

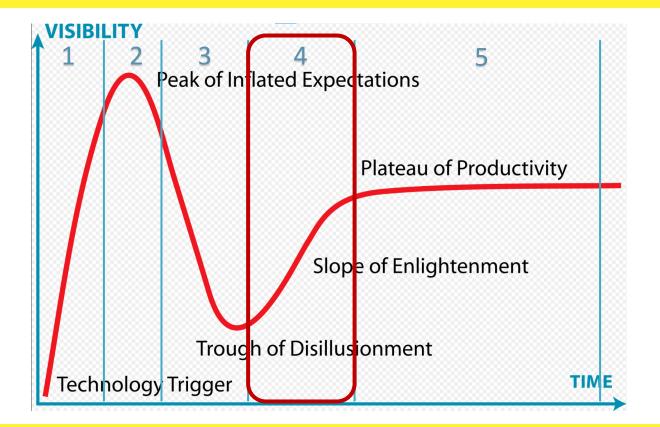
# Christophe Sanguina Keolis



# Asset Management Innovation next steps

After years of Digitalisation in Light Rail, how to deliver tangible value to Passengers and PTAs?

## Where do we stand on the Hype cycle?



## Innovation on Asset Management, why?

**Rapid urbanisation**, leading to growing demand for mobility

**Increasing pressure on finances**, with up to 30% of the cities' budget dedicated to public transport

Constraint on resources such as labour

**High expectations from passengers** in terms of accessibility, reliability, safety and security



## Who we are : A passenger focused company





emplovees





revenues in 2022





300

Public Transport **Authorities** 





transport modes operated



tram operator

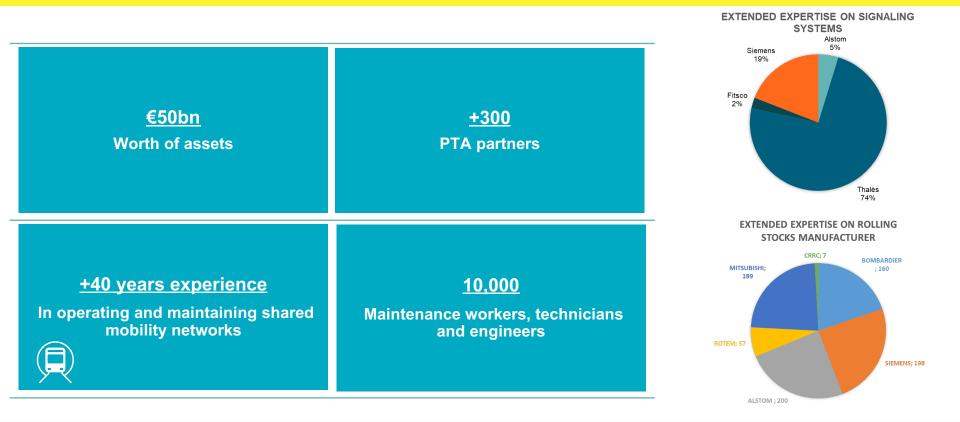
in the world



automated metro operator in the world



# Technical diversity is in our DNA



# Threat and Opportunity of being a large Group



# How to structure an agile Innovation Process

## How to promote Innovation in most of the contexts?

#### OPEN LAB INNOVATION PROCESS UNDERSTAND DEFINE ACCELERATE DEPLOY EXPERIMENT Innovation must solve Innovation arises from Innovation must be desirable, Innovation must scale up to a problem the clash of ideas viable, and feasible at the avoid remaining just an required scale Invention ... PROTOTYPE LEARN Innovation must fully innovation must come to life incorporate user feedback

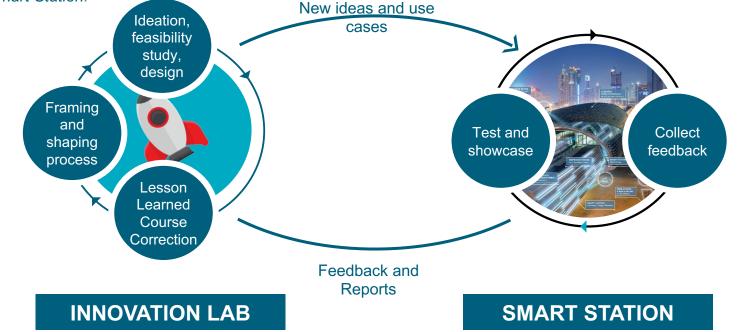
TEST Innovation must engage with users

**Keo**lis

# Dubai Use Case developed with the RTA

## The Smart Station in Dubai with the RTA

We have developed in collaboration with the RTA a strong innovation framework based on common a strategic approach and robust governance to assess existing challenges, explore opportunities, develop ideas, and build POCs that we run in the Smart Station.



# **PSD Remote Condition Monitoring System (POC)**

#### **Project and objectives**

Technology used :

Sensors, Loggers, Visualisation Dashboard, Al

### **Objectives :**

Collect & analyse data for optimisation

Refine thresholds based on observations & data



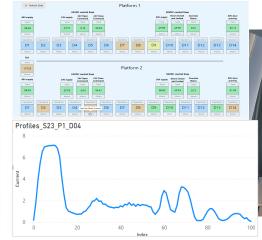
Reduction of failures Planned maintenance to predictive

**Timeline** : Solution installed and tested between May and Oct 23

#### Parameters to be monitored

- **PSD Motor Current**
- PSD Open Command (ATC signal) .
- PSD Close Command (ATC signal) .
- PSD Closed and Locked signal (ATC Signal)
- PSD Electrical Isolation





# Train Remote Condition Monitoring System (POC)

#### **Project and objectives**

Technology used :

High imaging, optical and thermal sensors, optic fibber, AI

#### **Objectives**:



Refine thresholds based on observations & data

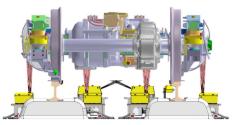
Collect & analyse data for optimisation



Reduction of failures Planned maintenance to predictive

#### Parameters to be monitored

- Vibration source (wheel impact detection system) .
- Wheel temperature
- Bearing temperature
- Axle temperature .
- Motor temperature
- Gear box temperature



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#### Timeline :

Solution installed and tested between July and Dec 23

# Automated Rail and Infrastructure Inspection System (ARIIS)

#### **Project and objectives**

Technology used :

High imaging, LiDAR, optical sensors, acetometer, Al

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#### Objectives :

Collect & analyse data for optimisation

Refine thresholds based on observations & data

Reduction of failures Planned maintenance to predictive

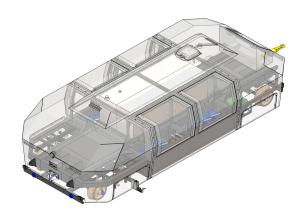


#### <u> Timeline :</u>

Delivered in Dubai in Dec 23 Implementation by Jan 24

#### Tracks :

- Gauge
- Curvature radius
- Flangeway
- Free wheel clearance
- TRaistproafile •
- Cross level
- GPS position
- Track videosPosition of third rail





# Train Examination System (TRES)

#### **Project and objectives**

Technology used :

High imaging, LiDAR, optical and thermal sensors, 3D modelling, Al

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#### **Objectives :**

Collect & analyse data for optimisation

Refine thresholds based on observations & data

Planned maintenance to predictive

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#### <u>Timeline :</u>

Solution tested in Mar 23 Implementation by Jul 24

#### Parameters to be monitored

- Wheel profile
- Gear box oil levels
- Collector shoe measurements
- Bolt torque marks
- Brake measurements

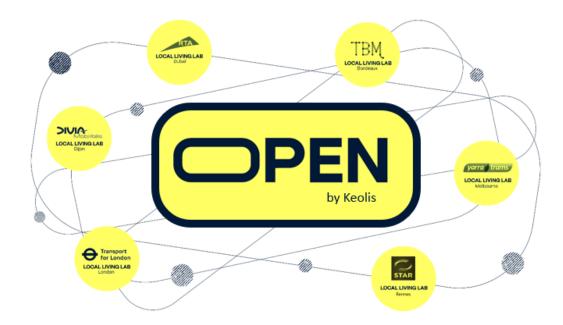
- 14 Days
- 28 Days
- 3 Months



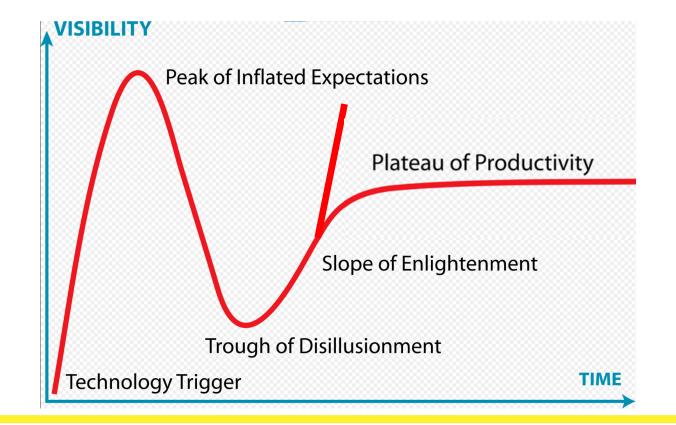
# How to leverage such diverse initiatives?

## How to leverage local initiatives on Innovation?

# KEOLIS OPEN LABS NETWORK



## We all need to enhance the Plateau of Productivity!



# THANK YOU

Christophe SANGUINA