Slide 1

Mobile Arts

System Development Methodology
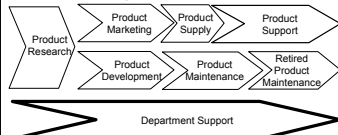
2 September 2005

Lars Kari

Slide 2

Content

- ► Working Process Overview
- ► Project Types
- ► Project Stakeholders
- ► Overall Methodology
- ► Document Types
- ► Project Roles
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- ► Specifications
- ► Testing Types
- ► Used Tools
- ► Quality Control
- ► Project Communication
- ► General Technology Requirements
- ► Characteristics Requirements
- ► Professional Services

Slide 3

Mobile Arts
Working Process Overview

Product Status:

PRT Product Ready for Tender (product can be marketed to limited set of customers)

PRA Product Ready for Acceptance (product can be sold to limited set of customers)

GA General Availability (product can be sold to all customers)

LTB Last Time Buy (product may no longer be sold)

EOL End Of Life (no more support or maintenance of product)

Product Status: -   PRT   PRA   GA   LTB   EOL → Time

Project Tollgate: TG0   TG1   TG2   TG5   TG9   TG13   TG16

Project Tollgate:
TG0 Tollgate 0 (product research activities can start)
TG1 Tollgate 1 (feasibility study and pre-sales activities can start)
TG2 Tollgate 2 (design and marketing activities can start)
TG5 Tollgate 5 (product supply and maintenance activities can start)
TG9 Tollgate 9 (product support activities can start)
TG13 Tollgate 13 (retired product maintenance activities can start)
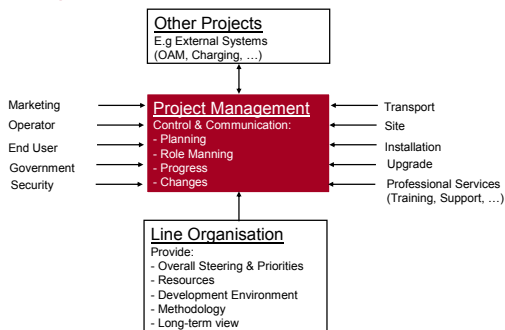TG16 Tollgate 16 (no more activities are needed)

Slide 4

Mobile Arts
Project Types

- ► Time To Market (TTM) Project
  - ✓ First System Creation, or
  - ✓ Subsequent System Modification

- ► Time To Customer (TTC) Project
  - ✓ Market Adaptation, and/or
  - ✓ Customisation, and
  - ✓ Deployment

- ► Maintenance Project
  - ✓ Support and help desk
  - ✓ Error correction
  - ✓ Maintenance upgrades

Slide 5

Mobile Arts
Project Stakeholders

Other Projects
E.g External Systems (OAM, Charging, …)

Marketing
Operator
End User
Government
Security

Project Management
Control & Communication:
- Planning
- Role Manning
- Progress
- Changes

Transport
Site
Installation
Upgrade
Professional Services (Training, Support, …)

Line Organisation
Provide:
- Overall Steering & Priorities
- Resources
- Development Environment
- Methodology
- Long-term view

Slide 6

Mobile Arts
Overall Methodology

- ► Architecture
  - ✓ Terminology
  - ✓ Reuse
  - ✓ Stability
  - ✓ Forward compatible
  - ✓ Manageable (sub)projects

- ► Product Structure
  - ✓ Architecture based (sub-component hierarchy)
  - ✓ Define responsibilities
  - ✓ Define repositories

- ► Document Structure
  - ✓ Product Structure based
  - ✓ Usability
  - ✓ Traceability

- ► Project Structure
  - ✓ Product Structure based
  - ✓ External project/system relations
  - ✓ Phasing (Tollgates, Milestones)

Mobile Arts
Overall Methodology

▶ Iteration
  ✓ Waterfall
  ✓ Incremental

▶ Change control
  ✓ Baselines
  ✓ Subsequent releases
  ✓ Requirement and architecture changes
  ✓ Error correction

▶ Line Organisation responsibilities
  ✓ Resource/tool development and allocation
  ✓ Cross-project prioritisation
  ✓ Long term quality
  ✓ Architecture change approval
  ✓ Product documentation approval
  ✓ Project Steering Group: Tollgate approval

Mobile Arts
Document Types

▶ Delta versus Full documents
  ✓ Delta document: Modification focus only
  ✓ Full document: All inclusive (inherited description)

▶ Project versus Product documents
  ✓ Project document: Lives during project only
  ✓ Product document: Maintained during product lifetime

▶ Release specific versus Common (product documents)
  ✓ Release specific: Dedicated to given product release and updated to next release
  ✓ Common: Shared between releases and/or products

▶ Project document uses
  ✓ Planning, Control, Follow up

▶ Product document uses
  ✓ Planning
  ✓ Marketing
  ✓ Specification
  ✓ Implementation
  ✓ OAM (Installation, Operation)
  ✓ Professional Services (Training, Operation, Support)

▶ Methodology documents
  ✓ Process Description
  ✓ Role Description

Mobile Arts
Project Roles

▶ Project Management
  ✓ Project Leader
  ✓ Project Administrator
  ✓ Test Leader

▶ Requirements
  ✓ Product Manager

▶ Coordination
  ✓ Technical Coordinator
  ✓ Configuration Manager
  ✓ Release Manager

▶ Implementation
  ✓ Designer
  ✓ Documenter

▶ Testing
  ✓ Tester

Mobile Arts
Line Organisation Roles in Project

▶ Requirements
  ✓ Product Manager

▶ Architecture
  ✓ System Manager

▶ Implementation
  ✓ Development Environment Manager

▶ Testing
  ✓ Test Environment Manager

▶ Quality Control
  ✓ Quality Manager

▶ Professional Services
  ✓ Generic Requirements

Mobile Arts
Specifications

▶ Overview
  ✓ Distribution of functionality upon components
  ✓ Grey-box cross-component sequence diagrams
  ✓ Multiplicative

▶ Details
  ✓ Component specification
  ✓ Black-box single component sequence diagrams
  ✓ Additive

Mobile Arts
Testing Types

▶ Function Test
  ✓ Test of single function in component
  ✓ Responsibility: Designer

▶ Joint Function Test
  ✓ Test of function cross components
  ✓ Responsibility: Tester

▶ Usability Test
  ✓ Test of function usability (End-User and OAM)
  ✓ Responsibility: Tester and OAM Guide writer

▶ System Test
  ✓ Test of system characteristics
  ✓ Regression test: "Daily builds"
  ✓ Responsibility: System Tester

▶ Acceptance Test
  ✓ Test of customer system
  ✓ Responsibility: Field Tester and Customer

Mobile Arts
Used tools

- ▶ Marketing
  - ✓ Power Point
  - ✓ Word (PDF)
- ▶ Project Planning
  - ✓ Project Planning: Excel, MS Project, Double Chocolatte
- ▶ Development
  - ✓ Specification: Word, Visio
  - ✓ Coding: Erlang, Linux, Intel HW
  - ✓ Testing: Own environment simulation tools, Sun Solaris
- ▶ Repositories
  - ✓ Specifications: MS Folder structures
  - ✓ Code: CVS
- ▶ Support and Maintenance
  - ✓ Trouble Reporting: Bugzilla

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Mobile Arts
Quality Control

- ▶ Methodology
  - ✓ Documented
  - ✓ Feedback and tuning
- ▶ Documents
  - ✓ Use of Templates
  - ✓ Reviews and approval
- ▶ Code
  - ✓ Desk check / Design-Test Iteration
- ▶ Trouble Report
  - ✓ Trend

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Mobile Arts
Project Communication

- ▶ A&O: Everyone sits close to each other
- ▶ Documentation
- ▶ Repositories
- ▶ Project Meetings
- ▶ Change Control Board

Mobile Arts

Mobile Arts
General Technology Requirements

- ▶ Operation, Administration, Maintenance (OAM)
  - ✓ Operator Management
  - ✓ Fault Management
  - ✓ Performance Management
  - ✓ License Management
- ▶ Charging
  - ✓ Offline/Post-paid
  - ✓ Online/Pre-paid
- ▶ Regulatory Requirements
  - ✓ Lawful Intercept
  - ✓ Malicious Call Tracing
  - ✓ Number Portability
  - ✓ Emergency Call
  - ✓ Environment
  - ✓ Safety
  - ✓ Certification
- ▶ Security Requirements
  - ✓ Authentication/Authorization
  - ✓ Encryption
  - ✓ Firewalls
  - ✓ Fraud detection/prevention

Mobile Arts

Mobile Arts
Characteristics Requirements

- ▶ Scalability/Load-sharing
- ▶ Robustness/Resilience/Redundancy
  - ✓ HW errors
  - ✓ SW errors
- ▶ Capacity (and forward prediction)
  - ✓ Processing
  - ✓ Memory and disk
  - ✓ Bandwidth
  - ✓ External impact
- ▶ Quality of Service
  - ✓ Delays
  - ✓ Jitter
- ▶ Upgrade and Migration
  - ✓ External compatibility
  - ✓ Internal data

Mobile Arts

Mobile Arts
Professional Services

- ▶ Installation and upgrades
  - ✓ HW, SW and documentation
- ▶ Customer Training
  - ✓ OAM
  - ✓ Application
- ▶ Support (office hour or 24/7)
  - ✓ Help desk
  - ✓ Trouble Shooting
  - ✓ Emergency Correction
- ▶ Maintenance
  - ✓ Approved Corrections
  - ✓ Maintenance Packages
- ▶ Operation (optional)
  - ✓ Remote
  - ✓ Hosting
- ▶ Consultancy
  - ✓ Investigations (e.g. network design)
  - ✓ Customisation

Mobile Arts