

CASMARAN
PRAGMATIC PROCESS IMPROVEMENT

CMMI Maturity Level 2 A Foundation for Large-Scale Agile Development

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Introduction

- In this presentation we will:
 - Follow one organisation’s transition from “predictive” to “agile” methods
 - Dispel some common CMMI and agility myths
 - Demonstrate that CMMI is supportive of agile approaches
 - Show how CMMI can provide the discipline needed to deploy agile methods in large development environments



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Agile Manifesto

“We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more.”




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CMMI Misconceptions

- There are a number of common misconceptions about CMMI, which suggest it is at odds with Agile methods:
 - Cumbersome, Overly prescriptive or dogmatic
 - Artefact intensive
 - Encourages ‘Heavy-weight’ processes
 - Stifles innovation
 - High process inertia




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Agility Misconceptions

- Similarly, Agile methods have their fair share of misconceptions:
 - Agility is another name for 'Cowboy development'
 - Agile approaches are largely unplanned
 - Agility is synonymous with a lack of discipline
 - Agile methods cannot be used in large scale development environments




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Formality vs Discipline

- CMMI is highly supportive of agile approaches
- The Problem is one of perception
- Agile methods demand Discipline from developers
 - By applying discipline ruthlessly, you can trade away formality
- CMMI is perceived as demanding formality
 - Agility is seen as being informal
- In fact, CMMI promotes discipline
 - Encourages the type of behaviour demanded by effective agile approaches.




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'Scaling' Agile Methods

- Agile approaches can work as well on large projects as small
- Success in large teams situations depends on:
 - Skill and enthusiasm of staff
 - Processes used and level of adherence
 - Management and reporting systems in place




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CMMI ML2 as an Agile Enabler

- Success with Agile methods is dependant on 'discipline'
 - Process formality is traded for process discipline
- CMMI **encourages** disciplined behaviour
 - essential for agile methods
- Maturity Level 2 is of particular interest
 - A 'Managed' process is a disciplined process
 - ML2 Process areas define practices that encourage disciplined development approaches



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“Managed” Processes

- Capability Level 2 is about ‘Managed Processes’:
 - Follow Policy
 - Planned and run according to a plan
 - Properly resourced with trained and responsible staff, empowered to succeed
 - Have an appropriate level of CM
 - Adequately involve stakeholders
 - Are subject to objective evaluation and management oversight
- Which of the above are at odds with ‘Agile Methods’?

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Core CMMI ML2 Process Areas

- At Maturity Level 2, there are 6 core process areas, common to all constellations:

ML 2	REQM	PP	PMC	CM	MA	PPQA
ML 3	RSKM	OT	OPF	OPD	DAR	IPM
ML 4	OPP	QPM				
ML 5	CAR	OID				

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Requirements Management

- Manage Requirements
 - “Responding to Change” is a key principle of the Agile Manifesto
 - REQM is all about supporting change
 - Regardless of development paradigm, unclear, constantly changing requirements introduce huge risks into a development.



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Project Planning

- Project Planning has three goals:
 - Establish Estimates
 - Agile methods rely on estimates
 - Develop A Project Plan
 - Planning is a key part of most agile methods
 - The focus of the detailed plans is different
 - Obtain Commitment To The Plan
 - Agile methods are reliant on the developers buy in
 - Securing Commitment is vital



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Project Monitoring & Control

- There are two Specific Goals in PMC:
 - Monitor Project Against Plan
 - There is no point having a plan unless you are going to use it!
 - Agility is about having a plan that you can use
 - Monitoring tends to be more frequent and more reactive
 - Manage Corrective Actions To Closure
 - Agile methods operate in a finer timescale
 - If something can go wrong – it will go wrong quickly
 - Taking effective corrective action is vital




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Measurement And Analysis

- Align Measurement And Analysis Activities
 - CMMI encourages you to only gather measurements that you need
 - This applies regardless of development paradigm
 - Work out what measures you need, based on your specific project activities.
- Provide Measurement Results
 - If you need some data, collect it, and use it
 - This applies irrespective of what development approach you choose




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Process & Product Quality Assurance

- Objectively Evaluate Processes and Work Products
 - Agile Methods are not intended to result in lower quality products!
 - QA activities are still required
 - Greater reliance on
 - Early validation
 - Frequent peer reviews
- Provide Objective Insight
 - The finer grained nature of agile methods promotes lessons learned activities
 - Systemic problems can be spotted and addressed early.




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Configuration Management

- Establish Baselines
 - In order to be truly 'agile' you must be 'controlled'
 - Effective baseline discipline is essential if you wish to sustain any development activities.
- Track And Control Changes
 - Responding to Changes is one of the principles within the Agile Manifesto.
 - You cannot be agile, if you cannot manage change.
- Establish Integrity
 - A successful product needs to be robust.
 - So development activities must also be robust



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CMMI Goals vs Practices


- The CMMI draws a distinction between 'Goals' and 'Practices'
 - Goals are 'required' components
 - Practices are 'expected' components
- To satisfy a process area, all Goals must be implemented
- Practices are considered important in achieving their associated goal, but are not mandatory.
- Agile Approaches may satisfy the Goals through alternative practices.

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A Question of Perspective...



- Agile methods tend to focus on a detailed level
 - Planning emphasis is on short iterations
- It is important to keep the frame of reference
E.g. To establish a project plan:
 - 2 weeks might be OK for a 6 month waterfall development
 - 2 hours might be more appropriate for a 2 week sprint!
- If your planning activity is 2 hours long, you do not want to spend several days documenting that plan!
 - Appropriateness is a key factor to consider.

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Case Study

- Large business unit in a government department
 - 1200 Engineers
- Core business was software development
- Partial success with CMMI ML2
- Turned to agile practices
- Successful areas were:
 - ones that had been successful with CMMI
 - Among the largest development groups

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Problems and Pitfalls

- Appraisal Issues
 - SCAMPI appraisals are evidence based
 - Direct and indirect evidence may be more difficult to identify
 - May need greater reliance on interpretation of Model practices
- Process Discipline is particularly vital when rolling out agility into large development teams

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Lessons Learned

- Agility and CMMI – it needn't be one or the other
- Scaling Agile approaches does work
 - But only if you do it in a disciplined way
- Any development method done half-heartedly is likely to fail...
- Keep your expectations realistic.
 - There are no magic bullets in the process world
 - There are lots of useful approaches out there, but they only really work if you fully embrace them.

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Any Questions?

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