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Together

we are more innovative

Mission

Transform knowledge and innovation into social well-being.

Vision

To be a vibrant ecosystem of opportunities and a reference in research, innovation, entrepreneurship, solutions, and technologies.

Values

✓ Valuing people
✓ Ethics and Integrity
✓ Cooperation and Integration
✓ Respect and Diversity
✓ Focus on Results
✓ Innovative Thinking
✓ Sustainability

OUR AREAS OF OPERATION

Research and Development

Technologies and Solutions

Management and Operation of Enterprises

Entrepreneurship and Business

Education and Extension

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We innovate to create technological solutions that transcend borders

Foz do Iguaçu

- 285 thousand inhabitants
- 110 Years
- Largest GDP in the western region
- 6º largest in the State
- Tourism, logistics and energy

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ITAIPU BINACIONAL MAIS QUE ENERGIA

Strategic Innovation Partnerships

5G Lab, Let5Go, and Critical Tech

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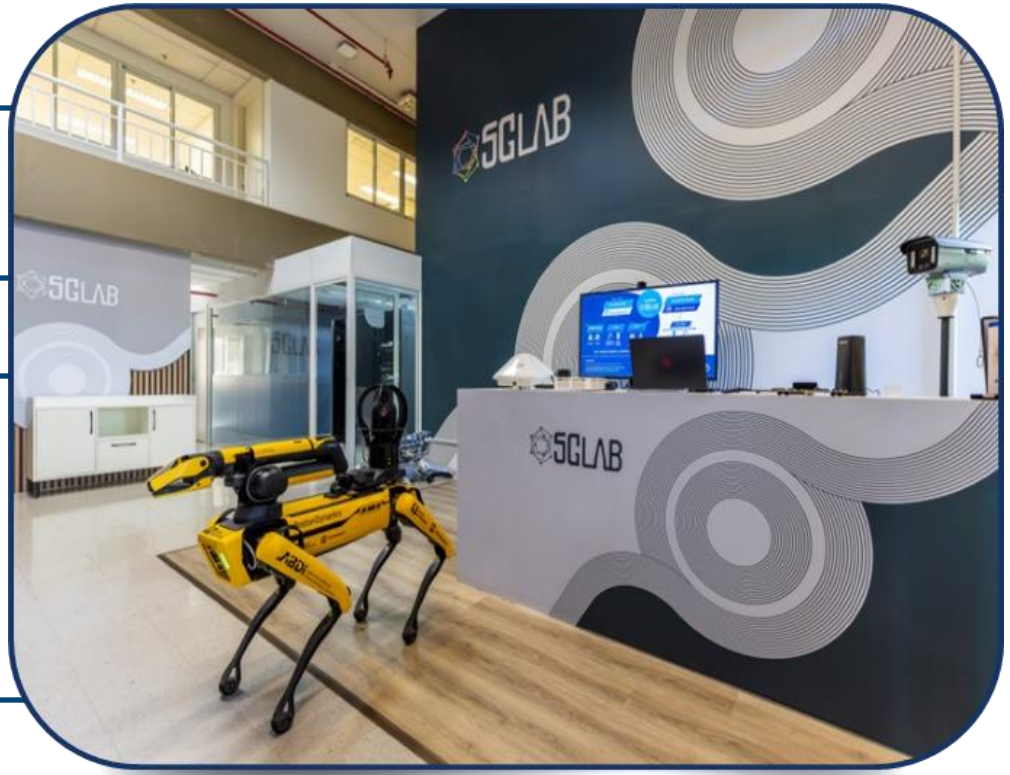
ITAIPU BINACIONAL MAIS QUE ENERGIA

5G Project

- Implementation of the 5G Network
- Let5GO Public Call



General Information
TA.DT

Stage: 5G Network Implementation

General Objective

Utilize the physical facilities of Itaipu Parquetec to develop technical solutions using 5G technology and experimentally evaluate conceptual use cases for the power plant through Technological Orders (ETECs), enabling a 5G technology infrastructure..

Coverage Area

ITAIPU PARQUETEC

Execution Period: 36 months
(Dec 2021 – Dec 2024)

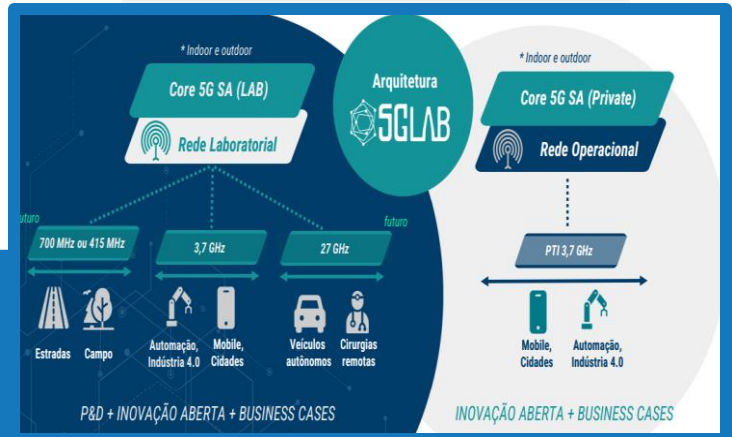
Research Development & Innovation in 5G

Goal: Installation of both Laboratory and Operational Networks

5GLAB Laboratory

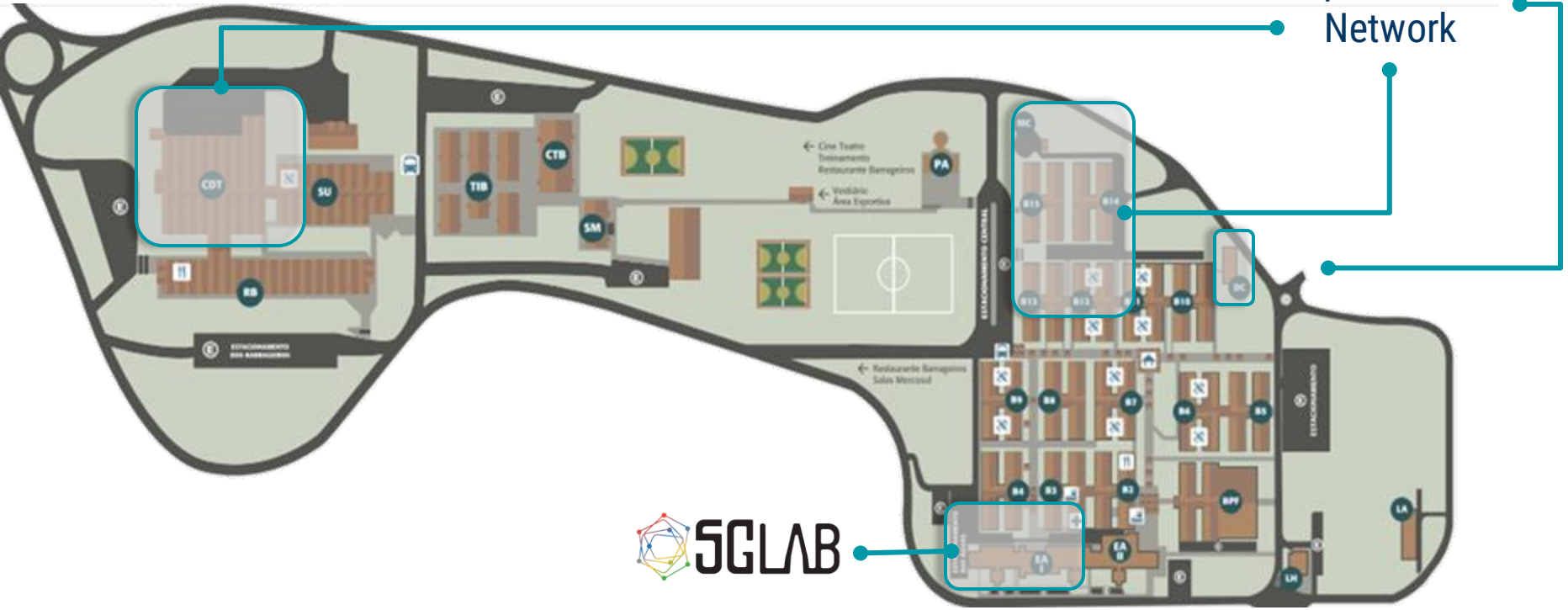
Antenna

5G Macro Network Architecture



Research Development & Innovation in 5G

Goal: Installation of both Laboratory and Operational Networks



General Information

TA.DT

Stage: Let5Go Public Call

General Objective

Promote the development of sustainable and efficient solutions, strengthen the startup ecosystem, and drive economic and social benefits for the region and the country.

Execution Period: 35 months
(January 2022 – December 2024)

ENERGY
Sustainability and Distribution

LOGISTICS
for Critical Infrastructure

INDUSTRY 4.0
for New Business Models

ENVIRONMENT
Water Resources and Fauna & Flora

Selected Companies

Let5Go Public Call

Selected Companies

Let5Go Public Call

AVANT SEMENTES & DRONES

Develop a mechanism for implementing 5G technology using a drone device to provide secure and stable internet access. The collected data will be sent to a server in real-time, processed, and then returned in the form of an application map.

Selected Companies

Let5Go Public Call

BSafer IoT Lock: Combining the Lockout Tagout (LOTO) method with the Internet of Things (IoT) to enhance industrial safety.

Selected Companies

Let5Go Public Call

GETTER
AMPLIFIED INDUSTRY

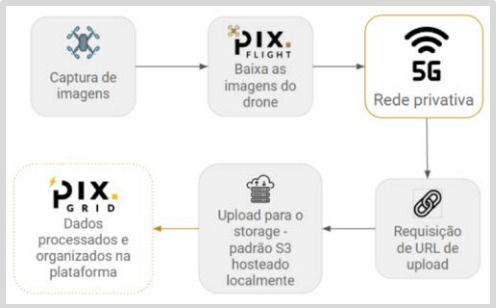
Advanced platform for accident prevention, safety monitoring, and productivity optimization using fixed, portable, and autonomous robotic cameras.

Selected Companies

Let5Go Public Call

PIX FORCE

Integration of Pix Grid technology with 5G to enhance operational efficiency and data transmission using computer vision and drone inspections.

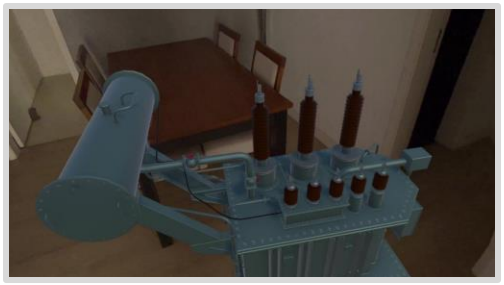
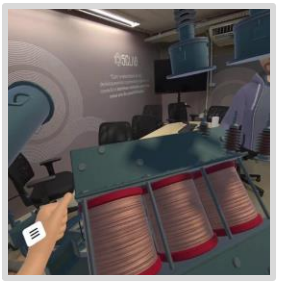
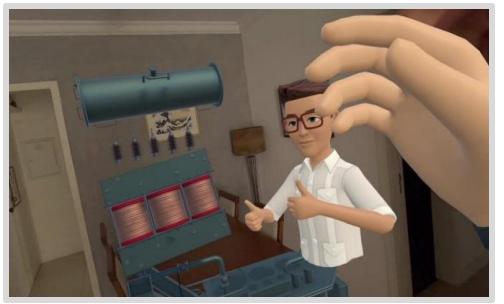


Selected Companies

Let5Go Public Call

sense+
EXPANDINDO REALIDADES

Use of augmented and assisted reality equipment applied to synchronous activities between the control center and the operator, utilizing 5G connectivity.


CRITICAL TECH

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ABDI
Agência Brasileira de Desenvolvimento Industrial

BR PETROBRAS

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ABDI Agência Brasileira de Desenvolvimento Industrial

BR PETROBRAS

ABOUT THE PROJECT

CRITICAL TECH

OBJECTIVE

Implementing use cases for testing and validation of private 5G networks in industrial environments, creating business models that make them viable for Brazilian industries.

STAGES

- Acquisition and testing: Innovating with 5G technology
- Development and integration of solutions
- 5G Business Models for Critical Infrastructures

SCOPE

USE CASES AND TECHNICAL APPLICATIONS

USE CASES

A.1) 360 Mapping the Pilot Plant with Metadata (Using 5G)

A.2) Detection of thermal differences in components in the Pilot Plant (Using 5G)

TECHNICAL APPLICATIONS

B1) Comparing the performance between Wi-Fi, 5G e 4G networks

B2) 1 day of autonomous inspection routine with 5G (with Demo) showing inspection potential and coverage

C1) Execution of a demonstration mission of the non-native AI of the SPOT robot (LEVATAS), performing streaming for mission monitoring (Teams)

A.1

360 MAPPING OF THE PILOT PLANT WITH METADATA (USING 5G)

EXECUTED ACTIVITY

Detailed 360º mapping of the pilot plant was carried out using a panoramic camera, resulting in the capture of 77 360-degree images at strategic points. Additionally, 15 image captures were performed using a PTZ camera, focused on visual inspections.

RESULTS

Utilization of the 5G network for the efficient execution of repetitive 360-degree image capture missions, with real-time remote monitoring.
Integration of images and generated metadata into the Plan 360 system (quantity/occurrence, quality, standardization, and reduced rework).
Autonomous data collection with reliable positioning and routine execution in an industrial environment.

A.2

DETECTION OF THERMAL DIFFERENCES IN COMPONENTS OF THE PILOT PLANT (Using 5G)

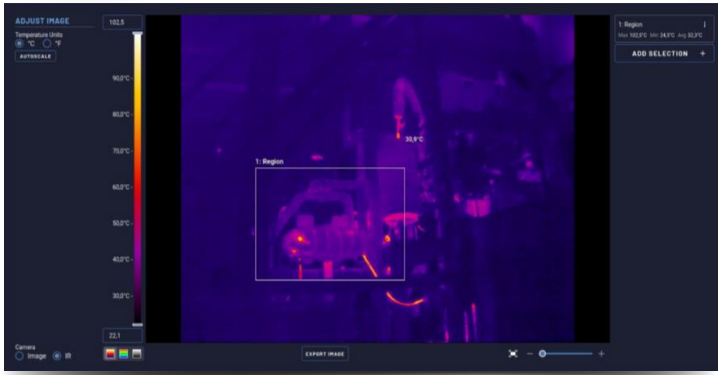
EXECUTED ACTIVITY

Implementation of thermal inspection missions using the 5G network in the pilot plant. A total of 16 thermal inspections were conducted at strategic points in the plant to enable precise analysis of thermal differences.

RESULTS

Crucial insights for predictive maintenance of equipment, combined with real-time communication for the remote execution of inspection missions/routines.

- Detailed thermal data collection, analysis, and storage via Spot (Orbit).
- Real-time alerts for preventive maintenance of equipment.
- Instantaneous analysis of devices with recorded anomalies.



B.1

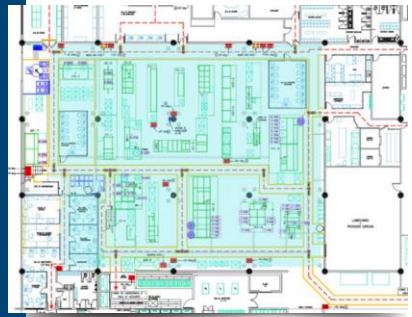
COMPARING PERFORMANCE BETWEEN WI-FI, 5G AND 4G NETWORKS

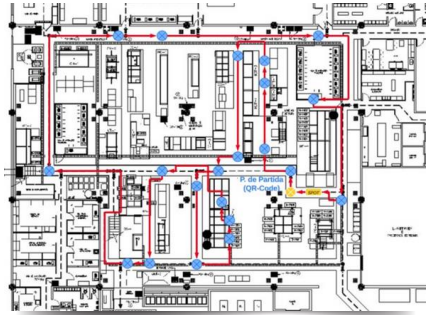
COMPARISON OF TECHNOLOGIES

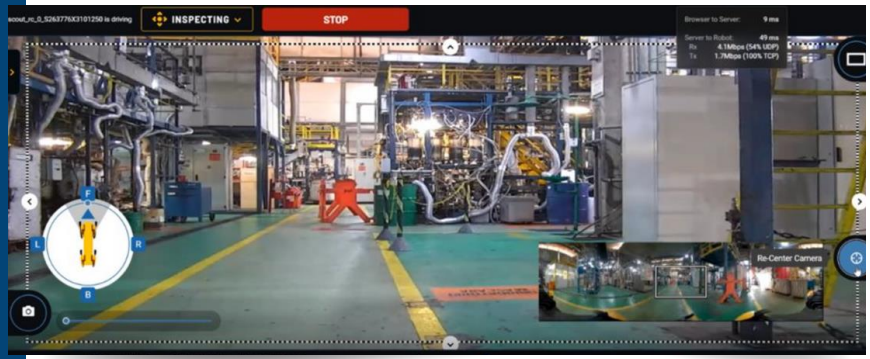
Analysis of the performance of 5G, 4G and Wi-Fi networks, focusing on metrics such as download and upload rates, latency, video quality and robot control responsiveness.

IMAGE-BASED PERFORMANCE

Validation of image quality in each of the technologies (4G, 5G and Wi-Fi).







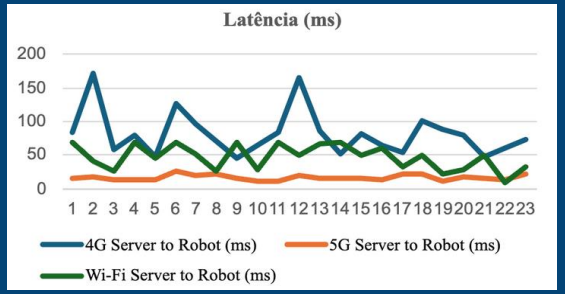
B.1 COMPARING PERFORMANCE BETWEEN WI-FI, 5G AND 4G NETWORKS

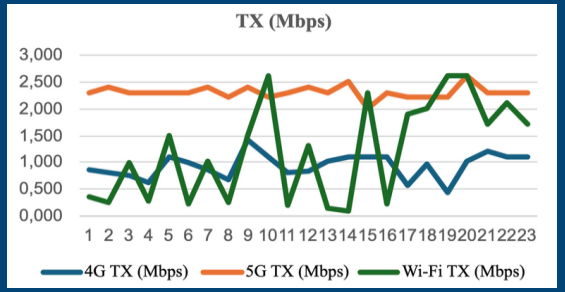
METHODOLOGY

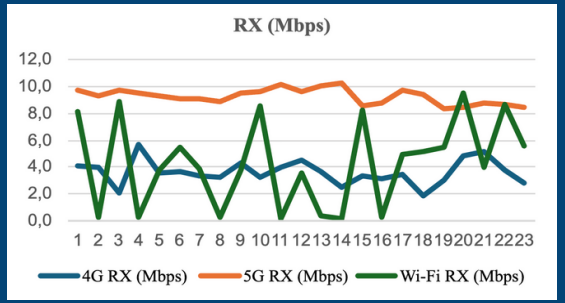
The data was collected through controlled tests under various conditions (maintaining the application standard for comparison purposes), with a focus on analyzing performance in terms of bandwidth.

The measurements were performed repeatedly to ensure the accuracy of the results.

	4G	5G	Wi-Fi
Control responsiveness	Medium	High	Medium
Image quality	Medium	High	Medium
Data Transfer	Low/Medium	High	Medium/High
Coverage and Availability	High	High	Medium/High
Connection Stability	Medium	High	Low
Latency	High	Low	Medium
Latency variation	Medium	Low	High





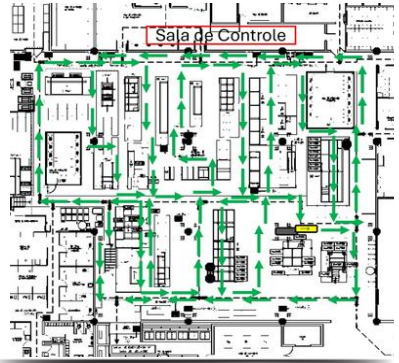


B.2

1 DAY OF AUTONOMOUS INSPECTION ROUTINE WITH 5G (WITH DEMO) SHOWING POTENTIAL AND INSPECTION COVERAGE

EXECUTED ACTIVITY

Analysis of signal quality and 5G performance across the entire area. The mission recording was conducted in all corridors of the Pilot Plant.



RESULTS

Utilization of the 5G network during the mission with exceptional video transmission quality and highly responsive control.

Duration: 8 minutes (entire plant, no pauses)
Battery: approximately 10% battery consumption

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Irineu Mario Colombo
General Superintendent

Clerione Raquel Herther
Administrative & Financial Director

Alexandre Gonçalves Leite
Technology Director

Eduardo de Miranda
Business & Entrepreneurship Director

Yuri Benites
Tourism Director

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