

iCT-M[®]

Information Communication Technology aided
Management

<http://www.ict-m.com>



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Belmah Strategies

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Introduction to iCT-M

Manufacturing

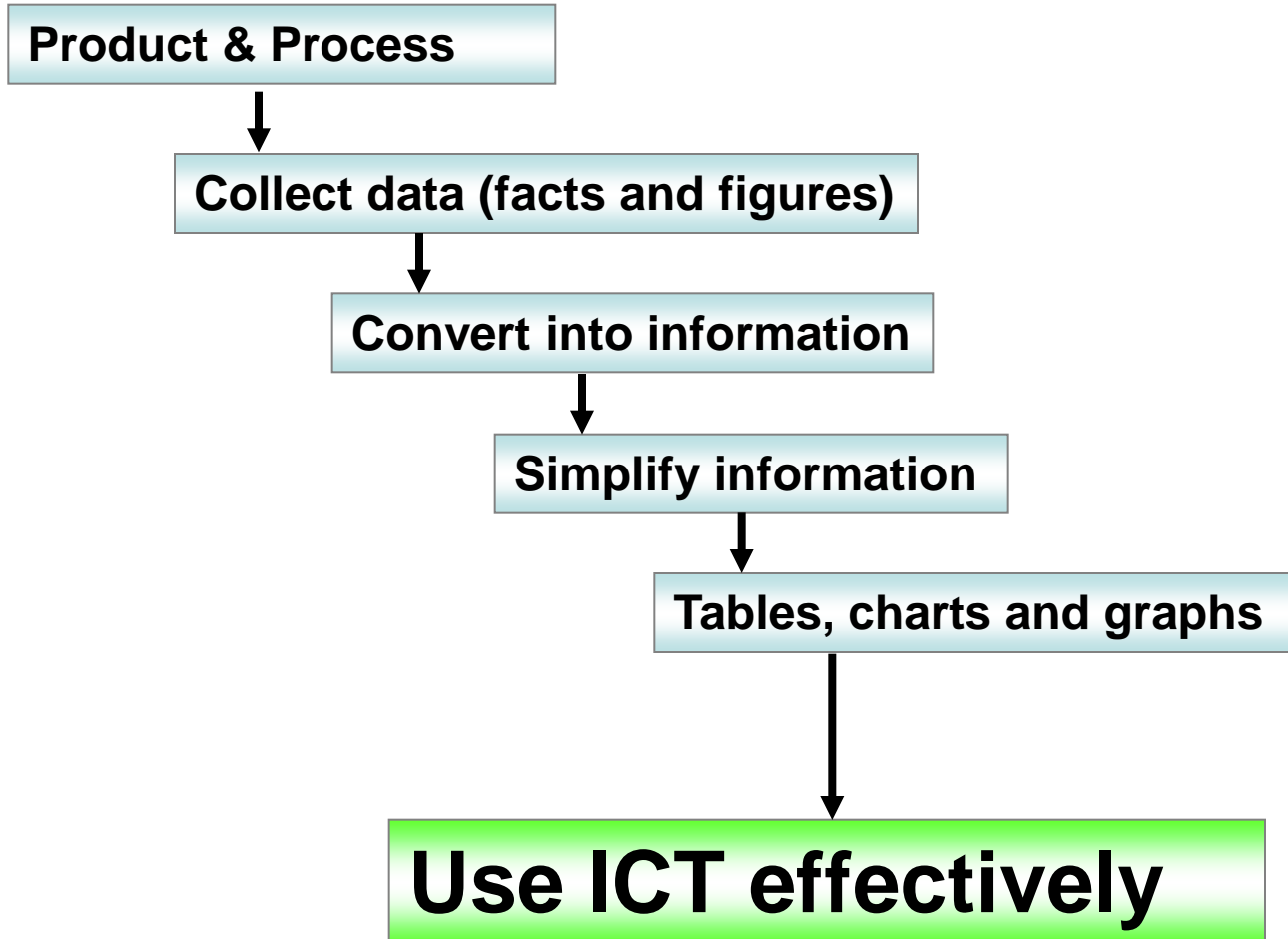


Significance of iCT-M



- New Policies
- New Challenges
- Time to Market
- Rapid Product Upgrades
- New Product Introduction
- Demanding Customer Requirements





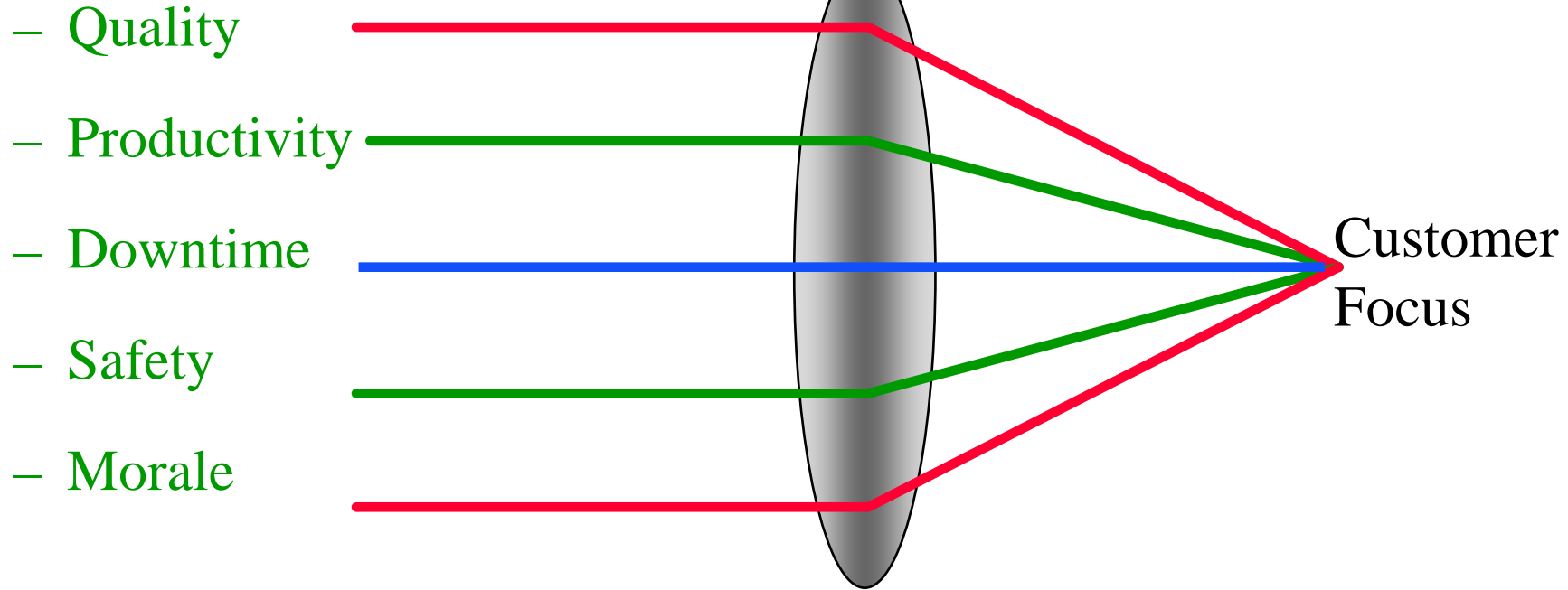


- Advanced Product Quality Planning (APQP)
- Total Quality Management (TQM)
- Six Sigma (6σ)
- Research & Development (R&D)
- Service Quality (ServQual)

New Paradigm in Management
Breakthrough Achievements
Competitive Edge
Globalization



- iCT-M can help your organization to improve:





- iCT-M drives your cost down:
 - Quality
 - Productivity
 - Downtime
 - Safety
 - Morale

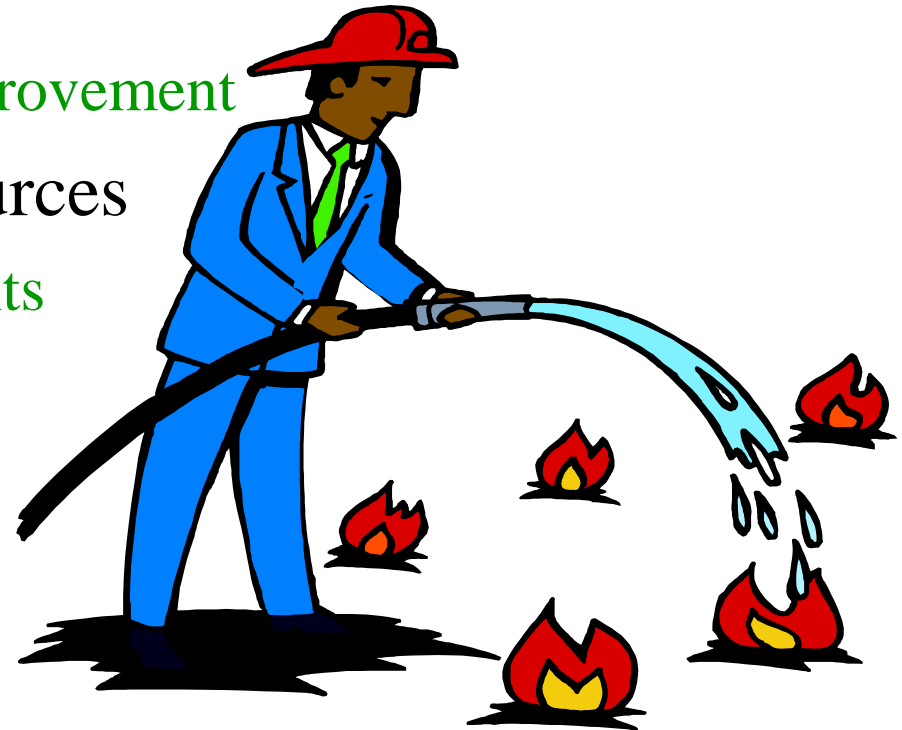




Traditional Approach

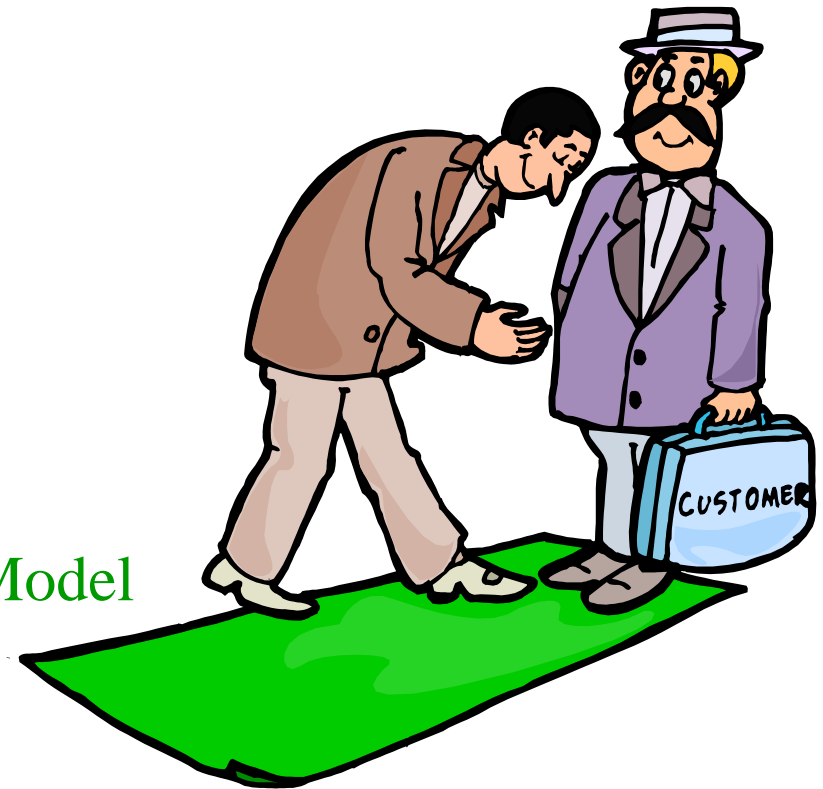


- No Methodological Resource
 - Left to employees
 - Ignore statistical tools
- Trial and Error Methods
 - Of Product and Process Improvement
- Too Much Time and Resources
 - Even for Small Improvements
- No Proper Documentation
 - Paper or Electronic





- Internal Measures
 - Internal Customers
- Waste Reduction
 - Lean Service Organization
- Quality Implementation
 - Process Improvement
- Monitoring Performance
 - Balanced Scorecard
- Business Model
 - Malcolm Baldrige Quality Model
- Accreditation
 - MSQH/JCI





- Lean tools
 - Reduce process wastes
- Quality tools
 - Improve service delivery
- Balanced Scorecard
 - Monitor business performance
- Malcolm Baldrige
 - Focus on business strategy
- MSQH/JCI
 - Promote Medical Tourism





Introduction to iCT-M

Healthcare



- Objectives
- What is iCT-M?
- What is the problem?
- What is the solution?
- Benefits of iCT-M
- Applications of iCT-M in Healthcare



- Overview
 - Provide an overview of iCT-M as a Quality Improvement Tool.
- Awareness
 - Increase awareness of different iCT-M Quality Tools.
- Encourage
 - Encourage administrators and healthcare professionals to learn usage in order to effectively implement iCT-M.
- Discuss
 - Discuss how iCT-M Quality tools may be helpful in healthcare.



What is iCT-M



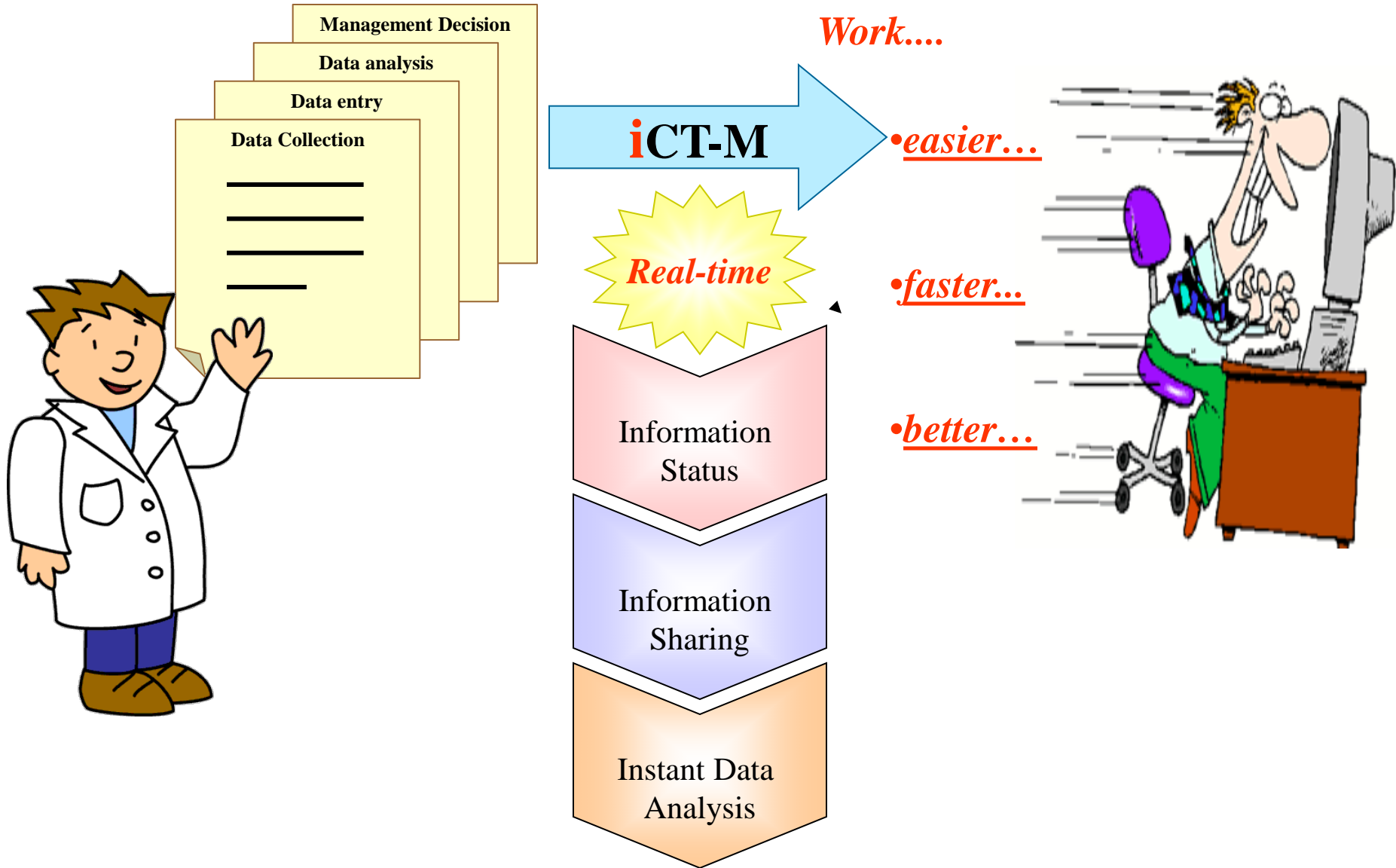
*What is
iCT-M?*



- Web based software for
 - Healthcare Management
 - Medical Research
- On-line system
 - To integrate quality, productivity and cost improvements
 - Without the need of multiple software
 - No need for knowledge of detailed mathematics, statistics or other hard skills



Breakthrough



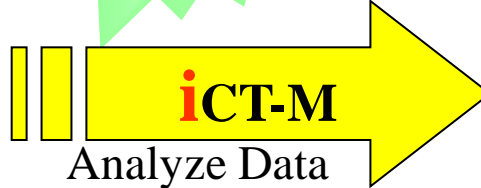


Using iCT-M



Enter Data

*No Maths
No Stats !*



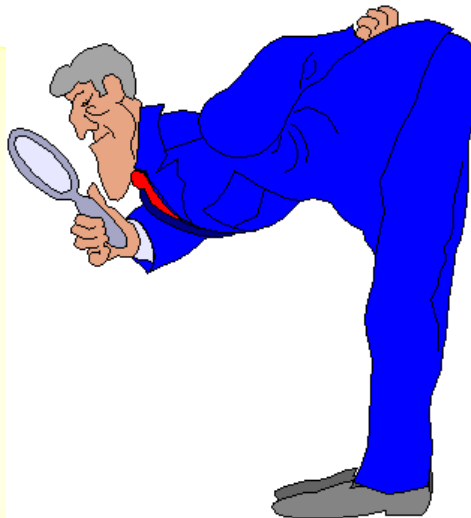
Analyze Data
Automatically



Generate Report



Conduct Quality
Improvement



Perform Audits



Research

What is the Problem?





Paper Based Systems



- Data
 - Cannot perform data validation, data analysis, or generate reports
- Key-in
 - Large amounts of data to key in by medical staff (with no maths or stats knowledge).
- Continuous improvement
 - Healthcare service delivery status not readily monitored, controlled or improved



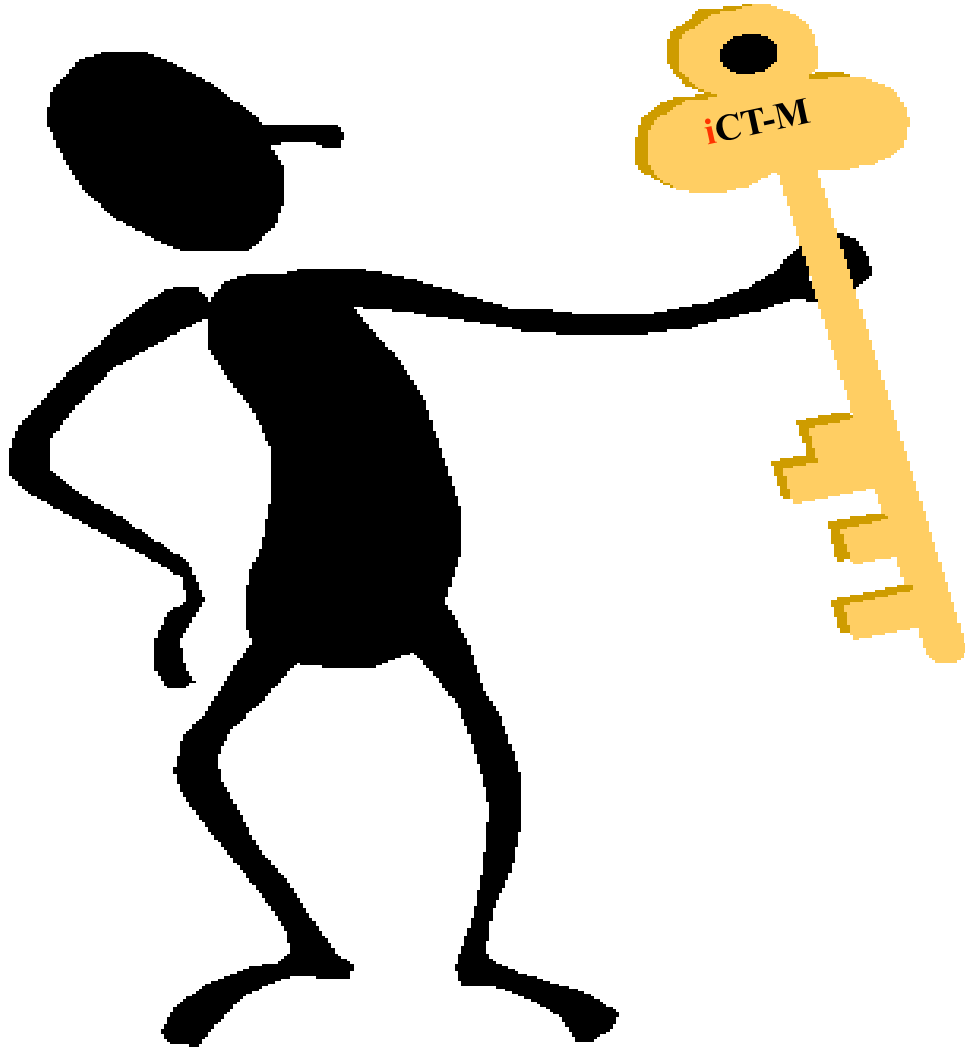
Existing Software



- Available in stand alone bits and pieces.
- Hospital may need to buy many software.
- Difficult to maintain, difficult to use with limited licenses, different installation, look & feel, etc.
- Not web based – future integration into a larger national scale is not likely.

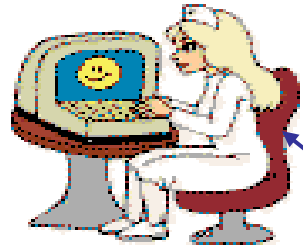


What is the solution?





Intranet Connectivity



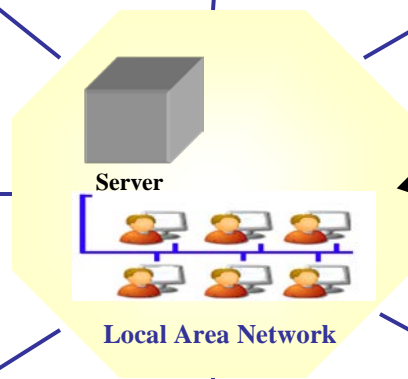
Evaluate Service Quality



Automated Report Generation



Participate Anywhere



Healthcare Management



Data Input at Workstation



Proactive Methodology



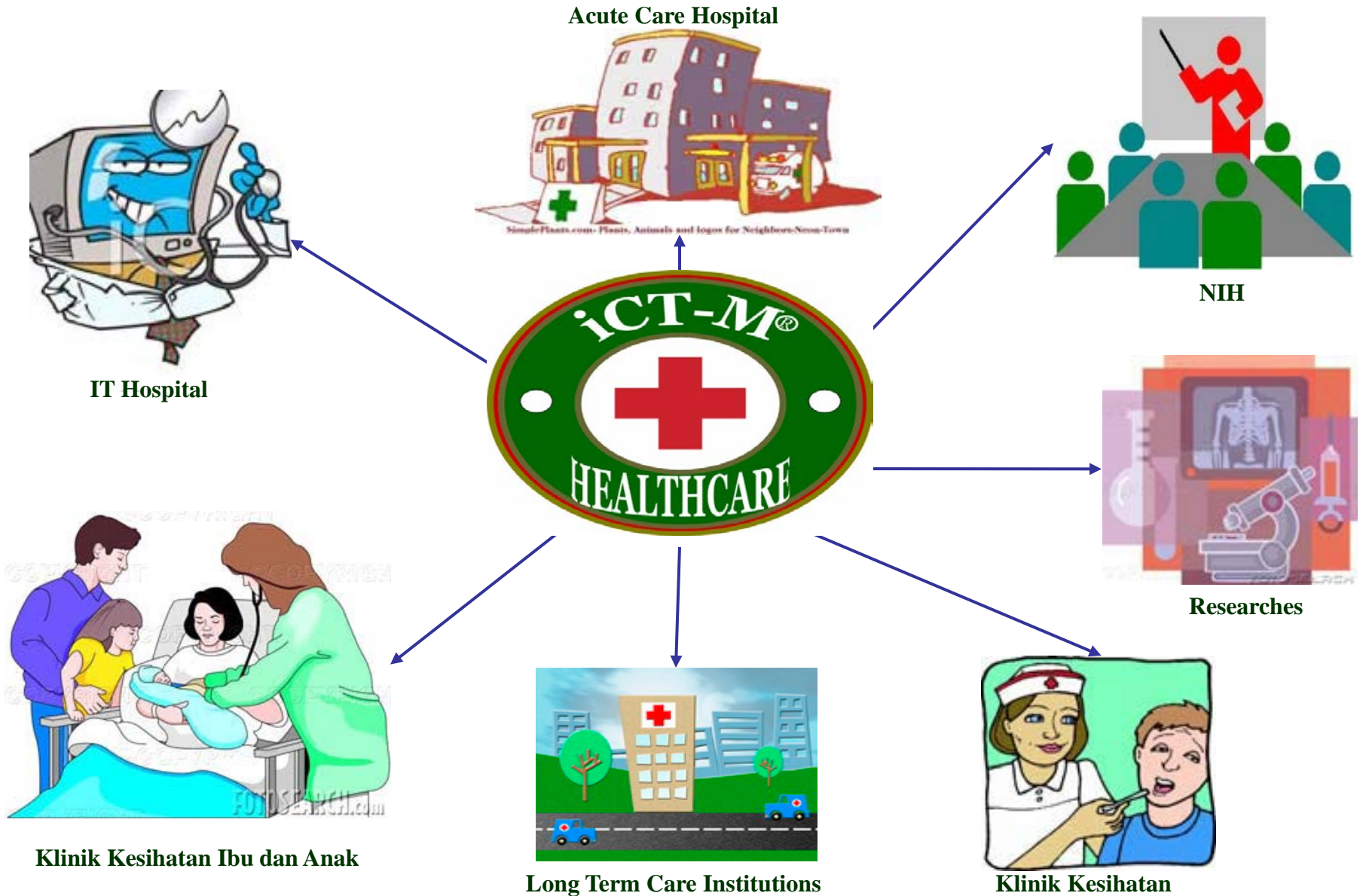
Compare Different Units



Evidence Based Medicine



iCT-M Network



Win-Win-Win



Satisfied External Customers



Increased Revenue



Satisfied Internal Customers



- Direct

- Root Cause Analysis
- Customer Complaints Management
- Healthcare Failure Mode Effects Analysis
- Service Quality
- Patient Satisfaction Questionnaire
- Customer Satisfaction Index
- Incident Reporting
- Cycle-time
- Affinity

- Indirect

- ISO Audit
- ISO Toolkit
- ISO Documents
- Benchmarking
- Balanced Scorecard



Healthcare

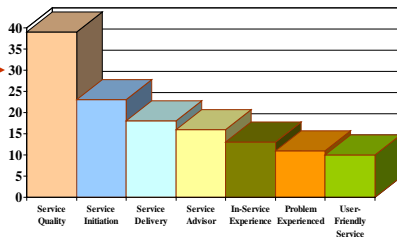


Belmah Strategies

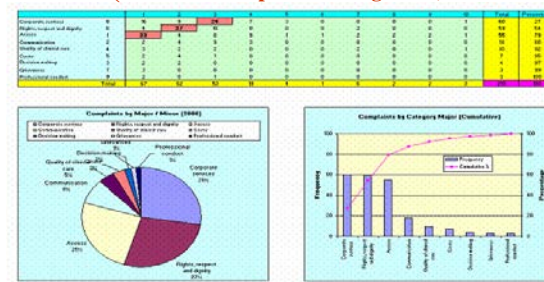
Service Quality



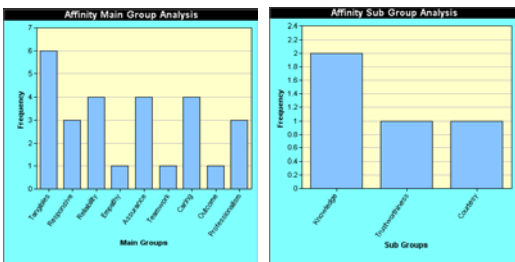
CSI (Customer Satisfaction Index)



CCM (Customer Complaint Management)



Affinity



Incident Report Form 1

The Incident Report Form 1 includes fields for 'Reporting Person', 'Category', 'Date of incident', 'Date of reporting', 'Witnessed the incident', 'State', 'Hospital', 'Incident Type', and 'Part A/B/C'. It also features a 'Departments Report' bar chart.

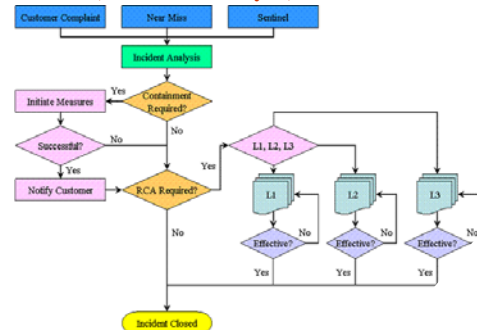
Cycle Time



HFMEA (Healthcare Failure Mode Effect Analysis)



RCA (Root Cause Analysis)





Unique Selling Propositions



Value Proposition of ICT-M

- What is the uniqueness of ICT-M?
 - A single holistic on-line ICT approach to integrate quality, productivity and cost improvement
 - No need to learn mathematics, statistics and hard-skills
 - Rapid prototyping and product design
- Are other similar software available?
 - No similar software available
 - Costly software may be used with little compatibility
- What makes ICT-M different and important?
 - Wide range of potential users
 - Provides an on-line resource center
 - Enables on-demand availability



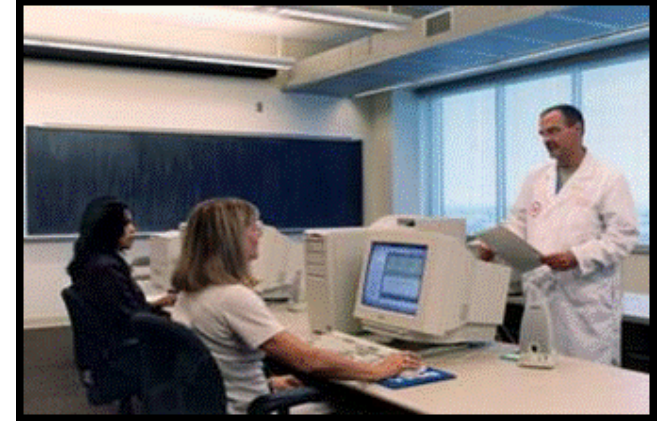
Industry Applications Of iCT-M



Manufacturing / Service



Hospitals / Universities



Laboratories



Research & Development





- Manufacturing
 - Automotive
 - Electrical
 - Electronics
 - Assembly
- Education
 - Universities
 - Colleges
- Service
 - Hotels
 - Banks
- Healthcare
 - Hospitals
 - Telehealth
 - Telemedicine
 - Clinics
- Government
 - Counter Service
 - e-Government
- Software / IT
- Transactional



Automotive

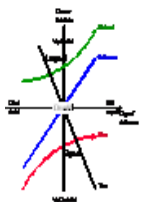


Belmah Strategies

ISO 9000/TS 16949



VOC



QFD



FMEA

| Function | Machine, Device |
|-----------------------------|----------------------|
| Flow Function | Ink injector, inject |
| Ink flow rate | Inkjet (nozzle) |
| Lead hardness | Inkjet (nozzle) |
| Mechanical ejection time | Stopwatch timer |
| Mechanism slowness cleaning | Go/No-Go gage |
| Case strength | Forming die |
| Surface tackiness | |

CFM

| Function | Machine, Device |
|-----------------------------|----------------------|
| Flow Function | Ink injector, inject |
| Ink flow rate | Inkjet (nozzle) |
| Lead hardness | Inkjet (nozzle) |
| Mechanical ejection time | Stopwatch timer |
| Mechanism slowness cleaning | Go/No-Go gage |
| Case strength | Forming die |
| Surface tackiness | |

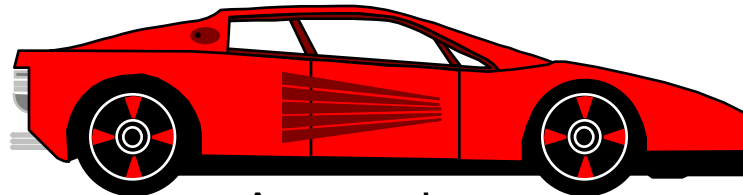
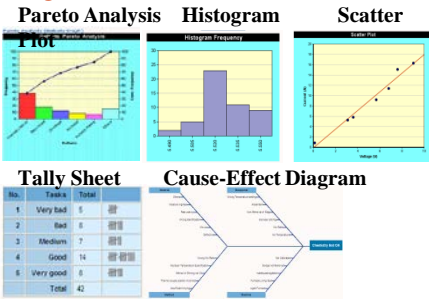
DCP

| No. | Part / Function | Potential Failure Mode | Spec | Type | Imp | Critical Factor | Control Method | Tool | Gage | Gr | CM | CP | Reaction Plan |
|-----|--------------------------|------------------------|------|------|-----|-----------------|----------------|------|------|----|----|----|---------------|
| 1 | Imported from linked QFD | | | | | | | | | | | | |
| 1.1 | Material Data Sheet | Not compliance | | | | | | | | | | | |
| 1.2 | Viscosity test | Ink hardness | | | | | | | | | | | |
| 1.3 | Dimensional checks | Not fitting parts | | | | | | | | | | | |
| 1.4 | Printed manual | Missed in package | | | | | | | | | | | |
| 1.5 | Tight rollers | Roller breaking crop | | | | | | | | | | | |
| 1.6 | Standard sizes | Not fitting of parts | | | | | | | | | | | |
| 1.7 | Microfitted burst | Working pressure high | | | | | | | | | | | |

SPC



7QC Tools

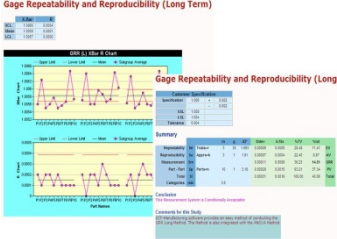


Automotive

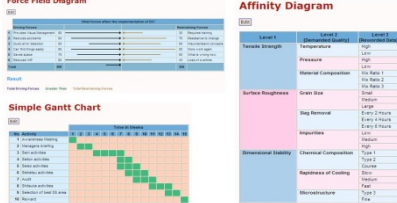
PPAP

| No. | Requirement | Approved | Approved | Approved | Approved | Approved |
|-----|---|----------|----------|----------|----------|----------|
| 1 | Design Approval of Customer Product | | | | | |
| 2 | Design Approval of Supplier Product | | | | | |
| 3 | Engineering Change Documentation - If any | | | | | |
| 4 | Customer Engineering Approval - If required | | | | | |
| 5 | Design FMEA | | | | | |
| 6 | Process Flow Diagram | | | | | |
| 7 | Dimensional Results | | | | | |
| 8 | Material Performance Test Results | | | | | |
| 9 | Initial Process Study | | | | | |
| 10 | Measurement System Analysis Studies | | | | | |
| 11 | Qualified Laboratory Documentation | | | | | |
| 12 | Control Plan | | | | | |
| 13 | Part Submission (Prevent APQP) | | | | | |
| 14 | Appropriate Customer Report, Source of application | | | | | |
| 15 | Risk Reduction Assessment (Checklist for each material APQP only) | | | | | |
| 16 | Sample Product | | | | | |
| 17 | Master Sample | | | | | |
| 18 | Checking Guide | | | | | |
| 19 | Records of Compliance with Customer-Specific Requirements | | | | | |

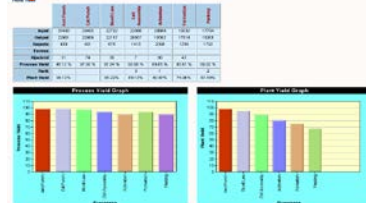
QYP



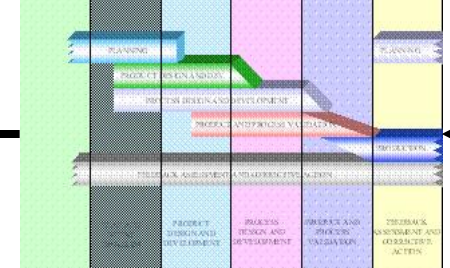
NOCT



QYP



APQP





Healthcare

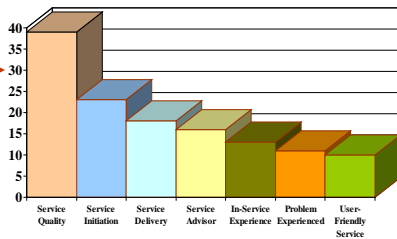


Belmah Strategies

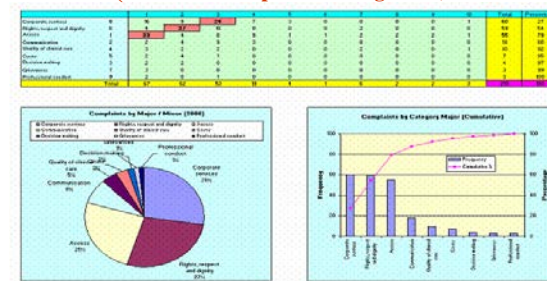
Service Quality



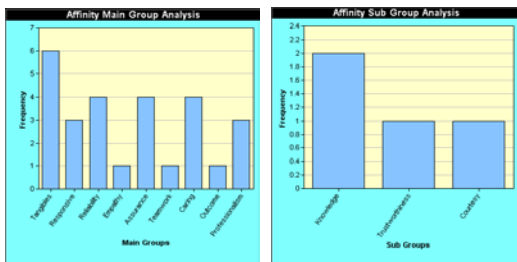
CSI (Customer Satisfaction Index)



CCM (Customer Complaint Management)



Affinity



Incident Report Form 1

A screenshot of an incident report form. It includes fields for Department (General Surgery), Units (Anaesthesia), Reporting Person (Ng Siew Ling), Category (Others), Date of Incident (01-Jun-2007 08:27 PM), Date of Reporting (02-Jun-2007 08:27 PM), and Incident Type (Radiology / laboratory error). A 'Departments Report' chart is also visible.

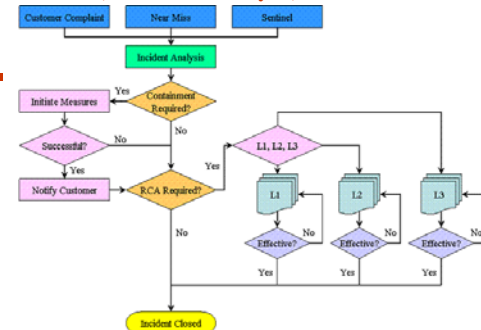
Cycle Time



HFMEA (Healthcare Failure Mode Effect Analysis)



RCA (Root Cause Analysis)





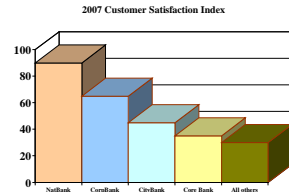
Banking



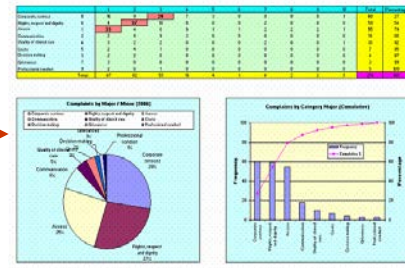
Service Quality



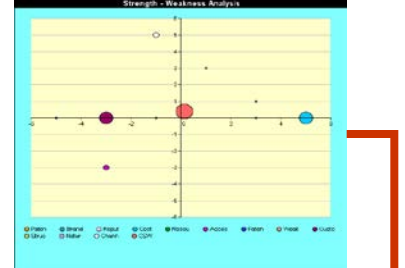
CSI (Customer Satisfaction Index)



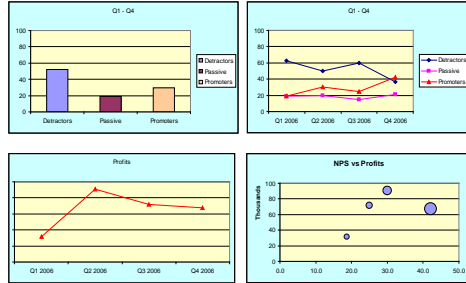
CCM (Customer Complaint Management)



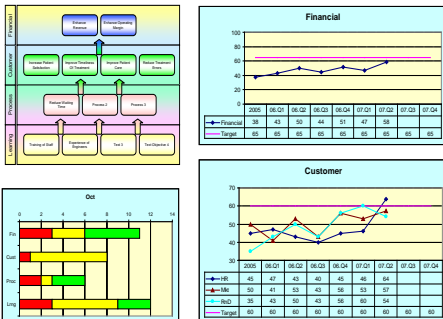
SWOT Analysis



Net Promoter Score



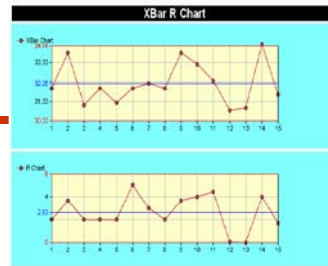
Balanced Score Card



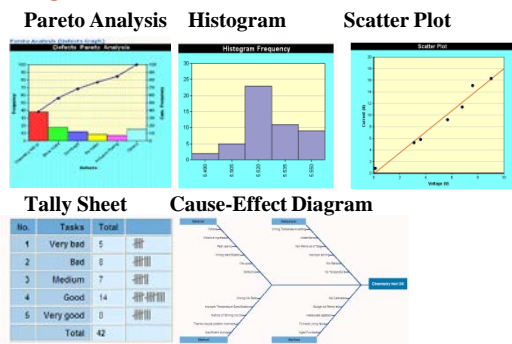
FMEA

FMEA table with columns for No, Name, Potential Effect of Failure, Current Cause of Failure, Failure Mode, No. of Occurrences, Critical Cause, Potential Cause, Current Control, and RPN.

SPC (Statistical Process Control)



7QC Tools

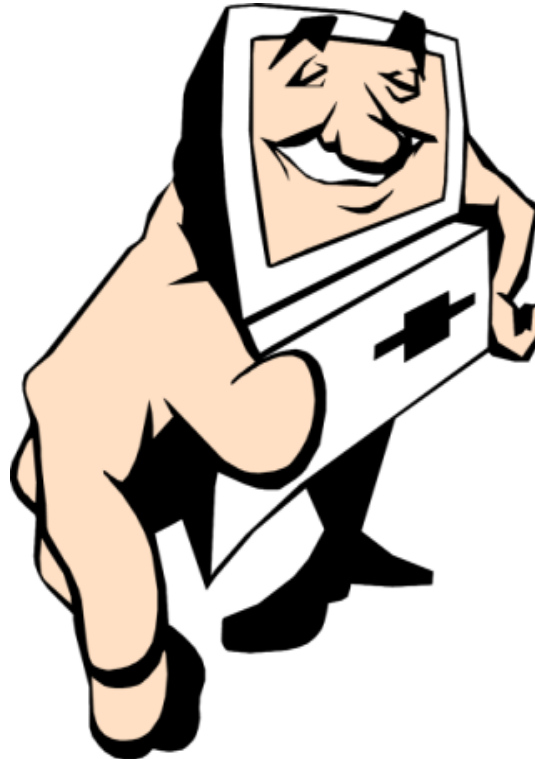


Cycle Time





- Six Sigma
 - DMAIC
 - DMADV
 - Lean Six Sigma
 - DFSS
- Automotive
 - APQP
- TQM
 - ISO Standards
- Evaluations
 - ICC / QCC
- Innovation
 - New Product / Service Development





- Required by
 - Six Sigma
 - APQP
- Project Tracking
 - Practical
 - Graphical
- Technology
 - Web based
 - LAN





Project Management



- Hierarchy control
 - Technicians / Clerk enter data into applets
 - Engineers analyze results from projects (groups of applets)
 - Managers decide course of action from all projects



Technician / Clerk enter data into applets



Engineers analyze results from projects (groups of applets)



Manager decide course of action from all projects

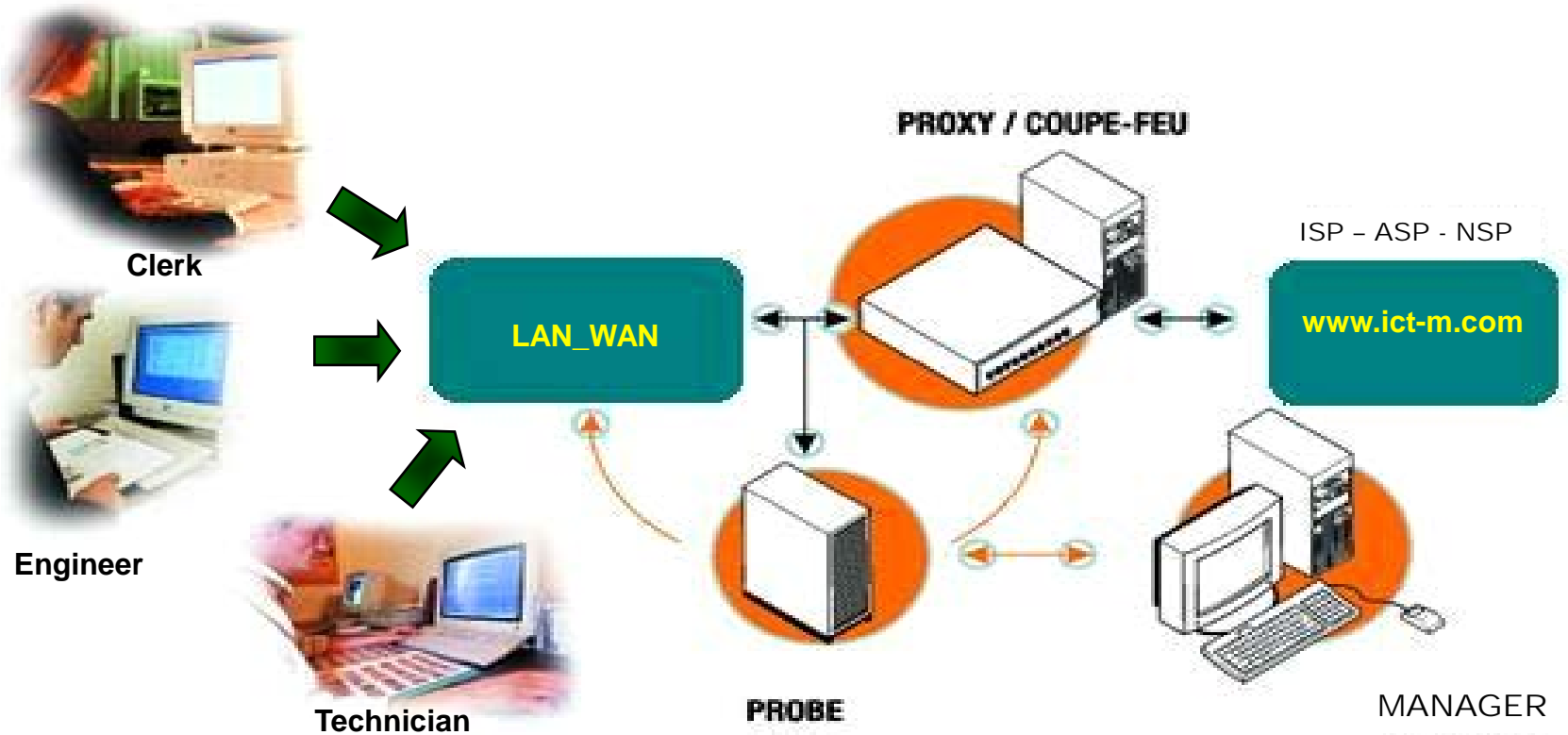


- Ease of Use
 - Can be use by a non-technical person
- No Mathematics here
 - User doesn't see mathematics
- No Statistics here
 - Data
 - Submit
 - Analyze
 - Report
 - Take business action





- Central Data
 - All projects stored in database and belongs to company
 - Engineers can come and go but data remains with company
 - Managers have direct access according to hierarchy

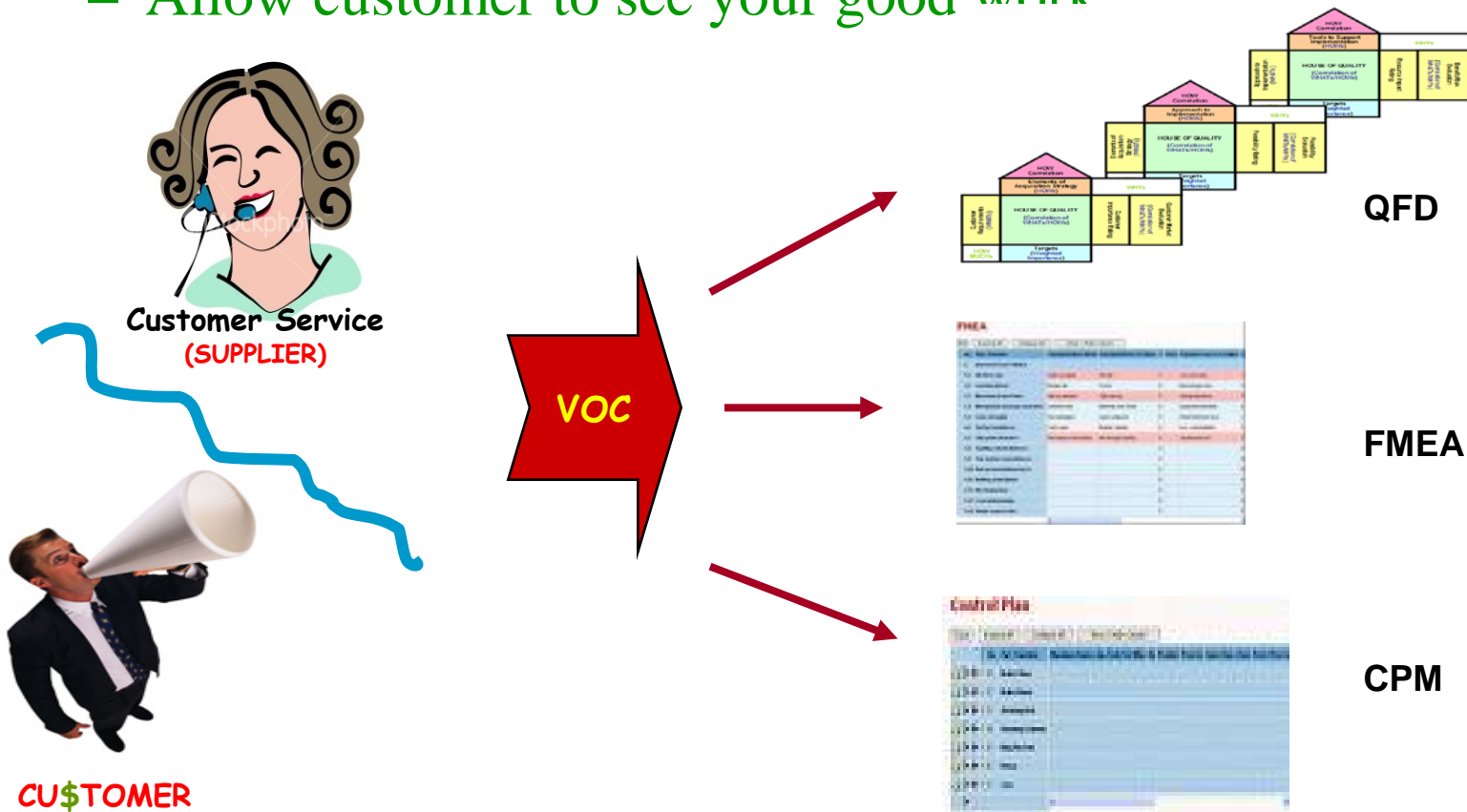




Data Connectivity



- Data flow
 - Link to projects in supplier's company
 - Allow customer to see your good work



Report Generation



- Easy Report

- Work carried out is automatically compiled
- No need to ask (beg) for reports from engineers
- Print a single applet or the entire project in any order / color
- Print to pdf, save to hard disk, send to colleague
- Mail report to customer



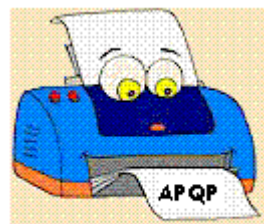
Reports on the go



Key in data/reports



Saving file



Printing Report



Customers all over the world

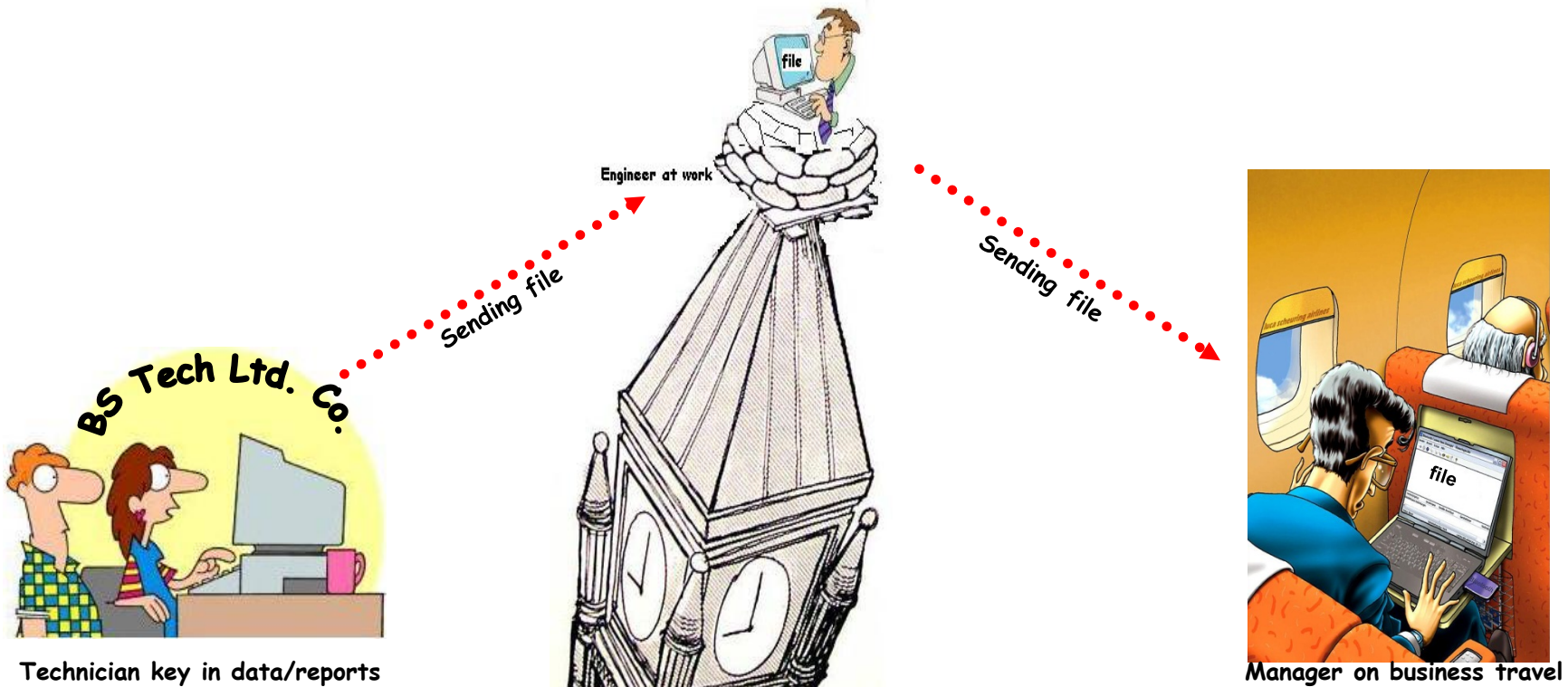


Super Teamwork



Belmah Strategies

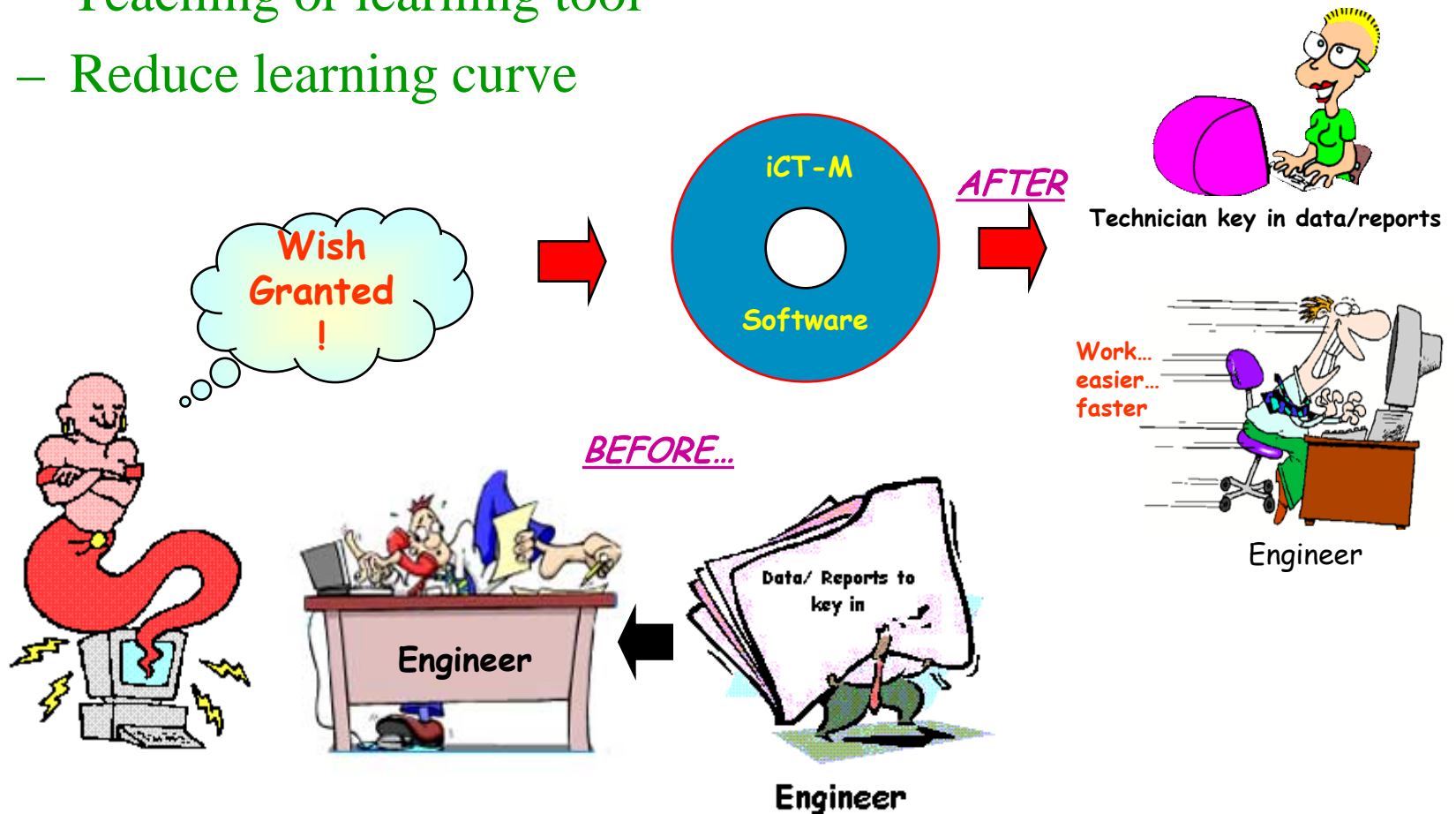
- Collaborative
 - Technician enters data in the factor floor
 - Engineer analyses results from engineering tower
 - Manager decides course of action from another country





- Job Simplification

- Work done by engineers can now be done by technicians
- Teaching or learning tool
- Reduce learning curve





iCT-M Project Approach



Projects



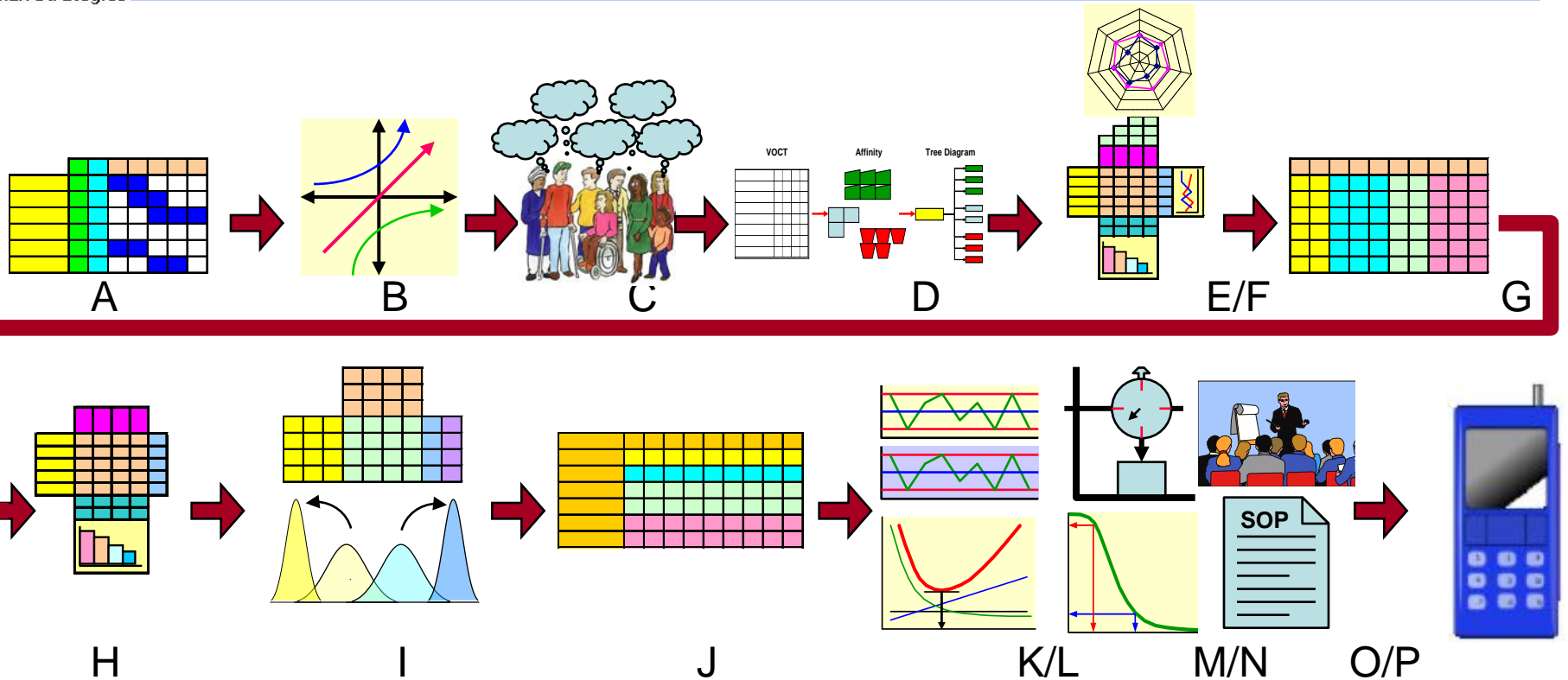
i C T - Manufacturing™

Project Flow

Edit



Concept to Customer Project Flow



ZD

Q/R

S/T

U/V

WX/Y

Z/a

b/c



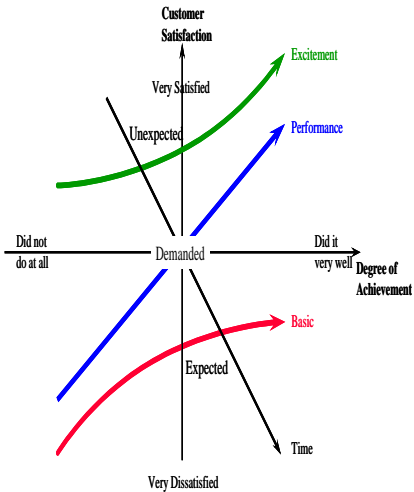


Data Connectivity

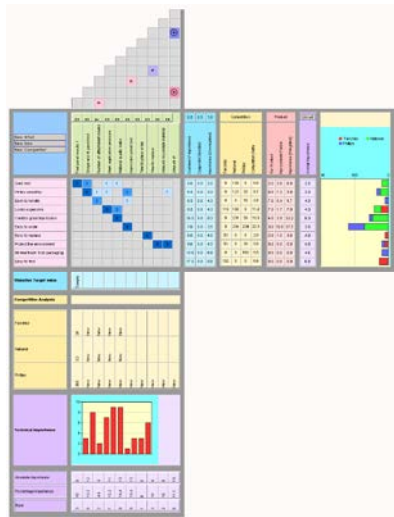


Belmah Strategies

VOC



QFD



FMEA

| Process FMEA | | FAILURE MODE EFFECT ANALYSIS | | | | | | | | | | Page | Design Responsibility | | |
|-----------------|-------------------|---------------------------------|------------------------------|---------------------------------|-----------------------------|----------------------------|-----|--|--------------------------------|----------------------------|---|----------|-----------------------|---------------|--|
| Customer Name | | Product or Process Name | | | | | | | | | | Date | Rev | User or Owner | |
| Consistent Line | | Battery Operator Portable Torch | | | | | | | | | | 12-04-03 | 01 | Josephine | |
| No. | Function and Part | Potential Failure Mode | Potential Effects of Failure | Potential Causes of Failure | Control Strategy Prevention | Control Strategy Detection | RPN | Recommended Actions | Responsibility and Target Date | Action Taken and Signature | S | O | D | RPN | |
| 1 | Blade surface | Crack | Can't light | Welding | OK | No control | 1 | Include this in the work instruction | 16 Jan 20th 2010 | | | | 24 | | |
| 1 | Blade surface | Crack | No light | Welding | OK | No control | 1 | Put highlight in the work instruction | 16 Jan 20th 2010 | | | | 18 | | |
| 1 | Blade surface | Blurred surface | Can't light | Insufficient thickness of metal | OK | No control | 2 | Increase thickness of the Shim by 0.015" | 05 Feb 27th 2010 | | | | 24 | | |
| 1 | Blade surface | Blurred surface | Can't light | Wear gauge built | OK | No control | 2 | Use better gauge | 07 Feb 20th 2010 | | | | 24 | | |
| 1 | Blade surface | Detached from base | No light | Wear bonding | OK | No control | 1 | 44 | | | | | 24 | | |
| 1 | Contact point | Not contact | No light | Weld error | OK | No control | 1 | 75 include this in the inspection plan | 07 Nov 20th 2010 | | | | 24 | | |
| 1 | Contact point | Crack | No light | Welding inhibitor | OK | No control | 1 | 75 source different material | 05 Feb 27th 2010 | | | | 24 | | |
| 1 | Blade Body | Flaking problem | Intermittent light | Coated surface | OK | No control | 4 | 85 include this in the work instruction | 06 Feb 20th 2010 | | | | 24 | | |
| 1 | Blade Body | Broken | No light | Wear inhibitor | OK | No control | 2 | 44 | | | | | 24 | | |
| 1 | Blade Body | Broken | No light | Wear inhibitor | OK | No control | 2 | 44 | | | | | 24 | | |

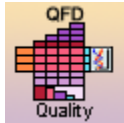
Using ICT, it is easier to understand, design and deliver what customers want

CPM

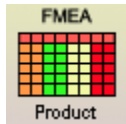
| Function | Machine, Device, Jig, Tool |
|-----------------------------|-----------------------------|
| New Function | |
| Ink flow rate | Ink injector, injection jig |
| Lead hardness | Instrom tensioned |
| Mechanical eject time | Stopwatch timer |
| Mechanism slowage clearance | Go No-Go gage |
| Case strength | Forming die |
| Surface tackiness | |



Product & Process Optimization

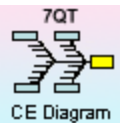


Quality Function Deployment
Translate Voice of Customer to product specification



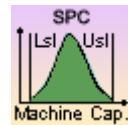
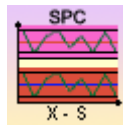
Design Failure Mode Effect Analysis
Reduce potential product failure

Design Review / Design Of Experiments
Design -in robust quality in products and processes

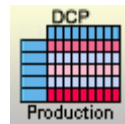


Characteristics Matrix
Cause -Effect Analysis

Preliminary Process Capability
To monitor and maintain ideal process



Measurement System Analysis Plan
To ensure capable measurements



Dynamic Control Plan
To generate a production control plan



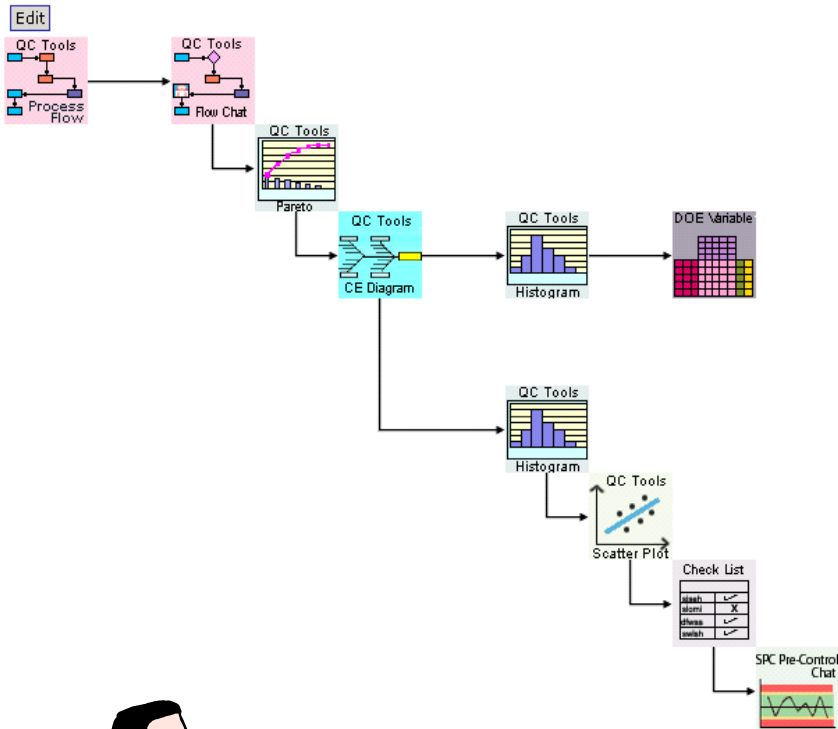
Documentation
Significant assistance in Documentation for

- Quality Record
- Historic Trend
- Lessons Learned



Project: Problem Solving

Project Flow



- Problem Solving
 - Create the activity sequence
 - Choice of over 57 elements
 - Work on each element
 - Step by step
 - Generate Reports
- Managing Projects
 - View/work from office
 - View/work from home
 - View/work from another country





Advanced Product Quality Planning



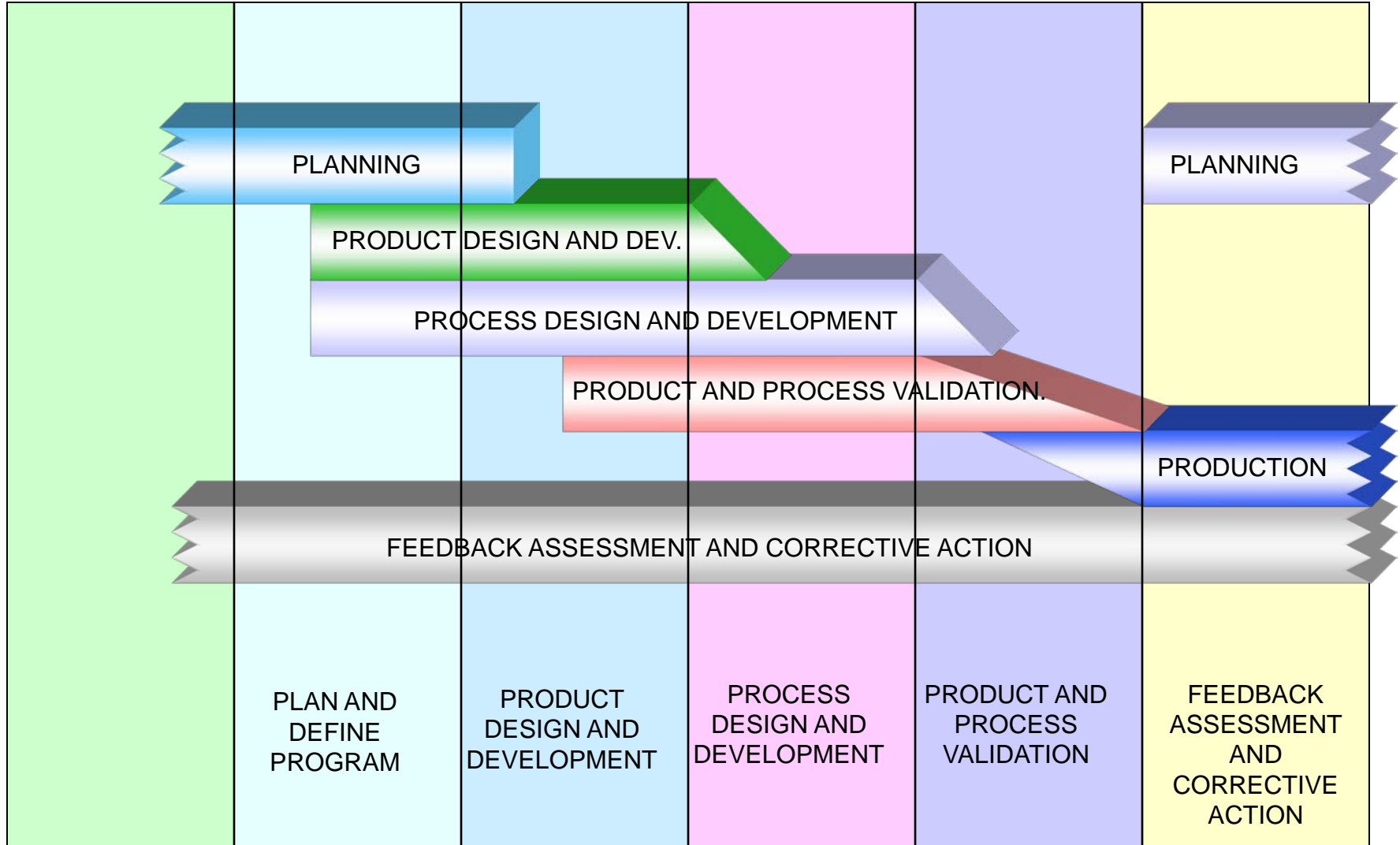
Concept Initiation / Approval

Program Approval

Prototype

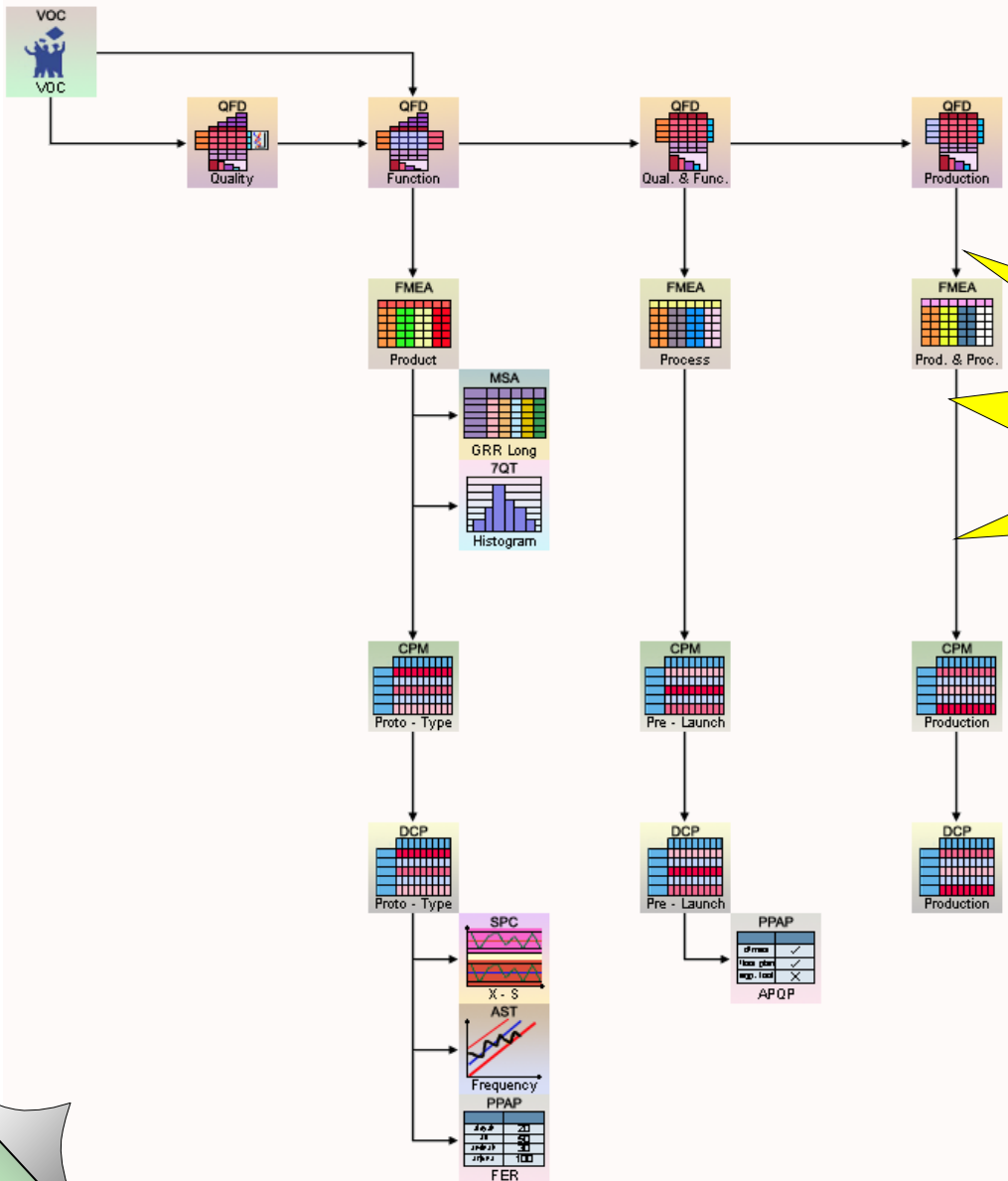
Pilot

Launch

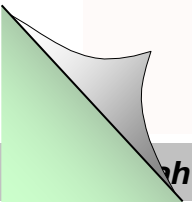




Example of APQP Application

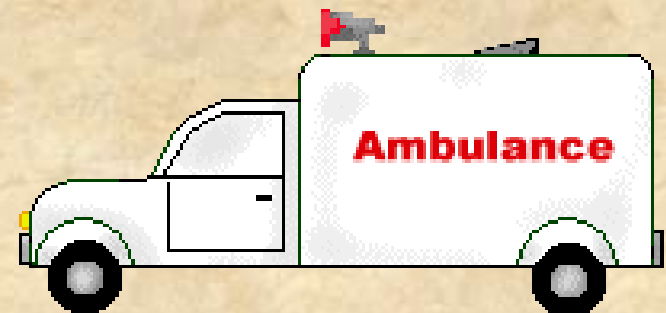


Arrange your project sequentially to achieve the best results





Applications for the Ministry of Health





- Cycle Time Reduction
 - Zero waiting time!!!
- Service Quality
 - Measuring and Meeting Customer Expectations
- MBNQA (JCI/MSQH)
 - Conforming to standards



- Customer Complaints Management
 - Customer centered complaints
- Root Cause Analysis
 - Now that it HAS happened...(we thought it won't happen)
- Healthcare Failure Mode Effect Analysis
 - What can we do before it happens...(we still think it won't happen)



- Statistical Process Control
 - C-Chart for Needle Sticks
 - U-Chart for Patient Falls
 - X-bar Range Chart for Complaints Management
- Healthcare Mistake Proofing
 - Make sure you...
 - Be careful not to forget ??? (don't wait till it happens)
- Plus – 160 Tools
 - VOC, QFD, Control Plan, etc.
 - Where do you want to go today?



- Current method
 - Attend a 2 day training
 - Attempt questionnaires within 6 months
 - Revert back to the centre with set of data
 - Centre compiles report within 3 months (charter!!!)
 - Min 2 months
 - Max 9 months.
- iCT-M
 - Questionnaire is ready
 - Edit if required
 - Choose respondent
 - Feedback is keyed at centre OR
 - Respondent clicks directly
 - DONE !!!
 - Report is ready as soon as submit button is clicked!!!



- Current method
 - Third party consultants
 - Training
 - Waiting for report
 - Expecting help
- iCT-M
 - Questionnaire is ready
 - Edit if required
 - Choose respondent
 - Feedback is keyed at centre OR
 - Respondent clicks directly
 - DONE !!!
 - Report is ready as soon as submit button is clicked!!!



- Current method
 - Is it done
 - Different system
 - Different software
 - Training
 - Set-up
- iCT-M
 - Collect data
 - Enter data collected
 - Automatic data analysis
 - Outputs results graphically
 - Implement Change
 - Enter new data collected
 - Check for improvement



- Current method
 - Is it important?
 - Is it done?
 - How?
 - Manual
 - Data and data and data
 - NOT TIMELY !
- iCT-M
 - Brilliant system
 - Structured approach
 - Systematic classification
 - Tracks Root Cause
 - Classify Event Type
 - Classify Complaints Type
 - Root Cause Analysis
 - 5-Why approach
 - Implement Action Plan
 - Monitor and improve



- Current method
 - Not done
 - Poorly done
 - Piles of worksheets
 - Vague ideas
 - Low traceability
 - A lot of meetings
 - A lot of files
 - A lot of moving
- iCT-M
 - Detailed procedure
 - Simple to use
 - Easy 5-Why
 - Cascading method
 - Guided step-by-step
 - Easy visibility
 - Automatic Report generation
 - Networking with team members from different areas



- Current method
 - Is it important?
 - How is it done now?
 - Usually not done
 - Many don't even know
- iCT-M
 - Create process flow
 - Where can things go wrong?
 - How can it go wrong?
 - How can it be prevented
 - Identify Severity
 - Identify Occurrence
 - Identify Detection
 - Rank the Risk
 - Take action



- Current method
 - Some charts
- iCT-M
 - Many types available
 - C-Chart
 - U-Chart
 - P-Chart
 - D-Chart
 - Different data types
 - Use without statistics



Healthcare Mistake Proofing



- Current method
 - Is it important?
 - Is it being practiced?
- iCT-M
 - Create awareness
 - Conduct training
 - Conduct audit among personnel in different departments and unit
 - Continuously conduct mistake proofing through a central unit



- Telehealth

- Is the use of communications and information technology to deliver health and health care services, information and education where participants are separated.

- Telehealth

- Can help to improve access by overcoming barriers of geography, transportation infrastructure, or socio-economic disparity.
- It can enable clinical consultation, continuing professional education, health promotion, and healthcare management and administration.
- Both broad and low bandwidth infrastructure and technology are used in the provision of services.



Integrated Management Systems

QMS, EMS and OHSAS



EMS and OHSAS Plan



- What is needed?
- Where to start?
- What is the strategy?
- How to Implement?
- Internal or external?
- What tools and techniques to use?





EMS and OHSAS Plan



- iCT-M implementation module

- Toolkit
- Document Control
- Audit

- iCT-M Standards modules

- QMS
- EMS
- OSH

- Manage

- 3 Standards
- 3 Utilities
- 1 software!



With CAPA
Corrective &
Preventive Action

| | Toolkit | DocCon | Audit |
|-----|---------|--------|-------|
| QMS | √ | √ | √ |
| EMS | √ | √ | √ |
| OSH | √ | √ | √ |



Training Needs Analysis



Personal Training Year Planner

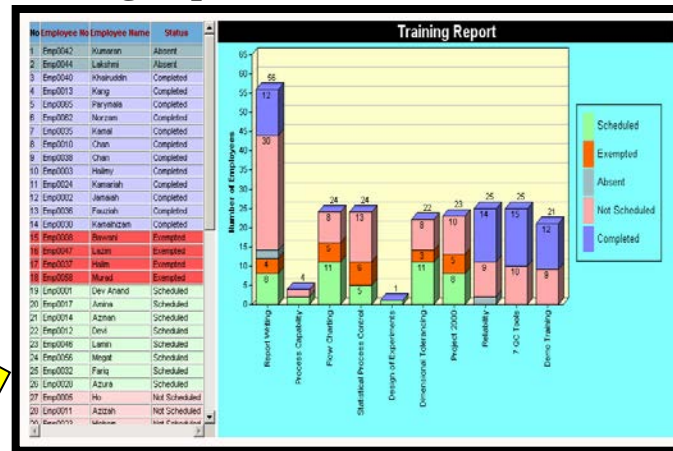
Expand All Collapse All

Personnel Training Year Planner

Legend:
 Training Needed
 Training Not Needed

| Position | Job Code | Employee No | Employee Name | Report Writing | Process Capability | Flow Charting | Statistical Process Control | Design of Experiments | Dimensional Tolerancing | Project 2000 | Reliability | 7 QC Tools | Demo Training |
|-------------------------|----------|-------------|---------------|----------------|--------------------|---------------|-----------------------------|-----------------------|-------------------------|--------------|-------------|------------|---------------|
| Chief Executive Officer | 1 | Emp0010 | Hamid | | | | | | | | | | |
| Chief Tech Officer | 2 | Emp0002 | vinod | | | | | | | | | | |
| Basic Research | 11 | Emp0007 | Fauziah | | | | | | | | | | |
| Advanced Development | 12 | Emp0011 | Thulasi | | | | | | | | | | |
| Marketing | 3 | Emp0003 | P | | | | | | | | | | |
| Marketing Manager 1 | 13 | Emp0017 | Hameed | | | | | | | | | | |
| Marketing Manager 2 | 14 | Emp0018 | Ho | | | | | | | | | | |
| Operations | 4 | Emp0005 | Shazrul | | | | | | | | | | |
| Prod Plan Control | 5 | Emp0001 | Balan | | | | | | | | | | |
| Production | 6 | Emp0030 | Zakuan | | | | | | | | | | |
| Product Quality Ass | 7 | Emp0006 | Kang | | | | | | | | | | |
| Safety Security Health | 8 | Emp0009 | Shirlene | | | | | | | | | | |
| Human Resource | 1 | | | | | | | | | | | | |

Training Report



Training Schedule

Show: Yearly

December 2004

| No | Training Name | Group No | Status | No. of Delegate | Date | Start Date | End Date | Mon | Tue | Wed | Thu | Fri | Sat | Sun | Mon | Tue | Wed | Thu | Fri | Sat | Sun | Mon | Tue | Wed | Thu | Fri | Sat | Sun |
|----|-----------------------------|----------|--------|-----------------|-------------|-------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | Report Writing | Group1 | Status | 8 | 05/Oct/2004 | 20/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Report Writing | Group2 | Status | 6 | 04/Nov/2004 | 05/Nov/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Report Writing | Group3 | Status | 12 | 22/Dec/2004 | 24/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Process Capability | Group1 | Status | 2 | 01/Dec/2004 | 02/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Flow Charting | Group1 | Status | 4 | 22/Dec/2004 | 22/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Flow Charting | Group2 | Status | 12 | 12/Jan/2005 | 13/Jan/2005 | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Statistical Process Control | Group1 | Status | 11 | 10/Dec/2004 | 10/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Design of Experiments | Group1 | Status | 0 | 21/Dec/2004 | 21/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Design of Experiments | Group2 | Status | 1 | 22/Dec/2004 | 22/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Dimensional Tolerancing | Group1 | Status | 14 | 08/Dec/2004 | 13/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Project 2000 | Group1 | Status | 13 | 08/Dec/2004 | 10/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Reliability | Group1 | Status | 16 | 31/Oct/2004 | 31/Oct/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 7 QC Tools | Group1 | Status | 15 | 20/Oct/2004 | 20/Oct/2004 | | | | | | | | | | | | | | | | | | | | | | |
| 14 | Demo Training | Group1 | Status | 12 | 25/Oct/2004 | 25/Oct/2004 | | | | | | | | | | | | | | | | | | | | | | |

Training Planner

Expand All Collapse All

From Date: 5/1/2005 To Date: 31/12/2005 Submit

| Category Group 1 | Trainers | Trainer | Jan 2005 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|--------------|---------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Quality Yield Productivity | Dr. Nic | | | | | | | | | | | | | |
| Strategic Method Analysis | Dr. Nic | | | | | | | | | | | | | |
| SPC | B. Sivarannu | | | | | | | | | | | | | |
| Total Productive Maintenance | B. Sivarannu | | | | | | | | | | | | | |
| Internal Audit Application software | B. Sivarannu | | | | | | | | | | | | | |
| ISO | Dr. Nic | | | | | | | | | | | | | |
| Advanced Statistical Techniques | B. Sivarannu | | | | | | | | | | | | | |
| Measurement System Analysis | B. Sivarannu | | | | | | | | | | | | | |
| Voice of Customer | Dr. Nic | | | | | | | | | | | | | |
| Quality Function Deployment | B. Sivarannu | | | | | | | | | | | | | |
| Failure Mode & Effect Analysis | B. Sivarannu | | | | | | | | | | | | | |
| Control Plan | B. Sivarannu | | | | | | | | | | | | | |
| Systemic Control Plan | Dr. Nic | | | | | | | | | | | | | |
| Problem Solving Techniques | B. Sivarannu | | | | | | | | | | | | | |
| Process Flow chart & Allied Tools | B. Sivarannu | | | | | | | | | | | | | |
| ISO 9001:2000 Awareness | B. Sivarannu | | | | | | | | | | | | | |
| ISO 9001:2000 Documentation and Implementation | B. Sivarannu | | | | | | | | | | | | | |
| ISO 18001 Environmental System Internal Audit | B. Sivarannu | | | | | | | | | | | | | |
| Awareness on OHSAS 18001 | Dr. Nic | | | | | | | | | | | | | |
| OHSAS 18001:1999 Documentation and Implementation | B. Sivarannu | | | | | | | | | | | | | |
| ISO 18001 Health and Safety Management System int | B. Sivarannu | | | | | | | | | | | | | |
| Awareness on TS 16949:2002 | B. Sivarannu | | | | | | | | | | | | | |
| TS 16949:2002 Documentation and Implementation | B. Sivarannu | | | | | | | | | | | | | |
| Internal Auditing to TS 16949:2002 | B. Sivarannu | | | | | | | | | | | | | |
| Awareness on Integrated Management Systems | B. Sivarannu | | | | | | | | | | | | | |
| Category Group 2 | | | | | | | | | | | | | | |
| Total Productive Maintenance | B. Sivarannu | | | | | | | | | | | | | |

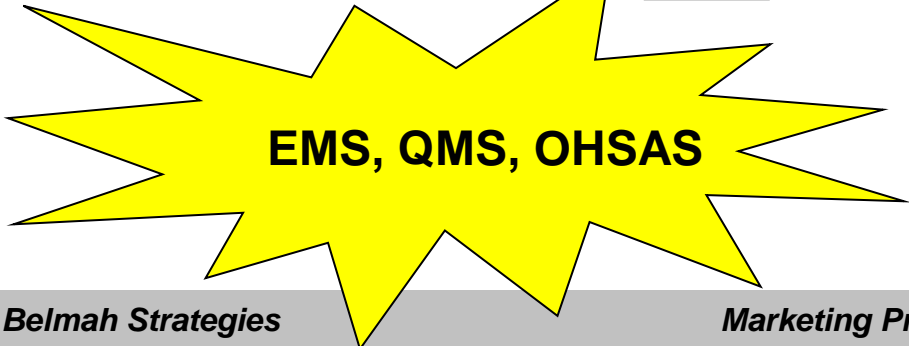
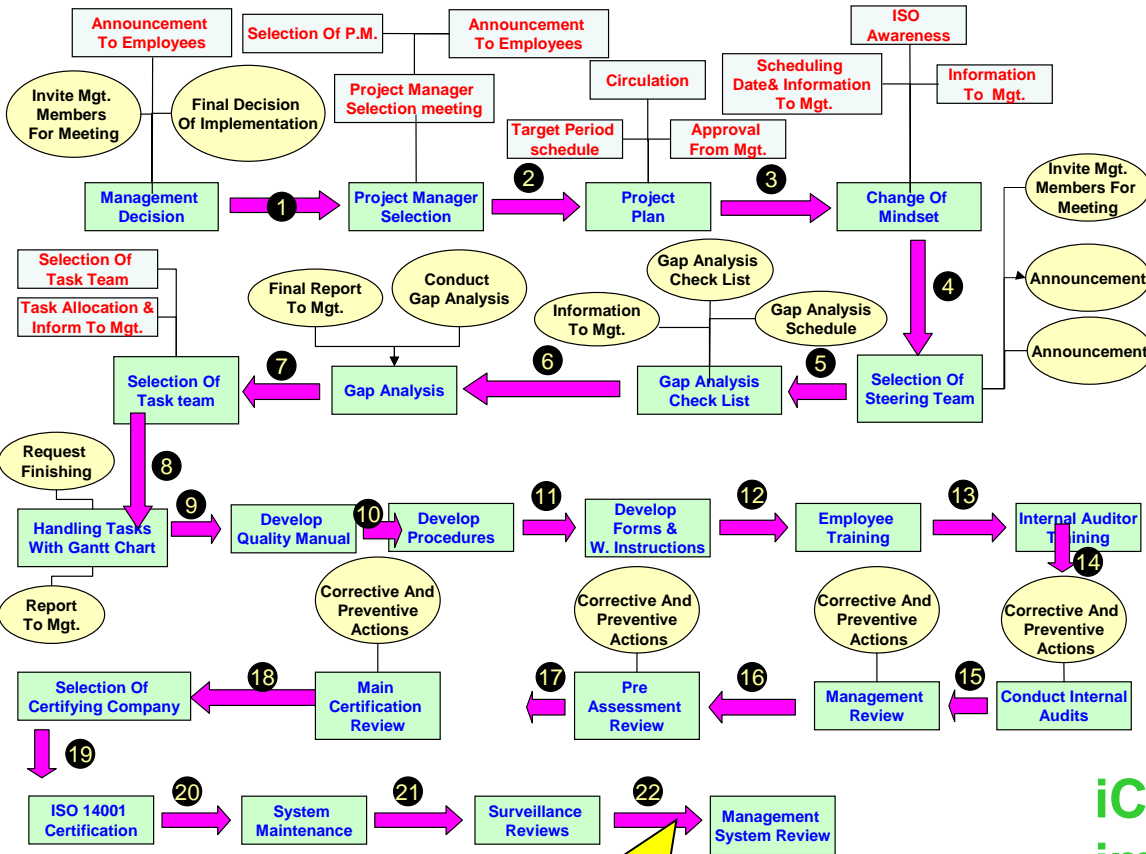


Toolkit



Link to Project Section!
 Conduct Improvement
 Implement crucial tools:

- FMEA
- SPC
- MSA
- Etc.



iCT-M provides a toolkit for implementing ISO 14001 and OHSAS

Step-by-Step

Templates available



Step by step Toolkit



Steps

Edit

Selected

| No. | Description | Template | Documents |
|-----|--------------------------------|-------------------------------------|----------------------|
| 1 | Introduction | <input checked="" type="checkbox"/> | View |
| 2 | Management Decision | <input checked="" type="checkbox"/> | View |
| 3 | Project Manager Selection | <input checked="" type="checkbox"/> | View |
| 4 | Project Plan | <input checked="" type="checkbox"/> | View |
| 5 | Change Of Mindset | <input checked="" type="checkbox"/> | View |
| 6 | Selection Of Steering Team | <input checked="" type="checkbox"/> | View |
| 7 | Gap Analysis Check List | <input checked="" type="checkbox"/> | View |
| 8 | Gap Analysis | <input checked="" type="checkbox"/> | View |
| 9 | Selection Of Task Team | <input checked="" type="checkbox"/> | View |
| 10 | Handling Tasks with Gantt Char | <input type="checkbox"/> | View |
| 11 | Develop Quality Manual | <input type="checkbox"/> | View |
| 12 | Develop Procedures | <input checked="" type="checkbox"/> | View |
| 13 | Develop Forms | <input checked="" type="checkbox"/> | View |
| 14 | Document Control | <input type="checkbox"/> | View |
| 15 | Employee Training | <input checked="" type="checkbox"/> | View |
| 16 | Auditor Selection and Training | <input checked="" type="checkbox"/> | View |
| 17 | Internal Auditing | <input checked="" type="checkbox"/> | View |
| 18 | Management Review | <input checked="" type="checkbox"/> | View |
| 19 | Selection Of Certifying Compan | <input type="checkbox"/> | View |
| 20 | Certification | <input checked="" type="checkbox"/> | View |
| 21 | System Maintenance | <input type="checkbox"/> | View |
| 22 | Surveillance Audit | <input type="checkbox"/> | View |

Steps

Close

Save

Clear All

| No. | Description | Status |
|-----|--------------------------------|-------------------------------------|
| 1 | Introduction | <input checked="" type="checkbox"/> |
| 2 | Management Decision | <input checked="" type="checkbox"/> |
| 3 | Project Manager Selection | <input checked="" type="checkbox"/> |
| 4 | Project Plan | <input checked="" type="checkbox"/> |
| 5 | Change Of Mindset | <input checked="" type="checkbox"/> |
| 6 | Selection Of Steering Team | <input checked="" type="checkbox"/> |
| 7 | Gap Analysis Check List | <input checked="" type="checkbox"/> |
| 8 | Gap Analysis | <input checked="" type="checkbox"/> |
| 9 | Selection Of Task Team | <input checked="" type="checkbox"/> |
| 10 | Handling Tasks with Gantt Char | <input type="checkbox"/> |
| 11 | Develop Quality Manual | <input type="checkbox"/> |
| 12 | Develop Procedures | <input checked="" type="checkbox"/> |
| 13 | Develop Forms | <input checked="" type="checkbox"/> |
| 14 | Document Control | <input type="checkbox"/> |
| 15 | Employee Training | <input checked="" type="checkbox"/> |
| 16 | Auditor Selection and Training | <input checked="" type="checkbox"/> |
| 17 | Internal Auditing | <input checked="" type="checkbox"/> |
| 18 | Management Review | <input checked="" type="checkbox"/> |
| 19 | Selection Of Certifying Compan | <input type="checkbox"/> |
| 20 | Certification | <input checked="" type="checkbox"/> |
| 21 | System Maintenance | <input type="checkbox"/> |
| 22 | Surveillance Audit | <input type="checkbox"/> |



Document Control for EMS and OHSAS

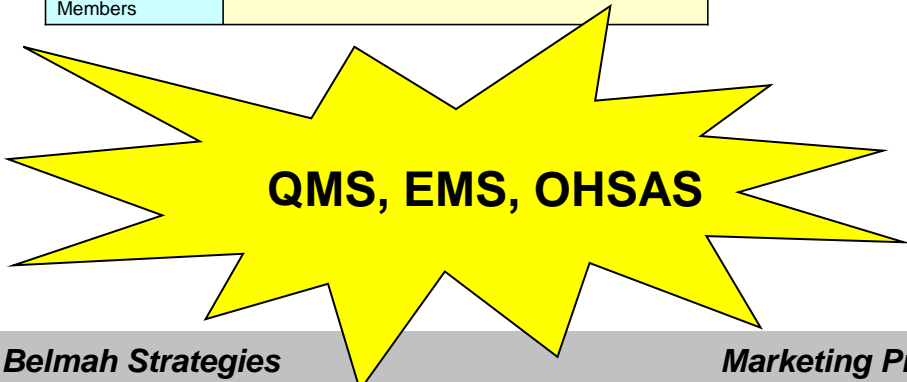


| Menu Link | Create | Draft Status | Verified Status | Approved Status | Circulation | Distribution |
|--------------------|--|--------------------------|-----------------------------|-----------------------------|-------------------------|--------------------------|
| Create (or Modify) | Create Document or Modify Document | | | | | |
| Authenticate | Authenticate Document by Mgmt. Rep. | Document in Draft Status | | | | |
| Verify | Verify Document by Verify List | | Document in Verified Status | | | |
| Approve | Approve Document by Approve List | | | Document in Approved Status | | |
| Circulation | Circulate Document by Circulate List | | | | Document in Circulation | |
| Distribution | Distribute Document by Distribute List | | | | | Document in Distribution |

| Menu Link | Purpose |
|--------------------|--|
| Register | Upload existing Documents View all Document |
| Active Documents | View all Active Documents |
| Obsolete Documents | View all Obsolete Documents |
| Master Documents | View all Active or Obsolete Documents |
| Search | Search for a particular Document |
| Document History | View all activities associated with a Document |
| Document Members | View who is involved in which Document |

Remember running round the organization before every audit?

Simplify your documents with Document Control





Audit for QMS, EMS and OHSAS



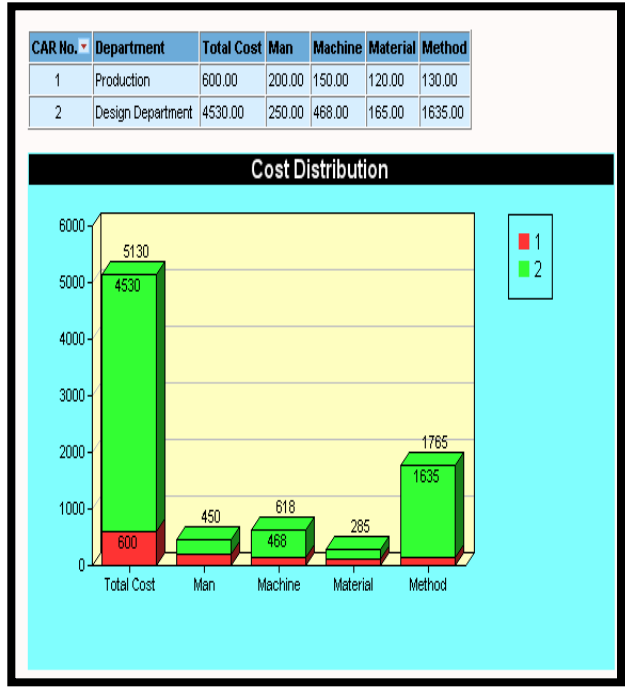
New Open

From Date: 08/01/2004 To Date: 12/01/2004 View

Edit

| | | | Aug - 2004 | | | | | | | |
|-----------|----------------------|---------------------------|------------|----|----|----|----|----|----|----|
| Audit No. | No. Days | | Sa | Mo | Tu | We | Th | Fr | Sa | Su |
| 1 | Marketing Department | 12-Aug-2004 - 16-Aug-2004 | | | | | | | | |
| 1/1 | Marketing | 12-Aug-2004 - 16-Aug-2004 | 5 | | | | | | | |
| 2 | Production | 20-Aug-2004 - 22-Aug-2004 | | | | | | | | |
| 2/1/3 | Production | 20-Aug-2004 - 22-Aug-2004 | 3 | | | | | | | |
| 3 | Design Department | 23-Aug-2004 - 25-Aug-2004 | | | | | | | | |
| 3/1/4 | Design | 23-Aug-2004 - 25-Aug-2004 | 3 | | | | | | | |
| 4 | Quality Department | 26-Aug-2004 - 30-Aug-2004 | | | | | | | | |
| 4/1/5 | Quality | 26-Aug-2004 - 30-Aug-2004 | 5 | | | | | | | |

- Audit Name
- Audit Plan
- Element Matrix
- Auditor List
- Audit Schedule
- Check List
- Audit Status
- Audit Improvement
- Audit Effectiveness
- Corrective Action Status
- Corrective Action Summary
- Cost Distribution
- Audit Summary
- Auditor Report
- Audit No. Report
- Department Report



| Audit No. | Department | Section | Date | | | Non Conformance | | | | | NC Status | Notes | |
|-----------|----------------------|------------|-----------|---------------|-------|-----------------|---------|-----------|---------|-------|-----------|-----------------|--|
| | | | Planned | Conducted | Delay | Major Qty | NC Nos. | Minor Qty | NC Nos. | Total | | | |
| 1 | Marketing Department | Marketing | 12-Aug-04 | 15-Sep-04 | 34 | | | | | | | | |
| 3 | Production | Production | 20-Aug-04 | 23-Aug-04 | 3 | 1 | View | | | 1 | NCR | Production Dept | |
| 4 | Design Department | Design | 23-Aug-04 | 25-Aug-04 | 2 | | | 1 | View | 1 | 1 Open | Design Dept | |
| 5 | Quality Department | Quality | 26-Aug-04 | Not Conducted | | | | | | | | | |

CAR

Link to Project Section!
Conduct Improvement



Audits



Audit Status as on Date 20/Nov/04

| Audit No. | Department | Section | Date | | | Non Conformance | | | | | NC Status | Notes |
|-----------|----------------------|------------|-----------|-----------|-------|-----------------|----------------------|-----------|----------------------|-------|-----------|-----------------|
| | | | Planned | Conducted | Delay | Major Qty | NC Nos. | Minor Qty | NC Nos. | Total | | |
| 1 | Marketing Department | Marketing | 12-Aug-04 | 15-Sep-04 | 34 | 1 | View | | | 1 | 1 Open | |
| 3 | Production | Production | 20-Aug-04 | 23-Aug-04 | 3 | 1 | View | | | 1 | 1 Open | Production Dept |
| 4 | Design Department | Design | 23-Aug-04 | 25-Aug-04 | 2 | | | 1 | View | 1 | 1 Open | Design Dept |
| 5 | Quality Department | Quality | 26-Aug-04 | 27-Aug-04 | 1 | | | 1 | View | 1 | 1 Close | Quality Dept |

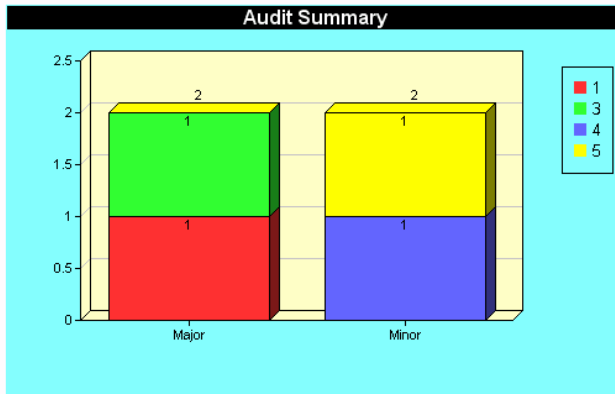
Audit Summary

Start_Date:

End_Date:

Department:

| Audit No. | Department | Section | Non Conformance | | |
|-----------|----------------------|------------|-----------------|-----------|-------|
| | | | Major Qty | Minor Qty | Total |
| 1 | Marketing Department | Marketing | 1 | | 1 |
| 3 | Production | Production | 1 | | 1 |
| 4 | Design Department | Design | | 1 | 1 |
| 5 | Quality Department | Quality | | 1 | 1 |



• ISO EMS/OHSAS

- Auditor Performance
- Generate Reports by
 - Department
 - Auditor
 - Audit No.
- Track
 - Corrective actions
 - Preventive actions
 - Improvement actions
- Non Conformances
 - Major
 - Minor



Statistical Process Control

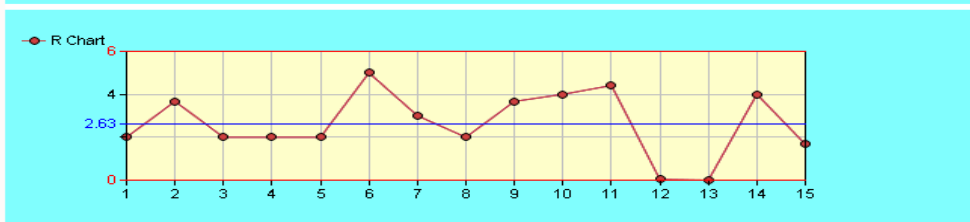
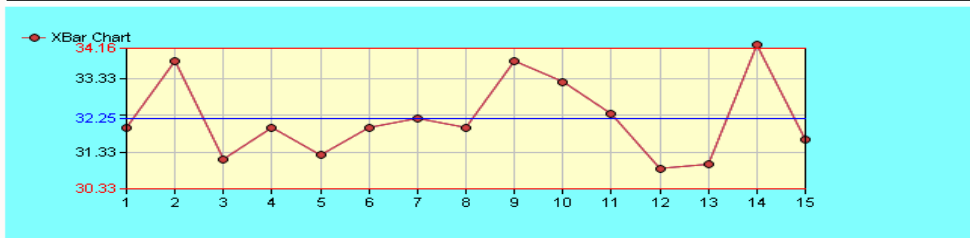


| | | | | | | | | | | | | | |
|-------------------------------|--------------------------|------------------------|-------|------------------|-------------------|----------------|----------------|----------------|-----------------------|----------------------------|-------|---------------------------------|-------|
| Name of the Study | Molding Process | | | | XBar Chart | | R Chart | | Spec Spread 68 | Process Capability | | | |
| Name of the Machine | Atkinson Molding Machine | Specification | 34.00 | USL | 71 | UCL (X) | 34.16 | UCL (R) | 6 | s = | 1.277 | cp | 8.873 |
| Type of Data Collected | Cavity dimension | Upper Limit (+) | 37.00 | LSL | 3 | CL (X) | 32.25 | CL (R) | 2.63 | Process Spread | 7.664 | Process Capability Index | |
| Unit of Measurement | Millimeter | Lower Limit (-) | 31.00 | Tolerance | 68 | LCL (X) | 30.33 | LCL (R) | 0 | Half Process Spread | 3.832 | cpk 7.632 | |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Year | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2004 |
| Date | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/21 |
| Hours | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 02:33 |
| Shift | | | | | | | | | | | | | | | 1 |
| Employee Name | | | | | | | | | | | | | | | Vinod |
| Sample 1 | 31.00 | 34.56 | 30.00 | 31.00 | 32.00 | 30.00 | 31.00 | 31.00 | 34.56 | 32.00 | 35.00 | 30.89 | 31.00 | 32.00 | 31.89 |
| Sample 2 | 32.00 | 35.56 | 31.00 | 33.00 | 31.00 | 35.00 | 34.00 | 32.00 | 35.56 | 35.00 | 32.00 | 30.88 | 31.00 | 35.00 | 30.89 |
| Sample 3 | 33.00 | 33.25 | 32.00 | 32.00 | 30.00 | 31.00 | 33.00 | 33.00 | 33.25 | 31.00 | 31.89 | 30.87 | 31.00 | 36.00 | 32.56 |
| Sample 4 | 32.00 | 31.89 | 31.56 | 32.00 | 32.00 | 32.00 | 31.00 | 32.00 | 31.89 | 35.00 | 30.59 | 30.90 | 31.00 | 34.00 | 31.33 |
| SubGroup Average | 32.00 | 33.81 | 31.14 | 32.00 | 31.25 | 32.00 | 32.25 | 32.00 | 33.81 | 33.25 | 32.37 | 30.89 | 31.00 | 34.25 | 31.67 |
| SubGroup Range | 02.00 | 03.67 | 02.00 | 02.00 | 02.00 | 05.00 | 03.00 | 02.00 | 03.67 | 04.00 | 04.41 | 00.03 | 00.00 | 04.00 | 01.67 |

Monitor Variations in the process

XBar R Chart



Even minor variations are detected for immediate analysis



Failure Mode And Effect Analysis

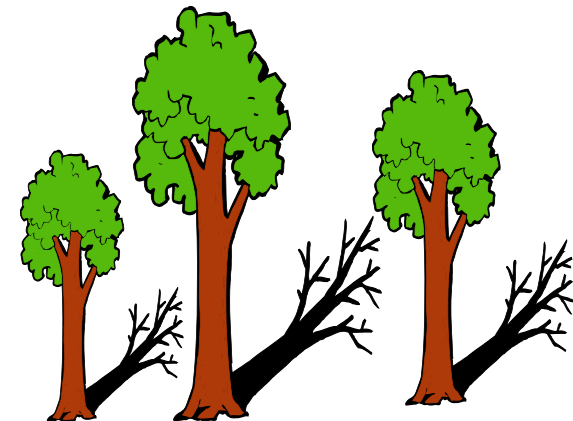
| No | Part | Function | Potential Effects of Failure | Potential Causes of Failure | S | Potential Failure Mode | O | C | Current Controls Prevention | Current Controls Detection | D | RPN |
|------|------------------------|-----------------------------|------------------------------|-----------------------------|---|------------------------|---|----|-----------------------------|----------------------------|---|-----|
| -1 | Imported from F-Matrix | New Function | | | | | | | | | | |
| 1.1 | | Ink flow rate | Ink drip | Stain on paper | 5 | Low viscosity | 7 | 35 | viscosity medium | Viscosity test | 7 | 245 |
| 1.2 | | Lead hardness | To dry | Breaks tip | 6 | Not enough wax | 3 | 18 | QA Inspection | QA Inspection | 3 | 54 |
| 1.3 | | Mechanical eject time | Tight spring | Nip not ejected | 8 | Spring hardness | 5 | 40 | Vendor quality control | Batch sampling | 8 | 320 |
| 1.4 | | Mechanism slowage clearance | Barell tip size small | Jammed lead | 8 | Squashed barell tip | 4 | 32 | Load single stand | 100% inspection | 6 | 192 |
| 1.5 | | Case strength | case collapses | Pen damaged | 3 | Sheet thickness low | 1 | 3 | Use standard sheet | Incoming QA Inspection | 5 | 15 |
| 1.6 | | Surface tackiness | Rubber Handle | Tacky pen | 4 | Low vulcanization | 5 | 20 | Batch test | Visual look | 3 | 60 |
| 1.7 | | Clip point clearance | Not enough spring | Pen drops from pocket | 6 | Clip tension low | 7 | 42 | Heat temper clip | Hand pull test | 4 | 168 |
| 1.8 | | Auxillary attach flatness | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.9 | | Top surface smoothness | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.10 | | Retract mechanism force | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.11 | | Writing point finish | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.12 | | Ink drying time | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.13 | | Lead antimudge | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.14 | | Shape aspect ratio | | | 0 | | 0 | 0 | | | 0 | 0 |

Import from QFD !!

- FMEA
 - Follows the criteria for FMEA application
- Import data
 - From previous QFD
 - Set criteria for import



- Find out about ISO 14001
- What ISO 14001 means for you
- Top management commitment
- Select assessment body
- Develop project plan
- Explain ISO 14001 to your personnel





- Find out about OHSAS 18000
- What OHSAS 18000 means for you
- Top management commitment
- Select assessment body
- Develop project plan
- Awareness of OHSAS 18000



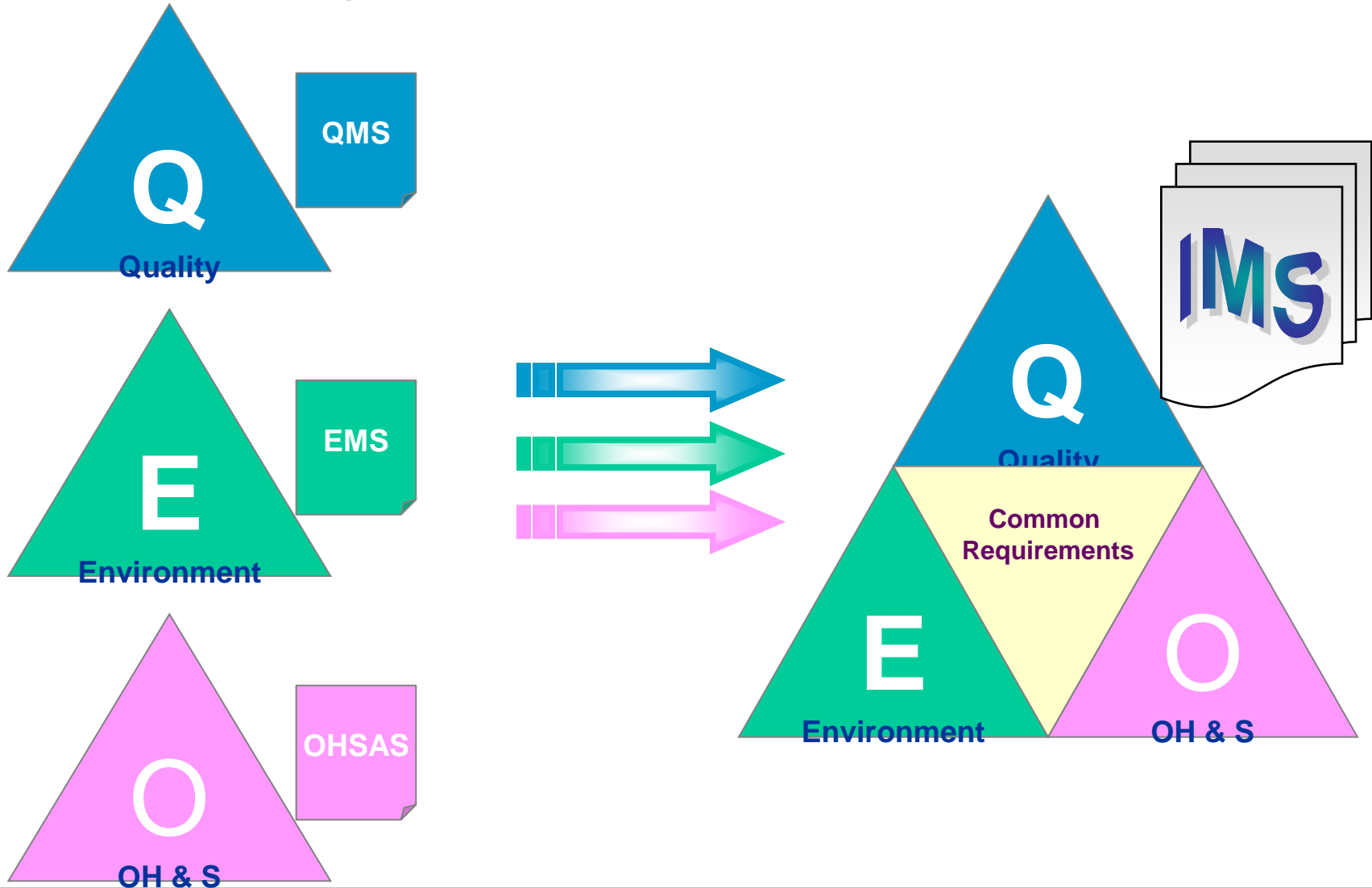


- Quality Management System +
- Environment Management System +
- Occupational Health & Safety =
- **Integrated Management System**
 - It follows the Plan, Do, Check, Act
 - Approach of all the major management systems requirements standards.





- Structured Progression





Gantt Chart for IMS Implementation



Gantt Chart

Expand All Collapse All Edit Show/Hide From Date: 9/28/2005 To Date: 10/28/2005 View

| Names | From Date | To Date | No. of Days | Sep - 2005 | | | | | | | Oct - 2005 | | | | | | | | |
|------------------------|------------|------------|-------------|------------|----|----|---|---|---|---|------------|---|---|---|---|----|----|----|----|
| | | | | 28 | 29 | 30 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| ISO Awareness Training | 10-10-2005 | 10-25-2005 | 14 | | | | | | | | | | | | | | | | |
| Safety Training | 10-3-2005 | 10-15-2005 | 11 | | | | | | | | | | | | | | | | |

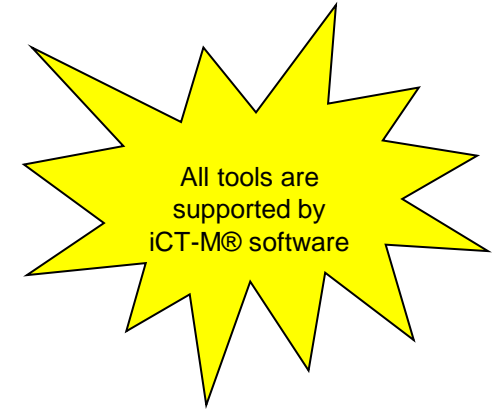
Gantt Chart

Expand All Collapse All Edit Show/Hide From Date: 9/28/2005 To Date: 10/28/2005 View

| Names | From Date | To Date | No. of Days | Sep - 2005 | | | | | | | Oct - 2005 | | | | | | | | |
|--------------------------|------------|------------|-------------|------------|----|----|---|---|---|---|------------|---|---|---|---|----|----|----|----|
| | | | | 28 | 29 | 30 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| ISO Awareness Training | 10-10-2005 | 10-25-2005 | 14 | | | | | | | | | | | | | | | | |
| Purchase Department | 10/16/2005 | 10/17/2005 | 2 | | | | | | | | | | | | | | | | |
| Production Department | 10/18/2005 | 10/20/2005 | 3 | | | | | | | | | | | | | | | | |
| Quality Department | 10/24/2005 | 10/26/2005 | 3 | | | | | | | | | | | | | | | | |
| Research And Development | 10/21/2005 | 10/22/2005 | 2 | | | | | | | | | | | | | | | | |
| Maintenance Department | 10/27/2005 | 10/29/2005 | 3 | | | | | | | | | | | | | | | | |
| Safety Training | 10-3-2005 | 10-15-2005 | 11 | | | | | | | | | | | | | | | | |
| Purchase Department | 10/03/2005 | 10/06/2005 | 3 | | | | | | | | | | | | | | | | |
| Production Department | 10/08/2005 | 10/09/2005 | 3 | | | | | | | | | | | | | | | | |
| Quality Department | 10/10/2005 | 10/12/2005 | 3 | | | | | | | | | | | | | | | | |
| Research And Development | 10/13/2005 | 10/15/2005 | 3 | | | | | | | | | | | | | | | | |
| Maintenance Department | 10/17/2005 | 10/19/2005 | 3 | | | | | | | | | | | | | | | | |



- Minimize paper in your organization
 - On your table
 - In your office
 - At your shop floor
- Store safely in computers
 - Easy to store
 - Easy to retrieve
- Easy to find
 - Display required documents
 - Print audit documents





Smart IMS Management



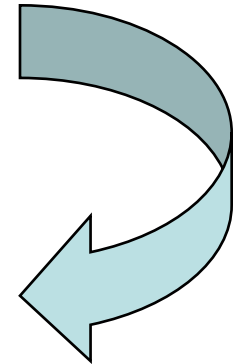
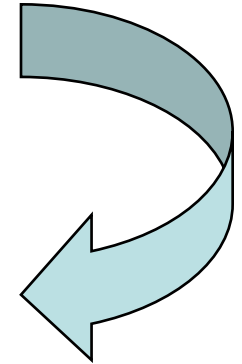
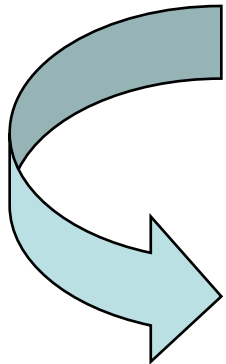
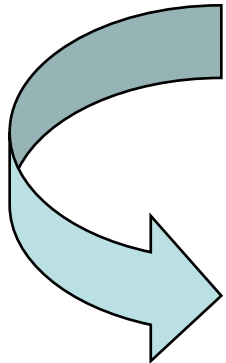
DASHBOARD VIEW for you to be in
CONTROL OF YOUR ORGANIZATION

Better DECISION MAKING

Reliable MEASUREMENT SYSTEM

Operational FORECASTING

**Enhance PEOPLE SKILL &
EQUIPMENT PERFORMANCE**

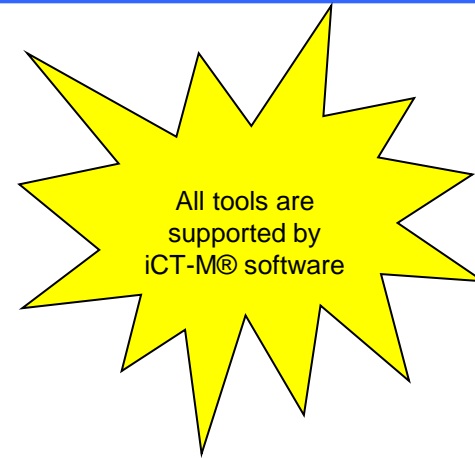




IMS Implementation

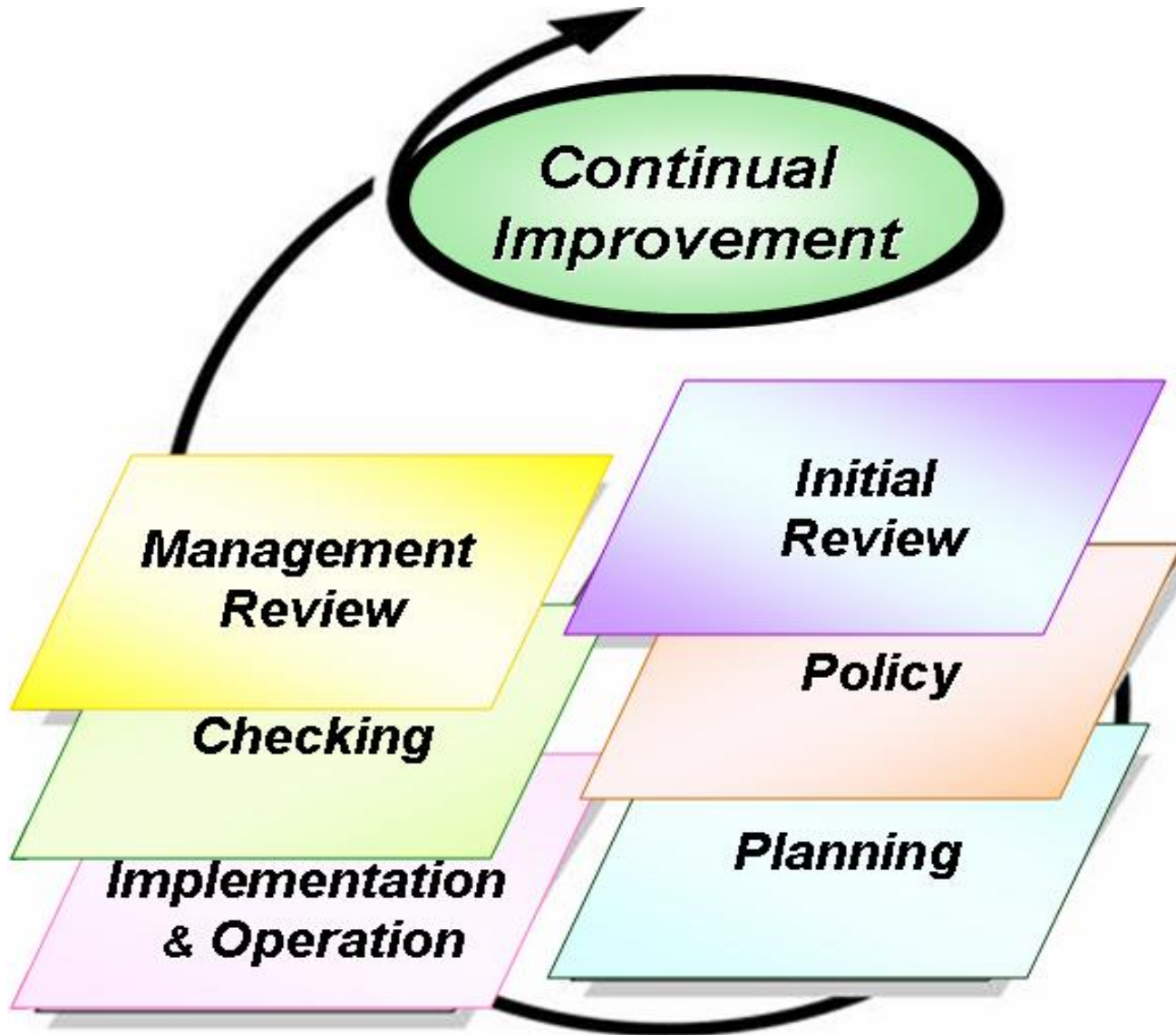


- Initial Review
 - Where are we now?
- Policy
 - Where do we want to be?
- Planning
 - How do we get to where we want to be?
- Implementation and operation
 - Planning
- Performance assessment
- Management Review
- Continual Improvement



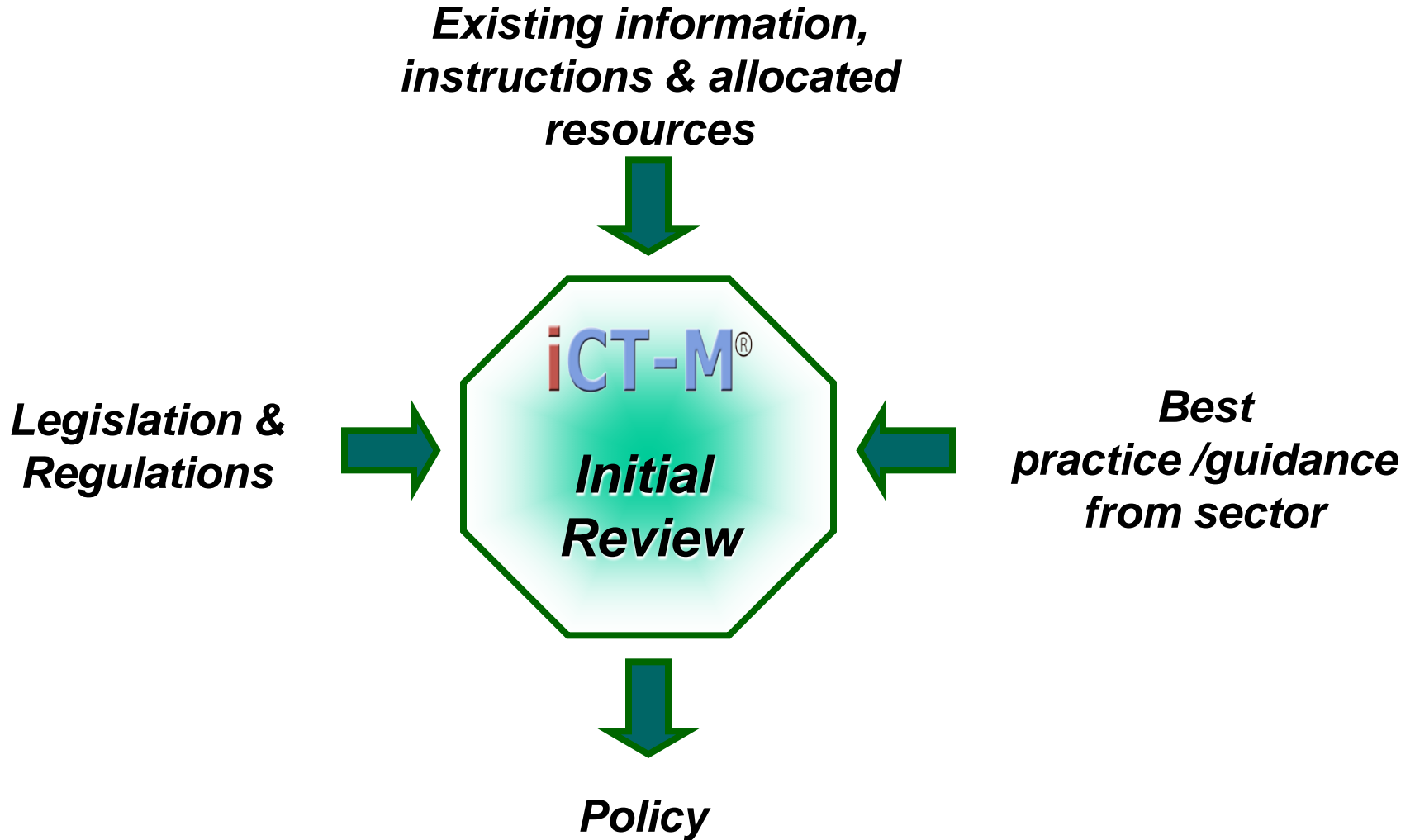


EMS and OHSAS 18001 Approach



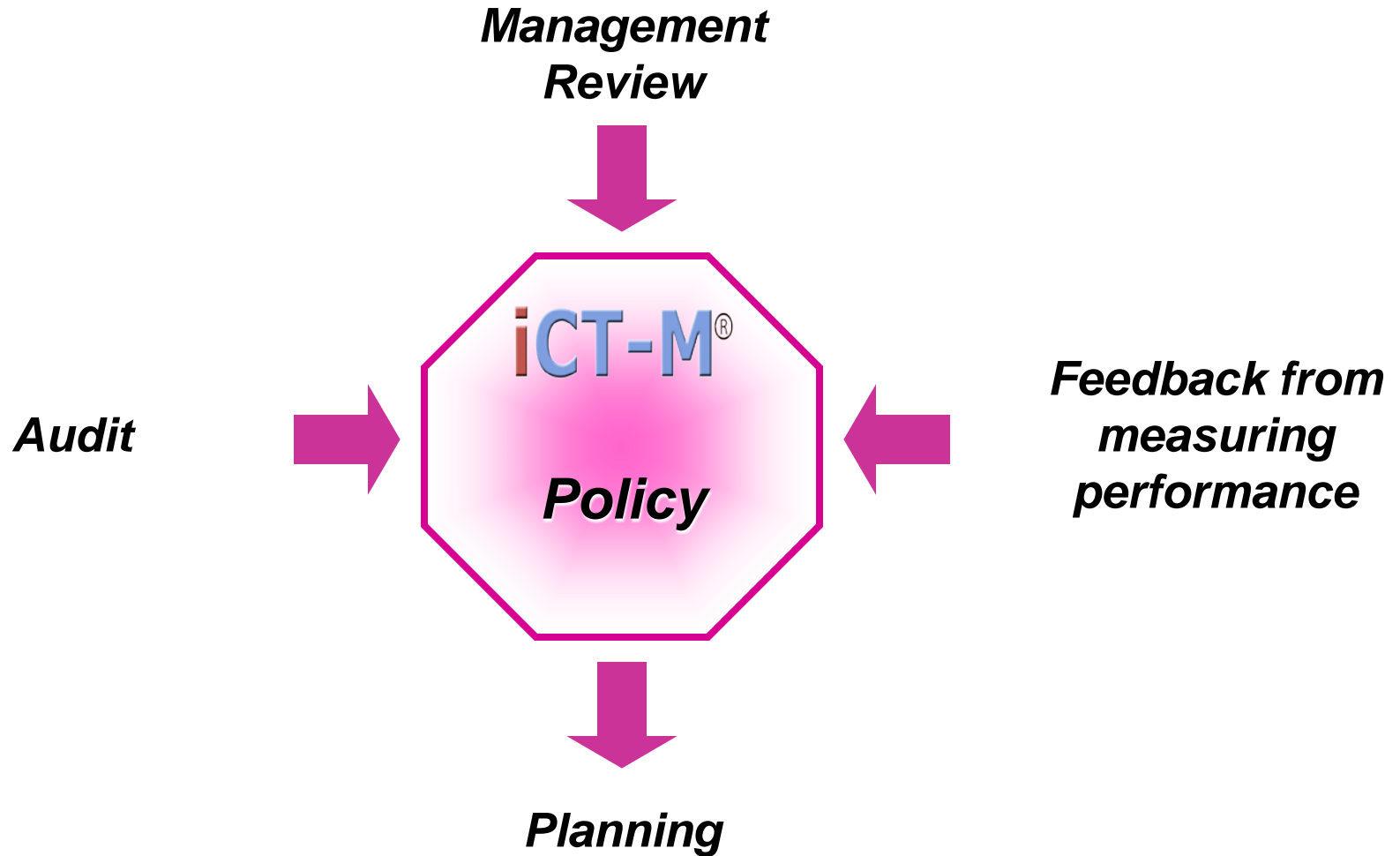


Where are we now?





Where do we want to be?



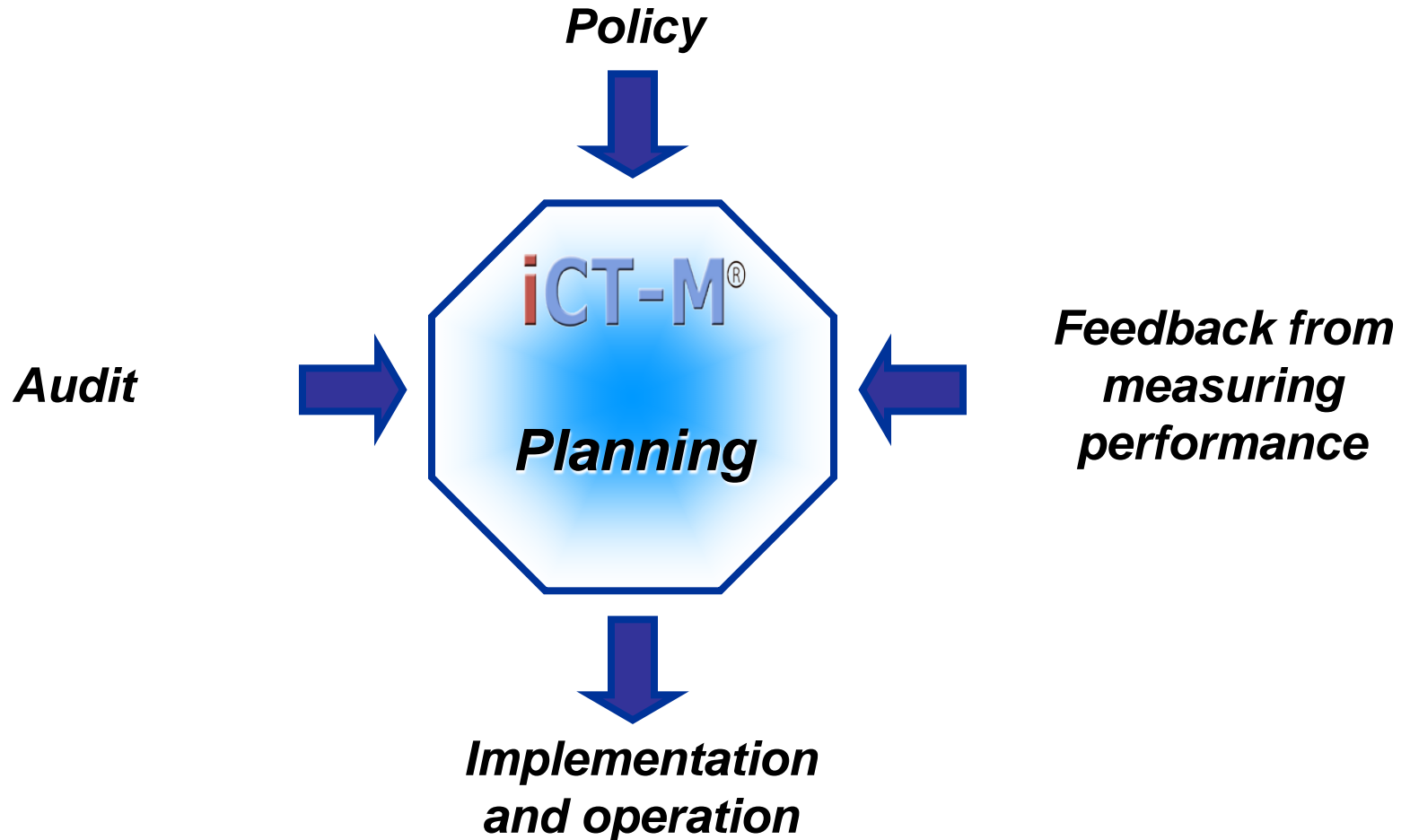


- **Must :**
 - Commensurate to nature and scale of an organization's risks
 - State commitment to continual improvement
 - Commit to comply with current EMS & OH&S legislation
 - Be communicated to all employees
 - Be available to all interested parties
 - Be reviewed by senior management
 - Be signed by senior management





How do we get to where we want to be?





- **Hazard identification, risk assessment and determining controls**
- Legal and other requirements
- Objectives and programmes

- Routine and non-routine activities
- Activities of all persons having access to the workplace
- Human behavior, capabilities and other human factors
- Infrastructure, equipment and materials
- Changes in the organization and modifications to the management system
- Determine controls according to a hierarchy:
 - Elimination
 - Substitution
 - Engineering controls
 - Signage/ warnings and/or administrative controls
 - Personal protective equipment

iCT-M[®]

Planning



Planning



- Hazard identification, risk assessment and determining controls
- ***Legal and other requirements***
- Objectives and programmes

- Procedure for identifying and accessing legal and other applicable OH&S requirements





How to get where we want to be?



- Hazard identification, risk assessment and determining controls
- Legal and other requirements
- **Objectives and programmes**

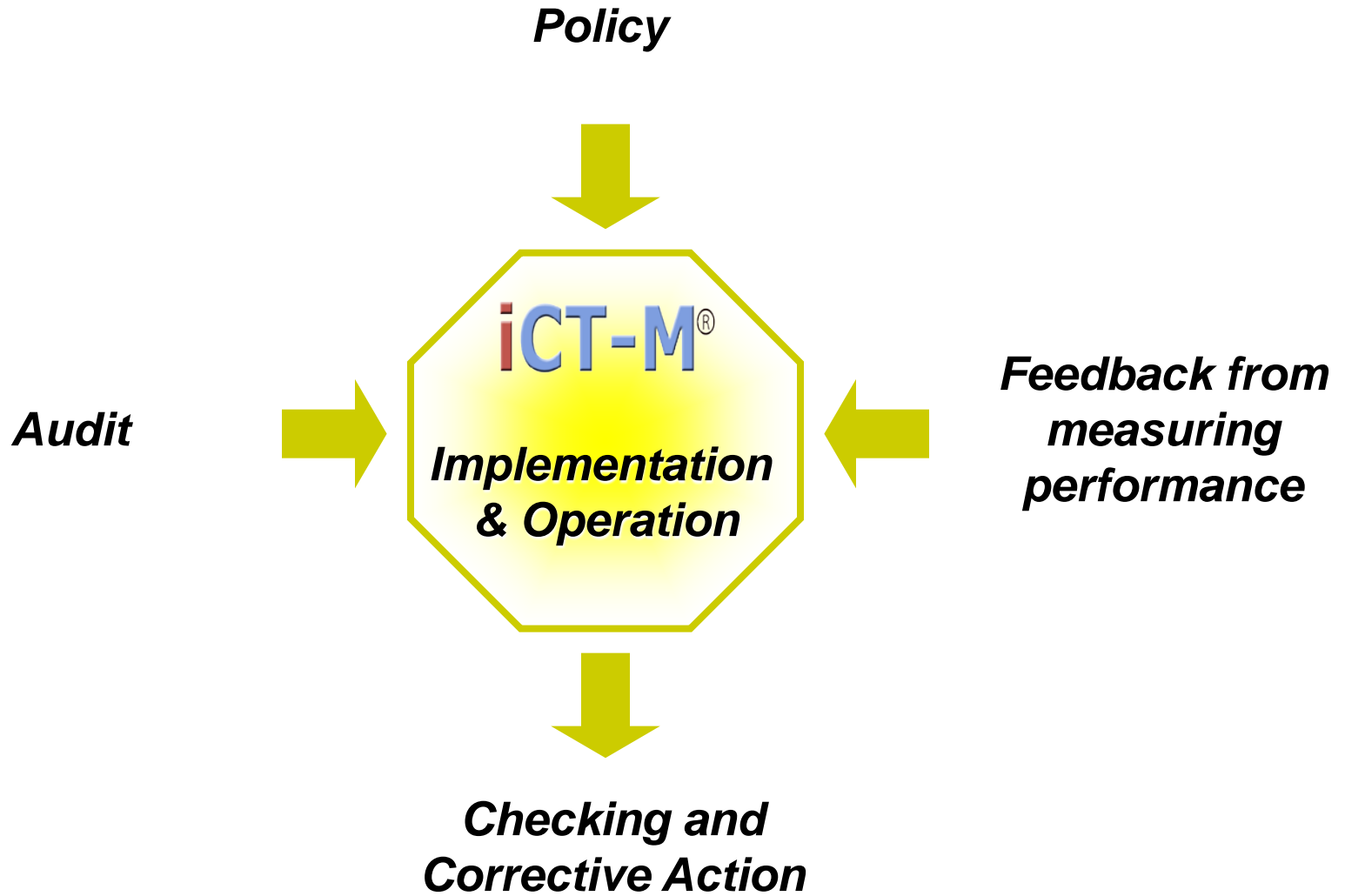
- Objectives & Targets:
 - Measurable
 - Consistent with the OH&S policy
 - Support compliance with legal requirements and continual improvement
 - Set targets for performance against the OH&S programme and operational criteria
- Programme:
 - Define responsibilities and authorities for activities

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Planning



Implementation & Operation





Implementation & Operation



- Resources, roles, responsibility, accountability and authority
- **Competence, training and awareness**
- Communication, participation and consultation
- Documentation
- Control of documents
- Operational Control
- Emergency preparedness and response

- Any personnel working under its control are competent to:
 - Perform tasks safely
 - Understand importance of conformance to the OH&S policy and procedures
 - Know roles and responsibilities of others
 - Knows potential consequences of departure from policy
 - Take account of risk, literacy, ability etc.





Implementation & Operation



- Resources, roles, responsibility, accountability and authority
- Competence, training and awareness
- **Communication, participation and consultation**
- Documentation
- Control of documents
- Operational Control
- Emergency preparedness and response

- Procedures for:
 - Communication both internally and externally
 - Participation of employees in the OH&S system development and operation
 - Consultation with contractors
 - Consultation with external interested parties where pertinent





Implementation & Operation



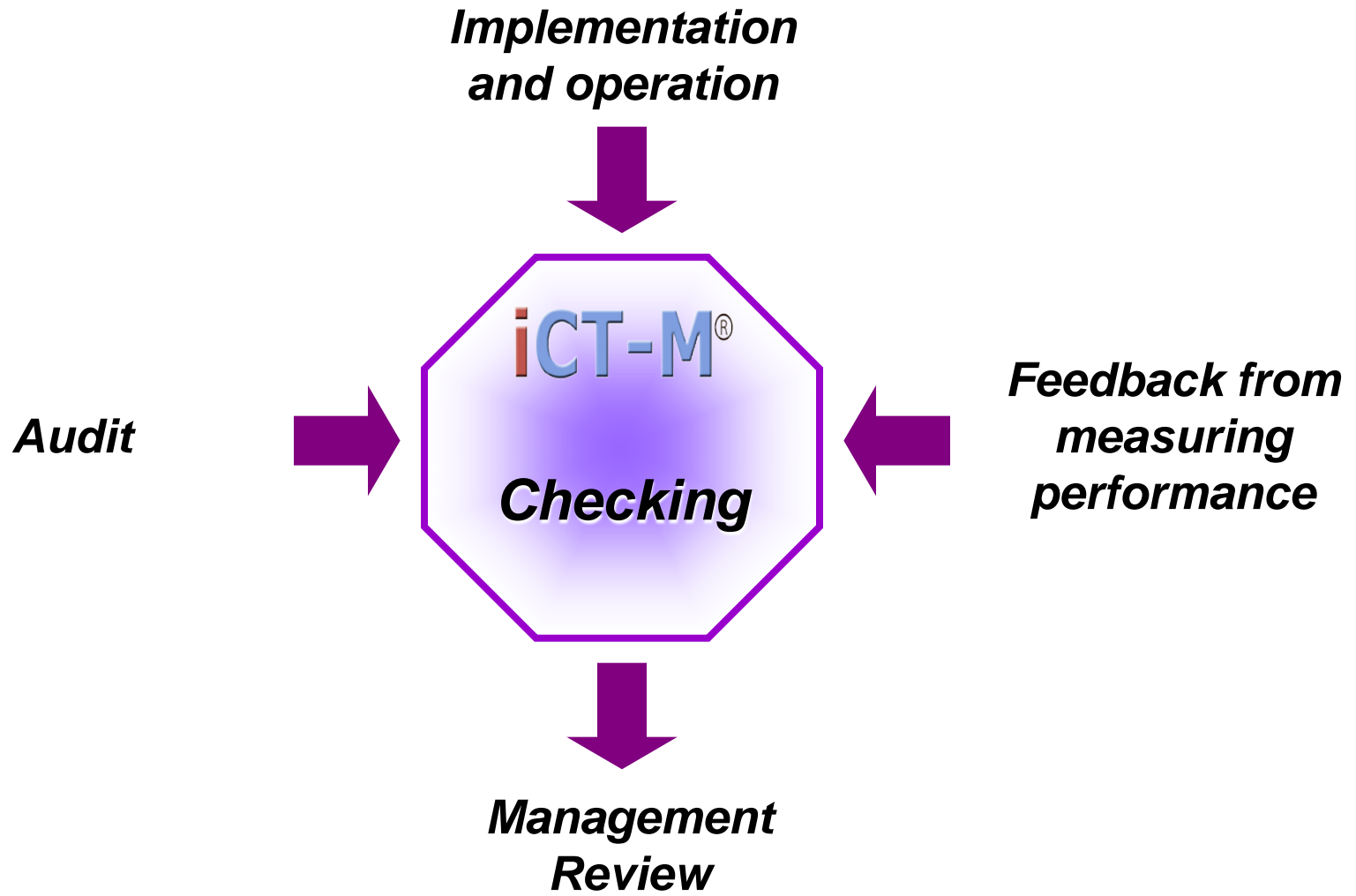
- Resources, roles, responsibility, accountability and authority
- Competence, training and awareness
- Communication, participation and consultation
- Documentation
- Control of documents
- Operational Control
- **Emergency preparedness and response**

- Identify potential for incidents / emergencies (eg disaster recovery plan)
- Deal with emergency responses
- Test emergency procedures, where practicable
- Ensure interested parties are involved in development of plans
- Provide information to visitors, contractors etc
- Review emergency arrangements





Checking





- **Performance measurement and monitoring**
- Evaluation of compliance
- Incident investigation, nonconformity, corrective action and preventive action
- Control of records
- Internal audit

- Procedures must be in place to:
- Measure performance on a regular basis
- Monitor the extent to which OH&S objectives are being met
- Implement proactive monitoring measures
- Implement reactive monitoring measures
- Ensure monitoring equipment is calibrated/maintained
- Records of the above to be kept

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Checking



Checking



- Performance measurement and monitoring
- **Evaluation of compliance**
- Incident investigation, nonconformity, corrective action and preventive action
- Control of records
- Internal audit

- Establish, implement and maintain a procedure for periodically evaluating compliance with applicable legal requirements
- Establish, implement and maintain a procedure for periodically evaluating compliance with other requirements to which it subscribes

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Checking



- Performance measurement and monitoring
- Evaluation of compliance
- ***Incident investigation, nonconformity, corrective action and preventive action***
- Control of records
- Internal audit

- Procedures need to define responsibility and authority for:
 - Recording, investigating and analyzing incidents
 - Determining underlying OH&S deficiencies
 - Dealing with breaches in procedures that resulted in an incident
 - Actions to mitigate consequences arising from incidents
 - Initiation / completion of preventive / corrective actions
 - Reviewing effectiveness of corrective and preventive actions

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Checking



- Performance measurement and monitoring
- Evaluation of compliance
- Incident investigation, nonconformity, corrective action and preventive action
- **Control of records**
- Internal audit

- Procedures needed for identification, maintenance and disposition of OH&S records:
 - To include audit reports and reviews
 - Legible
 - Identifiable and traceable to activities
 - Stored and maintained to be readily retrievable
 - Protected against damage
 - Maintained to demonstrate conformance to OHSAS

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Checking



Checking



- Performance measurement and monitoring
- Evaluation of compliance
- Incident investigation, nonconformity, corrective action and preventive action
- Control of records
- ***Internal audit***

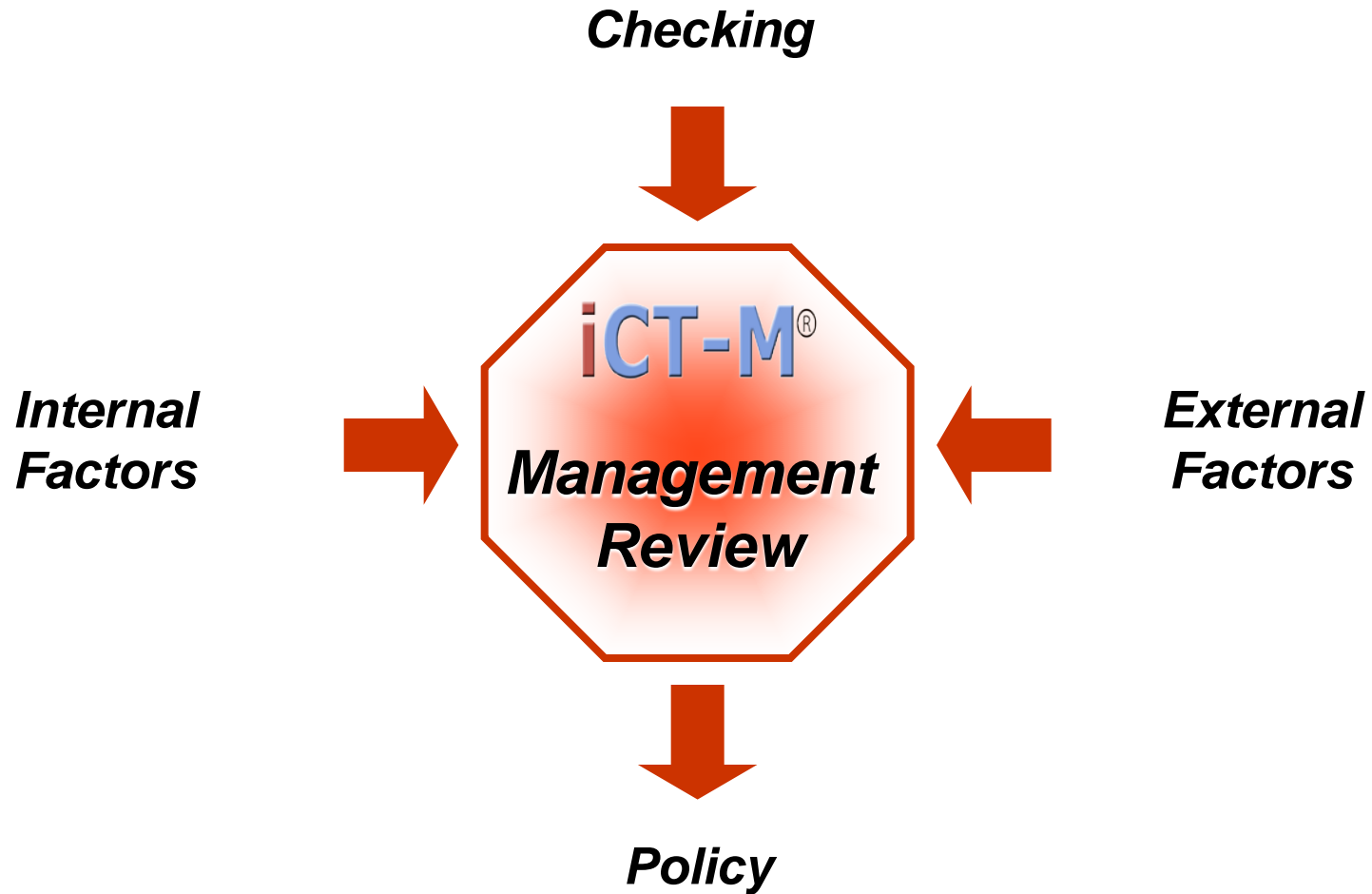
- Auditing needed to establish:
 - Conformance with management system
 - Whether systems are properly implemented
 - Proper maintenance of systems / procedures
 - Review of previous audits
 - Audit results to be informed to senior management

iCT-M®

Checking



Management Review





How To Get Started?

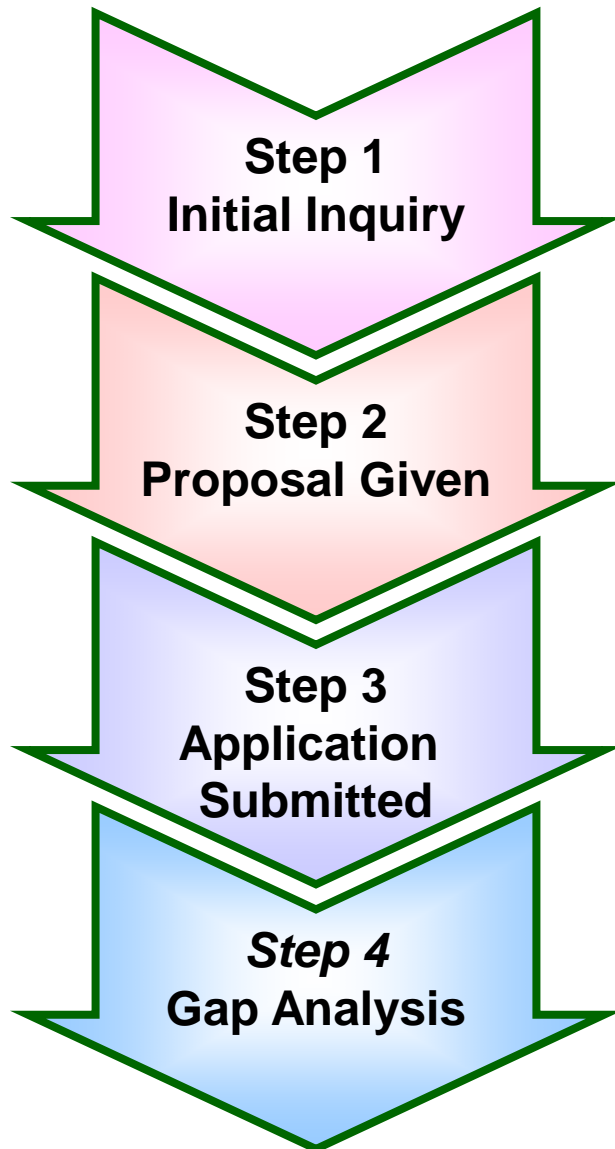




- Preparing a Business Case
 - Establish current OH&S Performance
 - Present your vision and mission
 - Explain your motivation
 - Outline an implementation plan
 - Identify the external support
 - Estimate financial costs, savings and benefits
 - Establish true cost of not complying
 - Support your case with evidence
 - Present your case to senior management



The Registration Process

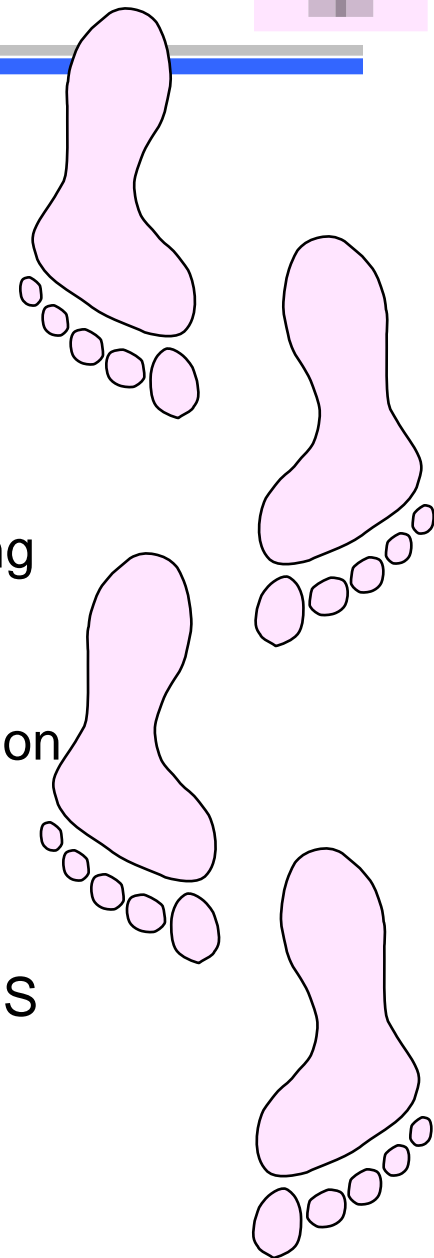


Site visit by Belmah Strategies (Malaysia)

Full proposal with costs for the certification process and training

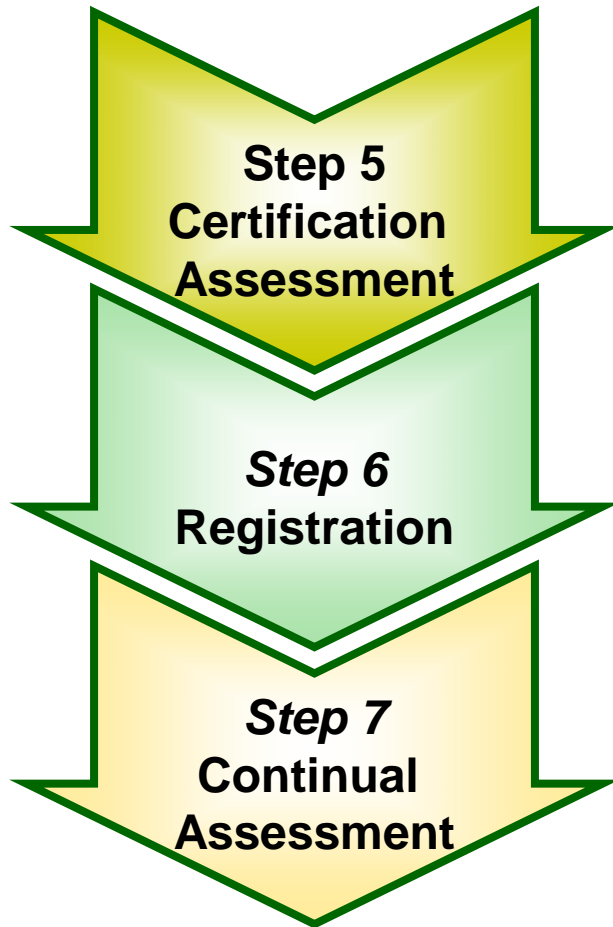
Formal application to Certification body for registration.

Initial evaluation of existing OHS arrangements compared with OHSAS 18001:2007





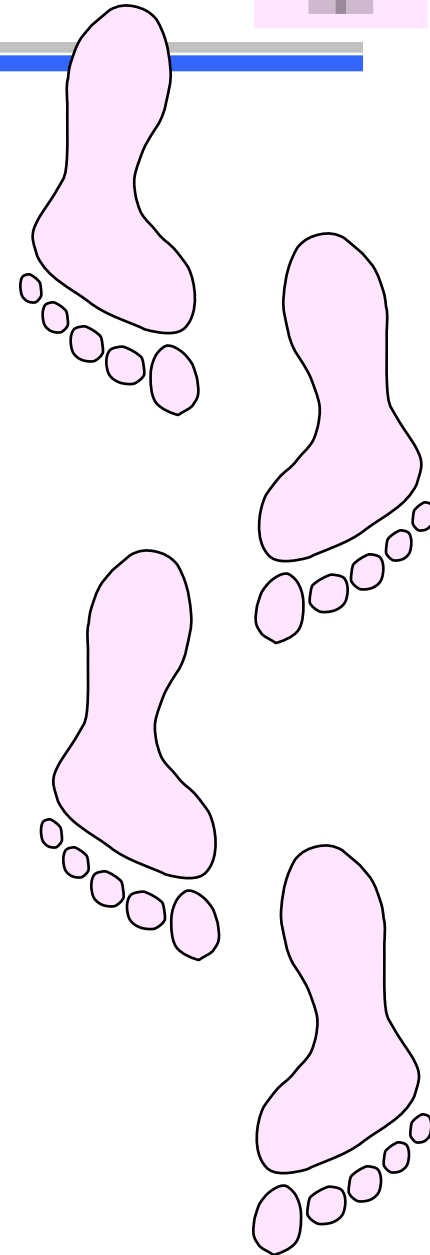
The Registration Process



Planning and
Implementation & Effectiveness

Reports reviewed.
Certificate issued.

Maintenance of certificate and
periodical strategic review





Integrated Management Registration



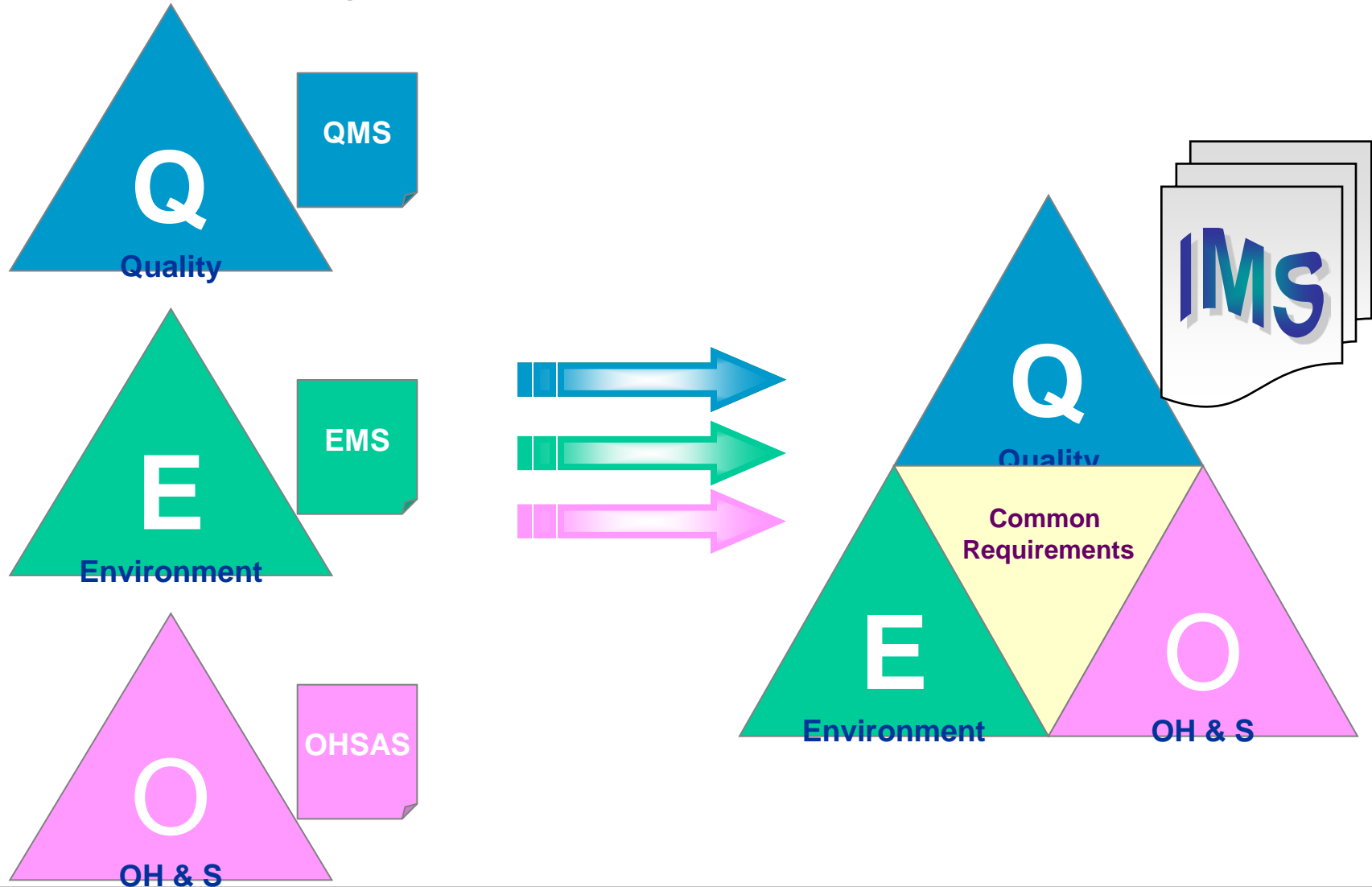
- Requirements standard
 - For Integrating Management Systems
- Seeks to follow
 - Plan, Do, Check, Act approach
 - Of all the major management systems requirements standards
- It is intended to
 - Encourage organizations with more than one management system
 - See these as one holistic management system
 - Enable them to manage their operations more effectively



- Common management system requirements:
 - Policy
 - Planning
 - Implementation and operation
 - Performance assessment
 - Improvement
 - Management review



- Structured Progression





EMS



Increased Revenue



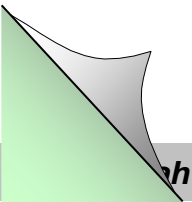
OHSAS



Trainings



- Introduction to EMS System
- Introduction to OH&S Management System
- Documentation of EMS
- Documentation of OHSAS
- Managing EMS
- Managing OHSAS
- Implementing an Integrated System
- Internal Auditor training for EMS
- ISO Internal Audit
- ISO Toolkit
- Document Control
- Developing Internal Audit Program for EMS
- Developing Internal Audit Program for OHSAS
- Internal Auditor training for OHSAS





Management Philosophies



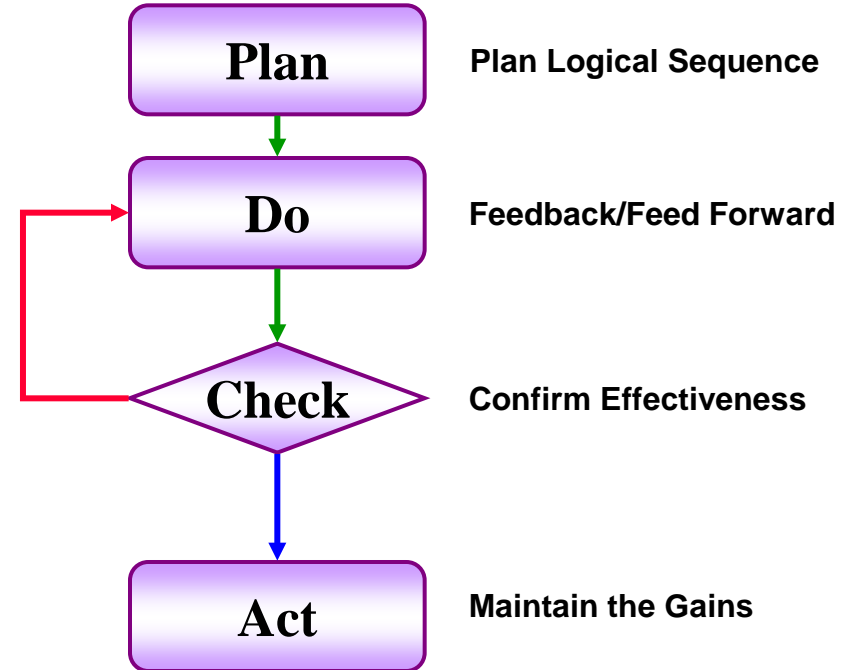
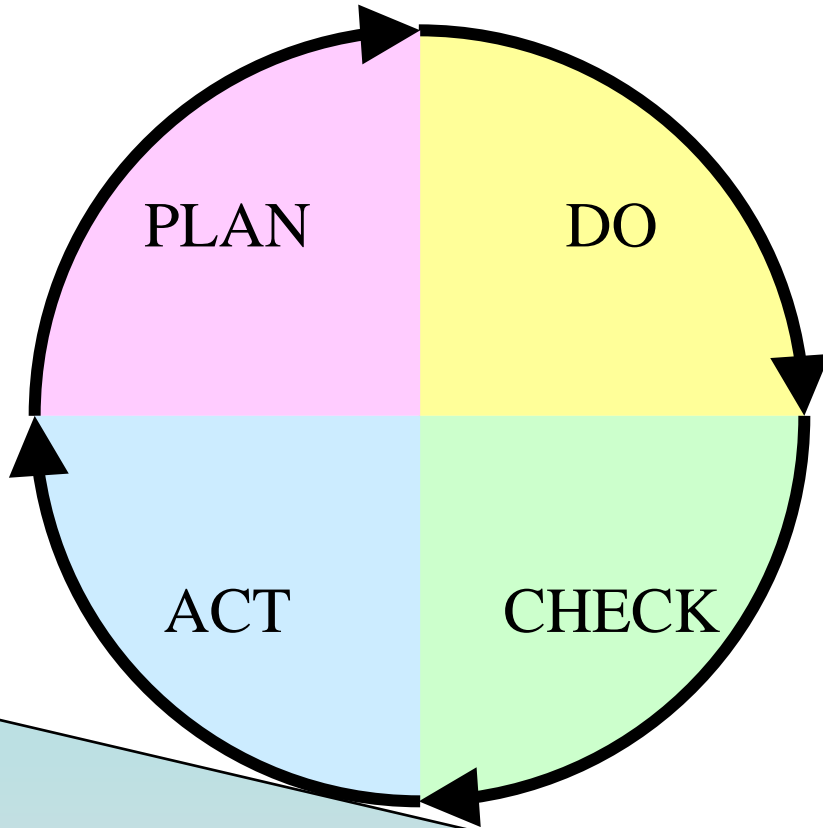
Management Philosophies



- APQP
- Six Sigma
- Balanced Scorecard
- Total Quality Management
- ISO 9000 Certification
- Statistical Process Control
- Deming
- Service Quality
- Lean Organization
- 8 D (Disciplines)
- Customer Centred
- Flavor of the Month



Deming's Plan-Do-Check-Act





Total Quality Management



Waste reduction in service processes using Lean methodology

SS House Keeping
SS House Keeping Evaluation Form

Kanban

Empowered Teams

Kaizen



Quality tools and techniques used to improve lean processes

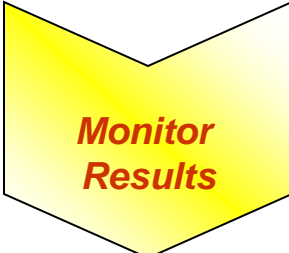
| Stages | Objective | Activities | Deliverables | Aspnet |
|---------|---|---|---|--------|
| Define | To use Vital X to decide on important variables | | Variables and how Vital they are | |
| Measure | To weight variables according to their weightings | Weight variables | A weighted measure of variables | |
| Analyze | A pair-wise hierarchical comparison | Compare variables in pairs | Distributions of what is favoured (or not favoured) | |
| Improve | To rank risks objectively | Assign Success Predictors according to their risk ratings | Determine the overall risk of the Success Predictors | |
| Control | To deliberate the Success, Inputs, process, Outputs and Customers | Brainstorm on the Success, Inputs, process, Outputs and Customers | Permanent Success, Inputs, process, Outputs and Customers | |



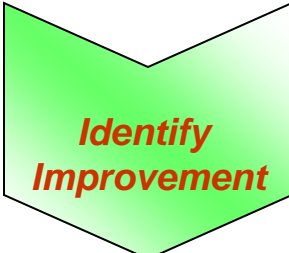
Balanced Scorecard used to monitor results & performance

FINANCIAL

CUSTOMER



MBNQA integrates entire business to enable World Class Service



ISO Certification

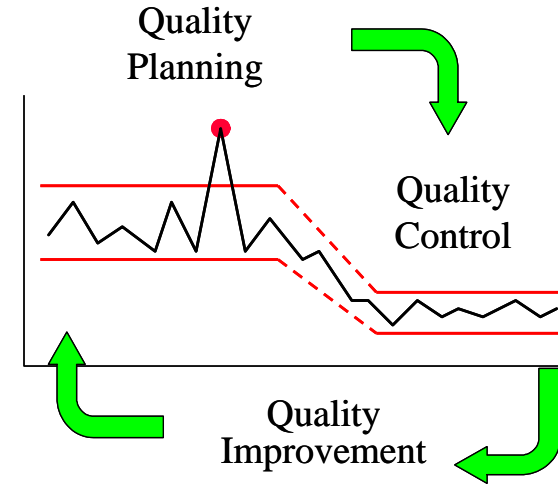
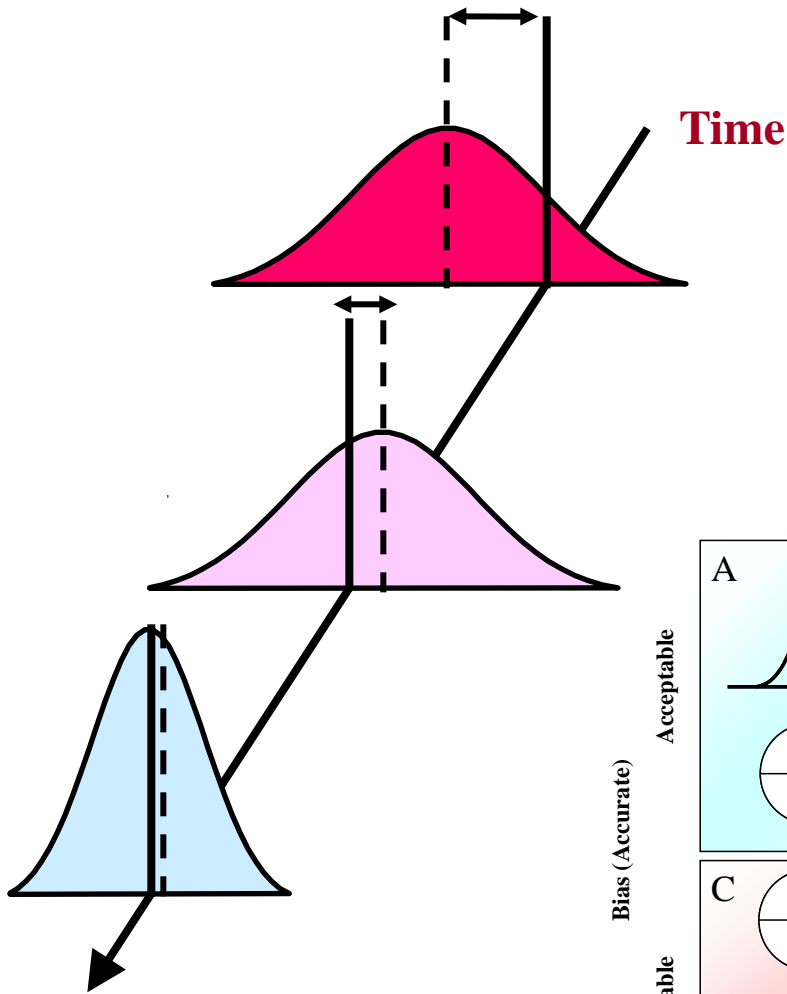


- ISO Toolkit
- Document Control
- ISO Auditing

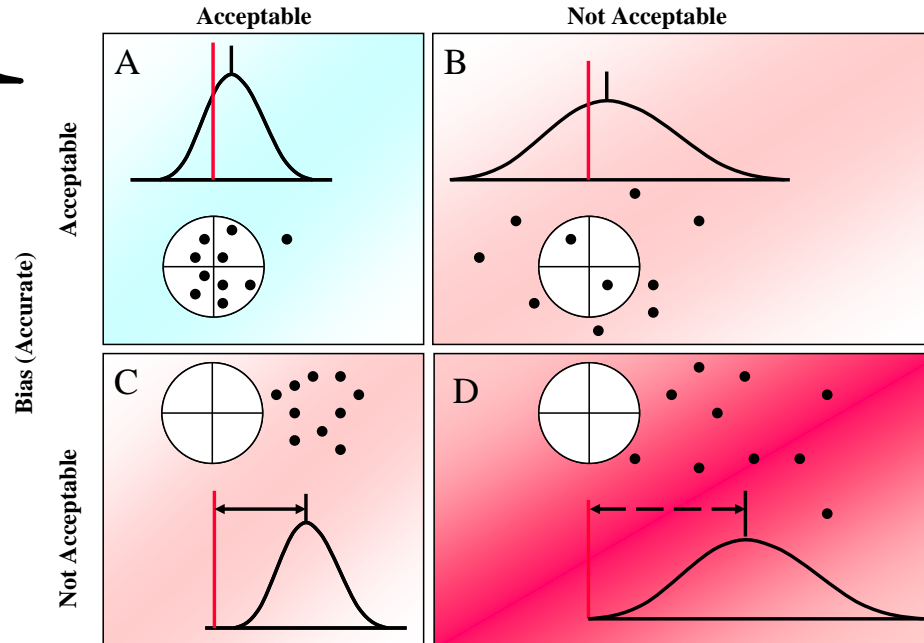




Statistical Process Control



Repeatability (Precise)





Advanced Product Quality Planning



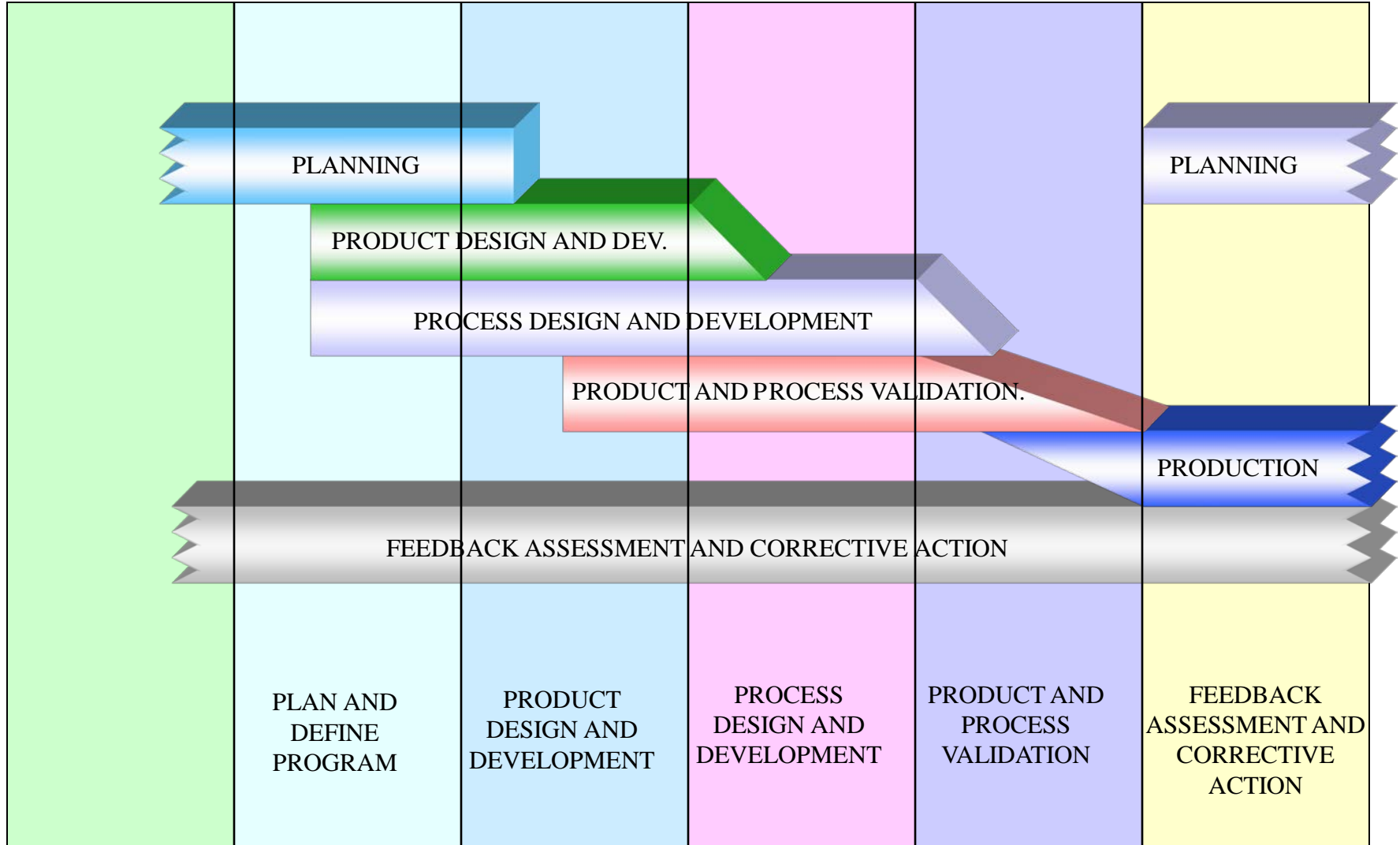
Concept Initiation / Approval

Program Approval

Prototype

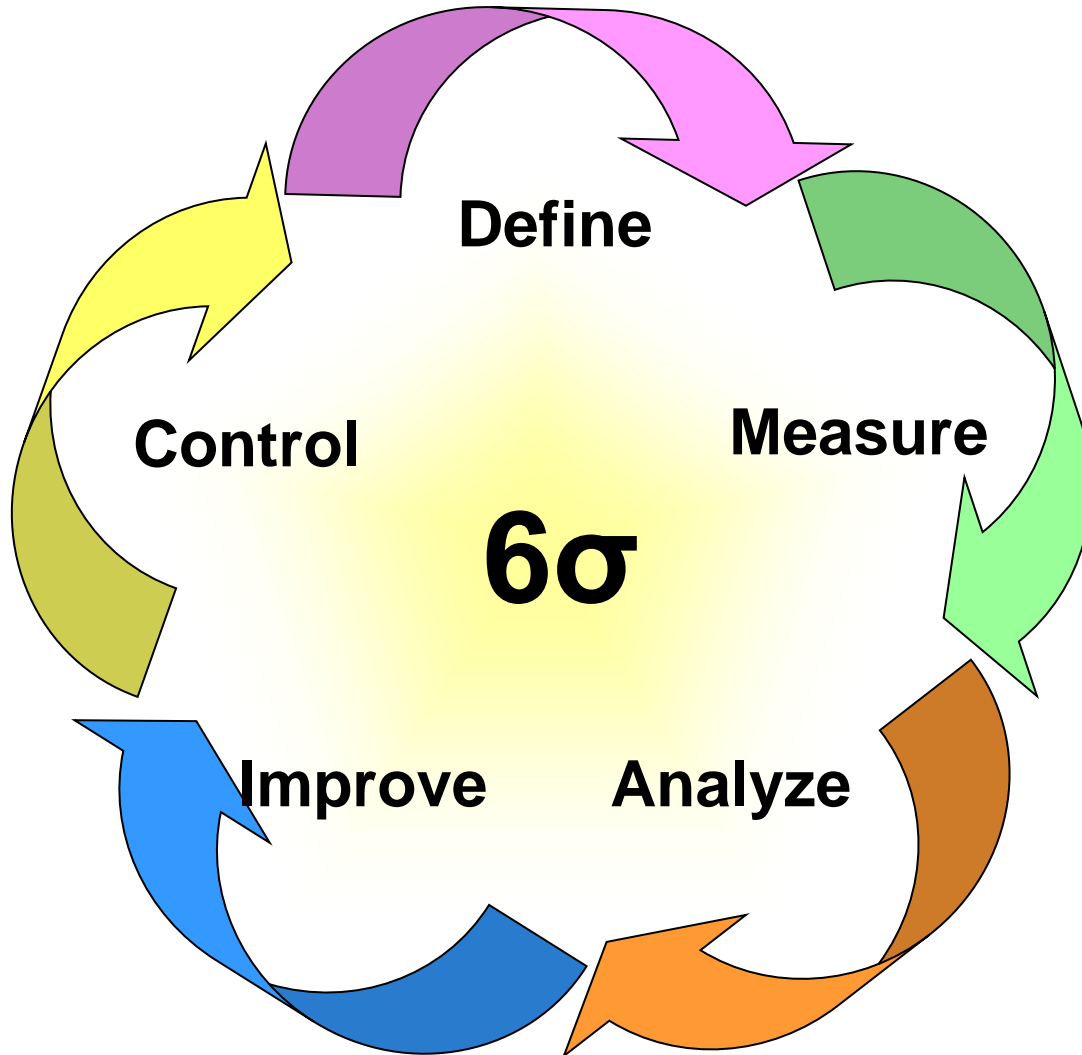
Pilot

Launch





Six Sigma: DMAIC



Define

- What is important?
- Where are the opportunities?

Measure

- How are we doing?
- What is our performance?

Analyze

- What is wrong?
- Root Cause & Gap Analysis

Improve

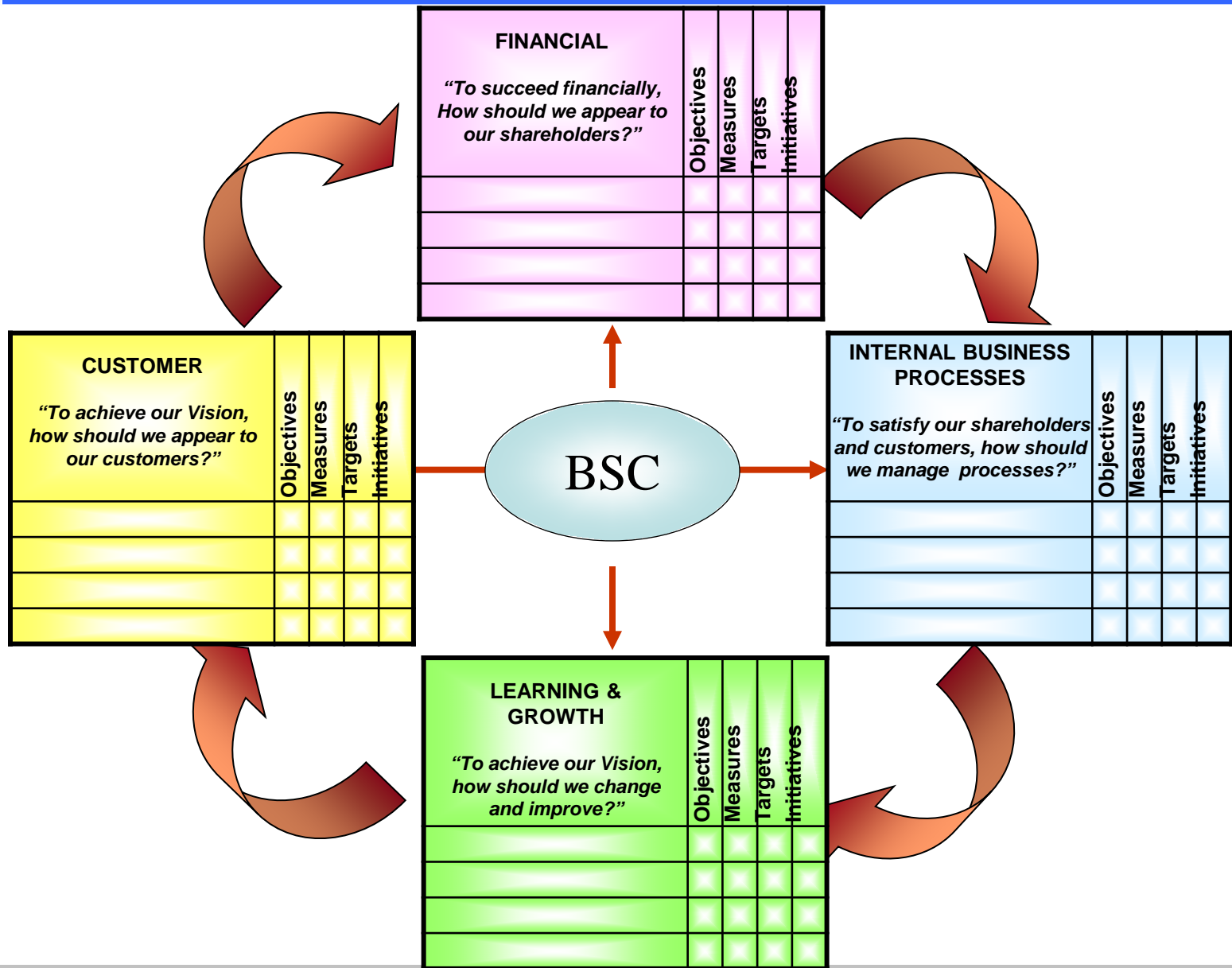
- What needs to be done?
- What are possible solutions?

Control

- How to guarantee Performance?
- Maintain the gain!

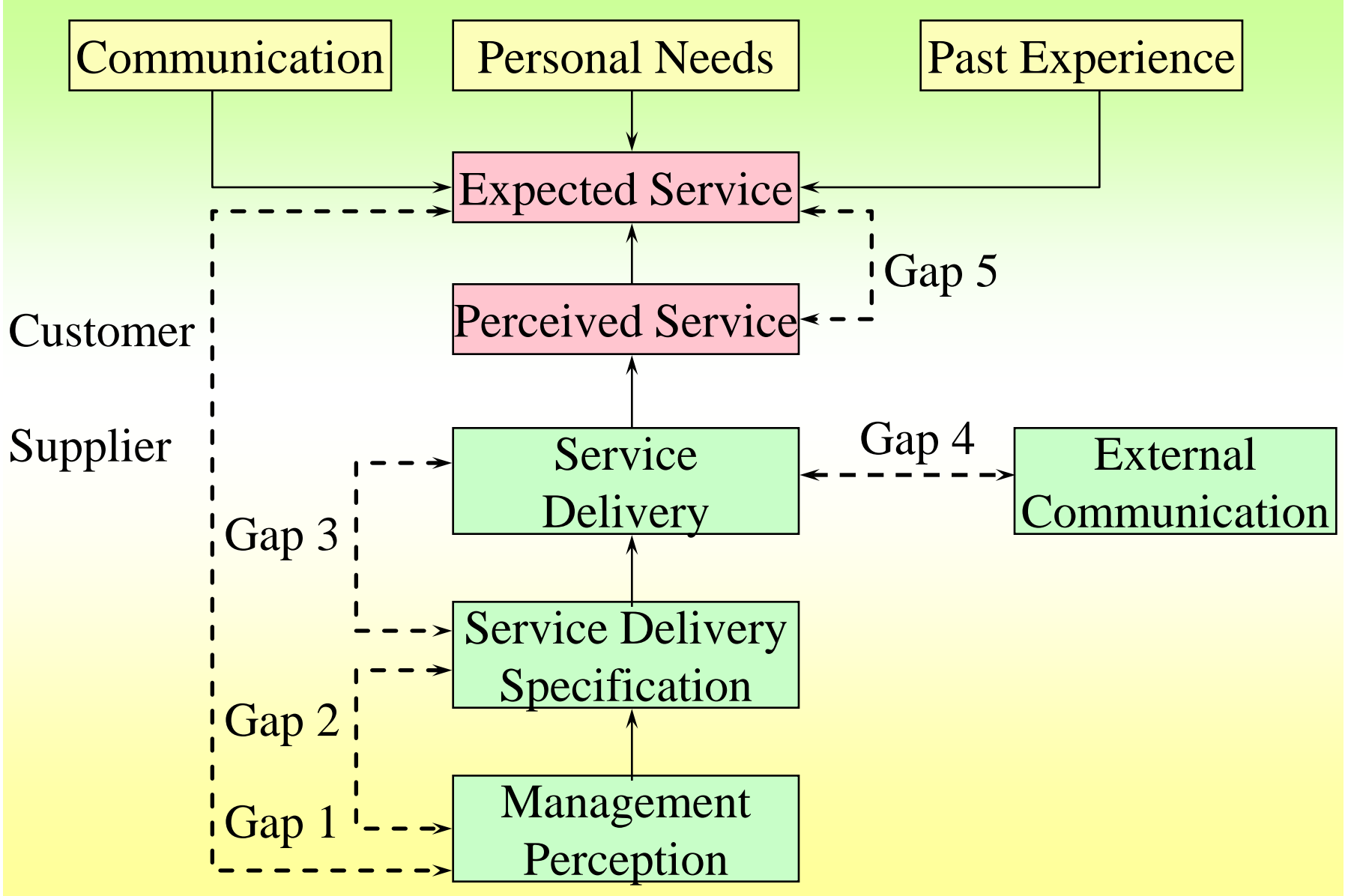


Balanced Scorecard





Service Quality





Lean Organization



5S House Keeping 5S House Keeping Evaluation Form

Expand All Collapse All Edit

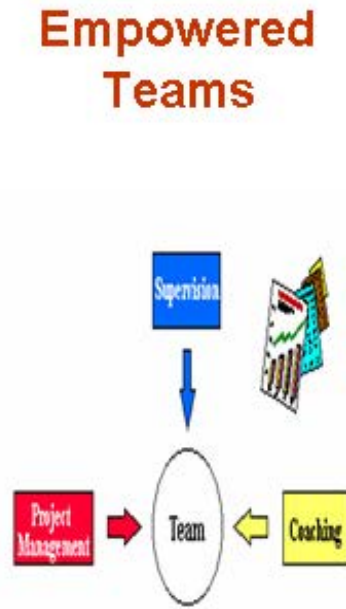
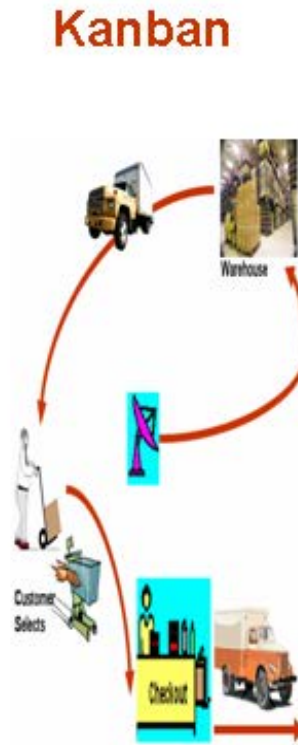
Factory: Belmah Injections (M) Sdn. Bhd.
Operation Site: Shop Floor
Department: Production

| Items | Points | Score |
|----------------------------------|---|-------|
| Working Area | | |
| 1. raw/mach parts | are they conveniently located and labeled for easy retrieval? | 2 |
| 2. work-in-process | are they conveniently located and labeled for easy retrieval? | 4 |
| 3. finished products | are they conveniently located and labeled for easy retrieval? | 2 |
| 4. defective rejects | are they clearly labeled for separation from good items? | 8 |
| 5. exclusive equipment | are they clean, safe, well-maintained and convenient to operate? | 10 |
| 6. wiring/cabling | are they laid out in a tidy, safe and convenient manner? | 2 |
| Tools and Jigs | | |
| 1. dies/fixtures | are they conveniently located and placed at designated location? | 2 |
| 2. spare parts/instruments | are they conveniently located and placed at designated location? | 2 |
| 3. containers/pallets | are they clean and conveniently placed at designated location? | 2 |
| 4. racks/shelves/stacks | are they dust-free, tidy and conveniently labeled for items stored? | 2 |
| 5. carts/wagons/trucks | are they well-maintained and placed at designated locations? | 2 |
| 6. lifts/conveyors/cranes | are they clean, tidy, safe, and well-maintained? | 2 |
| Office Area | | |
| 1. desk/beliefs/chairs | are they clean and organized inside and outside? | 2 |
| 2. computer monitors | are they up-to-date, easy to retrieve and all convenient locations? | 2 |
| 3. floor/drainages/drainways | are they dust-free, tidy, safe and well-maintained? | 2 |
| 4. walls/windows/cablings | are they dust-free, tidy, safe and well-maintained? | 2 |
| 5. lighting/ventilation | are they adequate for efficient operation? | 2 |
| 6. working wear/shoes | are they clean and do they present a good image? | 2 |
| Safety Aspects | | |
| 1. safety devices | are they conveniently located for use and well-maintained? | 2 |
| 2. fire extinguishers/fire exits | are they adequate and cleaned regularly? | 2 |
| 3. cleaning tools/waste baskets | are they dust-free, tidy, safe and well-maintained? | 2 |
| 4. cabinets/drawers/dockers | are they dust-free, tidy, safe and well-maintained? | 2 |
| 5. external areas/gardens | are they clean, tidy, safe and do they present a good image? | 2 |
| 6. security guards/car parks | are they clean, tidy, safe and do they present a good image? | 2 |
| Audit Score | | 88 |
| Bonus Score | | 9 |
| Total Score | | 97 |
| No. of Items Evaluated | | 24 |
| Total Score Possible | | 240 |
| Percentage Score | | 28.33 |

5S Housekeeping Practice Identified
Yes. The house keeping practice is identified.

Comments For Improvement
The infra structure of the shop floor is need to be improve to facilitate for 5s in more effective.

Date: 11/29/2005 Auditor: Shaddeh (P00112)



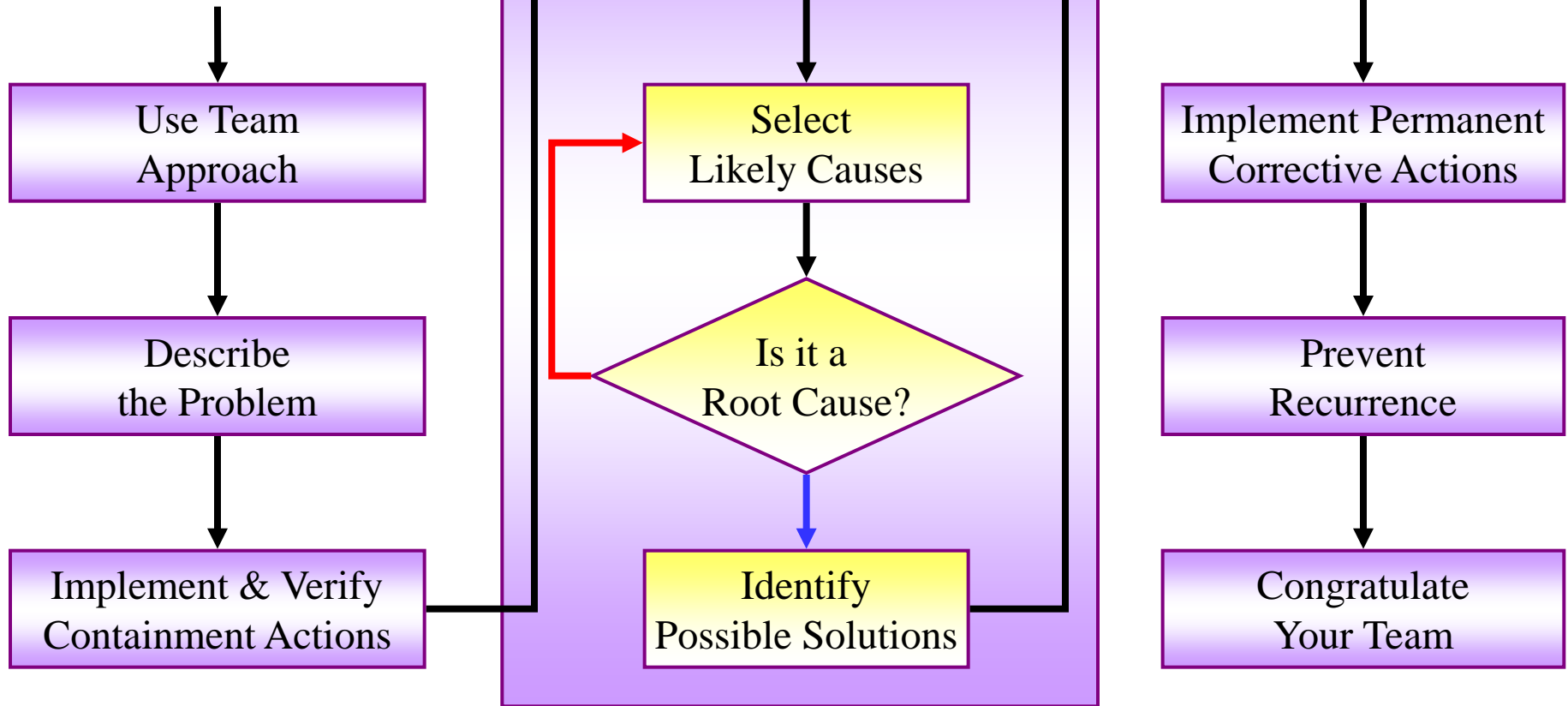
All tools are supported by ICT-M® software



8 Disciplines Problem Solving Method

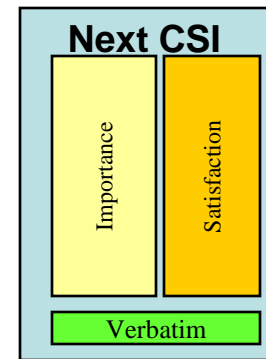
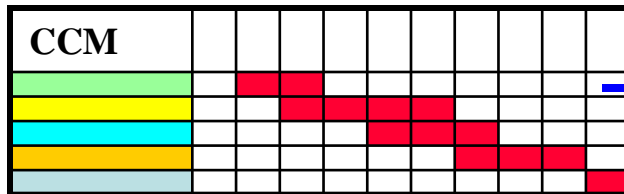
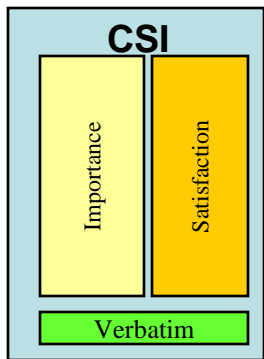


Awareness of Problem



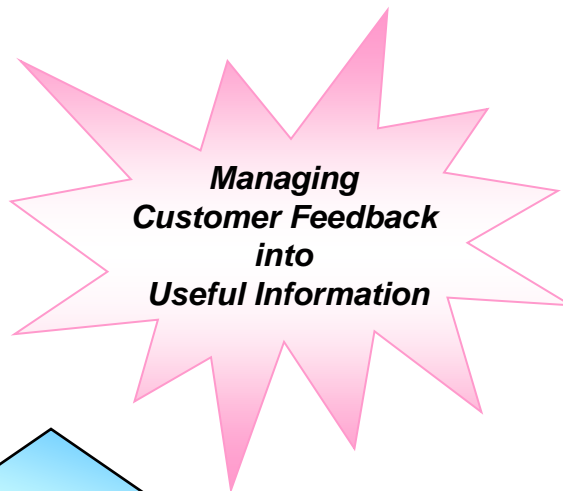
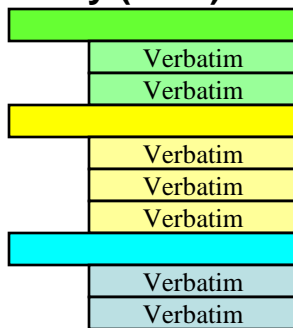


Customer Centred



Choice:
Path 1

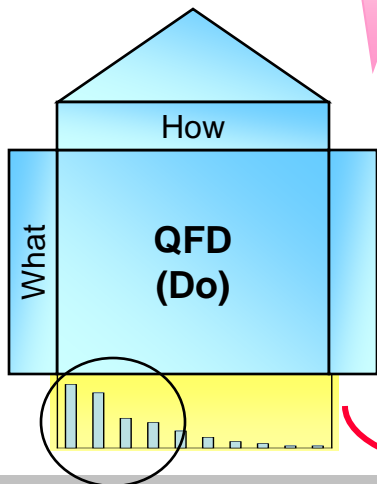
Affinity (Plan)



CPM (Act)

| CONTROL PLAN | | | | | | | | | |
|--------------------------------|--|---|----------|------------|---------|-----------|----------|----------|-------------|
| Part No. | Process Name / Operation Description | Machine, Device, Jig, Tools, Fixt (For Mfg) | Operator | Inspection | Control | Frequency | Response | Revision | Created |
| 1109 | J Device (2116-655-655) | | | | | | | | 2007 Jun 27 |
| 22521116 11-2-02 | Product Development Team (E10) Site List | | | | | | | | 2007 Jun 27 |
| Plastic Injection Moulded Grit | | | | | | | | | |
| Site / Hong Site #3 | | | | | | | | | |

Choice:
Path 2



FMEA (Check)

| FAILURE MODE EFFECT ANALYSIS | | | | | | | | | |
|------------------------------|-------------------------|-------------------|-----------------|----------|-----------------------|--|--|--|--|
| Process FMEA | Product or Process Name | Manufacturer | Date | Page | Design Responsibility | | | | |
| Specimen | Library | Customer/Supplier | Part No. | Rev | Approved by | | | | |
| Component Name | Material Code | Process Code | Part/Order/Part | Part No. | Rev | | | | |
| Function and Part | Material Code | Process Code | Part/Order/Part | Part No. | Rev | | | | |
| Sub | Material Code | Process Code | Part/Order/Part | Part No. | Rev | | | | |



Quality is Everything

Zero Mistakes for Operators

100 Million in 1 Month!



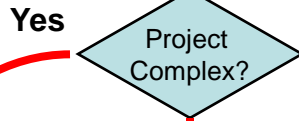
Developing the "Full" Control Plans

Belmah Strategies

Planning the Project



CCR Critical Customer Requirements
 CDR Critical Design Requirements
 CPR Critical Process Requirements



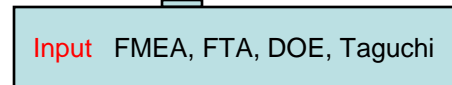
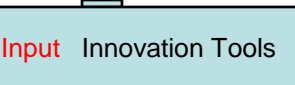
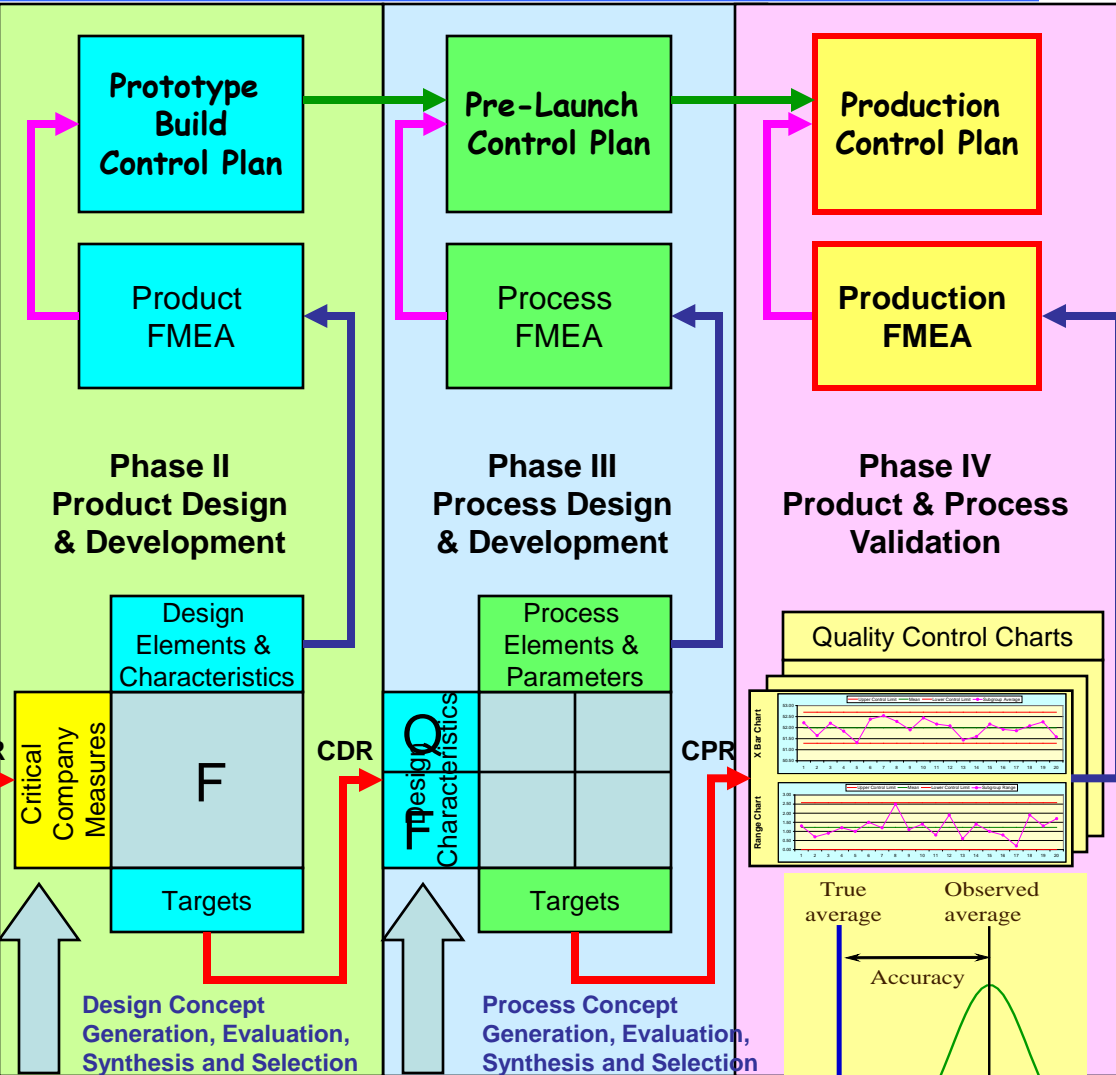
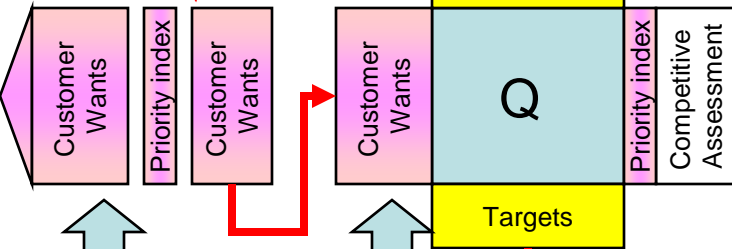
Phase 0 Pre-Planning

Phase 1 Product Quality Planning

Phase II Product Design & Development

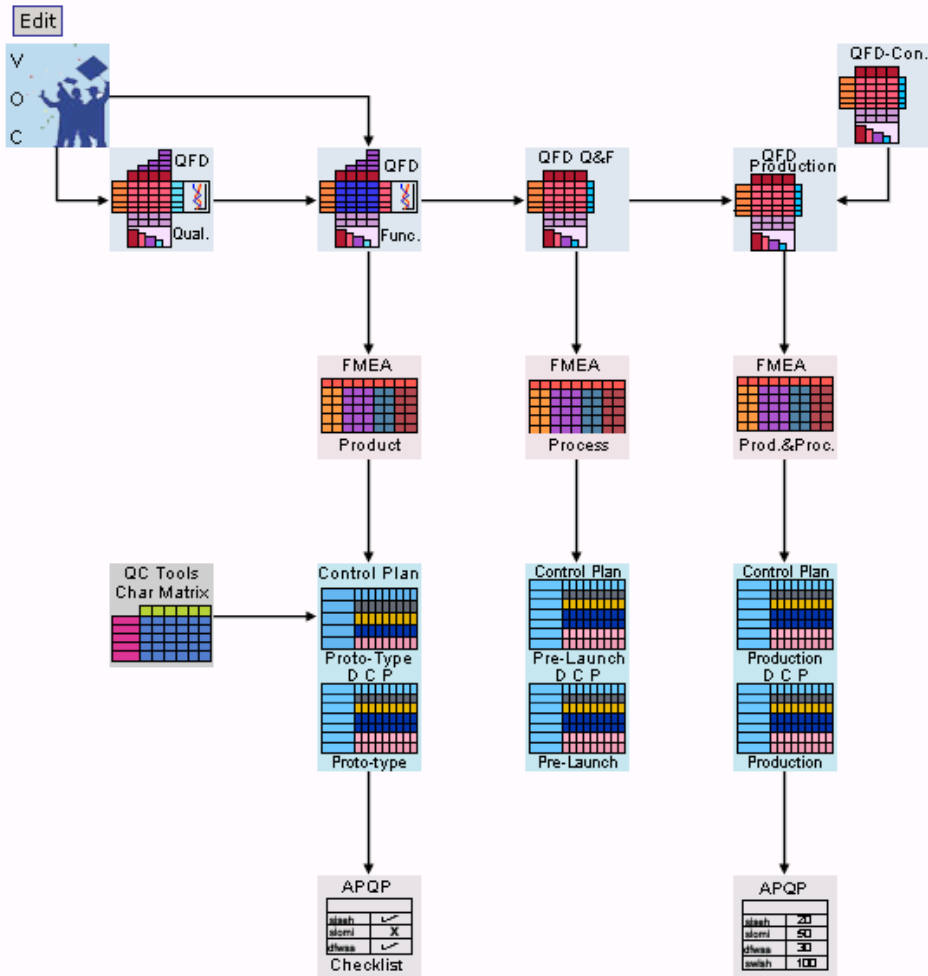
Phase III Process Design & Development

Phase IV Product & Process Validation



Developing “Full” Control Plans with ICT-M

Project Flow



- Build the sequence
 - Very easily done
 - Even link data flow
- Import and Export data
 - Import / Export from one application to another
 - Threaded system of data
 - Traceability of information
- Types of applications
 - Voice of Customer
 - Quality Function Deployment
 - Failure Mode Effects Analysis
 - Control Plan
 - Checklist



Show Me!!

- Can ICT-M really do that?
- Show me NOW!
 - QFD
 - FMEA
 - Control Plan
 - Numeric Checklist





Enterprise Solutions



1. Quality Yield Productivity (Multi Line)
2. Quality Yield Productivity (Single Line)
3. Training Needs Analysis
4. Staff Performance Eval
5. Statistical Process Control
6. Total Productivity Maintenance
8. Audit Management
9. Document Control
10. ISO Implementation Toolkit
11. Attendance Monitoring
12. Inventory Monitoring for Stock In
13. Inventory Monitoring for Finished Goods
14. Utilities for Events, Communication and Rooms



Quality Yield Productivity (QYP ML)





Quality, Yield and Productivity

Quality Yield Productivity

Select By Date

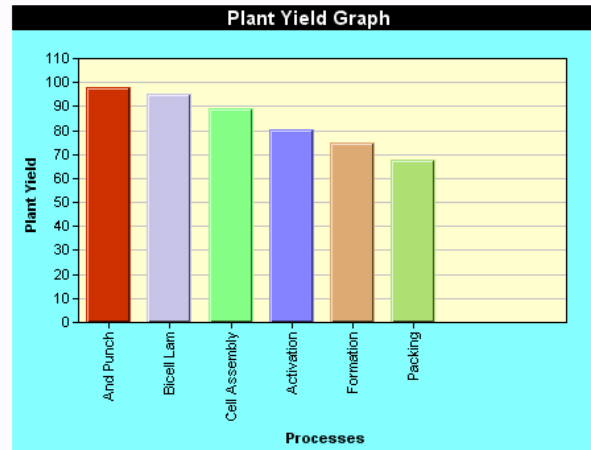
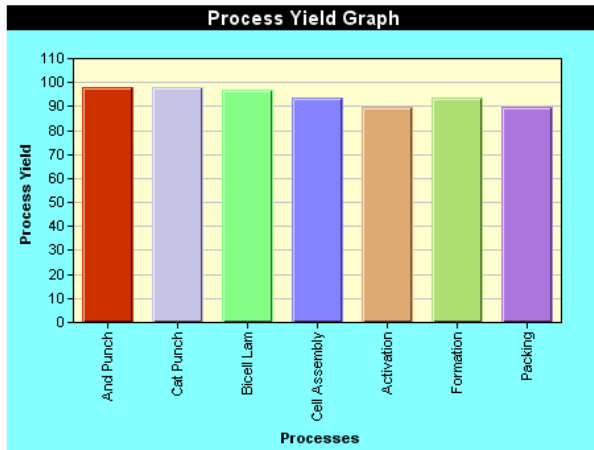
From: 01/Oct/2004

To: 20/Nov/2004

View Graph

Plant Yield

| | And Punch | Cat Punch | Bicell Lam | Cell Assembly | Activation | Formation | Packing |
|----------------------|-----------|-----------|------------|---------------|------------|-----------|---------|
| Input | 23400 | 23400 | 22792 | 22080 | 20660 | 19030 | 17794 |
| Output | 22961 | 22909 | 22117 | 20667 | 18562 | 17814 | 16001 |
| Rejects | 439 | 491 | 675 | 1413 | 2098 | 1216 | 1793 |
| Excess | | | | | | | |
| Hijacked | 31 | 74 | 38 | 7 | 90 | 43 | |
| Process Yield | 98.12 % | 97.90 % | 97.04 % | 93.60 % | 89.85 % | 93.61 % | 89.92 % |
| Rank | | | | 3 | 1 | | 2 |
| Plant Yield | 98.12% | | 95.22% | 89.12% | 80.07% | 74.96% | 67.40% |



QYP

- Build the process
- Enter process data
- View variously
 - By Date
 - By Batch
 - By Area
 - By Process
 - Etc.



Quality Yield Productivity (QYP SL)

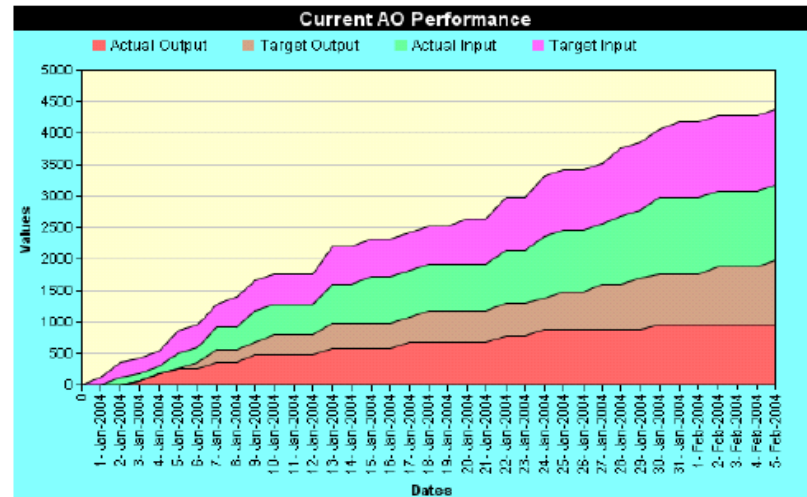
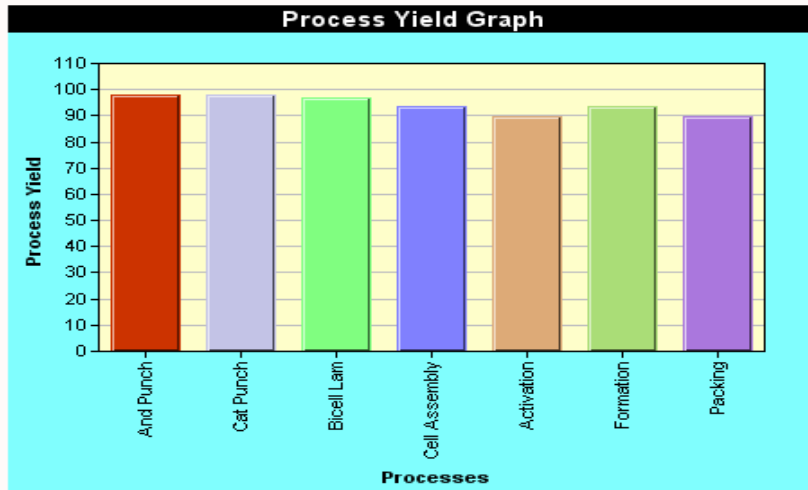


Plant Yield

| | And Punch | Cat Punch | Bicell Lam | Cell Assembly | Activation | Formation | Packing |
|----------------------|-----------|-----------|------------|---------------|------------|-----------|---------|
| Input | 23400 | 23400 | 22792 | 22080 | 20660 | 19030 | 17794 |
| Output | 22961 | 22909 | 22117 | 20667 | 18562 | 17814 | 16001 |
| Rejects | 439 | 491 | 675 | 1413 | 2098 | 1216 | 1793 |
| Excess | | | | | | | |
| Hijacked | 31 | 74 | 38 | 7 | 90 | 43 | |
| Process Yield | 98.12 % | 97.90 % | 97.04 % | 93.60 % | 89.85 % | 93.61 % | 89.92 % |
| Rank | | | | 3 | 1 | | 2 |
| Plant Yield | 98.12% | | 95.22% | 89.12% | 80.07% | 74.96% | 67.40% |

Needed by all companies
(unless they have some type of ERP)

Daily tracking
Monthly tracking
Yearly tracking



Low Process Yield?
Chain to Projects Section
to improve the process

Provides information needed for
continuous improvement to face
changing customer needs



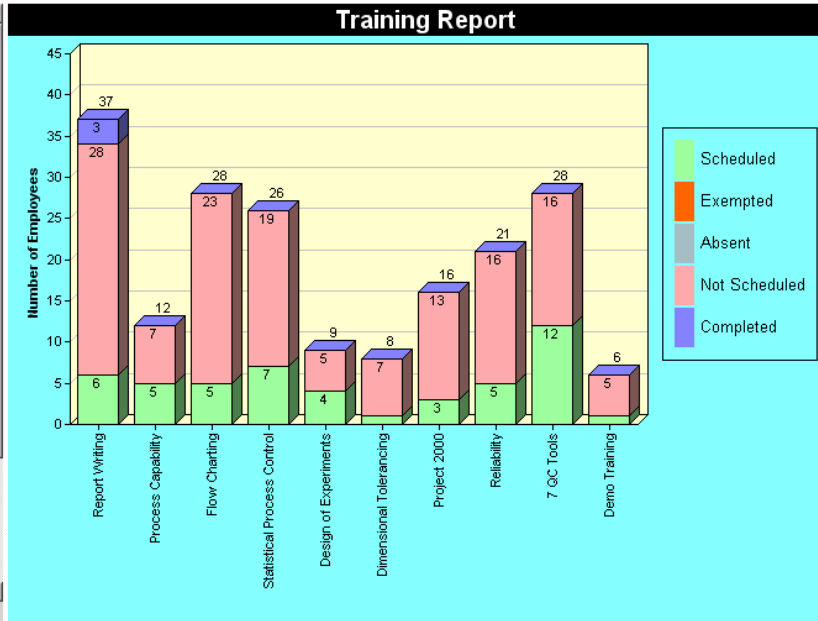
Training Needs Analysis

Training by Topics

<< < Report Writing > >>

Number Percent

| No | Employee No | Employee Name | Status |
|----|-------------|---------------|---------------|
| 1 | Emp0026 | Shairy | Completed |
| 2 | Emp0033 | Rozita | Completed |
| 3 | Emp0025 | Azman333 | Completed |
| 4 | Emp0014 | Shamel | Scheduled |
| 5 | Emp0004 | Ramam | Scheduled |
| 6 | Emp0015 | Marliza | Scheduled |
| 7 | Emp0001 | Balan | Scheduled |
| 8 | Emp0023 | Shazlee | Scheduled |
| 9 | Emp0038 | Hari | Scheduled |
| 10 | Emp0007 | Fauziah | Not Scheduled |
| 11 | Emp0022 | kamal | Not Scheduled |
| 12 | Emp0003 | P | Not Scheduled |
| 13 | Emp0029 | Mahallil | Not Scheduled |
| 14 | Emp0030 | Zakuan | Not Scheduled |
| 15 | Emp0008 | Haimy | Not Scheduled |
| 16 | Emp0037 | Senthil | Not Scheduled |
| 17 | Emp0036 | Saleh Drus | Not Scheduled |
| 18 | Emp0034 | Chan | Not Scheduled |
| 19 | Emp0035 | Zaitul | Not Scheduled |
| 20 | Emp0027 | Halim | Not Scheduled |
| 21 | Emp0028 | Fariq | Not Scheduled |
| 22 | Emp0021 | Paagal | Not Scheduled |
| 23 | Emp0002 | vinod | Not Scheduled |
| 24 | Emp0018 | Ho | Not Scheduled |
| 25 | Emp0039 | Ravi Kumar | Not Scheduled |
| 26 | Emp0017 | Shaari | Not Scheduled |
| 27 | Emp0032 | Rohana | Not Scheduled |
| 28 | Emp0011 | Thulasi | Not Scheduled |
| 29 | Emp0009 | Skidara | Not Scheduled |



TNA

- Training Planner
- Training summary
 - By Department
 - By Topic
 - By Employee
 - Etc.



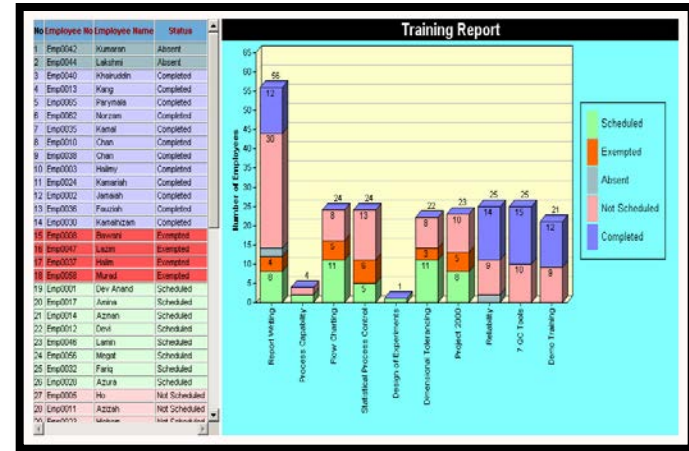
Training Needs Analysis



Personal Training Year Planner

| Expand All | | Collapse All | | Personnel Training Year Planner | | | | | | | | | |
|-------------------------|----------|--------------|---------------|---------------------------------|--------------------|---------------|-----------------------------|-----------------------|-------------------------|--------------|-------------|------------|---------------|
| Legend: | | | | Report Writing | Process Capability | Flow Charting | Statistical Process Control | Design of Experiments | Dimensional Tolerancing | Project 2000 | Reliability | 7 QC Tools | Demo Training |
| Position | Job Code | Employee No | Employee Name | | | | | | | | | | |
| Chief Executive Officer | 1 | Emp0010 | Hamid | | | | | | | | | | |
| Chief Tech Officer | 2 | Emp0002 | vinod | | | | | | | | | | |
| Basic Research | 11 | Emp0007 | Fauziah | | | | | | | | | | |
| Advanced Development | 12 | Emp0011 | Thulasi | | | | | | | | | | |
| Marketing | 3 | Emp0003 | P | | | | | | | | | | |
| Marketing Manager 1 | 13 | Emp0017 | Hameed | | | | | | | | | | |
| Marketing Manager 2 | 14 | Emp0018 | Ho | | | | | | | | | | |
| Operations | 4 | Emp0005 | Shazrul | | | | | | | | | | |
| Prod Plan Control | 5 | Emp0001 | Balan | | | | | | | | | | |
| Production | 6 | Emp0030 | Zakuan | | | | | | | | | | |
| Product Quality Ass | 7 | Emp0006 | Kang | | | | | | | | | | |
| Safety Security Health | 8 | Emp0009 | Shirlene | | | | | | | | | | |
| Human Resource | 1 | | | | | | | | | | | | |

Training Report



Training Schedule

| Show: Yearly | | | | December 2004 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|-----------------------------|----------|--------|-----------------|-------------|-------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| No | Training Name | Group No | Status | No. of Delegate | Date | Start Date | End Date | Mon | Tue | Wed | Thu | Fri | Sat | Sun | Mon | Tue | Wed | Thu | Fri | Sat | Sun | Mon | Tue | Wed | Thu | Fri | Sat | Sun | | | |
| 1 | Report Writing | Group1 | Status | 8 | 05/Oct/2004 | 20/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Report Writing | Group2 | Status | 6 | 04/Nov/2004 | 05/Nov/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Report Writing | Group3 | Status | 12 | 22/Dec/2004 | 24/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Process Capability | Group1 | Status | 2 | 01/Dec/2004 | 02/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Flow Charting | Group1 | Status | 4 | 22/Dec/2004 | 22/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Flow Charting | Group2 | Status | 12 | 12/Jan/2005 | 13/Jan/2005 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Statistical Process Control | Group1 | Status | 11 | 10/Dec/2004 | 10/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Design of Experiments | Group1 | Status | 0 | 21/Dec/2004 | 21/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Design of Experiments | Group2 | Status | 1 | 22/Dec/2004 | 22/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Dimensional Tolerancing | Group1 | Status | 14 | 08/Dec/2004 | 13/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Project 2000 | Group1 | Status | 13 | 08/Dec/2004 | 10/Dec/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Reliability | Group1 | Status | 16 | 01/Jan/2005 | 31/Jan/2005 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 7 QC Tools | Group1 | Status | 15 | 20/Jan/2004 | 20/Jan/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | Demo Training | Group1 | Status | 12 | 25/Oct/2004 | 25/Oct/2004 | | | | | | | | | | | | | | | | | | | | | | | | | |

Training Planner

| Expand All | | Collapse All | | From Date: 1/1/2004 To Date: 31/12/2005 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|------------------------------|----------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| | | | | Jan - 2005 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | |
| Coltact Group 1 | Quality Yield Productivity | Dr. Nic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Striking Word Analyticle | Dr. Nic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SPC | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total Productive Maintenance | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Internal Audit Application software | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ISO | Dr. Nic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Advanced Statistical Technicians | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Measurement System Analysis | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Voice of Customer | Dr. Nic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Quality Function Deployment | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Failure Mode & Effect Analysis | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Control Plan | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Spincial Control Plan | Dr. Nic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Problem Solving Techniques | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Process Flow chart & Aligned Tools | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ISO 9001:2000 Awareness | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ISO 9001:2000 Documentation and Implementation | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ISO 14001 Environmental System Internal Audit | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Awareness on OHSAS 18001 | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | OHSAS 18001:1999 Documentation and Implementation | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ISO 18001 Health and Safety Management System Int | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Awareness on TS 16949:2002 | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TS 16949:2002 Documentation and Implementation | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Internal Auditing to TS 16949:2002 | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Awareness on Integrated Management Systems | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Coltact Group 2 | Total Productive Maintenance | B. Siver amuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Staff Performance Evaluation



Employee Review

Employee Department

Close Save Submit

| | |
|-----------------------|------------------------------|
| Employee Name | IR0003 -- Miss. Azizah Mamat |
| Date Of Joining | 01-Apr-2004 |
| Date Of Leaving | |
| Template Name | Temp001 -- Template 1 |
| Template Created Date | 05-Dec-2005 |

| | |
|---------------|---|
| Review Date | 10/12/2005 |
| Review Period | From 04/26/2005 To 09/22/2005 |
| Review By | IR0013 -- Mr. Chee Kang |
| Conclusion | Not completed yet because of the Raya holidays. |
| Review Status | Not Completed |

Template

Monitor Employee Reviews

Follow-up on trends in on or all employees

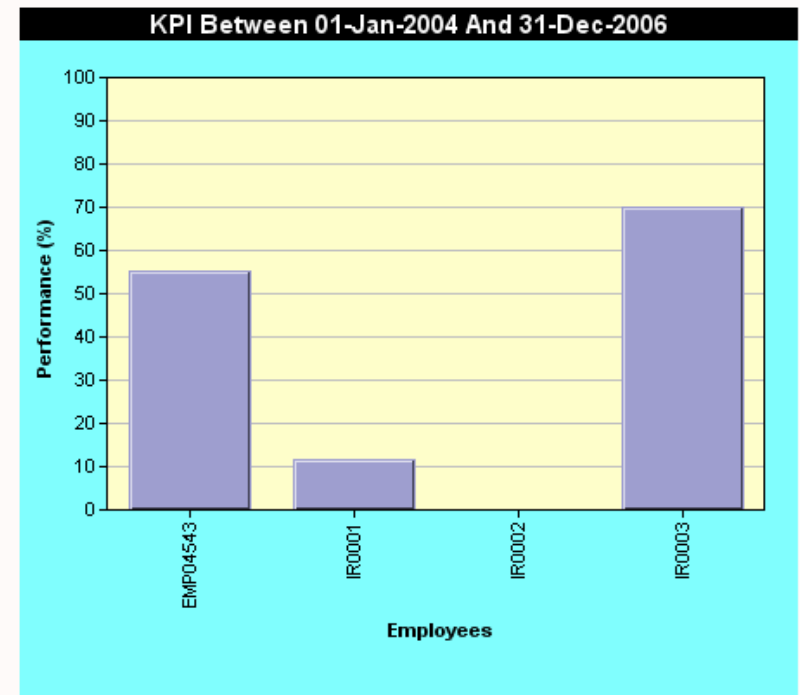
Create different templates for different skill levels

Cumulative Employee KPI

From 01/01/2004 To 12/31/2006 View Choose Employees List

| No. | Employee ID. | Employee | Total KPI |
|-----|--------------|--------------------------|-----------|
| 1 | EMP04543 | Mr. Thirumalai Kuppusamy | 55.2 % |
| 2 | IR0001 | Mr. Amina Hameed | 11.5 % |
| 3 | IR0002 | Mr. Ang Koon Long | |
| 4 | IR0003 | Miss. Azizah Mamat | 69.9 % |

Display By Employee Id Employee Name



TOP



Schedule to SPC Chart

SPC Chart Schedule

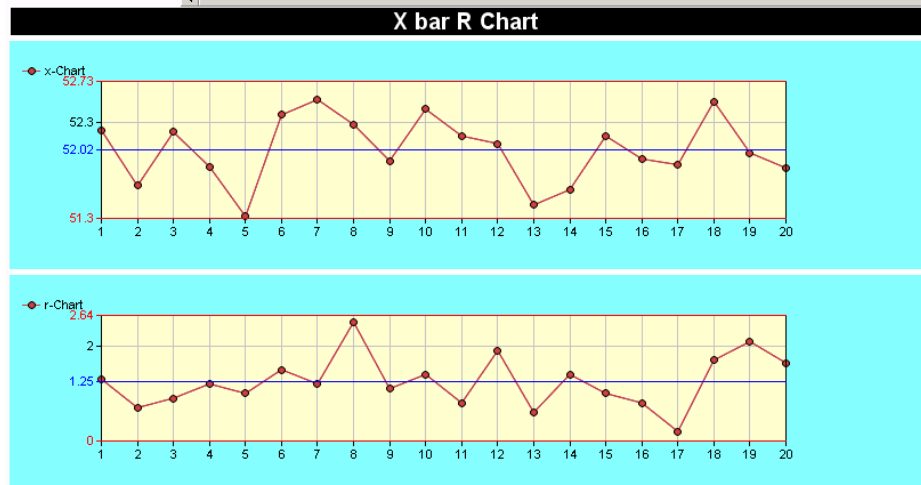
Process
 Facilities
 Office
 Gage

| Process Name | Mach No. | Mac Capability | PreControl | X-Bar-Sigma | X-Bar-Range | X-Ind-R-Move | X-Move-R-Move | Median-Chart | d-Chart | p-Chart | e-Chart | u-Chart |
|-----------------------|----------------|----------------|------------|-------------|-------------|--------------|---------------|--------------|---------|---------|---------|---------|
| CCT | | | | | | | | | | | | |
| Solution Mix | MIX-SYS-1 | | | | | | | | | | | |
| Mixing System 1 | MIX-SYS-1 | | | | | | | | | | | |
| Mixing System 2 | MIX-SYS-2 | | | | | | | | | | | |
| Mixing System 3 | MIX-SYS-3 | | | | | | | | | | | |
| Mixing System 4 | MIX-SYS-4 | | | | | | | | | | | |
| Strip Cutting | | | | | | | | | | | | |
| Grid Cutting System 1 | GRID-CUT-SYS-1 | | | | | | | | | | | |
| Grid Cutting System 2 | GRID-CUT-SYS-2 | | | | | | | | | | | |
| Grid Cutting System 3 | GRID-CUT-SYS-2 | | | | | | | | | | | |
| Grid Cutting System 4 | GRID-CUT-SYS-4 | | | | | | | | | | | |
| Spraying | SPR-SYS-1 | | | | | | | | | | | |
| Treatment Process | | | | | | | | | | | | |
| Strips Drying | | | | | | | | | | | | |
| Grid Annealing | | | | | | | | | | | | |
| Offline | BIC-LAM | | | | | | | | | | | |
| Cell Assembly | CAS-SEAL | | | | | | | | | | | |
| Lamination | | | | | | | | | | | | |
| Punching | PACK-PRE-MC-1 | | | | | | | | | | | |
| Tab Welding | | | | | | | | | | | | |
| Activation | ANNE-OVEN | | | | | | | | | | | |
| FDP | | | | | | | | | | | | |
| Un Used Machines List | | | | | | | | | | | | |



| Name of the Study | Molding Process | X Bar Chart | R Chart | Spec Spread | 2 | Process Capability | |
|------------------------|------------------|-----------------|---------|-------------|------|--------------------------|-------|
| Name of the Machine | Atkinson | Specification | 52.00 | USL | 53 | UCL (X) | 52.73 |
| Type of Data Collected | Cavity dimension | Upper Limit (+) | 1.00 | LSL | 51 | UCL (R) | 2.64 |
| Unit of Measurement | mm | Lower Limit (-) | 1.00 | Tolerance | 2 | CL (X) | 52.02 |
| | | | | LCL (X) | 51.3 | CL (R) | 1.25 |
| | | | | | | Process Spread | 3.215 |
| | | | | | | Half Process Spread | 1.608 |
| | | | | | | Process Capability Index | cp |
| | | | | | | | 0.622 |
| | | | | | | | cpk |
| | | | | | | | 0.612 |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Year | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2004 |
| Date | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/04 |
| Hours | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 12:58 |
| Shift | | | | | | | | | | | | | | | | | | | | |
| Employee Name | | | | | | | | | | | | | | | | | | | S1 | S2 |
| Sample 1 | 52.00 | 51.70 | 51.70 | 51.30 | 50.80 | 52.60 | 53.00 | 52.50 | 51.90 | 52.20 | 52.40 | 51.30 | 51.70 | 51.80 | 52.00 | 52.00 | 51.80 | 51.56 | 51.56 | |
| Sample 2 | 52.10 | 51.50 | 52.20 | 52.20 | 50.90 | 51.40 | 52.90 | 52.70 | 51.60 | 52.70 | 52.60 | 51.20 | 51.60 | 51.00 | 51.70 | 52.30 | 51.80 | 52.60 | 52.60 | |
| Sample 3 | 53.00 | 52.00 | 51.90 | 51.80 | 51.70 | 52.90 | 52.50 | 51.20 | 51.60 | 52.30 | 52.10 | 51.90 | 51.40 | 52.40 | 52.60 | 51.80 | 51.80 | 53.02 | 52.98 | |
| Sample 4 | 52.30 | 51.70 | 52.60 | 52.50 | 51.80 | 52.60 | 52.50 | 53.70 | 52.70 | 51.80 | 51.80 | 53.10 | 51.40 | 51.20 | 51.80 | 52.00 | 51.90 | 52.16 | 51.89 | |
| Sample 5 | 51.70 | 51.30 | 52.60 | 51.40 | 51.40 | 52.40 | 51.80 | 51.30 | 51.70 | 53.20 | 51.90 | 52.90 | 51.10 | 51.60 | 52.70 | 51.50 | 52.00 | 53.26 | 50.89 | |
| SubGroup Average | 52.22 | 51.64 | 52.20 | 51.84 | 51.32 | 52.38 | 52.54 | 52.28 | 51.90 | 52.44 | 52.16 | 52.08 | 51.44 | 51.60 | 52.16 | 51.92 | 51.86 | 52.52 | 51.98 | |
| SubGroup Range | 01.30 | 00.70 | 00.90 | 01.20 | 01.00 | 01.50 | 01.20 | 02.50 | 01.10 | 01.40 | 00.80 | 01.90 | 00.60 | 01.40 | 01.00 | 00.80 | 00.20 | 01.70 | 02.09 | |



| Number | Remark |
|--------|--------|
| Add | |

SPC

- Track every machine
- All conventional charts
- More being added
- No calculation needed



Statistical Process Control

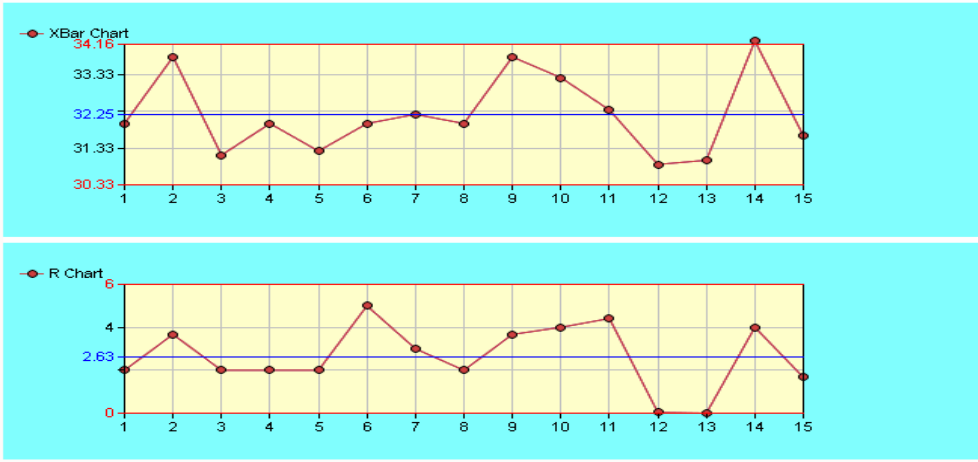


| | | | | | | | | | | | | | |
|-------------------------------|--------------------------|------------------------|-------|------------------|-------------------|----------------|----------------|----------------|-----------------------|----------------------------|-------|---------------------------------|-------|
| Name of the Study | Molding Process | | | | XBar Chart | | R Chart | | Spec Spread 68 | Process Capability | | | |
| Name of the Machine | Atkinson Molding Machine | Specification | 34.00 | USL | 71 | UCL (X) | 34.16 | UCL (R) | 6 | s = | 1.277 | cp | 8.873 |
| Type of Data Collected | Cavity dimension | Upper Limit (+) | 37.00 | LSL | 3 | CL (X) | 32.25 | CL (R) | 2.63 | Process Spread | 7.664 | Process Capability Index | |
| Unit of Measurement | Millimeter | Lower Limit (-) | 31.00 | Tolerance | 68 | LCL (X) | 30.33 | LCL (R) | 0 | Half Process Spread | 3.832 | cpk 7.632 | |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Year | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2003 | 2004 |
| Date | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/11 | 10/21 |
| Hours | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 11:41 | 02:33 |
| Shift | | | | | | | | | | | | | | | 1 |
| Employee Name | | | | | | | | | | | | | | | Vinod |
| Sample 1 | 31.00 | 34.56 | 30.00 | 31.00 | 32.00 | 30.00 | 31.00 | 31.00 | 34.56 | 32.00 | 35.00 | 30.89 | 31.00 | 32.00 | 31.89 |
| Sample 2 | 32.00 | 35.56 | 31.00 | 33.00 | 31.00 | 35.00 | 34.00 | 32.00 | 35.56 | 35.00 | 32.00 | 30.88 | 31.00 | 35.00 | 30.89 |
| Sample 3 | 33.00 | 33.25 | 32.00 | 32.00 | 30.00 | 31.00 | 33.00 | 33.00 | 33.25 | 31.00 | 31.89 | 30.87 | 31.00 | 36.00 | 32.56 |
| Sample 4 | 32.00 | 31.89 | 31.56 | 32.00 | 32.00 | 32.00 | 31.00 | 32.00 | 31.89 | 35.00 | 30.59 | 30.90 | 31.00 | 34.00 | 31.33 |
| SubGroup Average | 32.00 | 33.81 | 31.14 | 32.00 | 31.25 | 32.00 | 32.25 | 32.00 | 33.81 | 33.25 | 32.37 | 30.89 | 31.00 | 34.25 | 31.67 |
| SubGroup Range | 02.00 | 03.67 | 02.00 | 02.00 | 02.00 | 05.00 | 03.00 | 02.00 | 03.67 | 04.00 | 04.41 | 00.03 | 00.00 | 04.00 | 01.67 |

Monitor Variations in the process

XBar R Chart



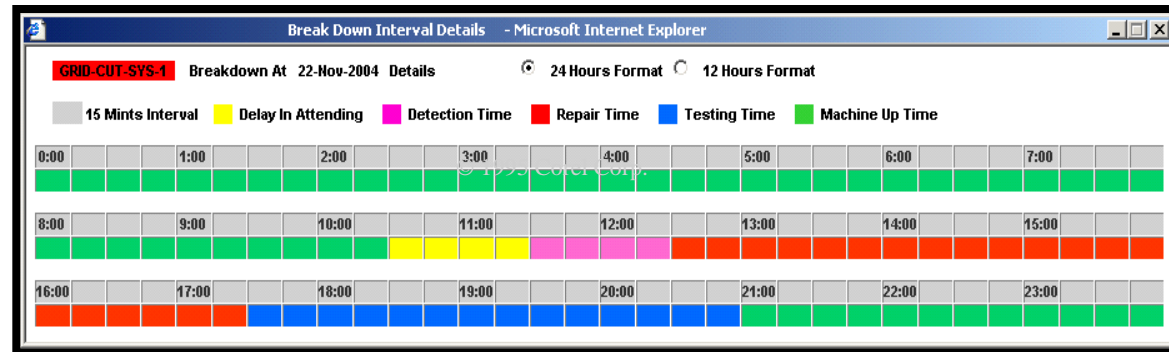
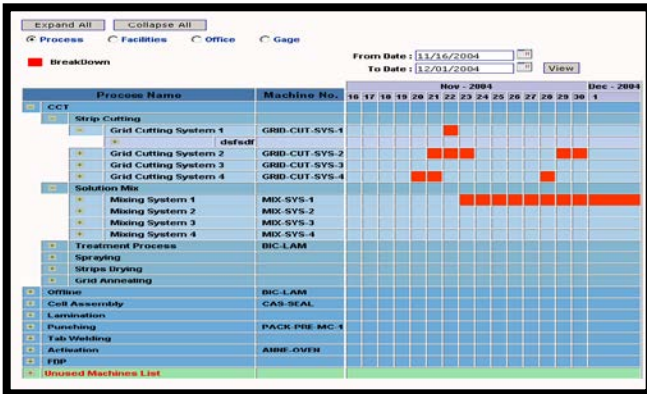
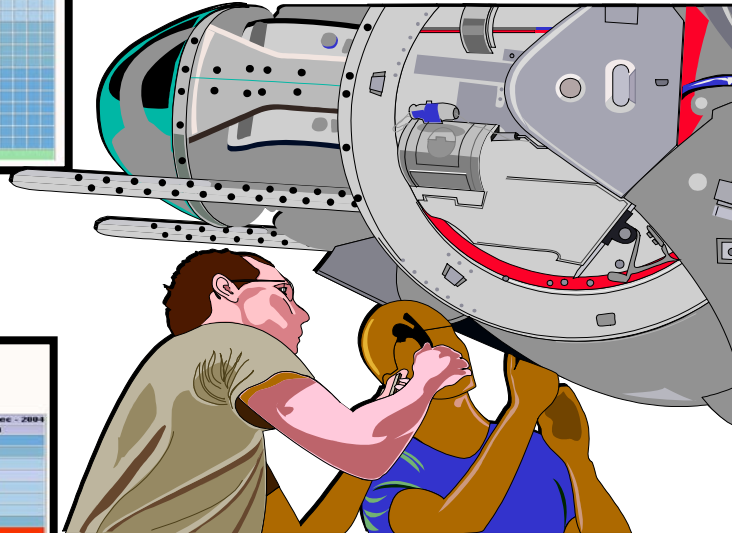
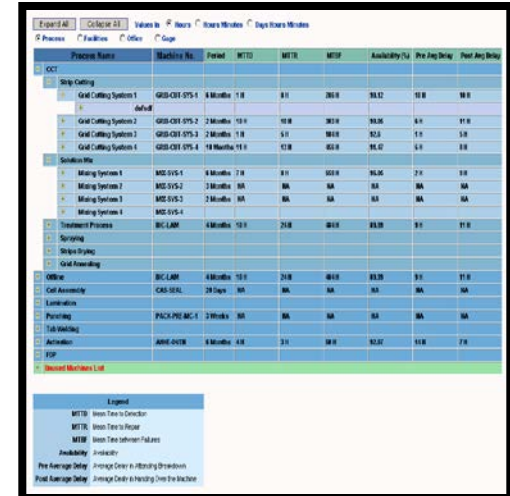
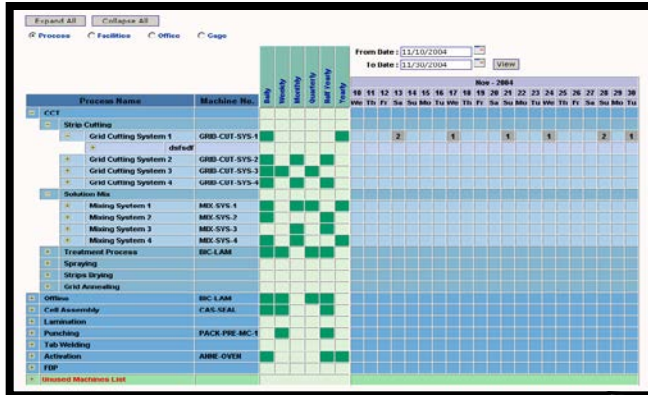
Even minor variations are detected for immediate analysis



Total Productive Maintenance



Belmah Strategies





Audits



Audit Status as on Date 20/Nov/04

| Audit No. | Department | Section | Date | | | Non Conformance | | | | | NC Status | Notes |
|-----------|----------------------|------------|-----------|-----------|-------|-----------------|----------------------|-----------|----------------------|-------|-----------|-----------------|
| | | | Planned | Conducted | Delay | Major Qty | NC Nos. | Minor Qty | NC Nos. | Total | | |
| 1 | Marketing Department | Marketing | 12-Aug-04 | 15-Sep-04 | 34 | 1 | View | | | 1 | 1 Open | |
| 3 | Production | Production | 20-Aug-04 | 23-Aug-04 | 3 | 1 | View | | | 1 | 1 Open | Production Dept |
| 4 | Design Department | Design | 23-Aug-04 | 25-Aug-04 | 2 | | | 1 | View | 1 | 1 Open | Design Dept |
| 5 | Quality Department | Quality | 26-Aug-04 | 27-Aug-04 | 1 | | | 1 | View | 1 | 1 Close | Quality Dept |

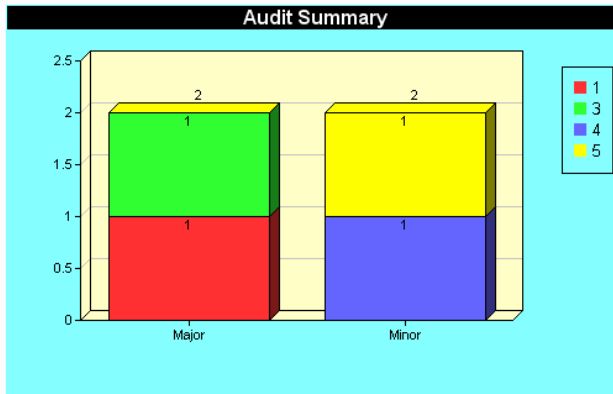
Audit Summary

Start_Date:

End_Date:

Department:

| Audit No. | Department | Section | Non Conformance | | |
|-----------|----------------------|------------|-----------------|-----------|-------|
| | | | Major Qty | Minor Qty | Total |
| 1 | Marketing Department | Marketing | 1 | | 1 |
| 3 | Production | Production | 1 | | 1 |
| 4 | Design Department | Design | | 1 | 1 |
| 5 | Quality Department | Quality | | 1 | 1 |



• ISO/TS 16949

- Automotive Standard
- Auditor Performance
- Generate Reports by
 - Department
 - Auditor
 - Audit No.
- Track
 - Corrective actions
 - Preventive actions
 - Improvement actions
- Non Conformances
 - Major
 - Minor



ISO 9000/TS 16949



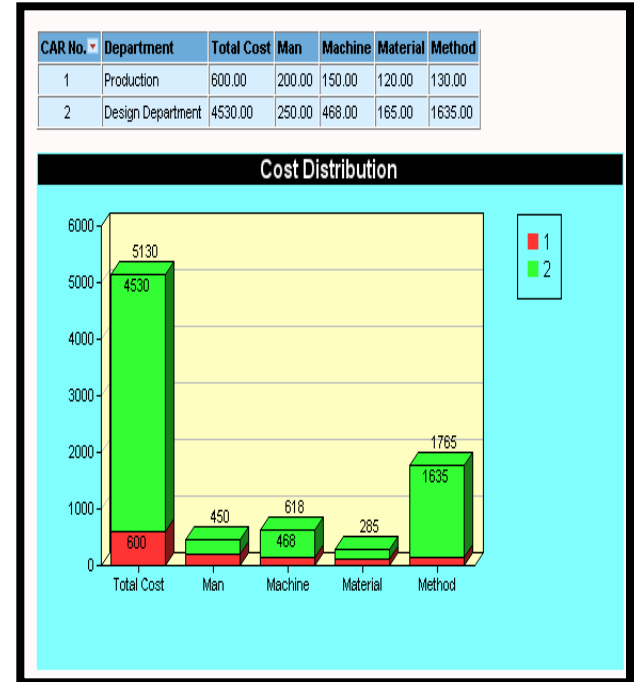
New Open

From Date: 08/01/2004
To Date: 12/01/2004 View

Edit

| | | | | Aug - 2004 | | | | | | | |
|-----------|----------------------|-------------|-------------|------------|----|----|----|----|----|----|----|
| Audit No. | Department | Start Date | No. Days | Sa | Mo | Tu | We | Th | Fr | Sa | Su |
| 1 | Marketing Department | 12-Aug-2004 | 16-Aug-2004 | | | | | | | | |
| 1.1 | Marketing | 12-Aug-2004 | 16-Aug-2004 | 5 | | | | | | | |
| 2 | Production | 20-Aug-2004 | 22-Aug-2004 | | | | | | | | |
| 2.1 | Production | 20-Aug-2004 | 22-Aug-2004 | 3 | | | | | | | |
| 3 | Design Department | 23-Aug-2004 | 25-Aug-2004 | | | | | | | | |
| 3.1 | Design | 23-Aug-2004 | 25-Aug-2004 | 3 | | | | | | | |
| 4 | Quality Department | 26-Aug-2004 | 30-Aug-2004 | | | | | | | | |
| 4.1 | Quality | 26-Aug-2004 | 30-Aug-2004 | 5 | | | | | | | |

- Audit Name
- Audit Plan
- Element Matrix
- Auditor List
- Audit Schedule
- Check List
- Audit Status
- Audit Improvement
- Audit Effectiveness
- Corrective Action Status
- Corrective Action Summary
- Cost Distribution
- Audit Summary
- Auditor Report
- Audit No. Report
- Department Report



| Audit No. | Department | Section | Date | | | Non Conformance | | | | | NC Status | Notes | |
|-----------|----------------------|------------|-----------|---------------|-------|-----------------|---------|-----------|---------|-------|-----------|-----------------|--|
| | | | Planned | Conducted | Delay | Major Qty | NC Nos. | Minor Qty | NC Nos. | Total | | | |
| 1 | Marketing Department | Marketing | 12-Aug-04 | 15-Sep-04 | 34 | | | | | | | | |
| 3 | Production | Production | 20-Aug-04 | 23-Aug-04 | 3 | 1 | View | | | 1 | NCR | Production Dept | |
| 4 | Design Department | Design | 23-Aug-04 | 25-Aug-04 | 2 | | | 1 | View | 1 | 1 Open | Design Dept | |
| 5 | Quality Department | Quality | 26-Aug-04 | Not Conducted | | | | | | | | | |

CAR

Link to Project Section!
Conduct Improvement



Document Control



| Menu Link | Create | Draft Status | Verified Status | Approved Status | Circulation | Distribution |
|--------------------|--|--------------------------|-----------------------------|-----------------------------|-------------------------|--------------------------|
| Create (or Modify) | Create Document or Modify Document | | | | | |
| Authenticate | Authenticate Document by Mgmt. Rep. ↓ | Document in Draft Status | | | | |
| Verify | Verify Document by Verify List ↓ | | Document in Verified Status | | | |
| Approve | Approve Document by Approve List ↓ | | | Document in Approved Status | | |
| Circulation | Circulate Document by Circulate List ↓ | | | | Document in Circulation | |
| Distribution | Distribute Document by Distribute List ↓ | | | | | Document in Distribution |

| Menu Link | Purpose |
|--------------------|--|
| Register | Upload existing Documents View all Document |
| Active Documents | View all Active Documents |
| Obsolete Documents | View all Obsolete Documents |
| Master Documents | View all Active or Obsolete Documents |
| Search | Search for a particular Document |
| Document History | View all activities associated with a Document |
| Document Members | View who is involved in which Document |

Remember running round the organization before every audit?

Simplify your documents with Document Control

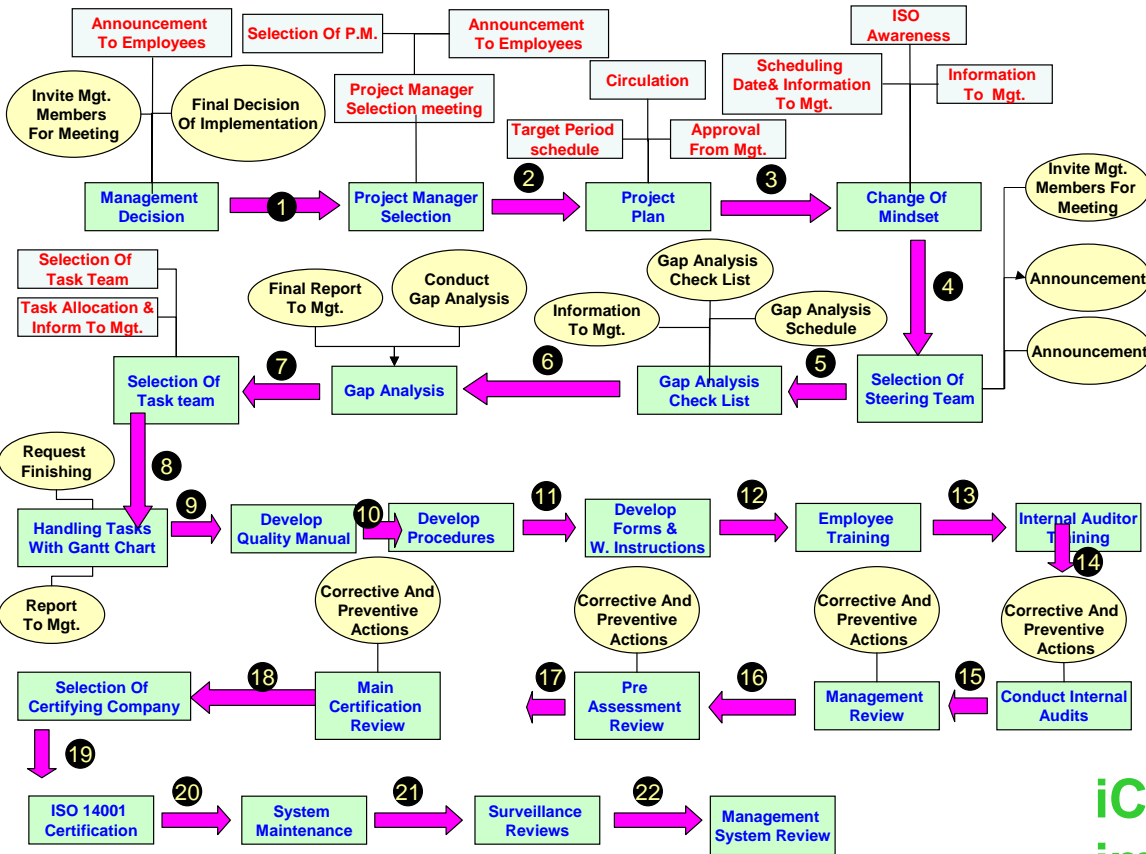


ISO Implementation Toolkit



Link to Project Section!
 Conduct Improvement
 Implement crucial tools:

- FMEA
- SPC
- MSA
- Etc.



iCT-M provides a toolkit for implementing ISO 9000

Step-by-Step

Templates available



Attendance



Attendance Details

Org. Tree Department Employee

Select OrgTree: Orgchart 7 (31-Mar-2006 --- 30-Mar-2007) Ats. All Del. All Working Hours Extra Working Hours

Select Date: << < 11/02/2006 > >> Working Day (Thursday 02-Nov-2006) Attendance

| Position | Job Code | Employee Name | Working | | Working Total Hrs. | Over Time Total Hrs. | Replacement Total Hrs. |
|-------------------------|----------|----------------------------|---------|-------|--------------------|----------------------|------------------------|
| | | | ATS | Shift | | | |
| Chief Executive Officer | 8 | IR0081 Megat Baharudin | | | | | |
| Chief Tech Officer | 7 | IR0042 Shankaran Sugandhan | P | L | 8:06 | 1:00 | 1:00 |
| Basic Research | 17 | IR0008 Badrulhisham Fauzi | P | | 9:36 | | |
| Research 1 | 5 | IR0011 khk khk | P | | 9:36 | | |
| Research 2 | 16 | IR0007 Azura Fariq | P | | 9:36 | | |
| Test Technician | 8 | IR00110 Shahulk Tamin | P | | 9:36 | | |
| Marketing | 14 | IR0027 Haimy Mahdi | P | | 9:36 | | |
| Markt. Manager 1 | 14 | IR00124 William Taylor | | | | | |
| Markt. Manager 3 | 14 | IR00126 Zakuan Sudiran | P | | 9:36 | | |
| markt. Manager 2 | 14 | IR00125 Zaitulana Zaotul | P | | 9:36 | | |
| Operations | 5 | IR0009 Bawani Ho | | L | | | |
| * Engineering | 2 | IR00101 Roslee Mutalib | P | | 9:36 | | |
| Production | 10 | IR00100 Rokiah Mustaq | | | | | |
| * Treatment | 4 | IR0017 Sridevi Sangkar | | | | | |
| * Bicell | 2 | IR0024 Shirlene Stanza | | | | | |
| * Cells | 20 | IR0018 Dharmarajah Paagal | | | | | |
| * FDP | 20 | IR0021 Eswari Raman | | | | | |

Who's having a good attendance?

Which department has the highest absenteeism?

Provide reports of attendances.



Project Tools & Techniques



Projects Menu



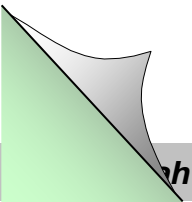
1. [Six Sigma Project](#)
2. [Voice of Customer](#)
3. [Quality Function Deployment](#)
4. [Failure Mode Effects Analysis](#)
5. [Control Plan Methodology](#)
6. [7 QC Tools](#)
7. [New Quality Tools](#)
8. [Advanced Statistical Tools](#)
9. [Benchmarking](#)
10. [Statistical Process Control](#)
11. [Measurement System Analysis](#)
12. [Hypothesis Testing](#)
13. [Design of Experiments](#)
14. [Dynamic Control Plan](#)
15. [Service Quality](#)
16. [Customer Satisfaction Index](#)
17. [Customer Complaints Mgmt](#)
18. [Cycle Time Analysis](#)
19. [Root Cause Analysis](#)
20. [Healthcare FMEA](#)
21. [Incident Reporting](#)
22. [Patient Satisfaction Questionnaire](#)
23. [National Indicator Approach](#)
24. [Malcolm Baldrige NQA](#)
25. [Joint Commissions International](#)
26. [Balanced Scorecard](#)
27. [Six Sigma](#)
28. [Net Promoter Score](#)
29. [Advanced Product Quality Planning](#)
30. [Product Part Approval Process](#)



6 Sigma Project



| Stages | Objective | Activities | Deliverables | Applet |
|------------------|---|---|---|-------------------|
| Define | To use Vital X to decide on important variables | | | Project Plan |
| | | Compare the potential importance of variables | Variables and how Vital they are | Vital X |
| Measure | To weight variables according to their weightings | Weight variables | A weighted measure of variables | Wghtd. Scores |
| Analyse | A pair-wise hierarchical comparison | Compare variables in pairs | Distributions of what is favoured (or not favoured) | Hier. Comp. |
| Implement | To rank risks objectively | Assign Success Predictors according to their risk ratings | Determine the overall risk of the Success Predictors | Risk Asses. |
| Control | To deliberate the Suppliers, Inputs, Process, Outputs and Customers | Brainstorm on the Suppliers, Inputs, Process, Outputs and Customers | Pertinent Suppliers, Inputs, Process, Outputs and Customers | SIPOC |
| | | | | Adv. SIPOC |





Voice of Customer (VOC)



Things Gone Wrong

Please Inform us About any trouble you have had with the product.
Please Mark an CROSS in each box next to the item you have had trouble with.

Key
OK
X Trouble

Close Expand All Collapse All

- Punching In IOL
- High Thickness In Loop
- Late Delivery
- Poor Packaging
- No Efficient Customer Service

What went right?
What went wrong?
Perform Kano Analysis!

Identify Customer Needs Objectively

iCT-M is custom built for VOC

Export VOC data to the next step - QFD

Voice Of Value Table 1

| Demanding Quality | 100 | Fairchild | Rational | Philips | Sharp | Average Data |
|--------------------------|-----|-----------|----------|---------|-------|--------------|
| Willing at seminars | 16 | 152 | 0 | 0 | 250 | 100.000 |
| Needs no training to use | 18 | 4 | 0 | 0 | 250 | 62.500 |
| Can buy anywhere | 27 | 150 | 100 | 0 | 0 | 62.500 |
| Repair centres | 13 | 200 | 0 | 0 | 0 | 90.000 |
| Immediate replacement | 23 | 0 | 255 | 0 | 200 | 112.500 |
| Easy to use | 34 | 0 | 0 | 0 | 75 | 18.750 |
| High image value | 27 | 0 | 0 | 0 | 5 | 0 |
| Beautiful look | 20 | 0 | 100 | 105 | 0 | 90.000 |
| Reasonable price | 14 | 0 | 5 | 175 | 0 | 43.750 |
| Will last a long time | 10 | 0 | 0 | 0 | 0 | 0 |

Insert User

| ID | Name | Title | Company | Action |
|----|----------------|-----------------|------------------------|--------|
| 1 | Jack Nicholson | Manager | Electronics Enterprise | Edit |
| 2 | Nina Anderson | Tip Top Fashion | Body Show | Edit |
| 3 | ad | ad | ad | Edit |

Voice Of Value Table 2

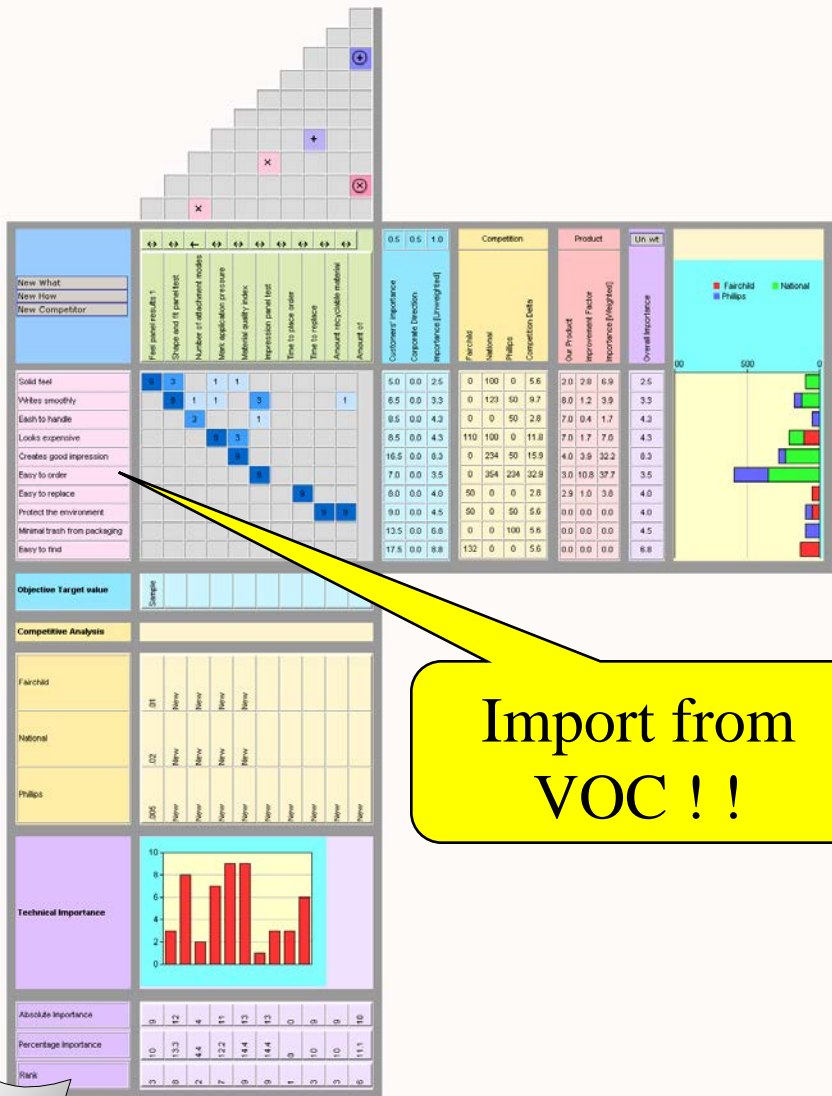
| Demanding Quality | 200 | | 2006 | | | Average Data | Importance | Value |
|------------------------------|-----|-----------|----------|---------|-------|--------------|------------|-------|
| | 100 | Fairchild | Rational | Philips | Sharp | | | |
| Solid Feel | 20 | 0 | 100.0 | 0 | 0 | 100 | 10.00 | 5.00 |
| Whites smoothly | 20 | 0 | 123.0 | 50.0 | 0 | 173 | 10.00 | 8.65 |
| Easy to handle | 10 | 0 | 0 | 50.0 | 0 | 50 | 5.00 | 2.50 |
| Easy to find | 20 | 132.0 | 100.0 | 0 | 213.0 | 445 | 10.00 | 22.25 |
| Looks expensive | 25 | 110.0 | 100.0 | 60.0 | 0 | 260 | 12.50 | 13.00 |
| Creates good impression | 25 | 0 | 234.0 | 0 | 0 | 234 | 12.50 | 11.70 |
| Easy to order | 25 | 50.0 | 254.0 | 234.0 | 0 | 538 | 12.50 | 20.90 |
| Easy to replace | 10 | 50.0 | 0 | 0 | 0 | 50 | 5.00 | 2.50 |
| Protect the environment | 30 | 0 | 0 | 90.0 | 0 | 90 | 15.00 | 2.50 |
| Minimal trash from packaging | 15 | 0 | 0 | 100.0 | 0 | 100 | 7.50 | 5.00 |

Insert User

| ID | Name | Title | Company | Action |
|----|-----------|-----------------|-----------------|--------|
| 1 | Alexander | QA Manager | Estrada Milling | Edit |
| 2 | Grady | Finance Manager | Amsted Bank Ltd | Edit |



Quality Function Deployment (QFD)



- ICT-Manufacturing
 - Graphic
 - Simple
 - Easy
- Alternatives
 - Using Excel?
 - Not easy to modify
 - Needs macro programming
 - Using Minitab?
 - Try teaching technicians
 - Consider site licenses
 - Consider upgrade costs

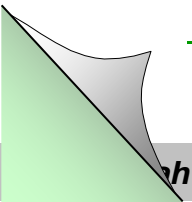


Failure Mode And Effect Analysis

| No | Part | Function | Potential Effects of Failure | Potential Causes of Failure | S | Potential Failure Mode | O | C | Current Controls Prevention | Current Controls Detection | D | RPN |
|------|------------------------|-----------------------------|------------------------------|-----------------------------|---|------------------------|---|----|-----------------------------|----------------------------|---|-----|
| -1 | Imported from F-Matrix | New Function | | | | | | | | | | |
| 1.1 | | Ink flow rate | Ink drip | Stain on paper | 5 | Low viscosity | 7 | 35 | viscosity medium | Viscosity test | 7 | 245 |
| 1.2 | | Lead hardness | To dry | Breaks tip | 6 | Not enough wax | 3 | 18 | QA Inspection | QA Inspection | 3 | 54 |
| 1.3 | | Mechanical eject time | Tight spring | Nip not ejected | 8 | Spring hardness | 5 | 40 | Vendor quality control | Batch sampling | 8 | 320 |
| 1.4 | | Mechanism slowage clearance | Barell tip size small | Jammed lead | 8 | Squashed barell tip | 4 | 32 | Load single stand | 100% inspection | 6 | 192 |
| 1.5 | | Case strength | case collapses | Pen damaged | 3 | Sheet thickness low | 1 | 3 | Use standard sheet | Incoming QA Inspection | 5 | 15 |
| 1.6 | | Surface tackiness | Rubber Handle | Tacky pen | 4 | Low vulcanization | 5 | 20 | Batch test | Visual look | 3 | 60 |
| 1.7 | | Clip point clearance | Not enough spring | Pen drops from pocket | 6 | Clip tension low | 7 | 42 | Heat temper clip | Hand pull test | 4 | 168 |
| 1.8 | | Auxillary attach flatness | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.9 | | Top surface smoothness | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.10 | | Retract mechanism force | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.11 | | Writing point finish | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.12 | | Ink drying time | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.13 | | Lead antimudge | | | 0 | | 0 | 0 | | | 0 | 0 |
| 1.14 | | Shape aspect ratio | | | 0 | | 0 | 0 | | | 0 | 0 |

Import from QFD !!

- FMEA
 - Follows the criteria for FMEA application
- Import data
 - From previous QFD
 - Set criteria for import





Control Plan Methodology (CPM)



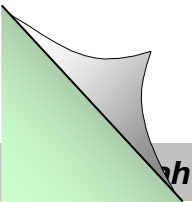
Belmah Strategies

Control Plan

| No | Part | Function | Machine, Device, Jig, Tools For Mfg. | No | Product | Process | Spec | Char. Class | Prod / Proc | Spec / Tol | Evaluation | Measurement Technique | Samp Size | Samp Freq | Control M |
|------|------------------------|-----------------------------|--------------------------------------|-----|---------|---------|------|-------------|------------------------|------------|------------|-----------------------|-----------|-----------|-----------|
| 1 | Imported from F-Matrix | New Function | | | | | | | | | | | | | |
| 1.1 | | Ink flow rate | Ink injector, injection jig | 138 | Product | - | - | | 3.4 < vis | <6.5 | | Viscometer range read | 20 | 5 | Vis |
| 1.2 | | Lead hardness | Instrom tensioned | 12 | Product | - | - | | >1.2 Nm | | | Tensile Strength | 5 | 4 | Q. |
| 1.3 | | Mechanical eject time | Stopwatch timer | 60 | Product | - | - | | <0.5 sec | | | Timer mechanism | 10 | 2 | Vend |
| 1.4 | | Mechanism slowage clearance | Go No-Go gage | 3 | Product | - | - | | Go No-Go | | | Go No-Go Procedure | 3 | 5 | Use |
| 1.5 | | Case strength | Forming die | 118 | Product | - | - | | Depression of 2.125 cm | | | Depth micrometer | 1 | 10 | |
| 1.6 | | Surface tackiness | | | | | | | | | | | | | |
| 1.7 | | Clip point clearance | | | | | | | | | | | | | |
| 1.8 | | Auxillary attach flatness | | | | | | | | | | | | | |
| 1.9 | | Top surface smoothness | | | | | | | | | | | | | |
| 1.10 | | Retract mechanism force | | | | | | | | | | | | | |
| 1.11 | | Writing point finish | | | | | | | | | | | | | |
| 1.12 | | Ink drying time | | | | | | | | | | | | | |
| 1.13 | | Lead antismudge | | | | | | | | | | | | | |
| 1.14 | | Shape aspect ratio | | | | | | | | | | | | | |

- Get the traceability
 - VOC to QFD to FMEA to Control Plan

Import from FMEA !!



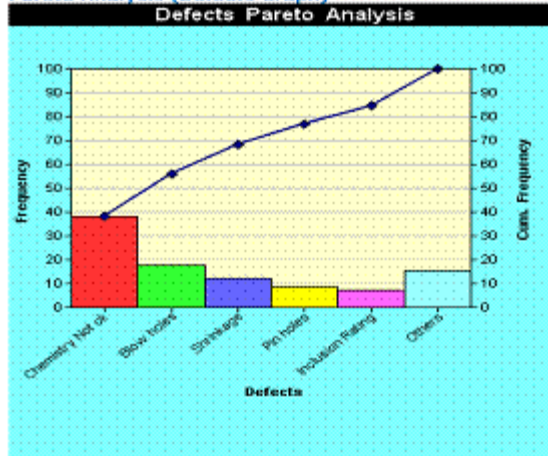


7 QC Tools

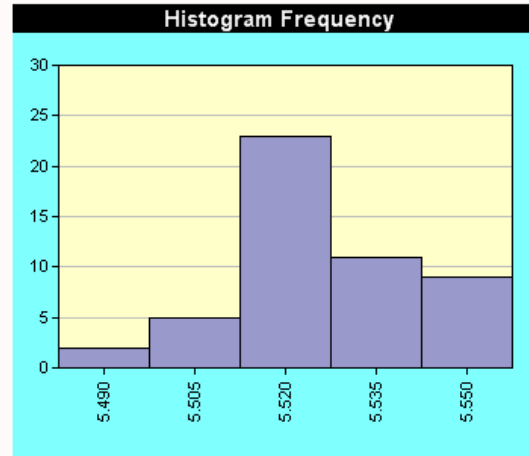


Pareto Analysis

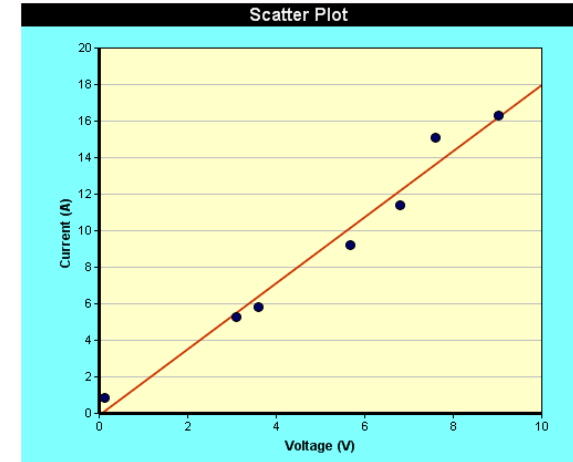
Pareto Analysis (Defects Graph)



Histogram



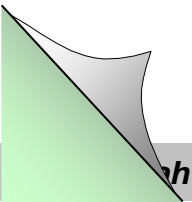
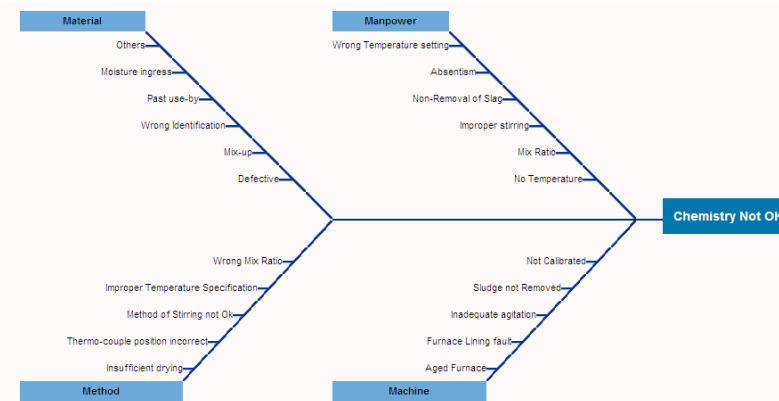
Scatter Plot



Tally Sheet

| No. | Tasks | Total | |
|-----|--------------|-----------|--|
| 1 | Very bad | 5 | |
| 2 | Bad | 8 | |
| 3 | Medium | 7 | |
| 4 | Good | 14 | |
| 5 | Very good | 8 | |
| | Total | 42 | |

Cause-Effect Diagram





New Quality Control Tools (NQCT)



Force Field Diagram

Edit

| What forces affect the implementation of 5S? | | | | | |
|--|----------------------------|------------|--------------------|------------|------------------------|
| Driving Forces | | | Restraining Forces | | |
| 1 | Provides Visual Management | 90 | ← | 30 | Requires training |
| 2 | Reduces accidents | 80 | ← | 70 | Resistance to change |
| 3 | Quick error detection | 50 | ← | 60 | Misunderstand concepts |
| 4 | Can find things easily | 80 | ← | 85 | More work again |
| 5 | Saves space | 70 | ← | 60 | What is wrong now |
| 6 | Reduces WIP | 90 | ← | 45 | Loss of overtime |
| Total | | 460 | | 350 | |

Result

Total Driving Forces **Greater Than** Total Restraining Forces

Affinity Diagram

Edit

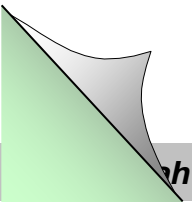
| Level 1 | Level 2 [Demanded Quality] | Level 3 [Reworded Data] |
|-----------------------|-------------------------------|---|
| Tensile Strength | Temperature | High Low |
| | Pressure | High Low |
| | Material Composition | Mix Ratio 1 Mix Ratio 2 Mix Ratio 3 |
| Surface Roughness | Grain Size | Small Medium Large |
| | Slag Removal | Every 2 Hours Every 4 Hours Every 6 Hours |
| | Impurities | Low Medium High |
| Dimensional Stability | Chemical Composition | Type 1 Type 2 Course |
| | Rapidness of Cooling | Slow Medium Fast |
| | Microstructure | Type 3 Fine |

All tools supported by iCT-M® software

Simple Gantt Chart

Edit

| No. | Activity | Time In Weeks | | | | | | | | | | | | | |
|-----|---------------------------|---------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 1 | Awareness Meeting | █ | | | | | | | | | | | | | |
| 2 | Managers briefing | | █ | █ | | | | | | | | | | | |
| 3 | Seiri activities | | | | █ | █ | █ | █ | | | | | | | |
| 4 | Seiton activities | | | | | | | █ | █ | | | | | | |
| 5 | Seiso activities | | | | | | | | █ | █ | | | | | |
| 6 | Seiketsu activities | | | | | | | | | █ | █ | | | | |
| 7 | Audit | | | | | | | | | | █ | █ | | | |
| 8 | Shitsuke activities | | | | | | | | | | | █ | █ | █ | |
| 9 | Selection of best 5S area | | | | | | | | | | | | █ | █ | █ |
| 10 | Reward | | | | | | | | | | | | | | █ |





Advance Quality Control Tools (AQCT)

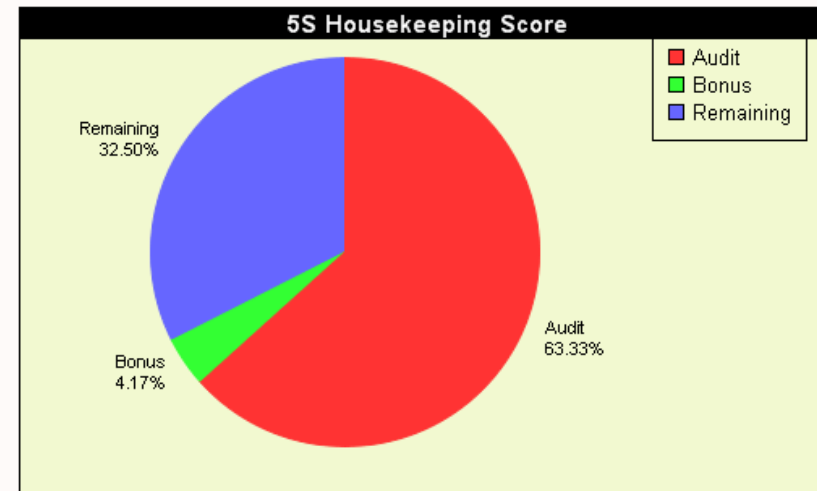


Belmah Strategies

5S House Keeping Evaluation Form

[Expand All](#) [Collapse All](#) [Edit](#)

| Factory : | | Metal Works | |
|-------------------------------|-------------------------------|---|----|
| Operation Site : | | Site 1 - Foundry | |
| Department : | | Quality Assurance | |
| Items | Focus | Scope | |
| Working Area | | | |
| 1 | Material parts | are they conveniently located and labeled for easy retrieval? | 8 |
| 2 | Work-in-process | are they conveniently located for easy handling? | 4 |
| 3 | Finished products | are they conveniently located and labeled for easy retrieval? | 6 |
| 4 | Defective/rejects | are they clearly labeled for separation from good items? | 8 |
| 5 | Machines/equipment | are they clean, asfe, well-maintained and convenient to operate? | 10 |
| 6 | Wiring/piping | are they laid out in a tidy, safe and convenient manner? | 2 |
| Tools and Jigs | | | |
| 1 | Dies/tools/jigs | are they conveniently labeled and placed at designated location? | 7 |
| 2 | Spare parts/lubricants | are they conveniently labeled and placed at designated location? | 6 |
| 3 | Containers/pallets | are they clean and conveniently placed at designated location? | 8 |
| 4 | Racks/shelves/cabinets | are they dust-free, tidy and conveniently labeled for items stored? | 5 |
| 5 | Carts/wagons/forklifts | are the well-maintained and placed at designated locations? | 9 |
| 6 | Lifts/conveyers/cranes | are they clean , tidy, safe, and well-maintained? | 6 |
| Office Area | | | |
| 1 | Desk/labels/chairs | are they clean and organized inside and outside? | 5 |
| 2 | Forms/files/records | are they up-to-date, easy to retrieve and at convenient locations? | 6 |
| 3 | Floors/passages/stairways | are they dust-free, tidy,safe and well-maintained? | 5 |
| 4 | Walls/windows/ceiling | are they dust-free, tidy,safe and well-maintained? | 6 |
| 5 | Lighting/ventilation | are they adequate for efficient operation? | 2 |
| 6 | Working wears/shoes | are they clean and do they present a good image? | 9 |
| Safety Aspects | | | |
| 1 | Safety devices | are they conveniently located for use and well-maintained? | 4 |
| 2 | Fire extinguishers/fire exits | are they adequate and cleaned regularly? | 5 |
| 3 | Cleaning tools/waste baskets | are they dust-free, tidy,safe and well-maintained? | 7 |
| 4 | Canteens/toilets/lockers | are they dust-free, tidy,safe and well-maintained? | 8 |
| 5 | External area/gardens | are they clean, tidy, safe and do they present a good image? | 9 |
| 6 | Security guards/car parks | are they clean, tidy, safe and do they present a good image? | 7 |
| Audit Score | | 152 | |
| Bonus Score | | 10 | |
| Total Score | | 162 | |
| No. of Items Evaluated | | 24 | |
| Total Score Possible | | 240 | |
| Percentage Score | | 67.50 | |

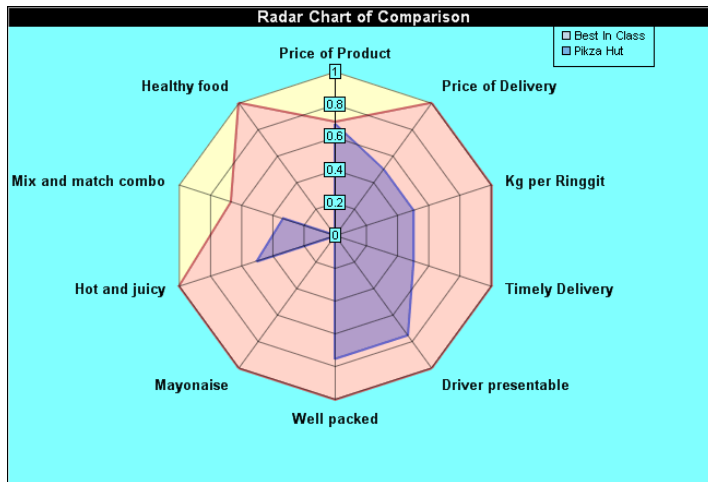




Benchmarking (BMK)



| No. | Key Success Factors | Competitor 1 | | | | Competitor 2 | | | |
|-------------------------|---------------------|--------------|------------|--------------|---------|--------------|-------------|--------------|-------------|
| | | Pikza Hut | Mac Donals | Kelly Rozers | Nandoos | Pikza Hut | Mac Donals | Kelly Rozers | Nandoos |
| 1 | Price of Product | 4.90 | 5.00 | 6.40 | 4.80 | 0.68 | 0.67 | 0.48 | 0.69 |
| 2 | Price of Delivery | 2.00 | 1.00 | 3.00 | 3.00 | 0.50 | 1.00 | 0.00 | 0.00 |
| 3 | Kg per Ringgit | 0.25 | 0.20 | 0.28 | 0.30 | 0.50 | 0.00 | 0.80 | 1.00 |
| 4 | Timely Delivery | 45.00 | 50.00 | 30.00 | 60.00 | 0.50 | 0.33 | 1.00 | 0.00 |
| 5 | Driver presentable | 4.00 | 3.00 | 2.00 | 5.00 | 0.75 | 0.50 | 0.25 | 1.00 |
| 6 | Well packed | 4.00 | 3.00 | 2.00 | 5.00 | 0.75 | 0.50 | 0.25 | 1.00 |
| 7 | Mayonaise | 20.00 | 40.00 | 25.00 | 30.00 | 0.00 | 0.00 | 0.50 | 1.00 |
| 8 | Hot and juicy | 65.00 | 70.00 | 75.00 | 0.00 | 0.50 | 1.00 | 0.50 | 0.00 |
| 9 | Mix and match combo | 6.00 | 5.00 | 8.00 | 4.00 | 0.33 | 0.17 | 0.67 | 0.00 |
| 10 | Healthy food | 1.00 | 3.00 | 5.00 | 1.00 | 0.00 | 0.50 | 1.00 | 0.00 |
| Weighted Average | | | | | | 0.45 | 0.47 | 0.54 | 0.47 |
| Rank | | | | | | 4 | 3 | 1 | 2 |



| No. | Key Success Factors | Pikza Hut | Mac Donals | Kelly Rozers | Nandoos | Competitor Check |
|-----|---------------------|-----------|------------|--------------|---------|------------------|
| 1 | Price of Product | | 3 | | | Not OK |
| 2 | Price of Delivery | | 9 | | | OK |
| 3 | Kg per Ringgit | | 9 | 3 | | OK |
| 4 | Timely Delivery | | | | 9 | OK |
| 5 | Driver presentable | | 3 | | 9 | OK |
| 6 | Well packed | | | 9 | | OK |
| 7 | Mayonaise | | | | 9 | OK |
| 8 | Hot and juicy | | | 9 | | OK |
| 9 | Mix and match combo | | 9 | | | OK |
| 10 | Healthy food | | 3 | | 9 | OK |



Key Success Factors

Edit

| Category | No. | Key Success Factors | Measure | Objective | Weights | Target | Units | Worst | Best |
|----------|-----|---------------------|----------------------------|----------------------------|---------|-----------|-------|-------|------|
| Price | 1 | Price of Product | Based on similar burger | Must be value provider | 1.0 | Small | RM | 10.0 | 2.5 |
| | 2 | Price of Delivery | Transport charges | Must be cheapest | 1.0 | Small | RM | 3.0 | 1.0 |
| | 3 | Kg per Ringgit | Weigh only the burger meat | Value on great meat | 1.0 | Large | Kg | 0.2 | 0.3 |
| Features | 4 | Timely Delivery | Time taken to deliver | Deliver within 30 minutes | 1.0 | Small | mins | 60.0 | 30.0 |
| | 5 | Driver presentable | Driver is neatly dressed | Smart dress, tie and shoes | 1.0 | Attribute | -- | 1.0 | 5.0 |
| | 6 | Well packed | Comes a box without spills | Moulded trays | 1.0 | Attribute | -- | 1.0 | 5.0 |
| Product | 7 | Mayonaise | Gives the right flavor | Just right taste | 1.0 | Nominal | gm | 20.0 | 40.0 |
| | 8 | Hot and juicy | Not cold and dry | Delicious to eat | 1.0 | Nominal | oC | 60.0 | 80.0 |
| | 9 | Mix and match combo | Good combination available | Great variety | 1.0 | Large | Units | 4.0 | 10.0 |
| | 10 | Healthy food | Not seen as junk food | Health conscious | 1.0 | Attribute | Size | 1.0 | 5.0 |

Note :

Weights may be assigned as an absolute number (e.g. 1, 5, etc.).
 Weights may be assigned as a deviation from 1 (e.g. 0.9, 1.1, etc.).
 All weights are normalized where necessary.

At least 3 Key Success Factor names and values are necessary to draw a Radar Chart.

Changing Weights, Target, Worst or Best values will update Benchmark results.



Competitors



Competitors

Edit

| No. | Key Success Factors | Pikza Hut | Mac Donalds | Kelly Rozers | Handoos | Competitor Check |
|-----|---------------------|-----------|-------------|--------------|---------|------------------|
| 1 | Price of Product | | 3 | | | Not OK |
| 2 | Price of Delivery | | 9 | | | OK |
| 3 | Kg per Ringgit | | 9 | 3 | | OK |
| 4 | Timely Delivery | | | | 9 | OK |
| 5 | Driver presentable | | 3 | | 9 | OK |
| 6 | Well packed | | | 9 | | OK |
| 7 | Mayonaise | | | | 9 | OK |
| 8 | Hot and juicy | | | 9 | | OK |
| 9 | Mix and match combo | | 9 | | | OK |
| 10 | Healthy food | | 3 | | 9 | OK |

Note :

The Competitor Check column must have all OK.
Not OK implies there is no suitable Competitor for that KSF comparison.



Benchmark



Benchmark

Edit

Measure Objective Weights & limits Competitor Notes Competitor Points Competitor Marks
 Best In Class Best Practice

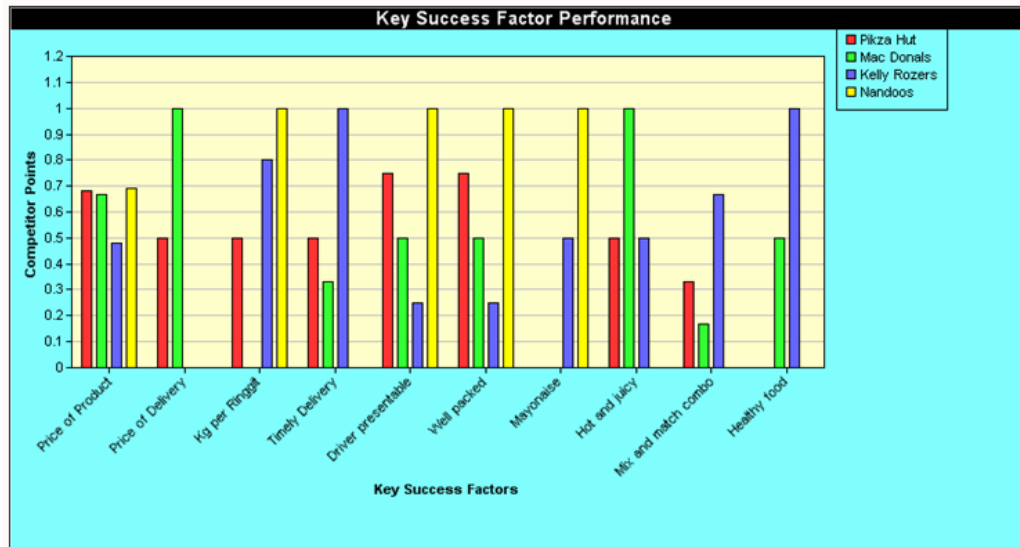
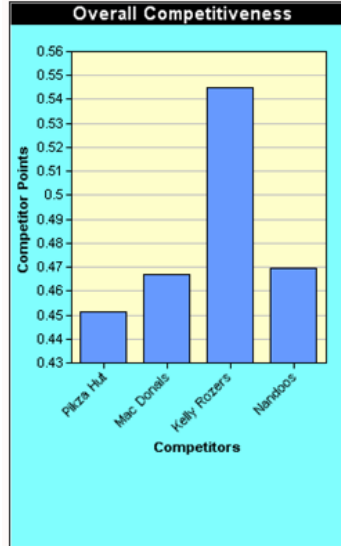
| No. | Key Success Factors | Measure | Objective | Pikza Hut | Mac Donals | Kelly Rozers | Handoos | Pikza Hut | Mac Donals | Kelly Rozers | Handoos | Best Practice |
|------------------|---------------------|----------------------------|----------------------------|-----------|------------|--------------|---------|-----------|------------|--------------|---------|--------------------|
| 1 | Price of Product | Based on similar burger | Must be value provider | 4.90 | 5.00 | 6.40 | 4.80 | 0.68 | 0.67 | 0.48 | 0.69 | Less than RM5.00 |
| 2 | Price of Delivery | Transport charges | Must be cheapest | 2.00 | 1.00 | 3.00 | 3.00 | 0.50 | 1.00 | 0.00 | 0.00 | Deliver to 2 km |
| 3 | Kg per Ringgit | Weigh only the burger meat | Value on great meat | 0.25 | 0.20 | 0.28 | 0.30 | 0.50 | 0.00 | 0.80 | 1.00 | 0.28 kg |
| 4 | Timely Delivery | Time taken to deliver | Deliver within 30 minutes | 45.00 | 50.00 | 30.00 | 60.00 | 0.50 | 0.33 | 1.00 | 0.00 | 30 mins |
| 5 | Driver presentable | Driver is neatly dressed | Smart dress, tie and shoes | 4.00 | 3.00 | 2.00 | 5.00 | 0.75 | 0.50 | 0.25 | 1.00 | Neat and tidy |
| 6 | Well packed | Comes a box without spills | Moulded trays | 4.00 | 3.00 | 2.00 | 5.00 | 0.75 | 0.50 | 0.25 | 1.00 | Styrofoam |
| 7 | Mayonaise | Gives the right flavor | Just right taste | 20.00 | 40.00 | 25.00 | 30.00 | 0.00 | 0.00 | 0.50 | 1.00 | 30 gms |
| 8 | Hot and juicy | Not cold and dry | Delicious to eat | 65.00 | 70.00 | 75.00 | 0.00 | 0.50 | 1.00 | 0.50 | 0.00 | 70 °C wrap in foil |
| 9 | Mix and match combo | Good combination available | Great variety | 6.00 | 5.00 | 8.00 | 4.00 | 0.33 | 0.17 | 0.67 | 0.00 | 8 combinations |
| 10 | Healthy food | Not seen as junk food | Health conscious | 1.00 | 3.00 | 5.00 | 1.00 | 0.00 | 0.50 | 1.00 | 0.00 | OK |
| Weighted Average | | | | | | | | 0.45 | 0.47 | 0.54 | 0.47 | |
| Rank | | | | | | | | 4 | 3 | 1 | 2 | |



Benchmark Results



Benchmark Results





Radar Chart



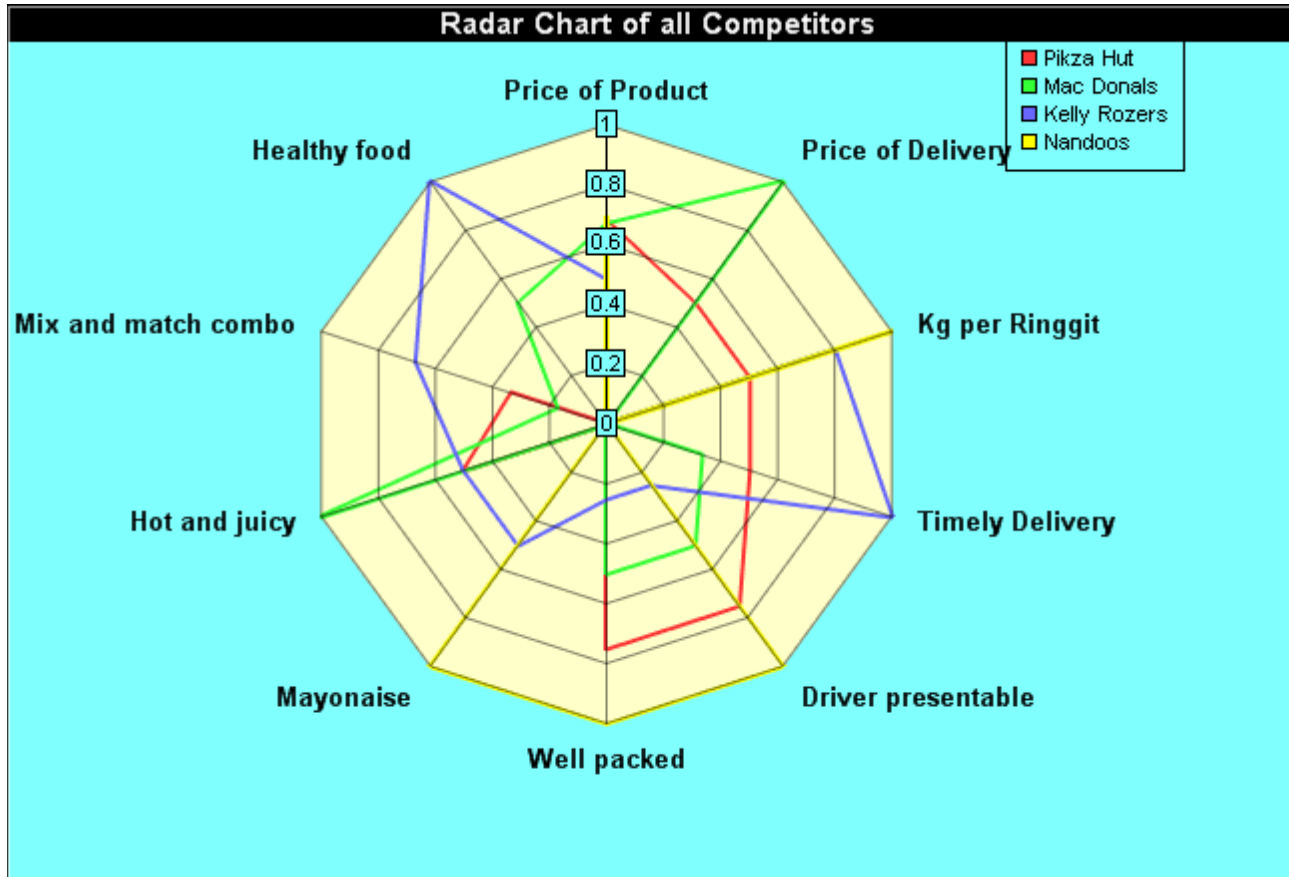
Radar Chart

+.0
 .00
 Competitor Marks
 Best In Class
 Best Practice
 [View](#)

| No. | Key Success Factors | Pikza Hut | Mac Donalds | Kelly Rozers | Handoos | Pikza Hut | Best in Class | Difference | Best Practice |
|------------------|---------------------|-----------|-------------|--------------|---------|-----------|---------------|------------|--------------------|
| 1 | Price of Product | 0.680 | 0.667 | 0.480 | 0.693 | 0.680 | 0.693 | -0.013 | Less than RM5.00 |
| 2 | Price of Delivery | 0.500 | 1.000 | 0.000 | 0.000 | 0.500 | 1.000 | -0.500 | Deliver to 2 km |
| 3 | Kg per Ringgit | 0.500 | 0.000 | 0.800 | 1.000 | 0.500 | 1.000 | -0.500 | 0.28 kg |
| 4 | Timely Delivery | 0.500 | 0.333 | 1.000 | 0.000 | 0.500 | 1.000 | -0.500 | 30 mins |
| 5 | Driver presentable | 0.750 | 0.500 | 0.250 | 1.000 | 0.750 | 1.000 | -0.250 | Neat and tidy |
| 6 | Well packed | 0.750 | 0.500 | 0.250 | 1.000 | 0.750 | 1.000 | -0.250 | Styrofoam |
| 7 | Mayonaise | 0.000 | 0.000 | 0.500 | 1.000 | 0.000 | 1.000 | -1.000 | 30 gms |
| 8 | Hot and juicy | 0.500 | 1.000 | 0.500 | 0.000 | 0.500 | 1.000 | -0.500 | 70 °C wrap in foil |
| 9 | Mix and match combo | 0.333 | 0.167 | 0.667 | 0.000 | 0.333 | 0.667 | -0.333 | 8 combinations |
| 10 | Healthy food | 0.000 | 0.500 | 1.000 | 0.000 | 0.000 | 1.000 | -1.000 | OK |
| Weighted Average | | 0.451 | 0.467 | 0.545 | 0.469 | 0.451 | 0.551 | | |
| Rank | | 4 | 3 | 1 | 2 | | | | |



Radar Chart of all Competitors





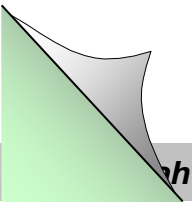
Action Program



Action

Best In Class
 Improvements
 Planning

| No. | Key Success Factors | Proposed Action | Improvement Target | PIC | Dateline | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|-----|---------------------|-----------------------|--------------------|---------|-------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 1 | Price of Product | No action needed | | Allen | 27-Feb-2007 | █ | █ | | | | | | | | | | | | | | |
| 2 | Price of Delivery | Increase our distance | | Brian | 13-Mar-2007 | | █ | █ | █ | | | | | | | | | | | | |
| 3 | Kg per Ringgit | Best No action | | Collin | 13-Feb-2007 | | | █ | █ | █ | █ | █ | | | | | | | | | |
| 4 | Timely Delivery | Reduce the time | 25 minutes | Denise | 06-Mar-2007 | | | | █ | █ | █ | | | | | | | | | | |
| 5 | Driver presentable | Improve neatness | Dress code | Elaine | 13-Mar-2007 | | | | | █ | █ | █ | █ | █ | | | | | | | |
| 6 | Well packed | Use sealed bags | Aluminium foil | Frances | 20-Mar-2007 | | | | | | | | █ | █ | █ | █ | | | | | |
| 7 | Mayonaise | | | | | | | | | | | | | | | | | | | | |
| 8 | Hot and juicy | | | | | | | | | | | | | | | | | | | | |
| 9 | Mix and match combo | | | | | | | | | | | | | | | | | | | | |
| 10 | Healthy food | | | | | | | | | | | | | | | | | | | | |

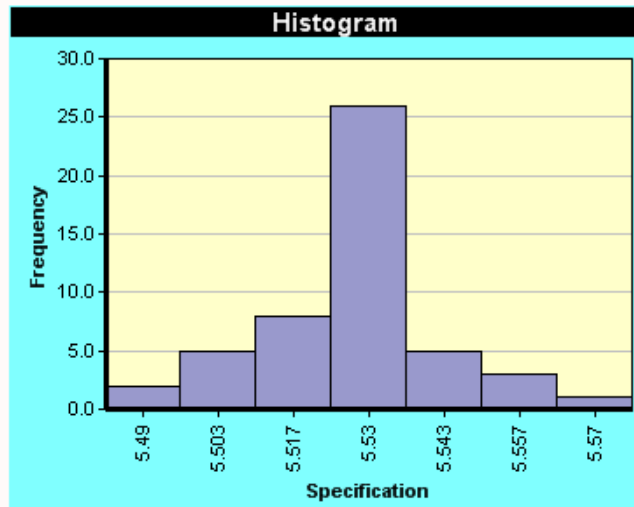




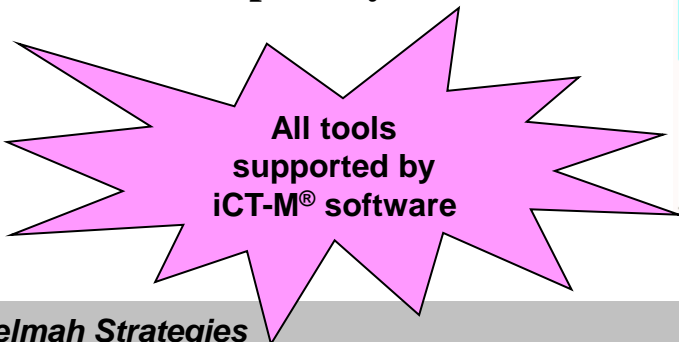
Statistical Process Control (SPC)



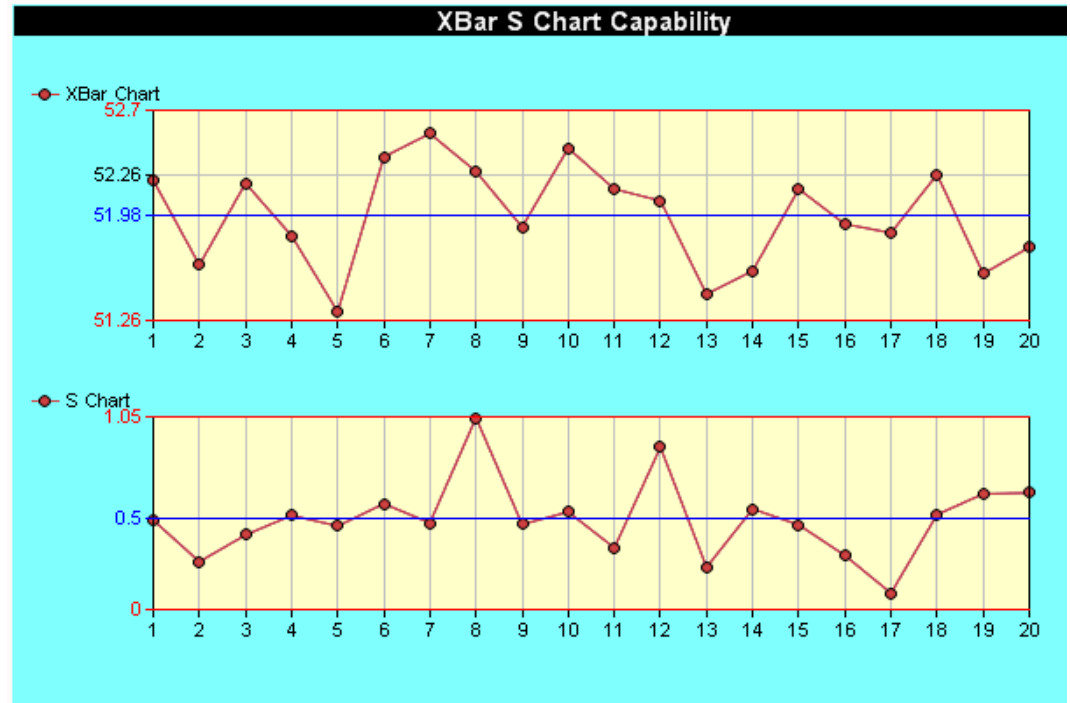
| Graph Interval | | Reading | |
|----------------|-------|--------------------------|----------|
| No. Of Cells | 7 | Slope | 59.810 |
| Cell Interval | 0.013 | Constant | -330.160 |
| Display By | Freq. | Int 3s | 5.570 |
| Spreads | | Machine Capability | |
| Spec | 0.100 | Cm | 0.997 |
| Process | 0.100 | Machine Capability Index | |
| Half Process | 0.050 | Cmk | 0.589 |



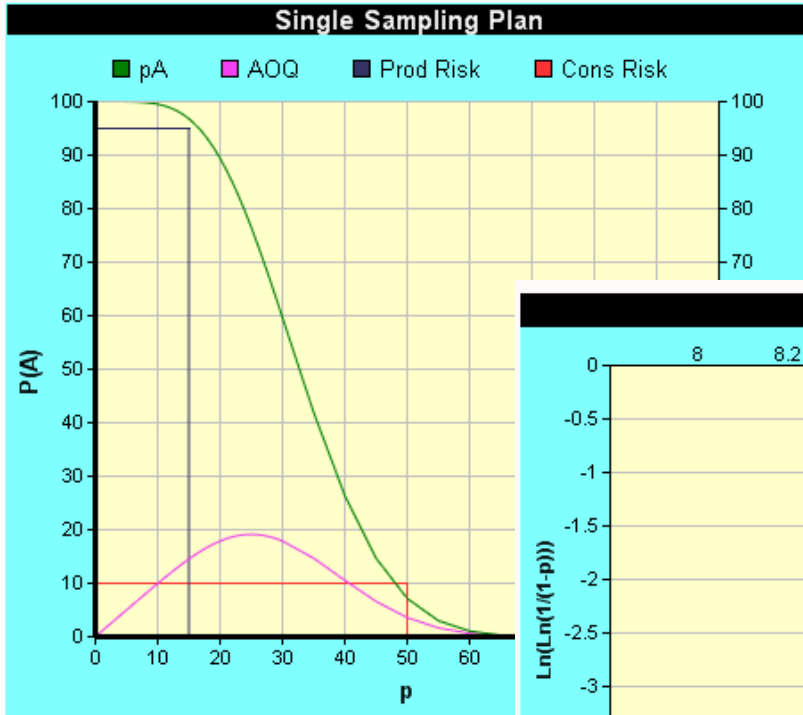
Machine Capability



Xbar Sigma Chart

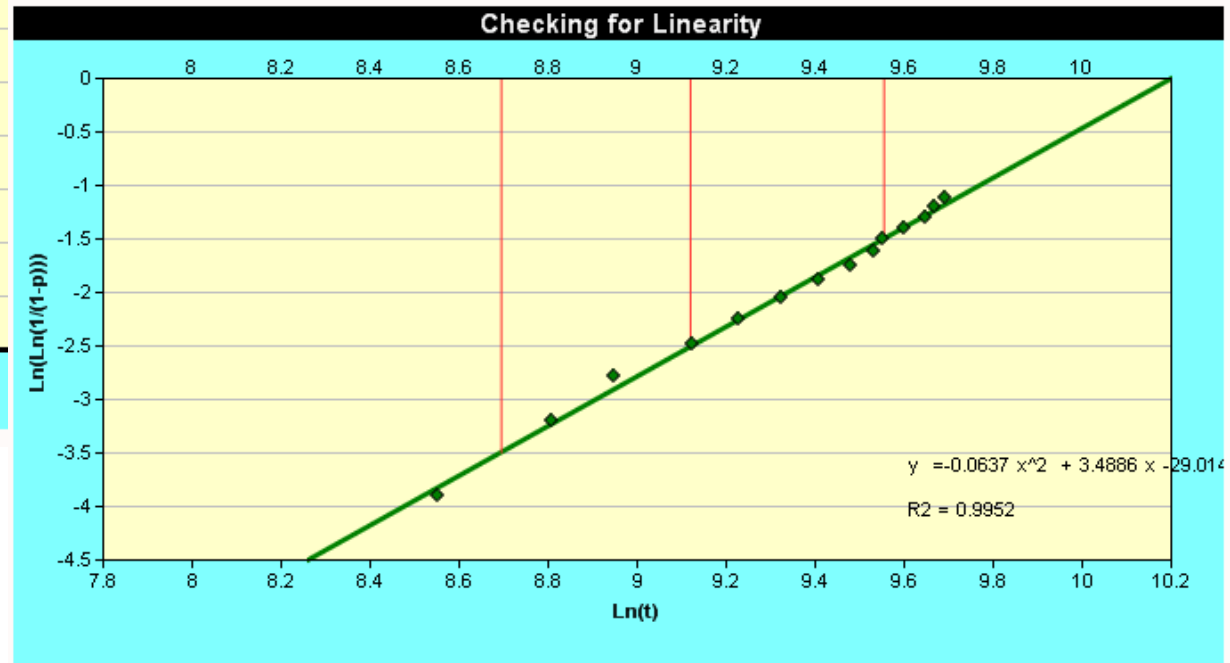


| No | Remark |
|----|--|
| 5 | Point is noted to be close to the Lower Control Limit. |
| 6 | Resample shows the process is under control. |

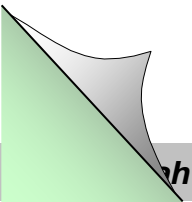


Single Sampling Plan

Reliability Studies



| Corrected Predictions | | | | | Shape factor Beta (b) | | 3.484 | 2.320 | Wear Out |
|-----------------------|-----------|---------|--------|-----------------|---|-----------|-----------|----------------------------------|----------|
| % Failure | Time (t) | P(Fail) | Ln(t) | Ln(Ln(1/(1-p))) | Minimum life | 4817.767 | 5285.359 | (i.e. 0% of population fails) | |
| 10.000 | 10208.667 | 0.100 | 9.231 | -2.250 | B10 Maintenance replacement life | 15249.706 | 15026.434 | (i.e. 10% of population fails) | |
| 50.000 | 22996.687 | 0.500 | 10.043 | -0.367 | Mean life | 26186.849 | 27814.454 | (i.e. 50% of population fails) | |
| 63.200 | 26929.152 | 0.632 | 10.201 | 0.000 | Characteristic life Alpha (a) | 29088.953 | 31746.919 | (i.e. 63.2% of population fails) | |



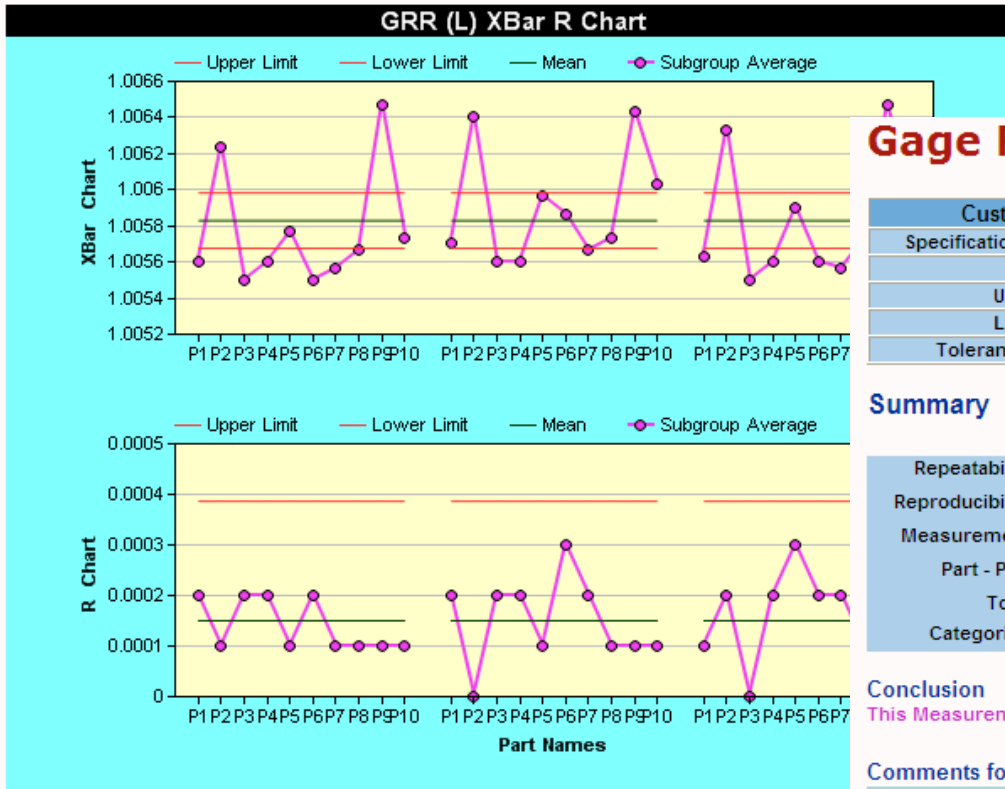


Measurement Systems Analysis (MSA)



Gage Repeatability and Reproducibility (Long Term)

| | X-Bar | R |
|------|--------|--------|
| UCL | 1.0060 | 0.0004 |
| Mean | 1.0058 | 0.0001 |
| LCL | 1.0057 | 0.0000 |



Gage Repeatability and Reproducibility (Long

| Customer Specification | | | |
|------------------------|-------|---|-------|
| Specification | 1.006 | + | 0.002 |
| | | - | 0.002 |
| USL | 1.008 | | |
| LSL | 1.004 | | |
| Tolerance | 0.004 | | |

Summary

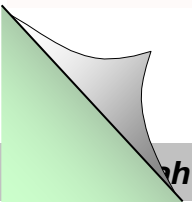
| | | m | g | d2* | Stdev | 5.15x | %TV | %tol | | |
|-----------------|-----|----------|-----|-----|---------|---------|--------|-------|-------|-------|
| Repeatability | Se | Trials=r | 3 | 30 | 1.693 | 0.00009 | 0.0005 | 28.48 | 11.41 | EV |
| Reproducibility | So | Apprs=k | 3 | 1 | 1.91 | 0.00007 | 0.0004 | 22.40 | 8.97 | AV |
| Measurement | Sm | | | | 0.00011 | 0.0006 | 36.23 | 14.51 | | GRR |
| Part - Part | Sp | Parts=n | 10 | 1 | 3.18 | 0.00029 | 0.0015 | 93.21 | 37.34 | PV |
| Total | St | | | | 0.00031 | 0.0016 | 100.00 | 40.06 | | Total |
| Categories | ndc | | 3.6 | | | | | | | |

Conclusion

This Measurement System is Conditionally Acceptable

Comments for this Study

ICT-Manufacturing software provides an easy method of conducting the GRR Long Method. The Method is also integrated with the ANOVA Method.





Hypothesis Testing (HYP)



Decision Rule

Left Tail

Alpha = 0.05

$t_{\alpha, v} = 1.73$

Accept H_0 if $-t_{\alpha, v} < t_{sample}$

Reject H_0 otherwise

Both Tails

Alpha = 0.05

$t_{\alpha/2, v} = 2.09$

Accept H_0 if $-t_{\alpha/2, v} < t_{sample} < t_{\alpha/2, v}$

Reject H_0 otherwise

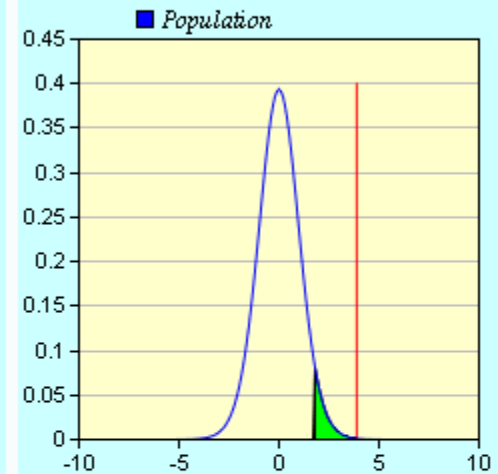
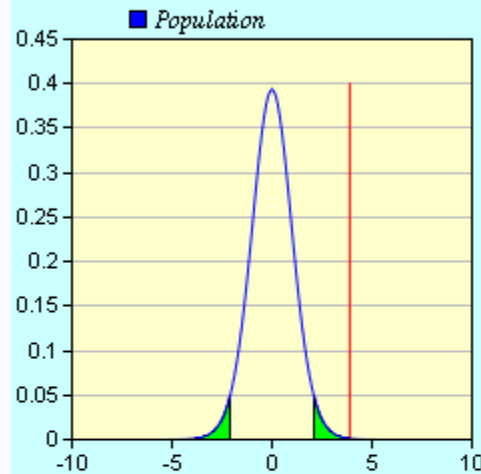
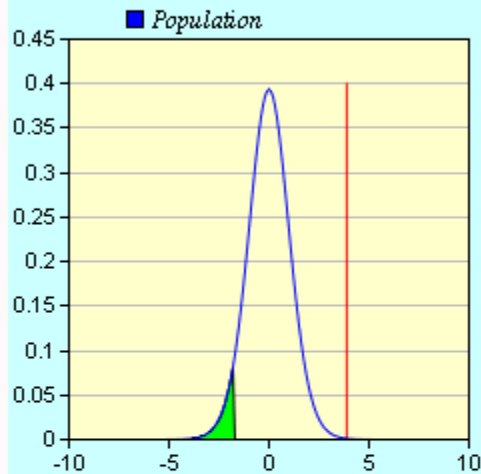
Right Tail

Alpha = 0.05

$t_{\alpha, v} = 1.73$

Accept H_0 if $t_{sample} < t_{\alpha, v}$

Reject H_0 otherwise



Calculate Test Statistic

$$t_{Sample} = \frac{(\bar{x} - \mu)}{\sqrt{\frac{S^2}{n}}} = 3.88$$

H_0 Accept

Test Statistic is not significant at 0.05

$$t_{Sample} = \frac{(\bar{x} - \mu)}{\sqrt{\frac{S^2}{n}}} = 3.88$$

H_0 Reject

Test Statistic is significant at 0.05

$$t_{Sample} = \frac{(\bar{x} - \mu)}{\sqrt{\frac{S^2}{n}}} = 3.88$$

H_0 Reject

Test Statistic is significant at 0.05

Conclusion

Not enough statistical evidence that the true mean is < than 24.00 .

Enough statistical evidence that the true mean is not 24.00 .

Enough statistical evidence that the true mean is > than 24.00 .

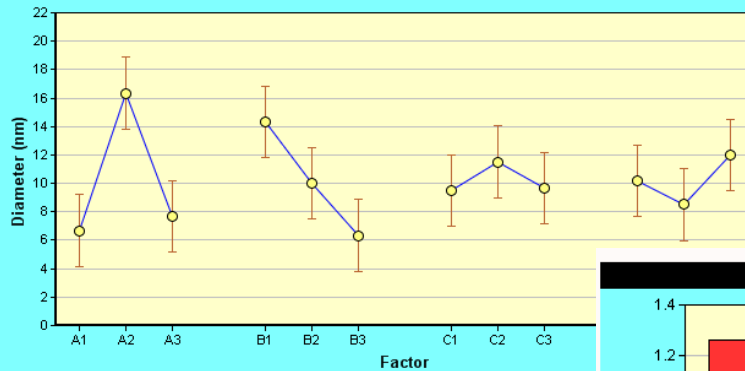


Design of Experiments (DOE)



TPM

Target Performance Measure

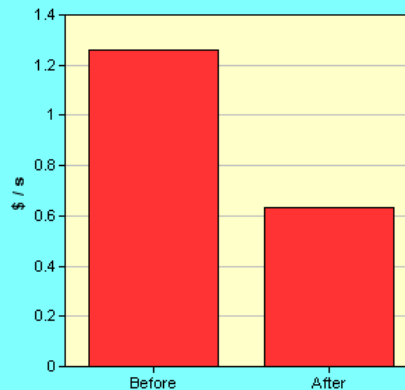


Analysis of Variance (TPM)

| Source | Pool | SSQ | Df | Var | F ratio | SSq | Rho |
|--------|------|---------|----|--------|---------|---------|--------|
| A | 0 | 678.22 | 2 | 339.11 | 73.46 | 668.99 | 55.46 |
| B | 0 | 384.89 | 2 | 192.44 | 41.69 | 375.66 | 31.14 |
| C | 1 | 29.56 | 2 | 14.78 | | | |
| D | 1 | 73.56 | 2 | 36.78 | | | |
| Err | 1 | 40.00 | 27 | 1.48 | | | |
| Pool | | 143.11 | 31 | 4.62 | 1.00 | 161.58 | 13.40 |
| St | | 1206.22 | 35 | 34.46 | | 1206.22 | 100.00 |
| | | 3761.78 | 1 | | | | |
| | | 4968.00 | 36 | | | | |

as a pooled error suggests low error

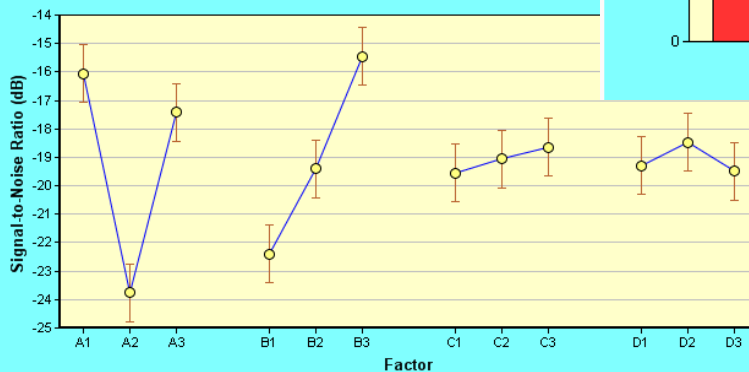
Conclusion



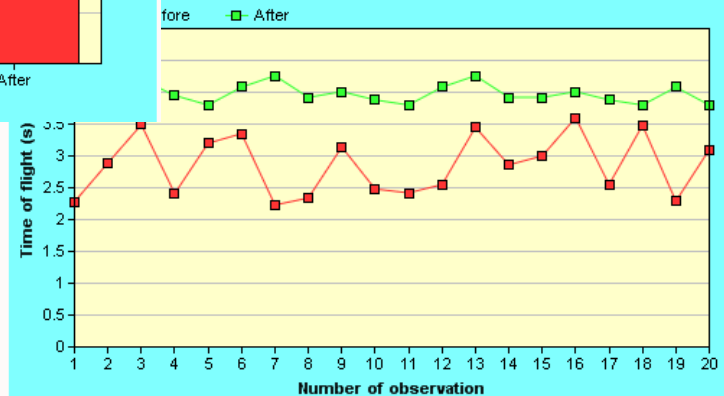
Comparison

NPM

Noise Performance Measure



Current and Optimized Process Data





Dynamic Control Plans (DCP)



Pre-launch Dynamic Control Plan

Edit

Arrange

Expand All

Collapse All

Show / Hide Column

Note : FMEA changes should be made in FMEA.

| No. | Part / Function | Potential Failure Mode | Spec | Type | Imp | Critical Factor | Control Method | Tool | Gage | Grr | CM | CP | Reaction Plan |
|-----|--------------------------|------------------------|------|------|-----|-----------------|----------------|------|------|-----|----|----|---------------|
| 1 | Imported from linked QFD | | | | | | | | | | | | |
| 1.1 | Material Data Sheet | Non compliance | | | | | | | | | | | |
| 1.2 | Viscosity test | Ink hardens | | | | | | | | | | | |
| 1.3 | Dimensional checks | Non fitting parts | | | | | | | | | | | |
| 1.4 | Printed manual | Missed in package | | | | | | | | | | | |
| 1.5 | Tight rollers | Roller housing crimp | | | | | | | | | | | |
| 1.6 | Standard sizes | Non fitting of parts | | | | | | | | | | | |
| 1.7 | Microfoil burst | Marking pressure high | | | | | | | | | | | |



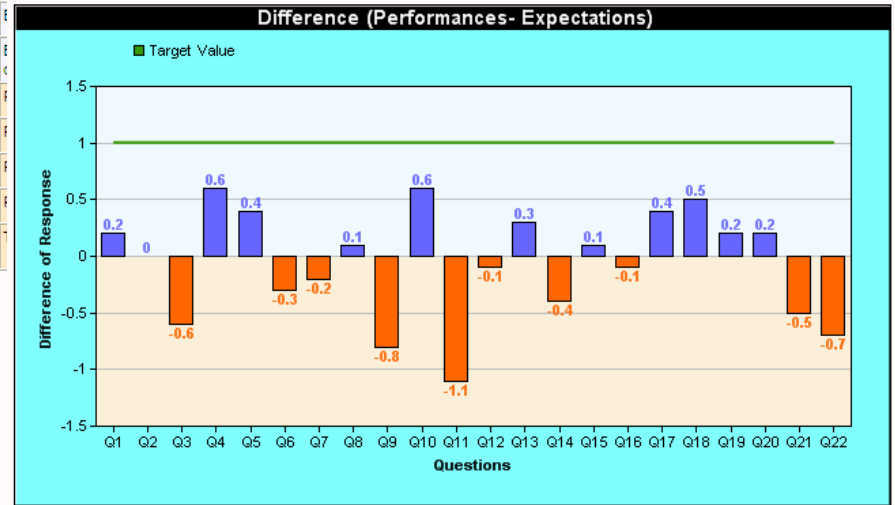
Service Quality



| Expectation | | | | | | |
|-------------|---|-----------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| No. | Description | 1 | 2 | 3 | 4 | 5 |
| Q1 | Excellent Hospitals will have modern looking equipment. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| Q2 | Physical facilities at excellent Hospitals will be visually appealing. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q3 | Employees at excellent Hospitals will be neat appearing. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q4 | Materials associated with the service (such as menu cards, pamphlets or marketing literature) will be visually appealing at an excellent Hospitals. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q5 | When excellent Hospitals promise to do something by a certain time, they do. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q6 | When a customer has a problem, excellent Hospitals will show a sincere interest in solving it. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q7 | Excellent Hospitals will perform the service right the first time. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q8 | Excellent Hospitals will provide the service at the time they promise to do so. | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q9 | Excellent Hospitals will insist on error free records. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q10 | Employees of excellent Hospitals will tell customers exactly when services will be performed. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q11 | Employees of excellent Hospitals will give prompt service to customers. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q12 | Employees of excellent Hospitals will always be willing to help customers. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q13 | Employees of excellent Hospitals will never be too busy to respond to customers requests. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q14 | The behavior of employees in excellent Hospitals will instill confidence in customers. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q15 | Customers of excellent Hospitals will feel safe in transactions. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| Q16 | Employees of excellent Hospitals will be consistently courteous with customers. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q17 | Employees of excellent Hospitals will have the knowledge to answer customers questions. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| Q18 | Excellent Hospitals will give customers individual attention. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q19 | Excellent Hospitals will have operating hours convenient to all their customers. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q20 | Excellent Hospitals will have employees who give customers personal attention. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q21 | Excellent Hospitals will have their customers best interests at heart. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q22 | The employees of excellent Hospitals will understand the specific needs of their customers. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| Performance | | | | | | |
|-------------|---|-----------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| No. | Description | 1 | 2 | 3 | 4 | 5 |
| Q1 | Rawatbagus Hospital has modern looking equipment. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q2 | Rawatbagus Hospital physical facilities are visually appealing. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q3 | Rawatbagus Hospital host desk employees are neat appearing. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q4 | Materials associated with the service (such as menu cards, pamphlets or brochures) are visually appealing at Rawatbagus Hospital. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q5 | When Rawatbagus Hospital promises to do something by a certain time, it does so. | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q6 | When you have a problem, Rawatbagus Hospital shows a sincere interest in solving it. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q7 | Rawatbagus Hospital performs the service right the first time. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q8 | Rawatbagus Hospital provides its service at the time it promises to do so. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q9 | Rawatbagus Hospital insists on error free records. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q10 | Employees in Rawatbagus Hospital tell you exactly when services will be performed. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q11 | Employees in Rawatbagus Hospital give you prompt service. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q12 | Employees in Rawatbagus Hospital are always willing to help you. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Q13 | Employees in Rawatbagus Hospital are never too busy to respond to your request. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| Q14 | The behavior of employees in Rawatbagus Hospital instills confidence in you. | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Q15 | You feel safe in your transactions with Rawatbagus Hospital. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |

| | | | |
|--------------|--|----------------|---------------------------------|
| W1 | The appearance of physical facilities, equipment, personnel and communication materials. | Tangibles | <input type="text" value="30"/> |
| W2 | Ability to perform the promised service dependably and accurately. | Reliability | <input type="text" value="30"/> |
| W3 | Willingness to help customers and provide prompt service. | Responsiveness | <input type="text" value="20"/> |
| W4 | Knowledge and courtesy of employees and their ability to convey trust and confidence. | Assurance | <input type="text" value="10"/> |
| W5 | Caring, individualised attention the firm provides its customers. | Empathy | <input type="text" value="10"/> |
| Total | | | 100 |





Likert Scale



Likert Scale : 5 Direction : (1) Strongly Disagree --- (5) Strongly Agree

| Scale | Description | Bahasa Malaysia |
|-------|-------------------|--------------------------------|
| 1 | Strongly Disagree | Sangat Tidak Setuju |
| 2 | Disagree | Tidak Setuju |
| 3 | Indifferent | Tidak Kisah (Tidak Berkecuali) |
| 4 | Agree | Setuju |
| 5 | Strongly Agree | Sangat Setuju |

| Grade No | Grade | Category | Description |
|----------|-------|--------------|------------------|
| -4 | F | Dissatisfied | Sev dissatisfied |
| -3 | F | Dissatisfied | Sev dissatisfied |
| -2 | E | Dissatisfied | Sev dissatisfied |
| -1 | D | Dissatisfied | Mid satisfied |
| 0 | C | Satisfied | Mid satisfied |
| 1 | B | Satisfied | Mid satisfied |
| 2 | A | Satisfied | Most satisfied |
| 3 | A | Satisfied | Most satisfied |
| 4 | A | Satisfied | Most satisfied |



Questionnaire



| No. | Catch Line | Expectation | Performance |
|-----|--|--|---|
| Q1 | Up-to-date equipment. <i>Peralatan terkini.</i> | I expect government clinic to use appropriate up-to-date equipment. <i>Saya harap klinik kerajaan akan menggunakan peralatan terkini yang bersesuaian.</i> | I find Health Clinic uses appropriate up-to-date equipment. <i>Saya dapati Klinik Kesihatan menggunakan peralatan terkini yang bersesuaian.</i> |
| Q2 | Visually appealing. <i>Kelihatan menarik.</i> | I expect government clinics physical facilities to be visually appealing <i>Saya harap kemudahan fizikal klinik kerajaan kelihatan menarik.</i> | I find the physical facilities in Health Clinic visually appealing <i>Saya dapati kemudahan fizikal Klinik Kesihatan kelihatan menarik.</i> |
| Q3 | Keep promises. <i>Menepati janji.</i> | I expect government clinic to provide their services at the time they promise to do so. <i>Saya harap klinik kerajaan memberi perkhidmatan pada masa yang dijanjikan.</i> | I find Health Clinic provides their services at the time they promise to do so. <i>Saya dapati Klinik Kesihatan memberi perkhidmatan pada masa yang dijanjikan.</i> |
| Q4 | Right first time service. <i>Betul setiap kali.</i> | I expect government clinic staff to perform the services right everytime. <i>Saya harap anggota klinik kerajaan sentiasa melaksanakan perkhidmatan dengan betul</i> | I find Health Clinic perform the services right everytime Rawatbagus Hospital. <i>Saya dapati Klinik Kesihatan sentiasa melaksanakan perkhidmatan dengan betul .</i> |
| Q5 | Prompt service. <i>Cepat.</i> | I expect government clinic staff to give prompt service. <i>Saya harap anggota klinik kerajaan memberi perkhidmatan yang cepat.</i> | I find Health Clinic staff gives prompt service. <i>Saya dapati anggota Klinik Kesihatan memberi perkhidmatan yang cepat.</i> |
| Q6 | Sincere interest to help. <i>Sedia membantu.</i> | I expect government clinic staff to be willing to help with sincere interest. <i>Saya harap anggota klinik kerajaan sedia membantu apabila diperlukan.</i> | I find Health Clinic staff willing to help with sincere interest. <i>Saya dapati anggota Klinik Kesihatan sedia membantu apabila diperlukan.</i> |
| Q7 | Competently. <i>Cekap.</i> | I expect government clinic staff to perform their job competently <i>Saya harap anggota klinik kerajaan dapat melaksanakan tugas mereka dengan cekap.</i> | I find Health Clinic staff performs their job competently <i>Saya dapati anggota Klinik Kesihatan menjalankan tugas mereka dengan cekap</i> |



Questionnaire Groups



| Tangibles <i>Benda yang dapat dikesan</i> | Catch Line <i>Kandungan ringkas</i> | Questionnaire Survey questions <i>Soalan Questionnaire Survey</i> | |
|---|--|--|---|
| Q1 | Up-to-date equipment. <i>Peralatan terkini.</i> | I expect government clinic to use appropriate up-to-date equipment. <i>Saya harap klinik kerajaan akan menggunakan peralatan terkini yang bersesuaian.</i> | I find Health Clinic uses appropriate up-to-date equipment. <i>Saya dapati Klinik Kesihatan menggunakan peralatan terkini yang bersesuaian.</i> |
| Q2 | Visually appealing. <i>Kelihatan menarik.</i> | I expect government clinics physical facilities to be visually appealing <i>Saya harap kemudahan fizikal klinik kerajaan kelihatan menarik.</i> | I find the physical facilities in Health Clinic visually appealing <i>Saya dapati kemudahan fizikal Klinik Kesihatan kelihatan menarik.</i> |
| Reliable <i>Kekukuhan</i> | Catch Line <i>Kandungan ringkas</i> | Questionnaire Survey questions <i>Soalan Questionnaire Survey</i> | |
| Q3 | Keep promises. <i>Menepati janji.</i> | I expect government clinic to provide their services at the time they promise to do so. <i>Saya harap klinik kerajaan memberi perkhidmatan pada masa yang dijanjikan.</i> | I find Health Clinic provides their services at the time they promise to do so. <i>Saya dapati Klinik Kesihatan memberi perkhidmatan pada masa yang dijanjikan.</i> |
| Q4 | Right first time service. <i>Betul setiap kali.</i> | I expect government clinic staff to perform the services right everytime. <i>Saya harap anggota klinik kerajaan sentiasa melaksanakan perkhidmatan dengan betul</i> | I find Health Clinic perform the services right everytime Rawatbagus Hospital. <i>Saya dapati Klinik Kesihatan sentiasa melaksanakan perkhidmatan dengan betul .</i> |
| Responsive | | | |
| Q5 | Prompt service. <i>Cepat.</i> | I expect government clinic staff to give prompt service. <i>Saya harap anggota klinik kerajaan memberi perkhidmatan yang cepat.</i> | I find Health Clinic staff gives prompt service. <i>Saya dapati anggota Klinik Kesihatan memberi perkhidmatan yang cepat.</i> |
| Q6 | Sincere interest to help. <i>Sedia membantu.</i> | I expect government clinic staff to be willing to help with sincere interest. <i>Saya harap anggota klinik kerajaan sedia membantu apabila diperlukan.</i> | I find Health Clinic staff willing to help with sincere interest. <i>Saya dapati anggota Klinik Kesihatan sedia membantu apabila diperlukan.</i> |



Respondents



<< < Carmlye ▾ > >>

| | |
|---|---------------------|
| Name | Carmlye |
| Address | Penang |
| Age | 51 - 55 |
| Gender | Male |
| Citizenship | Malaysian |
| Race | Others |
| Marital Status | Single |
| Highest Education Level | Secondary Education |
| Occupation | Retired |
| Visiting Clinic | Specialist Clinic |
| No of visit to Clinic | Twice |
| Waiting Time | 40-59 mint |
| What is your main problem that you encounter at this clinic? | Waiting too long |



Data Collection



Respondents Eleanor

Edit Switch to Bahasa Malaysia

Likert Scale : 1 Strongly Disagree 2 Disagree 3 Indifferent 4 Agree 5 Strongly Agree

| Expectation | | | | | | |
|---|---|---|---|---|---|---|
| 1. This questionnaire deals with your Expectations of the Service Provider. | | | | | | |
| 2. Please indicate the level of Expectation you think the Service Provider should have in the following Dimensions. | | | | | | |
| 3. The Survey needs a number that best represents your Expectations of the Service Provider. | | | | | | |
| No. | Description | 1 | 2 | 3 | 4 | 5 |
| Q1 | I expect government clinic to use appropriate up-to-date equipment. | | █ | | | |
| Q2 | I expect government clinics physical facilities to be visually appealing | | | | █ | |
| Q3 | I expect government clinic to provide their services at the time they promise to do so. | | █ | | | |
| Q4 | I expect government clinic staff to perform the services right everytime. | | | | █ | |
| Q5 | I expect government clinic staff to give prompt service. | | | █ | | |
| Q6 | I expect government clinic staff to be willing to help with sincere interest. | █ | | | | |
| Q7 | I expect government clinic staff to perform their job competently | | | | | █ |
| Q8 | I expect government clinic staff to be polite | | █ | | | |
| Q9 | I expect government clinic staff to always understand patients needs. | | | | █ | |
| Q10 | I expect government clinic staff to give patient personal attention. | | | █ | | |

| Performance | | | | | | |
|---|---|---|---|---|---|---|
| 1. This questionnaire deals with your Perception of the Service Provider. | | | | | | |
| 2. Please indicate the level of Perception you experienced from the Service Provider in the following Dimensions. | | | | | | |
| 3. The Survey needs a number that best represent your Perceptions of the Service Provider. | | | | | | |
| No. | Description | 1 | 2 | 3 | 4 | 5 |
| Q1 | I find Health Clinic uses appropriate up-to-date equipment. | | | █ | | |
| Q2 | I find the physical facilities in Health Clinic visually appealing | | █ | | | |
| Q3 | I find Health Clinic provides their services at the time they promise to do so. | | | | █ | |
| Q4 | I find Health Clinic perform the services right everytime Rawatbagus Hospital. | | | | | █ |
| Q5 | I find Health Clinic staff gives prompt service. | █ | | | | |
| Q6 | I find Health Clinic staff willing to help with sincere interest. | | | █ | | |
| Q7 | I find Health Clinic staff performs their job competently | | | | █ | |
| Q8 | I find Health Clinic staff is always polite | | █ | | | |
| Q9 | I find Health Clinic staff always understand patients needs. | | | █ | | |
| Q10 | I find Health Clinic staff gives patients personal attention. | | | | █ | |



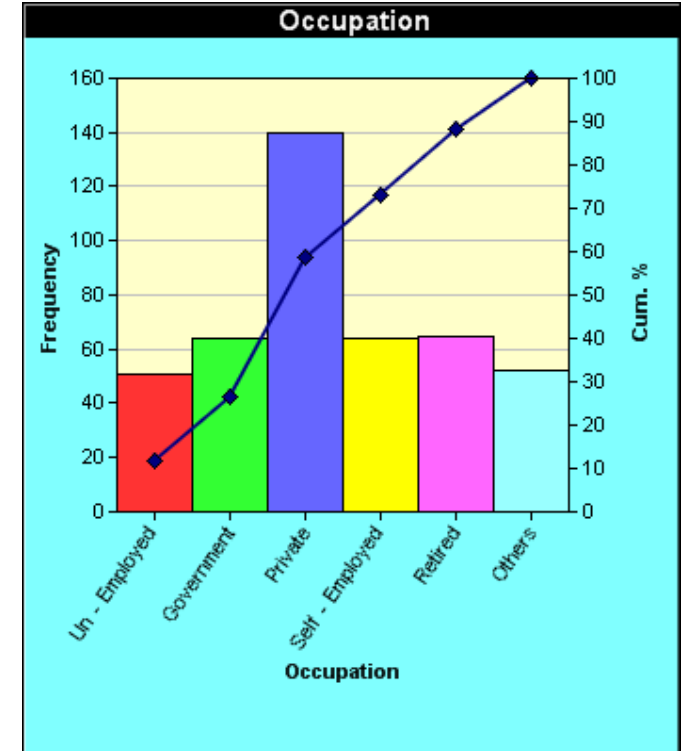
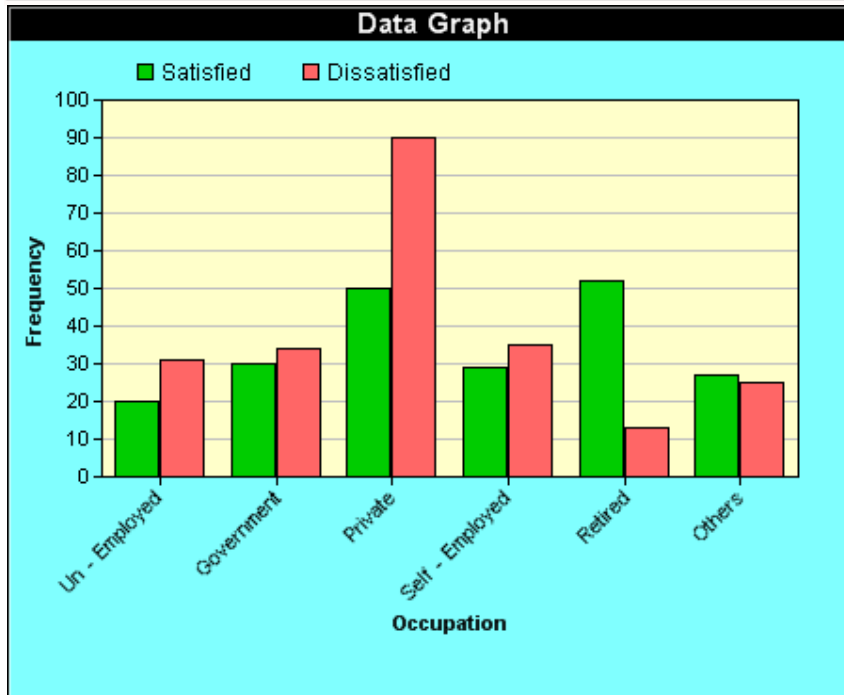
Demographics



Belmah Strategies

Demographics : Occupation

| Data | Frequency | | | Percentage | | | Cumulative % |
|-----------------|------------|--------------|------------|---------------|---------------|---------------|---------------|
| | Satisfied | Dissatisfied | Total | Satisfied | Dissatisfied | Total | |
| Un - Employed | 20 | 31 | 51 | 4.587 | 7.110 | 11.697 | 11.70 |
| Government | 30 | 34 | 64 | 6.881 | 7.798 | 14.679 | 26.38 |
| Private | 50 | 90 | 140 | 11.468 | 20.642 | 32.110 | 58.49 |
| Self - Employed | 29 | 35 | 64 | 6.651 | 8.028 | 14.679 | 73.17 |
| Retired | 52 | 13 | 65 | 11.927 | 2.982 | 14.908 | 88.07 |
| Others | 27 | 25 | 52 | 6.193 | 5.734 | 11.927 | 100.00 |
| Total | 208 | 228 | 436 | 47.706 | 52.294 | 100.00 | 100.00 |



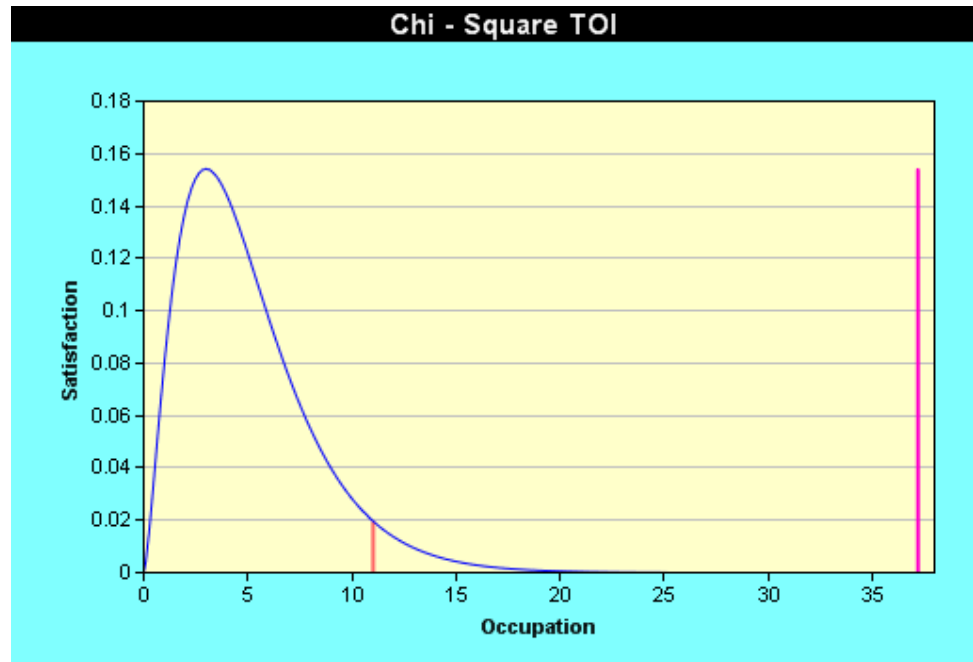


Chi-Sq Test



Calculate Test Statistic

| | | | Satisfaction | | |
|------------|---|-----------------|---------------|---------------|---------------|
| | | | Satisfied | Dissatisfied | |
| Occupation | 1 | Un - Employed | 0.771 | 0.703 | 1.474 |
| | 2 | Government | 0.009 | 0.008 | 0.018 |
| | 3 | Private | 4.220 | 3.850 | 8.070 |
| | 4 | Self - Employed | 0.077 | 0.070 | 0.147 |
| | 5 | Retired | 14.209 | 12.963 | 27.172 |
| | 6 | Others | 0.194 | 0.177 | 0.371 |
| | | | 19.480 | 17.771 | 37.251 |



Affinity Diagram



Brief Text
 Full Text
 Display Graph : Empathy

| Level 1 | Level 2 [Demanded Quality] | Level 3 [Reworded Data] |
|-----------------------------------|-------------------------------|---|
| Tangibles | 6 Premises | 1 The hospital is not clean. |
| | Employees/Staff | 4 Poor customer service |
| | | Banyak slow. |
| staff are very rude | | |
| | hospital staff are good | |
| | Equipments | 1 Some equipments are faulty |
| Responsive | 3 Fast | 1 good service |
| | Slow | 2 Please speed up your process. Waiting too long |
| Reliability | 4 Dependability | 1 Good Service. |
| | Accuracy | 3 Too Lambat |
| Doctor was too slow in diagnosis. | | |
| wrong medications | | |
| Empathy | 1 Understanding | 1 know and understand patients feelings |
| Assurance | 4 Knowledge | 2 Medicine is not good enough. |
| | | cannot understand doctors explanation |
| | Trustworthiness | 1 they take patients record as confidential |
| | Courtesy | 1 staff smiles and greets everybody |
| Teamwork | 1 level 9 | 1 Ok but slow. |
| Caring | 4 level 10 | 4 no immediate attention |
| | | not caring to patients |
| | | dont listen to patients request |
| | | doctor spent less time |

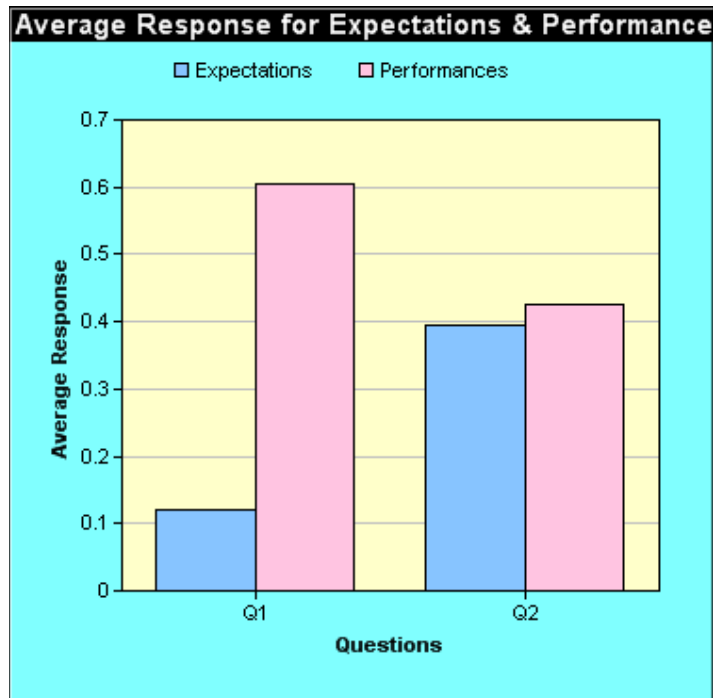


Dimensions



Dimensions Tangibles +0 +00 Report Setup

| Expectation | | | | | | | | | | | Performance | | | | | T-Test | | | | | | | | | |
|--------------|-----------|-----------|----------|-----------|-----------|------|-------|-------|-------|--------|-------------|----------|-----------|-----------|----------|--------|-------|-------|-------|-------|-------|-------|--------|----------|--|
| No. | 1 | 2 | 3 | 4 | 5 | Tot. | Expt. | Var. | +CI | -CI | 1 | 2 | 3 | 4 | 5 | Tot. | Perf. | Var. | +CI | -CI | Diff | Pvar. | T-Val. | Decision | |
| Q1 | 10 | 1 | 5 | 9 | 8 | 33 | 0.121 | 2.547 | 0.666 | -0.423 | 1 | 2 | 11 | 14 | 5 | 33 | 0.606 | 0.871 | 0.925 | 0.288 | 0.485 | 0.322 | 1.506 | Good | |
| Q2 | 2 | 9 | 4 | 10 | 8 | 33 | 0.394 | 1.684 | 0.837 | -0.049 | 2 | 3 | 11 | 13 | 4 | 33 | 0.424 | 1.064 | 0.776 | 0.072 | 0.030 | 0.289 | 0.105 | Improve | |
| Total | 12 | 10 | 9 | 19 | 16 | | | | | | 3 | 5 | 22 | 27 | 9 | | | | | | | | | | |



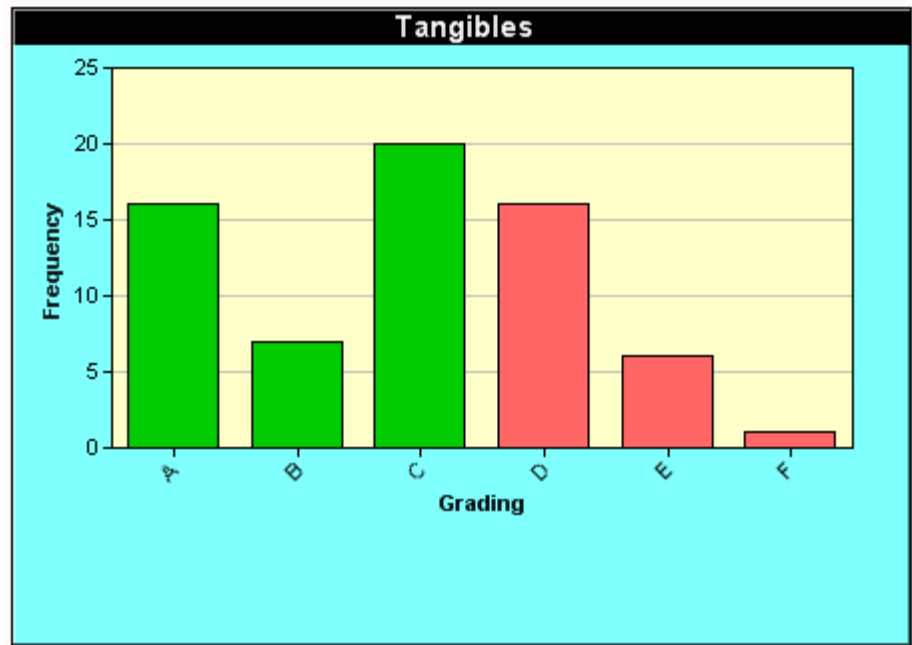


Satisfaction



Dimensions Questions

| Q. No. | Description | Grading | | | | | | Satisfaction | | Total |
|--------------|-----------------------|-----------|----------|-----------|-----------|----------|----------|--------------|--------------|-----------|
| | | A | B | C | D | E | F | Satisfied | Dissatisfied | |
| Q1 | Up-to-date equipment. | 9 | 3 | 12 | 7 | 2 | 0 | 24 | 9 | 33 |
| Q2 | Visually appealing. | 7 | 4 | 8 | 9 | 4 | 1 | 19 | 14 | 33 |
| Total | | 16 | 7 | 20 | 16 | 6 | 1 | 43 | 23 | 66 |



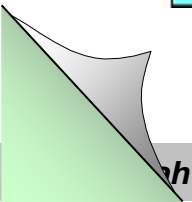
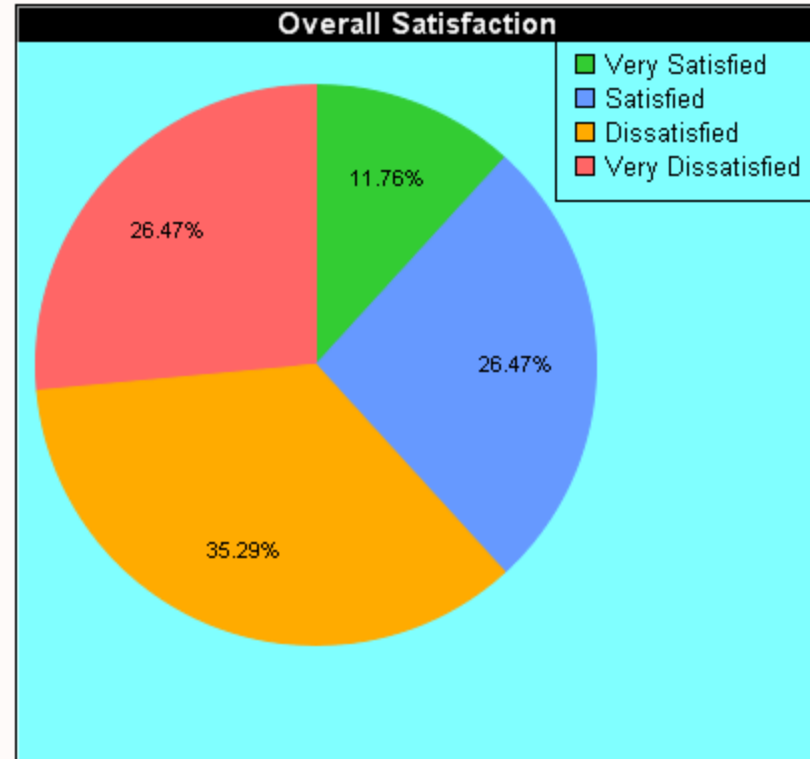
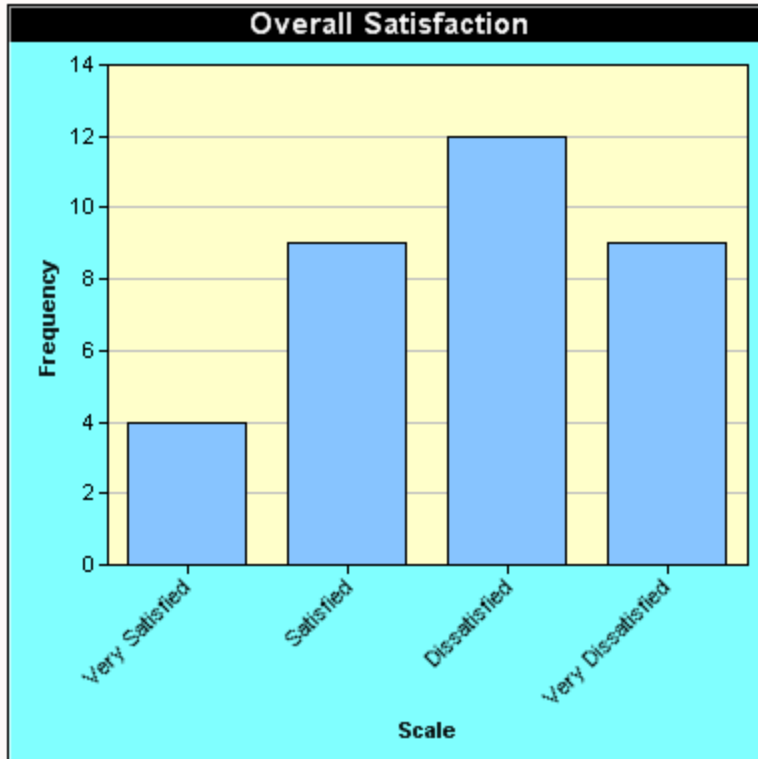


Overall Satisfaction



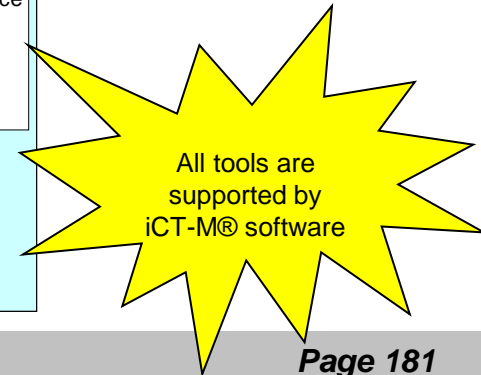
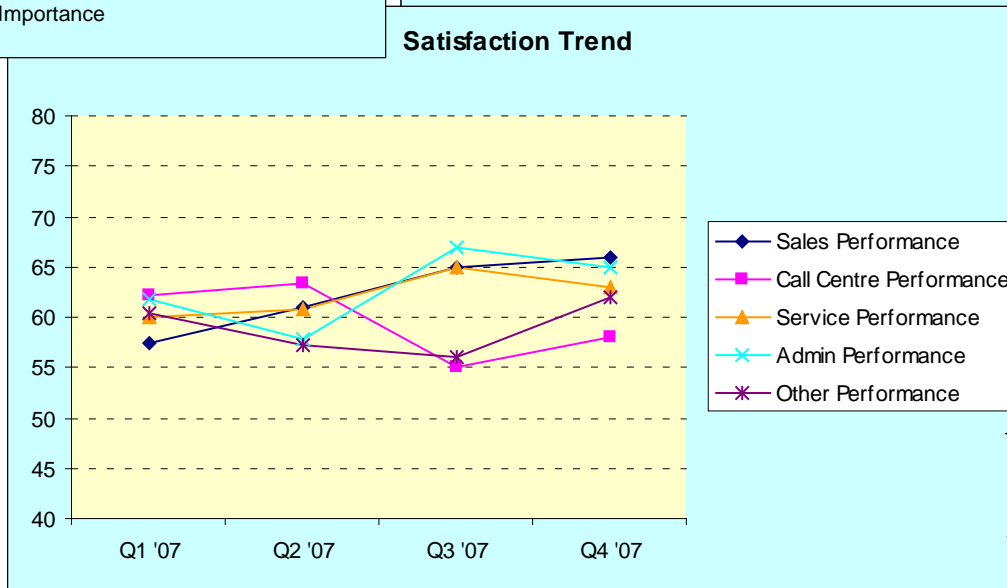
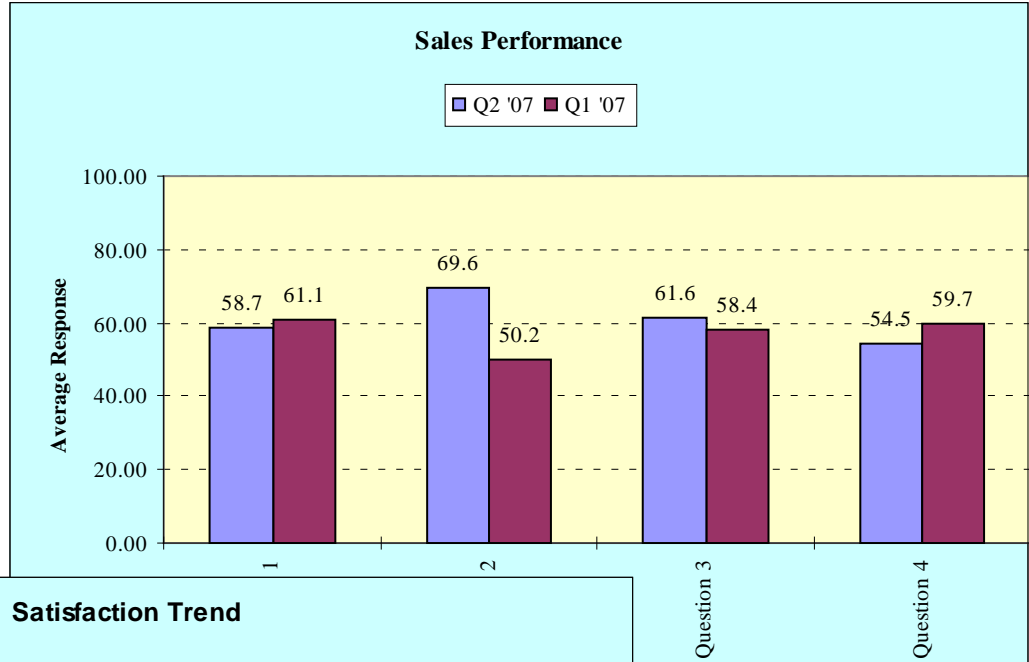
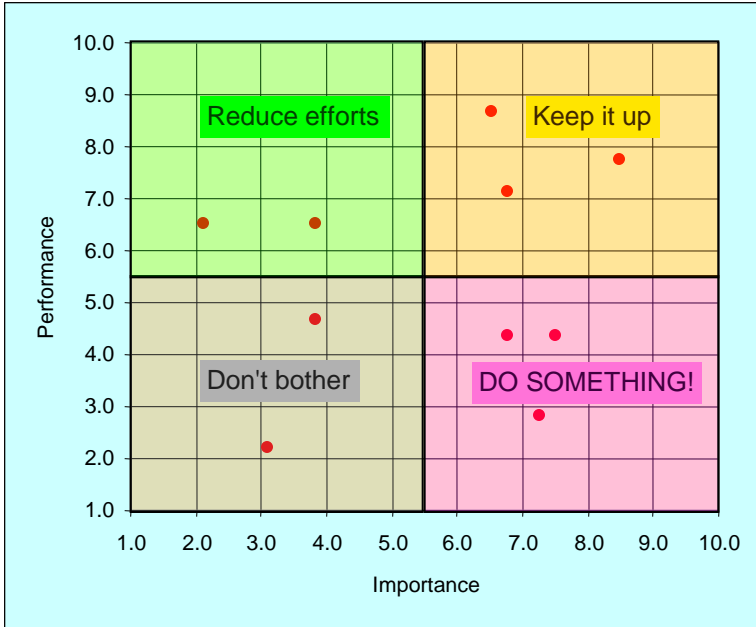
Questions

| No. | Question Description | 1 | 2 | 3 | 4 | Total |
|-----------------------|---|--------------|--------------|--------------|--------------|-----------|
| Q18 | Overall, the level of satisfaction towards services provided by Health Clinic is: | 4 | 9 | 12 | 9 | 34 |
| Total | | 4 | 9 | 12 | 9 | 34 |
| Percentage (%) | | 11.76 | 26.47 | 35.29 | 26.47 | |





Customer Satisfaction Index (CSI)





Respondents

<< < 01 > >>

[New](#) [Edit](#) [Delete](#) [Report Setup](#)

| | |
|---|-------------|
| Name | 01 |
| Address | Bandar |
| Age | >=51 |
| Gender | Male |
| Nationality | Chinese |
| Education | Master |
| What is the main problem you encountered in this Service? | lambat |
| Created Date | 16-Nov-2007 |



Data Collection

Respondents

Likert Scale : 1 Very Low 2 Fairly Low 3 Low 4 Slightly Low 5 Just Low 6 Just High 7 Slightly High 8 High 9 Fairly High 10 Very High

| Satisfaction | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|----|
| 1. This questionnaire deals with your Perception of the Service Provider. | | | | | | | | | | | |
| 2. Please indicate the level of Perception you experienced from the Service Provider in the following Dimensions. | | | | | | | | | | | |
| 3. The Survey needs a number that best represent your Perceptions of the Service Provider. | | | | | | | | | | | |
| No. | Description | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Q1 | Staff are courteous and friendly | | | | | | | | | | |
| Q2 | Staff are helpful | | | | | | | | | | |
| Q3 | Staff explained admission procedure | | | | | | | | | | |
| Q4 | Overall satisfaction with the admission services | | | | | | | | | | |
| Q5 | How much have the admission services met with your expectation? | | | | | | | | | | |
| Q6 | Nurses are concern / caring | | | | | | | | | | |
| Q7 | Nurses are friendly & courteous | | | | | | | | | | |
| Q8 | Nurses are reassuring & give support | | | | | | | | | | |
| Q9 | Prompt of service | | | | | | | | | | |
| Q10 | Provide clear explanation of discharge process | | | | | | | | | | |
| Q11 | Overall satisfaction with nursing services | | | | | | | | | | |
| Q12 | How much have the nursing services met with your expectation? | | | | | | | | | | |
| Q13 | Doctors are concern / caring | | | | | | | | | | |
| Q14 | Doctors are courteous & friendly | | | | | | | | | | |
| Q15 | Doctors are reassuring & give support | | | | | | | | | | |



Demographics

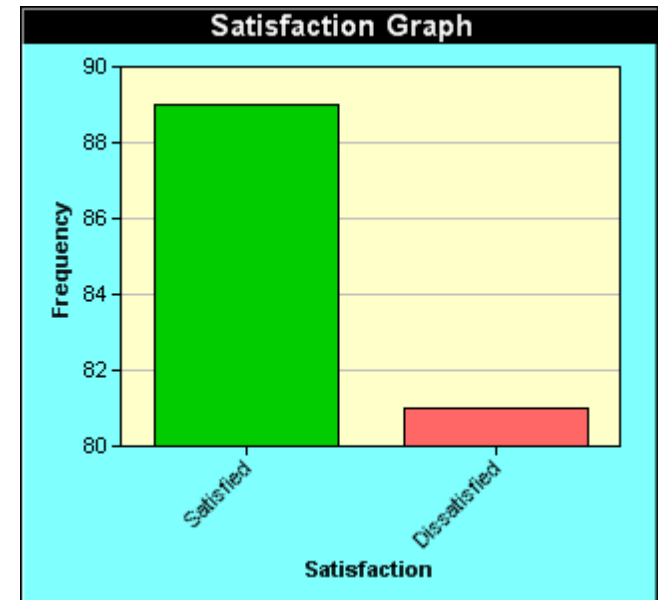


Demographics

Demographics :

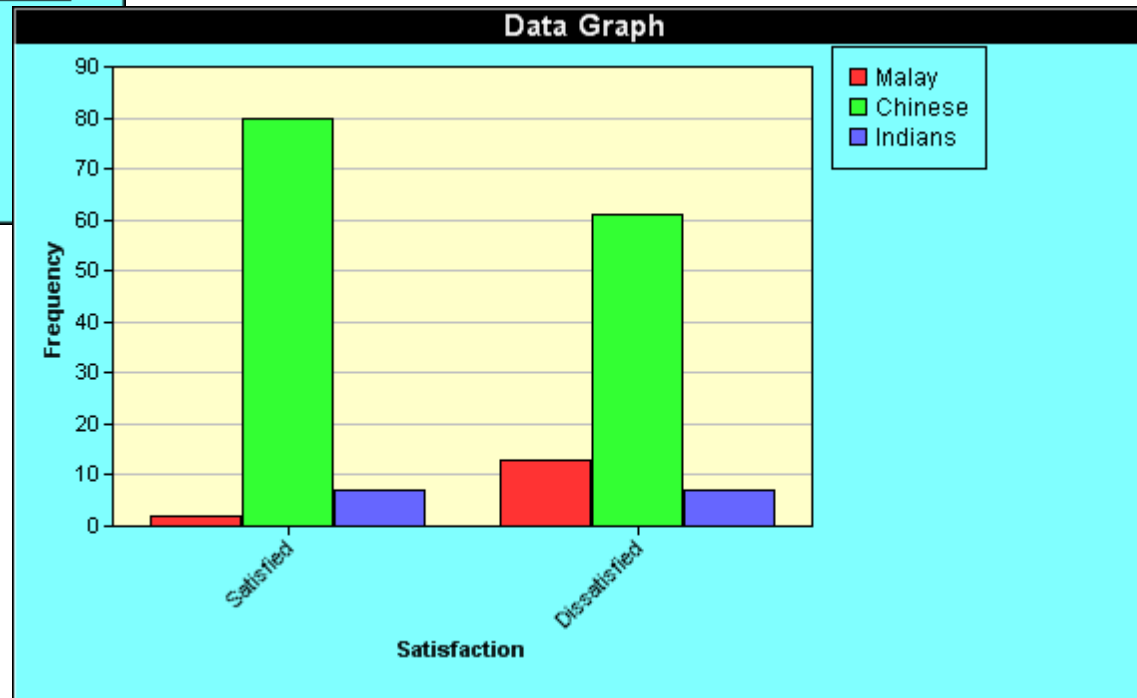
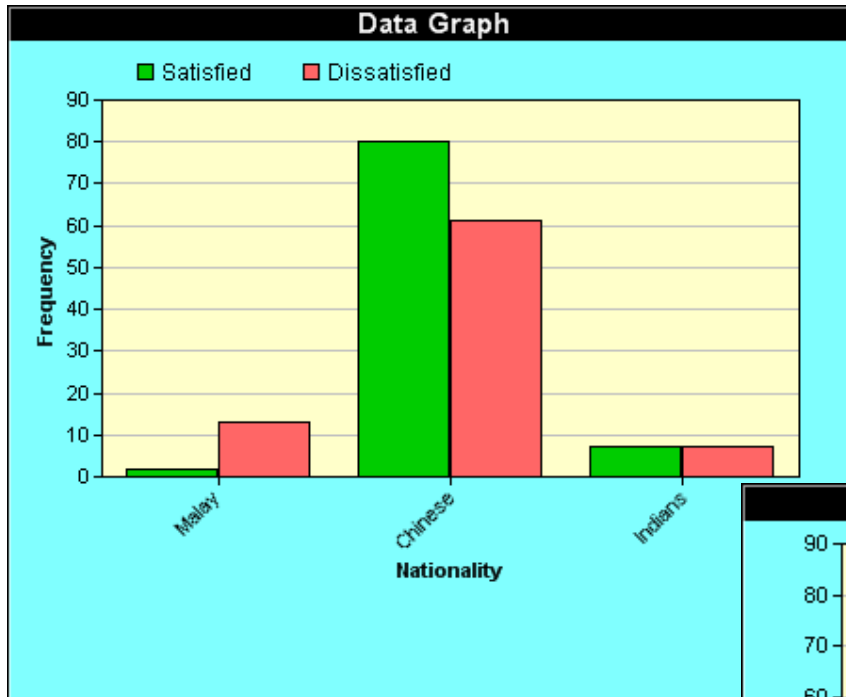
Time Periods :

| Data | Frequency | | | Percentage | | | Cumulative % |
|--------------|-----------|--------------|------------|---------------|---------------|---------------|---------------|
| | Satisfied | Dissatisfied | Total | Satisfied | Dissatisfied | Total | |
| Malay | 2 | 13 | 15 | 1.176 | 7.647 | 8.824 | 8.82 |
| Chinese | 80 | 61 | 141 | 47.059 | 35.882 | 82.941 | 91.76 |
| Indians | 7 | 7 | 14 | 4.118 | 4.118 | 8.235 | 100.00 |
| Total | 89 | 81 | 170 | 52.353 | 47.647 | 100.00 | 100.00 |





Satisfaction Measures





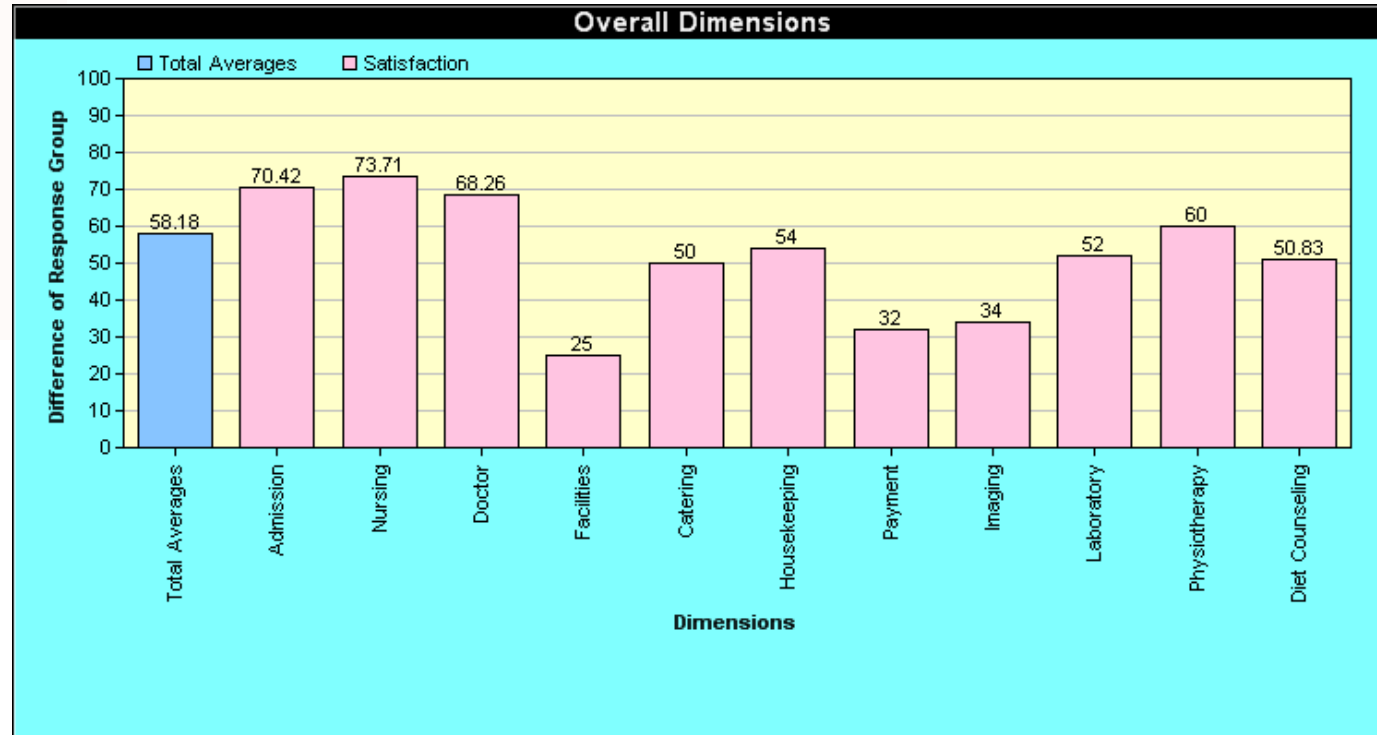
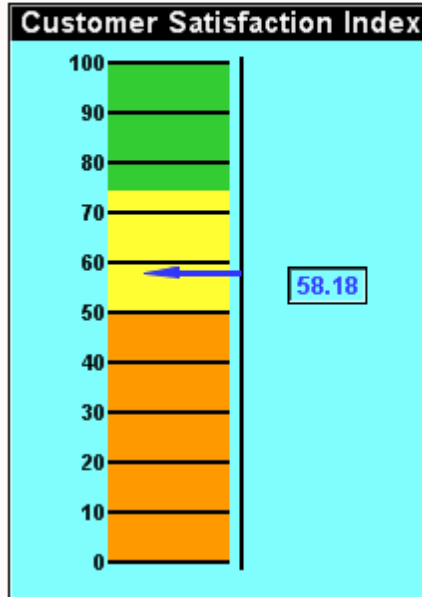
Overall Dimensions



Belmah Strategies

Overall Dimensions

Time Periods : 2007 - Feb





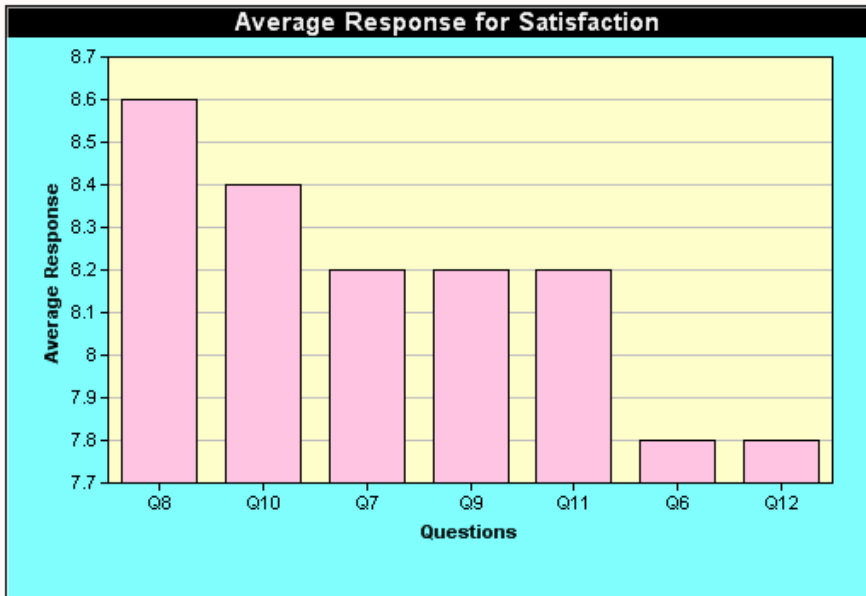
Dimensions



Dimensions

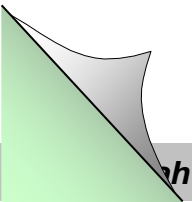
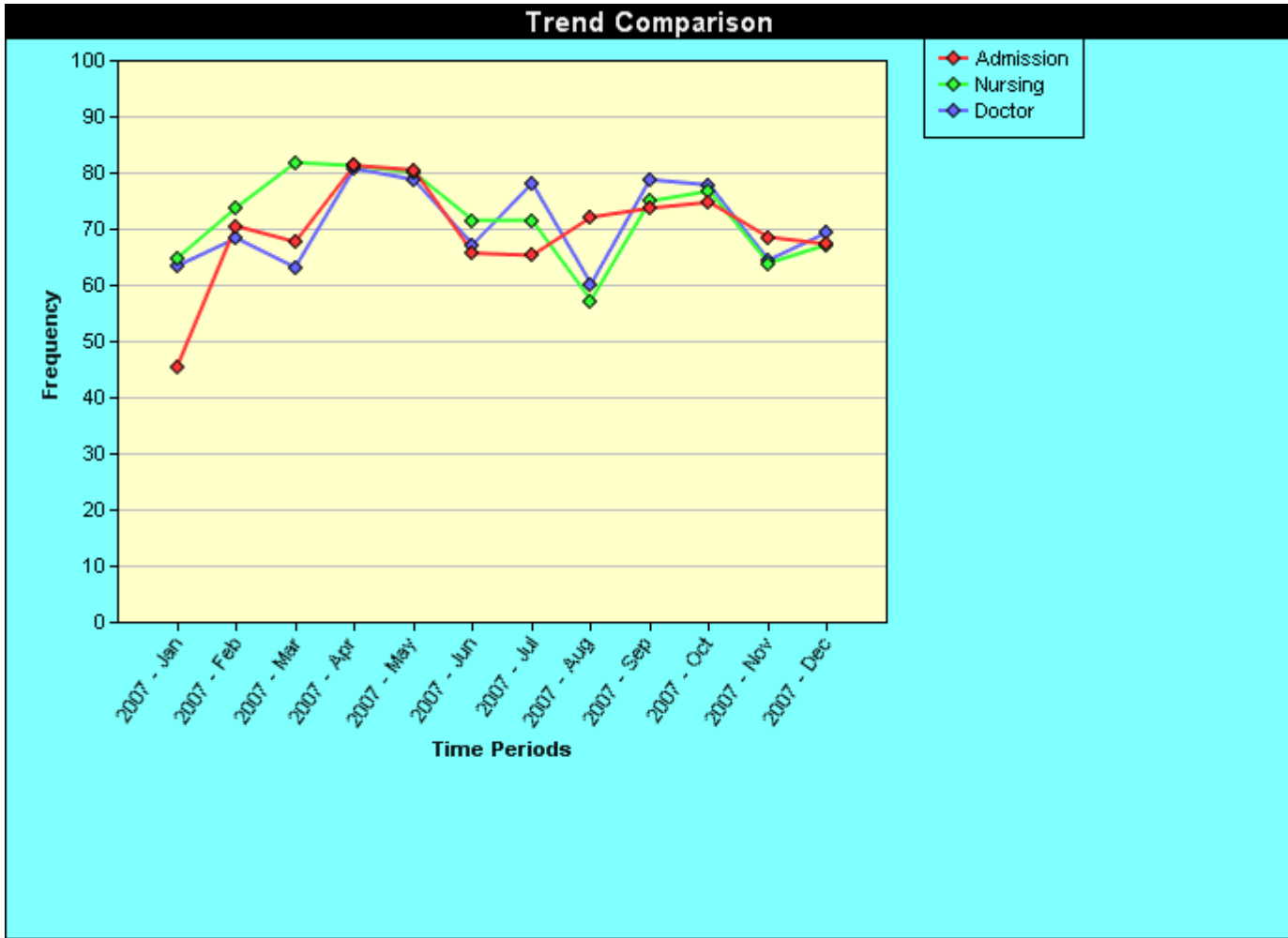
Dimensions: Time Periods:

| No. | Satisfaction | | | | | | | | | | | | | | Weights (%) | | T - test | |
|-------|--------------|---|---|---|---|---|---|----|----|----|------|-------|-------|-------|-------------|--------|----------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Tot. | Sat. | Var. | +CI | -CI | Sat. | T-Val. | Decision |
| Q6 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 5 | 7.800 | 1.700 | 8.943 | 6.657 | 78.000 | 1.764 | Decision 90 |
| Q7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 5 | 8.200 | 0.700 | 8.933 | 7.467 | 82.000 | 3.227 | Decision 99 |
| Q8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 5 | 8.600 | 0.800 | 9.384 | 7.816 | 86.000 | 3.466 | Decision 99 |
| Q9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 5 | 8.200 | 0.700 | 8.933 | 7.467 | 82.000 | 3.227 | Decision 99 |
| Q10 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 5 | 8.400 | 1.300 | 9.399 | 7.401 | 84.000 | 2.543 | Decision 99 |
| Q11 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 5 | 8.200 | 0.700 | 8.933 | 7.467 | 82.000 | 3.227 | Decision 99 |
| Q12 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 5 | 7.800 | 0.200 | 8.192 | 7.408 | 78.000 | 5.143 | Decision 99 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 16 | 10 | 2 | 35 | 8.171 | 0.793 | 8.467 | 7.876 | 81.714 | 3.228 | Decision 99 |





Trend Comparison





Customer Complaints Management (CCM)



Belmah Strategies

3: Containment

Not applicable – basic investigation undertaken by local manager

Date:

Containment Response Date:

Containment Completed Date:

Investigation Level:

Description of Issue:

The Nurse gave the wrong dose of injection.

The Team leader shall ensure that the following Corrective Actions are completed timely.

Administrator's Brief description:

This incident is causing much public interest. Please act on this with utmost care.

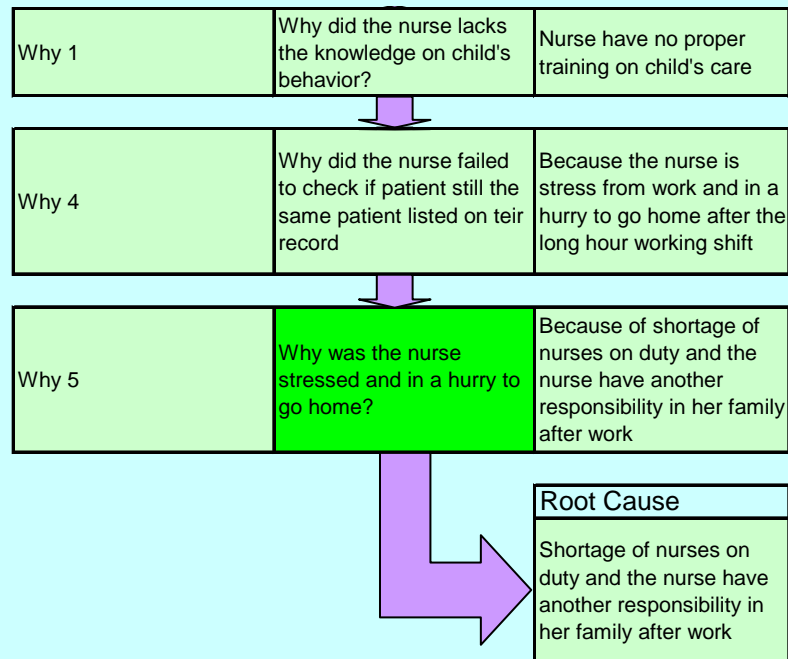
Containment Action

This incident is causing much public interest. Please act on this with utmost care.

6: Determine Root Cause

Possible use of 'Five Whys' approach

No formal meeting necessary



| Root Cause | Progress | Date Completed | PIC |
|---|-----------|----------------|--------|
| Shortage of nurses on duty and the nurse have another responsibility | | | |
| 1 Increase staffing to decrease workload and responsibilities. | Completed | 2005 01 10 | Allan |
| 2 Nurses should have checklist to prevent errors in their work. | Completed | 2005 01 13 | Brian |
| 3 5' S Housekeeping must be implemented in their workplace. | Completed | 2005 01 15 | Collin |
| 4 The following should be implemented: Creative scheduling options, Let nurse choose their overtime, and offer referral bonuses to employees. | Completed | 2005 01 22 | Doreen |



Event Registry



Event Registry

<< < 1 > >>

[Edit](#) [New](#) [Delete](#)

| | | | |
|---|---|---------------------------|--|
| Complaint No | 1 | Relationship | Other Health Prof. |
| Date of Incident | 08-Nov-2007 | Date of Complaint | 13-Nov-2007 |
| Person Affected | | Person Complaining | |
| Name | Annaletchumi | Name | Siti Nur Bayah |
| Gender | Female | Gender | Female |
| NRIC No | 570311-04-7743 | NRIC No | 600825-09-6578 |
| Date Of Birth | 30-Oct-2007 | Date Of Birth | 22-Nov-2007 |
| Race | Indian | Race | Malay |
| Incident Type | Customer Complaint | | |
| Describe the Incident | Too high charge for the treatments. | | |
| Immediate Corrective Action | To check on the invoice and a reduction in payment. | | |
| What the complainant wants to see happen | A revised bill with only the necessary charges. | | |
| Department | Surgery Neuro | Complaint Type | Access Inadequate or no service Absence of a service |
| Impact | Major | Status | Resolved |
| Risk | Unlikely | Completion date | 02-Dec-2007 |
| Investigation Level | 3 Serious | | |
| Final Remarks | A case worth considering as the charges seems to be high for the nature of complaint. | | |



Containment

[Edit](#)

Time should be within the stated time

Description Of Incident

Too high charge for the treatments.

| | |
|-----------------------------|-------------|
| Date of CAR Issued | 14-Nov-2007 |
| Date of CAR Issue Completed | 15-Nov-2007 |

| | |
|-------------------------------|-------------|
| Date of Containment | 18-Nov-2007 |
| Date of Containment Completed | 20-Nov-2007 |
| Investigation Level | 3 (Serious) |

Description of Issue

| No. | Description |
|-----|--|
| 1 | The Nurse gave the wrong dose of injection |

Administrator's Brief description

| No. | Description |
|-----|---|
| 1 | This incident is causing much public interest. Please act on this with utmost care. |

Containment Action

| No. | Description |
|-----|---|
| 1 | This incident is causing much public interest. Please act on this with utmost care. |
| 2 | Maximum chages have been lowered. |



Investigation

[Edit](#)

Investigation by manager and some others

Description Of Incident

Too high charge for the treatments.

| No. | Investigation | Date | Time | Person | Comments | Attachments |
|-----|---|-------------|----------|---------|----------|----------------------|
| 1 | The customer claimed that the salesgirl shouted at him. | 19-Dec-2007 | 11:15 Am | Allan | | Event Image sentinel |
| 2 | The salesgirl denies shouting. | 20-Dec-2007 | 10:30 Pm | Brain | | Important picture |
| 3 | Copy of protocol/guidelines for IVTT | 12-Dec-2007 | 11:00Am | Collin | | Accident |
| 4 | Copy of patient record | 06-Dec-2007 | 09:00 Pm | Deborah | | Text file |
| 5 | Written statement | 26-Dec-2007 | 10:00 Am | Ellaine | | |



Identify Root Causes



Identify Root Causes

Edit

Identify all important factors

| | | | |
|---|-------|---|--|
| 1 Nurse lacks the knowledge on childs behavior | | | |
| 1 | Why 1 | Why did the nurse lacks the knowledge on childs behavior? | Nurse have no proper training on childs care |
| 2 | Why 2 | Why the nurse mistakenly given the medication on the wrong patient? | Because the nurse not aware patient moved to the other bed without informing the nurse |
| 3 | Why 3 | Why did the nurse not aware patient move to other bed? | Because the nurse dont bother to check if the patient on the bed same patient listed |
| 4 | Why 4 | Why did the nurse failed to check if patient still the same patient listed on teir record | Because the nurse is stress from work and in a hurry to go home after the long hour working shift |
| 5 | Why 5 | Why was the nurse stressed and in a hurry to go home? | Because of shortage of nurses on duty and the nurse have another responsibility in her family after work |
| | | | Root Cause |
| | | | Shortage of nurses on duty and the nurse have another responsibility in her family after work |





Corrective Action Plan



Corrective Action Plan

[Edit](#) [Report Setup](#) From Date To Date [View](#)

Detailed risk reduction by manager and team

Root Cause :
Shortage of nurses on duty and the nurse have another responsibility in her family after work

| Action | PIC | From Date | To Date | Duration | Nov - 2007 | | | | | | | | | | | | | |
|--------|-----------------|-------------|-------------|-------------|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | | | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| | | 12-Nov-2007 | 20-Nov-2007 | 8 | █ | █ | █ | █ | █ | █ | █ | █ | | | | | | |
| 1 | Increase staff | Allan | 12-Nov-2007 | 20-Nov-2007 | 8 | █ | █ | █ | █ | █ | █ | █ | | | | | | |
| 2 | 5 S Housekeepin | Brain | 13-Nov-2007 | 18-Nov-2007 | 5 | | █ | █ | █ | █ | █ | | | | | | | |
| 3 | Train nurses on | Collin | 19-Nov-2007 | 20-Nov-2007 | 1 | | | | | | | █ | █ | | | | | |



Corrective Action Implementation



Corrective Action Implementation

[Edit](#) [Report Setup](#) From Date To Date [View](#)

Detailed action plan is necessary

Root Cause :
Shortage of nurses on duty and the nurse have another responsibility in her family after work

| Action | PIC | From Date | To Date | Duration | Progress | Date Completed | Nov - 2007 | | | | | | | | | | | | | | |
|--------|-----------------|-------------|-------------|-------------|----------|----------------|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | | | | | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| | | 12-Nov-2007 | 20-Nov-2007 | 8 | | | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 1 | Increase staff | Allan | 12-Nov-2007 | 20-Nov-2007 | 8 | More staff | 20-Nov-2007 | | | | | | | | | | | | | | |
| 2 | 5 S Housekeepin | Brain | 13-Nov-2007 | 18-Nov-2007 | 5 | Housekeepi | 20-Nov-2007 | | | | | | | | | | | | | | |
| 3 | Train nurses on | Collin | 19-Nov-2007 | 20-Nov-2007 | 1 | Nurses tra | 20-Nov-2007 | | | | | | | | | | | | | | |



Verification

[Edit](#)

To verify all actions

Root Cause :

Shortage of nurses on duty and the nurse have another responsibility in her family after work

| Action | Risk Reduction | Key Indicators | Monitoring and Review | Communication Strategies |
|---|---|---|---|--------------------------|
| 1 Increase staffing to decrease workload and responsibilities. | Assign more nurses that are knowledgeable and well-experienced to prone-medical error workplace. | More qualified nurses added. | Nurses able to do work easily and finish their work faster without a mistake. | |
| 2 Nurses should have checklist to prevent errors in their work. | Nurses should use checklist in all types of work. | All nurses use checklist in all their tasks. | Usage of checklist is being implemented after 1 month. | |
| 3 5 S Housekeeping must be implemented in their workplace. | Apply 5S Housekeeping in the workplace. | Nurse station and the ward is well arranged and organized. | 5S is being applied in the workplace immediately after the workshop. | |
| 4 Let nurse choose their overtime, and offer referral bonuses to employees. | Design and develop a creative scheduling options for nurses and provide them with better incentives and benefits. | Decrease number of complaints recieved. No medical errors reported. | Nurses are more more focus on their work. They are happy with their working schedule. | |
| 5 Train nurses on patient care | | | | |

Final Remarks by Board / Committee

All actions required have been satisfactorily implemented.



Event Timeline



Event Timeline

| Complaint Analysis | Date Set | Date Completed | 07-Nov-2007 | 08-Nov-2007 | 09-Nov-2007 | 10-Nov-2007 | 11-Nov-2007 | 12-Nov-2007 | 13-Nov-2007 | 14-Nov-2007 | 15-Nov-2007 | 16-Nov-2007 | 17-Nov-2007 | 18-Nov-2007 | 19-Nov-2007 | 20-Nov-2007 | 21-Nov-2007 | 22-Nov-2007 | 23-Nov-2007 | 24-Nov-2007 | 25-Nov-2007 | 26-Nov-2007 | 27-Nov-2007 | 28-Nov-2007 | 29-Nov-2007 | 30-Nov-2007 | 01-Dec-2007 | 02-Dec-2007 |
|----------------------------|-------------|----------------|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | | Date of Incident | 08-Nov-2007 | | | Red | | | | | | | | | | | | | | | | | | | | | |
| Date of Complaint | 13-Nov-2007 | | | Orange | Orange | Orange | Orange | Orange | Orange | | | | | | | | | | | | | | | | | | | |
| Date of CAR Issued | 14-Nov-2007 | 15-Nov-2007 | | | | | | | Green | Green | | | | | | | | | | | | | | | | | | |
| Date of Containment Action | 18-Nov-2007 | 20-Nov-2007 | | | | | | | Green | Green | Green | Green | Green | Green | | | | | | | | | | | | | | |
| Date of Acknowledgement | 17-Nov-2007 | 22-Nov-2007 | | | | | | | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | | | | | | | | | |
| Date of Corrective Action | 18-Nov-2007 | 12-Dec-2007 | | | | | | | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green |
| Date of Preventive Action | 21-Nov-2007 | 30-Nov-2007 | | | | | | | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green |
| Date of Completion | 02-Dec-2007 | | | | | | | | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue | Blue |



Overview of Complaints

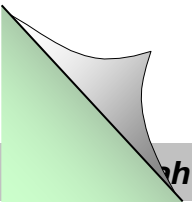


Overview

Incident Type Outcome Investigation Level

Resolved within policy time frame Resolved out of policy time frame Not resolved and out of policy time frame

| Complaint Id. | Incident Type | Outcome | Invest Level | Complaint Date | Complaint | Days |
|---------------|--------------------|--------------|--------------|----------------|-------------------------------------|------|
| 1 | Customer Complaint | Resolved | Serious | 13-Nov-2007 | Too high charge for the treatments. | 19 |
| 2 | Customer Complaint | Not Resolved | Standard | 03-Jan-2008 | Bad incident | 3 |

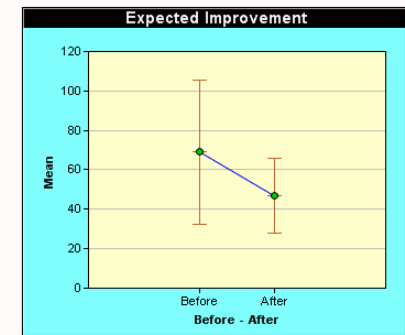
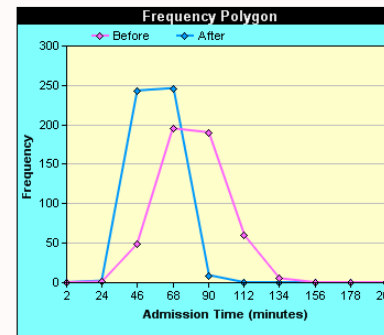
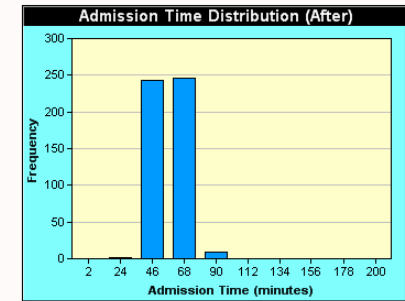
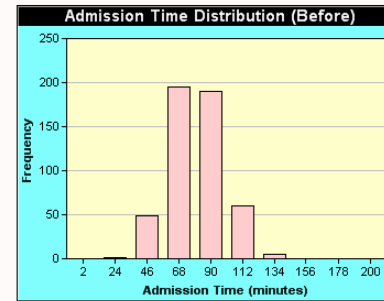




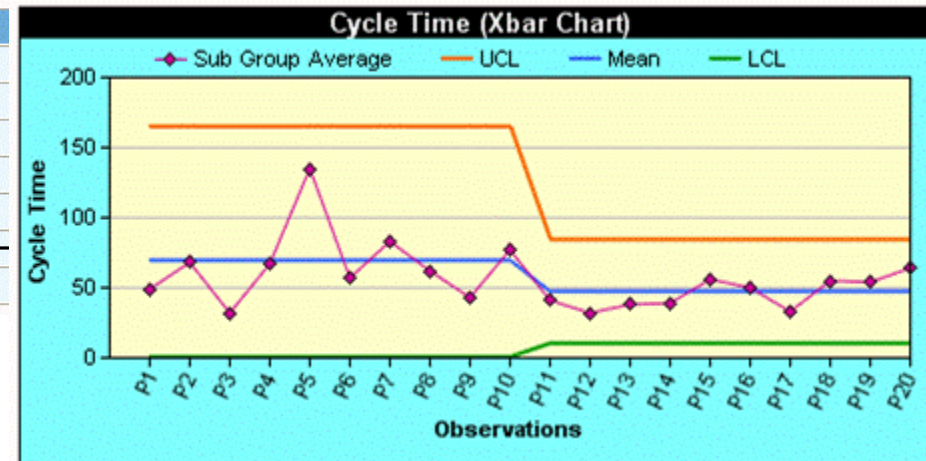
Cycle Time Analysis (CTA)



| No. | Process Steps | Start | Elapsed | Bar Graph of Times | Comments |
|--------------|-------------------------|--------|---------------|--------------------|------------------------|
| 1 | Start | 0.000 | 0.000 | | |
| 2 | Sign In | 15.400 | 15.400 | | Computer not available |
| 3 | Triage by Nurse | 8.300 | 23.700 | | Waiting |
| 4 | Exam by Doctor | 7.200 | 30.900 | | Doctor Not Arrived |
| 5 | Bed Requested | 7.700 | 38.600 | | Information not send |
| 6 | Bed Request Time | 9.000 | 47.600 | | Incorrect bed number |
| 7 | Bed Assigned Time | 10.400 | 58.000 | | Wrong Patient |
| 8 | Patient Assigned to Bed | 9.300 | 67.300 | | Waiting |
| Total | | | 67.300 | | |
| 1 | Start | 0.000 | 0.000 | | Setup |
| 2 | Sign In | 5.800 | 5.800 | | Setup |
| 3 | Triage by Nurse | 6.100 | 11.900 | | Waiting |
| 4 | Exam by Doctor | 6.500 | 18.400 | | Doctor not arrived |
| 5 | Bed Requested | 8.700 | 27.100 | | Information not send |
| 6 | Bed Request Time | 6.200 | 33.300 | | In correct bed Number |
| 7 | Bed Assigned Time | 6.300 | 39.600 | | Wrong Patient |
| 8 | Patient Assigned to Bed | 6.600 | 46.200 | | Waiting |
| Total | | | 46.200 | | |



| No. | Process | Mean | Stdev | Duration | Process Cycle Time |
|-----|-------------------------|--------|-------|----------|--------------------|
| 1 | Sign In | 15.400 | 8.044 | 15.400 | |
| 2 | Triage by Nurse | 8.300 | 7.646 | 23.700 | |
| 3 | Exam by Doctor | 7.200 | 6.426 | 30.900 | |
| 4 | Bed Requested | 7.700 | 4.322 | 38.600 | |
| 5 | Bed Request Time | 9.000 | 8.857 | 47.600 | |
| 6 | Bed Assigned Time | 10.400 | 6.150 | 58.000 | |
| 7 | Patient Assigned to Bed | 9.300 | 7.718 | 67.300 | |





Setup Process



| | | |
|---|----------|---------------------|
| - | 1 | Doctor |
| | 1 | Dr. Allan Lin |
| | 2 | Dr. Brian |
| | 3 | Dr. Collin |
| | 4 | Dr. David |
| | 5 | Dr. Eline |
| - | 2 | Diagnosis |
| | 1 | UTI |
| | 2 | Insomnia |
| | 3 | Gouty Arthritis |
| | 4 | Fever of Unk Origin |
| | 5 | Myocardial Ischemia |
| + | 3 | Bed Type |
| + | 4 | Room No. |
| + | 5 | Delay |



Data Collection



<< < DT0020 > >> [Edit](#) [New](#) [Delete](#) [Report](#)

| | |
|--------------------------------|----------------------|
| Data Code | DT0020 |
| Patient Name | P20 |
| Start | 07-Apr-2007 12:32 PM |
| Sign In | 07-Apr-2007 12:39 PM |
| Triage by Nurse | 07-Apr-2007 12:46 PM |
| Exam by Doctor | 07-Apr-2007 12:50 PM |
| Bed Requested | 07-Apr-2007 01:03 PM |
| Bed Request Time | 07-Apr-2007 01:15 PM |
| Bed Assigned Time | 07-Apr-2007 01:25 PM |
| Patient Assigned to Bed | 07-Apr-2007 01:36 PM |
| Doctor | Dr. Elline |
| Diagnosis | UTI |
| Bed Type | Med |
| Room No. | Room E |
| Delay | No Room |



“Before” Cycle Time



| No. | Process | Mean | Stdev | Duration | Process Cycle Time | | | | | | |
|-----|-------------------------|--------|-------|----------|--------------------|---|---|---|---|---|---|
| 1 | Sign In | 15.667 | 8.485 | 15.667 | ↔ | | | | | | |
| 2 | Triage by Nurse | 8.889 | 7.865 | 24.556 | | ↔ | | | | | |
| 3 | Exam by Doctor | 7.556 | 6.710 | 32.111 | | | ↔ | | | | |
| 4 | Bed Requested | 8.111 | 4.372 | 40.222 | | | | ↔ | | | |
| 5 | Bed Request Time | 8.111 | 8.908 | 48.333 | | | | | ↔ | | |
| 6 | Bed Assigned Time | 9.444 | 5.681 | 57.778 | | | | | | ↔ | |
| 7 | Patient Assigned to Bed | 8.444 | 7.667 | 66.222 | | | | | | | ↔ |



“Before” Cycle Time Analysis



| No. | Process Steps | Start | Elapsed | Bar Graph of Times | Comments |
|--------------|-------------------------|--------|---------------|--------------------|------------------------|
| 1 | Start | 0.000 | 0.000 | | |
| 2 | Sign In | 15.667 | 15.667 | | Computer not available |
| 3 | Triage by Nurse | 8.889 | 24.556 | | Waiting |
| 4 | Exam by Doctor | 7.556 | 32.111 | | Doctor Not Arrived |
| 5 | Bed Requested | 8.111 | 40.222 | | Information not send |
| 6 | Bed Request Time | 8.111 | 48.333 | | Incorrect bed number |
| 7 | Bed Assigned Time | 9.444 | 57.778 | | Wrong Patient |
| 8 | Patient Assigned to Bed | 8.444 | 66.222 | | Waiting |
| Total | | | 66.222 | | |



Implementation of Improvements

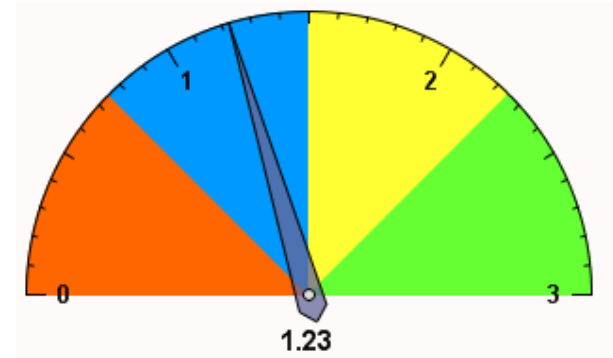
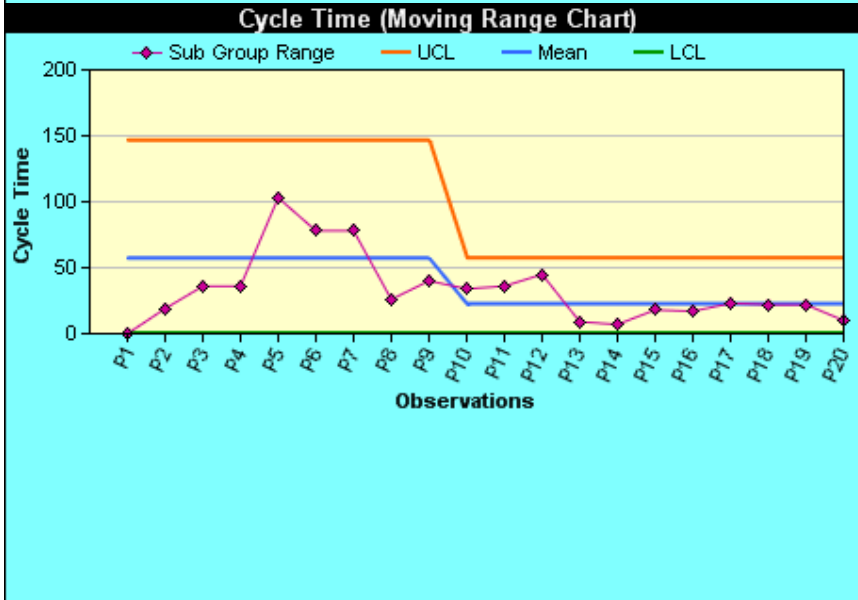
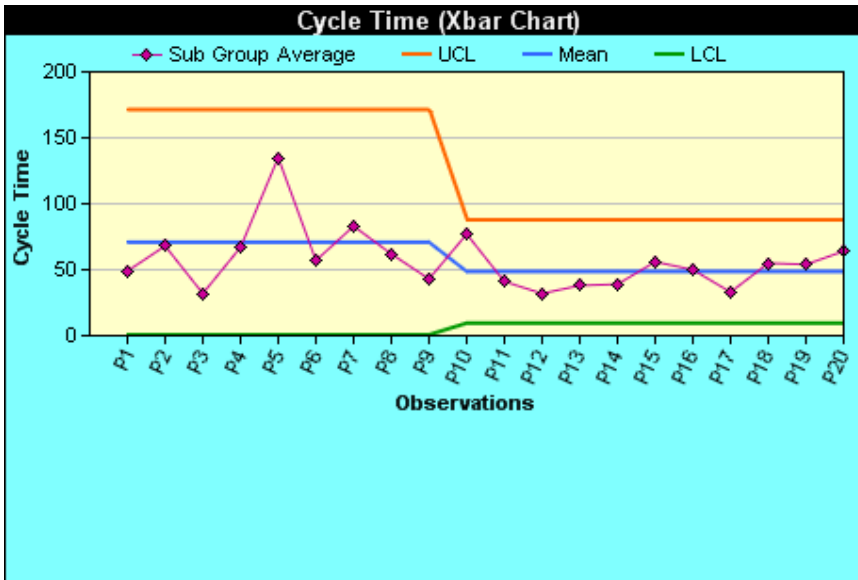


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 To Date :
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| | | | | Feb - 2008 | | | | | | | | | | | | | | | | | | |
|-----------------------|--|----------------|--------------------|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| | | | | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu |
| - Punctuality | From Date | To Date | No. of Days | | | | | | | | | | | | | | | | | | | |
| | Late Doctors | 05/08/2007 | 05/10/2007 | 3 | | | | | | | | | | | | | | | | | | |
| | Schedule patients | | | | | | | | | | | | | | | | | | | | | |
| | Remind patients of time | 05/11/2007 | 05/17/2007 | 7 | | | | | | | | | | | | | | | | | | |
| | Inform patients via SMS | 05/16/2007 | 05/19/2007 | 4 | | | | | | | | | | | | | | | | | | |
| - Breaks | From Date | To Date | No. of Days | | | | | | | | | | | | | | | | | | | |
| | Staggered breaks | 05/13/2007 | 05/20/2007 | 8 | | | | | | | | | | | | | | | | | | |
| | Staff should keep to break times | 05/14/2007 | 05/18/2007 | 5 | | | | | | | | | | | | | | | | | | |
| | Patients should be told of their times | 05/14/2007 | 05/22/2007 | 9 | | | | | | | | | | | | | | | | | | |
| - Consultation | From Date | To Date | No. of Days | | | | | | | | | | | | | | | | | | | |
| | Laboratory results must be inhand | 05/19/2007 | 05/23/2007 | 5 | | | | | | | | | | | | | | | | | | |
| | Use electronic records | 5/21/2007 | 05/25/2007 | 5 | | | | | | | | | | | | | | | | | | |
| | Retrieve files quickly | | | | | | | | | | | | | | | | | | | | | |



Comparison of Before and After



Process Capability



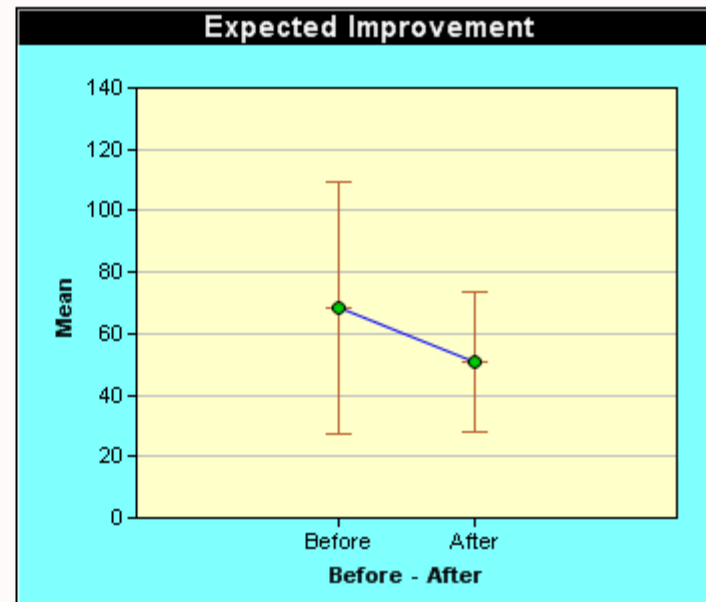
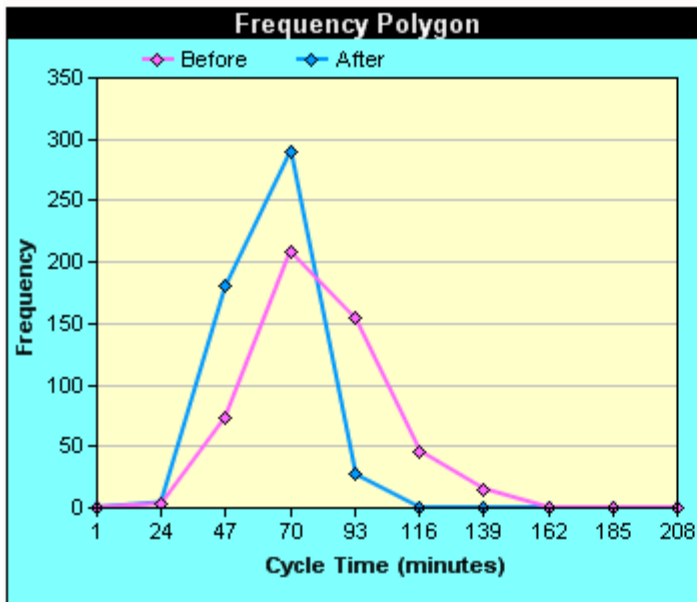
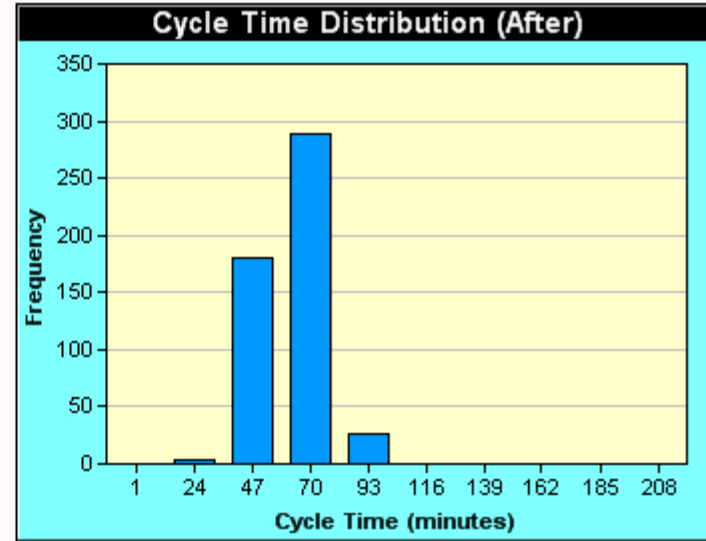
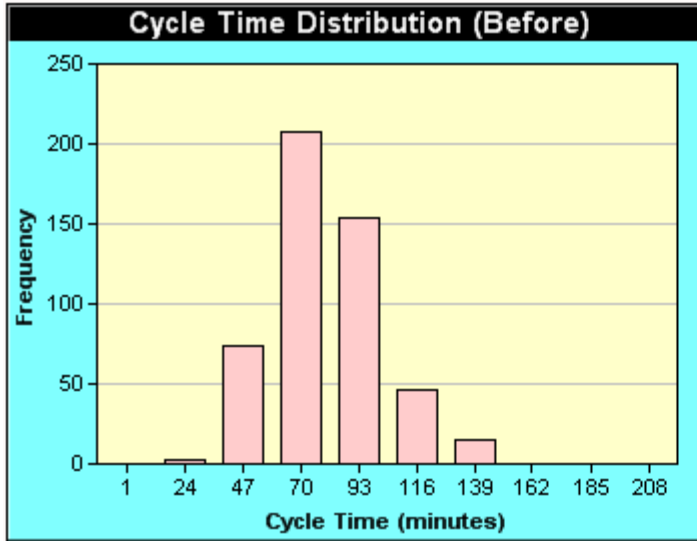
Cycle Time Analysis



| No. | Process Steps | Start | Elapsed | Bar Graph of Times | Comments |
|--------------|-------------------------|--------|---------------|--------------------|------------------------|
| 1 | Start | 0.000 | 0.000 | | |
| 2 | Sign In | 15.667 | 15.667 | | Computer not available |
| 3 | Triage by Nurse | 8.889 | 24.556 | | Waiting |
| 4 | Exam by Doctor | 7.556 | 32.111 | | Doctor Not Arrived |
| 5 | Bed Requested | 8.111 | 40.222 | | Information not send |
| 6 | Bed Request Time | 8.111 | 48.333 | | Incorrect bed number |
| 7 | Bed Assigned Time | 9.444 | 57.778 | | Wrong Patient |
| 8 | Patient Assigned to Bed | 8.444 | 66.222 | | Waiting |
| Total | | | 66.222 | | |
| 1 | Start | 0.000 | 0.000 | | Setup |
| 2 | Sign In | 6.455 | 6.455 | | Setup |
| 3 | Triage by Nurse | 5.818 | 12.273 | | Waiting |
| 4 | Exam by Doctor | 6.273 | 18.545 | | Doctor not arrived |
| 5 | Bed Requested | 8.273 | 26.818 | | Information not send |
| 6 | Bed Request Time | 7.182 | 34.000 | | In correct bed Number |
| 7 | Bed Assigned Time | 7.455 | 41.455 | | Wrong Patient |
| 8 | Patient Assigned to Bed | 7.545 | 49.000 | | Waiting |
| Total | | | 49.000 | | |

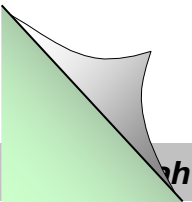
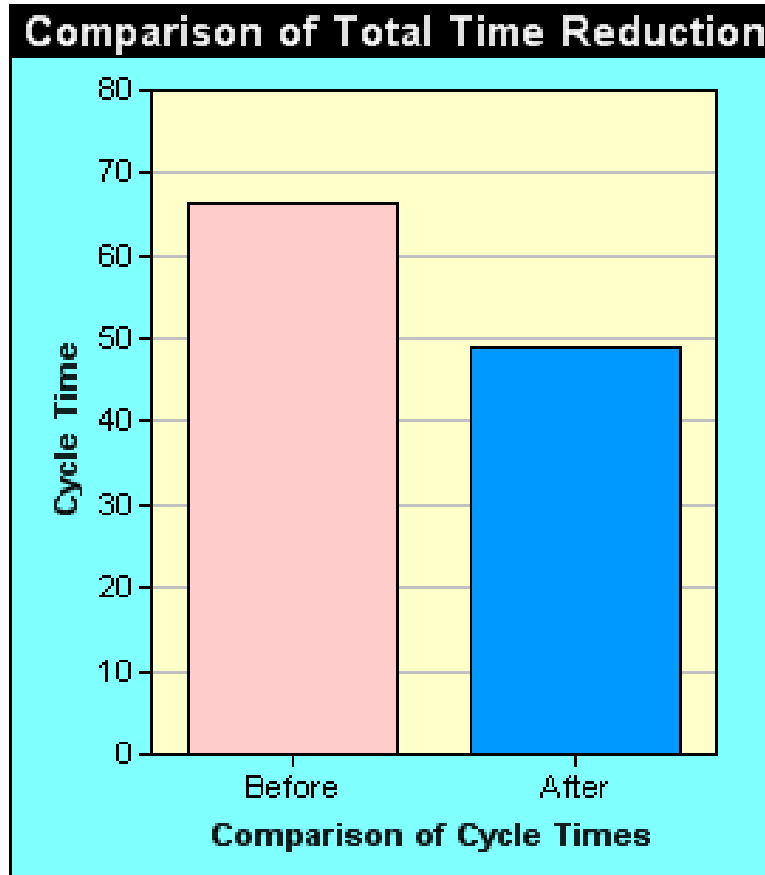


Simulated Expectation





Bottom Line Improvement





Root Cause Analysis (RCA)



Incident Details

| | | | |
|--|---|---------------------|---|
| Complaint No | 2 | Relationship | Vistor |
| Person Effected | | Person Complaining | |
| Name | Rosita Ahmad | Name | Ahmad Ibrahim |
| Gender | Female | Gender | Male |
| NRIC No | 42424353 | NRIC No | 7586979709 |
| Date Of Birth | 02-May-2007 | Date Of Birth | 01-Jun-2007 |
| Race | Chinese | Race | Malay |
| Incident Type | Internal Complaint | | |
| Describe the Incident | The patient fainted and fell to the floor after being given an IV drug. | | |
| Immediate Corrective Action | The drug was changed immediately. The patient was assured of the correct medicine and put in intensive care. | | |
| What the complainant wants to see happen | The nurse on duty used the drug for the patient in the next bed because both patients have similar problems but the drugs prescribed are of different concentrations. | | |
| Department | Gen Surgery NW 11 | Complaint Type | Communication Misinformation or failure in communication (but not failure to consult) Give inaccurate/wrong information |
| Event Type | Agents Medication Preparation/Dispensing | Contributing Factor | Task and technology factors Decision making aids Availability, use and reliability of specific types of tests, e.g. blood testing |
| Impact | Moderate | Risk | Possible |
| Investigation Level | 2 Minimal | Status | Not Resolved |
| Final Remarks | Successfully resolved the matter | | |

Complaint Analysis

| | | 30-Apr-2007 | 01-May-2007 | 02-May-2007 | 03-May-2007 | 04-May-2007 | 05-May-2007 | 06-May-2007 | 07-May-2007 | 08-May-2007 | 09-May-2007 | 10-May-2007 | 11-May-2007 | 12-May-2007 | 13-May-2007 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Date of Incident | 02-May-2007 | | | ■ | | | | | | | | | | | |
| Date of Complaint | 03-May-2007 | | | ■ | ■ | | | | | | | | | | |
| Date of Informing Department | 05-May-2007 | | | ■ | ■ | ■ | | | | | | | | | |
| Date of acknowledgement to Complainant | 08-May-2007 | | | | | ■ | ■ | ■ | ■ | | | | | | |
| Date of Letter to HOD for Actioning | 11-May-2007 | | | | | | | | | ■ | ■ | ■ | ■ | | |
| Date of Response from HOD after Actioning | | | | | | | | | | | | | | | |

| 1 | Nurses lack knowledge on child's behavior | | |
|---|---|---|--|
| 1 | Why? | Why did the nurse lack the knowledge on child's behavior? | Nurse have no proper training on child's care |
| 2 | Why? | Why did the nurse mistakenly give the medication to the wrong patient? | Because the nurse not aware patient moved to the other bed without informing the nurse |
| 3 | Why? | Why did the nurse not aware patient move to other bed? | Because the nurse don't bother to check if the patient on the bed same patient listed |
| 4 | Why? | Why did the nurse failed to check if patient still the same patient listed on their record? | Because the nurse is stress from work and in a hurry to go home after the long hour working shift |
| 5 | Why? | Why was the nurse stressed and in a hurry to go home? | Because of shortage of nurses on duty and the nurse have another responsibility in her family after work |
| | | | Root Cause |
| | | | Shortage of nurses on duty and the nurse have another responsibility in her family after work |



Action Level

Edit

Seriousness of Complaints

| | Minimum | Minor | Moderate | Major | Serious |
|----------------|---------|-------|----------|-------|---------|
| Rare | 1 | 1 | 2 | 2 | 3 |
| Unlikely | 1 | 1 | 2 | 3 | 4 |
| Possible | 1 | 2 | 3 | 3 | 4 |
| Likely | 1 | 2 | 3 | 4 | 4 |
| Almost Certain | 2 | 2 | 3 | 4 | 4 |

Setup Criteria

| | |
|---|----------|
| 1 | None |
| 2 | Minimal |
| 3 | Mini RCA |
| 4 | Full RCA |

Policy

| | |
|----------------------------------|----------|
| Time frame for resolution | 8 (Days) |
|----------------------------------|----------|



Action Needed



| No. | Process Stage | Objective | None | Minimal | Mini RCA | Full RCA |
|-----|-------------------------|---|--|------------------------------------|---|--|
| 1 | Event Registry | To record the event and determine action needed | Record in ICT-M Event Registry | Record in ICT-M Event Registry | Record in ICT-M Event Registry | Record in ICT-M Event Registry |
| 2 | RCA Team | Form Team to investigate event | Not necessary to form team | Investigation manager | Investigation to be conducted by small RCA team | Investigation to be conducted by full RCA team with leader |
| 3 | Critical Events | Collect data relevant to incident | Not necessary to investigation | Investigation by manager | Investigation by manager and some others | Full investigation by manager and all stakeholders |
| 4 | Identify Causal Factors | To understand what happened | Not necessary to investigation | Basic sequence of events | Detailed sequence of events | Thorough sequence of events |
| 5 | Identify Root Causes | Identify the factors contributing to event | Identify one important factor | Identify a few important factors | Identify all important factors | Identify all important factors thoroughly |
| 6 | Recommendations | Take necessary actions | 5 Why not necessary | 5 Why necessary | Detailed 5 Why necessary | Thorough 5 Why necessary |
| 7 | Lesson Learnt | What did we learn? | Risk reduction action is not necessary | Basic risk reduction by manager | Detailed risk reduction by manager and team | Thorough risk reduction by manager and team |
| 8 | W3 Programme | Develop an action plan | Action plan is not necessary | Basic action plan is necessary | Detailed action plan is necessary | Thorough action plan is necessary |
| 9 | Close RCA | Take appropriate action and close RCA | Implementation action is not mandatory | Basic action plan is necessary | Detailed action plan is necessary | Thorough action plan is necessary |
| 10 | Effectiveness | Did we achieve an effective system? | Evaluation of effectiveness is not mandatory | Basic observation of effectiveness | Detailed observation of effectiveness | Detailed observation of effectiveness |



Critical Events



[Edit](#)

Detailed sequence of events

| No. | Event Date-Time | Event Location | Person(s) Involved | Event Description | Comments |
|-----|----------------------|----------------|--------------------|---|--|
| 1 | 02-May-2007 11:49 AM | Patient Ward | Nurse A | Nurse A prepared medicines on a tray for the patients | Usual procedure |
| 2 | 02-May-2007 06:51 PM | Patient Ward | Nurse A | Nurse A on a phone call for 15 mins | The nurse has a new boyfriend |
| 3 | 02-May-2007 06:52 PM | Patient Ward | Nurse A | Nurse A asked Nurse B to gave the medications to patients due for 8am dose | Nurse B and Nurse A are good friends |
| 4 | 02-May-2007 06:53 PM | Patient Ward | Nurse B | Gave and administered prepared medications to patients | Nurse B gave the drug while Nurse A was on the phone |
| 5 | 02-May-2007 06:53 PM | Patient Ward | Nurse B | Patient PDC injected with Amoxicillin known to have allergy to Penicillin | Nurse B did not know of patients allergy |
| 6 | 02-May-2007 06:54 PM | Patient Ward | Nurse B | Nurse B finished giving medications to patients | Nurse B unaware of actions |
| 7 | 02-May-2007 06:54 PM | Patient Ward | Nurse A | Patient PDC complaints of itchininess and difficulty of breathing | Nurse A surprised at patients reaction |
| 8 | 02-May-2007 06:54 PM | Patient Ward | Nurse A | Nurse A called Patient Dr BK about the patient | Nurse A and B both scared |
| 9 | 02-May-2007 06:55 PM | Patient Ward | Sister S | Patient was given Oxygen inhalation | Sister S was very helpful |
| 10 | 02-May-2007 06:55 PM | Patient Ward | Patient | Patient suffered Severe Anaphylactic Shock | Patients father was very angry |
| 11 | 02-May-2007 06:55 PM | Patient Ward | Dr. BK | Dr. BK came to realize that staff nurse administered wrong medication for patient | Dr. BK was visibly upset at Nurse A and B |
| 12 | 02-May-2007 06:55 PM | Patient Ward | Patient | Patient was transferred to PICU (Pediatric Intensive Care Unit) ward | Patients father demanded an explanation |



Identifying Root Cause



| 1 Nurses lack knowledge on childs behavior | | | |
|--|------|---|--|
| 1 | Why? | Why did the nurse lacks the knowledge on childs behavior? | Nurse have no proper training on childs care |
| 2 | Why? | Why the nurse mistakenly given the medication on the wrong patient? | Because the nurse not aware patient moved to the other bed without informing the nurse |
| 3 | Why? | Why did the nurse not aware patient move to other bed? | Because the nurse dont bother to check if the patient on the bed same patient listed |
| 4 | Why? | Why did the nurse failed to check if patient still the same patient listed on teir record | Because the nurse is stress from work and in a hurry to go home after the long hour working shift |
| 5 | Why? | Why was the nurse stressed and in a hurry to go home? | Because of shortage of nurses on duty and the nurse have another responsibility in her family after work |
| | | | Root Cause |
| | | | Shortage of nurses on duty and the nurse have another responsibility in her family after work |





W3 Action Program



[Edit](#) [Report Setup](#) From Date To Date [View](#)

Detailed action plan is necessary

| No. | Root Cause | Recommendations | Resources | PIC | From Date | To Date | Duration | Apr - 2007 | | | | | | | | | | | | | | | | | | | |
|----------|------------------------|-----------------|------------|-----------|--------------------|--------------------|-----------|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|--|
| | | | | | | | | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | | | |
| 1 | Shortage of nur | | | | 12-Apr-2007 | 25-Apr-2007 | 13 | | | | | | | | | | | | | | | | | | | | |
| 1 | Increase staffi | Assign mor | Hire more | Allan | 12-Apr-2007 | 17-Apr-2007 | 5 | | | | | | | | | | | | | | | | | | | | |
| 2 | Nurses should h | Nurses sho | Provide ap | Brian | 16-Apr-2007 | 19-Apr-2007 | 3 | | | | | | | | | | | | | | | | | | | | |
| 3 | 5 S Housekeepin | Apply 5S H | Provide nu | Collin | 19-Apr-2007 | 25-Apr-2007 | 6 | | | | | | | | | | | | | | | | | | | | |
| 4 | The following s | Design and | Give nurse | Doreen | 19-Apr-2007 | 25-Apr-2007 | 6 | | | | | | | | | | | | | | | | | | | | |
| 2 | Management sold | | | | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | | | | | | |
| 1 | Chief Nurse sho | Design and | Chief nurs | Elaine | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | | | | | | |
| 2 | ICT should be i | Make appoi | Encourage | Frenie | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | | | | | | |
| 3 | If possible mus | Encourage | Provide nu | Geraldine | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | | | | | | |
| 3 | Deliver good qu | | | | 07-May-2007 | 29-May-2007 | 22 | | | | | | | | | | | | | | | | | | | | |
| 1 | Management shou | Designate | Give train | Helen | 07-May-2007 | 22-May-2007 | 15 | | | | | | | | | | | | | | | | | | | | |
| 2 | Clinical Perfor | Plan a tra | Provide CP | Irene | 22-May-2007 | 24-May-2007 | 2 | | | | | | | | | | | | | | | | | | | | |
| 3 | Use appropriate | Select app | Submit bud | Janete | 22-May-2007 | 24-May-2007 | 2 | | | | | | | | | | | | | | | | | | | | |
| 4 | Provide Quality | Send hospi | Call a Gua | Karen | 25-May-2007 | 29-May-2007 | 4 | | | | | | | | | | | | | | | | | | | | |



Close RCA



Detailed action plan is necessary

| No. | Root Cause | Recommendations | Resistance Faced | How to Overcome Resistance | Progress | PIC |
|----------|---|---|--|---|--|--------|
| 1 | Shortage of nurses on duty and the nurse have another responsibility in her family after work | | | | | |
| 1 | Increase staffing to decrease workload and responsibilities. | Assign more nurses that are knowledgeable and well-experienced to prone-medical error workplace. | Lack of knowledgeable and well-trained nurses. | Give incentives to staff who can refer a qualified nurses for the position. | More quified nurses applied for the position posted. | Allan |
| 2 | Nurses should have checklist to prevent errors in their work. | Nurses should use checklist in all types of work. | Nurses prefer to do work on their routine way. | Provide Awareness training to all nurses. | More nurses adapt to use checklist in their daily work. | Brian |
| 3 | 5 S Housekeeping must be implemented in their workplace. | Apply 5S Housekeeping in the workplace. | Nurses not interested to do 5S in the workplace. | Send nurses for a Workshop on 5S Housekeeping. | Nurse station is well-organized and arranged. Nurses able to locate things easily. Nurses done their work with ease and on time in a better way. | Collin |
| 4 | The following should be implemented: Creative scheduling options, Let nurse choose their overtime, and offer referral bonuses to employees. | Design and develop a creative scheduling options for nurses and provide them with better incentives and benefits. | Shortage of nurses. | Hire more knowledgeable and experienced nurses. Give nurses good salary, better incentives and benefits. Offer referral bonuses to employees. | More quified nurses being added. Nurses are more focus on their work. They are happy with their working schedule. | Doreen |



Summary Status



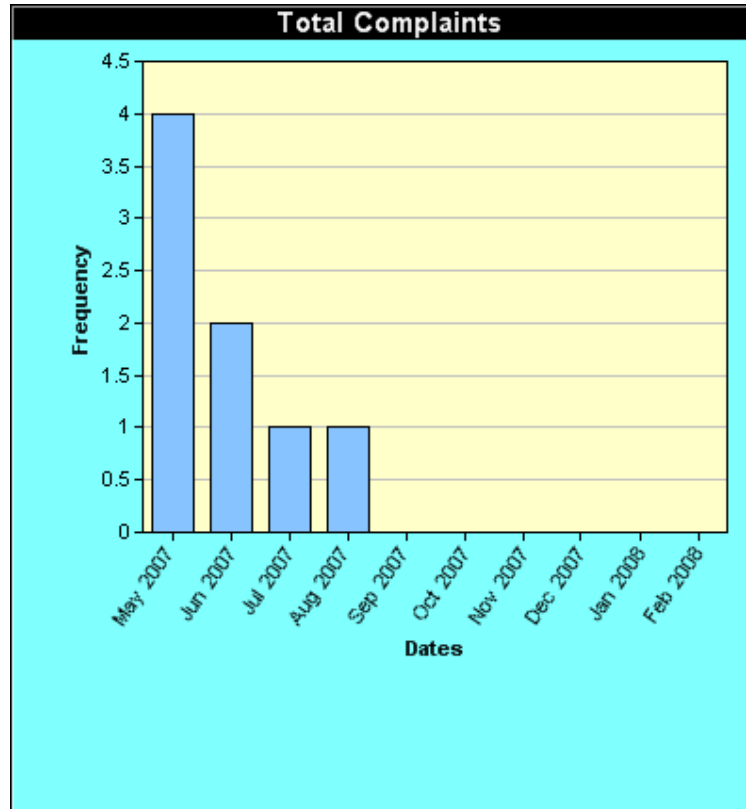
Incident Type Outcome Investigation Level

■ Resolved within policy time frame ■ Resolved out of policy time frame ■ Not resolved and out of policy time frame

| Complaint Id. | Incident Type | Outcome | Invest Level | Complaint Date | Complaint | Days |
|---------------|--------------------|--------------|--------------|----------------|---|------|
| 2 | Patient Complaint | Not Resolved | Mini RCA | 03-May-2007 | The patient fainted and fell to the floor after being given an IV drug. | 292 |
| 3 | Customer Complaint | Not Resolved | Full RCA | 02-May-2007 | The patient was operated on the wrong side of the abdomen. | 293 |
| 4 | Internal Complaint | Pending | Minimal | 18-Apr-2007 | Patient went missing | 307 |
| 5 | Patient Incident | Resolved | Mini RCA | 09-May-2007 | The staff at the canteen were rude | 8 |
| 6 | Customer Incident | Not Resolved | Full RCA | 15-May-2007 | The nurse was not able to answer as to the condition of her mother | 280 |
| 7 | Customer Incident | Resolved | None | 10-May-2007 | A wrong procedure was conducted on the patient | 8 |
| 8 | Internal Incident | Not Resolved | Minimal | 25-May-2007 | The discharge took a long time | 270 |
| 9 | Patient Complaint | Not Resolved | None | 17-May-2007 | The patient did not like the food given in the wards. | 278 |
| 10 | Customer Complaint | Not Resolved | Minimal | 11-Apr-2007 | Wrong medication by the pharmacy | 314 |
| 11 | Internal Complaint | Pending | Mini RCA | 09-May-2007 | Wife was put at a very noisy area at the ward. | 286 |
| 12 | Customer Incident | Not Resolved | Minimal | 22-May-2007 | Needle stick | 273 |



Trend Bar Chart



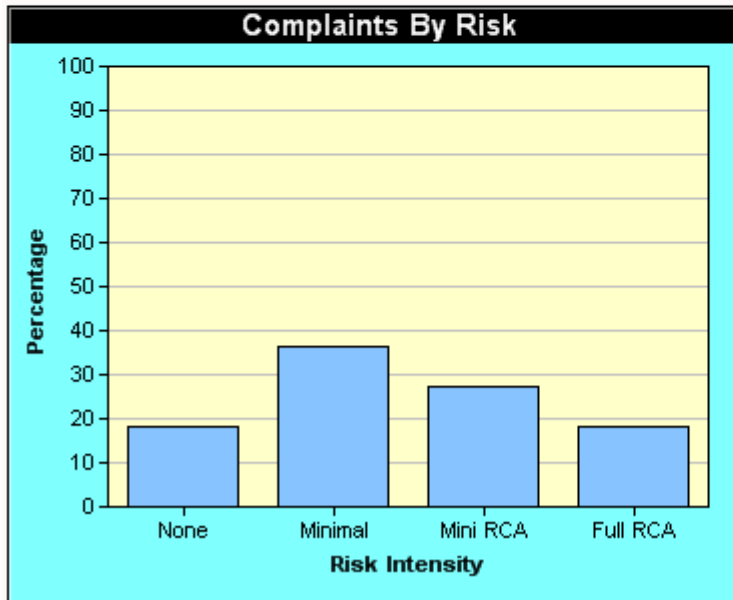


Risk Analysis

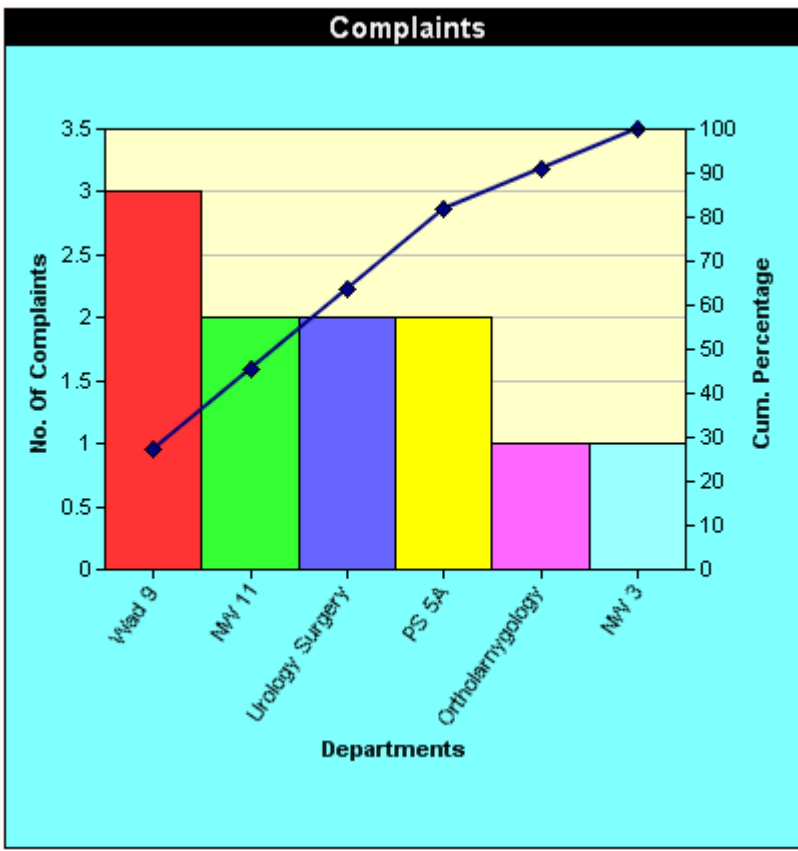


| | Minimum | Minor | Moderate | Major | Serious | Total |
|----------------|----------|----------|----------|----------|----------|-----------|
| Rare | 0 | 0 | 1 | 0 | 0 | 1 |
| Unlikely | 1 | 1 | 1 | 1 | 0 | 4 |
| Possible | 0 | 2 | 1 | 0 | 1 | 4 |
| Likely | 0 | 0 | 0 | 0 | 1 | 1 |
| Almost Certain | 0 | 0 | 1 | 0 | 0 | 1 |
| Total | 1 | 3 | 4 | 1 | 2 | 11 |

| | | | |
|---|----------|---|--------|
| 1 | None | 2 | 18.18% |
| 2 | Minimal | 4 | 36.36% |
| 3 | Mini RCA | 3 | 27.27% |
| 4 | Full RCA | 2 | 18.18% |

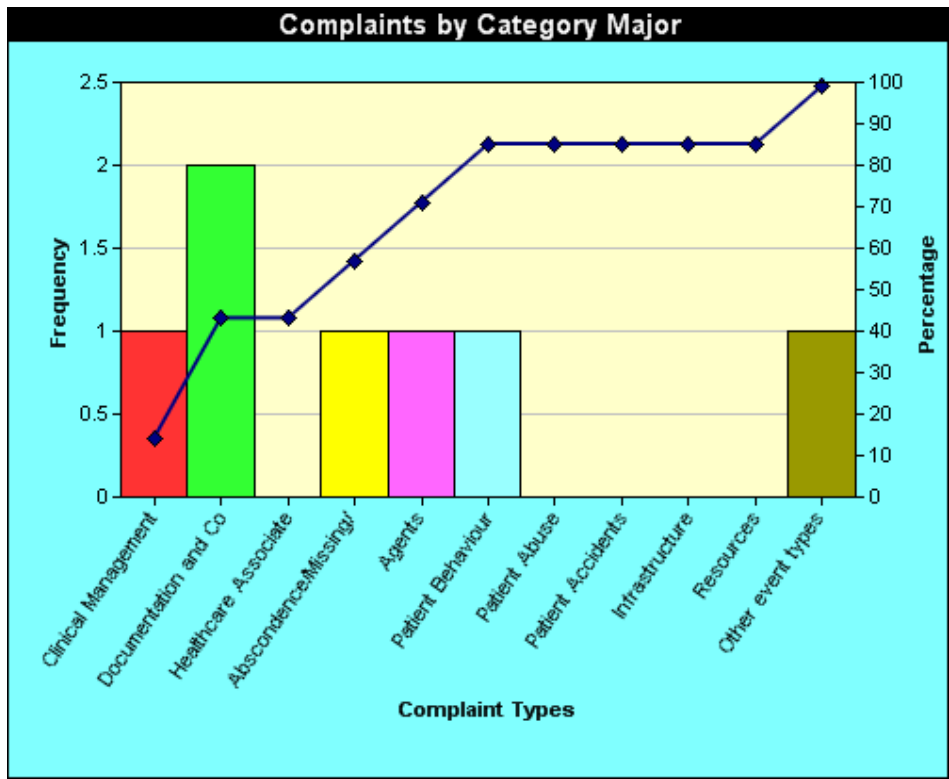


Department Report



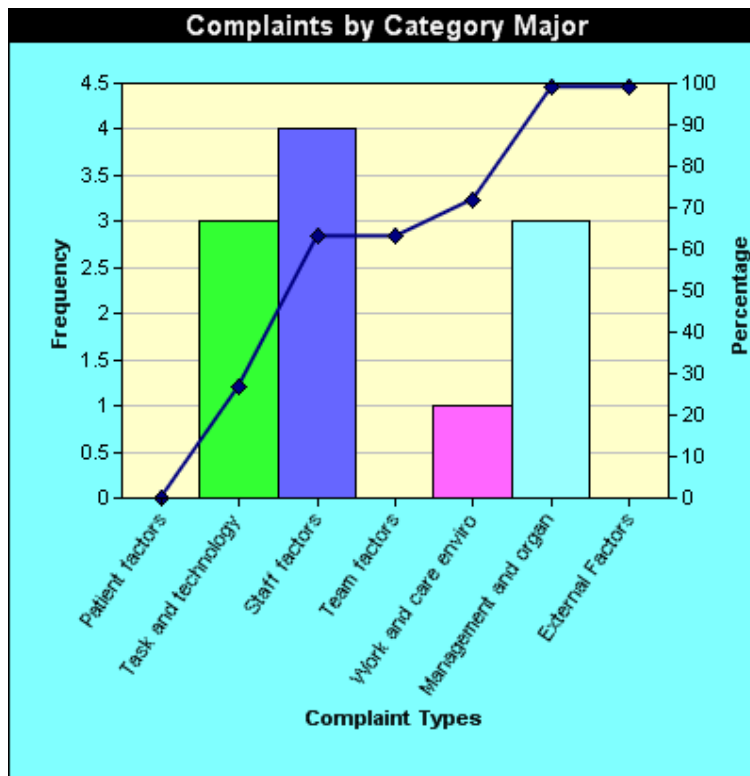


Complaints by Category



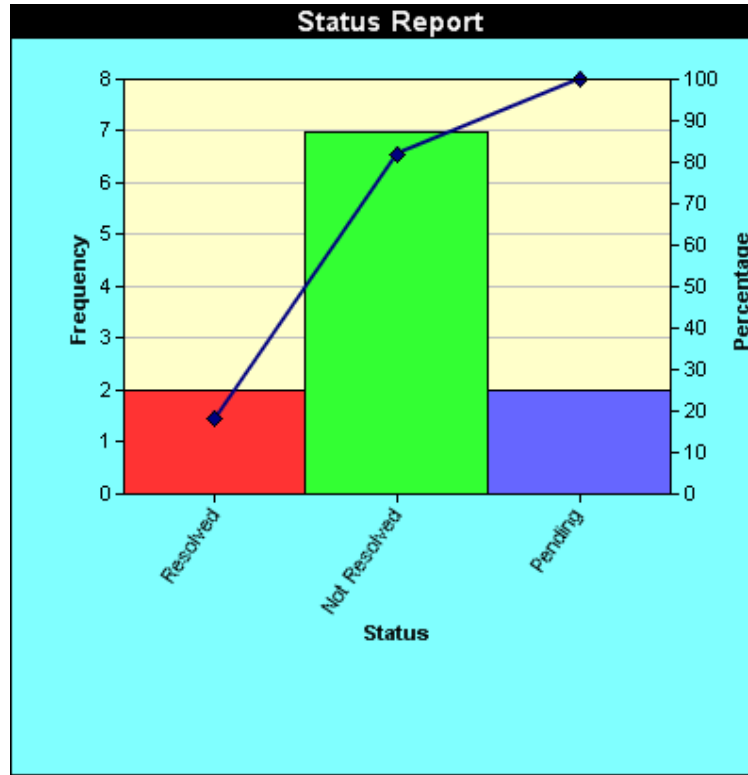


Complaints by Causal Factors



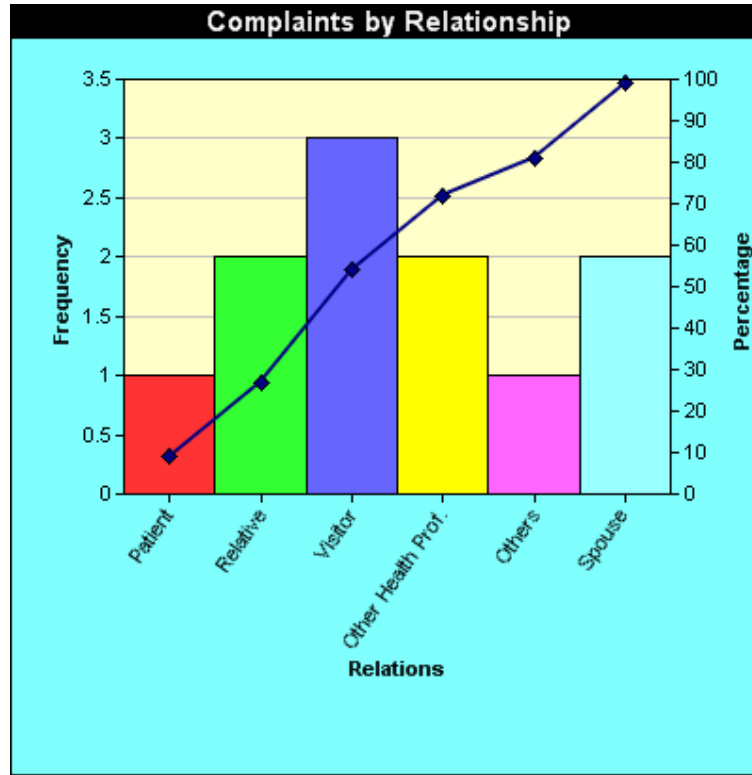


Complaints by Status





Complaints by Relations



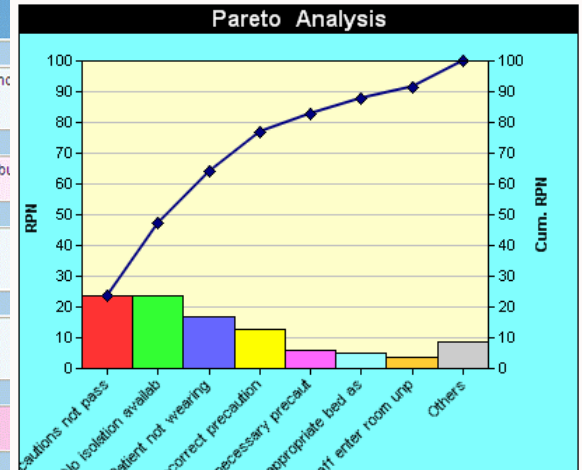


Healthcare Failure Mode Effects Analysis (HFMEA)



Belmah Strategies

| No. | Process | Potential Failure Mode | Potential Effects of Failure | S | Potential Causes of Failure | O | D | RPN | Recommended Action |
|---|---------|---|---|---|---|---|---|-----|---|
| 1 Infection control questions asked through glass partition. | | | | | | | | | |
| 1.1 | | Step missed questions not understood by patient. Patients dont tell truth. | Potential infection missed and others put at risk. | 1 | Language barrier, staff talking quickly, patient embarrassed, hoping for faster service. | 4 | 5 | 20 | Signage to alert patient to screening process and why necessary. |
| 2 Infection control sheet filled out. | | | | | | | | | |
| 2.1 | | Unnecessary precaution, inappropriate precaution. | Risk spread of infection becomes overwhelmed. | 2 | Inadequate assessment info and time to decide. | 8 | 8 | 128 | Ask questions in step 1 to protect Triage nurse by complete infection control form in step 4. |
| 3 Patient asked to carry out infection control precautions, apply mask or hand wash. | | | | | | | | | |
| 3.1 | | Patient refuses to comply, patient unable to comply. | Risk of spread of infection. | 2 | Children, cognitive impairment, too sick to wear mask, isolation unavailable. | 3 | 1 | 6 | Staff to wear appropriate PPE. Staff to be clear with instructions and reinforce behavior. |
| 4 Patient brought to Triage area for assessment. | | | | | | | | | |
| 4.1 | | Staff not wearing PPE. Temperature not recorded on screening tool. | Temperatures not recorded, all should be. | 1 | Interpretation of directions on form. | 5 | 1 | 5 | Change form, example provided. Staff ED. |
| 5 Infection control precautions entered in computer. | | | | | | | | | |
| 5.1 | | Incorrect precaution entered. | Risk of infection transmission. | 5 | Not understanding categories. Computer entry errors. | 8 | 7 | 280 | Change drop chart on computer add BSP for nil most used order by staff ED. |
| 6 Patient sent to waiting area. | | | | | | | | | |
| 6.1 | | No isolation available, patient noncompliant with infection control precaution. | Risk of spread of infection. Risk to immuno compromised patients. | 8 | Lack of space in department and waiting room. | | | | |
| 7 Patient brought to room in Emerg. | | | | | | | | | |
| 7.1 | | Precautions not passed on to ER staff. | Infection risk to staff and other patients. | 8 | Infection control not on chart face. Many people taking patients to department. Signs not put on room. Infection control not on desk monitor. | | | | |
| 8 RN enters room for initial assessment. | | | | | | | | | |
| 8.1 | | Staff enter room unprotected for initial assessment. | Risk of spread of infection to staff. | 2 | Sign not on door. Staff not checking Tracking Board. | | | | |
| 9 Health professionals and other services enter room. | | | | | | | | | |
| 9.1 | | Other department staff enters room unprotected or inappropriate use of PPE. | Risk of spread of infection. | 2 | Signage not coordinated. Triage incorrect. Signs not visible from angles in the acute room. Not enough isolation carts. | | | | |
| 10 Patient and family informed of required infection control precautions and risks. | | | | | | | | | |
| 10.1 | | Family not using PPE and other infection control measures. | Risk of spread of infection to family and community. | 2 | Family not informed of infection control measures to take. Family noncompliant. | | | | |



| No. | Potential Failure Mode | RPN |
|-----|--|-------------|
| 1 | Step missed questions not understood by patient. Patients dont tell truth. | 20 |
| 2 | Unnecessary precaution, inappropriate precaution. | 128 |
| 3 | Patient refuses to comply, patient unable to comply. | 6 |
| 4 | Staff not wearing PPE. In Yes section A temperature not recorded in section B on screening tool. | 5 |
| 5 | Incorrect precaution entered. | 280 |
| 6 | No isolation available, patient noncompliant with infection control precaution. | 512 |
| 7 | Precautions not passed on to ER staff. | 512 |
| 8 | Staff enter room unprotected for initial assessment. | 80 |
| 9 | Other department staff enters room unprotected or inappropriate use of PPE. | 80 |
| 10 | Family not using PPE and other infection control measures. | 48 |
| 11 | Patient not wearing necessary PPE. staff in other departments unaware of infection control precautions. Porters not wearing PPE. | 360 |
| 12 | Inappropriate bed assignment. | 108 |
| 13 | Patient sent to floor with infection control status unreported. | 24 |
| | Total | 2163 |



Severity



| Description | Rank ▲ | |
|-------------------------------|-----------|--|
| Severity | | |
| No danger | 1 | Failure causes no injury and has no impact on system. |
| Slight danger | 2 | Failure causes no injury and customer is unaware of problem however the potential for minor injury exists; little or no effect on system. |
| Low to Moderate danger | 3 | Failure causes very minor or no injury but annoys customer and/or results in minor system problems that can be overcome with minor modifications to system or process. |
| Low to Moderate danger | 4 | Failure causes very minor or no injury but annoys customer and/or results in minor system problems that can be overcome with minor modifications to system or process. |
| Moderate danger | 5 | Failure causes minor injury with some customer dissatisfaction and/or minor system problems. |
| Moderate danger | 6 | Failure causes minor injury with some customer dissatisfaction and/or major system problems. |
| Dangerous | 7 | Failure causes minor injury with customer dissatisfaction and/or major system problems. |
| Very dangerous | 8 | Failure could cause major or permanent injury and/or serious system disruption with interruption in service with prior warning. |
| Very dangerous | 9 | Failure could cause major or permanent injury and/or serious system disruption with interruption in service without any prior warning. |
| Extremely dangerous | 10 | Failure could cause death of a customer (patient, visitor, employee, staff member, business partner) and/or total system breakdown without any prior warning. |



Occurrence



| Occurrence | | |
|--|-----------|---|
| Remote probability of occurrence | 1 | Failure almost never occurs, no one remembers last failure. |
| Low probability of occurrence | 2 | Failure occurs rarely or about once per year. |
| Moderate probability of occurrence | 3 | Failure occurs occasionally or once every 6 months. |
| Moderate probability of occurrence | 4 | Failure occurs occasionally or once every 3 months. |
| Moderate high probability of occurrence | 5 | Failure occurs about once in every 2 months. |
| Moderate high probability of occurrence | 6 | Failure occurs about once per month. |
| Very high probability of occurrence | 7 | Failure occurs frequently or about once a fortnight. |
| Very high probability of occurrence | 8 | Failure occurs frequently or about once a week. |
| Failure is almost inevitable | 9 | Failure occurs predictably or occurs every 4 days |
| Certain probability of Occurrence | 10 | Failure occurs at least once a day. |



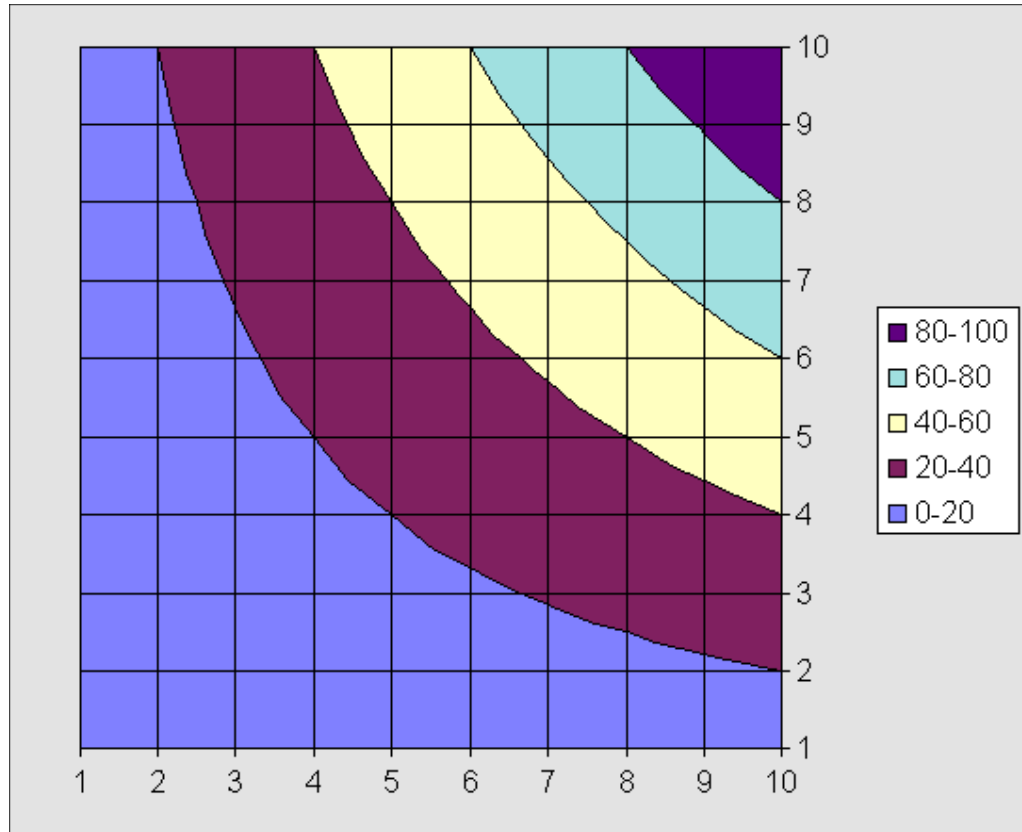
Detection



| Detection | | |
|-------------------------------------|-----------|---|
| Almost certain | 1 | There are automatic "shut-offs" or constraints that prevent failure. Very likely it will be detected. |
| Very high | 2 | There is 100% inspection of the process and it is automated. |
| High | 3 | High chance the Design Control will detect a potential Cause of failure |
| High | 4 | There is 100% inspection or review of the process but it is not automated. |
| Moderate chance of detection | 5 | There is a process for double-checks or inspection but no process is in place so that detection left to chance. |
| Remote | 6 | Low chance |
| Remote | 7 | The error can be detected with manual inspection but no process is in place so that detection left to chance. |
| Very remote/Unreliable | 8 | The failure can be detected only with through inspection and this is not feasible or cannot be readily done. |
| Very remote/Unreliable | 9 | The failure can be detected only with through inspection and this is not feasible or cannot be readily done. |
| No chance of detection | 10 | There is no known mechanism for detecting the failure. Very likely it will not be detected. |

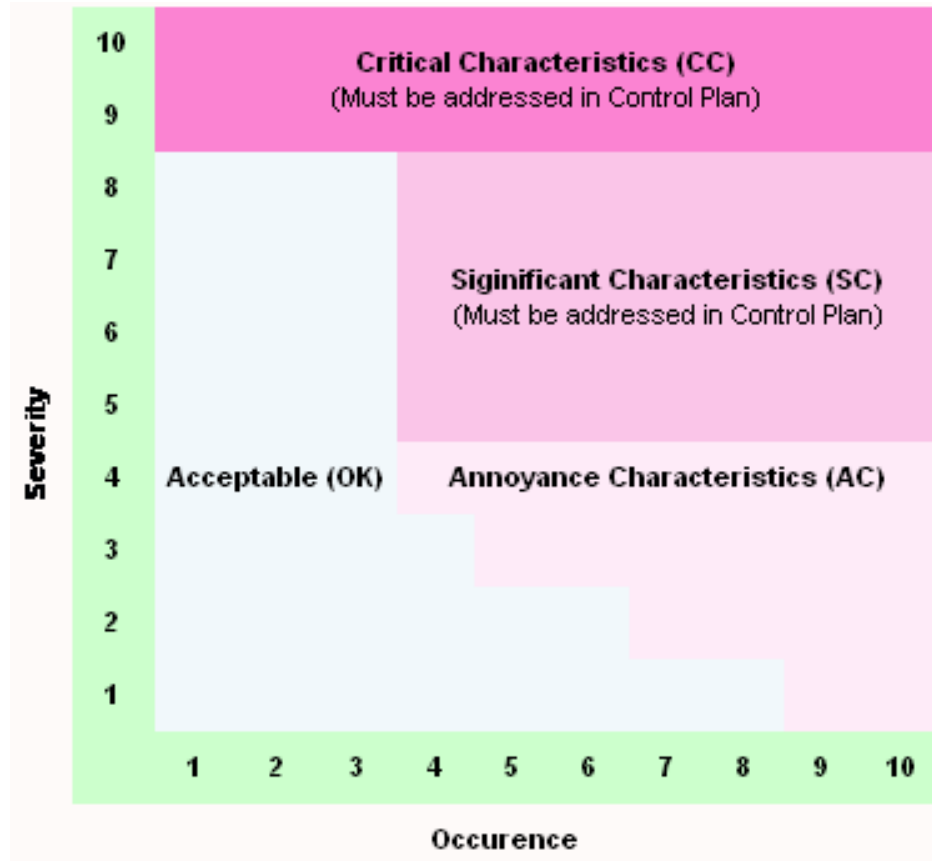


Contour Map of Criticality





Severity vs. Occurrence





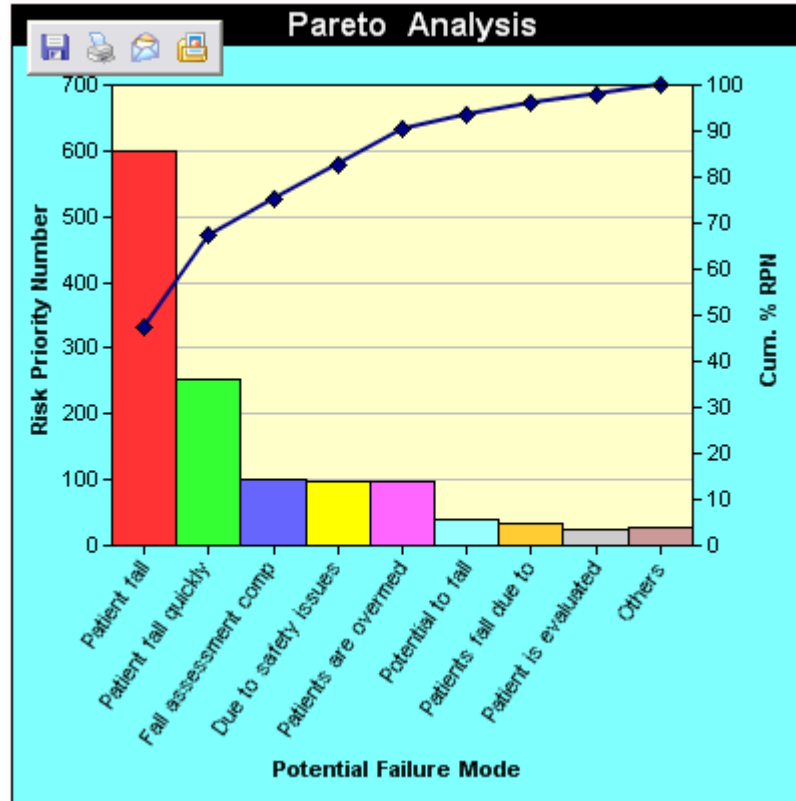
FMEA Process



| Edit | | Arrange | | Expand All | | Collapse All | | Show / Hide Column | | CC | | SC | | AC | | OK | |
|-------------------------------------|--|---|---|------------|--|--------------|-------|-----------------------------|----------------------------|----|-----|--|----------------|----|--|----|--|
| No. | Process | Potential Failure Mode | Potential Effects of Failure | S | Potential Causes of Failure | O | Class | Current Controls Prevention | Current Controls Detection | D | RPH | Recommended Action | Responsibility | | | | |
| 1 Fall Assessment | | | | | | | | | | | | | | | | | |
| 1.1 | Fall assessment completed upon admission | Fall assessment completed upon admission | Potential injury | 10 | Effects of anesthesia, analgesia. | 1 | CC | | | 10 | 100 | Patients are ambulated with assistance for first 24 hours per policy. Placed on fall risk precautions. Dont fall call program. | Chin Yong | | | | |
| 1.2 | Patient assessment | Patient is not assessed at time of admission. | Inaccurate fall risk assigned to patient | 8 | Lack of staffing | 2 | OK | | | 1 | 16 | Nightly chart audits to assure completion of admission evaluation | Wahab Harun | | | | |
| 2 Inaccurate Fall Assessment | | | | | | | | | | | | | | | | | |
| 2.1 | Fall assessment | Potential to fall | No injury to severe injury | 8 | Slip, trip, equipment, IV tubing, drains, drainge bags, liquid on floor, urinary urgency, diarrhea | 1 | OK | | | 5 | 40 | All patients are assigned fall risk category and assisted to chair first 24 hours per policy. | Abdullah | | | | |
| 2.2 | Patient opinion | Patient is evaluated to be at a fall risk not consistant with presentation. | Fall interventions are not implemented correctly. | 6 | Inaccurate assessment tool. Lack of training to use of tool. | 1 | OK | | | 4 | 24 | Provide in orientation training on Fall prevention. Monitor Fall events for specific criteria. | Leong Soon Lim | | | | |



Pareto Analysis





Summary



Comments

We experimented with many ways of doing a study on reducing patient falls. This was a new idea we tried. We are happy with the outcome.

Observations

Initially it looked like it was going to be a difficult tasks but as we started into the project, a lot of the steps became clearer and do able.

Lesson Learnt

Using the right method, we are able to comprehend the issue better and develop a systematic way of managing the inpatient falls to a desirable level.

Summary

This application must be made available to all other units and departments so as to use this method in all other areas where it can be used.

Next Action

The hospital must introduce HFMEA so that the maximum benefit of HFMEA can be capitalized to the maximum



Incident Reporting (IR)



Form 1

Departments : Units :

<< < 4 > >>

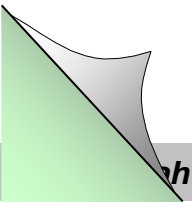
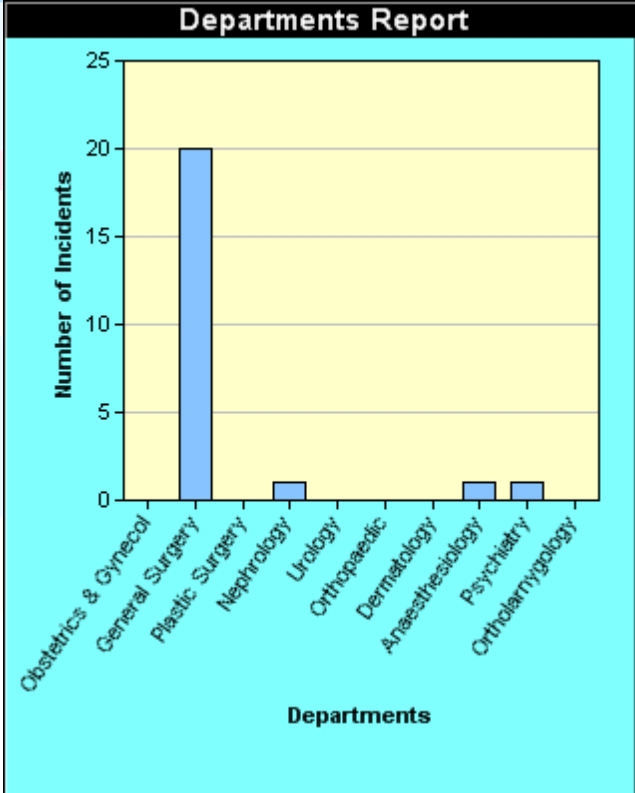
| | | | |
|--------------------------|---|------------------------|----------------------|
| Reporting Person | Ng Swee Ling | Date of incident | 01-Jun-2007 06:27 PM |
| Category | Others | Date of reporting | 02-Jun-2007 06:27 PM |
| Involved in the incident | | If patient is involved | |
| Witnessed the incident | Yes | Name | |
| State | Johor | R/N | |
| Hospital | Hospital Tuanku Ampuan Najihah, Kuala Pilah | Ward | |
| Incident Type | Radiology / laboratory error | | |

Part A Part B Part C

Summary of the Incident

The laboratory report was not signed off.

Name Jamilah
Signature Jamilah





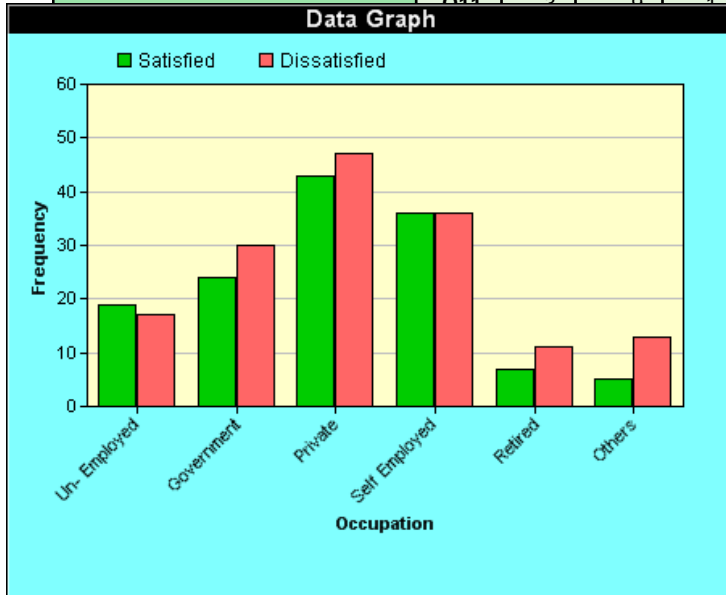




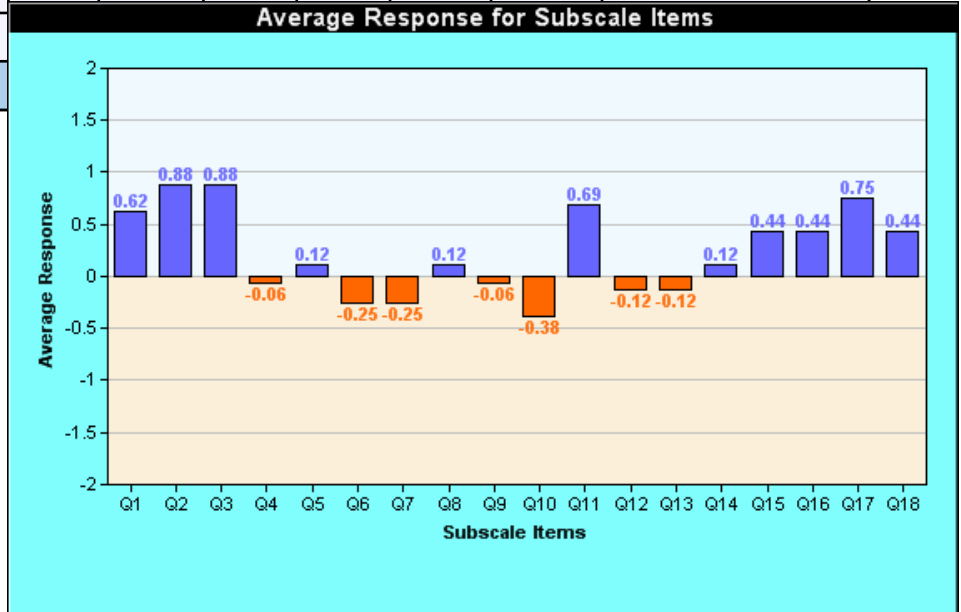
Patient Satisfaction Questionnaire (PSQ)



| | Care Received (Care Expected) | | | | | | | | | | | T-Test | |
|----------------------|-------------------------------|---|---|---|---|---|------|-------|------|------|-------|--------|---------------------|
| | No. | 1 | 2 | 3 | 4 | 5 | Tot. | Expt. | Var. | +CI | -CI | T-Val. | Decision |
| General Satisfaction | Q3 | 5 | 6 | 3 | 2 | 0 | 16 | 0.88 | 1.05 | 1.38 | 0.37 | 3.42 | Good |
| | Q17 | 2 | 9 | 4 | 1 | 0 | 16 | 0.75 | 0.60 | 1.13 | 0.37 | 3.87 | Good |
| Technical Quality | Q2 | 3 | 9 | 3 | 1 | 0 | 16 | 0.88 | 0.65 | 1.27 | 0.48 | 4.34 | Good |
| | Q4 | 2 | 3 | 4 | 6 | 1 | 16 | -0.06 | 1.40 | 0.52 | -0.64 | -0.21 | Immediate Attention |
| | Q6 | 0 | 4 | 5 | 6 | 1 | 16 | -0.25 | 0.87 | 0.21 | -0.71 | -1.07 | Urgent Action |
| | Q14 | 2 | 6 | 3 | 2 | 3 | 16 | 0.12 | 1.85 | 0.79 | -0.54 | 0.37 | Improve |
| Interpersonal Manner | Q10 | 0 | 3 | 6 | 5 | 2 | 16 | -0.38 | 0.92 | 0.09 | -0.84 | -1.57 | Crisis Situation |
| | Q11 | 2 | 9 | 4 | 1 | 0 | 16 | 0.62 | 1.05 | 1.13 | 0.12 | 2.44 | Good |



| | |
|----|----|
| 2 | 0 |
| 5 | 2 |
| 60 | 20 |





Likert Scale : 5 Direction : (1) Strongly Agree --- (5) Strongly Disagree

| Scale | Description | Bahasa Malaysia |
|-------|-------------------|---------------------|
| 1 | Strongly Agree | Sangat Setuju |
| 2 | Agree | Setuju |
| 3 | Uncertain | Tidak Pasti |
| 4 | Disagree | Tidak Setuju |
| 5 | Strongly Disagree | Sangat Tidak Setuju |

| Grade No | Grade | Category | Description |
|----------|-------|--------------|-------------|
| 1 | A | Satisfied | |
| 2 | B | Satisfied | |
| 3 | C | Dissatisfied | |
| 4 | D | Dissatisfied | |
| 5 | E | Dissatisfied | |



Subscale Items



| Ilo. | Catch Line | Care Received (Care Expected) | Status |
|------|---|---|--------|
| Q1 | Explain the reason for tests. <i>Menjelaskan alasan untuk ujian.</i> | Doctors are good about explaining the reason for medical tests. <i>Doktor baik dalam menjelaskan alasan untuk menjalankan ujian perubatan.</i> | P |
| Q2 | Office has everything needed. <i>Pejabat mempunyai semua keperluan.</i> | I think my doctors office has everything needed to provide complete medical care. <i>Saya berpendapat pejabat doktor saya mempunyai segala keperluan yang diperlukan untuk ujian perubatan yang sempurna.</i> | P |
| Q3 | Care just about perfect. <i>Perkhidmatan adalah sempurna.</i> | The medical care I have been receiving is just about perfect. <i>Perkhidmatan perubatan yang saya perolehi adalah sempurna.</i> | P |
| Q4 | Wonder if diagnosis is correct. <i>Tertanya-tanya sekiranya diagnostic adalah tepat.</i> | Sometimes doctors make me wonder if their diagnosis is correct. <i>Kadang-kadang doktor menyebabkan saya tertanya-tanya sekiranya diagnostic mereka adalah tepat.</i> | N |
| Q5 | Care without financial setback. <i>Rawatan yang murah.</i> | I feel confident that I can get the medical care I need without being set back financially. <i>Saya pasti untuk memperoleh rawatan perubatan yang diperlukan tanpa melibatkan wang yang banyak.</i> | P |
| Q6 | Careful to check everything. <i>Pemeriksaan perubatan yang komprehensif.</i> | When I go for medical care, they are careful to check everything when treating and examining me. <i>Bila saya hadir untuk rawatan perubatan, mereka menyiasat dengan berhati-hati bila merawat dan memeriksa saya.</i> | P |
| Q7 | Pay more than can afford. <i>Membayar lebih dari kemampuan</i> | I have to pay for more of my medical care than I can afford. <i>Saya terpaksa membayar melebihi kemampuan saya untuk perkhidmatan perubatan.</i> | N |
| Q8 | Easy access to specialists. <i>Senang berjumpa dengan doctor pakar.</i> | I have easy access to the medical specialists I need. <i>Saya boleh berhubung dengan doctor pakar yang saya perlu.</i> | P |
| Q9 | Wait too long for emergency treatment. <i>Lama menunggu untuk perkhidmatan</i> | Where I get medical care, people have to wait too long for emergency treatment. <i>Di tempat saya mendapat perkhidmatan perubatan, orang awam terpaksa menunggu lama untuk mendapatkan perkhidmatan kecemasan.</i> | N |
| Q10 | Too business-like, impersonal. <i>Sangat mirip perniagaan, tanpa segan.</i> | Doctors act too businesslike and impersonal toward me. <i>Tindakan doktor sangat mirip perniagaan tanpa menyegani perasaan saya.</i> | N |



Subscales



| General Satisfaction | | |
|----------------------|---|--|
| Q3 | Care just about perfect. <i>Perkhidmatan adalah sempurna.</i> | The medical care I have been receiving is just about perfect. <i>Perkhidmatan perubatan yang saya perolehi adalah sempurna.</i> |
| Q17 | Dissatisfied with some things. <i>Tidak puas dengan beberapa perkara.</i> | I am dissatisfied with some things about the medical care I receive. <i>Saya tidak puas hati dengan beberapa perkara mengenai rawatan yang saya terima.</i> |
| Technical Quality | | |
| Q2 | Office has everything needed. <i>Pejabat mempunyai semua keperluan.</i> | I think my doctors office has everything needed to provide complete medical care. <i>Saya berpendapat pejabat doktor saya mempunyai segala keperluan yang diperlukan untuk ujian perubatan yang sempurna.</i> |
| Q4 | Wonder if diagnosis is correct. <i>Tertanya-tanya sekiranya diagnostic adalah tepat.</i> | Sometimes doctors make me wonder if their diagnosis is correct. <i>Kadang-kadang doktor menyebabkan saya tertanya-tanya sekiranya diagnostic mereka adalah tepat.</i> |
| Q6 | Careful to check everything. <i>Pemeriksaan perubatan yang komprehensif.</i> | When I go for medical care, they are careful to check everything when treating and examining me. <i>Bila saya hadir untuk rawatan perubatan, mereka menyasat dengan berhati-hati bila merawat dan memeriksa saya.</i> |
| Q14 | Doubt about ability of doctors. <i>Meragui kebolehan doktor.</i> | I have some doubts about the ability of the doctors who treat me. <i>Saya meragui kebolehan doktor yang merawat saya.</i> |
| Interpersonal Manner | | |
| Q10 | Too business-like, impersonal. <i>Sangat mirip perniagaan, tanpa segan.</i> | Doctors act too businesslike and impersonal toward me. <i>Tindakan doktor sangat mirip perniagaan tanpa menyegani perasaan saya.</i> |
| Q11 | Very friendly and courteous. <i>Ramah tamah dan berhemah.</i> | My doctors treat me in a very friendly and courteous manner. <i>Doktor merawat saya dengan ramah tamah dan berhemah tinggi.</i> |



Respondents



<< < Emma ▾ > >> [New](#) [Edit](#) [Delete](#) [Survey](#)

| | |
|---|---------------------------------------|
| Name | Emma |
| Address | Sungai Buloh |
| Age | 31-35 |
| Gender | Female |
| Citizenship | Malaysian |
| Race | Chinese |
| Marital Status | Widowed |
| Highest Education Level | Tertiary Education |
| Occupation | Government |
| Visiting Clinic | Specialist Clinic |
| No. of Visits | Thrice |
| Waiting Time | 20-29 minutes |
| What is your main problem that you encounter at this clinic? | cannot understand doctors explanation |



Data Collection



Respondents **All Respondents** ▼

[Switch to Bahasa Malaysia](#)

Likert Scale : 1 Strongly Agree 2 Agree 3 Uncertain 4 Disagree 5 Strongly Disagree

Care Received (Care Expected)

These next questions are about how you feel about the medical care you receive.
 On the following pages are some things people say about medical care. Please read each one carefully, keeping in mind the medical care you are receiving now.
 (If you have not received care recently, think about what you would expect if you needed care today.) We are interested in your feelings, good and bad, about the medical care you have received.
 How strongly do you AGREE or DISAGREE with each of the following statements?
 (Choose One Number on Each Line)

| Ilo. | Description | 1 | 2 | 3 | 4 | 5 |
|------|--|---|---|---|---|---|
| Q1 | Doctors are good about explaining the reason for medical tests. | 4 | 4 | 6 | 2 | 0 |
| Q2 | I think my doctors office has everything needed to provide complete medical care. | 3 | 9 | 3 | 1 | 0 |
| Q3 | The medical care I have been receiving is just about perfect. | 5 | 6 | 3 | 2 | 0 |
| Q4 | Sometimes doctors make me wonder if their diagnosis is correct. | 1 | 6 | 4 | 3 | 2 |
| Q5 | I feel confident that I can get the medical care I need without being set back financially. | 2 | 4 | 5 | 4 | 1 |
| Q6 | When I go for medical care, they are careful to check everything when treating and examining me. | 0 | 4 | 5 | 6 | 1 |
| Q7 | I have to pay for more of my medical care than I can afford. | 2 | 5 | 5 | 3 | 1 |
| Q8 | I have easy access to the medical specialists I need. | 3 | 3 | 4 | 5 | 1 |
| Q9 | Where I get medical care, people have to wait too long for emergency treatment. | 2 | 3 | 5 | 6 | 0 |
| Q10 | Doctors act too businesslike and impersonal toward me. | 2 | 5 | 6 | 3 | 0 |
| Q11 | My doctors treat me in a very friendly and courteous manner. | 3 | 9 | 1 | 2 | 1 |
| Q12 | Those who provide my medical care sometimes hurry too much when they treat me. | 4 | 2 | 3 | 6 | 1 |
| Q13 | Doctors sometimes ignore what I tell them. | 2 | 5 | 2 | 7 | 0 |
| Q14 | I have some doubts about the ability of the doctors who treat me. | 3 | 2 | 3 | 6 | 2 |
| Q15 | Doctors usually spend plenty of time with me. | 3 | 5 | 4 | 4 | 0 |

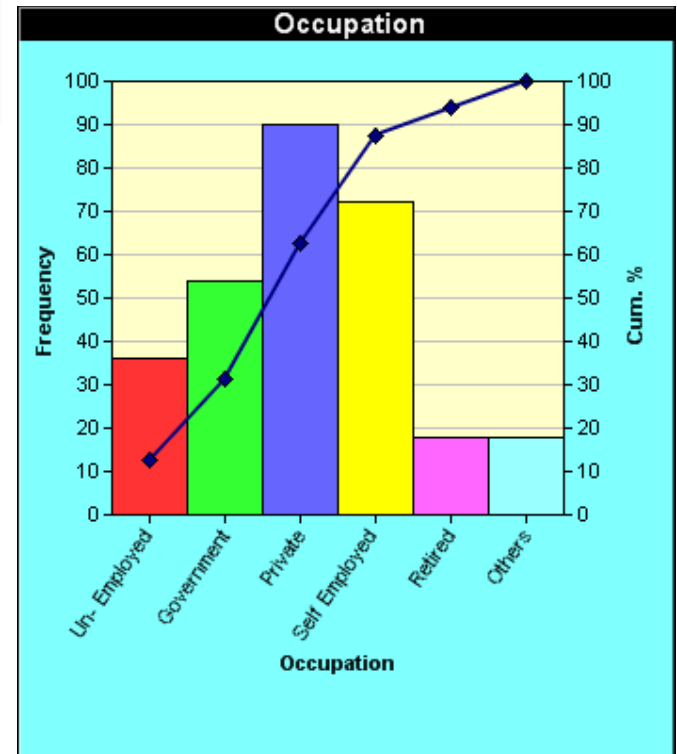


Demographic Data



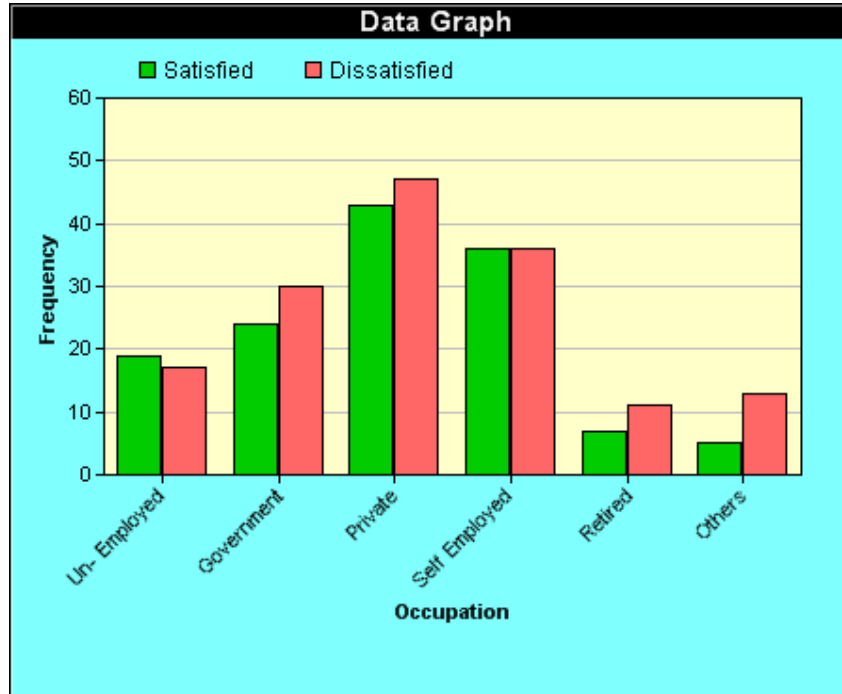
Demographics : Occupation

| Data | Frequency | | | Percentage | | | Cumulative % |
|---------------|------------|--------------|------------|---------------|---------------|---------------|---------------|
| | Satisfied | Dissatisfied | Total | Satisfied | Dissatisfied | Total | |
| Un- Employed | 19 | 17 | 36 | 6.597 | 5.903 | 12.500 | 12.50 |
| Government | 24 | 30 | 54 | 8.333 | 10.417 | 18.750 | 31.25 |
| Private | 43 | 47 | 90 | 14.931 | 16.319 | 31.250 | 62.50 |
| Self Employed | 36 | 36 | 72 | 12.500 | 12.500 | 25.000 | 87.50 |
| Retired | 7 | 11 | 18 | 2.431 | 3.819 | 6.250 | 93.75 |
| Others | 5 | 13 | 18 | 1.736 | 4.514 | 6.250 | 100.00 |
| Total | 134 | 154 | 288 | 46.528 | 53.472 | 100.00 | 100.00 |





Satisfied vs. Dissatisfied

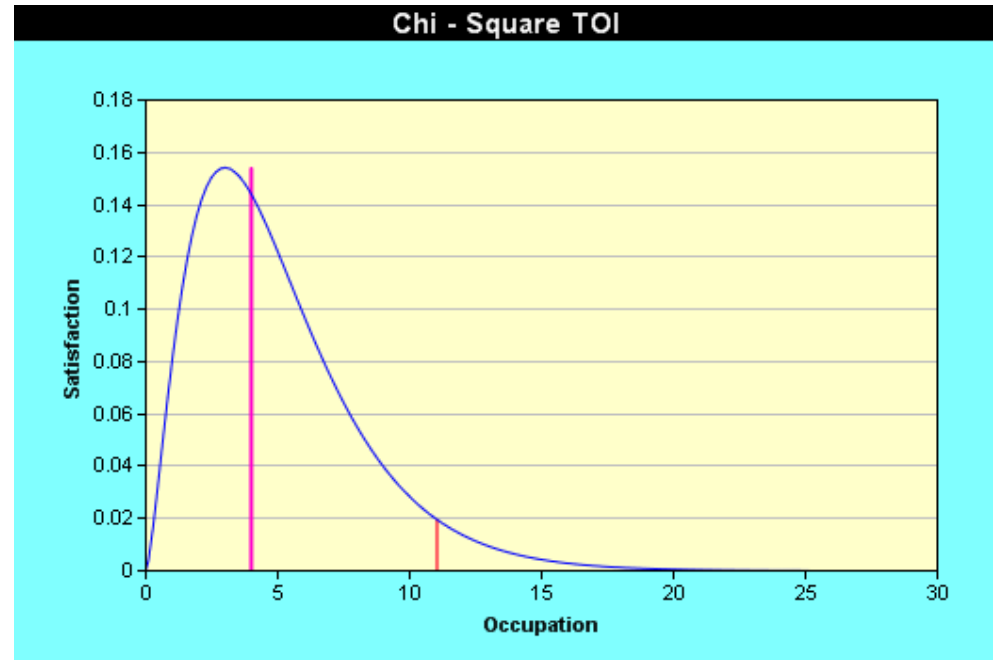




Chi-Square Tests



| | | Satisfaction | | | |
|------------|---|---------------|--------------|--------------|--------------|
| | | Satisfied | Dissatisfied | | |
| Occupation | 1 | Un- Employed | 0.302 | 0.263 | 0.565 |
| | 2 | Government | 0.050 | 0.044 | 0.094 |
| | 3 | Private | 0.030 | 0.026 | 0.057 |
| | 4 | Self Employed | 0.187 | 0.162 | 0.349 |
| | 5 | Retired | 0.226 | 0.196 | 0.422 |
| | 6 | Others | 1.360 | 1.183 | 2.544 |
| | | | 2.155 | 1.875 | 4.031 |



Affinity Diagram



| Level 1 | Level 2 [Demanded Quality] | Level 3 [Reworded Data] | |
|-------------------------------|-------------------------------|---|---------------------------|
| General Satisfaction | 6 Care | 2 they treat patient well doctor treated me well. | |
| | Dissatisfied | 4 treatment not good no immediate attention from staff hospital receptionist too busy nurses provide insufficient information to patient | |
| | | 1 Technical Items | 0 |
| | | Diagnostics | 1 lab result still not in |
| Interpersonal Manner | 1 Businesslike | 0 | |
| | Courtesy | 1 doctor is good | |
| Communication | 3 Good Explanation | 1 cannot understand doctors explanation | |
| | Dont Listen | 2 doctor dont listen what i say difficult to communicate with doctor | |
| Financial Aspects | 1 Expensive | 1 hospital charges is too expensive | |
| | Affordability | 0 | |
| Time Spent with Doctor | 2 Hurry | 1 doctors always in a hurry when treating me | |
| | Spend Time | 1 doctor spent less time | |
| Accessibility and Convenience | 2 Acces to Doctor | 0 | |
| | Long Wait | 2 waiting too long waiting too long | |
| | | Long Appointment | 0 |
| | Anytime | 0 | |



Subscale Details



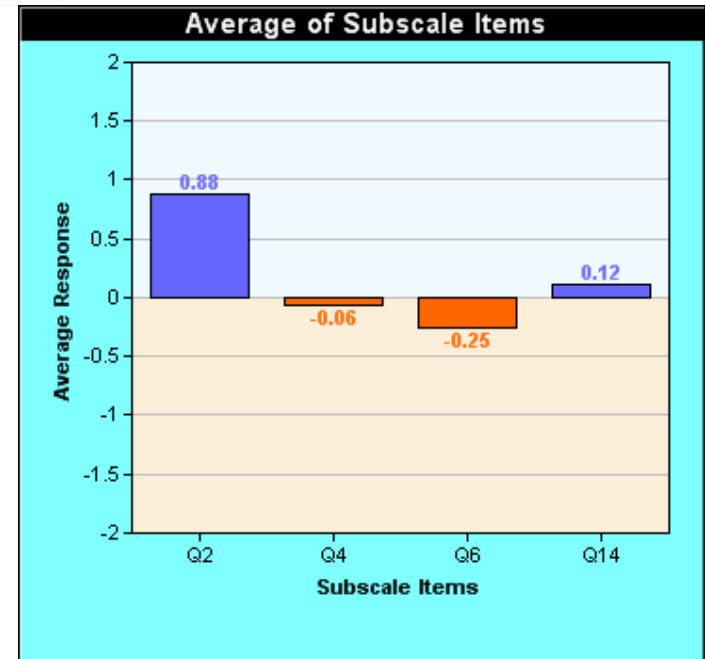
Subscales

Technical Quality

+0.00 -0.00

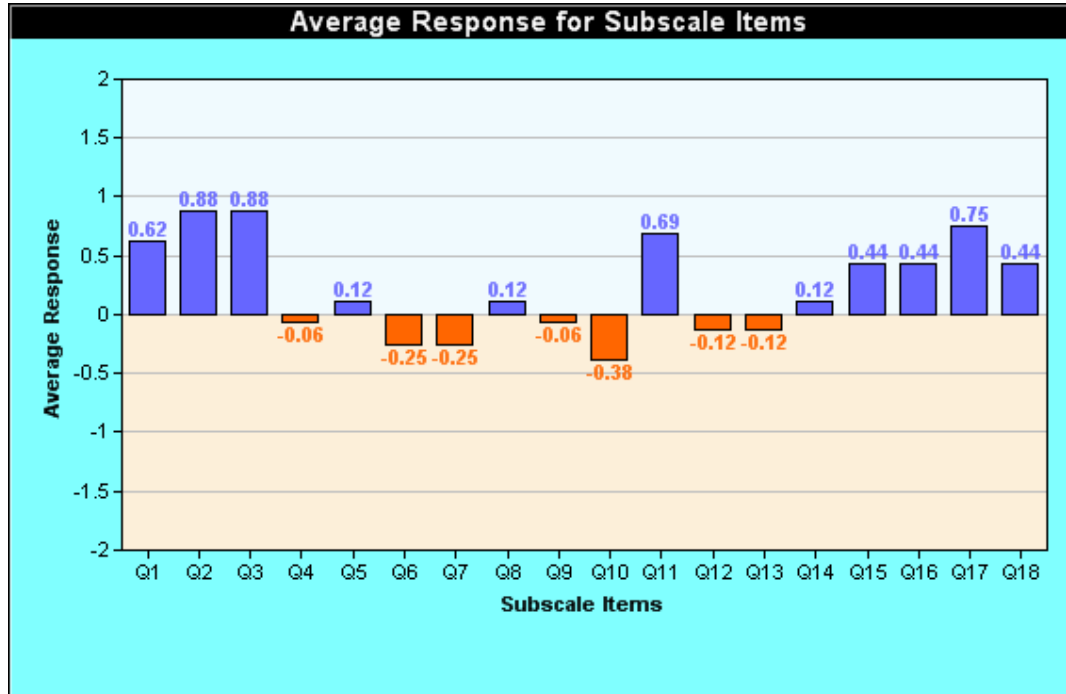
Report Setup

| Care Received (Care Expected) | | | | | | | | | | T-Test | | |
|-------------------------------|---|----|----|----|---|------|-------|------|------|--------|--------|---------------------|
| Ilo. | 1 | 2 | 3 | 4 | 5 | Tot. | Expt. | Var. | +CI | -CI | T-Val. | Decision |
| Q2 | 3 | 9 | 3 | 1 | 0 | 16 | 0.88 | 0.65 | 1.27 | 0.48 | 4.34 | Good |
| Q4 | 2 | 3 | 4 | 6 | 1 | 16 | -0.06 | 1.40 | 0.52 | -0.64 | -0.21 | Immediate Attention |
| Q6 | 0 | 4 | 5 | 6 | 1 | 16 | -0.25 | 0.87 | 0.21 | -0.71 | -1.07 | Urgent Action |
| Q14 | 2 | 6 | 3 | 2 | 3 | 16 | 0.12 | 1.85 | 0.79 | -0.54 | 0.37 | Improve |
| Total | 7 | 22 | 15 | 15 | 5 | | | | | | | |



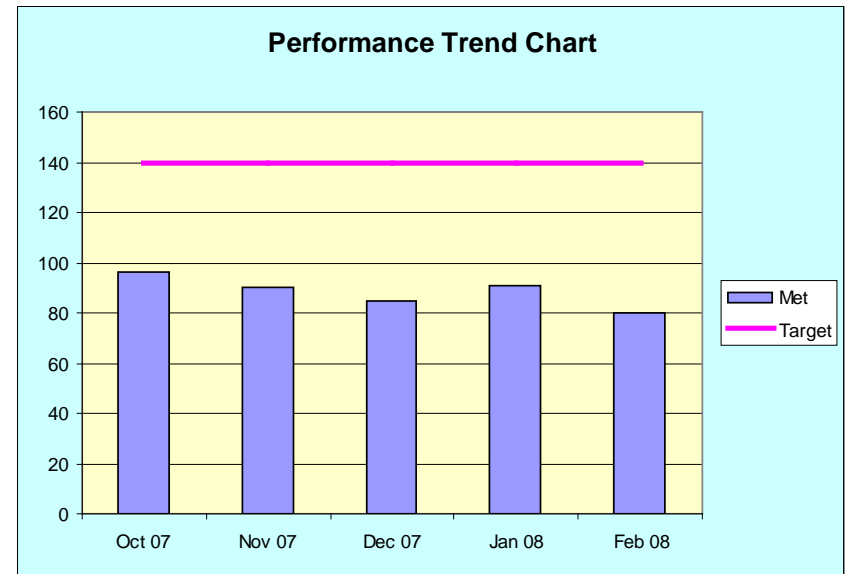
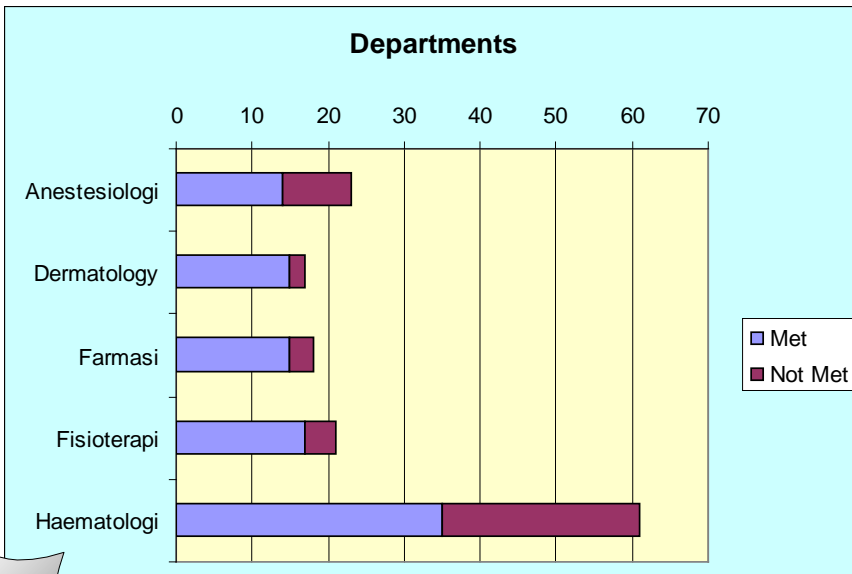
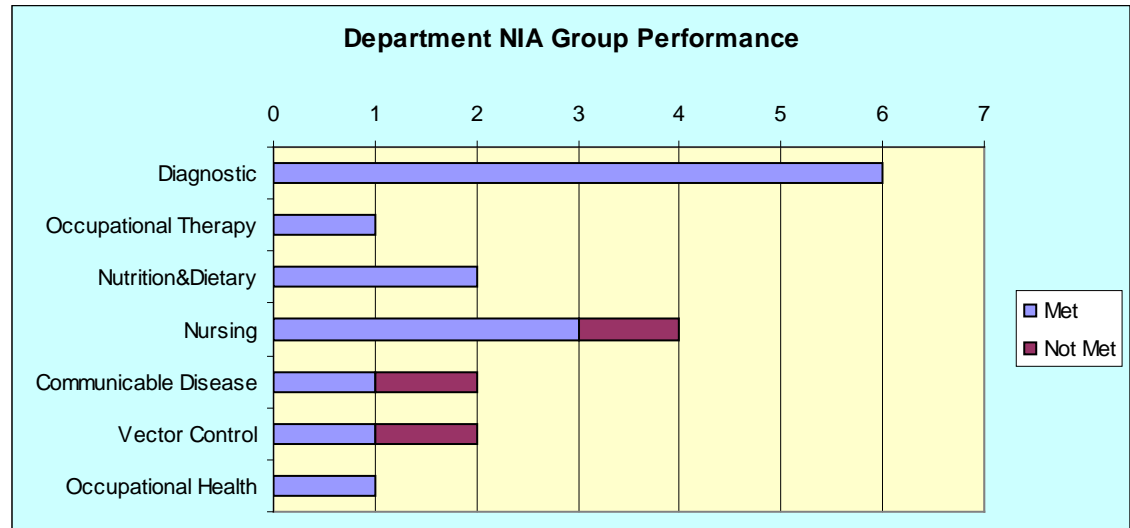
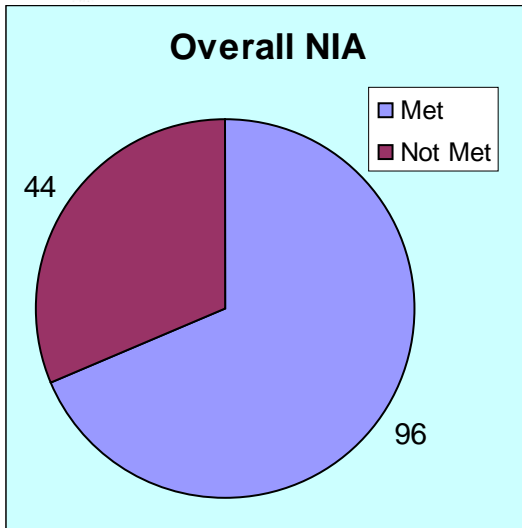


Average Responses





National Indicator Approach (NIA)





- Align the Organization
- Use Malcolm Baldrige National Quality Award
 - Leadership
 - Strategic Planning
 - Customers and Market Focus
 - Measurement, Analysis and Knowledge Management
 - Workforce Focus
 - Process Management
 - Results



Malcolm Baldrige NQA (MBNQA)



Leadership

- Senior Leadership**
 - VISION and VALUES**

HOW do SENIOR LEADERS set organizational VISION and VALUES?

HOW do SENIOR LEADERS personally promote an organizational environment organizational performance management that results in legal and ETHICAL BE...

HOW do SENIOR LEADERS create a SUSTAINABLE organization?
 - Communication and Organizational PERFORMANCE**

HOW do SENIOR LEADERS communicate with and engage the entire WORKFO...

HOW do SENIOR LEADERS create a focus on action to accomplish the organ...
- Governance and Social Responsibilities**
 - Organizational GOVERNANCE**

HOW does your organization review and achieve the following KEY aspects...

HOW do you evaluate the PERFORMANCE of your SENIOR LEADERS, includi...
 - Legal and ETHICAL BEHAVIOR**

HOW do you address any adverse impacts on society of your products, serv...

HOW does your organization promote and ensure ETHICAL BEHAVIOR in...
 - Support of KEY Communities**

HOW does your organization actively support and strengthen your KEY communit...

Welcome To Malcolm Baldrige National Quality ...

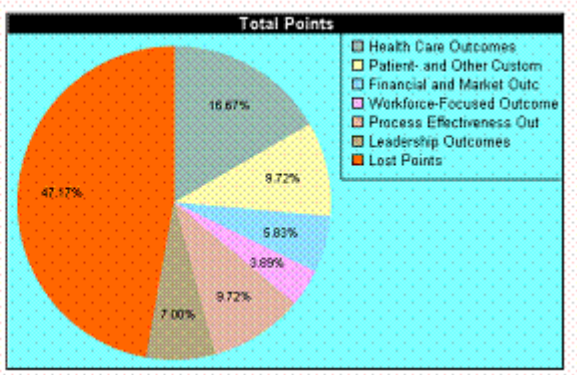
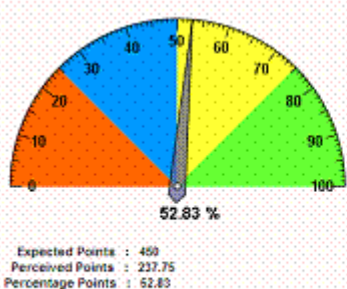
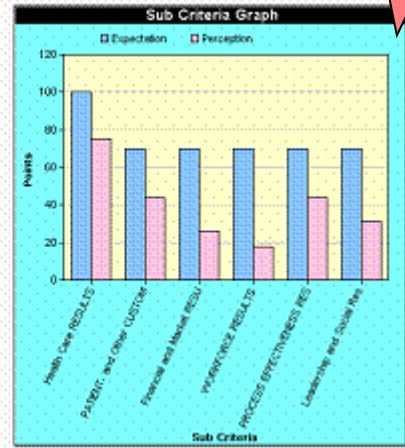
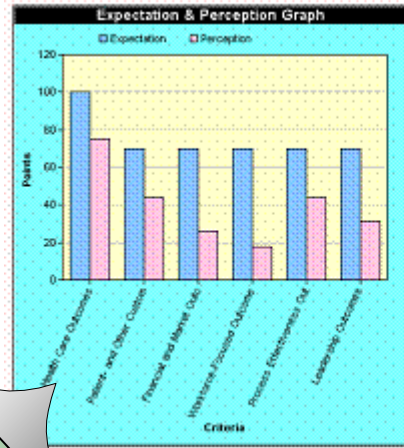
q/Mbnq/GetPert.aspx?dmid=1&respid=1&questid=8&stid=4&tp=0&ft=0

Close

| Percent | Description |
|---------|--|
| 0 | No vision and value set |
| 25 | Some vision and value considered |
| 50 | Vision and value talked about |
| 75 | Vision and value appears in documents |
| 100 | Organization operates according to the vision and values set |

| | Expt. | Perception | Pt. Expt. | Pt. Per. |
|--------------|-------------|------------|------------|-------------|
| | | | 70 | 42 |
| | | | 42 | 31.5 |
| | 100 | 75 | 14.00 | 10.5 |
| | 100 | 75 | 14.00 | 10.5 |
| | | | 28 | 10.5 |
| | 100 | 25 | 14.00 | 3.5 |
| | 100 | 50 | 14.00 | 7 |
| | | | 50 | 22.5 |
| | | | 20 | 7.5 |
| | 100 | 25 | 10.00 | 2.5 |
| | 100 | 50 | 10.00 | 5 |
| | | | 20 | 7.5 |
| | 100 | 25 | 10.00 | 2.5 |
| | 100 | 50 | 10.00 | 5 |
| | | | 10 | 7.5 |
| | 100 | 75 | 10.00 | 7.5 |
| Total | 1000 | 525 | 120 | 64.5 |

All tools are supported by ICT-M® software





Joint Commission International (JCI)



- We are looking for a Hospital partner
 - to develop all 11 standards and
 - 1032 Measurable elements



- Access To And Continuity Of Care
- Patient And Family Rights
- Assessment Of Patient
- Care Of Patient
- Patient And Family Education
- Prevention And Control Of Infection
- Staff Qualification And Education
- Governance, Leadership And Direction
- Facility Management And Safety
- Management Of Information
- Quality Improvement And Patient Safety

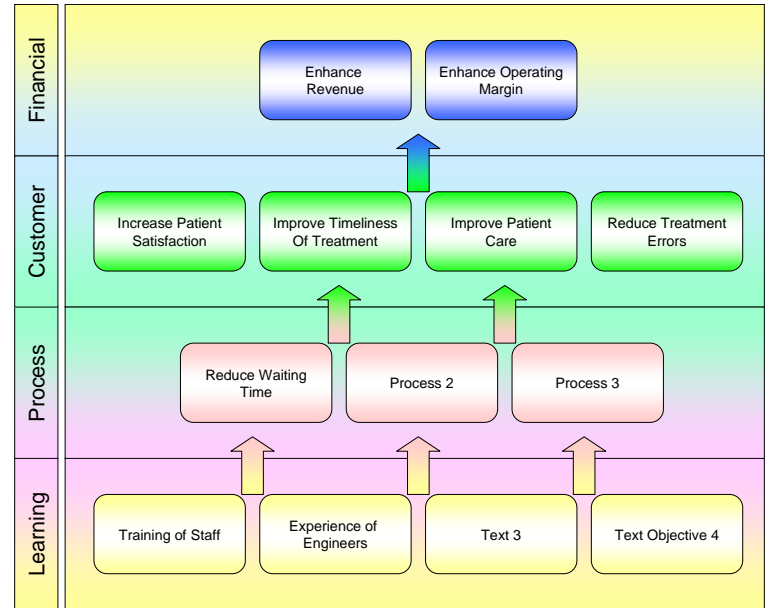




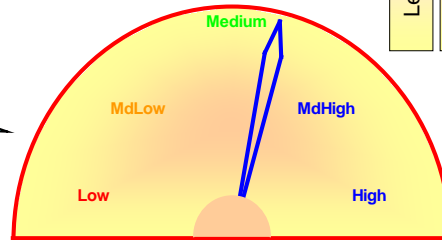
Balanced Scorecard



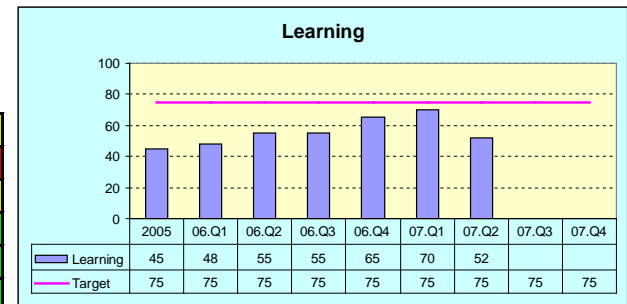
- Organizational Performance
 - Financial
 - Customer Satisfaction
 - Internal Processes
 - Growth and Learning



All tools supported by iCT-M® software

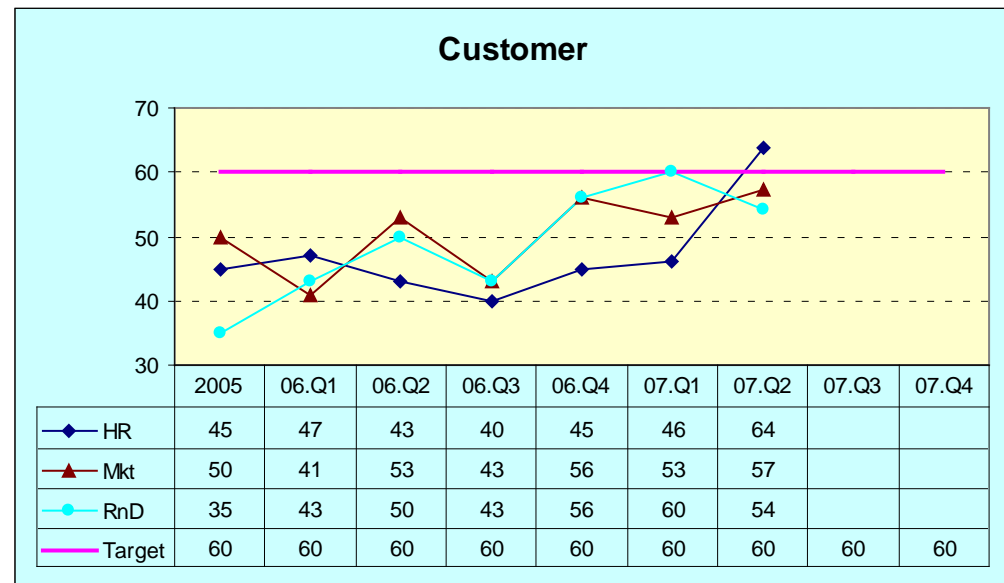
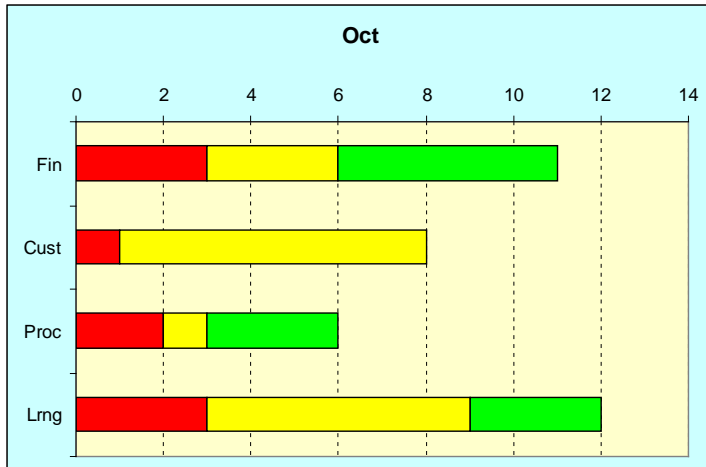
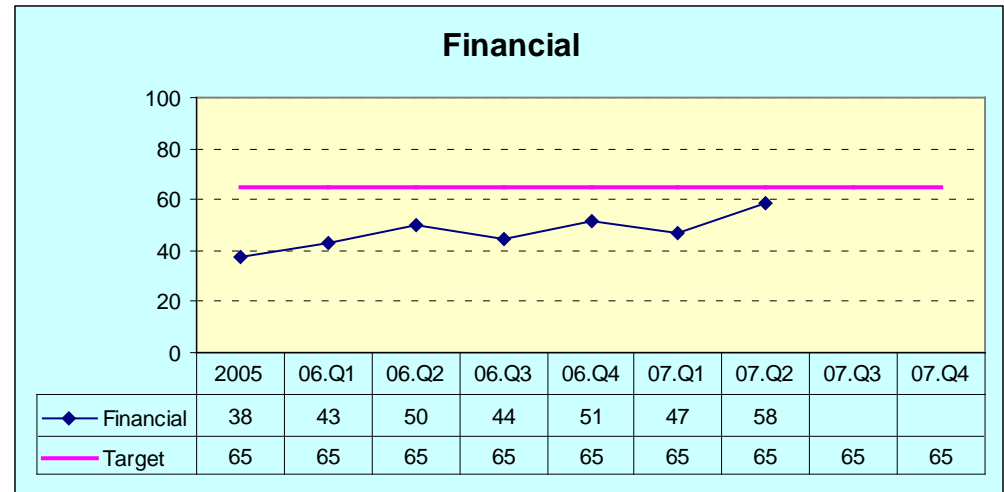
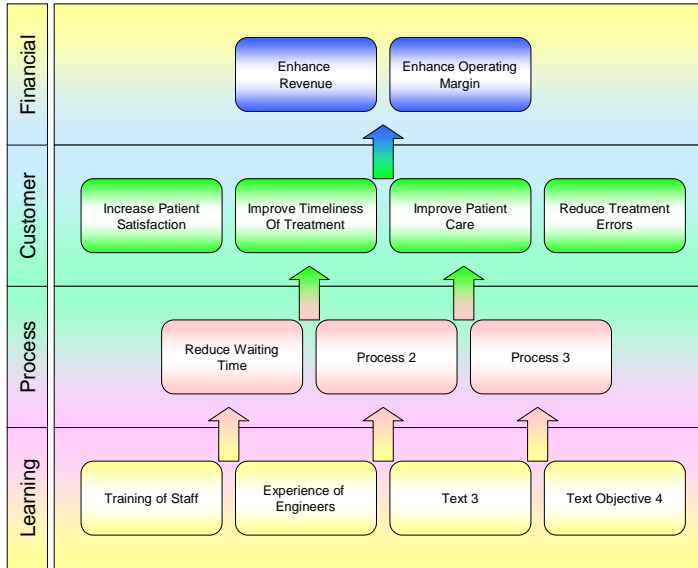


| No. | Learning | Objective Description | Target Best | Measure 2007.Q2 |
|-----|------------------------|----------------------------|-------------|-----------------|
| 1 | Price of Product | Must be value provider | 2.5 | 53 |
| 2 | Price of Delivery | Must be cheapest | 1 | 25 |
| 3 | Kg per Ringgit | Value on great meat | 100 | 55 |
| 4 | Timely Delivery | Deliver within 30 minutes | 30 | 50 |
| 5 | Driver presentable | Smart dress, tie and shoes | 5 | 75 |
| All | Overall Learning Index | | | 52 |





Balanced Scorecard

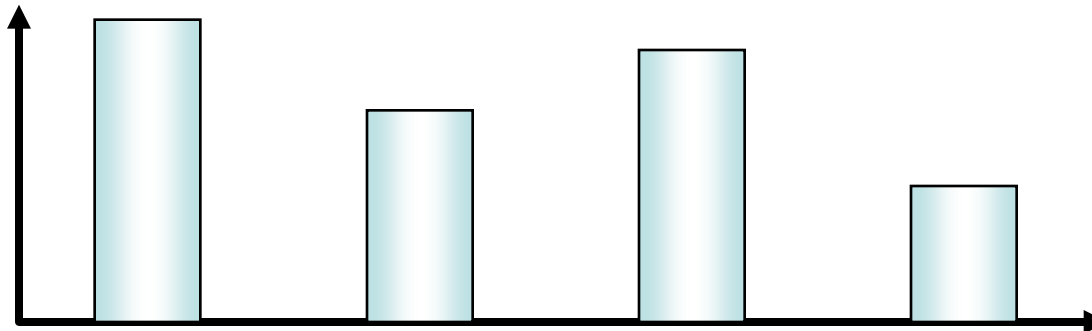
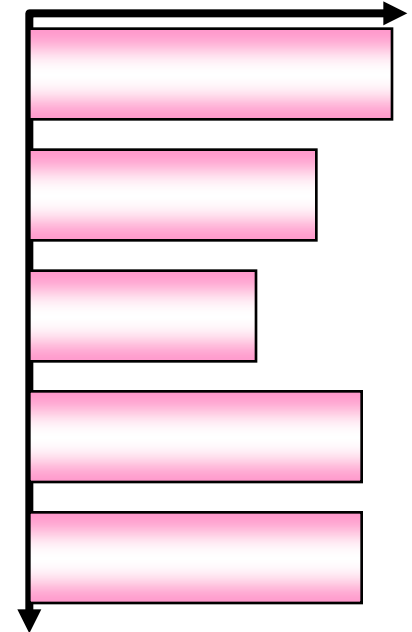


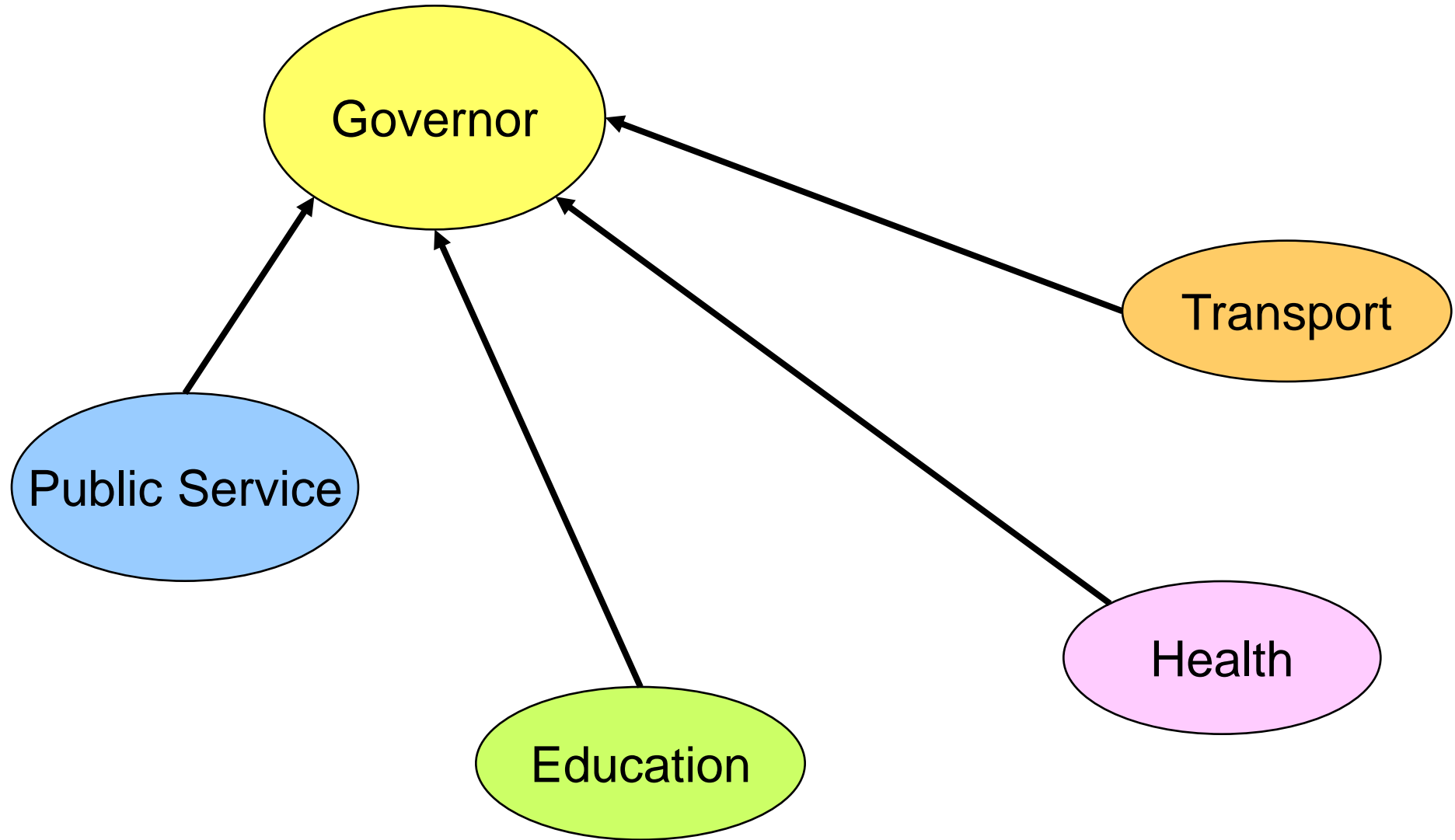


Advanced Analysis



| | Finance | Customer | Process | Learning |
|---------------|---------|----------|---------|----------|
| Education | | | | |
| Health | | | | |
| Transport | | | | |
| Public Servic | | | | |
| Economy | | | | |







Perspectives and Metrics



| | Objectives | Properties | | | Target | | Observation | | | Measure | | Result | |
|--------------------|----------------------|--|----------|-------|--------|-------|-----------------|---------------------|-------|---------|-------|--------|--|
| | | Weight | Tg. Type | Units | Worst | Best | What To Measure | Lower | Upper | Value | Score | | |
| 1 Financial | | | | | | | | | | | | | |
| 1 | Price of Product | Must be value provider | 1 | ▼ | RM | 20.00 | 10.00 | Measure price | 40.00 | 80.00 | 10.00 | 100.00 | |
| 2 | Kg per Ringgit | Value on great meat | 1 | ▲ | Kg | 20.00 | 60.00 | Weight per Ringgit | 25.00 | 75.00 | 40.00 | 50.00 | |
| 3 | Well packed | Moulded trays | 1 | ▲ | - | 5.00 | 25.00 | Food arrangement | 30.00 | 70.00 | 8.00 | 15.00 | |
| 4 | Mayonaise | Just right taste | 1 | ✕ | Gm | 10.00 | 100.00 | Amount of mayonaise | 40.00 | 90.00 | 10.00 | 0.00 | |
| Cumulative | | | | | | | | | | | 41.25 | | |
| 2 Learning | | | | | | | | | | | | | |
| 1 | Operator Training | Skilled staff | 1 | ▲ | Hrs | 5.00 | 10.00 | Training hours | 15.00 | 50.00 | 12.00 | 140.00 | |
| 2 | Service orientation | Know the importance of customer satisfaction | 1 | ▲ | - | 10.00 | 50.00 | Graded test | 20.00 | 60.00 | 18.00 | 20.00 | |
| 3 | Attain minimum hours | Must meet minimum hours of training | 1 | ✕ | % | 5.00 | 10.00 | Training hours | 35.00 | 75.00 | 55.00 | 0.00 | |
| Cumulative | | | | | | | | | | | 53.33 | | |



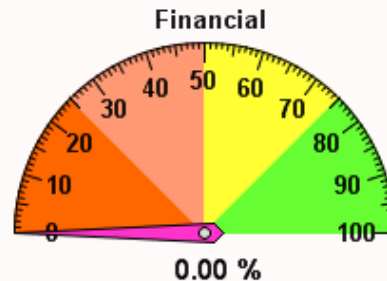
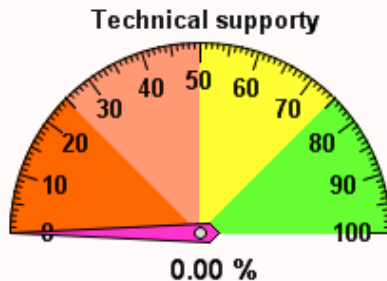
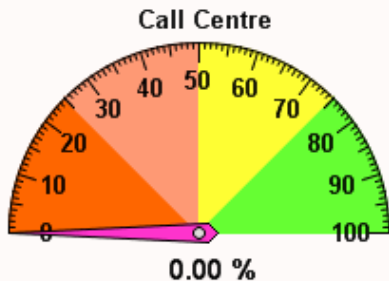
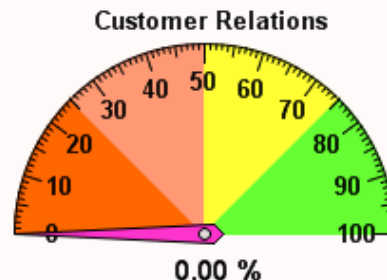
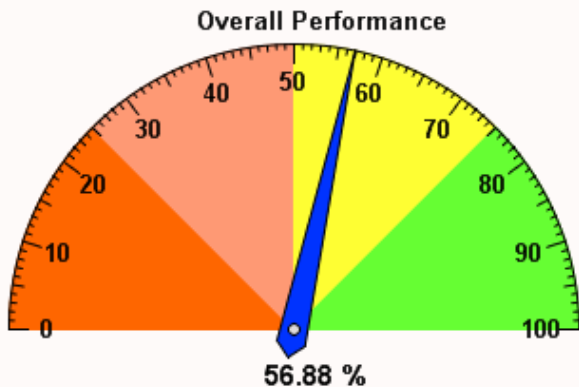
Perspective Score Dials



Perspective Score Dials

Time Periods : Perspectives :

Time Frame : 01-Jan-2008 To 31-Jan-2008





Perspective Score Gaps



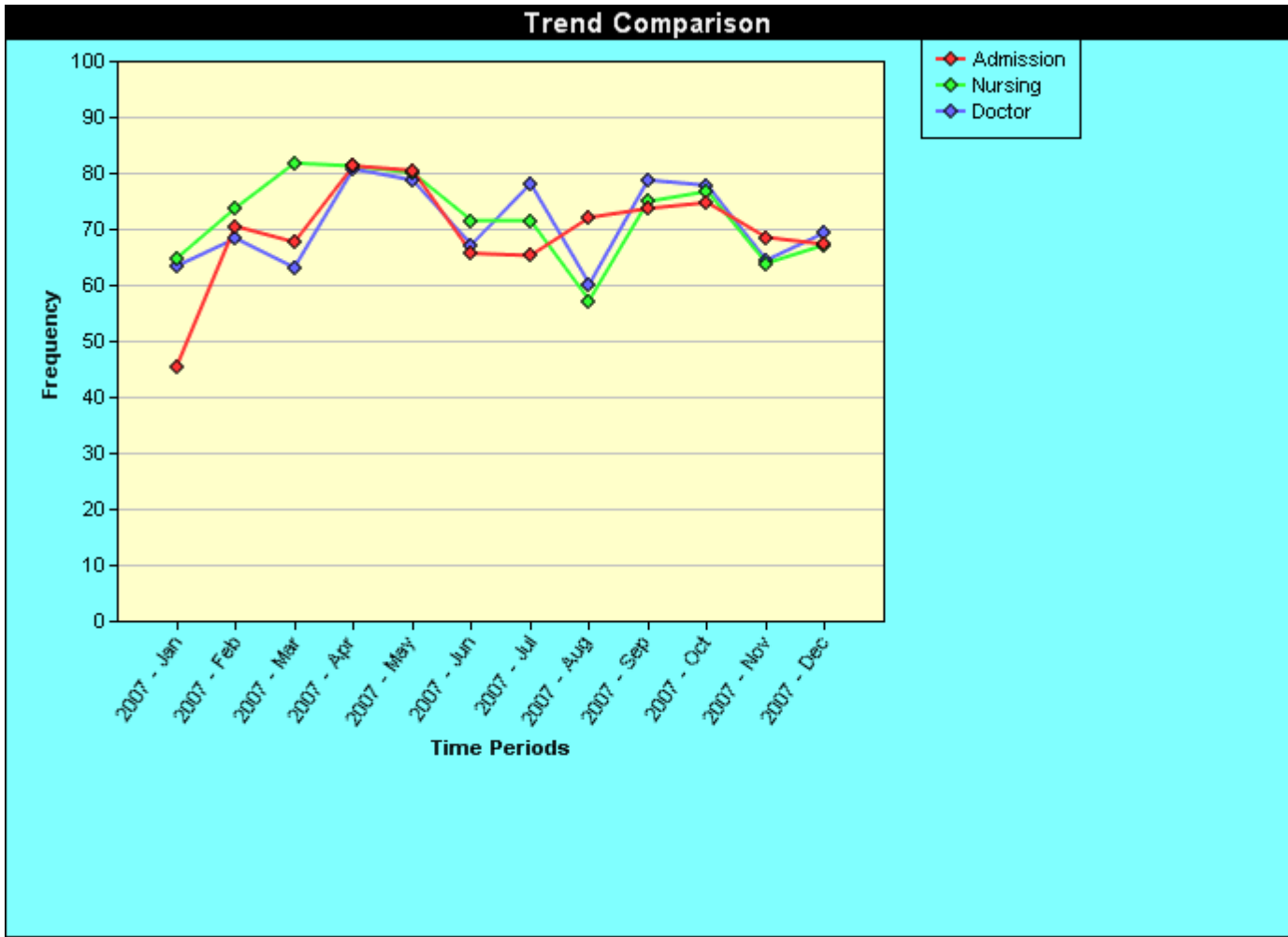
Perspective Score Gaps

Time Periods : 2008 Jan Perspectives : Financial

Time Frame : 01-Jan-2008 To 31-Jan-2008

| | | Graphs |
|----------|-----------------------------------|--------|
| 1 | Human Resources | 41.25 |
| 1 | Price of Product | 100 |
| 2 | Kg per Ringgit | 50 |
| 3 | Well packed | 15 |
| 4 | Mayonaise | 0 |
| 2 | Marketing | 26.111 |
| 1 | Price of Product | 0 |
| 2 | Kg per Ringgit | 26.111 |
| 3 | Well packed | 0 |
| 4 | Mayonaise | 0 |
| 3 | Research & Development | 72.5 |
| 1 | Price of Product | 70 |
| 2 | Kg per Ringgit | 0 |
| 3 | Well packed | 75 |
| 4 | Mayonaise | 0 |

Performance Trend





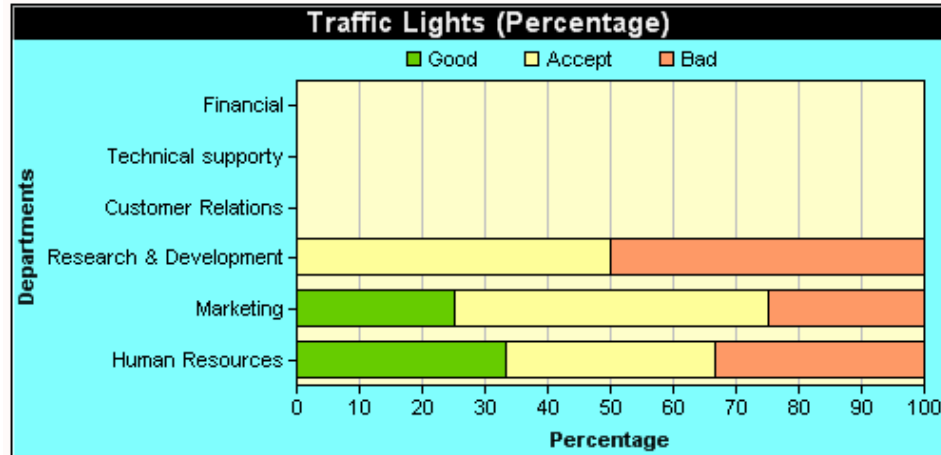
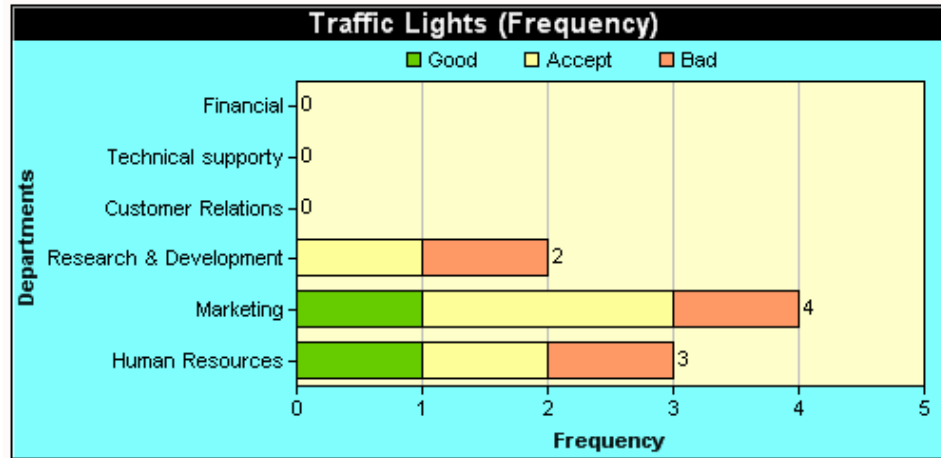
Perspective Traffic Lights



Perspective Traffic Lights

Time Periods : Perspectives :

Time Frame : 01-Jan-2008 To 31-Jan-2008





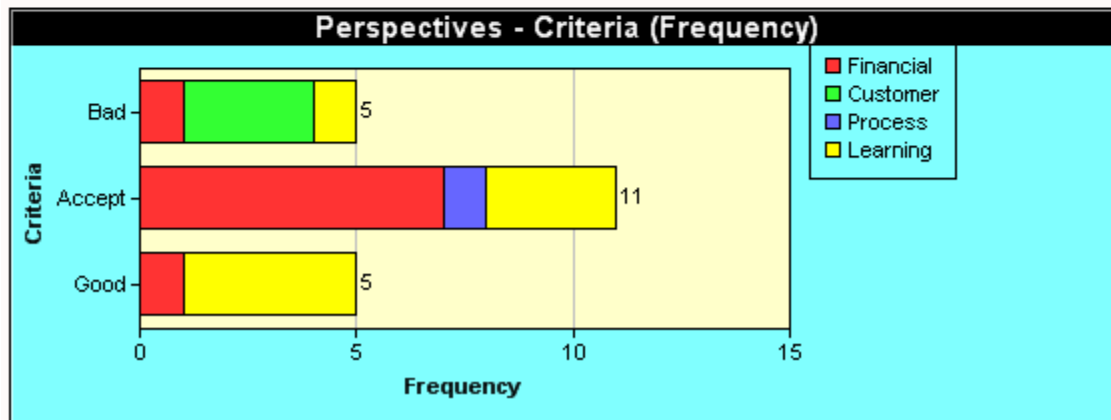
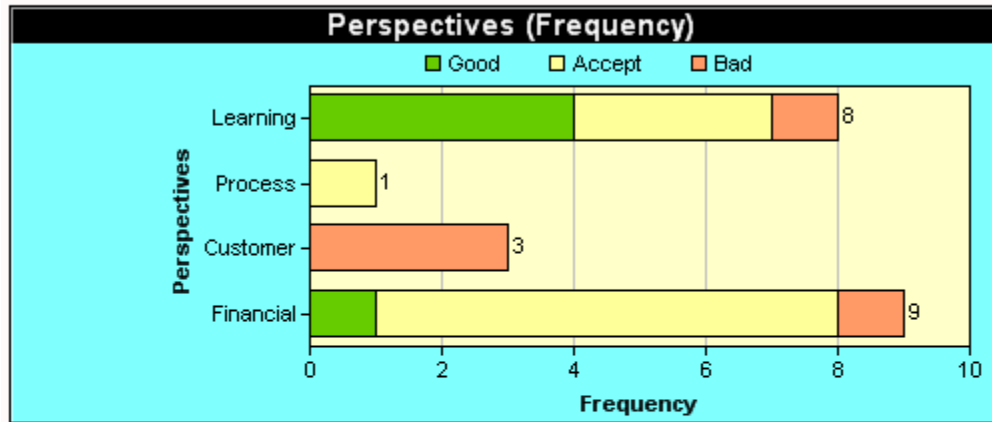
Perspective Frequency Charts



Perspective Frequency Charts

Time Periods : 2007 Dec

Time Frame : 01-Dec-2007 To 31-Dec-2007



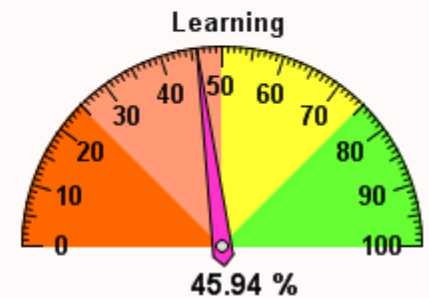
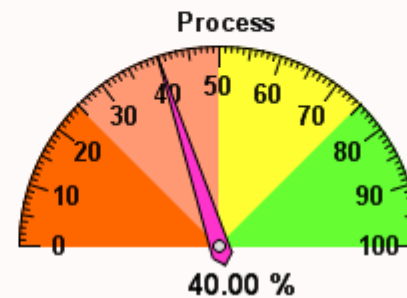
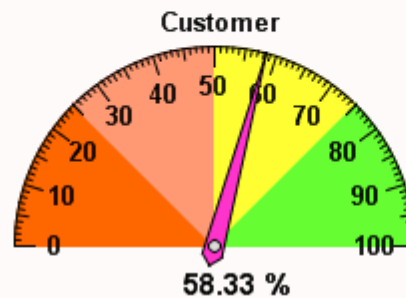
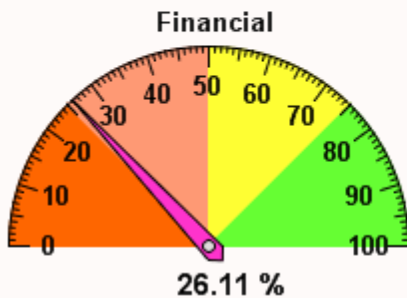
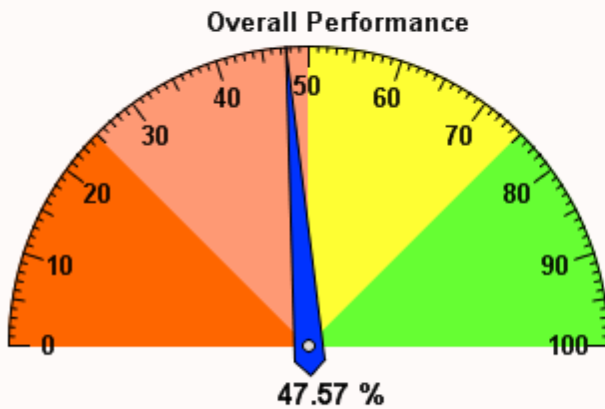


Department Score Dials



Department Score Dials

Time Periods : Departments : Total Records :
Time Frame : 01-Jan-2008 To 31-Jan-2008





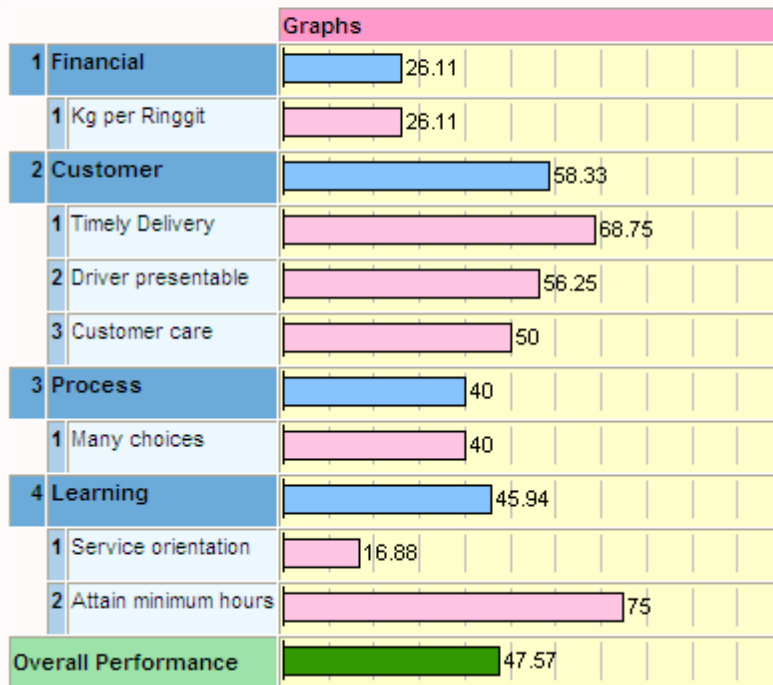
Department Score Graphs



Department Score Graphs

Time Periods : 2008 Jan Departments : Marketing Total Records : All

Time Frame : 01-Jan-2008 To 31-Jan-2008





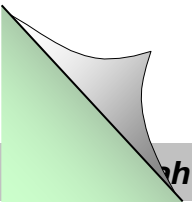
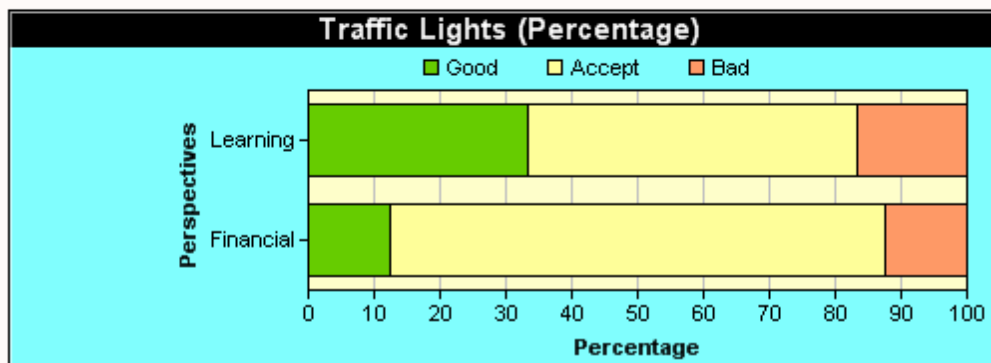
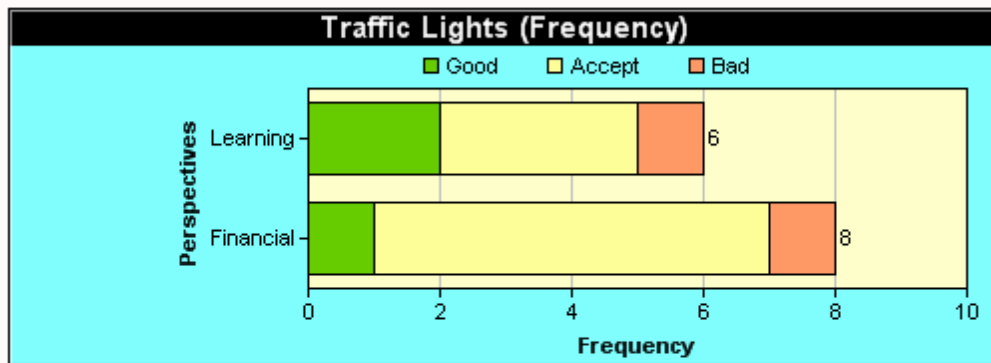
Department Traffic Lights



Department Traffic Lights

Time Periods : 2007 Dec Departments : Human Resources

Time Frame : 01-Dec-2007 To 31-Dec-2007

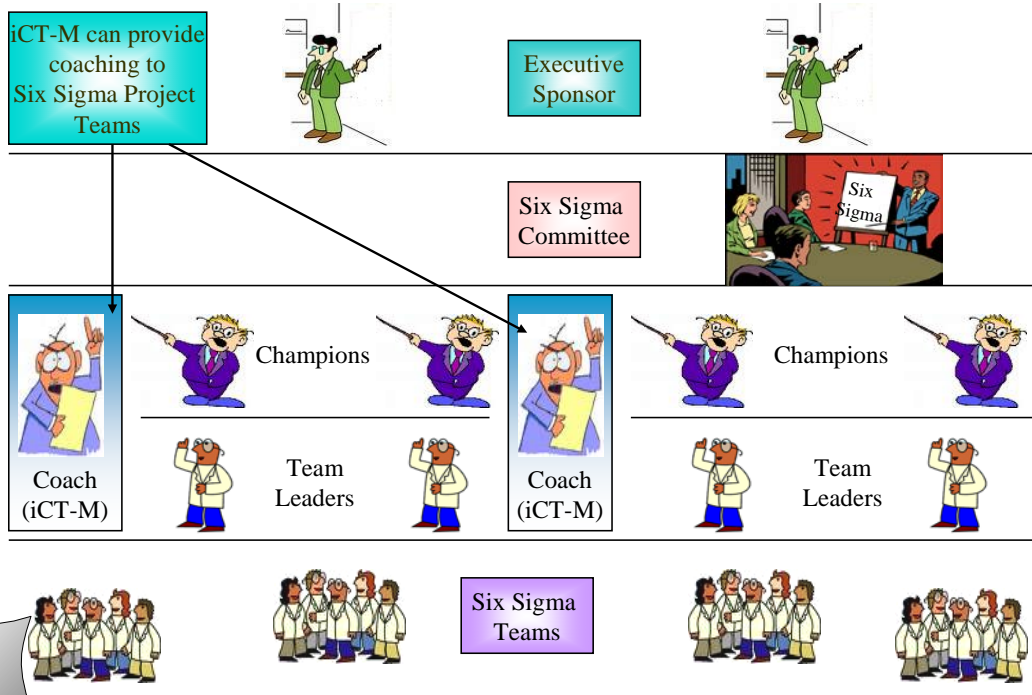




Six Sigma Implementation



- **D**efine important business case
- **M**easure current performances
- **A**nalyze root causes and gaps
- **I**mprove performances
- **C**ontrol the gains



iCT-M can provide coaching to Six Sigma Project Teams

Executive Sponsor

Six Sigma Committee

Coach (iCT-M)

Coach (iCT-M)

Champions

Champions

Team Leaders

Team Leaders

Six Sigma Teams

All tools are supported by iCT-M® software

Easy to report

Print to pdf

Save to thumb drive

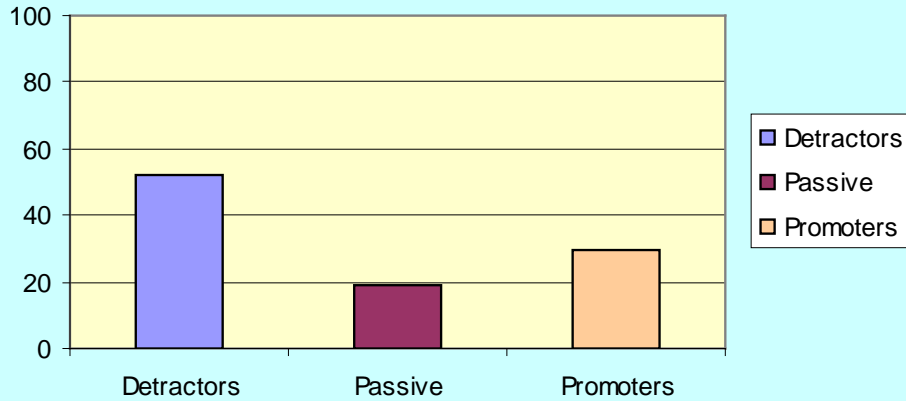
Send via email



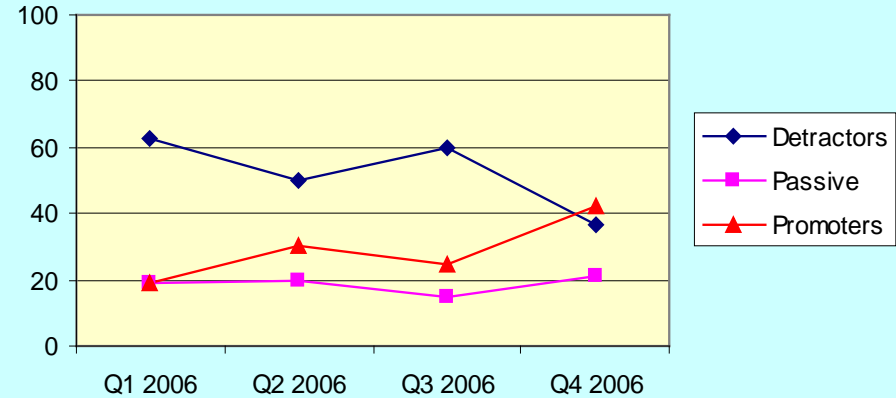
Net Promoter Score (NPS)



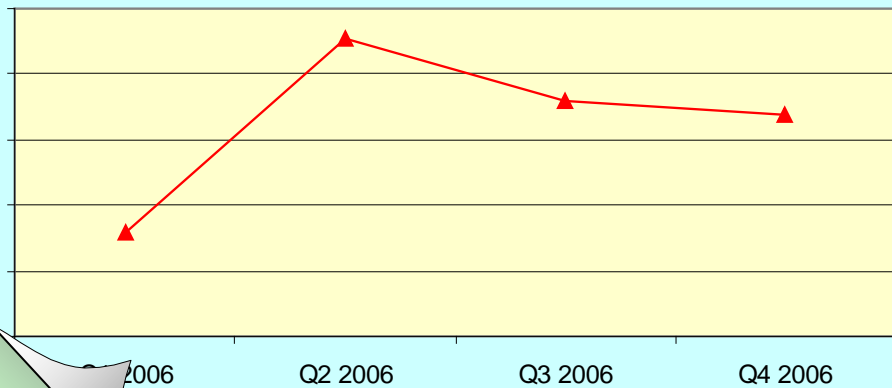
Q1 - Q4



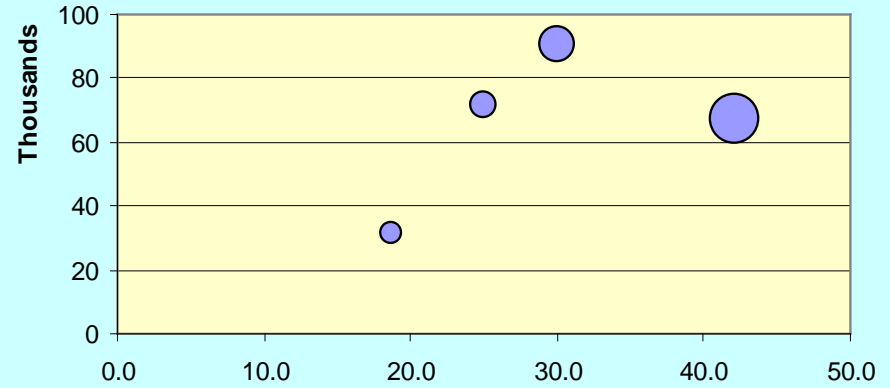
Q1 - Q4



Profits



NPS vs Profits





Advanced Product Quality Planning



Belmah Strategies

APQP Focus Element Rating Checklist Status Report

[Edit](#)

| | | | | | |
|------------------------|-----|------|------------|---------|----------------------|
| Date : | | | | | |
| Review No. : | | | | | |
| Diamond Point : | | | | | |
| Supplier | | | | | Program |
| Location | | | | | Model Year |
| Supplier Code | | | | | Lead Part No. |
| Risk Assessment | New | Site | Technology | Process | Part Name |
| Other Risks | | | | | Eng. Level |
| | | | | | User Plant(s) |

| No. | Team Members | Company/Title | Phone/Fax |
|-----|--------------|---------------|-----------|
| 1 | | | |
| 1 | | | |

| No. | Build Level | Material Required Date | Quantity | Concurred | | P.I.S.T.% | P.I.P.C.% |
|-----|-------------|------------------------|----------|-----------|----------|-----------|-----------|
| | | | | No. SC's | No. CC's | | |
| 1 | | | | | | | |

| No | APQP Elements | GYR Status | Focus Element Rating | Program Need Date | Supplier Timing Date | Closed Date | Resp. Engineer Initials | Remarks or Assistance Required |
|-----|--------------------------------------|------------|----------------------|-------------------|----------------------|-------------|-------------------------|--------------------------------|
| 1. | Sourcing Decision | | | | | | | |
| 2. | Customer Input Requirements | | | | | | | |
| 3. | Design FMEA | | 0 | | | | | |
| 4. | Design Review(s) | | | | | | | |
| 5. | Design Verification Plan | | 0 | | | | | |
| 6. | Subcontractor APQP Status | | | | | | | |
| 7. | Facilities, Tools and Gages | | | | | | | |
| 8. | Prototype Build Control Plan | | 0 | | | | | |
| 9. | Prototype Builds | | | | | | | |
| 10. | Drawings and Specifications | | | | | | | |
| 11. | Team Feasibility Commitment | | | | | | | |
| 12. | Manufacturing Process Flow Chart | | 0 | | | | | |
| 13. | Process FMEA | | 0 | | | | | |
| 14. | Measurement Systems Evaluation | | | | | | | |
| 15. | Pre-Launch Control Plan | | 0 | | | | | |
| 16. | Operator Process Instructions | | 0 | | | | | |
| 17. | Packaging Specifications | | | | | | | |
| 18. | Production Trial Run | | | | | | | |
| 19. | Production Control Plan | | 0 | | | | | |
| 20. | Preliminary Process Capability Study | | | | | | | |
| 21. | Production Validation Testing | | | | | | | |
| 22. | Production Part Approval (PSW) | | | | | | | |
| 23. | PSW Part Delivery at MRD | | | | | | | |

Checklist

- Consolidates
- Calculates



Product Part Approval Process (PPAP)



| No. | Requirement | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
|-----|--|---------|---------|---------|---------|---------|
| 1 | Design Records Of Saleable Product | S | S | * | * | * |
| | - for Proprietary components/details | S | * | * | S | S |
| | - for all other components/details | S | * | * | R | S |
| 2 | Engineering Change Documents, if any | R | * | S | S | S |
| 3 | Customer Engineering approval, if required | S | S | S | R | * |
| 4 | Design FMEA | R | | | | |
| 5 | Process Flow Diagrams | R | R | R | R | S |
| 6 | Process FMEA | R | R | R | R | S |
| 7 | Dimensional Results | S | S | S | S | S |
| 8 | Material, Performance Test Results | R | S | S | S | * |
| 9 | Initial Process Study | R | R | S | S | S |
| 10 | Measurement System Analysis Studies | R | R | R | S | S |
| 11 | Qualified Laboratory Documentation | | | | | S |
| 12 | Control Plan | R | R | R | R | R |
| 13 | Part Submission Warrant (PSW) | S | S | S | S | S |
| 14 | Appearance Approval Report, (AAR) if applicable | S | S | S | S | * |
| 15 | Bulk Material Requirements Checklist (for bulk material PPAP only) | R | R | R | S | S |
| 16 | Sample Product | S | S | S | S | S |
| 17 | Master Sample | S | S | S | S | S |
| 18 | Checking Aids | R | R | R | R | R |
| 19 | Records Of Compliance With Customer-Specific Requirements | S | S | S | S | S |

- S = The supplier shall submit to designated customer product approval activity and retain a copy of records or documentation items at appropriate locations, including manufacturing.
- R = The supplier shall retain at appropriate locations, including manufacturing, and make **readily** available to the customer representative upon request.
- * = The supplier shall retain at appropriate locations, and submit to customer upon request.



Continuous Improvement

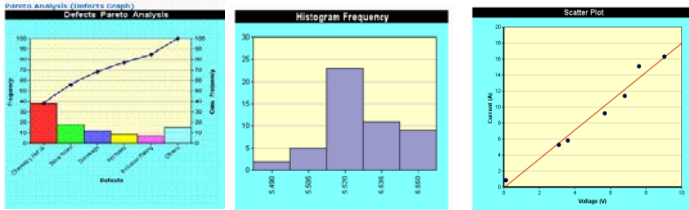


Problem Solving Tools



7QC Tools

Pareto Analysis Histogram Scatter Plot



Tally Sheet Cause-Effect Diagram

| No. | Tasks | Total | |
|-----|-----------|-------|--|
| 1 | Very bad | 5 | |
| 2 | Bad | 8 | |
| 3 | Medium | 7 | |
| 4 | Good | 14 | |
| 5 | Very good | 8 | |
| | Total | 42 | |

RCA (Root Cause Analysis) Incident Details

| | | | |
|--|---|---------------------|---|
| Complaint No | 2 | Relationship | Visitor |
| Person Effected | Rozita Ahmad | Person Complaining | Ahmad Ibrahim |
| Name | Rozita Ahmad | Name | Ahmad Ibrahim |
| Gender | Female | Gender | Male |
| NRIC No | 42424353 | NRIC No | 750579709 |
| Date Of Birth | 02-May-2007 | Date Of Birth | 01-Jun-2007 |
| Race | Chinese | Race | Malay |
| Incident Type | Internal Complaint | | |
| Describe the Incident | The patient fainted and fell to the floor after being given an IV drug. | | |
| Immediate Corrective Action | The drug was changed immediately. The patient was assured of the correct medicine and put in intensive care. | | |
| What the complainant wants to see happen | The nurse on duty used the drug for the patient in the next bed because both patients have similar problems but the drugs prescribed are of different concentrations. | | |
| Department | Gen Surgery NW 11 | Complaint Type | Communication Misinformation or failure in communication (but not a failure to consult) Give inaccurate/wrong information |
| Event Type | -gentis Medication Preparation/Dispensing | Contributing Factor | Task and technology factors Decision making skills Availability, use and reliability of specific types of tests, e.g. blood testing |
| Impact | Moderate | Risk | Possible |
| Investigation Level | 2 Minimal | Status | Not Resolved |
| Final Remarks | Successfully resolved the matter | | |

Complaint Analysis

| | 02-May-2007 | 03-May-2007 | 04-May-2007 | 05-May-2007 | 06-May-2007 | 07-May-2007 | 08-May-2007 | 09-May-2007 | 10-May-2007 | 11-May-2007 | 12-May-2007 | 13-May-2007 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Date of Incident | | | | | | | | | | | | |
| Date of Complaint | | | | | | | | | | | | |
| Date of Informing Department | | | | | | | | | | | | |
| Date of acknowledgement to Complainant | | | | | | | | | | | | |
| Date of Letter to HOD for Actioning | | | | | | | | | | | | |
| Date of Response from HOD after Actioning | | | | | | | | | | | | |

5 Why's

| 1 | Nurses lack knowledge on childs behavior | | |
|---|--|--|--|
| 1 | Why? | Why did the nurse lacks the knowledge on childs behavior? | Nurse have no proper training on childs care |
| 2 | Why? | Why the nurse mistakenly given the medication on the wrong patient? | Because the nurse not aware patient moved to the other bed without informing the nurse |
| 3 | Why? | Why did the nurse not aware patient move to other bed? | Because the nurse dont bother to check if the patient on the bed same patient listed |
| 4 | Why? | Why did the nurse failed to check if patient still the same patient listed on their record | Because the nurse is stress from work and in a hurry to go home after the long hour working shift |
| 5 | Why? | Why was the nurse stressed and in a hurry to go home? | Because of shortage of nurses on duty and the nurse have another responsibility in her family after work |

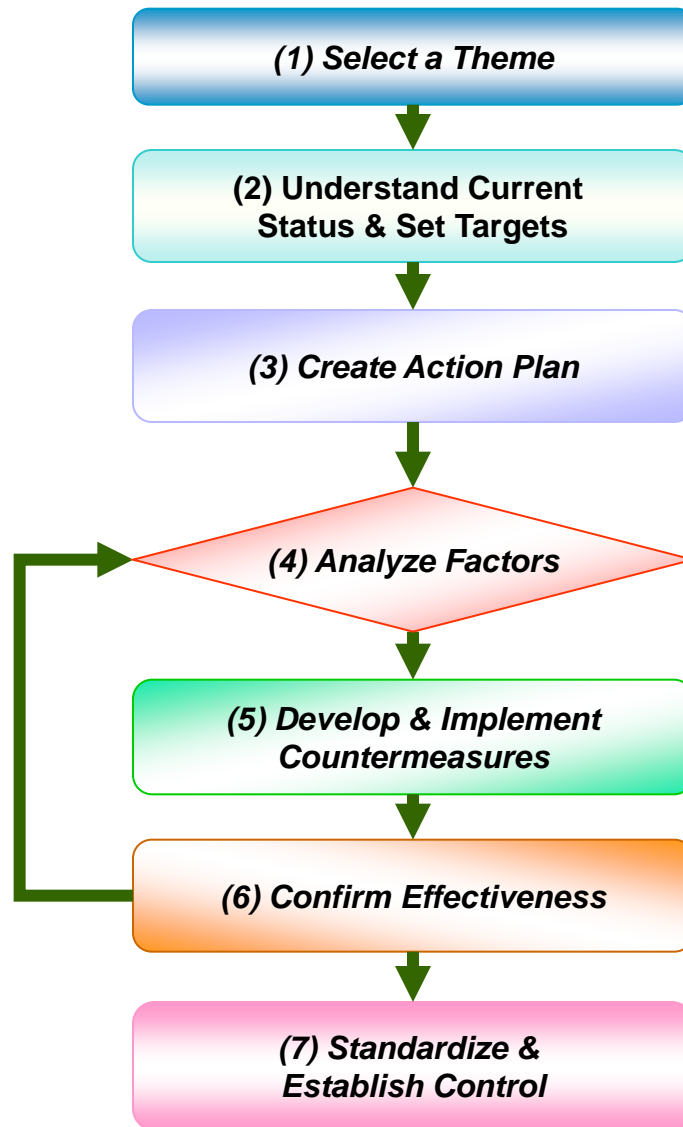
Root Cause

Shortage of nurses on duty and the nurse have another responsibility in her family after work

All tools supported by iCT-M® software



Problem Solving Process





Select a Theme

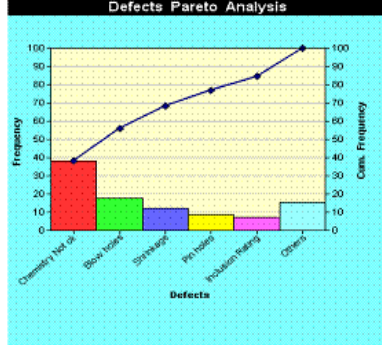


1. Narrow the focus

Pareto Analysis

| No. | Description | Defects | Description | Defects | % Defects | Cum. % Defects | Comments |
|--------------|-------------------------|-------------|-------------------------|-------------|-----------|----------------|--------------|
| 1 | Blow holes | 265 | Chemistry Not ok | 575 | 30.3 | 30.3 | Valid Freq |
| 2 | Porosity | 56 | Blow holes | 265 | 17.6 | 56.0 | Valid Freq |
| 3 | Chemistry Not ok | 476 | Skiralinge | 166 | 12.9 | 69.9 | Valid Freq |
| 4 | Drainage | 105 | Pin holes | 130 | 6.7 | 77.0 | Valid Freq |
| 5 | Inclusion Rating | 112 | Inclusion Rating | 112 | 7.5 | 84.4 | Valid Freq |
| 6 | Cold shut | 11 | Dimensional Defects | 96 | 8.4 | 90.8 | Trivial Many |
| 7 | Pin holes | 130 | Porosity | 56 | 3.7 | 94.5 | Trivial Many |
| 8 | Dimensional Defects | 36 | Cracks | 19 | 1.2 | 95.7 | Trivial Many |
| 9 | Crack cutting defective | 12 | High Hardness | 12 | 1.1 | 96.8 | Trivial Many |
| 10 | Handling Damages | 6 | Crack cutting defective | 12 | 0.6 | 97.7 | Trivial Many |
| 11 | Rough Surface | 6 | Cold shut | 11 | 0.7 | 98.4 | Trivial Many |
| 12 | Edges chip off | 5 | Rough Surface | 6 | 0.6 | 99.0 | Trivial Many |
| 13 | High Hardness | 17 | Handling Damages | 6 | 0.4 | 99.3 | Trivial Many |
| 14 | Poor Machinability | 5 | Edges chip off | 5 | 0.3 | 99.7 | Trivial Many |
| 15 | Cracks | 18 | Poor Machinability | 5 | 0.3 | 100.0 | Trivial Many |
| Total | | 1992 | Total | 1688 | | | |

Pareto Analysis (Defects Graph)



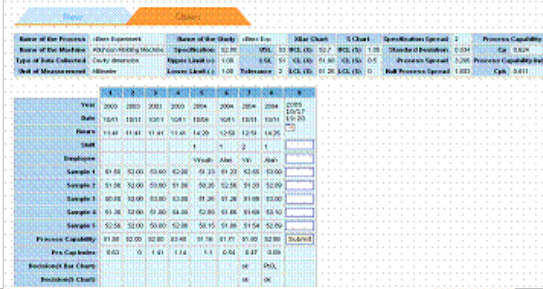
Pareto Analysis

Cause-Effect

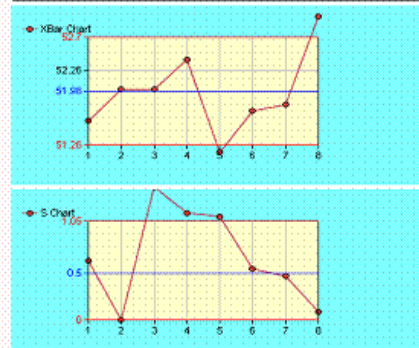
...

2. Look at control status

XBar S Chart Process



XBar S Chart

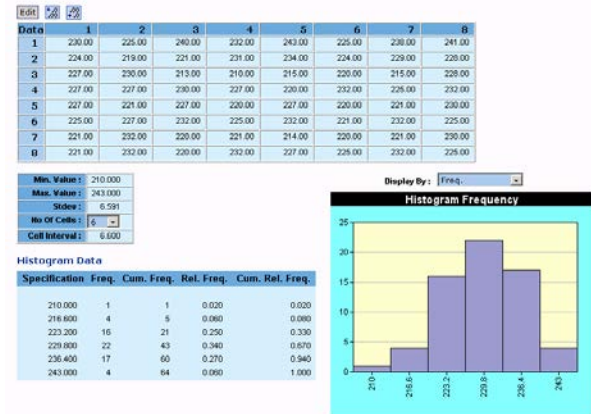


Control Chart

...

3. Quantify process capability

Histogram



Histogram

...



Create Action Plan



Report And Action Plan

[Edit](#) From Date To Date [View](#)

Report and action plan including risks

| No. | Root Cause | Risk Reduction Action | Resources | PIC | From Date | To Date | Duration | Apr - 2007 | | | | | | | | | | | | | | | |
|----------|------------------------|-----------------------|------------|-----------|-------------|-------------|----------|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| | | | | | | | | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | |
| | | | | | | | | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | |
| 1 | Shortage of nur | | | | 12-Apr-2007 | 25-Apr-2007 | 13 | | | | | | | | | | | | | | | | |
| 1 | Increase staff | Assign mor | Hire more | Alan | 12-Apr-2007 | 17-Apr-2007 | 5 | | | | | | | | | | | | | | | | |
| 2 | Nurses should h | Nurses sho | Provide ap | Brian | 16-Apr-2007 | 19-Apr-2007 | 3 | | | | | | | | | | | | | | | | |
| 3 | 5 S Housekeepin | Apply 5S H | Provide nu | Collin | 19-Apr-2007 | 25-Apr-2007 | 6 | | | | | | | | | | | | | | | | |
| 4 | The following s | Design and | Give nurse | Doreen | 19-Apr-2007 | 25-Apr-2007 | 6 | | | | | | | | | | | | | | | | |
| 2 | Management seld | | | | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | | |
| 1 | Chief Nurse sho | Design and | Chief nurs | Elaine | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | | |
| 2 | ICT should be i | Make appoi | Encourage | Frenie | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | | |
| 3 | If possible mus | Encourage | Provide nu | Geraldine | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | | |
| 3 | Deliver good qu | | | | 07-May-2007 | 29-May-2007 | 22 | | | | | | | | | | | | | | | | |
| 1 | Management shou | Designate | Give train | Helen | 07-May-2007 | 22-May-2007 | 15 | | | | | | | | | | | | | | | | |
| 2 | Clinical Perfor | Plan a tra | Provide CP | irene | 22-May-2007 | 24-May-2007 | 2 | | | | | | | | | | | | | | | | |
| 3 | Use appropriate | Select app | Submit bud | Janete | 22-May-2007 | 24-May-2007 | 2 | | | | | | | | | | | | | | | | |
| 4 | Provide Quality | Send hospi | Call a Qua | Karen | 25-May-2007 | 29-May-2007 | 4 | | | | | | | | | | | | | | | | |

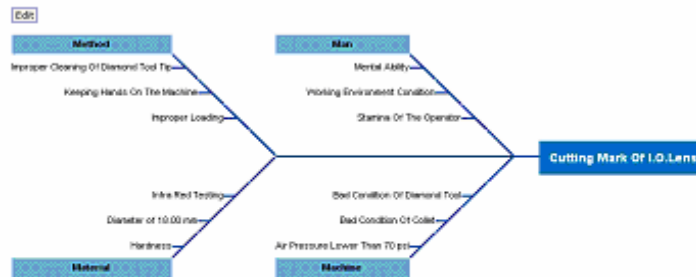


Analyze Factors



Cause and Effect Diagram

Fish Bone Diagram



➤ Summarize relations between causes and effect

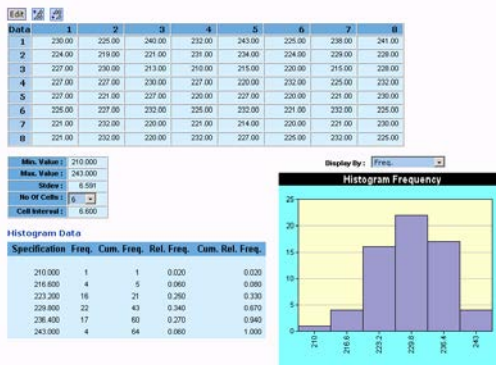
Tally Sheet

| No. | Tasks | Total | |
|-----|--------------|-----------|--|
| 1 | Very bad | 5 | |
| 2 | Bad | 8 | |
| 3 | Medium | 7 | |
| 4 | Good | 14 | |
| 5 | Very good | 8 | |
| | Total | 42 | |

➤ Assemble the data

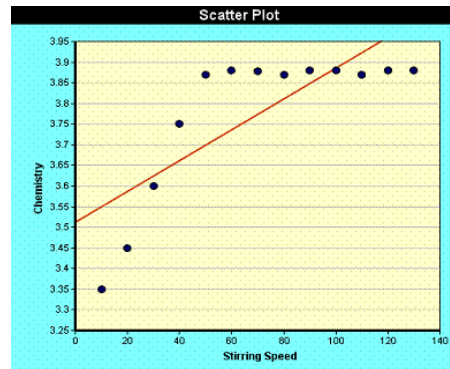
Histogram

Histogram



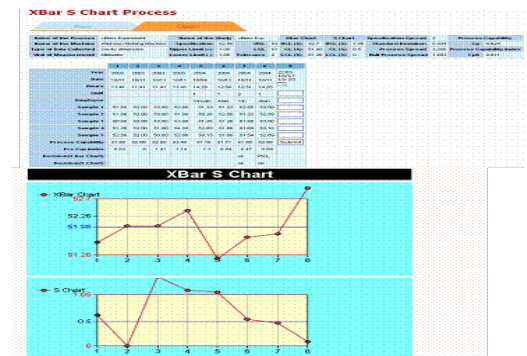
➤ Try stratification

Scatter Diagram



Check interrelationships

Control Chart (for analysis)



Look at changes over time



Develop and Implement Countermeasures



W3 Programme

Edit Report Setup From Date 04/10/2007 To Date 05/27/2007 View

Thorough action plan is necessary

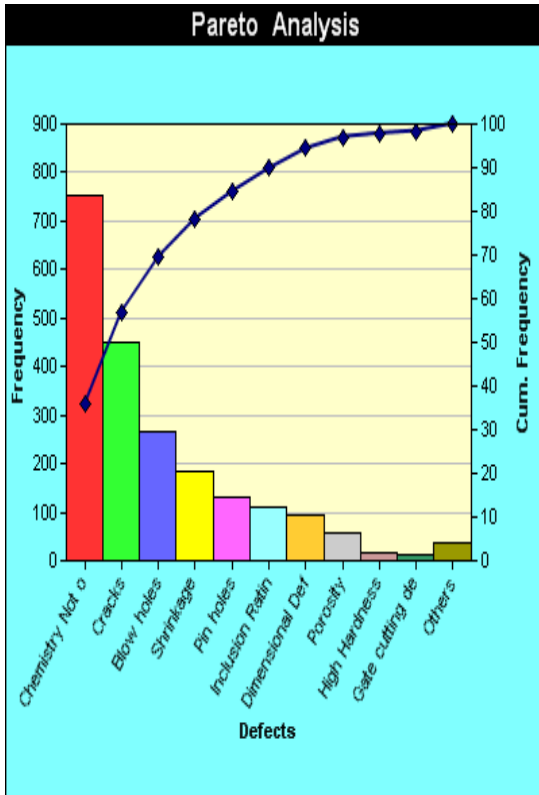
| No. | Root Cause | Recommendations | Resources | PIC | From Date | To Date | Duration | Apr - 2007 | | | | | | | | | | | | | | |
|----------|------------------------|-----------------|------------|-----------|--------------------|--------------------|-----------|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| | | | | | | | | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| | | | | | | | | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | | |
| 1 | Shortage of nur | | | | 12-Apr-2007 | 25-Apr-2007 | 13 | | | | | | | | | | | | | | | |
| 1 | Increase staffi | Assign mor | Hire more | Allan | 12-Apr-2007 | 17-Apr-2007 | 5 | | | | | | | | | | | | | | | |
| 2 | Nurses should h | Nurses sho | Provide ap | Brian | 16-Apr-2007 | 19-Apr-2007 | 3 | | | | | | | | | | | | | | | |
| 3 | 5 S Housekeepin | Apply 5S H | Provide nu | Collin | 19-Apr-2007 | 25-Apr-2007 | 6 | | | | | | | | | | | | | | | |
| 4 | The following s | Design and | Give nurse | Doreen | 19-Apr-2007 | 25-Apr-2007 | 6 | | | | | | | | | | | | | | | |
| 2 | Management seld | | | | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | |
| 1 | Chief Nurse sho | Design and | Chief nurs | Elaine | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | |
| 2 | ICT should be i | Make appoi | Encourage | Frenie | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | |
| 3 | If possible mus | Encourage | Provide nu | Geraldine | 25-Apr-2007 | 07-May-2007 | 12 | | | | | | | | | | | | | | | |
| 3 | Deliver good qu | | | | 07-May-2007 | 29-May-2007 | 22 | | | | | | | | | | | | | | | |
| 1 | Management shou | Designate | Give train | Helen | 07-May-2007 | 22-May-2007 | 15 | | | | | | | | | | | | | | | |
| 2 | Clinical Perfor | Plan a tra | Provide CP | Irene | 22-May-2007 | 24-May-2007 | 2 | | | | | | | | | | | | | | | |
| 3 | Use appropriate | Select app | Submit bud | Janete | 22-May-2007 | 24-May-2007 | 2 | | | | | | | | | | | | | | | |
| 4 | Provide Quality | Send hospi | Call a Qua | Karen | 25-May-2007 | 29-May-2007 | 4 | | | | | | | | | | | | | | | |



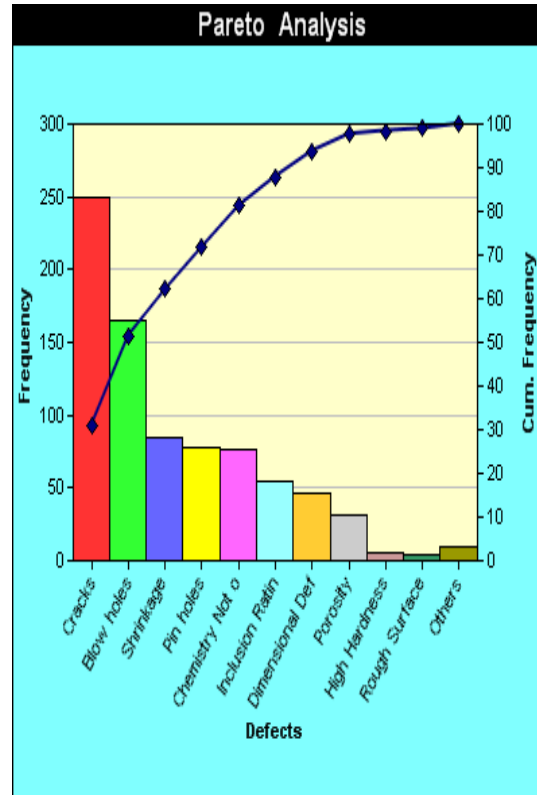
Confirm Effectiveness



Pareto Analysis

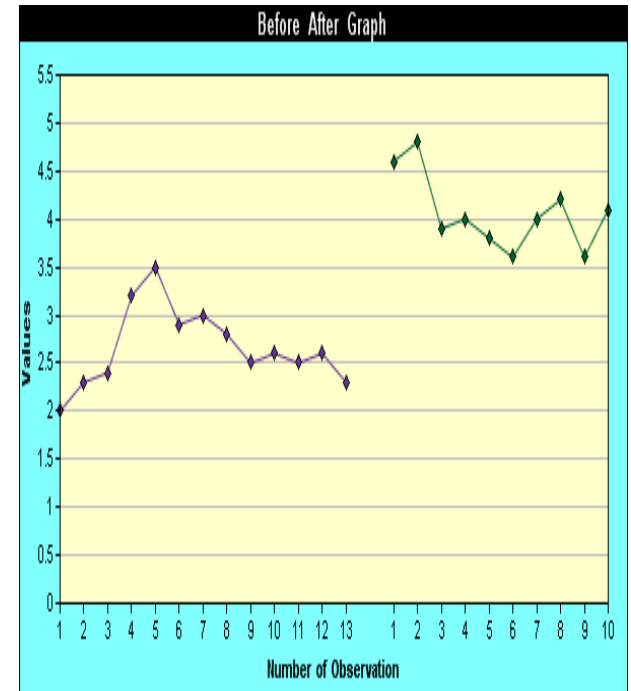


Before



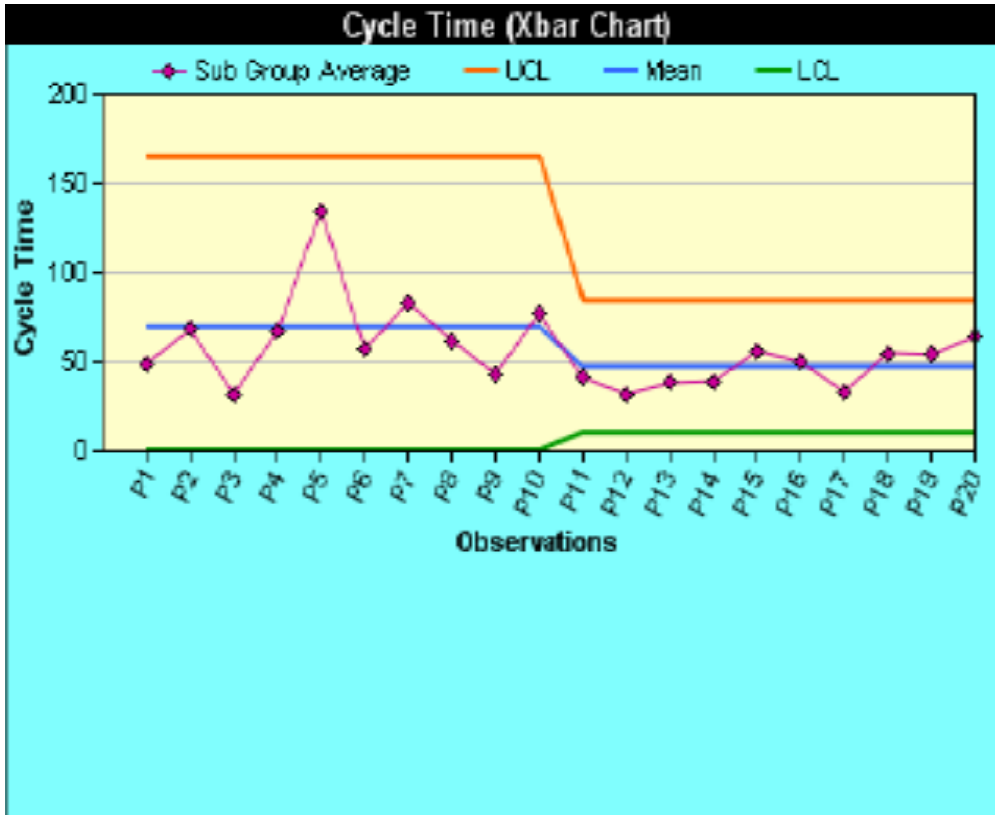
After

Line Graph (Before-After)





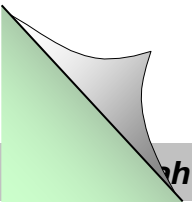
Standardize & Establish Control



Control Chart

| No. | Tasks | Total | |
|-----|--------------|-----------|--|
| 1 | Very bad | 5 | |
| 2 | Bad | 8 | |
| 3 | Medium | 7 | |
| 4 | Good | 14 | |
| 5 | Very good | 8 | |
| | Total | 42 | |

Tally Sheet





Using iCT-M



Methods





Checker Board





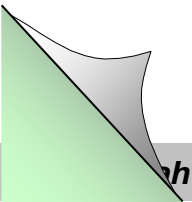
Story Board









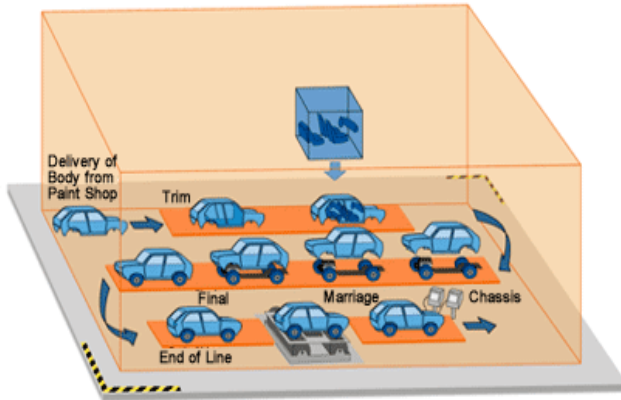




Benefits



Manufacturing



Threats
Losses

iCT-M[®]
Product & Process
Optimization

Opportunities
Gains \$\$\$

Service



Business Growth



Satisfied External Customers



Increased Revenue



Satisfied Internal Customers



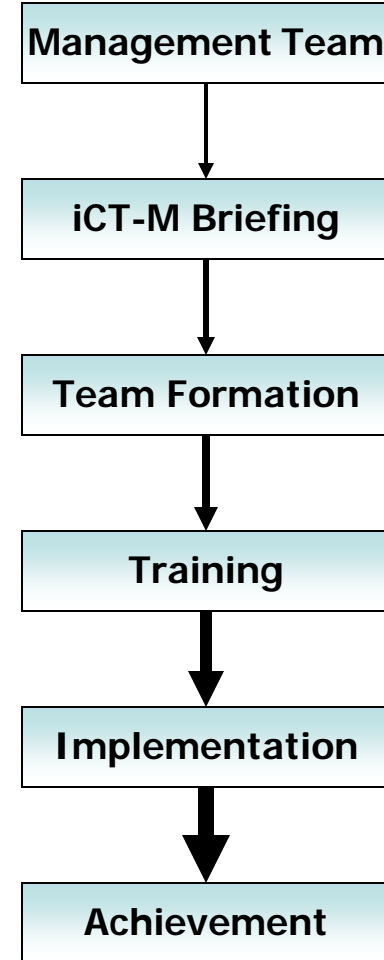
Training



Community Development



- Seminar
 - Awareness of iCT-M
 - iCT-M tools
- Training
 - Understand all elements
 - Hands-on applications
 - Use Templates
- Workshop



Take-back-and-Do
Info-sharing
Value Based





Problem Solving and Quality Trainings



Belmah Strategies

- 5 Why's
- 5S Housekeeping
- 7QC Problem Solving Tools
- Incident Reporting
- Benchmarking
- Cycle Time Reduction
- Control Plan Methodology
- Data Analysis
- Design Of Experiments
- Distributions
- Document Control
- Dynamic Control Plan
- Healthcare Failure Mode Effect Analysis
- Innovative Creative Circles (Award)
- ISO Internal Audit
- ISO Toolkit
- Just In Time
- Lean Services
- Logistics Regression
- Measurement System Analysis
- Mistake Proofing
- Monte Carlo
- Multivariate Analysis
- New QC Problem Solving Tools
- Control Plan
- Hypothesis Testing



Problem Solving and Quality Trainings



- Process Capability
- Process Flow Chart
- Process Work Instruction
- Productivity Tracking
- Project Charter
- Quality Function Deployment
- Regression Methods
- Research Methodology
- Research Protocol Writing
- Research Publication
- Robust Design
- Root Cause Analysis
- Scientific/Technical Paper Writing
- Six Sigma
- SMED
- Staff Performance Evaluation
- Standard Operating Procedure
- Statistical Process Control
- Statistical Techniques
- Total Productive Maintenance
- Training Needs Analysis
- Visual Management
- Voice Of Customer



Research & Development Trainings



Belmah Strategies

- Research and Development
- Regression Analysis
- Stepwise Regression Analysis
- Orthogonal Polynomials
- Parameter Design
- Data Transformation
- Tolerance Design
- Successive Approximation
- Dynamic Characteristics
- Technology Development
- Principal Component
- Factor Analysis
- Discriminate Analysis
- Cluster Analysis
- Canonical Correction
- Multi Dimensional Scaling





- Service Quality Gap Analysis
- Assertive Behavior
- Calming Upset Customers
- Counter Service
- Customer Complaints Management
- Customer Loyalty
- Delivering Customer Service
- Internal Customer Satisfaction
- Managing Customer Service
- MBNQA
- Risk Assessment
- Service Cycle Time
- SWOT Analysis
- Telephone Answering Techniques





The Company

Belmah Strategies (M) Sdn. Bhd.



MSC Status Certificate





MSC STATUS CERTIFICATE

*The Government of Malaysia
hereby awards Multimedia Super Corridor Status
to*

BELMAH STRATEGIES (MALAYSIA) SDN BHD
.....

*for having fulfilled the necessary set of criteria
in meeting the objectives of the
Multimedia Super Corridor.*

*MSC Status entitles your company to the incentives, rights
and privileges provided for under the Bill of Guarantees subject
to your company's continued adherence to
the aforementioned criteria.*

7th January 2004


 Minister of Finance
Malaysia


 Minister of International Trade and Industry
Malaysia



MSC BILL OF GUARANTEES


- 1 To provide a world-class physical and information infrastructure.
- 2 To allow unrestricted employment of local and foreign knowledge workers.
- 3 To ensure freedom of ownership by exempting companies with MSC Status from local ownership requirements.
- 4 To give the freedom to source capital globally for MSC infrastructure, and the right to borrow funds globally.
- 5 To provide competitive financial incentives, including Pioneer Status (100 percent tax exemption) for up to ten years or an Investment Tax Allowance for up to five years and no duties on the importation of multimedia equipment.
- 6 To become a regional leader in Intellectual Property Protection and Cyberlaws.
- 7 To ensure no censorship of the Internet.
- 8 To provide globally competitive telecommunications tariffs.
- 9 To tender key MSC infrastructure contracts to leading companies willing to use the MSC as their regional hub.
- 10 To provide a high-powered implementation agency to act as an effective one-stop super shop.


Multimedia Super Corridor
 Multimedia Development Corporation
 Serial No.



MSC Status




Multimedia Super Corridor
Multimedia Development Corporation

CLIENT'S COPY

Our Ref: CS/3/2064 (16)

7 January 2004

Belmah Strategies (Malaysia) Sdn Bhd
No. 9, 3rd Floor, Jalan PJS 11/28
Bandar Sunway Metro
46150 Petaling Jaya
Selangor Darul Ehsan.

Tel: 603 – 5636 2210
Fax: 603 – 5636 2220

Attn : Mr. Dominic Belavendram
Chief Executive Officer

Dear Sir,

Re: Application for MSC Status
MSC-status Company: Belmah Strategies (Malaysia) Sdn Bhd (456263-W)

We refer to the following documents ("Application Documents"):

- (a) your completed application form dated : **1st December 2003** applying for the grant of MSC Status;
- (b) the approved business plan for your company; and
- (c) all agreed variations or modifications to the above documents, if any

We are pleased to inform you that your application for MSC status has been approved and that Belmah Strategies (Malaysia) Sdn Bhd has been granted MSC status together with all the benefits attached thereto subject to your acceptance of such status and your compliance with the conditions contained in the enclosed document titled "Conditions of Grant of MSC-Status" ("the Conditions of Grant"). The financial incentive awarded to your company is *Pioneer Status* under Section 4A of the Promotion of Investments Act, 1986.

We have provided two copies of this approval letter. Kindly confirm your acceptance by signing the copy marked "*MDC's Copy*" and returning it within thirty (30) days from the date of this letter, failing which the offer stated herein shall lapse.

Kindly note that any company granted Pioneer Status must make an application to determine the "effective date" for the commencement of this benefit ("Application for Effective Date"). As a rule, it becomes effective from the date of the first sale. We have attached a pink form to this letter to enable you to make the Application for Effective Date. Please comply with the instructions and guidelines as stated in the form.

In the event that you are unable to make the Application for Effective Date within **six (6) months** from the date of this letter, you are required to seek an extension for the Application for Effective Date from the Multimedia Development Corporation.

For any assistance with regards to immigration approvals for foreign knowledge workers please contact Pn Roslaini Nazar at (03) 8313 7200 or (03) 8313 7210. For assistance on relocation to the Cybercities, financial and customs duty incentives and any other matters requiring our assistance, please contact our Client Relations Support Center at (03) 8315 3142 or (03) 8315 3143. Further, we also enclose herewith the Handbook for MSC Status Companies for your reference.



No. 08682

KEMENTERIAN KEWANGAN MALAYSIA

AKUAN PENDAFTARAN PERUNDING SWASTA

NO. RUJUKAN PENDAFTARAN: 465-02005361

TEMPOH : 14/08/2004 -13/08/2007

Bahawa dengan ini diperakui firma : BELMAH STRATEGIES (MALAYSIA) SDN. BHD.
9-3 (3RD) JLN. PJS 11/28,
BANDAR SUNWAY METRO,
46150 PETALING JAYA
SELANGOR

telah berdaftar dengan Kementerian Kewangan Malaysia dalam bidang perkhidmatan perunding di bawah kepala seperti berikut:

243000 PENGURUSAN KOMPUTER

Kelulusan ini adalah tertakluk kepada syarat-syarat seperti dinyatakan di sebelah


MOHAMAD ARIF BIN OTHMAN

Bahagian Pengurusan Perolehan Kerajaan
b.p. Ketua Setiausaha Perbendaharaan
Kementerian Kewangan Malaysia.

Bertarikh : 16/08/2004





No. 169455

KEMENTERIAN KEWANGAN MALAYSIA

AKUAN PENDAFTARAN KONTRAKTOR

No. RUJUKAN PENDAFTARAN : 357-02034238

TEMPOH : 11/08/2004 -10/08/2007

Bahawa dengan ini diperakui syarikat:
BELMAH STRATEGIES (MALAYSIA) SDN. BHD.
NO. 9-3 (3RD)
JLN. PJS 11/28,
BANDAR SUNWAY,
46150 PETALING JAYA
SELANGOR

telah berdaftar dengan Kementerian Kewangan Malaysia dalam bidang
bekalan/perkhidmatan di bawah kepala dan sub-kepala berikut:

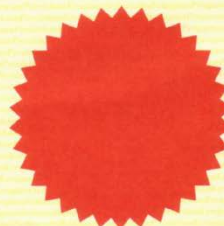
210101, 210102, 210103, 210104, 210105, 210106 ***

Kelulusan ini adalah tertakluk kepada syarat-syarat seperti dinyatakan
di sebelah


MOHAMAD ARIF BIN OTHMAN

Bahagian Pengurusan Perolehan Kerajaan
b.p. Ketua Setiausaha Perbendaharaan
Kementerian Kewangan Malaysia
11/08/2004

Bertarikh:





Rules of Contractor Registration



SYARAT-SYARAT KELULUSAN PENDAFTARAN KONTRAKTOR

1. SYARAT-SYARAT

- 1.1 Kelulusan ini diberi berdasarkan maklumat-maklumat yang telah disampaikan oleh pihak syarikat tuan.
- 1.2 Sebarang perubahan ke atas maklumat-maklumat tersebut hendaklah dibuat secara "online" dalam masa 10 hari dari tarikh perubahan tersebut berlaku.
- 1.3 Syarikat hendaklah mengemukakan segala maklumat dalam tempoh yang ditetapkan apabila diminta oleh Kementerian Kewangan. Kegagalan berbuat demikian akan mengakibatkan tindakan seperti di para 1.5 di bawah.
- 1.4 Syarikat hendaklah memastikan bahawa bidang yang telah didaftarkan dalam sijil ini tidak bertindih dengan bidang yang telah diluluskan ke atas mana-mana syarikat yang mempunyai pemilik atau Ahli Lembaga Pengarah dan pengurusan yang sama.
- 1.5 Kementerian Kewangan berhak membatalkan/mengantungkan pendaftaran syarikat tuan tanpa apa-apa notis jika didapati maklumat yang diberi tidak benar.

2. PENGGANTUNGAN/PEMBATALAN PENDAFTARAN

- 2.1 Pendaftaran akan digantung/dibatalkan sekiranya didapati:
 - 2.1.1 Syarikat/pemilik/ahli kongsi/pengarah terlibat dalam sebarang kegiatan haram/jenayah yang disabitkan dan didapati bersalah oleh mahkamah di Malaysia atau di luar negeri.
 - 2.1.2 Sekiranya syarikat menarik balik tawaran sebelum tender dipertimbangkan atau menolak setelah tawaran dibuat.
 - 2.1.3 Kegagalan syarikat melaksanakan kontrak-kontrak yang telah ditandatangani dengan Kerajaan.
 - 2.1.4 Meminda surat kelulusan ini dengan tujuan menipu atau lain-lain maksud.
 - 2.1.5 Membenarkan sijil pendaftaran disalahgunakan oleh individu/syarikat lain.
 - 2.1.6 Syarikat didapati membuat pakatan harga dengan syarikat-syarikat lain semasa memasuki tender Kerajaan.

3. PEMBAHARUAN

- 3.1 Syarikat tuan hendaklah mengemukakan permohonan pendaftaran tiga (3) bulan sebelum tamat tempoh pendaftaran.
- 3.2 Permohonan yang diterima selepas tamat tempoh pendaftaran adalah dianggap sebagai pendaftaran semula.

4. PENYERTAAN TENDER/SEBUTHARGA

- 4.1 Sijil ini hendaklah ditunjukkan semasa mengambil dokumen tender/sebutharga di dalam kepala/sub-kepala (bidang) yang diluluskan sahaja.
- 4.2 Salinan sijil ini hendaklah dikemukakan bersama-sama dokumen tender/sebutharga.

5. HAK KERAJAAN

Kerajaan berhak mendapat Sijil Pendaftaran ini apabila pendaftaran syarikat digantung/dibatalkan.

No. Siri : 169455
 No. Fail : 357-02034238
 Nama Syarikat : BELMAH STRATEGIES (MALAYSIA) SDN. BHD.
 Alamat : NO. 9-3 (3RD)
 JLN. PJS 11/28,
 BANDAR SUNWAY,
 46150 PETALING JAYA
 SELANGOR
 Tarikh Tamat : 11/08/2004-10/08/2007

- 210101 PERSONAL COMPUTER & RELATED PERIPHERAL & SERVICES
- 210102 SMALL TO LARGE MULTI-USER SYSTEMS & SERVICES
- 210103 WORKSTATIONS AND RELATED PERIPHERAL & SERVICES
- 210104 SOFTWARE PRODUCT AND SERVICES
- 210105 OTHER COMPUTER RELATED SERVICES
- 210106 NETWORKING PRODUCTS & SERVICES



Commitment to Agreement



Belmah Strategies



Our Ref : MB/DAGS/AR/48-2003

Date : 29 October 2003

Dominic Belavendram
Belmah Strategies (Malaysia) Sdn Bhd
No. 9, 3rd Floor, Jalan PJS 11/28
Bandar Sunway Metro
46150 Petaling Jaya
Selangor Darul Ehsan

Fax: 03-5636 2220

Dear Sir,

Project Endorsement by Ministry of Science, Technology & the Environment

The above matter refers.

We are pleased to inform you that the Ministry of Science, Technology & the Environment (MOSTE) has approved and endorsed your project namely **ICT-Manufacturing** to be funded under Demonstrator Application Grant Scheme (DAGS). The amount approved for the project is **RM2,273,491.00** (Two million, two hundred seventy three thousand, four hundred ninety one only) out of the total project cost, which is RM4,490,449.00

We wish to take this opportunity to remind you of our high expectation on your demonstrator project. As such, please ensure that all deliverables are achieved as planned.

We seek to assist you in all matters pertaining to your grant allocation. Should you have any inquiries, please do not hesitate to contact the DAGS Secretariat (En Shukor, mshukor@mimos.my, 03-8996 5000 ext 2063).

Thank you.

Yours sincerely,

Badrul Hisham Jaafar
Manager, DAGS
MIMOS Berhad





Official Delegate to Islamabad



MINISTER OF INTERNATIONAL TRADE AND INDUSTRY
MALAYSIA

BPA(0) 1127/2

8 March 2005

Mr Dominic Belavendram
BELMAH STRATEGIES SDN BHD
No 9, 3rd Floor, Jalan PJS 11/28
Bandar Sunway Metro
46150 Petaling Jaya, Selangor

**Official Visit of YAB Prime Minister of Malaysia to Islamabad,
Pakistan, 15 – 18 February 2005**

I would like to thank you for your participation in the official visit of YAB Dato' Seri Abdullah Ahmad Badawi, the Prime Minister of Malaysia to Islamabad, Pakistan from 15 – 18 February 2005.

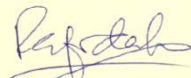
2. I hope that the programme organized in conjunction with the official visit YAB Prime Minister has provided you with useful insights on the business opportunities and with relevant contacts in Pakistan.

3. You are kindly advised to follow up on the prospects and inform MATRADE on any development resulting from the mission.

4. Should you require any further assistance, please contact Mr S. Arokiadass, Malaysia Trade Commissioner, 554 & 555 Anna Salai, Teynampet, Chennai, India, Tel: 009144 24313722 Fax: 009144 24313725 or e-mail: matrade@touchtelindia.net.

Thank you.

Yours sincerely,


(RAFIDAH AZIZ)



Chief Executive Officer

Technology Transfer



Official Delegate to the United States



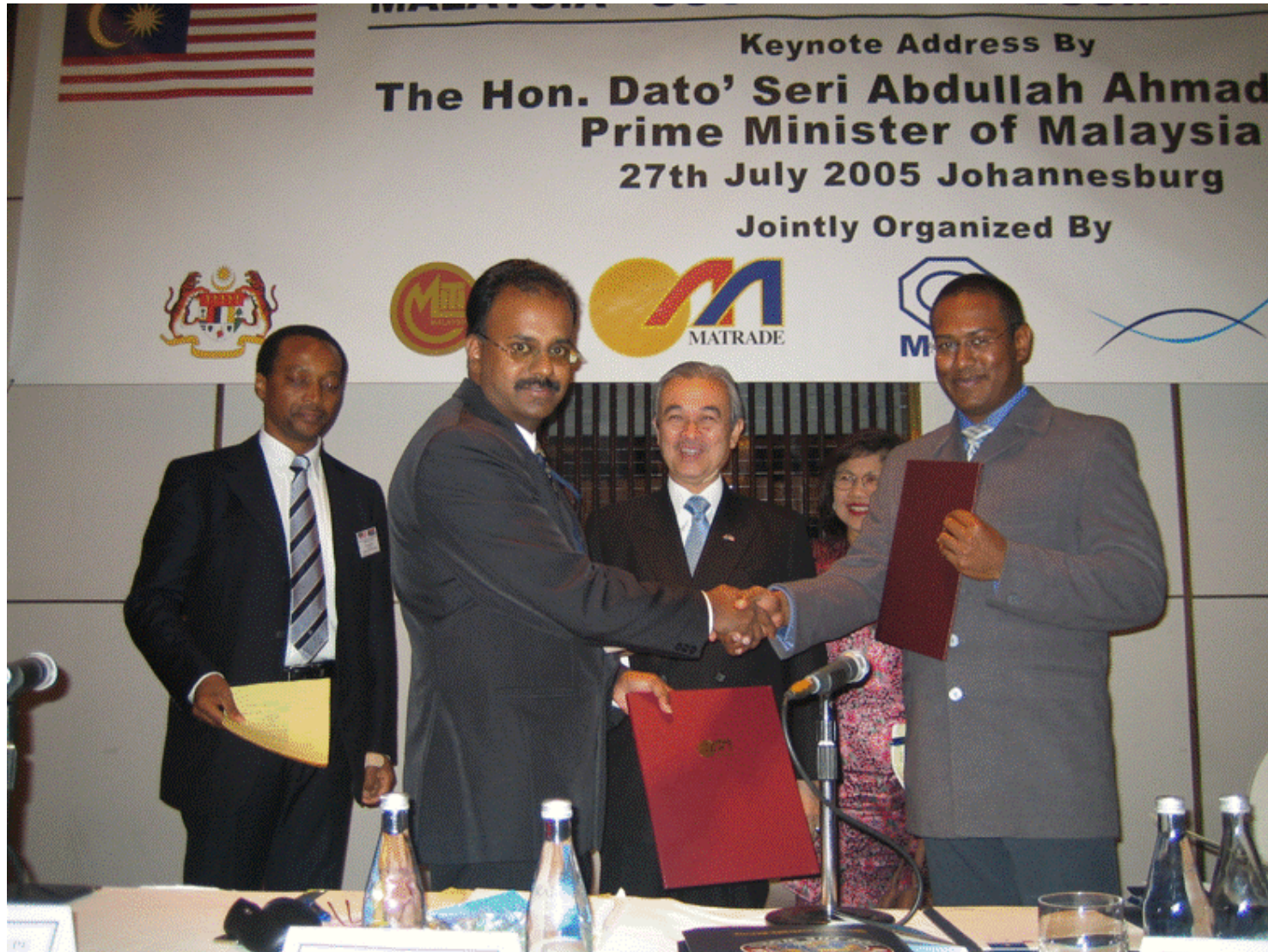


Official Delegate to Indonesia





Official Delegate to Johannesburg





Official Delegate to Islamabad





Chief Technical Officer

Assoc. Prof. Dr. Nic

Principal Consultant



- Quality Engineer in Texas Instruments, KL
 - Quality Assurance, Quality Engineering
- Postgraduate Diploma in Engineering, 1989
 - University of Paisley, Scotland, UK
 - Best student of the year
- Best Envoy of Quality Engineering, 1989
 - Babcock Award
- International Institute of Welding, 1992
 - UK Granjon nomination
 - Given to 1 person per year
 - Best research paper





2 The Renfrewshire World, June 19, 1992

Paisley College student in the running for an international prize

A PAISLEY College student will represent the UK in a world-wide search for innovation in manufacturing.

Nicolo Belavendram (34), pictured right, from Malaysia, is studying at the college quality centre for a PhD in quality management.

He has already beaten off a fierce challenge from other UK competitors to win the national nomination for the International Institute of Welding's Granjon Prize.

Now Nicolo's paper — "Robustisation of Welding Procedures Through Computer Aided Parameter Design" — is being examined along with those of finalists representing up to 36 other countries.

work in the area of design for welding is at the leading edge of technology, and forms an important part of his studies in manufacturing quality.

Robustisation which involves identifying welding procedures that are insensitive to uncontrollable factors, including temperature and humidity, while achieving the required quality.

"His nomination as the UK representative for the Granjon Prize is both significant and well-deserved," added Professor McEwan. "The college is justifiably





PAGE 12

SUNDAY MAIL, 5 JULY 1992

INSIGHT ON *Education*

MALAYSIAN research student Nicolo Belavendram will represent UK interests in a world-wide search for manufacturing innovation sponsored by the International Institute of Welding (IIW).

Nicolo, from Perak, who is studying in Scotland at the Paisley College Quality Centre for a PhD in quality management, has already beaten off the fierce challenge of other UK competitors to win the national nomination for the IIW's prestigious Granjon Prize.

Now his paper *Robustisation of Welding Procedures through Computer Aided Parameter Design* is being examined along with those of finalists representing up to thirty six other countries.

Prof William McEwan, Director of the Quality Centre at Paisley, says: "Nicolo's research work in the area of design for welding is at the leading edge of technology, and forms an impor-

Malaysian leads UK challenge

tant part of his studies in manufacturing quality.

"Robustisation involves identifying welding procedures that are insensitive to uncontrollable factors, including temperature and humidity, while achieving the required quality.

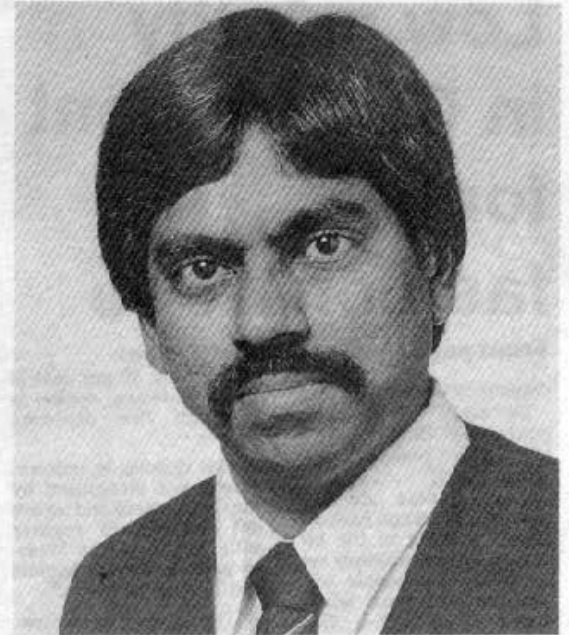
"His nomination as the UK representative for the Granjon prize is both significant and well-deserved. The College — which is set to become a university later this year under Government plans for higher education — is justifiably proud of Nicolo."

Nicolo, 34, who worked as a Process Control Engineer with Texas Instruments in Kuala Lumpur before leaving to study in Scotland, says: "For many years I was taught that quality meant being careful and constantly checking to prevent defects from occurring. However, I realised that such methods are unsatisfactory, particularly for world quality leaders like the UK.

"Indeed, there are many other complex factors that have to be understood in the search for total quality,

so that quality is not only robust, but also intrinsic. With the help of my colleagues at Paisley College I have been able to shed a little more light upon this fascinating subject. I am delighted to share my success with them."

Nicolo's paper is currently being assessed, with the other international winners, by a French jury, and the final result will be announced within the next few weeks. The eventual winner will receive the Granjon prize at the IIW's Annual Assembly in Madrid in September.



Nicolo Belavendram: Paper for world meet



1992 UK Nominee for Best R&D



Best Student of the Year, 1989
Paisley College, Scotland

Best Envoy of Quality, 1989
Babcock Energy, Scotland



Deming and Me





Invitation from the Queen



*The Lord Chamberlain is
commanded by Her Majesty to invite*

.....
.....Doctor and Mrs. Nicolo Belavendram
to a Garden Party
at the Palace of Holyroodhouse
on Thursday 10th July 1997 from 4 to 6 pm



BELAVENDRAM

TAGUCHI

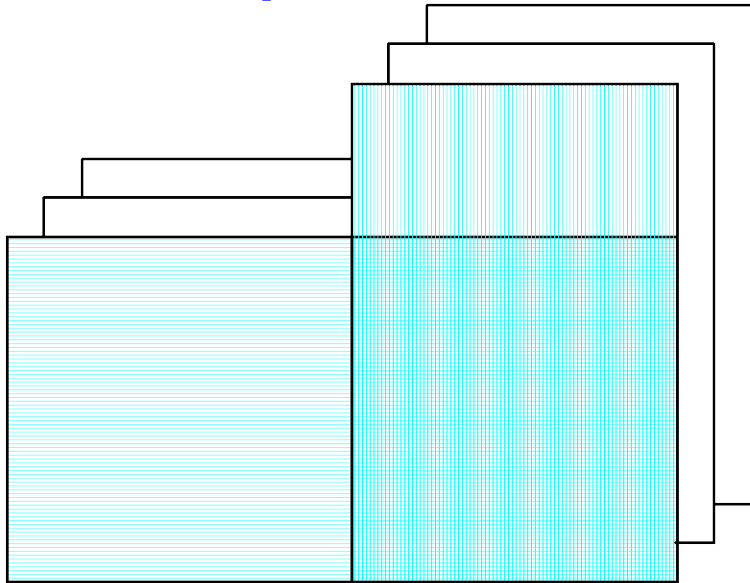
QUALITY EXPERIMENTS

SCIENCE HALL



TAGUCHI QUALITY EXPERIMENTS

A collection of Taguchi Experiments for Practising Engineers.



NICOLO BELAVENDRAM

- Taguchi Quality Experiments
 - Loss to society
 - Experimentation
 - Computer Aided Parameter Design
 - Multi Variable Approximation
 - Response Analysis



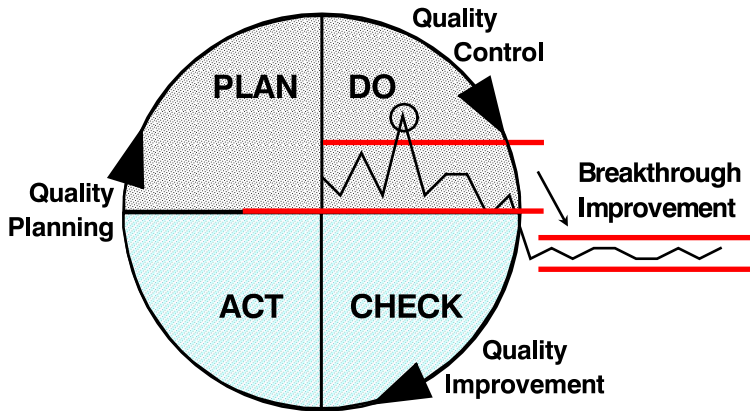
BELAVENDRAM



BASIC QUALITY BY DESIGN

Total Quality Management for Manufacturing, Service and Hospitality Industries.

BASIC QUALITY BY DESIGN



- Basic Quality by Design
 - Quality Cost
 - 5S Housekeeping
 - 7 QC Tools
 - Quality Function Deployment
 - Benchmarking
 - FMECA
 - Service Quality
 - Design of Experiments
 - SPC
 - JIT
 - Motivation
 - Human Aspects
 - Standards

NICOLO BELAVENDRAM





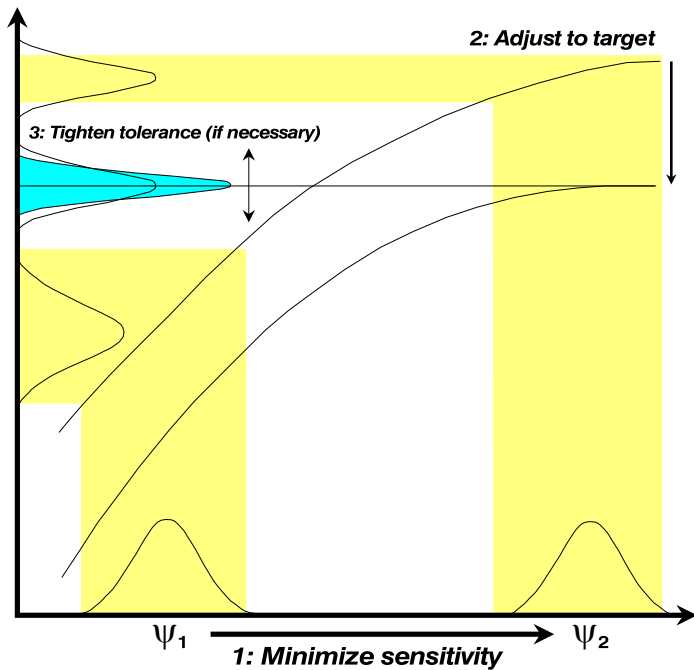
QUALITY BY DESIGN

Taguchi Techniques for Industrial Experimentation

BELAVENDRAM

QUALITY BY DESIGN

PRENTICE HALL



NICOLO BELAVENDRAM

- Quality by Design
 - Quality Loss Function
 - Design Process
 - Orthogonal Arrays
 - 2 Step Optimization
 - Analysis of Variance
 - Modifying Orthogonal Arrays
 - Computer Aided Parameter Design
 - Managing Experiments



BELAVENDRAM

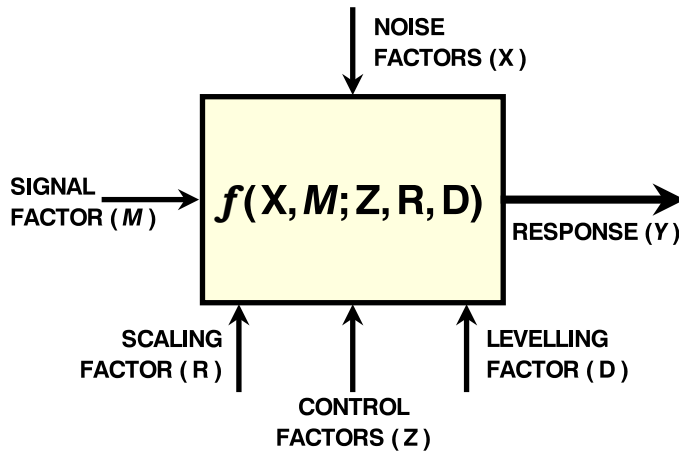


ADVANCED QUALITY BY DESIGN

A Synthesis of Taguchi Techniques and Classical Design of Experiments

ADVANCED QUALITY BY DESIGN

PRENTICE HALL



- Advanced Quality by Design

- Quality Hypermodel
- Sequential Experiments
- Regression Analysis
- Orthogonal Polynomials
- Steepest Ascent
- CAPD
- Data Transformation
- CATD
- Accumulation Analysis
- Dynamic Characteristics

NICOLO BELAVENDRAM

A spiral-bound notebook with a textured, light brown cover. The spiral binding is on the left side. The text is centered on the cover.

About The Trainer

Dr Nic



Background

- Quality Engineer in Texas Instruments, KL
 - Quality Assurance, Quality Engineering
- Postgraduate Diploma in Engineering, 1989
 - Best student of the year, University of Paisley, Scotland, UK
- Best Envoy of Quality Engineering, 1989
 - Babcock Award
- International Institute of Welding, 1992
 - UK Granjon nomination
 - given to 1 person per year for best research paper



1992 UK Nomination for best R&D

2 The Renfrewshire World, June 19, 1992

Gold medal winner

A DOCUMENTARY which followed a Britannia Airways flight from Glasgow to Orlando has been awarded a gold medal at the 1992 International Radio Festival of New York.

"Britannia 300 Alpha" — produced by Radio Clyde and first broadcast in January — took the prize for the best programme in the special report category.

Access

Britannia gave Radio Clyde unprecedented access to their Glasgow crew briefing room, operational areas and the flight deck of a Boeing 757 which made the trip to Orlando.

The 10-hour flight and the preparations for it produced 30 hours of recording which were edited down to the 50 minute documentary.

More than 1500

Provost launches Organ Festival

PAISLEY International Organ Festival — the only one of its kind in Scotland — was launched last week by Provost Willie Orr with the help of the Berlioz Brass Quintet.

The 1992 programme features 30 events in 11 venues over a nine-day period in August.

A major attraction will be an international organ competition.

The programme, which caters for all musical tastes, also features a host of choirs, orchestras and ensembles including the BBC Scottish Symphony Orchestra, the Royal Scottish Orchestra, the Britten Singers, the Wallace Collection, the Goldberg Ensemble, the Berlioz Brass Quintet and the Whistlebinkies.

Circuit

Competitors and performers will be coming to Paisley from around the world, including Russia, the United States and Italy, which indicates the growing importance of the festival on the international circuit.

Among the judges will be distinguished organists Gillian Weir, Lionel Rogg, Naji Hakim and Joachim Grubich, who will also be performing.

Festival chairman George McPhee said: "This festival now has an established international reputation for excellence. It is not just for organists, but for all music lovers".

Funded by Chivas Brothers, Renfrew District Council, Renfrewshire Enterprise and Strath-

Paisley College student in the running for an international prize

A PAISLEY College student will represent the UK in a world-wide search for innovation in manufacturing.

Nicolo Belaven-dram (34), pictured right, from Malaysia, is studying at the college quality centre for a PhD in quality management.

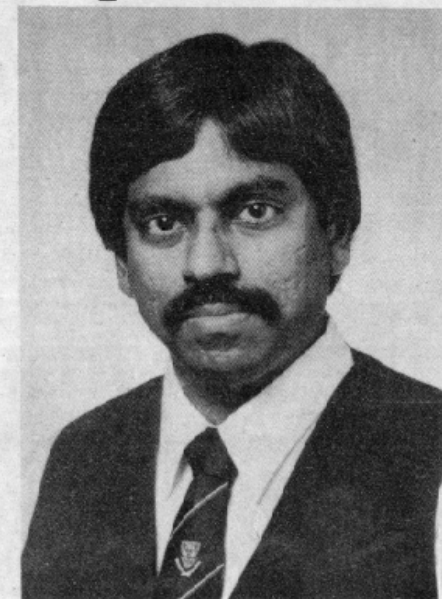
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1992 UK Nomination for best R&D

PAGE 12 SUNDAY MAIL, 5 JULY 1992

INSIGHT ON *Education*

Malaysian leads UK challenge

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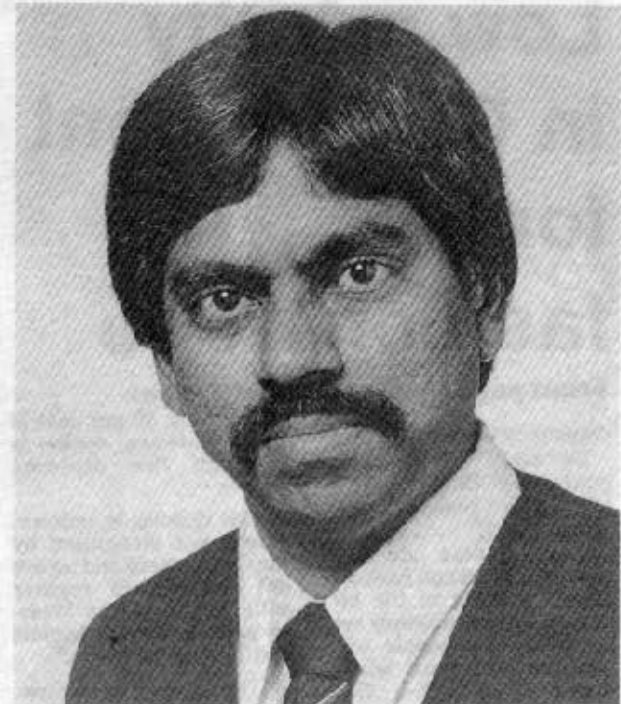
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Nicolo Belavendram: Paper for world meet



Academic Publications - 1

- Belavendram, N., *Robustisation of Production Systems through Computer Aided Parameter Design*, Granjon Competition. **Winner of the UK competition for the 1992 International Institute of Welding Granjon Prize.**
- Belavendram, N., *Taguchi Methodology for Engineering Design*, Engineering Design Research Centre News, April 1991 Issue 5.
- Belavendram, N., *Taguchi Methodology for Engineering Design*, Engineering Design Research Centre News, May 1991 Issue 6.
- Belavendram, N., *Step by Step Software, ANOVA-TM*, Second Annual Scottish Taguchi Forum, February 91.
- McEwan, W., Belavendram, N. And Abou-Ali, M., *Practical Guide to SPC in NDT*, the 30th [British Institute of Non-Destructive Testing](#) Annual Conference, Coventry, 17-18 September 1991.
- McEwan, W., Belavendram, N. And Abou-Ali, M., *Improving Quality through Robustisation*, [Journal of The Institute of Quality Assurance](#), June 92, vol 18, no. 2, Pp 56-61.
- McEwan, W., Belavendram, N. And Abou-Ali, M., *Quality Improvement through Computer Aided Parameter Design*, Journal of Quality Technology (Quality Progress), [American Society for Quality Control](#).



Outstanding Performance

- **Single author of the book** *Basic Quality by Design: Total Quality Management for Manufacturing, Service and Hospitality Industries* currently awaiting publisher's acceptance.
- **Single author of the book** *Quality by Design: Taguchi Techniques for Industrial Experimentation* published by Prentice Hall, May 1995.
- **Single author of the book** *Advanced Quality by Design: A Synthesis of Taguchi Techniques and Classical Design of Experiments* currently awaiting publisher's (Wiley Interscience, USA) acceptance.
- **Winner of the 1992 Granjon Competition** for research done in Computer Aided Parameter Design. This award is given to one person per year in the UK.
- **Winner of the 1992 Babcock Award**, given to the Best Envoy of Quality Engineering in the Postgraduate Quality Diploma, Scottish School of Non-Destructive-Testing in 1989.
- **Outstanding Performance Award** (1985) for the use of Taguchi Methods in Design of Experiments for attaining Marking Permanency Quality to Military Standard 883-B.
- **Outstanding Performance Award** for Job Simplification in Engineering Statistical Experimental Studies. Jobs that normally required hours of Engineer's time were reduced to minutes of keyboard operator's time.



BELAVENDRAM



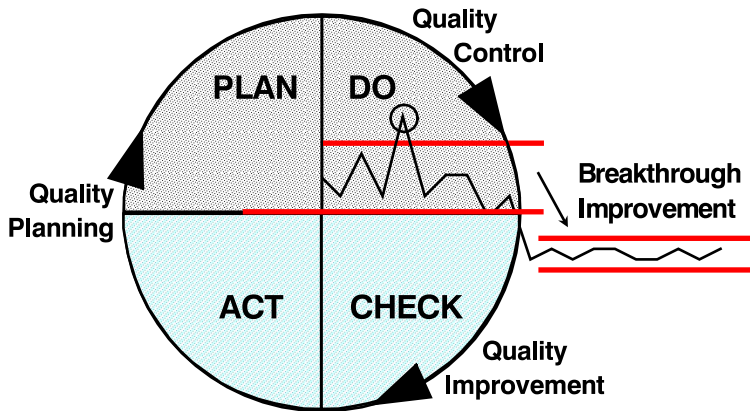
BASIC QUALITY BY DESIGN

Total Quality Management for Manufacturing, Service and Hospitality Industries.

BASIC



QUALITY BY DESIGN



PRENTICE HALL

NICOLO BELAVENDRAM

- Basic Quality by Design
 - Quality Cost
 - 5S Housekeeping
 - 7 QC Tools
 - Quality Function Deployment
 - Benchmarking
 - FMECA
 - Service Quality
 - Design of Experiments
 - SPC
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 - Human Aspects
 - Standards



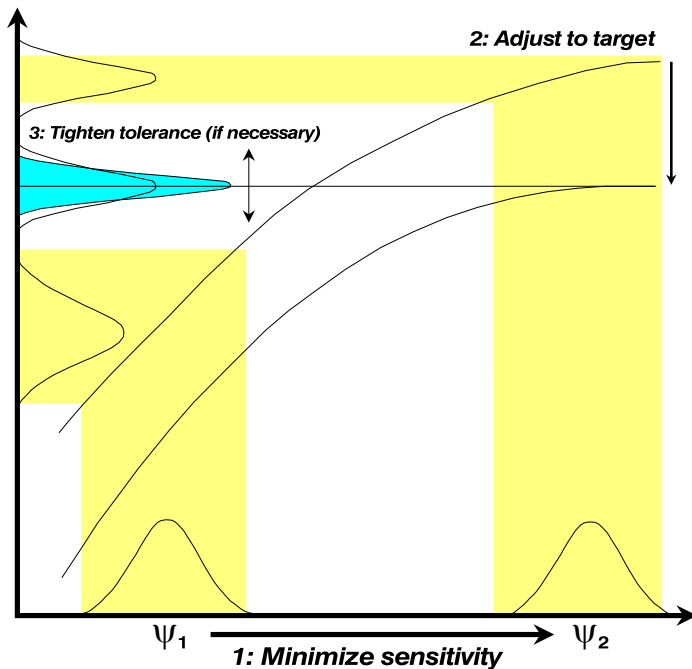
BELAVENDRAM

QUALITY BY DESIGN

Taguchi Techniques for Industrial Experimentation

QUALITY BY DESIGN

PRENTICE HALL



NICOLO BELAVENDRAM

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BELAVENDRAM

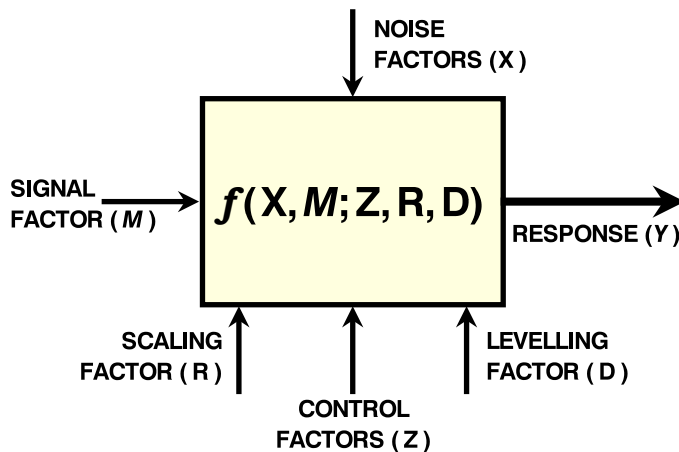


ADVANCED QUALITY BY DESIGN

A Synthesis of Taguchi
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ADVANCED
QUALITY BY DESIGN

PRENTICE
HALL



NICOLO BELAVENDRAM

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 - Quality Hypermodel
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 - Orthogonal Polynomials
 - Steepest Ascent
 - CAPD
 - Data Transformation
 - CATD
 - Accumulation Analysis
 - Dynamic Characteristics



Metamorphosis for the Millennium

- Deming
 - Profound knowledge
- Progress is not important
 - Rate of progress is
- Learning is not important
 - Life long learning is
- Companies must
 - Evolve a society that is affluent
 - Provide a platform for this metamorphosis
 - Provide this platform through YOU





TQM - ISO 9002

- Implemented ISO 9002 in Renfrewshire Council
 - Government body in charge of Cleansing the Town
- Successful implementation on first attempt
- 20 Days over 6 months
- Achieved ISO 9002 Certificate from BSI
 - British Standards Institution

TQM - ISO 9002



- Conducted Internal Audits in Rosyth Royal Dockyard
 - Submarine maintenance for UK Ministry of Defense
- Audited complex procedures
- 5 Day audit
- Seeking ISO 9002 Certification from BSI



Research Supervision

- PhD Supervision
 - Mohd Azman Idris
 - John Gerard Rafferty
 - Yi-Min Li
 - Ying-Fang Huang
 - Wen-Jen Han
 - Ching-Ho Liu
 - Chuan-Chen Wu
 - Tien-Chin Wang
 - Chyuan-Yao Wu
- MPhil Supervision
 - Same as above
- MSc Supervision
 - Numerous
- PhD Examination
 - Apostolos
- MPhil Examination
 - Joseph Akomode
 - Meer Hamzah
- MSc Examination
 - Numerous



- Yi-Min Li, Nov 1994
 - A Service Quality Performance Evaluation Model For Hotel Service.
- Ying-Fang Huang, Jan 1995
 - An Analytic Approach To Competitive Strategy Formulation In Quality.
- Wen-Jen Han, Sep 1997
 - A Dynamic Model For International Strategic Total Quality In The Electrical And Electronic Industry.



Research Studies

Belmah Strategies

- Ching-Ho Liu, Sep 1997
 - A Strategic Activity Model And Management Performance Of American, Japanese, And Taiwanese Firms.
- Chuan-Chen Wu, Sep 1997
 - A Quality Model For An Employee Grievance System.
- Tien-Chin Wang, Mar 1998
 - A Service Quality Model Matched By A Customised Instrument For Measurement Of Retail Service Sector Performance.



Research Studies

Belmah Strategies

- John G Rafferty, Mar 1998
 - A Quality System Model For Welding Engineering And Fabrication Methodology In The Petrochemical, Process, Structural And Offshore Industry Sector.
- Mohd A Idris, Nov 1998
 - A Total Quality Management Implementation Model For Small And Medium Sized Manufacturing Industries.
- Chyuan-Yao Wu, Jan 1999
 - Improving The Quality Of Fish Products Using Conventional And New Methods.





Contact Us



Contact Us



Dominic Belavendram

Belmah Strategies (Malaysia) Sdn. Bhd.
No. 9, Tingkat 3, Jalan PJS 11/28,
Bandar Sunway Metro,
46150 Petaling Jaya,
Selangor, Malaysia



Tel: + 60 3 5636 2210



Fax: + 60 3 5636 2220



HP: + 60 12 474 7473



Website: <http://www.ict-m.com>



Email : dominic@ict-m.com

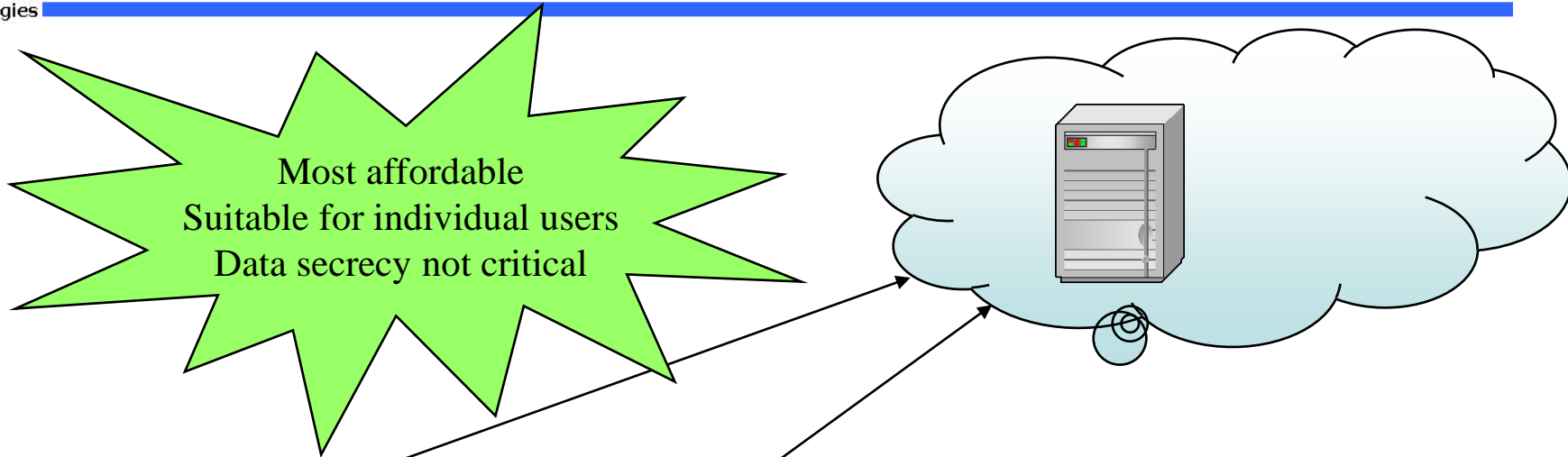


iCT-M Configurations

by
Belmah Strategies



Multi-User Shared DB Server



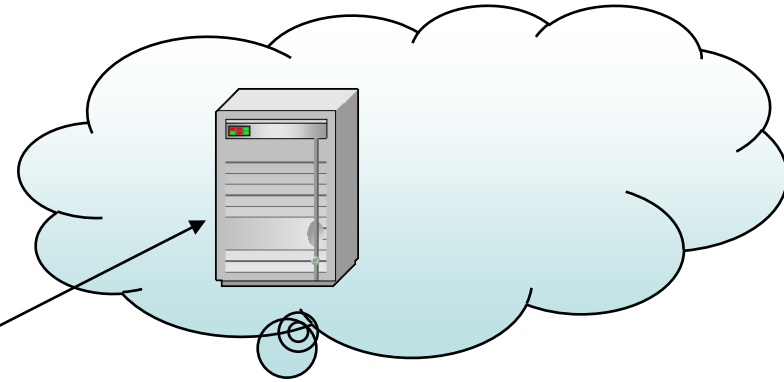
| | |
|---------------|--------------------------------|
| Option | 1 |
| PC | Thin Client |
| Database | Multi-User Shared DB Server |
| Equipment | PC, Modem, Streamyx |
| Lease / Buy | Lease approx. RM 100 – RM 2500 |
| Hardware Cost | RM 0 |



Shared DB Server



Very affordable
 Suitable for small companies
 Data secrecy not critical



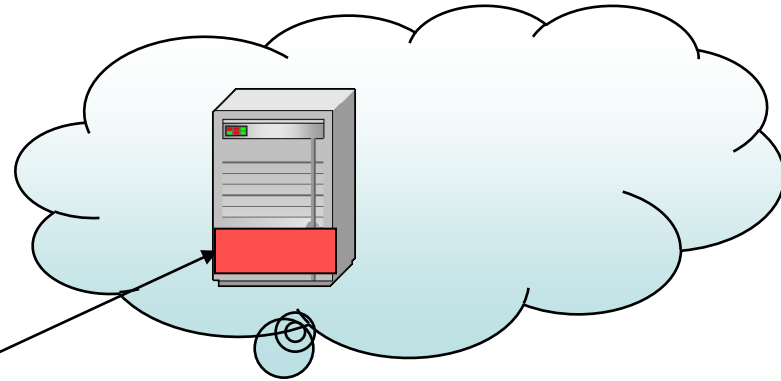
| | |
|---------------|--------------------------------|
| Option | 2 |
| PC | LAN |
| Database | Shared DB Server |
| Equipment | PC, Modem, Streamyx, Intranet |
| Lease / Buy | Lease approx. RM 100 – RM 2500 |
| Hardware Cost | RM 0 |



Dedicated DB Server Space



Highly affordable
 Suitable for medium companies
 Data secrecy not critical



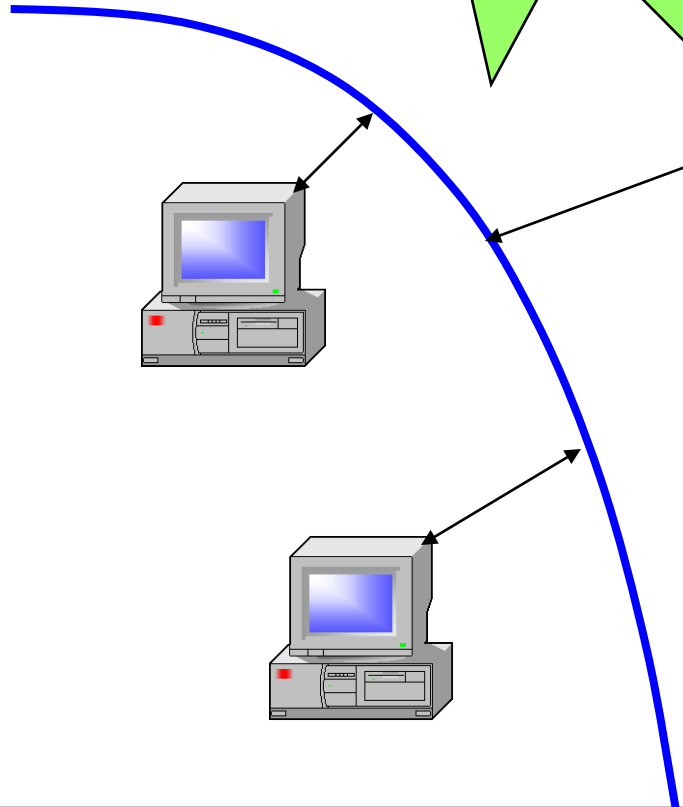
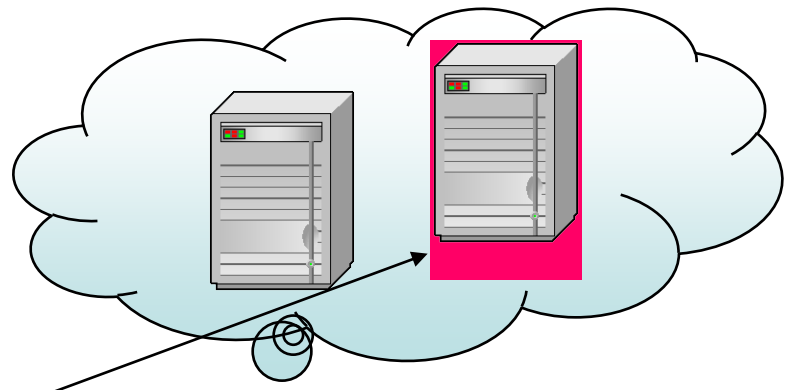
| | |
|---------------|--------------------------------|
| Option | 3 |
| PC | LAN |
| Database | Dedicated DB Server Space |
| Equipment | PC, Modem, Streamyx, Intranet |
| Lease / Buy | Lease approx. RM 100 – RM 2500 |
| Hardware Cost | RM 500.00 |



Dedicated DB Server

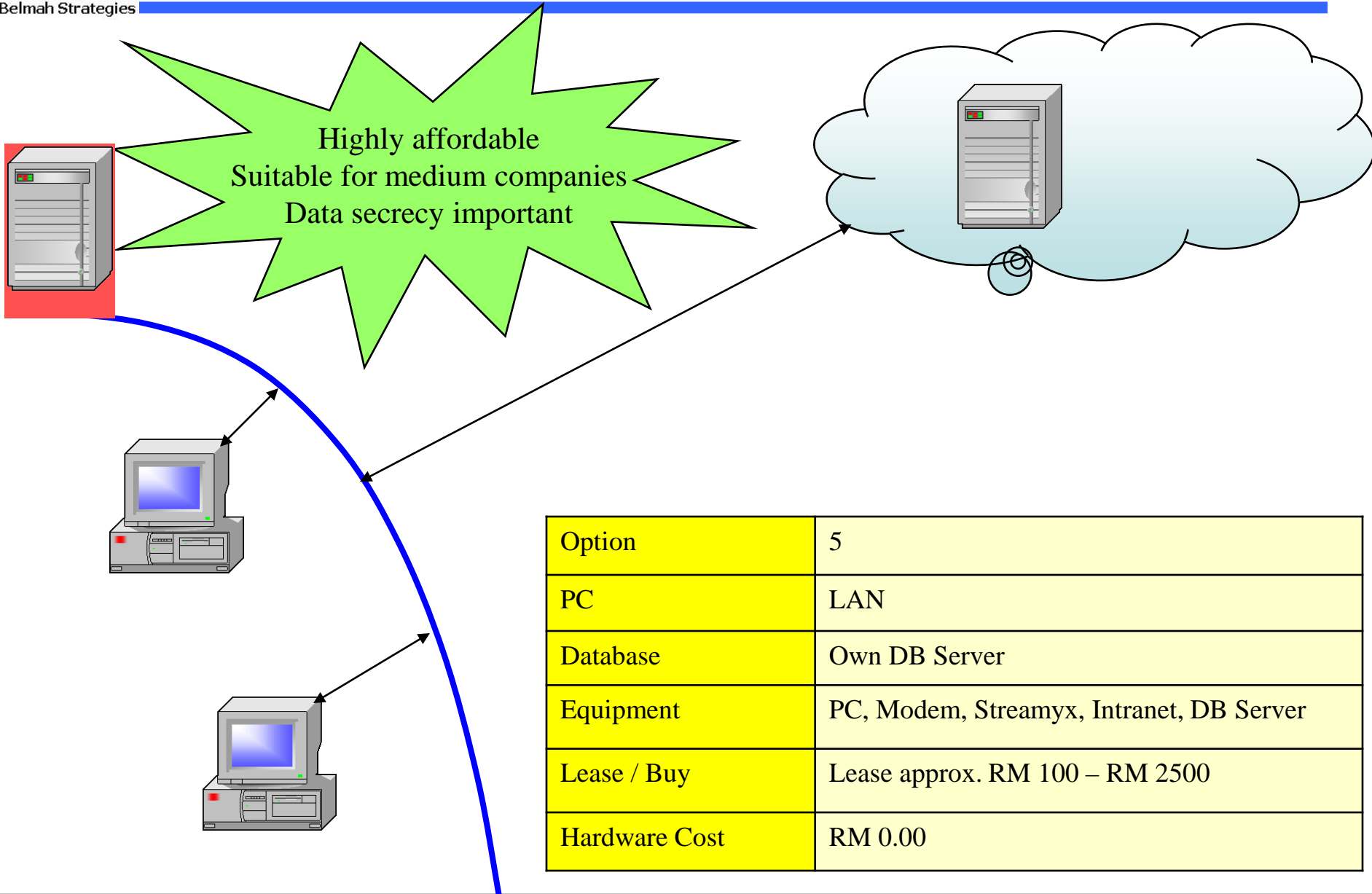


Highly affordable
 Suitable for medium companies
 Data secrecy important



| | |
|---------------|--|
| Option | 4 |
| PC | LAN |
| Database | Dedicated DB Server |
| Equipment | PC, Modem, Streamyx, Intranet, DB Server |
| Lease / Buy | Lease approx. RM 100 – RM 2500 |
| Hardware Cost | RM 1000.00 (rack charges at co-location) |

Own DB Server

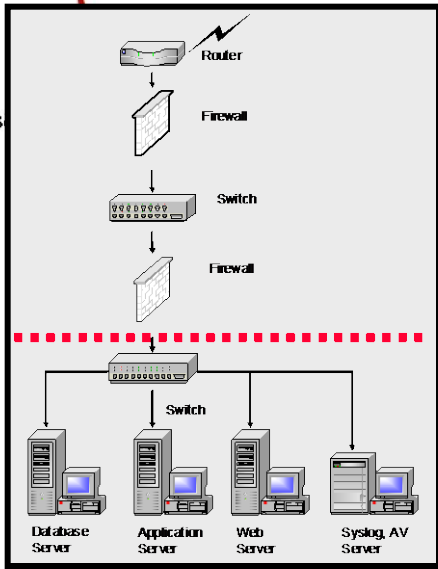


Highly affordable
Suitable for medium companies
Data secrecy important

| | |
|---------------|--|
| Option | 5 |
| PC | LAN |
| Database | Own DB Server |
| Equipment | PC, Modem, Streamyx, Intranet, DB Server |
| Lease / Buy | Lease approx. RM 100 – RM 2500 |
| Hardware Cost | RM 0.00 |



Own Network Server



Highly affordable
 Suitable for large companies
 Data secrecy paramount



| | |
|---------------|---|
| Option | 6 |
| PC | LAN |
| Database | Own Network Server |
| Equipment | Intranet, Server (DB & Application), Oracle |
| Lease / Buy | Buy (by discussion) |
| Hardware Cost | RM 0 |