InSAR Preliminary Requirements Document

Introduction

The purpose of this document is to collect and list the technical requirements on the design of the InSAR mission and systems as derived from the mission objective, the science objectives, the science requirements, and the program level constraints. These requirements are the "parents" in a flow-down of requirements to the lower levels within the project's requirements architecture.

Mission Objective

The InSAR mission objective is to provide the first dedicated spaceborne interferometry mission to precisely map Earth surface deformation due to tectonic, volcanic, and glacial processes. The resulting data will uniquely allow characterization and quantification of underlying processes enabling predictive models.

Within this mission objective are three distinct science objectives from which all science requirements are derived. These science objectives are:

- Understand strain changes leading to and following major earthquakes
- Characterize three dimensional magma movements to predict volcanic eruptions
- Assess the impact of ice sheet and glacier system dynamics on sea level rise and characterize temporal variability
- Characterize land surface motion related to subsidence, hydrology and coastal processes.

Level 1 – Sponsor Requirements and Constraints *(The Level 1 customer requirements are the science and technology performance requirements and program constraints that are allocated to the project from its sponsor or program customer.)*

ID: 1 Three-Dimensional Surface Deformation Requirement

Three-dimensional surface deformation maps are required to infer sub-surface processes.
Comments:

ID: 2 Science Target Access Requirement

Imaging/mapping of polar ice caps, as well as, mid and low-latitudes are required.
Comments:

ID: 3 Radar Penetration Requirement

Penetration of vegetation is required in order to map surface deformation.
Comments:

ID: 4 Signal Correlation Requirement

Correlation of signals of rapidly deforming regions is required.
Comments:

ID: 5 Tropospheric/Ionospheric Noise Requirement

In order to map surface deformation, InSAR must be able to remove noise associated with the troposphere and ionosphere.
Comments:

ID: 6 Swath Width Requirement

The system must be capable of obtaining a complete map of the deformation of large earthquakes, volcanoes, and cryospheric phenomena.
Comments: Based on historical data, to obtain a complete map of the deformation related to large earthquakes and volcanoes the InSAR mission requires a swath width of 100 km or greater. The deformation related to the Landers, Kern County and Owens Valley events extended beyond 70 km. Mount Etna has a broad base (or shield) spanning roughly 60 by 40 km. Cryospheric phenomena to be observed also have ~100 km scale.

ID: 7 Resolution Requirement

A 35 meter resolution or better is required for spatial and temporal complexity of faulting during earthquakes and localized volcanic phenomena during eruption sequences, while 100 m resolution is required for inter-seismic and tectonic deformation.
Comments:

ID: 8 Mission Lifetime Requirement

The mission lifetime should be sufficient to map tectonic deformation to 1 mm/yr
Comments: Basin and range spreading and post-glacial rebound are on the order of 1 mm/yr.

ID: 9 Customer Constraints

Customer constraints are TBD.
Comments:

Level 2 – Derived Science Requirements *(The Level 2 science requirements are the derived science requirements that are partitioned and allocated to the Level 3 systems that must be satisfied to meet the mission objectives and Level 1 requirements.)*

ID: 10 Radar Frequency Requirement

InSAR shall use an L-band H-pol (horizontal-polarimetry) radar.
Comments: L-band radar is needed to overcome temporal decorrelation problems in regions of appreciable ground cover.

ID: 11 Measurement Access Requirement

The InSAR mission and systems shall be designed for complete global access, excluding areas near the Poles, which, as a function of chosen orbital inclination, are inaccessible.
Comments: The nominal InSAR mission includes pre-defined (per the InSAR Science Targets document) globally distributed science targets that will be regularly accessed as well as globally distributed science targets for Natural Hazards Research, which will be identified on-orbit. Given the current baseline orbit (760 km, 98.5^{o}), targets above 78.8 degrees latitude can only be acquired with the beams that are pointed toward the pole (right near the North Pole, left near the South Pole). Targets above 87.3 degrees latitude are never visible.

ID: 12 Repeat Pass Requirement

The InSAR orbit shall be an exact repeat orbit with a repeat frequency of ≤ 9-days.
Comments: Repeat frequencies greater than 9 days would introduce surface decorrelation errors and would not allow surface unfolding events to be captured. SRTM results show rapidly moving mountain glaciers can decorrelate in 3-4 days. Shorter revisit times are highly desirable, but must be balanced with the requirement for global access.

ID: 13 Ionospheric/Tropospheric Noise Reduction Requirement

The InSAR orbit shall have an ascending node at the 6 am terminator.
Comments: This is a 6 am / 6 pm nodal crossing orbit. A 6 am/6 pm nodal crossing time is required to minimize ionospheric effects/tropospheric moisture variability in the data.

ID: 14 Look Direction Requirement

The InSAR mission and systems shall be designed such that radar data can be taken from both right and left (of ground track) looking viewing angles.
Comments: Left and right looking capability is required to obtain the multiple view angles necessary to develop 3D vector deformation maps. How often do we need to turn? What would be the longest duration we would maintain a left or right looking orientation - for a complete cycle? This is important as it will feed Flight System power requirements.

ID: 15 Minimum Swath Width Requirement

The InSAR mission and systems shall be designed for a minimum swath width (single beam) of ≥ 100 km in the primary operating mode.
Comments: Based on historical data, to obtain a complete map of the deformation related to large earthquakes and volcanoes the InSAR mission requires a swath width of 100 km or greater. The deformation related to the Landers, Kern County and Owens Valley events extended beyond 70 km. Cryospheric phenomena to be observed also have ~100 km scale.

ID: 16 Observing Modes/Resolution Requirement

The InSAR radar shall be capable of operating in a minimum of two modes: 1) a Stripmap Mode (the primary operating mode) with an interferometric resolution of ≤ 35 m; and 2) a ScanSAR Mode with an inteferometric resolution of ≤ 100 m.
Comments: Spatial complexity of faulting during earthquakes, and localized volcanic phenomena during eruption sequences requires 35 m resolution or better, 100 m resolution is adequate for other slower deformation phenomena. This requirement and comment points to an architecture that utilizes ScanSAR as the primary operating mode.

ID: 17 Post-Processing Surface Displacement Detection Requirement

The InSAR mission and systems shall be designed to enable post-processing detection of vector deformation rates of ≤ 2 mm per year (single component accuracy) over 50 km with 100 km swaths averaged over the 5-yr nominal mission subsequent to the Calibration Validation period.
Comments: How can we verify the system can meet this requirement? Perhaps we need to understand/quantify the number of observations required to detect the desired deformation fidelity. For example: After post-processing of interferometric pairs from ≤ 10 observations from ≥ 3 directions over the same location.

ID: 18 Post-Processing Surface Displacement Detection Goal

As a goal, the InSAR mission and systems shall be designed to enable post-processing detection of vector deformation rates of ≤ 1 mm per year (single component accuracy) over 50 km with 100 km swaths averaged over the 5-yr nominal mission subsequent to the Calibration Validation period.

Comments: How can we verify the system can meet this requirement? Perhaps we need to understand/quantify the number of observations required to detect the desired deformation fidelity. For example: After post-processing of interferometric pairs from ≤ 10 observations from ≥ 3 directions over the same location.

ID: 19 Post-Processing Position Accuracy Requirement

InSAR mission and systems shall be designed to enable post-processing detection of vector deformation rates with position accuracies of 5-10 mm over the 5-yr nominal mission subsequent to the Calibration Validation period.

Comments: We need to understand/quantify what is meant by position accuracy such that this requirement can be verifiable. How does this relate to the requirement for geolocation of slant range pixel spacing and slant range to 0.2 pixel?

ID: 20 Measurement Frequency Requirement – Western US Plate Boundary Observatory (PBO) Targets

The InSAR mission and systems shall be designed to allow for ≥95% coverage of the Western US Region PBO Targets specified in the InSAR Science Targets Document from ≥ 3 directions (right and left looking data takes on ascending and descending passes) every 48 days throughout the 5-yr nominal mission subsequent to the Calibration and Validation period.

Comments: Specific target areas are identified in the InSAR Science Targets document.

ID: 21 Measurement Frequency Requirement – Active Earthquake and Volcanic Targets

The InSAR mission and systems shall be designed to allow for ≥90% coverage of non-PBO Active Earthquake and Volcanic Targets specified in the InSAR Science Targets Document from ≥ 3 directions (right and left looking data takes on ascending and descending passes) every 75 days throughout the 5-yr nominal mission subsequent to the Calibration and Validation period.

Comments: Specific target areas are identified in the InSAR Science Targets document.

ID: 22 Measurement Frequency Requirement – Glacier and Ice Targets

The InSAR mission and systems shall be designed to allow for ≥90% coverage of Glacier and Ice Targets specified in the InSAR Science Targets Document from ≥ 2 directions (right and/or left looking data takes on ascending or descending passes) ≥ 3 times during first, third, and fifth winter of the 5-yr nominal mission subsequent to the Calibration and Validation period.

Comments: Specific target areas are identified in the InSAR Science Targets document. The baseline 10-minute average data taking constrains the data taking to every 48 days from four directions – not sure if the original 5 times per winter can be met dependent upon length of winter and if 48 days from four directions is linear (i.e., 24 days from 2 directions?). Is 5 maps from greater than 2 directions absolutely needed?

ID: 23 Measurement Frequency Requirement – Natural Hazards Research

The InSAR mission and systems shall be designed to allow for 5 minutes of additional data taking per month, for the duration of the 5-yr nominal mission subsequent to the Calibration and

Validation period, for targeting of natural hazards research areas not identified in the Science Target Document.
Comments: This would allow for approximately 1.25 minutes of additional data taking per 8-day cycle per 32-day period. (40,000 km polar circumference; 100 min orbit; ~ 500 km coverage in 1.25 minutes)

ID: 24 Natural Hazards Research Response Requirement

The InSAR mission and systems shall be designed to accommodate sequence generation and targeting of natural hazard research areas in ≤ 24 hours and return data to JPL from the targeted areas within ≤ 10-days.
Comments: Needs review and concurrence.

ID: 25 Mission Lifetime Requirement

The InSAR mission and systems shall be designed to perform the Nominal Science Mission science data collection in 60 months of operation including Calibration and Validation.
Comments: A five year mission duration allows for sufficient observing history to detect slow movements in the presence of noise due to tropospheric and ionospheric variations. While capture of an earthquake would be assured in approximately 3 years time, the temporal scale of non catastrophic events is >3 years. As an example Northridge continued to deform for >2 years after the earthquake.

ID: 26 Baseline Data Set Requirement

To establish a baseline data set, InSAR data for ≥ 95% of all target areas shall be collected in ≤ 100 days subsequent to the Calibration and Validation period.
Comments: Need to know if passes from three directions are adequate. We may be able to get the specified coverage earlier (currently assuming 75 days + 30 percent) if only three passes are needed, but this would require slightly different operating scenarios for this phase of the mission. Also, could think about ScanSAR as primary operating mode.

ID: 27 Total Science (Bits Per Day) Limit Requirement

The InSAR science and mission planning activities shall limit the total number of bits to be collected on the ground to xxxx bits/24 hours.
Comments: This requirement drives most of the MOS/GDS requirements and is a top level driver for satellite data storage and flow capacities.

ID: 28 Science Data Latency Requirement

The InSAR mission and systems shall be designed to provide Level 0 science data products to one or more regional data centers and make those products available to users in less than 72 hours.
Comments: The above requirement was provided by MOS/GDS. Does this meet the need? Original requirement: Subsequent to Calibration and Validation, InSAR data shall be available via internet to the scientific community within 24 hours of downlink.

ID: 29 High Priority Science Data Latency Requirement

The InSAR mission and systems shall be designed to provide level 0 high priority science data products to one or more regional data centers and make those products available to users in less than 48 hours.
Comments: The above requirement was provided by MOS/GDS. Does this meet the need?

ID: 30 Science Data Return Requirement

The InSAR mission and systems shall be designed to collect, downlink successfully, and make available to users, as a minimum, 95% of the data from the planned targets identified in TBD Science Target Document.

Comments:

ID: 31 High Priority Science Data Return Requirement

The InSAR mission and systems shall be designed to collect, downlink successfully, and make available to users, as a minimum, 98% of the data from the high priority targets identified by the science and mission planning activity.

Comments:

ID: 32 Science Data Return Goal

It will be a goal of the InSAR mission and systems to collect, downlink successfully, and make available to users 98% of the data from the planned targets identified in TBD Science Target Document.

Comments:

ID: 33 High Priority Science Data Return Goal

It will be a goal of the InSAR mission and systems to collect, downlink successfully, and make available to users 100% of the data from the high priority targets identified by the science and mission planning activity.

Comments

ID: 34 Processing Software Requirement

Software for processing of InSAR data shall be made available to the investigator community.

Comments:

Level 2 – Derived Mission & System Requirements *(The Level 2 mission requirements are the derived mission requirements that are partitioned and allocated to the Level 3 systems that must be satisfied to meet the mission objectives and Level 1 requirements)*

Payload System

ID: 35 Swath Coverage Requirement

The InSAR mission and systems shall be designed for a viewable swath width larger than 340 km to obtain global access.

Comments: This is based on the currently planned 760 km, i = 98.5^0 orbit. If we have a higher level requirement for global coverage this will drive the instrument design (swath width, number of beams etc.) dependent upon orbit parameters.

ID: 36 Maximum Allowable Range to Target Requirement

Given the Level 1 Science Req for global access we need to specify a range to target or a range of acceptable distances to the target that in conjunction with swatch width allow global coverage. This distance would then feed the mission design/orbital altitude. This requirement and the swath coverage requirement above might need to be combined.

Comments:

ID: 37 Precise Orbit Determination Requirement

The InSAR mission and systems shall be designed such that orbit knowledge of < 10 cm is possible using post-processing ground data analysis.

Comments: Is this the knowledge the instrument requires to meet the Level 1 Science Requirement for position accuracy? If not, perhaps a higher level requirement belongs here and this requirement belongs in the Flight System area.

ID: 38 GPS Operation Requirement

The GPS shall be operational X percentage excluding while operating the radar on average for the 5-yr nominal mission….

Comments: For the Payload System to meet the higher level science requirements we need a requirement that specifies how often the GPS is required to provide position information (It will not work while using the instrument – per Yoaz Bar-Sever). Perhaps this is a lower level requirement on the Flight System/sub-systems, but it would flow from a Precise Orbit Determination Requirement (which flows from a science resolution/accuracy requirement)

ID: 39 Observation Position Knowledge Requirement

The InSAR mission and systems shall be designed for ≤100 m real-time, ≤10 cm post-processing, and 1 pps (pulse per second) output from the GPS receiver.

Comments: Needs rationale from Payload System.

ID: 40 Observing Modes Requirement

The InSAR radar shall be capable of operating in three modes: 1) a Stripmap Mode (the primary operating mode) with an interferometric resolution of approximately 35 m and a swath width of approximately 120 km; 2) a ScanSAR Mode with an inteferometric resolution of approximately

100 m and a swath width of approximately 350 km; and 3) a High-Resolution Mode with an interferometric resolution of approximately 10 m and a swath width of approximately 40 km.
Comments:

ID: 41 Accuracy Requirement

The InSAR instrument shall be designed such that the noise equivalent σ^0 is smaller than –24 dB.
Comments: What higher level requirement does this come from?

ID: 42 Electronic Beam Steering Requirement

The InSAR instrument shall be designed to be capable of viewing angle access between 20^0 and 40^0 left and right of nadir.
Comments: Electronic beam steering to minimize spacecraft interactions for acquisition and allow ScanSAR operation – a compromise between shadow and layover.

ID: 43 Pointing Accuracy Requirement

The InSAR Instrument shall be designed for pointing to better than 0.05 deg. (1 sigma).
Comments: Need rationale for this requirement.

ID: 44 RMS Value Requirement

The random component (rms value) of the single observation deformation error shall be less than 5-10 mm at 100 m spacing for bare surfaces. (?) – not sure if this should be a science requirement levied on your subsystem or not as opposed to a Payload subsystem requirement
Comments: Descriptive/supportive information

ID: 45 Ionospheric Disturbance Correction Requirement

The instrument shall be capable of compensating the ionospheric disturbance to meet the deformation accuracy requirement. – not sure if this should be a science requirement levied on your subsystem or not as opposed to a Payload subsystem requirement
Comments: Descriptive/supportive information

ID: 46 Observing Bandwidth Requirement

With the exception of the high-resolution mode, the InSAR L-band 80 MHz bandwidth allocation shall be split into two sub-bands (15 MHz and 7 MHz), which bookend the 80 MHz allocation.
Comments: Two sub-bands separated by 70 MHz will be used to resolve and correct dispersive ionospheric delays. It's not clear if this should be a lower-level requirement or not, if so, this high-level requirement would read something like: "The InSAR mission and systems shall be designed to minimize temporal decorrelation and ionospheric delays," which is hard to verify. Per Science – system designed such that it allows you to estimate or measure ionospheric effects on the measurement/can remove the ionospheric effects/delays…this is required to meet the 2mm/yr goal. Needs input from Payload System.

ID: 47 Standby Mode Requirement

The radar instrument shall be placed in standby or off mode of operation during propulsive maneuvers.
Comments: Needs review and concurrence.

Flight System

ID: 48 Pointing Requirement – Pitch Axis

The InSAR mission and systems shall be designed such that the radar antenna boresight will rotate about the pitch axis at the orbital rate.
Comments:

ID: 49 Pointing Requirement – Roll Axis

The InSAR Flight System shall be capable of rotating left and right ±30 degrees from nadir about the roll axis.
Comments:

ID: 50 Attitude Control Requirement

The InSAR Flight System shall be controlled to 0.04° 3-sigma in the yaw and pitch direction and 0.25° 3-sigma in the roll direction.
Comments: The attitude control requirements on the Flight System are based on the need for phased-array antenna pointing to within 1/20 of the elevation and azimuth beamwidth. The 3-sigma deviation is based on a normal (Gaussian) distribution.

ID: 51 Agility Requirement

The InSAR mission and systems shall be capable of left/right rolling from +30° from nadir to -30° from nadir within ≤ 10 minutes ≥ 2 times per orbit.
Comments: Need input/rationale from Science, Payload System and Trajectory Analysis. How often and how quickly...what's the real requirement?

ID: 52 Left/Right Pointing Duration Requirement

The InSAR mission and systems shall be designed such that the Flight System can operate nominally in either a left or right pointing attitude for ≥ 1 repeat cycle (≥ 9-days).
Comments: Need input/rationale from Science, Payload System and Trajectory Analysis. What's really required here? This will drive the Flight System power design.

ID: 53 Orbit Maintenance Requirement

The InSAR mission and systems shall be designed such that orbit maintenance to a repeat-track to within 250 m will be maintained for 95% of the orbits over the nominal mission lifetime.
Comments: Orbits outside of the 250 m tube introduces deformation errors of ≥15 mm. To meet the science deformation requirement of ≤10 mm orbit maintenance to a repeat-track of 250 m is required. A tightly controlled orbit guarantees that all measurement pairs will be interferometrically viable. Why 95%? Quantify the impact to science. Perhaps 95% is the goal and 90% is acceptable and therefore the requirement?

ID: 54 GPS Navigation (250 m Tube) Requirement

The InSAR mission and systems shall be designed to provide precise, dual-frequency GPS pseudo-range and carrier phase, with a residual error RMS not worse that 1m and 1cm, respectively, after ground post-processing.
Comments: The above knowledge is required to navigate to a 250 meter orbital tube.

ID: 55 GPS ScanSAR Mode Orbit Knowledge Requirement

The InSAR mission and systems shall be designed to provide ≤ 10 cm accurate positioning post-processing knowledge.
Comments: This level of position knowledge is needed for interferometry.

ID: 56 Translation Thruster Requirement

The InSAR flight system shall be designed such that small (< 20 mm/s) orbital maneuvers in the translation direction can be accomplished at any place in the orbit.
Comments:

ID: 57 Translation Maneuvers Duration

The InSAR flight system shall be designed so that when translation maneuvers are performed, normal operational data take shall be possible outside of a 20 minutes interval centered at the mid-point of the maneuver.
Comments: These requirements minimize the time spent doing the maneuvers necessary to meet the 250 meter tube requirement (maneuvers expected very frequently) and thereby maximize the opportunity for science data takes. Maneuvers can be performed over the oceans and this statement frees the suppliers to choose either thruster location or "swiftness" of the attitude control for turn-burn-turn.

ID: 58 On-board Data Storage Requirement

The InSAR mission and systems shall be designed for 60 minutes of on-board storage for global accessibility within ground station constraints.
Comments: Needs review and rationale. About 6 orbits worth – Needs to be communicated and agreed upon.

ID: 59 On-board Data Storage Requirement

The InSAR mission and systems shall be designed to collect 10 minutes (on average) of data per orbit.
Comments: Needs review and rationale.

ID: 60 GPS Field of View Requirement

The GPS antenna mounting shall be such that there is an unobstructed field of view above 5 degrees of elevation.
Comments: GPS positioning shall maximize stability and field of view; and minimize multipaths. Solar arrays and other structures should not be located in the field of view of the GPS antennas (GPS antennas should be positioned such that no unwanted radio signals bounce into them).

ID: 61 GPS Data Downlink Frequency

The spacecraft GPS receiver shall provide continuous dual-frequency pseudorange and carrier, and navigation solutions. Data shall be transmitted to the ground at each ground station pass.
Comments: Required to verify receiver health, for operational navigation and for precise orbit determination. Would it be appropriate to make the above (at each ground station pass) a goal and make the requirement to be at least once a day?

ID: 62 Spacecraft Real-Time Command & Telemetry System

The spacecraft contractor must provide a real-time command/telemetry system that will support automated operations. Automation scripts must have access to real-time telemetry and be able to perform all functions that can be performed by an operator. Automation scripts must be able to notify on-call personnel via telephone paging in the event of spacecraft or ground alarms.
Comments:

Mission Assurance

ID: 63 JPL Mission Assurance Lead Requirement

The JPL Mission Assurance (MA) team shall lead the Project-wide mission assurance team/effort and tailor the project Safety and Mission Assurance requirements in accordance with institutional requirements, rules and principles. The project MA requirements apply to JPL, U.S. partners, U.S. contractors and other NASA centers.
Comments:

ID: 64 Mission Assurance Plans Review Requirement

JPL MA team shall review Partners/Contractors or other NASA centers proposed mission assurance plans to ensure consistency with Project requirements and JPL practices.
Comments: Other NASA centers are assumed compliant with general JPL and NASA safety and mission assurance practices initially. Validation of this assumption will occur in Phase A via JPL MA team assessment.

ID: 65 Mission Assurance Verification/Validation Requirement

All project elements shall review and respond to JPL Document D-17868, "Design, Verification/Validation and Operations Principles for Flight Systems, Rev 2". The latest copy of this document can be found on the web at JPL Rules!.
Comments:

ID: 66 Mission Assurance Project Practices Requirement

All project elements shall review and respond to JPL Document D-58032, "Flight Project Practices, Rev 5". The latest copy of this document can be found on the web at JPL Rules!.
Comments:

ID: 67 Inheritance Reviews Requirement

Inheritance Reviews shall be performed and formally documented on all subsystems and components, whenever an existing design, (H/W or S/W) is planned for use.

- Inheritance evaluation shall include compliance with respect to the mission assurance requirements.
- Results of the evaluation will include both requirement exceptions that have been granted and actions where compliance is considered necessary.

Comments: Descriptive/supportive information

ID: 68 Approval Authority on Collaboratively Developed Project Documents

JPL shall retain final approval and signature authority on project-level documents produced in a collaborative manner with the Industry Partner/Spacecraft Provider.
Comments:

Level 3 – System Requirements *(The Level 3 systems requirements are those derived from Level 2 requirements and those partitioned and allocated to Level 4 subsystems necessary to achieve the expected functionality, performance and reliability to meet the objectives of the mission. Typically, system requirements are written on the flight system, mission operations system [MOS], and launch vehicle [with focus on capabilities, services, and interfaces].)*

ID: 69 (Name) Requirement

Requirement
Comments: Descriptive/supportive information

Level 4 – Subsystem Requirements *(The Level 4 subsystem requirements respond to the allocated systems requirements levied on the targeted subsystem(s) and may be further derived, and allocated to the next level down [Level 5] or implemented at the subsystem level. Flight system requirements [Level 3] are allocated to flight subsystems [at Level 4], while mission operations system requirements [Level 3] are allocated to Level 4 mission operations ground data subsystems and operations teams [at Level 4].)*

Sequencing Subsystem - TBD

ID: 70 (Name) Requirement

Requirement
Comments: Descriptive/supportive information

Realtime Telemetry and Command Subsystem - TBD

ID: 71 (Name) Requirement

Requirement
Comments: Descriptive/supportive information

Science Data Processing Subsystem (DPS)

ID: 72 (Name) Requirement

The DPS shall capture all of the InSAR science and telemetry data files successfully down-linked to the Ground Stations.
Comments: Descriptive/supportive information

ID: 73 (Name) Requirement

The DPS shall process all of the successfully received InSAR science and telemetry data files to the space agency standard Level 0 product (CEOS format).
Comments: Descriptive/supportive information

ID: 74 (Name) Requirement

The DPS shall provide public access to required ancillary files and algorithms for processing the DPS-generated Level 0 files to Level 1.
Comments: Descriptive/supportive information

ID: 75 (Name) Requirement

The DPS shall catalog all captured InSAR science and telemetry data files down-linked to the Ground Stations.
Comments: Descriptive/supportive information

ID: 76 (Name) Requirement

The DPS shall catalog all Level 0 product files it produces.
Comments: Descriptive/supportive information

ID: 77 (Name) Requirement

The DPS shall distribute all DPS-generated Level 0 product files appropriately to designated regional access nodes for download within 72 hours.
Comments: Does this meet the science requirements?

ID: 78 (Name) Requirement

The DPS shall distribute all DPS-generated high priority Level 0 product files appropriately to designated regional access nodes for download within 48 hours.
Comments: Descriptive/supportive information

ID: 79 (Name) Requirement

All DPS-generated Level 0 files shall be accessible from a DPS-managed archive (the regional data nodes) for at least 6 months.
Comments: Descriptive/supportive information

ID: 80 (Name) Requirement

All DPS-generated Level 0 files shall be distributed to the designated long-term archive.
Comments: Descriptive/supportive information

ID: 81 (Name) Requirement

The DPS shall distribute all of the successfully down-linked InSAR science and telemetry data files to the designated long-term archive.
Comments: Descriptive/supportive information

ID: 82 (Name) Requirement

The DPS shall provide public access to all DPS-generated Level 0 product files.
Comments: Descriptive/supportive information

ID: 83 (Name) Requirement

The DPS shall provide tools for the public to generate higher level data products from the DPS-generated Level 0 products.
Comments: Descriptive/supportive information