

## **A BRIEF HISTORY OF SPACEOPS**

**Dave Linick, Joachim Kehr, Thomas Kuch**

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In the glow of the overwhelming success of the 11th SpaceOps Conference in Huntsville, Alabama in 2010, Joachim Kehr and Dave Linick were reminiscing about the formative years of SpaceOps when they came to the realization that there are few people around who still remember how SpaceOps got started and who can recall its early history. Dave and Joachim have been involved in SpaceOps activities since its beginning until retirement. Both have served continuously on a SpaceOps Committee since the inception in 1992. They speculated that no one else has such a long background with SpaceOps and if they didn't document the history, it would be forgotten. This realization led to the article that follows.

We, Joachim and Dave, have documented the early history as best we can recall. Time has a way of dulling the memory, so we take responsibility for any errors that exist in this narrative. However, we also take comfort in realizing that there are few still around who are old enough to be able to contradict us.

In 2024 Thomas Kuch, DLR's long standing SpaceOps Executive Committee representative decided to keep the tradition and add an update to the SpaceOps history which now covers all the years from 1990 to 2024.

### **An Idea was Born**

In late June of 1990, the European Space Agency (ESA) organized a symposium on "Ground Data Systems for Spacecraft Control." The symposium was held at the Maritim Konferenzhotel in Darmstadt, Germany, and was managed by the European Space Operations Center (ESOC). Mike Jones, from ESOC, was the Symposium chair. Although no one realized it at the time, this turned out to be the first SpaceOps Conference.

The story of SpaceOps actually began a few years earlier. Dave Linick was working in the field of mission operations at NASA's Jet Propulsion Laboratory. He observed that there were many opportunities for people in the space business to attend conferences and exchange ideas, but noted that very few included topics related to ground system development or mission operations. It seemed to him that even the most arcane and specialized disciplines related to building spacecraft had their own societies, annual conferences, logos, coffee cups and secret handshakes, but the operations field, which comprises thousands of people from around the world, was largely unrepresented. From this, an idea was born.

Dave then began discussing with his colleagues at JPL the possibility of creating a community forum for people engaged in mission operations, with regularly scheduled conferences for exchanging technical information. Although this idea was widely endorsed, the press of normal work slowed progress. Then, in early 1990, the announcement for the ESA Conference in Darmstadt was circulated. Dave, along with three hundred other ground system and operations personnel from around the world, signed up to attend.

The Conference was quite a success. Many of the attendees remarked that they were pleased and surprised to learn that other people, in other Centers and Agencies, were dealing with problems that were similar to theirs and spoke a similar vernacular. It was as if they had stumbled upon family that they never knew they had.

However, ESOC had planned this as a singular event; there were no plans for it to become a regularly scheduled Conference. So, Dave met with Mike Jones and they discussed Dave's idea for creating a recurring conference for the operations community. They introduced this idea to their respective Center management and after some negotiation, JPL and ESOC agreed to cooperate in creating an ongoing operations forum.

So, the two Centers, ESOC and JPL agreed in 1990 that the next step would be for JPL to host a Conference in Pasadena, California, in 1992. The technical planning committee was to have international involvement, a decision which turned out to be a key to future success.

### **The Founding Act and the SpaceOps Committee(s)**

During the Conference at Pasadena, on November 19<sup>th</sup> 1992, a meeting was convened with interested Conference participants by interim chairs Giulio Varsi and Dave Linick (both from JPL), to consider the formation of a permanent SpaceOps Committee. The goals were to organize future SpaceOps Symposia and

to promote an international community in space operations comprising agencies, academia and industry. The participants representing their agencies expressed unanimous approval for the proposed formation of the committee.

The founding meeting participants were:

JPL	Giulio Varsi, Dave Linick, Valery Altunin, Garry Burdick, Judy Cobb, Ek Davis
ESA/ESOC	Kurt Heftman, Peter Beech, Kurt Debatin, George Delmas, Carlo Mazza, Dave Wilkins
CNES	Roland Ivarnez, R. Simon Pons
NASA/HQ	John Rodgers
NASA/GSFC	Dolly Perkins
NASDA	Akkio Yamamoto
GUS	Konstantin G. Sukhanov, Lavochkin Assoc
DLR/GSOC	Joachim Kehr

Dave Wilkins from ESOC expressed the desire for a journal or a professional forum in analogy to IEEE. It was decided that, even though the issuance of a professional publication is an important function of the committee, it would be too early to plan for it.

Important to the future of SpaceOps was that during the meeting several participants expressed their desire to be hosts of the next Symposium (ESOC, CNES, and GSFC). Therefore, the first order of Committee business was to select a host for SpaceOps 1994 and that honor went to CNES. (A few weeks later, CNES had to withdraw its bid and the Goddard Space Flight Center was selected as host for 1994.) The second order of business was, as for any good Committee, to establish a subcommittee. This subcommittee was formed to develop a governance model for SpaceOps. It was a three person subcommittee whose members were Peter Beech (ESA/ESOC), Roland Ivarnez (CNES) and Dave Linick (NASA/JPL), to be supported later, and very diligently, by Joachim Kehr (DLR/GSOC). Now much older, the latter two are the humble authors of this reminiscence.

Over the next few months, the governance model emerged, titled: “Charter – International Committee on Technical Interchange for Space Mission Operations and Ground Data Systems (also known as SpaceOps Committee)”. Most of what was defined remains today, including the dual committee structure (the smaller Executive Committee, which has decision authority, and the larger Committee-at-Large, which accomplishes studies and provides advice and recommendations), the process for admitting agencies for SpaceOps membership, the assignment of chairs for the two Committees, and the selection of host agencies for the Symposia.

Although the idea for a SpaceOps publication had been postponed, it was not forgotten. In 2002, during the Symposium at Houston, the SpaceOps Committee joined forces with AIAA and its Space Operations Support Technical Subcommittee (SOSTC) and established the joint on-line journal for space operations called the “Communicator” to finally fill the need for the publication of articles, operations best practices and other relevant documentation as well as the publication of peer reviewed technical and scientific papers. Later, the Communicator became the joint SpaceOps/SOSTC online “Journal of Space Operations & Communicator” and is published regularly on a quarterly basis. (see Annex 1).

In 2002, the SOSTC Chairman, Trevor Sorensen, also promoted the idea to create an official SpaceOps Award. His proposal was accepted by the SpaceOps Executive Committee and Trevor arranged with AIAA the appearance, rules and conditions of the Award.

### **SpaceOps Conferences**

During the 1992 conference in Pasadena, the planning for each session of the conference was managed by a local NASA- JPL chair and co-chaired by a volunteer from a different space agency. As a result, the Conference took on a truly international flavor far beyond ESOC and JPL, with papers being presented from all over the world.

Per the JPL-ESOC agreement, the formal name for the Conference was “The International Symposium on Ground Data Systems for Space Mission Operations.” This name was not very convenient for brochures, logos, and the like, so the term “SpaceOps” was adopted as the informal name.



*The first SpaceOps logo (1992)*

SpaceOps 1992 was a great success with over 135 presentations and 400 attendees from 14 countries. These first two successful operations conferences validated the notion that a need was there to be filled. In addition, these two symposia established many of the conventions and traditions that still define much of SpaceOps – biannual conferences, a highly international flavor, full panel sessions with invited keynote speakers, multiple parallel tracks, four full conference days, on-site hosted lunches, a gala dinner, and a social event highlighting the local culture. For SpaceOps 1992, the social event even included filming by Universal Studios.

For a complete list of SpaceOps conferences since 1990 please refer to the Annex 2 of the attached Annex compiling all the detailed Annexes referred to in this brief history.

### **SpaceOps Organization**

As mentioned before, the SpaceOps Organization is managed through two Committees, an *Executive Committee* and a *Committee-at-Large*.

The Executive Committee and the Committee-at-Large are chaired by the members who represent the most recent and next host countries for the biennial SpaceOps Conference.

The *Executive Committee* membership consists of one member from each agency authorized to represent the entire agency delegation in matters addressed by the Executive Committee (see Annex 3).

The *Committee-at-Large* membership consists of members from each space agency installation of each country or international consortium and industrial representatives from the participating countries (see Annex 4).

Additionally, *SpaceOps Partners* and *Associated Members* are accepted on more relaxed terms (see Annex 5).

SpaceOps Partners and Associated Members participate actively in the SpaceOps Organization but are not members of the Executive Committee or the Committee-at-Large.

*SpaceOps Office:* The previous and present conference organizing institutions internally serve as secretarial support for the SpaceOps Organization and provide secretarial, treasury and promotional and technical services for Space Ops. The organizing institutions were supported by:

*Additional Organizational Support:* To better be prepared for committee meetings and as a permanent support for the SpaceOps organization professional and consistent support has been provided since 2004, initially by AIAA, followed in 2018 by IAF. In 2022 it has been decided to hand over this task to the previous and the upcoming host of a SpaceOps conference. The following table summarizes the selected support organizations up to 2025.

#### ***Treasurers and Secretarial Support 2004-2025***

2004-2018	AIAA, Reston, Virginia, USA
2018-2021	IAF, Paris, France
2022	SANSA + MBRSC
2023-2025	MBRSC + CSA

### ***Executive Committee and Committee Meetings***

The SpaceOps Executive Committee ensured that all participating members implemented and followed the ideas as defined in the SpaceOps charter.

Annex 6a shows a list of the ExCom members as nominated by each space agency.

Since 2001 the SpaceOps Committee Meetings took place on a more regular basis, i.e. twice per year (see Annex 6b).

### ***SpaceOps Working Groups***

To organize the committee meetings more efficiently the SpaceOps Organization introduced the so-called Working Groups in 2010. Each individual of the Committee-at-Large attends one or two of the following groups allow a structured approach considering the various topics that are to be addressed and discussed.

#### ***Awards Group***

Scope: To oversee and manage the awards of the SpaceOps Organization. The Group will be responsible for the oversight of the awards nomination process, the promotion of the awards and their processes, and the coordination the review and selection of the recipients. Oversee the award criteria and procedures; oversee design and biennial production of awards; execute the selection process; identify and define other potential awards and prepare proposals to be submitted to the Executive Committee (Annex 7a provides a list of SpaceOps Award categories, Annex 7b lists the Awardees up to 2021).

#### ***Communications, Outreach, and Publications Group***

Scope: To coordinate the communications and outreach of the SpaceOps Organization into the space operations community, and to produce and disseminate publications for the benefit of the space operations community. In particular the group will be responsible for the SpaceOps website, the marketing and promotional activities for the SpaceOps organization. The Working Group will also focus on the external relationships of the SpaceOps Organization with other organizations and space agencies. (Annex 8 provides the list of all published SpaceOps Conference books)

#### ***Conference and Program Group***

Scope: To oversee the organization of the SpaceOps biennial conference. Subcommittee members change every two years and include representatives from the host agency of the next conference and focus on conference organization tasks to include logistics, technical program development, marketing and promotion of the conference, etc. Other members can include representatives from the host agency of the past conference in an advisory role.

#### ***Strategy and Policy Planning Group***

Scope: To develop and recommend to the ExCom the strategic vision, future directions, policies and guidelines of the SpaceOps Organization. To regularly assess the SpaceOps WGs scope and potential external relationships, from a strategy and policy standpoint.

#### ***Workshop Working Group***

Scope: To establish a work relationship between the SpaceOps Organization and the SpaceOps Workshop, to organize the SpaceOps Workshop, and to synergize and harmonize with the SOSTC Workshop and other similar activities (see Annex 9 for a complete list of conducted SpaceOps Workshops).

### ***.... and Still Going Strong.***

SpaceOps, as a Conference and as an Organization, continued to mature over the years. Attendance at the Conferences has continued to rise, paper quality is high, the Conferences are professionally organized and executed, a vibrant poster session has been instituted, and selected and important papers have been compiled into published books after each conference.

The number of agencies and countries that have become members of the SpaceOps organization has grown significantly. Industry involvement has greatly increased. The participation of academic institutions and students has gathered momentum over the years.

In cooperation with AIAA/SOSTC SpaceOps has instituted a prestigious awards program since 2002. In addition, the SpaceOps organization expanded its contributions to the field in other ways – including electronic periodicals, like the Journal of Space Operations & Communicator (JSOC), Newsletters and presence on social media Wikipedia, Facebook and LinkedIn.

In summary, SpaceOps has become the premier professional, international organization in its field.



*Current SpaceOps Logo  
(2024)*

Ultimately, the success of SpaceOps has depended on the hard work and dedication of its volunteers – those who serve on the SpaceOps Committees and those who organize and manage the Conferences.

We, Joachim, Dave and Thomas, agree that working with those dedicated operations experts, and sharing experiences with this international community, have been among the most satisfying, educational, and enjoyable experiences of our careers.

We wish for SpaceOps another decade of healthy and productive life!

Dave, Joachim, Thomas  
June 2024