Quality Process Awareness

Objective

To Understand the following :

- Quality – What and Why
- Introduction to Quality Management System (QMS @iGATE)
- QMS support to Software Methodology
- Metrics
- Defect Prevention

Quality Management System

Introduction to Quality

What will make any organization successful ?

What will make a project successful ?

Concept of Quality

“ I don’t know much about Quality, but I am sure of one thing – if your quality is good, customers come back, else product come back.”

- Margaret Thatcher

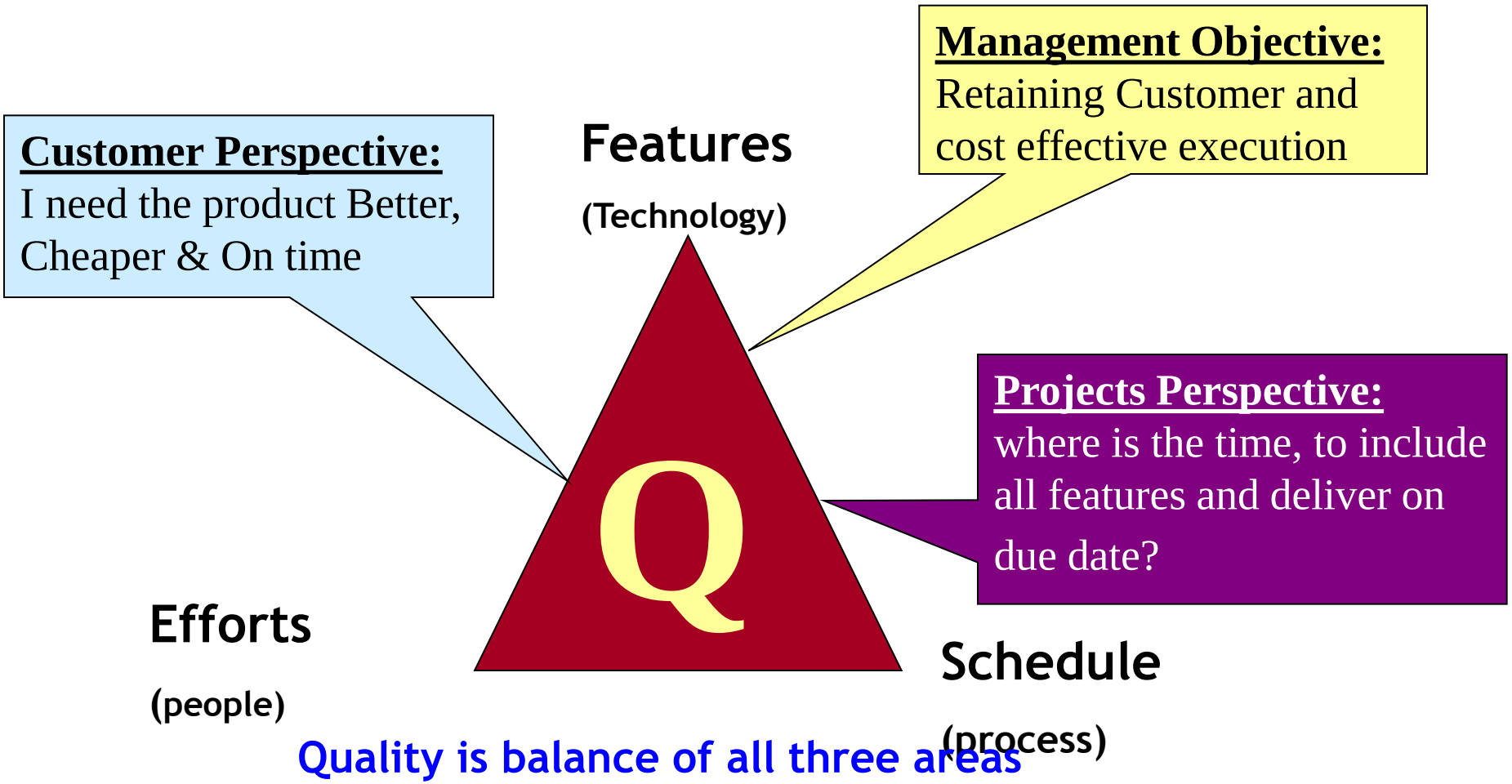
Quality - What ?

- **Simply put , quality means a state which is free from defects , deviations and variations and is cost effective**

- **ISO defines quality as ability of a service or product to satisfy the stated or implied needs of the customer**

- **Developing Quality product /service means**
  - Meeting the customer explicit and implicit requirements
  - Delivering on time and in full
  - Defect free service within cost and schedule
  - Being flexible and responsive to desired changes
  - Co-operating
  - Improving own performance

Concept of Quality



Quality is balance of all three areas

Quality Management

- **A management technique used to ensure that product / service of the organization is of desired quality and standards**

- **Quality Management helps in**
  - Establishes a vision for the employees.
  - Sets standards for employees.
  - Monitors and tracks the adherences of standards
  - Helps in communicating to the employees about the standards
  - Brings consistency
  - Reduces conflict (My way is better than yours)
- **Quality Management is needed because**
  - Problems and Solutions are becoming more complex requiring higher level of precision
  - Cost and progress monitoring is becoming difficult
  - rapid pace of technological and business change

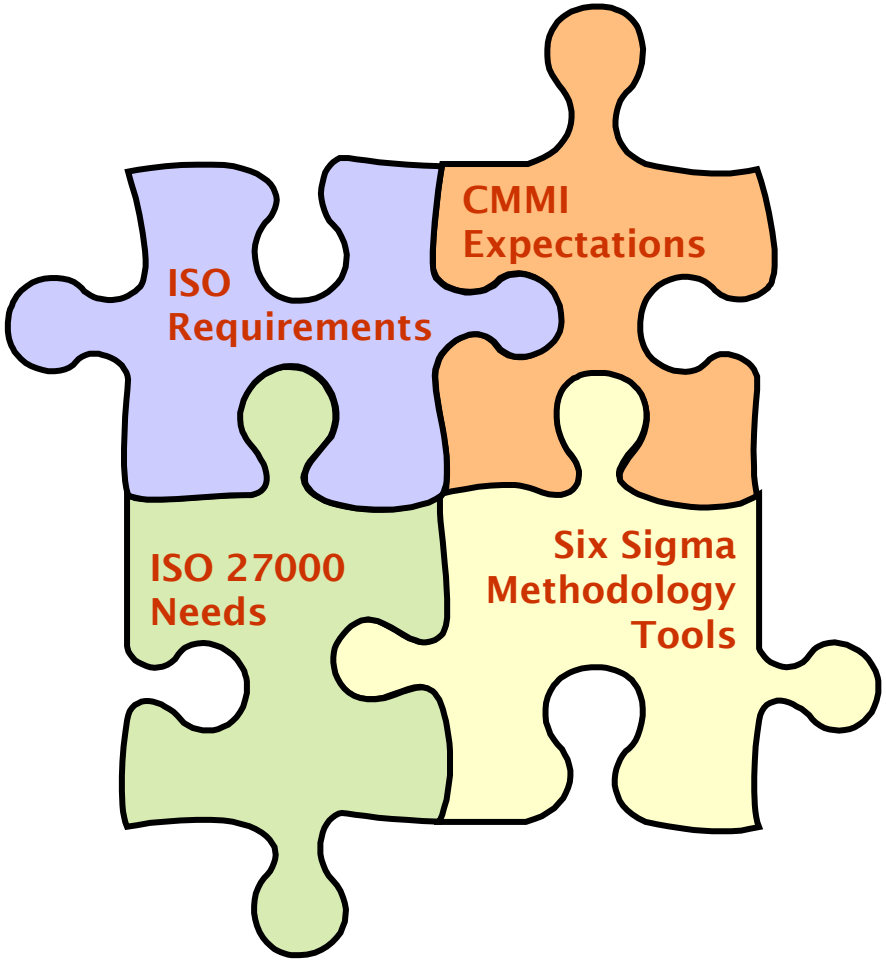
Quality Management Systems – QMS

- **A system of as the organizational structure, procedures, processes and resources needed to implement to implement quality management**

- **Elements of QMS**
  - **Standard Operating documentation**
    - Processes, guidelines, and standards
    - Templates and forms for record keeping
  - **Documentation classification**
    - Public, Sensitive etc
  - **Audit /QA procedure**
    - Internal audit , reporting and
  - **Defect and Rework procedure**
  - **Training of employees**

IGATE QMS is known as Qzen

IGATE QMS is an integration of…..



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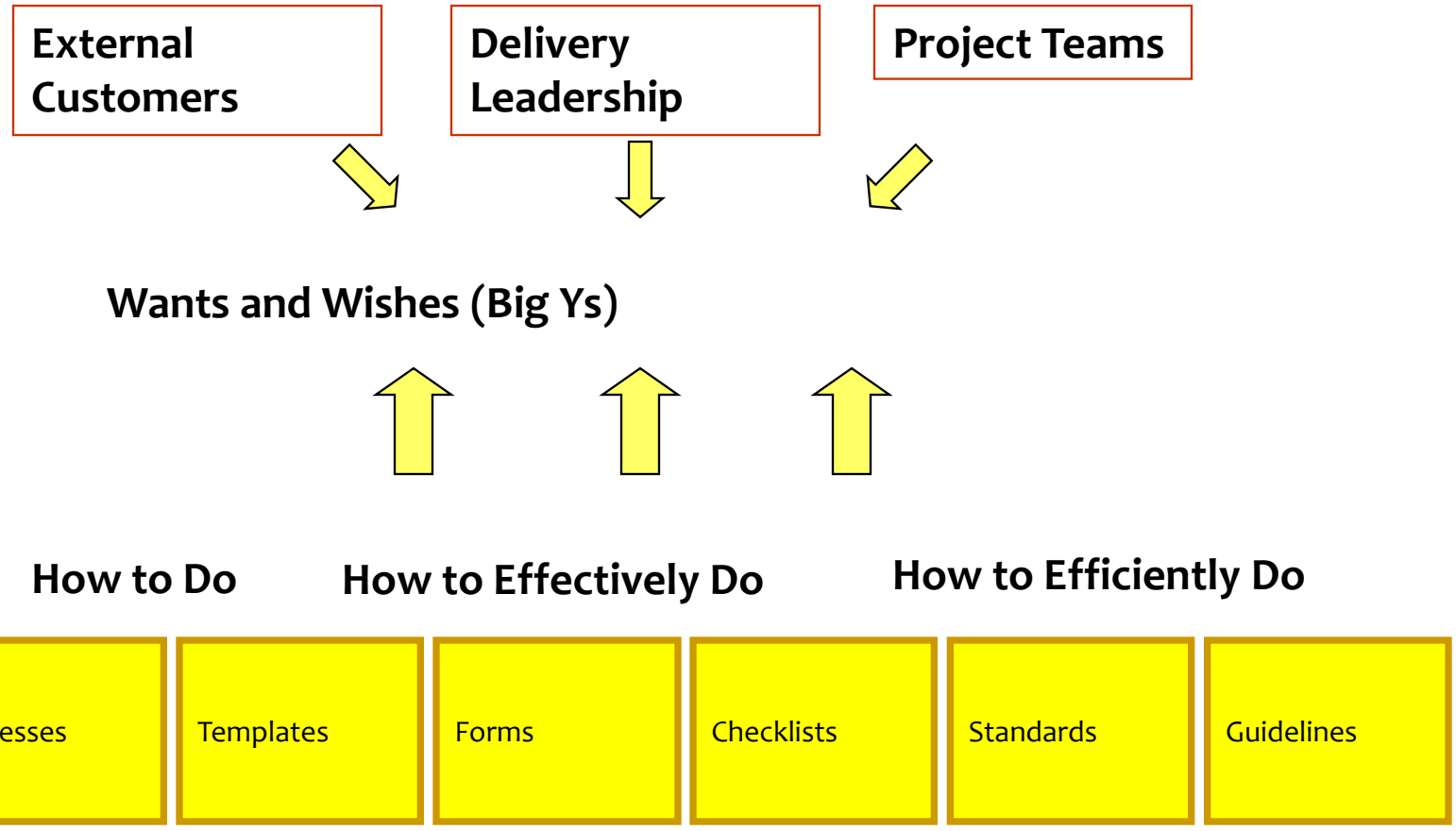
How can QMS help?



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Branded QMS?

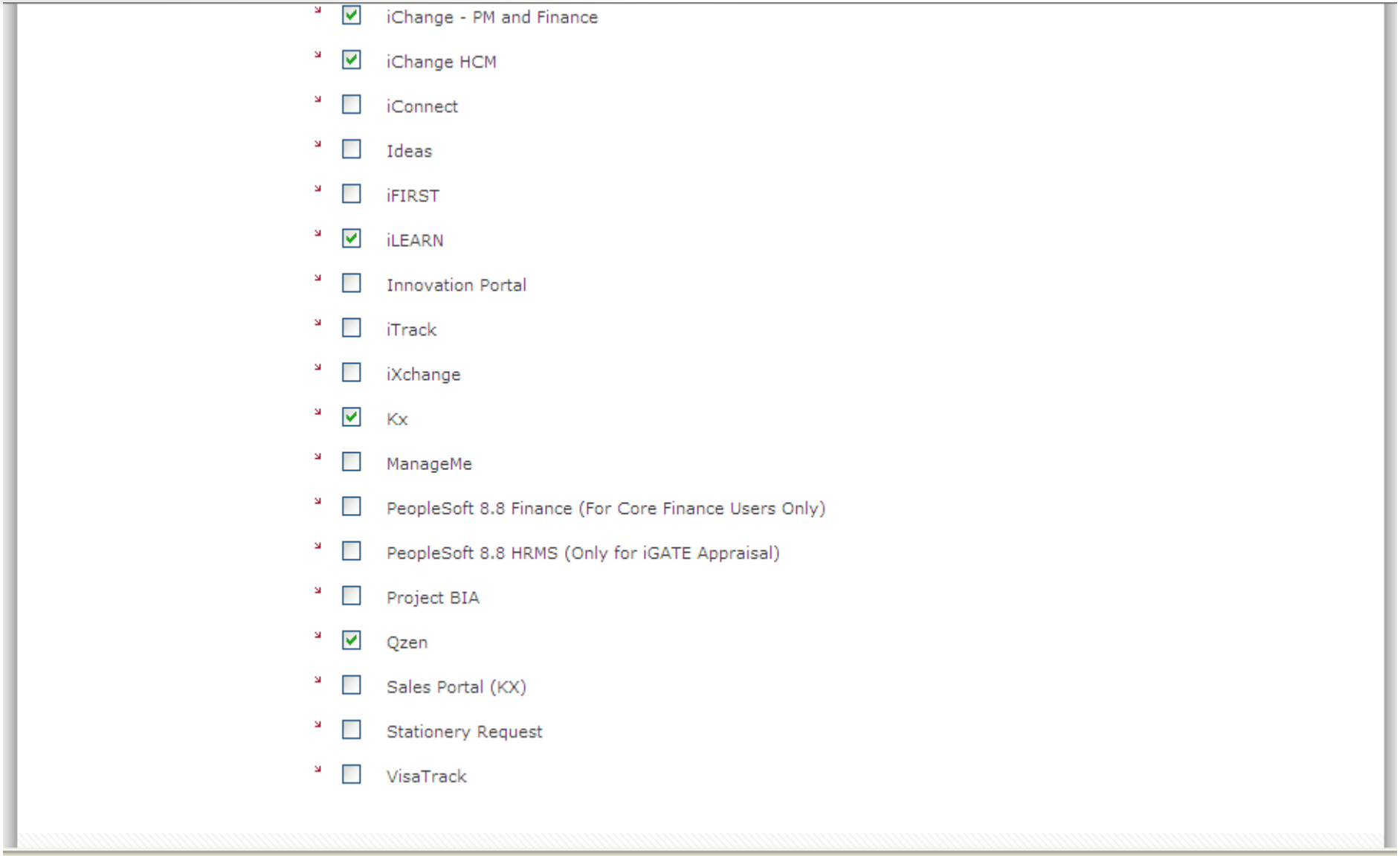
Why do we need Qzen?

- **Market**
- Customers comfort in branded methodology of vendor
- Peer Pressure
- Creating a differentiator in the market place
- Delivering Speed with Consistent Predictability

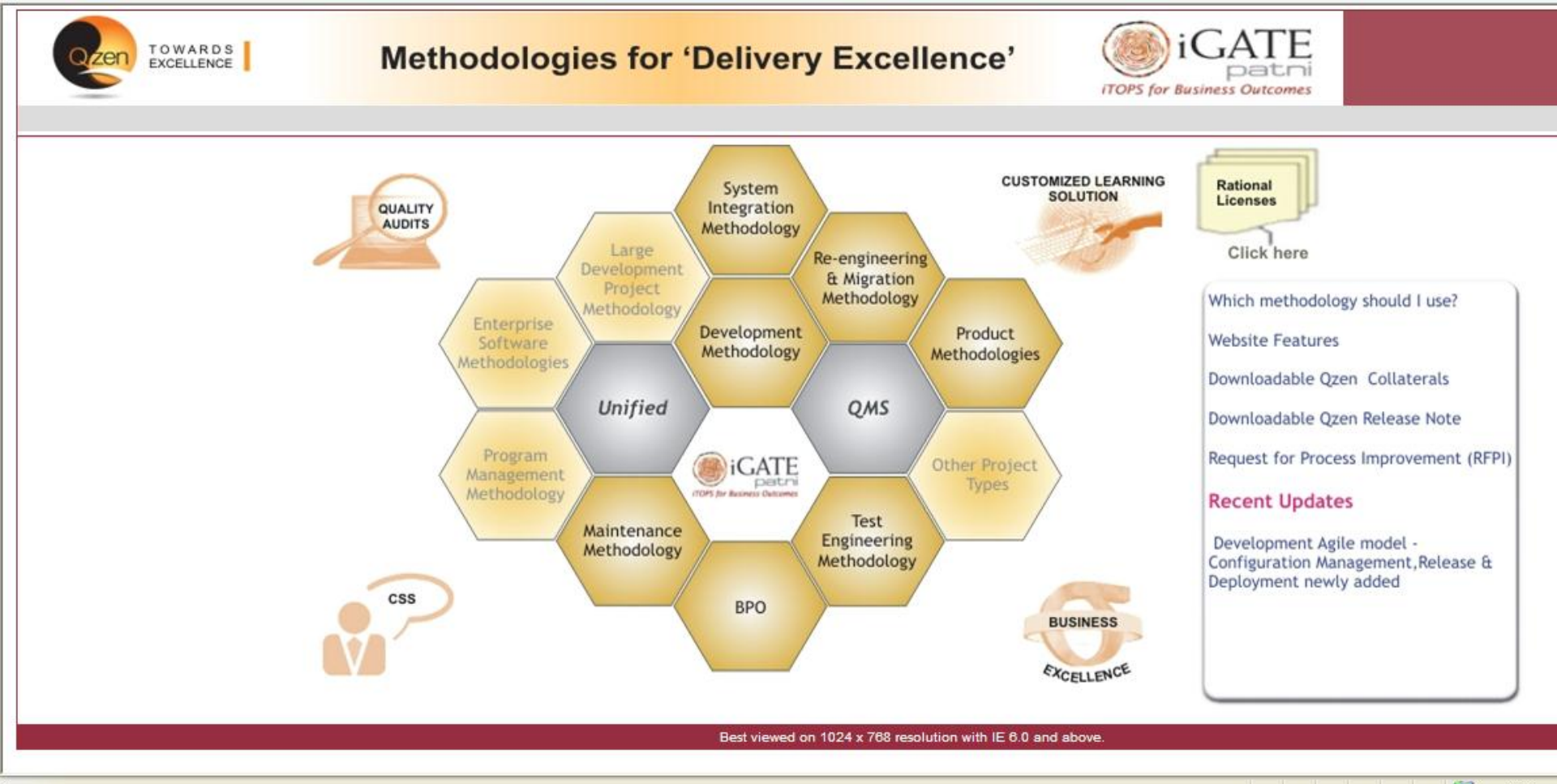
- **Delivery**
- Details of software engineering practices
- De-risk projects and reduce escalations
- Building Customer Confidence
- Handling of Large engagement successfully
- Technology and Domain competencies creation and retention (upper life cycle skills)
- Flattening of pyramid requiring deskilling
- Working as Global teams
- Clear, crisp and easy to understand process

Where is QMS ? ---- The iSpace intranet

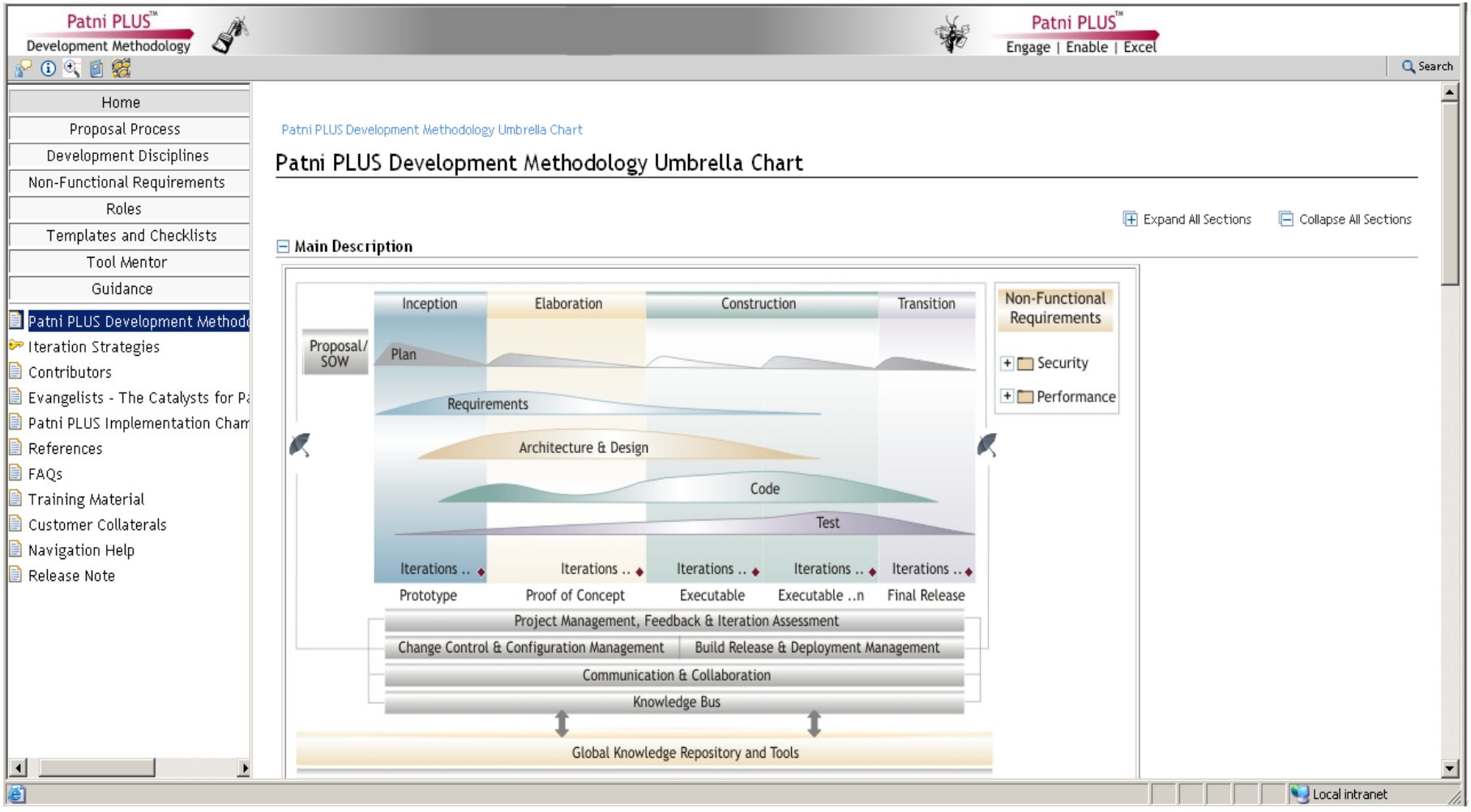
Where is QMS?



Q zen


Qzen
TOWARDS EXCELLENCE
Methodologies for 'Delivery Excellence'
iGATE patni
iTOPS for Business Outcomes
QUALITY AUDITS
System Integration Methodology
Large Development Project Methodology
Re-engineering & Migration Methodology
Enterprise Software Methodologies
Development Methodology
Product Methodologies
Unified
QMS
Program Management Methodology
Other Project Types
Maintenance Methodology
Test Engineering Methodology
BPO
CSS
CUSTOMIZED LEARNING SOLUTION
BUSINESS EXCELLENCE
Rational Licenses
Click here
Which methodology should I use?
Website Features
Downloadable Qzen Collaterals
Downloadable Qzen Release Note
Request for Process Improvement (RFPI)
Recent Updates
Development Agile model - Configuration Management,Release & Deployment newly added
Best viewed on 1024 x 768 resolution with IE 6.0 and above.
Done
Local intrane

Development Methodology



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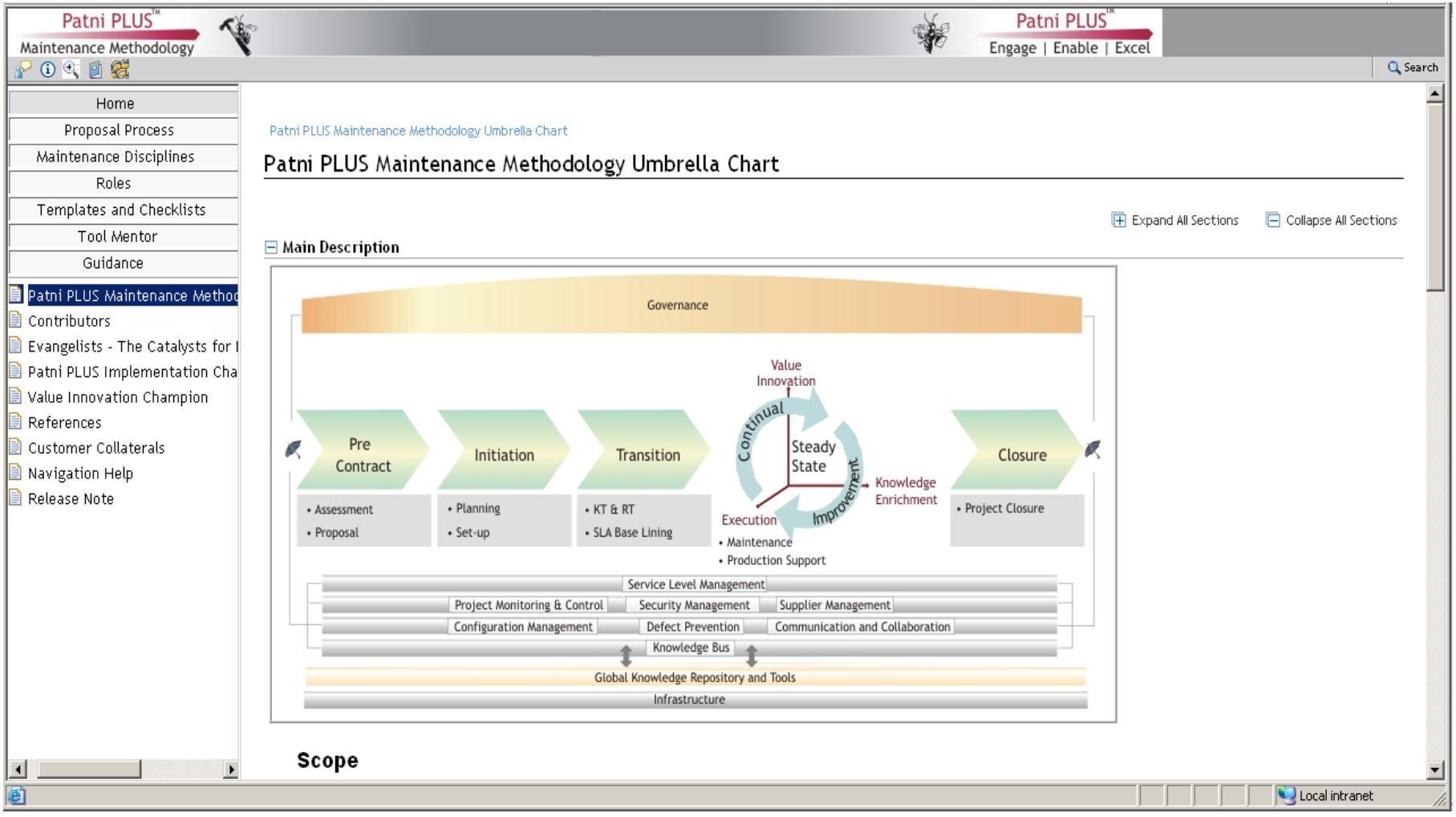
Maintenance Methodology



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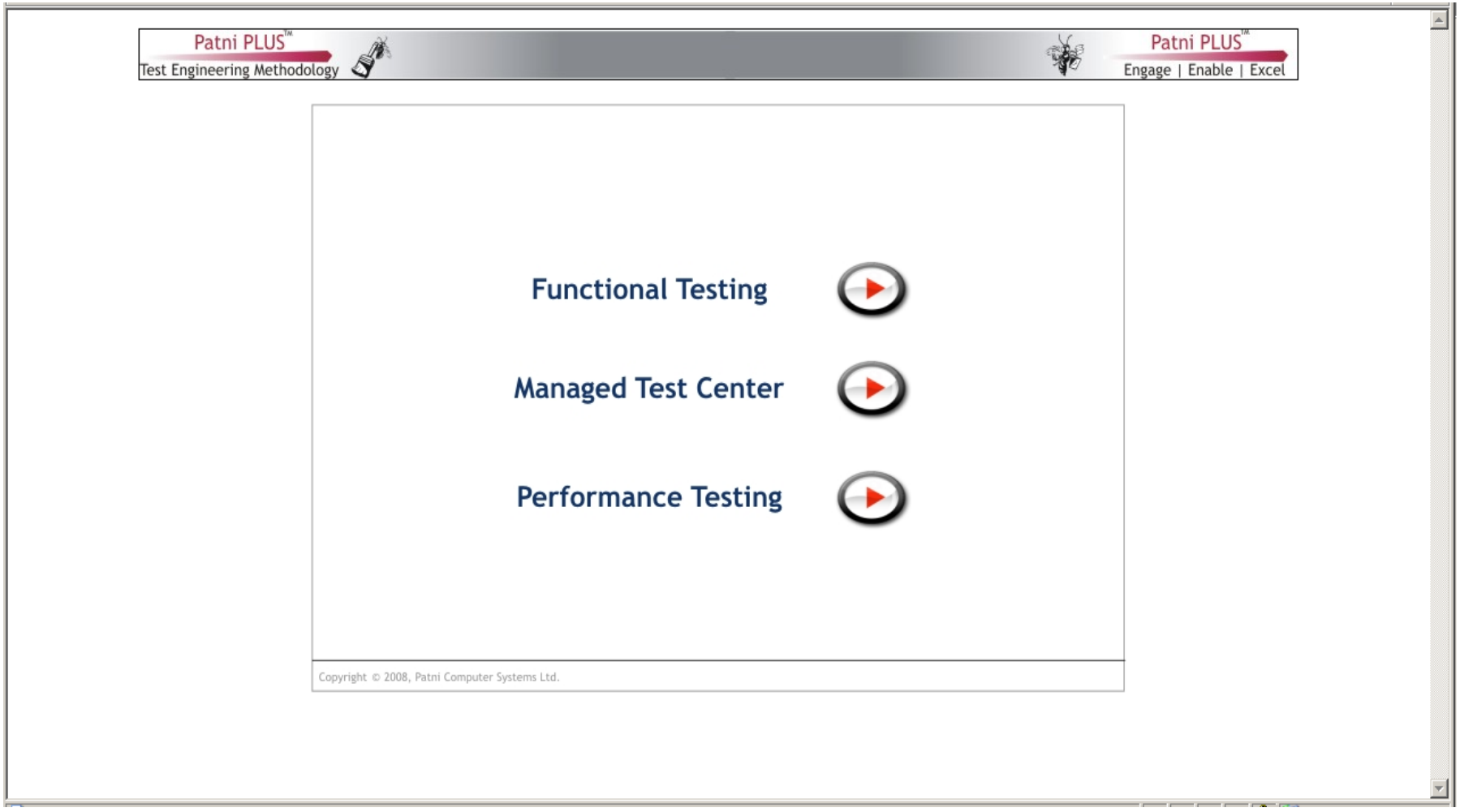
Test Engineering Methodology



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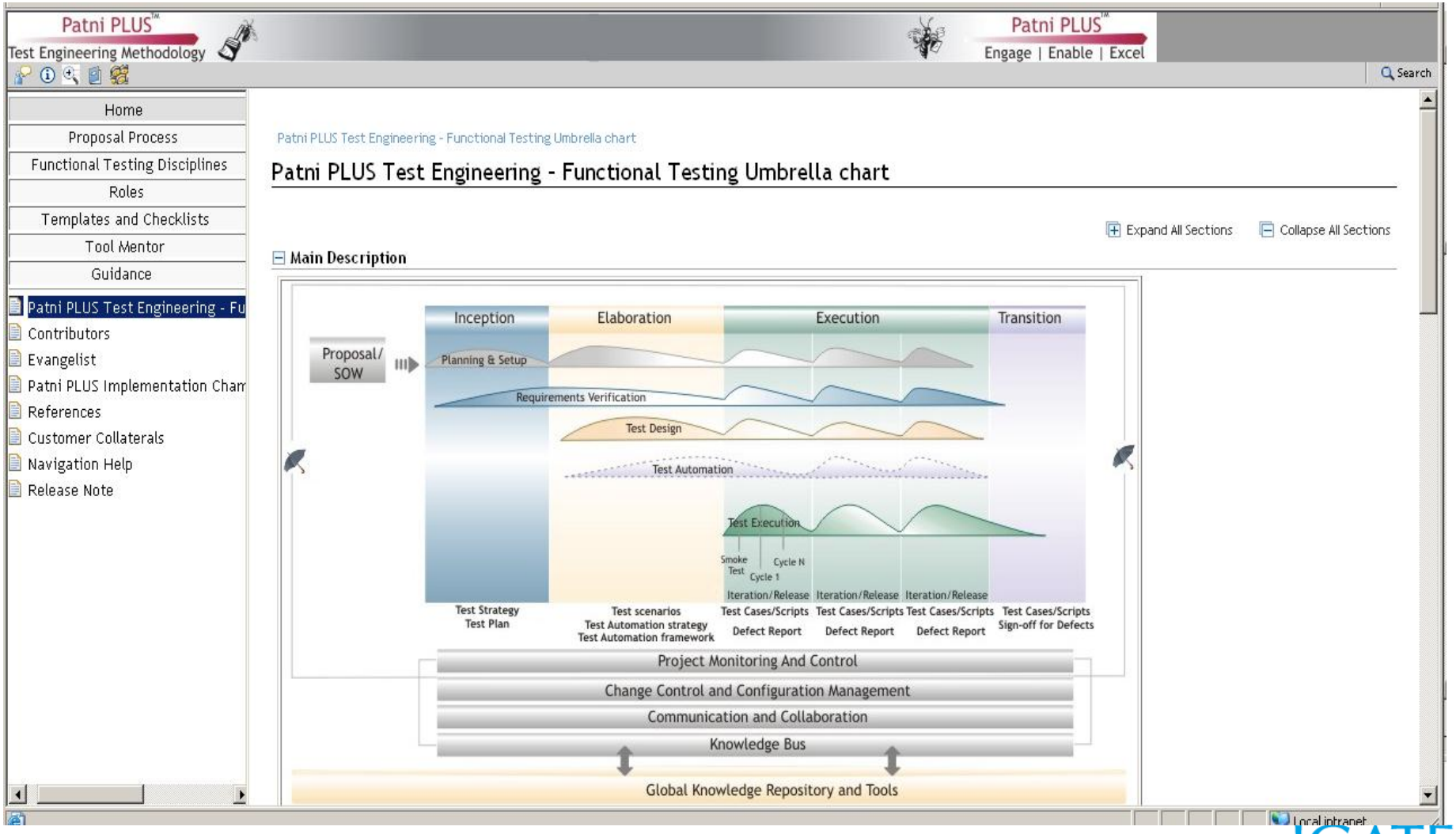
Test Engineering Methodology



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QZen support for SDLC Phases

Requirement Phase

- **Requirement Process flow**
- **Task list for each activity in Requirements**
- **Templates for capturing requirements - functional & non functional**
- **Checklists for review**
- **Guidelines for Requirement Development**
- **Change Management process**
- **Tools for requirement readiness**

Note : We will not be discussing Requirement phase in detail at this juncture

Requirement Phase

- **Some artifacts which is relevant and essential for us**
  - Software Requirement Specification
  - Use Case specification
  - Query Tracking Sheet
  - Traceability Matrix

Design Phase

- **The design phase in iGATE includes 3 activities**
  - Define Architecture
  - High Level Design
  - Low level Design

Design Phase

- **Architecture Process includes**
  - Understand the customer needs and define the Architecture of the proposed system
  - Prepare the software architecture document
  - Update the traceability matrix
- **High Level Design (HLD) includes**
  - Design the functional model of the application
  - Design application UI
  - Design database models (logical)
  - Prepare the HLD document
  - Prepare integration test plan
- **Low Level Design (LLD) includes**
  - Prepare detailed level flow of each and every module (Pseudocode, data structures , procedures etc) in LLD document
  - Prepare physical database model
  - Prepare unit test plan
  - Update traceability matrix

Design Phase –Qzen support

- **Architecture**
  - Inputs
    - Non functional Specification
    - Software Requirement Specification
  - Output
    - Software Architecture Document
- **High Level Design Document**
  - Input
    - Software Architecture Document
    - Base lined SRS/ Use Case Documents
  - Support Documents
    - Guideline to design using UML , OO Design patterns
    - Review checklists
  - Output
    - HLD Document , Updated traceability Matrix

Design

- **LLD**
  - Inputs
    - Base lined HLD
    - Traceability Matrix
  - Support Documents
    - Checklists
  - Output
    - Base lined LLD ,
    - Updated Traceability Matrix
    - Finalized Coding standards documents
    - Approved unit test plans

Construction Phase –Qzen support

- **Inputs**
  - Base lined Low Level Design
  - Base lined Unit Test Plan
  - Re-usable components
  - Traceability Matrix
- **Support Documents**
  - Code review checklists (self and peer)
  - Coding Standards and guidelines
  - Continuous Integration plan
- **Output**
  - Reviewed Code
  - Defect logs (system /excel)

Unit Testing

- **Inputs**
  - Reviewed Code
  - Unit Test Plan
- **Support Documents**
  - Causal analysis and resolution (for defects)
- **Output**
  - Test Report
  - Baseline code
  - Defect log (tool / manual)

Metrics

Measurement

- **Measurement: Measurement is the numerical value assigned to an entity**
  - ✓ It is always associated with a unit
  - ✓ e.g. If I want to measure the weight of a brick I will not say it is 2.5. I will always say it is 2.5 KG
- **Examples of Measurement are:**

  Length: 2 Meter

  Temperature: 298 K, 30 Degree

  Time : 60 Seconds

  Mass : 50 KG
- **Above are 4 basic measurements that we deal in physical world**

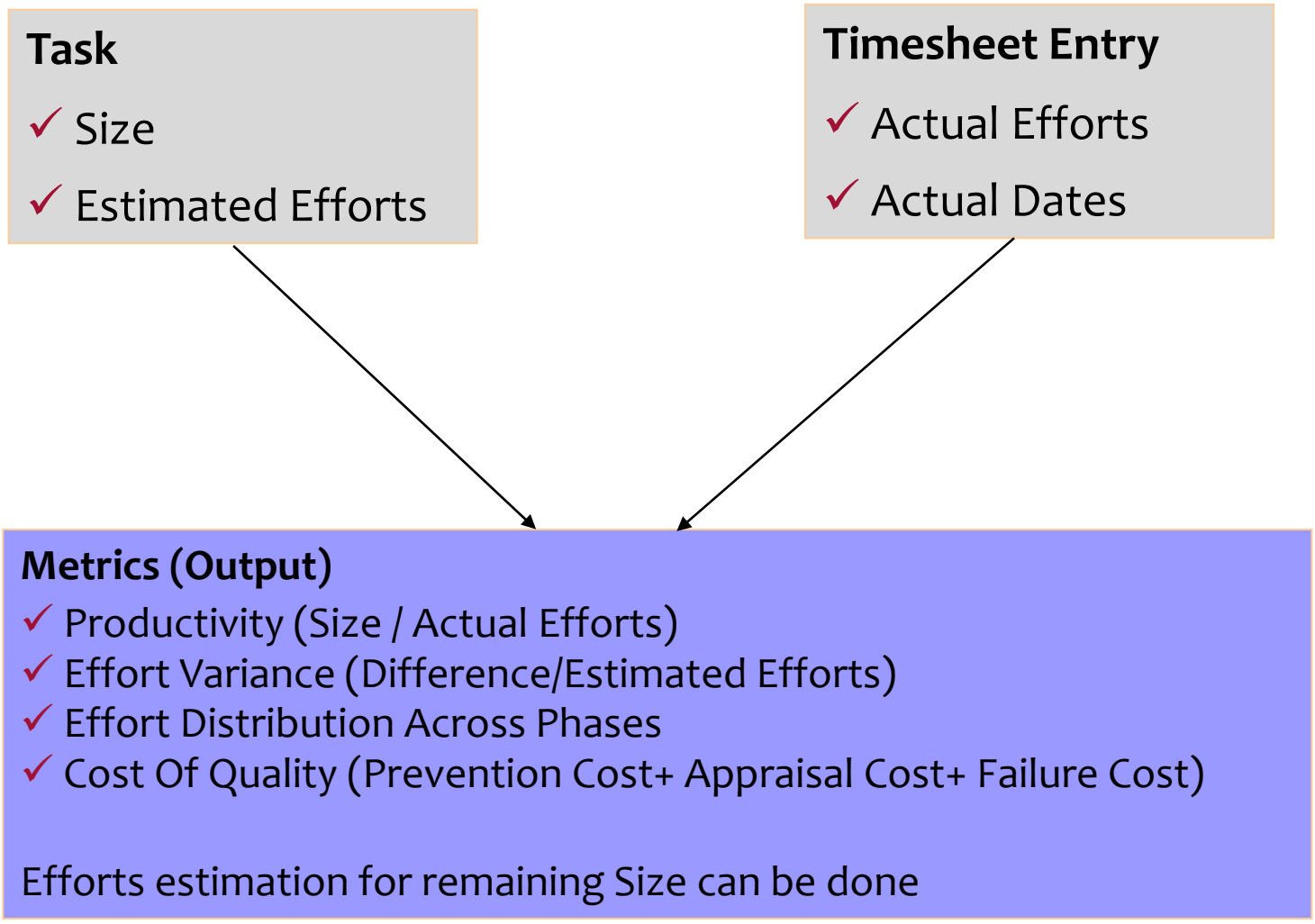
Reason for Measurement and Metrics

- **Most of the time measurement and Metrics are calculated only for one reason - DECISION MAKING.**
- **E.g. Speed in order to control the vehicle. Carpet area to estimate the cost of the flat etc**
- **Data based decision making, help's us to take better decisions.**
- **Rule of Thumb: Do not put any effort on taking measurement and Metrics if it is not going to be used for any kind of decision making.**

Metrics

- Quantitative Indicator of the project status
- Measurements for Project tracking and Health status
- Using Metrics Project progress can be Monitored
- Different Metrics (e.g.)
  - Effort Variance,
  - Schedule Variance,
  - Defect Density,
  - Cost of Quality,
  - Review Effectiveness,
  - Productivity

Why Capture Efforts ?

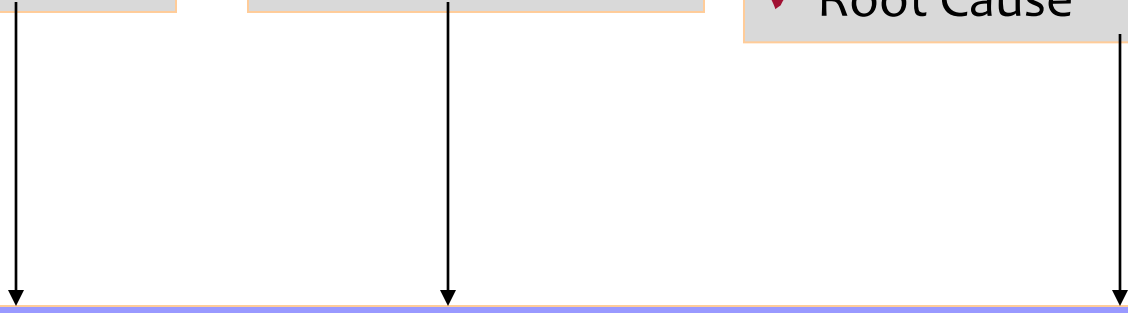


Why to capture Defects ?

Task
- ✓ Size

Timesheet
- ✓ Actual Efforts

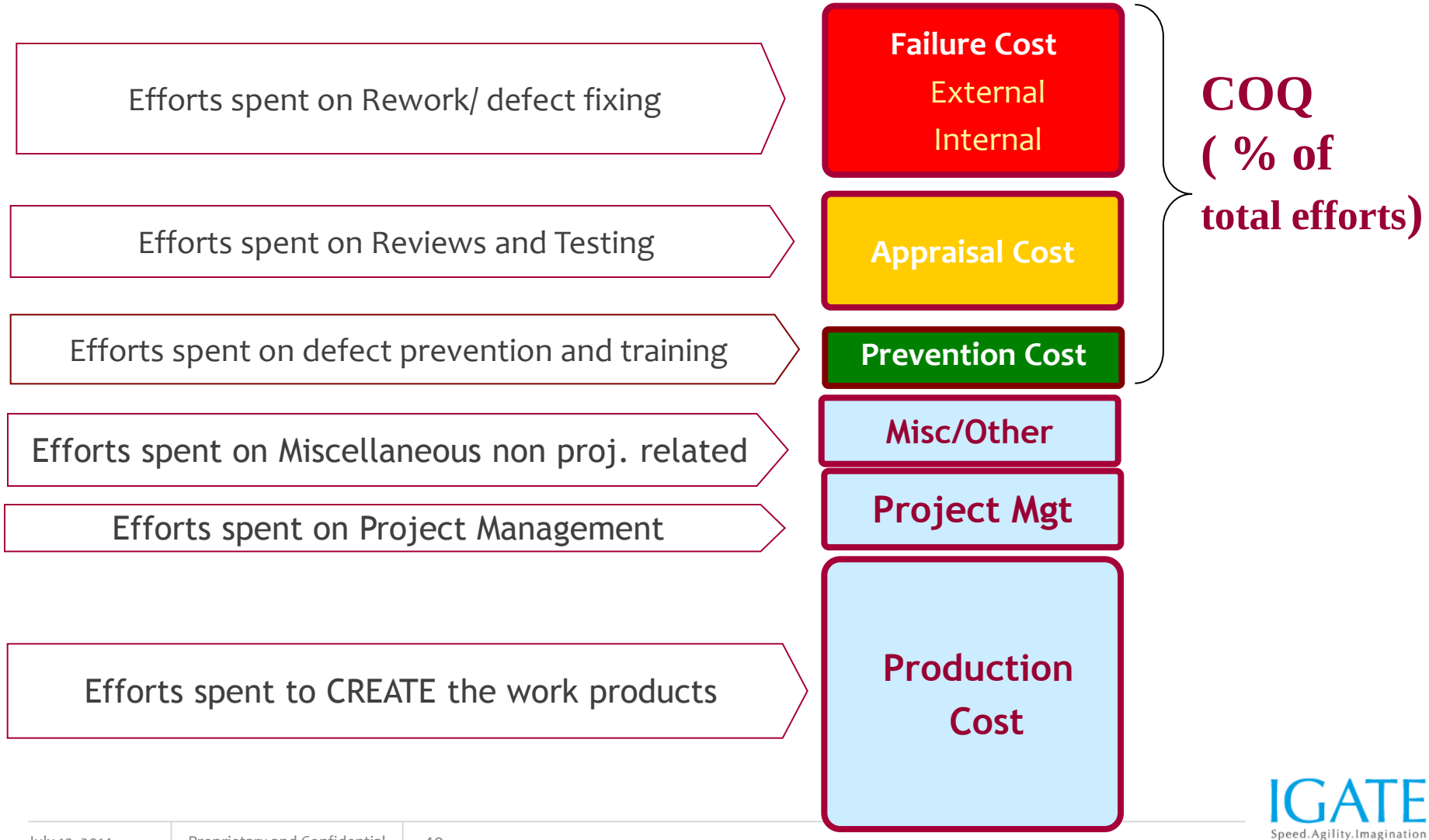
Defect Entry
- ✓ Defects – No., Severity
- ✓ Stage – Introduced & Detected
- ✓ Error Category
- ✓ Root Cause



- ✓Metrics (Output)
- ✓ Defect Density (No. of Defect / Actual Size)
- ✓ Defect Detection Rate (No. of Defect / Person Days)
- ✓ Avg. Defect Age (depends on stage detected & injected)
- ✓ Defect Removal Efficiency (Pre-delivery & Post-delivery defect comparison)

- ✓Defects estimation for remaining size can be done

Components of Total Efforts



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A Few Metrics

Defect Density
Total Defect density =
(Total number of defects including both impact and non-impact, found in all the phases + Post delivery defects)/Size

Average Defect Age =
(Sum of ((Defect detection phase number – defect injection phase number) * No of defects detected in the defect detection phase))/(Total Number of defects till date)

A Few Metrics

Defect Removal Efficiency (DRE) =
100 * No. of pre-delivery defects / Total No. of Defects

Review Effectiveness (RE) =
100 * Total no. of defects found in review / Total no. of defects

Cost of finding a defect in review (CFDR) =
Total efforts spent on reviews / No. of defects found in reviews

Cost of finding a defect in testing (CFDT) =
Cost of finding a defect in testing = (Total efforts spent on testing / defects found in testing)

Discussion points

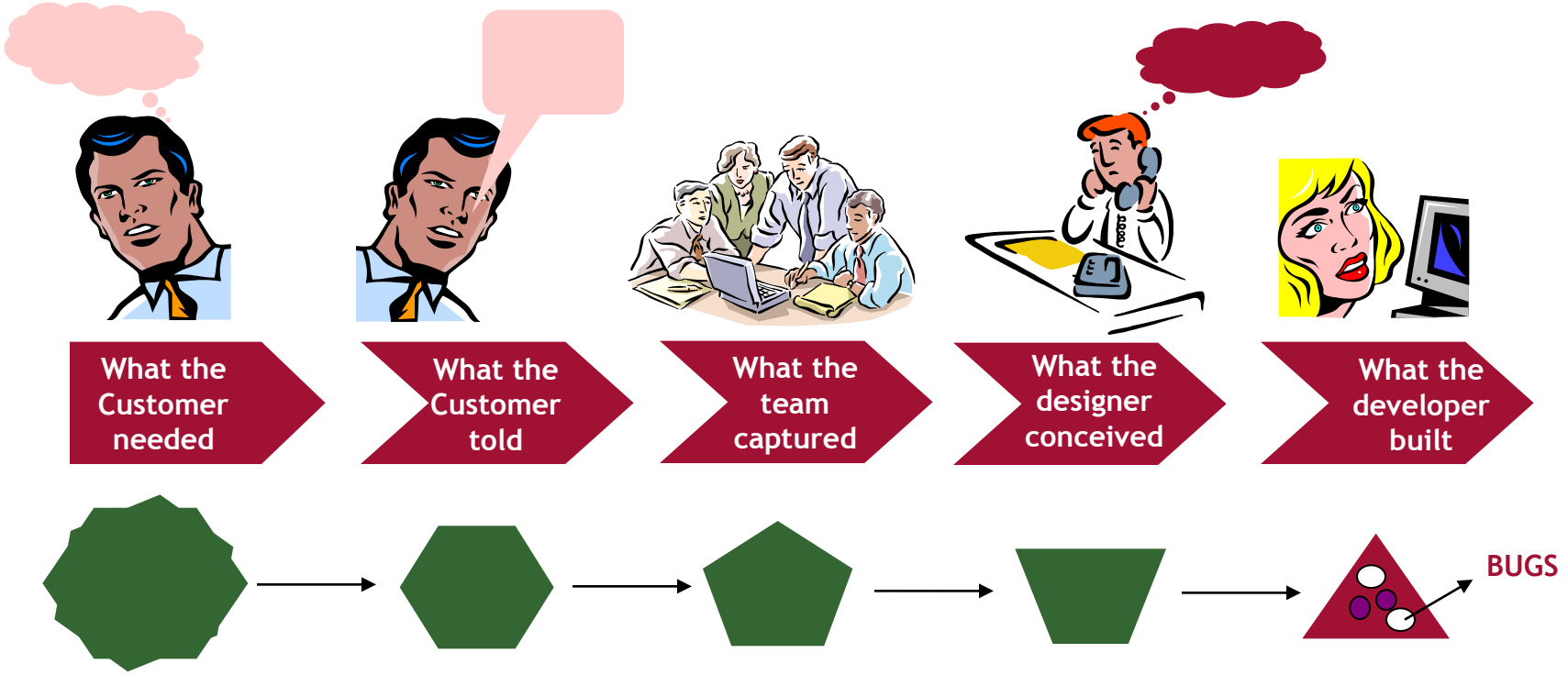
- Do not view metrics in isolation
- Do take corrective actions based on metrics
- Remember that Organizational Metrics baseline depend on your project's metrics

Defect Prevention

Definition

Defect Prevention is a measure to prevent the recurrence of defects

Origin of Defects



- Injection
  - Requirements Gathering
  - Errors in Previous phase output

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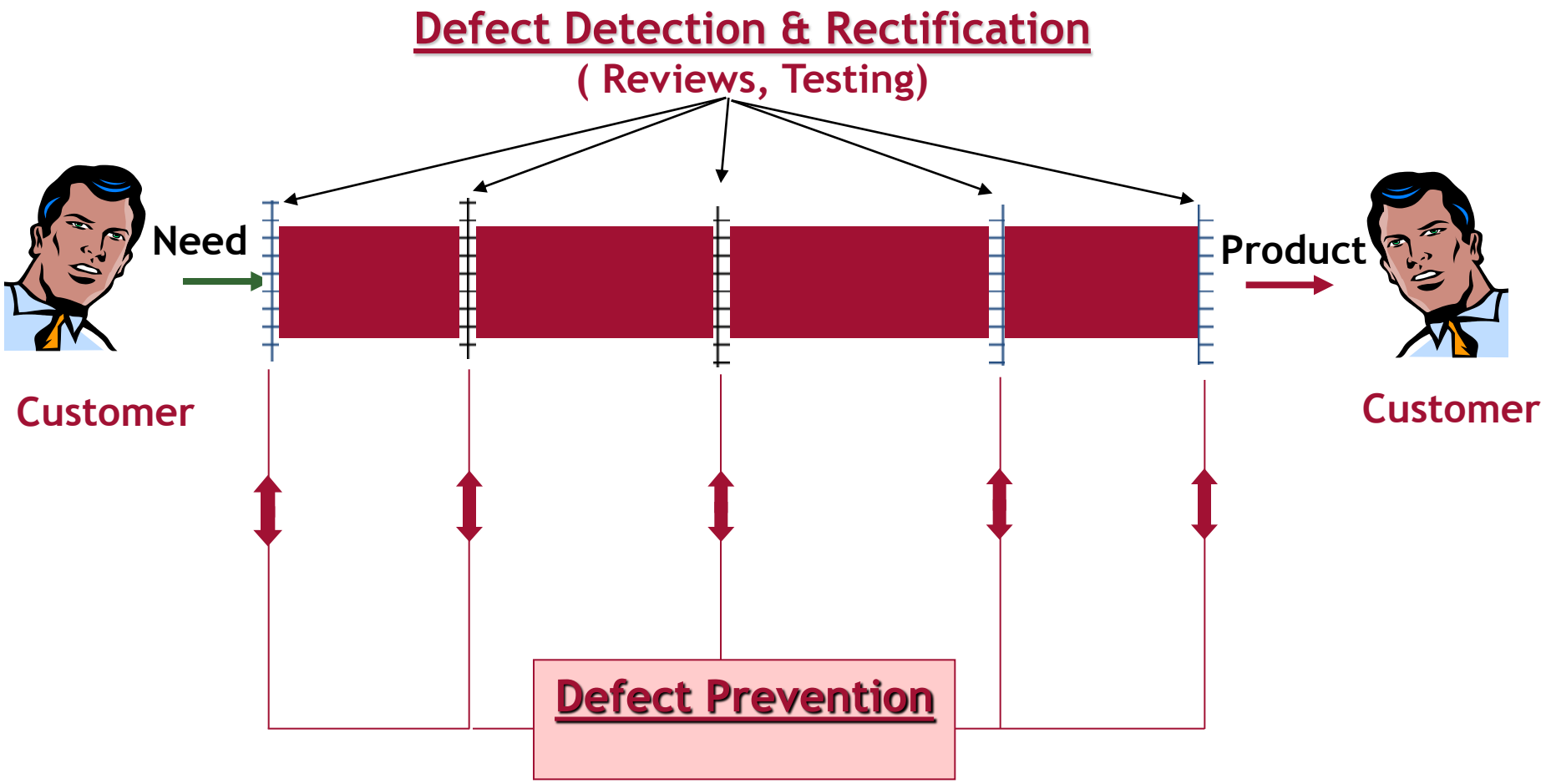
What to do with Defects



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We always try to remove the Defects!

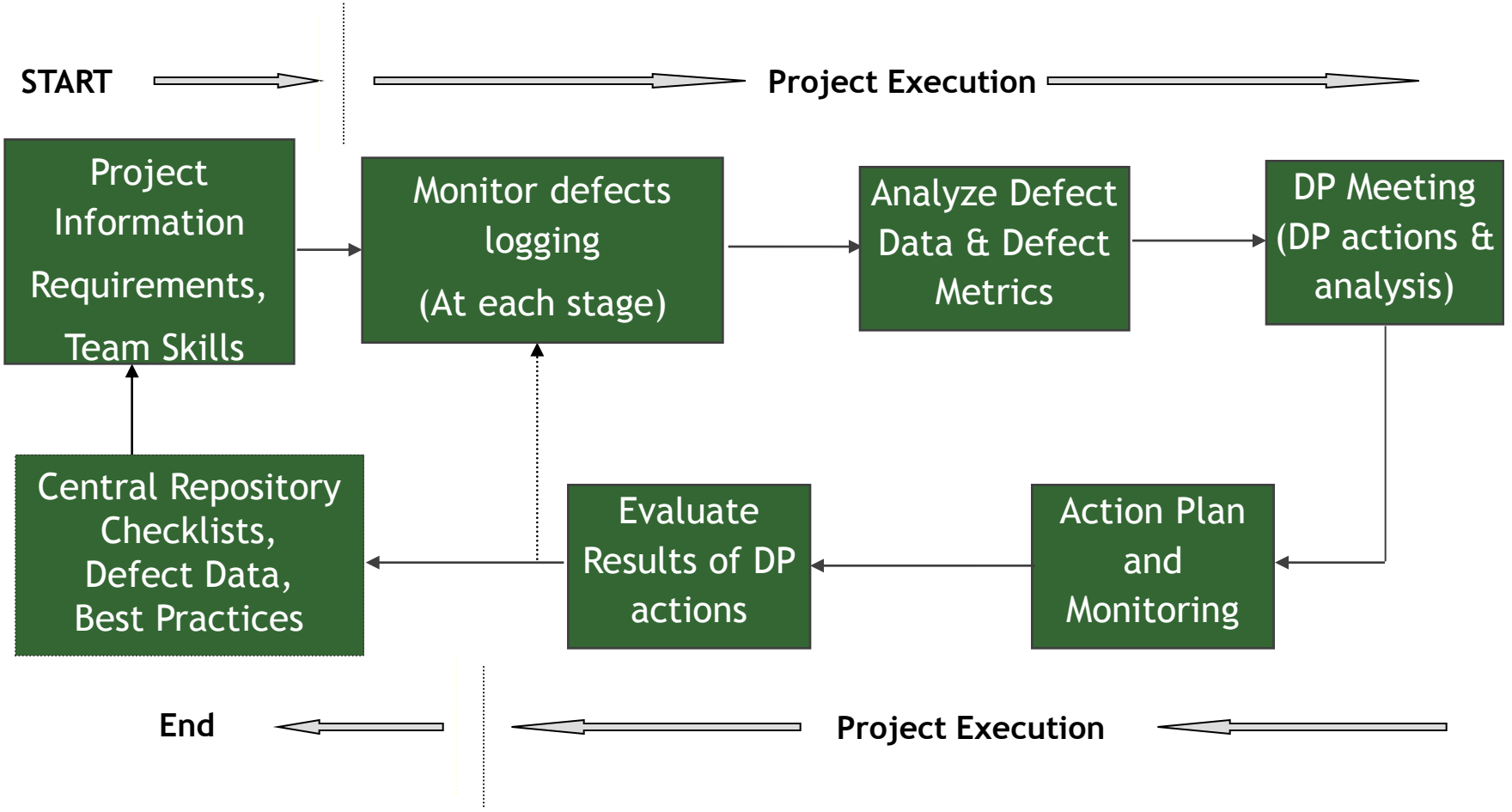
Rectification Process

- Duplication of Efforts
- Schedule Over-run
- Product is corrected
- Additional Cost
- Re-invention of the Wheel

Prevention Process

- Look Ahead
- Utilize Past Experience
- Processes get improved
- Analyze Defects Encountered
- One Time Investment

Workflow of DP activities



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Analysis Tools and Techniques

- Checklists
- Brainstorming Sessions
- Pareto Diagram
- Cause and Effect (Fish-bone) Diagram
- 5-Why
- Charts

So what is Defect Prevention?

- It's a Continuous Improvement Process
- To realize that it is OK to make mistakes
- But it is not OK to repeat mistakes
- Learn from past mistakes
- Predict what could go wrong
- Take preventive actions
- Share knowledge/information

To Summarize

Quality processes are followed
to ensure that work is done as efficiently as possible,
at the same time maintaining consistency of performance throughout the organization.

The key Factors

Ensuring Delivery Excellence

- **Engage** – to become one with customer's Business Objective
- **Enable** – to make available Best in Class Practices
- **Excel –** to provide unsurpassable Delivery Results. Always and every time

Thank you