Improvements to KPS System Way of Working

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Content:

Current state:
- The KPS Product and history
- Key observation of KPS WoW.
- Goal for improvements

New Process:
- Functional structure
- Connecting requirement and architecture
- Increased availability to the documentation
Current State:

Key observation of KPS WOW.
Goal for improvements

New Process:
New proposed Process
Benefits/problems
Demo

Cases:
MCRWS
DOK
...

Plan:
Work packages and Effort
Migration/Steps/plan
KPS Product: Remote Weapon Station (RWS)
The Industrial Adventure

- MNOK
- 2001 to 2010
- Y-axis: 0 to 6000
- X-axis: 2001 to 2010
KPS observations
Illustration attempt: current situation

Customer Specific
Generic
System Specific
Generic for sys. variants
Specific

Customer

Functional

Architecture

Design
Goal for improvements

Fill in the gap of missing system documentation to achieve:

- **Increased system understanding:**
  - Described functionality with requirements placed in context, described architectures and solutions -> more competent and productive designers.
  - Less dependent on heroes.
  - Easier to distribute work packages – internally and externally.

- **More efficient development**
  - Quicker requirement definition
  - More time spent on design, less on corrections, re-runs and variant handling
  - Better test planning covering incremental testing
  - Common development methodology - Increased flexibility
  - Support for parallel activities – functional def. in parallel with architecture design and verification planning and spec.
Goal for improvements (ctd.)

- Improved quality
  - Early catching of errors (incremental testing) - fewer releases
  - Improved first-time-right performance (follow on errors) as a consequence of increased system overview
  - More complete requirements

- Increased level of reuse
  - Fully specified, designed, verified and documented modules

- Enable a common SW:
  - Common specifications
  - Specify SW independent of system

- Incremental design and test:
  - Modular design
  - Unit test, Integration testing, Functional test, System test, Acceptance testing.
“New” Process:

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## General functional development model

### Customer Level
- Stakeholder req.
- FAT
- Approvals..

### System Design Level
- Func. model
- Characteristics
- Functionality
- Funct. Verification
- System Verification
- Performance Verification

### Architecture Level
- System
- SW
- HW
- Mech.
- Integration Verification

### Design Level
- Units
- Reusable Blocks
- Unit Verification

Customer Spec
- Generic
System Spec
- Spesific
Spesific
(ADD) Architecture Design Description

ADD contains definition of the architecture «AU» and design requirements (DRQ) on architecture level including interfaces between AUs.

(AU) Architecture Unit.

Requirements are traces to AUs, i.e. types, DRQ, SRQ and STRQ.
Functional Structure

Main functions (purpose)

System Control Functions

Non Functional

Target Acquisition
Surveillance
Platform Integration
Target Engagement
Weapon&Ammo
Physical Protection

Equipment Control
Access
Configuration Handling
Alarm Handling
HMI
Training
What's new?

Requirements organized according to functional model:
What's new?

Working in documents – not in database:
What's new?

Easy availability to the documentation:

WEB access to the database
What's new?

Easy availability to the documentation:

Upon baselining of the requirements, the documents are copied into the PDM system.
What's new?

Reuse of information – less effort:

• Common database – common specs.
• Common functional specs. to enable common design.
• Common test specifications.
Whats new (ctd)?

Described implementation architecture:

- Architecture described on multiple level to improve product understanding and delivery configuration.
- Higher speed by starting architecture phase simultaneously as system design, incremental design.
- Higher speed in design due to documented architecture and requirement mapped to design units. The designer know what to implement.
- Architecture and design requirement are used to generate, SSDD, SRS and HRS for all units in the system.
What's new (ctd)?

Focus on work processes:

- The job leader is “forced” to delay the detail design work until the system design work has reached an acceptable level.
- The designers are included in the system design work.
- The system engineers are involved in creating the templates used for design documentation.