

# WORKSHOP A: ENSEMBLE MANAGEMENT

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## Goals:

- Deliver timing signals locally in real time
- Synchronization of remote sites
- Provide frequency and syntonization
- Maximize reliability and availability
- Deliver UTC

## Performance Objectives

- Minimize the probability of doing harm
- Frequency stability improvement is of secondary importance
- Peak errors are more significant than RMS errors
- Outlier detection is critical
- Impact of frequency steering on users is not known

## Operational Objectives

- 100% automation with operator oversight
- “guru” free operation
- Minimum probability of an out of tolerance event
- Facilities without gurus are not steering, but would like to

## Needed improvements

- Ability to change phase with low noise
- Highly deterministic steering
- Independent intelligence in steering mechanism that returns to nominal on other failures
- Real time access to UTC with smaller errors