SiLC Test beams

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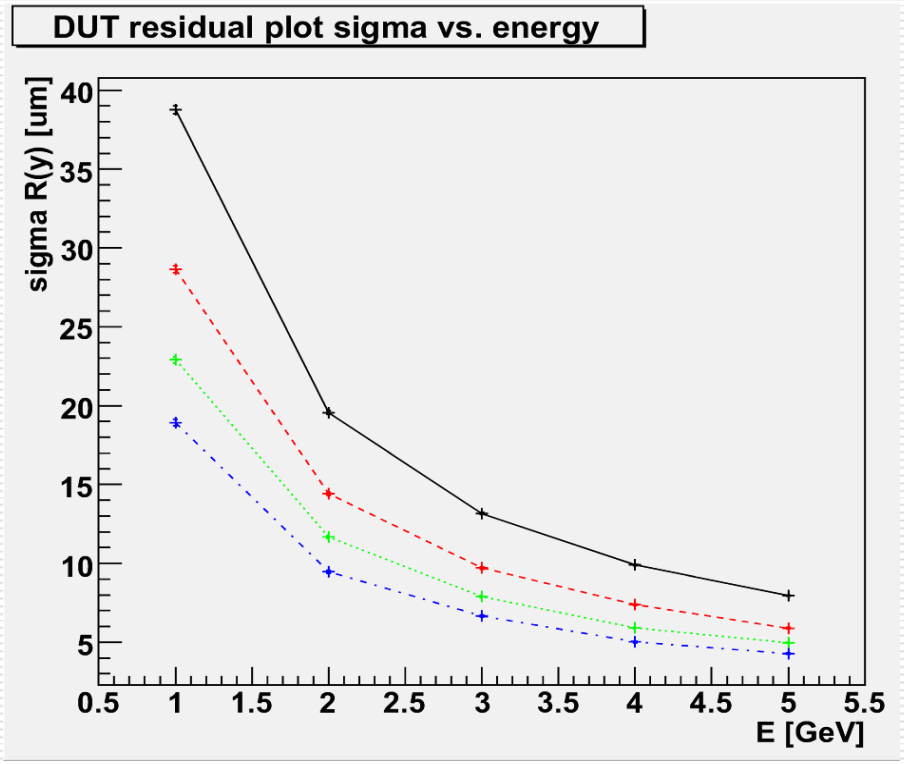
Beams available

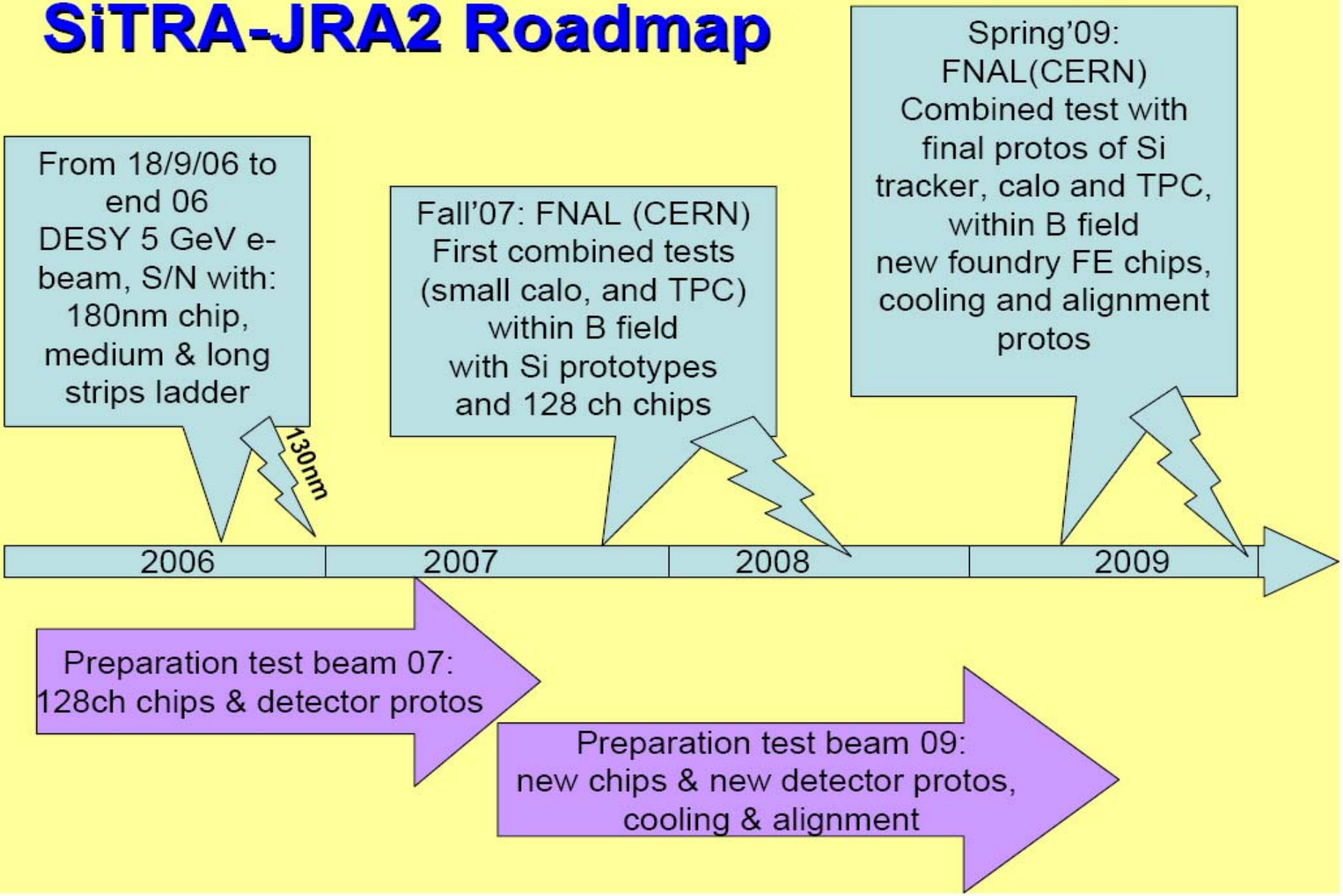
- DESY, 1-6 GeV e
  - Good access via EUDET
  - Problem of multiple scattering (track precision >10 μm)
  - G4 simulation (Prague)
  - Sep 18-22 booked



Beams available

- CERN, 20-200 GeV π,μ,e
  - High quality beam
  - Helsinki participate in TOTEM, possibility to run in a piggyback mode
  - Schedule for 2006 unsure due to recent magnet failure
- FNAL:
  - beam structure not very convenient
- SLAC
- KEK

SiTRA-JRA2 Roadmap



DESY September 2006

From 18/9/06 to end 06
DESY 5 GeV e-beam, S/N with:
180nm chip, medium & long strips ladder

130nm

Test Beam at DESY in 2006 2.Half

Beam	Responsible	July				August				September				October				November				
	Collaboration/Sub-detector	03	10	17	24	31	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	04
22	Stahl et.al. ILC/E166																							
22	Bruschi ATLAS/Luminometer																							
22	Savoy-Navarro SiTra																							
22																								
22	SHUTDOWN/ NO BEAM																							

DESY Beam Area

What is needed?

- Trigger + DAQ + Telescopes
- Prototype modules + DAQ HW
- DAQ software
- Chamber, XY stage
- Manpower (experts, shifters)
- Data analysis

Trigger + DAQ+Telescopes

ZEUS DESY group telescopes booked:

trigger photomuliplier

- 3 defining an area of 9x9 mm2 triggering the readout of the 3 telescope units

telescope

- 3 modules with crossed sensors about 3x3 cm2; diode pitch 25 micron, readout pitch 50 micron ("Cern type", Coledani et al., NIM372(1996)379)

readout

- CAEN module 550 and 551 in VME Power PC in the VME crate coincidence, deadtime control,... in a NIM crate in the hut. The VME crate is close to the telescope. Software and data format under investigations

SiLC Prototype Modules

30 cm ladders

- 2 new ladders with 3 9-cm CMS sensors each, i.e. 28 cm strip length one equipped with VA1 chips (for a comparison) and the other with SiLC UMC 180 nm chip
- This module will be built in Paris

Long ladder

- a new prototype with 10 GLAST sensors, i.e. 90 cm strip length equipped with SiLC UMC 180 nm chip
- This module will be built in Karlsruhe and populated with chips probably in Paris
- Option with 2 readout chips (UMC+VA) exists

DAQ HW+SW

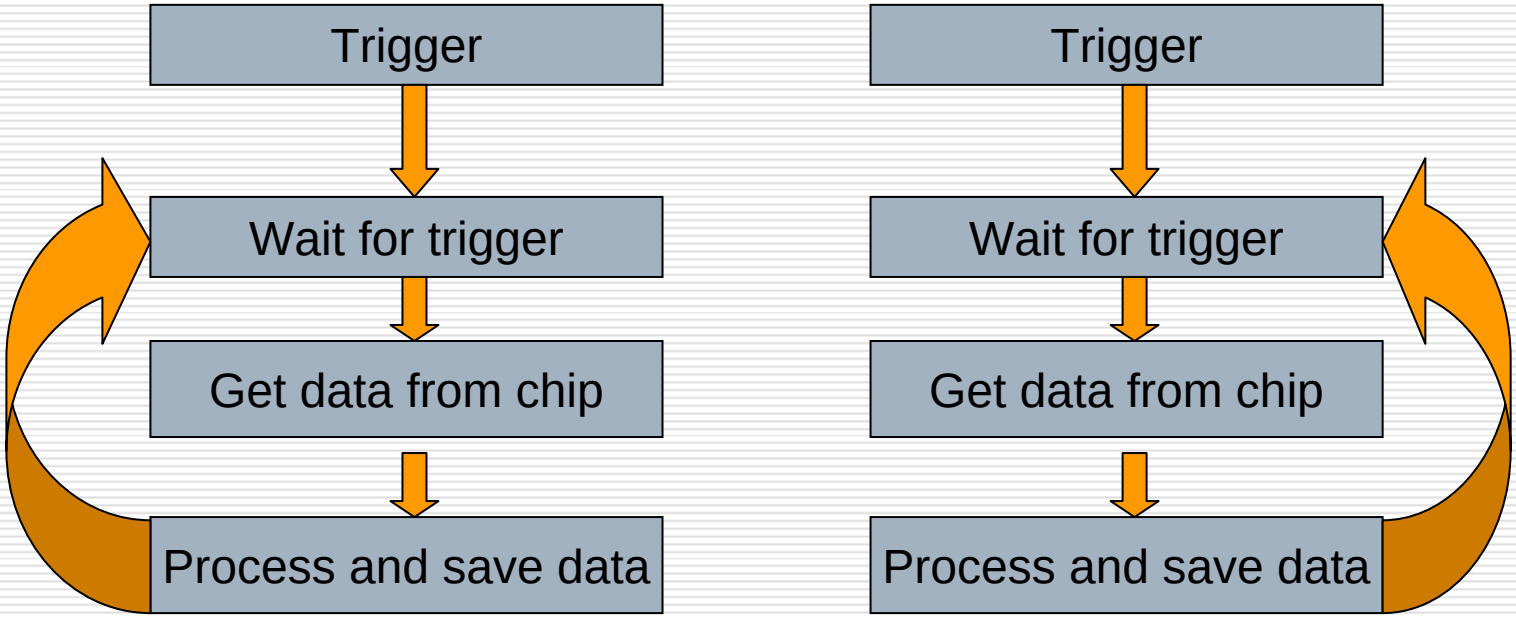
Telescopes:

- CAEN VME V550+551 ADC+sequencer
- PowerPC in VME Crate, Lynx OS
- DESY Support promised

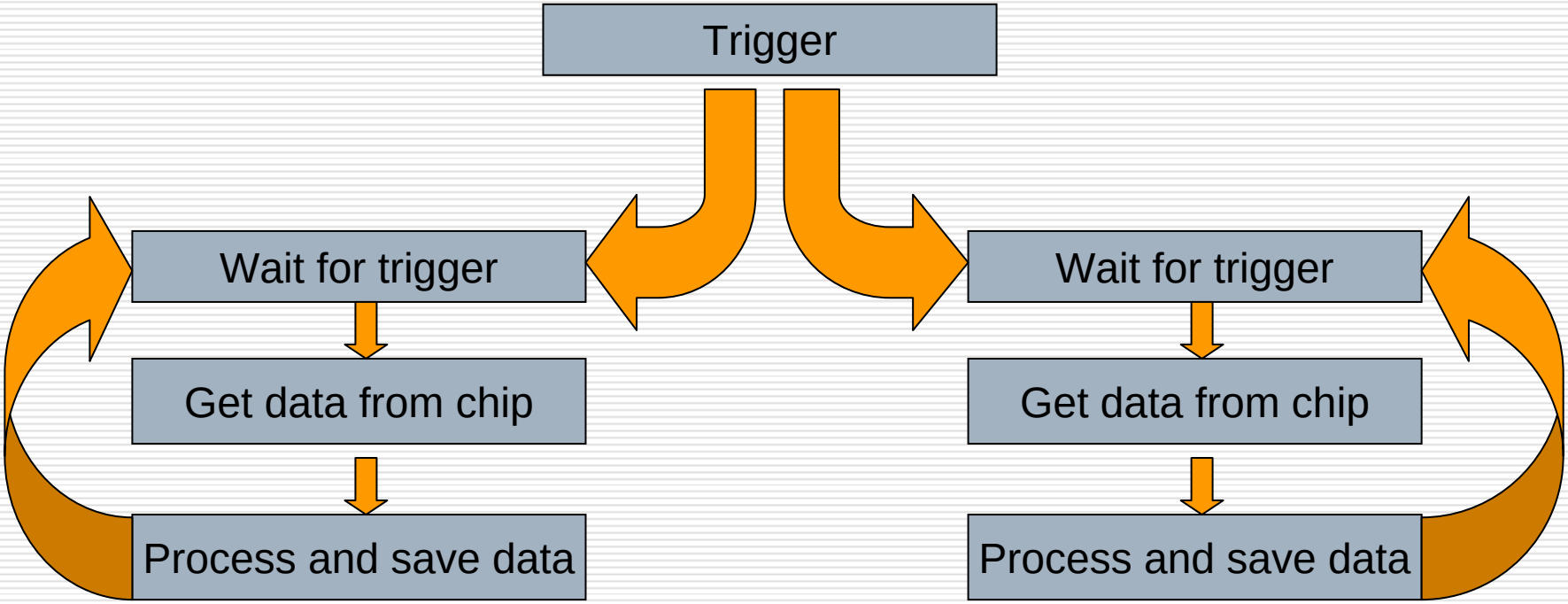
SiLC modules:

- Interface card between UMC/VA chips and ADC
- NI AD card, 100 MHz, 14 bit (PCI or PXI)
- LabView DAQ SW tested in lab in Paris
- Readout speed limitations

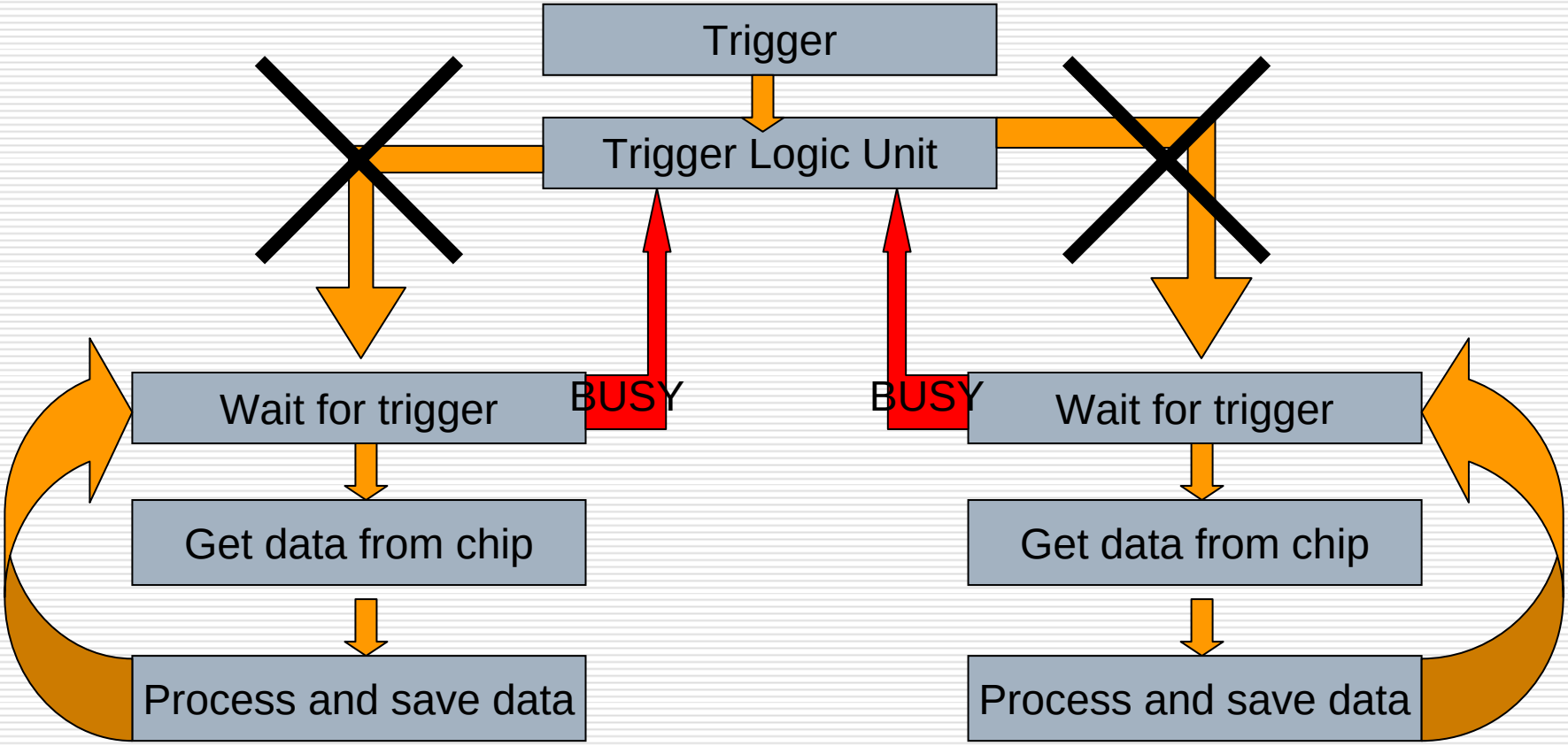
Standalone Telescope+Proto DAQ



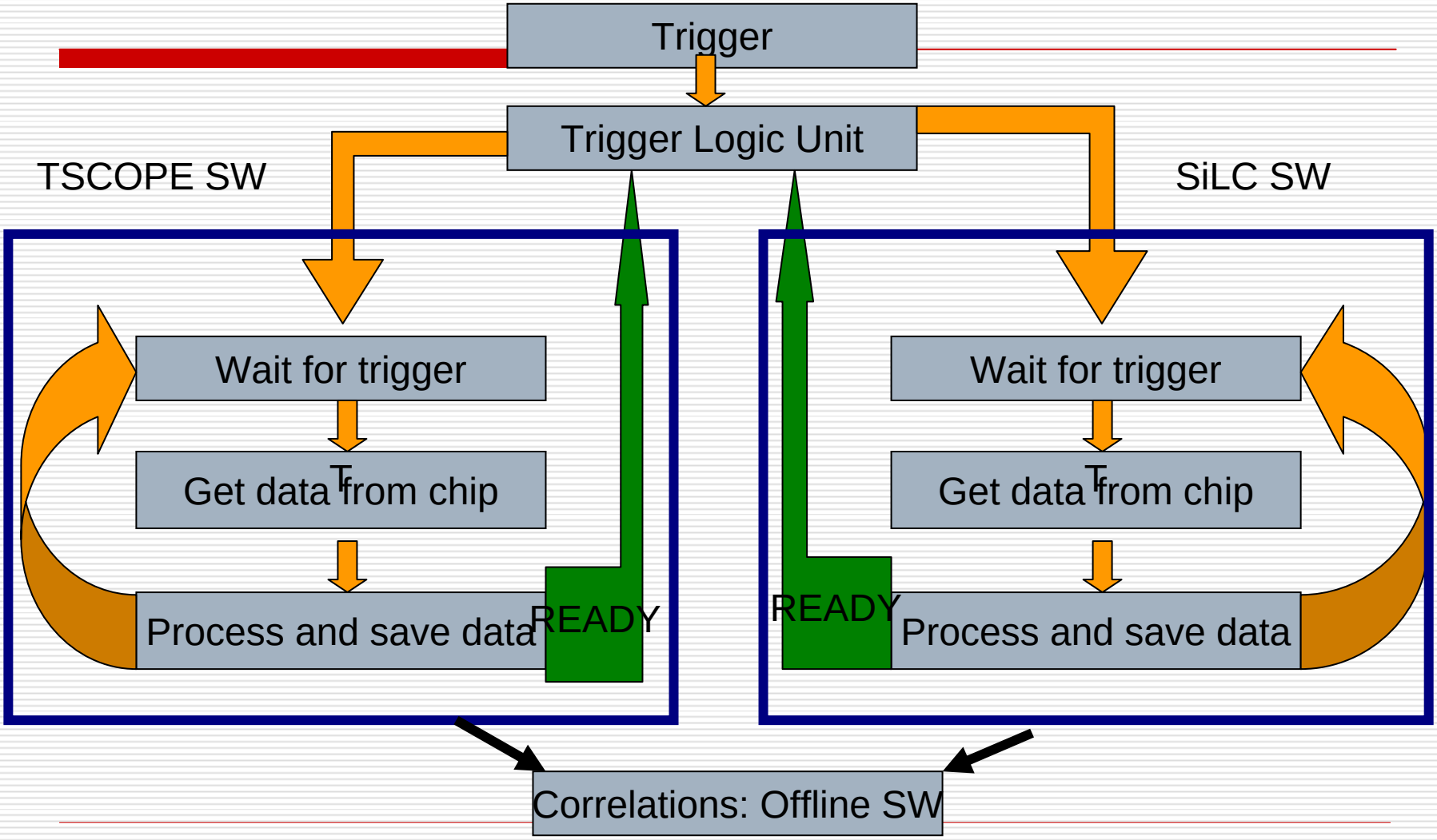
Synchronised Telescope+Proto DAQ



Synchronised Telescope+Proto DAQ



Synchronised Telescope+Proto DAQ



Not prompt!

Synchronised Telescope+Proto DAQ

Telescopes VME PowerPC readout, Lynx

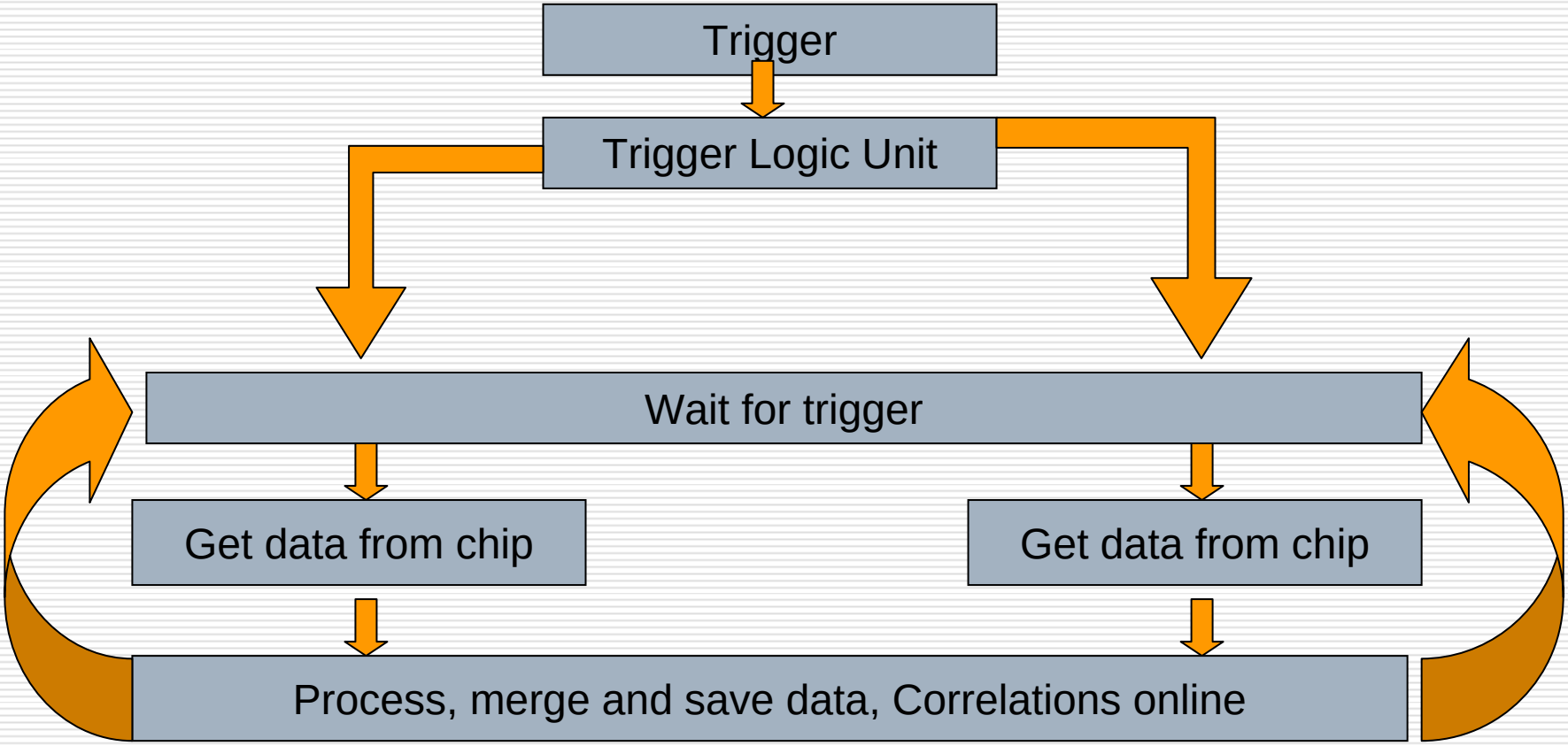
SiLC NI AD card (PCI or PXI), LabView DAQ SW

Synchronisation might be time consuming!

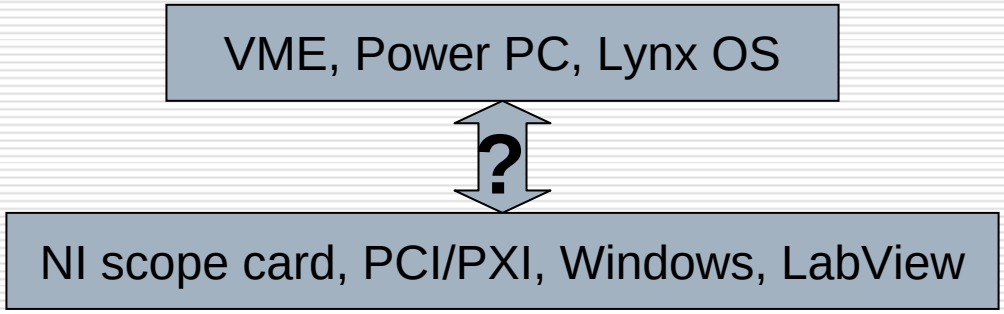
Hard to test in advance, but need to be prepared:

- data formats
- readout logic
- source codes

Common Telescope+Proto DAQ



Common Telescope+Proto DAQ



- Hardware?
- Operating system?
- SW Platform?
- Perspective?

Common Telescope+Proto DAQ

Operating system?

- Telescopes: VME can be read with a different communication board (NI PCI-VME) under Win or Linux
- SiLC
  - No need to leave Windows

Common Telescope+Proto DAQ

SW platform?

- LabView: ‘easy’, but slow
- Windows MSVC++: fast, can use dll from vendors for PCI/PXI,VME + ROOT GUI + plots

Common Telescope+Proto DAQ

Perspective?

- Telescopes:
  - The same for DESY beams
  - Hopefully similar or identical for CERN/FNAL beams
  - New EUDET for 2008+ with common DAQ?
- SiLC
  - R/O mode change with 130 nm (end of 2006): digital readout
  - Simpler DAQ HW will be needed
  - Keeping SW/HW functionality for 180 nm/VA desirable for crosscheck

Common Telescope+Proto DAQ

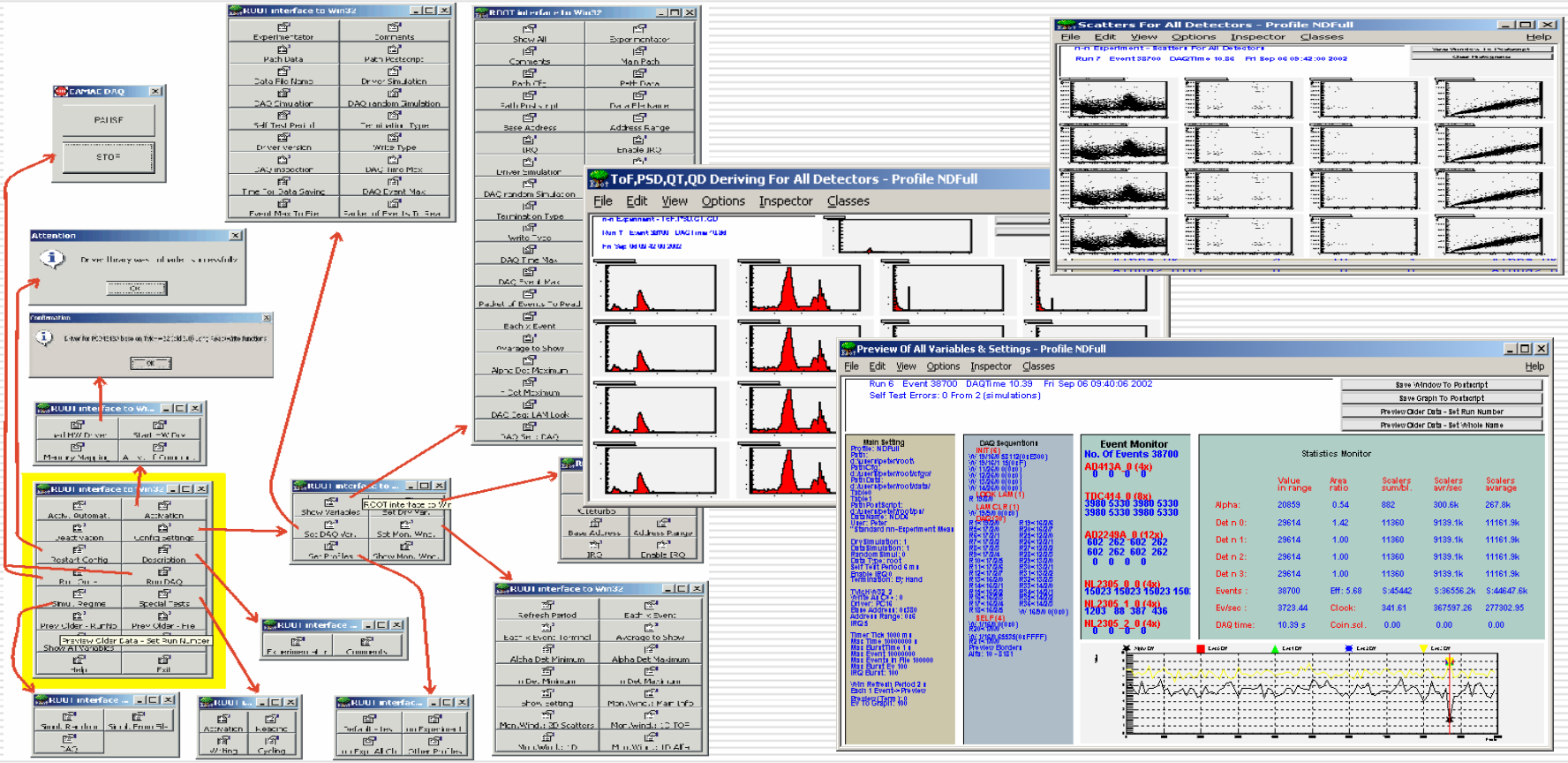
Proposal

- September 2006: stay with 2 standalone synchronised systems
- 130 nm (end of 2006): attempt to create common TB software

Who?

- Prague: MSVC++ + ROOT,
- Other proposals, participations
- Prerequisites: all info on communication protocols, chip configuration sequences, etc.

Common Telescope+Proto DAQ



Chamber, supports, XY stage

- Concrete blocks, tripod available on site
- 30 and 1000 kg XY stages with a remote control exist at DESY
- 30 kg XY stage booked
- Chambers?
- Dry nitrogen: to be checked

Chamber, supports, XY stage

Responsibilities

Telescopes, trigger…
- Prague
- Obninsk
- DESY

Prototypes+ test setup
- Paris
- Karlsruhe

Mechanics, chambers
- Obninsk
- DESY
- Paris
- Karlsruhe

Readout
- Prague
- Paris
- DESY

Offline analysis
- Prague

Shifts
- All (who?)

Data analysis
- Prague
- Everyone interested

SiLC test beam page: www-ucjf.troja.mff.cuni.cz/ilc