

An Instrument Scientist's View of Instrument Control

Workshop on Neutron Instrument Architecture for Data Acquisition,
Instrument Control, and Data Storage

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EUROPEAN
SPALLATION
SOURCE

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What does “Instrument Control” Mean?

The Simple View ...



Move Motors

and



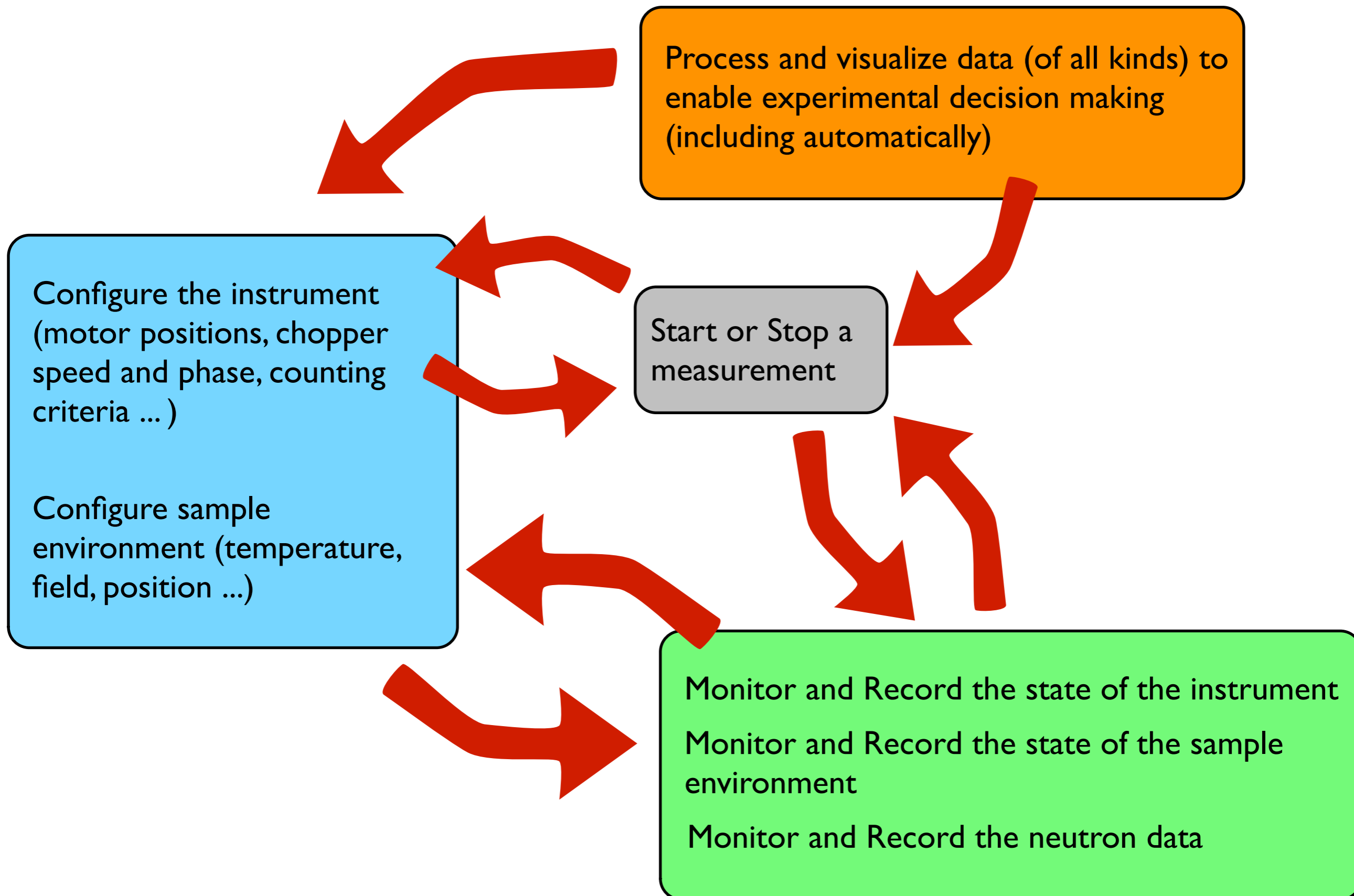
Count

The more realistic(?) view ...

Visit a series of instrument states, recording the instrument state and neutron detector data at each state.

Instrument state = position of motors, chopper speed, sample environment variables etc
Neutron detector data = “The measurement”

The more useful(?) view...



What do we want?

Simplicity, Flexibility and Reliability

- Sufficiently simple for once-a-year type users
- Frequent, routine operations should be straightforward.

- Complex combinations of parallel operations must be possible.
- Infrequent, non-routine operations must be possible.

- System performs requested actions
- System doesn't perform un-requested actions.

What do we want?

Maintainability and Accessibility

- Well documented
- No “secret knowledge”
- At least one person must have an overall view of the workings of each instrument from the bottom up (most likely instrument scientist / SA / technician)
- Instrument scientist / SA / technician must be able to diagnose and fix many problems (out-of-hours operations)
- Clear division of responsibility but no finger-pointing (the user doesn't care about blame, just about things working)

Possible architecture view...

