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Combining Agile Methods

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Presentation Outline

- Introduction
- SEMS *Cycles of Control* Framework
- Using the Cycles of Control in Choosing and Combining Agile Methods

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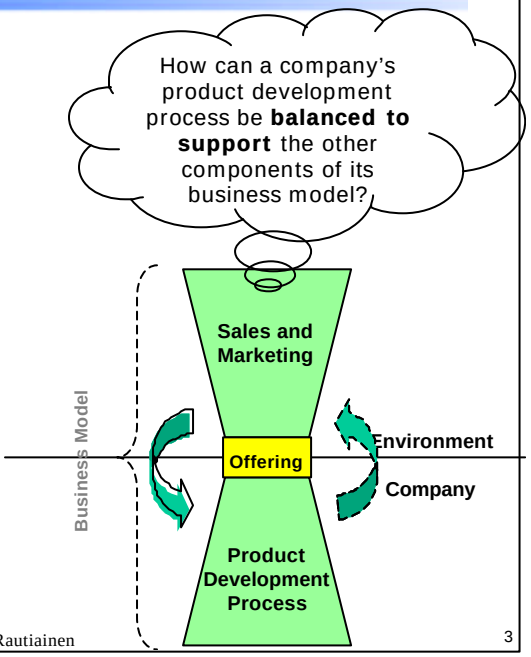
Background and Context

- SEMS research project
  - Partners are small software product companies
    - Striving for standard products with minimum customer tailoring
  - The companies operate in turbulent environments
    - New technologies
    - Immature markets
  - There is a need to better manage and coordinate the different parts of the business model
    - Linking business and product development



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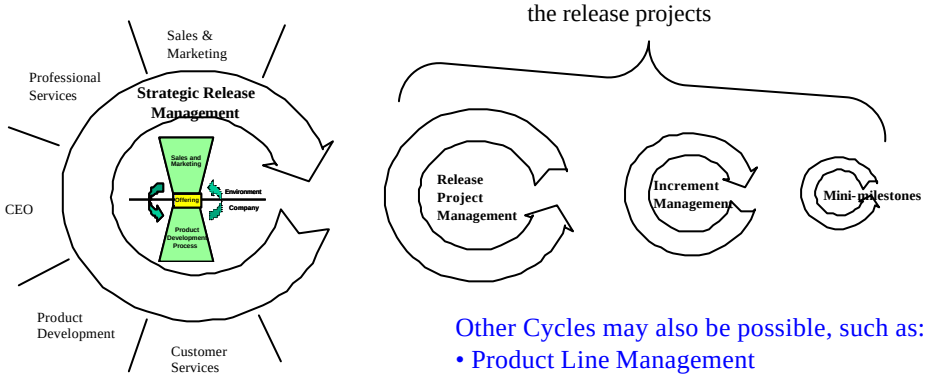
Characteristics of Software Product Business

- Based on releases of different types
  - Major and minor product versions
  - Maintenance and bug fix releases
- Sales and Marketing have to be well coordinated with Product Development
  - Risk of over or under selling
    - Sales sells something Product Development cannot deliver
    - Sales starts after product is ready
- Product quality must be good (enough)
  - The few resources may be tied up in maintenance work
- In immature markets the company must be able to react to and utilize changes
  - The product development process needs to be flexible and controlled

SEMS *Cycles of Control*



Other Cycles may also be possible, such as:
- Product Line Management
- Product Architecture Management
- Multi-project management
- …

Strategic Release Management Decisions

- Product mix
  - The product offering portfolio of the company
- Release types
  - Major, minor, maintenance, …
- Release content
  - Product vision to guide releases
  - Requirements for releases
- Release timing/pacing
  - Planned release dates/rhythm for the different types of releases
- Development model
  - How the releases are built
  - Pacing and phasing of the development work
- Organisation, roles and responsibilities
  - Deciding on decisions
  - Outsourcing vs. internal work
  - Competences and resource availability
    - Training and recruiting
- Technology and architecture
  - Technology used and investigated
  - Product architecture
  - Development infrastructure
- Quality assurance
  - Testing strategy
  - Release criteria
- Risk management

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Release Project Management

- Input
  - Product vision for release
  - Product requirements for release
  - Release criteria
  - Release date
- Release planning
  - Requirements refinement
  - Effort estimation
  - Technical risks
  - Possible renegotiation of release requirements
  - Phasing the development into increments
- Output to customers
  - Ready product version
  - Acceptance or release criteria met
  - All accompanying product documentation ready
  - Other product release tasks done
- Output to Increment Mgmt
  - Release goal
  - Increment plan
    - Order and priority of requirements
    - Increment themes
      - Architecture
      - Testing
      - ...

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Increment Mgmt and Mini-milestones

- Increment Mgmt
  - Increment goal set
  - Requirements broken down to tasks
  - Tasks allocated to people
- Output to Release Project
  - Ready product increment that is fully integrated to the product
  - At least the highest priority system tests passed
  - Some or all product documentation up-to-date
- Mini-milestones
  - Synchronising the individual efforts
    - For example the daily build, daily test cycle at Microsoft
- Early warning signs of trouble
  - Mini-milestones show progress of work
    - If work is not progressing it can be spotted right away
    - Corrective actions and evaluation of increment goal volatility
  - After each increment the same is applied to release goals

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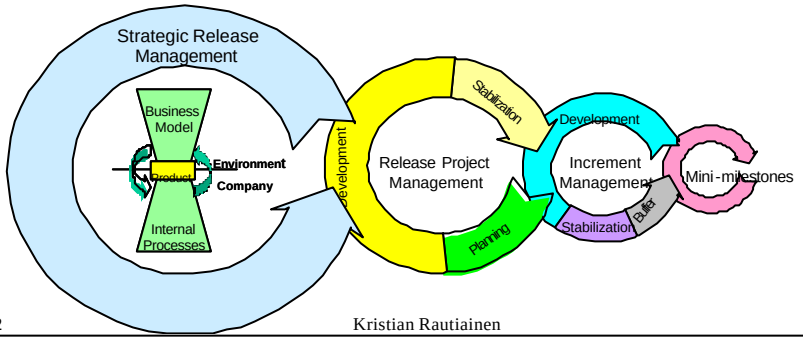
Product Development Management System

- Is created by combining and specifying the cycles
  - The length and number of the cycles
  - The software engineering activities and practices within and between the cycles
    - Here ideas and principles from Agile Methods can be used
  - For example: Microsoft's Synch-and-Stabilize (one release)



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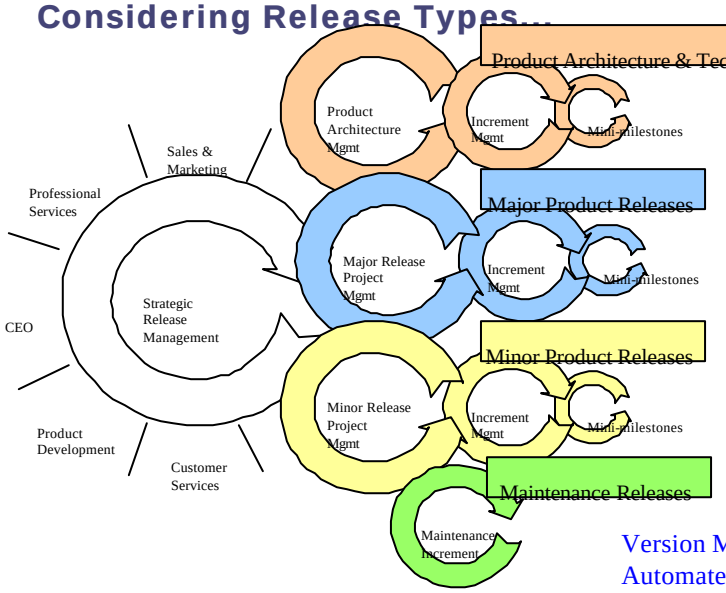
Considering Release Types...



Implementation details vary between different types of projects

- Roles and resourcing
- # and duration of cycles
- Communication patterns
- Decision-making rights
- ...

Version Mgmt challenging, Automated testing important, Concurrency issues, ...

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Choosing and Combining Agile Methods

- Pekka told in his presentation about the deployment and suitability of different Agile methods
- Combining different Agile methods is possible, but some risks are involved
  - The practices in each method are carefully planned to support and utilise each other's strengths and weaknesses
  - To combine a different set of practices requires good understanding of the underlying implications
- Worst case:
  - An organisation throws away all practices that seem "boring" and only chooses practices to fit a "hacking" approach
- Good news
  - Agile methods address different aspects of software engineering
    - Project management
    - Development work
    - ...
  - For example Scrum and XP have been proposed to be combined, so that project management would use Scrum practices and development would use XP practices

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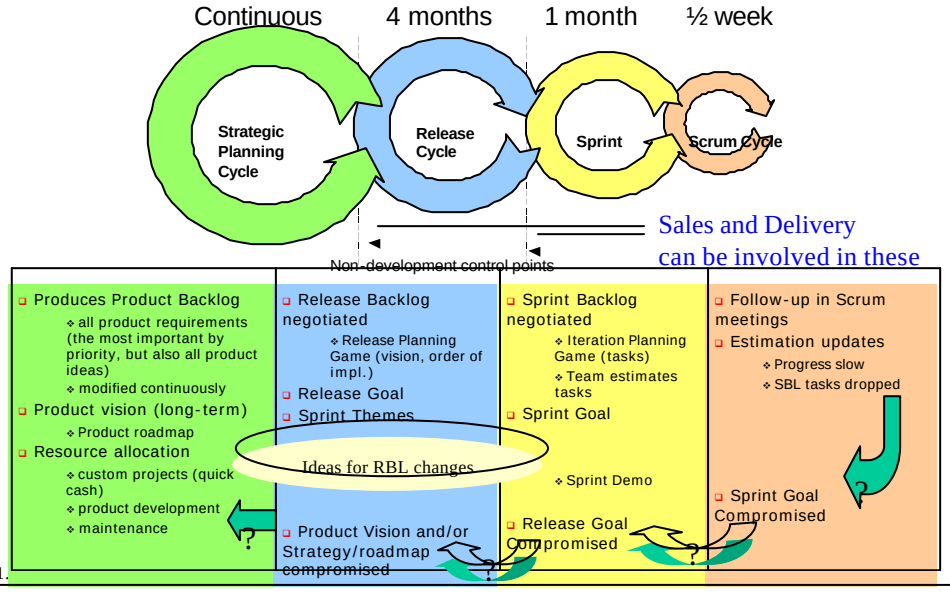
Example: (From Requirements Perspective)



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Development Work and Quality Assurance

- Frequent synchronisation of development work
  - Early and frequent integration of the code base
    - Configuration mgmt!
    - Automated unit tests to catch bugs in regression
    - Examples:
      - XP practices
      - MS Synch-and-Stabilize Daily Build cycle
- Early defect detection by other means than testing
  - Peer reviews
    - Pair Programming
    - Review by Chief Architect
- Testing should start as early as possible
  - Key point of several Agile methods
    - Not too much detailed guidance given, though
  - Applies to all levels of testing
    - Unit, integration, system, acceptance

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Summary

- Agile methods and/or practices can be combined
  - If the underlying implications are understood
  - Hint: start by piloting the one that seems to be the best fit, learn and improve/modify
- Understand your business and the needs and constraints it imposes upon your product development and vice versa
  - A balance should be found
  - Identify and utilise the strengths of your organisation
- The SEMS Cycles of Control can be used as a framework to ease communication about how product development could be organised
  - It is still tentative and needs refinement and detail
  - Initial experiences are encouraging