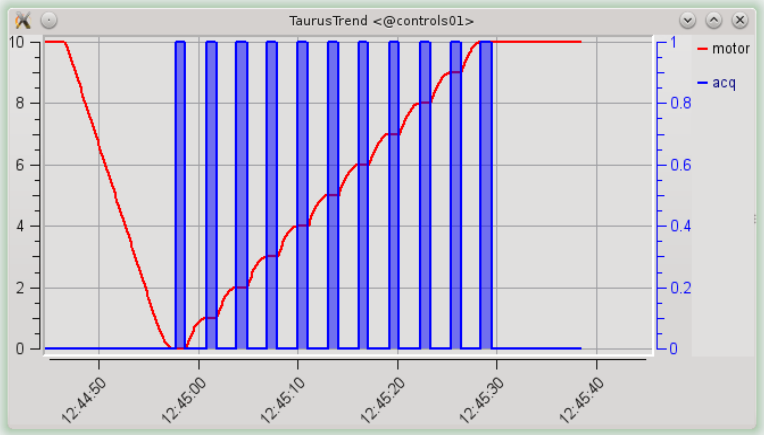
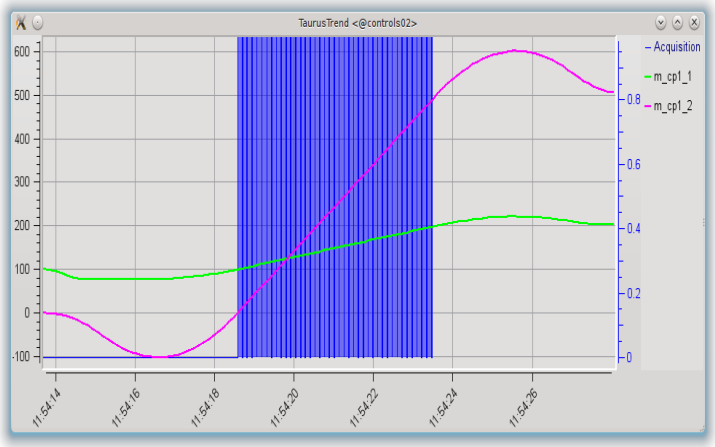
Continuous Scans



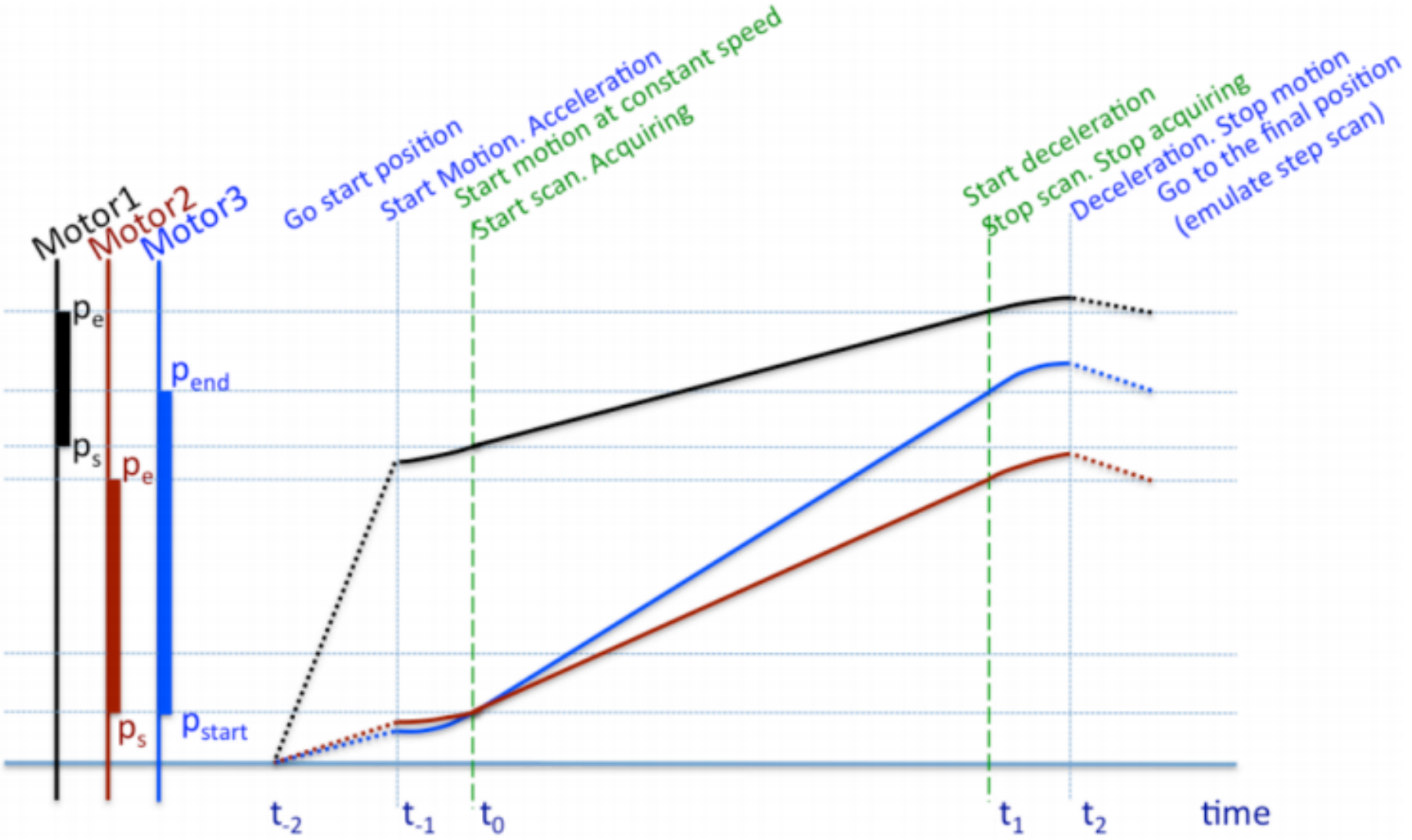
Motion & acquisition during the step scan.



Motion & acquisition during the continuous scan

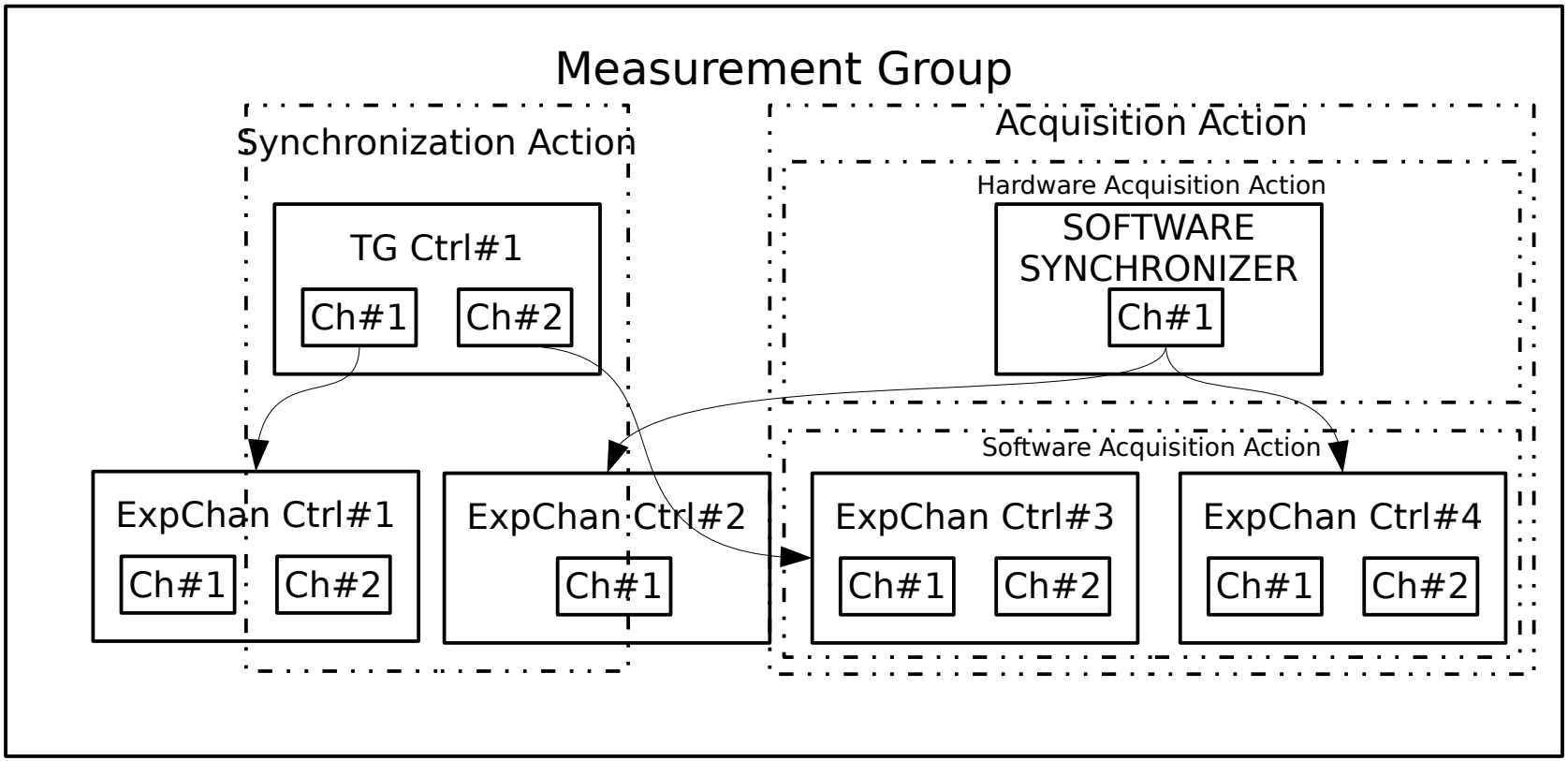
- Continuous scans give many benefits, but also their implementation is challenging.
- Numerous ad-hoc implementations were developed over years, but they are hard to reuse...
- What do we focus on?
  - Abstract access to the hardware
  - Generic synchronization description (hardware & software; time & position)
  - Common experiment configuration (step scan & continuous scan)
  - Transparent user experience with the scans: scan inputs and outputs.

Motion

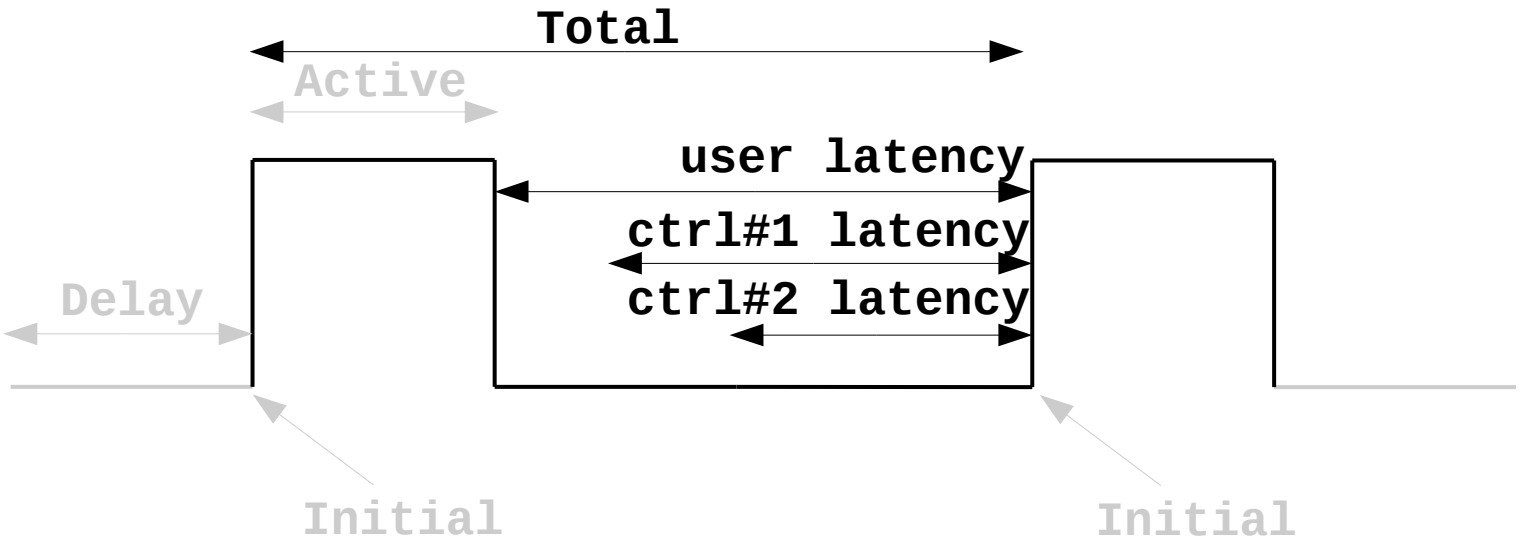

Motor1
Motor2
Motor3
Go start position
Start Motion. Acceleration
Start motion at constant speed
Start scan. Acquiring
Start deceleration
Stop scan. Stop acquiring
Deceleration. Stop motion
Go to the final position
(emulate step scan)
p_e
p_s
p_{end}
p_e
p_s
p_{start}
t_{-2}
t_{-1}
t_0
t_1
t_2
time

Coordination & Actions

- Measurement Group contains channels and synchronizers
- Coordination using *acquisition* and *synchronization* actions

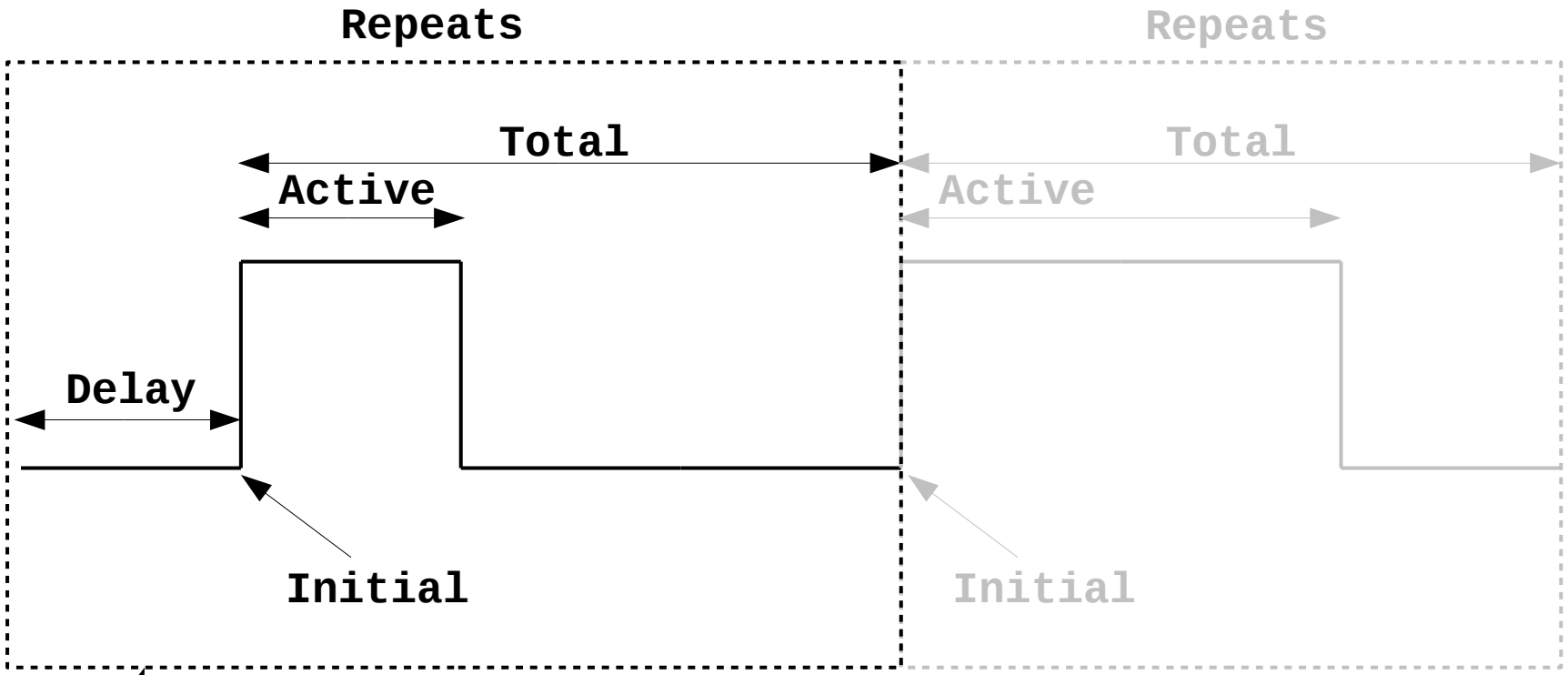


Latency time



- **MG latency time** – maximum of its controller latency times
- Controller's latency time – time necessary for rearming
- Affects directly total interval (time) and indirectly motors' velocities.

Synchronization description




```
[{Delay:   {Time: 0.3, Position: 400},
  Initial: {Time: None, Position: 0},
  Active:  {Time: 0.1, Position: 10},
  Total:   {Time: 0.15, Position: 15},
  Repeats: 1000},
 ...]
```