Smart Museum

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Technical POV

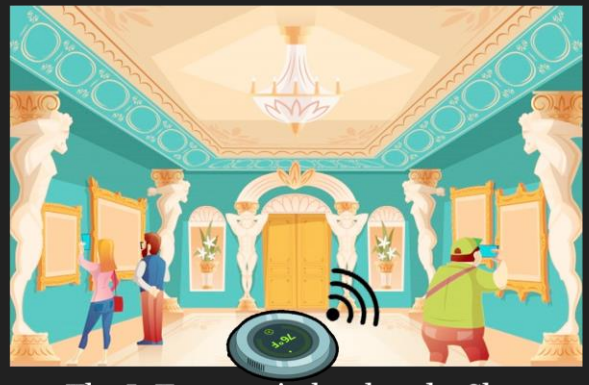
1. Good the idea of a specific target.
2. The feature for this target (Curators) is pretty straightforward and not related to the main features for users.
3. Bluetooth Low Energy is too common among projects.
4. Monitoring the environment is only a corner feature while it might be the core.
5. No need for AR (Augmented Reality).
6. Architecture should focus more on the IoT
7. Excellent the comparison of IoT cloud services.

PIVOT

- Focus on Environmental Monitoring
- Efficient management of resources
- Asset preservation (artworks) and energy efficiency (low power technologies).

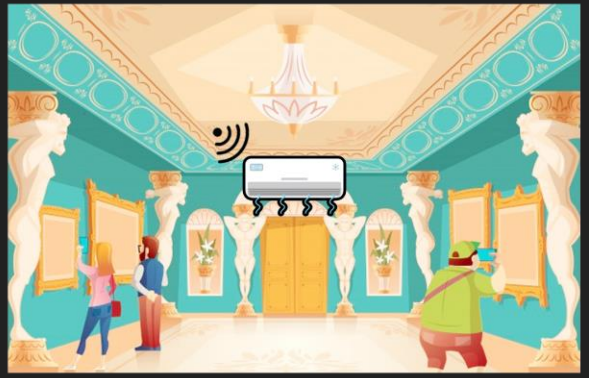
As Museum Curator, Gabriella wants to controll the museum environment to best preserve all the collections

Indeed due to bad wheather condition the artworks might be damaged



The IoT comes in her hands. She make install sensor for indoor environment monitoing in all museum's room

Thanks to the Dashboard, Gabriella can monitor rooms, receiving temperature, humidity and air pressure stats

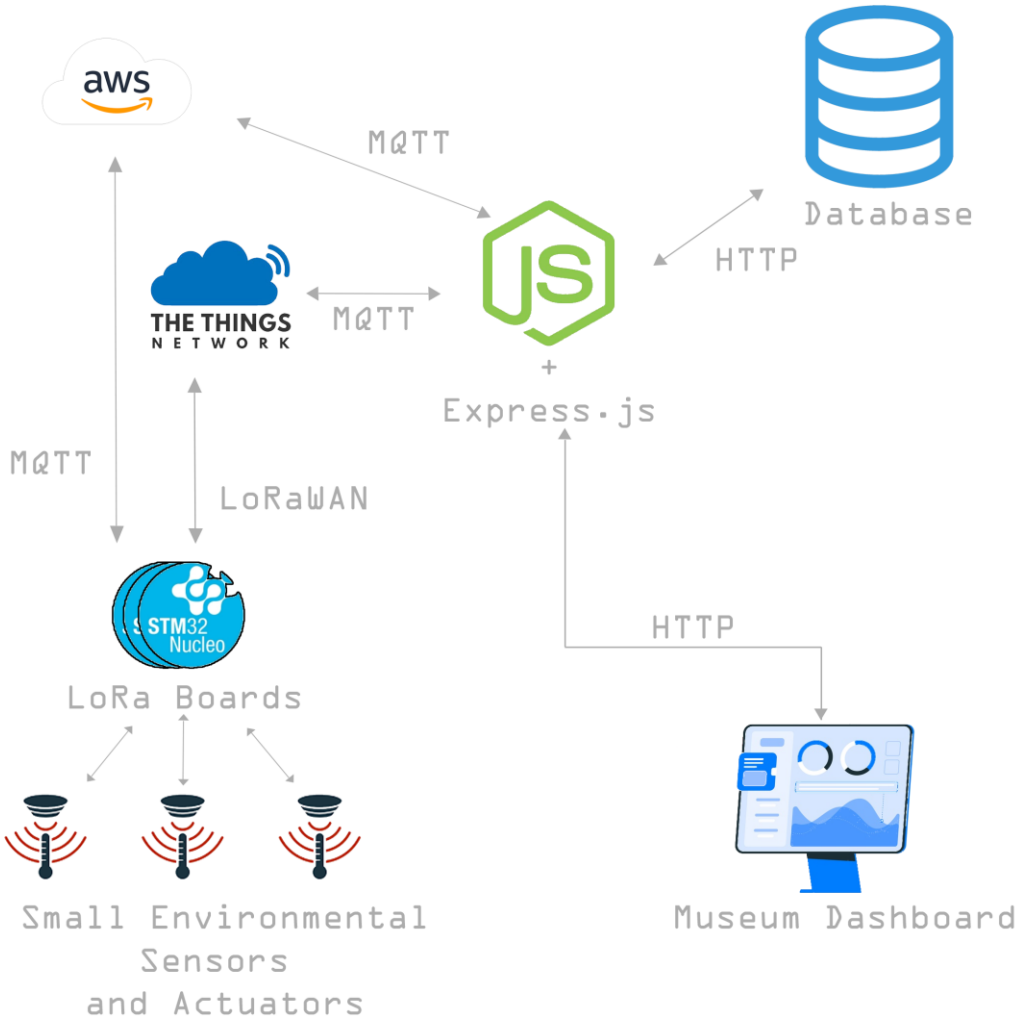


With actuators she can automatically and remotely configure the best indoor enviroment and the system will take care of it

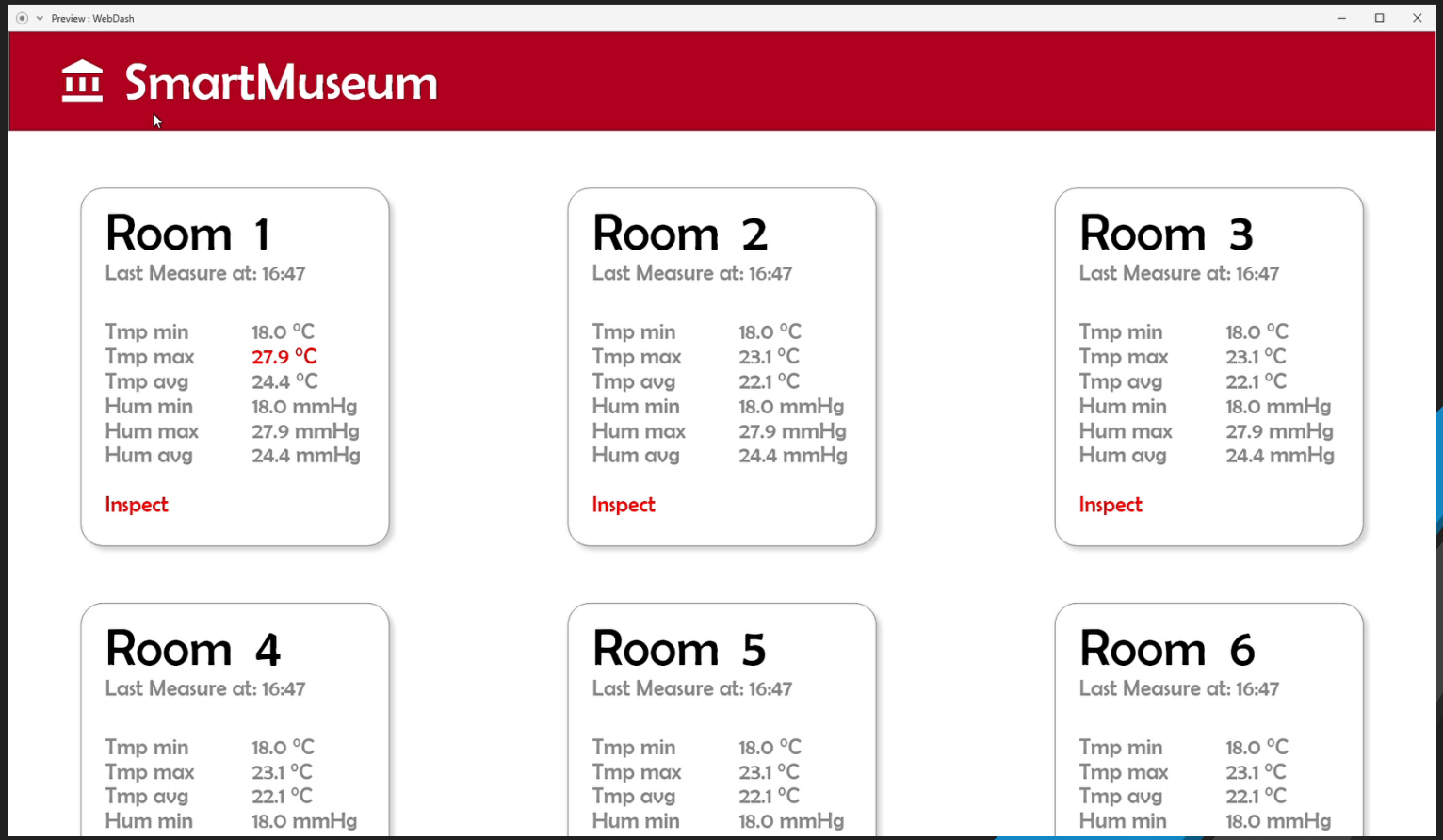
If some value is not normal Gabriella is allerted so she can switch to real time monitoring and understand what is not working

Architecture

- Aggregate measures
- Real Time on demand



Dashboard Demo



Evaluation

- Competitor Analysis
- UX Evaluation
- Required Hardware
- Costs

Competitors analysis

	Cairo University	VLSI and Embedded research Group	Preservation of Cultural Heritage at Yale Univerisity	Smart Museum Sapienza
AC Actuators	✓	✗	✗	✓
Data Processing	✓	✗	✓	✓
Air Quality	✗	✗	✓	✗
Remote Monitoring	✗	✗	✗	✓
Real Time	✗	✓	✓	✓

User Experience Evaluation

- Address the difficulties of the period.
- Think-aloud approach

- **Results:** the prototype seems intuitive and easy to use.

Required Hardware

- STM NUCLEO
- LoRa Extension board
- WiFi support (MQTT)
- One board per room with LoRaWAN support

Costs Evaluation

- To host the API: AWS EC2.
- Few MB per month of storage
- TTN service (free)
- Low data volumes

Future Evaluation plans

- Transition between “normal mode” and “real time”
- Latency in the system
- Energy Consumptions
- Adjust message transmission rate based on network latency

Thank You For The Attention

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