InCA
The point of view of the main users
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On behalf of the users
Outlines

• Motivations
• Architecture
• LEIR & PS (Users & Experts)
• Issues follow-up
• PSB Deployment
• Roadmap
• Conclusion
InCA - Motivations

- Control System Renovation
- Homogenisation
- Manpower for 2 control systems
  - Development
  - Support
- New Functionalities
  - LSA for Injectors
  - YASP
- Architecture
  - Scalability
  - Performance
  - Security
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PS Control System (2-Tier)

- Working Set
- DA
- Lib
- DB
- Knob
- DA
- Lib
- DB
- FEC
- Lib
- FEC
- FEC
- FEC

- Reliability
- Scalability
- Security

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**Injector Control Architecture**

- ↑ scalability
- ↑ performance
- ↑ security

![Diagram of Injector Control Architecture with components like WorkingSet, Knob, Client Lib, Application Servers, and Database]
InCA (Current)
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Deployments

• LSA
  – LEIR 2005 - 2007 (β tester)
    • Very hard debugging
    • Hybrid Control system

• InCA
  – LEIR 2009 (β tester)
    • Debugging start 2 months before beams
  – PS 2010 (29/06/2010)
    • Several MD’s before the D-day
    • Fallback solution (InCA flag)
InCA @ LEIR 2009 (Users)

- InCA Configuration
  - Properties not defined
  - Properties values not initialized
  - Properties definition LSA ≠ FESA

- InCA ? Strange behavior
  - Null pointer - Cycle selector name to long – connection refused – Class not found – Incoherent device status etc..

- Function Editor not operational

- Releases
  - INCA/LSA
  - Generic controls
    - FESA classes

- InCA team very reactive
InCA @ LEIR 2009 (Feedback)

- InCA should integrate strict configuration rules from bottom to top
  - FESA classes version or New FESA classes
  - Devices
  - Working set, knobs, archives etc..
  - Etc..

- Releases
  - Tests before release
  - Understand edge effects
  - Communicate

- Essential tools were not fully operational
  - Function editor
  - Archives

- Improve Training & Documentation
InCA @ PS (Users)

Cycle Creation

– Complicate to use
  • Waste of time during cycle creation
  • Not intuitive. Too many applications
  • Not enough CPS oriented
  • New terminologies

– Need debugging

– Lack of documentation
InCA @ PS (Experts)

Cycle Creation

- Must stay generic
- Some default settings have been implemented
- Cycle Creation Suite soon available
- Online help available
- Cycle cloning (cycle type & cycle) will be improved
- Documentation will be improved
- Users need time to learn and to use new concepts
- Experts Support
  - For creating procedures with OP
  - For creating Easy Cycle Creation with OP
InCA @ PS (Users)

✗ LKTIM

– Partial implementation
– Values changes are not propagated to all cycles.
– Manual changes are needed on each cycle.
– Response time
InCA @ PS (Experts)

LKTIM

- Requirements (CO + RF) => Done.
- Analysis & Design (CO) => Ongoing.
  - Not only LKTIM also HARM, PCAL, Virtual GFA, ...
- Create “make rules” + GUI (OP)
- β versions with partial functionalities during May
- Operational with full functionalities at the end of summer 2011
InCA @ PS (Users)

✗ PPM Copy
– Too many bugs
  • MTE cycle was corrupted
  • Waste of time for recovering the MTE cycle
  • MTE cycle was not fully recovered
  • MTE cycle had to be rebuilt
  • MTE setting-up delayed
– Only between resident cycle
– Only between cycle with the same length
– Dead lock
InCA @ PS (Experts)

- PPM Copy
  - Application re-factored
  - Release with OP Validation
  - Operational
InCA @ PS (Users)

✗ Machine check (Compare HW and DB)
  – Not useful
    • Too many false alarms are reported
  – Precision of the comparison
    • too high ($10^{-10}$)
  – Rounded values
    • Rounded values in the hardware and the requested values are different
InCA @ PS (Experts)

➤ Machine Check

- Precision of the comparison
  • Feature available
  • Configuration is needed in the server to adapt precision for each devices

- Rounded values
  • Feature not available in the Front End
  • Part of the Control System renovation
InCA @ PS (Users)

Sending Command

☆ It is impossible to send the same command or setting twice consecutively
  • For example the RESET sequence is “RESET–OFF–RESET–ON”

☆ The continuous switching ON and OFF of the RF equipments reduce their lifetime
Sending command twice

- It reduces the control system performance
- Should separate command (Reset) and setting (On, Off, ... , ccv)
- GM classes (POW-V,RFPS) don’t support this separation

Part of the Control System renovation

- RF FESA classes can support this separation with minor modifications
InCA @ PS (Users)

❌ Configuration
   – Too many databases
   – Incoherencies between CCDB and LSA DB
   – Waste of time for the configurators

✅ YASP
   – Users are happy with the functionalities
   – Improve GUI (expert & normal mode)
InCA @ PS (Experts)

Configuration

- Specific application interface CCDB & LSA DB
- Will be implemented as soon as possible
- It is not planned to build a tool which makes it possible to configure in a simple way all CO databases needed for the operation
InCA @ PS (Users)

❌ Documentation
  – No documentation
  – Waste of time to understand and use the tools

✨ Training
  – Need more
  – Oriented sessions for MD’s
  – Oriented sessions for day to day operation
InCA @ PS (Experts)

- **Documentation**
  - Online help available
  - To build in collaboration with OP

- **Training**
  - Sessions were done before and during deployment
  - Lectures were done during shutdown courses
InCA @ PS (Users)

✓ Release
  – Well planned
  – Without perturbation

✓ Support
  – On best effort 24/7
  – Very appreciated
  – Very reactive
  – Follow up
InCA @ PS (Priorities)

- Improve Cycle Creation
- Improve LKTIM
- Improve PPM Copy
  - Allow to send command twice
  - Improve Machine Check
  - Improve Configuration process
- Documentation
- Need training
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Follow-up operational issues

- InCA technical meetings (OP + CO + ...)
- JIRA (issues tracking system)
- eLogbook OP Issues
  - Create an event in the eLogbook
  - Send the Issues to JIRA with reference to the event
  - Add URL to the Issue in the event
- Specific InCA tag event in the eLogbook

× Insert feedback from JIRA to eLogbook when Issue is resolved
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InCA @ PSB

• January – June
  – InCA Configuration
  – To convert the specific applications
  – Parasite MD’s

• July
  – Deployment of the Control Setting
  – Same InCA support as PS
  – Same training as PS

• AcqCore
  – Mandatory for FGC (Q3 - Q4 2011)
  – BLM
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Roadmap

• AD (2012)
  – Major challenge is the Cycle Editor
  – How Elena Decelerator will be implemented?
• CTF (2013)
• InCA Consolidation (2014 – 2015)
• SPS (to be discussed)
  – It already uses LSA but it is also an injector!
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Conclusion (1/2)

• Improve first
  – Cycle Creation, LKTIM, PPM Copy

• Some InCA functionalities depend of status of the Control Renovation

• Accelerate the migration from GM to FESA

• AcqCore must be deployed at least for the PSB

• InCA must reduce its complexity for the main users
Conclusion (2/2)

• Important functionalities must be tested more carefully and deeply before their deployment
• Simplification of the configurations processes
  Too many DB
• Create a documentation
• The support was excellent and it should stay at the same level for the other deployments