



Software Measurement Services  
Perfecting Process Performance

Liberty Information Technology



“As a part of Liberty Mutual Information Systems enable Liberty Mutual Group to exceed their business objectives by delivering high value, market responsive IT solutions”

# Improving processes as an enabler of business growth CMMI Journey ...at Liberty IT

## European SEPG June 2007

## Foreword....



**Software Process Improvement (SPI) is not a goal in itself.**

**It is a means to achieve better business results by continuously improving the performance of the software processes.**

## Who we are

### ■ Gordon Currie (LIT)

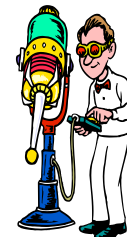
- Business Process Improvement Manager
- Leads the LIT improvement programme on behalf of the Management Team

### ■ Grant Rule (SMS)

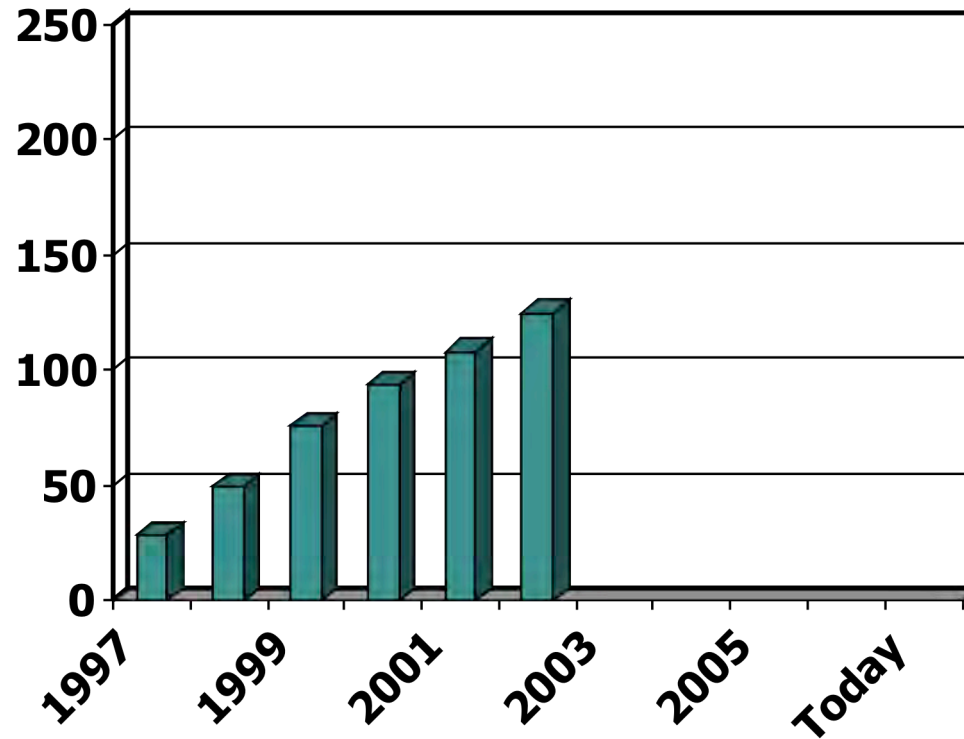
- MD of SMS Ltd.
- Objective, independent assessor and advisor
- Worked with LIT since 2002

## Who are we?

- **A wholly owned subsidiary of Liberty Mutual Group**
- **Started June 97 (28 employees)**
- **Formed specifically to provide software development services**
- **We develop software solutions for LM Business Users**
  - Project oriented
  - Business aligned
- **225 employees (202 development staff)**

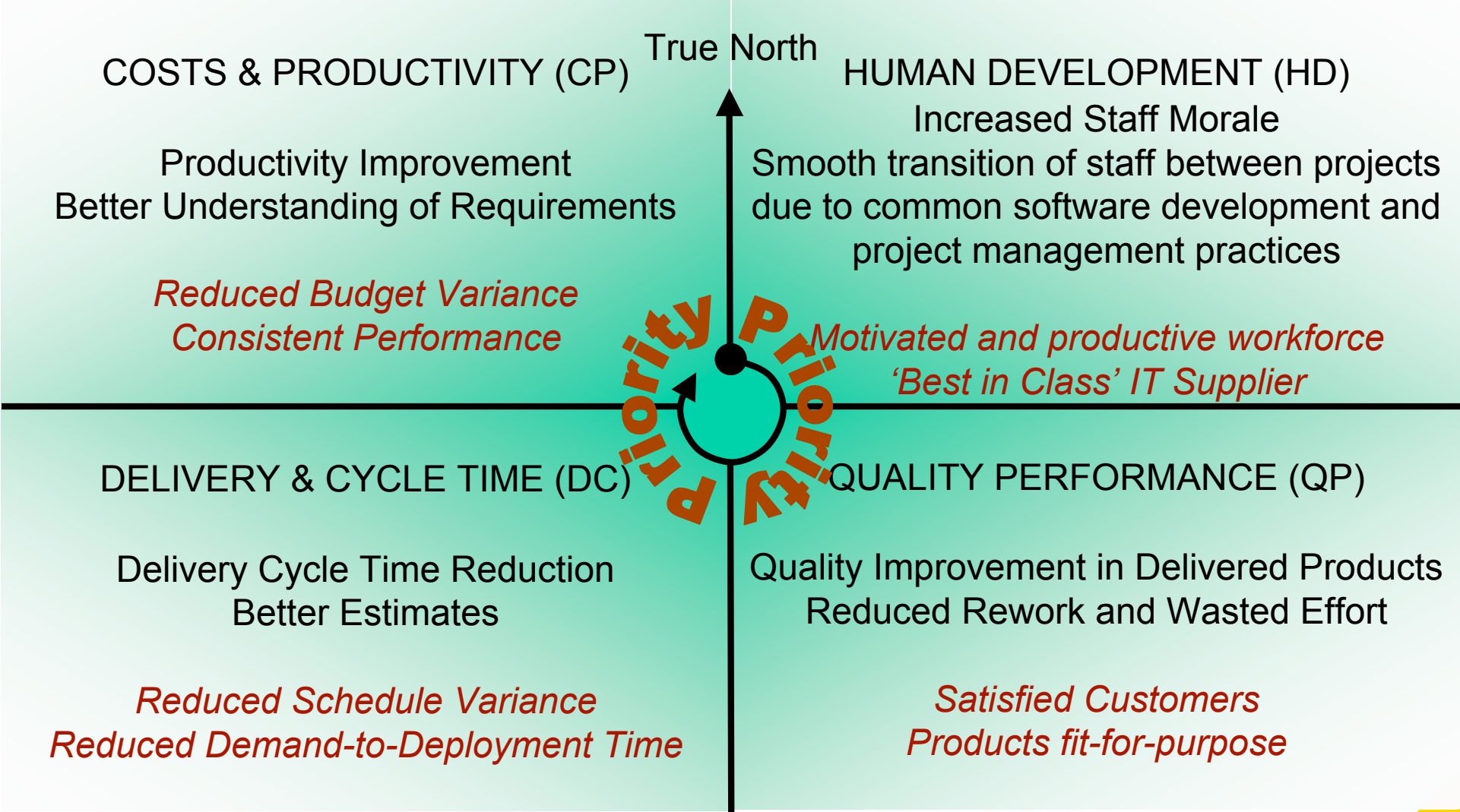


# Headcount grew consistently between 1997–2003



- **Maintaining project stability and product quality while growing rapidly was identified as a challenge**

# Back in 2003 ... Business Case for SPI



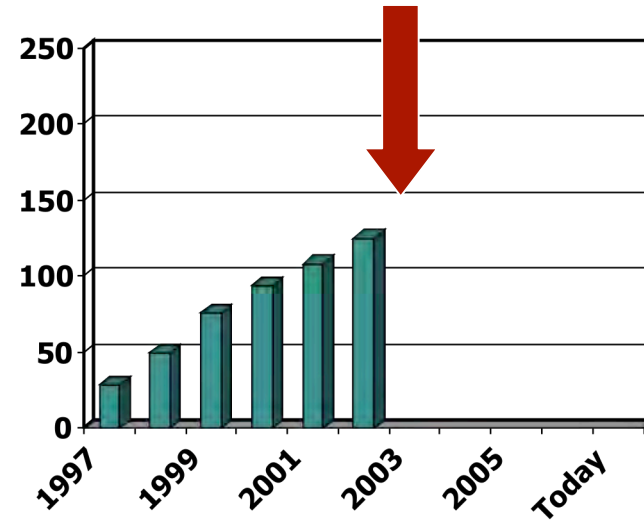
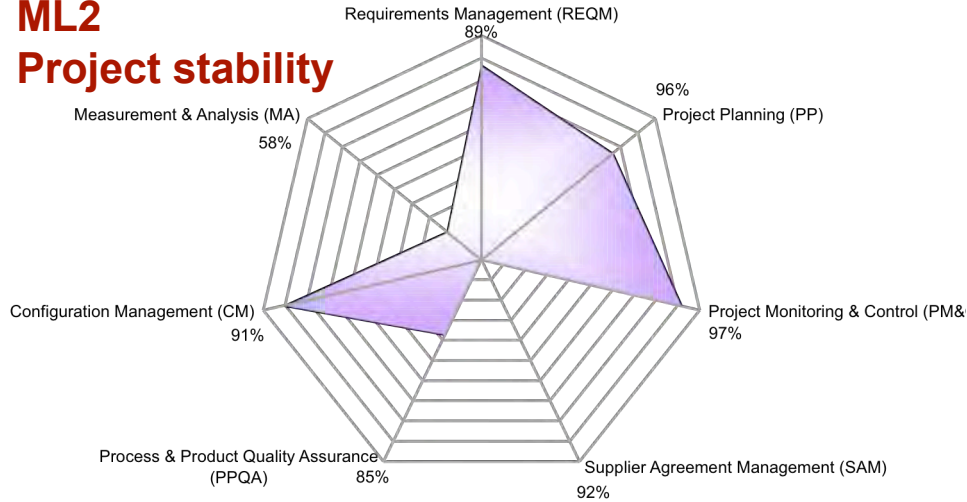


## **An appraisal was conducted to establish a baseline**

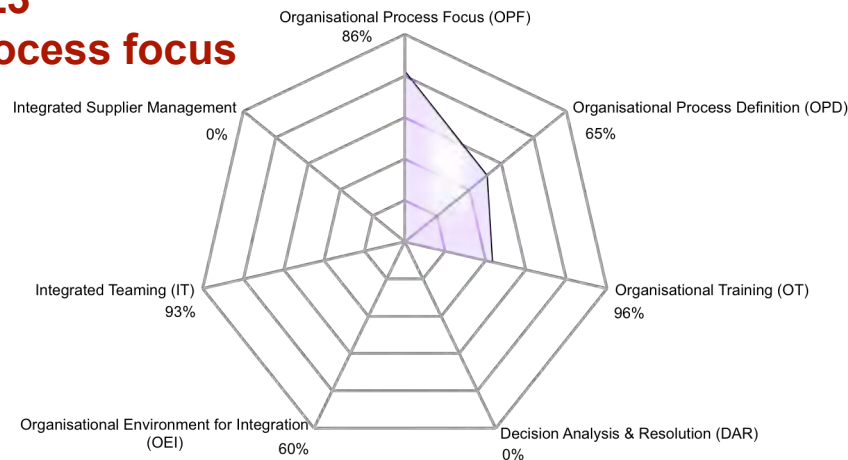
- **Mini-appraisal by external, independent, objective, assessor**
- **On-site period of one week**
- **Preceded by a Document Review**
- **Scope included projects in all business areas**
- **Interviews with...**
  - **Functional area representatives**
  - **Project managers**
  - **Business area managers**
- **Presentation of Draft Findings to all participants**
- **Discussion of Final Findings with Senior Managers**
- **Creation of a Management Action Plan (MAP)**

# 2004: results relied heavily on individual expertise

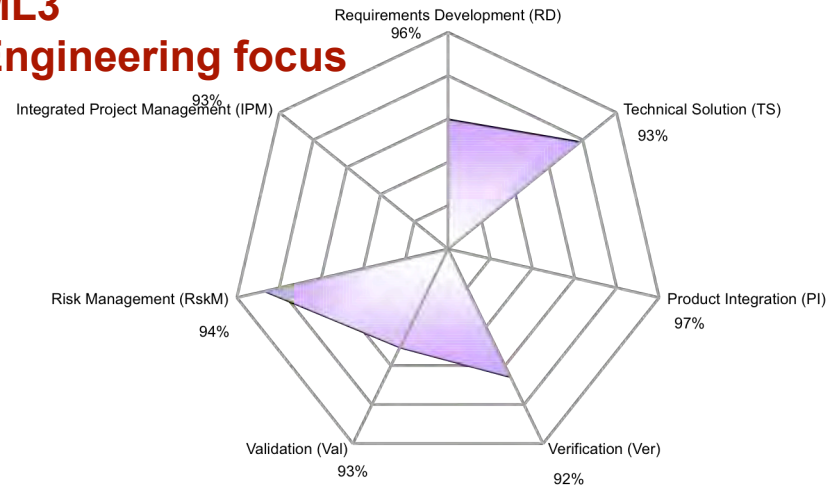
## ML2 Project stability



## ML3 Process focus



## ML3 Engineering focus



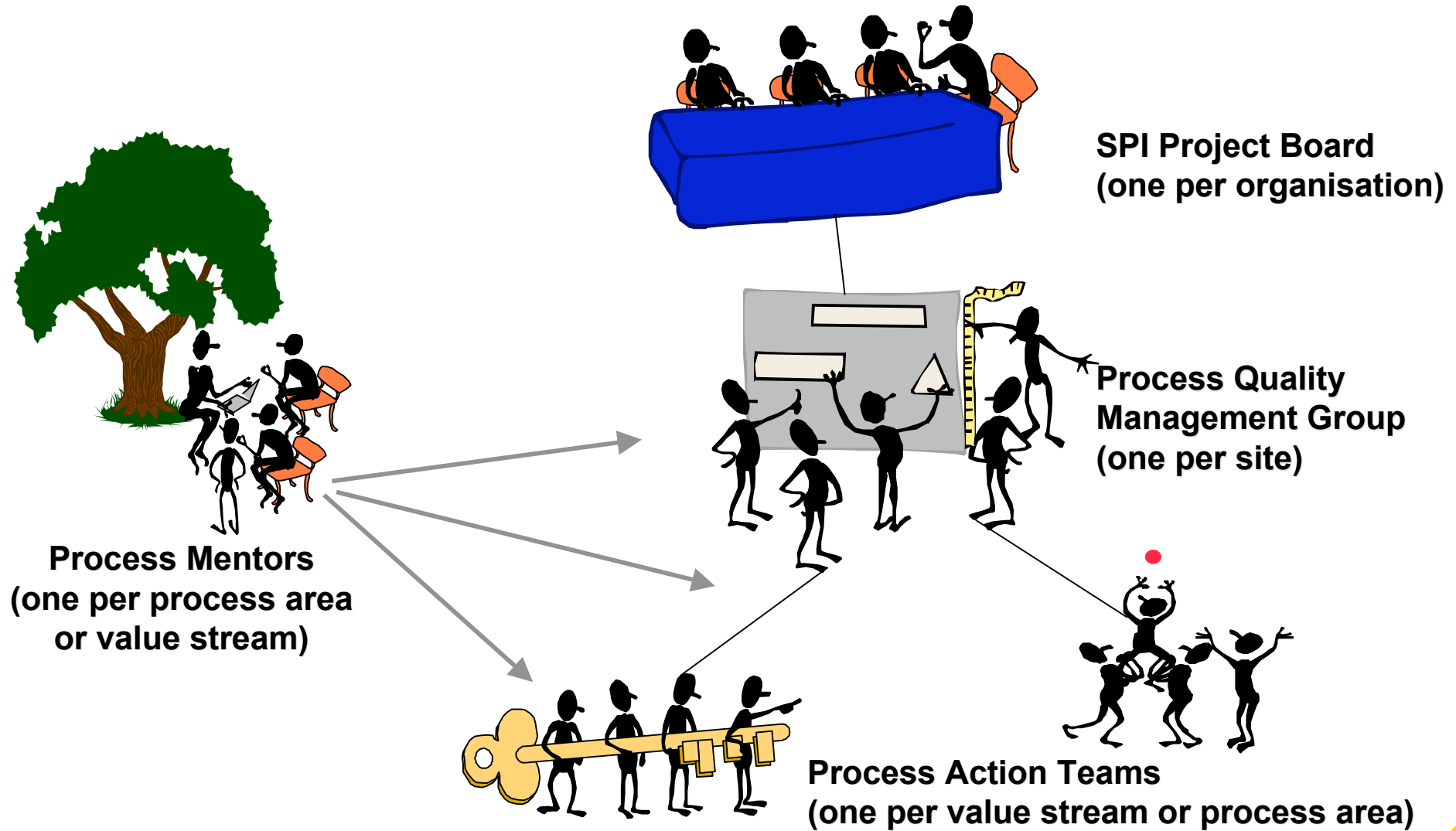


**John Kotter's Model suggests change & improvement is created & sustained by an 8 stage process**



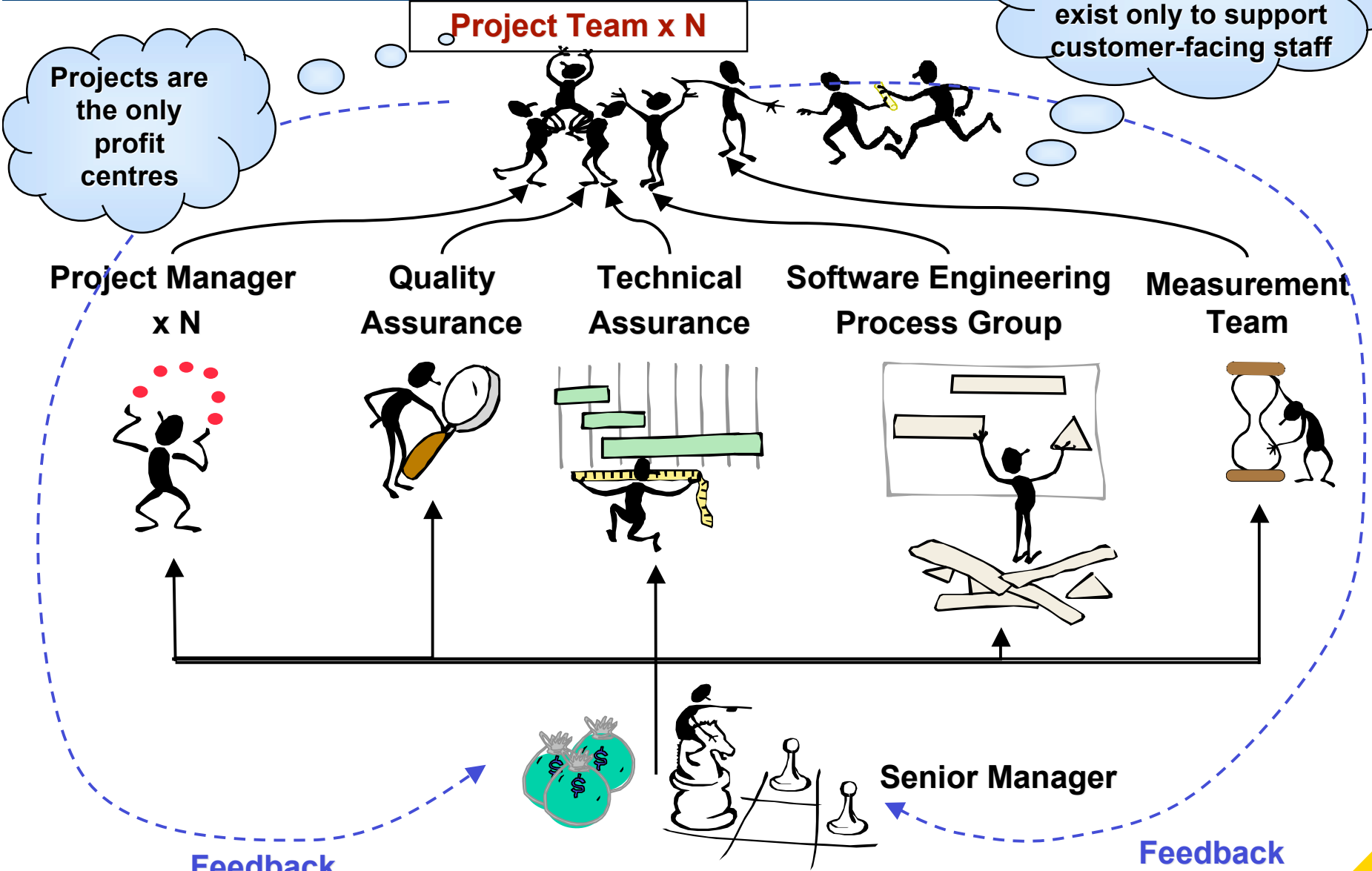
Ref: *Leading Change* by John P. Kotter, p.21

**Achievement of ML3 requires a process improvement infrastructure with mentors**



# Value the value-creating staff

Management, admin, quality & process improvement staff exist only to support customer-facing staff

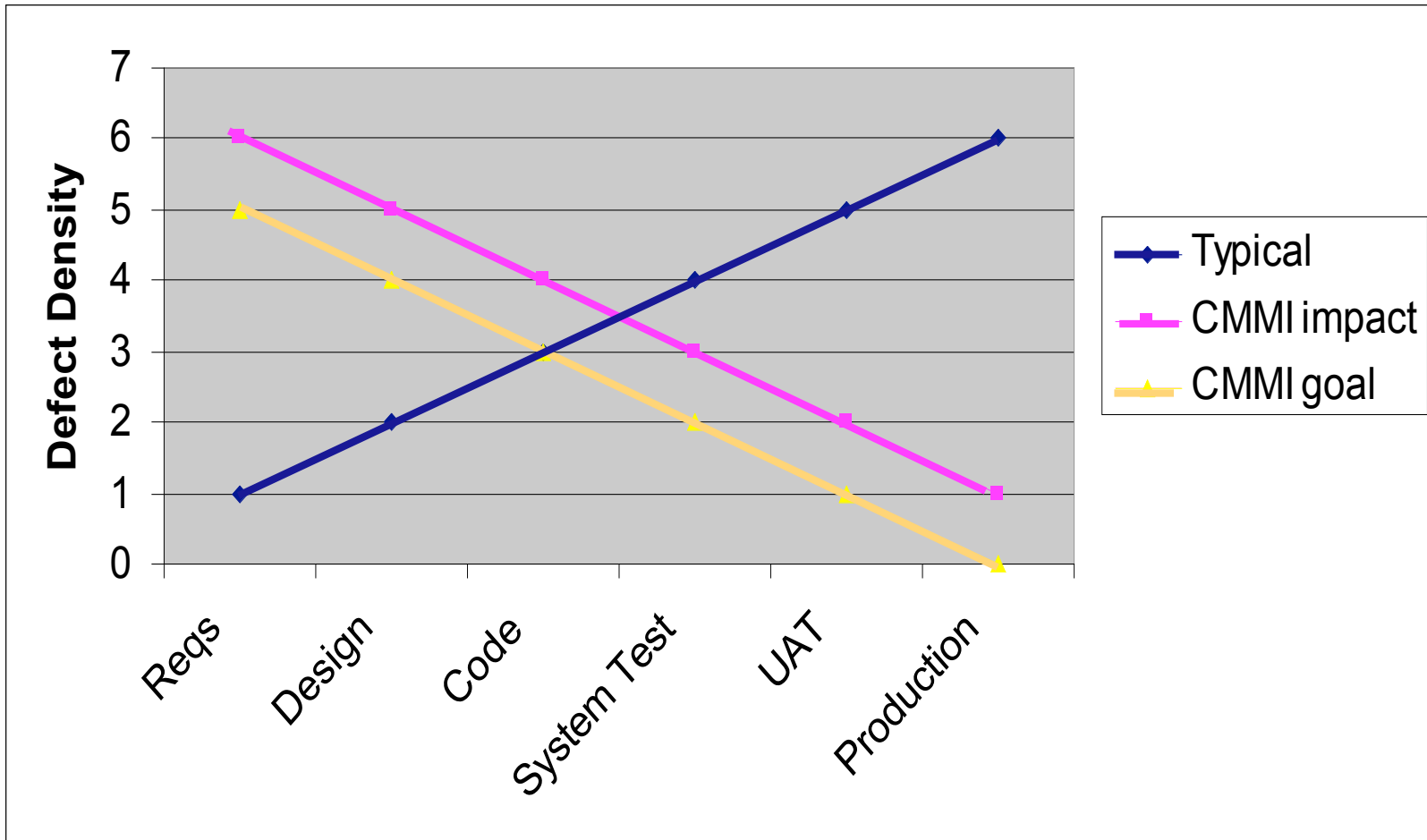


## The Liberty IT Approach to SPI

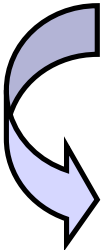
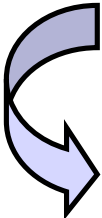
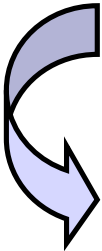
- **Set short-term and long-term goals**
- **Leverage a standard for 'best practice' (CMMI)**
- **Plan phased SPI initiatives**
  - work first on the key areas that will give greatest benefit to the customer
- **Time-box the development of processes**
- **Involve staff in the creation of processes**
  - gain buy-in
  - create real ownership by practitioners
- **Leverage alignments with EITS and Market aligned QA Managers**
- **Underpin our progress with measurement**

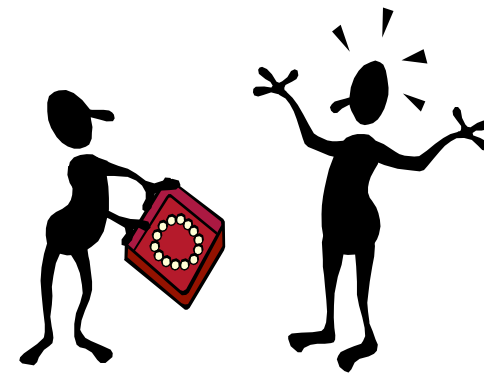


**The inner logic of CMMI maturity levels 2/3 is the need to detect defects early and prevent them**



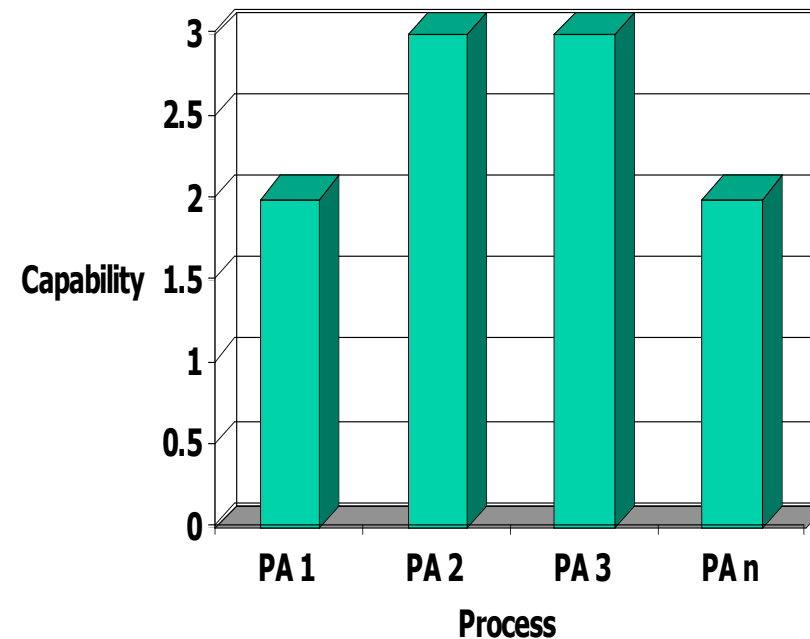
# The impact of achieving this CMMI level 2/3 goal...

- 
  - **Project/Development Impact**
    - Effective and efficient processes
    - Productive workforce
    - Minimal re-work
- 
  - **Product Impact**
    - Reduced time to market/More functionality
    - Fewer defects shipped
- 
  - **Business Impact**
    - Superior product
    - Competitive edge
- **IT Customer Impact**
    - Delighted customers



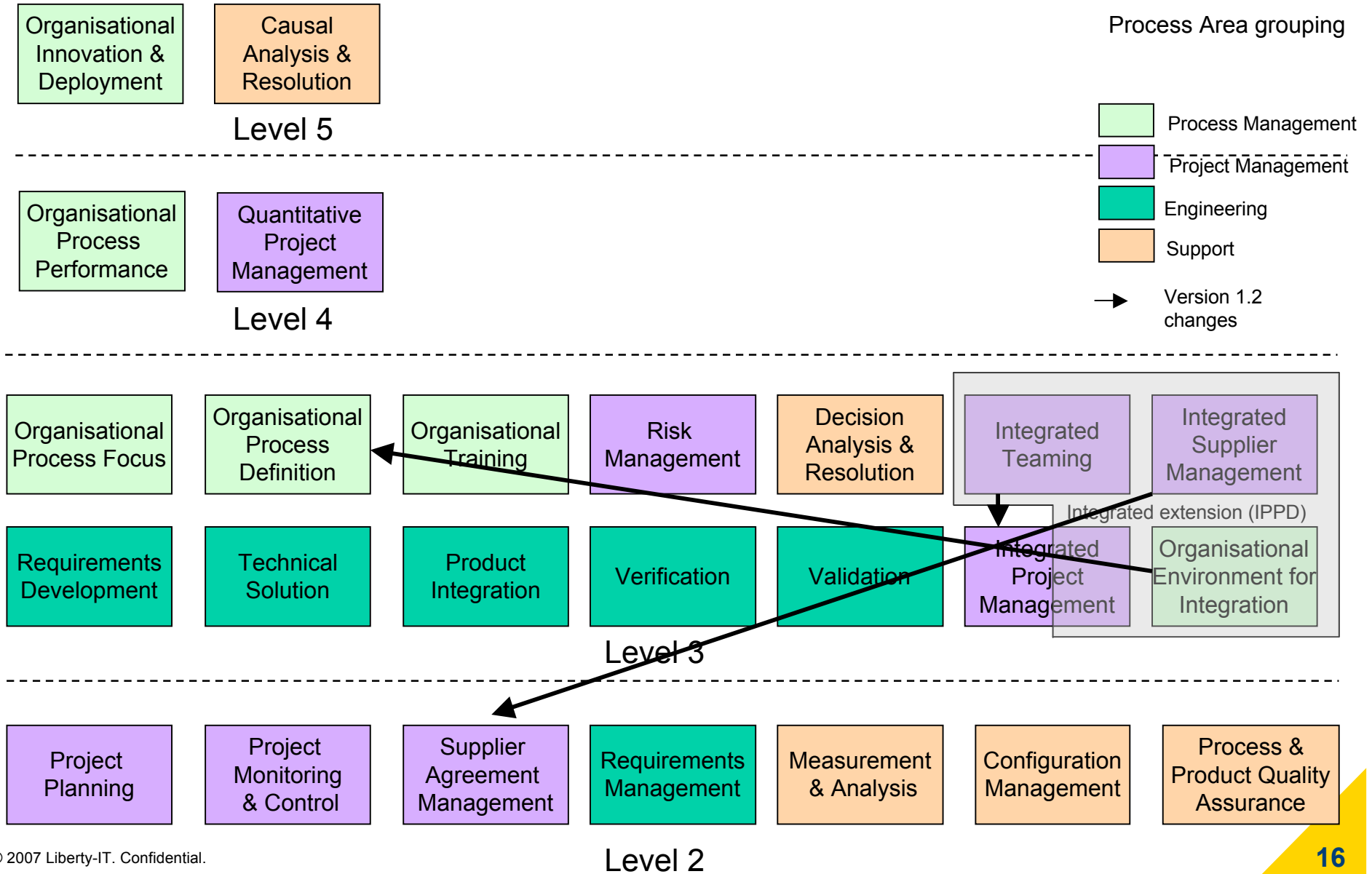
# Liberty IT - CMMI Strategy

- The CMMI ‘Continuous Representation’ allows LIT to handpick those key processes that will benefit the business most
- A process area capability profile may be represented by a set of points in two dimensions
  - *the process dimension*
    - ‘What’ you do
  - *the capability dimension*
    - ‘How well’ you do it
- ‘Doing the right things well’



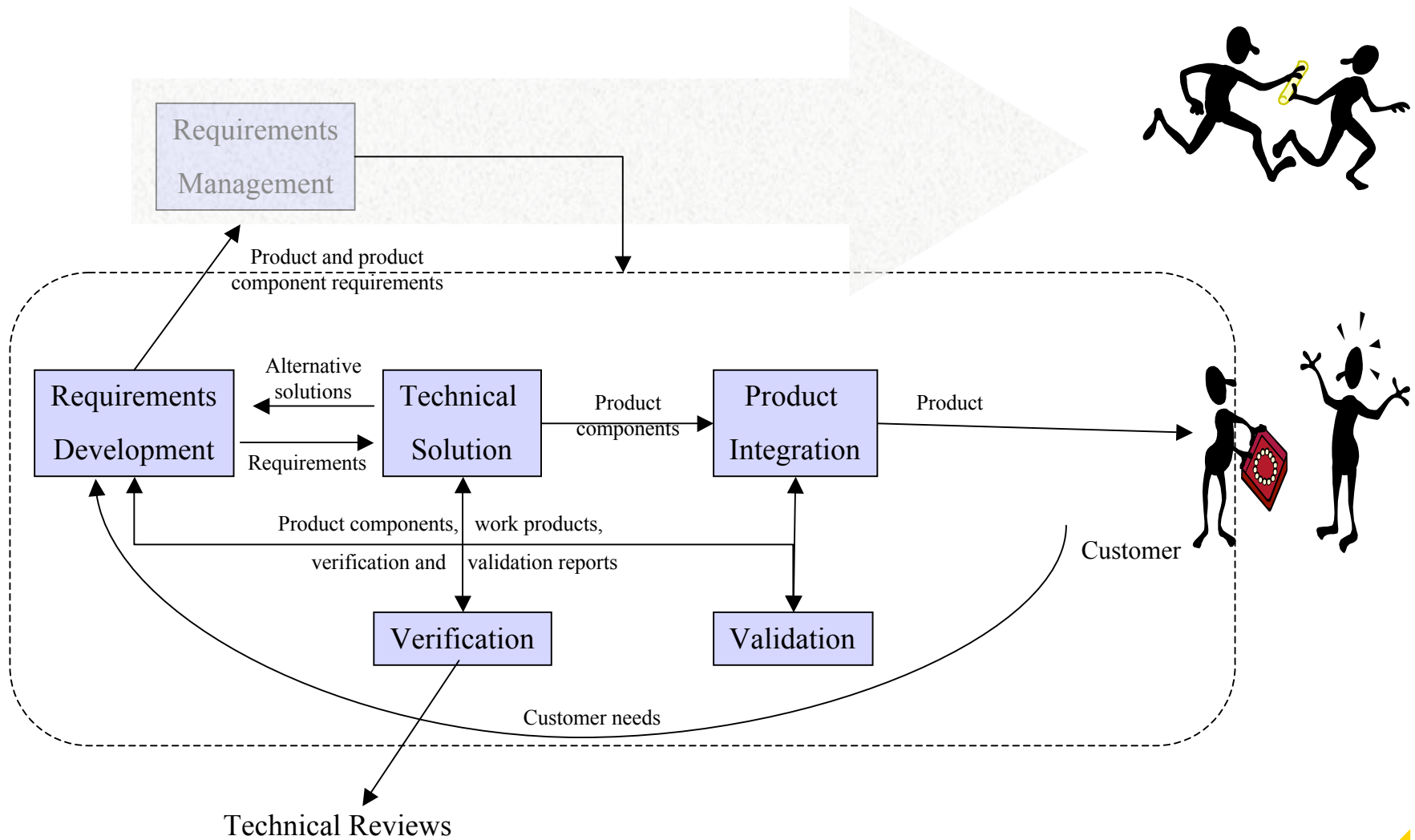
**Process Area Capability Profile**

# CMMI Process Areas





# CMMI Birds-eye view of the interactions among Software Engineering Process areas





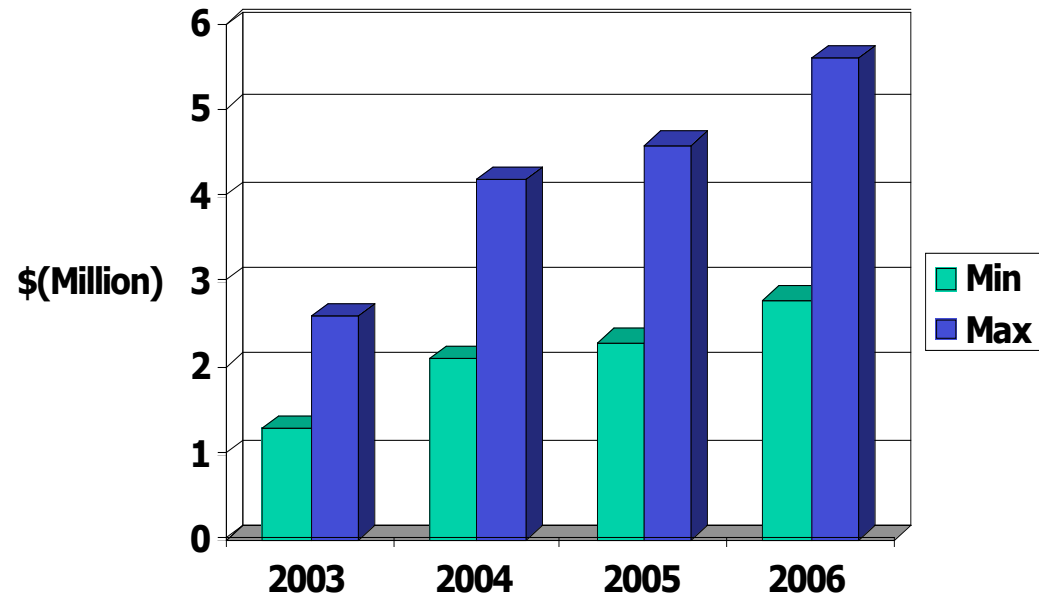
## Technical Reviews: Key Business Drivers

- **Decreased project risk by identifying and eliminating defects earlier in the lifecycle**
- **Improved productivity due to emphasis on ‘right first time design’ and minimal rework**
  - Industry data: reworking defective requirements, design and code typically consumes 40-50% of the system development effort
  - published ROI 37:1 (benefit/cost ratio)
- **Assurance that products delivered by LIT are ‘fit for purpose’**
- **Improved quality of products delivered into production**

# Technical Reviews offer BIG savings

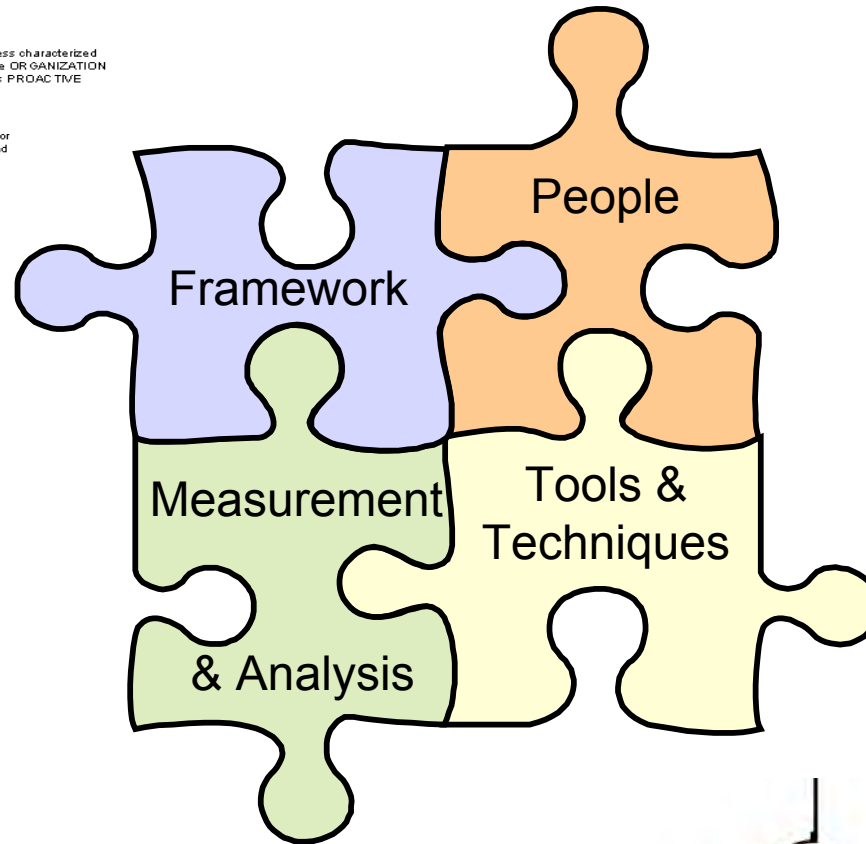
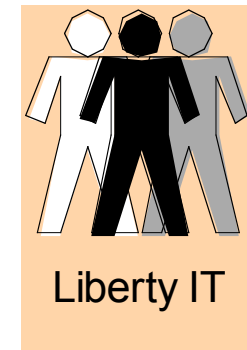
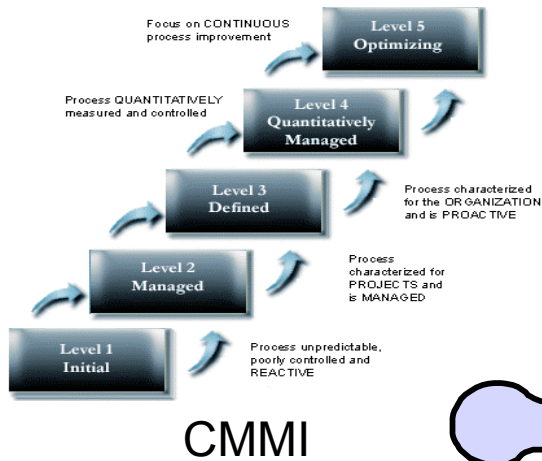
- Based on industry standard costs, **LIT have saved more than \$8 million** in wasted effort over the last 4 years (defects found/fixed before testing)
- ... **increasing** productivity & capacity
- ... **improving QUALITY** – more defects being caught earlier in the lifecycle, fewer defects released into production
- **Result = more value delivered to the business**

**Technical Review savings**



**Source of Base Statistics :** Marilyn Bush Associates  
 1 defect found early in development costs \$100 to fix  
 1 defect found during testing costs \$1000 to \$2000 to fix  
 1 defect found during operations costs \$10,000 to \$20,000 to fix

# The Quality/Improvement Jigsaw



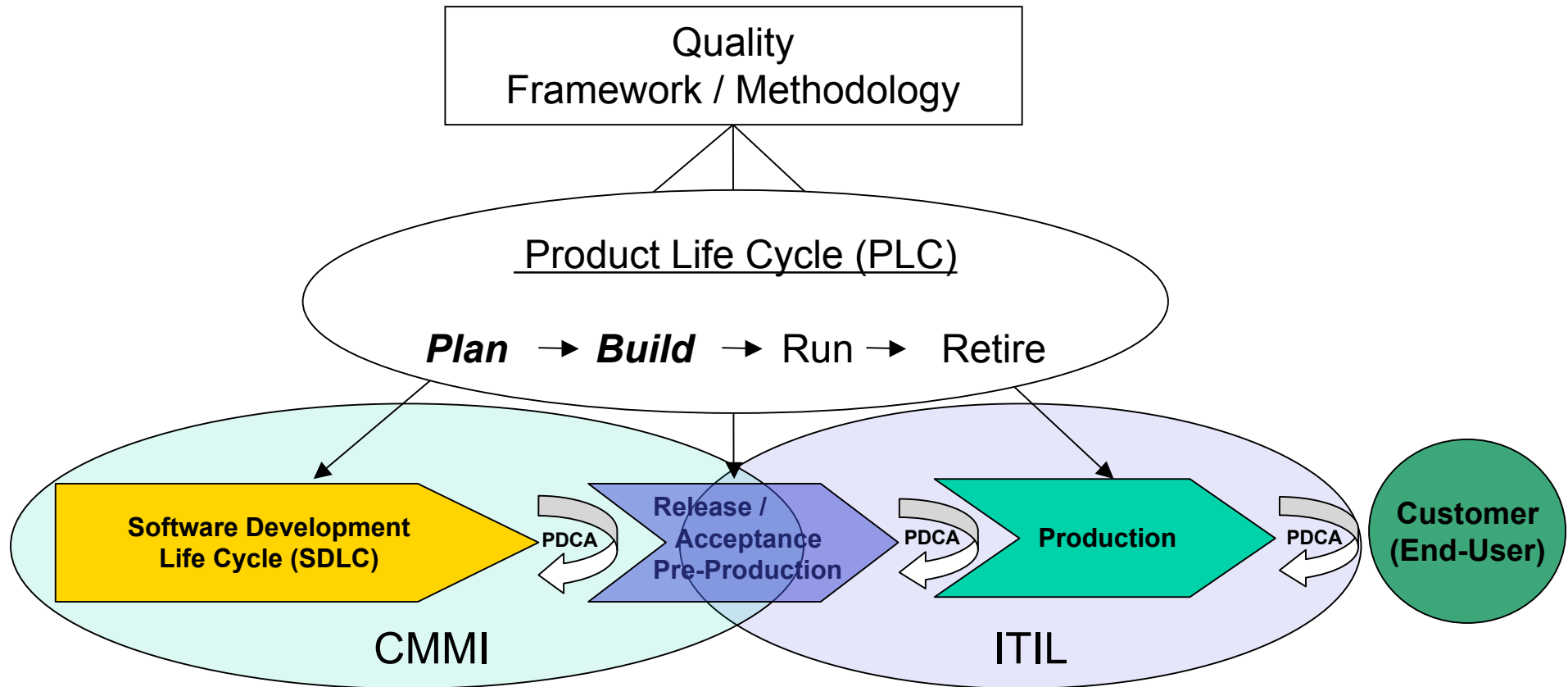
Microsoft Office Enterprise Project Management (EPM) Solution

Scorecards, Benchmarks

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# CMMI supports the Quality Framework



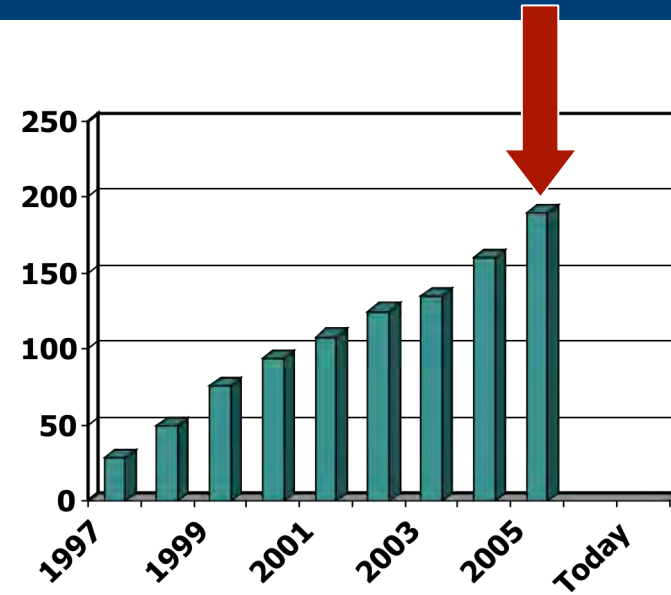
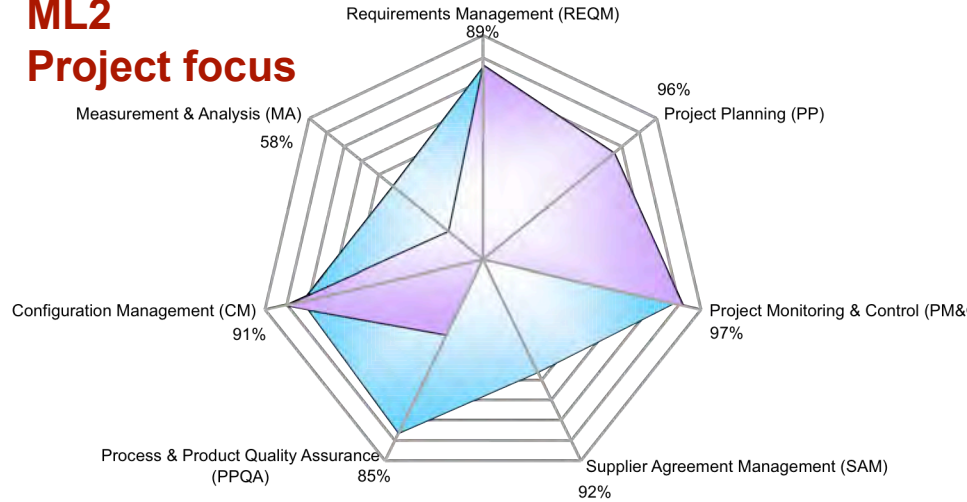


## **2005: Quick-Look Appraisal conducted by team**

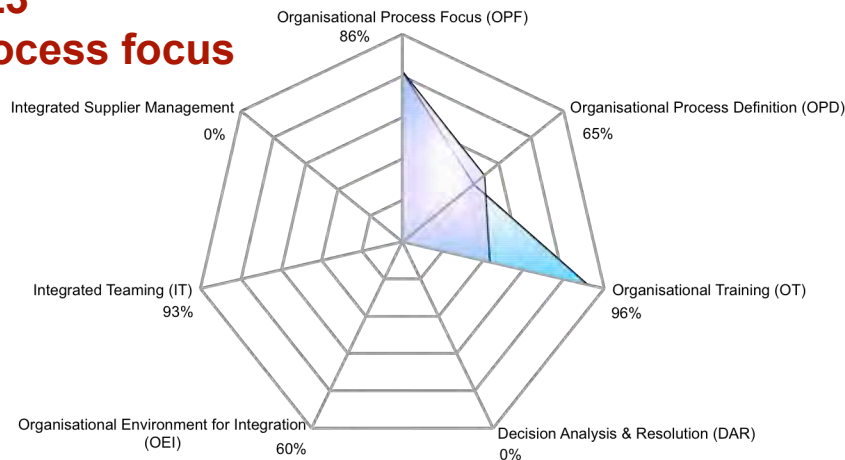
- **Team-based, involving LIT staff**
- **Led by external, independent, objective, assessor**
- **On-site period of seven workdays**
- **Required projects to prepare a Document Pack**
- **Scope covered...**
  - All business areas
  - Interviews with FARs, Project Managers & Senior Managers
- **Special focus on priority product lines (Test Service)**
- **'Town Hall' presentation of Draft Findings to all**
- **Discussion of Final Findings with Senior Managers**
- **Creation of a Management Action Plan (MAP)**

# 2005: Continued growth supported by a process focus

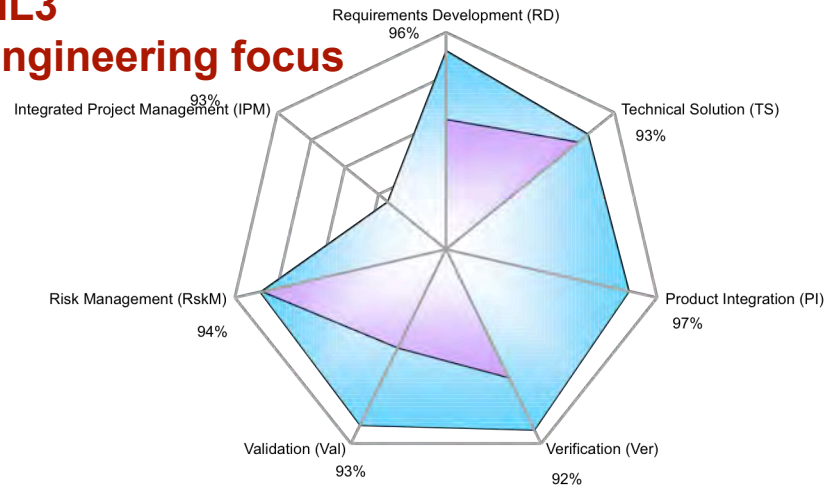
## ML2 Project focus



## ML3 Process focus

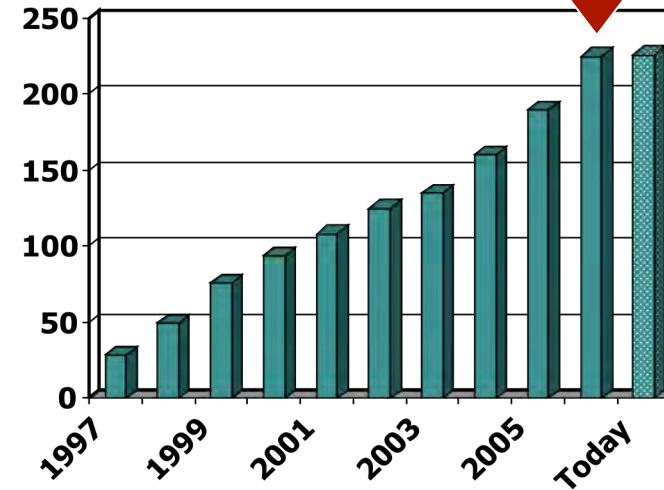
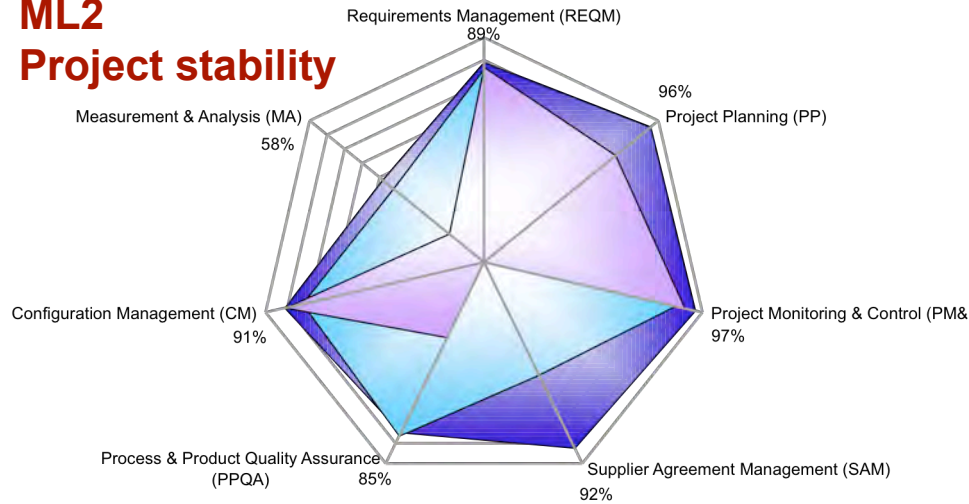


## ML3 Engineering focus

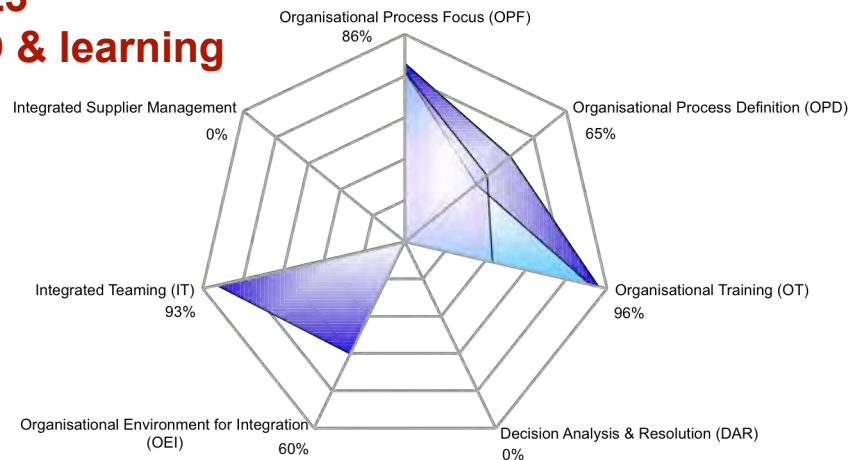


# 2006: Priorities evolve over time: (1) project stability; (2) product quality; (3) human development & learning

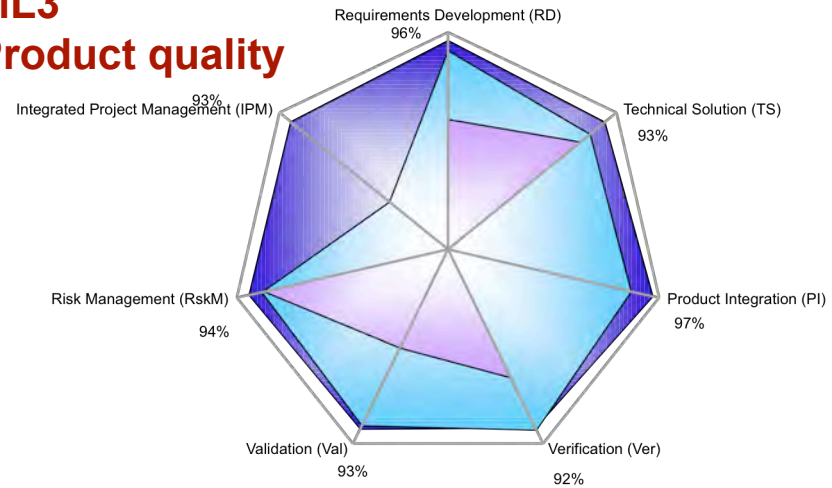
## ML2 Project stability



## ML3 HD & learning



## ML3 Product quality

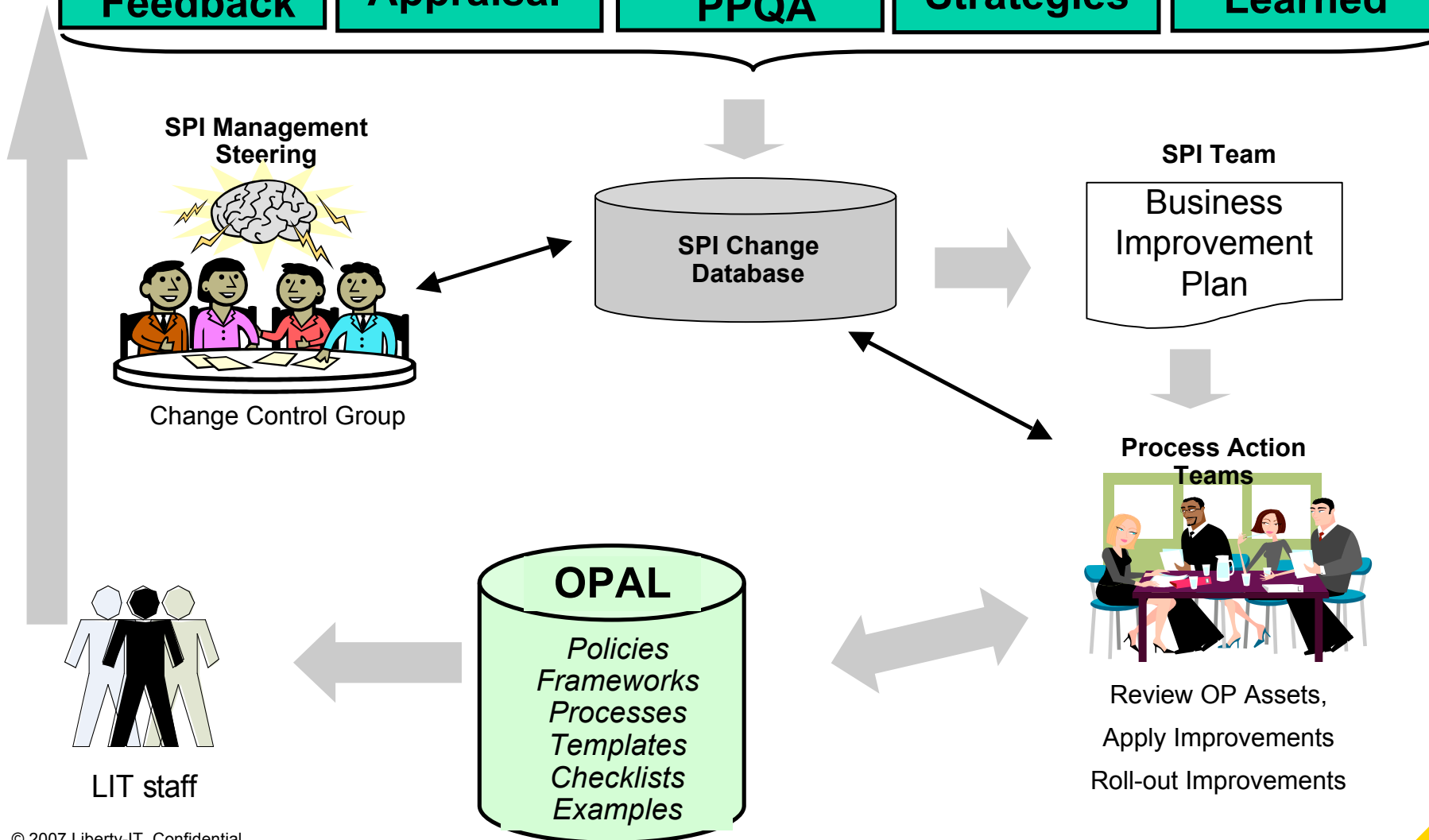
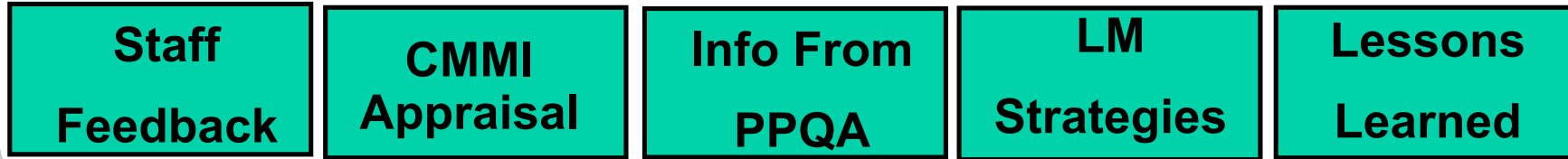






# CMMI results – March 2006

Maturity Level 2 Process Areas	Jan 2004 %	Jan 2005 %	Mar 2006 %	Diff 2005-06
<b>Project Planning</b>	76	75	96	+21
<b>Project Monitoring and Control</b>	92	88	97	+9
<b>Requirements Management</b>	87	86	89	+3
<b>Configuration Management</b>	91	83	91	+8
<b>Measurement &amp; Analysis</b>	20	52	58	+6
<b>Process and Product Quality Assurance</b>	37	86	85	-1
<b>Supplier Agreement Management</b>	n/a	56	92	+36
<b>Maturity Level 3 Process Areas</b>				
<b>Risk Management</b>	87	88	94	+6
<b>Requirements Development</b>	60	92	96	+4
<b>Technical Design/Solution</b>	79	84	93	+9
<b>Product Integration</b>	n/a	87	97	+10
<b>Verification (incl. Technical Reviews)</b>	66	93	92	-1
<b>Validation</b>	55	91	93	+2
<b>Organisational Process Focus</b>	82	82	86	+4
<b>Organisational Process Definition</b>	51	44	65	+21
<b>Organisational Training</b>	43	92	96	+4
<b>Integrated Teaming</b>	n/a	56	93	+37
<b>Integrated Project Management</b>	n/a	35	93	+58
<b>Organisational Environment for Integration</b>	n/a	n/a	60	n/a
<b>Total Net Gain/Loss (% points)</b>		+210	+257	



# Improved Delivery through Quality

- **Real emphasis on Quality – not just deadlines & cost**
  - Move from ‘faster, cheaper, BETTER’ to ‘BETTER, faster, cheaper’
  - It cannot be overstated the **importance of requirements quality**. **Tests are only as good as the requirements they are testing**. If requirements are ambiguous, tests will not be effective.
  - **Quality cannot be tested into a system, a system must be designed for quality**
  
- **Quality will be the differentiator in the future**
  - Best companies in the world put **Quality** first e.g. Toyota
    - ‘Toyota are much faster than the competition, up to twice as fast. Toyota has never missed a launch date, nor do they miss interim milestones. And they consistently have the best quality in the industry.’  
extract from *Product Development for the Lean Enterprise*
  
- **Keep the Balance**
  - Quality & Delivery are both important and can complement each other
  
- **Reward the desired behaviour – currently we ‘talk quality’ but only ‘reward delivery’. We need to reward ‘Delivery AND Quality’.**

## More from the Experts (the BIG GUYS) - Gartner

### Gartner ITXPO – Quest for Quality : October 2006. “*The Quality Gap is Widening*”

- By 2009, 90% of top-tier internal and external service providers will be **distinguished by their substantial process capabilities** as well as their **quality and service improvement capabilities** (0.8 probability)
- By 2011, IT organisations that have **not built holistic, integrated quality management programs and values** will be **substantially underperforming** against industry norms (0.8 probability)
- Through 2011, **quality problems in 75% of the IT** organisations will be predominantly **defects and waste** caused by silo based sub-optimization (0.8 probability)
- Through 2009, **75% of IT** organisations **will focus their “quality” initiatives too narrowly** on implementing ITIL, CMMi, Prince or PMI’s PMBOK (0.9 probability)
- Through 2009, **two-thirds of IT** organisations **will overemphasize process at the expense of developing staff** and the appropriate values and behaviours (0.8 probability)
- By 2016 many **organisations that have not deployed quality** techniques successfully **will fail**, be absorbed or be outsourced to those who have.



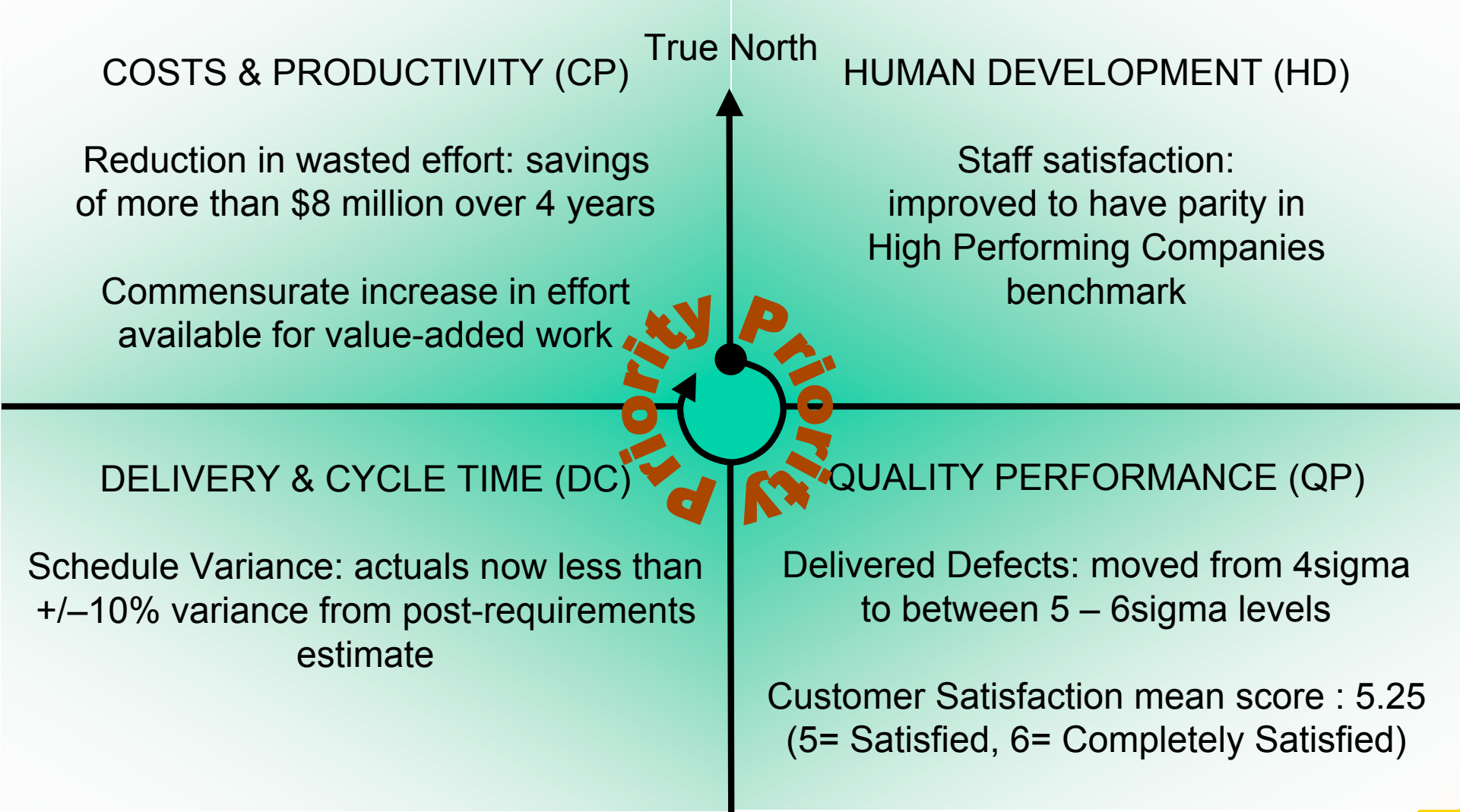
## The biggest factor in striving for excellence... PEOPLE

**“There is very little difference in people. But that little difference makes a big difference.**

**The little difference is ATTITUDE. The big difference is whether it is positive or negative”.**

**W Clements Stone  
President, Combined Assurance**

# Deploying 'True North' metrics encourages engagement



## **Conclusion: has it been worth it?**

- **LIT has grown from 28 to over 225 staff in 10 years while...**
  - Achieving improved employee morale
  - Increasing customer satisfaction
  - Improving product quality to 5-6 sigma levels
  - Broadening the customer base
  - Engaging more closely with end-users
  - Delivering faster and more predictably
  - Removing waste to increase productivity
  
- **Could LIT have done it any other way?**

# THE VISION

To become a 'Centre of Excellence' within the Liberty Mutual Group by continuously improving our processes and consistently delivering robust, 'fit for purpose', technically excellent IT solutions

