SPIDER
EU-LAC Digital Partnership

Survey Report on the digital ecosystem interconnectivity in LAC and Europe

Funded by the European Union

INTRODUCTION

This report presents the findings of a comprehensive survey conducted by the SPIDER project, which works to foster and promote the longstanding EU-LAC collaboration for an inclusive digital transformation.

The survey aims to evaluate the current state of the digital ecosystem interconnectivity, as well as the awareness and use of the infrastructure and services provided by BELLA (Building the Europe Link to Latin America and the Caribbean) Infrastructure through the European and Latin America NRENs. To evaluate the potential of BELLA, the survey also explores the technology areas and applications that can take advantage of BELLA to support digital transformation and identify key barriers to unlocking BELLA's full potential.

Conducted across Latin America, the Caribbean, and Europe, the survey analyses the connectivity requirements for daily activities in research and business and the knowledge and connectivity provided by NRENs in both regions. The survey also sought to identify application and technology areas that can benefit from BELLA to support digital transformation and international collaboration.

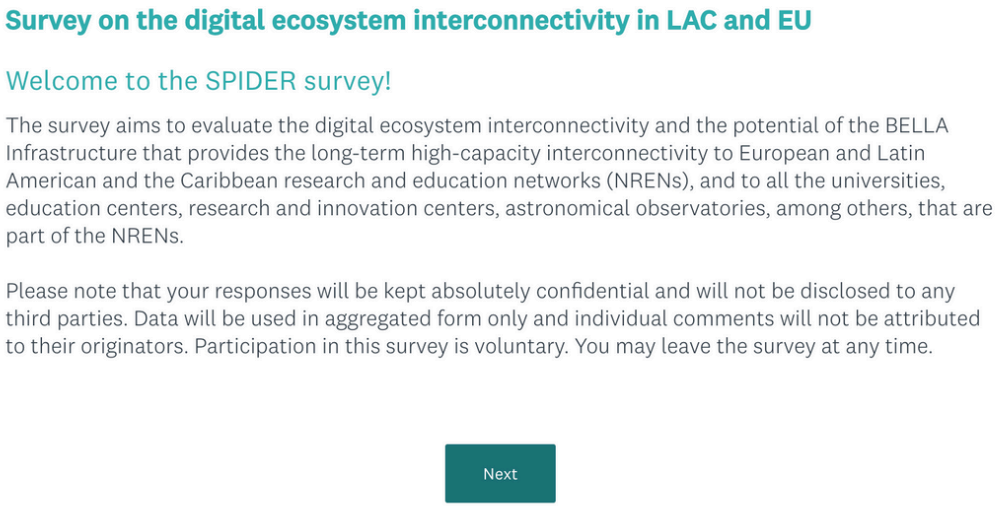
The survey was conducted online using web-based tools and was available in English, Spanish, and Portuguese. The survey was answered by 357 people from Latin America and the Caribbean (284 responses) and Europe (73 responses), including representatives from NRENs, Universities, Research Performing Organisations, Research Funding Organisations, private organisations, government organisations, innovation hubs and NGOs.

Participation in the survey was voluntary and respondents could withdraw at any time. All responses were kept confidential and not disclosed to third parties. Data was used only in aggregated form to ensure anonymity.

SURVEY METHODOLOGY

The survey on the digital ecosystem interconnectivity in LAC and EU was sent to a sample size of more than 3.000 key actors from both regions.

The survey was accessible from 3 April to 17 May 2024. During this period we gathered 357 responses from a wide range of participants, exceeding by 79% the initial goal of 200 responses.



Introduction of the online survey

The survey comprised 26 questions formatted as open-ended, multiple-choice, and ranking questions that were organised in five sections:

Section A - Basic Information.
Section B - Connectivity Requirements Assessment.
Section C - EU-LAC Interconnectivity.
Section D - Barriers to use the BELLA Network.
Section E - Suggestions and Feedback.

PROFILE OF SURVEY RESPONDENTS

REGION

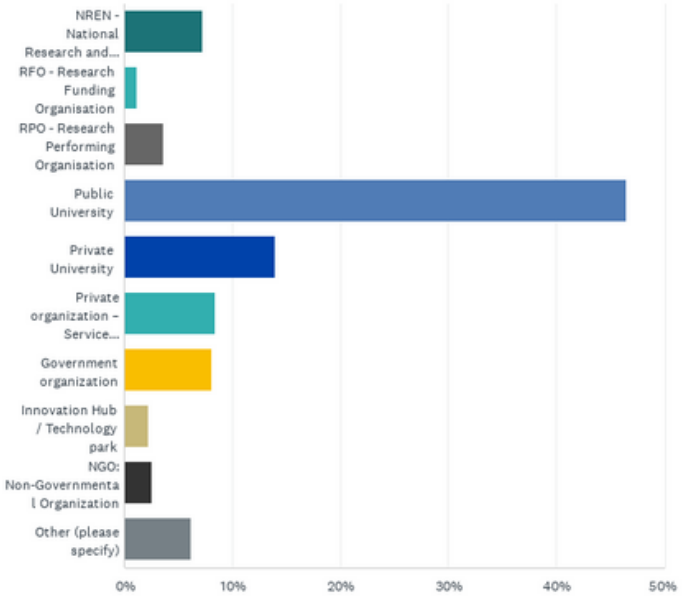
We received a total of 357 responses, of which 284 (79.55%) were from LAC participants, while 73 (20.45%) were from Europe.

GENDER

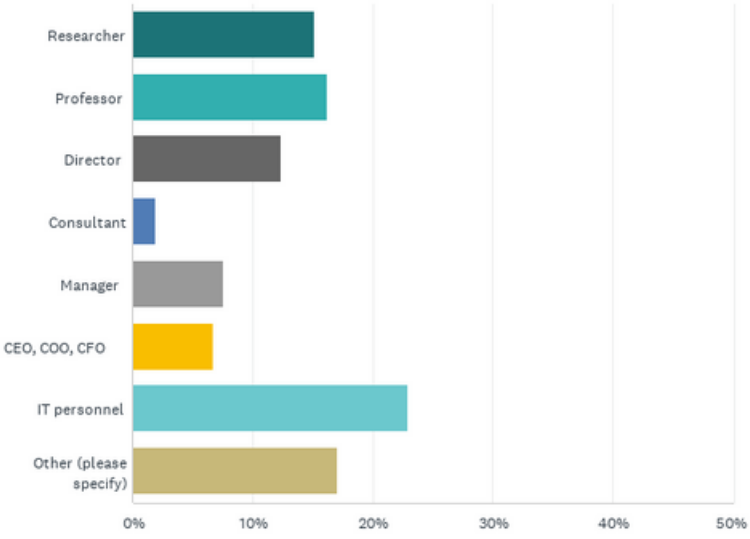
Among the 357 responses received, 63.59% were from men, while women accounted for 35.85% of the responses, indicating a substantial women underrepresentation in the use of digital transformation technologies. In contrast, nonbinary individuals represented a negligible 0.56%.

ORGANISATION TYPE

From all the survey responses, most of the participants (60.51%) were from public universities (46.50%) and private universities (14.01%). Additionally, private organisations were represented by 8.40% of respondents, government organisations by 8.12%, and NRENs by 7,28%.



POSITION AT ORGANISATIONS



The survey shows a diverse range of roles among respondents. The largest group of respondents, comprising 25.94%, identified as IT personnel. Professors account for 17.74%, followed by researchers who represent 16.99%, which reflects a significant presence of academic professionals. Directors made up 14.55% of the respondents, while Managers constituted 13.13%, highlighting a considerable number of leadership roles. CEO, COO, and CFO positions were held by 7.46% of participants. Consultants represented the smallest group at 2.71%, demonstrating specialized advisory roles within organisations.

ORGANISATION SIZE

The data shows that a majority of organisations participating in the survey are large, with more than 250 employees, accounting for 68.35%. Medium-sized organisations, with 11-50 employees and 51-250 employees, constitute 14.85%, and 10.36%, respectively. Lastly, small organisations, with fewer than 10 employees, make up only 6.44%.

EUROPE-LAC COLLABORATION

Among LAC respondents, the majority (61.51%) confirmed existing collaborations with European organisations; another 11.51% said no; 21.22% were unsure; and 5.76% planned to collaborate in the future.

Similarly, 41.10% of European respondents confirmed collaborations with LAC; 24.66% reported no collaboration; 27.40% were unsure; and 6.85% planned to collaborate in the future.

ASSESSMENT OF CONNECTIVITY REQUIREMENTS

RELEVANCE OF HIGH-SPEED INTERNET CONNECTION

The great majority of respondents, 85.20%, indicated that a high-speed internet connection is extremely important for their activities. This highlights the critical role of reliable internet in business and research operations. Another group of responders (12.39%) said that high-speed internet connection is important. Only a minimal number of respondents (0.30%) indicated that they could operate without the internet for a couple of days, emphasising the pervasive need for constant connectivity in today's digital environment.

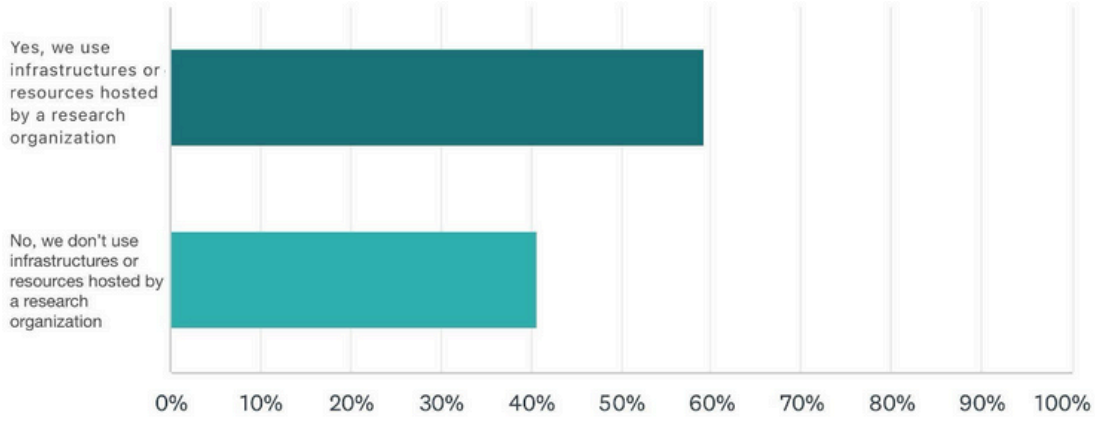
DEGREE OF SATISFACTION WITH CURRENT INTERNET CONNECTIVITY

The largest group (40.48%) reported feeling moderately satisfied, closely followed by a significant percentage (36.85%) expressing high satisfaction. Dissatisfaction is also notable, with 21.15% expressing discontent, while a smaller percentage (1.51%) reported feeling very dissatisfied with their current internet connectivity. Out of these dissatisfied respondents, 66.67% are from universities, and 12% from government organizations.

USE OF RESEARCH INFRASTRUCTURES OR COMPUTING RESOURCES HOSTED BY A CLOUD PROVIDER

A great majority (73.72%) expressed the need for such resources, indicating a strong reliance on cloud computing for various activities. This high percentage suggests that organisations recognize the benefits of cloud services, such as scalability, flexibility, and accessibility, in meeting their computing needs.

Conversely, 26.28% of respondents reported no need for cloud computing services, which may indicate either a preference for on-premises solutions or existing investments in alternative computing infrastructures.



USE OF RESEARCH INFRASTRUCTURES OR COMPUTING RESOURCES HOSTED BY A RESEARCH ORGANISATION

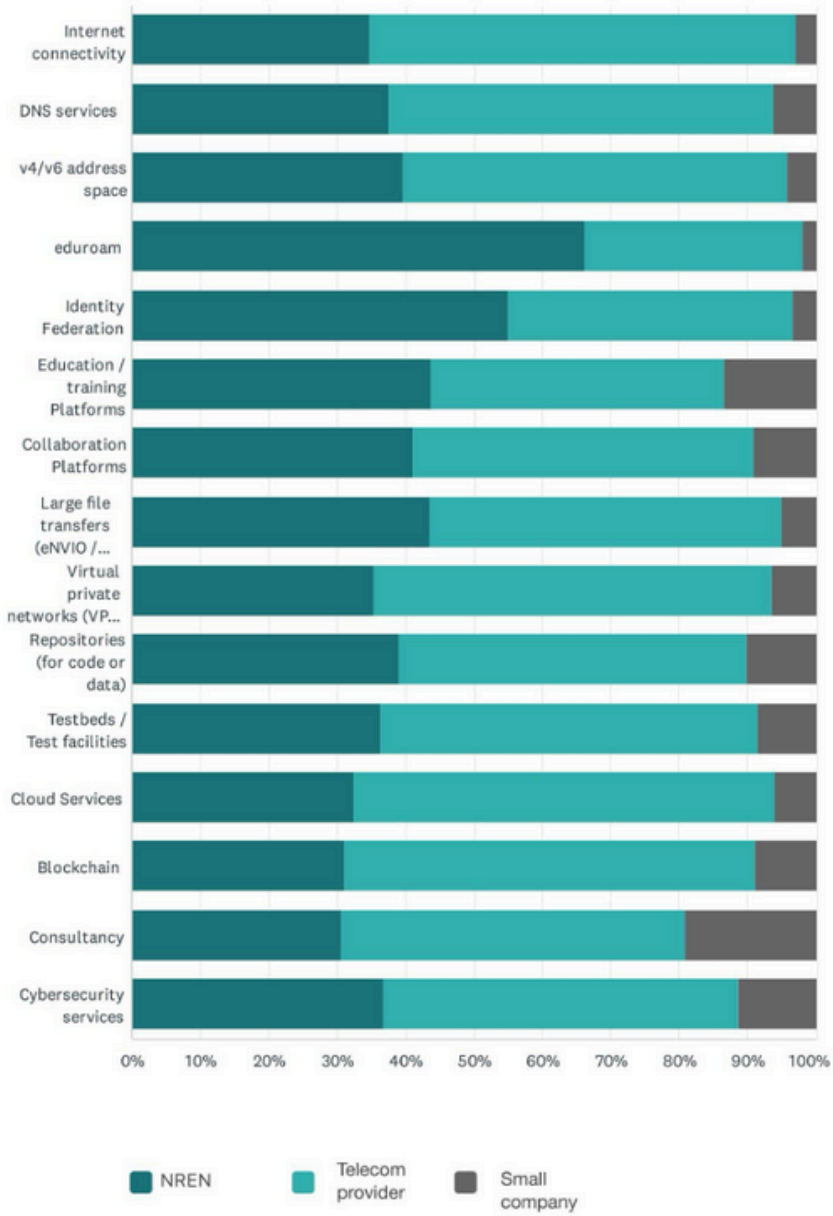
A majority of respondents (59.21%) expressed the need for such resources, indicating a significant demand for remote access to research infrastructures or computing resources hosted by research organisations to support their activities. Among respondents who reported using research infrastructures or computing resources hosted remotely by research organisations, many cited institutions such as CERN in Switzerland, the REUNA network in Chile, and CEDIA in Ecuador.

In addition, it's worth highlighting that 64.00% of dissatisfied respondents with their current internet connection, claimed to use infrastructures or computing resources remotely hosted by a research organisation.

On the contrary, 40.79% of respondents reported no need for remote access, suggesting that some organisations may already have sufficient in-house resources or alternative arrangements to meet their computing needs.

APPLICATIONS AND SERVICES PROVIDERS

The analysis of participants' usage patterns across various applications and services and their providers reveals notable trends.



For internet connectivity, Telecommunications providers emerge as the dominant choice, with 62.50% of respondents opting for this option, followed by NRENs at 34.68%, and Small companies at 2.82%. Similarly, Telecommunications providers lead in DNS services with 56.35%, while NRENs follow closely at 37.56%, and Small companies at 6.09%. However, when it comes to eduroam, a service prevalent in academic settings, NRENs take the lead with 66.25%, surpassing Telecommunications providers at 31.87%, and Small companies at 1.88%.

Across the responses, NRENs maintain a significant presence, particularly in services like Identity Federation, where they account for 54.92%, compared to 41.80% for Telecommunications providers, and 3.28% for Small companies.

Furthermore, Telecommunications providers dominate most service categories, such as internet connectivity, cloud services, blockchain, and virtual private networks, among others, reflecting their broad capabilities and resources. NRENs also play a significant role, particularly in services tailored to academic and research environments, such as eduroam and identity federation. Small companies contribute meaningfully to certain areas, such as education/training platforms, repositories, consultancy, and cybersecurity services, highlighting their niche capabilities and specialised offerings.

DEGREE OF SATISFACTION WITH CURRENT INTERNET CONNECTIVITY

The data highlights a digital divide that could significantly affect research and educational activities, emphasizing the need for targeted infrastructure improvements. Also, the survey presents a complex picture of internet connectivity satisfaction: while 77.33% of respondents report moderate to high satisfaction, a substantial 22.66% express dissatisfaction. This dissatisfaction is particularly prominent in academic environments, where universities account for two-thirds of the dissatisfied respondents, signaling a critical need for enhanced connectivity in these institutions.

USE OF RESEARCH INFRASTRUCTURES OR COMPUTING RESOURCES HOSTED BY A CLOUD PROVIDER

The overwhelming majority (73.72%) of respondents indicate a need for cloud-hosted resources, signaling a strong trend towards cloud adoption. This high demand reflects the growing recognition of cloud computing's benefits in enhancing operational efficiency and resource accessibility. However, the 26.28% who do not require such services warrant further investigation. This group may represent organizations with robust on-premises solutions or those facing barriers to cloud adoption, such as data sovereignty concerns or legacy system dependencies.

USE OF RESEARCH INFRASTRUCTURES OR COMPUTING RESOURCES HOSTED BY A RESEARCH ORGANISATION

The survey indicates a significant reliance on research-hosted computing resources. This demand (59.21% of respondents) underscores the importance of collaborative research infrastructures in supporting scientific and academic endeavors. .

Interestingly, 64% of respondents dissatisfied with their internet connectivity also report using research-hosted resources. This correlation suggests that inadequate local infrastructure may be driving researchers to seek external computing solutions, potentially impacting the efficiency and scope of their work.

FINDINGS ON CONNECTIVITY REQUIREMENTS FOR BUSINESS AND RESEARCH ACTIVITIES

A significant majority of respondents (85.20%) rated **high-speed internet as extremely important for their activities.** This underscores the critical role that reliable and fast internet connections play in both business and research operations, and thus in digital transformation.

While many respondents are satisfied with their internet service, the LAC region shows a lower average satisfaction rating than Europe. Overall, the **data underscores the importance of continuous efforts to enhance digital infrastructure** and address varying satisfaction levels across regions.

The majority of respondents who are dissatisfied with their current internet connectivity are from **universities and government organisations**. Also, 64.00% of these dissatisfied participants claim to use **research infrastructures or computing resources remotely hosted by a research organisation.**

Responses **highlight the evolving landscape of computing resources,** with a notable shift towards cloud providers, particularly in the LAC region, while still maintaining a strong reliance on traditional research infrastructure hosts.

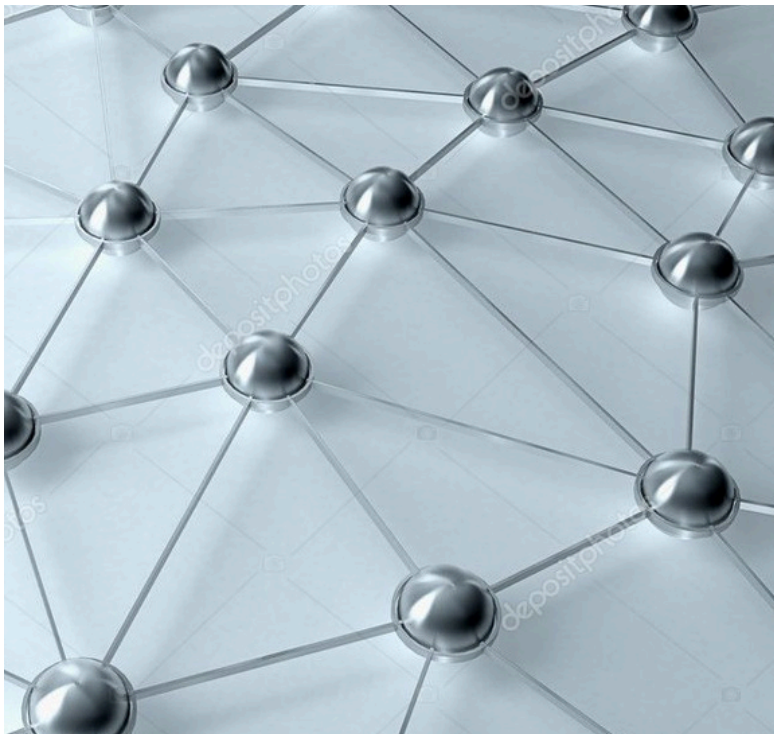
Telecommunications providers dominate the general connectivity and cloud services, **yet NRENs play a critical role in academic and research services.** Despite being less prevalent, small companies contribute significantly to niche areas, notably in Europe. This diversity highlights the necessity for tailored strategies to address regional and sector-specific needs, thereby strengthening the overall efficiency and resilience of the digital ecosystem.

EUROPE-LAC INTERCONNECTIVITY

This section analyses the long-term high-capacity interconnectivity provided by BELLA through GÉANT in Europe and RedCLARA in Latin America and the Caribbean, interconnecting the National Research and Education Networks (NRENs) of the two regions.

KNOWLEDGE OF LOCAL NRENS

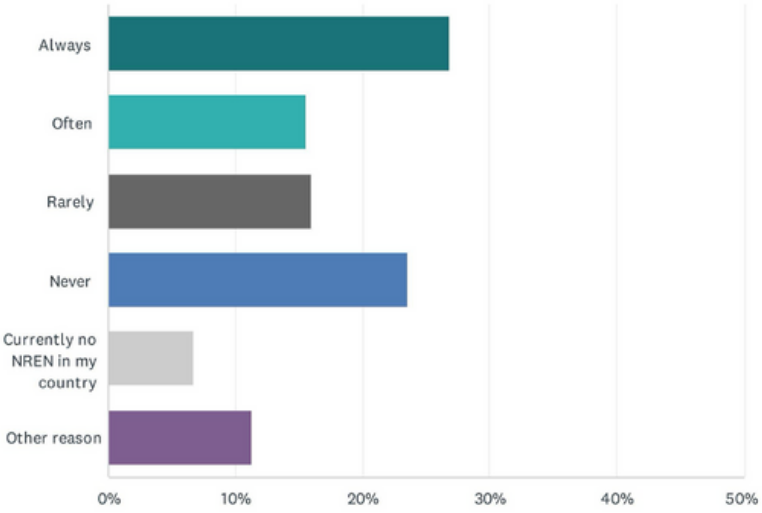
The analysis of respondents' familiarity with their local NREN reveals diverse levels of knowledge. While 19.75% claim to be very familiar, and 26.89% feel somewhat familiar, most of the respondents (53.36%) express limited or no familiarity. Specifically, 24.37% indicate not very familiar, and 28.99% report not at all familiar. This indicates a range of understanding and awareness regarding the roles and services provided by local NRENs among respondents, with a majority indicating limited familiarity.



In LAC, the answer distribution highlights that while a moderate proportion of respondents are somewhat familiar with their local NREN (28.26%), an equally significant percentage (28.26%) have no familiarity at all. Additionally, 24.46% indicate limited familiarity, and 19.02% are very familiar with their local NREN. In Europe, the largest representation falls into the "Not at all familiar" category (31.48%), followed by “Not very familiar” (24.07%). This indicates that a significant 55.55% of respondents have little to no knowledge of their local NREN. Although the "Very familiar" and "Somewhat familiar" categories each account for 22.22% of respondents.

CURRENT USE OF CONNECTIVITY PROVIDED BY LOCAL NRENS

The data indicates mixed usage levels of NRENs among respondents. While a substantial portion always or often utilizes their local NREN (42.44% combined), a significant minority rarely or never does (39.50% combined). Some respondents also face barriers like the absence of an NREN in their country (6.72%) or other unspecified reasons (11.34%) for not using these networks.



PLAN TO USE CONNECTIVITY PROVIDED BY LOCAL NRENS

The analysis of organisations' plans to utilise connectivity provided by their local NRENs within the next two years reveals a significant percentage of respondents indicating uncertainty.

The most substantial representation lies in the "Maybe" category (47.90%), indicating that a large portion of organisations are considering but not yet committed to using local NREN connectivity. Meanwhile, a notable group revealed affirmative intentions, with 41.60% responding "Yes" to planning to use local NREN connectivity, indicating a considerable interest in leveraging these services shortly.

Conversely, a smaller proportion (10.50%) responded "No," indicating a definite lack of intention to utilise local NREN connectivity within the specified timeframe.

In Europe, a greater percentage of organisations express a definite intention to adopt local NREN connectivity within the next two years, with 46.30% indicating affirmative plans. Conversely, in LAC, while still substantial, the percentage of organisations intending to utilise local NREN connectivity is slightly lower at 40.22%.

FINDINGS ON EUROPE-LAC INTERCONNECTIVITY THROUGH LOCAL NRENS

The similarity in the awareness challenge regarding local NRENs between Europe and LAC underscores a **significant need to enhance knowledge and understanding of these networks** across both regions.

The survey highlights varying levels of NREN connectivity utilisation between regions. Despite the level of knowledge in LAC, the utilisation of connectivity provided by local NRENs is lower **in LAC region where 39,14% said that they use NRENs always or often, compared to 53,7% in Europe.**

Similarly, there is a significant group of respondents (39.50%) that recognise that **they rarely or never utilise local NRENs services.**

The analysis of organisations' plans to utilise connectivity provided by their local NRENs within the next two years reveals a notable degree of uncertainty among respondents. While **41.60% of respondents showed substantial interest in leveraging NREN** capabilities shortly, **almost the majority of organisations expressed a "Maybe" stance (47.90%), reaching 51,63% in LA**C. This indicates that a significant proportion of respondents is considering but not yet committed to using NREN connectivity.

BELLA POTENTIAL FOR DIGITAL TRANSFORMATION

BELLA BENEFITS FOR INTERNATIONAL COLLABORATION

The responses highlight several key areas where participants believe BELLA can enhance their collaborative activities. "Collaboration opportunities" was the most frequently cited benefit, with 66.67% acknowledging its potential. "Enhanced connectivity" and "Improved data transfer speeds" were also significant, selected by 59.15% and 56.34%, respectively. "Access to advanced technologies" was noted by 53.52%, while "Improved latency" was considered beneficial by 36.62%.

"Cost-effectiveness" was identified as a benefit by 27.23%. Additionally, 7.51% specified other benefits, such as: the application of a same scheme for data and metadata protection, and local cluster connections.

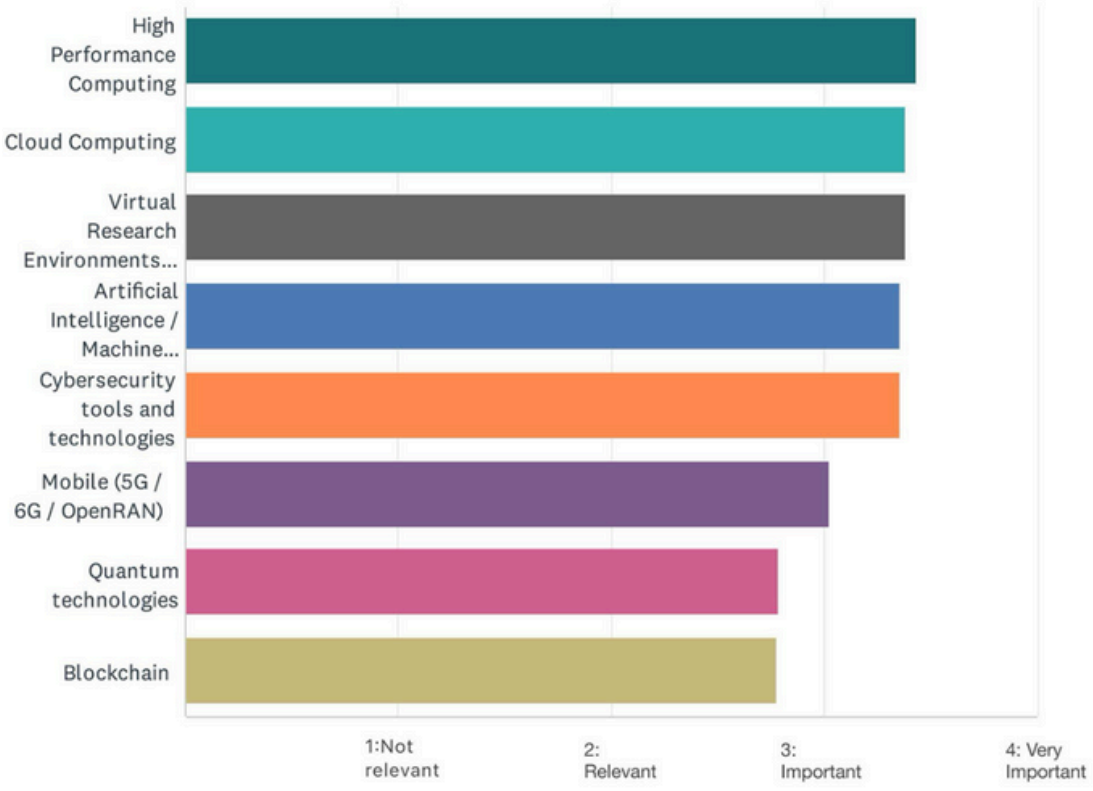
Therefore, the data suggests that BELLA is a valuable initiative for fostering collaboration through enhanced connectivity, improved data transfer speed, and access to advanced technologies.

In both LAC and Europe, "Collaboration opportunities" emerge as the most widely recognized potential benefit, with 68.67% and 59.57% of respondents, respectively. This indicates a strong consensus across regions regarding the perceived value of BELLA in fostering collaboration opportunities.

TECHNOLOGY AREAS ENHANCED BY THE USE OF BELLA

The survey results indicate a strong consensus regarding the importance of several technology areas crucial for digital transformation and benefiting from BELLA infrastructure. High-Performance Computing (average score: 3.44), Cloud Computing (average score: 3.39), and Virtual Research Environments (average score: 3.39) are highlighted as top priorities, reflecting their critical roles in data processing, scalable infrastructure, and collaborative research environments. Artificial Intelligence and Machine Learning also received significant support (average score: 3.36), underscoring their pivotal role in advancing digital capabilities.

Similarly, Cybersecurity tools and technologies are highly regarded (average score: 3.36) for safeguarding digital assets and infrastructure. Among the surveyed areas, "High-Performance Computing" emerges as highly significant, with 60.00% of respondents rating it as "Very important." This indicates a strong acknowledgment of the critical role of HPC in advancing digital transformation efforts. Similarly, "Artificial Intelligence / Machine Learning" and "Cloud Computing" are deemed very important by over half of the respondents, underscoring their crucial role in supporting digital transformation initiatives.



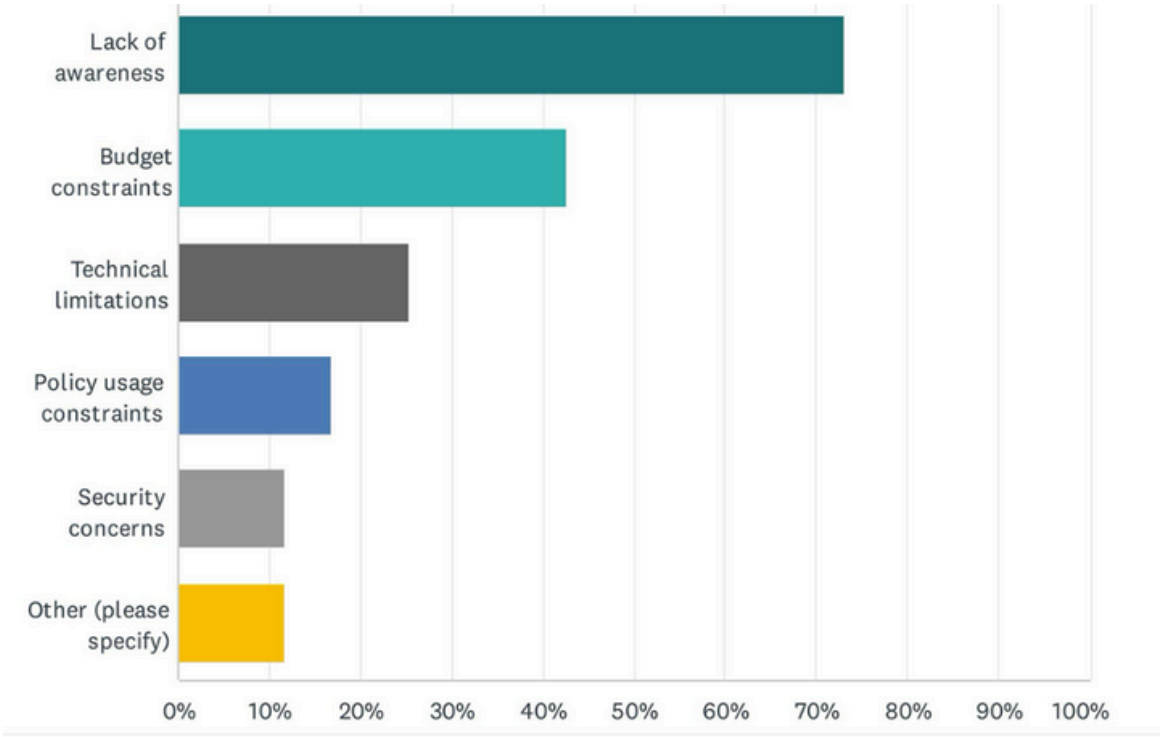
BARRIERS TO USE THE BELLA NETWORK

The findings highlight several significant barriers to the use of BELLA, with lack of awareness emerging as the foremost challenge, cited by 73.24% of respondents. Budget constraints also loom large as a major concern, with 42.72% of respondents grappling with financial limitations.

Additionally, 25.35% of participants identified technical limitations, indicating potential infrastructure or capability gaps. Policy usage constraints affected 16.90% of respondents, while security concerns were raised by 11.74%.

Furthermore, 11.74% cited other reasons, including challenges such as a shortage of trained personnel in cybersecurity, limited staffing, lack of projects or initiatives leveraging BELLA, geographical digital disparities, and bureaucratic hurdles.

Regionally, disparities in perceived barriers to adopting BELLA are evident. In LAC, 77.11% cite lack of awareness as a major obstacle, compared to 59.57% in Europe. Budget constraints are also more pronounced in LAC (48.80%) compared to Europe (21.28%). Conversely, Europe expresses higher concern about technical limitations, security issues, and policy usage constraints. These regional differences underscore the need for tailored strategies to address specific challenges in each area.



FINDINGS ON THE BELLA POTENTIAL FOR DIGITAL TRANSFORMATION

Respondents acknowledge the BELLA network's **perceived capacity to foster partnerships by enhancing connectivity** and facilitating access to advanced technologies. The results emphasise the critical importance of High-Performance Computing, Artificial Intelligence / Machine Learning, and Cloud Computing in driving digital transformation efforts supported by the BELLA network.

Regional differences are evident in the prioritisation of technological areas for digital transformation efforts. Latin America and the Caribbean prioritise "Artificial Intelligence / Machine Learning," "Cybersecurity," and "Mobile (5G / 6G / OpenRAN)" more than Europe.

The primary obstacle to the widespread adoption of the BELLA network is a **lack of awareness across both regions**. Bridging this gap is essential for boosting the network's visibility, fostering broader adoption, and fully exploiting its potential.

Budgetary constraints emerge as a significant hurdle, particularly in Latin America and the Caribbean, while **technical limitations** also pose challenges to effectively utilising BELLA. On the other hand, European respondents express s**trong concerns about policy usage**, highlighting the need for robust policy frameworks and tailored security measures. These efforts are crucial for **instilling trust and ensuring the smooth implementation** of the BELLA network within regional contexts.

INSIGHTS FROM RESPONDENTS

In the survey's final section, respondents were invited to voluntarily share comments to improve connectivity for EU-LAC collaboration. In total, 51 individuals (14.28%) provided comments, with more detailed responses.

Based on the feedback gathered from this last section, the comments from respondents can be categorized into four main areas:

INFORMATION AND AWARENESS GAPS ON CONNECTIVITY

- Comment from survey respondent: *"I don't have much information on connectivity issues, I think I can't contribute much to this survey."*
- Comment from survey respondent: *"Not sure about my answers to this question (about the use of cloud providers) as I'm not fully knowledgeable on this."*

POSITIVE FEEDBACK AND ENDORSEMENTS

- Comment from survey respondent: *"Very happy with EU-LAC connectivity."*
- Comment from survey respondent: *"Opportunity for all."*
- Comment from survey respondent: *"We currently have BELLA but it is not being exploited, we are looking for BELLA II to make a more profitable and attractive business model."*

RECOMMENDATIONS TO ENHANCE CONNECTIVITY FOR EU-LAC COLLABORATION

- Comment from survey respondent: *"Improve coordination between actors."*
- Comment from survey respondent: *"Improve connectivity and information exchange."*
- Comment from survey respondent: *"Improve dissemination."*

REGIONAL-SPECIFIC ISSUES AND SUGGESTIONS

- Comment from survey respondent: *"I don't see participation from my country Bolivia, I work in experimental health research."*
- Comment from survey respondent: *"More investment in university research is needed."*

CONCLUSION

This survey delves into the current state of the digital ecosystem interconnectivity and the potential of the BELLA Infrastructure for digital transformation, as BELLA provides long-term high-capacity interconnectivity through NRENs.

The findings highlight the critical role of high-speed internet for research and innovation activities and digital transformation. While some users express satisfaction with existing services, a notable portion, primarily in LAC, faces challenges impacting their research and business operations. This underscores the need for continuous connectivity improvement and efforts to close the digital divide between regions.

The survey captures a dynamic computing landscape, with a growing shift towards cloud-based solutions, particularly in LAC, alongside the continued utilisation of traditional research infrastructures. Yet, the diversity in needs and connectivity providers, amplifies the importance of tailored strategies to address regional and sector-specific needs, fostering a more robust and resilient digital ecosystem.

Another key takeaway is the insufficient awareness of NRENs in both regions, suggesting more effective outreach efforts need to be undertaken to overcome this challenge that is critical for the expansion of BELLA. Moreover, the data also reveals mixed patterns regarding NREN connectivity utilisation, with a significant percentage relying on these services regularly, while another sizable portion rarely or never uses them. This underscores the need to address the varying levels of NREN adoption and bridge the gap between regions.

Despite this, the survey acknowledges the potential of BELLA to foster partnerships and facilitate access to advanced technologies. Respondents recognize its role in propelling digital transformation efforts, particularly in areas like High-Performance Computing, Artificial Intelligence/Machine Learning, and Cloud Computing. Notably, regional priorities differ, with LAC placing greater emphasis on Artificial Intelligence and mobile technologies compared to Europe, concluding on the differing emphases on specific technological areas relevant to digital transformation efforts.

Nonetheless, significant hurdles remain. A lack of awareness across both regions is the primary obstacle, hindering wider adoption and maximising BELLA's potential. Budgetary constraints, especially in LAC, and technical limitations pose additional challenges that require targeted strategies for financial assistance and technical support. Finally, the survey highlights European concerns regarding policy usage and security measures. Addressing these concerns through strategies tailored to different regional contexts is crucial for building trust and ensuring the smooth implementation of BELLA.

In conclusion, the BELLA Infrastructure offers tremendous potential for fostering collaboration in research and innovation between Europe and LAC. However, unlocking this potential needs a multifaceted approach. Enhancing awareness, addressing budgetary and technical constraints, and implementing robust policy frameworks are critical steps. By prioritising these actions, BELLA can truly bridge the digital divide and propel a new era of collaborative research and advancement across the Atlantic.

QUESTIONNAIRE

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EU-LAC Digital Partnership

Survey on the digital ecosystem interconnectivity in LAC and EU

Welcome to the SPIDER survey!

The survey aims to evaluate the digital ecosystem interconnectivity and the potential of the BELLA Infrastructure that provides the long-term high-capacity interconnectivity to European and Latin American and the Caribbean research and education networks (NRENs), and to all the universities, education centers, research and innovation centers, astronomical observatories, among others, that are part of the NRENs.

Please note that your responses will be kept absolutely confidential and will not be disclosed to any third parties. Data will be used in aggregated form only and individual comments will not be attributed to their originators. Participation in this survey is voluntary. You may leave the survey at any time.

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Survey on the digital ecosystem interconnectivity in LAC and EU

Section A - Basic Information

* 1. Gender

- ◯ Woman
- ◯ Man
- ◯ Nonbinary

2. Organization name (optional)

[ ]

* 3. What is your current position in your organization?

- ◯ Researcher
- ◯ Professor
- ◯ Director
- ◯ Consultant
- ◯ Manager
- ◯ CEO, COO, CFO
- ◯ IT personnel
- ◯ Other (please specify)

[ ]

* 4. How would you describe your organization? Please select the option that best describes your organization

- ◯ NREN - National Research and Education Network
- ◯ RFO - Research Funding Organisation
- ◯ RPO - Research Performing Organisation
- ◯ Public University
- ◯ Private University
- ◯ Private organization – Service provider/ Manufacturing
- ◯ Government organization
- ◯ Innovation Hub / Technology park
- ◯ NGO: Non-Governmental Organization
- ◯ Other (please specify)

* 5. How many employees does your organization have?

- ◯ <10 employees
- ◯ 11- 50 employees
- ◯ 51- 250 employees
- ◯ > 250 employees

* 6. What country is your organization located in?

* 7. What region is your organization located in?

- ◯ Latin America and the Caribbean (LAC)
- ◯ European Union (EU)

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* 8. Does your organization collaborate with Europe?

- ◯ Yes
- ◯ No
- ◯ Don't know
- ◯ Not yet, but plan to

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* 9. Does your organization collaborate with LAC?

- ◯ Yes
- ◯ No
- ◯ Don't know
- ◯ Not yet, but plan to

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Section B - Connectivity Requirements Assessment

* 10. **How important is a high-speed internet connection for your activities?** From 1 (Not at all important: I can keep running my business/ research even without Internet for a couple of days) to 4 (Extremely important: I cannot run my business/ research without Internet)

1	2	3	4
◯	◯	◯	◯

* 11. **How satisfied are you with your current internet connectivity for your activities?** From 1 (Very dissatisfied: low speed or frequent instability affects my business/ research) to 4 (Very satisfied: I can do everything my business/ research need)

1	2	3	4
◯	◯	◯	◯

* 12. Does your organization need to make use of research infrastructures or computing resources (ex. processing, storage, databases, etc.) remotely hosted by a research organization for your activities?

- ◯ Yes
- ◯ No

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Section B - Connectivity Requirements Assessment

13. Since your answer was "yes", please indicate the type of research organization and country where it is located

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Survey on the digital ecosystem interconnectivity in LAC and EU
Section B - Connectivity Requirements Assessment

* 14. Does your organization need to make use of computing resources (ex. processing, storage, databases, etc.) hosted by a cloud provider for your activities?

- ◯ Yes
- ◯ No

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Section B - Connectivity Requirements Assessment

15. Since your answer was "yes", please specify.

[ ]

* 16. Please select the applications or services and the provider you are using for your activities (multiple choice).

	National Research and Education Network (NREN)	Telecommunications provider	Small company
Internet connectivity	◯	◯	◯
DNS services	◯	◯	◯
v4/v6 address space	◯	◯	◯
eduroam	◯	◯	◯
Identity Federation	◯	◯	◯
Education / training Platforms	◯	◯	◯
Collaboration Platforms	◯	◯	◯
Large file transfers (eNVIO / FileTransfer / Filesender)	◯	◯	◯
Virtual private networks (VPN) / layer 2 VLANs	◯	◯	◯
Repositories (for code or data)	◯	◯	◯
Testbeds / Test facilities	◯	◯	◯
Cloud Services	◯	◯	◯
Blockchain	◯	◯	◯
Consultancy	◯	◯	◯
Cybersecurity services	◯	◯	◯

Section C - EU-LAC Interconnectivity

BELLA provides the long-term high-capacity interconnectivity between GÉANT, in Europe, and RedCLARA, in Latin America and the Caribbean, interconnecting the National Research and Education Networks (NRENs) of the two regions.

* 17. How familiar are you with your local NREN?

- ◯ Very familiar
- ◯ Somewhat familiar
- ◯ Not very familiar
- ◯ Not at all familiar

* 18. To what extent is your organization using connectivity provided by your local NREN?

- ◯ Always
- ◯ Often
- ◯ Rarely
- ◯ Never
- ◯ Currently no NREN in my country
- ◯ Other reason not to use your local NREN (please specify)

* 19. Is your organization planning to use connectivity provided by your local NREN in the next two years?

- ◯ Yes
- ◯ No
- ◯ Maybe

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20. Since your answer was "No", please specify the reason

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* 21. How do you think BELLA can benefit your collaboration activities in the following application areas (select at least one):

- [ ] Enhanced connectivity
- [ ] Improved data transfer speeds
- [ ] Improved latency
- [ ] Collaboration opportunities
- [ ] Cost-effectiveness
- [ ] Access to advanced technologies
- [ ] Other (please specify)

22. What do you think are the most important technology areas that support the digital transformation and thus can benefit from the use of BELLA?

	Not Relevant	Relevant	Important	Very Important
Artificial Intelligence / Machine Learning	○	○	○	○
Mobile (5G / 6G / OpenRAN)	○	○	○	○
Blockchain	○	○	○	○
Cloud Computing	○	○	○	○
High Performance Computing	○	○	○	○
Cybersecurity tools and technologies	○	○	○	○
Virtual Research Environments (ex. virtual laboratories, simulators, science gateways, data repositories)	○	○	○	○
Quantum technologies	○	○	○	○

Other (please specify)

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Section D - Barriers to use the BELLA Network

* 23. What do you think are the main barriers or reasons preventing the use of BELLA through your local NREN? (Select all that apply)

- [ ] Lack of awareness
- [ ] Technical limitations
- [ ] Budget constraints
- [ ] Security concerns
- [ ] Policy usage constraints
- [ ] Other (please specify)

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Section E - Suggestions and Feedback

24. Are there any additional comments you would like to provide to improve connectivity for your EU-LAC collaboration?

25. Would you like to stay updated about SPIDER?

- [ ] I would like to receive the result of the survey.
- [ ] I would like to be invited to participate in focus groups with experts and policy makers on the adoption of the technologies I've chosen above.
- [ ] I would like to be invited to participate in the SPIDER Community of Practice.

26. If you checked one of the boxes above, please provide your e-mail address:

FINAL NOTES

This document is a summary of the survey report. The full report is available on the SPIDER website in the resources section.

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