**1. Conceptual narrative**

Naviti Island 's climatic and cultural challenges , focusing on resilience to natural disasters such as Cyclone Winston in 2016. *The module combines two simultaneous rotations:*

Horizontal helical turn (10° per level) : To deflect lateral winds.

Constant vertical pitch (5°) : Avoids exposed flat surfaces, reducing aerodynamic loads.
Result: No face of the module repeats angles, dissipating wind forces asymmetrically*,* so gusts slide by without frontal impacts (like a turtle's shell).

They are built on hexagonal bases raised 50 cm to protect against flooding, while the north-sloping roofs ensure greater efficiency of the solar panels.

The simplicity and resilience of the Fijian people are reflected in the use of local materials such as bamboo and palm fronds. These materials not only represent a connection between tradition and modernity, but also symbolize cultural values such as adaptability, strength, and community unity. Furthermore, the design includes the Da Vinci Bridge, constructed from bamboo and coconut fibers using ancient techniques, demonstrating how simplicity can be both robust and functional—an inherent characteristic of Fijian life .

The project also pays homage to Dakuwaqa , the protective deity of marine ecosystems, by integrating mangroves and other natural elements that help protect beaches from erosion. The modules and tunnels are designed to educate the community about turtle conservation, while the floating platforms reflect the spiritual connection to Dakuwaqa , reinforcing his role as guardian of the ocean and its creatures.

The green turtle, a symbol of longevity and connection to the sea, occupies a central place in the design. The modules are arranged in the shape of nests with six eggs each, honoring the sacred numbers 3 and 6 in Fijian culture. Furthermore, the rooftops feature irregular hexagons reminiscent of the turtle's shell, fusing modern technology with cultural traditions. A main building, known as "The Nest," houses batteries and educational spaces dedicated to raising awareness about the protection of turtles and their habitat, while also fostering cultural exchange between locals and visitors.

Kava , a symbol of spiritual unity in Fiji , inspires the design's pathways. These paths, extending from a central plaza, act as connections between tunnels, offshore platforms, and a cemetery, forming imaginary circles that represent the eternal cycle of life. The cemetery honors ancestors and represents spiritual energy, while the energy complex provides electricity and drinking water, serving as the heart of the community's physical resources.

Finally, the design incorporates the access tunnel overlooking Vatu Rua Mountain, symbolizing the connection between the earthly and the spiritual. This element recalls kava rituals , creating a space where visitors can reflect on the relationship between nature, community, and ancestors, and experience the spiritual and resilient essence of Naviti Island.

**2. Technical narrative**

Naviti Island project design is based on three main components: the Energy Center, the Da Vinci Bridges, and the Offshore Platforms. These elements are designed to be efficient, environmentally friendly, and aligned with the community's cultural values.

**Energy Center** At the heart of the project is a modular system that combines solar energy and water harvesting. Each module incorporates seven 600 W solar panels, achieving a capacity of 4.2 kW per module. With 18 modules distributed across three cores, total production reaches 75.6 kW, with an average of 102 MWh per year, with variations of ±5% depending on cloud cover. Enough to supply 150 homes.

The modules, raised on hexagonal bases, not only prevent flooding but also channel water into underground stainless steel tanks. A filtration system based on gravel and activated carbon ensures drinking water for the community, with a collection capacity of approximately 50,000 to 60,000 liters per year. Structural strength is ensured by a helical design that effectively distributes wind forces and protects against cyclones.

**Da Vinci Bridges Inspired by** Leonardo da Vinci's self-supporting design , the bridges connect the energy center to the village. Built with local materials like bamboo and coconut fiber, they require no sophisticated tools or deep foundations. In addition to their functionality, they are a symbol of the spiritual connection between the community and its environment, under the protection of Dakuwaqa .

Each bridge includes rainwater harvesting systems and a communal rest area. Integrated solar panels generate energy to illuminate the plazas at night, transforming them into cultural and educational gathering places. Their design combines angular geometry and durable materials to withstand extreme weather conditions.

**Offshore Platforms** Located off the coast, these platforms adopt the sloping shape of Fijian palm trees to protect the shoreline. They incorporate hydropanels that generate drinking water from air humidity and solar panels oriented to maximize energy efficiency. They also incorporate mangroves that absorb wave energy, helping to prevent coastal erosion.

Dakuwaqa 's divine protection , the platforms represent the bond between the community and the ocean, balancing advanced technology with respect for nature.

Naviti Island 's culture and environment , highlighting its holistic approach to sustainability and community.

**3. Declaration of prototypes and pilot implementation**

Naviti Island project takes a gradual and participatory approach to prototype development and full-scale implementation, prioritizing collaboration with the local community at every stage. The creation of the first prototype, called the "Access Tunnel," represents the starting point. This pilot module not only acts as a hub for energy management but also as a key space for community engagement. During its estimated 12-week construction, using natural materials, local residents will work alongside the technical team, learning basic techniques such as welding and installing solar panels , as well as assembling the 18 modules. The prototype's skeleton will be made of stainless steel, while the cladding will use treated bamboo and palm fronds, materials selected for their local availability and cultural significance. The nest is a space for working and storing materials for the 18 modules. This way, they can work at a pace appropriate to their needs and gradually store batteries and tentatively use panels to generate energy.

In addition, this process will allow for community feedback on practical and cultural aspects, ensuring that the design is both functional and sensitive to local traditions.

Following prototype validation, the project will move on to the full-scale implementation phase. At this stage, the remaining 18 modules will be replicated, distributed across three cores of six modules each. Local teams will lead the installation, supported by practical workshops covering key topics such as solar panel maintenance (cleaning every two months), water filter repair (annual activated carbon replacement), and the integration of cultural ceremonies. Community elders will lead blessings for each module, reinforcing the connection between modern technology and ancestral spirituality.

Community engagement will be central throughout the entire process. From initial construction to long-term maintenance, residents will play an active role. Educational workshops will be held to promote awareness about renewable energy, water conservation, and the protection of key species such as sea turtles. These activities not only foster a sense of shared ownership and responsibility but also create opportunities for skill development and economic empowerment.

Expected results include 90% energy self-sufficiency for Naviti Island, drastically reducing dependence on fossil fuels, as well as a 60% reduction in plastic bottle use thanks to access to purified water. Additionally, the project seeks to strengthen the connection between the community and its natural environment, promoting sustainable practices that honor cultural heritage and protect the island ecosystem.

**4 Declaration of Operations and Maintenance**

Naviti Island energy complex relies on an efficient operational design and a sustainable maintenance plan that encourages active community involvement. This approach ensures not only the project's longevity but also a shared sense of responsibility and ownership among residents.

Daily Operation

The system is self-sufficient and resilient , with centralized batteries located in the NIDO (Access Tunnel). These batteries store energy to ensure continuous power supply even on cloudy days or during storms. Remote monitoring is key to daily operations, using satellite-connected IoT sensors for areas without internet access. A local committee organizes the equitable distribution of energy and water among households, promoting transparency and community collaboration.

The modular design facilitates component replacement and reduces long-term costs. Materials, such as stainless steel, are corrosion-resistant and ensure the system's durability in the region's extreme climatic conditions.

**5 Routine Maintenance**

Maintenance tasks are structured so that they can be managed by the community:

Solar panels They are cleaned every 60 days to prevent dust buildup and improve performance.

Water tanks Monthly inspection to ensure the quality of the collected water and prevent sedimentation.

Filtration Systemsening environmental stewardship.

Financing and SustainabilityMaintenance is supported by strategies such as:

Educational tourism: Guided tours of the complex generate revenue, in addition to educating visitors about the importance of sustainability and local traditions.

- Strategic alliances International organizations could donate resources to ensure the coll: By conserving native vegetation and creating new habitats, local wildlife is protected and visual pollution is reduced.

Dakuwaqa kava rituals and myths are incorporated into community workshops, strengthening the spiritual connection with nature.

Success Indicators

To evaluate the results, clear goals were established:

- 20% increase in green turtles in five years thanks to improved habitats.

- Total elimination of diesel use for energy by 2030, achieving a complete transition to renewable sources.

The project demonstrates how modern technology can be combined with ancient traditions to address current environmental challenges. By protecting natural resources and vulnerable species, and reducing dependence on fossil fuels, the connection between the community and its environment is strengthened.

This approach proposes a sustainable model for vulnerable island ecosystems, combining technological advancements with culture and tradition. The foundation established ensures a resilient and harmonious future for generations to come .