PLC Systems at Gemini Observatory

“Two telescopes, one observatory”

Images from Gemini PIO Dept.

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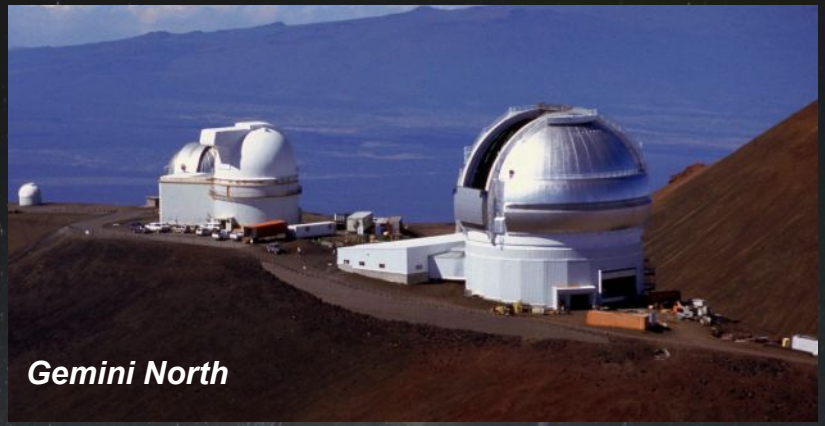
Exploring the Universe, Sharing its Wonders

What is Gemini Observatory?

Twin 8.1-meter telescopes

Optimized for infrared astronomy

International Partners: USA, Canada, Chile, Brasil, Argentina, Korea


Gemini North

Gemini South

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Where is Gemini located?

Hawaii, USA (Gemini North)

La Serena, Chile (Gemini South)

6,500 miles away

MK at 13,822 ft

CP at 8,930 ft

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What PLC technology do we use?

Hardware

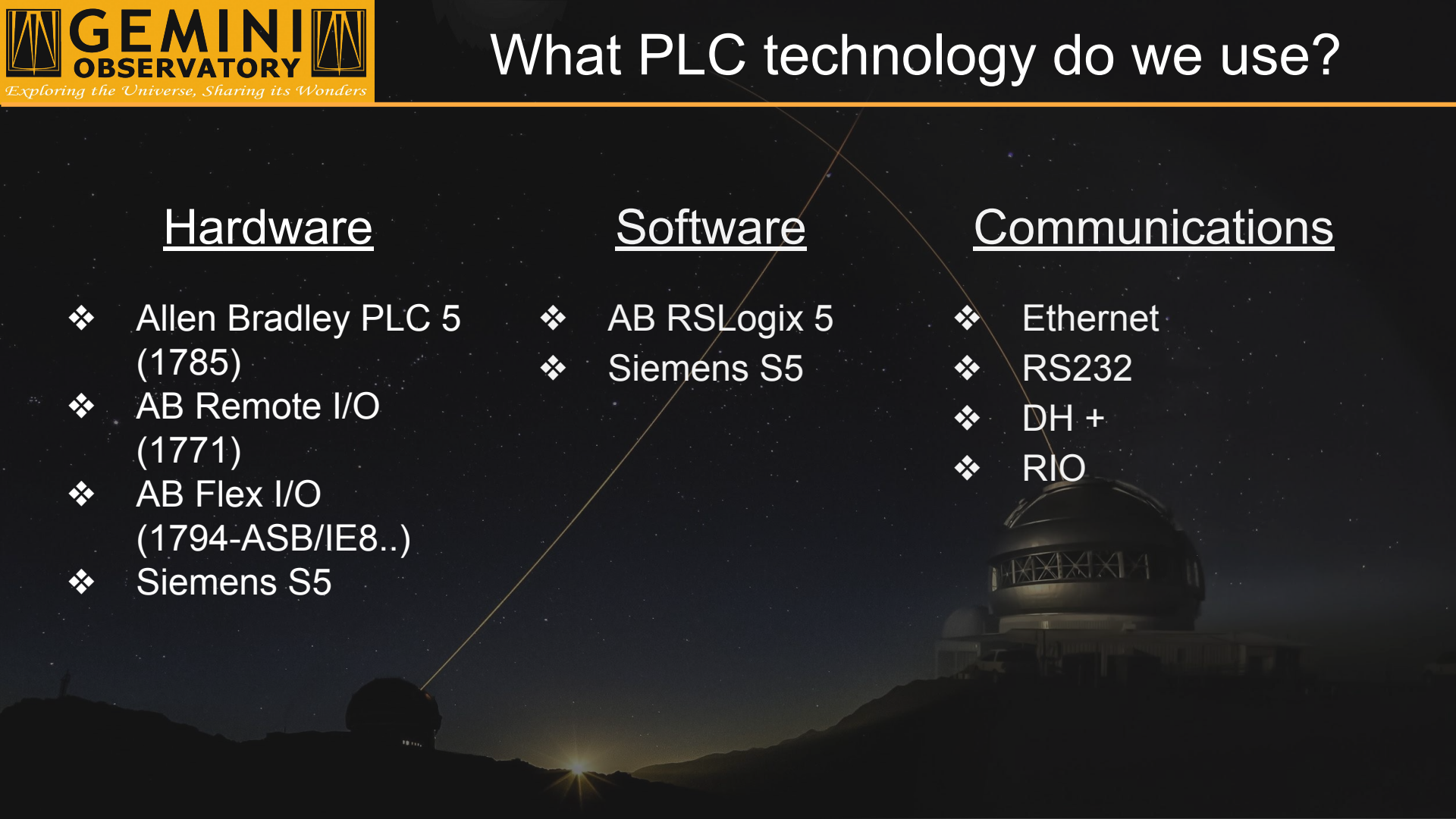
- Allen Bradley PLC 5 (1785)
- AB Remote I/O (1771)
- AB Flex I/O (1794-ASB/IE8..)
- Siemens S5

Software

- AB RSLogix 5
- Siemens S5

Communications

- Ethernet
- RS232
- DH +
- RIO



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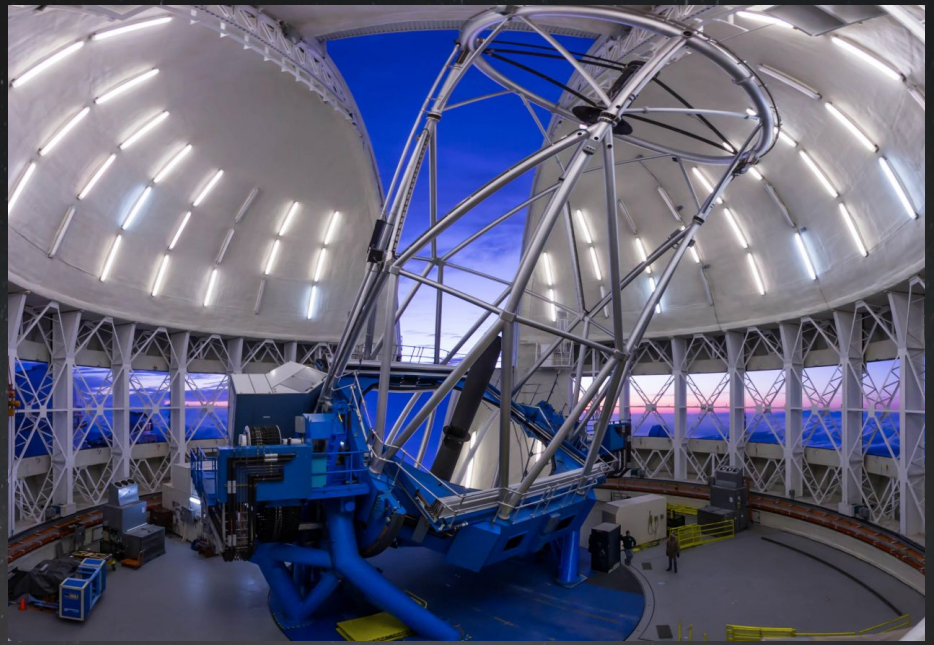
Where do we use PLC's?

- Gemini Interlock System (GIS)
- Laser Interlock System (LIS)
- Facility Protection System (FPS)
- Base Facility Operations (BFO)
- Hydraulic Bearing System (HBS)
- Enclosure Control System (ECS)
- Plant Room
- Coating Chamber



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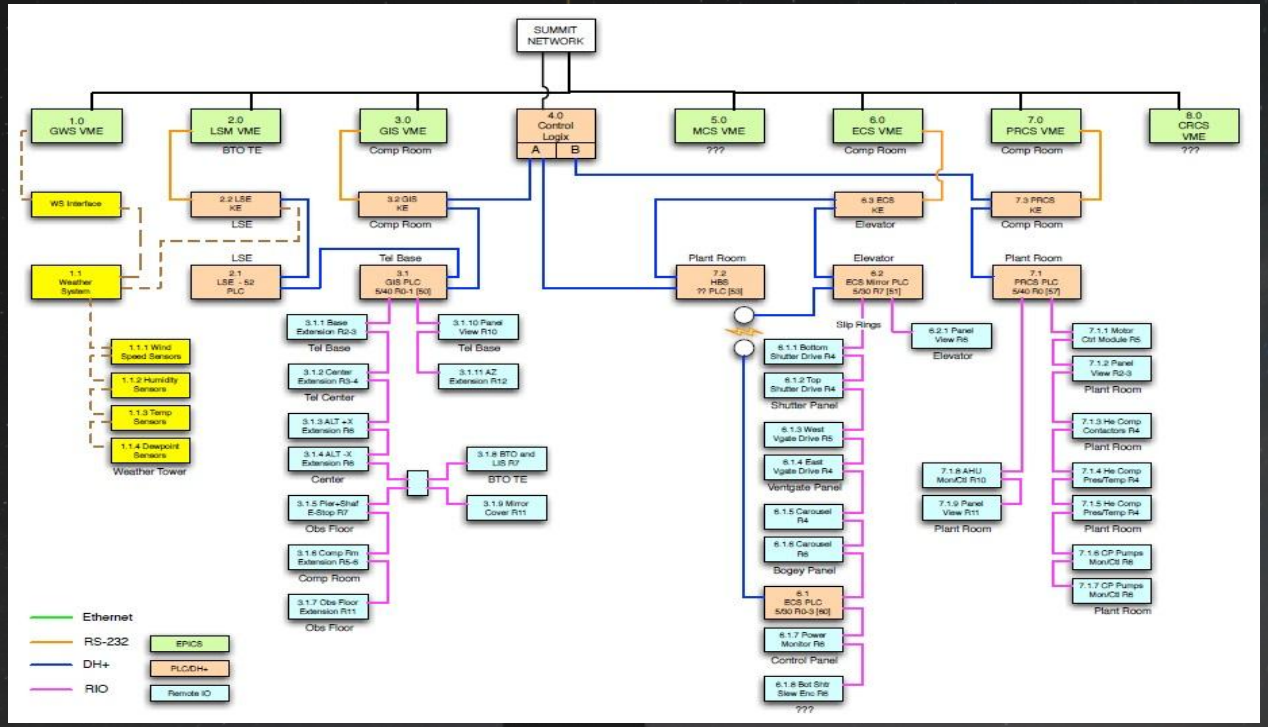
PLC Architecture Overview (>1000 I/O)



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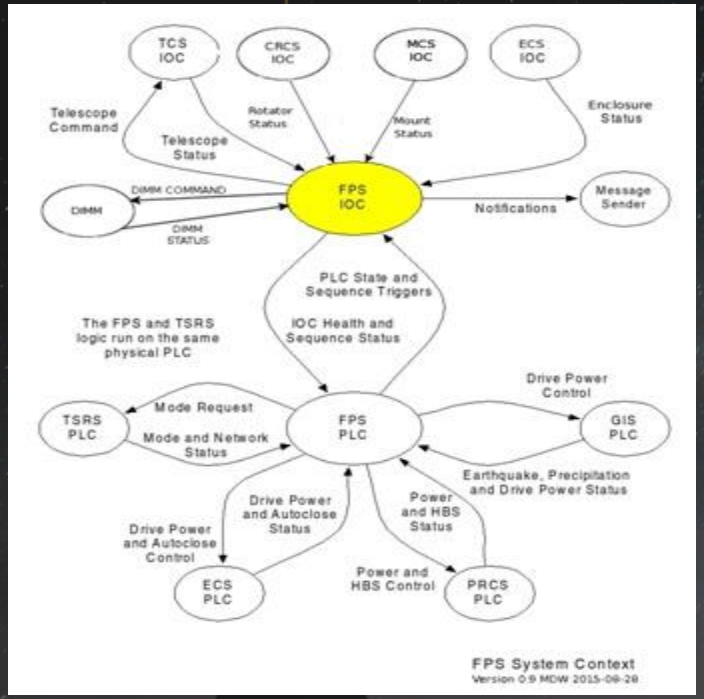
Facility Protection System application



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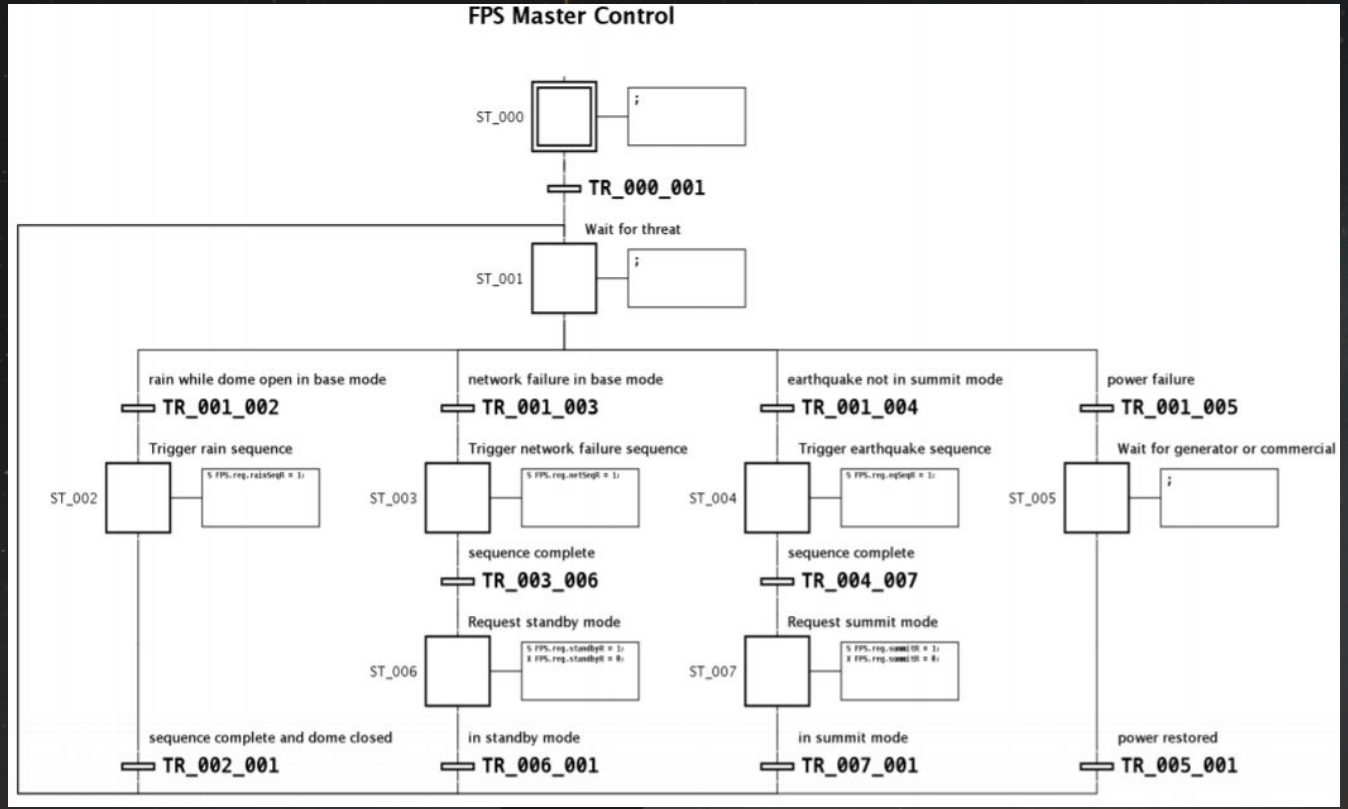
Grafcets: State machine design



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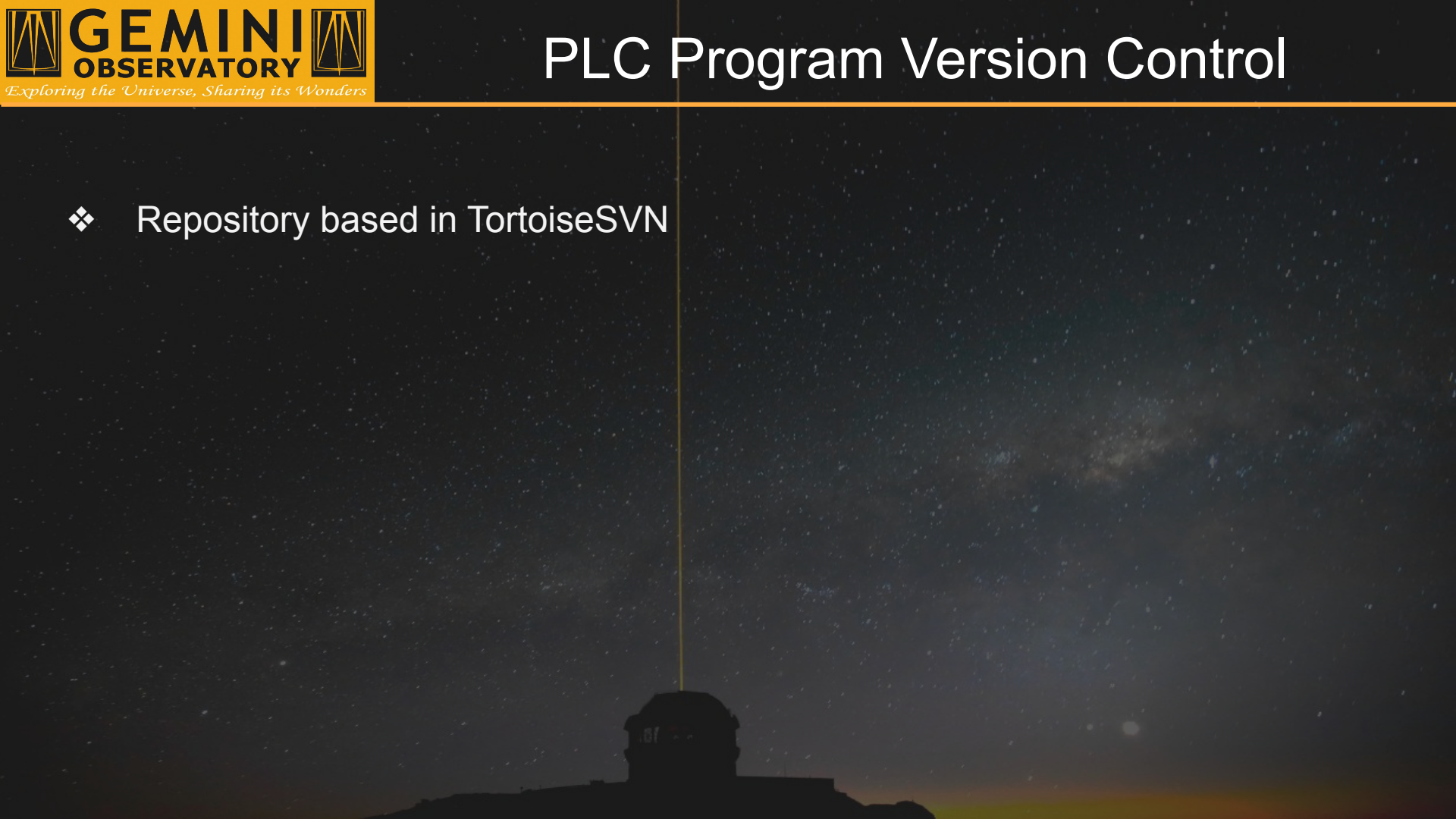
PLC Program Version Control

- Repository based in TortoiseSVN



PLC future at Gemini Observatory

- PLC upgrade/replacement is part of the Observatory Obsolescence project
- Not at the highest priority now. Possible in the next 3 years
- (For more information about Gemini Observatory check our website)

www.gemini.edu