

**Lessons Learned from
Testing and Commissioning of
the Ion Source and LEBT**

BI: Diagnostics Deployment

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Lund, 28 August 2019

<https://indico.esss.lu.se/event/1280/>

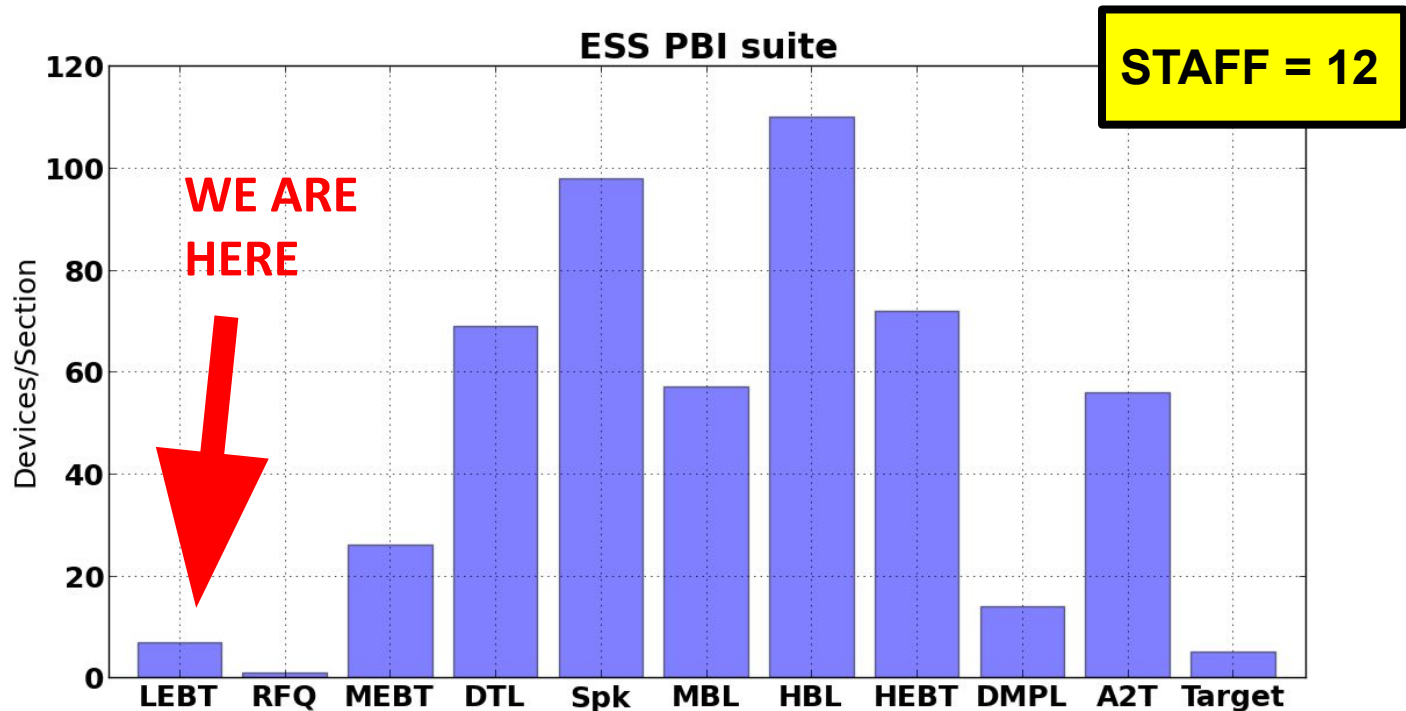
Intent

- Self reflection
- What went well? **16**
- What needs to be improved? **26**
- What remains critical? **22**

STAFF = 12

Intent

- Self reflection
- Constructive feedback
- Forward thinking
- What went well? **16**
- What needs to be improved? **26**
- What remains critical? **22**



Legend



Big success!



There is room for
improvement

~~LCR~~

Critical

Preparations

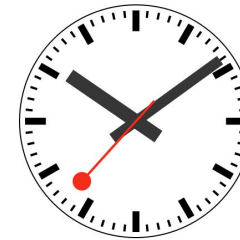
Work request
System installation



Operational limits
Risk assessment



System relocation
BD \longleftrightarrow Rigging



Time

Preparations

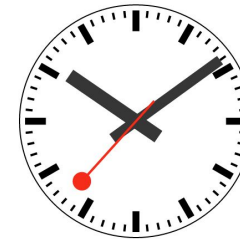
Work request
System installation



Operational limits
Risk assessment



System relocation
BD \longleftrightarrow Rigging



Time

Cable routing
Cable termination
Assembly verification
Racks population
Collision avoidance

Catania legacy
Verification with beam
No assets traceability
Not approved .opi
Workflow for .opi

No automated tests
No remote power monitoring
Several power cuts \rightarrow restart
No list of safe/default par
Limited remote access

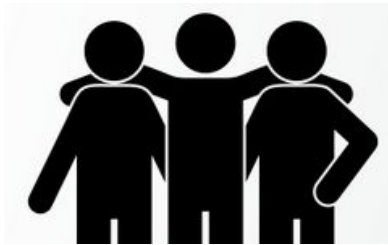
Verification w/o beam

BD \longleftrightarrow Operators

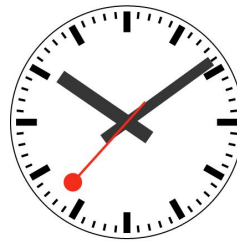
Lost beam time

During the Commissioning

BD \longleftrightarrow Lars, Rick
 BD \longleftrightarrow Vacuum
 BD & 'EMC task force'



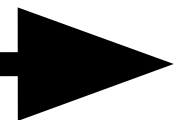
BD \longleftrightarrow Ryoichi
 ESS logbook (preliminary)
 Beam time for verifications



BD \longleftrightarrow ICS
 Debugging
 Jupyter scripts (Ema)



Time



Underestimated EMC
No alarms
No interlocks
 Waiting for 1 technician

Equipment maintenance

No redundant system leads
No device 'history'
Archiver
 Few spares

BD \longleftrightarrow Operators

No system replica in Lab
No LCR replica
Lost beam time
 Timestamps for DAQ

Manually saved PVs

Some constants



Documentation

No user manuals

Jira & Confluence

No triggers after EMC

Database (Nextcloud)

System hand-over

Machine overview



Public webpage(s)

Communication with LCR

Morning meeting

Priorities → CAP forum

No spare time for 'surprises'

On call support

Conclusions

Most critical issues	Need for
BD $\leftarrow \rightarrow$ ICS collaboration	<ul style="list-style-type: none">● Pragmatic .opi workflow● Systems replica in the PBI lab● Assets traceability
BD $\leftarrow \rightarrow$ LCR communication	<ul style="list-style-type: none">● Dedicated meeting● Machine 'overview'● Operator manuals
Documentation	<ul style="list-style-type: none">● User manuals● Rack cabling documents● Device status & history

- Thanks for the opportunity of sharing our 'Lessons learned'
- (26+22) issues are identified. BD is open to discussion
- BD is looking forward to fostering the **collaborations**

Summary

Preparations and execution	Interfaces	Planning and coordination	Administration	Organizational
<ul style="list-style-type: none"> Cable routing Cable termination Assembly verification Racks population Collision avoidance Verification w/o beam Operational limits Verification with beam 	<ul style="list-style-type: none"> Not approved .opi Workflow for .opi BD $\leftarrow \rightarrow$ Operators No alarms No interlocks Preliminary ESS logbook Timestamps for DAQ Manually saved PVs No triggers after EMC 	<ul style="list-style-type: none"> System relocations Underestimated EMC Lost beam time System hand-over Machine overview Public webpage(s) Communication with LCR Morning meeting Priorities No spare time for surprises 	<ul style="list-style-type: none"> No device history Archiver Few spares Documentation No user manuals Database (Nextcloud) Catania legacy No assets traceability 	<ul style="list-style-type: none"> No automated tests No remote power monitoring Restart after powercut No list of safe/default par Limited remote access Waiting for 1 technician No redundant system leads No system replica in Lab No LCR replica