A New Tool to Support Collaborative Building and Sharing of an IVVQ Strategy

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Thales Missions and Solutions...

Sensing & data gathering

Data transmission & storage

Data processing & decision making

Digital Identity and Security

Defense and Security

Aerospace

Space

Ground Transportation
ENGINEERING IN THALES

Transform knowledge into value for the customers and our company through collaboration and agility

GLOBAL FOOTPRINT
- 68 Countries
- 100 Development Centers

MORE THAN 32000 ENGINEERS
- ~ 11 000 System Engineering
- ~ 14 400 Software Engineering
- ~ 6 300 Hardware Engineering

OUR TARGET
Improve Thales Engineering competitiveness

80,000 employees around the world
The Origin of MAESTRIA

Promoting a fundamental co-engineering practice...

... and achieving a common understanding across cultures and formats

Graphical Approach

Standard Formalization

Test strategy

Word
Excel
Visio
PowerPoint
Project
The Rationale of MAESTRIA...

Quickly Building...

... A System Integration, Test, and Acceptance...

... High Level Strategy and Schedule...

... Shared in a Co-Engineering Way...

... During the Bid Phase or at the Project Start
Quickly Building…

Fat client  
Easily installed

Familiar framework  
Advanced graphical display

Coaching & support  
IVVQ Community

NoC: Network of Coaches

Standardized syntax  
Robust metamodel
... A System Integration, Test and Acceptance...
... a System Integration, Test and Acceptance...
... High Level Strategy and Schedule...

- **Process**
  - Assembly Tree: According to physical and industrial constraints
  - Integration & Test Tree: Specify tests, tuning and associated test means
  - PERT diagram: Allocate on prototypes and associated resources according to capacity

- **LEVERS**
  - Quality
  - Milestones
  - NRC Cost

- **Activities**
  - HW & SW Versioning: Test level, Test coverage
  - Activities Outsourcing: Test Environment Cost
  - Testability & Industrial issues: Technical & calendar risk
  - Parallelizing activities

Thales Group / template : 87211168-GRP-EN-004

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… Shared in a Collaborative Way…

Demonstrating the Obeya concept, this diagram illustrates how various roles such as IVQ Manager, Test Bench Architect, Software Manager, Production Manager, and Architect work together to solve problems and improve product flow. In a collaborative environment, these roles share information and ideas to ensure the best outcomes for the project.

Obeya

PRODUCT

CUSTOMER

FLOW

PROBLEMS

Thales Group / template : 87211168-GRP-EN-004
... During the Bid Phase or at the Project Start.

**Missile Seeker**

Integration trees built in parallel for both Development and Production

**IR Search & Track**

Easier knowledge transfer between SE Manager/Architect and IVVQ Manager

**POD Computer**

Integration tree for a calculator: SW Agile compatible
The Value Stream of MAESTRIA

PBS Editor
- Definition of PBS Component
- PBS Structure
- PBS Structure
- PBS import
- Empty IVV Tree
- IVV Tree
- PM export
- Scheduled IVV Tree
- Scheduled assembly tree
- Assembly tree
- Excel export

MAESTRIA - IVVQ Strategy
- PBS import
- Creation of IVVQ-S project
- PM export
- Scheduled tasks
- PM export

Project Management Tool
- Imported tasks
- Edition and scheduling of tasks
- PM import

Diff/Merge of data

PBS Import, round-trip with the project management tool, and Excel export
Example: PBS Import in MAESTRIA

<table>
<thead>
<tr>
<th>THALES</th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong>: Equipped Computer</td>
<td><strong>Date</strong>: 12/03/2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Levels</th>
<th>Description</th>
<th>Category</th>
<th>Make, Team, Buy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equipped Computer</td>
<td>System, Make</td>
<td>Buy</td>
</tr>
<tr>
<td>1.1</td>
<td>Bare Computer</td>
<td>System</td>
<td>Buy</td>
</tr>
<tr>
<td>1.1.1</td>
<td>Mechanical Structure</td>
<td>System</td>
<td>Buy</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Motherboard</td>
<td>System</td>
<td>Make</td>
</tr>
<tr>
<td>1.1.3</td>
<td>Power Supply</td>
<td>System</td>
<td>Make</td>
</tr>
<tr>
<td>1.1.4</td>
<td>I/O Board</td>
<td>System</td>
<td>Make</td>
</tr>
<tr>
<td>1.1.5</td>
<td>Base I/O Board</td>
<td>System</td>
<td>Make</td>
</tr>
<tr>
<td>1.1.6</td>
<td>Equipped CPU Board</td>
<td>System</td>
<td>Make</td>
</tr>
<tr>
<td>1.2</td>
<td>Software</td>
<td>System</td>
<td>Buy</td>
</tr>
<tr>
<td>1.2.1</td>
<td>Operational system</td>
<td>System</td>
<td>Buy</td>
</tr>
<tr>
<td>1.2.2</td>
<td>Avantivirus Software</td>
<td>System</td>
<td>Buy</td>
</tr>
<tr>
<td>1.2.3</td>
<td>Office Suite</td>
<td>System</td>
<td>Buy</td>
</tr>
<tr>
<td>1.2.4</td>
<td>Firewall</td>
<td>System</td>
<td>Buy</td>
</tr>
<tr>
<td>1.3</td>
<td>I/O FW</td>
<td>System</td>
<td>Make</td>
</tr>
<tr>
<td>1.4</td>
<td>CPU FW</td>
<td>System</td>
<td>Make</td>
</tr>
<tr>
<td>1.5</td>
<td>Equipped CPU Board</td>
<td>System</td>
<td>Make</td>
</tr>
<tr>
<td>1.6</td>
<td>Base I/O Board</td>
<td>System</td>
<td>Make</td>
</tr>
</tbody>
</table>

Example: PBS Import in MAESTRIA

[Diagram showing the integration of various components in MAESTRIA]

- Firewall
- Office Suite
- Antivirus Software
- Operational system
- Equipped CPU Board
- Base CPU Board
- Power Supply
- Motherboard
- Base I/O Board

PBS
Example: Integration Tree & Scheduling

- Board Integration
  - CPUs Base
  - Power Supply
  - Mechanical Structure
  - Display
  - Software
  - Antivirus Software
  - Office Suite
  - Firewall
- MS Integration
  - PC Base
  - Motherboard B
  - Motherboard
  - RC PS
  - RC MS
  - Mechanical Structure
  - Power Supply
- HW Integration
  - I/O CPU
  - Equipped Computer
  - Bare Computer
  - I/O Board
  - Equipped I/O Board
  - SW
  - Operational System
  - Antivirus Software
  - Office Suite
  - Firewall
  - RC I/O CPU
  - HW Integration
  - Board Integration
- MS Project (Gantt)
Example: IVV Strategy (PERT)
MAESTRIA Continues Its Way

Coming for a look
- Avionics: France, Australia
- Defense Germany, Netherlands, UK
- Space: France, Germany, Belgium
- Air Defense France
- Security France
- Transportation Austria
- Digital France

Early adopters
- Underwater systems
- Radars & Defense
- Optronics, Surface Radars, Air Operations
- Radiocommunication
- Networks

Its usability and simplicity are its key assets. It enables to easily share planned and current integration steps.

- Co-engineering and value-pulled perspective around the IVVQ Manager
- The way toward a seamless transition from the strategy to its implementation
Wrap-up: The MAESTRIA Value Proposition

Collaborative, simple, intuitive and adaptable graphic standard

Ensure the consistency between test strategy and scheduling

Ability to quickly visualize and monitor the test execution according to the test strategy “Visual Management”

A Selected feature of the Thales engineering environment, along with lean engineering, model-based, and collaborative prospects
« To quickly build and share a high level IVVQ strategy and schedule in a co-engineering way during the bid phase or at project start »

« To optimize a fine-grained IVVQ strategy, and to prepare and monitor its implementation »
Thank You for Your Attention 😊

Q&A

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