



Preparing the Direct Broadcast Community for GOES-R

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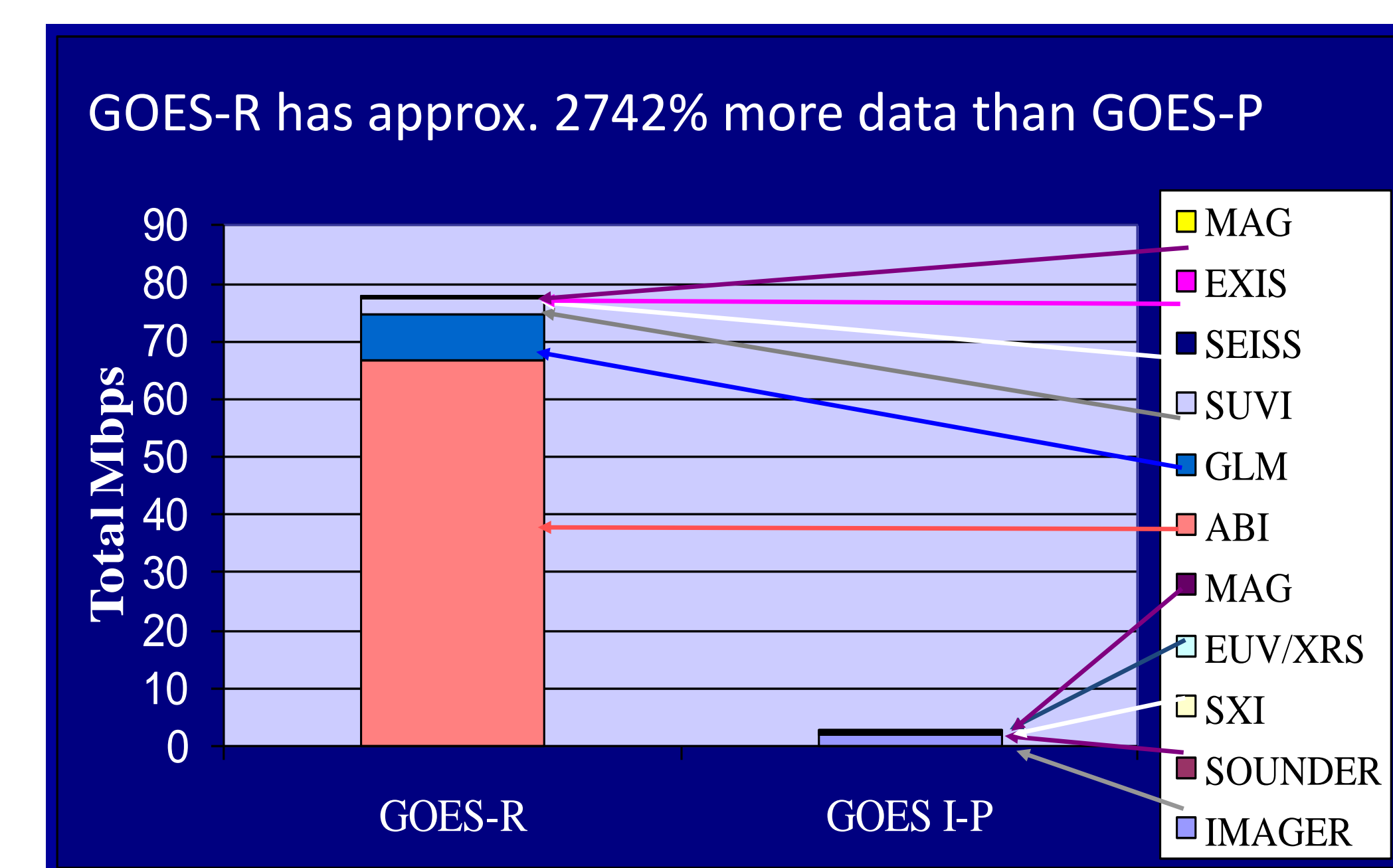
Background

The first satellite in the United States next generation weather satellite program, GOES-R, will be launched in 2015. SeaSpace Corporation is using our recent experience and lessons learned from bringing Suomi NPP-capable direct reception systems online, to similarly bring direct reception solutions to future GOES-R users. This includes earlier outreach to customers, due to the advance budgeting deadline for procurement in many agencies. With the cancellation of eGRB, all current GOES gvar customers will require a new direct broadcast system, including a new receiver, high powered processing subsystem, and possibly a larger antenna.

More Data, Many Users

NOAA estimates that there are 400 GOES gvar ground stations in the Western Hemisphere and 100 of those are in the United States. Of those outside of the United States, many are owned by operational agencies such as major meteorological offices in Central and South America. Each operational agency therefore represents thousands of citizens affected by forecasts and warnings made using GOES data from a direct broadcast system.

GOES-R will bring an increase in the quantity and speed of data it delivers. The ABI instrument will have sixteen channels (approximately three times more than GOES-P) and will image the Earth approximately five times faster. If operated in Scan Mode 4, a full disk image will be taken every five minutes.



ABI Scan Modes

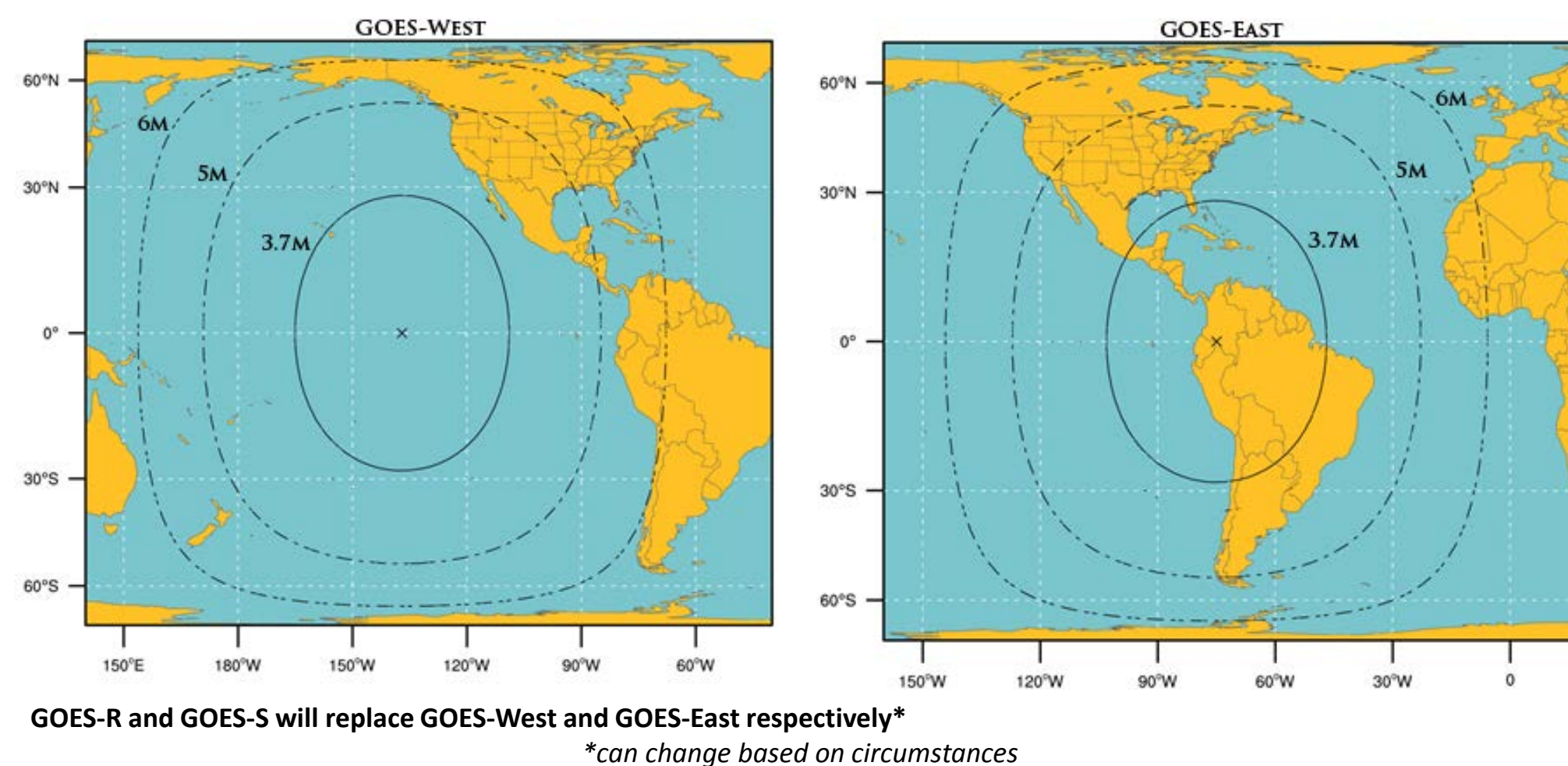
- Mode 3: 15 minute cycle of the following**
- 1 full disk
 - 3 CONUS
 - 1000km x 1000km every 30 sec
- Mode 4**
- Continuous 5 minute full disk

Getting the Data

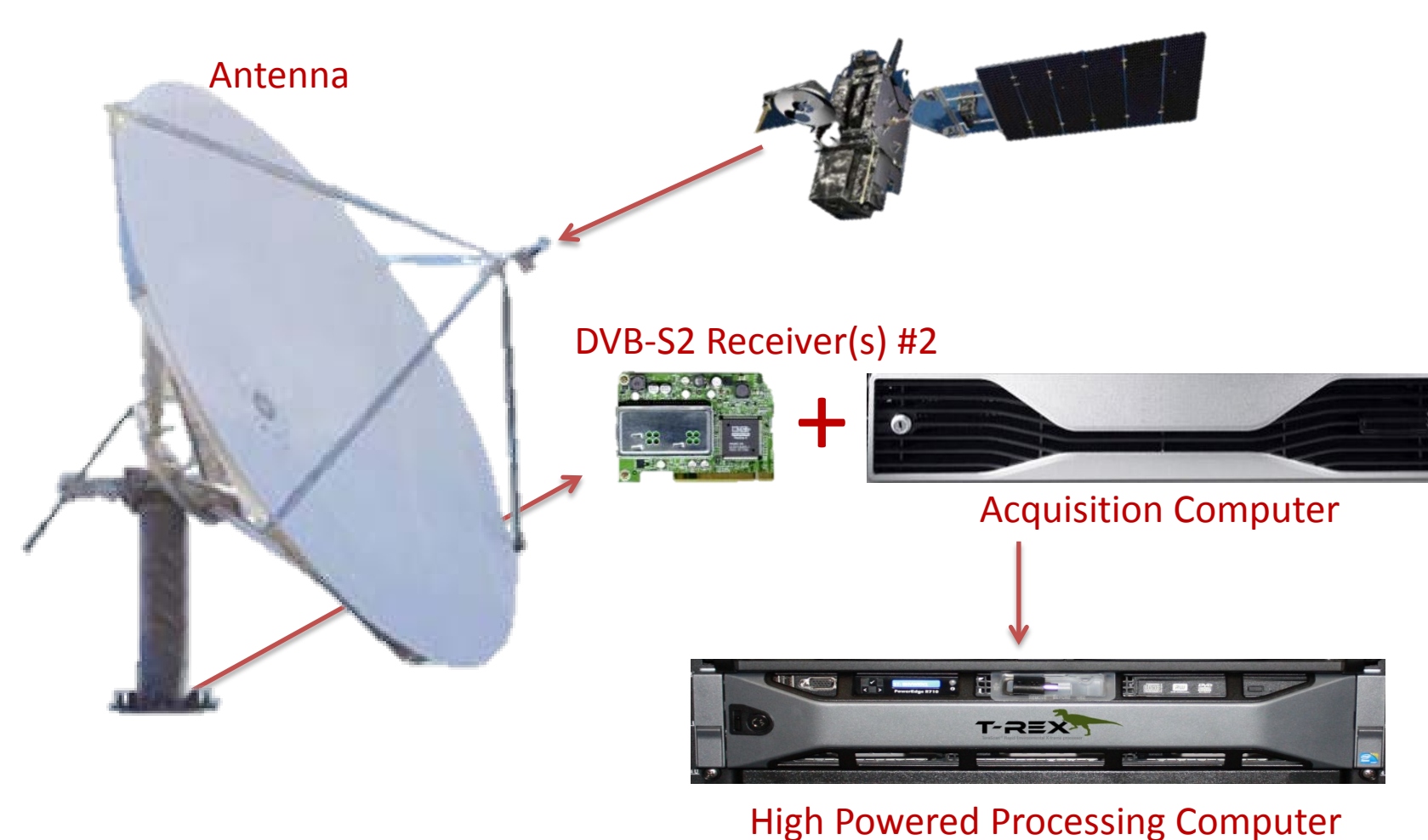
No current GOES gvar ground station will be able to receive GRB data. All will require, at the least, a major upgrade of everything except for the dish. For most customers, a larger antenna will be necessary, requiring an entire system replacement. The antenna size is chosen based on the location of the ground station (see maps below).

Antenna Size

- Antenna sizes offered by SeaSpace
- 3.7 m
 - 5 m
 - 6 m
- Size chosen by location and desired satellite



Ground Station Components

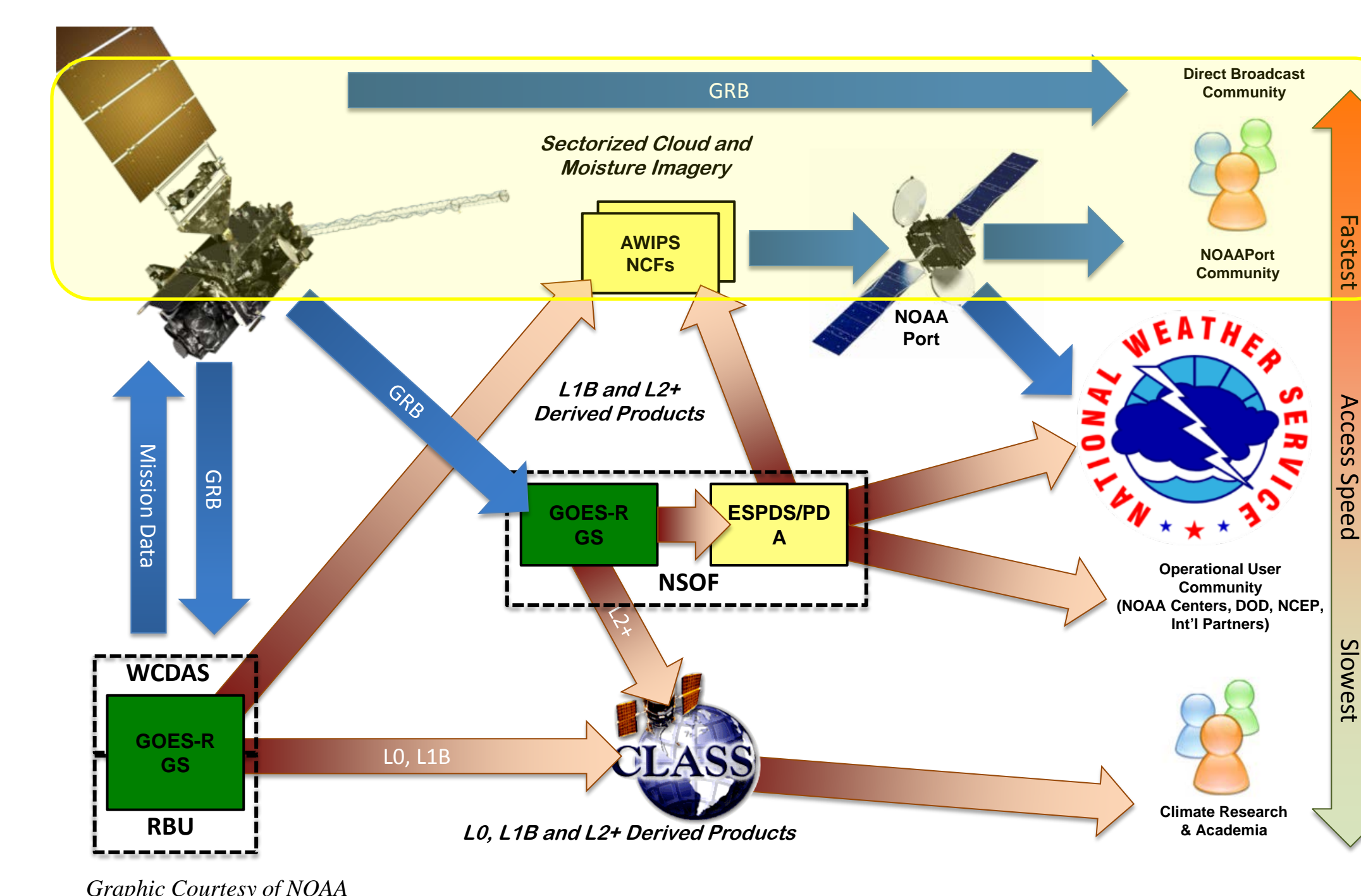


Processing Requirements



SeaSpace will provide a T-REX™ high powered processor to meet the requirements of Scan Mode 4 (full disk processed through to Level 2 products within 5 minutes). T-REX™ will also be available to customers without ground stations, who plan to receiver their data through other methods.

Direct broadcast users will get data faster than the U.S. National Weather Service

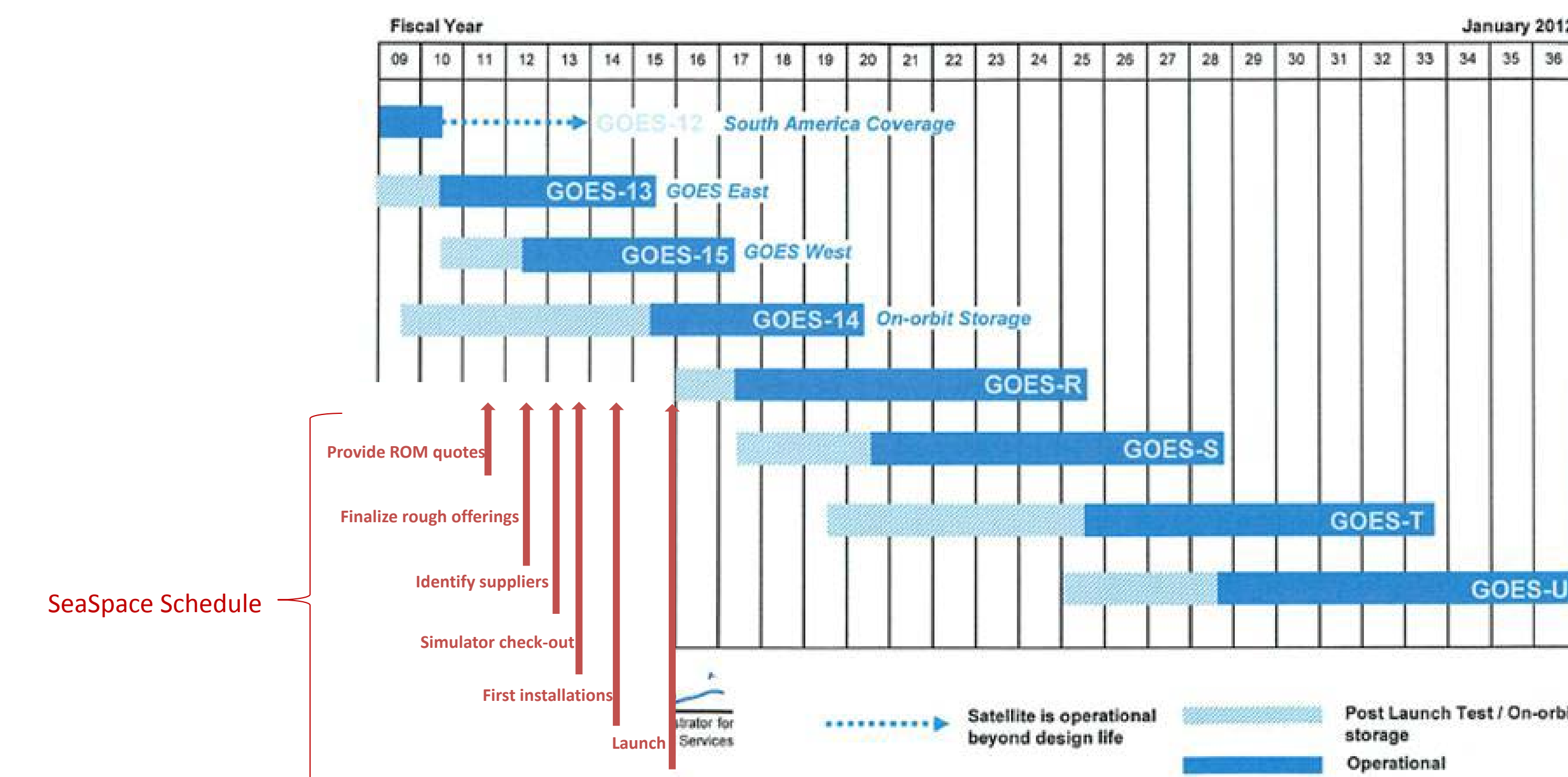


NOAA will distribute GRB data to the National Weather Service and other U.S. government entities. There likely will be no nodes allotted to outside users. All other users will have to get data through CLASS, which will have unacceptable delays for operational users. Therefore, operational agencies will need to get a direct broadcast ground station in order to make use of GRB data.

Moving Forward

Our preparations for GOES-R have already begun, and include a wide range of actions from providing budgetary quotations to our customers, to identifying our hardware suppliers and checking out a GRB simulator in 2013. We expect our first GOES-R ground stations to be installed in 2014, with a software update being performed to those stations at time of launch.

We have learned from Suomi NPP that the U.S. government must support the release of a software package to the direct broadcast community, which will contain the level 2 algorithms for GOES-R. This will enable SeaSpace and other providers to integrate this into the ground station and deliver it to many customers in the fastest amount of time, thus immediately increasing how many people can benefit from this new satellite.



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