Automated Deployment of Siemens Software

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19th May 2009
Outline

- Background
- Objectives
- Approach/Initiatives
- Progress and Milestones
- Questions and Discussion
Background

• LHC Control Equipment
  • Such as gas controls, alarms, temperature sensors etc etc
  • Monitored by Programmable Logic Controllers (PLC)
    • Transit between different states, collect input from the control equipment/sensors and send to PVSS (data acquisition layer)
  • Large PLC user base at CERN

• Two main providers of PLC
  • Siemens
    • S300, S700
  • Schneider
Background II

- Step7 IDE provided by Siemens
  - To develop PLC code for the PLC’s
  - Deployed to PLC’s through Ethernet

- Has different programming interfaces
  - A programming language
  - Graphical language to describe states of PLC
  - And many other add-on tools to enhance its capabilities
Objectives

- Siemens objective: To bring-in modern software engineering capabilities to Step7 product line

1. Step7 “Openness”
   - Source code versioning control
     - Capability available in PVSS but not in Step7
     - Initially source files had a binary format rather then plain text
       - Difficult for differentiating/comparing source files
     - Evolving to text based source files
   - Syntax highlighting
     - Keywords, blocks, functions
     - to improve PLC programmers productivity and reduce errors
Objectives II

2. Step7 “Automated Deployment”

• To automate the deploy Siemens software (Step7 initially) on a group of machines
• Custom solution or using off the shelf tools
• Enabling system administrators to roll out newer patches and upgrades
• Scalability: from small (10’s of machines) to large (100’s of machines)
• Easy to learn and deploy, fast refresh rate
• Ultimate AIM: to add value for Siemens customers

FIRTST PRIORITY!!!
Approach

• Market survey of available tools
  • Identify their capabilities, cost and licensing issues
    • Proprietary, Open-Source (what kind of ??)
  • Build a feature and comparison matrix
  • Compare against Project Requirement Document
  • Shortlist the tools
  • Validate the solution with Siemens dev. team
  • Finally, provide a concrete proposal for Siemens

• STATUS: currently at the validation stage and market survey document already sent to Siemens

European Organization for Nuclear Research
Approach II

• Gathering deployment of Step7 experience inside CERN: To learn about
  • Current practices at CERN
    • E.g. User self-managed or admins managing it? How?
  • Deployment environment and context
    • E.g. Where its deployed? GPN, Technical network?
  • Potential current issues and bottleneck
    • Are they using any tools to help them, if yes which ones? What is the frequency of the Step7 updates? Does the configuration change often? etc etc

• STATUS: A survey have been sent PLC users and would be completing in few days.
Approach III

• Meetings and brainstorming sessions with EN-ICE-PLC section
  • As they provide user support and services to CERN PLC community
  • Currently administers the availability of Step7 software
  • Learning and gathering their experiences

• STATUS: a list of deployment use cases focusing on CERN’s context have been identified, developed and documented. Available to Siemens.
Milestones

• Project started in March and the work packages/plan was prepared

• Deliverables so far (with iterations):
  • Market survey of the tools
  • PLC User survey feedback
  • CERN Use cases

• Next:
  • Software architecture document, validation of the selected tool at CERN, transfer of the code to Siemens

• Completion: End of Aug 2009
Conclusion

• Focusing on Step7 Deployment only
• Developing Work packages and project plan
• Identifying available tools
• Understanding present CERN’s Step7 use cases and deployment practices
• Prepare a proposal for Siemens
• Validate/Test it
• Final Implementation

QUESTIONS!!!