
# Harri Hellgren

## System Integration Engineer

# Skibotn, Norway

House building started

Transformers ready

# Karesuvanto, Finland

Groundwork done

House building ongoing

# Kaiseniemi, Sweden

## Groundwork started but has delayed and will continue May 2022

# Procurements

Antenna Unit:

- Production ready February
- Delivery to sites Spring 22
- Installation Summer 22

Exciter:

- All 444 ready for delivery to Skibotn

Receiver:

- 109 ready for delivery to remote sites
- 119 waiting for components
- All manufactured September 2022

Transmitters:

- Only 20 ready
- Waiting for components
- Production during Spring 2022
- Installation as soon as containers are in place

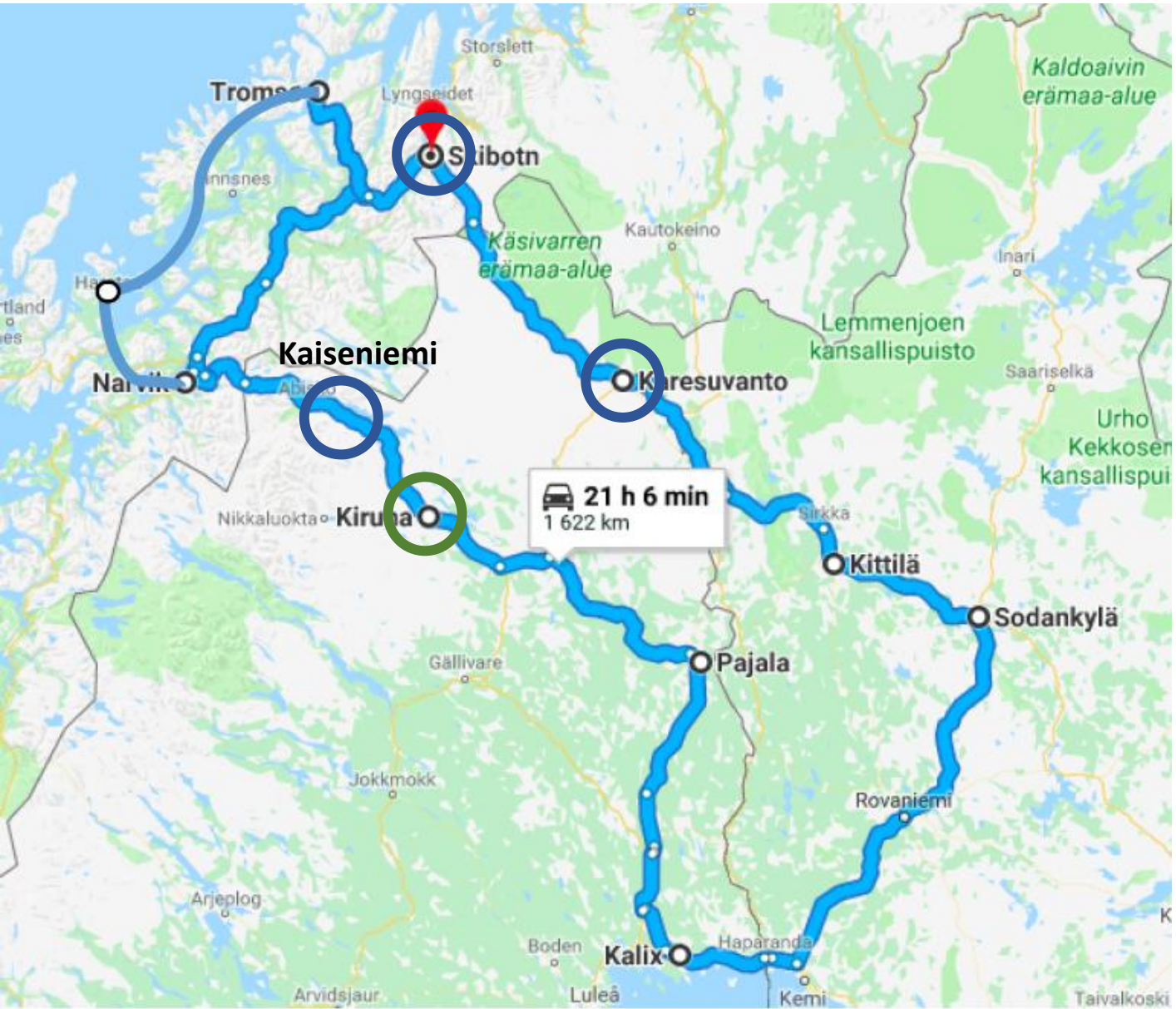
# Antenna Unit

## All units will be ready for shipments on February 22

# Antenna Unit

# Antenna Unit

# Computing network

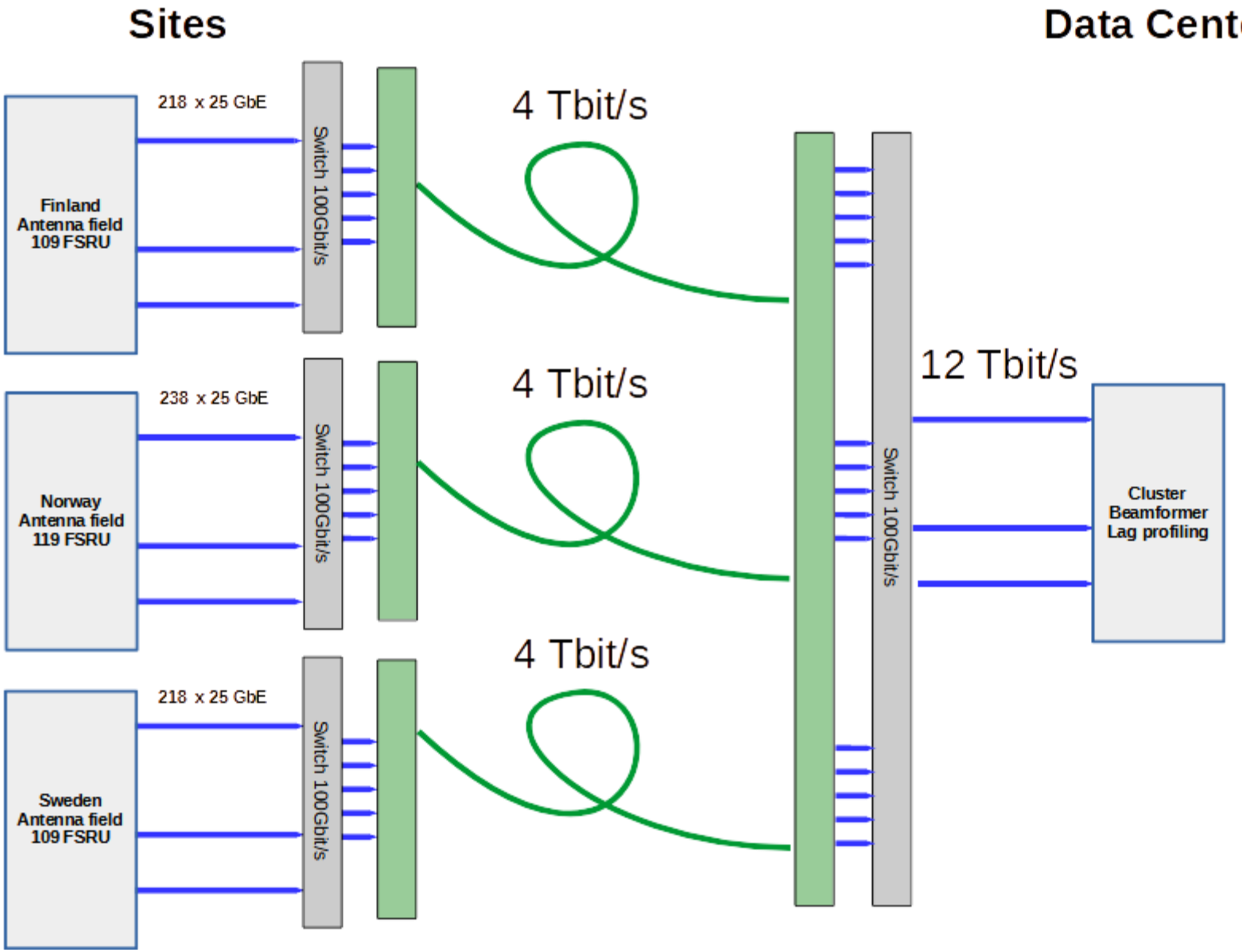



All 3 sites and HQ in Kiruna are connected into an optical ring.

Ring is bidirectional so that data transmission can be done in both directions.

As cable past by EISCAT HQ in Kiruna optical ring was decided to take there also so that system management can be done inside the ring.

# Computing network




An optical ring of 4 sites will be constructed.

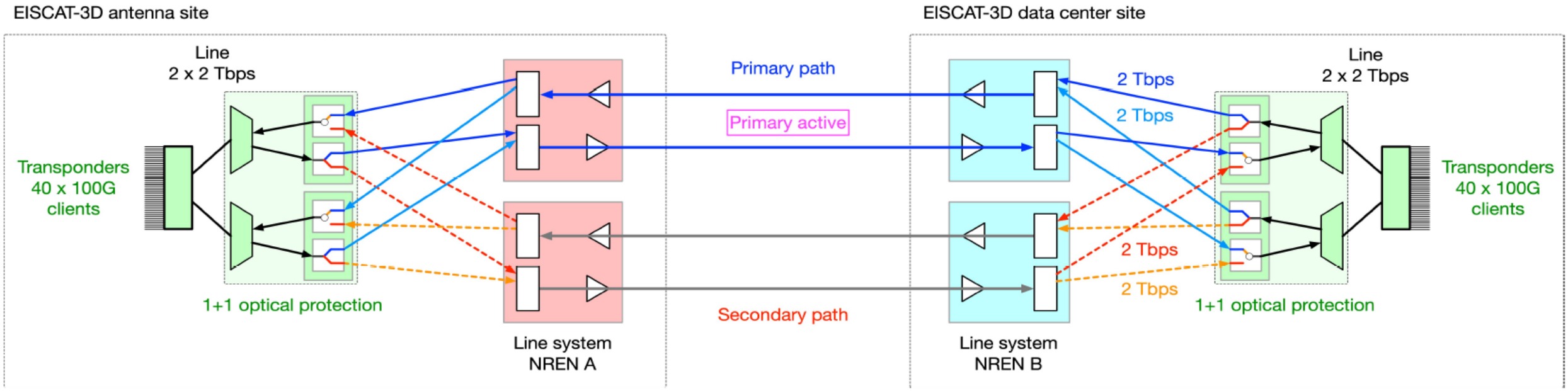
Each site has logical point-to-point connection to data center.

Data center can be located into any or multiple places in the ring.

# Computing network

Ring is bidirectional having other direction use as a protection.
Data is always sent to both directions
Fast optical protections switch change the input if connection is missing from the Primary link.

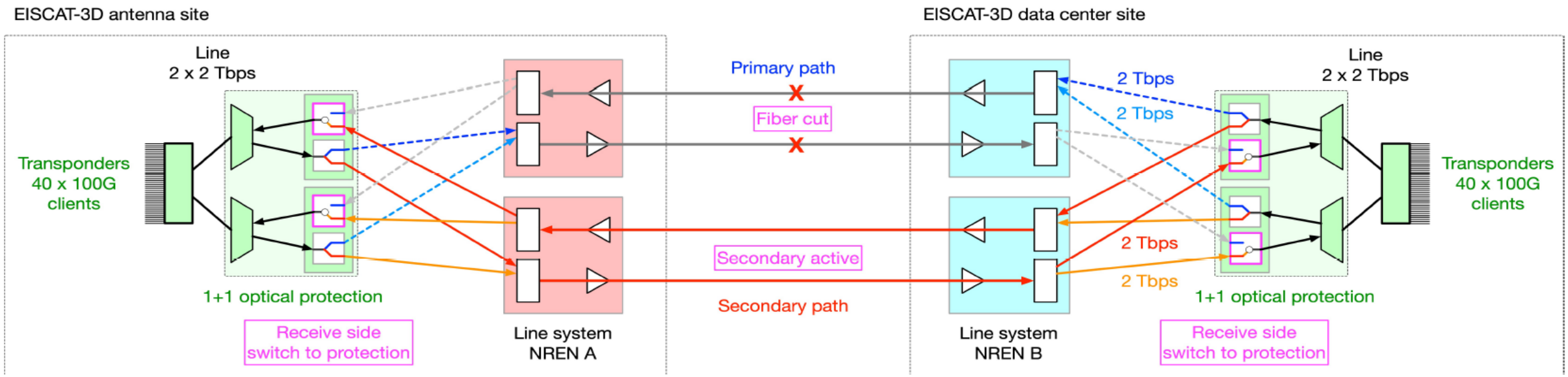
## EISCAT-3D 1+1 optical protection (primary path active)



# Computing network

Protection circuits works automatically in fractions of a second.
Data drop is minimal and allows radar operation continue.

## EISCAT-3D 1+1 optical protection (primary fail, secondary active)

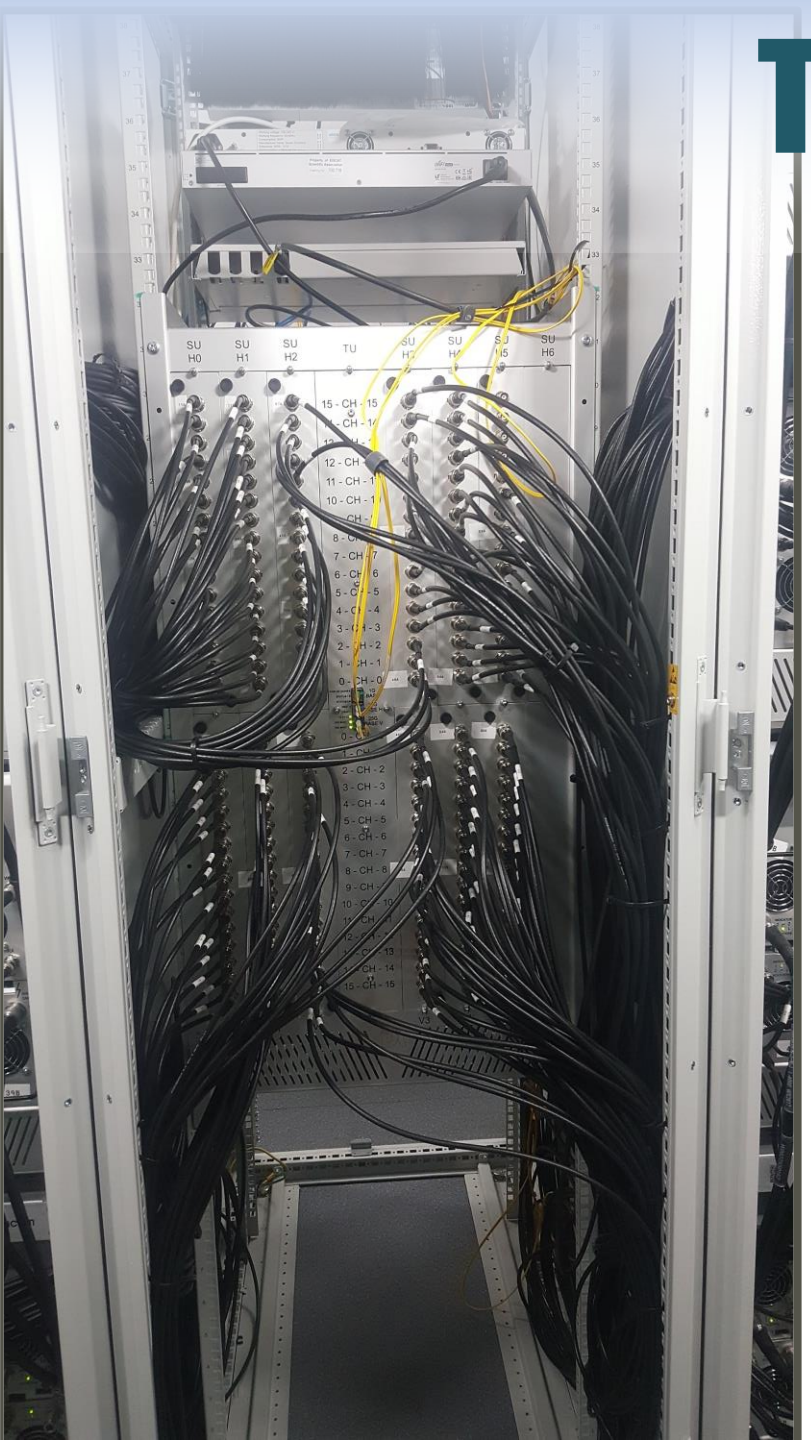


# Test subarray, PET

# Test Subarray, PET

## New delivery of equipment

# Test subarray, PET



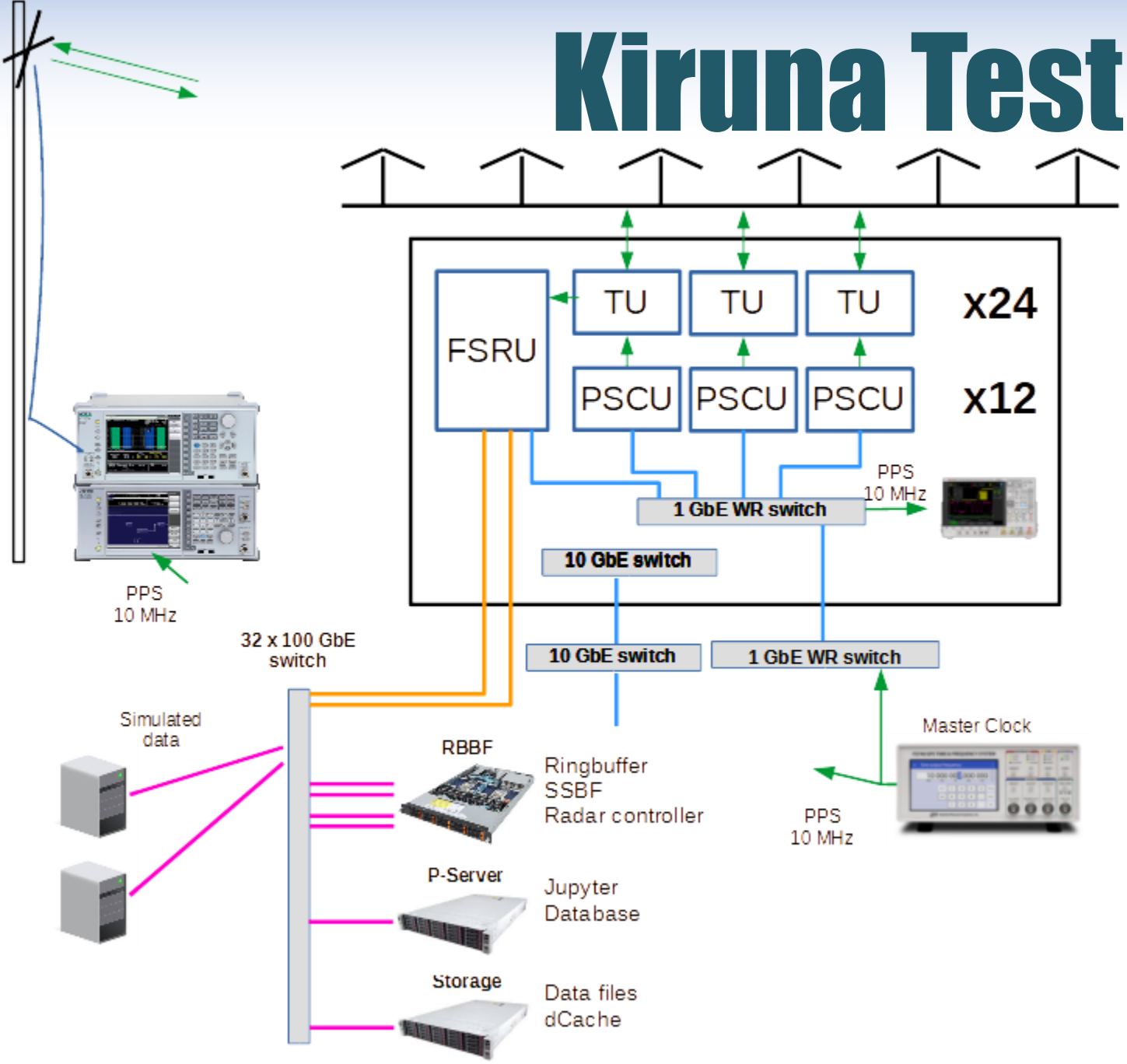

Full subarray of transmitters installed last week.

We can now run 91 antennas having nominal 1kW peak 25% duty cycle (2 polarizations).

Transmitting license for 30 MW ERP

Integration work and testing ongoing.

# Kiruna Test Setup




- Calibration antenna for testing.
- Signal analyzer can be used to measure transmitted waveforms.
- RF generator is used to make fake signals for receiver testing.
- White Rabbit (WR) supported LAN is delivering control and timing info to devices.
- Additional 10 GbE switch for fast control
- Oscilloscope inside container to measure waveforms and timing signals
- GPS master clock as a timing source
- AMD EPYC server for real-time data flow, RBBF
- Intel server for supportive tasks, P-Server
- Intel server for storage, Storage, dCache
- Two AMD Ryzen PC for simulators.