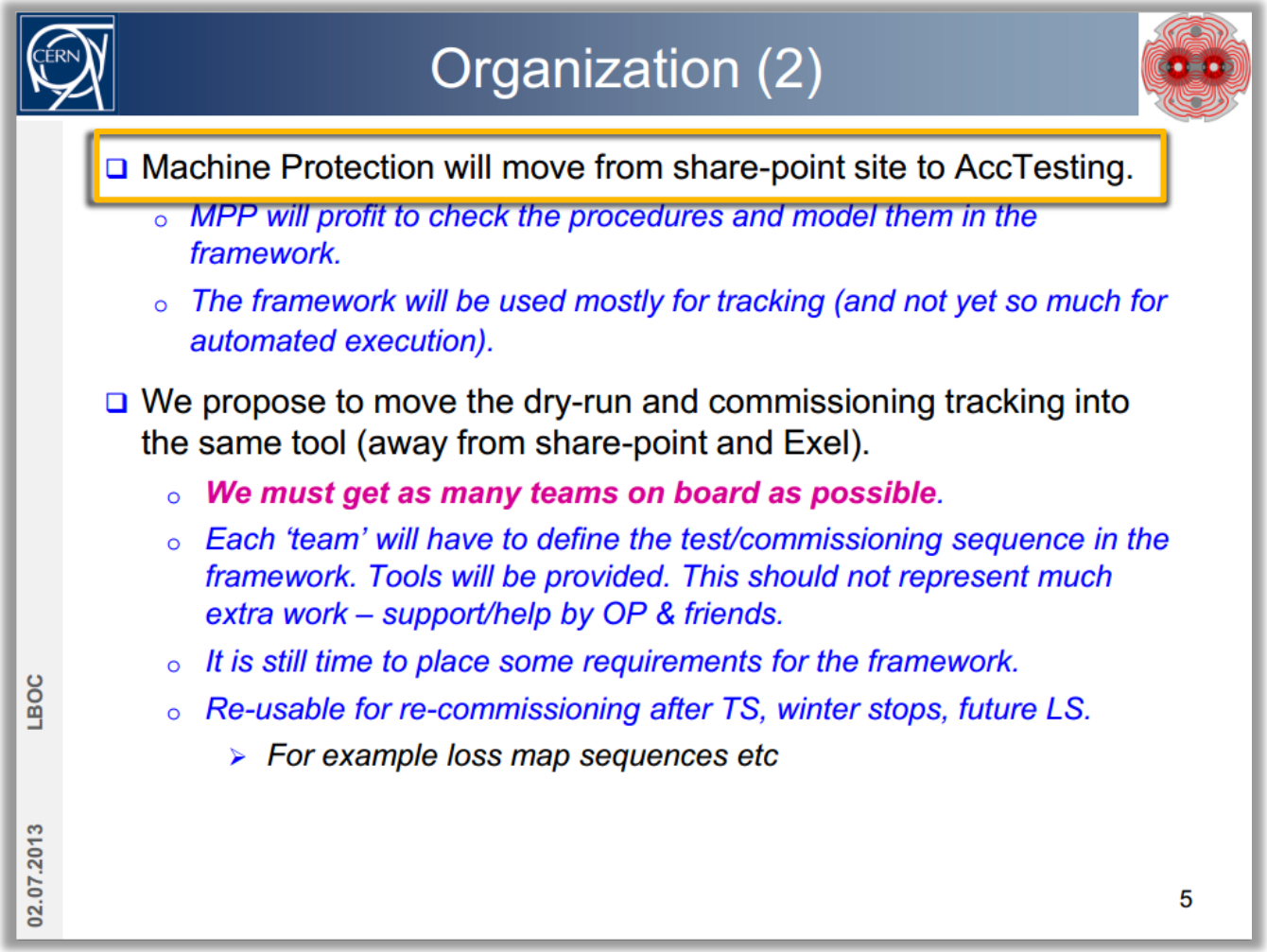
The AccTesting Framework – MPS recommissioning

Kajetan Fuchsberger
LHC MPP, 2013-07-05

On behalf of the TE-MPE-MS Software Team:
M.Audrain, J.-C. Garnier, A.Gorzawski, A. Moscatelli, I.R.Ramirez, J.Suchowski, P.C. Turcu, M. Zerlauth

What is it all about?



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- MPS Commissioning in run 1
- Introduction to AccTesting
- What we (TE-MPE-MS) are working on
- What would be required from Equipment Owners / MPP

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MPS Commissioning in run 1

Introduction to AccTesting

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MPS commissioning documents

- MPS commissioning during run 1 based on EDMS documents prepared for individual MPS systems (LHC-OP-MPS-000*)

- Documents covered system overview, dependencies on other systems, and step wise commissioning from IST, machine checkout and commissioning with beam as seen from individual MPS subsystem

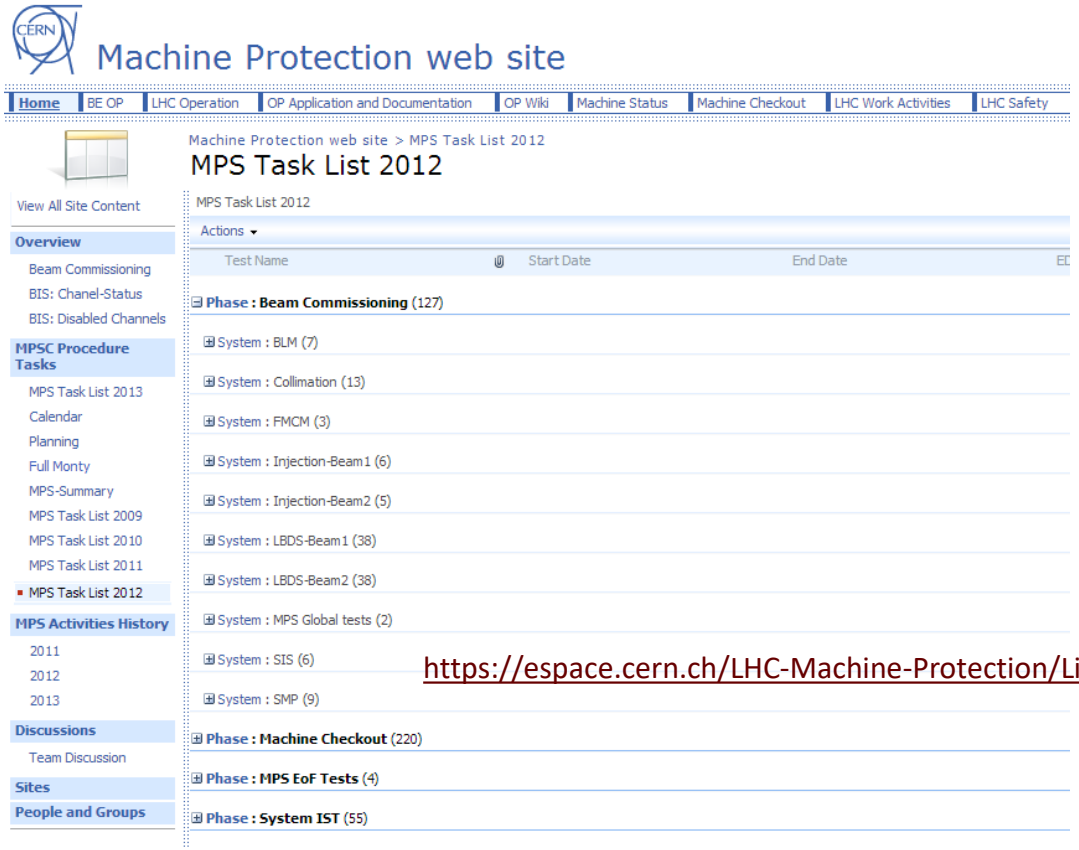
LHC-OP-MPS-0004 v.2	MPS Aspects of the Beam Interlock System Commissioning	Released
Doc. page	MPS-BIS-Commissioning_v2 **doc** (1 Mb) **pdf** (1 Mb)	
LHC-OP-MPS-0005 v.3	MPS Aspects of the Powering Interlock System Commissioning	Released
Doc. page	MPS_PIC-BIC_v6 **doc** (1 Mb) **pdf** (994 Kb)	
LHC-OP-MPS-0007 v.2	MPS Aspects of the Beam Dump System Commissioning	Released
Doc. page	MPS-bc-LBDSv5 **pdf** (977 Kb) **doc** (564 Kb)	
LHC-OP-MPS-0008 v.2	MPS Aspects of the Fast Magnet Current Change Monitors Commissioning	Released
Doc. page	MPS_FMCM-V0.6 **doc** (850 Kb) **pdf** (2 Mb)	
LHC-OP-MPS-0009 v.3	MPS Aspects of the Beam Loss Monitor System Commissioning	Released
Doc. page	MPS-BLM-v2_0 **doc** (517 Kb) **pdf** (883 Kb)	
LHC-OP-MPS-0010 v.2	MPS Aspects of the Warm Magnet Interlock System Commissioning	Released
Doc. page	MPS_WIC_v6 **doc** (429 Kb) **pdf** (563 Kb)	
LHC-OP-MPS-0016 v.3	2011 MODIFICATION OF THE LHC COLLIMATOR CONTROLS RELEVANT FOR MACHINE PROTECTION	Released
Doc. page	LHC-OP-MPS-0016 **doc** (93 Kb) **pdf** (74 Kb)	

7 documents found

Courtesy: M. Zerlauth

MPS commissioning

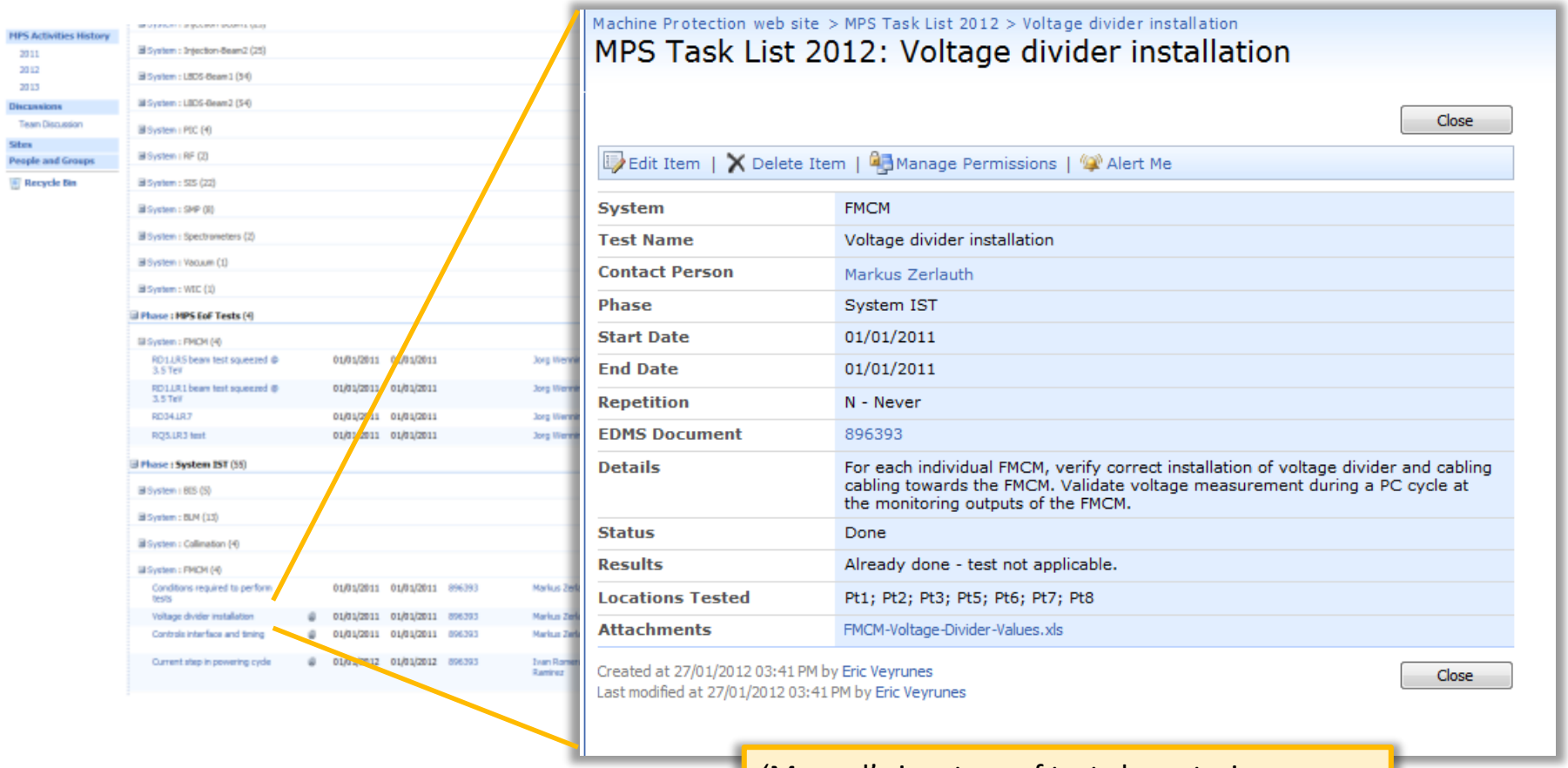
- Described tests were extracted, allocated to a commissioning phase and reflected in Share-Point site, amounting to a total of ~ 400 individual steps



https://espace.cern.ch/LHC-Machine-Protection/Lists/MPS%20Task%20List%202012/Resume.aspx

Courtesy: M. Zerlauth

MPS commissioning

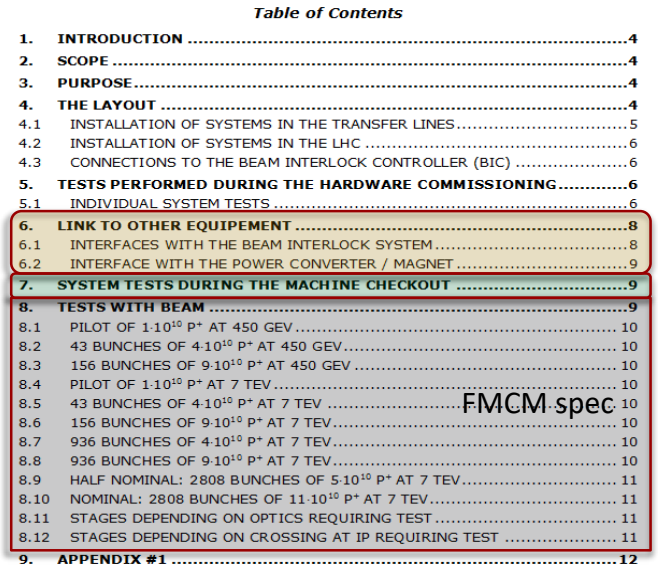


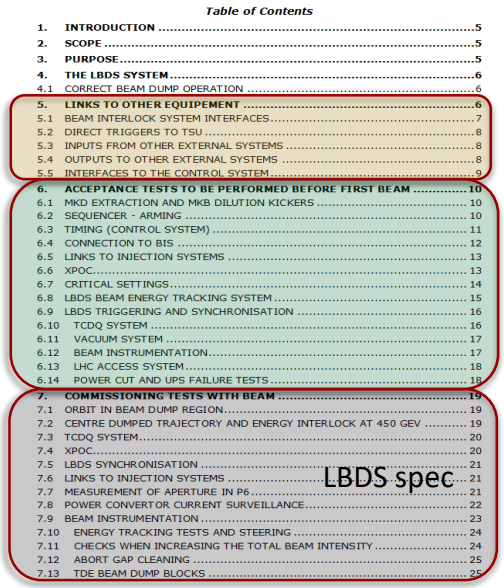
Courtesy: M. Zerlauth

'Manual' signature of tests by entering comments and eventually documents

MPS commissioning improvements

- System dependencies and boundary conditions for commissioning are very different, no sequence of steps is currently proposed/enforsed
  - Not clear what needs to be done before going to next phase/intensity
  - No guarantee all necessary steps are completed before moving on
  - Results distributed in EDMS, logbook, SharePoint,…
  - No coherency for execution and analysis of repetitive tests (individual tools by BLM, COLL, PIC/WIC/BIS,….)





Courtesy: M. Zerlauth

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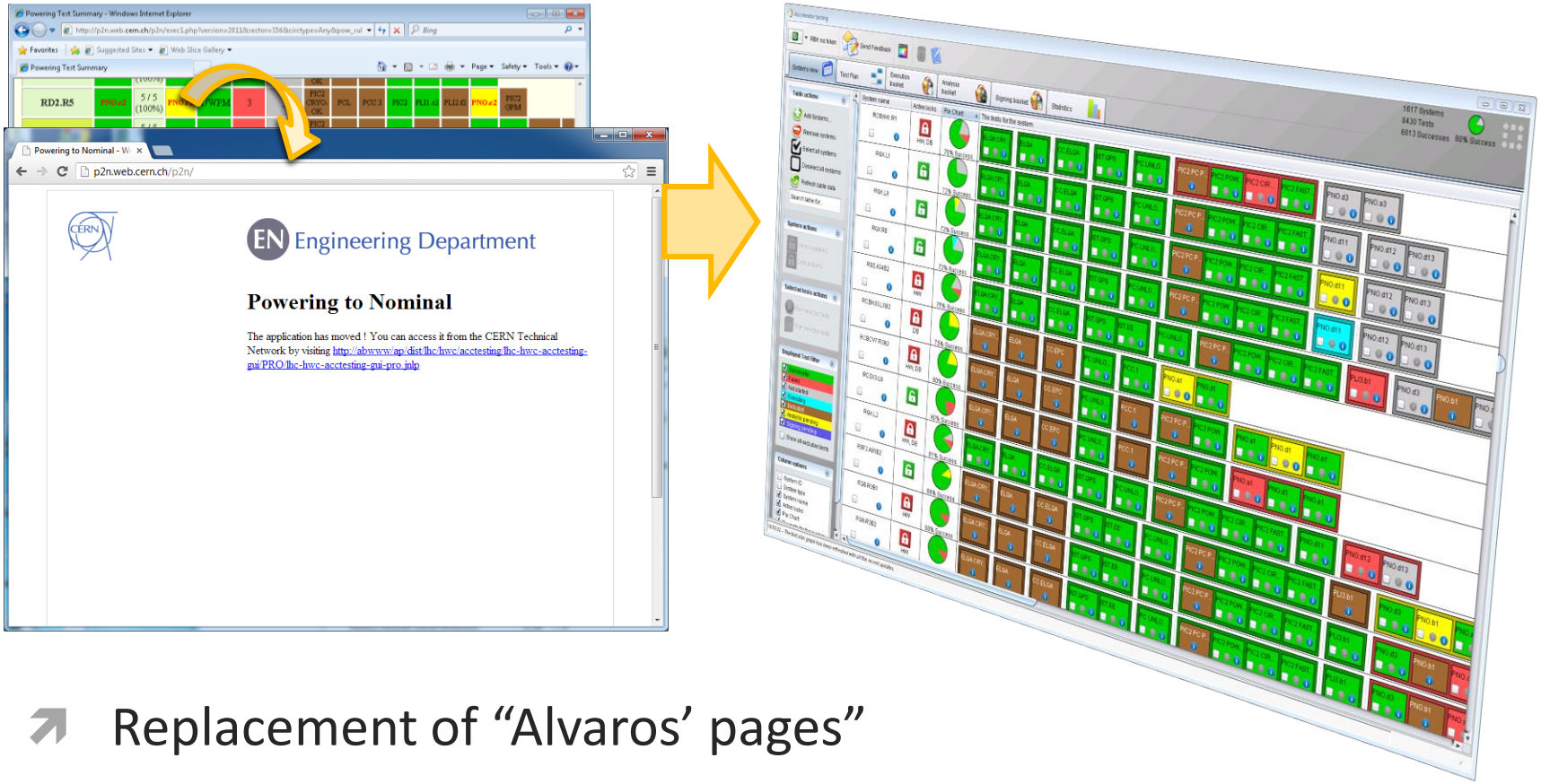
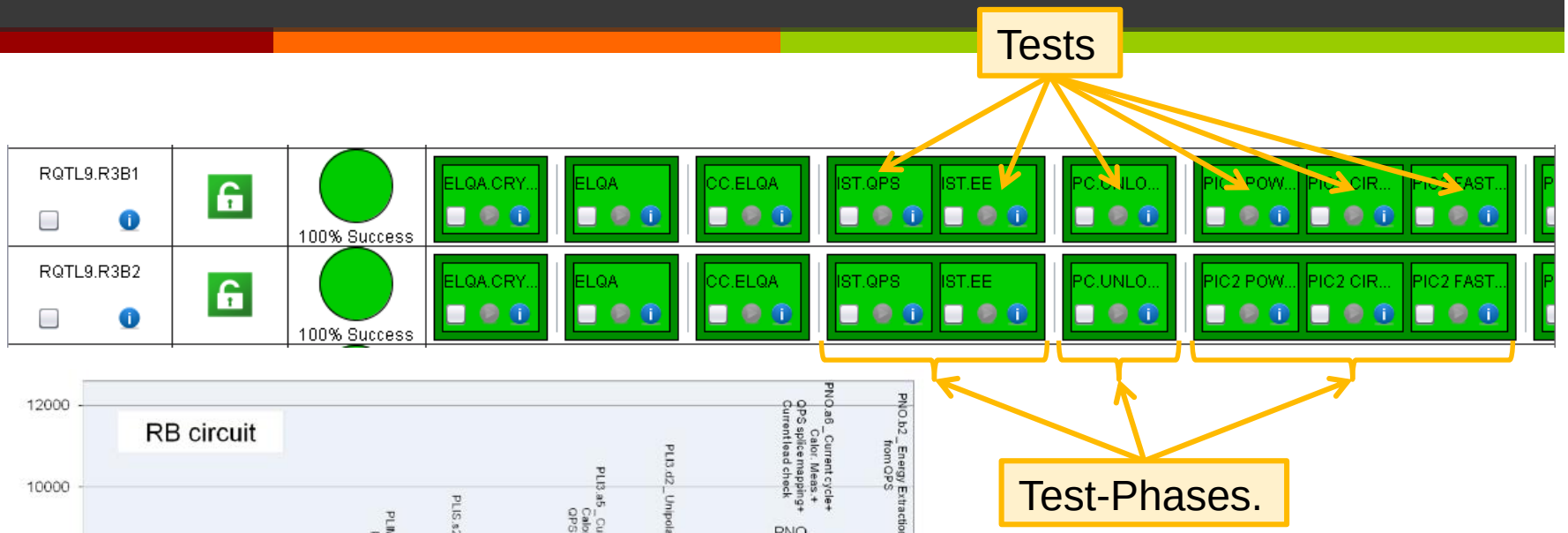
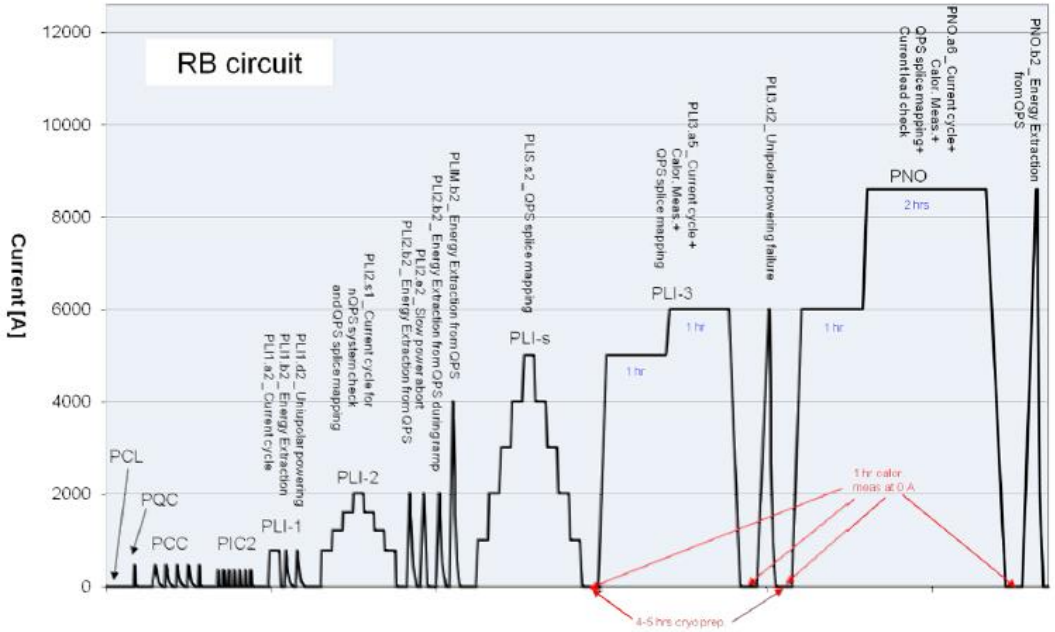
The Roots of AccTesting



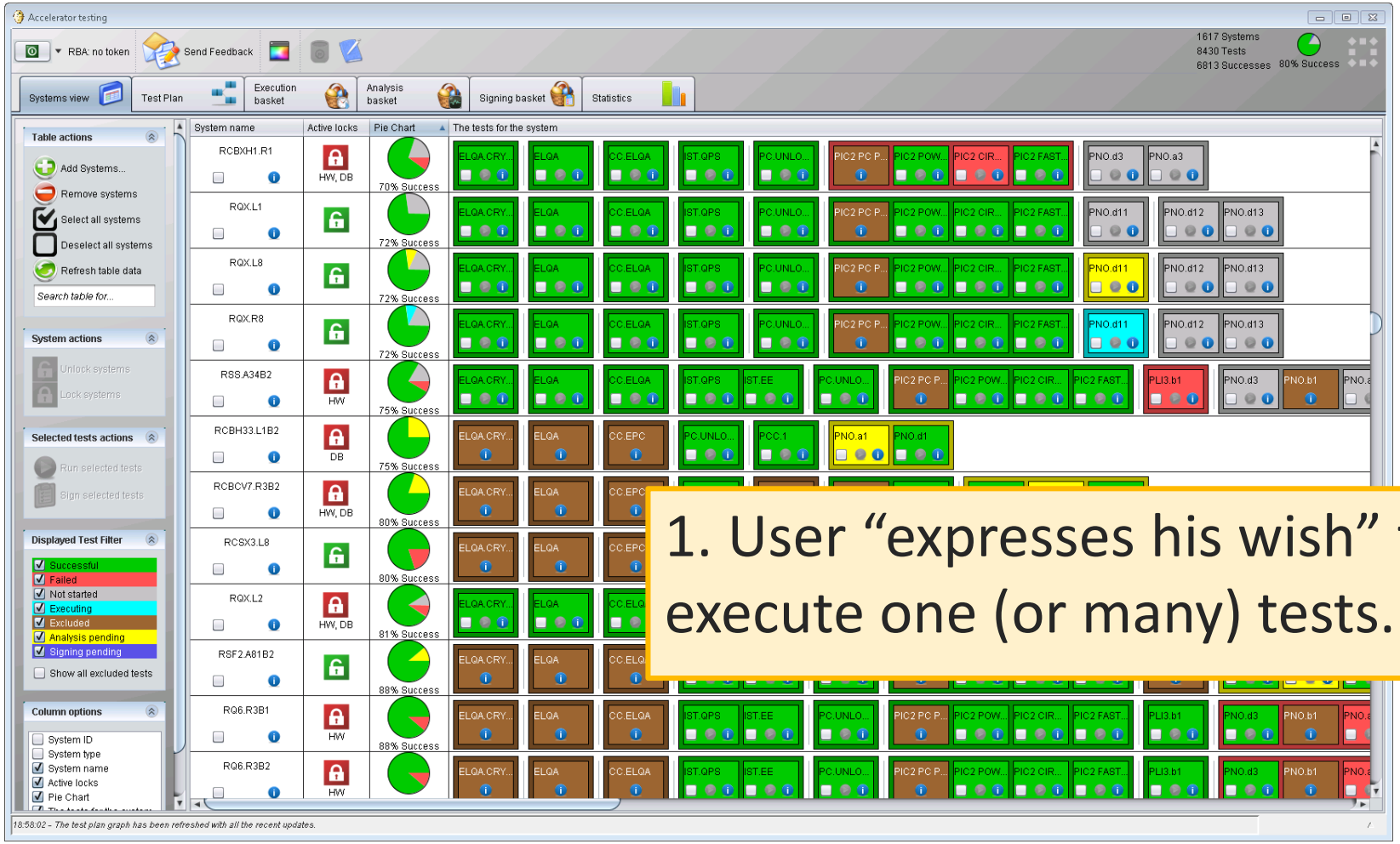
- Replacement of “Alvaros’ pages”
- Evolved into a general test execution and tracking framework.

AccTesting Concept





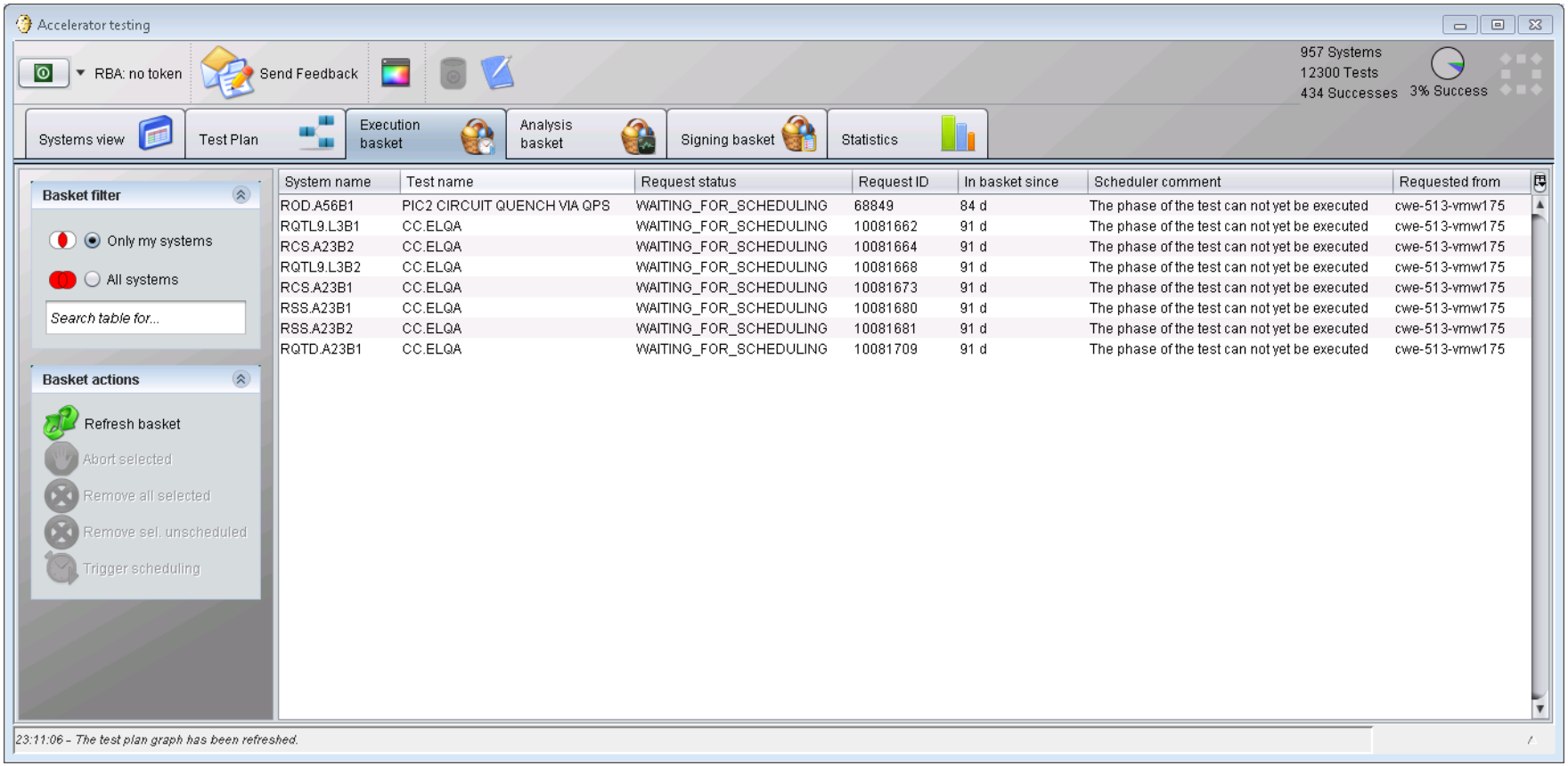
HWC - Workflow I



1. User “expresses his wish” to execute one (or many) tests.

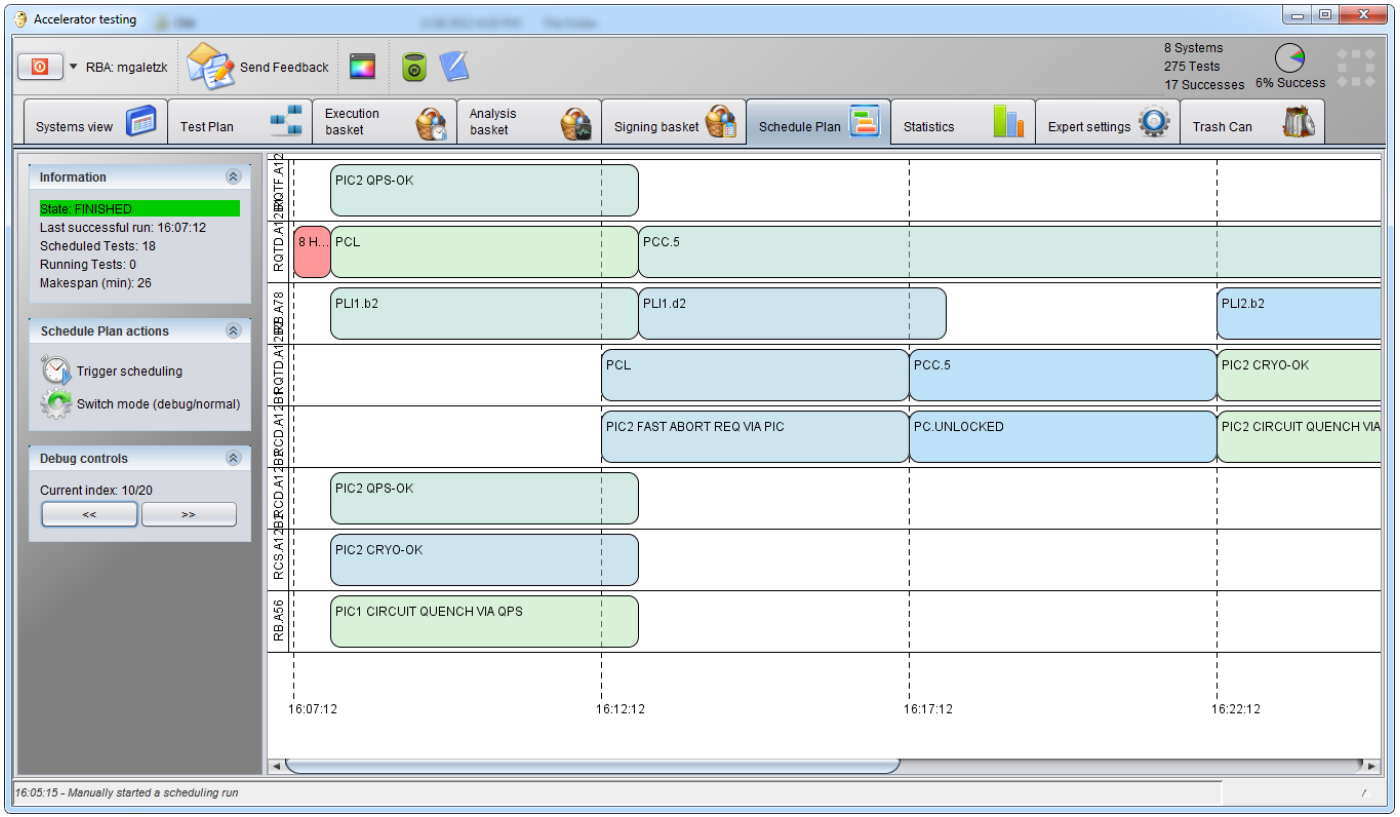
HWC - Workflow II

2. The Tests go to the Execution Basket (Server!)



HWC - Workflow III

3. The Scheduler (on the Server) will decide when to start which test(s).



Why so complicated?

- Central Scheduling can respect all the conditions (Phases, Locks, Constraints …), even if requests come from different GUIs.
- When conditions are fulfilled later, the tests are started automatically (No delays).
- No Need for reservation of Systems

General Structure of Tests

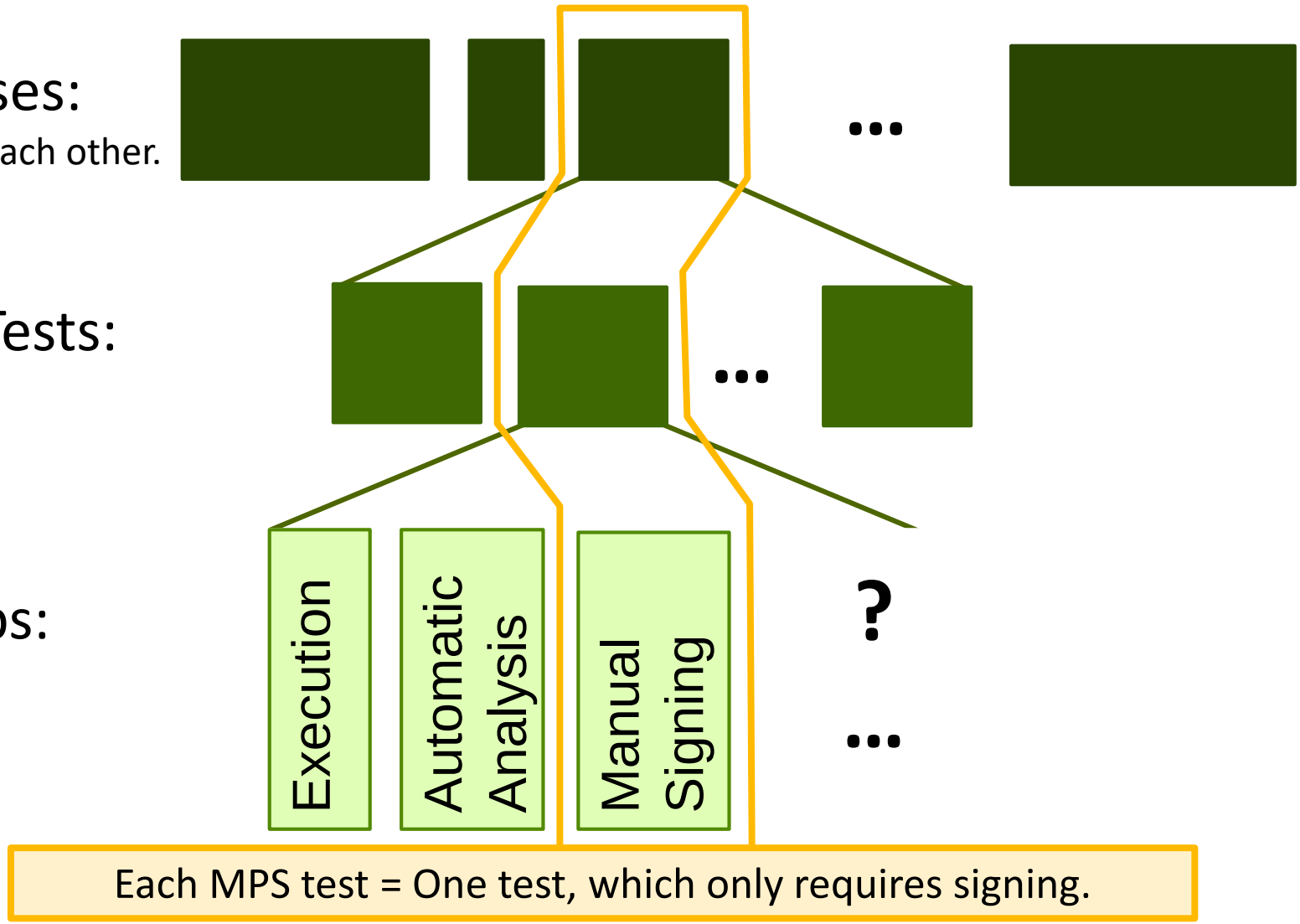
TestPhases:

Depend on each other.

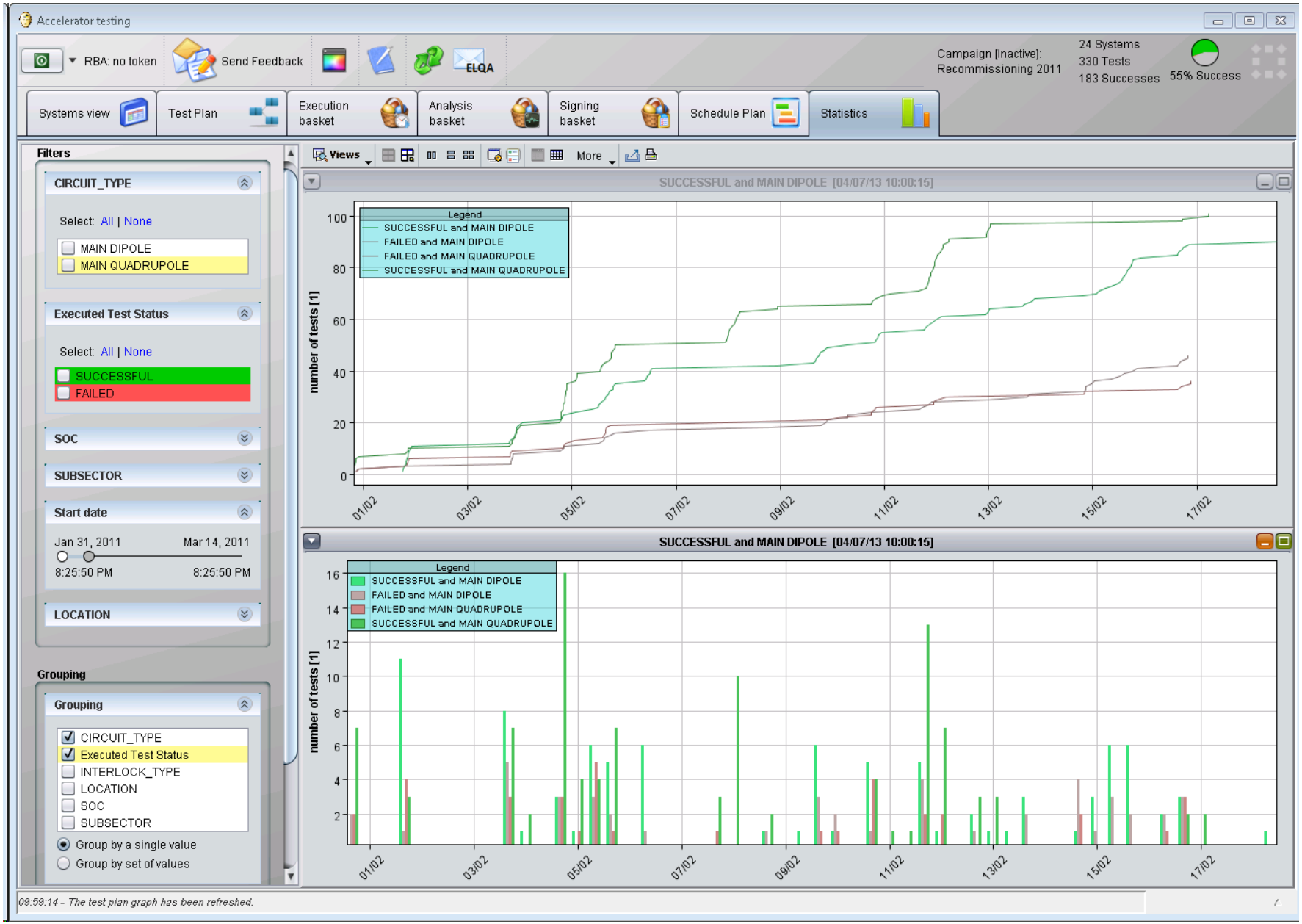
SystemTests:

Per System

TestSteps:



Statistics


Accelerator testing
RBA: no token
Send Feedback
ELQA
Campaign [Inactive]:
Recommissioning 2011
24 Systems
330 Tests
183 Successes
55% Success
Systems view
Test Plan
Execution basket
Analysis basket
Signing basket
Schedule Plan
Statistics
Filters
CIRCUIT_TYPE
Select: All | None
MAIN DIPOLE
MAIN QUADRUPOLE
Executed Test Status
Select: All | None
SUCCESSFUL
FAILED
SOC
SUBSECTOR
Start date
Jan 31, 2011
Mar 14, 2011
8:25:50 PM
8:25:50 PM
LOCATION
Grouping
Grouping
CIRCUIT_TYPE
Executed Test Status
INTERLOCK_TYPE
LOCATION
SOC
SUBSECTOR
Group by a single value
Group by set of values
Views
More
SUCCESSFUL and MAIN DIPOLE [04/07/13 10:00:15]
Legend
SUCCESSFUL and MAIN DIPOLE
FAILED and MAIN DIPOLE
FAILED and MAIN QUADRUPOLE
SUCCESSFUL and MAIN QUADRUPOLE
number of tests [1]
01/02
03/02
05/02
07/02
09/02
11/02
13/02
15/02
17/02
09:59:14 - The test plan graph has been refreshed.

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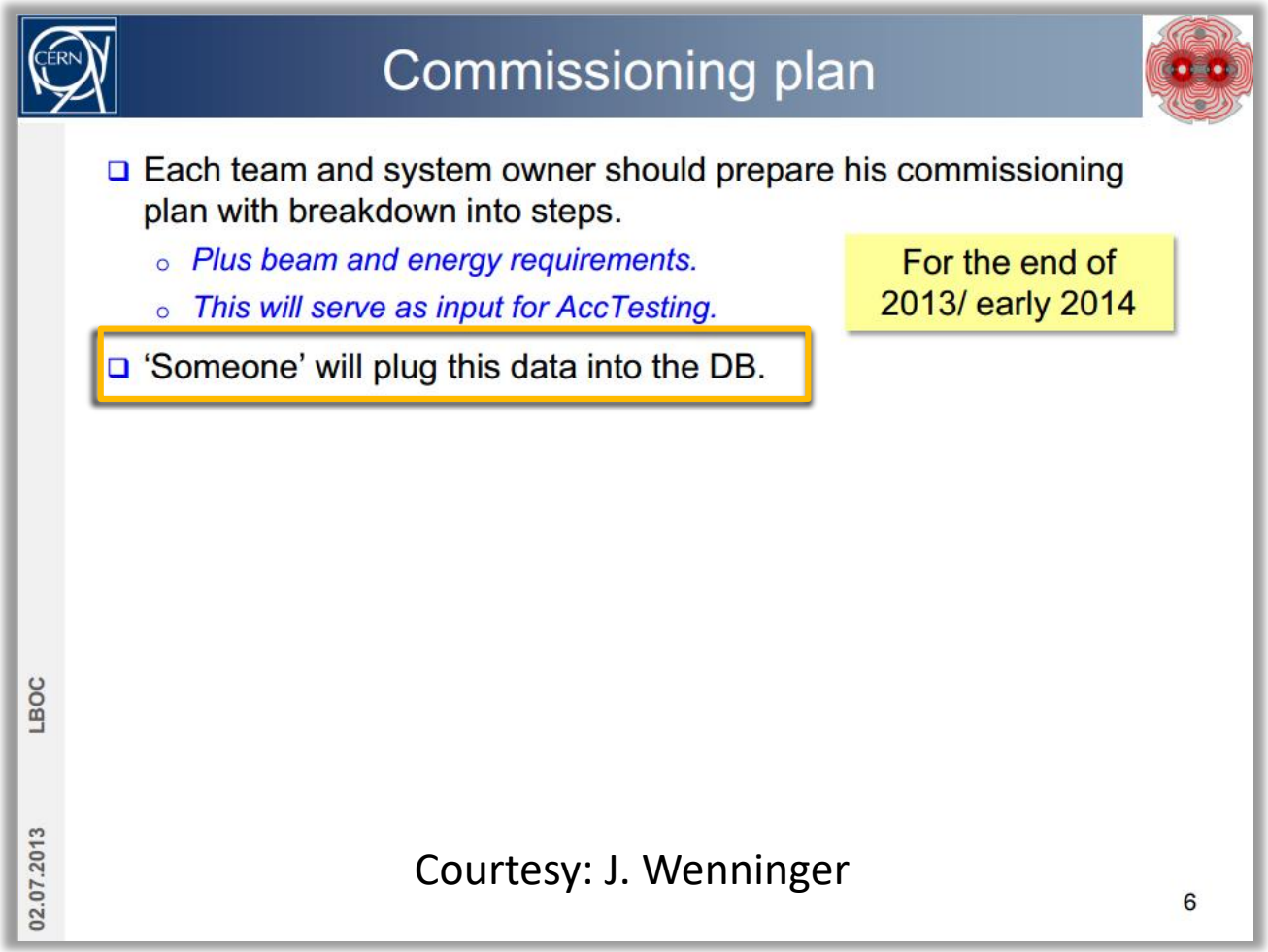
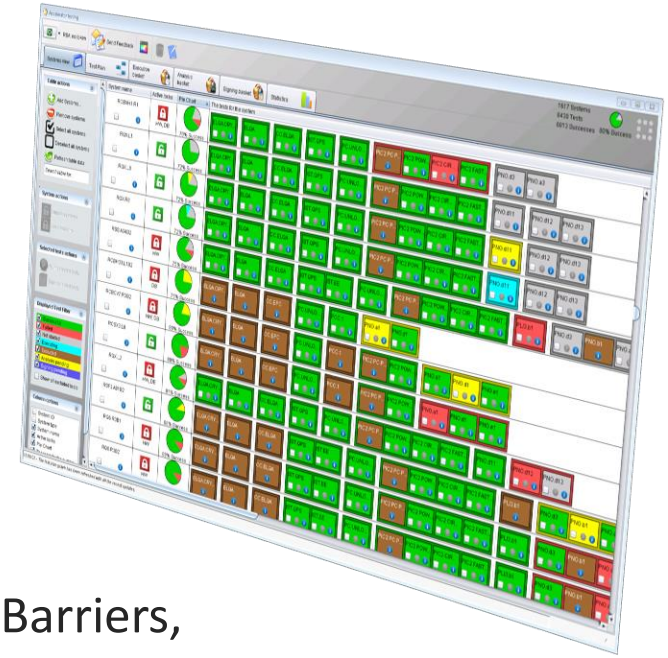
Jörg said …



Courtesy: J. Wenninger

Editing of Test Plans

- Currently:
  - Database hacks to change the test plan ☹
- Basic Concepts:
  - All Possible Tests per System Type
  - Subset is active per Campaign
  - Campaign can be small (e.g. TS)
- We have to provide at least:
  - Creating campaigns
  - Activating/Deactivating Tests
  - Change Test Relations/Properties (Phases, Barriers, Composite Tests, Notifications)



Composite Tests

- E.g. One test for a composite system might consist of one test per System Component.

BLM - Crate A	TST.1
BLM1	TST.1
BLM2	TST.1
BLM3	TST.1
...	TST.1

<consists of>

Barriers

- When the commissioning of a system reaches a Barrier Point, it has to wait until all other systems (which have the same barrier) reach it also.

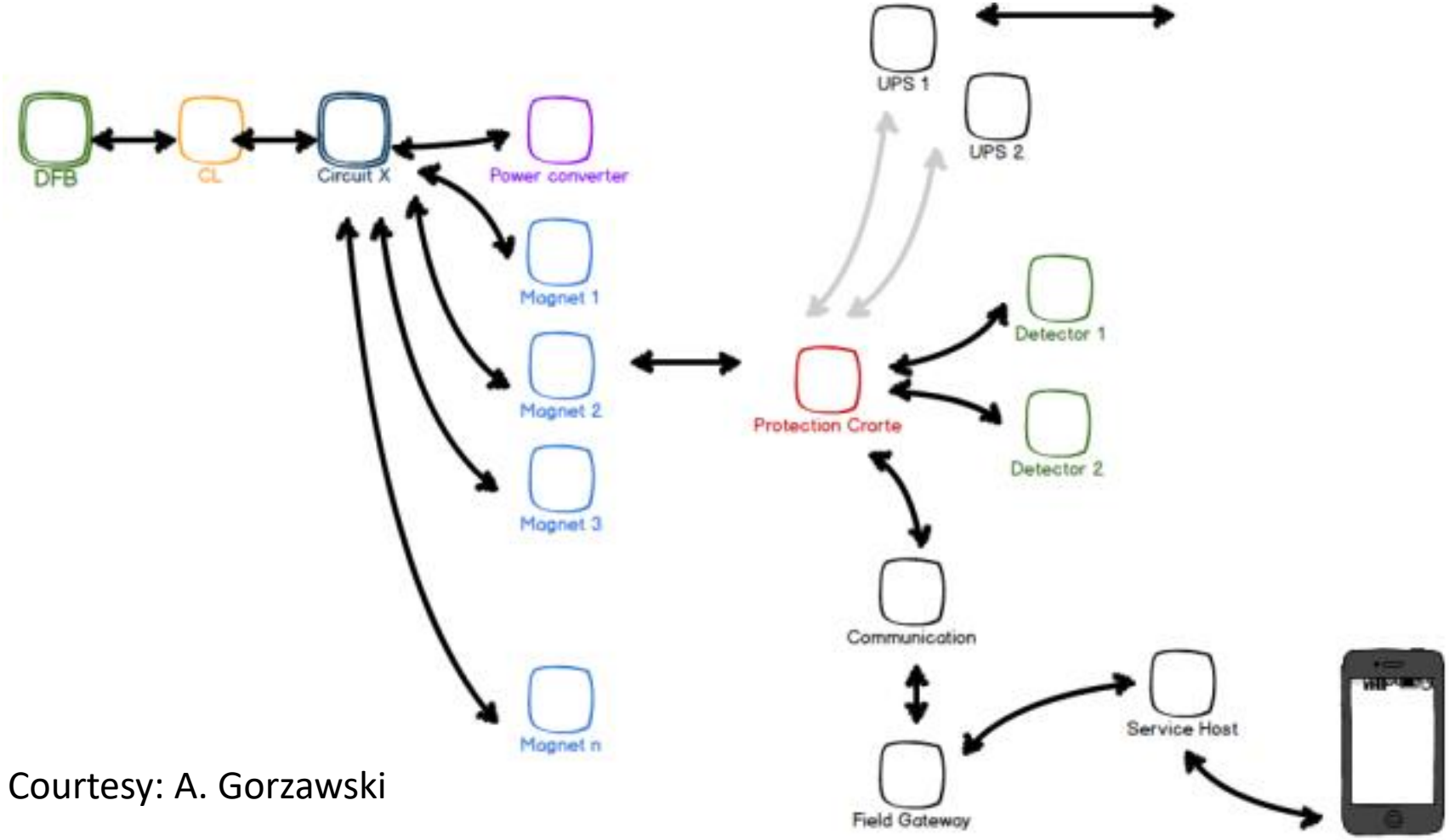
Ready for Powering

Ready for Injection

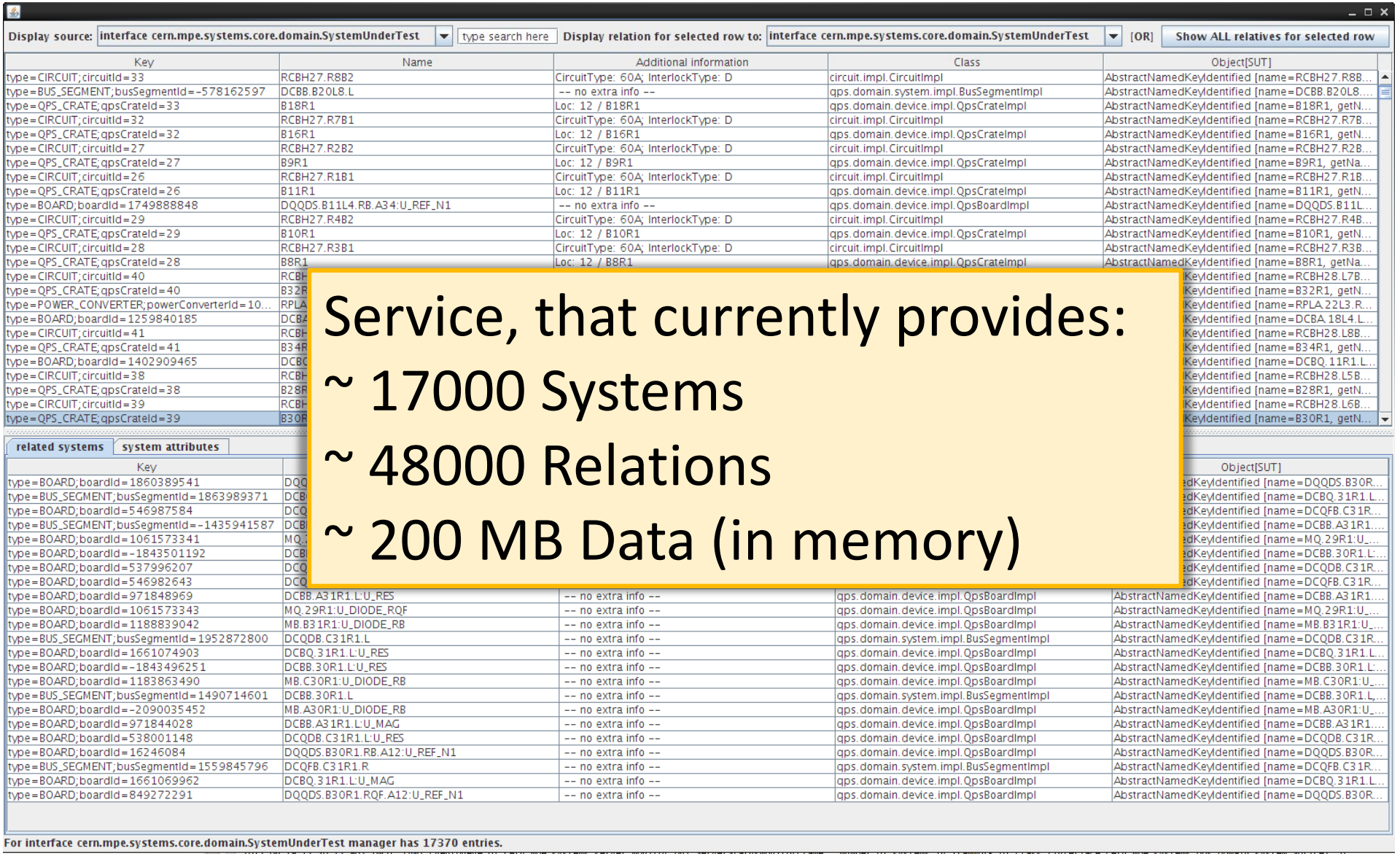
QPS	IST1						
BLM	IST2	IST3	IST4			INJ1	INJ2
BIS	IST5	IST6	IST7			INJ3	
LBDS	IST8					INJ4	
RQTL…	IST10	IST11		POW1	POW2		

- Knowledge of System-Relations required!

System Relations



Courtesy: A. Gorzawski


Display source: interface cern.mpe.systems.core.domain.SystemUnderTest
type search here
Display relation for selected row to: interface cern.mpe.systems.core.domain.SystemUnderTest
[OR]
Show ALL relatives for selected row
Key
Name
Additional information
Class
Object[SUT]
type=CIRCUIT;circuitId=33 RCBH27.R8B2 CircuitType: 60A; InterlockType: D circuit.impl.CircuitImpl AbstractNamedKeyIdentified [name=RCBH27.R8B...
type=BUS_SEGMENT;busSegmentId=-578162597 DCBB.B20L8.L -- no extra info -- qps.domain.system.impl.BusSegmentImpl AbstractNamedKeyIdentified [name=DCBB.B20L8....
type=QPS_CRATE;qpsCrateId=33 B18R1 Loc: 12 / B18R1 qps.domain.device.impl.QpsCrateImpl AbstractNamedKeyIdentified [name=B18R1, getN...
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type=QPS_CRATE;qpsCrateId=32 B16R1 Loc: 12 / B16R1 qps.domain.device.impl.QpsCrateImpl AbstractNamedKeyIdentified [name=B16R1, getN...
type=CIRCUIT;circuitId=27 RCBH27.R2B2 CircuitType: 60A; InterlockType: D circuit.impl.CircuitImpl AbstractNamedKeyIdentified [name=RCBH27.R2B...
type=QPS_CRATE;qpsCrateId=27 B9R1 Loc: 12 / B9R1 qps.domain.device.impl.QpsCrateImpl AbstractNamedKeyIdentified [name=B9R1, getNa...
type=CIRCUIT;circuitId=26 RCBH27.R1B1 CircuitType: 60A; InterlockType: D circuit.impl.CircuitImpl AbstractNamedKeyIdentified [name=RCBH27.R1B...
type=QPS_CRATE;qpsCrateId=26 B11R1 Loc: 12 / B11R1 qps.domain.device.impl.QpsCrateImpl AbstractNamedKeyIdentified [name=B11R1, getN...
type=BOARD;boardId=1749888848 DQQDS.B11L4.RB.A34:U_REF_N1 -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=DQQDS.B11L...
type=CIRCUIT;circuitId=29 RCBH27.R4B2 CircuitType: 60A; InterlockType: D circuit.impl.CircuitImpl AbstractNamedKeyIdentified [name=RCBH27.R4B...
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type=CIRCUIT;circuitId=28 RCBH27.R3B1 CircuitType: 60A; InterlockType: D circuit.impl.CircuitImpl AbstractNamedKeyIdentified [name=RCBH27.R3B...
type=QPS_CRATE;qpsCrateId=28 B8R1 Loc: 12 / B8R1 qps.domain.device.impl.QpsCrateImpl AbstractNamedKeyIdentified [name=B8R1, getNa...
type=CIRCUIT;circuitId=40 RCBH
type=QPS_CRATE;qpsCrateId=40 B32R
type=POWER_CONVERTER;powerConverterId=10... RPLA
type=BOARD;boardId=1259840185 DCBA
type=CIRCUIT;circuitId=41 RCBH
type=QPS_CRATE;qpsCrateId=41 B34R
type=BOARD;boardId=1402909465 DCBC
type=CIRCUIT;circuitId=38 RCBH
type=QPS_CRATE;qpsCrateId=38 B28R
type=CIRCUIT;circuitId=39 RCBH
type=QPS_CRATE;qpsCrateId=39 B30R
Service, that currently provides:
~ 17000 Systems
~ 48000 Relations
~ 200 MB Data (in memory)
related systems
system attributes
Key
Object[SUT]
type=BOARD;boardId=1860389541 DQQ
type=BUS_SEGMENT;busSegmentId=1863989371 DCB
type=BOARD;boardId=546987584 DCQ
type=BUS_SEGMENT;busSegmentId=-1435941587 DCB
type=BOARD;boardId=1061573341 MQ.
type=BOARD;boardId=-1843501192 DCB
type=BOARD;boardId=537996207 DCQ
type=BOARD;boardId=546982643 DCQ
type=BOARD;boardId=971848969 DCBB.A31R1.L:U_RES -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=DCBB.A31R1....
type=BOARD;boardId=1061573343 MQ.29R1:U_DIODE_RQF -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=MQ.29R1:U....
type=BOARD;boardId=1188839042 MB.B31R1:U_DIODE_RB -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=MB.B31R1:U_...
type=BUS_SEGMENT;busSegmentId=1952872800 DCQDB.C31R1.L -- no extra info -- qps.domain.system.impl.BusSegmentImpl AbstractNamedKeyIdentified [name=DCQDB.C31R...
type=BOARD;boardId=1661074903 DCBQ.31R1.L:U_RES -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=DCBQ.31R1.L...
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type=BOARD;boardId=1183863490 MB.C30R1:U_DIODE_RB -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=MB.C30R1:U_...
type=BUS_SEGMENT;busSegmentId=1490714601 DCBB.30R1.L -- no extra info -- qps.domain.system.impl.BusSegmentImpl AbstractNamedKeyIdentified [name=DCBB.30R1.L,...
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type=BOARD;boardId=971844028 DCBB.A31R1.L:U_MAG -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=DCBB.A31R1....
type=BOARD;boardId=538001148 DCQDB.C31R1.L:U_RES -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=DCQDB.C31R...
type=BOARD;boardId=16246084 DQQDS.B30R1.RB.A12:U_REF_N1 -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=DQQDS.B30R...
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type=BOARD;boardId=849272291 DQQDS.B30R1.RQF.A12:U_REF_N1 -- no extra info -- qps.domain.device.impl.QpsBoardImpl AbstractNamedKeyIdentified [name=DQQDS.B30R...
For interface cern.mpe.systems.core.domain.SystemUnderTest manager has 17370 entries.

Automated Analysis

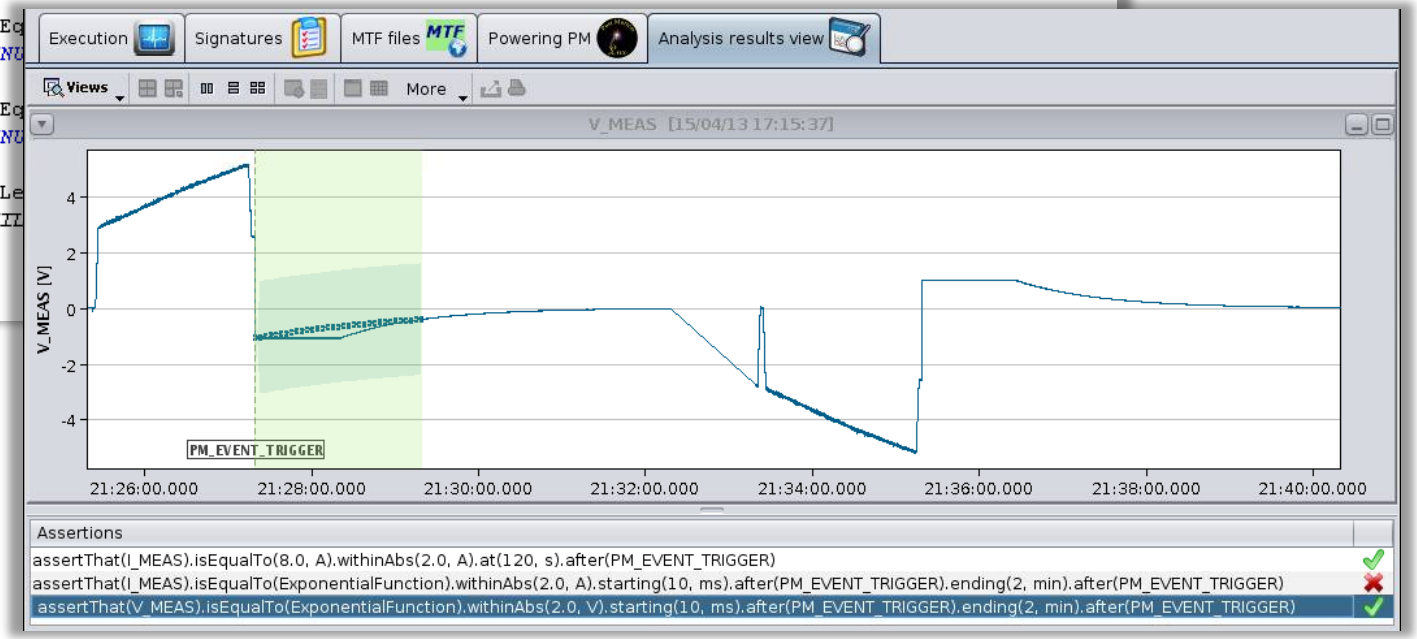
```
public class PnoD1On60A extends AnalysisModule {
    {
        assertThat(I_MEAS).isEqualTo(8.0, AMPERE).withinAbs(2.0, AMPERE).at(120, SECOND).after(PM_EVENT_TRIGGER);

        assertThat(I_MEAS).isEq
                .ending(2, MINU

        assertThat(V_MEAS).isEq
                .ending(2, MINU

        assertThat(I_MEAS).isLe
                .ending(10, MIL

    }
}
```



- Simple description of test-expectations (assertions) on signals resulting from tests (Java).
- Will have access to PM, Logging, …

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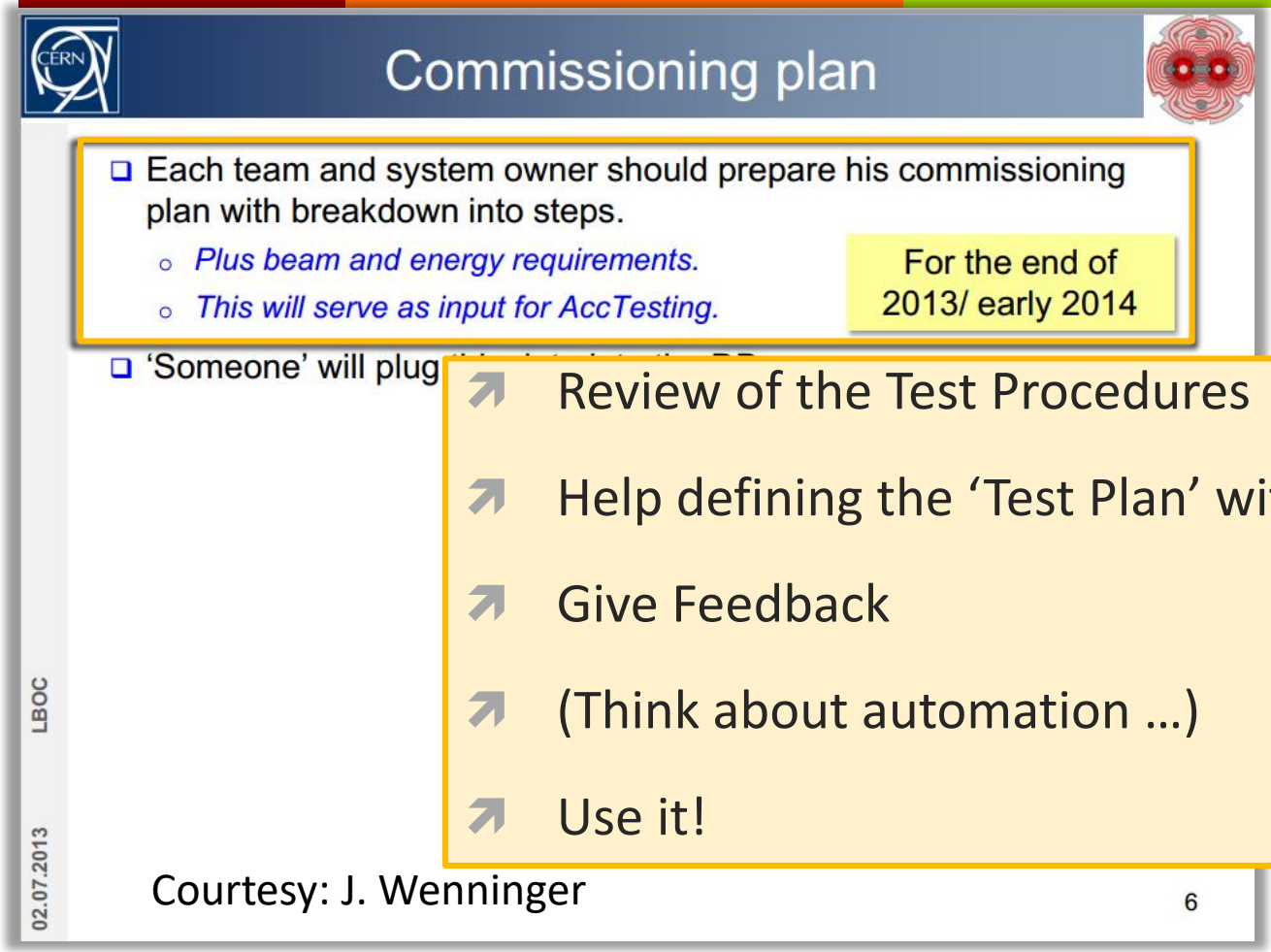
What would be needed from System Owners / MPP Members?



Courtesy: J. Wenninger

- Review of the Test Procedures
- Help defining the 'Test Plan' within AccTesting
- Give Feedback
- (Think about automation …)
- Use it!

Time scale

- End of 2013:
  Ready for Testplan editing (TE-MPE-MS)
- Spring 2014:
  Finalization of Test Procedures
- Summer 2014:
  Creation of Test Plan
  (Responsible ?)

For Discussion

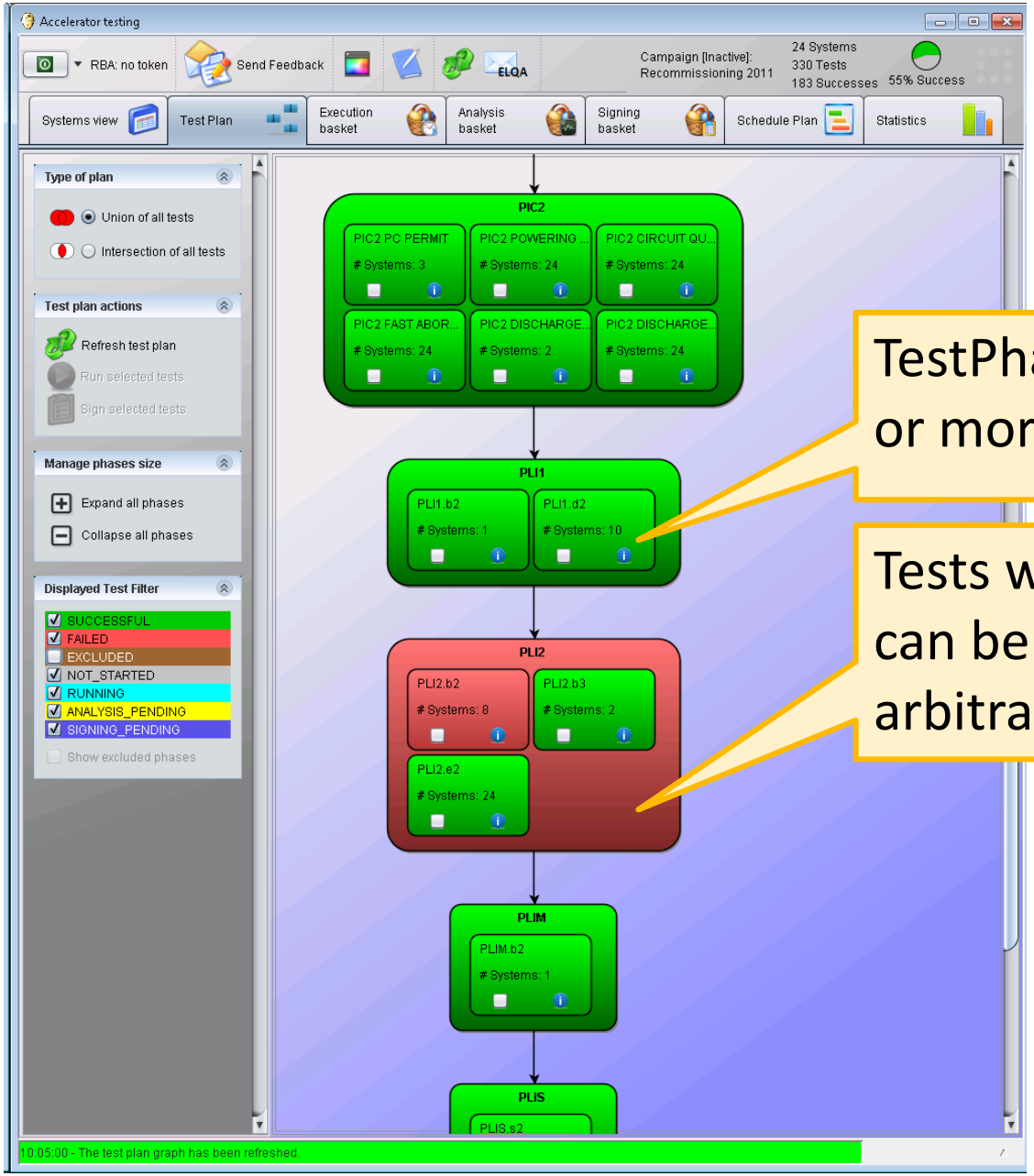
- Attachements? E.g. Links to Logbook? (!!)
- Interlocks on (uncomplete) active Test plan?
- Could we even profit from other AccTesting Features?
  - Scheduler?
  - Constraints?
  - Notifications?
  - Execution?
  - Analysis?
- Anything else missing?

Summary

- AccTesting can provide:
  - Reusable Test Plans
  - Consistent Tracking & Test History
  - Enforcement of order
  - Enforcement of Signatures
  - Automation for the future
- Still some work to be done
  - Test Plan Editing
  - New Concepts (Composite Tests, Barriers)
- Aiming to be ready for “feeding DB” end of 2013

Thank you for your Attention!

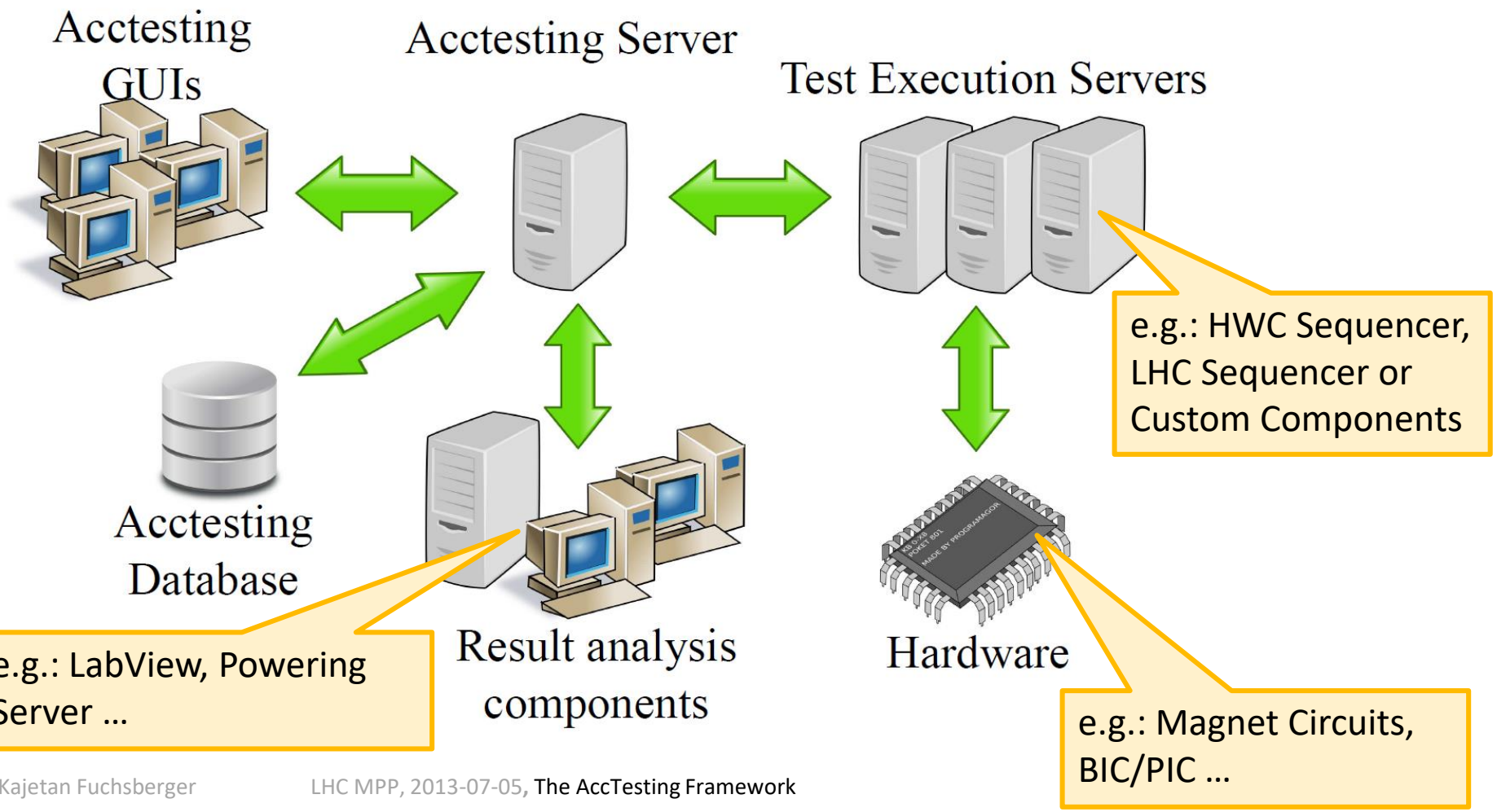
Questions?



TestPhase contains one or more Tests

Tests within a test phase can be executed in arbitrary order.

Overview


Acctesting GUIs
Acctesting Server
Test Execution Servers
Acctesting Database
Result analysis components
Hardware
e.g.: HWC Sequencer, LHC Sequencer or Custom Components
e.g.: LabView, Powering Server …
e.g.: Magnet Circuits, BIC/PIC …

System Relations & Information

- Key Concept: Re-use of existing Sources!
- Cooperation between TE-MPE-MS software team and BE-CO-DO (S. Baggiolini, D. Csikos).

Clients
(e.g. AccTesting, Diamon, ….)

System Information Server

System Providers:
- Lsa
- Layout Db
- …

Information Providers:
- Status
- Issues (Jira)
- Deployments
- Faults? …

Relation Providers:
- Layout Db
- Runtime info (JMS)
- Java code analysis
- …

Interlocks based on Test Plan?

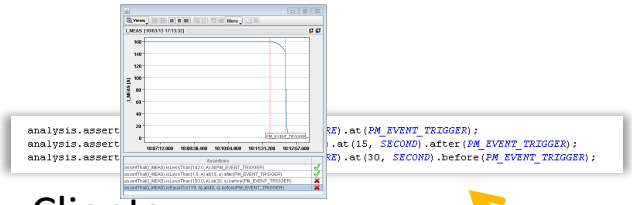
- Examples:
  - Prohibit, that circuit can be powered, before all the tests are done.
  - Do not allow injection of beam before all necessary MPS tests are done.
- Possibly: Enforce Tests after changes:
  - E.g. Which tests have to be executed, after a change of a QPS – card?
  - Pre-defined test plans or (partially) auto-generated?
  - → Knowledge about System-Dependencies required!
- What to interlock?
  - E.g. Additional Circuit lock on PIC level which allows tests?
  - Injection interlock?

Automation?

- Automate whatever can be automated!
  (Avoid Errors, Reproducibility)
- First steps: Concentrate on systems, where many interlocks of same type:
  - BIC/PIC: Already dedicated tool, in the pipeline to be integrated with AccTesting
  - Collimators
    - Integrate BIS connection Test?
    - Do we really have to look 'by eye' on lossmaps?
    - Could there be a Hierarchy-check without a reference?
  - Vacuum
  - BLMs:
    - E.g.: Test Of Latency: Close collimators: Done in pt3, pt7: Could be done for more, if automatic.
  - Others?

Data Analysis Service

- TE-MPE-MS Vision: More general Data Analysis Framework
- Key Concept: Perform analysis as close as possible to the data!
- (Potential) Collaboration with BE-CO-DA to optimize resources, avoid duplication of efforts
- First Implementation in place.



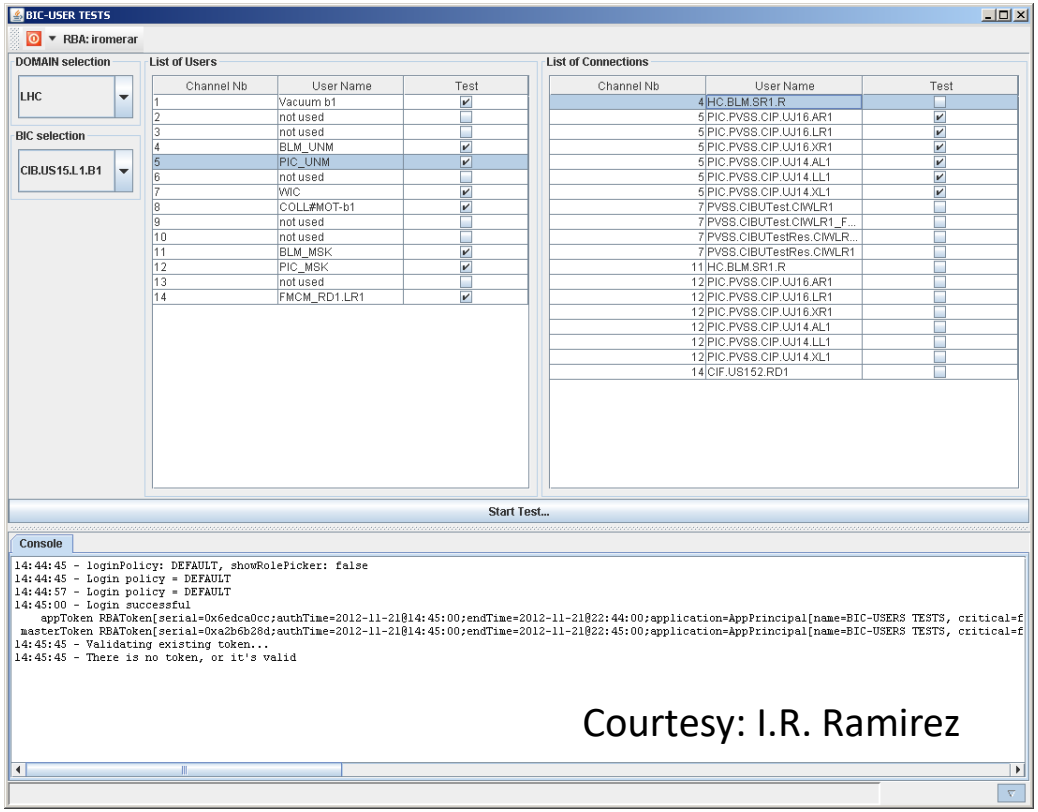
Clients
(e.g. AccTesting, Timber, Custom Analysis….)

Analysis Framework (Cluster?)

- Logging DB
- Post Mortem
- Hadoop Cluster?
- Others?

BIC Communication Tests

- Testing communication between PICs, WICs and FMCMs to BICs.
- Migration of existing GUI + dedicated Db Tables to Generic Framework + DB
- Re-Usage of existing Code.



Courtesy: I.R. Ramirez

Custom Reports

- To be used for:
  - Notification
  - Status reports
  - Periodical reports
  - Generation of Procedure Documentation
  - Combination with analysis language?
- Export to different Formats (e.g. html, pdf, xml, csv….)
- Various Libraries under investigation

→ ?

Migration of MPS Commissioning Proc.

- Transform all the MPS comissioning steps to AccTesting (simple sign-only tests).
- Replace one by one with automated tests.
- Automate whatever can be automated! (Avoid Errors, Reproducibility)
- First steps: Concentrate on systems, where many interlocks of same type:
  - Collimators
  - Vacuum
  - BLMs

Summary

- AccTesting operational since 2012.
- Done:
  - Db migrated
- Ongoing:
  - Analysis Language
  - ELQA Integration
  - System Relation Management
- Plans & Visions:
  - MPS Commissioning Integration
  - Editing of Test Plans
  - Reporting

AccTesting Server

- Orchestrates the whole process:
  - Test Execution
  - Test Analysis
- Exclusively reads/persists data in the database.
- Notifies all the GUIs about changes.
- Robust Design:
  - Continuously persists relevant data to be able to recover in case of a crash.
  - Gracefully handles unexpected behaviour of Execution- and Analysis Components.

Constraints

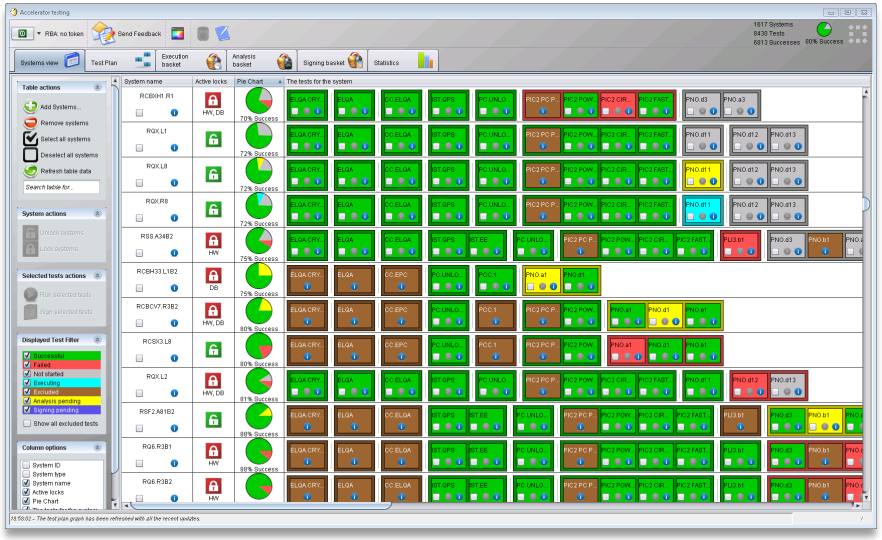
- Simple Extension Point, which has to decide if one Test is allowed to be run together with another one. (Simple Yes/No decision)
- Used to formulate requirements like:
  “Only start one test on one of the four circuits on the same QPS controller.”
- Checked by the Scheduler, to decide if a certain test-configuration is allowed or not.

  → **See Michael’s presentation.**

Test Step Handlers

- Responsible for executing a specific TestStep (execution, analysis) for a certain type of tests.
- Is itself responsible for communicating with other systems, if required.
- Examples:
  - HwcTestExecutionHandler: Communicates with HWC Sequencer to execute the tests
  - DaemoneAnalysisHandler: Communicates with LabView system to retrieve analysis results
  - … Future: PicBicTestExecutionHandler?

The AccTesting Framework



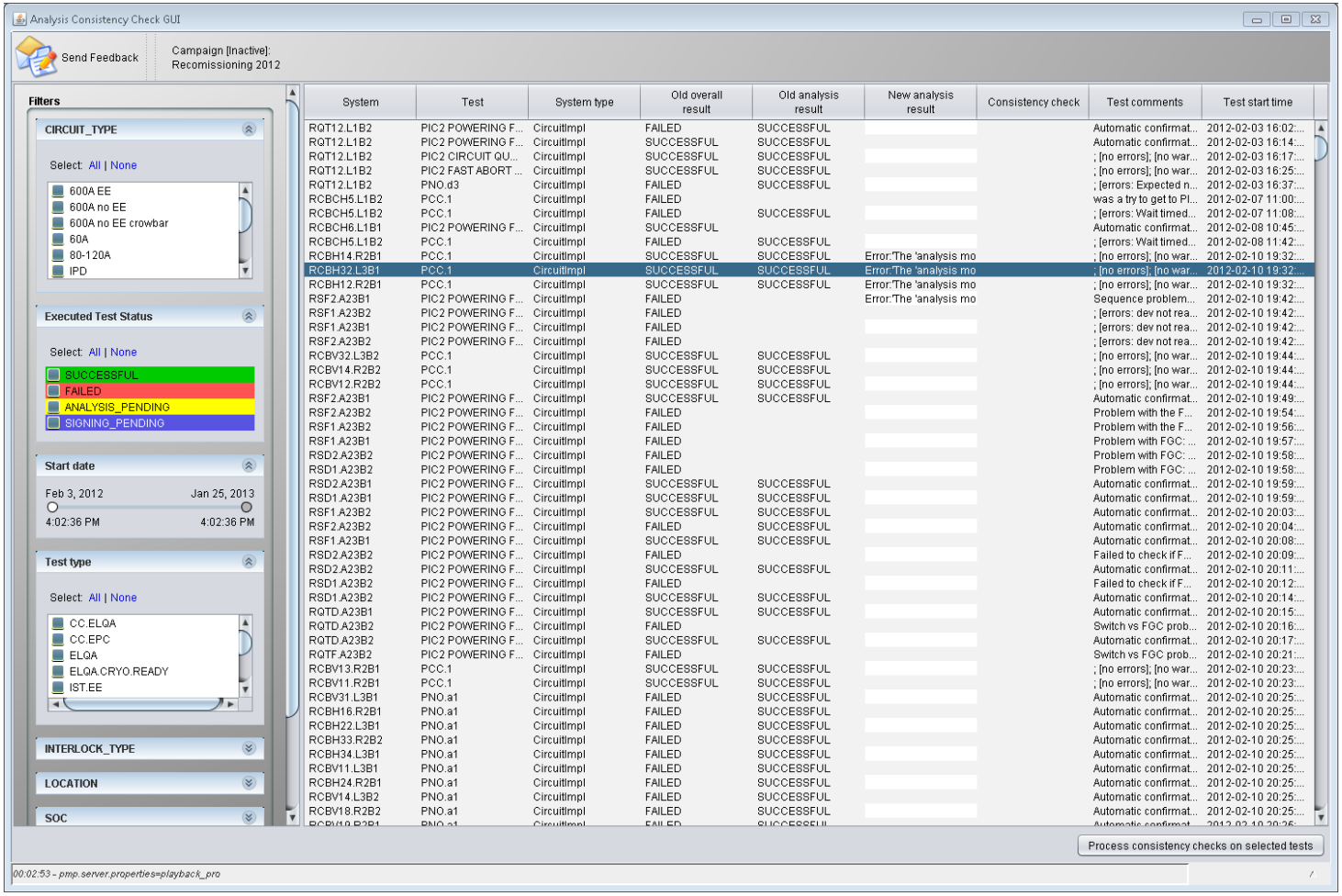
- Designed from the experience of Hardware Commissioning.
- Successfully Used in HWC Campaigns 2012, 2013
- Enforces Correct Order of Tests
- Many additional features:
  - Automatic Scheduling
  - Constraints
  - Statistics

Notifications

- Precondition for ELQA Tests
- Grouping/Aggregation wrt different conditions (Systems, Tests ….)
- Currently manually triggered
- Later: Triggered automatically
- Useful also for Beam Commissioning?

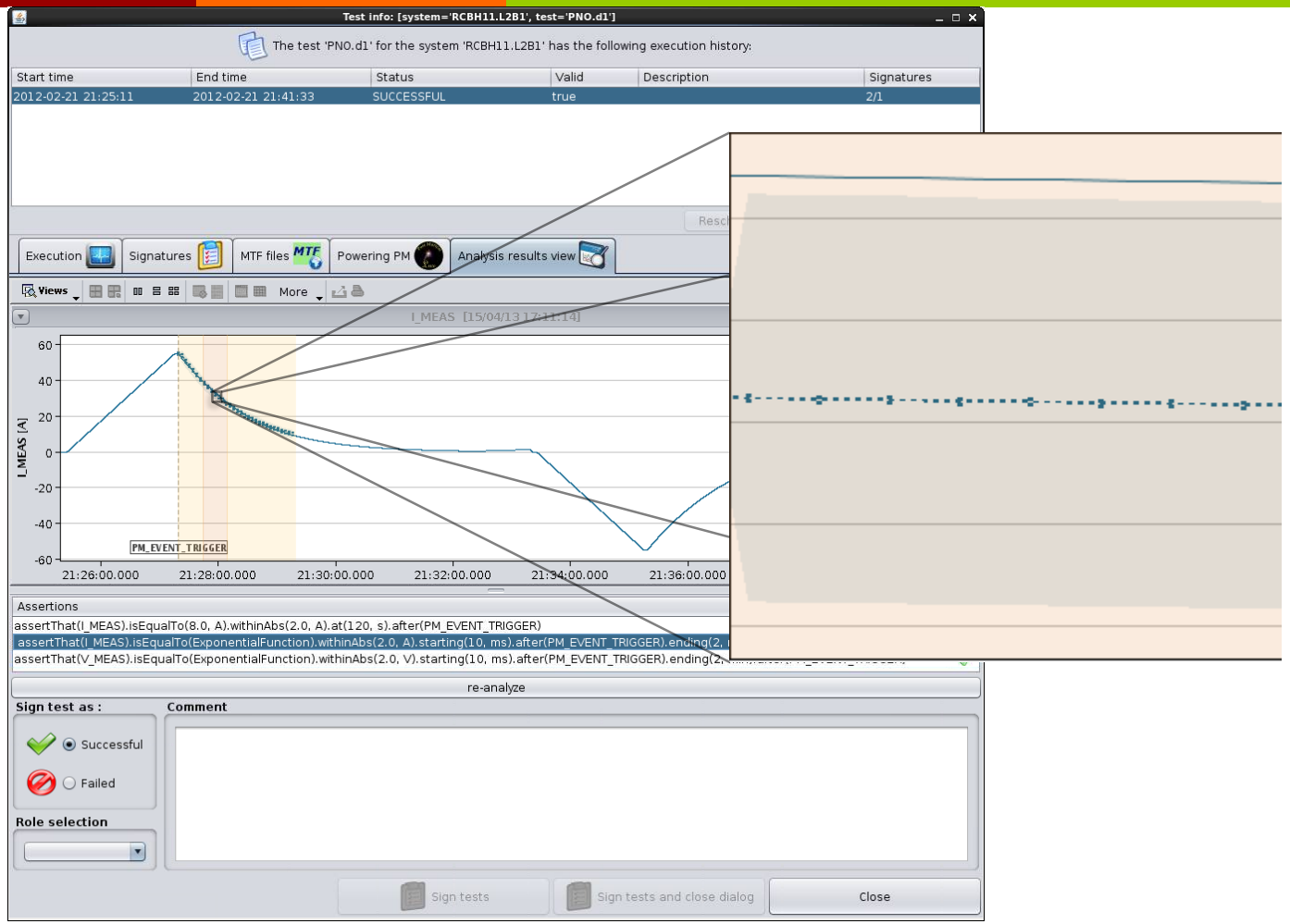
Designed for Extension

- Server Extension Points:
  - TestStepHandler (handle certain types of SystemTests)
  - Constraints (Restrict Test Execution)
  - LockProvider (PIC, Db, …)
  - SystemInformationProvider (e.g. Issues)
- GUI Extension Points:
  - TestResultsViewer (E.g. Powering Server)

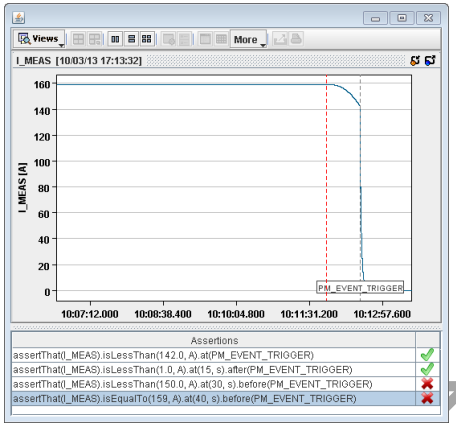

Analysis Consistency Check GUI
Send Feedback
Campaign [Inactive]:
Recomissioning 2012
Filters
CIRCUIT_TYPE
Select: All | None
600A EE
600A no EE
600A no EE crowbar
60A
80-120A
IPD
Executed Test Status
Select: All | None
SUCCESSFUL
FAILED
ANALYSIS_PENDING
SIGNING_PENDING
Start date
Feb 3, 2012
Jan 25, 2013
4:02:36 PM
4:02:36 PM
Test type
Select: All | None
CC.ELQA
CC.EPC
ELQA
ELQA.CRYO.READY
IST.EE
INTERLOCK_TYPE
LOCATION
SOC
System
Test
System type
Old overall result
Old analysis result
New analysis result
Consistency check
Test comments
Test start time
RQT12.L1B2 PIC2 POWERING F... CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-03 16:02:...
RQT12.L1B2 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-03 16:14:...
RQT12.L1B2 PIC2 CIRCUIT QU... CircuitImpl SUCCESSFUL SUCCESSFUL ; [no errors]; [no war... 2012-02-03 16:17:...
RQT12.L1B2 PIC2 FAST ABORT ... CircuitImpl SUCCESSFUL SUCCESSFUL ; [no errors]; [no war... 2012-02-03 16:25:...
RQT12.L1B2 PNO.d3 CircuitImpl FAILED SUCCESSFUL ; [errors: Expected n... 2012-02-03 16:37:...
RCBCH5.L1B2 PCC.1 CircuitImpl FAILED was a try to get to PI... 2012-02-07 11:00:...
RCBCH5.L1B2 PCC.1 CircuitImpl FAILED SUCCESSFUL ; [errors: Wait timed... 2012-02-07 11:08:...
RCBCH6.L1B1 PIC2 POWERING F... CircuitImpl SUCCESSFUL Automatic confirmat... 2012-02-08 10:45:...
RCBCH5.L1B2 PCC.1 CircuitImpl FAILED SUCCESSFUL ; [errors: Wait timed... 2012-02-08 11:42:...
RCBH14.R2B1 PCC.1 CircuitImpl SUCCESSFUL SUCCESSFUL Error:'The 'analysis mo ; [no errors]; [no war... 2012-02-10 19:32:...
RCBH32.L3B1 PCC.1 CircuitImpl SUCCESSFUL SUCCESSFUL Error:'The 'analysis mo ; [no errors]; [no war... 2012-02-10 19:32:...
RCBH12.R2B1 PCC.1 CircuitImpl SUCCESSFUL SUCCESSFUL Error:'The 'analysis mo ; [no errors]; [no war... 2012-02-10 19:32:...
RSF2.A23B1 PIC2 POWERING F... CircuitImpl FAILED Error:'The 'analysis mo Sequence problem... 2012-02-10 19:42:...
RSF1.A23B2 PIC2 POWERING F... CircuitImpl FAILED ; [errors: dev not rea... 2012-02-10 19:42:...
RSF1.A23B1 PIC2 POWERING F... CircuitImpl FAILED ; [errors: dev not rea... 2012-02-10 19:42:...
RSF2.A23B2 PIC2 POWERING F... CircuitImpl FAILED ; [errors: dev not rea... 2012-02-10 19:42:...
RCBV32.L3B2 PCC.1 CircuitImpl SUCCESSFUL SUCCESSFUL ; [no errors]; [no war... 2012-02-10 19:44:...
RCBV14.R2B2 PCC.1 CircuitImpl SUCCESSFUL SUCCESSFUL ; [no errors]; [no war... 2012-02-10 19:44:...
RCBV12.R2B2 PCC.1 CircuitImpl SUCCESSFUL SUCCESSFUL ; [no errors]; [no war... 2012-02-10 19:44:...
RSF2.A23B1 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 19:49:...
RSF2.A23B2 PIC2 POWERING F... CircuitImpl FAILED Problem with the F... 2012-02-10 19:54:...
RSF1.A23B2 PIC2 POWERING F... CircuitImpl FAILED Problem with the F... 2012-02-10 19:56:...
RSF1.A23B1 PIC2 POWERING F... CircuitImpl FAILED Problem with FGC: ... 2012-02-10 19:57:...
RSD2.A23B2 PIC2 POWERING F... CircuitImpl FAILED Problem with FGC: ... 2012-02-10 19:58:...
RSD1.A23B2 PIC2 POWERING F... CircuitImpl FAILED Problem with FGC: ... 2012-02-10 19:58:...
RSD2.A23B1 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 19:59:...
RSD1.A23B1 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 19:59:...
RSF1.A23B2 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 20:03:...
RSF2.A23B2 PIC2 POWERING F... CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:04:...
RSF1.A23B1 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 20:08:...
RSD2.A23B2 PIC2 POWERING F... CircuitImpl FAILED Failed to check if F... 2012-02-10 20:09:...
RSD2.A23B2 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 20:11:...
RSD1.A23B2 PIC2 POWERING F... CircuitImpl FAILED Failed to check if F... 2012-02-10 20:12:...
RSD1.A23B2 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 20:14:...
RQTD.A23B1 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 20:15:...
RQTD.A23B2 PIC2 POWERING F... CircuitImpl FAILED Switch vs FGC prob... 2012-02-10 20:16:...
RQTD.A23B2 PIC2 POWERING F... CircuitImpl SUCCESSFUL SUCCESSFUL Automatic confirmat... 2012-02-10 20:17:...
RQTF.A23B2 PIC2 POWERING F... CircuitImpl FAILED Switch vs FGC prob... 2012-02-10 20:21:...
RCBV13.R2B1 PCC.1 CircuitImpl SUCCESSFUL SUCCESSFUL ; [no errors]; [no war... 2012-02-10 20:23:...
RCBV11.R2B1 PCC.1 CircuitImpl SUCCESSFUL SUCCESSFUL ; [no errors]; [no war... 2012-02-10 20:23:...
RCBV31.L3B1 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
RCBH16.R2B1 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
RCBH22.L3B1 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
RCBH33.R2B2 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
RCBH34.L3B1 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
RCBV11.L3B1 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
RCBH24.R2B1 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
RCBV14.L3B2 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
RCBV18.R2B2 PNO.a1 CircuitImpl FAILED SUCCESSFUL Automatic confirmat... 2012-02-10 20:25:...
Process consistency checks on selected tests
00:02:53 - pmp.server.properties=playback_pro

Analysis result - example

Analysis failed



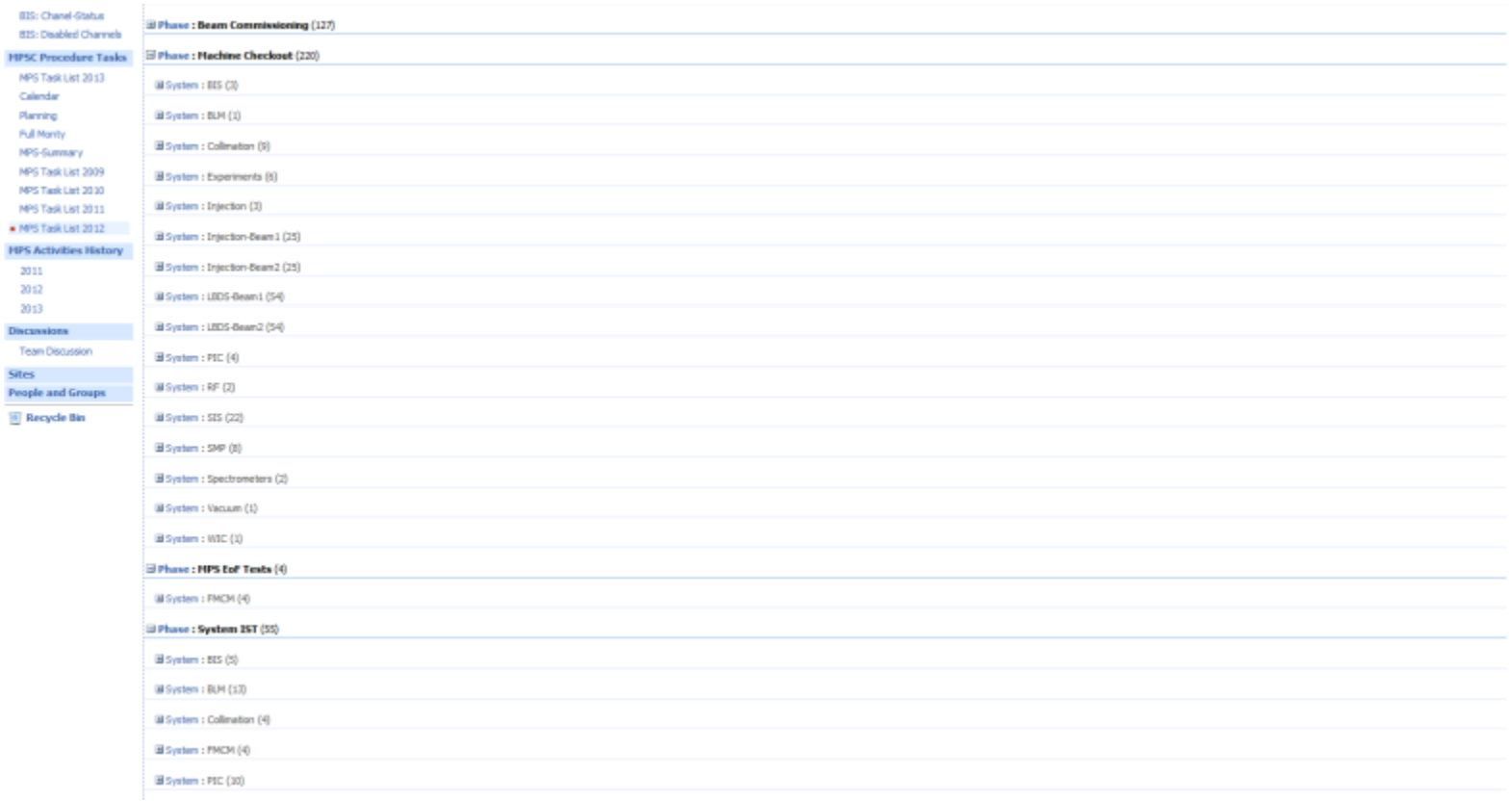
Test Analysis



- Vision:
  - Simple description of test-expectations (assertions) on signals resulting from tests (Java).

```
analysis.assertThat(I_MEAS).isLessThan(142, AMPERE).at(PM_EVENT_TRIGGER);
analysis.assertThat(I_MEAS).isLessThan(1, AMPERE).at(15, SECOND).after(PM_EVENT_TRIGGER);
analysis.assertThat(I_MEAS).isLessThan(150, AMPERE).at(30, SECOND).before(PM_EVENT_TRIGGER);
```

  - Universal GUI components to visualize problems.
- First Implementation:
  - Cooperation between TE-MPE-MS software team and BE-CO-DA (R. Gorbonosov, A. Jalal)
  - Used in AccTesting
  - could be used e.g. in future PM modules. (Maybe also in sequencer tasks and other checks?)


BIS: Chanel-Status
BIS: Disabled Channels
MPSC Procedure Tasks
MPS Task List 2013
Calendar
Planning
Full Monty
MPS-Summary
MPS Task List 2009
MPS Task List 2010
MPS Task List 2011
MPS Task List 2012
MPS Activities History
2011
2012
2013
Discussions
Team Discussion
Sites
People and Groups
Recycle Bin
Phase : Beam Commissioning (127)
Phase : Machine Checkout (220)
System : BIS (3)
System : BLM (1)
System : Collimation (9)
System : Experiments (6)
System : Injection (3)
System : Injection-Beam1 (25)
System : Injection-Beam2 (25)
System : LBDS-Beam1 (54)
System : LBDS-Beam2 (54)
System : PIC (4)
System : RF (2)
System : SIS (22)
System : SMP (8)
System : Spectrometers (2)
System : Vacuum (1)
System : WIC (1)
Phase : MPS EoF Tests (4)
System : FMCM (4)
Phase : System IST (55)
System : BIS (5)
System : BLM (13)
System : Collimation (4)
System : FMCM (4)
System : PIC (10)