Gen2 Technical Overview

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with
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Outline

- Overview
- Goals
- Software Architecture
  - Phase 1
  - Example: Monitoring
  - Phase 2
  - Compatibility Mode
  - Phase 3
- Hardware
- Roadmap
- Questions

Subaru OCS Entities

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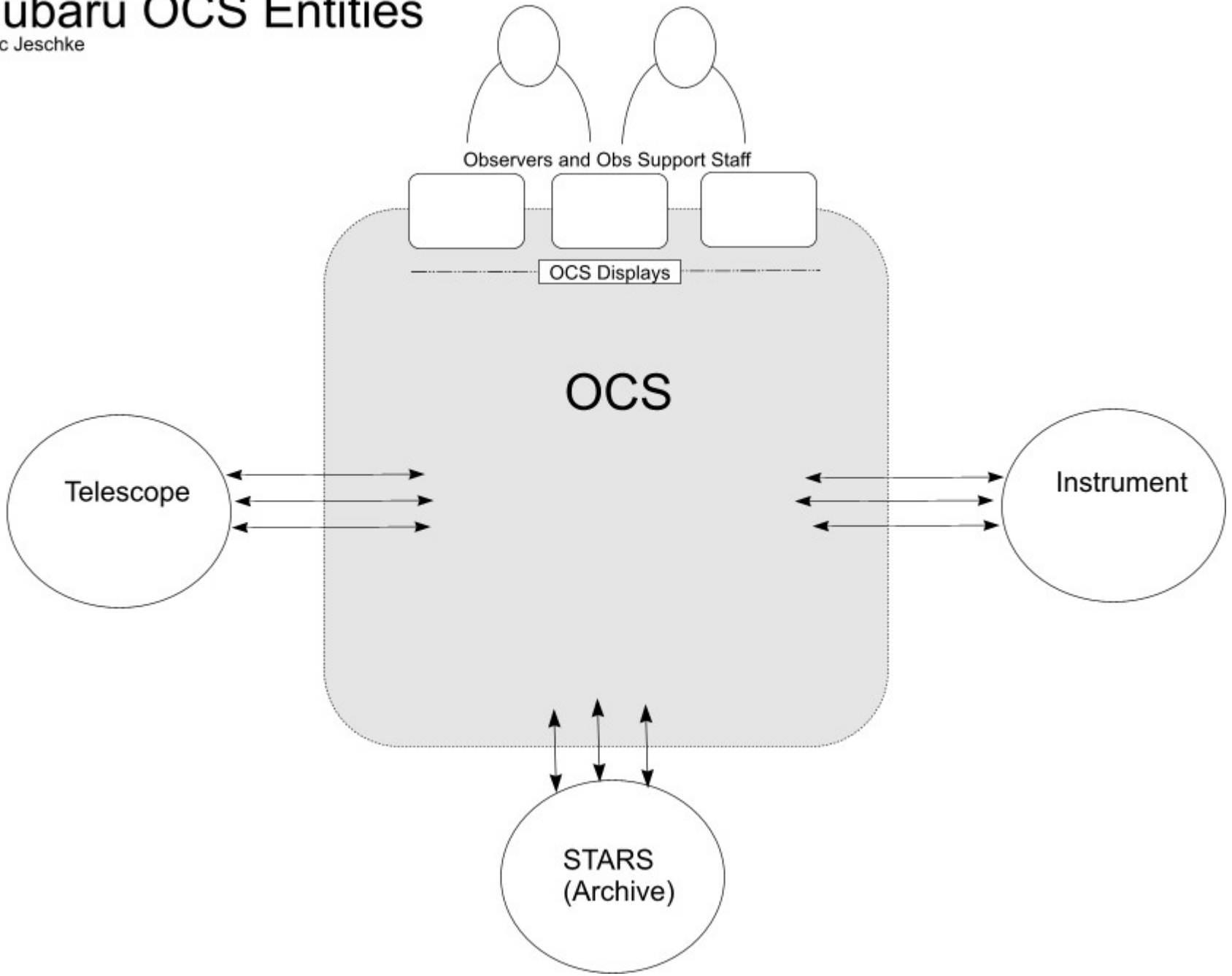

Subaru OCS Entities

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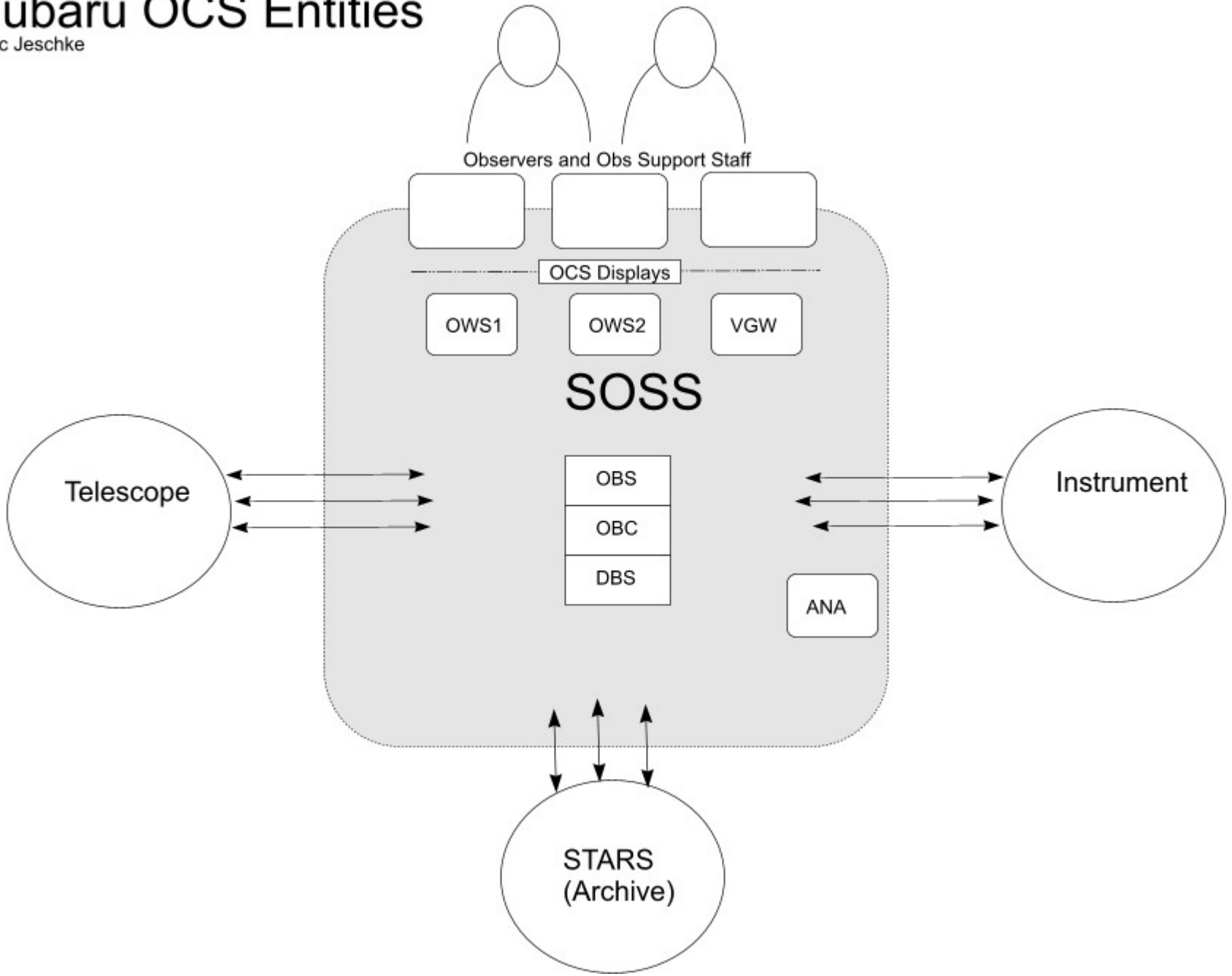

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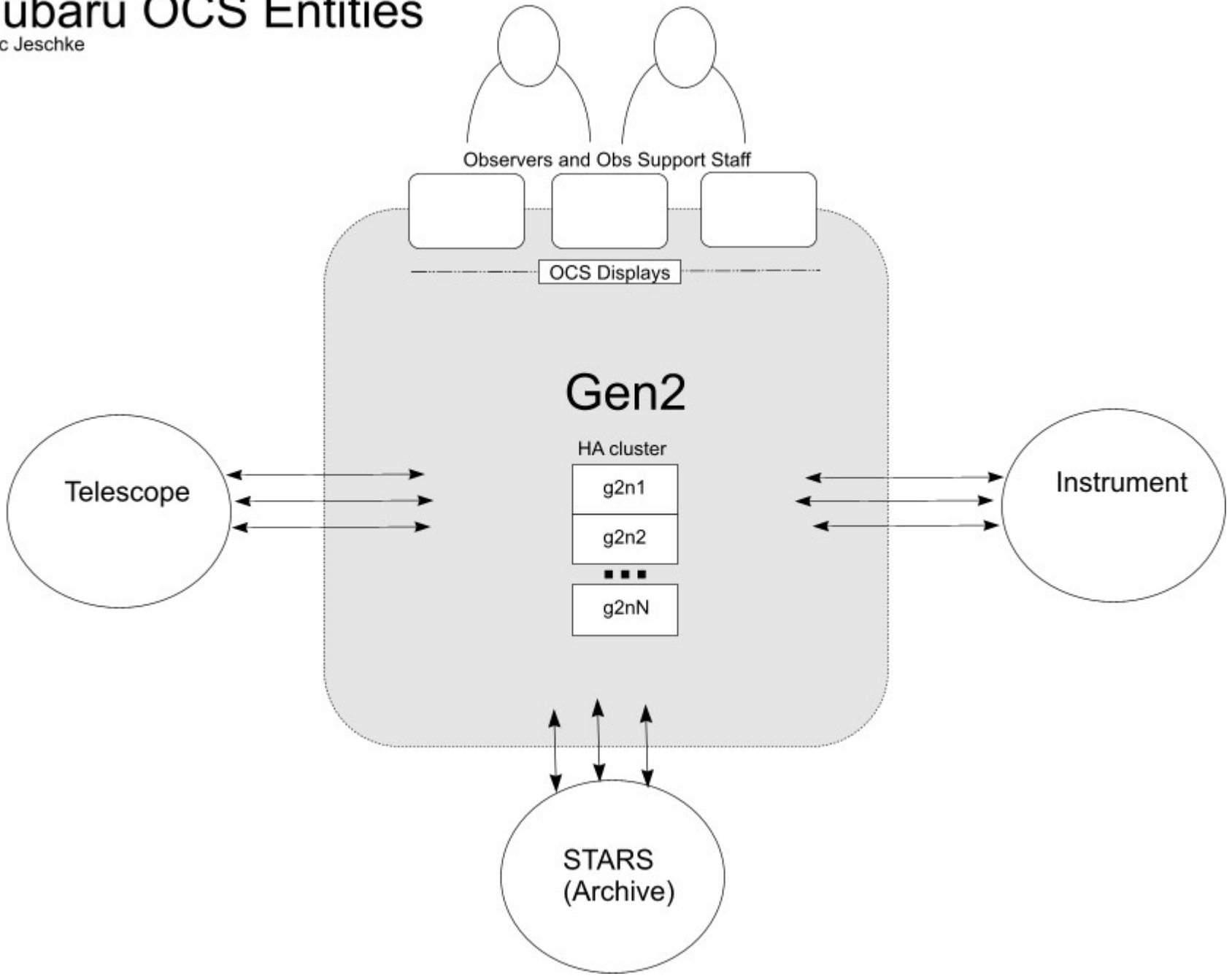

Goals for Gen2 OCS (Observers & Obs Support Staff)

- Improved language & tools for writing observation tasks
- Improved graphical user interfaces for observation
- Clear, simple and transparent monitoring of command execution
  - WHAT is happening, WHERE and WHEN
- Good documentation
- Portable version for training, simulation & instrument development
- Reliable operation & simplified troubleshooting
- ??? (***your opinion here***)

Goals for Gen2 OCS (Developers & Support Staff)

- Flexible software design for future modifications and astronomer workflows
- Automated, comprehensive regression tests
- Software version control and simple upgrade/downgrade procedure
- Simple, centralized logging and monitoring
- Good fault-tolerance (resistance to failure) via graceful failover or simple reconfiguration
- Simple start up, shut down, troubleshooting
- Simple maintenance

Gen2 Software Diagram

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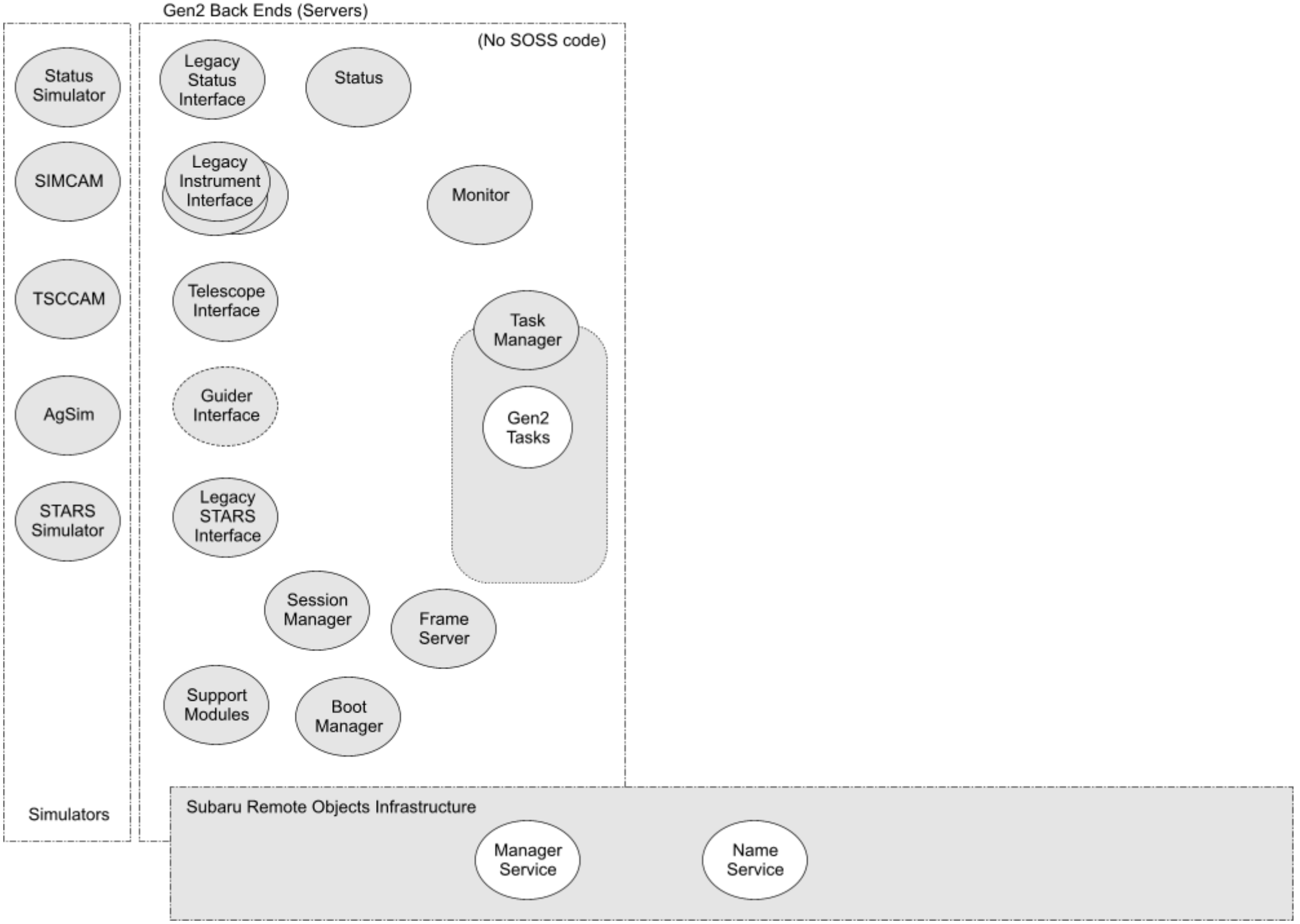
Phase I



Example: Monitoring

- Need to know what is happening: what commands, what subsystems
- Lesson from current OCS: need both “birds eye view” and detail (if wanted)
- Architecture of Gen2 is designed to facilitate centralized reporting via the *Monitor* (a kind of shared, high-bandwidth bulletin board)

Gen2 Monitor

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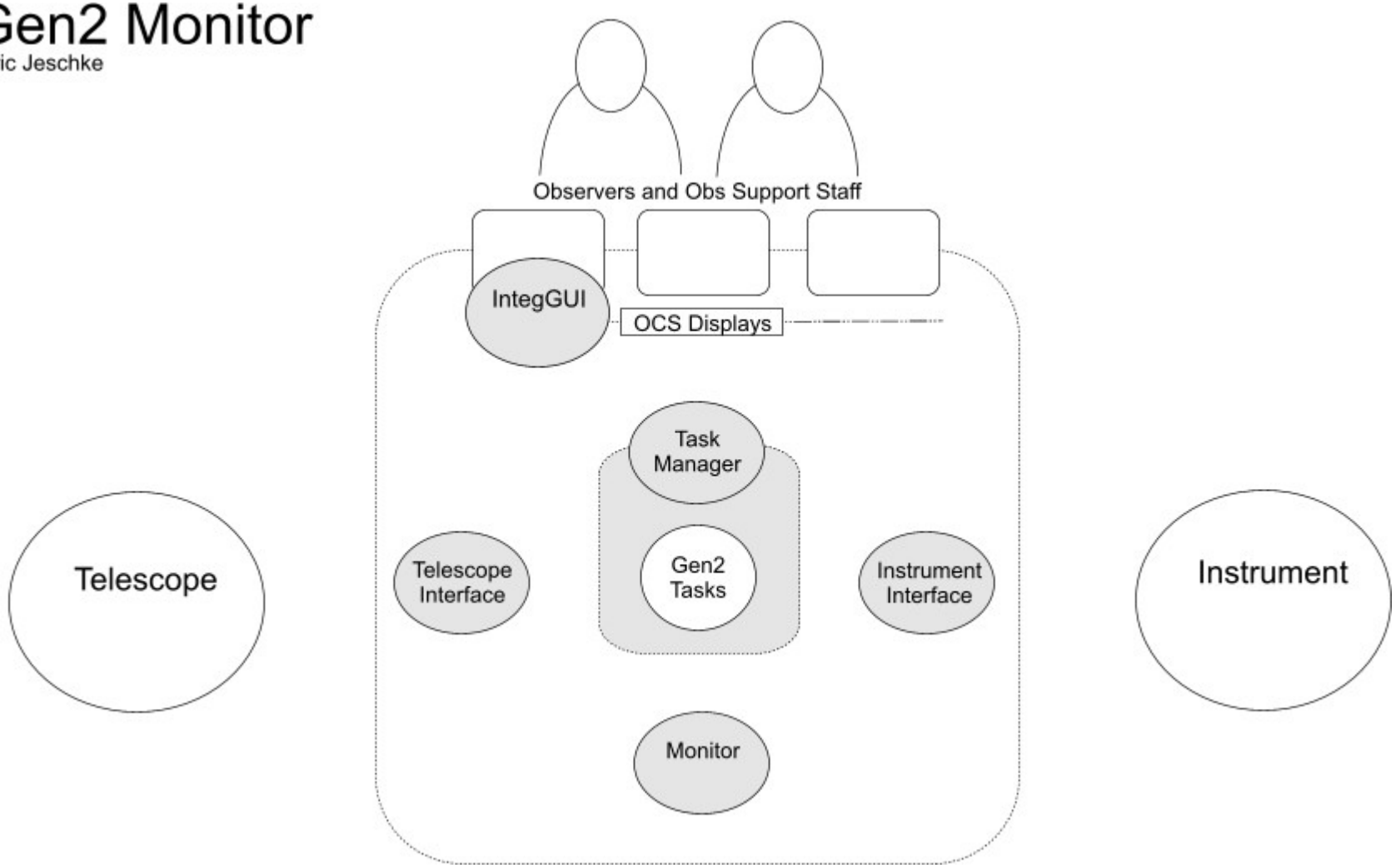

Gen2 Monitor

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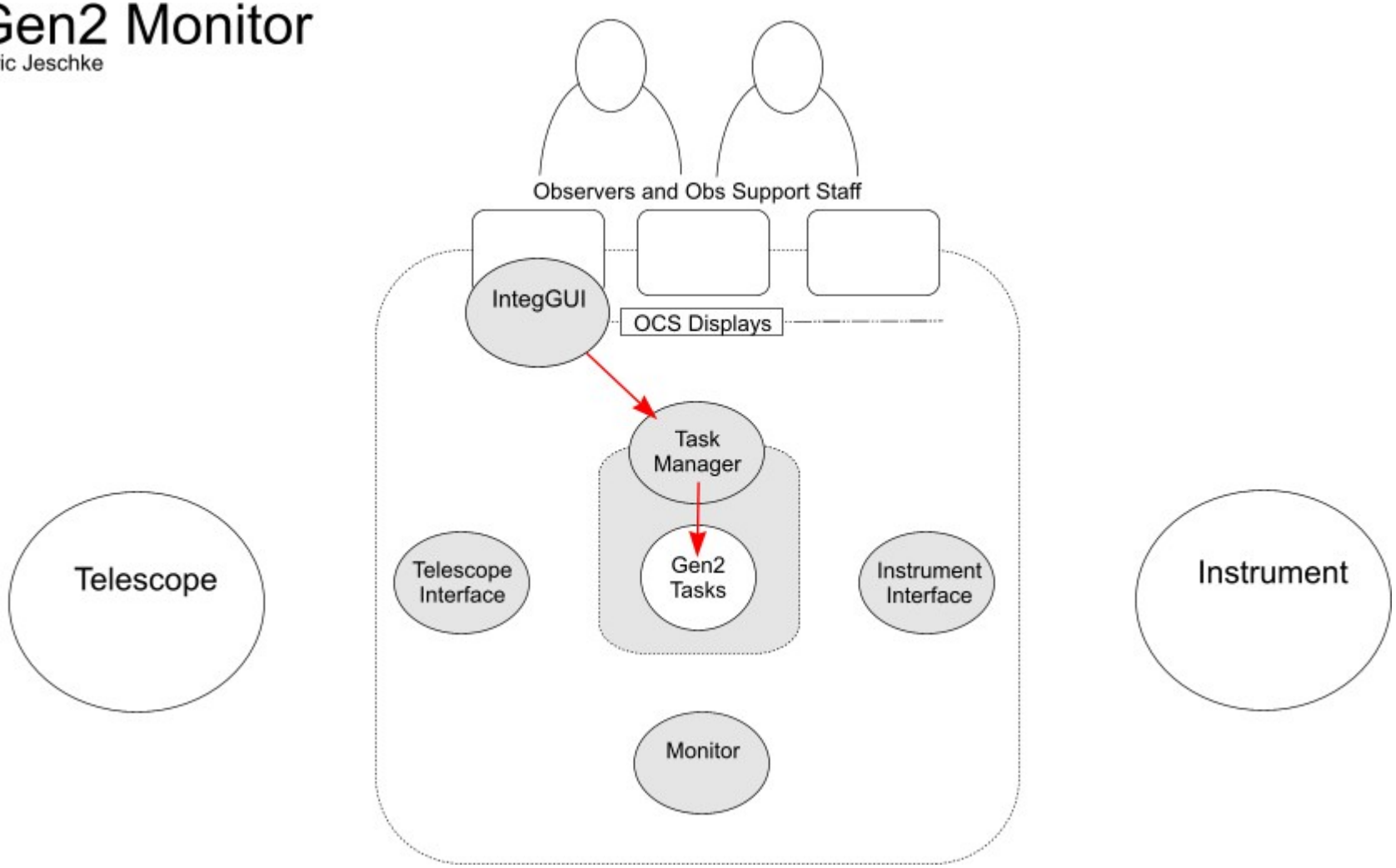

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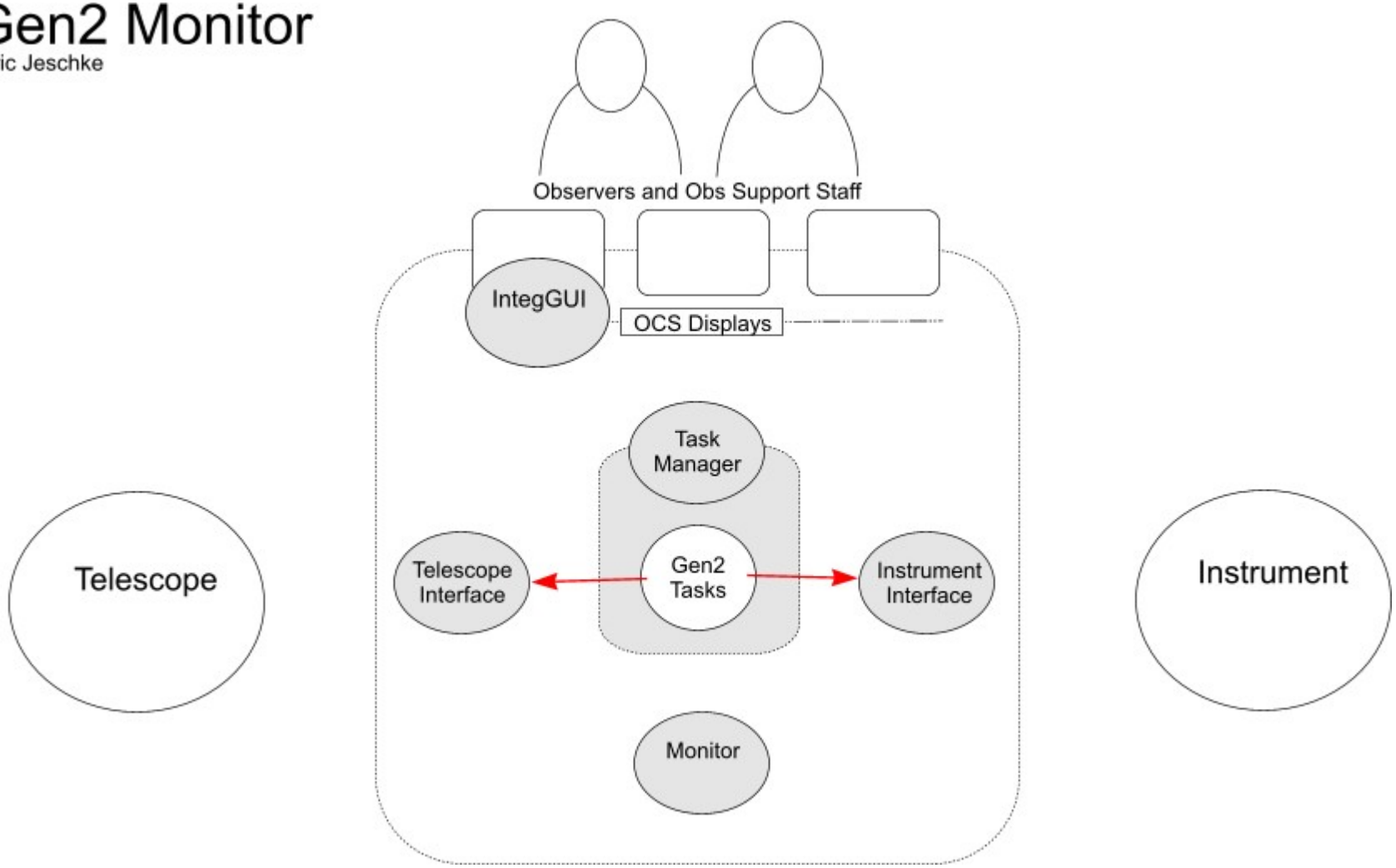

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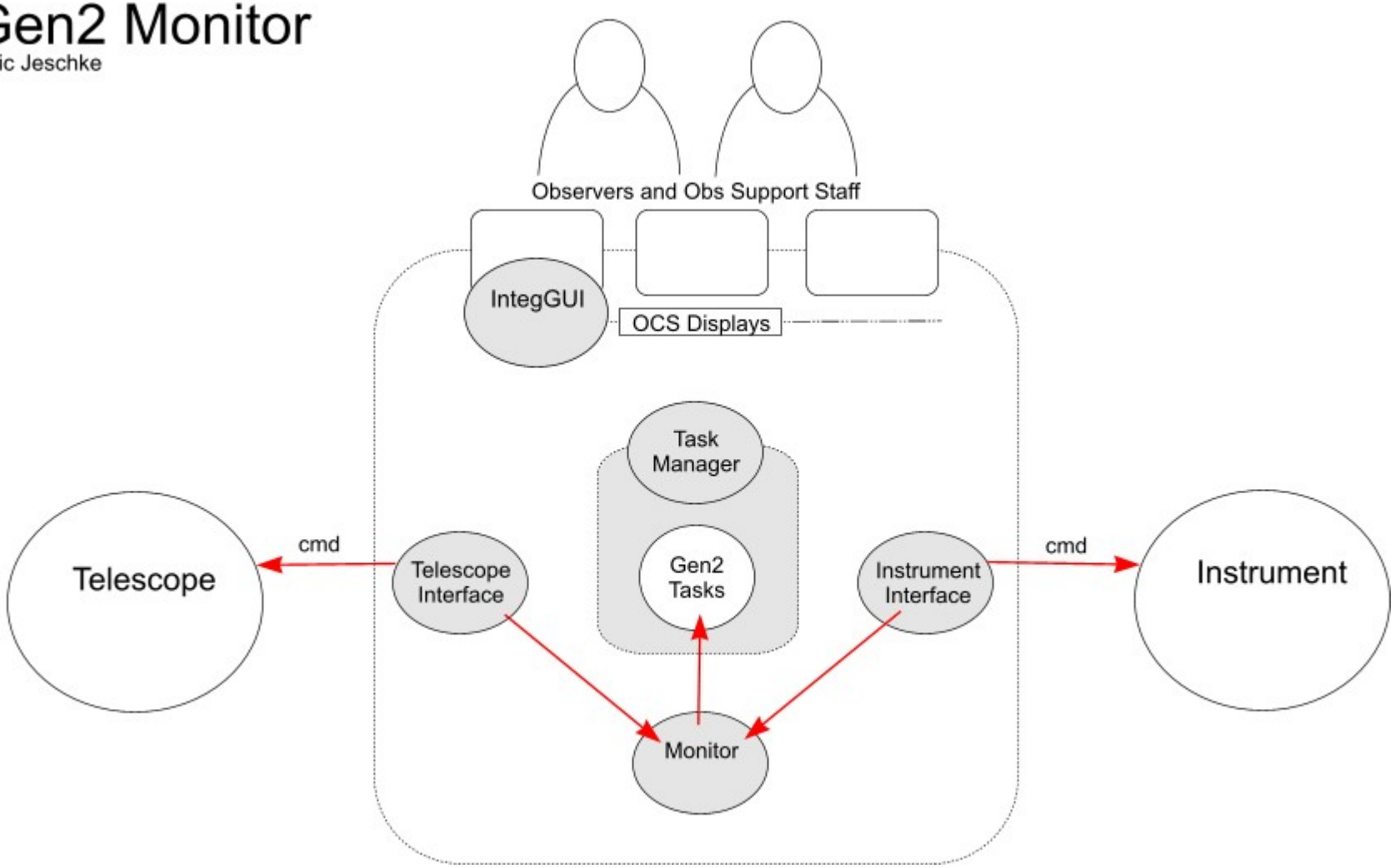

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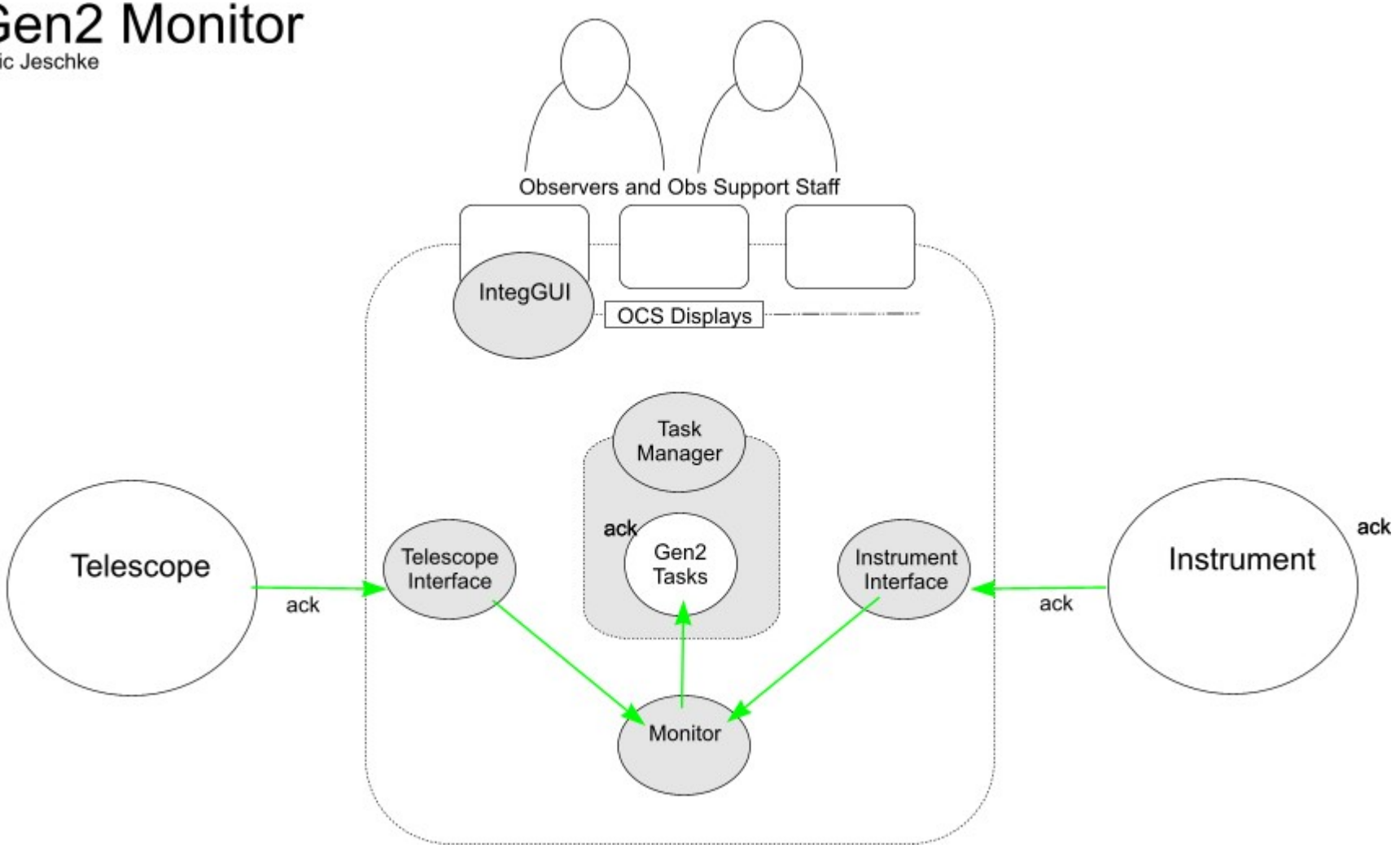

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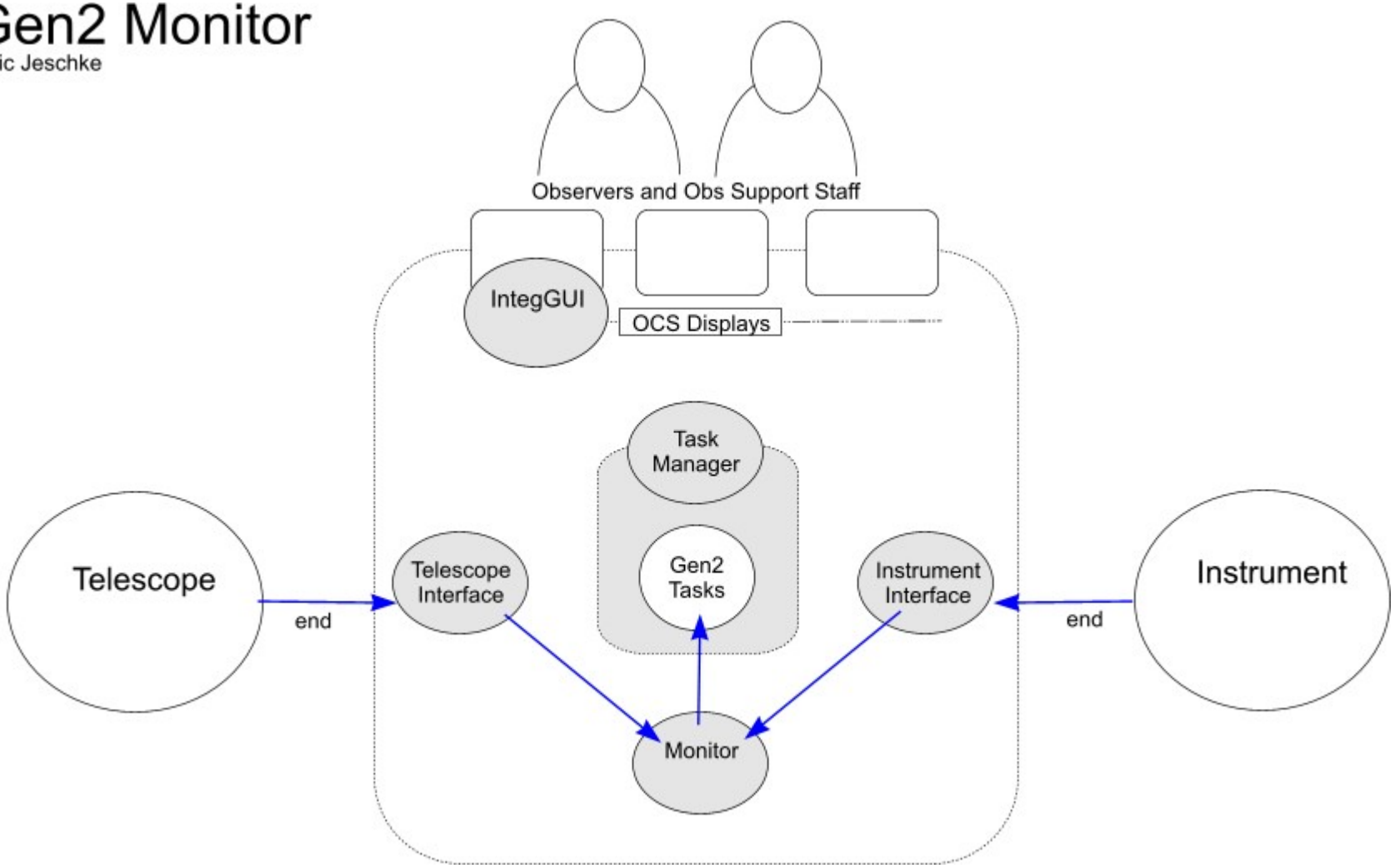

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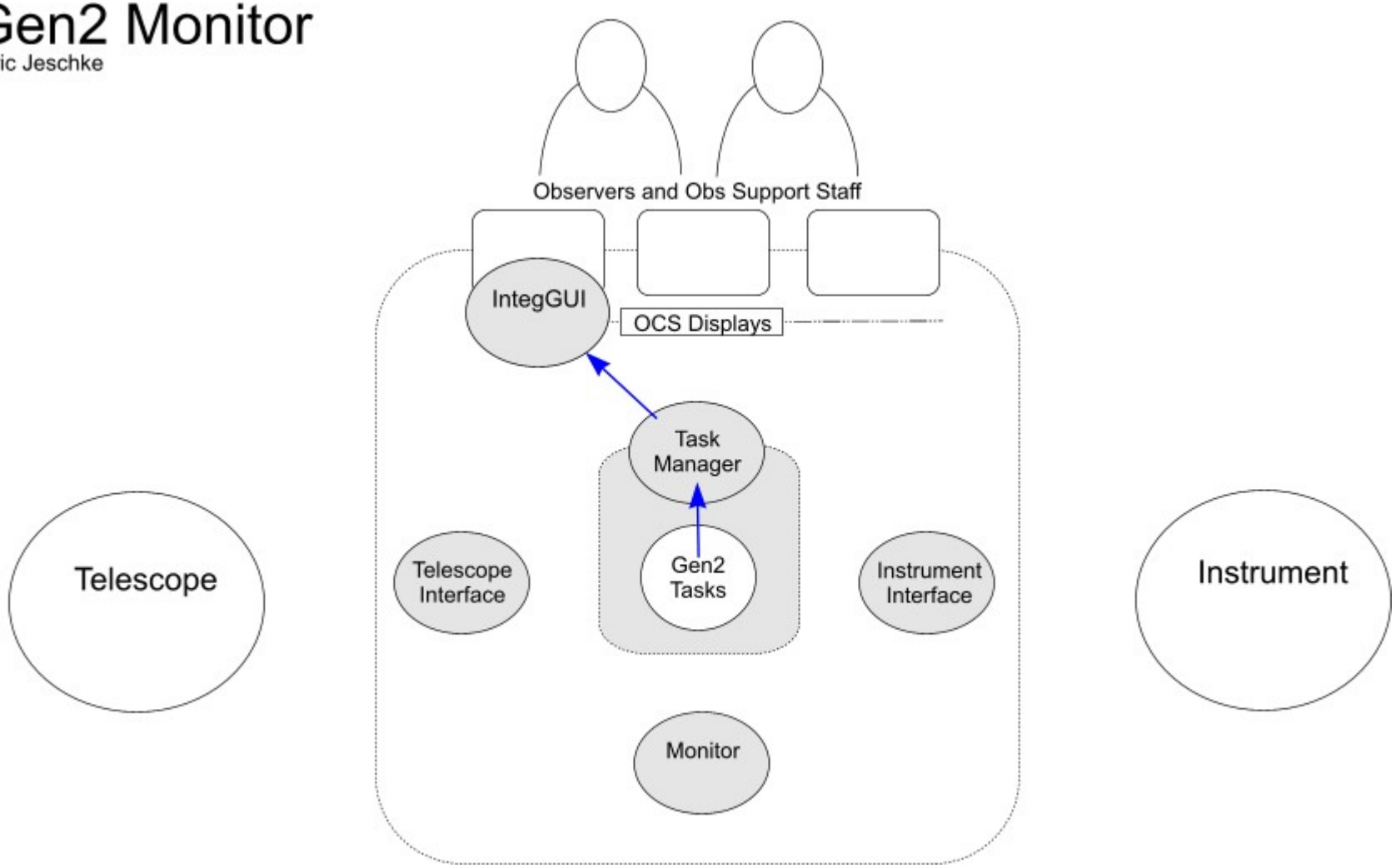

Gen2 Software Diagram

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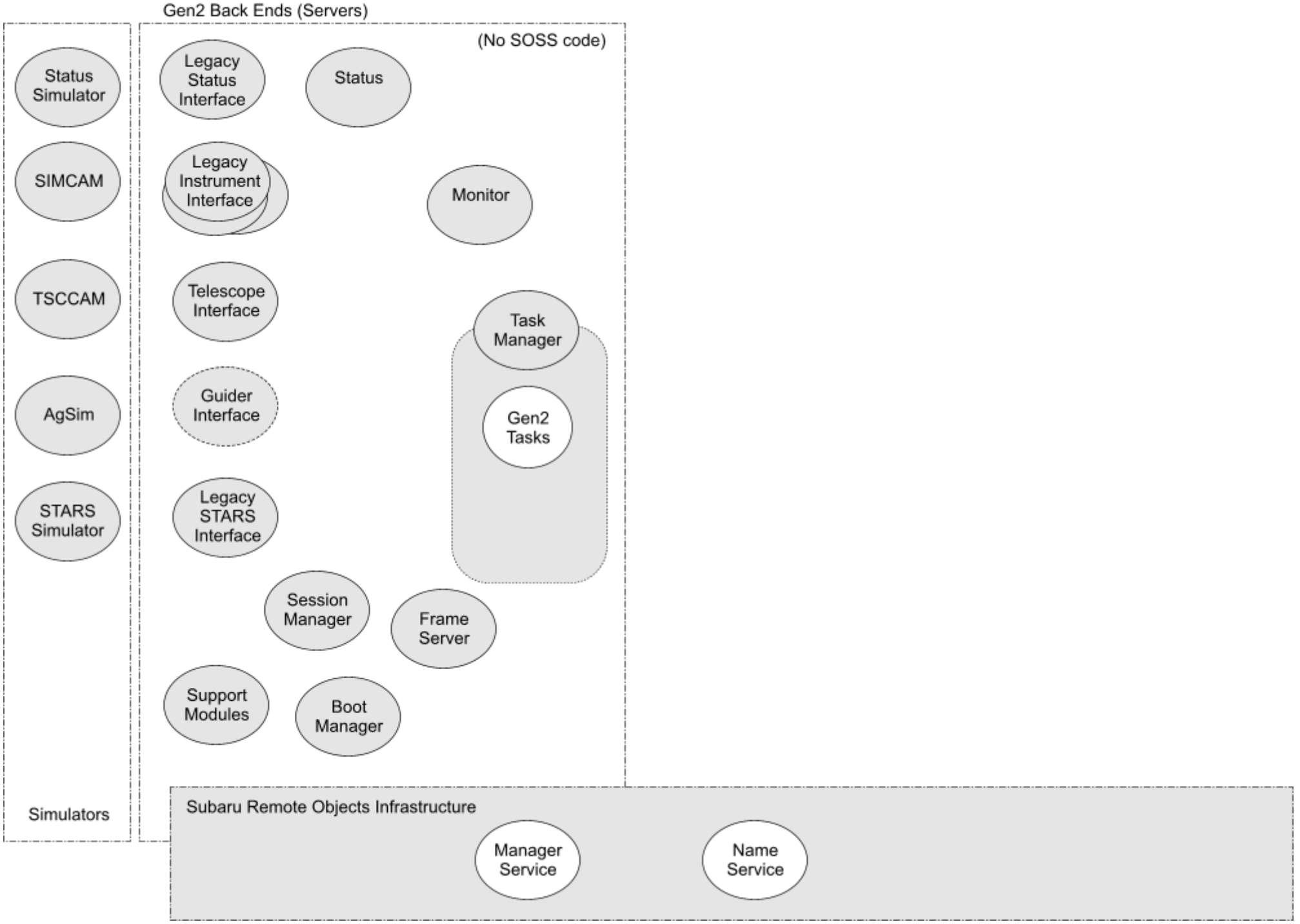
Phase I



Gen2 Software Diagram

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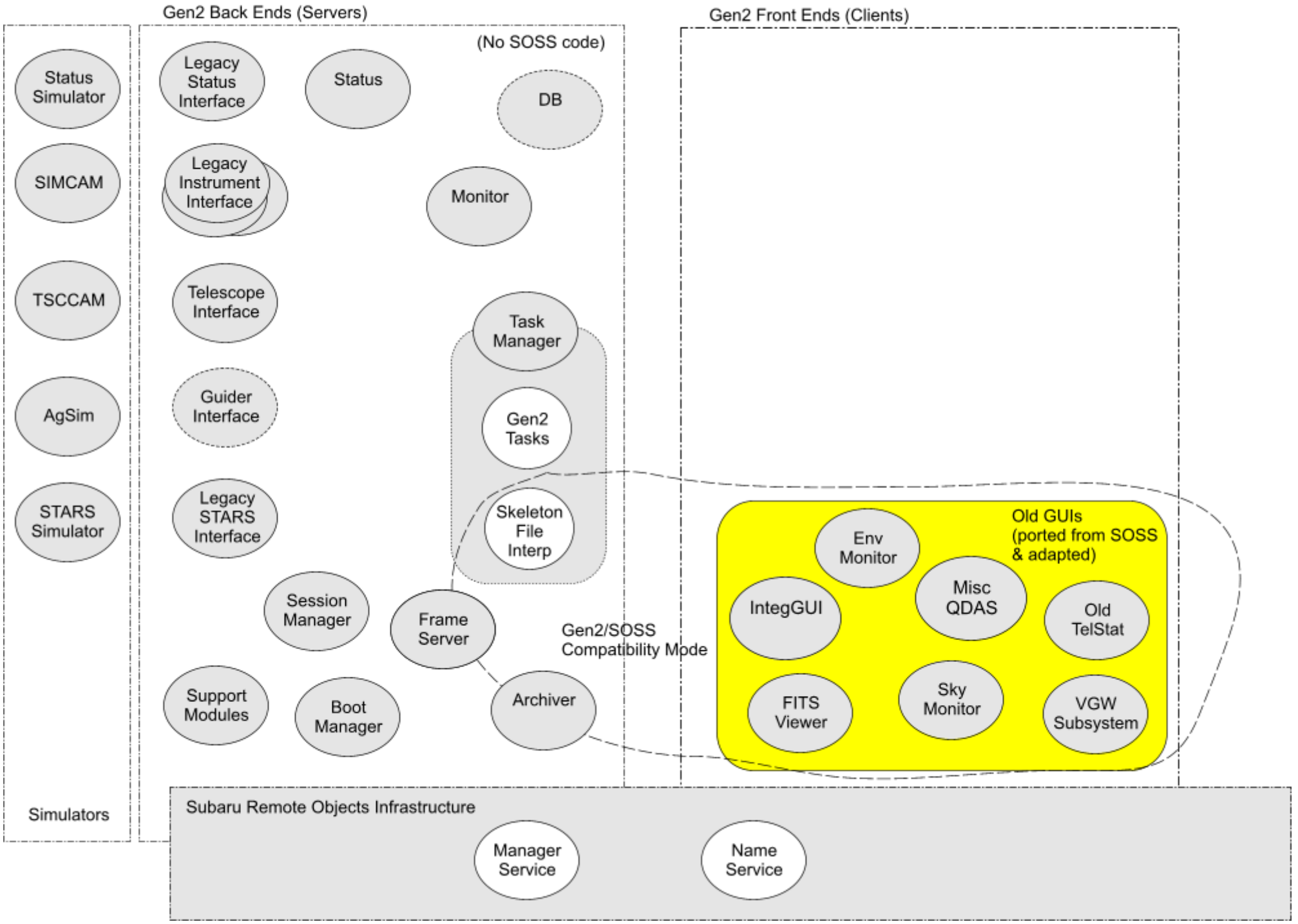
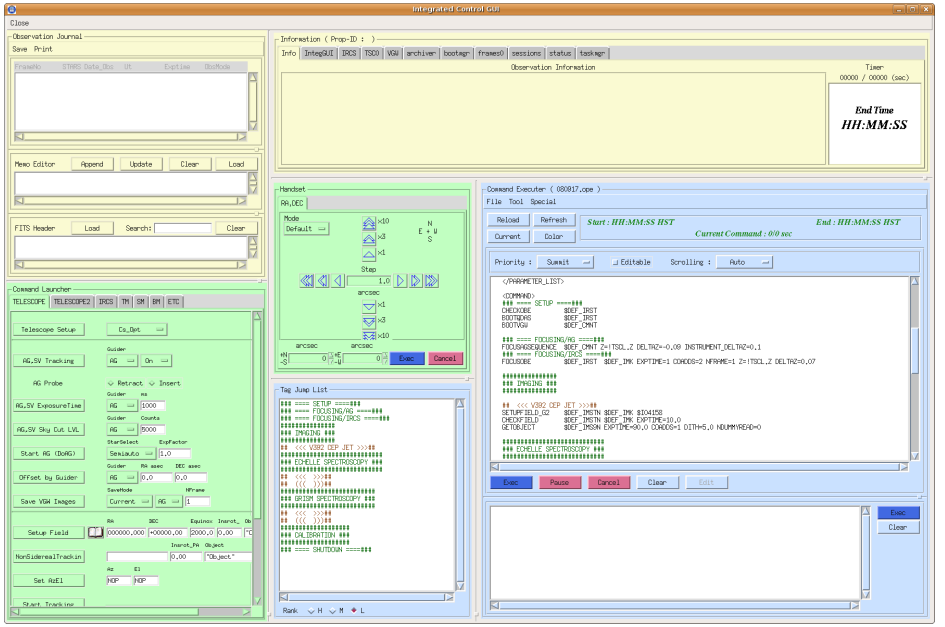
Phase II



SOSS Compatibility Mode

- Ability to run legacy observations
  - Support execution of most .sk/.ope files
  - Support some legacy GUIs (e.g. IntegGUI, TelStat, VGW, QDAS, Skymonitor)
- Allows Gen2 use with minimal retraining
- Allows time to develop new user interfaces



Gen2 Software Diagram

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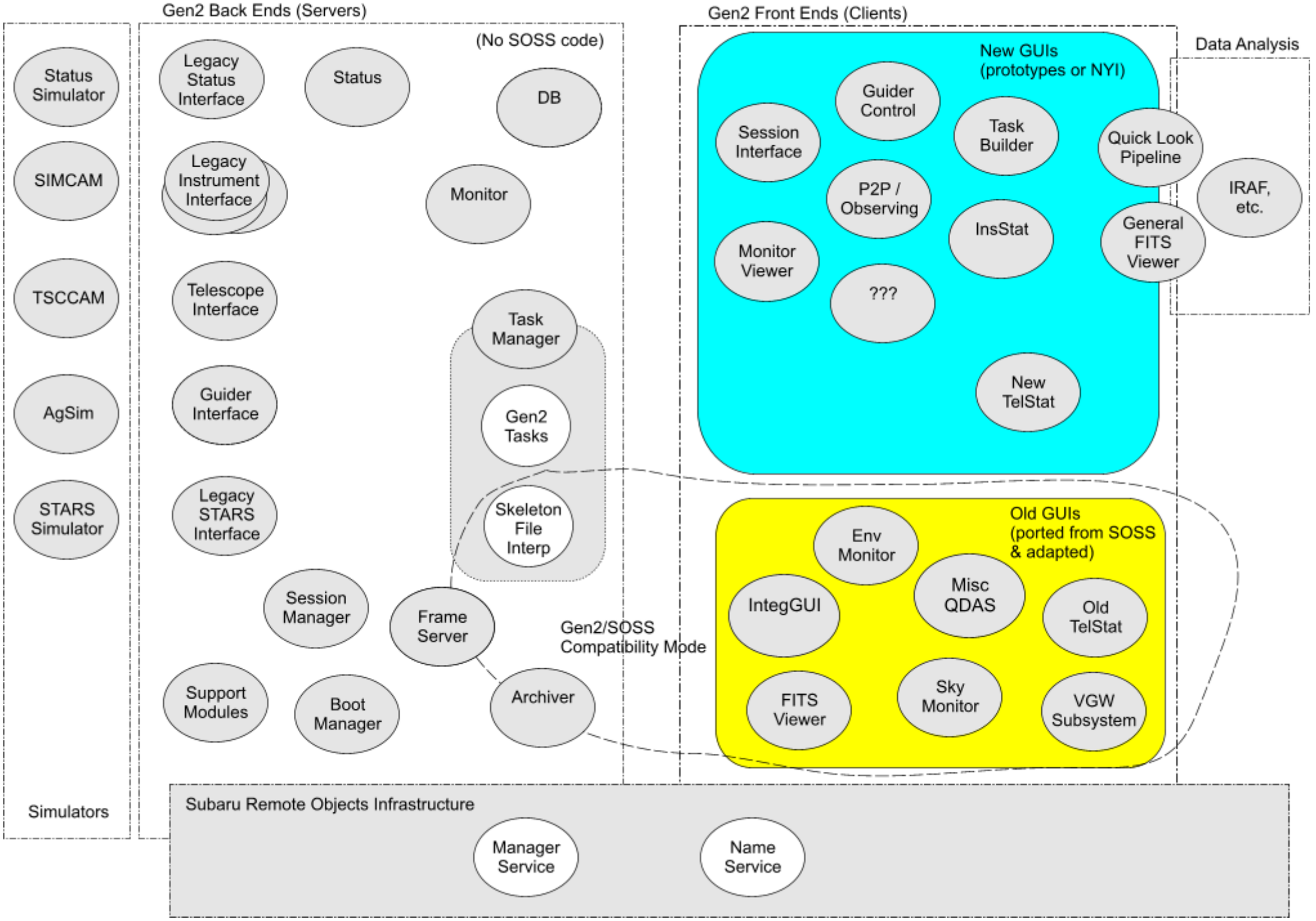
Phase III



Hardware

- High-Availability cluster design
  - Redundancy and fault-tolerance
- Commodity hardware (when possible)
- Simple maintenance and replacement
- Full remote manageability
- Extensive monitoring of fans, temp, disks, memory, CPU, network, etc.

Hardware Redundancy

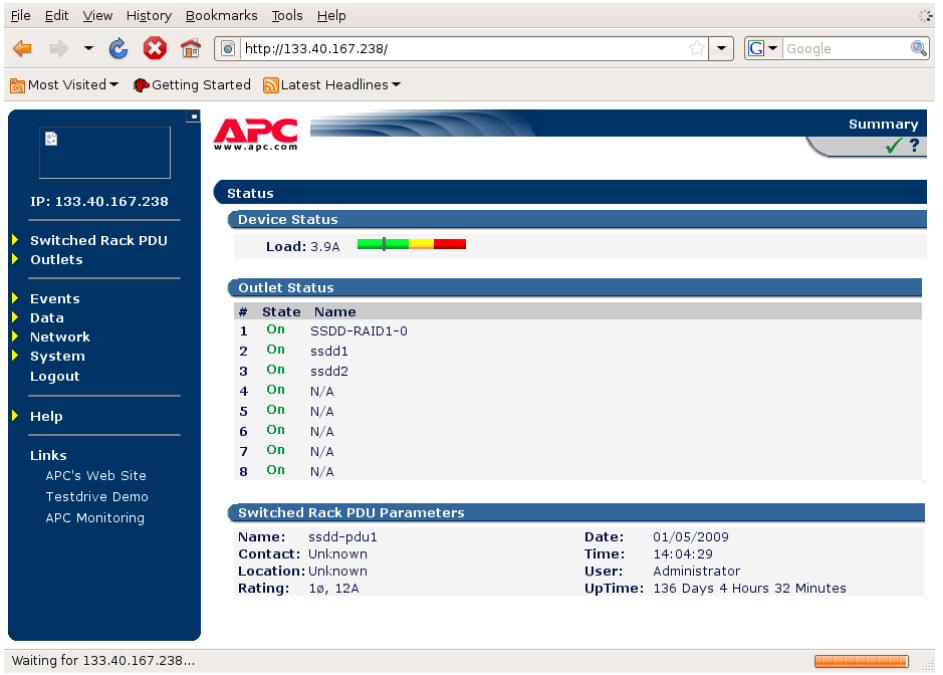
- No specialized nodes: any node can do any job
- Redundant components to provide fault-tolerance and graceful hardware failover
  - All disks in RAID configurations
  - Dual power supplies
  - Dual network ports in bonded configuration
  - Multiple fans
  - Multiple CPUs

Simple Maintenance and Repair

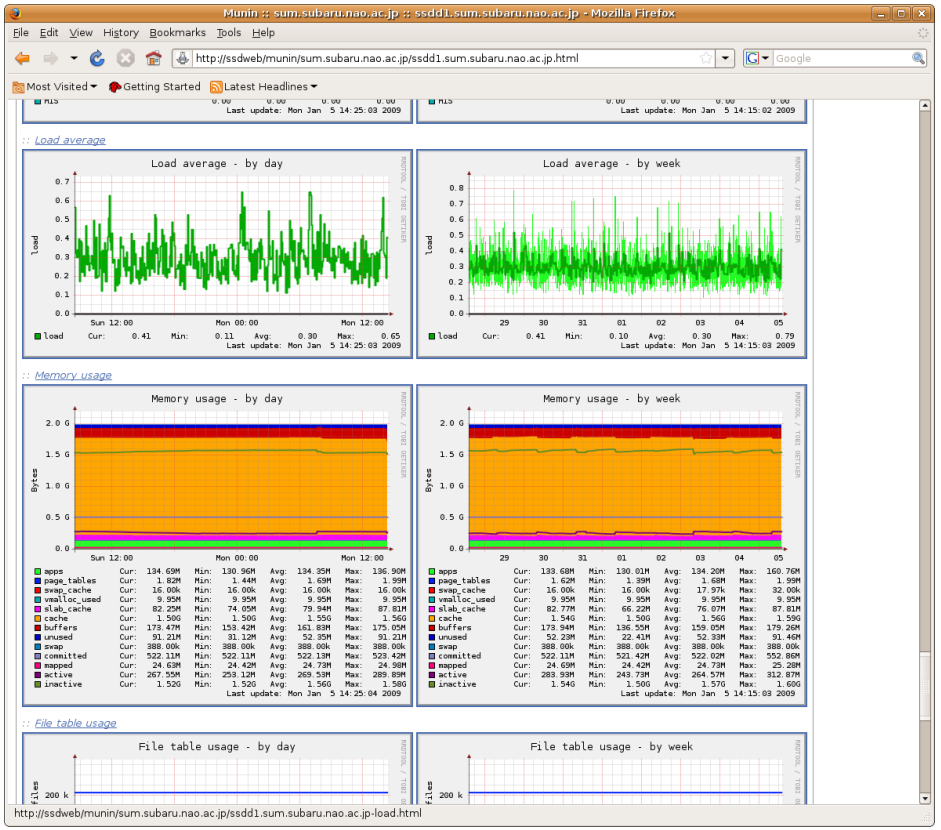
- All disks are front-accessible hot-swap
- CPUs are generic x86 rack mount units, easily replaceable
- System software (OS, etc) is “cloned” to a new system in minutes

Full Remote Managability

- All hardware in Gen2 cluster can be managed over the network from Hilo base
- IP-enabled KVM (keyboard/video/mouse)
- IP-enabled power distribution
- IP-enabled UPSes
- IP-enabled switches
- e.g. turn off power, reboot, access console, etc.



Hardware Monitoring



- Hardware is monitored continuously
- Alerts and statistics easily seen via web interface

Gen2 Development Timeline

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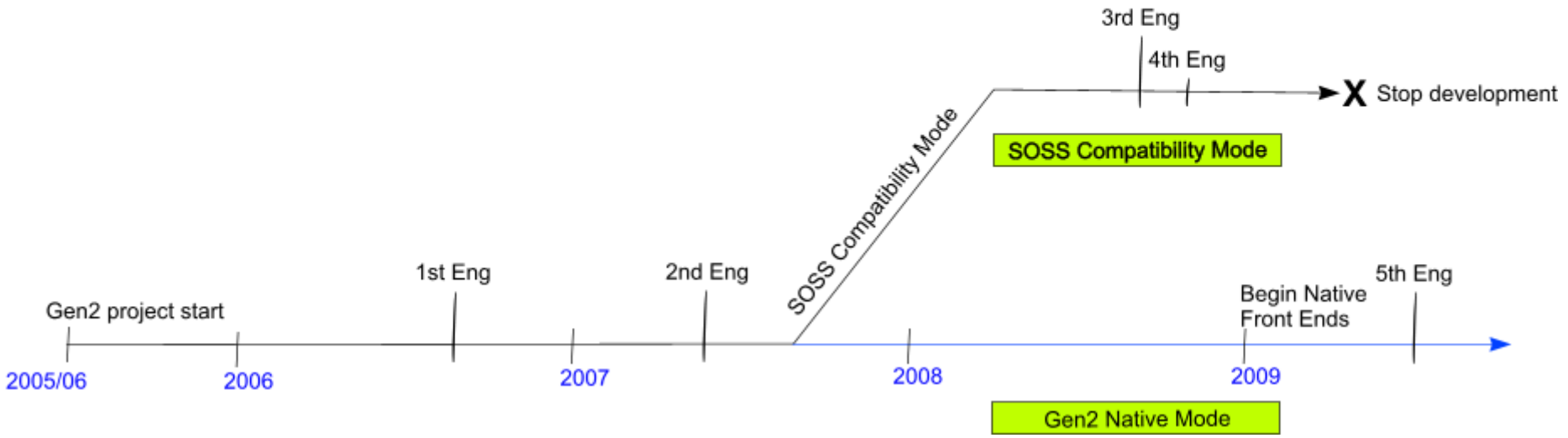

Gen2 Rollout: 2009

- To smooth adoption of Gen2 we must manage the risk of using new software
- → Make it simple to “fall back” to using SOSS on any given legacy-style observation
- Develop a simple, quick switch procedure between Gen2 and SOSS observation
- Share frame id allocation and ensure accessibility of data files from both sides
- Begin with risk share, staff obs, new instruments

Questions?

Thank You!

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