



Optimizing BOM in Embedded Systems

Tino Pyssysalo
Senior Product Manager – Tooling
The Qt Company

Embedded Conference Finland 2019



Optimizing BOM



How to optimize BOM based on real SW requirements?



How to measure the requirements?

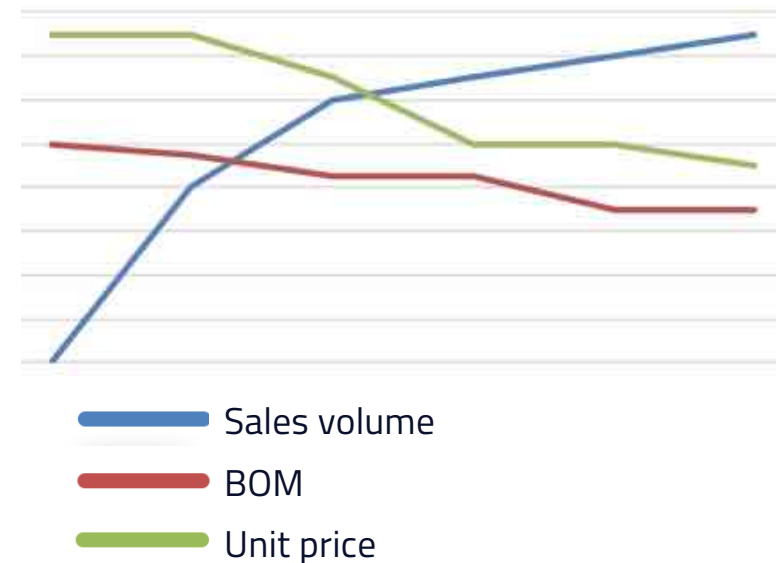


How to start optimization early in the project?

The Rightsizing Challenge

Lower BOM => bigger margin

- › SW designed independently of a chosen HW
 - › HW often chosen before SW exists
 - › HW requirements based on assumptions: SW is simple, no need for the GPU, small flash memory sufficient
- › Upgrading HW increases BOM costs
 - › MCU (32kb/128kB, 100 MHz)
 - › SoC i.MX7 (1Mb/16Mb, ~1 MHz)
 - › SoC i.MX8 (256Mb/256Mb, > 1 GHz)
- › SW developed in the host and validated in target HW late in the dev project



Early prototyping and early fails – even in the emulator with adjustable parameters

UI Design and SW Development Workflow

- › Lack of workflow and tools between UI designers and developers
 - › Incomprehensible UI requirements
 - › Long feedback cycles in both directions
 - › UI design ignores SW and HW capabilities
- › UI prototyping is time-consuming
 - › Prototype creation/implementation
 - › Prototypes cannot be used in the real product
- › User experience ignored
 - › Design looks beautiful, but UI transitions do not work
 - › Too late UI validation in the target HW

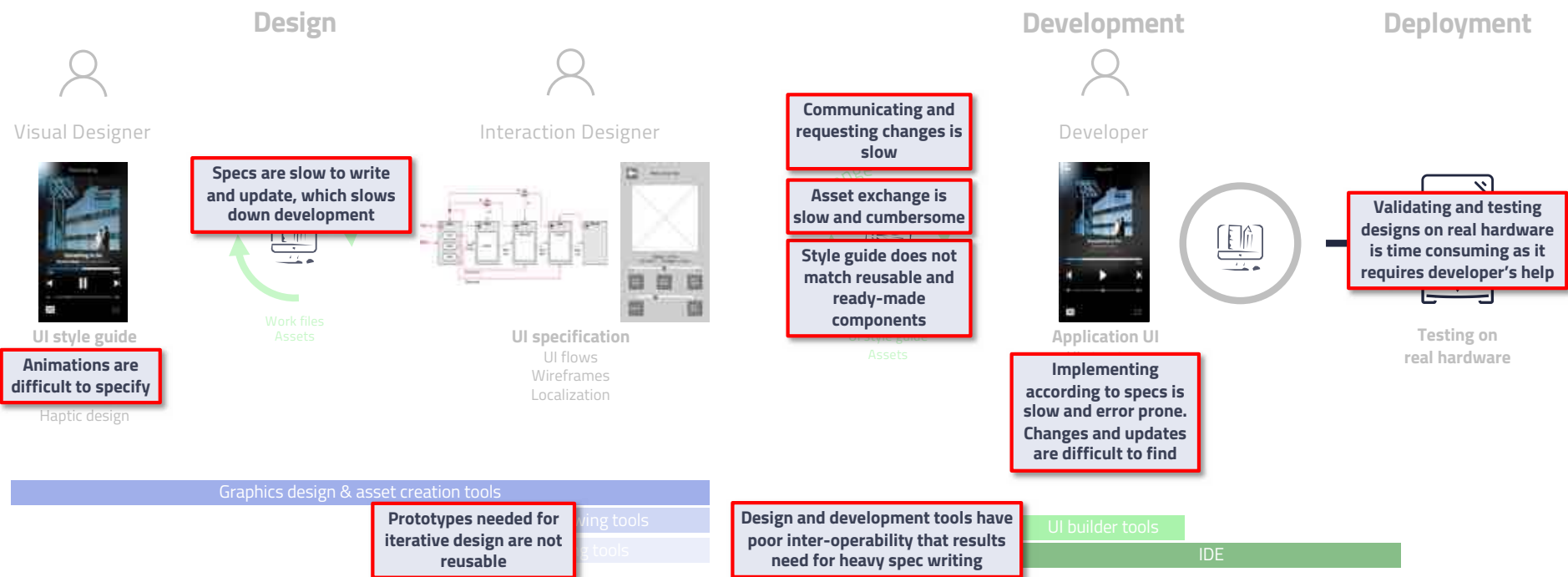
WYSIWYG editor



Target validation



Typical Pitfalls during Development



Enhanced Workflow – Early Prototyping in a Real Target

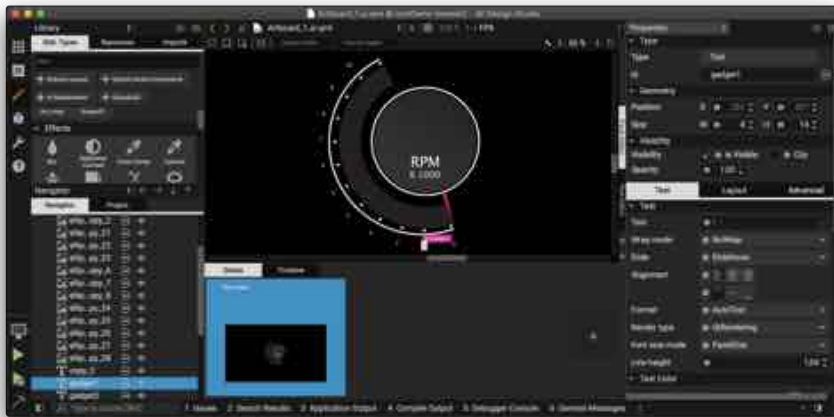


**Result is QML-based UI specification
→ directly usable by developers**

**A product or
a prototype**

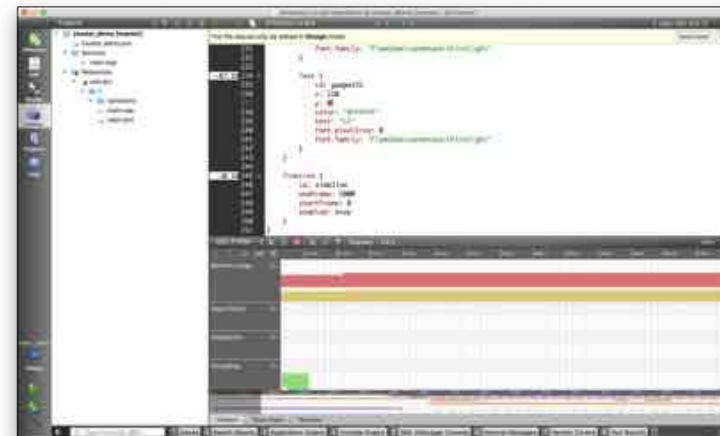
- > UI specification is UI implementation
- > Immediate integration with the backend => no time-consuming implementation required
- > Memory, performance, and rendering profiling in a real HW
- > BOM requirements based on explicit data – no assumptions

Enhanced Workflow with Qt Tools



Qt Design Studio

- > UI editor
- > Generates QML code
- > UI prototyping/profiling in a target HW
- > Importers from Photoshop and Sketch (soon)



Qt Creator

- > SW IDE
- > Static code analysis
- > Easy UI code integration
- > Ready-made board support packages

Qt

Demo Time





Thank you!

Visit our booth in the exhibition hall!

tino.pyssysalo@qt.io

