

# Embedded Agile

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*We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:*

Individuals and interactions **over processes and tools**

Working software (product) **over comprehensive documentation**

Customer collaboration **over contract negotiation**

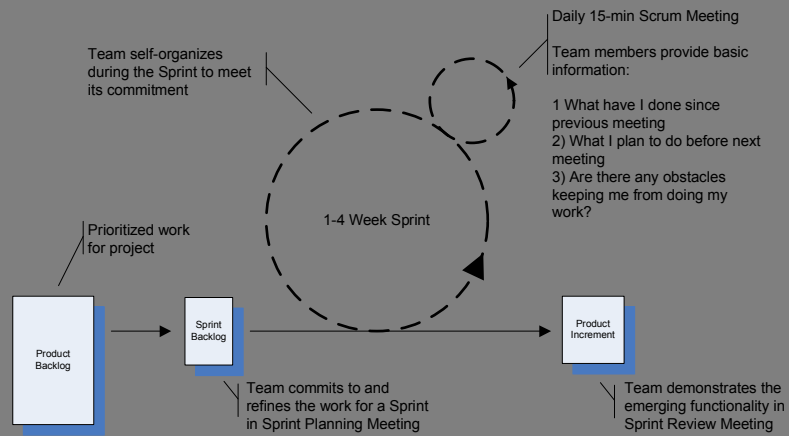
Responding to change **over following a plan**

*That is, while there is value in the items on the right,  
we value the items on the left more.*

*([agilemanifesto.org](http://agilemanifesto.org))*

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# Scrum

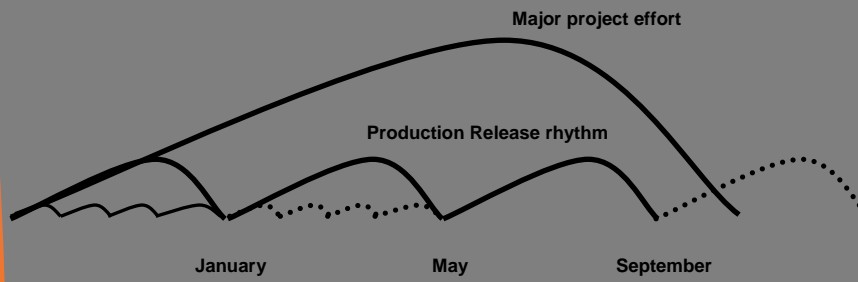


**150KLOC C**  
**Legacy Code from 10+yrs**  
**RTOS**  
**Modular multi-uC**  
**Safety critical (property and human)**

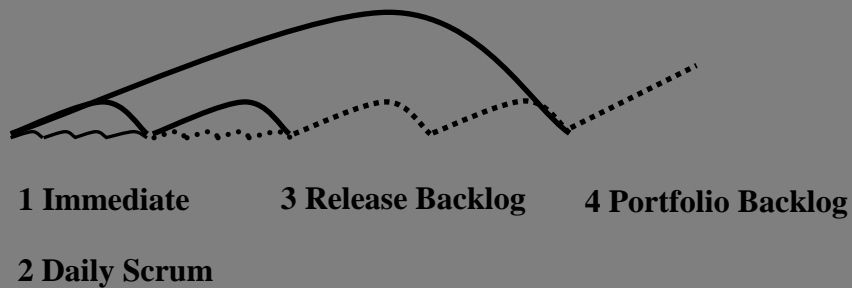
**Main Board**  
**Renesas uC**  
**2M Flash**  
**2M RAM**



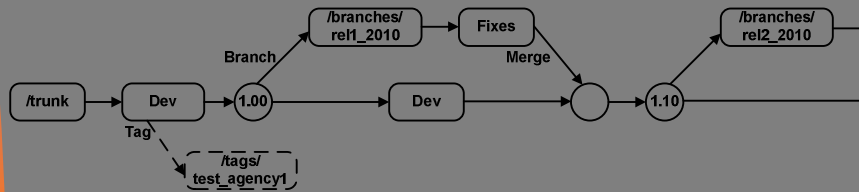
# Frequent Release (Cadence)



# Urgent Stuff



# Branch before release



# Product Team

Breaking down the  
knowledge silos



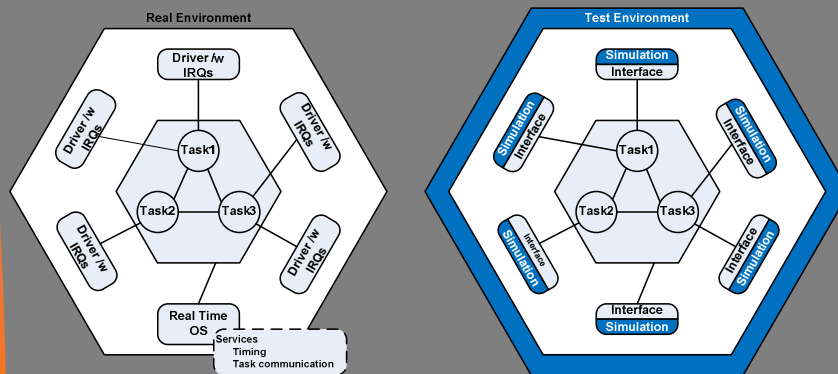
runrunrun @ <http://www.sxc.hu>

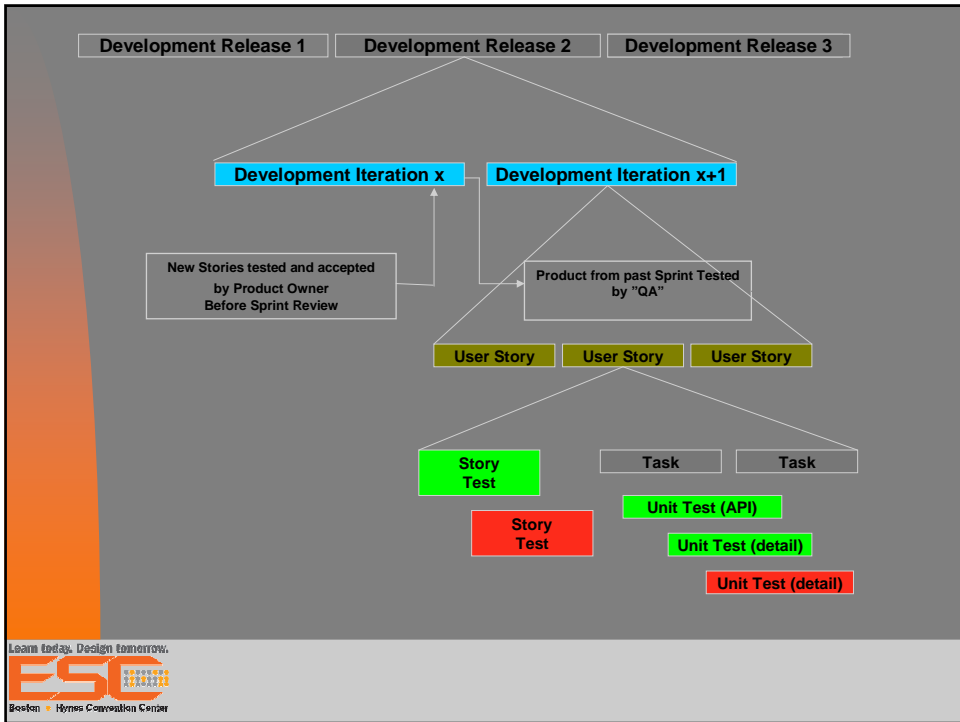
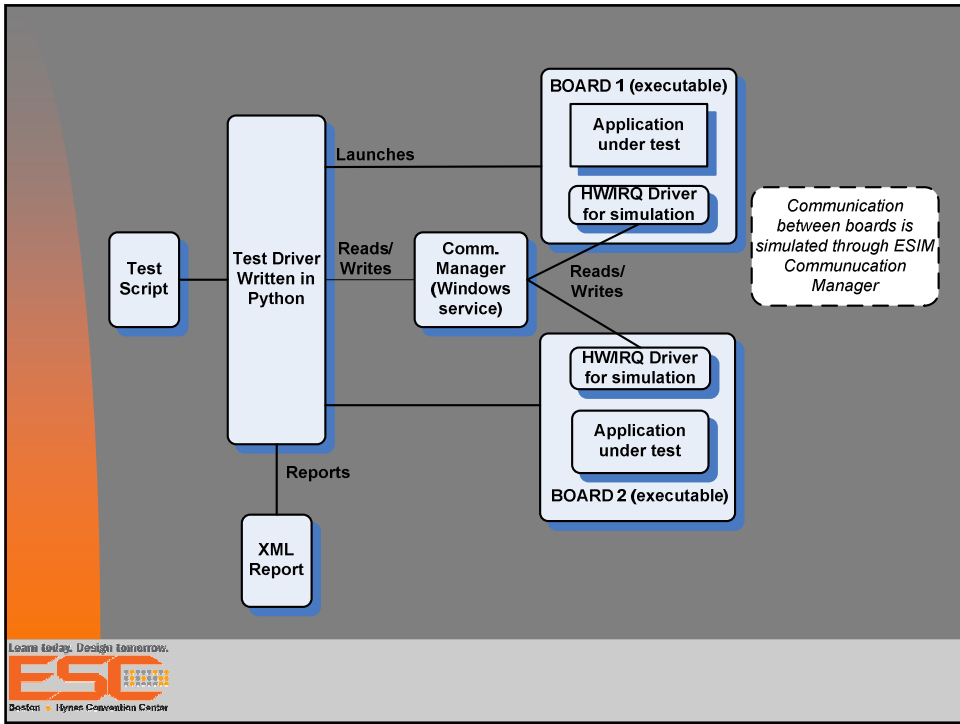
# Reliable Delivery

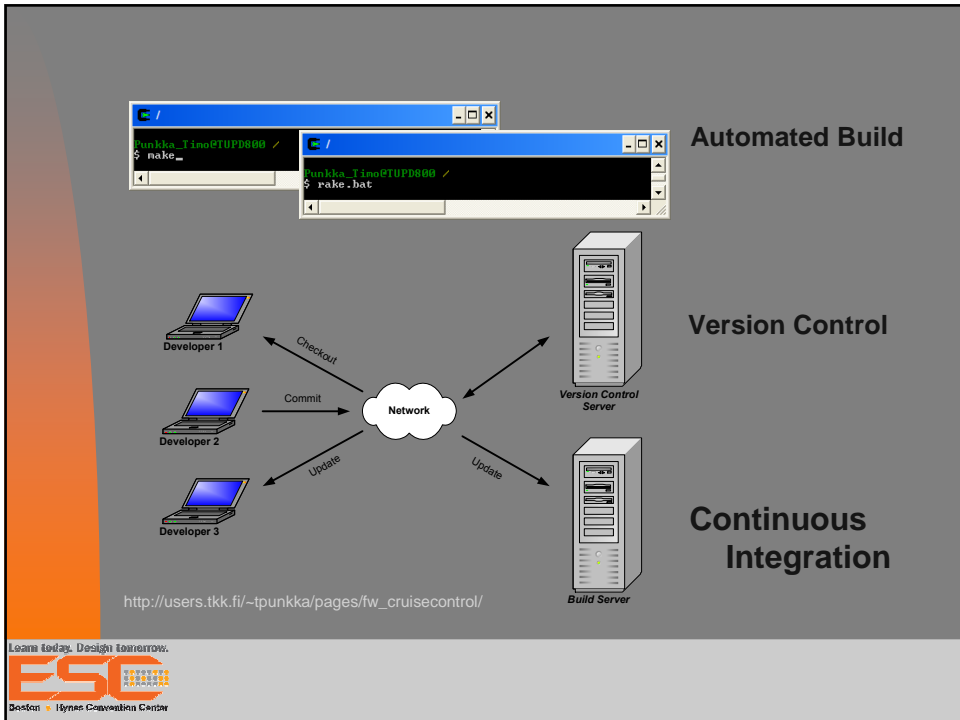
*"Visibility has increased. It is easier to collaborate with customers about priorities and schedules."*

-Product Manager

# Dual Targeting







Target Build  
 Host Build  
 Unit Tests  
 Acceptance Tests  
 Quality metrics

The screenshot shows the CruiseControl dashboard. The 'Summary' section indicates that 4 project build(s) failed, 4 project build(s) succeeded, and 0 project(s) are inactive. The 'Builds' section shows a list of builds with green checkmarks indicating success. The 'BUILD COMPLETE - build364' section provides details for a specific build, including the date of build, time to build, last change, and last log entry. The 'Acceptance Tests' section shows a list of tests with their status and duration.

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# Build Indicator



Python, Ruby, etc..

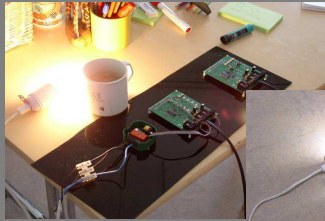


Execution window 8ms  
Resource utilization ~100%  
Cross-disciplined team  
Non-SW increments

“I’m surprised on team performance!”

“This is impressive!”

“I’m super impressed!”



“Stakeholder presence gave real meaning to this deadline”

## Customer Role

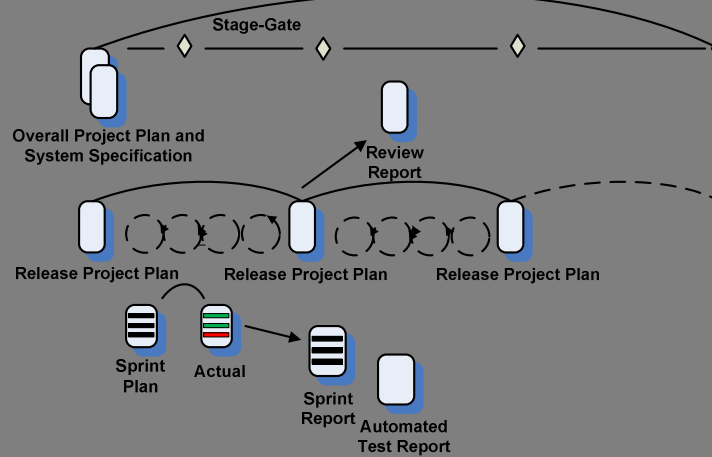
Single  
Product Owner



# Meetings According the Audience



# ISO9001



## For Embedded Agile You Need:

- 1) Incremental development with short increments
- 2) Inspect and Adapt -cycles
- 3) Learning-Driven Culture

## Jump In





?

Applause

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