Preliminary tests for the Beam Interlock Controller

bulletin

Dernier délai pour soumission des articles : mardi 12.00 h.
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Le SPS s'entraîne pour le LHC

Les 8 et 9 septembre, le nouveau système d'extraction de faisceaux du SPS et la ligne de transfert aval ont été mis en service et testés avec succès. Grâce à cette extraction, les faisceaux seront envoyés vers le LHC en 2004 et l'installation CNGS en 2006.

Les 8 et 9 septembre, le SPS, exploité sur le cycle LHC, est parvenu à extraire des paquets individuels d'environ cinq milliards de protons. Le nouveau système d'extraction rapide dans la section droite longue 4 et la ligne de transfert TT40 qui lui fait suite, construit et installé au cours des quatre dernières années, a réussi son premier test de faisceau après plusieurs galops d'essai. Le succès de cette extraction depuis le SPS rapproche encore un peu plus le faisceau du LHC.

Pour Brennan Goddard, chef de section au sein du Groupe Transfert de faisceaux de la Division AB et responsable de la préparation du test, «la chaîne d'injection du LHC vient de franchir une nouvelle étape».

Le SPS sera le préinjecteur final du LHC ; il accélérera des

SPS in training for LHC

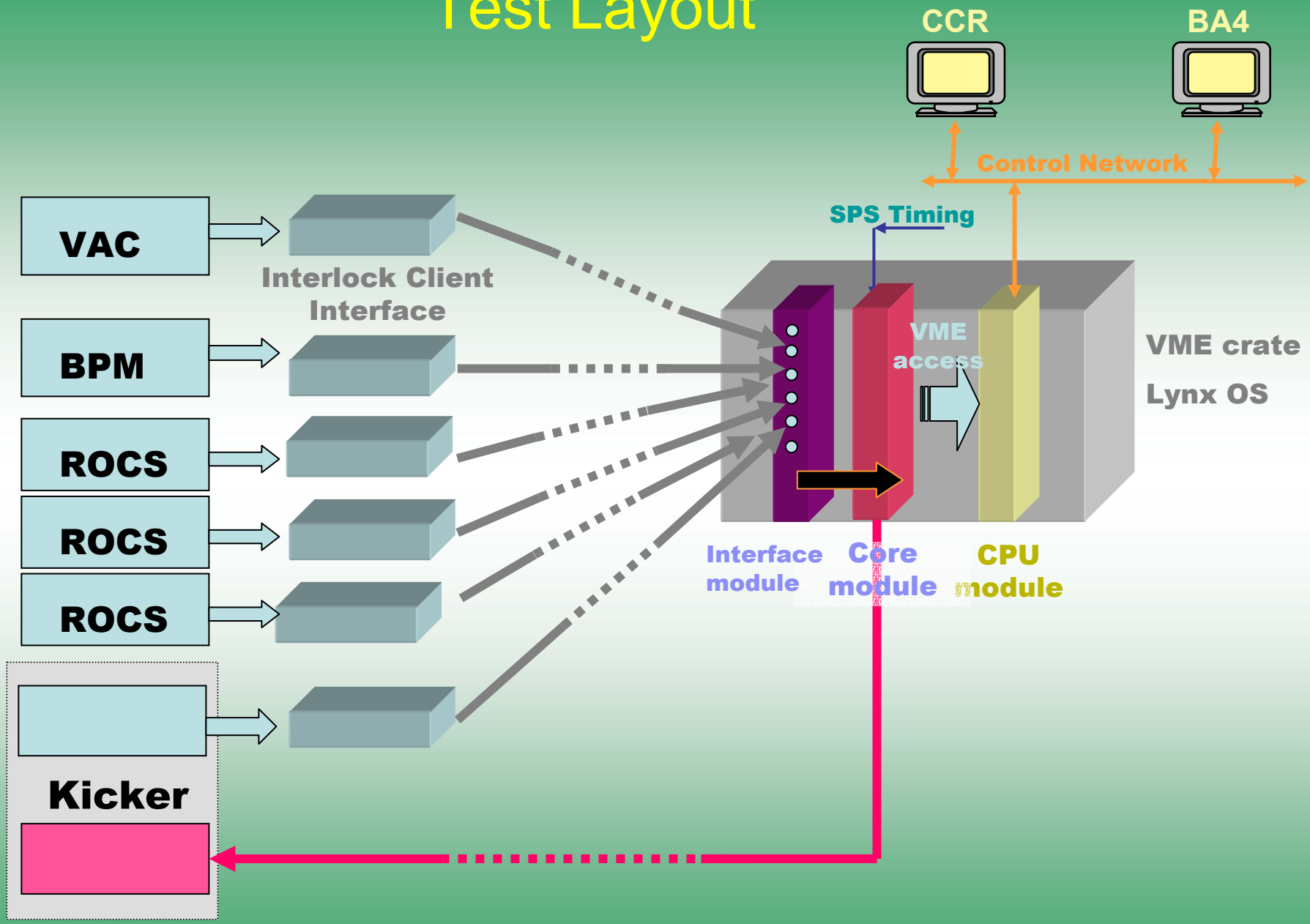
On 8 and 9 September the new beam extr... of the SPS and the downstream transfer line... fully commissioned and tested. Using this... beam will be sent towards LHC in 2004 and... facility in 2006.

The SPS, running its LHC cycle, successfully e... single bunches of about five billion protons on 8 ... September. The new fast extraction system in t... straight section 4 and the subsequent short tr... TT40, constructed and installed over the la... passed its first beam test after several prepa... tests. With the successful extraction from the ... beam is ...xting ever closer to the LHC. "We pushed the LHC injector chain another step," says Brennan Goddard, section leader in the AB Beam Transfer group and responsible for the preparation of the test.

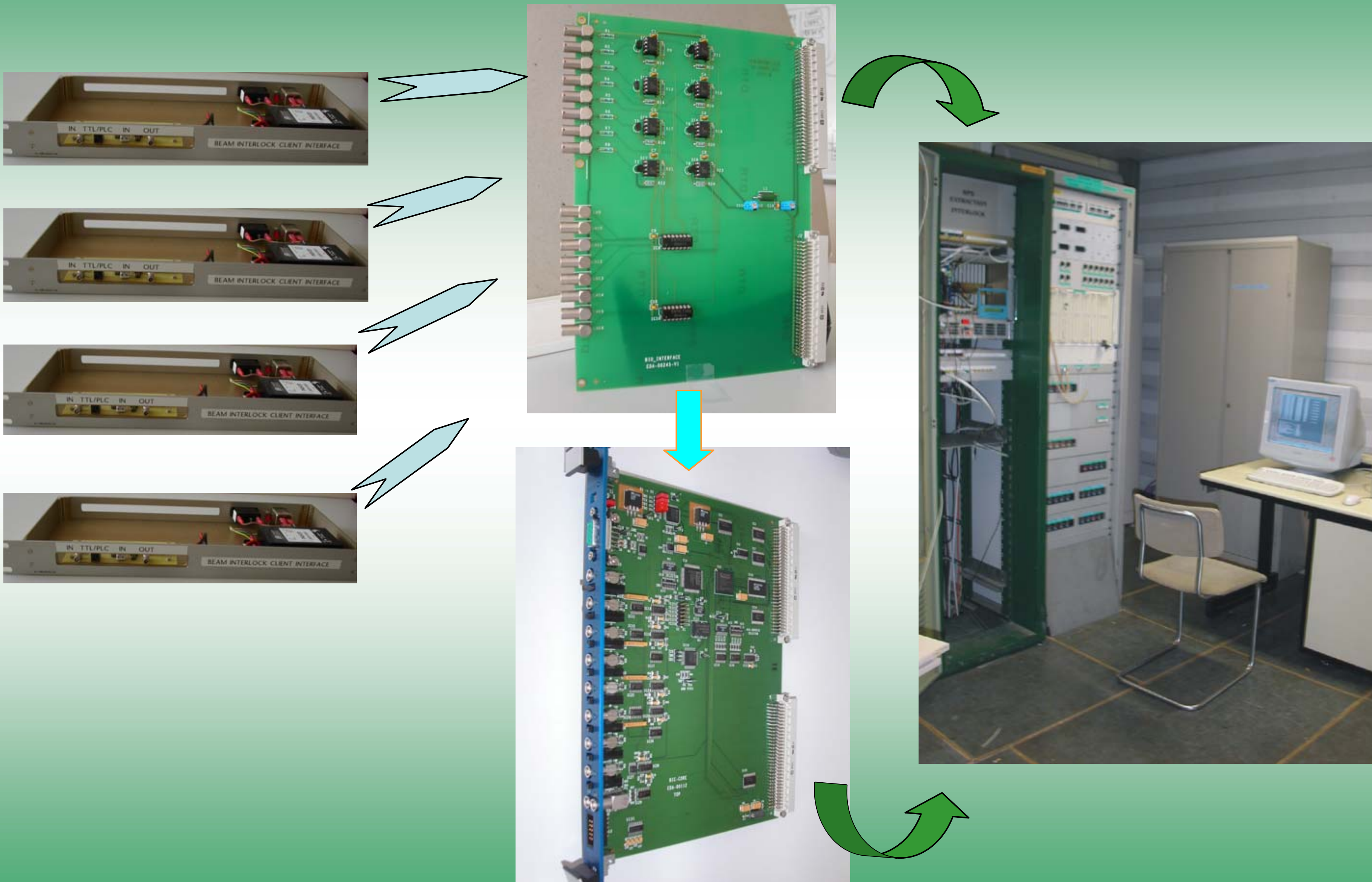
The SPS is the final pre-injector for the LHC, accelerating 26 GeV protons from the PS to 450 GeV. Two transfer lines with a length of

performed in TT40 on 8th Sept.

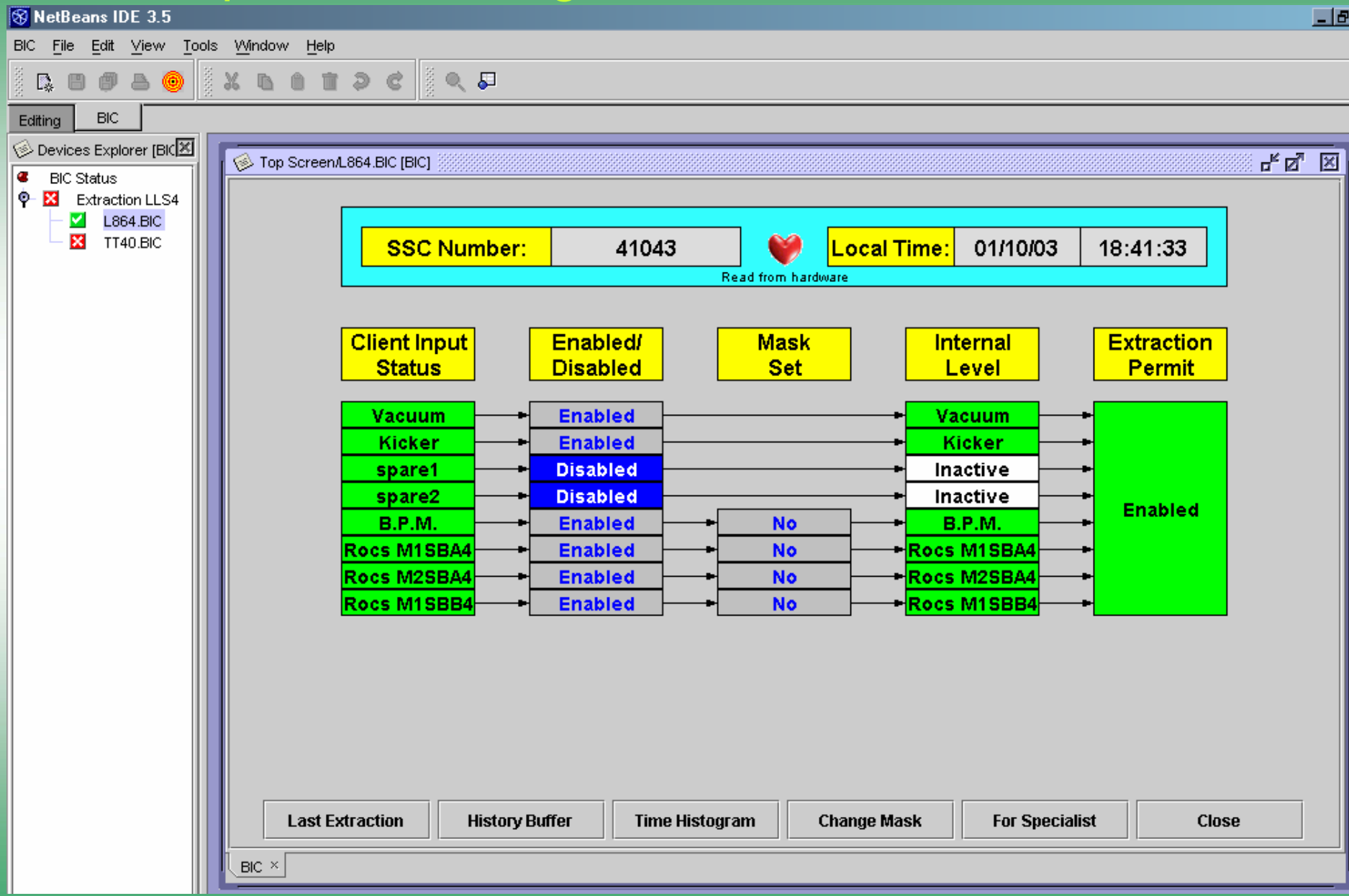
Test Layout


CCR
BA4
Control Network
SPS Timing
VAC
Interlock Client Interface
BPM
ROCS
ROCS
ROCS
Kicker
VME access
VME crate
Lynx OS
Interface module
Core module
CPU module

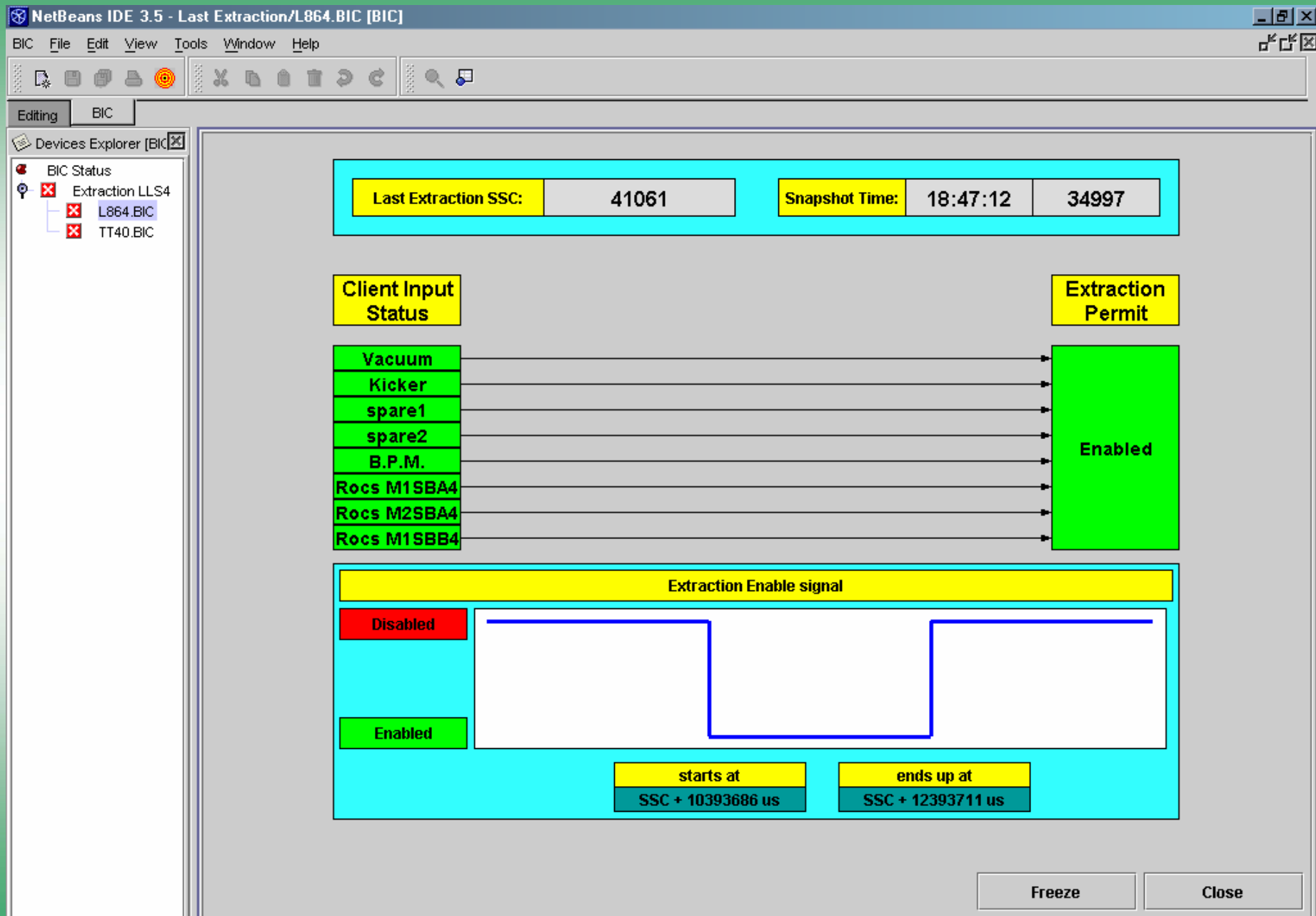
Some pictures



Supervision using Java + 3-tier architecture



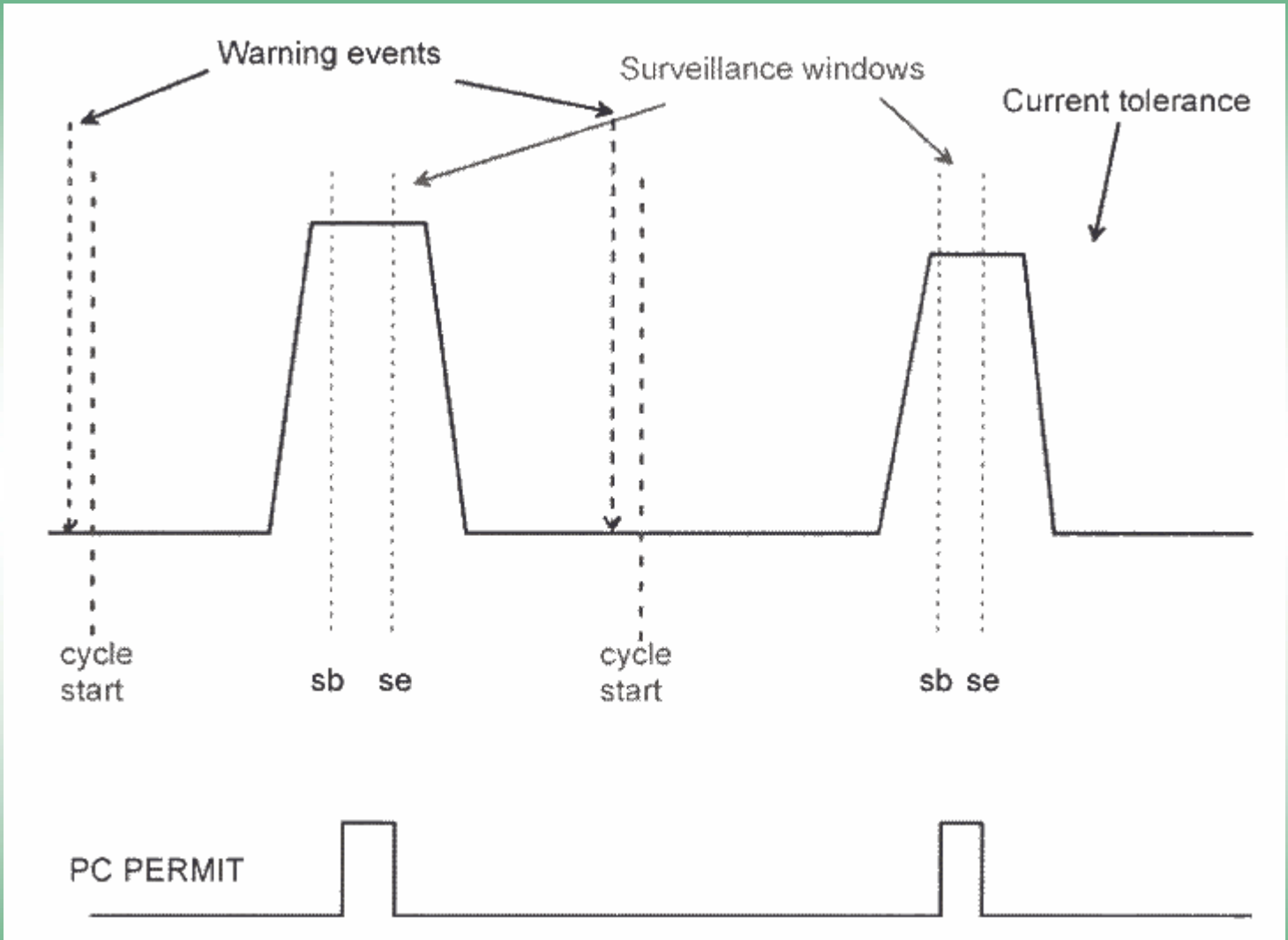
Last Extraction Screen



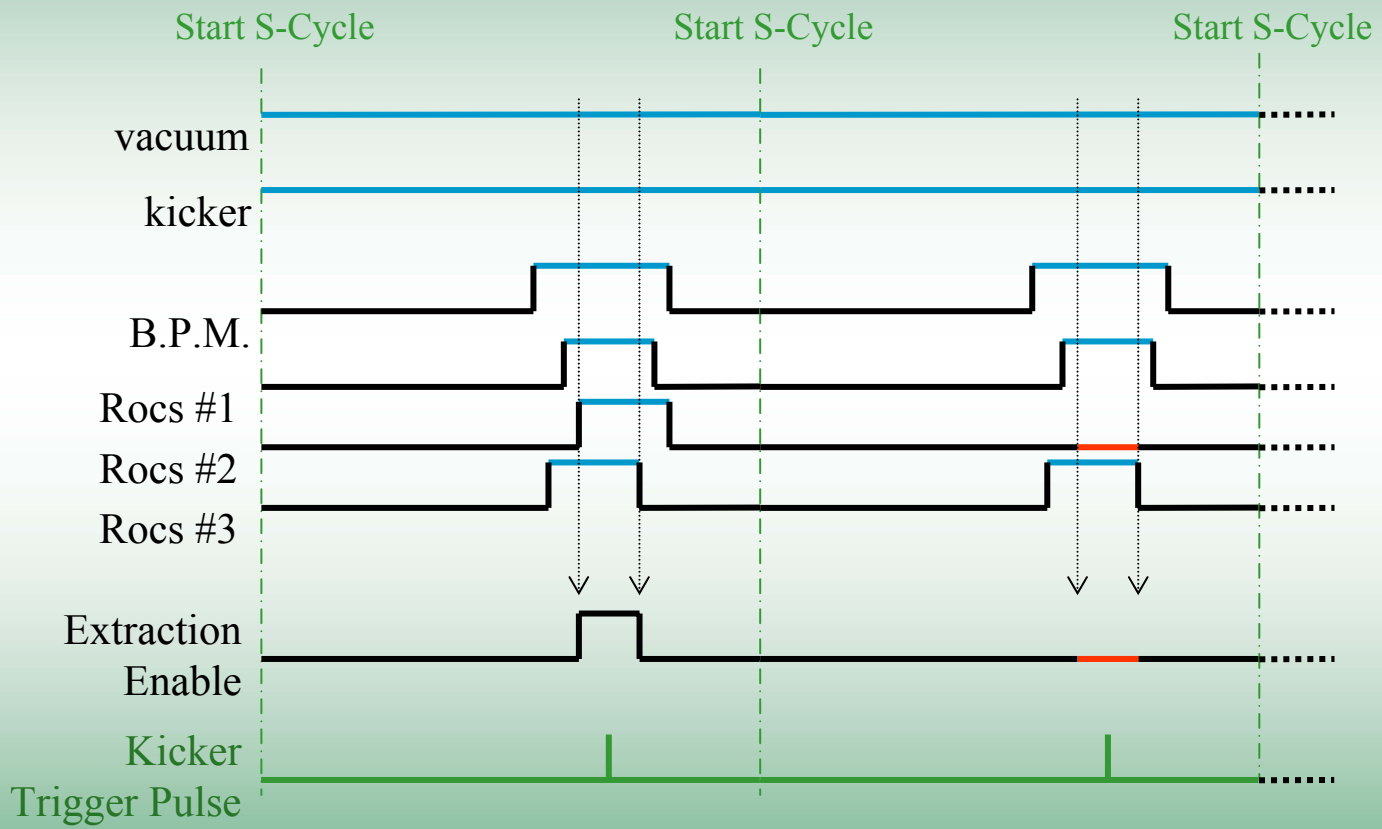
History Buffer

Rocs M1SBA4	1 to 0	at	12:22:19	258294
Rocs M1SBB4	1 to 0	at	12:22:19	259832
Rocs M2SBA4	1 to 0	at	12:22:19	2599
Rocs M1SBA4	0 to 1	at	12:22:22	74014
Rocs M1SBB4	0 to 1	at	12:22:22	75612
Rocs M2SBA4	0 to 1	at	12:22:22	75886
SSC	599921	at	12:22:27	747312
Rocs M1SBA4	1 to 0	at	12:22:36	57988
Rocs M2SBA4	1 to 0	at	12:22:36	58913
Rocs M1SBB4	1 to 0	at	12:22:36	58925
Rocs M1SBA4	0 to 1	at	12:22:38	874008
Rocs M1SBB4	0 to 1	at	12:22:38	875589
Rocs M2SBA4	0 to 1	at	12:22:38	876011
SSC	599922	at	12:22:44	547312
Rocs M1SBA4	1 to 0	at	12:22:52	857987
Rocs M1SBB4	1 to 0	at	12:22:52	858924
Rocs M2SBA4	1 to 0	at	12:22:52	858927
Rocs M1SBA4	0 to 1	at	12:22:55	674013
Rocs M1SBB4	0 to 1	at	12:22:55	675467
Rocs M2SBA4	0 to 1	at	12:22:55	675968
SSC	599923	at	12:23:01	347312
Rocs M1SBA4	1 to 0	at	12:23:09	657986
Rocs M2SBA4	1 to 0	at	12:23:09	658928
Rocs M1SBB4	1 to 0	at	12:23:09	659388
Rocs M1SBA4	0 to 1	at	12:23:12	474023
Rocs M1SBB4	0 to 1	at	12:23:12	475476
Rocs M2SBA4	0 to 1	at	12:23:12	475949
SSC	599924	at	12:23:18	147312
Rocs M1SBA4	1 to 0	at	12:23:26	457983

Power Converter surveillance window



Extraction Enable window



What we have learnt?

- Hardware prototype version is working well but…
  - Only ~¼ of the full LSS4 Interlock system
  - Extraction Line Interlock ≠ LHC Beam Interlock
- Usefulness of precise time stamping (1µs)
- Supervision OK
- Helpfulness(?) of Masks:
  - to much Flexibility := to less Reliability
  - concept of conditional masks => Safety beam Flag?

That's all…