

Systems performance Assessment Team (SAT) Terms of Reference

The purpose of the Core Systems performance Assessment Team (Core-SAT) is to provide authoritative scientific and performance assessment support to NESDIS in its efforts to plan for the next generation of environmental remote sensing satellite programs. The primary area of support will be on codifying performance requirements and conducting scientific investigations to answer questions that arise in the course of architecture, formulation, and execution design steps and to assess resulting performances against NESDIS mission requirements.

Background:

NESDIS has finished the first step towards the next-gen architecture by completing the NSOSA (NOAA Satellite Observing System Architecture) study. Along with the NSOSA, the SPRWG (Space Platform Requirement Working Group) has issued its final report in support of the NSOSA (now published in a BAMS paper). NOAA is now entering into the next step of the space architecture implementation through initiation of pre-Phase A initiatives to define next generation satellite systems. During the pre-Phase A period, NOAA will interact with industry and other interested parties to acquire concepts for architecture solution elements through study contracts. SAT needs to be well aware of the NESDIS users' needs including their current and future requirements. Therefore, awareness of current and future applications as well as high level mission priorities will be critical in this effort.

NESDIS has identified two next generation satellite systems for initial program start-up: A next Generation GEO-Extended Orbit (GEO-XO) satellite constellation and a LEO sounder-focused small satellite system. The initial focus of the SAT will be on these two systems but is expected to expand to support other IPTs for other observables. The linkages of SAT to the rest of the processes leading to the release of RFPs to the industry is illustrated in figure 1.

Expected Role of SAT In Support of the Next-Gen Space Architecture

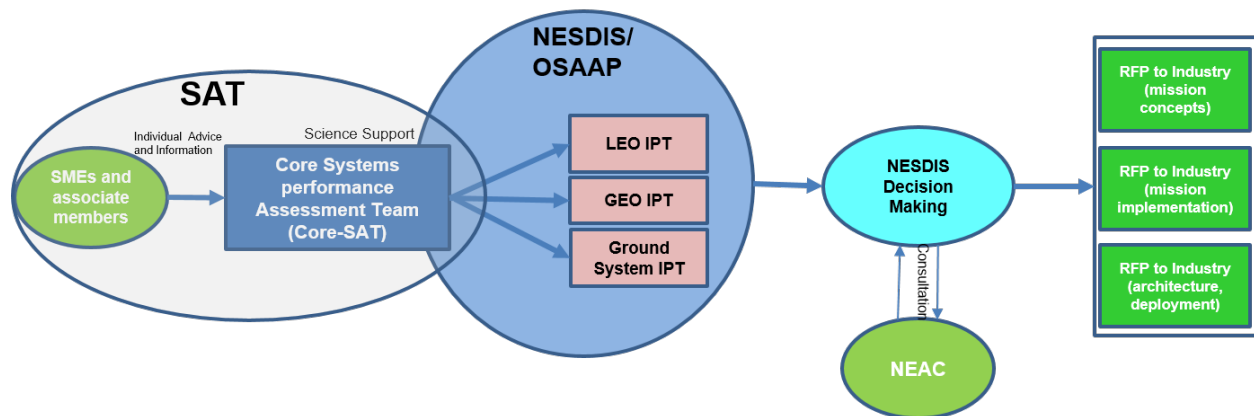


Figure 1 - The SAT's contribution to the overall NESDIS process leading to the release of RFPs to the industry.

Scope:

The SAT is to provide expert opinion, feedback, and technical assessment of scientific problems relating to architecture, formulation, and execution scientific questions. The specific issues will be brought to the attention of SAT by OSAAP, pre-formulation IPTs, and execution programs for independent analysis. These issues may relate to:

1. Setting technical requirements,
2. Performing Impacts assessment experiments on users' applications and systems,
3. Performing scientific studies (impact assessment, geophysical capability evaluation, etc.) as needed
4. Interacting with outside experts on an as needed basis.
5. Help drafting the text of the RFPs,
6. Providing help assessing the solutions offered as a result of the RFPs,
7. Providing support for the interaction, when needed and appropriate, with vendors, to optimize their selection and designs,
8. Supporting the effort of the design and optimization of constellations.

Reach out to users, stakeholders, international partners, to provide awareness, build support and seek feedbacks on the science requirements, and scientific tradeoffs being considered

The SAT is a science team and does not have an advocacy role. The SAT is dedicated to providing science-based input, which will account for multiple scientific and strategic factors so that decision-makers can make sound, informed decisions based on the Core-SAT's recommendations.

Composition and Interfaces:

The SAT is a technical team that has a diverse set of expertise in remote sensing, data assimilation, impact assessment, etc. It is composed of a core team of federal employees from NOAA. The SAT support includes providing performance assessment and expert feedback to the IPTs to help them prepare RFPs, review proposals, provide science assessment of sensor performances, sensor and mission concept evaluation, develop concept requirements, constellation impacts (such as alignment with CGMS and WMO constellation plans), etc.

Besides the core team, the SAT will also have Associate Members who are subject matter experts (SMEs) in a diverse set of areas. The principal role of the Associate Members is to present briefings, provide individual opinions and thoughts on a diverse set of technical subjects related to sensors impacts and pros and cons of methodologies. These Associate Members must be under signed Non-Disclosure agreement (NDA) and no-Conflict of interest (COI) agreements in order to be able to participate in the SAT discussions. The Associate Members, who could be feds or non-feds, will not participate in decision-making or recommendation-making process. The Core-SAT will not request or accept consensus advice from these Associate Members, nor will NOAA or NESDIS. Below is a list of membership and functions of the SAT:

- **Executive Champions(s):** Karen St Germain (DAAS), and TBD (NESDIS Chief scientist)
- **Executive Sponsors:** Vanessa Griffin (OSAAP), Harry Cikanek (STAR), Pam Sullivan (GOES R), Greg Mandt (JPSS), Elsayed Talaat (OPPA)
- **Chairperson:** Sid Boukabara (STAR)
- **Co-chair:** Frank Gallagher (OSAAP)
- **Chairmanship Board (for prioritization of SAT activities and consultations with the Chair and Co-chair):** Dave Spencer (OSAAP), Greg Mandt or designate (JPSS), Pam Sullivan or designate (GOES-R), Patricia Weir (OPPA)
- **Website/Contact:** [tbd](#)
- **Core and Associate Members:** Some members of SAT will be designated “Core members” and others will be designated “Associate Members.” Core members, all federal employees, will be expected to be actively contributing to the science assessment (sharing scientific results, undertaking experiments, etc.) and the development of the science feedback when needed. Associate Members will be providing individual expert opinions and highlighting important scientific issues and solutions.
- **Participation:**
 - SAT: Meetings of the general SAT are open to all members. At any particular meeting, depending on the specifics of the agenda to be covered, participation by some members might be more critical than others. As much as possible, the membership of the SAT should be able to reflect the different opinions and viewpoints that exist for the scientific issues to be discussed. No consensus or unified recommendations are sought in these meetings.
 - Core-SAT: A core group of federal employees (Core-SAT) will provide governance to the SAT primarily by consolidating different inputs and individual recommendations, including from the Associate Members, into a NOAA position/recommendation that will help in the decision-making process.
- **Membership Requirements:** Core-SAT members have to be federal employees. In order to maintain the process integrity, Associate Members of the SAT who are not federal employees must be bound by the obligation to not disclose materials or information that are competitive in nature. Therefore a Non-Disclosure and Conflict of Interest agreements will need to be signed by SAT Associate Members who are non-federal employees. In particular, if an Associate Member of SAT deems that he or she has a conflict of interest for a specific subject, he/she should immediately notify the chair or co-chair and recuse him/herself.
- **Diversity of membership:** The goal is not necessarily to represent institutions, but instead, to be sure sufficient experts are included to cover all likely scientific topics. Feds and non-Feds, with the right expertise and skills set, are expected to be part of the SAT, either as Core or Associate Members.
- **Working Groups:** Ad hoc groups comprised of members of the SAT, SMEs, and volunteers may be established to address specific subjects.
- **Sub-teams.** The SAT may establish specialized teams to address specific aspects of the SAT objectives.

- **Affiliation:** Members of the SAT will be from a diverse set of institutions, including NOAA, other federal agencies, contractors, academic institutions, and the private sector. The driving factor in the membership selection will be to look for the right expertise to solve particular problems. Members who are not federal employees will be required to disclose all potential conflicts of interest before they may serve on the SAT. The Core-SAT members will however, be all federal employees (from NOAA and, possibly, other federal agencies).
- **Expertise & Knowledge:** Figure 2 represents the general concept that drives the membership of the SAT. Both in terms of membership but also in terms of elements of information and expertise needed. Core-SAT members will be interacting with Associate Members during meetings to get individual expert opinions and scientific feedback to help rapidly generate system performance assessment results.

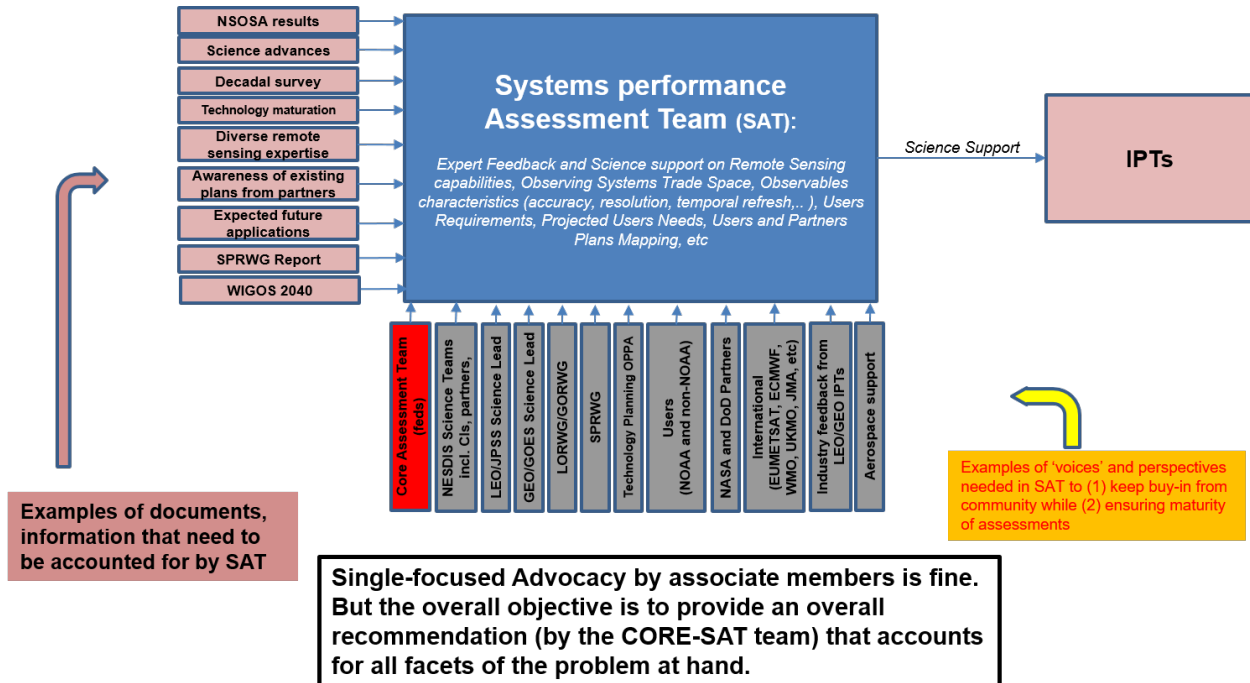


Figure 2 - Systems Assessment Team (SAT) and the factors driving its membership. To be effective, the SAT has to avoid blind spots when providing science support, and for this purpose, it is expected that a diverse set of viewpoints and a wide range of prior knowledge and expertise, will be necessary. This figure gives an example of these requirements.

- **Deliberation Process:** The Core-SAT members will strive to consolidate the feedbacks and science assessments results into a coherent, fact-based recommendation. This does not mean that consensus is required. Many factors will be considered including from briefing by Associate Members and invited speakers. The deliberation process in the Core-SAT should account for the parameters conveyed to the SAT by NESDIS. All issues to be addressed by the SAT will be compiled and listed in the SAT Google drive, along with the scoping and clarifications comments. **Reporting:** The SAT provides technical and scientific feedbacks and assessments directly to the IPTs led by OSAAP (SAE), LEO, and GEO and to other programs and projects as required. SAT reports to OSAAP (SAE) for strategic directions and planning purposes.
- **Linkages to NOAA functions and activities:** SAT will strive to maintain active two-way interactions with several NOAA functions and groups with potential to influence the formulation of the SAT scientific assessment, including but not limited to (1) NESDIS direct users of satellite

data: e.g. LOs NWS, NOS, OAR, NMFS, (2) TPIO, (3) STAR Science teams, (4) JPSS and GOES-R programs, (5) OPPA's Technology maturation Program (TMP).

Roles and Responsibilities:

- SAT is to provide science support to the pre-Phase A and formulation activities for next-generation space architecture led by OSAAP.
- SAT is to provide independent science support to Projects and Programs of Record
- SAT will be chaired by a senior scientist in NESDIS (S. Boukabara) and co-chaired by OSAAP lead architect (Frank Gallagher)
- The chairmanship board is composed of lead representatives from the different divisions and programs in NESDIS (OSAAP, OPPA, STAR, JPSS, GOES-R, etc)
- SAT Core and Associate Members will be selected by the chair and approved by OSAAP.
- Non-federal employee Associate Members of the SAT will be bound by a non-disclosure and no-conflict of interest requirement, to preserve the integrity of the decision-making process in the development and evaluation of RFPs
- SAT Chair and co-chair will designate an alternate when not available.
- SAT Chair will be the single POC interacting with Projects, Programs, IPTs, OSAAP, and NEAC for providing consolidated recommendations.
- The SAT members will be attending weekly or as needed meetings to support these activities.
- The SAT members will be expected to be familiar with the documents made available ahead of the SAT meetings.
- Only federal Core-SAT members will help drafting the scientific feedback and assessment to be provided to Projects, Programs, IPTs, and OSAAP.
- Associate Members will provide diverse individual (non consensus) expert opinions and thoughts.
- SAT members will not be required to attend all meetings: only those where their expertise is expected to be critical. They may be excluded where their attendance is not appropriate
- The SAT Chair and co-chair will communicate the agenda of the meeting prior to the meetings
- Core SAT members will contribute in reviewing final documents that SAT will be delivering
- The Core-SAT can commission performing value and impact assessment, to answer specific technical questions.
- The Core-SAT will be responsible to interact with multiple projects (Technology Maturation Program projects, NASA and other community-led projects) to help SAT maintain awareness.
- SAT is aiming to put together a standing capability to assess performances, study information content, perform tradeoff assessment and impact assessment that can rapidly answer science questions and help not only formulate requirements, but also provide support in the design phase (interaction with vendors) and assess value of data from partners.
- SAT team will be funded by OSAAP to commission value and impact assessment activities.
- Some key consultants, part of the SAT, will be funded by OSAAP to provide expert opinion during the SAT deliberations.
- The SAT will interact with users groups (e.g., NWS, NOS, and NMFS) through direct membership into SAT and through other SAT members' experience with users.

Meetings, Assessment and Reporting:

Meetings will be held at a regularly scheduled time and location. Day, time, and location may be changed to meet the needs of the SAT membership. Most meetings will be open for general attendance. The Chairperson will regularly brief the Executive Sponsor(s) as well as the IPTs on the activities of the SAT

and to convey science feedback. Additional, longer meetings/workshops could be organized by the SAT, to have sustained focus on specific questions.

Approval Signatures

Vanessa Griffin
Director, OSAAP

Harry Cikanek
Director, STAR

Greg Mandt
Director, JPSS

Pamela Sullivan
Director, GOES-R, GEO-XO IPT co-chair

Elsayed Tallat
Director, OPPA

Karen StGermain
DAAS, NESDIS