



## Telescope Command and Control in the SST-GATE Project

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## **General concepts and Hardware**

- General concepts
  - Safety: topic of primary importance
  - Compliance with international standards
  - Good reliability of the overall system
  - Network-based automation and instrumentation
  - Easy maintenance
  - Compliance with CTA-SST requirements
- Hardware
  - Standard, rugged, long life-cycle and easily supplied components (typically COTS)
  - Main PLC: CompactRIO (NI)
  - Safety-dedicated PLC (Siemens, Rockwell, other?), components and network
  - Provisions (power supply, network) for cameras as test bed facility



## **Software and Communications**

- Software
  - Local control mode:
    - Industrial control panel
  - Remote control mode:
    - Distant computer
    - TBD: Distributed application or HTTP browser?
  - Object-oriented programming preferred:
    - LabVIEW, C++, Java...
- Communications
  - Fast- or Gb-Ethernet-based communications
  - <u>Externally</u> for remote control, scientific events alerts, technical archive server, UTC time synchronization...
    - OPC UA, HTTP, NTP
  - Internally for actuators, sensors, PLCs, real-time controllers
    - TBD: PROFINET, POWERLINK, other?
  - <u>Safety fieldbus</u>
    - TBD: PROFIsafe, openSAFETY, other?



## **Communication Layout**



