

# IAU Centre for the Protection of the Dark and Quiet Sky

UNOOSA/SKAO Conference

Vienna - 9-12 December 2025

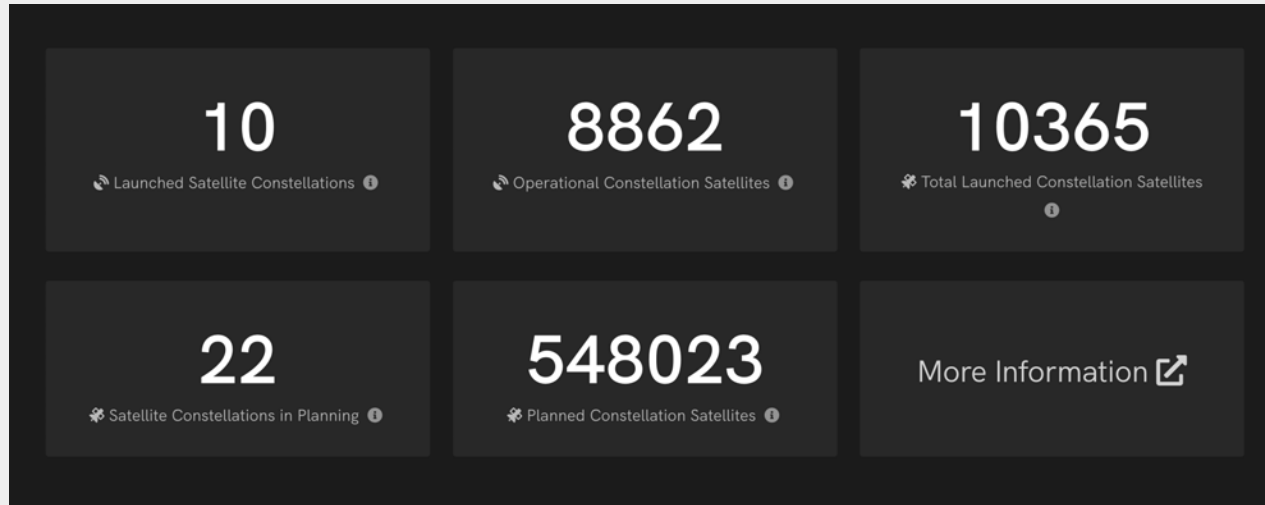




# A revolution in space activities...

- Until recently, space was the domain of National and International Space Agencies, which have scientific and technological advancements and space exploration as their primary goals.
- Today, the New Space Economy, with the prominence of the private sector and of defence projects, is profoundly transforming the scenario.
- The very nature of the revolution necessitates innovative regulatory measures.
- Large communication satellite constellations are just one example of the potential issues posed by the New Space Economy, and they can serve as a case study.
- Astronomy has the dubious merit of being the first to be immediately affected...

# A snap-shot about LEO constellations...



- In the near future, not only communication satellite constellations...
  - Space-Based Solar Power (solar mirrors and microwave power beaming)
  - Defence satellite constellations



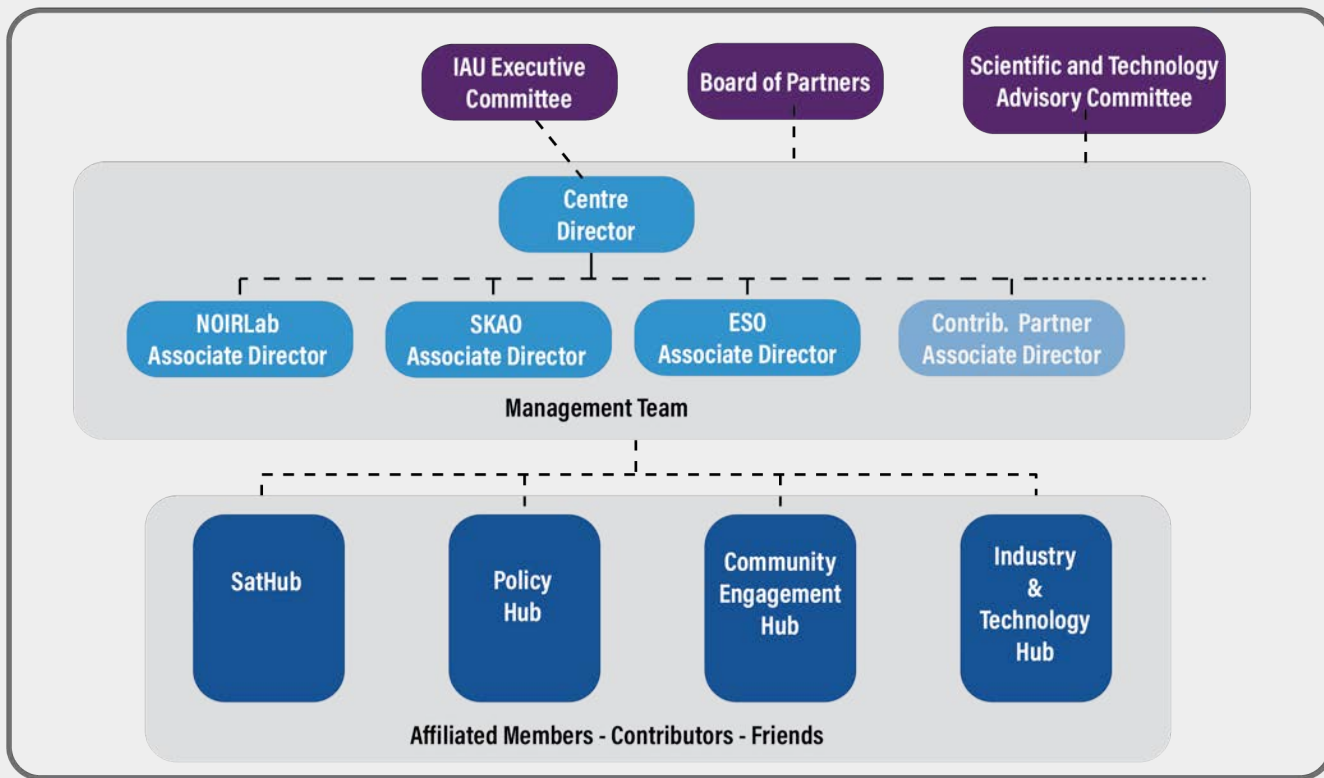
# CPS Mission

- The mission of the CPS is to coordinate efforts among all stakeholders to protect the dark and quiet sky from interference by satellite constellations (of any type).
- Inaugurated in 2022 with a 3-year MoU between the IAU and the “founding partners” NOIRLab and SKAO.
- New 5-year MoU signed in 2025
  - Opening to Contributing Partners, Contributors and Friends
  - New Management Team





# CPS organigramme





# CPS membership map



# The IAU CPS Hubs



# SatHub: observations and data analysis

Contact: [sathub@cps.iau.org](mailto:sathub@cps.iau.org)



Meredith Rawls



Mike Peel



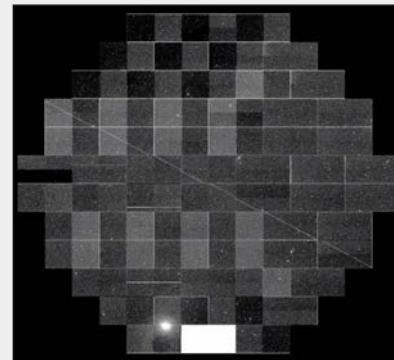
Siegfried Eggli





# IAU CPS SatHub Aims

- **Assess constellation impact on optical and radio astronomy** via independent observation campaigns and peer reviewed publications
- **Strengthen relations** with key players:  
Privateer, The Exocore, Slingshot Aerospace, European Centre for Space Safety, The Aerospace Corporation, AST SpaceMobile, SpaceX, Amazon Kuiper, Planet Labs, European Space Agency and more
- **Develop mitigation tools for astronomers/observatories**
  - SatChecker satellite position prediction service
  - Satellite Constellation Observation REpository (SCORE)
  - NSF SWIFT-Sat: Field-Of-View / active satellite avoidance service
  - Radio astronomy impact modeling (SCEPTER)
- **Coordinate mitigation efforts** with all stakeholders



# The Industry & Technology hub

Hub leads: [industry-tech@cps.iau.org](mailto:industry-tech@cps.iau.org)



Chris Hofer



Tim Stevenson



Patricia Cooper



# Mitigations for satellites

## ENLIST

- **Recruit** satellite constellation operators, manufacturers, other stakeholders to participate and collaborate in the Hub to **develop and adopt solutions**

## INFORM

- **Provide a flow of references** to the latest technical concerns, recommendations and best practices, and **identify available tools and resources** to assess and adopt mitigations

## EXCHANGE

- **Facilitate dialogue among industry stakeholders** on mitigation techniques and their efficacy, and **promote innovative approaches and tools** that are accessible, affordable and effective



## Case Study: Astronomer Guides

- Partnered volunteer expert astronomers vetted by IAU CPS with member companies of Industry & Technology Hub
- Facilitates insight and direct collaboration across satellite and astronomy stakeholders
- Improves understanding of operator's processes and project, and astronomy operations and objectives

Outcome to Date: Six Astronomer Guide pairings in pilot year

# The Policy hub

Contact Hub leads: [policy@cps.iau.org](mailto:policy@cps.iau.org)



Aaron Boley



Giuliana Rotola



# Policy Hub

1. **Conduct research** into existing and potential space policies, as well as their legal underpinnings
1. **Raise awareness** of astronomy requirements in space policy-making circles
1. **Coordinate policy work** conducted by national societies and observatories, as well as advise on IAU responses
1. **Foster the development of better regulation**, in coordination with national points of contact
1. Identify **future threats and future opportunities**

## Strategic Outcomes

Astronomy community acts together with aligned messages

We produce policy outputs and contribute to policy change

Industry is aware of the issues and of the solutions

Policy makers are aware of the issues and of the solutions

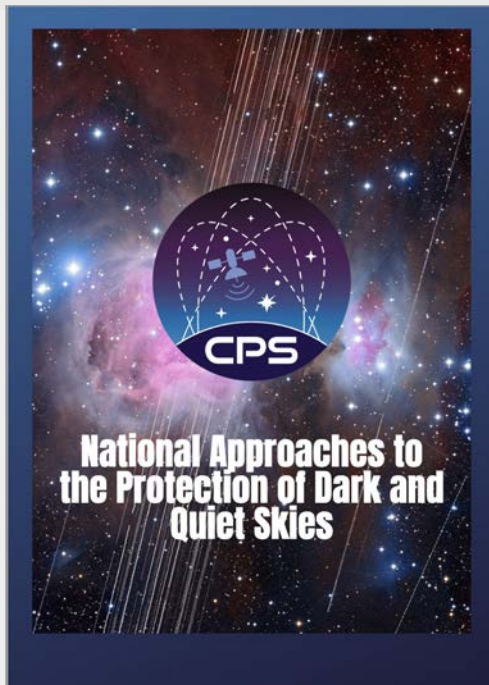




## Policy Hub Output (examples)



Initial position  
paper (WP1)



Extensive national law  
and policy analysis  
(WP2)



National and International legal  
and policy setting review  
(WP2)



# The Community Engagement Hub

Contact Hub leads: [community-engage@cps.iau.org](mailto:community-engage@cps.iau.org)



John Barentine



Jessica Heim





# The Community Engagement Hub

**CE Hub is a bridge between CPS participants and the broader stakeholder community.**

**We:**

- Create and distribute resources to improve stakeholder understanding of the issues
- Engage stakeholders in discussion and dialogue through community fora

*CE Hub works to raise awareness of views from the broader stakeholder community and strives to bring these perspectives into the discussion.*





# Case study: SatCons 101

- Series of 8 learning modules covering:
  - Satellite design
  - Environmental impacts
  - Effects on optical and radio astronomy
  - Cultural impacts
  - The current policy climate
  - Potential satellite mitigations
- Introduces issues of satellite constellations for astronomy to the general public



[cps.iau.org/  
community-engagement-  
hub/satcons-101](https://cps.iau.org/community-engagement-hub/satcons-101)





# UN Committee on the Peaceful Uses of Outer Space

- The IAU is a Permanent Observer in the COPUOS
- Dark and Quiet Skies five-year agenda item in the Scientific and Technical Subcommittee (STSC)
- Group of Friends for the Dark and Quiet Skies for Science and Society
- The CPS is acting as the secretariat of the Group of Friends



