



Geneva's Blueprint For Global Connectivity: The Case Of Giga

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This report was written by members of the Competence Center for Innovation and Partnerships (I&P) at the University of Geneva. The Center aims to create, share and promote knowledge on innovation and cross-sector partnerships in the Geneva ecosystem. It develops systematic research to catalyze innovation, grows learning-based partnerships across organizations, including the private and public sectors, and spurs and disseminates ideas to create impact.

Bridging the Digital Divide: Giga's Mission and Geneva's Role in Global School Connectivity

The digital divide¹ remains a significant barrier to education and opportunity, particularly in underserved regions of the world. Recognizing this challenge, Giga, a partnership between the United Nations International Children's Fund (UNICEF) and the International Telecommunication Union (ITU), was launched in 2019. Giga's mission is to connect every school in the world to the internet, thereby providing young people with access to information, opportunities, and choices. As Chris Fabian, co-founder of Giga, aptly puts it, *"Connecting schools is connecting the world."*

Giga employs a comprehensive, data-driven strategy consisting of four key components: mapping, modelling, financing, and contracting. This multifaceted approach has enabled Giga to map over 2.1 million schools across 142 countries.² The initiative leverages innovative technologies, including satellite imagery and artificial intelligence, to identify and connect schools, driving down connectivity costs and enhancing digital inclusivity.

The decision to establish Giga's strategic, managerial, and financial headquarters in Geneva underscores the city's pivotal role in fostering international cooperation, innovation,

and sustainable finance. Known for its rich ecosystem of international organizations, financial institutions, and cutting-edge research centers, Geneva offers a unique environment that aligns with Giga's goals. The city's commitment to human rights, peace, and development, coupled with its vibrant multicultural community and tradition of diplomacy, makes it an ideal hub for Giga's operations.

This white paper explores Giga's strategic initiatives within Geneva's ecosystem, focusing on four main streams: the Giga Learning Hub, the Giga Fund, the Geneva Gigabyte Procurement Centre (GGPC), and the Giga Connectivity Credits Marketplace. It builds on insights from a Student Challenge of the University of Geneva's Master in Responsible Management, led by the University's Center for Innovation and Partnerships in collaboration with Giga. By harnessing Geneva's resources and fostering collaborative partnerships, Giga aims to scale its impact, manage rapid growth, and ultimately achieve universal school connectivity. Through strategic engagement and innovative solutions, Giga is poised to bridge the digital divide, ensuring that every child has the opportunity to thrive in the digital age.

1. According to the OECD, the term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the internet." OECD (2001), "Understanding the Digital Divide", *OECD Digital Economy Papers, No. 49*, OECD Publishing, Paris, <https://doi.org/10.1787/236405667766>.

2. Giga. (n.d.). *Giga maps*. <https://maps.giga.global/map>

GIGA: Connecting every child to the internet

Giga, a partnership between the United Nations International Children's Fund (UNICEF) and the International Telecommunication Union (ITU), was launched in 2019 with the aim of connecting every school in the world to the internet. This initiative aims to provide every young person with access to information, opportunities, and choices. Giga's success lies in its four-step multifaceted approach: mapping, modelling, financing, and contracting. Each of these components work in harmony, as Chris Fabian explains: *"Giga tries to identify schools, see if they're connected, aggregate the demand for connectivity, and use that demand for connectivity to influence the market and make sure that kids have access to equitable connectivity. Not only kids but whole communities, starting with the school."*³

As of December 2023, Giga has connected over 5,800 schools in 30 countries, providing internet access to more than 2.5 million students.⁴ Giga's open-source tools, such as school mapping and real-time connectivity monitoring, have enabled many governments to reduce the cost of school connectivity. For instance, the Ministry of Education in Kyrgyzstan saved nearly USD 250,000 annually, achieving a 43% budget reduction. Similarly, Giga's pilot project for school connectivity in Rwanda reduced costs by 55% and increased Internet speed by 400%.⁵

In 2022, Giga implemented a dual headquarters structure to enhance its operational efficiency and global reach. This strategic move established a technology center in Barcelona and a managerial and strategic headquarters in Geneva. The Barcelona office focuses on technological development and innovation, while the Geneva office leverages its unique ecosystem to advance Giga's mission through four key streams. The Giga Connectivity Credits Marketplace, mirroring the "carbon credits marketplace" model, offers tax incentives to drive investments in connectivity projects. The Gigabyte Procurement Center focuses on advancing commitments for connectivity through Giga's supply division, ensuring efficient and cost-effective procurement processes. The Connectivity Learning Hub showcases the latest connectivity technologies and builds the capacity of Giga's partners by equipping them with cutting-edge knowledge and tools. Lastly, the Giga Investment Fund targets underserved markets, leveraging Giga's ecosystem to foster impactful investments. This comprehensive setup in Geneva is designed to harness the city's unique strengths and opportunities, enabling Giga to manage growth and scale its operations effectively.

3. INSEAD, Giga: Connecting Every Child case study, May 2024

4. Giga. (n.d.). *About us*. <https://giga.global/about-us/>

5. Giga. (n.d.). *Giga x30*. <https://giga.global/gigax30/>

Geneva as Global Hub for International Cooperation

Geneva, often referred to as “International Geneva” due to its long tradition of diplomacy, stands as a global center for international cooperation. The city’s commitment to human rights, peace and development is reflected in its hosting of 42 international organizations, over 750 non-governmental organizations, and the permanent missions of 181 states. This concentration of international entities, coupled with a multicultural population where 41.6% of residents are foreigners, underscores Geneva’s reputation as Switzerland’s most cosmopolitan city.

Leveraging Geneva’s diplomatic network is strategically vital for Giga’s diverse streams of work. The presence within this network can facilitate negotiations with stakeholders for the development and implementation of initiatives like the Giga Connectivity Credits Marketplace, which mirrors the “carbon credits marketplace” model offering tax incentives to drive investments in connectivity projects.

Geneva’s intricate network of partners and its relatively small size foster a unique innovation dynamic. Innovation and cross-sector partnerships are crucial for achieving the UN Sustainable Development Goals and in tackling grand challenges such as bridging the digital divide. For 13 consecutive years, Switzerland has ranked first in the Global Innovation Index, making it a global leader in innovation outputs. Institutions like CERN, which promotes research, innovation, and technology development, exemplify Geneva’s commitment to international cooperation and knowledge sharing. The

Geneva Foundation for Technological Innovation (FONGIT) has nurtured over a hundred start-ups in the past 25 years, highlighting the city’s dedication to fostering innovation. Additionally, the Department of Economy and Employment (DEE) supports innovation and enhances Geneva’s attractiveness and competitiveness. Through Innovation Meetings, stakeholders collaborate to identify areas for improvement and methods to promote innovation. These efforts highlight Geneva’s commitment to fostering innovation, making it an ideal place to develop innovative projects, leveraging collective intelligence, and enabling knowledge sharing and collaboration. This environment is particularly beneficial for the Giga Learning Hub, which showcases the latest connectivity technologies and enhances partners’ capabilities with cutting-edge knowledge and tools.

Switzerland ranks second in the Global Philanthropy Environment Index 2022 as it provides excellent conditions for philanthropic engagement globally. Geneva is home to over a thousand foundations, ranking third nationally and reflecting the city’s potential in the philanthropy sector. Philanthropy mobilizes necessary capital and innovation to tackle grand challenges, and sustainability has become a core focus for asset owners and managers. As a major financial center, Geneva hosts numerous international banks and financial institutions, occupying a unique position in the sustainable finance landscape. The city is a member of Financial Centers for Sustainability (FC4S), a network of 43 member cities collaborating to reach the objectives set

by the 2030 Agenda and the Paris Agreement.⁶ Leveraging Geneva's ecosystem for the GIGA Fund initiative is crucial due to the city's philanthropic environment and its status as a global financial center. The strong focus on sustainability within Geneva's financial institutions well align with GIGA's goals, providing a robust platform for sustainable finance and international collaboration. By tapping into this ecosystem, the GIGA Fund can effectively drive forward its mission by mobilizing necessary capital.

The city also stands out for its vibrant ecosystem of innovative NGOs and social entrepreneurs. Organizations such as the International Committee of the Red Cross (ICRC) or Médecins Sans Frontières (MSF) exemplify the city's commitment to pioneering social solutions and humanitarian aid. Social Innovation Hubs and incubators further support this ecosystem, fostering an environment where social entrepreneurs can thrive and develop impactful projects. Key hubs like Impact Hub Geneva, Seedspace Geneva, and the Geneva Innovation Movement (GIM), among others, provide co-working spaces, mentorship, and access to networks of investors and partners.

Events like the Social Innovation and Global Ethics Forum (SIGEF) and various UN initiatives further enhance Geneva's support for social innovation. This dynamic network effectively complements Giga's mission, offering numerous opportunities for collaboration and support to drive impactful initiatives.

Geneva's dynamic environment is characterized by a unique blend of international cooperation, cultural diversity, economic strength, and a commitment to innovation and sustainability. With its diverse ecosystem of actors and deeply rooted intergovernmental and financial community, along with the presence of UNICEF and ITU headquarters, Geneva stands out as an ideal hub for multistakeholder initiatives. This strategic advantage led Giga to establish its headquarters in Geneva in 2022, aiming to better leverage the city's ecosystem.

Given Geneva's strengths and opportunities, a pivotal question arises: how can Giga effectively manage its rapid growth and scaling? What strategies should be implemented to leverage Geneva's unique ecosystem? Addressing these questions is critical as Giga navigates this collaborative and diverse environment.



6. Financial Centres for Sustainability (FC4S). (n.d.). Home. <https://fc4s.org/>

Student Challenge

In 2022, Giga established its headquarters in Geneva to better leverage the city's rich ecosystem in support of its mission. In line with this strategy, Giga partnered with the Center for Innovation and Partnerships at the University of Geneva to launch a student challenge. Students of the Master in Responsible Management were given the challenge to co-create sustainable solutions to help Giga achieve universal school connectivity, focusing on the headquarters' four main streams of work: the Giga Learning Hub, the Giga Connectivity Credits Marketplace, the Giga Fund, and the Giga Procurement Center.

The semester kicked off with a session where students were introduced to the four work streams of Giga. Giga's co-leads, Chris Fabian and Alex Wong, along with the leads of each work stream, were present to provide insights and guidance. Throughout the semester, students participated in a coaching session with a diverse set of experts from the Geneva ecosystem, including Emilie-Alice Fabrizi from the Good Token Society, George Bowring from Fair Warning, and Valerie Harrington from Blue Orchard. These experts challenged the students

to be creative and think outside the box. As George Bowring explained, "I encouraged students to consider gamification as a solution for their projects, harnessing its potential to create engaging and impactful experiences." At the end of the semester, the students presented their projects to a jury that included Susanne Emonet (Farmer Connect), Nan Buzard, Kelly Ommundsen (WEF), Beatrice Ferrari (Etat de Genève), Alexandre Robert-Tissot (Art Computer), and Giga co-leads Chris Fabian and Alex Wong. In the words of Susanne Emonet, *"An ecosystem like we have here in Geneva is something incredibly powerful. It's just insane how much thinking power we have in this room, and it also shows how important it is for all of us to bring education further and what new initiatives there can be,"* underscoring the immense potential of Geneva's collaborative environment in driving innovation and new initiatives.

This section provides an overview of the insights and recommendations developed by the student groups after months of dedicated effort, offering valuable contributions to Giga's mission.



STUDENT CHALLENGE

Giga Learning Hub

Project summary

As one of the four components of the Giga Global Geneva Connectivity Center (3G2C), the Giga Learning Hub serves as a dynamic space for promoting cooperation, innovation and, learning among a diverse range of stakeholders. The Hub's primary goal is to facilitate the exchange of best practices and knowledge transfer, supporting collaborative efforts through the organization of workshops, events, and immersive learning experiences.

To engage stakeholders effectively, students analyzed the Geneva ecosystem and proposed a strategy based on three pillars: Learning, Networking, and Entertainment. This includes hosting the Giga Festival, an annual summer event showcasing new technologies like 5G and satellite internet, with live demonstrations, interactive exhibitions, and industry workshops. Additionally, the Giga Treasure Hunt, an augmented reality (AR) exploration game, allows participants to use mobile devices to find virtual treasures and learn about the Giga Project. Finally, in collaboration with the ITU Academy Certification Courses could be offered to enhance technical skills in digital connectivity.

Key takeaway

Building a diverse and robust partnership network, including actors such as educational institutions, ventures, art and design visionaries among others, is essential for the Hub's success. Partners should provide resources, expertise, and support to ensure the effectiveness of the Hub's initiatives.

"Accomplishing Giga's ambitious mission cannot be achieved alone but requires an extensive partnership network. Networking is the keyword at the center of our efforts. The proposed events provide a structured environment for collaboration and dialogue."



Giga Festival

The Giga Festival will focus on merging technology with entertainment, showcasing interactive exhibitions and live demonstrations on the latest in internet connectivity, like 5G and satellite internet, alongside practical workshops. This event will also feature panel discussions on global connectivity and digital education, and celebrate Geneva's diverse culture with dance, music, and food.

Primary Target Audience

- Technology Enthusiasts
- Industry Professionals
- Students and Educators
- Corporate Representatives

Secondary Target Audience

- Local and International Visitors
- Policymakers and Regulators
- Media and Influencers

The image also shows a photograph of a presentation slide titled 'STAKEHOLDER ENGAGEMENT' with a diagram of a network, and a woman presenting at a podium during the event.

STUDENT CHALLENGE

Giga Fund

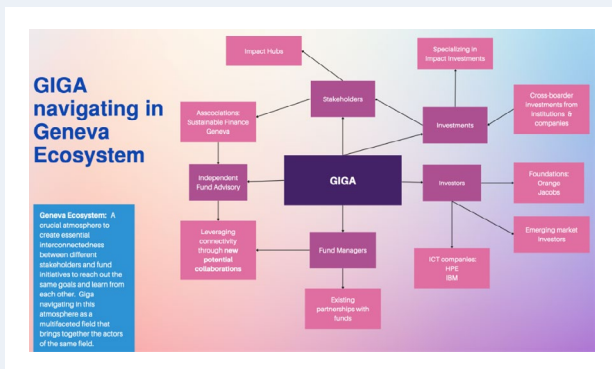
Project summary

Current philanthropic and public funding in Giga-present countries falls short in scaling high-impact projects, with a projected connectivity funding gap nearing USD 1 trillion by 2040. An estimated USD 125 billion is required to bridge the digital infrastructure financing gap, particularly in Asia and Africa. Greenfield investments in developing countries demand substantial initial funding and pose high risks with potentially low returns, necessitating innovative financing solutions to attract investors.

The Giga Fund aims to invest in companies that reduce connectivity costs and promote digital inclusivity, with three objectives: (1) Financial: Achieve market-competitive returns; (2) Social: Promote digital inclusion by lowering connectivity costs; and (3) Market: Prepare the ecosystem for scaling and attract investments from Development Finance Institutions (DFIs). Students identified challenges in aligning Giga's goals with suitable investment vehicles and recommended strategies to integrate Giga's operations into the Geneva financial ecosystem. They reviewed existing fund managers and potential investors, evaluating them based on investment objectives, strategies, and strategic partnerships within Geneva. Potential partners include INOKS Capital, Alpha Mundi, and Bamboo Capital. Additionally, potential investors among DFIs, tech companies, and foundations were identified, such as the African Development Bank (AfDB), Microsoft Philanthropies, and Foundation Orange.

Key takeaway

The recommendations include leveraging the Geneva ecosystem as a knowledge partner by joining Sustainable Finance Geneva to provide independent, qualified advice to fund managers and investors on connectivity projects, and to confirm the impact of projects benefiting GIGA's mission. Additionally, focus on deepening Geneva's networks and scaling across Switzerland by demonstrating financial and social impact to attract investors, collaborating with foundations and fund managers to expand networks, maintaining strong connectivity within the Geneva ecosystem, and expanding operations to other areas in Switzerland, including Zurich.



"By operating within Geneva's financial ecosystem and collaborating with experienced fund managers, Giga can ensure that its investments are both impactful and sustainable."

STUDENT CHALLENGE

Geneva Gigabyte Procurement Centre (GGPC)

Project summary

The lack of connectivity in many regions, particularly in Africa, is driven by affordability issues and high installation costs, especially in rural areas.⁷ Giga aims to use UNICEF's annual procurement power of USD 7.4 billion to improve competition, commoditize school connectivity services, and secure favorable terms, making connectivity more affordable and accessible. Given the diverse regional infrastructures and market inconsistencies, there is a need for standardization and an efficient supply chain.

Inspired by UNICEF's vaccine commoditization case study, students proposed a multifaceted approach to tackle these challenges. This includes (1) harmonizing services and developing global connectivity standards to ensure consistency across regions. (2) Implementing technologies like blockchain can facilitate transparent procurement and encourage partner collaboration. Additionally, (3) optimizing the supply chain with local logistics, centralized centers, and predictive analytics can enhance efficiency. (4) Building resilient networks by integrating redundant infrastructure, diversifying service providers, and implementing backup connectivity solutions for critical sites will further strengthen the initiative. (5) Developing regional pricing with cross-subsidization models can address affordability issues, while (6) educating local authorities and schools, and monitoring connectivity through regular evaluation has the potential to ensure sustained improvements.

Key takeaway

The GGPC assesses connectivity needs, makes bulk purchases, negotiates long-term agreements, and develops partnerships. Leveraging Geneva's ecosystem and learning from major players like MSC, GAVI, ICRC, and Swisscom can enhance strategies focusing on sustainability, transparency, and innovation. By adopting these procurement strategies, Giga is better placed to scale up school connectivity globally and manage arising complexities.

"Championing smart procurement is the backbone of GGPC's operations. One of the mechanisms in the basket is the bulk procurement, which implies receiving joint or multiple demands from different countries."



7. Giga Geneva Procurement Section: Commoditizing the Gigabyte slides, November 2023

STUDENT CHALLENGE

GIGA Connectivity Credits Marketplace

Project summary

The Connectivity Credits Marketplace is designed to attract and gather investors by incentivizing Internet Service Providers (ISPs) to connect schools. When an ISP connects a school, it earns connectivity credits. As long as the connection is maintained, the ISP continues to accumulate credits, which can then be sold in the marketplace. The amount of credits earned is by factors such as the cost of connecting the school, the impact on poverty, the number of students connected, and the community impact. One model envisioned by the Giga team involves a bond structure supported by governments.

Students analyzed the project and identified potential Swiss investors, highlighting the role of the Canton of Geneva and institutions like the Swiss Agency for Development and Cooperation (SDC) and the State Secretariat for Economic Affairs (SECO) for financial and technical support. They also identified private investors such as UBS, Banque Pictet & Cie SA, and Lombard Odier, as well as insurance and telecom companies like Zurich Insurance Group and Swisscom. To broaden the scope, they proposed involving players from the pharmaceutical or engineering industries. Engaging stakeholders through targeted communication approaches such as social media campaigns, webinars, case studies, and networking events is essential to foster collaboration.

Key takeaway

Partnering with the Canton of Geneva is essential, particularly for securing tax incentives. This partnership would help attract stakeholders from various industries, such as the banking, telecommunication, and pharmaceutical ones. Additionally, regular reporting and the establishment of clear guidelines to ensure transparency are crucial steps highlighted by the students. To attract and engage key stakeholders, the students propose implementing a strategic communication plan that employs various tools to reach different target audiences effectively.

Leveraging Geneva's existing procurement ecosystem as a model for Giga's initiatives

Strategies	Goal & Implementation at GIGA
<ul style="list-style-type: none"> 1. Internal Code of Conduct for Procurement - "An internal code of conduct for procurement with a 'zero tolerance policy'." 2. Turnover Policy - "The ICRC's share in suppliers' annual turnover should not exceed 30%." 3. Agreements for Strategic Needs - "ICRC has long term or frame agreements for strategic items." 4. Digital Transformation - "Swisscom supports the full potential of the digital transformation" 5. Holistic Risk Management - "holistic approach in carrying out due diligence checks" 6. Transparency in Supply Chains - "transparency is the key to fair supply chains" 7. Sustainable Sourcing - "working with suppliers that align with the goals of MSC" 8. Market Shaping - "the number of manufacturers supplying pre-qualified Govi-supported vaccines has grown from 5 in 2001 to 19 in 2022" 9. Performance-based Funding - "performance-based funding encourages countries to improve their immunization coverage." 	<ul style="list-style-type: none"> ethical practice - transparency, fairness and sustainability avoid over-reliance on single provider - spreading risk and enhancing supply chain resilience. Negotiate contracts with key connectivity providers - prompt responses to critical failures or needs. Digital tools to automate and optimize procurement - less manual intervention and improved decision-making. Use robust risk assessment platforms - less potential risks across the supply chain. Enhance supply chain transparency - stakeholders aware and confident - fairness and integrity Partnerships with connectivity providers that demonstrate commitment to sustainability Secure more favorable terms and foster a competitive supply environment. Reward regions or governments for achieving specific connectivity and usage targets.

Parallels with local practices

<p>Next4: Next4 Cocoa Plan social responsibility and environmental stewardship</p> <p>1, 6, 5, & 6, & 7.</p>	<p>CERN: CERN's Large Hadron Collider (LHC) project international cooperation and knowledge sharing</p> <p>4, & 7.</p>	<p>WEF: World Economic Forum Annual Meeting driving trust, including transparency, consistency and accountability</p> <p>5, & 6, & 7, & 8.</p>
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"By encouraging cooperation between stakeholders, these Connectivity Credits help to create a feeling of shared accountability for achieving universal connectivity."

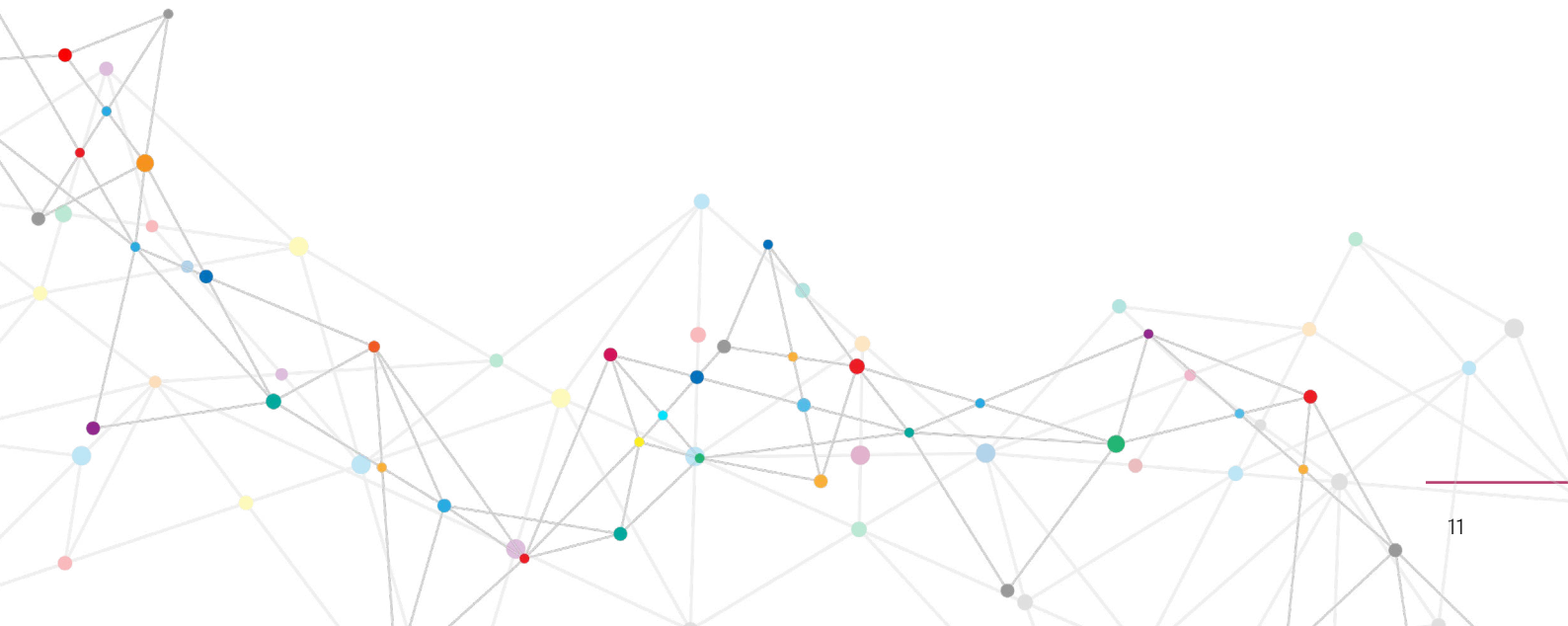
Looking Ahead: Leveraging Geneva's Strengths to Bridge the Digital Divide

The Giga initiative, with its ambitious goal of connecting every school to the internet by 2030, is at the forefront of bridging the digital divide. The collaboration with the University of Geneva and insights from the students challenge highlights the critical role that innovative, localized solutions in this global mission. By focusing on the Giga Learning Hub, Giga Fund, Geneva Gigabyte Procurement Centre (GGPC), and the Giga Connectivity Credits Marketplace, students have provided actionable recommendations to support Giga's rapid growth and scalability.

Geneva's unique position as a hub of international cooperation, financial expertise, and innovation makes it an ideal base for Giga's operations. By leveraging the city's resources, partnerships, and ecosystem, Giga can implement sustainable strategies that enhance its mission. Engagement with local authorities, educational institutions, and private sector partners is essential for fostering a collaborative environment that drives digital inclusion.

The proposed initiatives, ranging from stakeholder engagement through event organization to innovative financing models and smart procurement strategies, aim to create a robust framework for achieving universal school connectivity. By adopting these strategies and continuously learning from the Geneva's ecosystem, Giga can effectively scale its operations, manage complexities, and ultimately connect every child to the digital world.

The collective efforts outlined in this white paper illustrate a clear path forward, where strategic partnerships and innovative approaches pave the way for a more connected and equitable future. Giga's journey, powered by the Geneva ecosystem, exemplifies how local insights can drive global impact, ensuring that no child is left behind in the digital era.



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