

LHC Injectors Upgrade





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PS Longitudinal Profile Measurement

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Specifications

- Provided by BE-OP and BE-RF
 - **Important beam parameters**
 - Beam intensity range to cover from $1e9$ to $2e13$
 - Bunch length (4σ) from 2ns to 250ns
 - **Acquisition requirements (high energy / once per cycle)**

OP

- Longitudinal beam profile
- Intensity per bunch (integrated a bucket)
- Total intensity
- Bunch amplitude
- Longitudinal position (arrival time)

- Logging for the last acquisition turns

accuracy 3%

absolute accuracy 3%

absolute accuracy 3%

absolute accuracy 5%

accuracy 3%

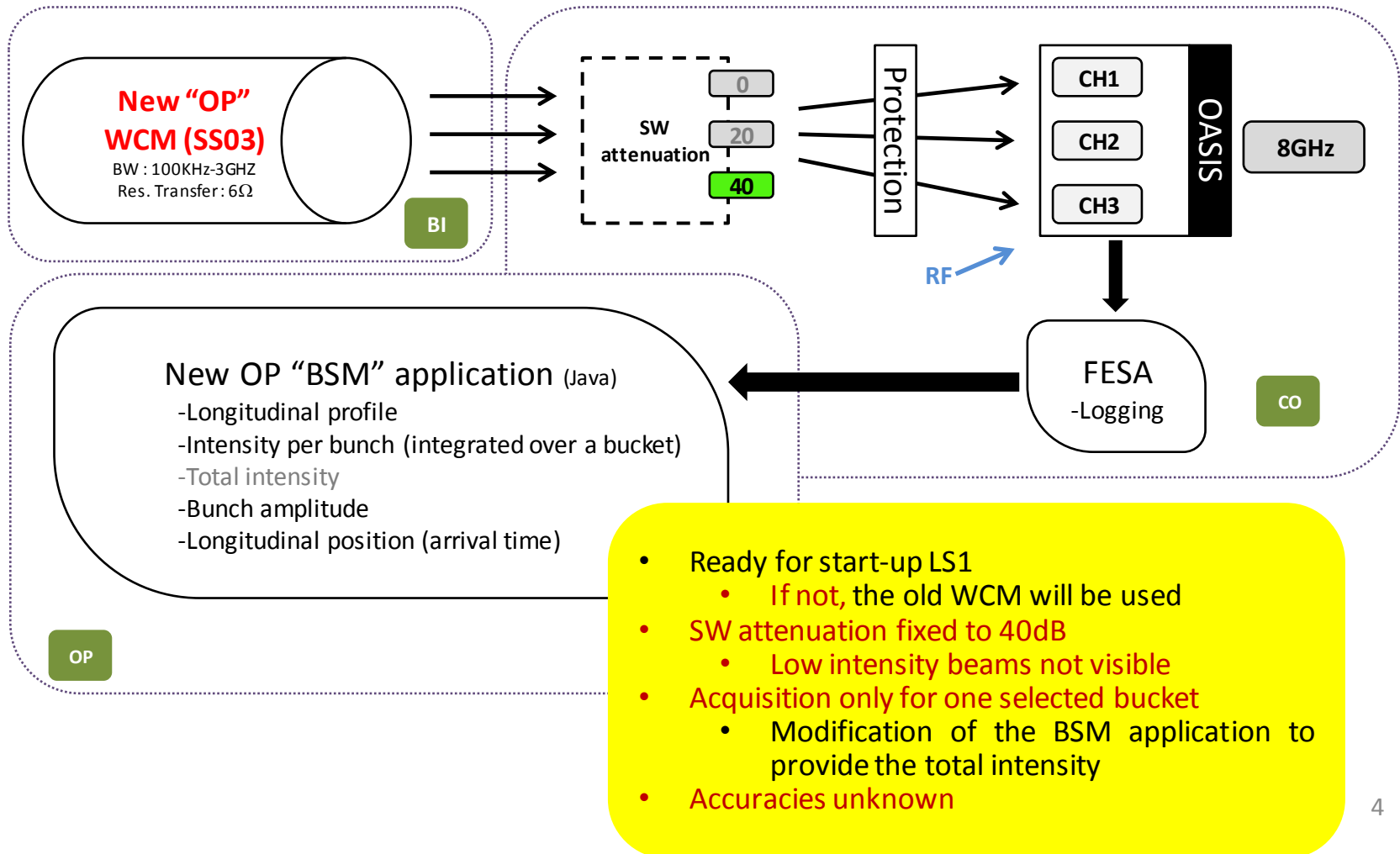
BI

- Satellite bunch intensities

level of $1e-3$

Technology #1 “OASIS scope” (put in place during 2012 - commissioning)

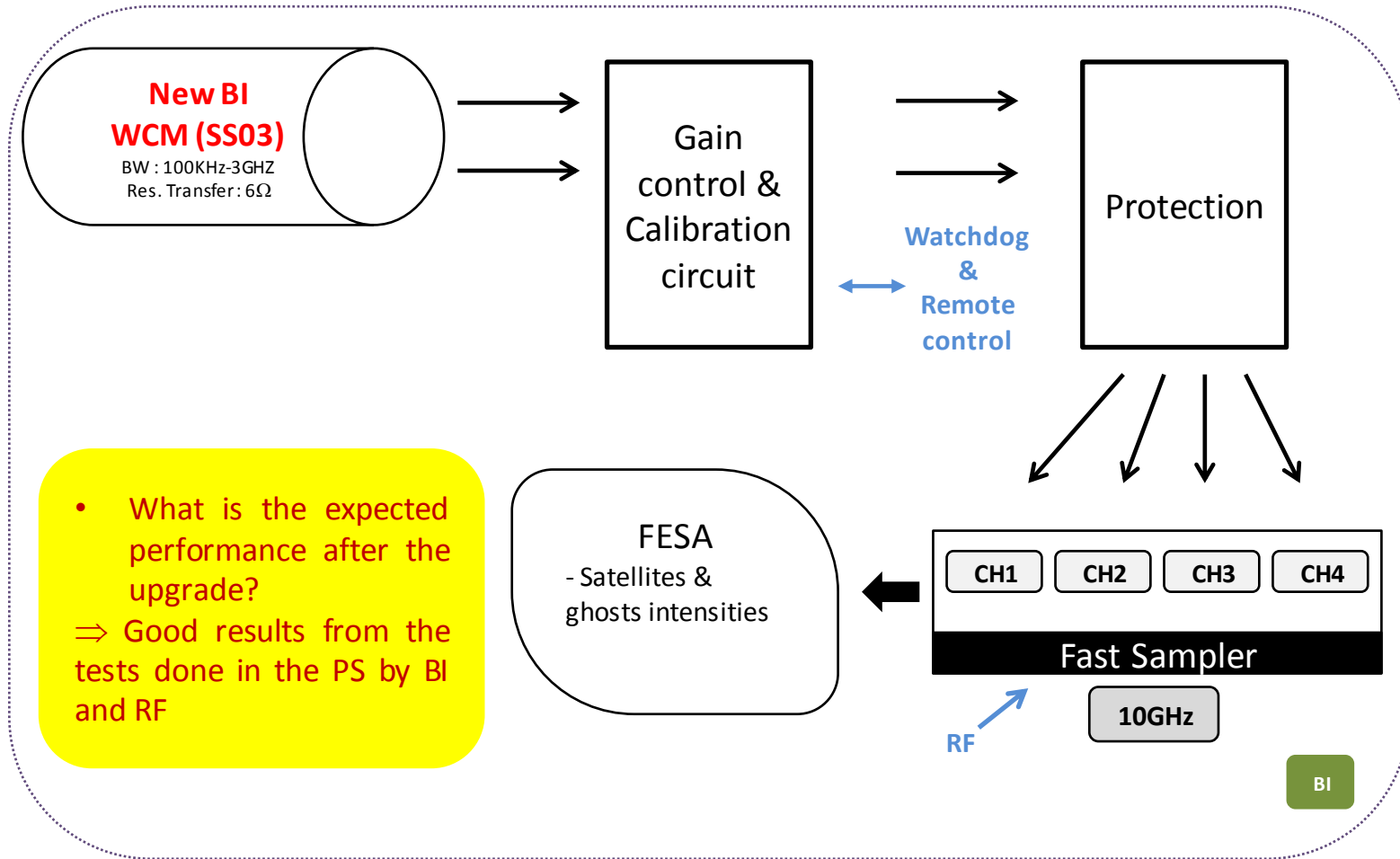
Does it meet all specifications?





Technology #2 “Fast BI BSM System” (Being designed / produced)

- Does it meet all specifications?





Status of Development

- New OP-WCM
 - To be installed and connected to OASIS acquisition cards
 - The BSM and Tomoscope applications are ready to be used
 - Protection of the OASIS solved
 - How to solve the fixed attenuation problem (both WCM)???

⇒ Collaboration between BI and CO needed to control the attenuation automatically in the hardware and to monitor it for example using a watchdog program.
- New BI-WCM
 - To be installed and connected to BI electronics
 - Prototype of front-end electronics being tested
 - New cables pulled for signal – some requested for slow control

Fast Digitizer and FESA server

 - Price enquiry result expected by the end of October 2013
 - Best candidate on paper :
 - Guzik digitizer (up to 13GHz BW, 64GB memory, MS-Windows based)
 - FESA server (using algorithm tested in the LHC)



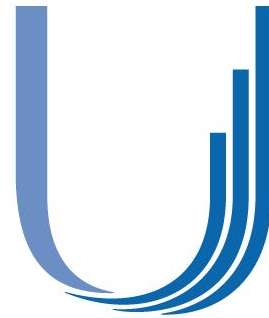
Installation and Commissioning Plan

- **Is there a conflict between machines?**
 - No, the workshop is currently manufacturing 2 WCM detectors (all other parts available).
 - WCM behaviour to characterize and to document.
 - If no problem then the installation is foreseen mid December.
- **If so, what is proposed priority?**
 - Assembly and vacuum testing of the OP-WCM is high priority.
 - Satellite bunch detection is lower priority. Not critical.
- **Where are we limited by available manpower?**
 - Update manpower - expert required in conflict with L4/L2 BPM electronics



Budgetary Requirements

- General cost breakdown up until 2019
 - Operation : OP-WCM 30000CHF (2013)
 - LIU : BI-WCM 135000CHF (2012-2013)
- Identify any changes with respect to current planning
 - No changes – but WCM production and vacuum testing critical
- Identify any areas of large uncertainty
 - Question of attenuation for the OP and the BI WCM



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THANK YOU FOR YOUR ATTENTION!

