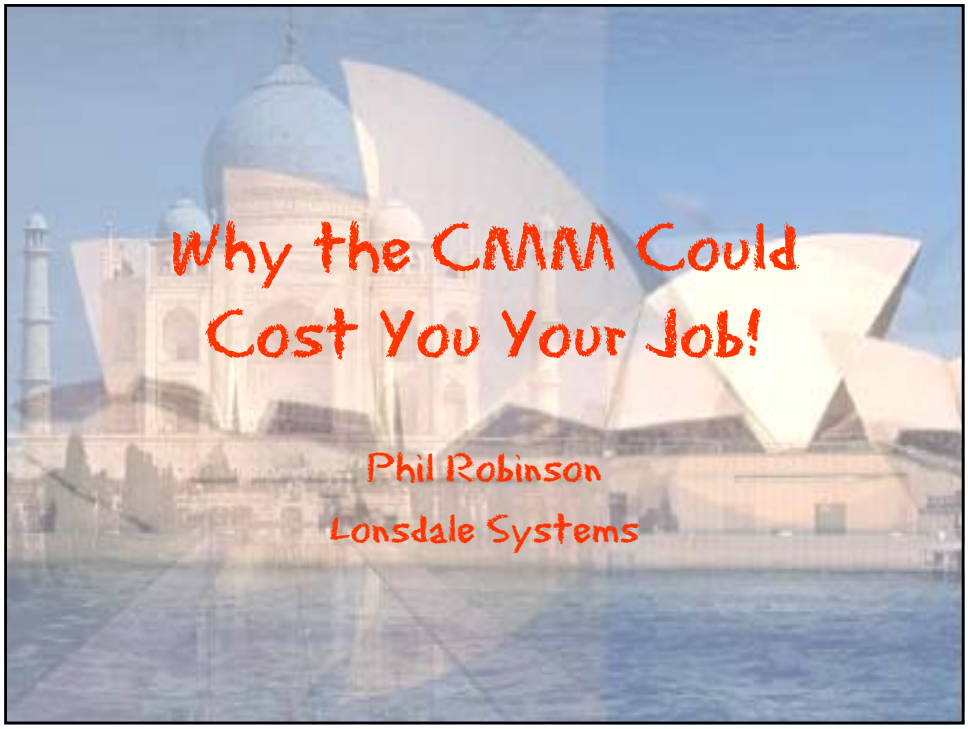

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IT Complex Samui

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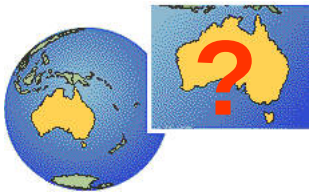
Supplier or Customer?

Australia can compete with anyone in the world in ICT. Among other advantages, we have a highly educated, productive and multilingual workforce, a strong pool of ICT skills, a cost-effective labour market, a world class IT infrastructure, and a stable and supportive political environment.

Darryl Williams

Former Minister for Communications, Information Technology and the Arts



Some Australian customers of India's "big four" IT consultancies

- ANZ Banking Group
- Coles Myer
- Ford
- Hutchinson Telecommunicaitons
- National Australia Bank
- Royal Sun Alliance
- Suncorp Medway
- Telstra
- Vodaphone
- Westpac Bank

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Offshoring Factors (Gartner 2003)

- Cost is not the only factor
- Other factors include
  - Government Support
  - Labour Pool
  - Infrastructure
  - Educational System
  - **Process Quality**
  - Cultural Compatibility

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Japanese Cars

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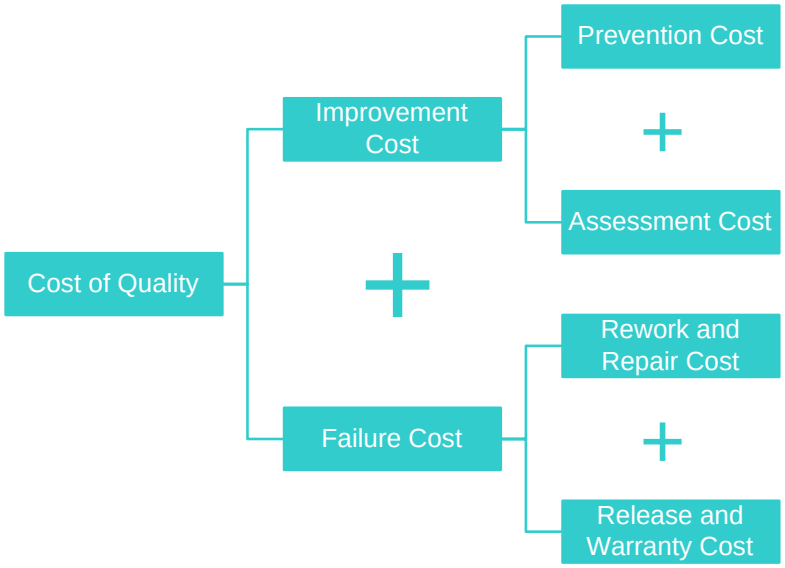
The Cost of Quality



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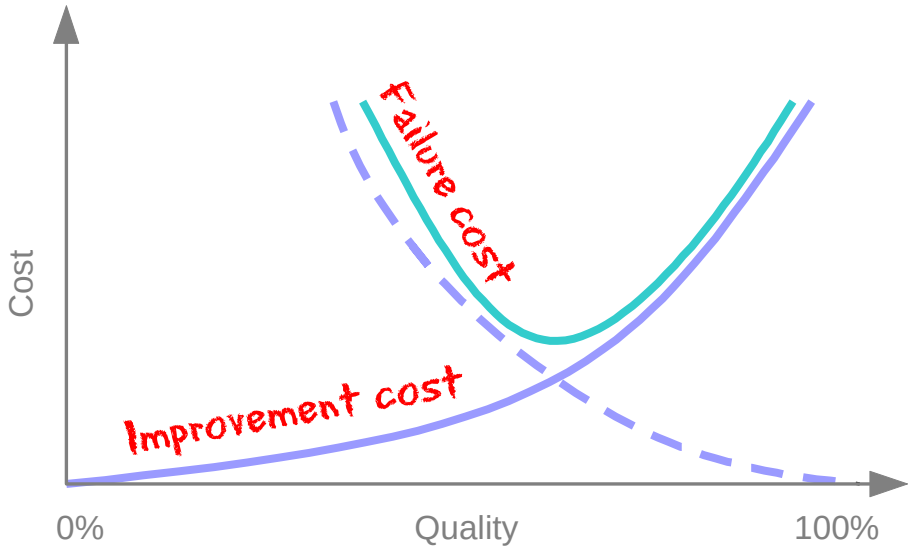
Cost of Quality



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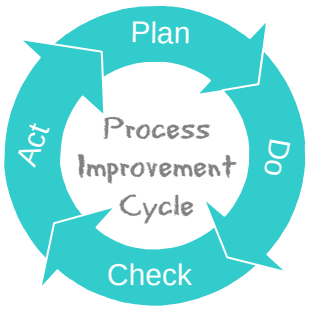
The PDCA Cycle

- Identify opportunities to improve a process
- If improved
  - Deploy the improvement across the organisation
- If not improved
  - Identify the reasons
  - Try again



- Try out the improvement
- Measure the effect of the improvement
- Capture lesson's learnt

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The PDCA Cycle

- ☺ Seems straightforward…
- ☹ But there's a catch
  - The PDCA only works for "mature" processes
- 😐 Immature processes
  - What to improve?
  - How to measure improvements?
  - How to deploy improvements?

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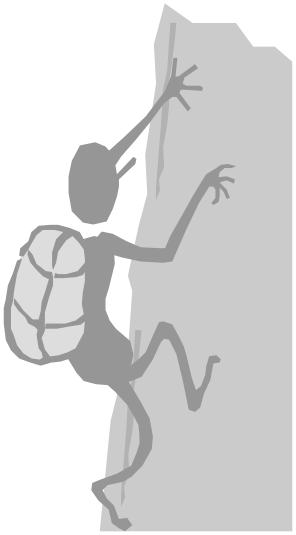
Process Capability



- Improving
- Measured
- Defined
- Managed
- Ad-hoc

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Ad-hoc Process

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Ad-hoc Process

- Depends on “heroic” effort and superior skills
- Processes
  - not predictable
  - not repeatable
  - do not scale
- Skills
  - few staff are “superheros”
  - 50% of staff are below the organisation average
  - many staff would take a “better offer”

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Managed Process

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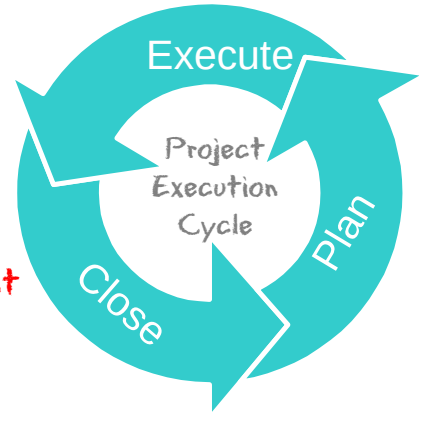
Managed Process
Project Life Cycle

- Control
  - Change
  - Quality
  - Schedule
  - Cost



- Scope
- Activities
- Estimates
  - Schedule
  - Cost

- Performance
- Lessons Learnt

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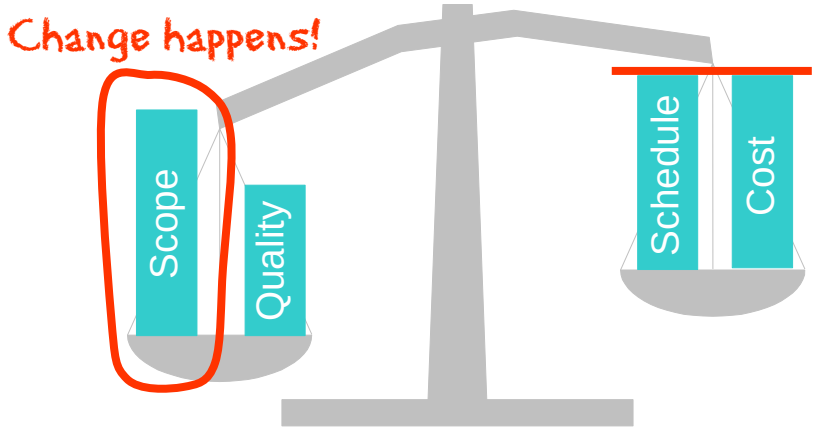
Managed Process
Project Control



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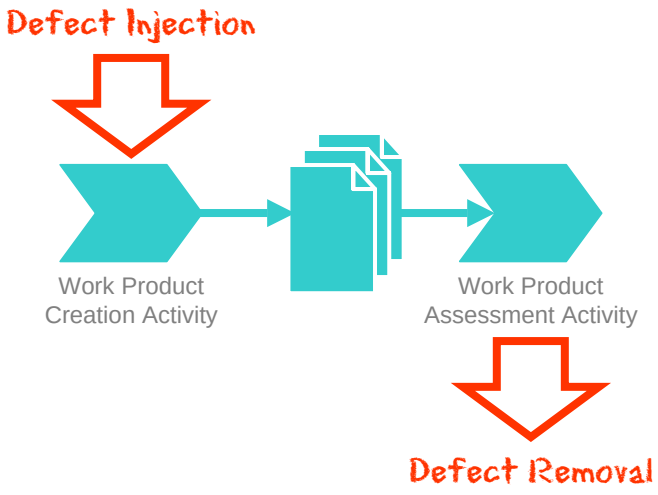
Managed Process
Quality Control



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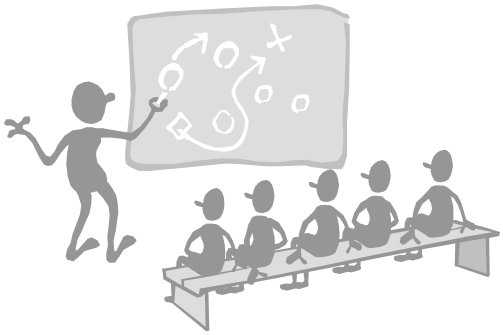

Defined Process

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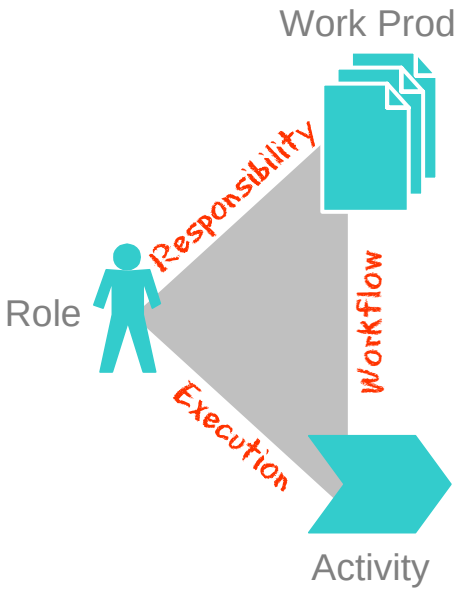
Defined Processes



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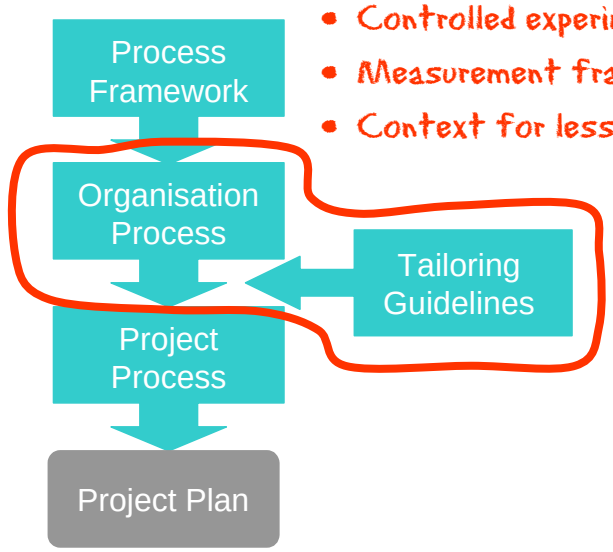
Defined Process



- Controlled experimentation
- Measurement framework
- Context for lessons learnt

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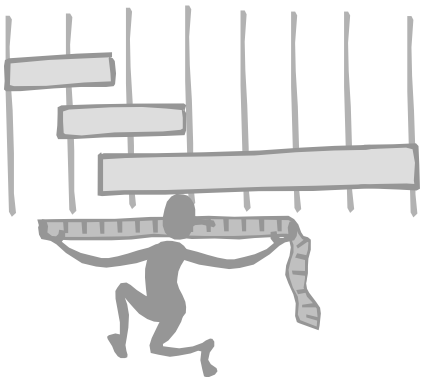
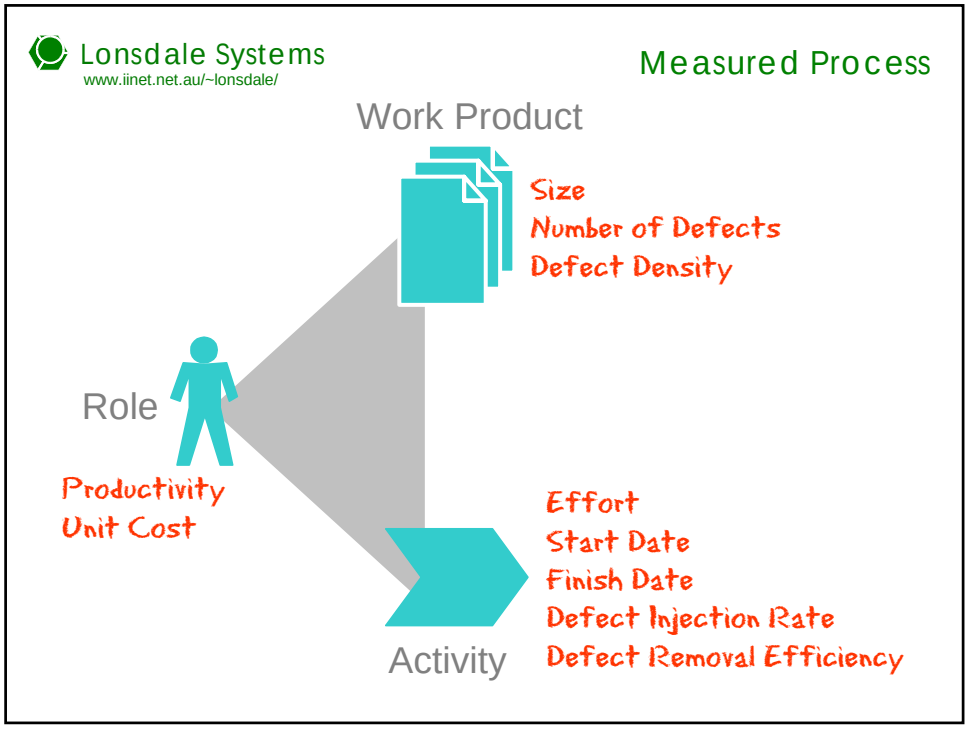


Measured Process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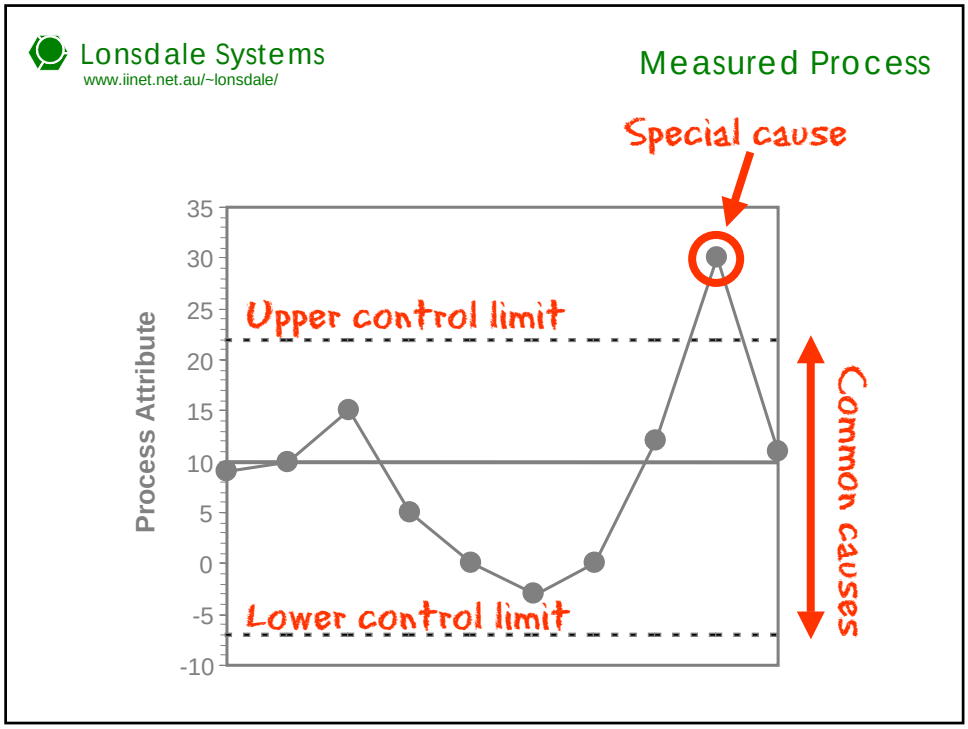
Measured Process
Work Product
Size
Number of Defects
Defect Density
Role
Productivity
Unit Cost
Effort
Start Date
Finish Date
Defect Injection Rate
Defect Removal Efficiency
Activity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Measured Process
Special cause
Upper control limit
Lower control limit
Common causes
Process Attribute
35
30
25
20
15
10
5
0
-5
-10

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Improving Process

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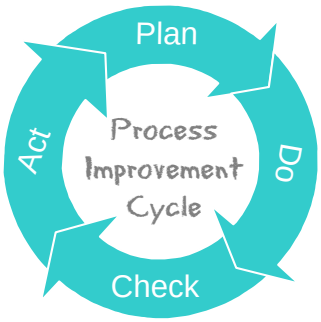
Improving Process

The defined and measured process provides consistent data for analysis

The defined process provides a framework for standardising and communicating improvements



The defined and managed process facilitates controlled experimentation

The measured process collects data which provides feedback on improvement trends

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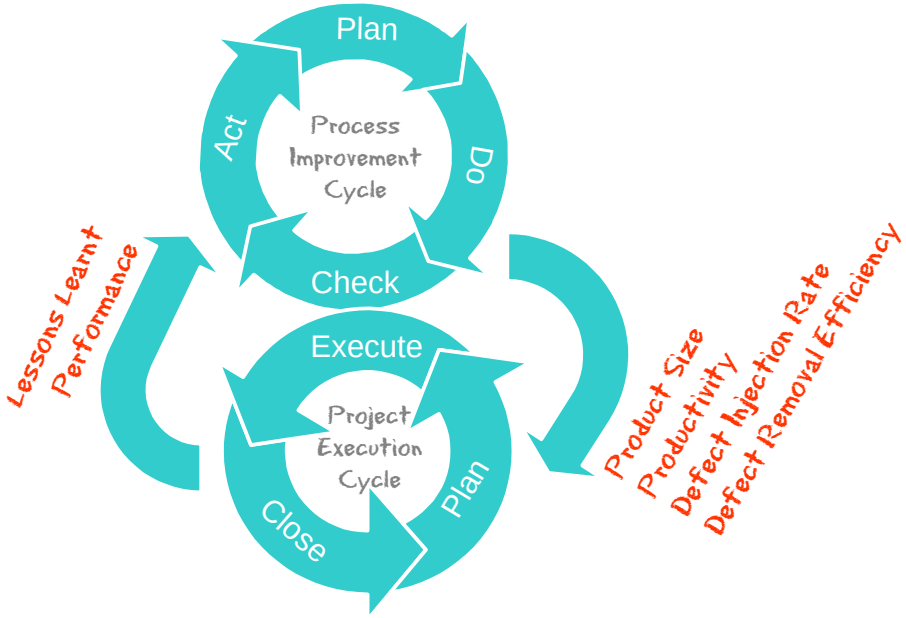
Improving Process



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Capability Maturity Models

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Software Engineering Institute (SEI)

- US federal government funded research and development centre
- One area of the SEI's work is development of Capability Maturity Models (CMMs)

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Capability Maturity Model (CMM)

- Current CMMs
  - **CMMI (Capability Maturity Model Integration)**
  - P-CMM (People Capability Maturity Model)
  - SA-CMM (Software Acquisition Capability Maturity Model)
- Legacy CMMs
  - **Capability Maturity Model for Software (SW-CMM)**
  - Systems Engineering Capability Maturity Model (SE-CMM)
  - Integrated Product Development Capability Maturity Model (IPD-CMM)

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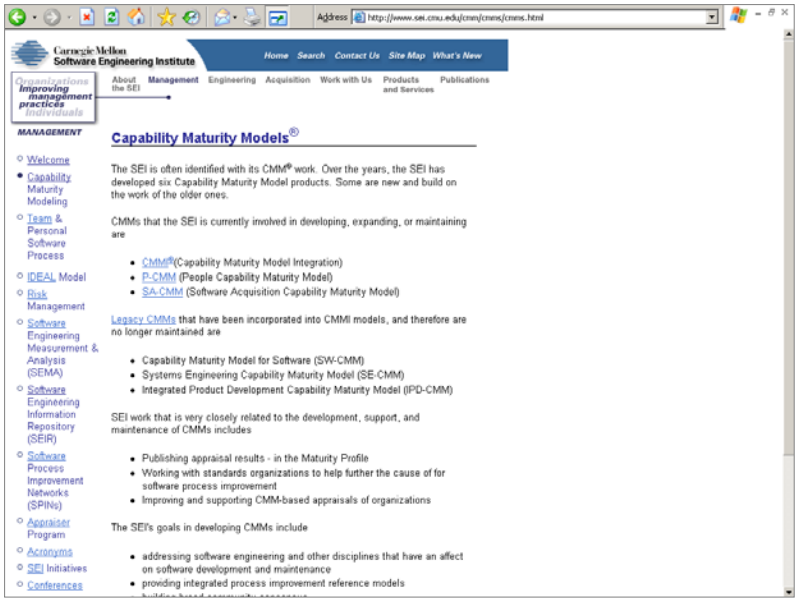
http://www.sei.cmu.edu



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CMMI

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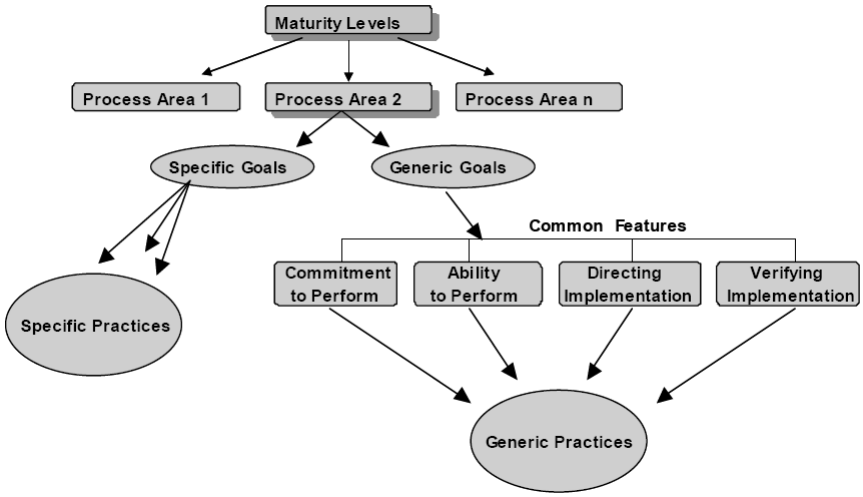
CMMI
Model Components



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CMMI
Process Areas

2 Managed	• Requirements Management • Project Planning • Project Monitoring and Control • Supplier Agreement Management • Measurement and Analysis • Process and Product Quality Assurance • Configuration Management

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CMMI
Process Areas

3 Defined	• Requirements Development • Technical Solution • Product Integration • Verification • Validation • Organizational Process Focus • Organizational Process Definition • Organizational Training • Integrated Project Management • Risk Management • Decision Analysis and Resolution

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CMMI
Process Areas

4 Quantitatively Managed	• Organizational Process Performance • Quantitative Project Management

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CMMI
Process Areas

5 Optimizing	• Organizational Innovation and Deployment • Causal Analysis and Resolution

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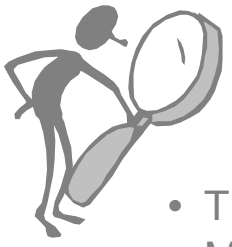
CMMI
Appraisals



- The Standard CMMI Appraisal Method for Process Improvement (SCAMPI)
- Identifies an organisation's maturity level

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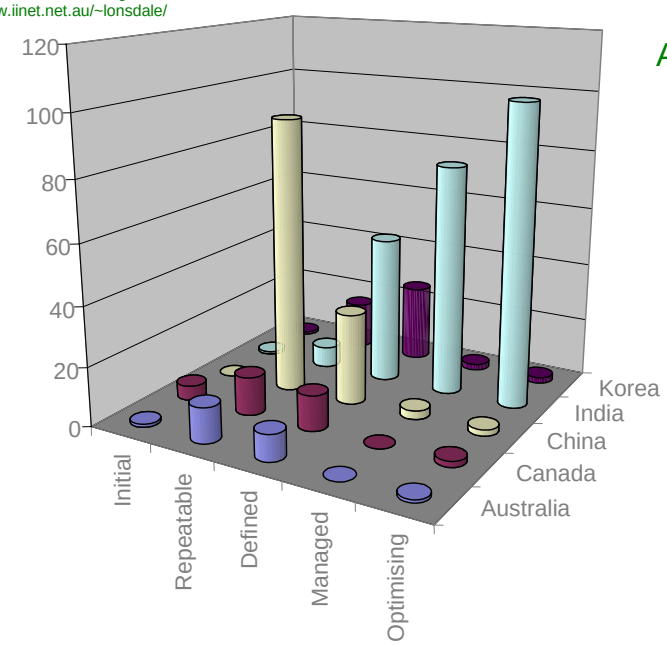
Outcomes of SW-CMM Appraisals



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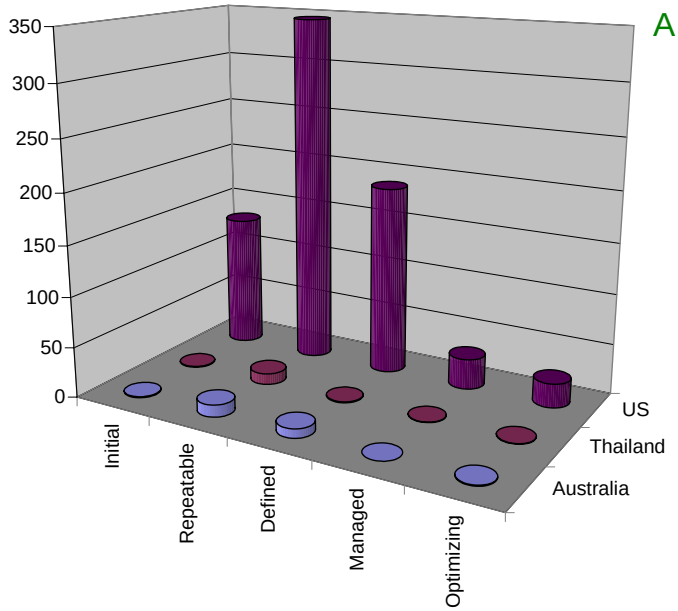
Outcomes of SW-CMM Appraisals



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Culture and the CMM

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Hofstede's Cultural Dimensions

- Study of how values in the workplace are influenced by culture
  - Conducted between 1967 to 1973
  - 100,000 IBM employees
  - 40 countries
- Identifies a number of cultural "dimensions"

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Hofstede's Cultural Dimensions

- Power Distance Index (PDI)
  - the extent
    unequal d
    of power i
    accepted
- Individualis
  - the degree
    individuals
    integrated
    groups
- Uncertainty Avoidance Index (UAI)

Reality Check...

These are statistical observations that are not intended to "stereotype" individuals from different cultures...

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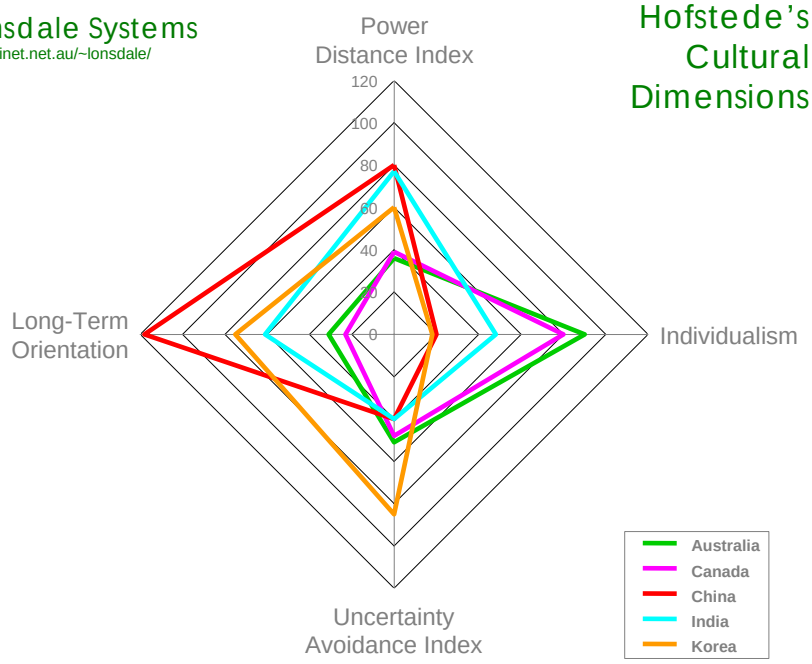
Hofstede's Cultural Dimensions



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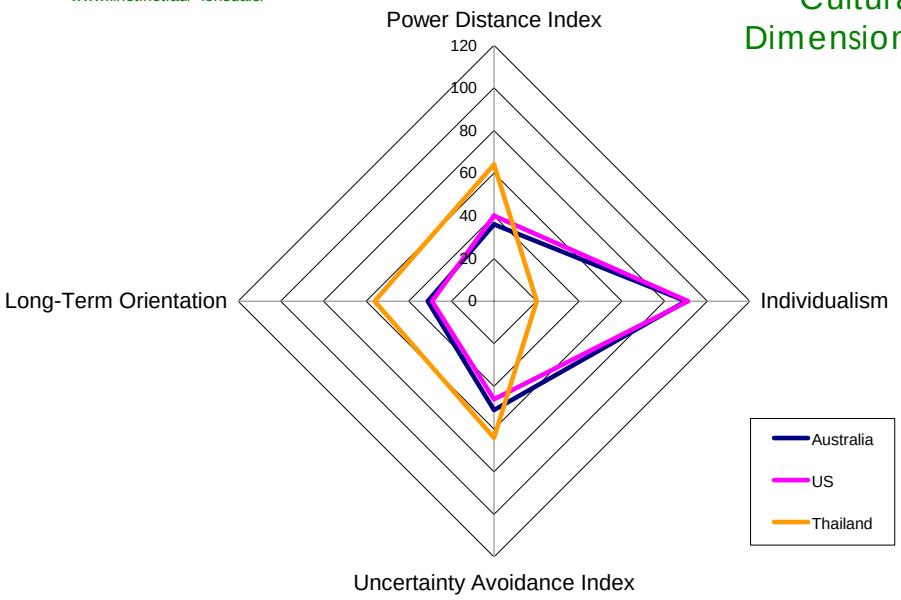
Hofstede's Cultural Dimensions



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Culture and Software Development

- Power distance (PDI)
  - people accept that someone is "running things"
  - they do what they are asked to do
- Individualism (IDV)
  - software development requires collaboration
  - individualism encourages "heroes"
- Uncertainty Avoidance Index (UAI)
  - software development requires risk mitigation
  - heroes "think on their feet"
- Long-term Outlook (LTO)
  - moving up a maturity level takes 2 years on average
  - heroes thrive on "mission impossible"

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Conclusions

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Conclusions

1. Quality, as well as cost, has helped India to become the number one offshoring destination
2. Our culture may not be well-suited to development of software on an industrial scale
3. Quality is only one of the factors in choosing an offshore location
4. We should decide if we are serious players and leverage our strengths
5. **Notably, one of the other offshoring factors is government support**

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Thailand's Software Parks