MUЯPHY: A Web 2.0 Approach for Proactive Risk Management in Hardware/Software Co-Design

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1. P r o b l e m

software becoming a major innovation tool

+

software failure

=

Risk Management of Failure

Exploit the full innovation potential of software without compromising safety, security or robustness of products
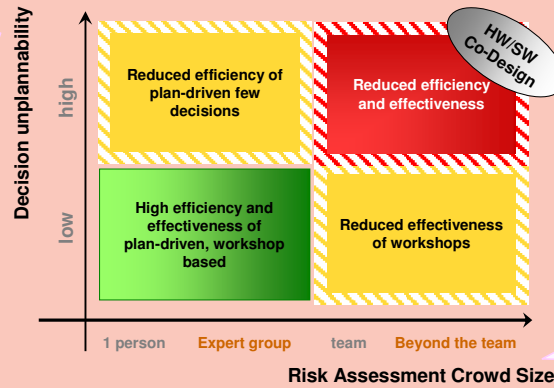
2. Local Decisions

Failure — Success

Decisions made every day – thousands of them – are the "inner loop" of the development process (Preston G. Smith, Flexible Product Development)

I have to replace this sensor to save production costs…

Where does this #$€@ bug suddenly come from?!?

3. Plan-driven, workshop-based approaches

Do you know when product decisions are taken? How unplannable are they?

Decision unplannability

high / low

HW/SW Co-Design

Reduced efficiency of plan-driven few decisions

Reduced efficiency and effectiveness

High efficiency and effectiveness of plan-driven, workshop based

Reduced effectiveness of workshops

1 person | **Expert group** | team | **Beyond the team**

Risk Assessment Crowd Size

How many people do you need to assess impact and risk of product decisions?

4. MUЯPHY: Observation-driven, social-based approach

Plan, track, report… | write/test SW, fix bugs, analyse requirements… | Write/test SW, port, debug new driver synch with HW engineer…

Product roadmap, prioritize, negotiate

Software Application Engineer

Embedded Software Engineer

Project Manager

Design HW, test, debug, analyze requirements, choose components…

Product Manager

Hardware Engineer

Dev. Process

development feed
a continuous online workshop

John posted a message
"I just heard news from Marc from sales. He got us a nice deal. We will have to implement three new features though"
5 days ago – Comment | Mark Not Risky
Bob & Smith think this is risky

Build and Test Server posted a test result
"Results of this week's performance tests, 27% failed"
6 days ago – Comment | Mark Risky
☐ Our current software is using close to 900MB of flash memory – Smith – Reply · Delete
☐ There's not much we can do about this – it will just get worse with mandatory audit logs – Bob – Reply | Delete

Subversion posted a message
"Changeset [7851] by bobs: new logging algorithm"
7 days ago – Comment | Mark Risky
☐ I looked at your changes. The audit logs for new regulations are not implemented! – Smith – Reply · Delete
☐ True! Totally forgot about that – Bob – Reply | Delete

John posted a message
"I ordered flash memory module XYZ, it's the only 1GB model that fits our current design and price limitations. A similar 2GB model is coming out in 3 months."
8 days ago – Comment | Mark Risky

commenting
blogging
micro
aggregation
rating

feedback

Risk Intelligence

supports

risk discovery

Risk Wall
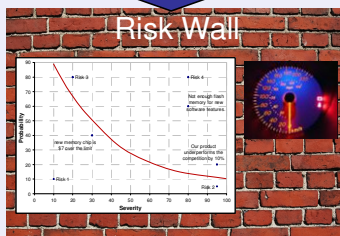
5. D i s c u s s i o n

Challenge: Information Overflow

time lost in e.g. fixing defects

time lost in Logging & info processing

Development time

0 ———— 100
% of activities logged

optimum
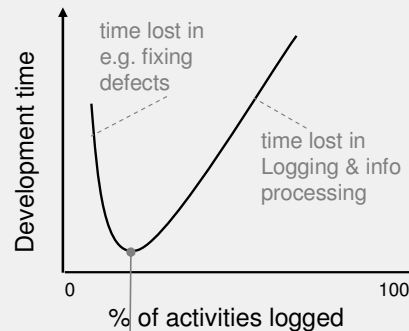
Strategy 1: Produce less

What types of events to log?

Strategy 2: Process More

groups search
wikis tagging
blog connections aggregation mashing

Team 1
Team 2
Team 3