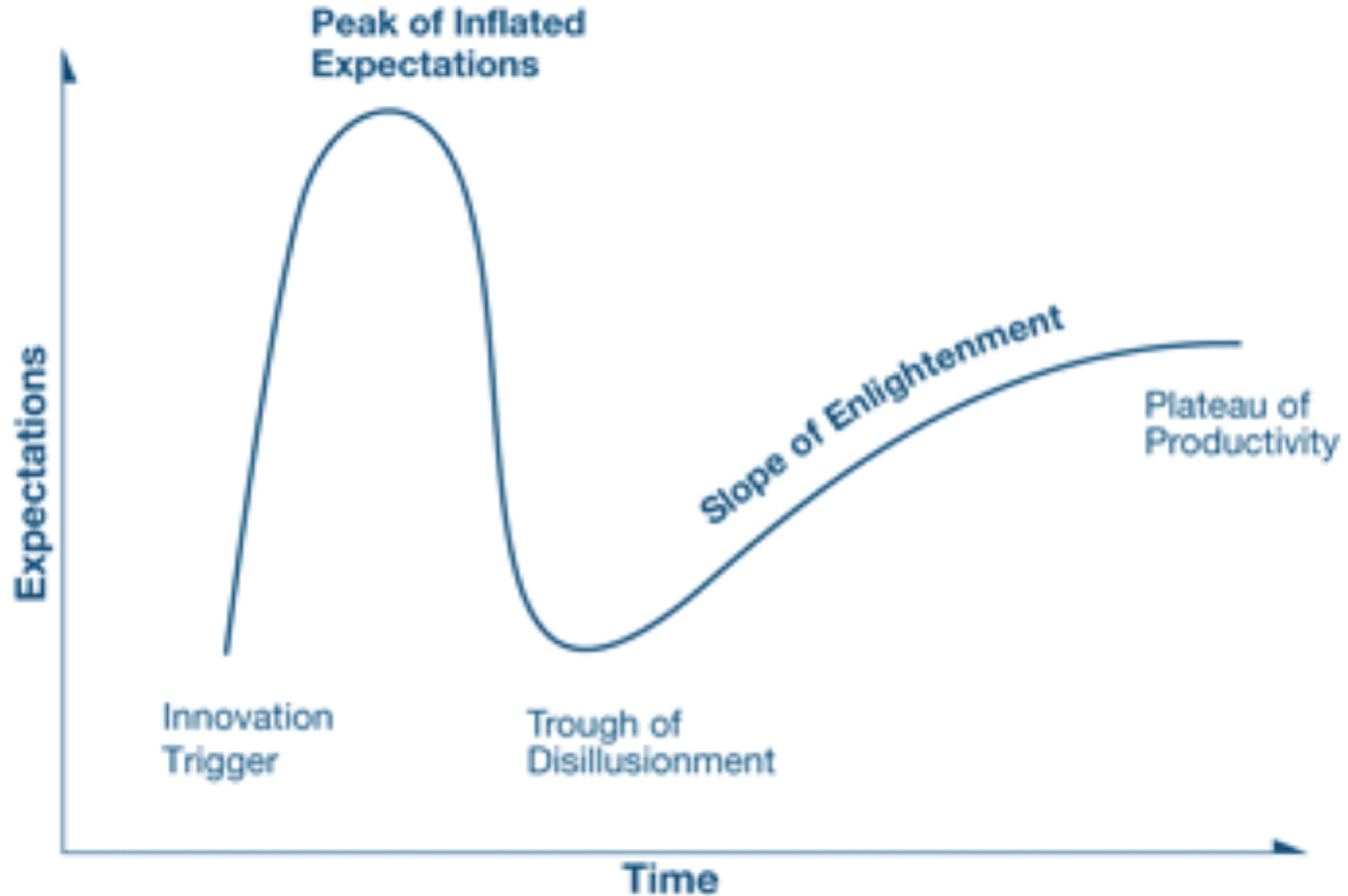


O futuro com 5G na indústria em Aveiro

Aveiro + Universidade de Aveiro

5G hype cycle



Some claims

- Communication between people
- Communication between sensors, “things”
- Speed, reliability
- Critical industrial applications possible
- “Factory of the future” is impossible without 5G
- Lower costs, without compromising security
- Sensors rather than wires and manually operated switches
- Augmented reality and monitoring

Aveiro as a center for vertical industry experimentation

UA at the core of the experimentation engine

- Altice Labs
- Bosch ThermoTechnologies
- Aveiro Harbour
- ...
- University of Aveiro 5G 4G 3G ...

Technology + 5G + AI + industry / business challenges

Concrete use cases, no hype

5G Scenarios in Aveiro

Vertical sectors: Industry 4.0, Transportation and Energy

- Stamping press (Bosch Aveiro)
- Video stream (Bosch Aveiro)
- Geolocation (Bosch Aveiro)
- Safety Critical Communications (Aveiro Harbour)
- Non-Safety Critical Communications (Aveiro Harbour)
- SmartGrid (UA)
- Advanced monitoring and maintenance support (UA)
- Advanced critical signal and data exchange (UA)

Dates

- Start: between September 2020 and February 2021
- End: between June 2021 and December 2021
- Plus some delay due to COVID-19

Stamping press

Bosch Aveiro

- Monitor a stamping press
- Sensors + 5G + high sampling rate + low latency
- Goal: replace preventive maintenance with condition-based maintenance

Video stream

Bosch Ovar

- Remove test computers from the production line
- Allocate test routines on a central computer
- Goal: improve flexibility on the shop floor

Geolocation

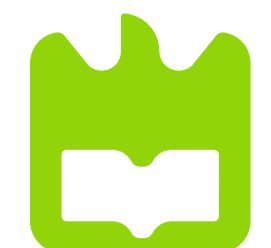
Bosch Ovar

- Track the position of components, products and vehicles in logistics
- Huge indoor area, with multiple shelves
- Need accuracy down to 10 cm
- Goals: reduce infrastructure complexity (no wired connections), adopt uniform indoor and outdoor infrastructure

Safety critical communications: train detection

UA, Aveiro Harbour

- Train detectors deployed at the Harbour
- Trains move slowly, but even so safety is critical
- Requires not only 5G but high reliability and safety-critical protocols



Non-safety critical communications: video surveillance

UA, Aveiro Harbour

- HD video transmission
- Surveillance of approaching trains
- Goal: increase crossing safety (crossing areas can be remotely monitored)



Smart grids

UA, IT Aveiro, EFACEC

- Use case 1: ensure that faults impact the smallest possible grid section
- Coordination between protection devices required
- Implies high-speed communication between protection devices
- Use case 2: high-speed fully distributed power grid self-healing application

Advanced monitoring and maintenance support

Medium voltage / low voltage distribution substations

- Fault monitoring
- Assist the remote operator in the control centre
- Assist the crews working in the field
- Video streaming exhibition at a workstation
- Video streaming exhibition in mobile interface
- Augmented reality in mobile interface