

ISOC CHAPTERS SURVEY

Summary

Decolonizing the Internet **Global Governance of LEO Satellite Broadband**

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**Internet Society
Foundation**

Global Governance of LEO Satellite Broadband

WP2 Interview Phase

ISOC Chapters survey

I. ISOC chapters survey outline and methodology

As presented in the project proposal methodology section, we “**contact(ed) ISOC Chapters, SIGs and individual members as well as relevant, local stakeholders to include their perception of potential benefits and risks of this new information communication technology.**”

This task (T4) was part of Work Package 2: “Interview Phase”, where we tested our initial desk research results against the perceptions of internet end users, businesses, government, and academia. The results of the ISOC Chapters survey complement a series of individual interviews with carefully selected LEO broadband professionals from industry, government, and academia and give us an end-user approach to the research topic.

II. ISOC chapters: survey questions

Based on our desk research, completed in the final quarter of 2021, between January and March 2022 we have **constructed an ISOC chapters survey with 13 questions**, ensuring this **target key issues related to contemporary LEO broadband deployment policies** while remaining accessible to an average internet end-user: not excessively time-consuming or skill demanding.

We aimed for the survey to be simple and swift while providing answers to basic questions from an end-user perspective on LEO satellite-based broadband policies. As initially designed, this was an auxiliary scoping exercise to inform us of the end-user community approach to LEOs and broadband policies.

Survey questions focused on:

- **Preferred priorities for policies informing regulatory frameworks regarding LEOSAT Broadband**, where we asked the interviewees to list in terms of priority our policy suggestions or add their own (**Q1**). The initial selection we offered included:
 - a) Access – connectivity;
 - b) Data privacy;
 - c) National security;
 - d) Economic benefits;
 - e) Development benefits (education, government service etc.).

- **State incentives to invest in LEO SATCOM (Q2)**, asking respondents to list in terms of priority or add their suggestions to the following list:
 - a) broadband connectivity;
 - b) space race – strategic objectives;
 - c) space race – economic objectives;
 - d) national defense;
 - e) national security and critical infrastructure protection;
 - f) cybersecurity;

- g) Digital sovereignty and technological autonomy concerns;
 - h) Increase its (national) stakes in the global data value chain
- A system that would be the **most appropriate way of engagement to resolve differences** on LEO-related policies (**Q3**), with suggested options including:
 - a) International (e.g. UN, ITU)
 - b) Multistakeholder (e.g. IETF, ICANN, IGF)
 - c) Bilateral (through agreements between states)
 - d) Regional (e.g. within a regional international organization)
 - e) Alliances among like-minded states
 - **Most important cybersecurity risk (Q4)**, asking respondents to list the following in terms of priority (or add any item they deem important at the end of the survey):
 - a) Vendor Profile – supply chain
 - b) Interference- state-backed actors
 - c) Interference – private malicious actors
 - d) Increased exposure to attacks and more potential entry points for attackers
 - e) Increased exposure to risks related to the reliance of mobile network operators on suppliers.
 - f) Threats to the availability and integrity of communication networks, including 5G
 - **Most important strategic risk (Q5)**, asking respondents to list the following in terms of priority (or add any item they deem important at the end of the survey):
 - a) Further colonization of the internet
 - b) Colonization of space resources
 - c) Security risks - dual use
 - d) Technological dependence
 - e) Colonization of spectrum resources
 - f) Digital divide – connectivity v. data value chain
 - **Best way to integrate LEOs into the telecom network (Q6)**, asking respondents to choose from the following or add their suggestions:
 - a) Requirement to work with a national service provider
 - b) Requirement to obtain internet service provider license
 - c) Requirement to establish local company
 - d) Requirement to obtain spectrum license from National Regulator
 - e) Requirement to set up ground station locally
 - **Best regulatory model or international organization best suited to lead LEO broadband deployment (Q7)**, granted it remains a domain of state regulation, asking respondents to chose from among the following or add their suggestions:
 - a) ITU – Spectrum Licensing
 - b) ITU – Orbital Planning
 - c) UN – Office for Outer Space Affairs
 - d) UN – Cybersecurity
 - e) WTO
 - f) National Regulatory Agencies - voluntary coordination of state practices

- **Best way to tackle concerns regarding the global Data Value Chain being monopolized** by a small number of LEOSAT Broadband companies (Q8), asking respondents to scale the importance of following items from “very relevant” to “irrelevant” (or add any item they deem important at the end of the survey):
 - a) An international treaty on data flows
 - b) Data localization requirements
 - c) The requirement to establish a local company
 - d) Soft law instruments
 - e) Global competition – market dynamics
 - f) Internet standards

- **Best business model to maximize efficient use of LEOSAT Broadband (Q9)** for an individual end user, offering a single choice from among:
 - a) Direct access to capacity by end users
 - b) Backhaul – emphasis on network connectivity
 - c) Combination, where we would ask them to explain in the comments section at the end of the survey

- **Most important global concern (Q10)** regarding the implementation of LEO-based technologies, asking respondents to choose from among the following or offer their suggestions:
 - a) Environmental – Space Debris
 - b) Environmental – Astronomical Observation
 - c) Collision
 - d) Spectrum Interference
 - e) Colonization of space resources
 - f) Securitization of Low Earth orbit

- **Most significant obstacle to the efficient use of LEOSAT Broadband (Q11)**, asking respondents to list in terms of priority or add any item they deem important at the end of the survey:
 - a) The requirement to work with a national service provider
 - b) The requirement to obtain an internet service provider license
 - c) The requirement to establish a local company
 - d) The requirement to obtain a spectrum license from National Regulator
 - e) The requirement to set up ground station locally
 - f) National Security Concerns
 - g) Cybersecurity Concerns.

We also asked them to **estimate a sustainable monthly fee for LEOSAT Broadband access** in their region (in USD) (Q12), offering a selection of answers:

- a) Free
- b) 10 – 20 USD
- c) 50 – 100 USD
- d) Above 100 USD

And **self-assess their level of expertise regarding LEO-based internet access technologies (Q13)**, based on the following criteria:

- a) Expert - I have extensive experience in internet infrastructures operation and design and am fully aware of how the LEO-based internet will work
- b) Experienced internet end user - I am fully aware of how my internet connection works and I follow media updates to seek sustainable ways to stay connected
- c) Novice - I enjoy using the internet but have thus far not given much thought to the networks behind it
- d) Layman – I have never thought about internet architecture or heard about LEO satellite-enabled internet access before taking this survey

In **section 14** the survey offered an opportunity for respondents to share any other comments.

[the survey is available [here](#) and attached as Annex I hereto].

The average time needed for the survey was estimated at 10 minutes.

III. ISOC chapters survey: timeline, scope, and metrics

In early 2022 we carefully reviewed the ISOC chapters' [website](#) [login required] and **compiled an updated database of 123 operating ISOC chapters together with their current contact details, including chapter leads** [the full list is available upon request].

We drafted an **introductory letter**, explaining our research methodology and aims of the project [attached hereto as Annex II] and **in coordination with the ISOC LEOs WG who were collecting feedback on their own initial study report draft from ISOC chapters and with due regard to their timeline we sent out our survey on 2022/10/08, requesting chapter leads to provide input within 10 days** from the receipt of our message.

Based on the initial feedback received from ISOC-NY Chapter, on **2022/10/16 we sent a follow-up message to all ISOC leads** [attached hereto as Annex III], providing more background information on LEOs technologies and encouraging respondents to consult a recent webinar by ISOC's Dan York and Rajnesh Singh presented at the APRIGF, exploring the issues:

Livestream: <https://livestream.com/internetsociety/aprigf2022/videos/232912910>

Download: https://archive.org/download/aprigf2022/23_S21_LEO_Satellite_Constellations.mp4

Text: https://archive.org/download/aprigf2022/23_S21_LEO_Satellite_Constellations_CARTTEXT.txt

We also extended the deadline for submissions until **2022/10/21, giving respondents a total of two weeks to provide their input.**

By **2022/10/29** we received a total of **18 responses**, with one request from **ISOC Ecuador** for the survey to be made available in **Spanish**, which we were unfortunately not able to comply with as multiple language versions were not in the scope of this current pilot project. The average response time was 24 mins.

NOTE: The response rate to our survey was low: out of 123 ISOC chapters we have contacted, we only received 18 replies, which amount to under 15% of the overall response rate. We have given due consideration to the survey results while taking into account the low response rate. The survey results analysis is presented below and has been reflected in our final report while compared and contrasted with feedback received from publications, outreach activities, and individual interviews.

IV. ISOC chapters survey results and feedback

Answers to individual survey questions look as follows:

Q1 Preferred priorities for policies informing regulatory frameworks regarding LEOSAT Broadband.

1. **What should be the priority for policies informing regulatory frameworks regarding LEOSAT Broadband?** Please list in terms of priority, add your own suggestions at the end of the survey.



Fig. 1. Preferred priorities for policies informing – general survey response

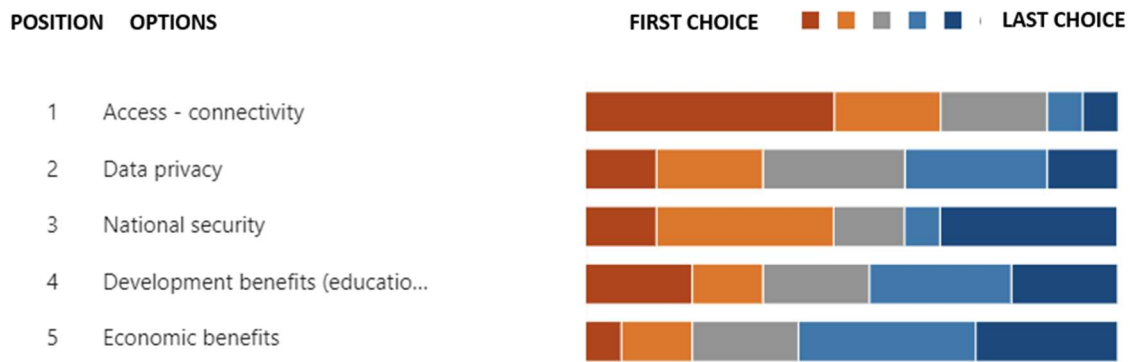


Fig. 2. Preferred priorities for policies informing – detailed survey response

47% of the respondents identified “**internet access**” as the top priority for LEO broadband policies, with 20% naming it their second priority. These results may be read to confirm our initial desk research results, which pointed to the need to prioritize equitable access to the Internet as an enabler of sustainable growth and a reason for the international community to engage in dialogue on LEO broadband connectivity and an appropriate model for its governance.

Considerations of **data privacy and national security** were placed second, which brings an interesting angle to the ongoing policy conversations on supply chain security, transparency, and trust, as discussed in the report sections II and III.

Q2 State incentives to invest in LEO SATCOM

2. **In your opinion, why do states invest in LEO SATCOM.** Please list in terms of priority, add your own suggestions at the end of the survey.

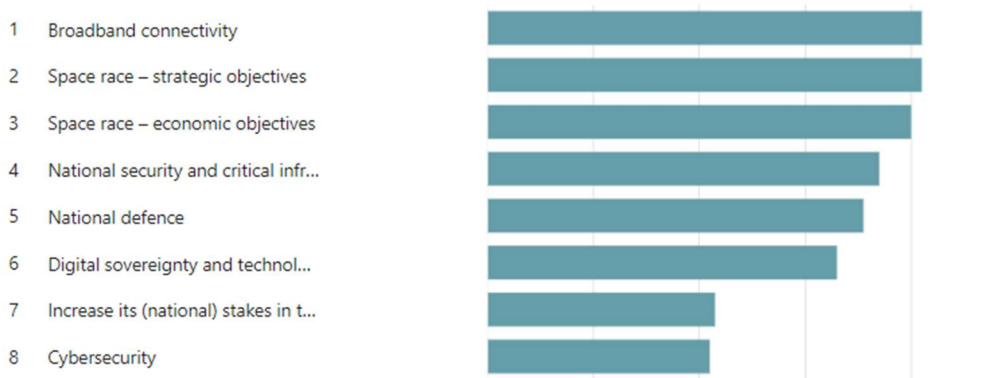


Fig. 3. State incentives to invest in LEO SATCOM – general survey response

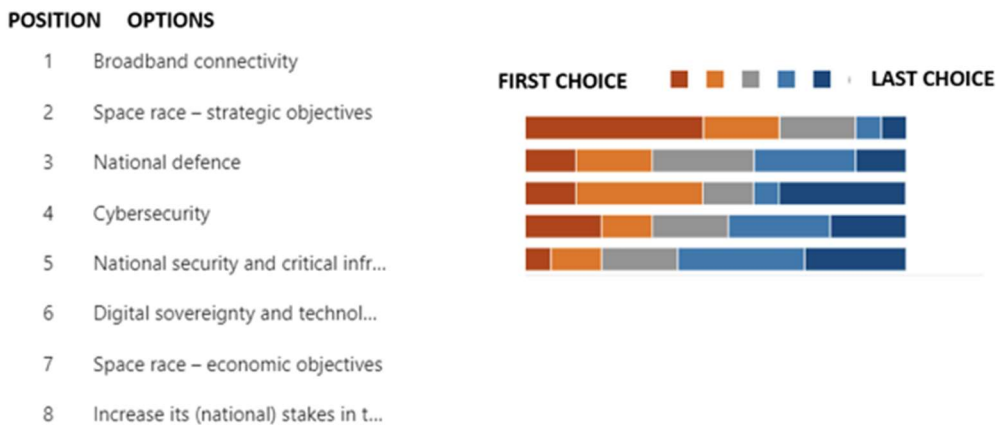


Fig. 4. State incentives to invest in LEO SATCOM – detailed survey response

When asked about state incentives to invest in LEO SATCOM (Q2), 33% of respondents prioritized broadband connectivity; followed by strategic and economic objectives of space fairing nations in the new space race. Cybersecurity and digital sovereignty concerns ranked low, which is interesting compared with its high position among the policy priorities which states should consider in their LEO broadband polices. This is most likely a reflection of perceived differences between the concerns of space-faring nations and others. Report section III on the integration of LEO satellite broadband to global internet infrastructure includes a discussion of these issues.

Q3. Appropriate way of engagement to resolve differences on LEO-related policies

3. What system is most appropriate way of engagement to resolve differences?

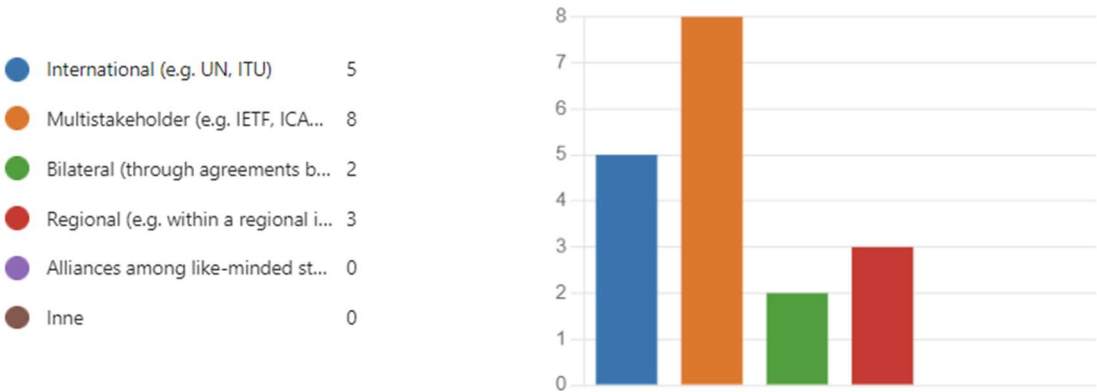


Fig. 5. Appropriate way of engagement to resolve differences on LEO-related policies

When asked about the most appropriate governance model to address LEO broadband concerns, 44% of respondents opted for the current multistakeholder governance model to be applied to LEO broadband-enabled connectivity. Interestingly, however, 28% opted for the ITU to take the lead on LEO broadband regulation. This question would be most interesting to follow up on in future research, as it is precisely the balance between existing multistakeholder governance frameworks within, e.g., IETF, ICANN, or regional RIRs and the regulatory authority of the ITU that will shape the future of LEO broadband policies. This issue is covered thoroughly in section IV of the report on international telecommunications regulations and trade law and is reflected in its recommendations.

Q4. Most important cybersecurity risk

4. What is the most important cybersecurity risk? Please list in terms of priority, add any item you deem important at the end of the survey.



Fig. 6. Most important cybersecurity risk – general survey response

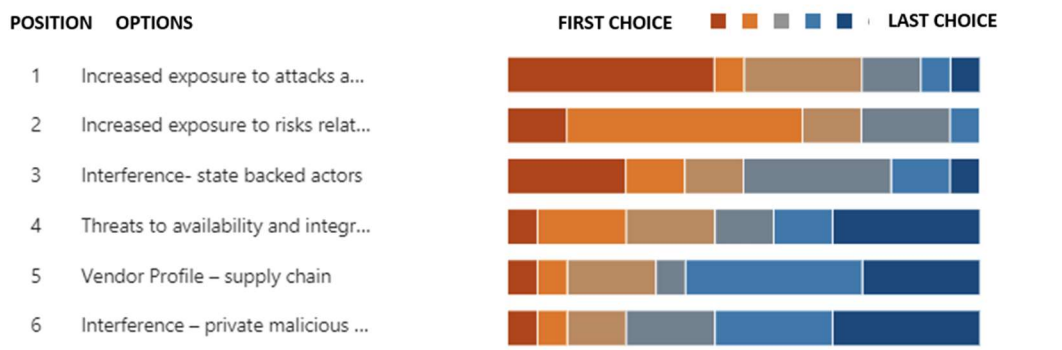


Fig. 7. Most important cybersecurity risk – detailed survey response

44% of respondents indicated the increased exposure to attacks and more potential entry points for attackers in LEO broadband infrastructures as a key cybersecurity risk, with 6% more identifying it as the second most significant hazard, whereas only 6% named supply chain security as their first choice. This implies the need to closely analyze the link between network vulnerabilities and vendors' profiles, which has been done in section III and IV, discussing the integration of LEO Satellite Broadband to global internet infrastructure and supply chain issues as part of global trade. There is a need to consider supply chain security and related vulnerability concerns to civil society and governmental actors in their policy development and regulatory processes that will allow for LEO broadband deployment in their respective jurisdictions. It is also interesting to note that the threat from state-backed attackers has been perceived as significantly greater than one generated by private actors: 25% of respondents raised concern about state interference, with only 6% expressing concern about private actors.

Q5. Most important strategic risk

5. **In your opinion, what is the most important strategic risk.** Please list in terms of priority, add any item you deem important at the end of the survey.



Fig. 8. Most important strategic risk – general survey response

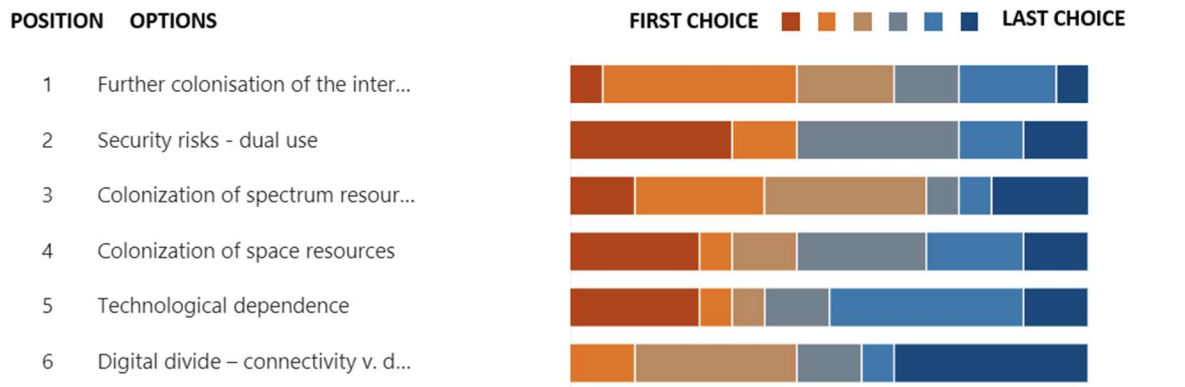


Fig. 9. Most important strategic risk – detailed survey response

Opinions on the most significant strategic risk were divided. However, 38% of respondents identified the further colonization of the internet as a major concern. This is interesting for the analysis presented in the report in light of its key recommendation to ensure the adoption of a holistic approach to the use of LEOs -telecoms, sustainable development, sustainable use of space, and trade. This conclusion is also supported by 25% of respondents identifying the colonization of space resources as their top concern. In contrast, the need to bridge the digital divide was the most minor concern to the respondents. This has been reflected in the report’s policy recommendations to ensure a diligent and cooperative (policy option 6 “Universal LEOs”) rather than prompt (policy option 1 “Quick LEOs”) policy development model for the deployment of LEO broadband. Moreover, the emphasis on cybersecurity concerns is also visible in these replies, with 31% of respondents pointing to security risks originating from the dual use of LEO technologies.

Q6. Integrating LEOs into the telecom network

6. Best way to integrate to the telecom network?

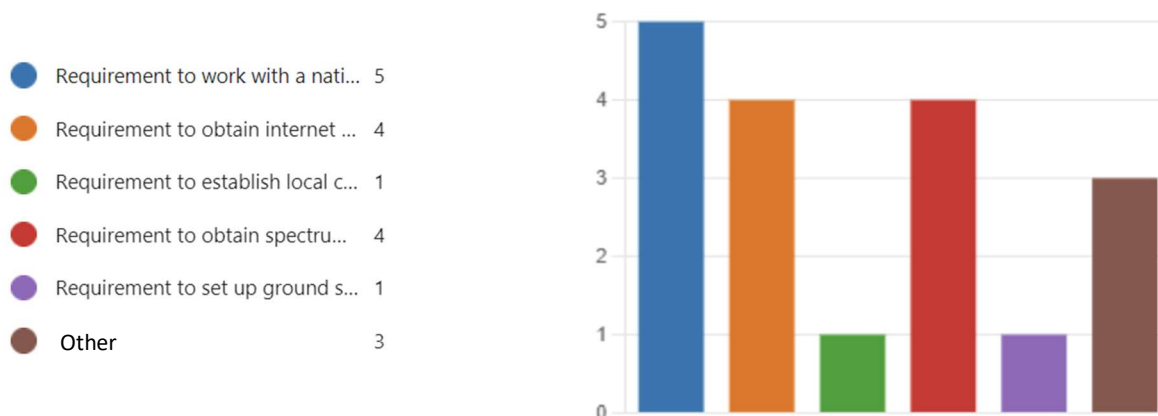


Fig. 10. Best way to integrate LEOs into the telecom network

Responses to the question on the most appropriate way to **integrate LEOs into the telecom network reflected the existing regulatory model, with respondents opting for the requirement to work with a national service provider and obtain an internet service provider license and a spectrum license from National Regulator**. Interestingly, however, there was also support for a different model of integration, whereas no specific recommendation was added in the comments section. It should be read, however together with the preference for the governance paradigms indicated in responses to Q3 and Q7. These have been elaborated on in section III of the report.

Q7 Best regulatory model or international organization

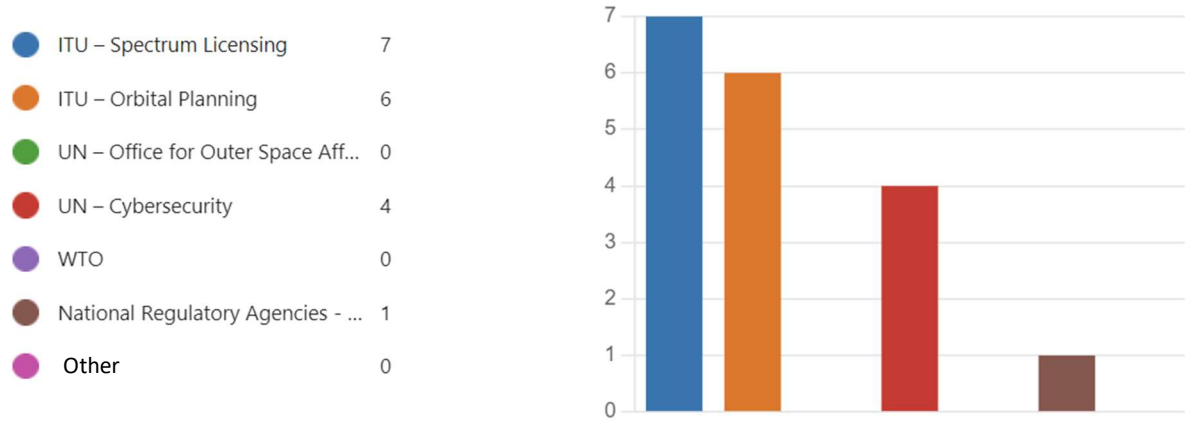


Fig. 10. Best regulatory model or international organization

Correspondingly to the answers in Q7, the existing regulatory model was also recognized as best suited to govern LEOs, with over 50% of the respondents pointing to the ITU spectrum licensing paradigm as most suitable. This has been reflected in the recommended policy forums for civil society and governmental engagement, with infrastructure regulation focus shifting from the multistakeholder model and national regulations to the ITU. Neither the ongoing discussion in the UN First or Third committees, working on cybersecurity and cybercrime, nor those on international trade law within the WTO have been identified as appropriate for this debate. These forums and their role have been discussed in the report in sections IV and V, respectively.

Q8 Tackling monopolies in global Data Value Chain

8. **What is the best way to tackle concerns regarding global Data Value Chain being monopolized by a small number of LEOSAT Broadband companies?** Please rate in terms of relevance, add any item you deem important at the end of the survey.

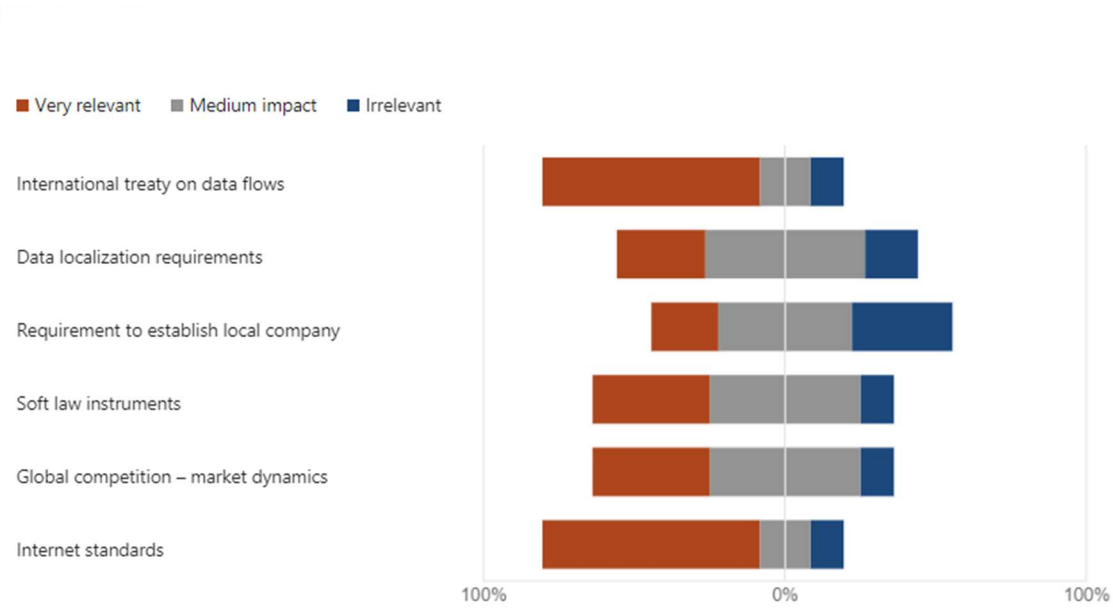


Fig. 11. Best regulatory model or international organization

Interestingly however, as much as the respondents reflected their support for the existing regulatory paradigms in the previous questions when asked about the best way to tackle concerns regarding the

global Data Value Chain being monopolized by a small number of LEOSAT Broadband companies, they equally strongly opted for both: a binding international instrument: an international treaty on data flows and a policy development approach, based on Internet standards. This again implies the need to ensure coherence between the ongoing regulatory discussion in the ITU and standard-setting processes within internet governance forums. By contrast, policies focused on implementing digital sovereignty policies or technological authority were not preferred. This has also been reflected in the report recommendations, prioritizing cooperative policy options (“universal LEOs” / “our LEOs”) over those focused on national security concerns (“my LEOs”).

Q9. Business model to maximize efficient use of LEOSAT Broadband

9. Best business model to maximize efficient use of LEOSAT Broadband for an individual end user.



Fig. 12. Business model to maximize efficient use of LEOSAT Broadband

The StarLink B2C business model was identified as best suited to maximize the efficient use of LEOSAT Broadband, with 50% of respondents identifying direct access to capacity by end users as the best business model to implement. This is interesting particularly because the companies gaining pace in this new space race, such as OneWeb or GW will likely focus on backhaul services, ensuring network connectivity through LEO broadband facilitation. These responses should likely be read together with a suggestion in the comments section expressing “real concern with the multiplication of satellites that constitute space junk and the overall market size for such services when local infrastructure in the globe's most developed regions (and where richest and most demanding users will be located) can already sustain high-quality broadband at a lower running cost”. The respondent point to a recent FCC ruling on a five year life cycle of a LEO, which in their opinion “reinforces the concern that such services might not be economically viable, or reserved for only high paying clients, thus reinforcing the digital divide rather than bridging it”. These concerns have also been reflected in the report sections II and III.

Q10. Most important global concern

10. **Most important global concern regarding the implementation of LEO based technologies.**

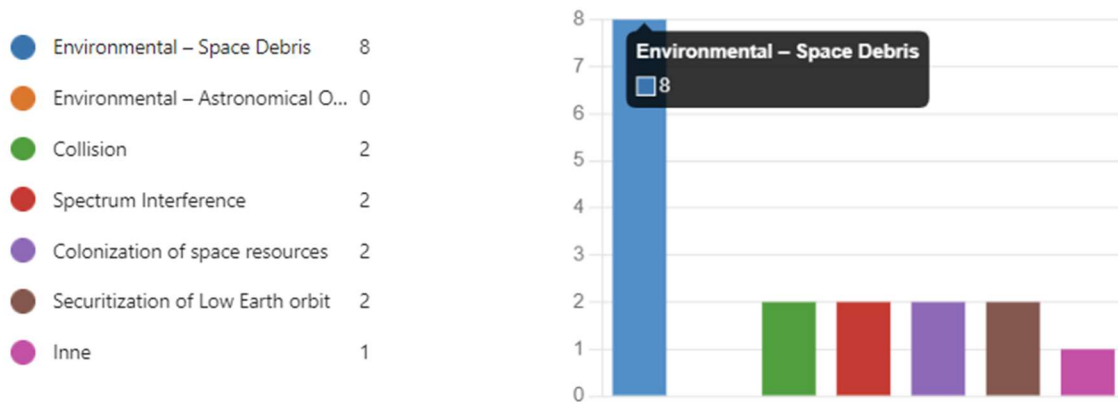


Fig. 13. Most important global concern.

The answer to Q 13 on the most important global concern was very clear and confirmed the results of desk research: regarding the implementation of LEO-based technologies, environmental concerns around **space debris** have been indicated as those in need of prompt policy response. Among other selected policy items to be addressed, the respondents indicated in equal proportions space collision, spectrum interference, colonization of space resources, and securitization of Low Earth orbit, with no concerns expressed about the potential negative impact on astronomical observations. The question of space debris regulation has been covered in **section V** in the report under Space Sustainability.

Q11 Most significant obstacle to the efficient use of LEOSAT Broadband

11. **Please mark the most significant obstacle to the efficient use of LEOSAT Broadband.** Please list in terms of priority, add any item you deem important at the end of the survey.



Fig. 14. Most significant obstacle to the efficient use of LEOSAT Broadband.

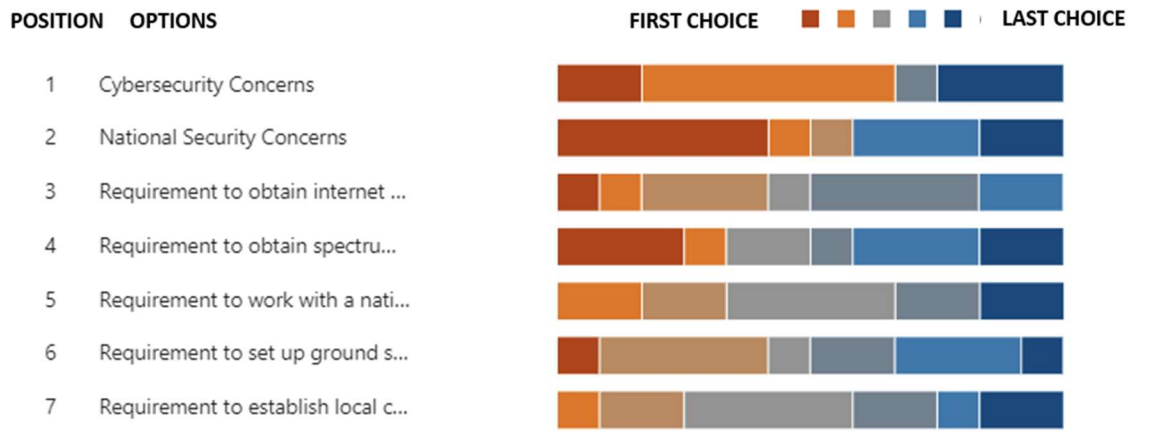


Fig. 15. Most significant obstacle to the efficient use of LEOSAT Broadband.

Confirming earlier findings, the respondents indicated national security concerns and cybersecurity concerns as top issues to be addressed when **efficient use of LEOSAT Broadband** is to be ensured. Next to security concerns, the challenge of the existing business model was indicated as involving the requirement to obtain an internet service provider license and the requirement to obtain a spectrum license from a national regulator were among the top two challenges for potential LEO broadband businesses. The need to establish a local company or set up a ground station locally were not indicated as concerning, likely since the current deployment of LEO satellites offers no alternatives. The existing business model characteristics and their challenges have been thoroughly covered in report **sections I and IV**.

Q12 Estimated sustainable monthly fee for LEOSAT Broadband access

12. Please estimate a sustainable monthly fee for a LEOSAT Broadband access in your region (in USD).



Fig. 16. Most significant obstacle to the efficient use of LEOSAT Broadband.

A majority of respondents of the survey, identifying as experts in internet broadband infrastructures (see Q13 below), indicated that a sustainable monthly fee for LEOSAT Broadband access would fall between 50 and 100 USD.

This response should be interpreted in the context of data from Q13 below: it is likely that responses from those who self-assess as internet technology experts would differ from those that would come from lay or novice internet users in underserved regions, where LEO satellite broadband connectivity will be of most significance. Given the low response rate and the respondents' profile indicated in Q13, this response has been assessed with caution.

Q13 Respondents' self-assessment

13. Please self-asses your level of expertise regarding LEO based internet access technologies:

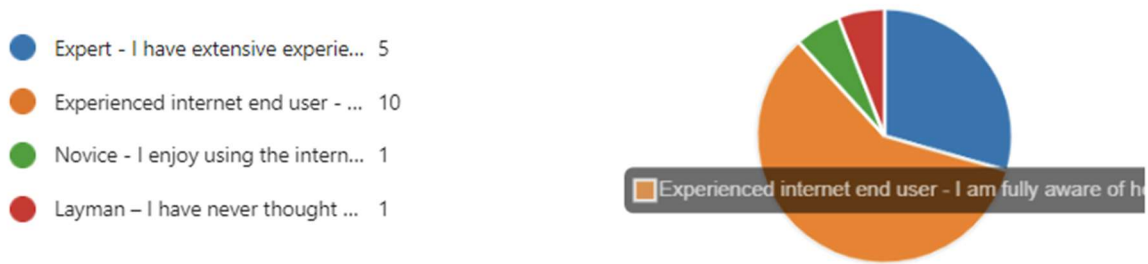


Fig. 17. Most significant obstacle to the efficient use of LEOSAT Broadband.

With due regard to the overall low response rate of this survey, it is worth noting, that the strong majority of respondents (83%) considered themselves experienced internet users with extensive knowledge or complete awareness of internet infrastructures operation and design, whereas those with lower technological skills were a strong minority. These numbers might imply that the replies offered in the survey came from internet users with a good understanding of the issues we have been researching, whereas the deployment of LEOs broadband will most likely directly impact those in underserved regions who have not yet had the chance to advance their Internet skills.

This input should be considered to support the sustainable development argument made in the report.

This is interesting for the analysis presented in the report in light of its key recommendation to ensure the adoption of a holistic approach to the use of LEOs -telecoms, sustainable development, sustainable use of space, and trade.

Section 14: Suggested responses.

4. Please share any other comments.

1	In essence the proposal of universal access is attractive. In practice, there is a real concern with the multiplication of satellites that constitute space junk and the overall market size for such services when local infrastructure in the globe's most developed regions (and where richest and most demanding users will be located) can already sustain high quality broadband at a lower running cost. The recent FCC ruling on a 5 year life cycle of a LEO reinforces the concern that such services might not be economically viable, or reserved for only high paying clients, thus reinforcing the digital divide rather than bridging it.
2	Satellite Internet is an on-going effort to milk 3rd world developing country taxpayers in order to subsidize financially shaky (perhaps unviable) developed county commercial ventures, a new form of digital colonialism
3	This is a flawed survey
4	I believe we can synergize our expertise to broaden the horizon of LEO Satellite Enabled Internet.
5	I think people need to be educated on Internet satellite technology.
6	Space Internet should be fully provided and restricted to areas that Fiber or Wireless Internet can not be economically feasible and it should not be provided in countries where the telecom infrastructure is fully developed.

We particularly appreciate the direct feedback provided in the comments section. They confirm the overall findings of the survey and complement the desk research phase and help us better identify issues to be prioritized in the further project implementation phases. They focus on the need to ensure sustainable development of LEO-based broadband and ensure the participation of developing countries. They also indicate that capacity building is urgently needed. We welcome the support received from respondents who indicated their willingness to take part in similar future studies, whereas when doing so, we would have deeply appreciated more context to the comment on the need to structure the survey differently. Granted, this work should be carried further in its current format, and all comments are to be closely followed up on, also through dedicated sessions welcoming feedback to the report and its findings.

V. Summary

With due regard to the limited response rate of the survey and the high level of expertise among the respondents, key concerns that have been identified and further researched in the report development phase included:

- sustainable development goals and their implementation for LEO broadband access
- national security and cybersecurity concerns
- urgent need to ensure capacity building to facilitate informed policymaking.

They have been discussed in detail in the report and summarized, with recommendations, in the policy papers. Key takeaways from this research have been offered in a series of peer-reviewed and media publications and presented in a series of dedicated, academic, and policy events as per the FLUXX report and its attachments.

Decolonizing the Internet: Global Governance of LEO Satellite Broadband

ISOC Chapters survey

This is a dedicated ISOC Chapters community survey for the purposes of an ISOC Foundation study on Low Earth Orbit satellites, internet governance models and international law:

“Decolonizing the Internet: Global Governance of LEO Satellite Broadband”.

Your replies will help the researchers in developing policy recommendations regarding LEOs based network design, accessibility, security and resiliency as well as aspects impacting individual privacy and freedom of information. We are also seeking your advice on best suited governance model for this unique network, combining satellite connectivity with internet governance.

It should not take more than 20 minutes to fill out the survey that will provide our research team with your valuable feedback on recommended LEOs network design and governance model. The survey includes multiple choice and open-ended questions. Should you encounter any issues in accessing or completing the survey, have any questions regarding the survey itself or the processes behind it, reach out directly to LEOSISOCstudy@gmail.com.

1. **What should be the priority for policies informing regulatory frameworks regarding LEOSAT Broadband?** Please list in terms of priority, add your own suggestions at the end of the survey.

Access - connectivity

Data privacy

National security

Economic benefits

Development benefits (education, government service ect.)

2. **In your opinion, why do states invest in LEO SATCOM.** Please list in terms of priority, add your own suggestions at the end of the survey.

Broadband connectivity

Space race – strategic objectives

Space race – economic objectives

National defence

National security and critical infrastructure protection

Cybersecurity

Digital sovereignty and technological autonomy concerns

Increase its (national) stakes in the global data value chain

3. **What system is most appropriate way of engagement to resolve differences?**

- International (e.g. UN, ITU)
- Multistakeholder (e.g. IETF, ICANN, IGF)
- Bilateral (through agreements between states)
- Regional (e.g. within a regional international organisation)
- Alliances among like-minded states
-

4. **What is the most important cybersecurity risk?** Please list in terms of priority, add any item you deem important at the end of the survey.

Vendor Profile – supply chain

Interference- state backed actors

Interference – private malicious actors

Increased exposure to attacks and more potential entry points for attackers

Increased exposure to risks related to the reliance of mobile network operators on suppliers.

Threats to availability and integrity of communication networks, including 5G

5. **In your opinion, what is the most important strategic risk.** Please list in terms of priority, add any item you deem important at the end of the survey.

Further colonisation of the internet

Colonization of space resources

Security risks - dual use

Technological dependence

Colonization of spectrum resources

Digital divide – connectivity v. data value chain

6. **Best way to integrate to the telecom network?**

- Requirement to work with a national service provider
- Requirement to obtain internet service provider license
- Requirement to establish local company
- Requirement to obtain spectrum license from National Regulator
- Requirement to set up ground station locally
- Other

7. Granted LEO Broadband access remains a domain of state regulation, which international organization should take the lead?

- ITU – Spectrum Licensing
- ITU – Orbital Planning
- UN – Office for Outer Space Affairs
- UN – Cybersecurity
- WTO
- National Regulatory Agencies - voluntary coordination of state practices
-

8. What is the best way to tackle concerns regarding global Data Value Chain being monopolized by a small number of LEOSAT Broadband companies? Please rate in terms of relevance, add any item you deem important at the end of the survey.

	Very relevant	Medium impact	Irrelevant
International treaty on data flows	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data localization requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requirement to establish local company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soft law instruments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Global competition – market dynamics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Best business model to maximize efficient use of LEOSAT Broadband for an individual end user.

- Direct access to capacity by end users
- Backhaul – emphasis on network connectivity
- Combination – please explain below

Other

10. Most important global concern regarding the implementation of LEO based technologies.

- Environmental – Space Debris
- Environmental – Astronomical Observation
- Collision
- Spectrum Interference
- Colonization of space resources
- Securitization of Low Earth orbit

Other

11. Please mark the most significant obstacle to the efficient use of LEOSAT Broadband. Please list in terms of priority, add any item you deem important at the end of the survey.

Requirement to work with a national service provider

Requirement to obtain internet service provider license

Requirement to establish local company

Requirement to obtain spectrum license from National Regulator

Requirement to set up ground station locally

National Security Concerns

Cybersecurity Concerns

12. Please estimate a sustainable monthly fee for a LEOSAT Broadband access in your region (in USD).

Free

10 – 20 USD

50 – 100 USD

Above 100 USD

Other

13. Please self-asses your level of expertise regarding LEO based internet access technologies:

Expert - I have extensive experience in internet infrastructures operation and design and am fully aware how the LEO based internet will work

Experienced internet end user - I am fully aware of how my internet connection works and I follow media updates to seek sustainable ways to stay connected

Novice - I enjoy using the internet but have thus far not given much thought to the networks behind it

Layman – I have never thought about internet architecture or heard about LEO satellite enabled internet access before taking this survey

14. Please share any other comments.

Enter your answer

You can print a copy of your answer after you submit

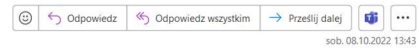
Submit

Annex II Survey invitation

ISOC Foundation study on Low Earth Orbit satellite-enabled internet access – a request for survey input



Joanna Kulesza
Do: LEOsISOCstudy@gmail.com



sob, 08.10.2022 13:43

Dear ISOC Chapter Lead,

Satellite-based networks are the future of online connectivity, and we are reaching out to you to help us shape it. With the rise of Starlink, OneWeb and GalaxySpace, Low Earth Orbit satellites (LEOs) are the Internet's next chapter. ISOC stands for sustainable development and equitable access. As part of an ISOC Foundation supported project, this survey aims to ensure the internet end user voice is heard when relevant policies are being developed. This is why we are reaching out to you for input into shaping policy for the development of satellite-enabled internet communications.

We are [Berna Akcali Gur](#) and [Joanna Kulesza](#), a research team conducting an ISOC Foundation study on Low Earth Orbit satellites, internet governance models and international law: **“Decolonizing the Internet: Global Governance of LEO Satellite Broadband”**. One of our aims is to identify community expectations concerning online satellite connectivity and frame them in a comprehensive report due later this year.

We are contacting you with a kind request for your input into the ongoing policy discussion on international procedures regarding LEO satellites and internet access. **We are looking to understand what policy recommendations are to be made regarding network development, accessibility, security, resiliency, as well as individual privacy and freedom of information when LEO constellations are being designed. We are also seeking your advice on the best-suited governance model for this unique network, combining satellite connectivity with internet governance.**

This is why we are reaching out with a kind request for you and your team **to take 10 minutes to fill out the survey** that will allow us to provide ISOC with your valuable feedback on recommended LEO network design and governance model. This survey offers a unique opportunity to share your local or regional community perspective on satellite-enabled internet access and feed it directly into policy recommendations to be published later this year. The survey includes 14 multiple choice and rating questions and can be found under this link:

<https://forms.office.com/r/e6UD9rc4wW>

We would appreciate your replies by October 20th, 2022, that is in 10 days from receiving this e-mail.

If you encounter any issues in accessing or completing the survey or have any questions regarding the survey itself or its processes, reach out directly to LEOsISOCstudy@gmail.com.

Please kindly note that no personal data will be collected for the purpose of this study.

Thank you for taking the time to fill out the survey. We are very much looking forward to your feedback.

Berna Akcali Gur
Joanna Kulesza

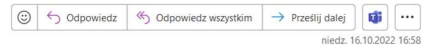
ISOC Foundation Project Leads
“Decolonizing the Internet: Global Governance of LEO Satellite Broadband”

Annex III Survey invitation follow-up

Follow up: ISOC Foundation study on Low Earth Orbit satellite-enabled internet access – a request for survey input



Joanna Kulesza
Do: LEOSOCstudy@gmail.com



Dear ISOC Chapter Lead,

This is a follow-up to our last week's message regarding your input into the ISOC Foundation research project on Low Earth Orbit satellites (LEOs) enabled internet access (please see the original message below and a link to the survey pasted here for your reference: <https://forms.office.com/r/e6UD9rc4wW>).

If you have already provided your input, please accept our sincerest thanks and feel free to disregard the following message.

If you are yet to consider a submission, please kindly allow for a brief explanation specifying the methodology behind this exercise. Originally, we were looking for one input per chapter, with replies reflecting those of the community it represents, understanding you might wish to consult internally before submission. We have noted however that different approaches have been taken by chapters to address the survey. Given we are trying to keep this process as simple as possible, making sure we don't add to your heavy volunteer workload, please let us note that **we welcome any approach you as the chapter leader decide appropriate to address the survey, including sharing it internally among your chapter members for them to submit their responses individually**. While we want to make sure the survey is representative, it is meant as a temperature-taking exercise rather than a precise opinion-taking poll. We are particularly looking forward to your comments in the dedicated section.

Should specific survey questions or the technical issue of LEO-enabled internet access prove challenging for individual community members, please make sure to reach out to us directly with questions or consider consulting a recent webinar by ISOC's Dan York and Rajnesh Singh presented at the APriGF, exploring the issues:

Livestream: <https://livestream.com/internetsociety/aprifg2022/videos/232912910>

Download: https://archive.org/download/aprifg2022/23_S21_LEO_Satellite_Constellations.mp4

Text: https://archive.org/download/aprifg2022/23_S21_LEO_Satellite_Constellations_CARTTEXT.txt

(with many thanks to Joly MacFie for sharing the links).

We are very much looking forward to your submission by the end of this working week, that is by Friday, Oct. 21st EOB UTC.

Thank you again for considering our request.

Kindest regards,

Berna Akcali Gur and Joanna Kulesza