

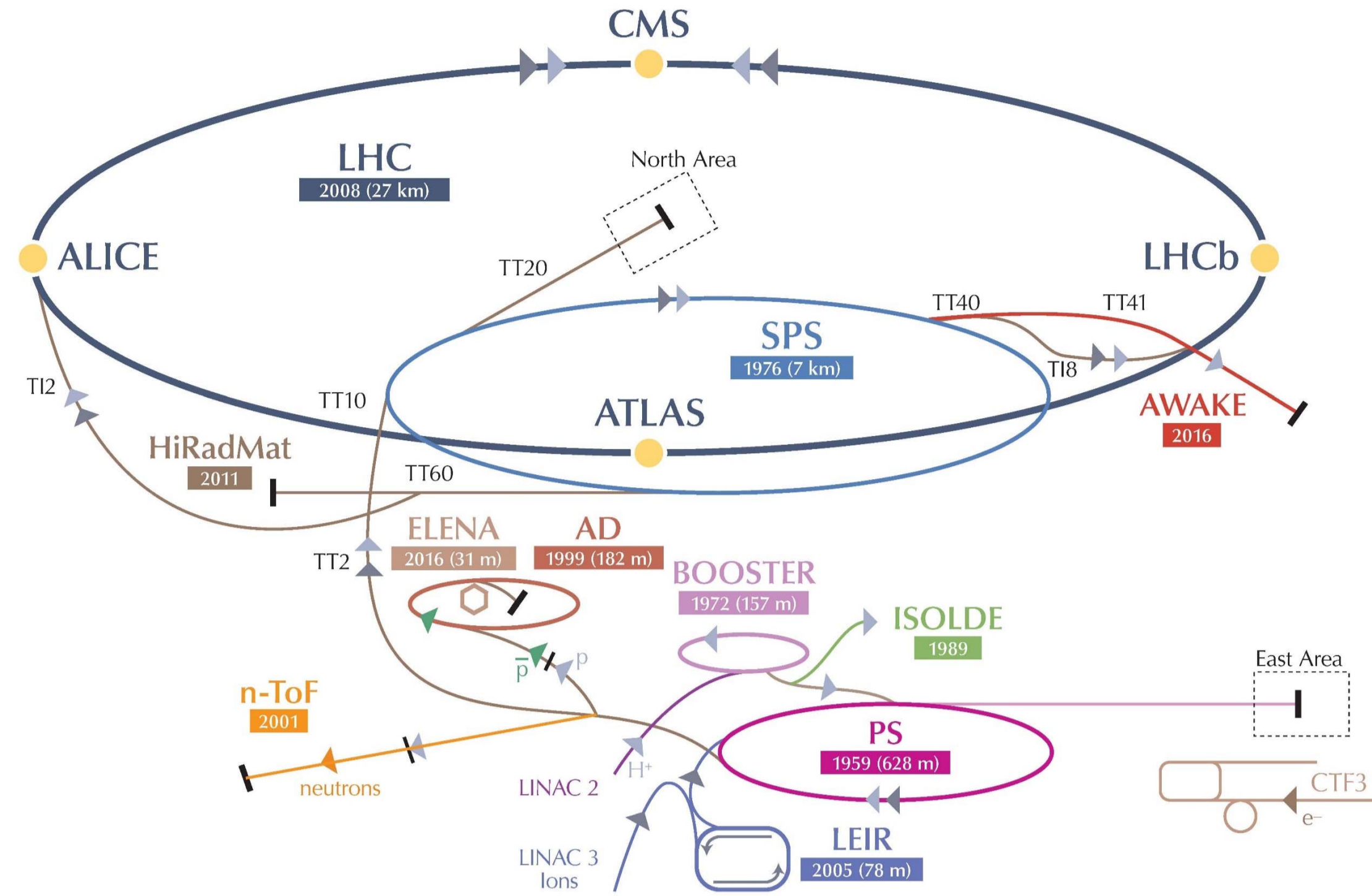
SMART - DEVELOPMENT OF A STAND-ALONE SOFTWARE FOR DATA ACQUISITION

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Challenges

SURVEY at CERN: a huge task ...

- ▶ 58 km to inspect
- ▶ 22 000 elements to measure and align
- ▶ 3 types of observables : levelling, roll angles, offset distances



... with limited resources

- ▶ Some twenty users
- ▶ No commercial solutions
- ▶ Typing & calculation errors (human factors)



▶ LS2 is coming ...

Solution

SMART mobile application:

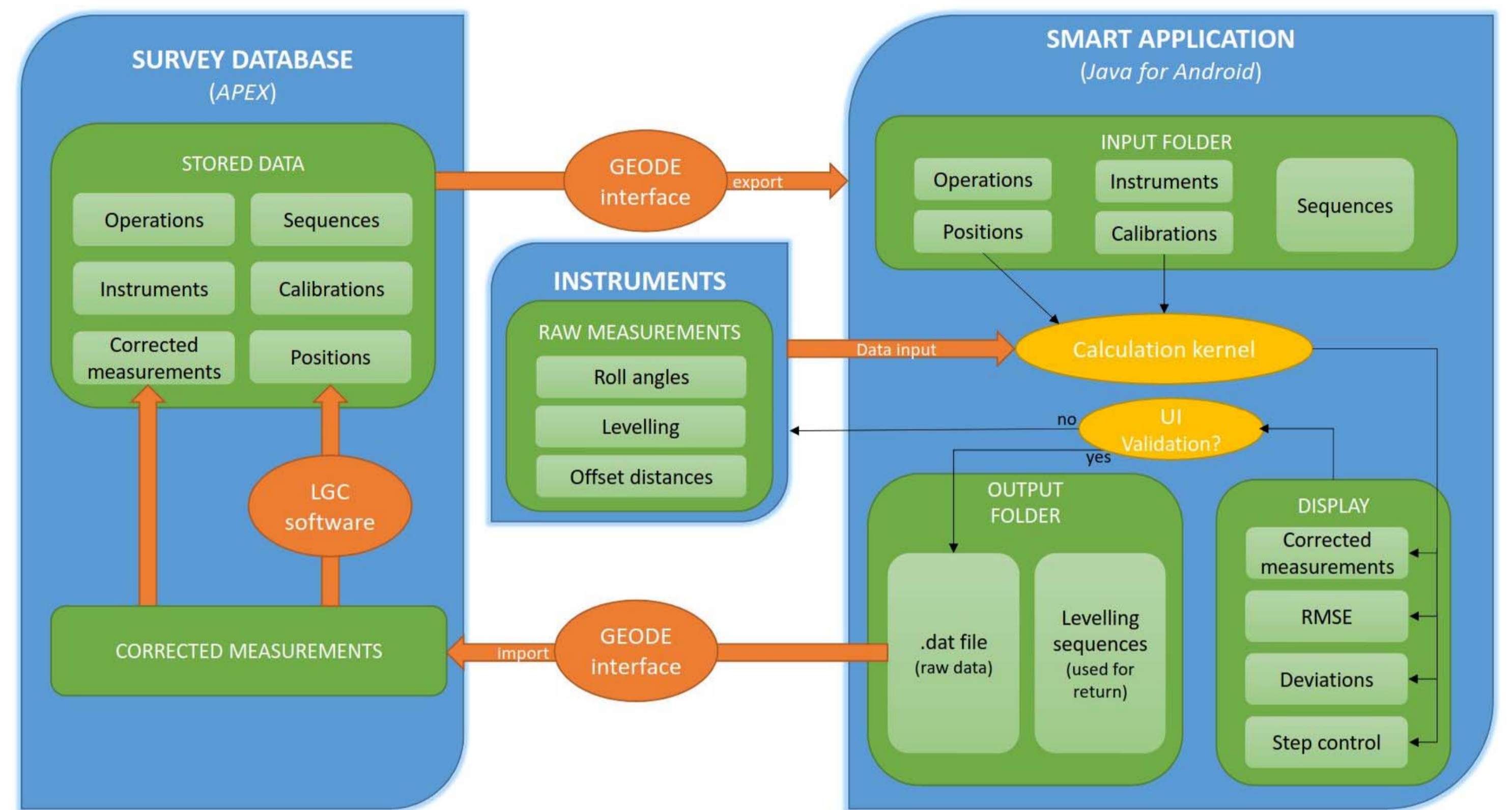
Survey Measurement Acquisition in Real Time



- ▶ Stand-alone software
- ▶ Portable hardware
- ▶ Bluetooth® communication
- ▶ SURVEY database compatible
- ▶ Field checks
- ▶ Versatile functionalities
- ▶ Evolving capacities

POINTS	MES.I	MES.R	JOURNAL
Mesures initiales			
14:00:43			
LHC.MB.A11L5.M	-9.35	faisceau	
LHC.MB.A11L5.M	9.42	inverse	
Lect. Moyenne	Lect. Theo	Ecart[mrad]	
-9.38	-9.2	-0.185	
Mesures après réglages			
14:01:28			
LHC.MB.A11L5.M	-9.22	faisceau	
LHC.MB.A11L5.M	9.30	inverse	
Lect. Moyenne	Lect. Theo	Ecart[mrad]	
-9.26	-9.2	-0.06	

Working principle

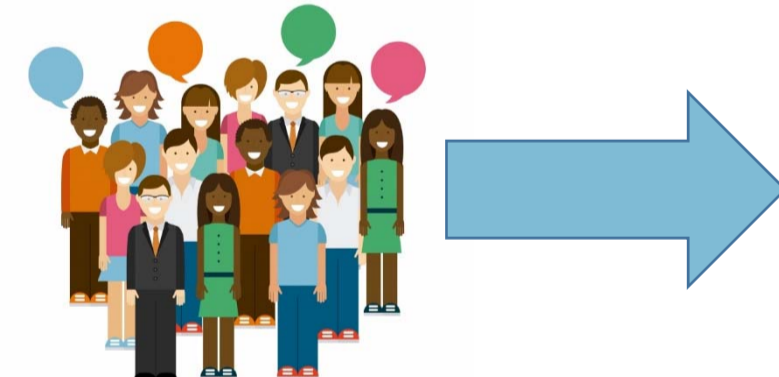


Project management

SMART teamwork



- ▶ Four hands computer programming (students job)
- ▶ Wide tester community (surveyors team)



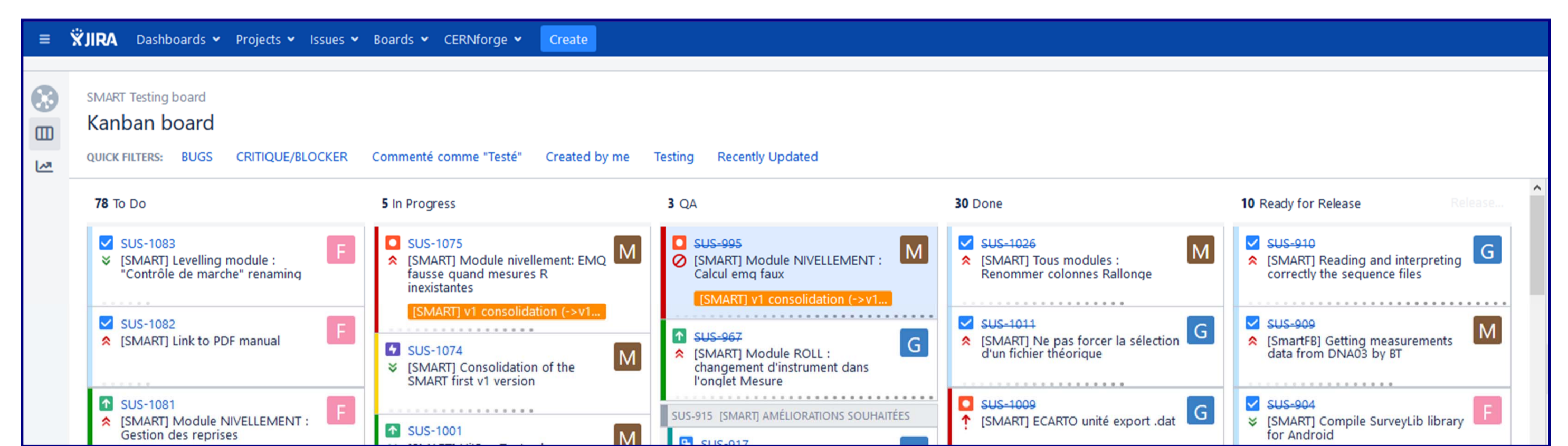
SMART technologic choices



- ▶ Android platform preferred
- ▶ Java for Android developments

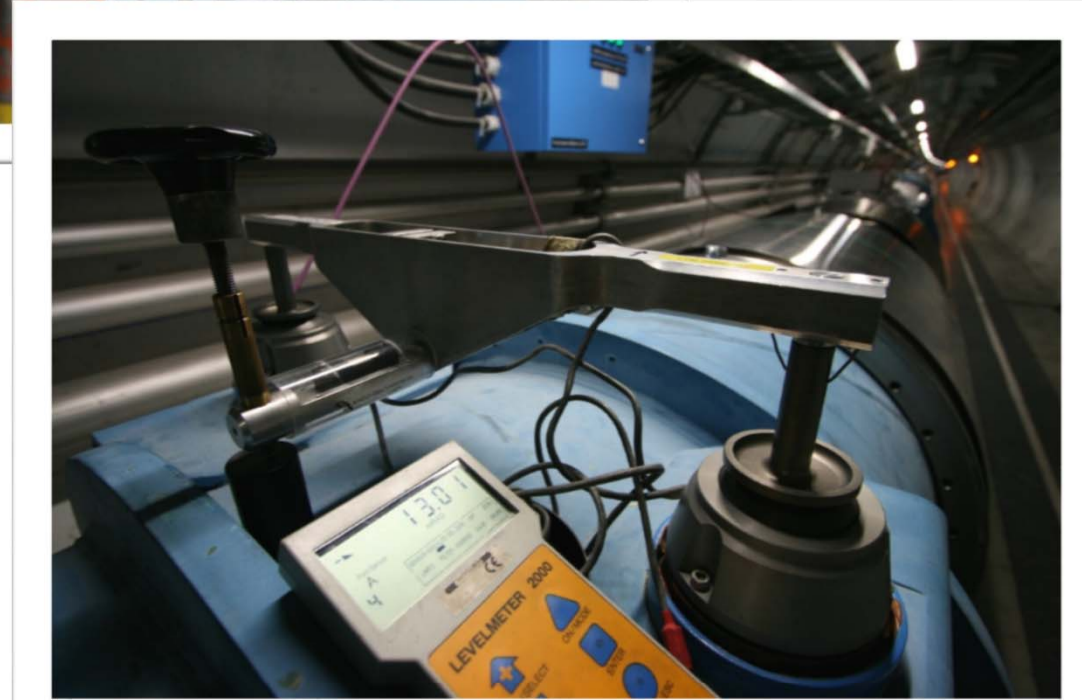
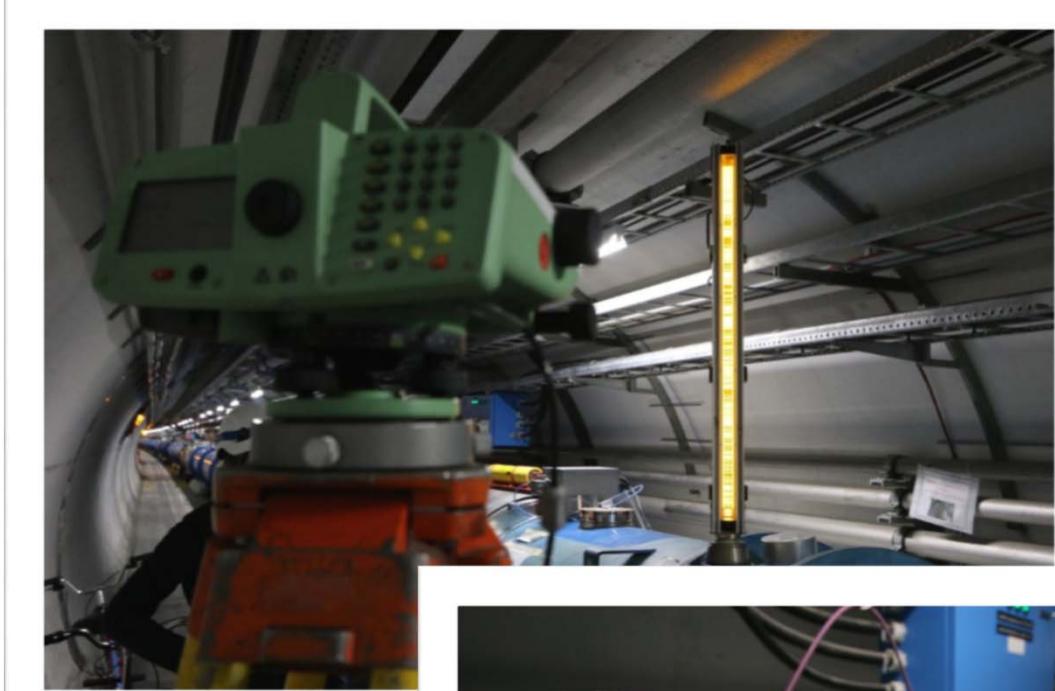
JIRA project monitoring

- ▶ Bugs, improvements or suggestions reporting
- ▶ More than 100 topics created in 3 months of tests



Results

- ▶ User-friendly interface
- ▶ Quick familiarization
- ▶ User comfort
- ▶ Time saving, productivity growth



POINTS	MESURES	JOURNAL
LHC.MB.A11L5.M	26922	70.0 -21301
LHC.MB.A11L5.M	26717	70.0 -21305
LHC.MB.A11L5.M	28402	70.0 -21303

What's next ?

New wireless connectivity

- ▶ Low energy Bluetooth® for ecartometry device
- ▶ Inclimeters connectivity



New types of observables and instruments

- ▶ Geographical azimuths
- ▶ High accuracy distances from mekometer

Commissioning before Long Shutdown 2 ...

