

# **International Cooperation, Challenges, and New Horizons**

Held at the Global Space Exploration Conference (GLEX 2025)

New Delhi, India  
7-9 May 2025

ISBN: 979-8-3313-2103-1  
DOI: <https://doi.org/10.52202/080552>

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2025) by International Astronautical Federation  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact International Astronautical Federation  
at the address below.

International Astronautical Federation  
100 Avenue de Suffren  
75015 Paris  
France

Phone: +33 1 45 67 42 60  
Fax: +33 1 42 73 21 20

[www.iafastro.org](http://www.iafastro.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

### **INTERNATIONAL COOPERATION, CHALLENGES, AND NEW HORIZONS - SESSION 1**

|                                                                                                                                                     |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Collaborative Modal to Expand Navigational Access in the Global South Through India's Advanced NavIC System .....                                   | 1  |
| <i>Kaushiki Singh</i>                                                                                                                               |    |
| Diplomacy of the Future: The Poland-Rwanda Partnership and New Challenges in International Politics .....                                           | 14 |
| <i>Mikolaj Mazan</i>                                                                                                                                |    |
| India-US Space Cooperation: Time Tested Friendship and Partnership for Global Good.....                                                             | 21 |
| <i>Krunal Joshi, Dheera Saxena, Hemant Jain</i>                                                                                                     |    |
| Benefits Stemming from Space Exploration .....                                                                                                      | 27 |
| <i>Anne-Marie Dallaire, Stefaan De Mey, Iacopo Baroncini, Fuki Taniguchi, Marino Crisconio, Kristina Koch, Raffaella Pappalardo, Gregory Mercer</i> |    |

### **INTERNATIONAL COOPERATION, CHALLENGES, AND NEW HORIZONS - SESSION 2**

|                                                                                                                                  |    |
|----------------------------------------------------------------------------------------------------------------------------------|----|
| Privatization of Space Sector and Its Implications on International Cooperation .....                                            | 34 |
| <i>Prarthana P Kulkarni, Khushi Choudki, B M Manohara, Krishna Vidhiprasad, Pratiksha Gaddigimath, Karthik Shastry</i>           |    |
| Strategies and Challenges for Lunar Orbital Services: Communications and PNT.....                                                | 42 |
| <i>Kangsan Kim, Gagana Y, Pranjal Mhatre</i>                                                                                     |    |
| Geopolitical and Geo-Economic Implications of Recent Advances in Space Propulsion and Hypersonic Technologies .....              | 50 |
| <i>Sai Susmitha Guddanti, Francisco Del Canto Viterale, Marcos Fernandez-Tous, Brian Urlacher, Chonglin Zhang, Pranika Gupta</i> |    |
| Unified Disaster Assistance and Information (UDAI) Platform for BRICS+ Countries .....                                           | 65 |
| <i>Leyla Bayramova, Anand Nagesh, Emebet Mehabaw Tegegne</i>                                                                     |    |
| Space as a Soft Power – Fostering International Cooperation for Collective Advancement in Space .....                            | 74 |
| <i>Ayushee Chaudhary</i>                                                                                                         |    |
| Japan's Scenario and Roadmap for International Space Exploration.....                                                            | 89 |
| <i>Kota Tanabe, Shinichiro Narita, Satoshi Ukai, Kyoko Dateki, Koji Yamanaka</i>                                                 |    |
| Space Diplomacy: Legal Challenges and Cooperative Frameworks for Sustainability in Outer Space .....                             | 94 |
| <i>Shrawani Shagun</i>                                                                                                           |    |

### **INTERNATIONAL COOPERATION, CHALLENGES, AND NEW HORIZONS - IP SESSION**

|                                                                                 |     |
|---------------------------------------------------------------------------------|-----|
| Supply Chain Challenges and Solutions for EEE Parts in Space Applications ..... | 111 |
| <i>Avirag Sharma, Tamizhinian A, Nisa Baboo, Ramaswamy K</i>                    |     |

|                                                                                                                                    |     |
|------------------------------------------------------------------------------------------------------------------------------------|-----|
| International Collaboration for an Innovative Electro-Optical Payload for EO .....                                                 | 118 |
| <i>Yamin Noor, Akash Yalagach, Avinash Bagali</i>                                                                                  |     |
| India's Future Collaborations in Space: Prospects .....                                                                            | 124 |
| <i>Amit Mukherjee</i>                                                                                                              |     |
| Theoretical Models for Peaceful Space Coordination: A Restorative Justice Approach .....                                           | 135 |
| <i>Alberto Báez Jiménez, Hector Gomez Torres Torres, Nuria Hernández Alás, Diego Pérez Reyes, Isaac Alejandro Pimentel Morales</i> |     |
| Building a Global Framework for International Collaboration Through Sandbox, Science Communication and Policy Generation.....      | 146 |
| <i>Tapaswini Sharma</i>                                                                                                            |     |
| Incredible, Independent India: Galaxy, Moon and 21st Century Solar System Complete.....                                            | 149 |
| <i>Steve Durst</i>                                                                                                                 |     |

## **Author Index**