REPUBLIC OF THE MARSHALL ISLANDS, JABWOR – JALUIT SMART ISLAND PROJECT

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Document

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Executive Summary

The Jabwor -Jaluit Smart Island Initiative, part of the ITU's Smart Villages and Smart Islands (SVSI) Initiative, aims to enhance digital connectivity and provide sustainable digital services to Jabwor, a community on Jaluit Atoll in the Republic of the Marshall Islands. This project seeks to improve the quality of life, economic prospects, and overall well-being of its residents through targeted digital interventions focused on four main pillars: enhancing broadband connectivity, ensuring affordability, fostering digital skills, and providing relevant services.

The first objective is to enhance broadband connectivity by providing reliable and high-speed internet access to all residents. This will bridge the digital divide and enable the community to tap into global information and opportunities. Ensuring affordability is the second objective, aiming to make digital services and tools financially accessible to everyone in Jabwor. This will be achieved through strategic partnerships and subsidies that lower the cost of internet access and digital devices.

Fostering digital skills is the third objective, which involves educating residents on essential digital competencies and cyber safety. This will include the establishment of a central digital hub equipped with computers and internet access for educational and community activities. Implementing digital literacy and vocational training programs tailored to the community's needs will empower individuals with the skills necessary to thrive in a digital economy.

The fourth objective is to provide relevant services, enhancing access to key areas such as education, healthcare, government, and financial services. Introducing telemedicine services will facilitate remote medical consultations, significantly improving healthcare access. Enhanced digital access to government services and financial institutions will streamline processes and increase efficiency. Community workshops will be conducted regularly to gather feedback, promote awareness, and ensure community involvement.

The expected outcomes of the Jabwor-Jaluit Smart Island Initiative include an improved quality of life through enhanced access to essential services and educational opportunities, economic growth by empowering local businesses and entrepreneurs with digital tools and training, and the establishment of a strong foundation in digital literacy among residents. Additionally, the initiative will foster increased community engagement, developing a sustainable, community-driven project that serves as a model for other remote areas in the Marshall Islands. By focusing on broadband connectivity, affordability, digital skills, and relevant services, this initiative will demonstrate the transformative power of digital technology, transforming Jabwor into a thriving, connected community.

The policy recommendations suggest establishing a digital transformation framework focusing on key sectors like e-health, e-agriculture, and e-commerce to drive innovation and economic growth. Programmatic recommendations include initiatives like the Smart Island Initiative to strengthen community resilience through digital connectivity. Developmental recommendations include investing in infrastructure, renewable energy, and broadband connectivity to promote digital inclusion in Jabwor-Jaluit. Strengthening partnerships with international organizations and the private sector is crucial to support these initiatives and drive long-term impact and progress in the region, ultimately improving the quality of life for residents. Collaboration with stakeholders is essential to achieve sustainable development goals and enhance community resilience in Jabwor-Jaluit and beyond.

Part 1: Introduction

About the Republic of the Marshall Islands (RMI)

The Republic of the Marshall Islands (RMI) is a sovereign nation located in the central Pacific Ocean, approximately halfway between Hawaii and Australia. It comprises 29 atolls and five individual islands, spreading over an area of about 750,000 square miles, yet only 70 square miles of actual land area. The capital city is Majuro, situated on the Majuro Atoll. The RMI lies in the central Pacific Ocean, part of Micronesia, between latitudes 7° N to 15° N and longitudes 160° E to 173° E. The climate is tropical maritime, with a wet season from May to November and a dry season from December to April. The islands feature stunning coral atolls, white sandy beaches, and clear lagoons teeming with marine life.

The total population of the RMI is approximately 58,000 people, predominantly of Marshallese (Micronesian) origin, with small populations of other Pacific Islanders, Asians, and expatriates. Marshallese and English are the official languages. About 74% of the population resides in urban areas, with Majuro and Ebeye being the most populated.

Economically, the RMI is primarily based on services, government employment, and agriculture, with major industries including fishing, copra (dried coconut meat), and handicrafts. The Gross Domestic Product (GDP) is modest, with significant contributions from U.S. aid under the Compact of Free Association. There is a strong emphasis on education, with several primary and secondary schools, along with the College of the Marshall Islands providing higher education opportunities. The healthcare system is improving, though it faces challenges due to geographic dispersion and limited resources.

The RMI holds strategic importance due to its location and agreements with the United States, including military use of Kwajalein Atoll. However, the nation faces significant environmental challenges, particularly from climate change impacts such as rising sea levels and extreme weather events, which threaten its low-lying atolls.

This strategic plan is designed to address the specific needs and challenges of the Republic of the Marshall Islands as it navigates the complexities of cybersecurity in a rapidly digitizing world. By focusing on developing a skilled workforce, enhancing government cyber capabilities, strengthening legal frameworks, promoting public awareness, and securing critical infrastructure, the RMI aims to build a resilient and secure digital future for its citizens and stakeholders.

About Jabwor -Jaluit

Jaluit Atoll (Marshallese: Jālwōj, or Jālooj) is a large coral atoll consisting of 91 islands and forms a legislative district in the Ralik Chain, located in the central Pacific Ocean of the Marshall Islands. The atoll is located approximately at 5°55′N latitude and 169°37′E longitude. It covers a total land area of about 11.34 square miles (29.37 square kilometers), with Jabwor being one of the key islands. The climate in Jabwor is tropical maritime, with a distinct wet season from May to November and a dry season from December to April.

Jabwor is one of the key population centers on Jaluit Atoll, with approximately 1,700 people residing on the atoll, and a significant portion living in Jabwor. The community is predominantly Marshallese, characterized by a close-knit social structure and strong cultural traditions. Marshallese is the primary language spoken, with English used as a second language.

Jabwor is a vibrant community that blends traditional practices with modern influences. The local economy is primarily based on subsistence agriculture, fishing, and handicrafts, with copra (dried coconut meat) production being a significant source of income. The community hosts primary, secondary schools, and the CMI, which play a vital role in the community's development. Healthcare facilities in Jabwor are limited, there is one clinic providing only basic medical services, with residents often relying on medical services in Majuro for more serious conditions. The island has basic infrastructure, including unpaved roads, NTA telecommunications, and limited transportation services, with boats and Air Marshall Islands (AMI), which is small aircraft providing connectivity to other parts of the Marshall Islands.

Jabwor falls under the administrative jurisdiction of the Government of the Marshall Islands, with the Atoll Local Government (ALG) playing a crucial role in local administration. Jabwor is represented in the national government, with senators from Jaluit participating in the legislative process. Political priorities include improving infrastructure, education, healthcare, climate resilience, and economic development. Traditional leadership, community engagement, and youth involvement are vital in governance. Jabwor has a rich cultural heritage, with Marshallese language and traditional practices still prevalent. The social structure follows a matrilineal system, and education is highly valued. Religion and community life are central to Jabwor's culture. Fishing, agriculture, handicrafts, and tourism are key economic activities, with challenges such as limited resources and climate change. Financial sources for development projects come from local, national, and international funds. Jabwor faces climate and disaster risks, with efforts to mitigate and adapt to natural disasters.

The fuller description of governance and socio-cultural can be found in Appendix A.

About the Joint-Programme

The Smart Island Initiative in Jabwor -Jaluit is a component of the broader Micronesia Joint Programme (JP), titled "Accelerating SDG Achievement through Digital Transformation to Strengthen Community Resilience in Micronesia." This initiative is funded by the UN Joint SDG Fund, which is dedicated to hastening the achievement of the Sustainable Development Goals (SDGs) by promoting collaboration among various UN agencies. The project is led by the International Telecommunication Union and jointly managed by UNOPS, with strategic oversight provided by the UNRCO and technical support from FAO, ILO, UNESCO, UNICEF, and UNODC.

The JP is active across several Pacific Island nations, including the Federated States of Micronesia (FSM), the Marshall Islands (RMI), Nauru, Palau, and Kiribati. It aids these countries in developing comprehensive digital transformation strategies aimed at improving sector-specific plans in areas such as e-health, e-agriculture, and e-commerce. The overarching goal is to address significant barriers to digital transformation and to assist governments in leveraging digital technologies for inclusive socio-economic development and heightened resilience to the unique challenges posed by their geographic locations, including vulnerability to climate change and natural disasters.

To implement this vision, the JP selects one island or district from each participating country as a pilot site. These sites are intended to serve as models for using digitalization to enhance service delivery and stimulate broader development. This community-level project is known as the "Smart Villages and Smart Islands Initiative."

About the Jabwor - Jaluit Smart Island Initiative

The needs assessment conducted for the Smart Islands project is similar to action research, with a focus on using the results to guide the implementation of a community digital transformation project as envisioned by the ITU Smart Village / Smart Islands initiative.

This approach involves consultative processes at all levels to ensure the involvement and buy-in of local officials and residents in developing a project that addresses the priority needs identified in the assessment. The transformation of small islands into smart islands through the project aims to provide connectivity and ICT-enabled services to improve the quality of life of island communities, promoting cooperation and interoperability to address SDG-related needs in a demand-driven and user-centered manner.

The Jabwor-Jaluit Smart Islands initiative aims to provide connectivity and sustainable services to disadvantaged island communities of Jabwor-Jaluit, focusing on improving well-being and livelihoods through the provision of digitally-enabled services. Using a whole-of-government approach and emphasizing sustainability, scalability and cross-sector collaboration, the project aims to address the unique challenges and opportunities of each island community. By improving digital connectivity, affordability, digital skills and service delivery, the initiative aims to bridge the digital divide and ensure that no one is left behind in the transformation to smart islands. Through a thorough needs assessment and a focus on cross-sector collaboration and cooperation, the Smart Islands project aims to improve the delivery of essential services such as healthcare, education and government services through digital technology, ultimately improving the quality of life for island communities.

Part-2: The Need Assessment

The ITU Smart Villages and Smart Islands model is a comprehensive and holistic approach to connectivity that promises not only to provide connectivity, but also to provide connectivity that is useful to communities. However, in order to achieve this goal, it is important to identify what is useful to a particular community. The wide range of potential SVSI communities means that some
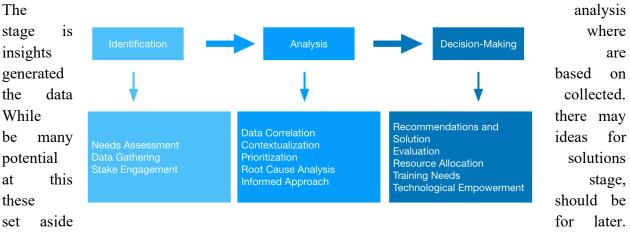
communities may benefit more from some aspects of the SVSI approach than others. It is therefore crucial to examine the context of each potential community's geographical, demographic, socio-economic and cultural circumstances in order to prepare for the implementation of SVSI initiatives in an effective and efficient manner, and to identify in advance those aspects of connectivity from which they could benefit most. In other words, it is crucial for the success of SVSI initiatives to identify the needs of the community prior to implementation.

This section presents the needs assessment framework, methodology and data collection approaches to achieve two parallel goals. First, it defines a set of needs and prioritized intervention areas that will inform improvement efforts. Second, a list of potential solutions and decision guidance.

Conceptual Framework

The needs assessment consists of three stages, identification, analysis and decision making, which build on each other and it is important to complete each stage before starting the next. Each stage has a different focus and it is important not to mix the different elements between the stages. This means that the identification and analysis stage should focus solely on needs, without considering potential solutions, which should be the focus of the decision making stage. These stages are discussed in detail below, including their purpose and the tools included in this guide for each stage.

The identification stage collects all the necessary data for the needs assessment and forms the basis for the rest of the needs assessment. Comprehensive data collection is essential to ensure that the needs identified reflect the real needs of the community and that potential solutions can effectively and efficiently address those needs.

The stage is insights generated the data While be many potential at this these set aside analysis where are based on collected. there may ideas for solutions stage, should be for later. Instead, the analysis should focus solely on the needs of the community.

The decision stage is where potential solutions to the identified needs are generated and a decision is made on which solution to implement. First, the information from the previous steps is synthesized to generate solutions that meet the priority needs of the community. Second, the potential solutions are ranked according to predefined criteria that include both internal and external factors.

Methodology

The methodology for the Smart Island project in Jabwor-Jaluit is designed to ensure a thorough understanding of the community's needs and the context of the initiative by incorporating various participatory and consultative methodologies. This includes quantitative surveys, qualitative interviews, focus groups, and observation to triangulate data and enhance the validity of findings.

A variety of methodologies are being used to ensure a comprehensive and inclusive approach, such as participatory needs assessment, consultative processes, SWOT analysis, and focus groups. By engaging with a diverse range of stakeholders, the project aims to accurately identify priorities and challenges while developing solutions collaboratively, ultimately creating sustainable and impactful solutions that address the specific needs and realities of the community in a holistic manner.

Data Collection Methods

Combining various data collection methods—surveys, interviews, focus groups, workshops, observation, document analysis, and community meetings—provides a comprehensive

understanding of the community's needs and the existing digital landscape. This ensures the project is tailored to the specific context and maximizes its positive impact.

Data collection methods are crucial for gathering relevant and accurate information to support the Smart Island project in Jabwor -Jaluit. Various methods were employed to ensure comprehensive data collection.

Surveys were used to collect quantitative data on the community's needs, internet usage, and satisfaction with current digital services. These were distributed as paper-based to households, schools, and businesses, with questions focused on demographics, internet access, digital literacy, and desired improvements.

Interviews provide in-depth qualitative insights from key stakeholders. One-on-one and group interviews were conducted with the Acting Mayor, Traditional/Community Leaders, Educators, Business Owners, and Local Government Officials, using open-ended questions to explore challenges, opportunities, and expectations regarding the Smart Island project.
Focus groups facilitated discussions to gather diverse perspectives and foster community engagement. These sessions were organized with specific demographic groups, such as youth, women, elders, and people with disabilities to discuss community needs, digital literacy, internet safety, and potential project impacts.

Workshops engage a broad range of stakeholders in collaborative problem-solving. Interactive workshops involving students, teachers, community organizations, and disaster risk communities included brainstorming sessions on digital initiatives, skill development, and infrastructure improvements.

Observation involved collecting direct data on the use of technology and digital infrastructure in the community. Observations were made on how community members interact with existing technology and services in public spaces, schools, and workplaces, noting frequency of use, accessibility, and any observable issues or challenges.

Document analysis reviews existing reports, policies, and records to understand the historical and current context. This method involved analyzing documents such as government reports, NGO publications, school records, and previous survey data to gather information on socio-economic conditions, education levels, digital infrastructure, and previous initiatives.

Community meetings ensured transparency and community involvement in the project. These public meetings presented project plans, gathered feedback, and discussed progress, with presentations on the project's objectives, timelines, and expected outcomes, as well as an open forum for questions and suggestions.

Data Collection Procedure

Findings	Objective	Survey	Interviews & FGDs	Workshops
Improved Internet Connectivity (Digital Hub Connectivity)	To identify the community's need for better internet connectivity.	Gather data on current internet access, speeds, reliability, and cost.	Understand the impact of poor connectivity on education, business, and daily life.	Discuss connectivity issues and develop solutions, such as partnering with new ISPs or improving existing infrastructure.
Awareness Raising and Capacity Building on ICT	To enhance the community's digital literacy and capacity to use ICT effectively.	Assess the current level of digital literacy and identify areas needing capacity building.	Engage with community members to understand their ICT experiences and barriers.	Conduct training sessions and awareness programs to build ICT skills and knowledge.
Financial Services - Send and Receive Money	To improve access to financial services, particularly for remittances.	Collect data on the frequency and methods of sending and receiving money, as well as challenges faced.	Gather insights into the impact of current financial services on the community.	Explore solutions such as introducing a mobile money app and involving local banks in digital finance initiatives.
Health Online Consultation	To assess the feasibility and need for online health consultations.	Determine current access to healthcare and the community's interest in online consultations.	Understand challenges in accessing healthcare and potential benefits of telemedicine.	Discuss the implementation of a virtual platform for medical consultations, including necessary infrastructure and training for healthcare workers.
Disaster Risk Management Pre/During/Post	To evaluate the community's preparedness and response to disasters.	Assess the community's knowledge and practices related to disaster risk management.	Identify gaps in disaster preparedness and response, and understand community needs during different disaster phases.	Develop strategies for improving disaster risk management, including training programs and infrastructure improvements.
Access to Reliable Electricity	To assess the need for a more reliable electricity supply in the community.	Include questions about electricity availability, outages, and their impact on daily activities.	Gather data on how unreliable electricity affects homes, schools, businesses, and healthcare facilities.	Discuss potential solutions like renewable energy sources or upgrades to the existing power grid.

| Enhanced Educational Resources | To determine the community's need for better educational resources and facilities. | Collect data on the current state of educational resources, access to learning materials, and technological tools in schools. | Engage with teachers, students, and parents to understand gaps in educational resources and their effects on learning outcomes. | Identify and prioritise educational needs, and brainstorm solutions such as establishing digital libraries, improving school infrastructure, or providing teacher training programs. |

Stakeholders

Stakeholders in the needs assessment consist of the various groups of people who are directly or indirectly affected by, involved in, or interested in the Smart Island initiative. These groups include the residents of Jabwor -Jaluit, encompassing all individuals living in the community, such as men, women, children, elderly people, and people with disabilities (PWDs), with a special focus on different demographics like youth, adults, and senior citizens. Additionally, students are a key part of the population, including high school students attending the local boarding school and higher education students at the College of the Marshall Islands (CMI) who may continue their studies on Jabwor. Educators, including teachers and administrative staff from local schools and CMI, also play a crucial role.

Local government officials are integral to the project, including the mayor and municipal council members of Jaluit, as well as traditional leaders (Iroij or chiefs). Community organizations are vital participants, featuring women's groups, youth organizations, and other local NGOs, alongside religious leaders and groups. Healthcare workers, such as staff from local health centers and clinics, are also essential stakeholders. Business owners, including local entrepreneurs and business operators, are part of the study population, as are technology and communications providers, like staff from the Marshall Islands National Telecommunications Authority (NTA) and other internet service providers. Environmental and sustainability advocates, including local environmental NGOs and activists, and international stakeholders, such as representatives from international development agencies, NGOs, and donors involved in the project, round out the diverse group involved in this initiative.

The locale refers to the specific geographical area where the study or project is conducted. For the Smart Island project, the locale is Jabwor -Jaluit Atoll. Jabwor is one of the villages on Jaluit Atoll in the Republic of the Marshall Islands (RMI), located in the Ratak Chain of the Marshall Islands, situated in the central Pacific Ocean. The atoll consists of multiple islets surrounding a central lagoon, with a total land area of approximately 11.34 square kilometers and a lagoon area of about 690 square kilometers.

Jaluit Atoll holds historical significance and has been inhabited for centuries, serving as an administrative centre during the German and Japanese colonial periods. Socio-economically, the community relies on subsistence farming, fishing, and small-scale trade, with limited resources and connectivity, though there are ongoing efforts to improve digital and infrastructural development. Educational institutions include local primary and secondary schools, as well as higher education facilities like the College of the Marshall Islands (CMI). Healthcare facilities consist of local clinics and health centers serving the community. Infrastructure and connectivity in the area are limited but improving, with projects underway to enhance connectivity and digital access.

Part-3: Community Digital Transformation Needs

In order to successfully assess community digital needs, it is crucial to consider a variety of factors. By examining the preliminaries, such as existing infrastructure and resources, and engaging with local government officials, a more comprehensive understanding of the community's digital landscape can be obtained. Additionally, evaluating the current state of connectivity within the community is essential for determining areas in need of improvement. By identifying specific needs and conducting a thorough analysis, decisions can be made regarding how to best address and prioritize digital needs within the community. This process of decision making is vital for effectively allocating resources and implementing solutions that will benefit the community as a whole.

Preliminaries

Engagement with Local Government

The initial mission for the Smart Island Initiative in Jabwor -Jaluit, took place from March 20 to March 28, 2024. Following the protocol advised by the RMI's Office of Chief Secretary, Ministry of Foreign Affairs (MOFAT), Ministry of Transportation, Communications, and Information Technology (MOTCIT), and Jaluit Leadership for local visits during project implementation, the National Consultant made a formal courtesy visit to the Mayor of Jaluit residing on Majuro.

The reception from both the Acting Mayor and the Mayor's office was appreciative. However, the Leadership of Jaluit advised that the National Consultant should also meet with the traditional leaders of Jabwor before proceeding further. Subsequently, a meeting with the Mayor was organized by the Chief of Staff who also arranged for the traditional leaders to facilitate the transfer to the island to meet with the Acting Mayor, who oversees the local government's operations there. Once arrived on Jaluit, the National Consultant met with the Acting Mayor, the High School Principal, Focal Points, the Disaster Community, and Traditional Leaders, for necessary preparations and communications. After a briefing on the project's components, implementation plans, and objectives, the Acting Mayor along with the Traditional Leaders called for a meeting with the community to organize time for consultation, workshop, and training.

During this mission, the National Consultant formally introduced the Smart Island Initiative, detailing its goals and anticipated benefits. This visit provided the assessment team an opportunity to gain insights into the local community's lifestyle, challenges, and issues, and discuss how the initiative could help address some of these concerns. Additionally, the National Basic digital skills training was conducted to cover an initial intervention package, mobile phone usage, online safety,

understanding and using mobile apps, and basic cybersecurity. The training emphasized the importance of public awareness to protect new or improved internet users from online threats, including scams, fraud, identity theft, viruses, hacking, spyware, and malware. Strategies for identifying potential risks and protecting oneself online were a key focus.

Needs Identification

The current digital landscape in Jabwor Jaluit reveals a notable absence of several key e-services. There is currently no infrastructure for e-health, e-government, e-agricultural, or e-disaster management services. Despite these gaps, there have been initial steps taken towards implementing e-finance services. Additionally, the region benefits from existing e-education initiatives, which represent a foundational step towards leveraging digital solutions for educational purposes. These efforts indicate a mixed landscape where digital advancements in certain sectors like finance and education contrast with significant gaps in others, highlighting both potential areas for growth and current limitations in digital integration.

The identification stage collects all the necessary data for the needs assessment and forms the basis for the rest of the needs assessment. Comprehensive data collection is essential to ensure that the needs identified reflect the real needs of the community and that potential solutions can effectively and efficiently address those needs.

Connectivity

Connection Availability

NTA is the sole broadband provider in Jaluit. Reportedly, residents often encounter poor internet performance, especially during rainy and cloudy weather. This problem stems from the inherent limitations of satellite connectivity, which requires a clear line of sight between the ground-based satellite dish and the satellite positioned 22,236 miles above Earth. Such connections are prone to weather-related disruptions, affecting not only residents but also everyone on the island.
Jabwor like many remote island communities in the Marshall Islands, faces significant challenges in communications and connectivity. Despite these challenges, the residents of Jabwor have developed ways to stay connected and communicate effectively within the constraints of their environment. Basic telecommunications services are available in Jabwor, primarily provided by the Marshall Islands National Telecommunications Authority (NTA). These services include landline telephones and limited mobile phone coverage. However, the connectivity can be sporadic and unreliable due to infrastructure limitations and geographical isolation. Radio remains a crucial medium for communication in Jabwor. Local and national radio stations provide news, weather updates, and entertainment. Radio is particularly important for reaching residents in areas with

limited or no access to other forms of communication. Traditional methods of communication, such as community meetings and public announcements via loudspeakers, are commonly used to disseminate information. These methods are effective for sharing important news and organizing community activities.

Internet Connectivity. Internet access in Jabwor is limited, with connectivity issues stemming from the island's remote location and underdeveloped infrastructure. Internet services are available but are often slow and unreliable. Broadband internet is limited, and many residents rely on satellite connections or other low-bandwidth solutions. High-speed internet access is generally restricted to public institutions such as schools and government offices. Due to limited access, internet usage is relatively low compared to urban areas. When available, the internet is used for communication, education, and accessing information. Social media platforms are popular among younger residents, providing a vital link to the outside world. The digital divide between Jabwor and more developed areas is significant. Limited access to digital technologies and the internet hampers opportunities for education, economic development, and social connectivity. Addressing this divide is critical for the community's future growth and integration into the global digital economy.

Challenges to Connectivity. Several factors contribute to the challenges of improving communications and connectivity in Jabwor. Jabwor's remote location presents logistical challenges for establishing and maintaining communication infrastructure. The cost of deploying and servicing telecommunications equipment is high, and frequent maintenance is required to ensure reliability. Existing communication infrastructure is outdated and insufficient to meet the growing demands of the community. Investment in modern telecommunications infrastructure is needed to improve connectivity and service quality. Economic limitations hinder the community's ability to invest in advanced communication technologies. Both the cost of infrastructure development and the affordability of services for residents are significant barriers.

Sustainability

Ensuring reliable and affordable broadband connectivity is critical to the digital transformation and economic development of the outer islands. However, the NTA is not obliged to provide services to the outer islands, as it is not part of its policy, and it plans to discontinue its services in the future. Efforts to improve the sustainability of broadband on Jabwor are currently focused on the implementation of Starlink, led by the government. There are seven NTA satellites available, but their usage is minimal, indicating an underutilization of resources. Effort is ongoing with MOTCIT to advocate licensing to a new low-orbit satellite to provide services to the outer islands at a lower cost. This initiative, using high frequency Ku-band technology, will significantly improve broadband connectivity for the Digital Hub. In addition, efforts are underway to ensure sustainable broadband connectivity and technical support for the Digital Hub. Connecting the outer

islands via submarine cable is currently too expensive, making a low-orbit satellite an attractive alternative solution.

<u>Resilience</u>

In Jabwor, the lack of alternative ISPs limits connectivity options. When technical issues arise, the local government must depend on the national government for assistance, as NTA lacks on-site personnel to promptly address problems. This reliance underscores the island's broadband system's lack of resilience. Additionally, the island's primary ISP uses high-frequency Ku-band technology, which, while providing faster speeds and competitive pricing compared to lower-frequency technologies, is more susceptible to atmospheric moisture, worsening resilience issues. Rain and strong winds can absorb and degrade Ku-band radio frequency signals, though significant disruption generally necessitates heavy and prolonged storms. Ensuring robust contingency plans and proactive maintenance strategies are crucial to mitigating the impact of weather-related challenges on Jabwor's broadband connectivity.

Affordability

<u>Network Cost</u>

The network costs are prohibitively expensive for the majority of residents given the minimum wage of $2.00 per hour in the outer islands of the RMI, making it difficult for them to afford reliable internet service. Home DSL 10 Mbps costs $49.95 per month, while Home DSL 25 Mbps is priced at $69.95 per month. For faster speeds, Home DSL 35 Mbps is available for $89.95 per month, Home DSL 60 Mbps for $139.95 per month, and Home DSL 100 Mbps for $200 per month.

<u>Access to Devices</u>

In Jabwor, mobile phone ownership is common, with many households owning smartphones, tablets, iPads, computers, or laptops. However, local government offices and the healthcare clinic lack computer facilities. Schools are somewhat better equipped, offering a computer lab for students. Additionally, there are no provisions for public borrowing or shared use of these devices, limiting many residents' access to digital resources.

<u>Public Internet</u>

Shared internet connectivity is not readily available to the community, which limits residents' access to online resources. The lack of adequate infrastructure and high costs further constrain the

effectiveness and reach of this connectivity. Ensuring affordable and reliable shared internet access remains a key challenge for enhancing digital inclusion in the community.

Digital Skills

Digital Literacy and Education

While there is some degree of digital engagement across population groups, the lack of diverse and comprehensive internet usage highlights a gap in digital skills. Furthermore, there are limited opportunities for community members to increase their digital skills, exacerbating the issue. Addressing these gaps through targeted digital literacy programs and improving access to a broader range of online resources is essential for enhancing digital inclusion and empowerment in Jabwor. In Jabwor, access to and use of digital technology vary among different demographic groups:

- **Women:** Many women primarily use the internet for Facebook and do not have extensive experience with other parts of the web. This limited use restricts their ability to leverage the full potential of digital technology for personal and professional growth.

- **Children:** The primary use of the internet among children is for playing games such as PUBG and Call of Duty. While these activities provide some digital interaction, they do not significantly contribute to developing broader digital skills that could be beneficial for education and future employment.

- **Youth:** The youth are mainly engaged in social media activities. While this offers a degree of digital literacy, it often lacks depth and does not encompass the full range of digital skills necessary for the modern job market or for more advanced technological engagement.

- **People with Disabilities:** Individuals with disabilities tend to use the internet primarily for watching movies and playing games. While these activities provide entertainment and some level of digital interaction, they do not significantly contribute to developing comprehensive digital skills that could enhance their quality of life and opportunities.

Awareness and Motivation

Interactions with the community revealed that many residents are unaware of the internet's full potential beyond basic communication and entertainment. This lack of understanding hinders their motivation to learn digital skills. Additionally, the language barrier poses a significant challenge, as many community members find it difficult to comprehend English, which is commonly used in digital communications and interfaces.

Community Engagement

The first on-the-ground visit that focused on raising awareness about the Smart Island Project's objectives and its potential impact on community sustainability. The main goals were to understand the current conditions, engage with the community and stakeholders to gather feedback, and start formulating plans to address digital connectivity needs. The initial visit successfully achieved its primary goal of raising awareness among local government, traditional leaders, community leaders, teachers, and church youth groups who participated in the training sessions. The insights gained from this visit informs future strategies to enhance digital inclusion and address other identified community needs.

Relevant Services

<u>Education Services</u>

There are e-education initiatives in place, but there are significant challenges such as instability, lack of internet access in some schools, and insufficient resources and bandwidth at others. Therefore, while e-education services exist to some extent, there are notable gaps and issues that need to be addressed to ensure effective delivery of digital education in the community.

- **Schools**: The school is connected to NTA but suffers from instability. They wish to use Starlink for more reliable internet access. The elementary school lacks internet entirely, and the boarding high school, with 300 students, faces insufficient bandwidth and limited resources, necessitating better services.
- **CMI/Library**: The library employs thin client technology, but only some units are operational, indicating a need for improved maintenance and support.

<u>Healthcare Services</u>

No, but there is a desire for tele-health capabilities in the clinic to improve healthcare delivery, specific e-healthcare services are not fully available or implemented yet. The emphasis on tele-health suggests a potential initiative in expanding digital healthcare services.

<u>Government Services</u>

No, it is evident that there are various gaps in e-government services in the community. Key facilities like the police station, court, churches, AMI, airport, and post office lack adequate internet connectivity and face operational challenges that could be addressed through digital upgrades. This underscores the need for improved e-government infrastructure to enhance service delivery and efficiency across these sectors.

- **Police Station**: Currently, there is no internet connection or communication infrastructure, highlighting a critical need for connectivity.
- **Court**: The court facilities are not in use, suggesting potential opportunities for digital upgrades.
- **Churches**: Churches in the area do not have internet access.
- **AMI**: The AMI lacks office space, hindering operations.
- **Airport**: The airport operates with limited flight availability (once a week, subject to change), which could benefit from improved communication infrastructure.

- **Post Office**: The post office has limited connection with the Bank of Marshall Islands, impacting its efficiency.

Financial Services

Yes, there are some efforts towards implementing e-financial services in the community, such as online payment systems at MEC and improved Wi-Fi services at BOMI, but the availability and extent of e-financial services is still limited. Further development and expansion of digital financial services could potentially enhance efficiency and accessibility for community members.

- **MEC**: The MEC currently only accepts cash payments and is interested in implementing online payment systems for greater efficiency.
- **BOMI**: The bank uses NTA and offers free Wi-Fi to the public, but the service is limited. They aim to use Starlink, purchase a router, and provide enhanced free services to the public.

Agricultural Services

No, there are currently no e-agricultural services available to the community. This highlights a potential area for development and improvement in leveraging digital technologies to support agricultural activities and enhance productivity in the area.

Disaster Risk Management

No, there are currently limited or no e-disaster management services available to the community. The need for office space and connectivity underscores the community's interest in utilizing digital technologies to enhance disaster preparedness and response efforts. As there is no office space for disaster management there is a desire to connect to Majuro for better data sharing.

Needs Analysis

The analysis stage is where insights are generated based on the data collected. While there may be many ideas for potential solutions at this stage, these should be set aside for later. Instead, the

analysis should focus solely on the needs of the community. This stage focuses on insights generated from collected data by transforming them into specific community needs statements within the SVSI framework. Proper identification and precise formulation of these needs are crucial for the next steps in the process. Needs are prioritized according to the community's perspectives while exploring the root causes of the priority needs, which can lead to potential solutions for the next stage.

Based on the preceded needs identification, the followings are the prioritized community needs:

1. Internet connectivity that is sufficient, robust and more stable to overcome existing limited services, high costs, slow speeds and lack of reliable support services to support education, healthcare, agriculture, business, disaster risk management and community social interaction.

2. A community facility to facilitate access to digital resources to address the current lack of training materials for teachers and students and inadequate support for community use to facilitate education, disaster preparedness, healthcare, agriculture and business development.

3. A digital facility for money - related transactions to address the limited options, lack of digital payment systems and challenges in sending and receiving money efficiently to provide online financing, access to agricultural information and disaster relief funds.

4. Opportunities to learn digital skills to participate in and enjoy digitally-enabled island life, technology-driven careers for youth, and to improve educational outcomes and promote climate-smart agriculture and disaster resilience.

5. Facilities to access health and remote medical consultations with doctors to address gaps in access to health services, lack of telemedicine infrastructure, and challenges in health education and training to address health issues exacerbated by climate change.

6. Applications to manage scarce water, electricity and sanitation services to address funding gaps for infrastructure improvements, inadequate access to reliable water and electricity, and the impact of climate change on water resources, in order to build climate-resilient and sustainable natural resource management practices.

7. Facilities to digitally support school teaching and learning materials, updated curricula and teacher training, given limited access to educational resources, outdated school facilities and the need for technology integration in education to support learning in modern technological environments.

8. A digital means to participate and engage with local island authorities by providing feedback and being involved in decision-making processes, as well as monitoring and evaluating local initiatives to ensure that the progress of initiatives and solutions are always relevant and effective to the needs of the community.

Decision Making

The decision stage is to generate potential solutions to the identified needs and make decisions on which solution to implement. First, the information from the previous steps is synthesized to generate solutions that meet the priority needs of the community. Second, the potential solutions are ranked according to predefined criteria that include both internal and external factors.

Improving communications and connectivity in Jabwor is essential for the community's socio-economic development and integration into the broader global context. Enhanced connectivity can open up new opportunities for education, healthcare, agriculture, business, disaster risk management, and social interaction, contributing to a more resilient and prosperous future for Jabwor and its residents. While significant challenges remain, a strategic approach involving infrastructure investment, renewable energy utilization, community education, and collaborative partnerships can pave the way for a more connected and digitally inclusive Jabwor -Jaluit.

Opportunities for improvement. In order to mitigate possible lopsided and incremental solutions to digital transformation, it is important to identify potential solutions, which include those that are aspirational in nature, would require massive policy and resource commitments, and a long-term process of change to realize.

These would include investment in modern telecommunications infrastructure, such as submarine cables and improved satellite technology, to significantly improve connectivity. Partnerships with international organizations and private sector investment can provide the necessary funding and expertise. The use of renewable energy sources, such as solar power, to support telecommunications infrastructure can reduce costs and improve reliability. Renewable energy can provide a consistent power supply for communications equipment, even in remote locations.

Providing digital literacy training and education programs can empower residents to make better use of available technologies. Educating the community on the benefits and uses of the internet can drive demand and support the case for infrastructure investment. Collaboration with government agencies and non-governmental organizations (NGOs) can facilitate the development of communication projects. These partnerships can offer technical assistance, funding, and policy support to enhance connectivity. Expanding mobile network coverage and introducing affordable

mobile internet plans can increase accessibility. Mobile technologies offer a flexible and scalable solution for improving connectivity in remote areas.

Additionally, it is recommended to create specific programs to help everyone understand digital transformation. Community-wide initiatives were also proposed, showcasing a comprehensive approach to enhancing digital literacy and safety.

Proposed Solutions

The identification of potential solutions is not constrained by the number of potential solutions, including those that are aspirational in nature and whose realization would require massive policy and resource commitments and a long-term change process. Addressing these issues will require a strategic approach to increasing connectivity, upgrading digital infrastructure and improving service delivery across the board. It is therefore necessary to prioritize these needs, taking into account specific usage patterns, which can significantly improve the quality of life and operational efficiency of the community.

Broadband connectivity

1. **Infrastructure Diversification**: Explore options for diversifying broadband infrastructure beyond satellite. This could involve investing in undersea cables or terrestrial wireless networks where feasible, to reduce reliance on satellite connections prone to weather interference.

2. **Technology Upgrades**: Upgrade existing satellite technology to mitigate weather-related disruptions. This may include advancements in satellite antenna technology or implementing redundancy measures to improve reliability during adverse weather conditions.
3. **Capacity Building**: Provide training and support to local technicians and residents to better manage and troubleshoot satellite connectivity issues locally. This could include basic maintenance and troubleshooting skills to minimize downtime.

Affordability

1. Subsidy Programs: Implement subsidy programs or government initiatives to reduce the cost burden on residents. Direct subsidies or tax incentives for service providers could help offer discounted rates for low-income households.
2. Community Networks: Explore community-based internet solutions or cooperatives that pool resources to provide affordable broadband access. This grassroots approach could leverage local resources and volunteer efforts to lower costs.
3. Regulatory Measures: Introduce regulatory measures to cap broadband prices or mandate affordable pricing tiers for basic internet services. This would ensure that essential broadband services are accessible to all residents at reasonable rates.

Network cost Management

- Affordable Pricing: Implementing policies to ensure broadband services are affordable for all residents, balancing quality and cost-effectiveness.
- Subsidy Programs: Introducing subsidy programs or incentives to lower the cost of broadband access for low-income households.

Device access (Promoting Device Accessibility)

- Device Provision Programs: Initiating programs to provide affordable or subsidized devices such as computers or tablets to enhance digital access for underserved populations.

Public internet

- Community Participation: Provision of publicly accessible digital hub to encourage community involvement in local governance through digital town hall meetings and participatory decision-making processes.
- Community Wi-Fi Initiatives**:** Establishing community Wi-Fi hotspots in public areas to provide free or low-cost internet access to residents.

Digital Skills

By focusing on these three areas—digital literacy and education, awareness and motivation, and community engagement—Jabwor -Jaluit can foster a digitally inclusive environment that supports its residents' personal and professional growth.

1. Diversified Training Programs: Implement tailored digital literacy programs that cater to diverse demographics, emphasizing skills beyond basic social media and gaming to include job readiness, online research, and digital communication.
2. Inclusive Educational Initiatives: Integrate digital literacy into formal education curricula to equip children and youth with essential digital skills early on. This could include practical applications for learning and career development.
3. Accessibility Improvements: Ensure online resources and training materials are accessible to individuals with disabilities, promoting inclusive digital learning environments that accommodate diverse needs.

Relevant Services

By enhancing these relevant services, Jabwor -Jaluit can improve the quality of life for its residents and build a more resilient, prosperous community.

Education Services:
Challenges: E-education initiatives face instability, inadequate internet access in some schools (including complete absence in the elementary school), and insufficient resources and bandwidth at the boarding high school.

1. Infrastructure Improvement: Upgrade internet infrastructure at schools, potentially including the use of more reliable satellite technologies like Starlink.
2. Resource Allocation: Allocate resources for maintaining and expanding e-education resources, ensuring equitable access across all educational institutions.

Healthcare Services:

Challenges: There are no e-healthcare services currently available, limiting healthcare access and delivery in Jabwor.

1. Telehealth Implementation: Introduce tele-health capabilities at the clinic to improve healthcare access and service delivery.
2. Connectivity Enhancement: Improve internet connectivity at healthcare facilities to support telemedicine and electronic health records.

Government Services

Challenges: E-government services are lacking due to inadequate internet connectivity across key facilities like the police station, court, churches, AMI, airport, and post office.

1. Digital Infrastructure Upgrade: Install and upgrade internet connectivity and digital infrastructure at government facilities to enable efficient service delivery and data management.
2. Training and Capacity Building: Provide training for government staff on using digital tools and platforms for enhanced service provision.

Financial Services:

Challenges: While there are efforts towards implementing e-financial services, availability and scope remain limited at MEC and BOMI.

1. Expansion of Services: Expand e-financial services such as online payment systems and improved Wi-Fi services at financial institutions to enhance accessibility and efficiency.
2. Partnerships for Technology Adoption: Foster partnerships with technology providers like Starlink to improve internet reliability and coverage.

Agricultural Services

Challenges: There are currently no e-agricultural services available, limiting opportunities for agricultural productivity and innovation.

1. Digital Tools Implementation: Introduce e-agricultural services including digital platforms for market information, weather forecasts, and agricultural best practices.
2. Training and Support: Provide training and support for farmers in using digital tools to improve farming techniques and market access.

Disaster Risk Management:

Challenges: There are no e-disaster management services available, hindering preparedness and response efforts in Jabwor.

1. Infrastructure Development: Establish dedicated office space and improve connectivity for disaster management operations.
2. Data Sharing and Coordination: Enhance connectivity with Majuro for improved data sharing and coordination during disaster events.

Priority Solutions for Immediate Implementation

1. **Enhanced Internet Broadband Connectivity**
   - **Action:** Partner with new Internet Service Providers (ISPs) to improve affordability, speed, and support services.
   - **Benefits:** Immediate enhancement of internet access crucial for education, healthcare, business, and disaster management.
   - **Feasibility:** Feasible with existing ISP partnerships and regulatory support.
2. **Community Digital Center (Digital Hub)**
   - **Action:** Establish a centrally located community centre equipped with laptops and internet access.
   - **Benefits:** Provides digital resources for education, disaster preparedness, healthcare, agriculture, and business development.
   - **Feasibility:** Achievable with community engagement and local partnerships.

Implementation Plan

Phase 1 (Months 1-3):

- **Needs Validation:** Confirm broadband connectivity needs and finalize ISP partnerships.
- **Stakeholder Engagement:** Engage community leaders, government, and ISPs to secure support and resources.
- **Establish Community Digital Centre:** Set up physical infrastructure and equip with necessary digital resources.

Phase 2 (Months 4-6):

- **Deploy Enhanced Internet Connectivity:** Begin rollout of improved internet services based on ISP partnerships.

- **Launch Digital Literacy Training:** Collaborate with local institutions and NGOs to initiate digital literacy programs.
- **Monitor and Evaluate:** Establish feedback mechanisms to monitor project progress and community satisfaction.

Monitoring and Evaluation

- **Establishment:** Set up regular monitoring mechanisms and community feedback loops to assess impact on connectivity, education, healthcare, agriculture, and business development.
- **Evaluation:** Conduct periodic assessments to measure effectiveness and adjust strategies as needed.

Part 4: The Jabwor - Jaluit Smart Island Initiative

The needs assessment includes a consultative process at all levels to ensure the involvement and buy-in of local officials and residents in the development of the project, which will address the priority needs identified in the assessment. The aim of transforming small islands into smart islands through the project is to provide connectivity and ICT-enabled services to improve the quality of life of island communities, promoting collaboration and interoperability to address SDG-related needs in a demand-driven and user-centric manner. As such, the Jabwor-Jaluit Smart Islands initiative aims to provide connectivity and sustainable services to disadvantaged island communities in Jabwor-Jaluit, focusing on improving well-being and livelihoods through the provision of digitally-enabled services.

By emphasizing sustainability, scalability and cross-sector collaboration, the project addresses the unique challenges and opportunities of each island community. By improving digital connectivity, affordability, digital skills and service delivery, the initiative aims to bridge the digital divide and ensure that no one is left behind in the transformation to smart islands. Through a thorough needs assessment, cross-sector collaboration and cooperation, the Smart Islands project aims to improve the delivery of essential services such as healthcare, education and government services through digital technology, ultimately improving the quality of life for island communities.

Vision and Objectives

Vision

The vision for the project is to transform the island into a technologically advanced, sustainable, and resilient community. This aims to enhance the quality of life for residents, boost economic development, and ensure environmental sustainability.

Objectives

The objectives include improving digital connectivity and infrastructure, enhancing public services through digital transformation, promoting economic growth through digital innovation, ensuring environmental sustainability, fostering community engagement and digital literacy, and strengthening disaster preparedness and resilience.
- Improve digital connectivity and infrastructure
- Enhance public services through digital transformation
- Promote economic growth through digital innovation
- Ensure environmental sustainability

- Foster community engagement and digital literacy
- Strengthen disaster preparedness and resilience

Implementation Plan

Phase 1: Assessment and Planning
- <u>Needs Validation</u>: Conduct a validation to the findings and recommendation of this present needs assessment
- <u>Stakeholder Engagement</u>: Involve government, private sector, community leaders, and residents in planning.
- <u>Strategic Partnerships</u>: Establish partnerships with technology providers, academic institutions, and international organizations.

Phase 3: Establishing the Enabling Environment
Governance and Regulation
- <u>Policy Framework:</u> Develop policies and regulations to support digital transformation and protect data privacy.
- <u>Regulatory Compliance</u>: Ensure compliance with national and international standards and regulations.

Phase 4: Implementation
Digital Transformation of Public Services
Community Engagement and Digital Literacy
Sustainable Development and Environmental Monitoring
Economic Development and Innovation
Resilience and Disaster Preparedness
Digital literacy, education and access to Technologies

Phase 5: Monitoring and Evaluation
Establish mechanisms for continuous monitoring and evaluation of the project's progress and impact.

Funding and Sustainability
- <u>Funding Sources</u>: Explore diverse funding sources including government budgets, private sector investments, international grants, and public-private partnerships.
- <u>Sustainability Plan</u>: Ensure long-term sustainability through revenue-generating services and efficient resource management.

Risk Management

- <u>Identify Risks</u>: Conduct a risk assessment to identify potential challenges such as cyber threats, technological obsolescence, and environmental impacts.
- <u>Mitigation Strategies:</u> Develop strategies to mitigate identified risks, including cybersecurity measures and contingency planning.

Conclusion

The Republic of the Marshall Islands (RMI) is a sovereign nation comprising 29 atolls and five individual islands located in the central Pacific Ocean, with a population of around 58,000 people. The economy is based on services, government employment, and agriculture, with fishing, copra production, and handicrafts being major industries. The nation faces significant environmental challenges like rising sea levels and extreme weather events due to climate change. Jaluit Atoll, specifically Jabwor, is a key community in the RMI, with a rich history, predominantly Marshallese population, and a blend of traditional and modern influences. The economy in Jabwor relies on traditional activities like fishing and agriculture, supplemented by tourism and remittances. The community faces challenges such as limited resources, climate change impacts, and economic constraints, but there are opportunities for development through sustainable tourism, renewable energy, and vocational training. Financial support for development projects comes from local, national, and international sources, including government ministries, NGOs, and bilateral aid. Climate and disaster risks in Jabwor include typhoons, sea-level rise, coastal erosion, and drought, necessitating preparation, infrastructure improvements, and adaptation strategies to enhance resilience and ensure sustainable development.

The Joint-Programme "Accelerating SDG Achievement through Digital Transformation to Strengthen Community Resilience in Micronesia" aims to use digital technology to address the unique challenges faced by Pacific Island nations. The Smart Island Initiative in Jabwor-Jaluit is a part of this programme, which focuses on developing comprehensive digital transformation strategies in areas such as e-health, e-agriculture, and e-commerce. The project aims to improve service delivery and stimulate broader development, with the goal of leveraging digital technologies for inclusive socio-economic development and increased resilience to climate change and natural disasters. The Jabwor-Jaluit Smart Islands initiative specifically aims to provide connectivity and sustainable services to disadvantaged island communities, focusing on improving well-being and livelihoods through digitally-enabled services. Through comprehensive needs assessments, cross-sector collaboration, and a user-centered approach, the initiative aims to bridge the digital divide and improve the quality of life for island communities.

The ITU SVSI needs assessment framework consists of three stages: identification, analysis, and decision making. Various data collection methods, such as surveys, interviews, focus groups, workshops, and observation, are used to understand the community's needs. Stakeholders involved in the Smart Island project in Jabwor-Jaluit include residents, government officials, educators, healthcare workers, business owners, and international stakeholders. The locale for the project is Jabwor-Jaluit Atoll in the RMI. Preliminaries, such as engaging with the local government and evaluating current connectivity, are crucial for assessing digital needs within the community. The Smart Island Initiative also includes basic digital skills training to enhance online safety and awareness.

The current digital landscape in Jabwor Jaluit lacks several key e-services, including e-health, e-government, e-agricultural, and e-disaster management. While initial steps have been taken towards e-finance services, gaps in digital integration remain. Connectivity issues, poor internet performance, and affordability challenges hinder progress in digital inclusion. Limited digital skills and awareness further complicate the situation. Efforts are being made to address these challenges, with a focus on sustainability and resilience in broadband networks. Relevant e-education initiatives exist, but face stability and resource issues. E-healthcare, e-government, e-financial, e-agricultural, and e-disaster management services remain largely unavailable in the community, highlighting areas for improvement in leveraging digital technologies for community development.

The analysis stage in the SVSI framework focuses on generating insights from collected data and transforming them into specific community needs statements. These needs are prioritized according to the community's perspective, and potential solutions are explored based on root causes. The prioritized community needs include improving internet connectivity, establishing a community facility for access to digital resources, creating a digital facility for money-related transactions, providing opportunities to learn digital skills, offering facilities for health and remote medical consultations, managing scarce resources like water and electricity, supporting school teaching and learning materials digitally, and engaging with local authorities through digital means for feedback and decision-making. This process aims to address various challenges faced by the community and to ensure that initiatives and solutions are relevant and effective.

The decision making phase outlines potential solutions such as infrastructure investment, renewable energy utilization, digital literacy training, and partnerships with international organizations and the private sector. The need for a strategic approach to increase connectivity, upgrade digital infrastructure and improve service delivery is of particular importance. Specific proposed solutions include diversifying broadband infrastructure, implementing subsidy programs for affordability, providing device access, offering public internet services, and enhancing digital skills through training programs. Additionally, it addresses the need to improve relevant services in education, healthcare, government, financial, agricultural, and disaster risk management sectors. Priority solutions for immediate implementation include enhancing internet broadband connectivity and establishing a community digital center, with an outlined implementation plan and monitoring and evaluation process.

The Jabwor-Jaluit Smart Islands initiative is developed based on the assessment findings to provide connectivity and ICT-enabled services to improve the quality of life on small islands. It emphasizes a consultative process involving local officials and residents to address priority needs and promote sustainability, scalability, and cross-sector collaboration. The initiative aims to bridge the digital divide, improve essential services, and enhance disaster preparedness and resilience.

The vision and objectives focus on transforming the islands into technologically advanced, sustainable, and resilient communities, with key areas of focus including digital connectivity, public services, economic growth, environmental sustainability, community engagement, and disaster preparedness. The implementation plan involves various phases such as assessment, stakeholder engagement, regulatory compliance, digital transformation, sustainability, and risk management. Funding sources and sustainability plans are also outlined to ensure the long-term success of the project.

Recommendations

Given the unique challenges faced by Republic of the Marshall Islands (RMI) and the specific community of Jabwor-Jaluit in addressing digital transformation and resilience-building efforts, the following are policy, programmatic, and developmental recommendations for the government of the RMI, UN agencies, development partners, and the private sector:

Policy Recommendations

To effectively navigate the digital age and harness its potential for growth and development, it is crucial to establish a comprehensive digital transformation policy framework. This framework should focus on key sectors such as e-health, e-agriculture, e-commerce, and e-government, to ensure that service delivery is optimized and facilitates broader development opportunities. By integrating digital technologies into these sectors, the government can streamline processes, improve accessibility to services, and drive innovation. This will not only benefit businesses and individuals but also create a more sustainable and resilient economy.

As digital transformation is a means rather than an end, it is essential to implement policies that leverage such transformation to support sustainable tourism, renewable energy, and vocational training in Jabwor-Jaluit. By harnessing digital transformation, the government can stimulate more opportunities for job creation, entrepreneurship and skills development. This will not only boost the local economy, but also help build resilience to economic shocks and uncertainties. Finally, sustainable tourism and renewable energy initiatives will not only benefit the environment, but also bring long-term economic benefits to the community.

In addition, policymakers need to invest in infrastructure improvements and adaptation strategies for digital transformation by prioritizing the Smart Island approach and programme as part of the National Development Plan, so that the government can mitigate the risks of the population falling further behind in the digital age, while protecting communities and public digital services from digital adversity and harm.

Programmatic Recommendations

The Accelerating SDG Achievement through Digital Transformation to Strengthen Community Resilience in Micronesia programme aims to harness the power of digital technologies to promote inclusive socio-economic development and enhance resilience to climate change and natural disasters. By leveraging digital tools, the programme seeks to empower communities in Micronesia to overcome challenges and build a more sustainable future. Through this initiative,

local residents will be equipped with the necessary resources and skills to navigate a rapidly evolving digital landscape.

Collaborating with international stakeholders and development partners, the Smart Island Initiative in Jabwor-Jaluit focuses on bringing connectivity and sustainable services to disadvantaged island communities. By bridging the digital divide and providing access to essential technologies, this initiative aims to strengthen community resilience and improve the overall quality of life for residents in Jabwor-Jaluit. By working together with global partners, this initiative has the potential to create positive and lasting change for those living on the islands.

Enhancing digital skills training programmes in Jabwor-Jaluit is crucial for bridging the gap between technology and underprivileged communities. By providing residents with the necessary skills and knowledge to utilize digital tools effectively, these training programmes will empower individuals to thrive in a digital world. Ultimately, improving digital literacy and access to technology will not only enhance the quality of life for residents in Jabwor-Jaluit but also promote economic growth and social development in the region.

Developmental Recommendations

Investment in infrastructure development, renewable energy utilization, and broadband connectivity is inevitable. Developing these aspects would help the community overcome barriers to accessing technology and digital resources. Improved infrastructure will not only enable better connectivity but also empower individuals and businesses to leverage digital tools for communication, education, and economic development.

In addition to physical infrastructure, establishing community facilities for access to digital resources is essential. These facilities can offer e-healthcare, e-government, e-agricultural, and e-disaster management services. By providing these services locally, the community can enhance service delivery, promote economic growth, and improve overall quality of life. Access to digital resources can also empower individuals to make informed decisions regarding health, government services, agricultural practices, and disaster preparedness.

Partnerships with international organizations and the private sector, again, is key to support digital transformation initiatives in Jabwor-Jaluit. Collaborating with external parties can bring in additional resources, expertise, and funding to support projects aimed at improving digital inclusion. By fostering these partnerships, the community can ensure the sustainability and scalability of initiatives, ultimately driving long-term impact and progress in the region.

These policy, programmatic, and developmental recommendations aim to advocate for the advancement of digital transformation efforts and enhance community resilience in Jabwor-Jaluit and, eventually, for replication and scaling up to the wider scope in the country. To this end, collaboration of the government with UN agencies, development partners, and the private sector is essential to achieve sustainable development goals and improve the quality of life for the islanders.

Appendix A: Profile of Jabwor - Jaluit Governance and Socio - Economy and Culture

Jabwor falls under the administrative jurisdiction of the Government of the Marshall Islands, with the Atoll Local Government (ALG) playing a crucial role in local administration. Jabwor is represented in the national government, with senators from Jaluit participating in the legislative process. Political priorities include improving infrastructure, education, healthcare, climate resilience, and economic development. Traditional leadership, community engagement, and youth involvement are vital in governance. Jabwor has a rich cultural heritage, with Marshallese language and traditional practices still prevalent. The social structure follows a matrilineal system, and education is highly valued. Religion and community life are central to Jabwor's culture. Fishing, agriculture, handicrafts, and tourism are key economic activities, with challenges such as limited resources and climate change. Financial sources for development projects come from local, national, and international funds. Jabwor faces climate and disaster risks, with efforts to mitigate and adapt to natural disasters

Governance and Politics

Jabwor and Jaluit Atoll, which are connected to each other, have a rich history that spans several centuries, marked by significant events and cultural transformations. The atoll has been inhabited for thousands of years by the Marshallese people, who developed a unique culture and navigational skills. The first recorded European contact occurred in the 16th century, but sustained contact began in the 19th century with the arrival of whalers, traders, and missionaries. Jaluit became an important administrative centre under German colonial rule in the late 19th century and later came under Japanese control from World War I until the end of World War II. During World War II, Jaluit Atoll served as a strategic Japanese base and experienced significant military activity, including bombings by Allied forces. After the war, Jaluit, including Jabwor, came under U.S. administration as part of the Trust Territory of the Pacific Islands until the Marshall Islands gained independence in 1986.

Jabwor falls under the administrative jurisdiction of the Government of the Marshall Islands. The political structure of the RMI extends to its atolls, including Jaluit, with local government playing a crucial role in the management of community affairs. Each atoll has its own local government known as the Atoll Local Government (ALG). The ALG is responsible for local administration, including community services, infrastructure maintenance and local law enforcement. The ALG is headed by a mayor and councillors elected by the residents of the atoll. These officials oversee the implementation of local policies and the allocation of resources within the community.

Jabwor is represented in the national government of the Marshall Islands. Jaluit Atoll elects representatives to the Nitijela, the unicameral legislative body of the Marshall Islands. Senators from Jaluit participate in the national legislative process, helping to make and amend laws that

affect the entire country. National elections are held every four years and the people of Jaluit participate in the democratic process to elect their representatives. These elections are crucial in ensuring that the voices of the Jaluit community are heard at the national level.

Several political issues and priorities are relevant to the residents of Jabwor, reflecting both local and national concerns. Improving infrastructure, including transportation, telecommunications, and public facilities, is a key political priority. Efforts to enhance connectivity and access to services are essential for the community's development. Ensuring access to quality education and healthcare services remains a significant focus. Political leaders advocate for increased investment in schools and medical facilities to improve the well-being of residents. Climate change and environmental protection are critical issues for Jabwor and Jaluit Atoll. Rising sea levels and natural disasters pose significant threats, prompting political action on climate resilience and sustainable development. Economic policies aimed at boosting local industries, such as copra production, fishing, and tourism, are essential for creating jobs and improving living standards. Political leaders work on strategies to attract investment and support small businesses.

In addition to formal political structures, traditional leadership plays a vital role in the governance of Jabwor. The iroij (chiefs) and alaps (land owners) hold significant influence in local governance. They are involved in decision-making processes, particularly in matters related to land use, cultural practices, and conflict resolution. Traditional leaders are custodians of Marshallese culture and heritage. They work alongside elected officials to ensure that development initiatives respect and preserve cultural traditions.

The political landscape in Jabwor is characterised by active community engagement and participation. Regular public meetings and consultations provide a platform for residents to voice their concerns and contribute to decision-making processes. These forums foster transparency and accountability in local governance. Efforts to engage youth in politics and community service are essential for cultivating future leaders. Educational programs and youth councils encourage young people to take an active role in shaping their community's future.

Socio-Cultural

Jabwor is rich in cultural heritage that reflects the deep-rooted traditions and customs of the Marshallese people. The primary language spoken in Jabwor is Marshallese, which is integral to the community's identity and daily life. English is also widely understood and used, particularly in educational and governmental contexts. Traditional Marshallese practices such as weaving, canoe building, and navigation are still prevalent. These skills are passed down through generations, preserving the community's connection to their ancestors and the sea. Cultural events and festivals play a significant role in Jabwor's social life. Celebrations such as the annual Constitution Day and

local atoll festivals are marked by traditional dances (biit), story-telling (bwebwenato), music, and feasts, showcasing the vibrant cultural life of the community.

The **social structure** in Jabwor is shaped by a blend of traditional and contemporary influences. Marshallese society traditionally follows a matrilineal system where lineage and inheritance are traced through the mother's line. This influences land ownership, social roles, and family dynamics. The community is organized into extended families and clans, each headed by a chief (iroij) or land owner (alap). These leaders play a pivotal role in community decision-making and conflict resolution.

Education is highly valued in Jabwor, with efforts to balance traditional knowledge with formal education. Jabwor has primary and secondary schools that provide education to local children. The curriculum includes both standard subjects and lessons on Marshallese culture and history. There is a boarding school that serves students from seven different atolls, bringing together individuals from various islands to receive a quality education. Approximately 500 high school students are enrolled in this boarding school, including a Special Ed Class. Additionally, the College of the Marshall Islands (CMI) offers higher education opportunities for students who wish to continue their studies in Jabwor. In addition to formal schooling, there is a strong emphasis on learning traditional skills and knowledge from elders. This includes fishing, weaving, navigation, and storytelling.

Religion is a central aspect of life in Jabwor, influencing both daily activities and community events. The majority of Jabwor's residents are Christians, with various denominations such as Protestant and Catholic churches being prominent. Regular church attendance and participation in religious activities are common. Alongside Christianity, traditional spiritual beliefs and practices are respected and occasionally observed. These include rituals related to fishing, navigation, and other aspects of daily life.

Community life in Jabwor is characterized by close-knit relationships and mutual support. Community gatherings are frequent and often centered around communal activities such as fishing, farming, and cultural events. These gatherings foster strong social bonds and a sense of belonging. The concept of "bwebwenato" or community work is prevalent, where members come together to help with communal tasks such as building, farming, or organising events. This practice reinforces solidarity and cooperation.

Despite its rich cultural fabric, Jabwor faces several socio-cultural challenges that require adaptation and resilience. The influence of modern lifestyles and globalization poses challenges to traditional practices and values. Balancing modernity with cultural preservation is an ongoing effort. Limited access to resources such as healthcare, education, and economic opportunities can impact social well-being. The community strives to innovate and adapt to these limitations while

maintaining their cultural identity. Limited connectivity and infrastructure can hinder communication and access to broader opportunities. Regardless of this, the community leverages local resources and initiatives to enhance connectivity and development.

Economy

Traditional Economy. Jabwor, like many other communities in the Marshall Islands, has an economy deeply rooted in traditional practices. These practices are essential not only for economic sustainability but also for cultural preservation. Fishing is a primary economic activity in Jabwor. The atoll's lagoon and surrounding ocean provide abundant marine resources, which are crucial for both subsistence and small-scale commercial fishing. Traditional fishing methods are still widely used, preserving the community's ancestral knowledge. Agriculture in Jabwor focuses on subsistence farming. Key crops include breadfruit, pandanus, taro, and coconuts. These crops are integral to the local diet and also play a role in cultural practices and trade. The production of handicrafts, such as mats, baskets, and traditional clothing, is another important economic activity. These items are often made from locally sourced materials like pandanus leaves and coconut fibers and are sold to visitors or at local markets.

Modern Economic Activities. In addition to traditional practices, Jabwor has embraced some modern economic activities to supplement its economy. Although relatively small, tourism is a growing sector in Jabwor. Visitors are attracted by the island's natural beauty, traditional culture, and historical sites. Tourism provides income through hospitality services, guided tours, and the sale of handicrafts. The local government is a significant employer in Jabwor. Jobs in administration, education, and healthcare provide stable income for many residents. These positions are crucial for the functioning of the community and the delivery of essential services. Remittances from family members working abroad, particularly in the United States, are an important source of income for many households in Jabwor. These funds help support local families and contribute to the community's overall economic stability.

Challenges and Opportunities. Jabwor faces several economic challenges that impact its development and sustainability. The island's remote location and limited natural resources constrain economic growth. Access to goods, services, and infrastructure is often restricted, affecting the community's ability to expand its economic activities. Limited connectivity, both in terms of transportation and digital infrastructure, hampers economic development. Improved connectivity could facilitate better trade, access to markets, and communication with the broader world. The impacts of climate change, such as rising sea levels and increased frequency of extreme weather events, pose significant threats to Jabwor's economy. These changes affect fishing, agriculture, and infrastructure, necessitating adaptive measures. Despite these challenges, there are opportunities for economic development in Jabwor. Promoting sustainable tourism that respects

the environment and local culture can provide a steady income source. This approach can attract eco-tourists and cultural tourists interested in authentic experiences. Investing in renewable energy sources, such as solar and wind power, can reduce reliance on imported fuels and provide more reliable energy, supporting local economic activities. Enhancing education and vocational training can equip residents with the skills needed for emerging economic opportunities. This includes training in new fishing techniques, agriculture innovations, and digital literacy.

Economic Resilience

Building economic resilience is crucial for Jabwor's future sustainability. Diversifying economic activities can reduce dependency on a single sector and spread risk. This includes exploring new markets for handicrafts, expanding tourism offerings, and developing niche agricultural products. Strengthening community-based economic initiatives can enhance local ownership and sustainability. Cooperative models for fishing, farming, and crafts production can provide collective benefits and foster social cohesion. Leveraging international aid and forming partnerships with NGOs and foreign governments can bring in necessary resources and expertise. These collaborations can support infrastructure projects, educational programs, and climate adaptation strategies.

Finance

The financial sources for development projects in Jabwor -Jaluit Atoll, primarily come from a mix of local, national, and international funds. At the local level, the municipal government allocates funds for community projects and essential services, although these resources are often limited due to the small local economy. Local businesses and community contributions also play a role in funding minor community initiatives.

Nationally, the Republic of the Marshall Islands (RMI) government provides significant financial support through various ministries. The Ministry of Finance, Banking, and Postal Services oversees the allocation of national budgetary funds to the atoll, supporting infrastructure, health, education, and other vital sectors. Additionally, the Ministry of Transportation, Communications, and Information Technology (MOTCIT) funds transportation and communication projects crucial for the atoll's connectivity and mobility.

Internationally, Jabwor and Jaluit Atoll benefit from substantial financial aid and grants from international development agencies, non-governmental organizations (NGOs), and donor countries. The United States provides financial assistance under the Compact of Free Association (COFA), which supports a wide range of development projects, including infrastructure, healthcare, and education. United Nations (UN) agencies, such as the UN Development Programme (UNDP) and UNICEF, offer grants and technical assistance for sustainable development, education, and health initiatives. The International Telecommunication Union (ITU) and other international bodies provide funds and expertise to improve digital infrastructure and connectivity.

Non-governmental organizations (NGOs) also contribute to funding various projects in Jabwor. International NGOs, such as the Red Cross and World Health Organization (WHO), offer financial and technical support for health and disaster preparedness initiatives. Environmental NGOs, like the Marshall Islands Conservation Society (MICS), fund projects focused on sustainability and climate resilience.

Moreover, **bilateral aid** from countries such as Japan, Australia, and Taiwan provides additional financial resources for infrastructure, education, and health projects. These countries often fund specific projects or provide general budget support to enhance the atoll's development.

Financial institutions, including local banks like the Bank of the Marshall Islands (BOMI), also play a role by providing loans and financial services to support local businesses and entrepreneurs. These institutions facilitate digital financial inclusion and services such as mobile banking and online transactions, which are crucial for economic development in the atoll.

Climate and Disaster Risks

Jabwor, a village on Jaluit Atoll in the Republic of the Marshall Islands (RMI), experiences a tropical rainforest climate characterized by high temperatures and significant rainfall throughout the year. The region's climate is influenced by its location in the central Pacific Ocean, leading to consistently warm and humid conditions, with average temperatures typically ranging between 27°C to 32°C (81°F to 90°F) and minimal temperature variation. Jaluit Atoll receives considerable rainfall, with an average annual precipitation of about 3,500 millimeters (137 inches), with the rainy season usually spanning from May to November and August being the wettest month. High humidity levels are a constant feature, contributing to the overall warmth and muggy conditions prevalent on the atoll. Additionally, the atoll is subject to the trade winds, which blow predominantly from the northeast, playing a crucial role in regulating the climate and bringing moisture to the region.

Jabwor, like other parts of the Marshall Islands, is susceptible to various natural disasters due to its geographic location and climatic conditions. The region is prone to typhoons and tropical storms, particularly during the rainy season, which can bring strong winds, heavy rainfall, and storm surges, leading to significant damage to infrastructure, homes, and crops. The low-lying nature of the atoll makes it highly vulnerable to sea-level rise and coastal erosion, with rising sea levels exacerbated by climate change threatening to inundate land, erode coastlines, and contaminate freshwater sources with saltwater. Heavy rains and storm surges often lead to flooding, disrupting daily life, damaging property, and impacting agriculture, as even minor increases in water levels can cause widespread flooding. Despite the overall high rainfall, the region can experience periods of drought, particularly during El Niño events, which can severely impact freshwater availability, agriculture, and the health of the local population. Although less frequent, the atoll is also at risk of tsunamis generated by undersea earthquakes in the Pacific Ocean, which can cause catastrophic flooding and damage to coastal communities.

Efforts to mitigate and adapt to these natural disasters are critical for the resilience of Jabwor and Jaluit Atoll. Local and national authorities, along with international organizations, conduct disaster preparedness and response training to enhance community resilience. Building and upgrading infrastructure to withstand extreme weather events and sea-level rise is a priority, including constructing seawalls, elevating buildings, and improving drainage systems. Protecting and restoring natural barriers, such as coral reefs and mangroves, helps reduce the impact of storm

surges and coastal erosion. Developing and implementing comprehensive climate change adaptation plans, supported by international funding and technical assistance, is essential for long-term sustainability. Understanding the climate and natural disaster risks of Jabwor is crucial for planning and implementing effective strategies to protect the community and ensure its sustainable development.

Appendix A: Initial requirements to establishing a Community Connectivity Hub

Recurring costs are to be provided by local government and / or other later partners

Community Wants/Needs for the Digital Hub			
Item	**Quantity**	**Unit Cost**	**Total Cost**
Desktops	10	$500	$5,000
Thin Clients	10	$250	$2,500
AC Units	2	$1,200	$2,400
Plywood Tables	10	$100	$1,000
Chairs	20	$50	$1,000
Starlink Kit	1	$600	$600
Router	2	$150	$300
Monitors	10	$150	$1,500
Keyboards and Mice	20	$30	$600
UPS (Uninterruptible Power Supply)	5	$200	$1,000
Power Strips/Extension Cords	10	$20	$200
Projector and Screen	1	$500	$500
Software Licences	20	$100	$2,000
Network Switch	2	$200	$400
Cabling	-	$100	$100
Server	1	$1,000	$1,000
Storage Solutions	2	$200	$400
Whiteboard/Notice Board	2	$100	$200
Digital Literacy Training Materials	-	-	-
Total Estimated Cost			**20,700**

Additional Fee	
Freight	**Total Cost**
Air	$3,000

Sea	$2,000
Total Estimated Cost to transport Equipments	**$5,000**

Appendix B: Photos and Services of Local Places

AIRPORT & HOTEL

ONLY AVAILABLE SPACE;
HS FOOD STORAGE LOCATED
AT THE POLICE STATION

COURT HOUSE; NOT IN USE

GARDEN FUNDED BY TTM TAIWAN TECHNICAL MISSION
(AGRICULTURE) (DESTROYED BY STORM) &
MIMRA (FISHERY)

MARSHALL ISLANDS ENERGY COMPANY (MEC)

POST OFFICE, BOMI, & MON BILIMON (ONE BUILDING)

BOMI & MON BILIMON OFFER
PUBLIC WIFI VIA NTA/STARLINK

SOME OF THE BUSINESS WEREN'T OPEN,
BUT THEY ALSO OFFER STARLINK WIFI SERVICES

HS
NURSE CORNER

CMI:
CLASS-DISTANT LEARNING
& LIBRARY

SATELLITES;
MISSING 2. TOTAL = 7

HS PRINCIPAL & KEY STAKEHOLDER   ACTING MAYOR

THESE ARE THE 2 MAIN PEOPLE I'M WORKING WITH

SURVEYS: ITU & FAO
INCLUDING PWD (SPECIAL ED'S CLASS)

DISASTER COMMUNITY

CHURCH YOUTH

YOUNG GIRLS

Appendix C: Summary of the project's key aspects

About Jaluit

The people of Jabwor have a rich cultural heritage and vibrant social life. Traditional customs like navigation, weaving, and dance are central to their community. Festivals and communal activities strengthen their sense of community and cultural continuity. Christianity is the dominant religion, with churches playing a central role. Despite limited resources and connectivity, the people of Jabwor live fully, showing resilience and a deep appreciation for their heritage and community bonds. Jabwor, part of the Jaluit Atoll, blends historical significance, cultural richness, and modern challenges, navigating the future with a strong identity and resilience.

Politics

Politics in Jabwor involves local governance, national representation, traditional leadership, and community engagement. Residents balance modern governance with deep-rooted cultural practices. Despite challenges, active participation ensures their needs and aspirations are addressed.

Socio-Cultural Landscape

Jabwor's socio-cultural landscape is rich in tradition, community, and resilience. The residents uphold their cultural practices while adapting to modern challenges. Through education, community work, and cultural preservation, they strive to maintain their way of life and cultural legacy.

Economy

Jabwor's economy blends traditional practices and modern activities. Despite significant challenges, the community is resilient and resourceful. By leveraging cultural heritage, exploring new opportunities, and enhancing resilience, Jabwor can sustain and develop its unique economy.

Financial Sources

Jabwor -Jaluit Atoll, draws on diverse financial sources, combining local, national, and international funds to support community development and resilience.

Methodology

The Smart Island project's methodology emphasizes community engagement, inclusivity, and understanding the local context. By using participatory and consultative methods, the research gathers comprehensive insights to create solutions tailored to the community's needs and aspirations.