Synoptic Displays for HBESL and NML Laser Lab

By Didier Muvandimwe
Hendrix College, Conway, Arkansas
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Supervisor: Jinhao Ruan

Outline

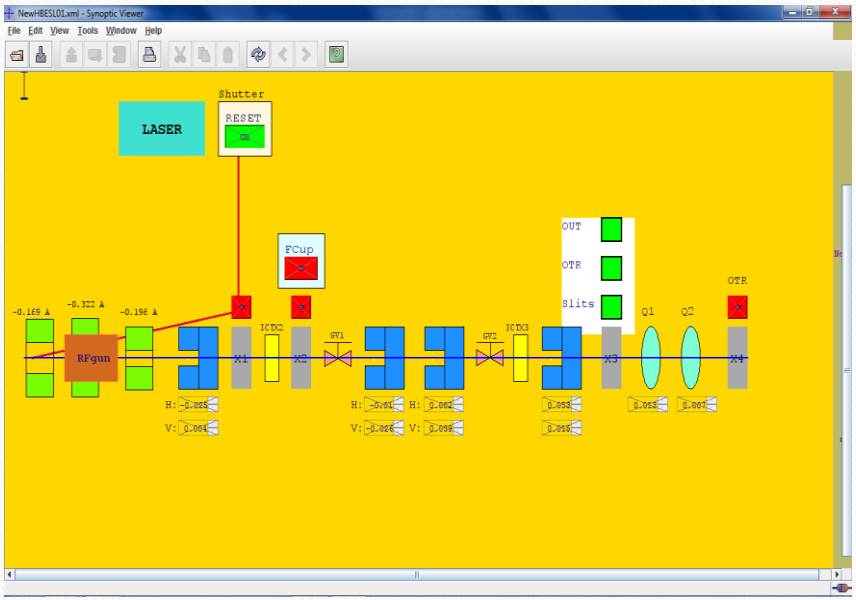
- What is synoptic?
  - Description and components
- How does it work?
  - Needs and execution of displays
- HBESL and NML Laser lab synoptic displays
  - Building and maintaining

What is synoptic?

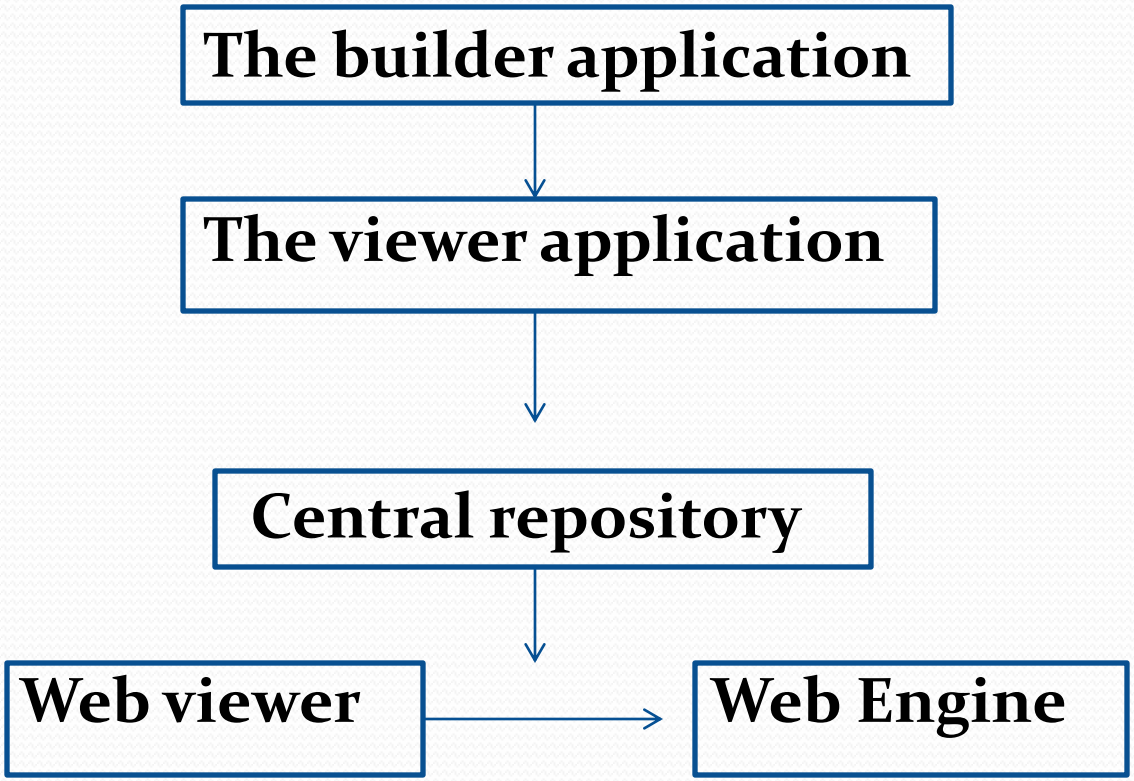
- GUI builder and runtime environment
  - System for graphical representation of real-time data in the control system of Fermilab .
    - Availability of the real-time data at any time everywhere
  - ***How?***
  - ✓ Creates diagrams representing a certain machine or process.
  - ✓ Providing actual reading from the control system indicating its current state.
  - ✓ Setting data back to the control system

HBESL Beam line

Synoptic display



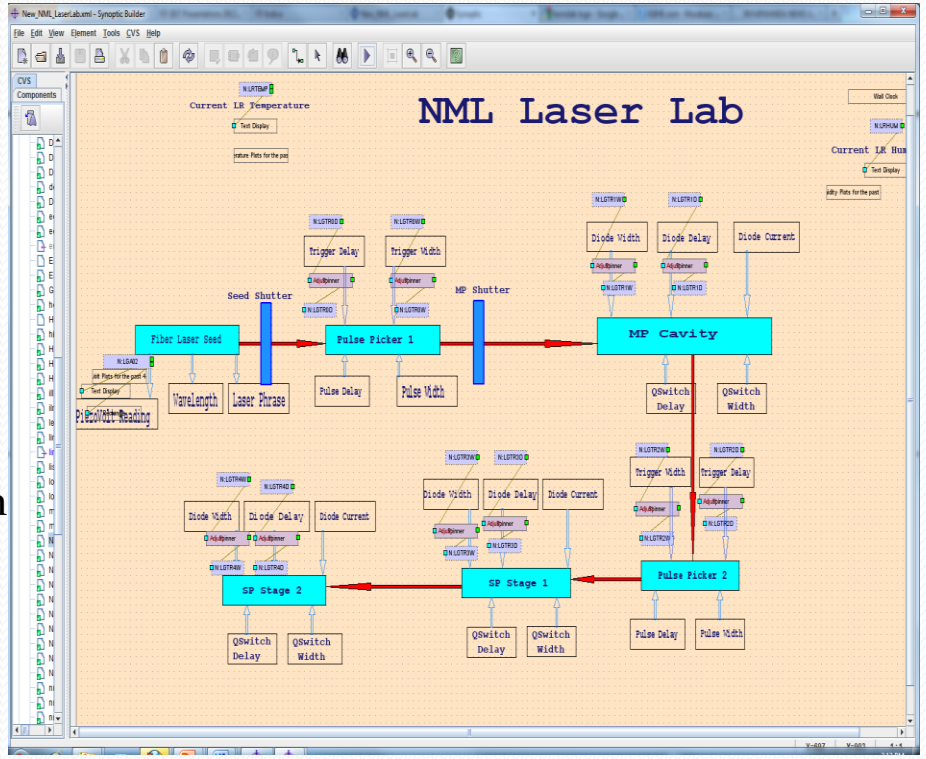
5 Components of the system(Synoptic)



Running Options: *Builder/Viewer Application, and web viewer*

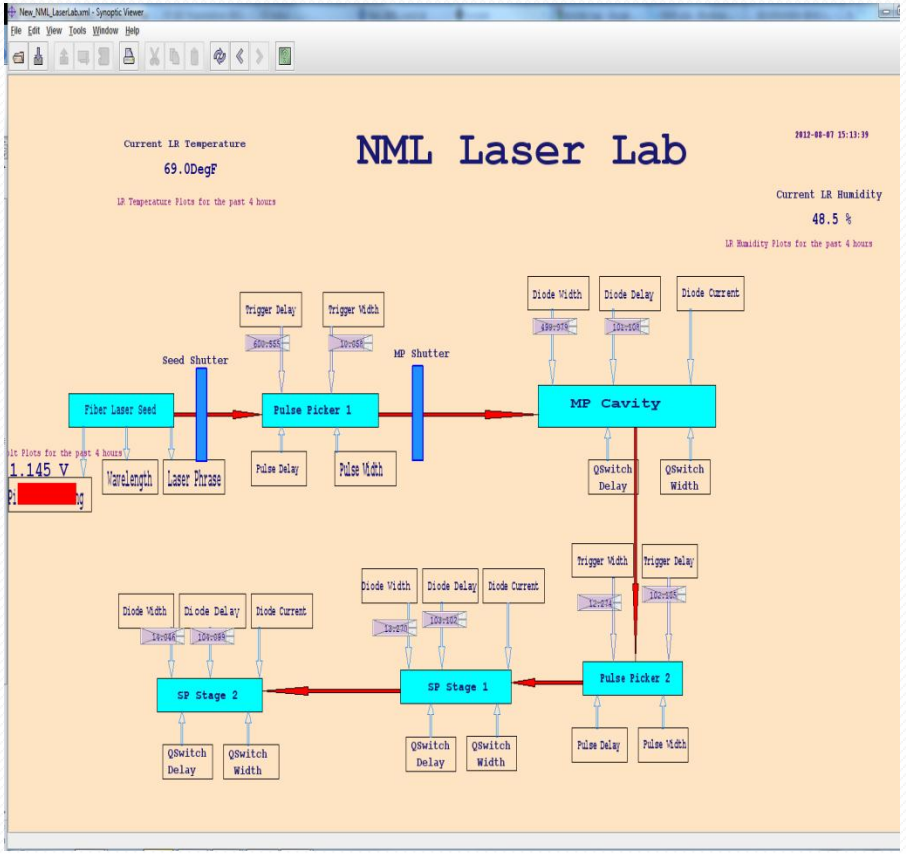
How? What do you need? Builder application

- **The builder application:**
  program used to build/edit displays
  - **Locally**
    - http://synoptic.fnal.gov
    - Launch builder
  - **Requirements**
    - Java Runtime Environment (JRE)…Java SE 6
    - Saving displays in the central repository
      - Fermilab Network connection
      - Running: MIT Kerberos account
      - Synoptic password



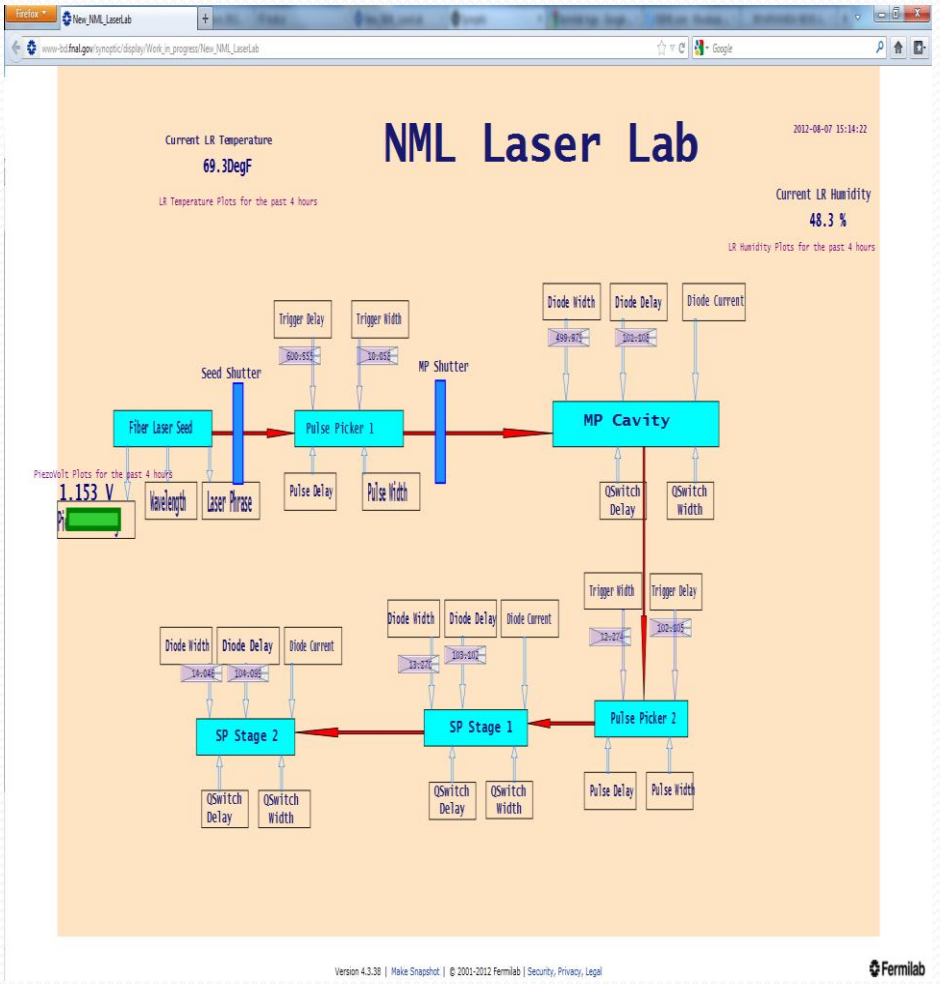
The viewer application

- program(Java application) to execute synoptic displays
  - ***Opening***
  - **Locally:**
    - http://synoptic.fnal.gov
    - Launch viewer
  - **Requirements**
    - Java Runtime Environment (JRE)…Java SE 6
    - Reading data
      - Fermilab Network connection
      - MIT Kerberos ticket
  - **Data connection and Setting control**
    - Synoptic password



Running web viewer

- **Can be opened on different web browsers (Firefox, Chrome, Safari)**
  - **Internet explorer (SVG plugin)**
  - **No strict security policies:** No user authentication needed, can even be opened outside of the Fermilab network.
  - Impossible to set data to the control system

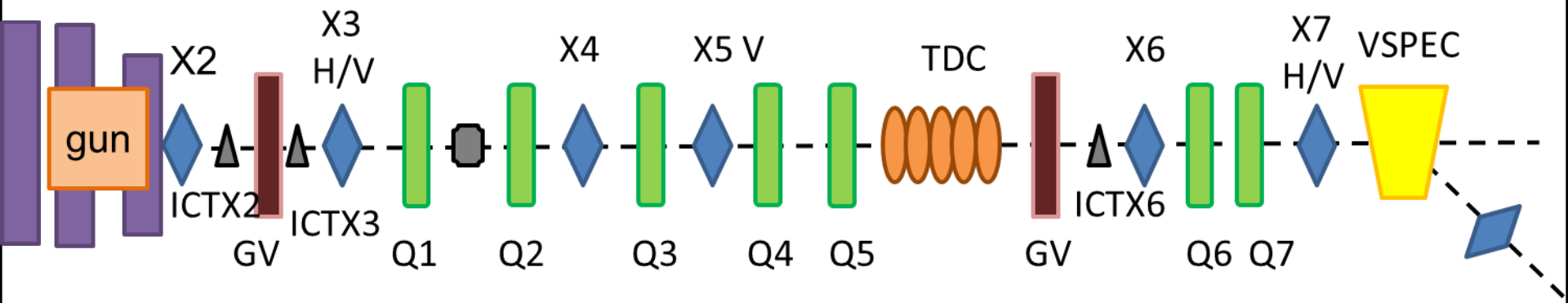


How were the displays created

- Schematic provided
- Details on what devices needed to be read-out or/and controlled
- Building and editing displays from scratch using the builder application of synoptic

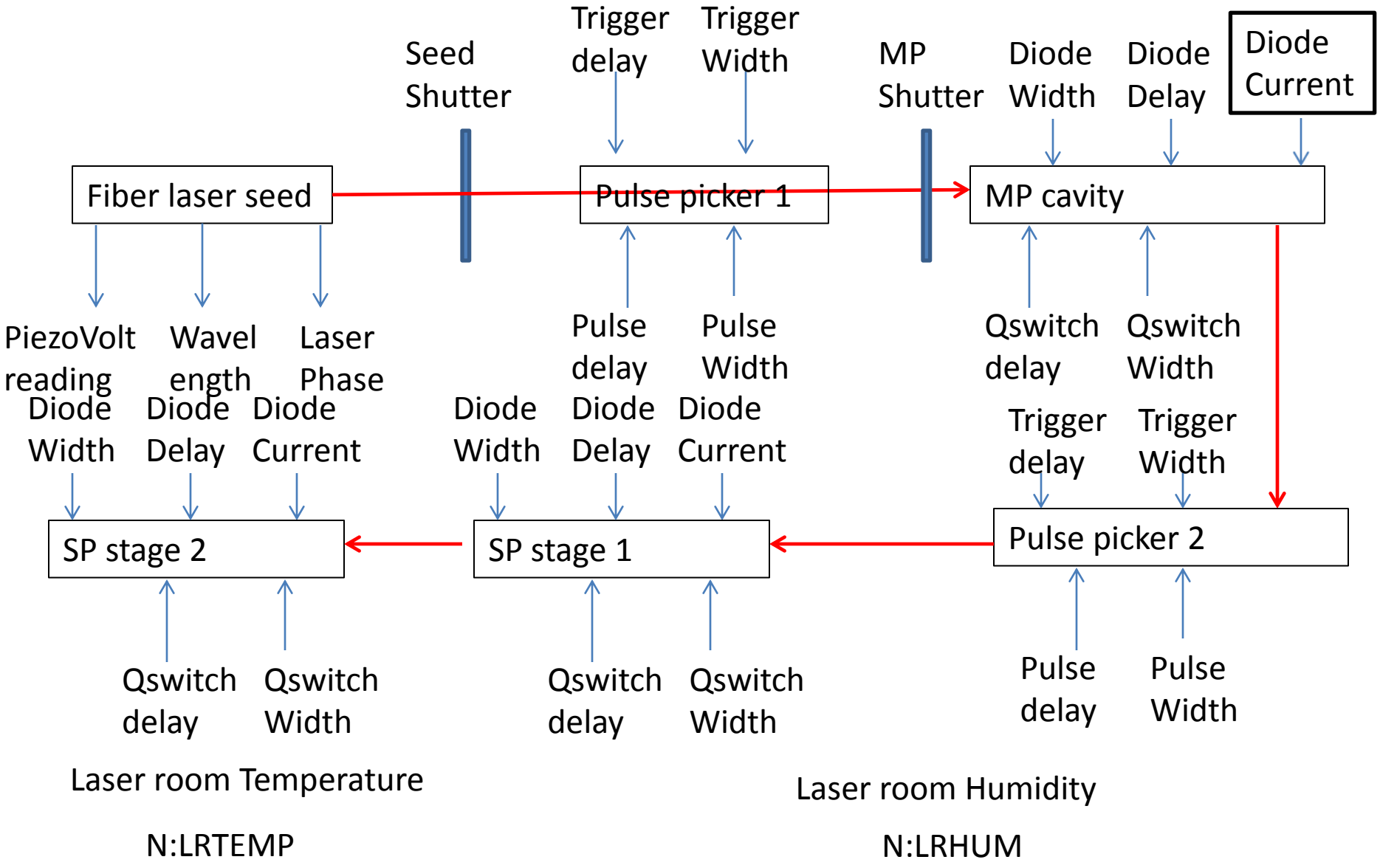
HBESL Schematic

- High Brightness Electron Source Laboratory



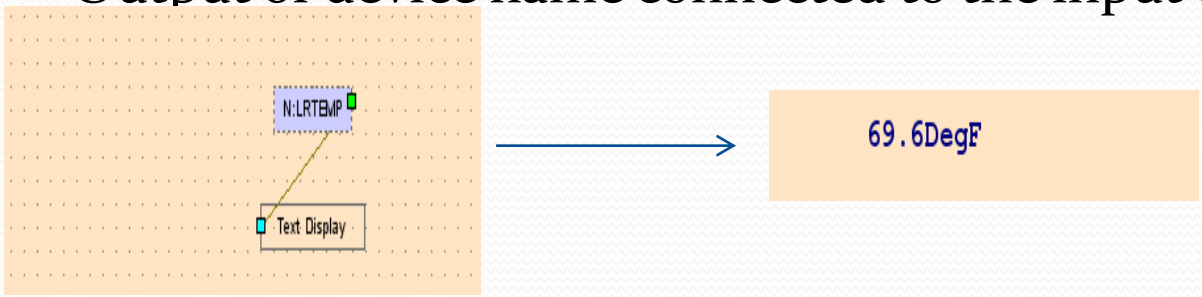
GV: Gate valve
Qn: Quadruples
Xx: Screens
H/V: Horizontal/Vertical stepping motor
ICTn: Integrated Current Monitors
TDC: Transverse Deflecting Cavity
SOLn: Solenoid magnets
Gun: RF Gun

NML Laser Room Schematic

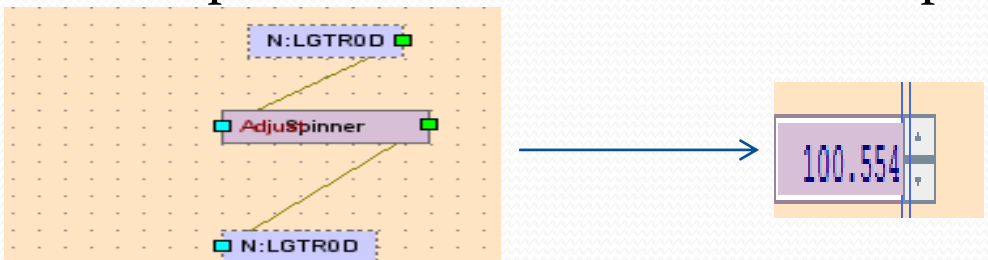


Reading and controlling devices

- The temperature reading in the laser experiment
  - Special name for each device & its connection to the ACNET
  - Importing the read-out values in synoptic
  - Read-out:
    - Output of device name connected to the input of “text display”

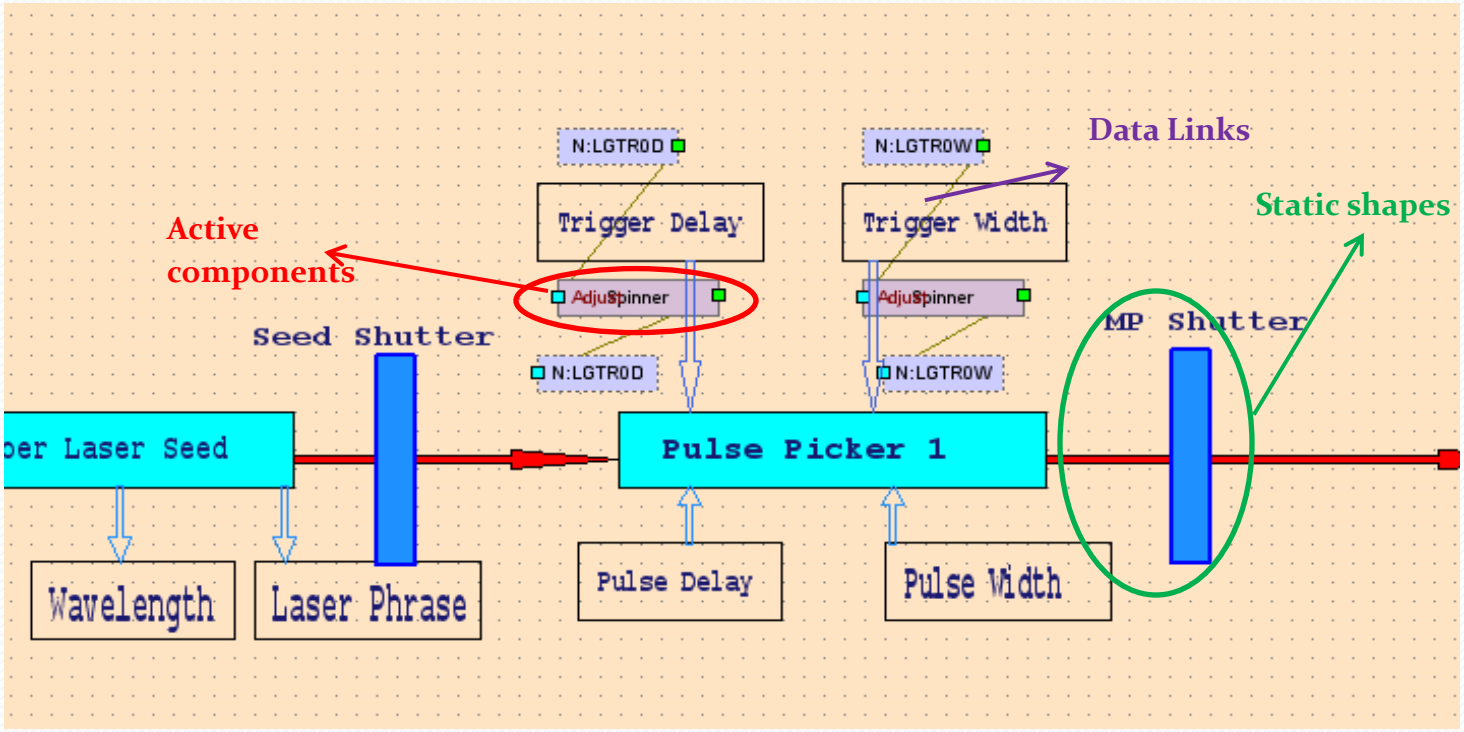


  - Controlling: Reading-out and setting
    - Output of device name → input of spinner and
    - Output of device name → input of device name

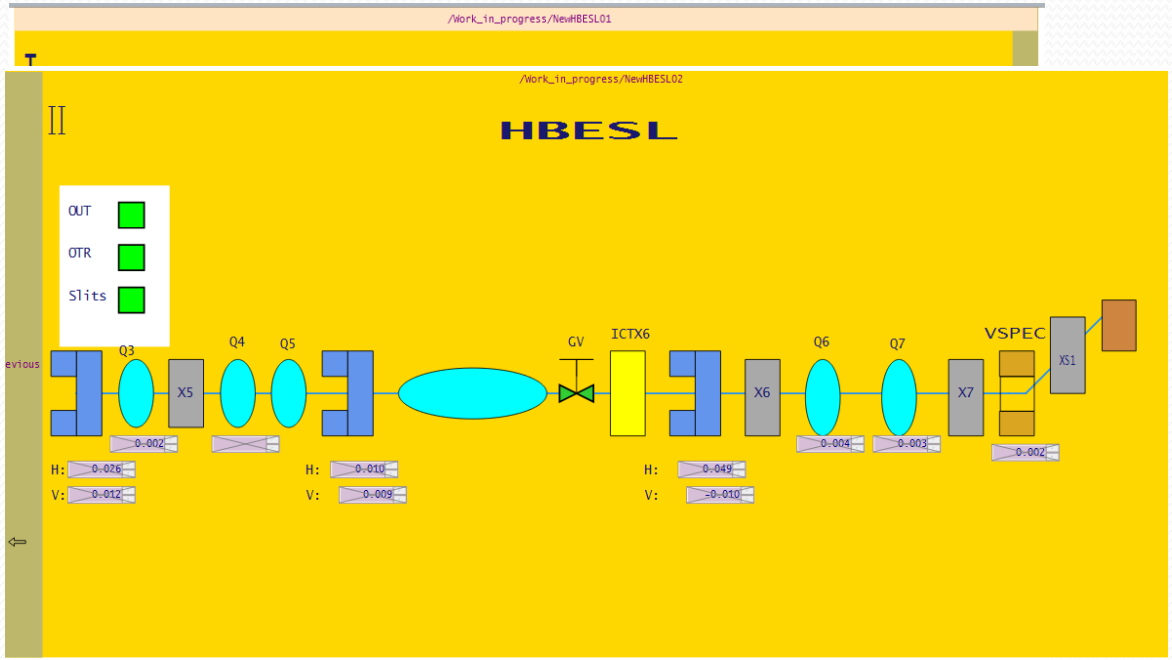


Classification of Components(Builder Application)

- *Active components, static shapes, data links, and displays*



- Work done on HBESL
  - HBESL display built and saved in the central repository: Can be easily accessed by many users
  - Can be accessed from ACNET console
    - http://www-bd.fnal.gov/synoptic/display/Work_in_progress/NewHBESL02

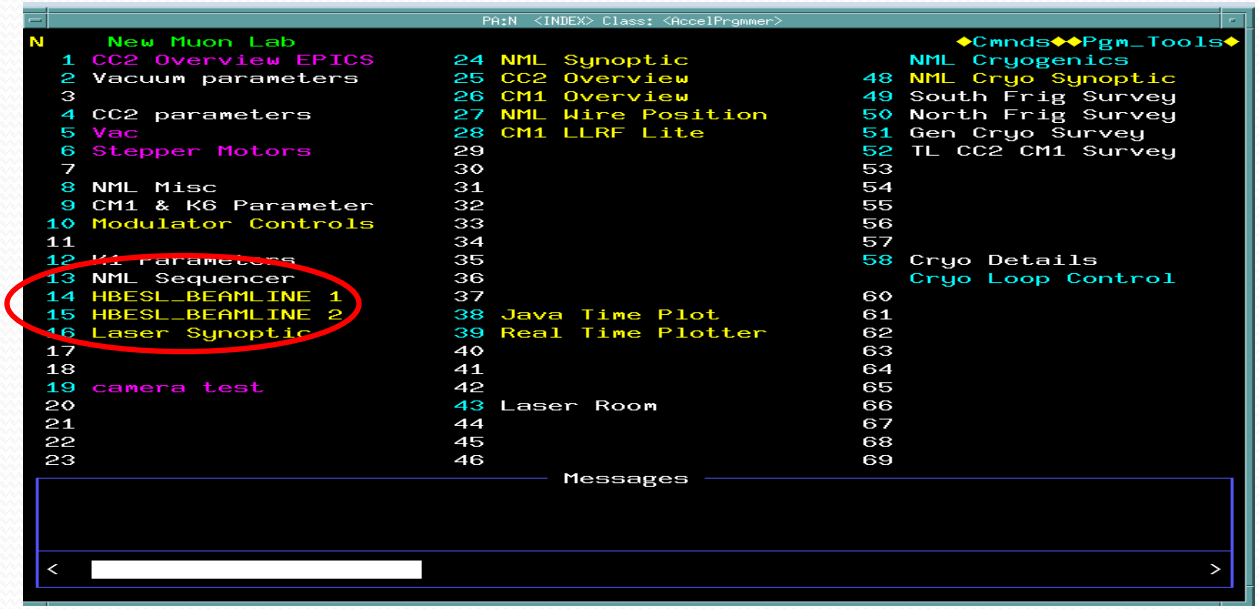


Work done on the display

- Web viewer:
  - http://www-bd.fnal.gov/synoptic/display/Work_in_progress/New_NML_LaserLab
- The display was added on ACNET

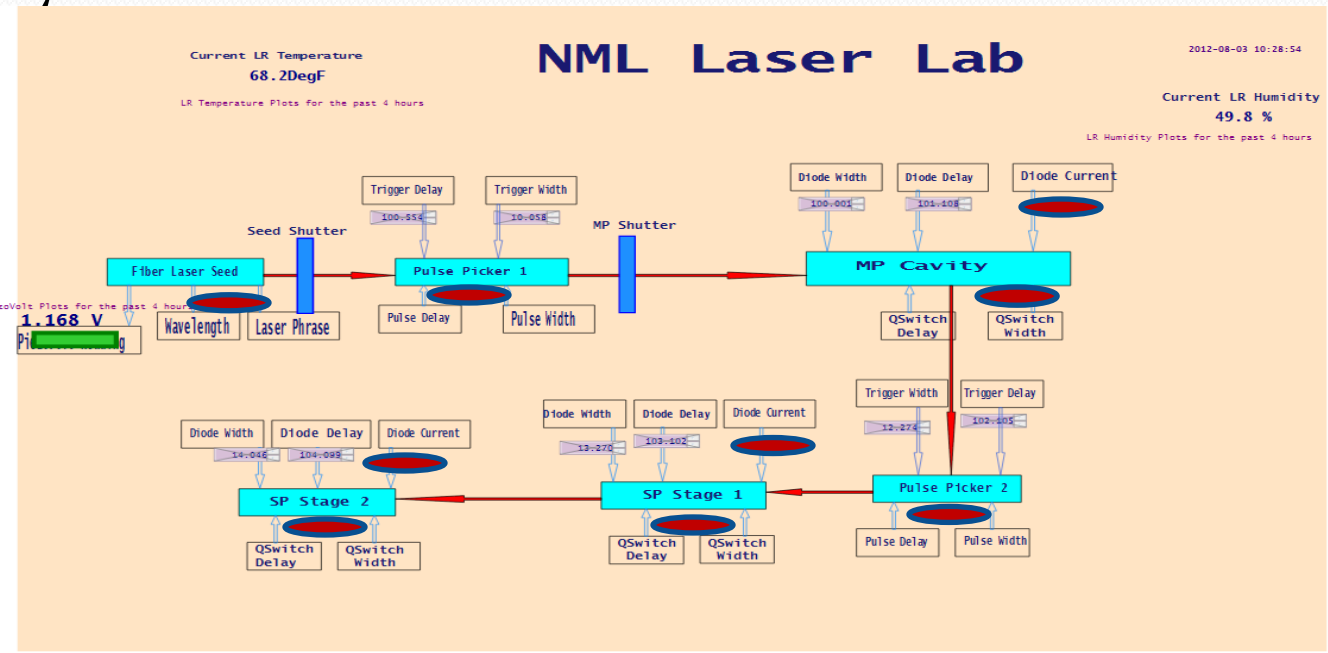
Summary

- Work Completed
  - Both displays(HBESL beam line & Laser experiment) were produced, added on the ACNET page under NML sub-page.



Future work

- Due to some technical reasons, some addresses are not set up yet…still need to be added on the display once they are available.



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Questions?