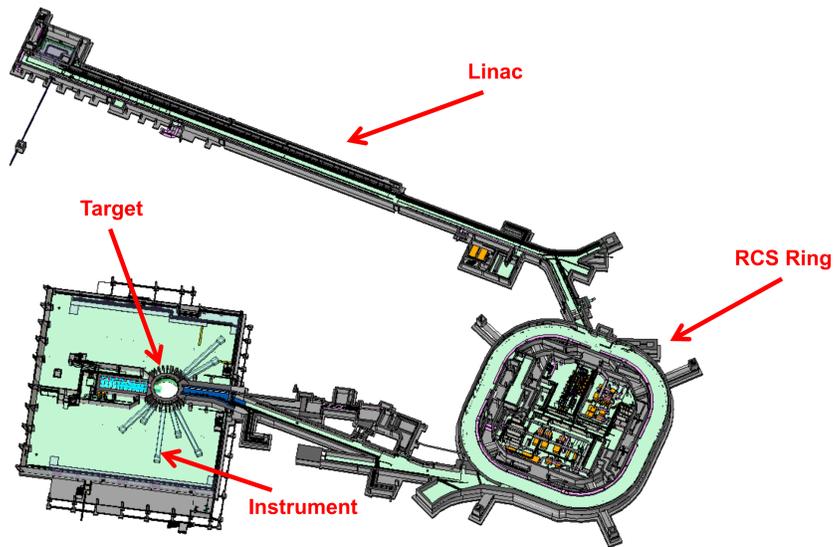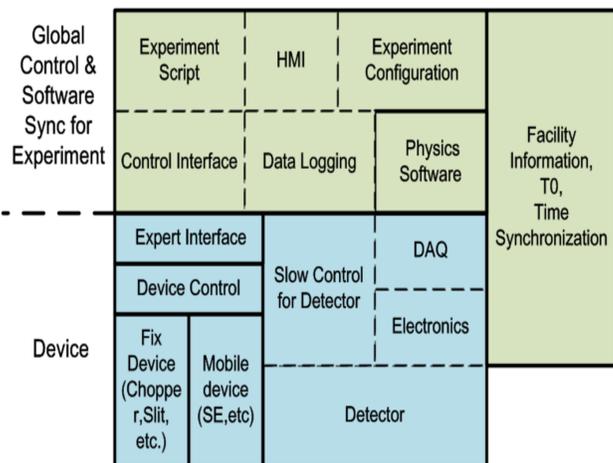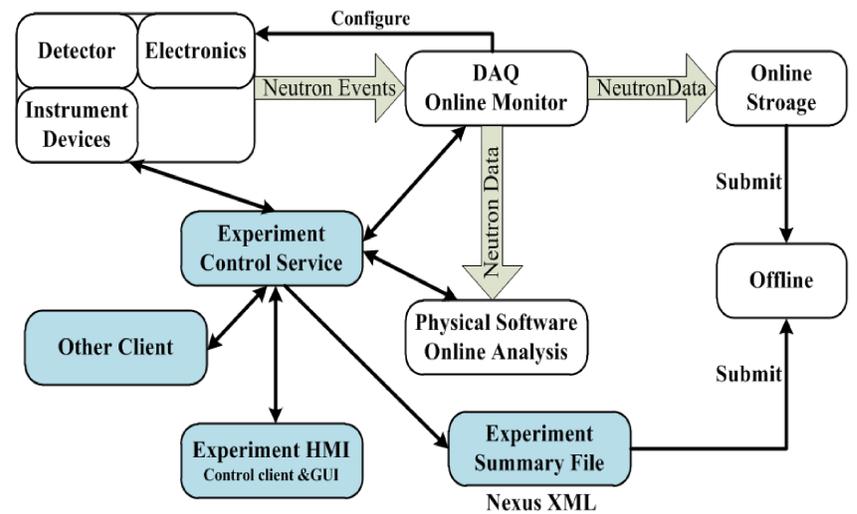# THE DESIGN OF CSNS INSTRUMENT CONTROL

Jian ZHUANG, Jiajie LI, Lei HU，Yongxiang QIU, Lijiang Liao, Ke ZHOU
Institute of High Energy Physics , Chinese Academy of Sciences,

China had decided to build a world-class spallation neutron source, called CSNS, to provide users a neutron scattering platform with high flux, wide wavelength range and high efficiency.
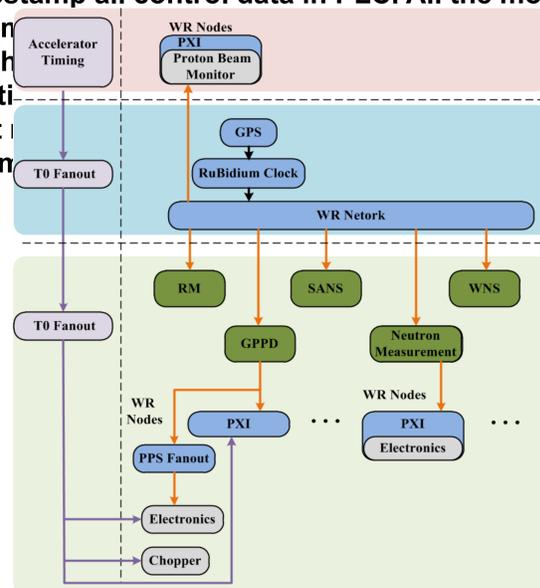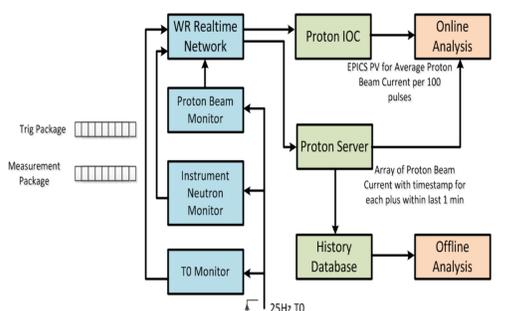

The layout of CSNS

The PLC system from BECKHOFF are tested. It uses IEEE 1588 protocol to synchronize all modules. So we can timestamp all control data in PLC. All the modules will be ti... ... and then to th... ... ion. We test ti... ...le, different ... ... and various ...

Traditional data in control system are marked in control computer. Now we want data are timestamp in PLC for time accuracy.
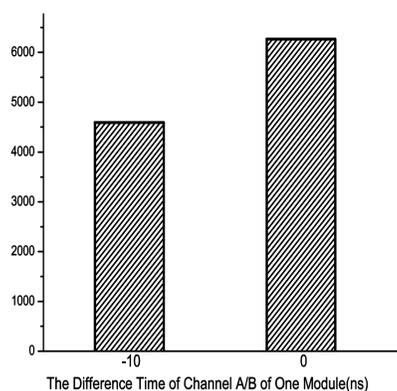
Single Module Test

Multi-module Test

Test System
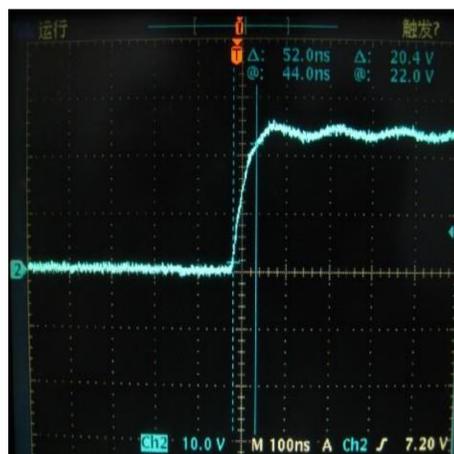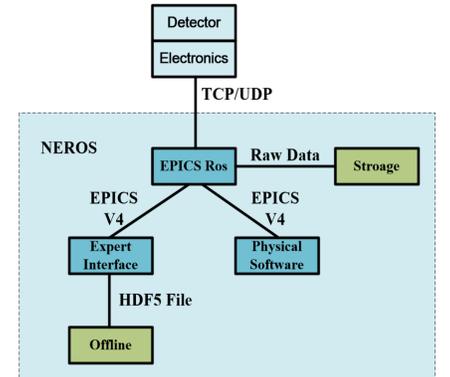
One module Test
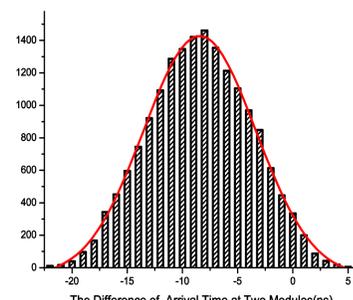

Signal send from output module for time accuracy test. Rising edge is about 50ns.
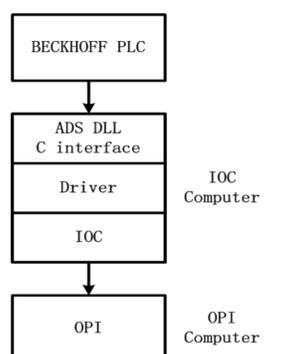

The Difference Time of Channel A/B of One Module(ns)

Time difference in two channel on one module. Only two 0ns, 10ns in result. So the local clock can be assume to be 100Mhz.

The Difference of Arrival Time at Two Modules(ns)

Mean	-8.44
Std	4.57
Max	-22
Min	6
Total Test	10860

Multi-module Test
Typical time difference on two channel in a multi-module system. Time accuracy is better than 100ns.

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