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Improving the Interface Between Business and Product Development Using Agile Practices and the Cycles of Control Framework

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Outline

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- Creating the Process
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- Conclusions

Introduction

- Common situation
  - Communication between Business and Development is challenging
  - Development progress is not visible, so salesmen don't know what to promise to customers
  - Developers don't know what was promised
  - Developers are frequently disturbed by new feature requests
- This is an experience report on improving communication between Business and Development
- Company personnel and researchers created a new process in co-operation
- The reported experiences are based on interviews with the personnel and observations by the researchers

The Case Company

- Avain Technologies Oy
  - Finnish, aiming at global markets
  - Specializes in building secure digital transaction solutions
  - Main product is a system for secure digital signatures of XML forms over the Internet
- The strategic focus of the company
  - Move to product business
  - Grow the company to become a global player in the market

avain technologies

www.avaintec.com

Motivation and Initial State

- Small development team (6 product developers)
- Ad-hoc process
- Product development done in customer projects
- Weaknesses of the development process
  - No common understanding of the development process
  - Unpredictable outcomes
  - Difficult to plan development work
  - Development work interrupted frequently
  - Development progress not visible to all stakeholders
  - Expertise not shared within team
- The need for an explicitly defined development process was evident

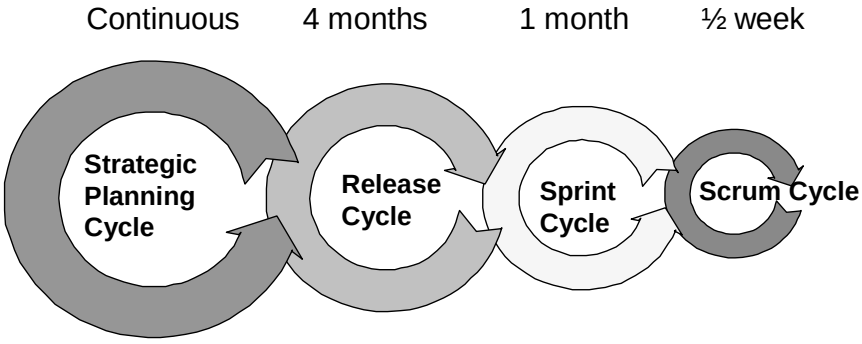
Creating the New Process

- The challenge was to make it possible to plan, predict, track and steer development
  - And yet maintain flexibility, efficiency, innovative work culture and ability to respond promptly
- Agile practices were best suited to fulfill these requirements
  - Requirements management practices and scrum meetings from Scrum
  - Some low level practices and ideas for planning game from XP
- The new process was created using the Cycles of Control Framework*
  - The product development manager led the work
  - The researchers provided new ideas and comments
  - Duration two months
  - Effort about
    - Firm 1,5 man months
    - Researchers 0,5 man months
- Quality assurance was only partly considered, so far

* Rautiainen, K., C. Lassenius, and R. Sulonen, "4CC: A Framework for Managing Software Product Development", *Engineering Management Journal*, Vol. 14, No. 2, June 2002.

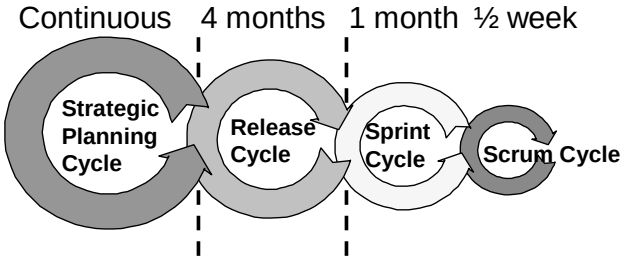
The Cycles of Control Framework

Implementation at Avain Technologies



▫ Product Backlog (PBL) maintained ▫ Product vision ▫ Product roadmap ➢ Release contents and timing	▫ Release Backlog (RBL) ➢ Planning Game ▫ Release Goals ▫ Release Demo	▫ Sprint Backlog (SBL) ➢ Planning Game ▫ Sprint Goals ▫ Sprint Demo	▫ Follow-up in Scrum meetings ▫ Red Flags ➢ SBL tasks dropped

Control Points



Non-development control points

- Clearly defined control points for Business
  - Beginning of each release
  - Beginning of each sprint
- The general goals for the cycles
  - Push decisions on details later
  - Allow being more adaptive to changes
  - Significance of accepted changes
- Feedback
  - Deliver working software early
  - Feedback propagates through scrum meetings, sprint demos and release demos

Practices

- Scrum meetings
  - Developers considered this the most useful single practice
- Pair working
  - Pair programming for difficult tasks
- Automated unit tests
  - Test-first was used by 2 developers
- Red-Flag practice
  - Unexpected work not related to product development
  - Included in the SBL as high priority tasks
- Other practices, not emphasized as much
  - Coding standards
  - Simple design
  - Collective code ownership
  - Continuous refactoring

Experiences

- Experiences of process use from one internal release
  - Jan-Apr/2003
- All stakeholders accepted the new process
- Business
  - did not have to change habits (much)
  - knows better the current and planned product status
  - knows when they can affect the development plans
  - understands the consequences of changes
- Development
  - Improvements without causing unnecessary bureaucracy

Development Manager's Experiences

- Improved Development working conditions
  - Fewer interruptions
- Improved intra-company communication
  - Business understands Development and product status better
  - Ramp-up time for new employees shorter than before
- Improved planning
  - Coherent product vision for at least one year into the future
  - Concrete near-term development timetable
- Developers report improved quality
  - Fewer bugs
  - More stable interfaces
  - Better designs

Reaching the Development Goals

- The release goals were reached
- Some adjustments were necessary, though
  - One big feature was discarded in the second sprint planning due to missing specifications from third party
  - The third sprint suffered from a large amount of unanticipated maintenance work for customers and big technical issues, which caused some tasks to be postponed to the fourth sprint
  - The original goals of the fourth sprint were tuned to be realistic
- The process enabled handling these surprises and redirecting the development
  - Problems in the middle of the release cycle did not cause panic and the rest of the release went well
  - In spite of the big problems in the third sprint the developers were able to re-focus for the fourth sprint and succeed

Conclusions

- We created and adopted an effective agile development process in a short time with reasonable effort
- Using the Cycles of Control framework
  - made process construction easier
  - helped understanding the linkage between the product development and business processes
  - helped identifying the crucial control points between Business and Development and defining well functioning connections between them
  - increased the understanding of the development process throughout the company
- It was easier than anticipated to get Business to understand development status better
  - Fewer interruptions by Business between control points and thus better working conditions for Development
- Selected agile practices worked well

Thank You!

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