

2024 Board Election Candidates



Felix Flentge

Felix Flentge is a software engineer in the Ground Segment Engineering and Innovation Department at ESA's Space Operations Centre in Darmstadt, Germany. He is an expert in space communication protocols and architectures, such as the CCSDS File Delivery Protocol and Disruption Tolerant Networking. Felix is actively supporting and promoting these technologies across all space mission families - from Earth Observation up to interplanetary missions. He is managing a wide range of activities from operational implementation and deployment of communication protocols and systems, inter-agency DTN demonstration activities up to academic cooperation in the areas of real-time DTN services, bundle routing and bundle protocol extensions. Felix is actively contributing to standardization and international coordination in these areas at CCSDS, IOAG and various international working groups including the IPNSIG Architecture & Governance WG.

As a member of the IPNSIG Board, Felix would like to contribute to the realization of the long-term vision of an interoperable and open Solar System Internet by ensuring a coherent and harmonized approach towards the SSI across the various international bodies and working groups based on input from all stakeholders. Towards the establishment of the SSI, he is convinced that we must follow an evolutionary approach where we need to start deploying DTN to space missions and space communication infrastructure (such as Moonlight and LunaNet) now but with maybe initially limited capabilities. At the same time, we need to stay flexible and open to allow these initial small-scale networks to grow into a true SSI within the next decades as technology develops.



Juan Fraire

My name is Juan Fraire. I am a researcher and professor at INRIA (France) and CONICET-UNC (Argentina) and a guest professor at Saarland University (Germany), where I teach a unique course about space informatics. For more than 15 years, I have been investigating near-Earth and deep-space networking and informatics. I have published more than 70 papers in international journals and leading conferences and a book about Delay-Tolerant Satellite Networks co-authored with Scott Burleigh (former with JPL and an IPNSIG Board Member). I am the founder and chair of the Space-Terrestrial Internetworking Workshop (STINT), and I participate in diverse joint projects with space agencies (e.g., NASA, ESA, CONAE) and companies in the space sector (e.g., D3TN, Spatiam, Skyloom). I am currently the coordinator of a French national project called STEREO, where academic and industrial partners join efforts to develop a space-terrestrial integrated Internet of Things, with exciting prospects of realizing new interplanetary exploration concepts based on IoT.

I have recently contributed to IPNSIG with my graphical design skills, which I developed as a hobby. I am the creator of the current IPNSIG logo, including the primary and IPNSIG academy logos. These logos were developed in coordination with Yosuke Kaneko (IPNSIG President). Also, I created the winning 100- year IPNSIG vision video, a powerful, eye-catching story-telling animation that conveys IPNSIG's interplanetary network vision. To render the 3D material, I developed a realistic and interactive solar system and line-of-sight communication model in Unity. This 3D game engine can serve multiple future purposes for IPNSIG: a) it can be compiled

for mobile devices and provided as an educational tool where users can interact and navigate over a solar system network; b) researchers could export realistic interplanetary network topologies from the tool; and c) it can be evolved into a strategy game where

users can play and create resource-efficient solar system network systems. If I join the IPNSIG board, I will push toward professional-looking images and videos and keep supporting the development of interactive applications to boost the impact of IPNSIG.

On the academic side, I have contributed to IPNSIG by jointly organizing the STINT workshops in 2021, 2022, and 2023. This event brings together some of the most influential thought leaders in the field of data transfer, data exchange, routing, management, and security between and amongst space-based, terrestrial, and planetary network nodes via delay-tolerant networks (e.g., Yosuke Kaneko was our keynote speaker in 2022, and Vint Cerf was our keynote speaker in 2021, both are IPNSIG Board Members). I have also participated in IPNSIG's Pilot Projects Working Group (PWG) by deploying μ D3TN nodes to the test network and successfully testing interoperability with ION in cooperation with Spatiam. Furthermore, I supported IPNSIG's Architecture and Governance Working Group (AWG) by discussing probabilistic routing schemes in the Routing Workshop Series. If I join the IPNSIG board, I will extend my participation with lectures in the IPNSIG academy events, keep organizing future STINTs workshops, and further support IPNSIG connections with related space industries such as D3TN and Skyloom.

Link to [IPNSIG logo design](#) and [IPNSIG Academy logo design](#)

Link to IPNSIG 100-yr vision video: <https://youtu.be/5rnbRdkrn70>

Link to STINT website: <https://www.stintworkshops.org>



Dr. Pedro Martinez-Julia

I am Dr. Pedro Martinez-Julia. I am a full-time researcher at the National Institute of Information and Communications Technology, Japan. I received a B.S. in Computer Science from the Open University of Catalonia, the M.S. in Advanced Information Technology and Telematics and the Ph.D. in Computer Science from the University of Murcia, Spain. I have been involved in several EU-funded research projects since 2009, leading tasks/activities, and participating in IETF/IRTF for the standardization of new network technologies. I have published over twenty papers in refereed conferences and journals. My main expertise is in network architecture, control and management, with particular interest in overlay networks and distributed systems and services. I am an active member of ACM and IEEE.

My proposal to form part of IPNSIG board is to help all IPN stakeholders to reach each other in technical and technological terms, including the effect of technical aspects on policies and hence governance. I would support this by interfacing societal aspects of IPNSIG with academy and SDOs, such as the IETF and ETSI. I would promote research efforts to pursue synergy between those stakeholders from my current position, and support initiatives for technology transference to society in general.

Such goals can be conducted much more efficiently from within the IPNSIG board, complementing my current involvement with other ISOC initiatives, such as the IETF and other chapters.