NOMAD GOES MOBILE

Paolo Mutti – Institut Laue-Langevin

ICALEPCS 6 – 11 October 2013

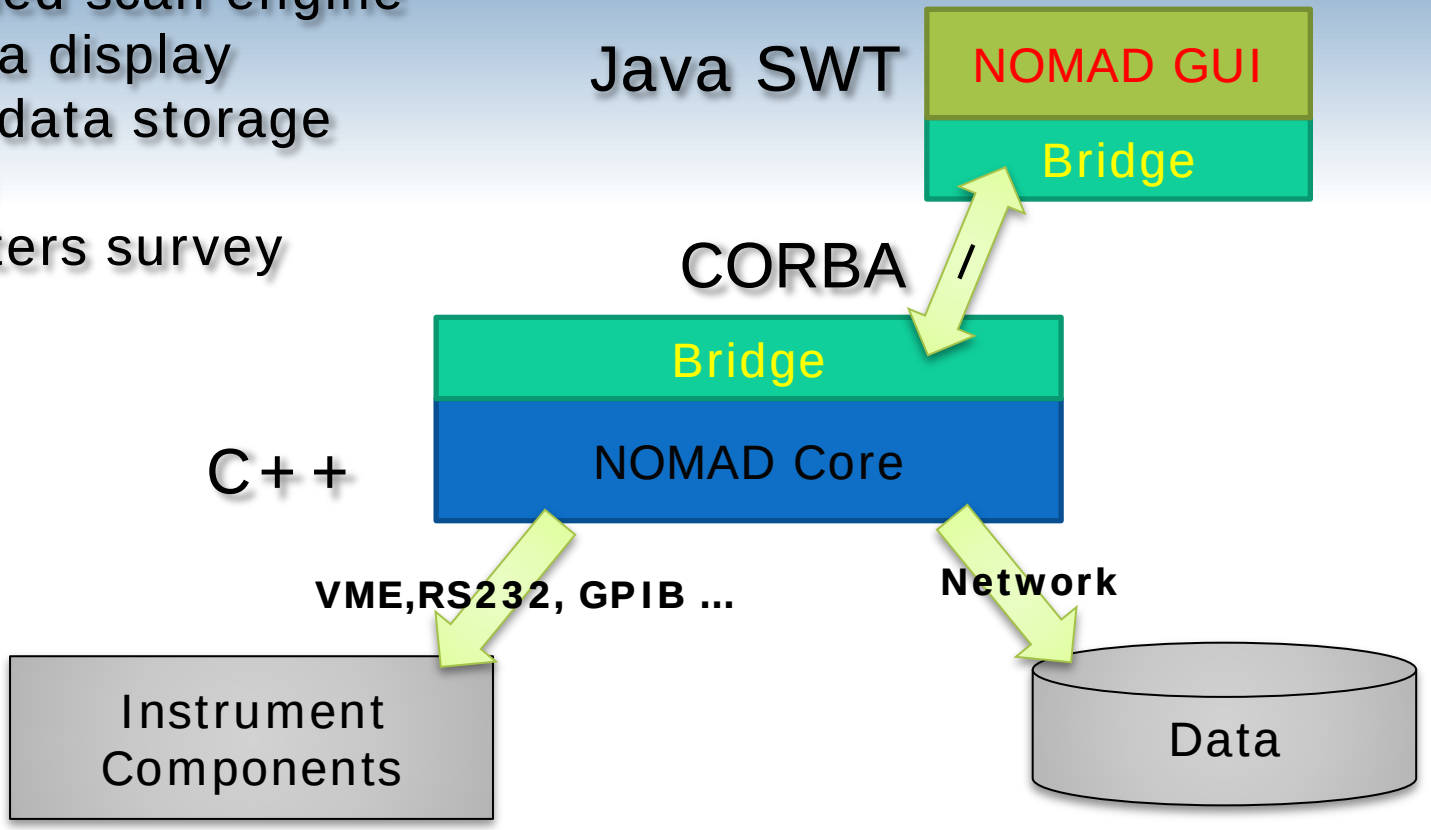
Outline

- What is NOMAD
- Why we need mobile solutions
- Our choice
- NOMAD mobile
- Problems and perspectives

NOMAD

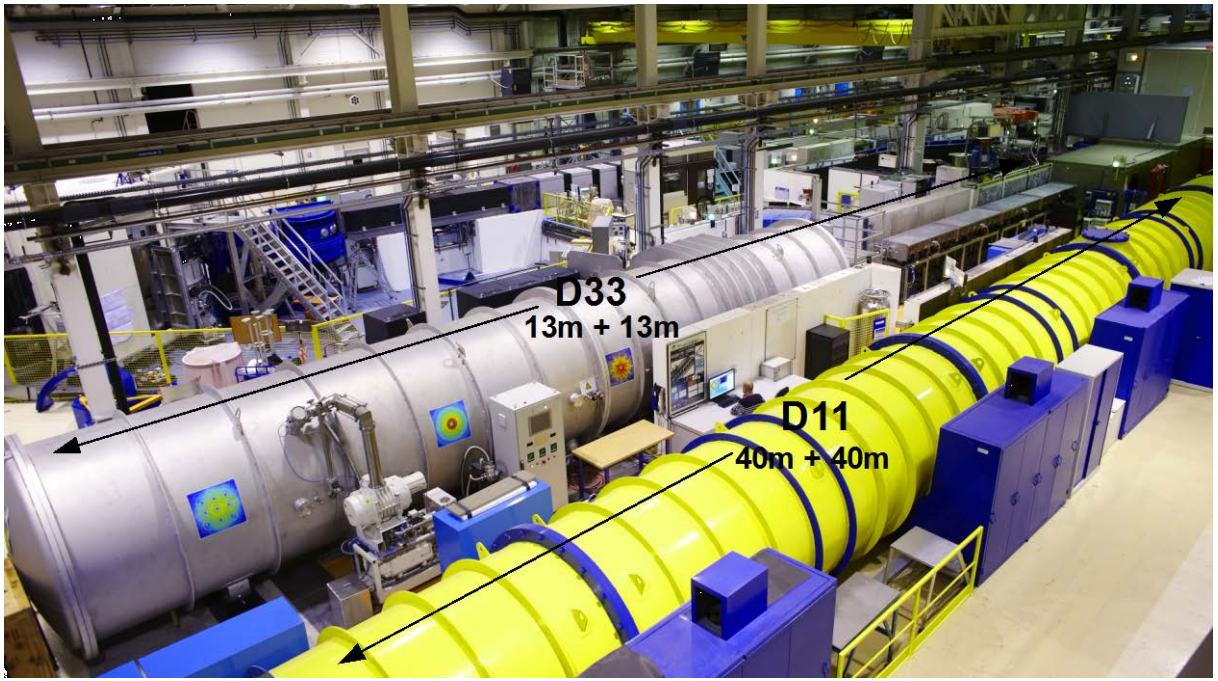
Instrument Control Software at ILL

- Sequencer
- Embedded scan engine
- Live data display
- Central data storage
- Logging
- Parameters survey



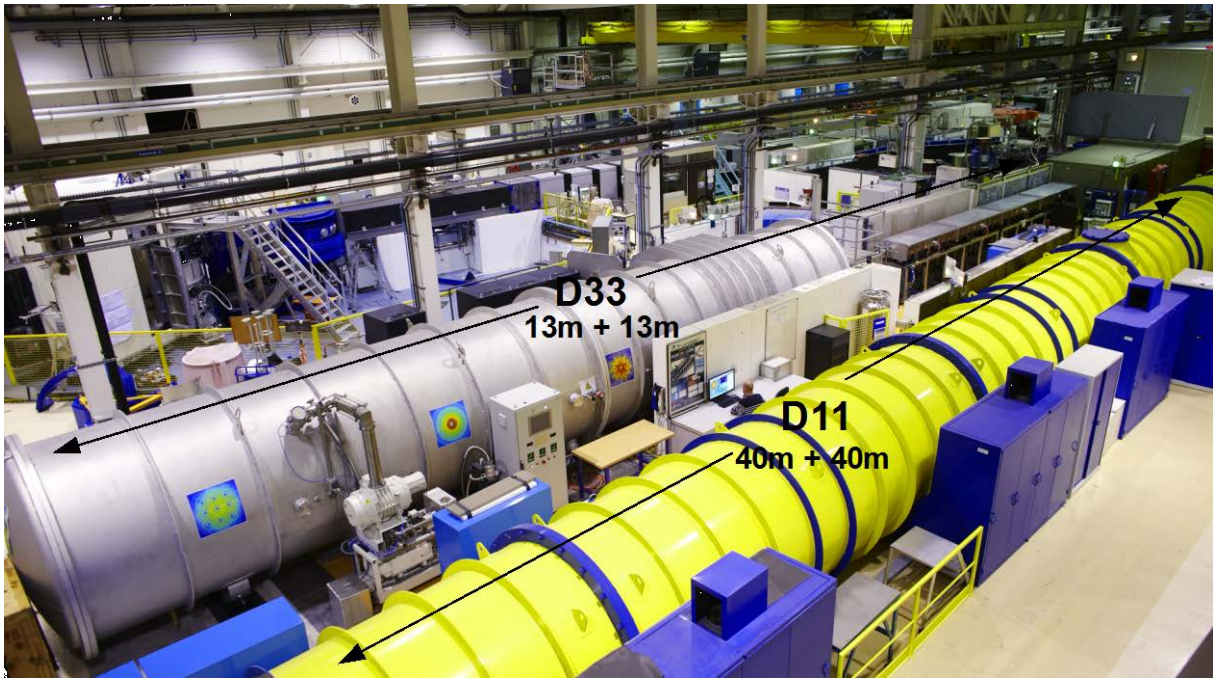
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access



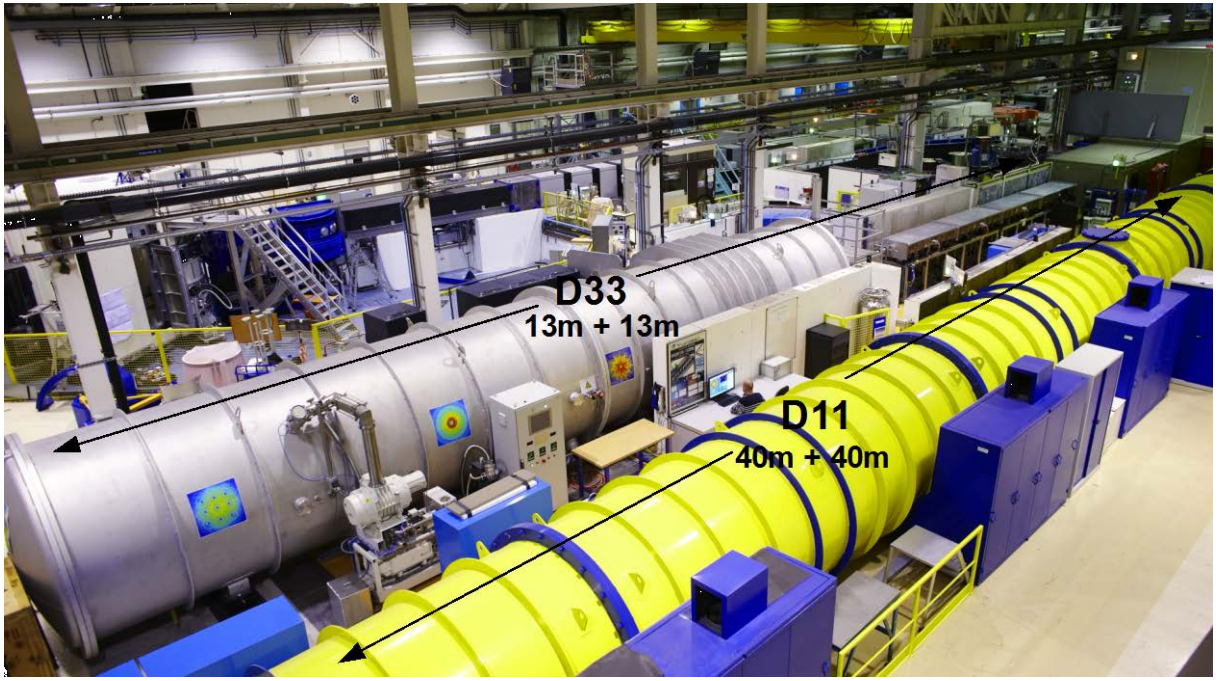
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access



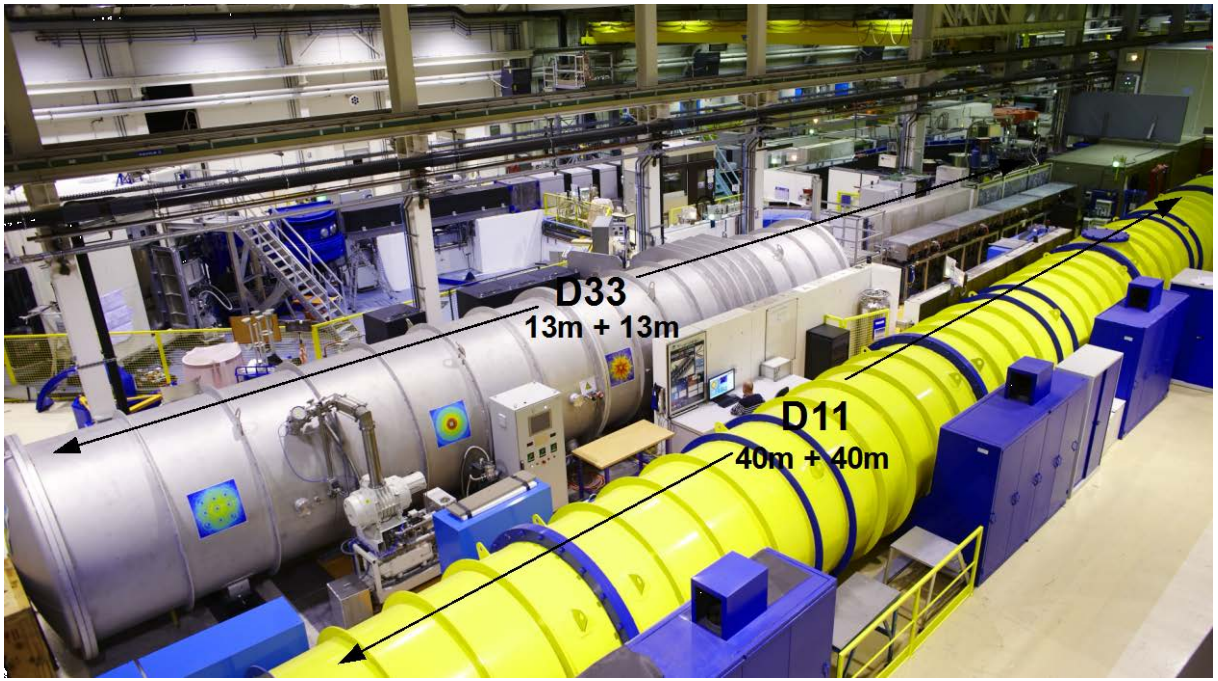
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access
- Easy setup of a new measurement



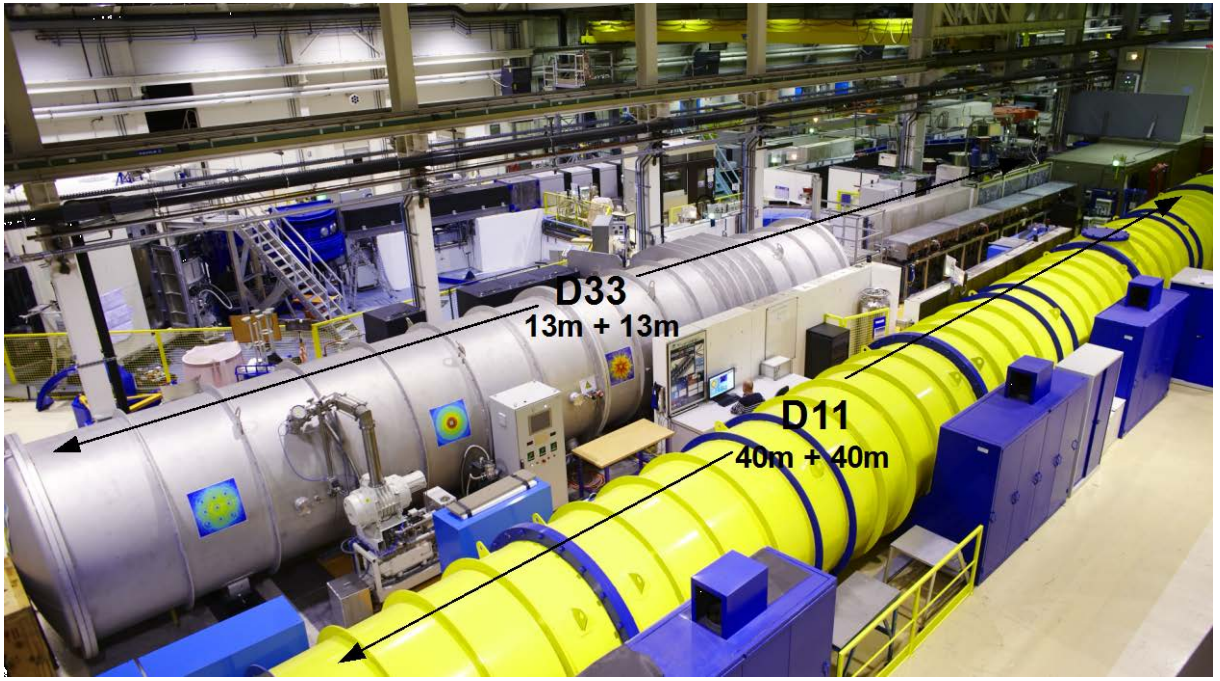
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access



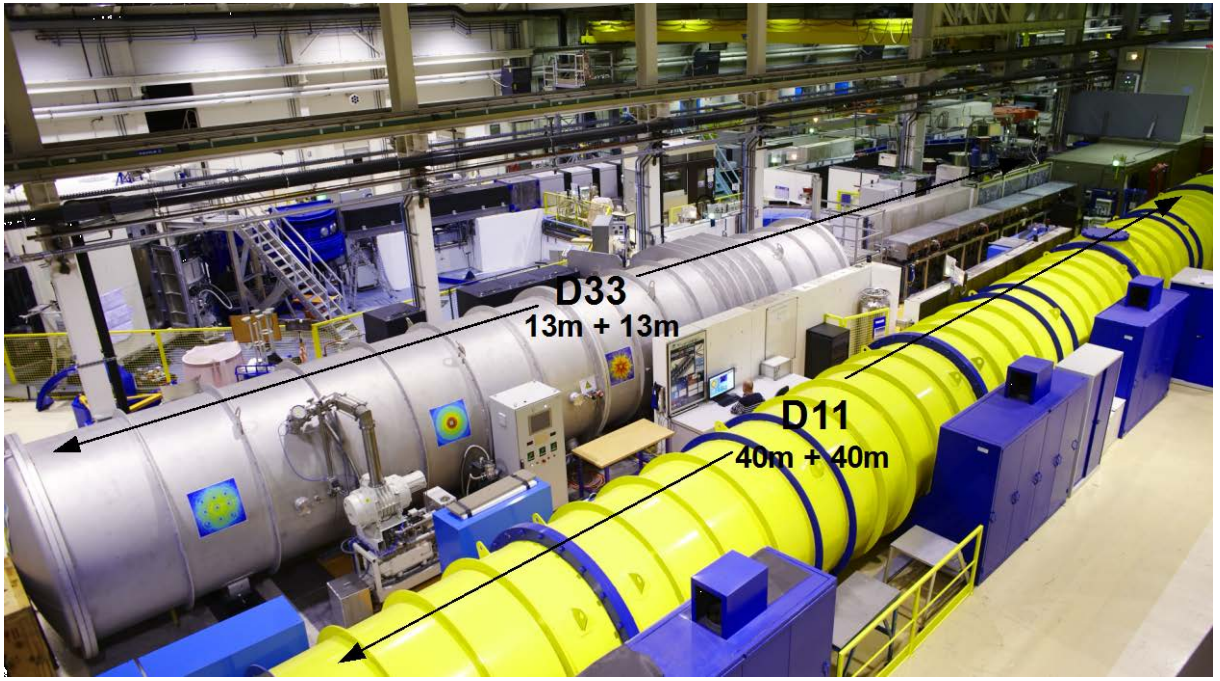
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access
- Easy setup of a new measurement



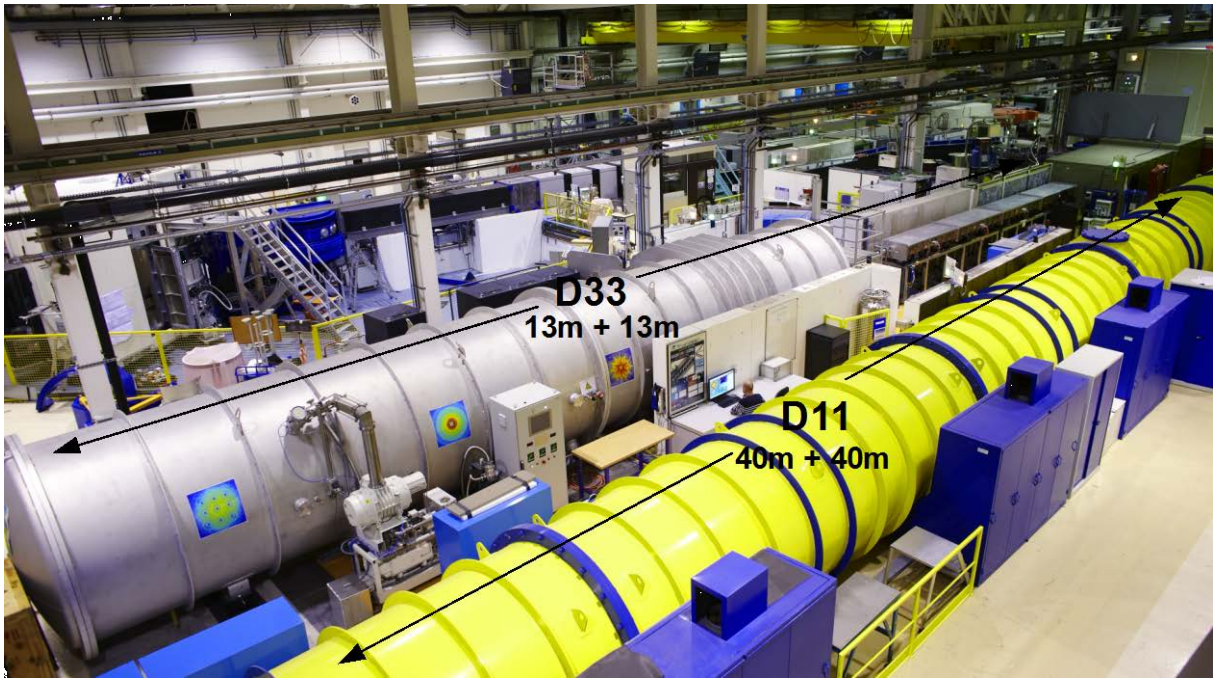
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access
- Easy setup of a new measurement
- Remote control



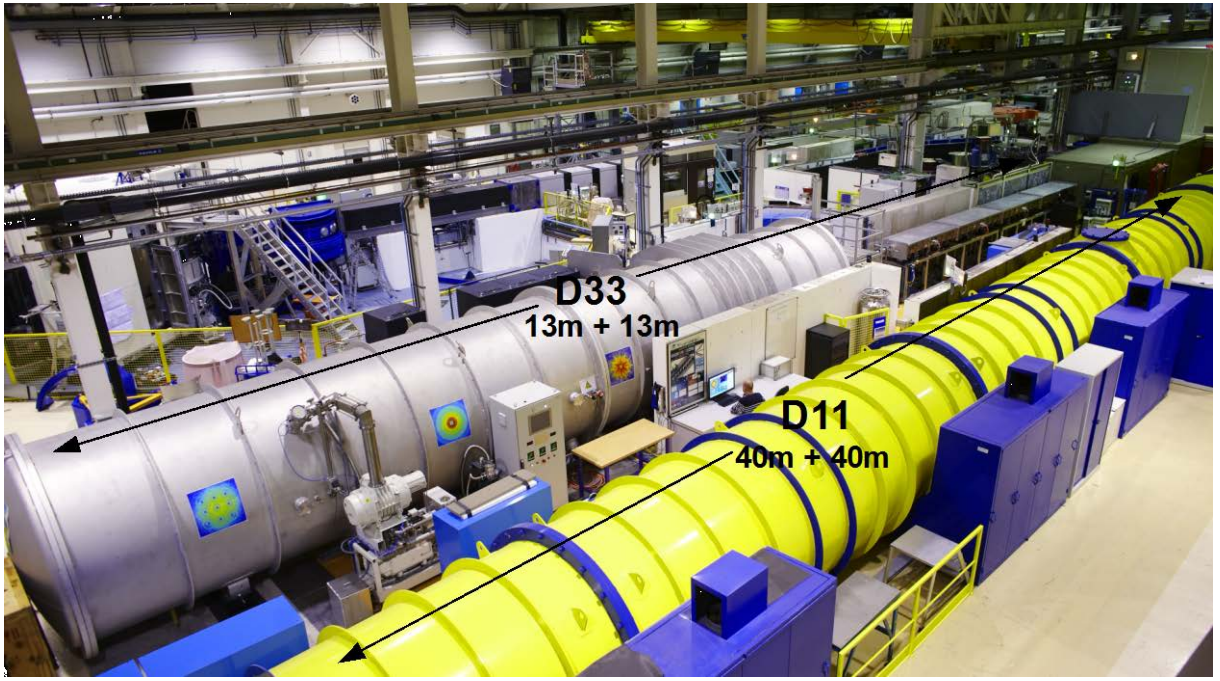
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access



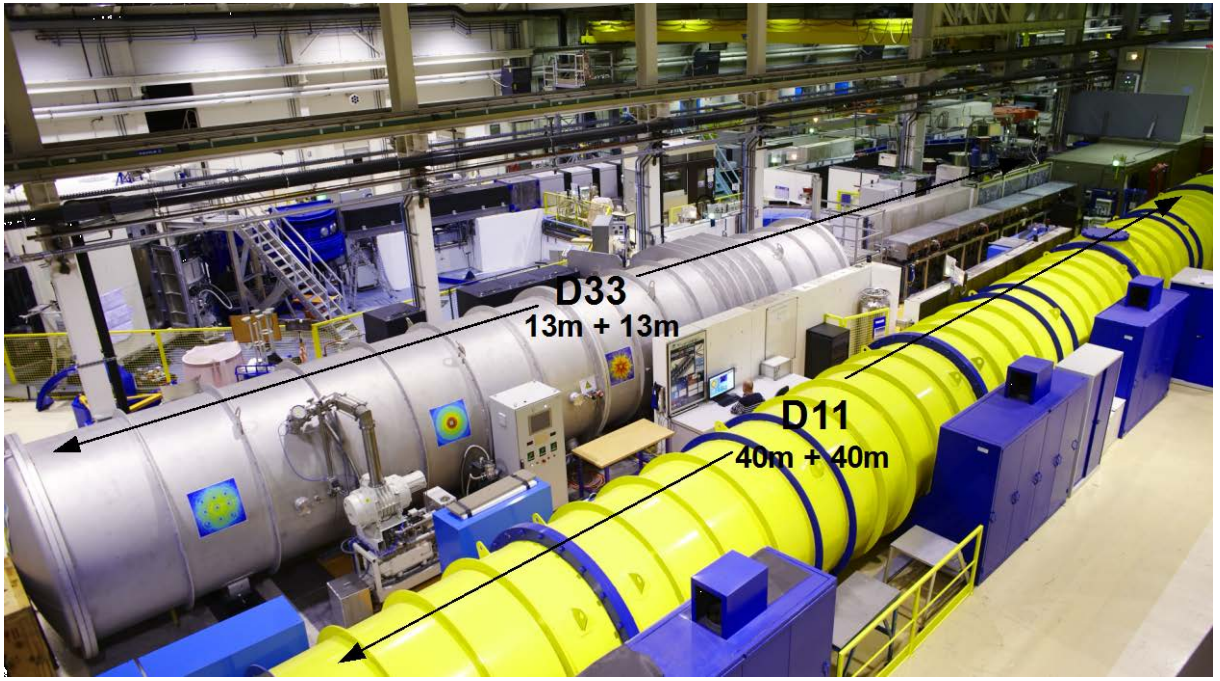
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access
- Easy setup of a new measurement



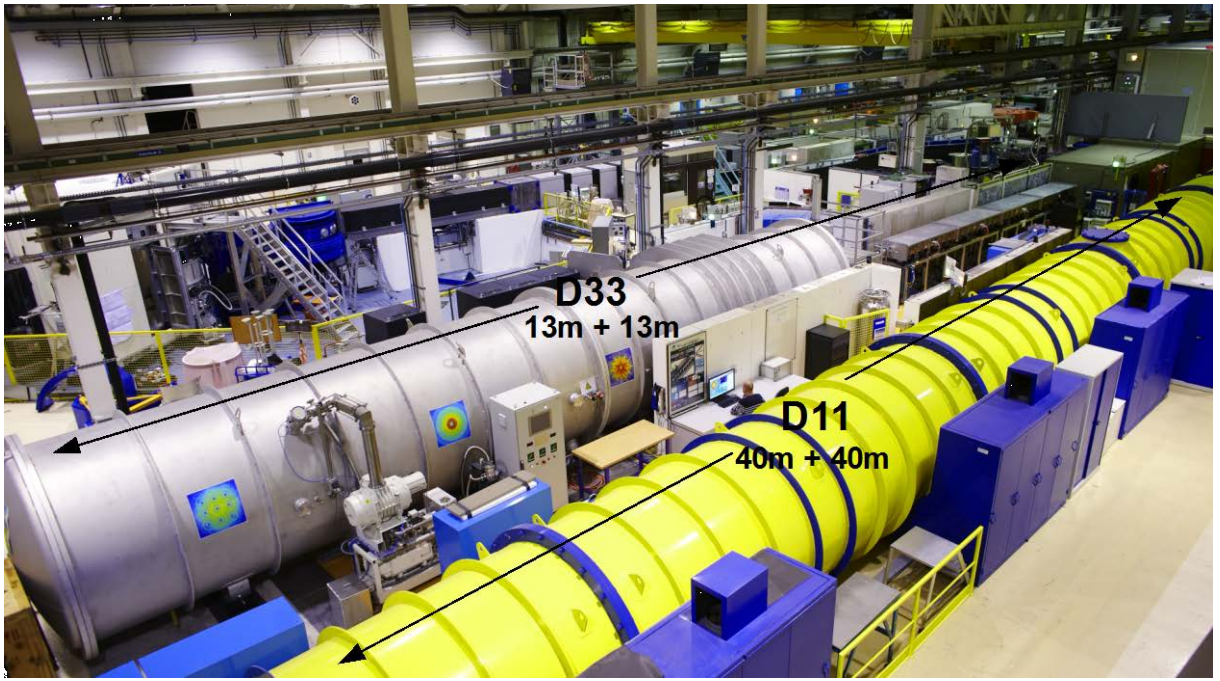
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access
- Easy setup of a new measurement
- Remote control



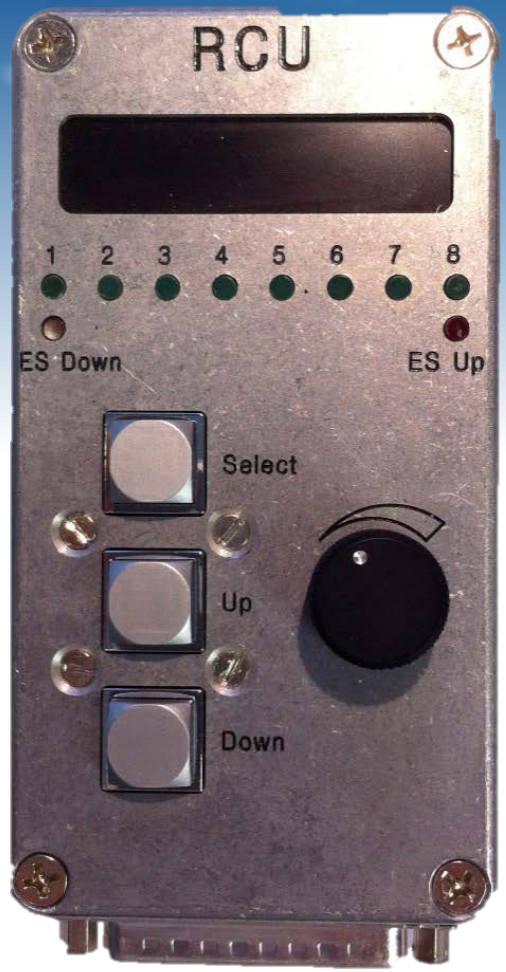
Why?

- Evolution towards bigger instruments
  - Control room often far from instrument
  - Sample area difficult to access
- Easy setup of a new measurement
- Remote control
- It's cool!



Looking Back

- Cable link with electronics
- Limited to motor control
- Limited to 8 axis
- Limited functionalities
- Often broken
- Expensive



Axis remote control 2.0

Hardware Choice

- Weight
- Screen format and size
- Battery life

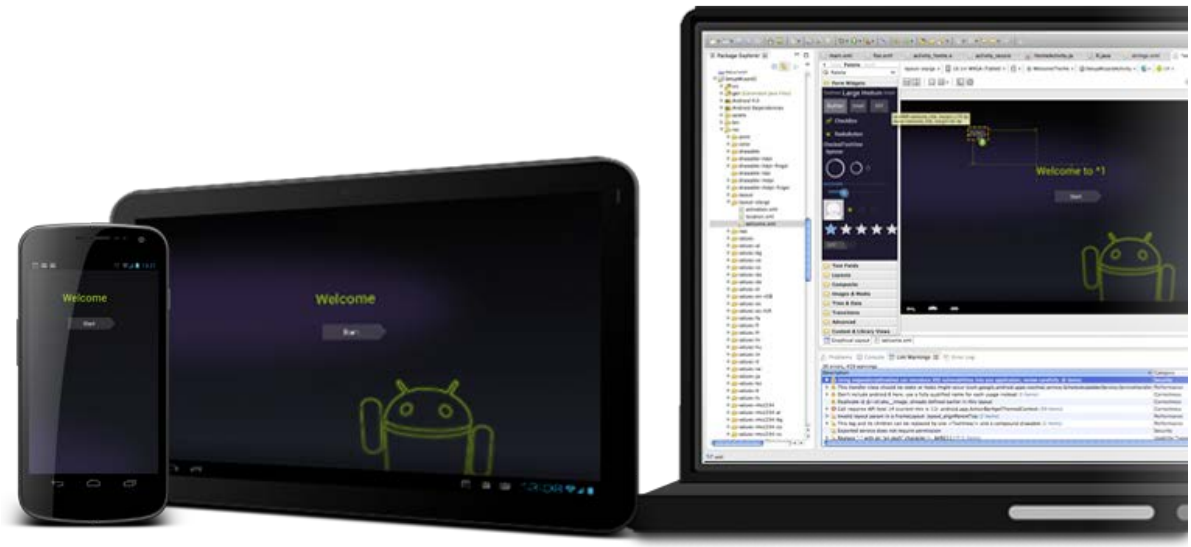
- Minimum gadgets
- Quality vs price

Software Choice

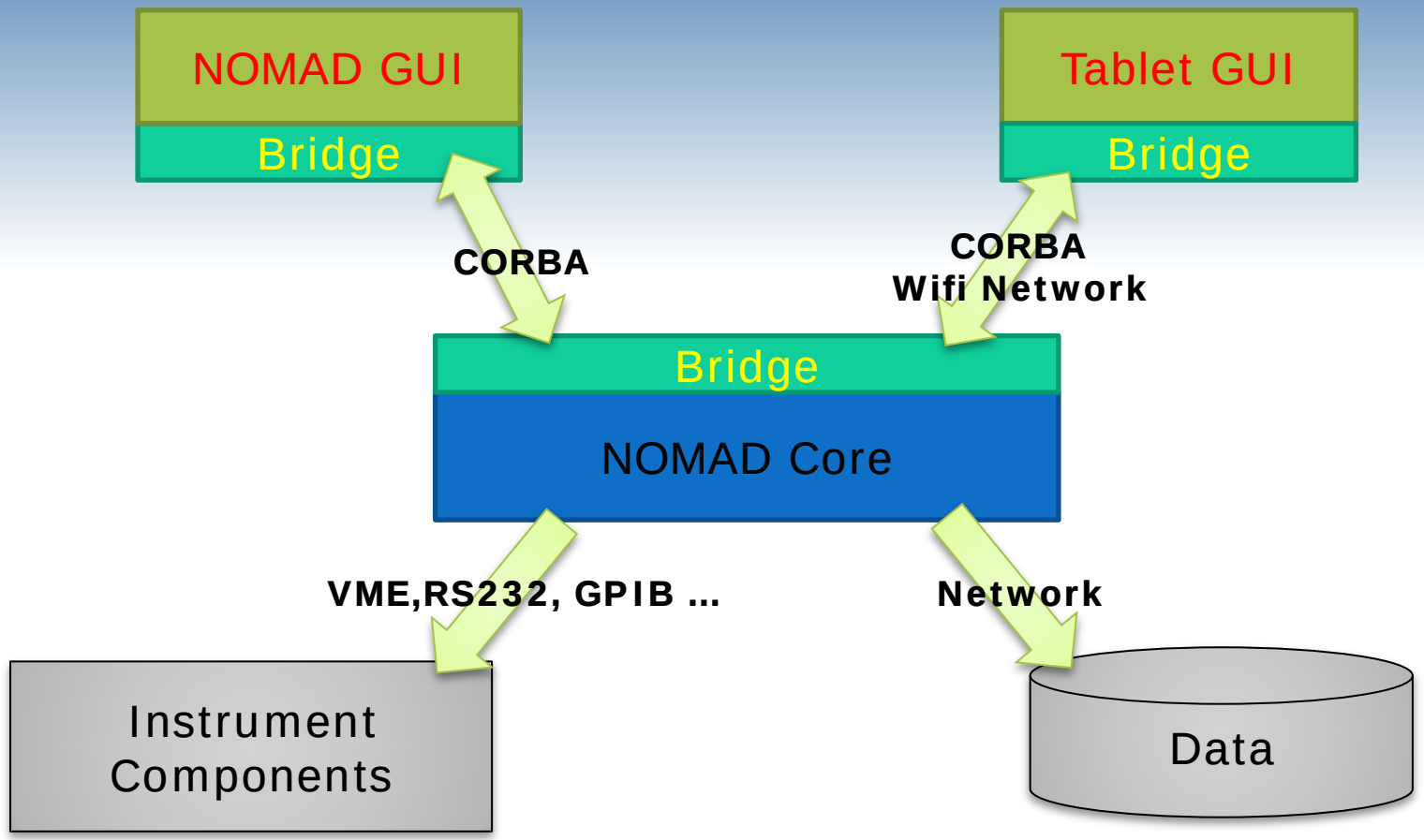
NEUTRONS FOR SCIENCE®

ANDROID

- Development on Linux Workstation
- Android SDK
- ADT eclipse plug-in
- USB debugging



NOAMD Integration



Implementation

- A tablet is affected to one instrument
  - MAC Address verification

- Dedicated screens
  - Use finger instead of a mouse
  - Large icons, Texts, Labels
  - Specifics options for the tablet

Implementation

- A tablet is affected to one instrument
  - MAC Address verification

- Dedicated screens
  - Use finger instead of a mouse
  - Large icons, Texts, Labels
  - Specifics options for the tablet

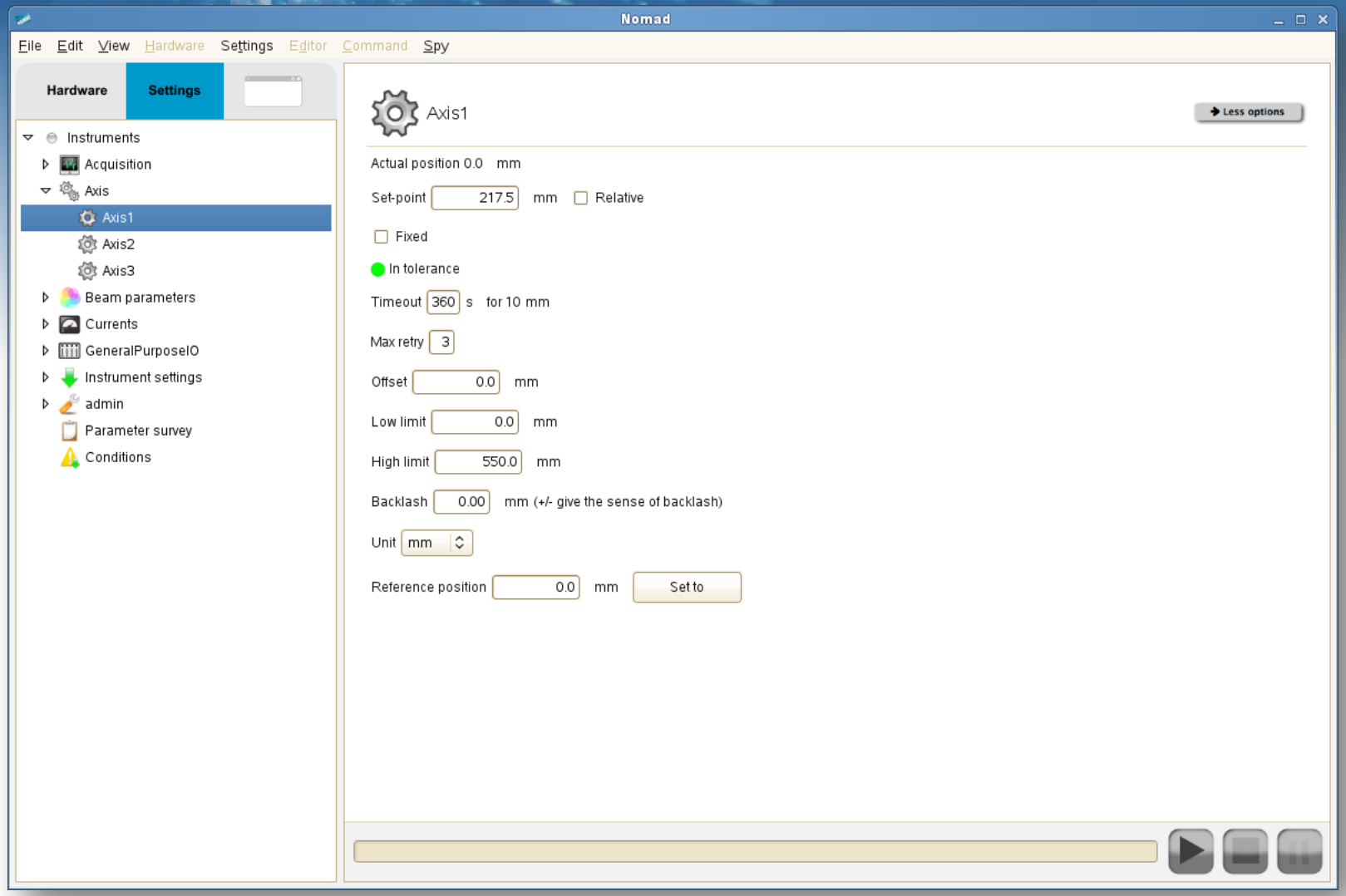
Implementation

- A tablet is affected to one instrument
  - MAC Address verification

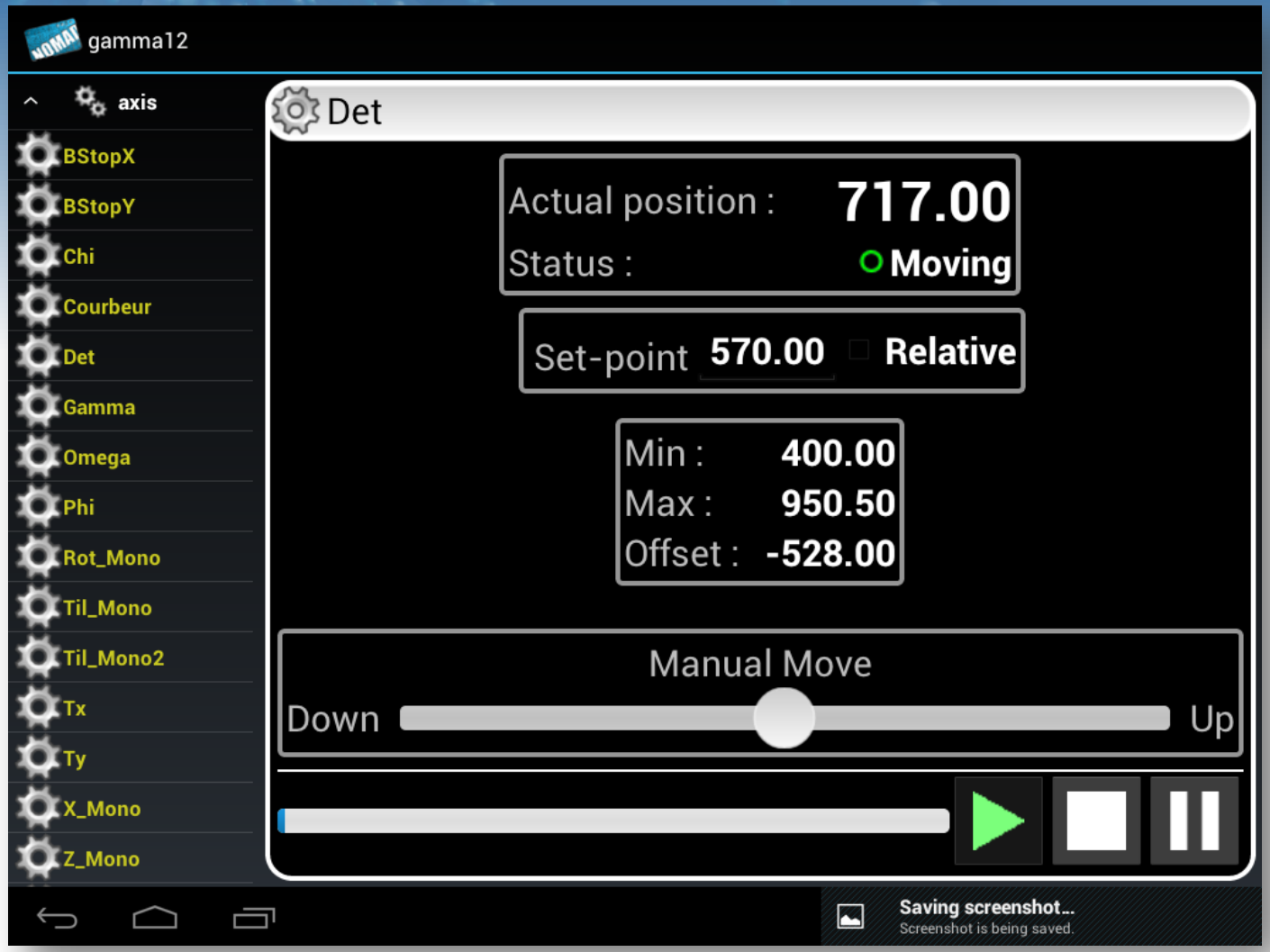
- Dedicated screens
  - Use finger instead of a mouse
  - Large icons, Texts, Labels
  - Specifics options for the tablet

Not replacing the Main GUI

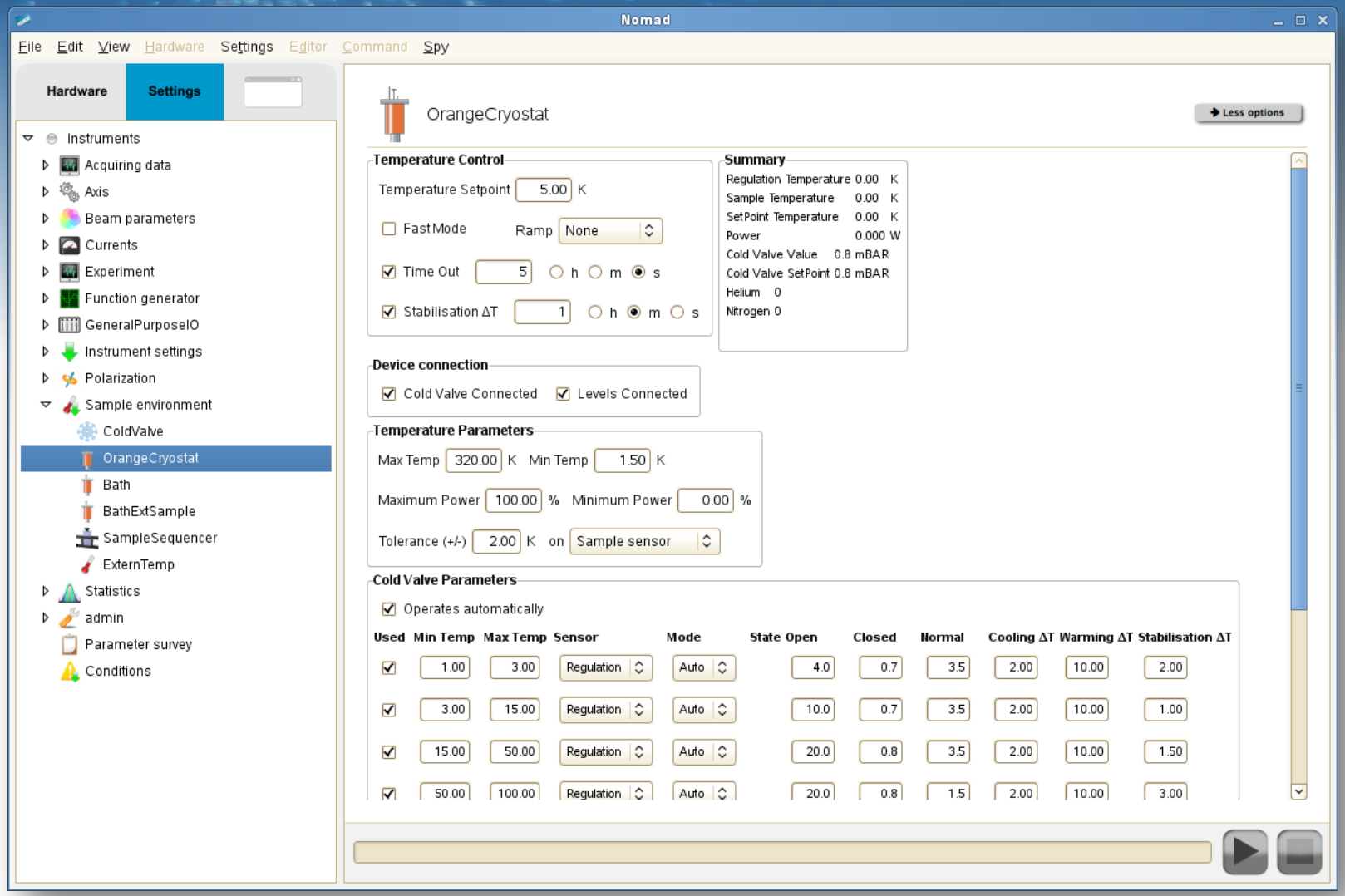
Axis Screen


Nomad
File Edit View Hardware Settings Editor Command Spy
Hardware
Settings
Instruments
Acquisition
Axis
Axis1
Axis2
Axis3
Beam parameters
Currents
GeneralPurposeIO
Instrument settings
admin
Parameter survey
Conditions
Axis1
Less options
Actual position 0.0 mm
Set-point 217.5 mm Relative
Fixed
In tolerance
Timeout 360 s for 10 mm
Max retry 3
Offset 0.0 mm
Low limit 0.0 mm
High limit 550.0 mm
Backlash 0.00 mm (+/- give the sense of backlash)
Unit mm
Reference position 0.0 mm
Set to

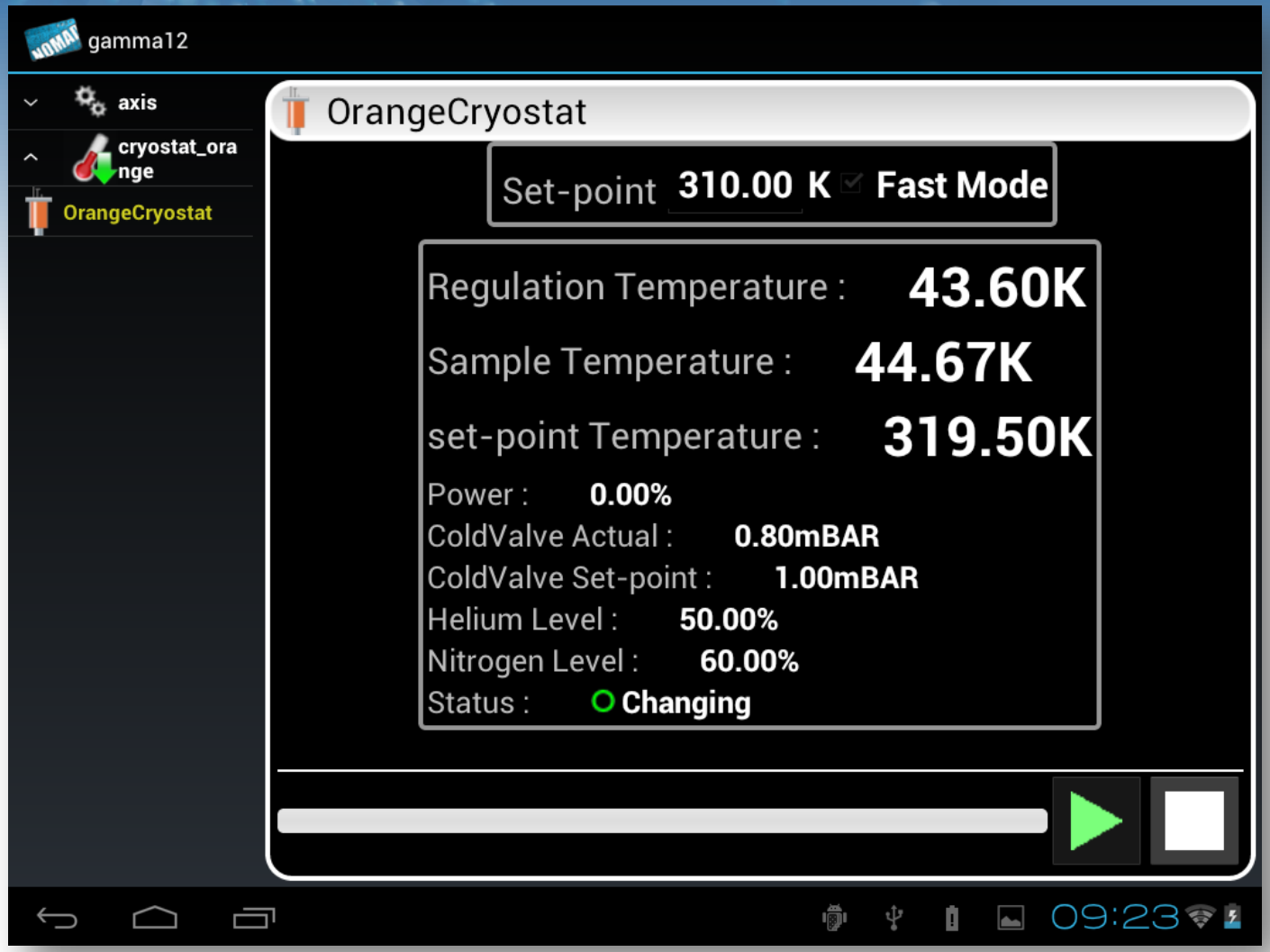
Axis Screen


gamma12
axis
BStopX
BStopY
Chi
Courbeur
Det
Gamma
Omega
Phi
Rot_Mono
Til_Mono
Til_Mono2
Tx
Ty
X_Mono
Z_Mono
Det
Actual position : 717.00
Status : Moving
Set-point 570.00 Relative
Min : 400.00
Max : 950.50
Offset : -528.00
Manual Move
Down
Up
Saving screenshot...
Screenshot is being saved.

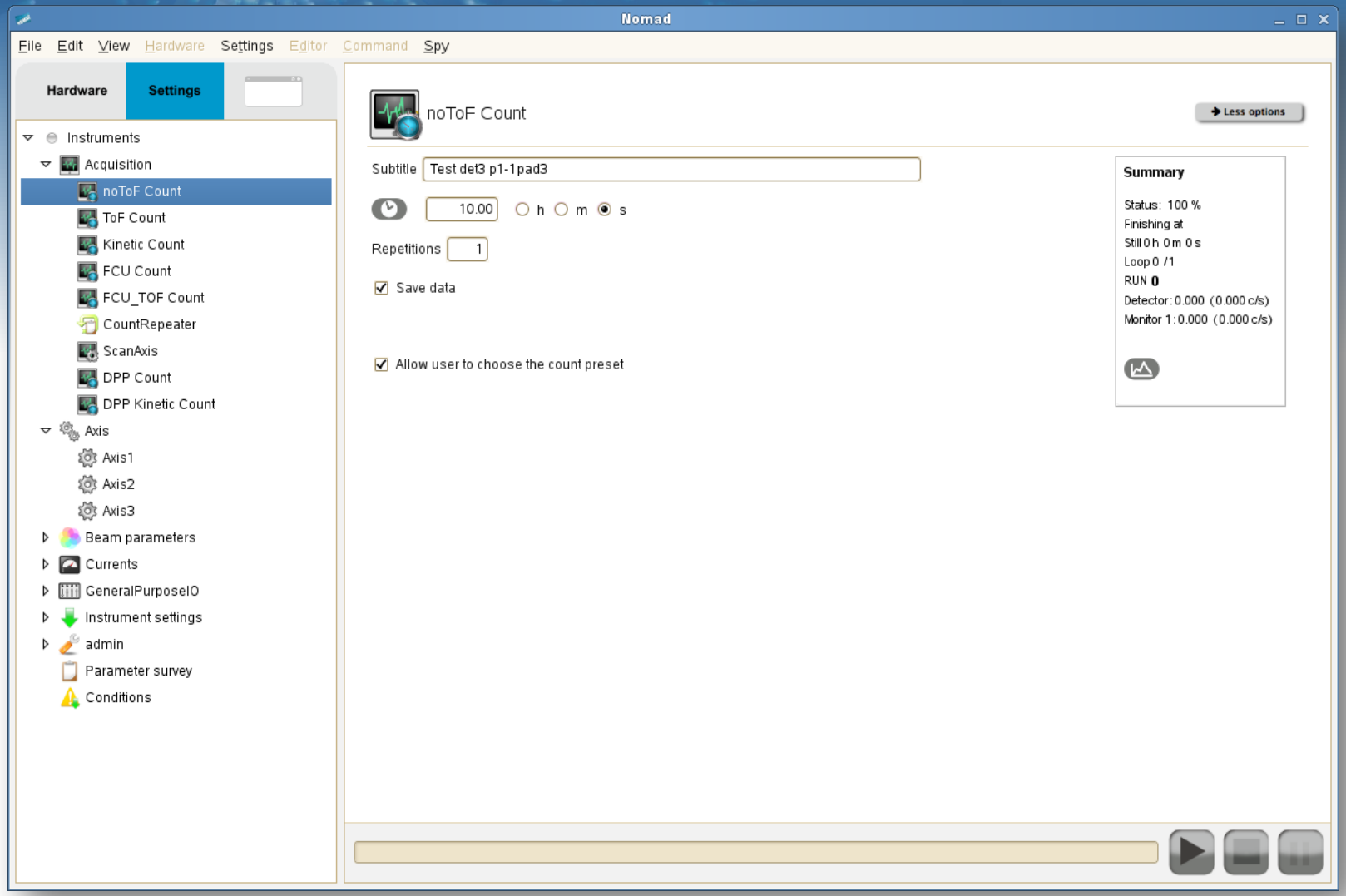
Sample Environment Screen



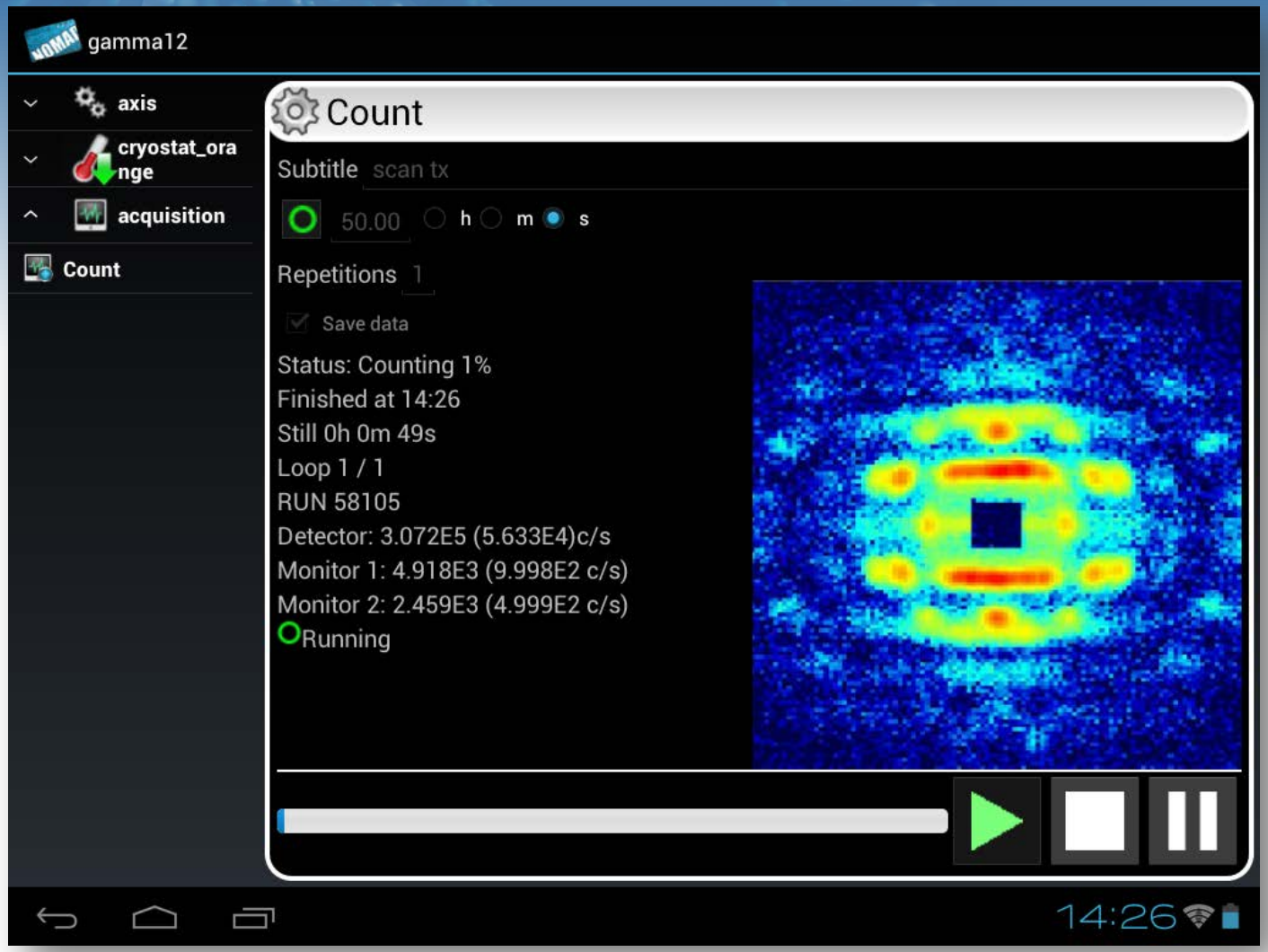
Sample Environment Screen



Acquisition Screen



Acquisition Screen



Problems And Perspectives

NEUTRONS FOR SCIENCE®

- Replace CORBA technology
  → ØMQ, Protocol Buffer and JeroMQ

- Generate view from the main GUI Description
  → XML resource files and Java classes

- Integrate a light plot library

x Security for loose connection!

Conclusion

- Android client operational on several instruments

- Very good user feedback

- Available on Google Market

Conclusion

- Android client operational on several instruments

- Very good user feedback

- Available on Google Market

Conclusion

- Android client operational on several instruments

- Very good user feedback

- Available on Google Market

But it won’t work for you …