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Bella II launches Test Beds

RedCLARA
Cooperación Latino Americana de Redes Avanzadas

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At RedCLARA, we continue to progress towards building and integrating digital ecosystems that support science, education, and research in Latin America and the Caribbean. Digital ecosystems are open, inclusive, participatory, and dynamic spaces that enable participants to interact with each other, supported by digital infrastructures such as high-performance computing centres, artificial intelligence tools, blockchain, the Internet of Things, data centres, and Earth observation data, among others. This network-connected infrastructure is a valuable resource for the region, fostering partnerships and collaborations that generate significant benefits for RedCLARA members and society at large.

One example of this value is our work on launching the Copernicus Academy LAC, which is now operating in Uruguay, Mexico, Guatemala, Brazil, and Ecuador. This effort contributes to the development of human capital capable of using Earth observation data for tasks related to climate change and precision agriculture. National networks, their universities, and governments have shown tremendous interest in this initiative, seeing it as an opportunity to promote solutions that can benefit government action, knowledge production, and innovation.

Other initiatives in the same line include ideathons and hackathons held throughout the year, culminating in the event we have called InnovaInvest, which aims to support groups that have developed solution prototypes, helping them to secure additional resources to advance their proposals. These initiatives demonstrate, in practice, what the digital ecosystem stands for and promotes.

These efforts are part of the broader context of the BELLA II project, whose overall goal is to develop and strengthen the aforementioned digital ecosystem. To achieve this, the project seeks to promote the creation of investment and innovation consortia in each of these countries, functioning as a space for value creation among national networks, governments, the private sector, universities, and communities. Currently, we are focusing particularly on Costa Rica, aiming to establish a sustainable infrastructure with long-term impact. The various stakeholders involved in the project, particularly development banks and cooperation agencies, have well received this consortium model, viewing it as a promising alternative to other investment models in development projects that, unfortunately, have not been successful in the past.

Once BELLA II is completed, we will move forward with the next phase, which seeks to integrate this infrastructure into the Caribbean islands—an essential step in completing a regional infrastructure that will have no equivalent in the region.

TICAL is coming soon!

Annual NREN Conference will discuss the role of Artificial Intelligence and data in academic and social transformation

Luiz Rasseli

The challenge of harnessing emerging technologies to drive innovation and transformation within higher education institutions in Latin America and the Caribbean will be the focus of the TICAL2024 Conference, scheduled for December 3-5 at the Barra Windsor Hotel in Rio de Janeiro, Brazil.

Under the theme "Connecting Knowledge: AI and Data as Catalysts for Academic and Social Transformation," this annual gathering of the region's research and education network community expects to bring together over 400 experts, including researchers, academics, university presidents, IT directors, and decision-makers. It will create a dynamic space where participants will not only present new ideas but also build strategic alliances to shape the region's future.

"The advancement of Artificial Intelligence gives us opportunities to personalize learning, improve research efficiency, and optimize internal processes. However, many institutions face challenges related to inadequate infrastructure, capacity building and the creation of ethical policies for using these technologies. Moreover, the growing volume of data requires new skills for analysis and management while raising concerns about privacy and security," explains Tania Altamirano, RedCLARA's Academic Relations Manager.

In response to these challenges, the conference program is being designed to provide solutions and boost the work of higher education institutions in the region. "We expect experts and academics to share success stories, discuss advanced technological solutions, and, above all, strengthen international collaboration. The seven proposed themes — E-Science, Sustainability, E-Health, Security, Infrastructure, Services, and Culture — align with the current challenges faced by higher education institutions, particularly regarding how to leverage emerging technologies for innovation and transformation", Altamirano adds.

Another major highlight of the thirteenth edition of TICAL is its venue: Rio de Janeiro. This marks the first time that Brazil will host the event, with the support of its advanced network, RNP. Leandro Guimarães, a member of the TICAL Programme Committee and manager of RNP's School of Networks, views holding the event in Rio as the perfect opportunity to discuss the topics outlined for this edition.

"The truth is, RNP and TICAL have been in a long relationship, but only now decided to get married! Jokes aside, hosting the event in Brazil has been our long-time wish, and I believe a vibrant, cosmopolitan city like Rio is the perfect setting to bring together NRENs from the region and other continents. Our expectations couldn't be higher. We hope for massive participation from the Brazilian community to strengthen ties with our Latin American peers as we discuss the future of NRENs, connecting the thematic pillars around the main topic of AI and data management. We invite everyone to join the conversation and enjoy what our country has to offer," Guimarães says.

Early bird registration now open

From August 8 to October 30, those interested in attending TICAL2024 can access promotional rates to register for the event. During the early registration period, the fee will be USD 100, representing more than 30% off the original conference fee of USD 150, which applies from October 30 until the event begins.

TICAL 2024

To register and secure your spot at the annual gathering of the Latin American and Caribbean advanced research and education networks (NREN) community, TICAL2024, simply fill out the registration form and make the payment according to your participation category. TICAL2024 is organized by RedCLARA with support from Brazil's National Research and Education Network (NREN), RNP, the BELLA II Project, and sponsored by Nokia.

For more information about the event, agenda, and registration details, please visit tical2024.redclara.net

InnovaInvest: BELLA II will connect innovation and investment for development

Luiz Alberto Rasseli

BELLA II's Innovation Hub, with support of RedCLARA, the European Union (EU) and Secretaría Nacional de Ciencia y Tecnología from Panama (SENACYT), will host the first edition of InnovaInvest on 23 and 24 October in Panama City. The aim of the event is to promote innovation and entrepreneurship in Latin America and the Caribbean.

This first edition, called the "Copernicus Edition," will focus on funding proposals that improve the use of data from the EU's Earth observation programme, Copernicus. These proposals are based on the results of a series of innovation events organized last year by BELLA II, RedCLARA, and the EU.

More than 300 experts from the academia, government, and the private sector from 17 Latin American and Caribbean countries and two European countries participated in the "Copernicus Innovation Challenge Ideathon" and the "Copernicus Innovation Development Hackathon." These events resulted in the creation of eight innovative concepts and six products, all using Copernicus data and fostering collaboration within the region's digital ecosystem.

At the InnovaInvest Copernicus Edition, participants will present these proposals to a panel of potential investors to secure funding that could help turn them into high-impact projects. "Previous events have focused on development of ideas and products. Now, we're taking it a step further by creating an environment where these results can be brought to life through funding and strategic connections, and reach their full potential in areas like climate change and agriculture," said Laura Castellana, RedCLARA's Academic Project Coordinator.

The event will bring together national research and education networks from the region, multilateral organizations, government agencies, seed capital funds, companies, and cooperation entities. "This is a unique opportunity to internationalize the products developed through our innovation initiatives and present them to key players like BIDLab, the Development Bank of Latin America (CAF), and EU delegations. The aim is to pave the way for incubation, acceleration, and development processes that will have a positive impact on the countries of the region," adds Castellana.

The first InnovaInvest will take place in collaboration with the Copernicus Academy Latin America and the Caribbean (Copernicus Academy LAC), another initiative supported by RedCLARA under BELLA II, which aims to strengthen capacity building and knowledge management in the field of Earth observation.

For more information about InnovaInvest, please visit: bella-programme.eu

Bella II Launches Test Beds for blockchain, cybersecurity, and HPC innovation

Jenny Flores

To drive the development of innovative projects with a positive societal impact, the BELLA II project, led by RedCLARA and co-funded by the European Union, has launched two operational testbeds with blockchain and High-Performance Computing (HPC) technologies. Additionally, a third testbed focused on cybersecurity is under development.

These testbeds are advanced technological environments developed in close collaboration with LACNET, the region's permissioned public blockchain network; SCALAC, the Advanced Computing Network for Latin America and the Caribbean; Ciberlac, the Excellence Network in Cybersecurity for Latin America and the Caribbean; and the University of the Republic (Udelar) in Uruguay.

These environments mark a milestone in technological experimentation and innovation in the region, allowing for the first time the testing and development of projects requiring these specialized technologies at lower costs, with shared resources, and in a highly secure environment.

The testbeds offer complex computational tools and new technologies or faithfully replicate real-world operational conditions, providing researchers and developers with an ideal platform to gain insights, identify issues, and test solutions. This approach ensures precise evaluation of performance and effectiveness before implementation in production environments, resulting in more efficient and secure development.

Each testbed has unique features. Based on LACNET-managed infrastructure, the blockchain testbed enables the development and validation of decentralized solutions, facilitating application experimentation and optimizing investment through pre-implementation testing.

The HPC testbed provides access to SCALAC's advanced infrastructure, enabling complex simulations, large data analysis, and the development of advanced models, thereby strengthening technological and research capabilities in the region and promoting socio-economic development.

Soon, the cybersecurity testbed, based on the cyber range concept, will offer a secure environment for simulating attacks, testing technologies, and improving defenses against cyber threats, enhancing regional resilience, and fostering collaboration.

The BELLA II project aims to bridge the digital divide and strengthen the regional digital ecosystem, facilitating relationships between researchers, scientists, and other sectors to develop solutions to regional challenges.

The project funds and supports the creation of testbeds in key areas as part of its activities to create specialized environments where researchers and developers can test and validate new technologies in controlled conditions, ensuring their effectiveness before large-scale implementation. As a result, the BELLA II Program contributes to advancing technological infrastructure in the region and socio-economic development, solidifying its role as a critical facilitator of innovation and technological excellence in Latin America and the Caribbean.

Learn more and contact us about testbed usage through the portal:

https://bella-programme.eu/es/resultados/testbeds

SCALAC:

Driving the Future of Supercomputing in Latin America

Jenny Flores

SCALAC has successfully transformed supercomputing in Latin America by providing a platform that stimulates research and innovation..

The Latin American and Caribbean Advanced Computing Network (SCALAC) is a key pillar for scientific and technological development in the region. The initiative began in 2011 as a response to the lack of high-performance computing (HPC) resources necessary for cutting-edge research across various scientific disciplines. This gap hindered researchers in the region from competing globally and addressing complex problems that required significant computational power.

In 2012, as the leading academic and research network in Latin America, RedCLARA facilitated collaboration among institutions from different countries, providing the infrastructure and support needed to connect research centers and universities in the region. Its technological platform and network of contacts allowed for coordinated efforts to identify common HPC needs and develop a joint strategy to address them.

Additionally, RedCLARA supported the creation of SCALAC by promoting institutional participation and managing key resources and projects for the development and expansion of supercomputer infrastructure in Latin America and the Caribbean.

Since its founding in 2012, SCALAC has evolved from a technological infrastructure project to a knowledge network with strong international alliances in supercomputing. Carlos Jaime Barrios, SCALAC's president, highlights the significant impact of the organization, exemplified by its contribution during the COVID-19 pandemic. "SCALAC's support allowed research centers to share data and generate the computing power needed to sequence the virus. During the initial months, RedCLARA dedicated 80% of its machine resources to this task, leading to significant advancements in bioinformatics. This is clear evidence of how SCALAC contributes to tackling global challenges

effectively," he states. A major milestone in SCALAC's evolution is the integration of CARLA (Advanced Center for High-Performance Resources and Laboratories), which represents a significant advancement in the region's supercomputing infrastructure. CARLA provides a highly specialized environment for the development and application of cutting-edge technologies, offering researchers access to advanced computing resources and a collaborative environment for innovation. This center enhances SCALAC's ability to support high-impact projects and foster regional cooperation.

SCALAC has also strengthened its collaboration with the Supercomputing Academy and promoted cooperation between the European Union and Latin America. A notable example is the LAGO project (Gravitational and Astrophysics Observatories), supported by the ERASMUS program. This support has facilitated mobility and academic exchange for students and researchers, strengthening international collaboration and fostering specialized human resources. Through ERASMUS, LAGO project participants access quality education, collaborate on cutting-edge research, and contribute to scientific advancement in the region.

Barrios emphasizes that these projects are merely the beginning. "What's most intriguing has been accessing experiences and institutional visibility. It's not just about access to machines but the experience and knowledge that help projects succeed. In countries that have invested in supercomputing, like Ecuador, Colombia, and Argentina, SCALAC has supported these processes, ensuring technological decisions in high-performance computing and offering backing."

Maintaining credibility is a significant challenge. SCALAC not only provides resources but also training and recognized competencies, giving solid support to projects and contributing to success in the field of supercomputing. Collaboration has been a fundamental pillar of SCALAC's success. By partnering with international institutions like RedCLARA, it has expanded its reach and resources. "We have built a collaboration network that transcends borders. These alliances allow us to share knowledge and resources, enhancing the impact of our projects," explains Barrios.

SCALAC has not only focused on the present but also looks to the future. "To strengthen infrastructure in advanced computing centers, it's essential not just to have larger equipment but also to use it efficiently and responsibly. Our infrastructure observatory guarantees that these resources are beneficial to the region and optimized in areas with sustainable energy in the long run. Additionally, fostering skills and competencies in quantum computing is crucial," he adds.

This type of computing (quantum computing) uses quantum physics principles to perform calculations. Unlike normal computers, which use bits to represent 0 or 1, quantum computers use qubits, which can be 0, 1, or both at the same time. This makes them very powerful for certain types of problems, allowing them to perform calculations that normal computers cannot or would take an extremely long time.

In the next five years, one of SCALAC's main challenges will be visibility and formalization. RedCLARA has been key in this process. Strengthening cooperation and infrastructure will allow SCALAC to maintain its autonomy while also improving science and innovation in the region. "It is crucial to secure political and financial support and integrate other countries into RedCLARA so they can benefit from its resources," emphasizes SCALAC's president.

Developing robust labs for advanced computing and reducing technological dependence is essential. Creating interconnected academic clouds is vital for researching areas such as food sovereignty and climate change. Integrating emerging technologies like quantum computing will offer new opportunities. Collaboration among countries, regardless of size, can lead to significant achievements, as demonstrated during the COVID-19 pandemic.

Cooperation has been key to addressing global challenges and will be crucial for maintaining a leadership position in advanced computing. Looking to the future, by strengthening its collaboration network and advancing the integration of emerging technologies, SCALAC not only drives research and innovation but also ensures the region is prepared to face global challenges.

SCALAC's vision and commitment are essential to ensuring that science and technology in Latin America continue to advance and contribute to global progress and sustainable development.

In August, SCALAC launched its revamped website with a modern and functional design that enhances navigation and access to advanced computing information in the region. Available exclusively in English, the portal allows users to intuitively explore projects, collaborations, and infrastructure developments. It also provides access to news, events, and educational resources, offering a clear view of SCALAC's mission, objectives, and team.

CARLA 2024, the region's premier high-performance computing event, will take place in Chile from September 30 to October 4 and features a dedicated section on the new website interface at scalac.redclara.net/en/.

Philippe Navaux: the 'conductor' of SCALAC towards the future

Luiz Alberto Rasseli

Reelected as the Chairman of SCALAC's Board of Directors for a second consecutive term, Philippe Olivier Alexandre Navaux is a born leader with a passion for science and technology, committed at the service of transforming society. His talent and discipline have made him a reference in the field of High-Performance Computing (HPC) in Latin America and the Caribbean.

Navaux was born in Brussels, Belgium, in 1948. When he was just two years old, he moved to Brazil with his family, thanks to a job opportunity for his father, that would help them to leave the instability of post-war Europe behind. The family settled in Porto Alegre, the capital of the state of Rio Grande do Sul, where young Philippe unwittingly took his first steps toward becoming the leader he is today: a key voice in the field of HPC. "I was a curious child and did a bit of everything. My parents once gave me an electric train set and I built a model. I had six electric trains, and I managed them so they didn´t collide, which involved a certain amount of engineering. I think it was in my blood," he says with characteristic humor.

Years later, the choice of his university career seemed rather obvious. Navaux chose to study electronics at the Federal University of Rio Grande do Sul (UFRGS), and, like the trains of his childhood, he had a very clear path to follow. He became a Brazilian citizen at the age of 25, obtained a master's degree in Physics (1973), also from UFRGS, and a Ph.D. in Computer Science from the Grenoble Institute of Technology in France (1979). This was the moment when HPC became an inseparable part of his professional career. He joined UFRGS as a professor in 1971 and became a Full Professor at the Institute of Informatics in 1996. He was then Director of the Institute of Computer Science from 1998 to 2006 and Vice-Rector of Postgraduate Studies from 2000 to 2001.

Throughout his career, Navaux has made significant contributions to the fields of engineering and HPC, not only regionally but globally. He has published around 400 papers in prestigious journals and conferences. His research has been recognized, and he has participated in many collaborative projects with international organizations and companies such as Petrobras, Microsoft, Intel, and HP. Additionally, he has supervised around 100 master's and doctoral theses, representing a significant contribution to developing new talent in the field of computer science.

HPC in the Region

Navaux is now one of the leading figures in Computer Architecture and HPC in the region. With the authority that comes from his extensive knowledge and background, he emphasizes the great importance of HPC today, which goes far beyond the evident. "High-performance computing is at the core of the development of whole field of computing. Why is that? Because what you 'see,' such as the many applications of Artificial Intelligence, are just models and algorithms at work. But to run all that, you need processing power, which is where HPC comes in. The same goes for big data and cloud computing services, among others. HPC is the rail that keeps the train moving ", he says.

The rapid growth of the field in recent years (there are some chips with 1 trillion transistors) leaves the specialist with a dual reaction: surprise at the unimaginable advances in the area he saw emerge in the 1970s, and a desire to continue working so that Latin America and the Caribbean keeps evolving and doesn't fall behind. "A major challenge we face is the lack of resources. There's a lot of instability, even politically, and what research needs most is stability and planning, in addition to investment. Despite the difficulties, we are trying to move forward. The number of supercomputers is increasing, as noted in SCALAC's latest report, and our organization's work is helping to interconnect the main HPC centers in Latin America and organizing conferences, courses and training camps for human resources," he highlights.

Navaux believes the region's greatest contribution to the world of HPC lies

precisely in the quality of its human resources. "The education of our students is excellent, as evidence by the fact that many of them are recruited by leading supercomputing centers around the world. The research we conduct is also of high quality, but it still hampered by a lack of computing resources," he says.

Vision for SCALAC

Navaux has a clear vision of the direction SCALAC should take during the 2024-2026 term to fill resource gaps and harness the region's impressive human capital: becoming a bridge builder. "Our last meeting forced us to think beyond immediate needs and plan strategically for the future, and I believe that building bridges is a very fitting phrase to describe what we aim to do with SCALAC in the coming years," he explains.

SCALAC, the Advanced Computing System for Latin America and the Caribbean is a consortium of scientific and high-performance computing centers from several Latin American countries. The organization is an allied of RedCLARA. Recently, the organization met in Costa Rica to review the progress and challenges, and to plan future collaborations.

"If it is true that we have already connected the supercomputing centers in the region, we now want to use this interconnection to serve research groups in other countries that don't have as many machines or access to HPC resources. In other words, we want to take the technology to those who need it." For the SCALAC president, the success of regional initiatives and projects in areas such as climate change, biology, high-energy physics, machine learning, and, of course, Artificial Intelligence, is linked to the organization's success and its ability to coordinate efforts.

In this respect, Navaux sees great value in contributing to governments and facilitating joint efforts with other sectors. He notes that the recently released report on the state of robust HPC infrastructures in the region is a valuable resource for governments to identify where improvements are needed and implement necessary advancements. "The report is a snapshot of the moment, which should be constantly updated. However, it helps us have a panoramic view of the state of HPC in the region."

SCALAC will also seek to further strengthen its position as a reference for HPC in Latin America on a global level. Its vision is to establish agreements with international entities, such as EuroHPC, and to apply for funding for projects that benefit the region, in a model very similar to what RedCLARA has done with initiatives such as the BELLA programme. Navaux points out that the Latin American Cooperation of Advanced Networks is more than just an ally; it is a model to follow: "We see ourselves reflected and inspired by RedCLARA's institutionalization, innovation, and broad vision for Latin America and the Caribbean," he emphasized. Whether leading the organization's "train" or building bridges for the development of HPC in the region, SCALAC seems to be in good hands for the years to come.

Ipezinho, the award-winning chatbot of Brazil's advanced network

Luiz Alberto Rasseli

The boom of Artificial Intelligence (AI) and the countless possibilities it opens up in the world of research and education inevitably brought an important question: How can National Research and Education Networks (NRENs) practically benefit from this technology revolutionizing the world? Among the many possible answers, a project from the Brazilian network, RNP, offers an exciting path: the virtual assistant Ipezinho.

Launched in 2019, Ipezinho, a unique AI-based virtual assistant, has revolutionized the service delivery to institutions connected

to the Brazilian network. It interacts with clients in multiple languages, provides answers related to general services, and opens tickets to activate service analysts across all RNP's digital service channels, such as the website and social media.

"We are dealing with a customer profile that no longer wants to send emails or make phone calls, nor wait hours or days to be attended to. The new generation is looking for speed and efficiency when it comes to solving their problems. In 2019, with the chatbot boom and when no one was yet talking about AI or ChatGPT, we decided to invest in a tool based on these technologies. That's how Ipezinho was born, which handles 30% of RNP's customer service demand today," explains Francisco Junior, Integrated Service Manager at the Brazilian network. Ipezinho, named after the Rede Ipê (as the RNP backbone is known in Brazil), virtually solves many of the issues related to the Brazilian National Network's service portfolio. "These include eduroam, CAFÉ (identity federation service), authentication, and connectivity services. When a user institution is disconnected from the network, the person in charge can open a ticket directly through Ipezinho, speak quickly with one of the analysts, and monitor the progress of their request in real-time", Junior explains.

Another function of the chatbot is to answer questions from network users, in a service model very similar to what ChatGPT offers today. To do this, the Integrated Services Team, led by Francisco Junior, connected Ipezinho to an OpenAI API (the company that created ChatGPT) which reads and learns to answer questions based on RNP's database, of more than 10,000 knowledge items. "Users can ask absolutely anything related to the universe of RNP services and get an instant answer. To give you an idea of the solution's effectiveness, 50% of our Web Conference service requests are already solved this way", he adds.

In terms of numbers, Ipezinho handled about 5,000 calls in the first half of 2023. According to RNP's Integrated Service Manager, the chatbot's average accuracy is 90%, and the average satisfaction rating for Ipezinho's service is 4.4/5.

OpenAI's features were added to the chatbot last year to keep Ipezinho up-to-date and increasingly efficient and to meet the demands of a generation increasingly eager for practicality and speed. "We are constantly working to develop the tool and stay at the forefront. In Silicon Valley, people say that great companies are born from the tripod of 'money, knowledge, and rebellion.' We didn't have enough money, but we had some knowledge and rebellion. The truth is that when we started using OpenAI, the cost was very low, and it was more important to have the courage to think outside the box and take something that was only used for personal purposes on apply it on an organizational scale." This continuous improvement ensures that Ipezinho will always be at the cutting edge of technology.

Award-Winning Initiative

The fruits of this boldness have been abundant. In addition to providing multiple costumer benefits, in 2022, Francisco Junior's team won the "Best Support Team in Brazil" award at the HDI International Institute's Trophy for Ipezinho. In the 2023 edition of the same event, RNP's chatbot was awarded "Best Virtual Assistant in Brazil," beating virtual assistants from companies the size of Petrobras, the Brazilian oil giant. "Receiving these awards was very gratifying for us, because we realized that we could provide our students, our researchers, and our entire academic network with services that are among the best. Some people think public services don't have to be high quality. We think the opposite! We can and should offer high quality service. It's not just a matter of money; it's about processes and putting the end-user at the center of what we do," says the manager.

Another important victory for the team that created Ipezinho is that, for the past eight years, the team and its services have been audited by HDI, obtaining top marks in areas such as process and leadership, placing RNP among the top 20 audited companies in Brazil in terms of customer service. "For me, this is proof that we, as academic networks in Latin America and the Caribbean, can be the best in our countries and a reference for other companies and networks worldwide," concludes Francisco Junior.

In the case of RNP and Ipezinho, this is already a reality. In September, representatives from the Brazilian network visited the facilities of MoreNET, the academic network of Mozambique, to train their teams in using the virtual assistant so that institutions in that country can also benefit from the technology that has so profoundly changed the world in recent years.

REUNA: Chile's three decades of scientific and educational transformation

Since its creation in 1990, the National University Network (REUNA) has been a fundamental pillar in the scientific and educational transformation of Chile.

Jenny Flores

As a founding member of RedCLARA, REUNA has facilitated connections between universities and research institutions in Chile and around the world over the course of 30 years. It has also promoted critical projects and collaborations in areas such as digital transformation, telemedicine, cybersecurity, high-performance computing, and earth observation, driving significant advancements. As it celebrates its past successes, REUNA is determined to face future challenges by focusing on expanding its impact across the country, supporting the academic and research community, and strengthening its network of partners and alliances.

REUNA is a well-established network with immense potential, playing a crucial role in strengthening the digital ecosystem and innovation in Latin America and the Caribbean. As an active member of RedCLARA, it contributes to reinforcing the regional network that connects academic and research institutions across the continent, facilitating smooth collaboration and the exchange of crucial data. The Chilean network, along with those of Ecuador, Brazil, and Argentina, played a pivotal role in the first phase of the BELLA (Building the Europe Link to Latin America) program, which RedCLARA implemented and the European Union co-financed. Under this program, a submarine fiber optic cable directly connected Latin America to Europe for the first time. This achievement has not only improved global connectivity for universities and scientific institutions in the region but also strengthened REUNA's position as a vital link in the international network, promoting continuous collaboration between researchers and academics on both continents.

The Chilean network is part of SPIDER (EU-LAC Strategic Partnership for the Implementation of Digital Dialogues in R&I Cooperation), a project funded by the EU and composed of nine organizations that drive the use of the BELLA infrastructure to achieve impactful results in EU-LAC cooperation in research and innovation. SPIDER aligns with the efforts of the BELLA II project, implemented by RedCLARA and co-financed by the EU.

In the dynamic landscape of academic networks, Luis Eliécer Cadenas, Executive Director of RedCLARA, highlights REUNA's pioneering role. According to him, the role of an organisation like this in Chile is fundamental to the entire educational, university, and innovation systems. "REUNA was one of Latin America's first national education and research networks, but its growth over the years is even more impressive," he says.

He adds, "REUNA has consistently shown a dedication to serving its partners, Chilean universities, and research centers. It has built, step by step and with great consistency and effort, something that is not easy to achieve: a team that is proud of what they do and understands the significance of their work. Long live REUNA, and many thanks from all of Latin America, because what REUNA does strengthens us all," he emphasizes.

A Path of Innovation and Growth

REUNA's story starts in Chile, which is undergoing modernization. In 1994, the universities of the Council of Rectors (CRUCH) established the network as the "Corporación REUNA," with the support of the National Commission for Scientific and Technological Research (CONICYT), which is now the National Agency for

Research and Development (ANID). Since then, it has been fundamental in improving the country's academic connectivity, positioning itself as a strategic ally for higher education and research institutions.

Since 2004, the corporation has grown from 13 members to over 50 affiliated organizations, consolidating itself as a powerful collaboration network with a presence from Arica to Punta Arenas and a robust international presence.

Among the most significant milestones in its history is its role in the founding of RedCLARA, contributing its infrastructure expertise and knowledge in the early 2000s. During that same period, REUNA connected Chile with Internet 2, the advanced U.S. network, marking the beginning of its global expansion. In 2004, it solidified its role by integrating with the European advanced network GÉANT through RedCLARA, strengthening its connection with the world's leading academic networks.

In 2005, the Association of Universities for Research in Astronomy (AURA) became the first non-university institution to join REUNA, a fundamental alliance. This alliance set a precedent for the world's leading astronomical observatories to establish themselves in Chile, confident that they would have the necessary connectivity conditions for their operations. "The development of the network has been a collaborative effort with partners and observatories, which act as catalysts for large data movements and require infrastructures capable of meeting the challenges of astronomy and the academic community in general," emphasizes Paola Arellano, Executive Director of REUNA.

In 2012, REUNA, in collaboration with the Mathematical Modeling Center of the University of Chile, inaugurated the first photonic network (which uses light to transmit data through fiber optics instead of electrical signals) for science and education in Chile's capital, Santiago. This network significantly improved the infrastructure for scientific research and development and facilitated access to the National High-Performance Computing Laboratory (NLHPC).

During the COVID-19 pandemic, REUNA quickly adapted to new demands. With universities closed, confinement measures in place, and the rise of remote work, the network increased its videoconferences from 7,000 in the previous year to over 3 million between 2020 and 2021. The partners achieved this increase through synergy and collaborative work, without incurring significant costs. The University of Concepción also contributed a telemedicine platform for online consultations, and REUNA deployed virtual servers to handle the high demand. This platform had a significant impact, attending to consultations from not only Chile but also 143 other countries.

In 2024, REUNA and the Atacama Astronomical Park inaugurated a new fiber optic connection at Cerro Toco, near San Pedro de Atacama, which will help transmit data from international astronomical projects in the area, strengthening collaboration and scientific research in this privileged geographical zone.

Connecting the End of the World

Looking to the future, REUNA plans to expand its network to Antarctica. With Punta Arenas as a strategic starting point, this ambitious project aims to connect more than 20 countries operating on the white continent, facilitating collaboration between scientific stations in one of the planet's most extreme environments.

"Punta Arenas, Chile's southernmost city, serves as the gateway for more than 20 countries conducting scientific expeditions to Antarctica, so for us, extending our network to that city was essential, and we achieved that this year with the Patagonia project. But our dream is to go further. Currently, the Chilean government is leading a feasibility study for this expansion, so we are excited about the possibility of being part of this initiative and supporting the interconnection of Antarctic centers with global research and education networks," states Arellano.

A constant challenge for REUNA is to expand and strengthen its network infrastructure. The network is developing physical exit channels, establishing access points through RedCLARA, and collaborating with the BELLA II program to improve connectivity, extend coverage to remote areas, and increase data transmission capacity. "Chile faces challenges such as fires, earthquakes, and tsunamis, and these improvements are crucial to ensuring the continuity and resilience of our network," she notes.

REUNA's collaboration with the Copernicus Center, which manages the Copernicus Earth Observation program, aligns with the BELLA II program by strengthening the digital infrastructure needed to access satellite data. This facilitates the integration of Copernicus data into research and academic projects, boosting scientific and technological development in the region.

As part of a new agreement with ESO (European Southern Observatory) and ALMA (Atacama Large Millimeter/Submillimeter Array), REUNA will expand the current network capacity for the transmission of astronomical data from the Atacama Desert to the world by tenfold. "The ALMA observatory is undergoing a significant upgrade process that will require a substantial increase in data transmission capacity, as will ESO's cutting-edge telescopes, such as the Very Large Telescope (VLT) and, in the future, the Extremely Large Telescope (ELT), the world's largest optical infrared telescope under construction. This new alliance

reflects the trust we have built over a decade of collaboration and will allow us to continue providing them with the necessary connectivity conditions to stay at the forefront of science," says Arellano.

REUNA is an example of a continuous effort to innovate, and it has demonstrated how cooperation and innovation can transform a country's academic and scientific landscape and contribute to that of the entire region. Arellano emphasizes that the key to success has been working with people and building a network of trust: "The network is based on this collaboration and mutual trust, extending its impact beyond Chile to a global perspective."

Arellano also highlights RedCLARA's role in fostering a global vision in research and teaching, as well as the importance of collaborating with international networks to strengthen global communication and cooperation. Finally, she expresses deep gratitude to REUNA's partners for their commitment, trust, and continued contribution to the corporation's success.

Further progress for Copernicus Academy LAC

Ixchel Pérez

RedCLARA is leading the development of the Copernicus Academy in Latin America and the Caribbean (Copernicus Academy LAC) within the BELLA II project. In this effort, Guatemala and Uruguay have made significant progress, marking important regional Earth observation advances in recent months.

In July, Guatemala established its National Copernicus Committee with the collaboration of the European Union (EU) Delegation, the National Research and Education Network of Guatemala, the National Secretariat of Science and Technology (Senacyt), the Universidad del Valle, and RedCLARA. This committee, comprised of representatives from various institutions, experts, and authorities, aims to develop a strategic plan for the Copernicus Academy LAC, promote the use of European Union Earth observation data, and coordinate efforts between national and international bodies. The creation of the committee underlines the country's commitment to scientific research and data-driven decision-making to address development challenges.

The Uruguayan Agency for International Cooperation (AUCI), the Uruguayan Academic Network (RAU), RedCLARA, and the National Emergency System (SINAE) signed a statement to create the Copernicus Academy in Uruguay. On 20 August, they held the first meeting of the National Committee to officially launch the committee, define its strategy, and develop an action plan. The meeting brought together representatives from universities, ministries, and the private sector to design the plan and identify priority areas.

These developments are crucial for promoting Earth observation and international cooperation, contributing to sustainable development and capacity building in Latin America. The establishment of the Copernicus Academy is a unique opportunity to train current and future generations in effectively using and processing satellite data and images to improve the quality of life on the planet.

CoAfina Hackathon: Solutions for social impact issues in Latin America and the Caribbean

Luiz Alberto Rasseli,
with information from LA-CoNGA Physics

Over 80 participants, 40 universities, 15 Latin American countries, and four major social impact topics tackled by the winning teams. These are just some of the impressive numbers from the third edition of the CoAfina Hackathon, which took place between July 19 and 21.

Driven by the LA-CoNGA Physics project, the initiative aimed to bring together university students (undergraduate, master's, doctoral, or other programs) from Latin America to collaboratively develop solutions addressing social impact issues related to science and education.

During the three days, participants worked in multidisciplinary and multicultural teams, remotely connected, to solve challenges presented by professionals and researchers from around the world. The topics spanned education, health, agriculture, environment, citizenship, governance, and public opinion. In addition to the problem-solving work, participants attended keynote talks and took virtual tours of major international laboratories.

Each team presented its solution to a panel of interdisciplinary experts from Latin America, who selected four winning ideas. In this third edition, the podium featured students from seven universities in Venezuela, Ecuador, Colombia, and Peru.

The first prize went to the "Delta Function Pizza" team, made up of four physics students from Universidad Centroccidental Lisandro Alvarado (Venezuela): Adriana Araña, Dalia García, Víctor Sánchez, and Bárbara Guanipa. Their solution tackled detecting negative themes and discourse in Colombian newspapers' coverage of Venezuelan migration, a challenge posed by Mairene Tobón, a member of the Fundación Entre Dos Tierras in Colombia.

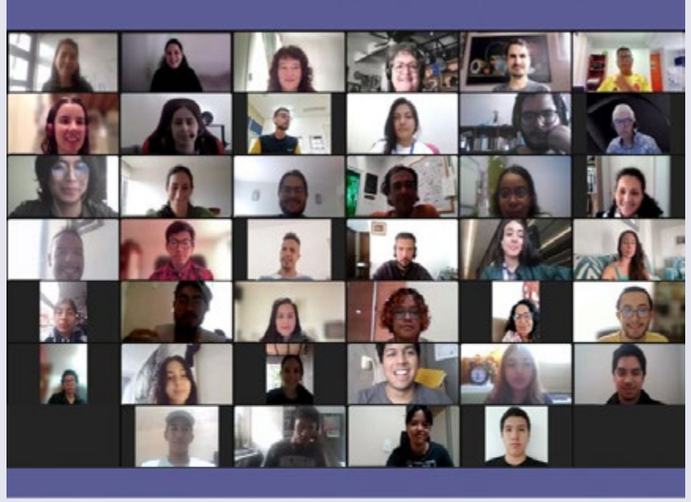
The second prize went to the "Neotropical 2.0" team, made up of students from Universidad Simón Bolívar (Venezuela), Universidad de Los Andes (Venezuela), Universidad Central de Venezuela, and the Escuela Superior Politécnica del Chimborazo (Ecuador). The team's fields of study included biology (Emilio Toledo and Rubén Niño), physics (Andrés Caña and Cristian Usca), and anthropology (Isabella Sánchez). They impressed the judges with their solution to citizen classification of microplastics, a challenge presented by Marga Rivas from Universidad de Cádiz (Spain) and Iskya García from Creative Commons (Venezuela).

The third prize went to the "Book Finders" team, composed of four Venezuelan students from Universidad de Los Andes (Venezuela), Universidad Nacional

Experimental del Transporte (Venezuela), and Universidad Central de Venezuela. Their fields of study included physics (Reinaldo Díaz, Juan Martínez, and Richard Brito) and engineering (Anibal Pico). Their solution focused on optimizing a Venezuelan tool for locating public domain works, which can be scaled to other countries, a challenge presented by José Luis Mendoza from the Latin American Center for Internet Research in Venezuela.

The "Data Fixers" team received a special mention for their solution addressing citizen recognition of wetland transformations in Colombia. Alejandra Melfo and Yelitza León from Universidad de Los Andes (Venezuela), and Óscar Altuve from Universidad Simón Bolívar (Venezuela), presented the challenge. The team included two systems engineering students from Universidad Autónoma de Bucaramanga (Colombia): Adrián Parra and Luis Jaimes; a physics student from Universidad Nacional de Trujillo (Peru); and an electronics engineering student from Universidad Nacional de Ingeniería (Peru).

Reina Camacho Toro, a researcher at the French National Research Center (CNRS) and a member of the CoAfina organizing team, considered the third edition a success due to the quality of the proposals and for demonstrating the ability of Latin America's new generations to engage in innovative scientific practices. "Across all editions, dozens of challenges have emerged that promote good scientific and technical practices using open data, with an impact on education and social sectors through an interdisciplinary lens. We are also



excited to see some of the challenges solved in these three editions evolve into prototypes for medium-term development," she emphasized.

She added that CoAfina's benefits go beyond finding solutions to regional challenges. "We emphasize the importance of initiatives like CoAfina in building communities around data and open science in Latin America, as well as in training new generations in a scientific environment where science is as open and accessible as possible," she explained.

The third edition of CoAfina was co-organized by LA-CoNGA Physics in collaboration with Creative Commons Venezuela, RedCLARA, and Ecuador's Academic Network (CEDIA). It also received funding from the Open Research Funders Group (ORFG), INAIT, Software Sustainability Institute (SSI), and Open Life Science (OLS).

For more information, visit
laconga.redclara.net/hackathon

New President and Vice-President elected at LA Referencia

LA Referencia

The Board of Directors of LA Referencia, composed of representatives from the countries that make up the network, has elected Robinson Zapata-Pino (SENACYT - Panama) as President and Patricia Muñoz (ANID - Chile) as Vice President for a two-year term.

(Source: LA Referencia) Robinson Zapata-Pino is the Head of the Scientific and Technological Information Department of the National Secretariat for Science, Technology, and Innovation (SENACYT) of Panama. He has been a member of the board of LA Referencia since 2020.

Patricia Muñoz is the Deputy Director of Networks, Strategy, and Knowledge at the National Research and Development Agency (ANID) of Chile. She is also one of the creators and founders of LA

Referencia and has been a member of the Board of Directors until now.

The new president explained that his common goal with Patricia Muñoz is to highlight the need to integrate the Ibero-American countries to continue the path toward open science. He added: "We are two sub-regions, and our focus is on unity and integration. This is our first message, the integration of visions."

In this regard, Patricia Muñoz said, "LA Referencia is a public good that has been well received by countries in the region and even beyond. We need to strengthen this effort and not lose it, to move from access to open science. We need to have a cooperative perspective, including differences; this is what motivates us to be here. Based on what we have achieved so far, we are looking for a more coordinated way to understand what we want as a region in terms of LA Referencia and what open science is."

Robinson Zapata-Pino has emphasized the objective of continuing to strengthen the regional open science infrastructure when setting the objectives of collaboration. This includes the technical aspects related to systems, platforms, and the opportunity to integrate other knowledge systems and organizations, such as national research and education networks, and other initiatives and organizations that contribute to the consolidation of open science. The integration of innovation ecosystems that are part of the productive management of countries and funding spaces for long-term sustainability are also fundamental for LA Referencia to continue to grow and include more countries to enable the exchange of best practices among all countries, whether they are members of LA Referencia or not.

About Robinson Zapata-Pino

Biotechnologist, research specialist. He has been an assistant professor at Santo Tomás University in Chile and a researcher at Diego Portales University, the University of Santiago in Chile, and the University of Panama. He is currently the head of the Department of Scientific and Technological Information at SENACYT in Panama.

About Patricia Muñoz

Patricia Muñoz has been the director of the Scientific Information Program at CONICYT and, since 2019, has served as the Deputy Director of Networks, Strategy, and Knowledge at ANID. In this role, she leads strategic areas that include territorial and international coordination, institutional strengthening, access to data and scientific knowledge, and enabling infrastructures for astronomy and information access. Her main areas of expertise are open access and science, monitoring scientific production, and science policies.

Currently, at ANID, she leads the implementation of the Open Access Policy and participates in several expert committees and international networks, including Red SciELO. Starting in 2024, she will join the Council of the Research Data Alliance (RDA). She is also a founding member of LA Referencia, the Ibero-American infrastructure for open science, and part of its board of directors, which she chaired from 2016 to 2018.

About LA Referencia

The Latin American Network for Open Science, or simply LA Referencia, supports national Open Access strategies in Latin America and Spain through its services, providing a platform with interoperability standards, sharing, and visibility of the scientific production generated by higher education and scientific research institutions.

Through national nodes, LA Referencia integrates scientific articles, doctoral theses and master's theses from over a hundred universities and research institutions in the ten countries that currently make up the network: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Spain, Mexico, Panama, Peru and Uruguay. This initiative is based on technical and organizational agreements between public science and technology agencies of the member countries, in collaboration with RedCLARA.

LA Referencia was born from the Cooperation Agreement signed in Buenos Aires in 2012, reflecting the political will to offer Latin America's scientific production in open access as a regional public good, with an emphasis on results funded by public resources.

LACChain podcast explores the possibilities of RedCLARA's new blockchain project

Luiz Alberto Rasseli

The functionalities of the “Diploma” project, an initiative by RedCLARA that facilitates regional academic dialogue and the interoperability of student and professional credentials, along with other educational services deployed on LACNet’s blockchain networks, were discussed in one of the podcasts from the “Café LACChain” series, titled “Education in the Web3 Era.”

RedCLARA’s Services Manager, Carlos González, presented the Diploma Project. He participated in the conversation along with Anabella Laya, Founder and CEO of Acreditta; Carmen Ocampo, Co-founder and CTO of BlockchainDC; and Marcos Allende, Co-Founder and CEO of Blerify.

Through this initiative, RedCLARA provides a service on LACChain networks so that the Latin America and the Caribbean’s national research and education networks (NRENs) can enable their member institutions to issue verified academic certifications and diplomas through blockchain. This information can be securely stored, shared, and standardized.

“The role of blockchain is very significant for the work of the national networks and for the entire research ecosystem of Latin America and the Caribbean, with challenges ranging from credential verification to identity management and data traceability,” González emphasized. He added that the NRENs that are part of RedCLARA came together to discuss what could be done to ensure this proper "mobility" of data, and from this effort, “emerged the Diploma, which, with the strong support of LACChain and LACNet, allows " easily verifiable credentials issued by the different member institutions of the NRENs, becoming a regional standard.”

According to the RedCLARA Service Manager, the model creates a "trust list" that ensures that the certificate issuing institution has been properly validated by its respective NREN, which, in turn, has been previously validated by RedCLARA. “This creates a chain of trust confirming that the certificate issuer had the authority to do so, providing greater confidence for all stakeholders.”

Currently, the Diploma project is already operational, and universities wishing to issue verifiable academic degrees using blockchain technology can turn to the national networks and RedCLARA for guidance. The process can be carried out through partners authorized by the regional network or through a joint consultancy between RedCLARA, LACChain, and LACNet which will guide the technical teams

of the higher education institutions. For more information about the Diploma Project, please contact to servicios@redclara.net.

Sobre LACChain y LACNet

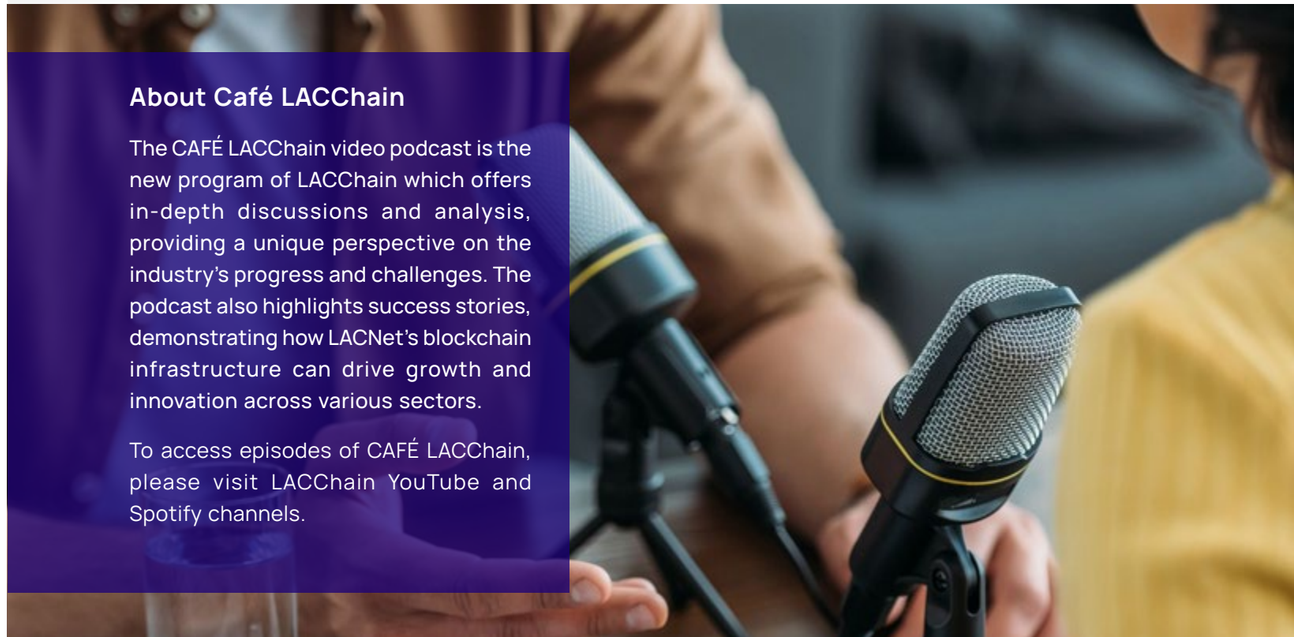
LACNet enables governments, NGOs, businesses, startups, and consortia to deploy blockchain projects quickly and efficiently. Since its launch in 2022, LACNet has facilitated the implementation of more than 100 blockchain solutions across 21 countries in the region, benefiting more than 9.3 million people.

For more information, please visit
lacnet.com

About Café LACChain

The CAFÉ LACChain video podcast is the new program of LACChain which offers in-depth discussions and analysis, providing a unique perspective on the industry’s progress and challenges. The podcast also highlights success stories, demonstrating how LACNet’s blockchain infrastructure can drive growth and innovation across various sectors.

To access episodes of CAFÉ LACChain, please visit LACChain YouTube and Spotify channels.



New Report on HPC in Latin America and the Caribbean

Luiz Alberto Rasseli

The Advanced Computing System for Latin America and the Caribbean (SCALAC) recently released a report on the current state of high-performance computing (HPC) in the region. Supported by RedCLARA, SCALAC promotes the development of HPC in the region to contribute to closing the digital divide and achieving technological autonomy and data sovereignty.

The authors of the report are SCALAC General Chair and Director of the Scientific and High-Performance Computing Center (SC3UIS) at the Industrial University of Santander (UIS) in Colombia, Dr. Carlos Jaime Barrios Hernandez; Professor of the University of Córdoba (Argentina) Dr. Nicolas Wolowick, and UIS engineer and professor Luis Alejandro Torres Niño, with contributions of Dr. Phillippe Navaux, President of SCALAC and Professor of the University Federal of Rio Grande do Sul (UFRGS - Brazil); Dr. Harold Castro Barrera, Professor of University of the Andes (Colombia); and Dr. Esteban Meneses, Director of the National Center for High Technology of Costa Rica.

The report, titled "High-Performance Computing Robust Systems Report in Latin America and the Caribbean", is a comprehensive compilation of 41 reference platforms from 29 academic and governmental institutions across nine countries in the region. Eleven of these institutions are affiliated with SCALAC, and seven provide connectivity through a national network or RedCLARA. The findings of this report are of significant importance to the academic and government institutions in the region, providing valuable insights into the current status of high-performance computing systems and their connectivity.

The report was a collaborative effort, drawing on information provided by the various institutions, data previously gathered by the RISC-2 Observatory, and additional information collected by SCALAC and RedCLARA. While the report maps capabilities by country, it does not rank them or analyze platform performance and supremacy.

Beyond the machines listed in the international Top500 ranking (concentrated in Brazil and including the Argentine machine Clementina XXI as of June 2024), the report concludes that region's infrastructures hold great promise,

mainly supporting hybrid research needs in scientific computing, data analytics, and artificial intelligence. If countries were ranked by installed capacity, Brazil would have the highest capacity among the studied nations, followed by Argentina, Mexico, Chile, Colombia, Costa Rica, Uruguay, Ecuador, and Bolivia.

The report, with a new version already announced for September 2024 to include more platforms, also highlights the growing investments in HPC from the public and private sectors. Investments in robust infrastructures have the potential to support a wide range of needs and open exciting possibilities for the future of computing in Latin America and the Caribbean. These needs extend beyond traditional scientific computing and simulation, including data analysis and artificial intelligence.

Founded in 2012, SCALAC is the Advanced Computing System for Latin America and the Caribbean, a regional alliance supported by the national research and education networks (NRENs) members of RedCLARA. In 2018, SCALAC become an international civil society organization, with its legal headquarters in Costa Rica.

To download the report, please visit
bit.ly/3AeMN0Y

BELLA Programme highlighted at the EU-LAC Global Gateway Investment Agenda meeting

Luiz Alberto Rasseli

Almost one year after the EU-CELAC Summit and the launch of the European Union's Global Gateway Investment Agenda (GGIA) in Latin America and the Caribbean, representatives of the EU-LAC Digital Alliance Member States met in Madrid (Spain) on July 9 to review the achievements, lessons learned, and challenges in implementing the Agenda.

The "Second Overview Meeting of the EU-LAC Global Gateway Investment Agenda" was held at the Casa de América and was attended by high-level authorities from both regions. Participants included Alicia Varela Donoso, Director General for International Trade and Investment of the Government of Spain; Félix Fernández-Shaw, Director for Latin America and the Caribbean of the Directorate General for International Partnerships (DG-INTPA) of the European Union (EU); and Luis Eliécer Cadenas, Executive Director of RedCLARA, who spoke on the panel "The Investment Agenda for an Inclusive Digital Transition: Examples of private sector projects and experiences."

Miguel Exposito Verdejo, Deputy Head of Unit of the DG-INTPA, moderate the panel. The other participants were Mathilde Maur, Director of Global Policies and International Affairs of Nokia; Ana Luisa Valero Huete, Director of Public Policies of Telefónica; and Ignacio Sanchis, Commercial Director of HISPASAT.

During his presentation, Cadenas highlighted the efforts made by both regions to implement the BELLA Programme and the achievements of this initiative in reducing the digital divide and supporting the development of the necessary infrastructure to consolidate and expand a regional digital ecosystem of science, technology, education, and innovation. "BELLA is a consortium in which Latin American and European participants have joined forces and worked together to address the long-term interconnectivity needs of the European and Latin American research and education communities," explained Cadenas.

The first phase of the BELLA Programme secured spectrum rights for the first direct submarine cable between the two regions complemented by RedCLARA terrestrial fiber optic network infrastructure. This strengthened a ring of connectivity between Ecuador, Chile, Brazil, and Colombia, allowing for the potential activation or connection to other academic networks. BELLA II aims to extend these achievements to as many countries in the region as possible, starting with Central America and the Caribbean.

The aim of BELLA II is to help reduce the digital divide and consolidate the regional digital ecosystem, enabling relationships and exchanges between companies,

research centres, educational institutions, and national research and education networks. These efforts are in line with the strategic objectives of Latin America and the Caribbean (LAC) and Europe in the fields of in education, science, technology, and innovation. "From my perspective, this is one of the most successful projects we have undertaken in the framework of strategic relationship between the two continents, made possible by the investment contributions of partners such as the European Union (EU)," said the Director.

The EU's Global Gateway Investment Agenda in Latin America and the Caribbean focuses on potential projects that, like BELLA, meet the needs of the region, create local value, and promote growth, employment, and social cohesion. It represents a political commitment to work together to identify opportunities for green and fair digital investment in Latin America and the Caribbean, leveraging the open environment provided by trade and investment agreements, and contributing to the achievement of the Sustainable Development Goals.

For more information on the GGIA, please visit: https://international-partnerships.ec.europa.eu/policies/global-gateway/eu-lac-global-gateway-investment-agenda_es#x

For more information on the BELLA Programme, please visit: https://www.bella-programme.eu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