Long-term Planning of Development Efforts by Roadmapping – a Model and Experiences from Small Software Companies

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The Purpose of This Paper

- Present a visualization for planning and communicating
  - Release contents, timing and roles
  - Keeping in mind the software components’ life cycles and the whole product

- Present our experiences from applying the model in three small software companies
Agenda

- Introduction
- Product roadmapping and SW product development
- A model for product roadmapping
- Experiences
- Conclusion and future work
- Questions and Comments
Success Factors in Software Business from an Engineering Perspective

- Capability to invent new solutions and realise them as software
- Delivering the releases with
  - The right amount of features and quality
  - Within an open market window

- For the latter, it is crucial to manage the contents, timing and roles of future releases together with the product architecture
Specifically... release

- **Contents**
  - Linking product features to business requirements and market opportunities
  - Which features to include in which release?

- **Timing**
  - Identifying and exploiting a window of opportunity
  - Making trade-offs between functionality, quality and time-to-market based on assessing the product against its competitors.

- **Roles**
  - Intended business implications for the company
  - The type of the release (major, minor, patch etc.)
  - The planned audience for the release

- **Components’ lives and the whole product perspective**
  - Success often involves evolving both the individual products and the technologies they are based on at the same time
  - What is it that you sell (...more than compiled chunks of code)?
What is Roadmapping?

- A popular metaphor for planning and portraying
  - Use of scientific and technological resources and elements, and
  - their structural relationships
  - ...over a period of time. [Kostoff & Schaller, 2001]

- The process of roadmapping identifies, evaluates and selects strategic alternatives for achieving desired objectives [Kostoff & Schaller, 2001]

- The resulting roadmaps summarise and communicate the results of key business decisions [DeGregorio, 2000]

- Specifically, product roadmapping?
  - “Disciplined, focused, multiyear approach to product planning”, with the roadmap’s implementability viewed as important as its strategic value [Kostoff & Schaller, 2001].
Our Model for Product Roadmapping

- A **product roadmap visualization**, and a **process outline** for creating and updating such roadmaps

- The visualisation aims to communicate the plans intuitively but forces a degree of accuracy through the use of formal notation

- The aim of the process is to provide a checklist for what to take into consideration when conducting long-term planning
The Roadmap Visualisation - Elements

Activities

Releases

Composition, integration, (in some cases) reuse

Total planned resource usage
Visualisation Elements Explained (1/2)

- **Product release**
  - Consists of integrating the related product components and platform(s), doing system testing and error correction, as well as performing other product release activities
  - Three kinds of possible releases in the notation
    - Major, minor and patches

- **Product component**
  - Business requirements translated as software
    - Relatively independent (groups of) features
  - Documentation depicted as product components when necessary
    - Usually defined ‘software’ as well [Sommerville, 2001]

- **Product platform**
  - Core software asset(s) on top of which the product is built and expanded on
  - May be generic enough to be used in other products as well
Visualisation Elements Explained (2/2)

- Services
  - Classified and dealt with based on the kind of attention they need from product development
    - Product accessories
      - A one-time effort requiring product development resources to fulfil a need common to many customers
      - Typically developed for a specific customer, but are to be included as part of the standard offering
      - Depicted as product components
    - Customer-specific development services
      - Depicted on the service layer
      - Outcome is limited to the customer receiving the service (installation, systems integration)
    - Services that do not appear to require attention from product development
      - Not included in the product roadmap
Process Outline for Product Roadmapping

1) Define strategic mission and vision
   - Clarify and communicate what business the company is in

2) Scan the environment
   - Choose position and focus, assess the realism of the product vision and examine what technologies should be used

3) Revise and distil the product vision as product roadmaps
   - Establish release cycle, objectives for releases and allocate resources. Record decision rationale with business requirements

4) Estimate product life cycle and evaluate the mix of development efforts planned
   - Check sanity. Assess whether the planned development is parallel to the product vision

- The steps in the process should be performed periodically (quarterly to twice a year) to adjust the roadmap to new information and changing market situations
  - Smaller updates necessary to ensure the roadmaps always hold current information (once per 2 weeks to bimonthly)
Model developed and applied in co-operation with three small software companies

- **ToolCo (14 employees)**
  - Applications and software development tools for Internet-, intranet- and extranet environments
  - Most of the application experiences come from this case

- **TeamCo (~40)**
  - Solutions that facilitating group interaction for mobile operators, service providers and enterprises

- **MobAppsCo (~40)**
  - Mobile business solutions and professional services for mobile operators and enterprises.
Roadmapping at ToolCo

- Goal: Planning the productization of ToolCo’s internal toolkit for rapid creation of browser-enabled user interfaces
- Roadmapping was conducted over a period of three months
  - Planning the release cycle
  - Schedules for the major releases and their contents,
  - Considering what whole-product issues needed to be taken into account along the way
- Mainly carried out by the CEO
- Required about one man-month of effort
- Outcome (as stated by the CEO)
  - A clearer understanding of what had to be achieved in order to launch the product,
  - Understanding the schedule and timing implications of sales, marketing and other aspects not directly related to development
Lessons from ToolCo

- Visualisation found helpful
  - Development plans of the product, its parts and planned resource allocation over time in one picture
  - These issues had previously been found difficult to express and communicate

- Several adjustments based on feedback
  - Introduction of the service layer
  - Explicit resource types
  - Simplifying the notation for minor releases and release composition

- “Difficult, but important”:
  - Estimating the life cycles and financial implications of products, components and platforms
  - Identifying and analysing the competition

- Product roadmapping seemed to help in bridging the gap between management, marketing and software development
  - Concretises and communicates the plans so that they can be acted on – or refuted – when necessary
Lessons from all of the cases

- Personnel tend to have a wide range of responsibilities
  - Architecting, installing the system, systems integration, consulting, sales
  - Unclear priorities caused by lack of long-range planning
    - Overbooking of resources is common
    - Some important activities do not receive enough attention
- Important to account for services in the product roadmap
  - Helps make resource allocation trade-offs between product development and providing services
- A common conceptual view of the product may be lacking even when the development organisation is small
- Planning the issues depicted by the visualization is important – using this specific visualization is not
Future Work

- More empirical experience of how small companies (should) conduct long-term planning
  - Because a sense of urgency is always present when dealing with small companies, ‘long term planning’ may not be the keyword of choice

- Companies are on the lookout for (free) tools to replace spreadsheets as the project mgmt tool
  - A back door for getting more experiences?

- Implementing the roadmapping visualization into Agilefant
  - “The Finnish Ferrari of backlog management for the price of a Linux”
Questions and Comments!

More info:

Agilefant

www.agilefant.org

The ATMAN Research Project

(www.agilefant.org/atmanblog)
Roadmap Visualisation Elements

Activities:

Releases:
Composition, integration, (in some cases) reuse

Total planned resource usage