A Lean Quality

or how assessing software quality at each step of its lifecycle to enhance reliability of control systems

Vincent Hardion, Synchrotron Soleil
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Introduction

• Vincent Hardion

• Synchrotron Soleil, ICA (Control Group)

• Special responsibility for Software Quality

• Software Craftsmanship and DevOps
Agenda

- Kaizen
- Last enhancement
- Automatic Test
- Quality Control
- Production Monitoring
Kaizen
or Continuous Improvement

• Lean or “Toyota way”: No Productivity without Quality...
• Agile Manifesto: Interaction before, tools and process after
• Bottom-up information and other principles: KISS, DRY ...
• Software Factory: Jenkins, Maven
Automatic Test

- GUI : JFCUnit
- Client/Server : TangoUnit
- Equipment availability : Device Simulation
Continuous Quality Control

- Static Code Analysis: Sonar (since late 2010)
- Huge amount of Metrics: Top Priority Violation
- Analyze C++: CppCheck and Vera++
- Functionalities: Basic, Test metrics, Compliance of the style, Dependency Matrix, Evolution Trends, Technical Debt...
Production Monitoring

- Software Crashes: Crash Reporting
- Google BreakPad: CrashReport Library for C++
- Debugging: Replay the crash
- Report from RUN
Production Monitoring

- 2010-RUN 6: Device crashes per week - 150
- 2011-RUN 1: Crashes link to a Device Classes - 50
- 2011-RUN 2: Device crashes per week - 50

Legend:
- Blue: Device crashes per week
- Red: Crashes link to a Device Classes
Conclusion

• Other tricky things like Obsolescence

• Future: TDD, Sonar Views plugin, BreakPad Socorro, Continuous Deployment ...

• Interaction: importance of Bottom-up

• DevOps person as Quality manager
Credits

• The developers: S.PIERRE-JOSEPH ZEPHIR, G.ABEILLE, N.LECLERCQ

• The admin system: S.LE

• ...all the ICA Team