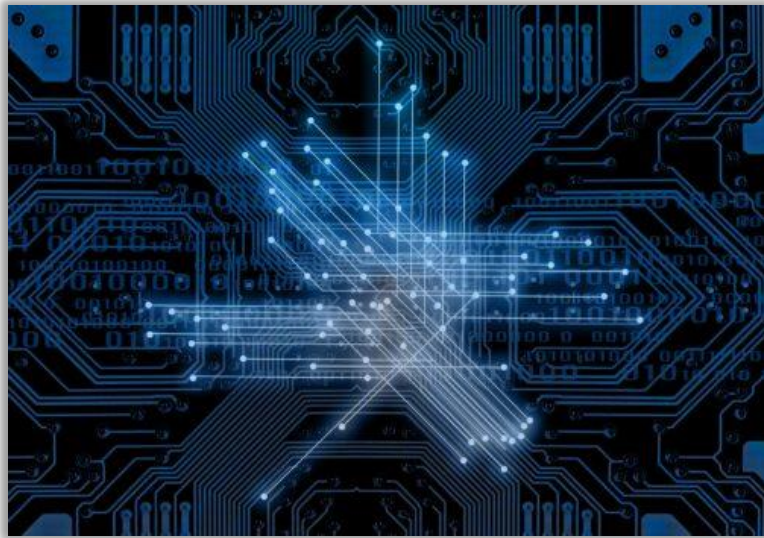


# METABUILDING 1st GROW / HARVEST CALL : MEET THE WINNERS !



*Unleashing the Innovation Potential of EU Construction SMEs*

## Construction + ICT Challenge



- Monitoring and managing building energy / comfort / health performance in buildings
- New BIM and digital tools for SMEs



METABUILDING Project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 873964. The sole responsibility for the content of this document lies entirely with the author's view. The European Commission and the European Innovation Council and SME Executive Agency (EISMEA) are not responsible for any use that may be made of the information it contains.

# METABUILDING 1st GROW / HARVEST CALL : MEET THE WINNERS !

## MONSEC

Integration of cheap and easy-to-use Sensors and AI solutions to Generate Data to assist Informed Decision-making throughout the Life-cycle of Concrete Infrastructures

SECTORS INVOLVED : Construction · Digital Industry



SMART  
ENGINEERING

SPAIN



SPAIN



AUSTRIA

*"The funded project will promote innovation and productivity growth in the construction sector by improving quality assessment and information management."*

Tai Ikumi Montserrat  
Head Digital Officer  
Smart Engineering SL



Online monitoring of the process of concrete setting **in real time**

*"Our product design will contribute to the successful launch of new IOT-products for speeding up and securing of building process, while advancing our internationalization."*

Tobias Bernstein  
Managing Director  
Industrial & Product Design  
toka OG

## Are you interested in solutions aimed at supporting the digital transition of the construction sector?



The Monsec Project is a collaborative innovation project funded through the H2020-INNOSUP programme directed by the European Innovation Council and SMEs Executive Agency (EISMEA)



# THE CONSORTIUM

# MONSEC PROJECT

## The consortium



Start-up company (2017)

Main core activities:

- Telecommunications
- IoT and sensors
- Programming, cloud data processing
- Data analytics



SMART  
ENGINEERING

UPC-Barcelona Tech Spin-Off  
(2014)

Main core activities:

- Smart Materials
- Structural Engineering
- Urban engineering
- Data analytics



Industrial Design company  
(2012)

Main core activities:

- Industrial product design
- Investment- and consumer goods
- HMI- & UX-Design
- Design development consulting



# THE MISSION

Solutions for ConTech 4.0

**Provide a WIRELESS SENSOR  
to assist DECISIONS during CONSTRUCTION projects  
based on TEMPERATURE, RELATIVE HUMIDITY and COMPRESSIVE STRENGTH of the concrete.**

- **Monsec®** is a solution for concrete setting monitoring in construction projects. Monsec® registers key parameters inside the formwork automatically and offers accurate information, in real time, on the temperature, maturity and strength of the in-place concrete.
- By sending the data via internet and presenting them through a web application, **Monsec®** allows remote control of the setting process of an unlimited number of construction projects, facilitating concrete evaluation and offering reliable support to managers and stakeholders for informed decision-making based on real data.



# THE CHALLENGE

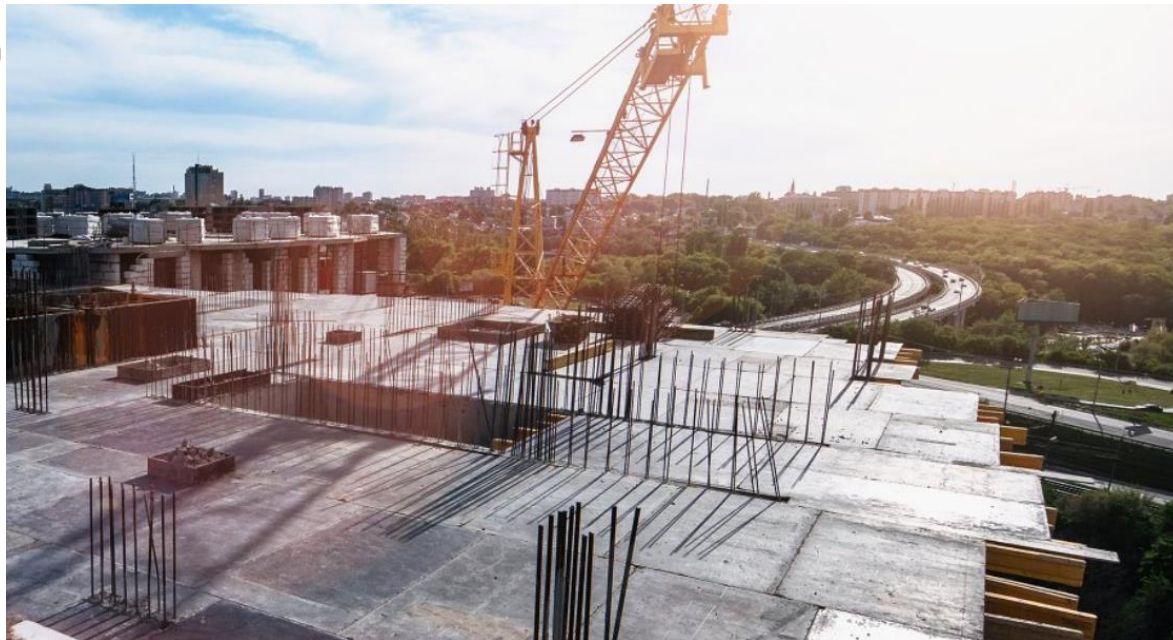
Improve actual construction methods



# MONSEC PROJECT



## CHALLENGE



IN SITU QUALITY CONTROL



TIME SAVINGS



MIX-DESIGN  
OPTIMIZATION

So you can...



**MAXIMIZE  
BENEFIT**



Reduce CO<sub>2</sub>  
emissions



Improve  
safety

## CURRENT SITUATION

**On-site concrete strength estimates based on Lab Break Tests at specific ages.**

### Reliability

- The strength is predicted on a specimen, not on the structure. This might provide slower strengths developments than on site.
- Different curing conditions between break specimens and the structure.
- Handling and conditions during preparation, transport and test of specimens might influence the strength value obtained.

### Speed

- Require specimens manufacturing, laboratory transport, break test and receive the results.
- The break tests ages selected might not correspond with the required ones.

### Costs

- High direct costs for concrete characterization (workforce, manufacturing, transport and test of specimens).
- High indirect costs due to results delay and critical decision making.



## MONSEC MAIN PRODUCTS

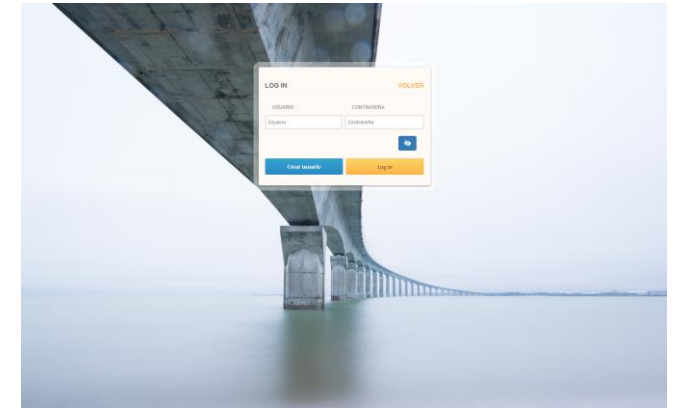
- Monsec Sensor.
  - Monsec Station.
    - Grid powered (110-230 Vac).
    - Solar battery powered.
  - Monsec WebApp.
- Monsec Service
    - Sensor applications
    - Concret calibrations
    - Data analytics
    - Process optimization



Monsec Sensor



Monsec Station



Monsec WebApp



# MONSEC PROJECT

## MONSEC SOLUTION

**Continuous on-site concrete strength estimates based on wireless sensors placed in the structure.**

### Reliability

- The strength is predicted directly in the structure.
- It can reflect the local strength variation in different locations within the same structure.
- The maturity method is considered as one of the most precise techniques for in-situ strength monitoring.

### Speed

- Strength predictions are obtained in real-time, with allows efficient decision making.
- New strength updates every 10 minutes.

### Costs

- 50 % technical cost reduction vs. traditional break test method.
- Workforce and financing costs savings due to early project completion.

### Sustainability

- CO2 emissions reduction and efficient use of materials.



# MONSEC PROJECT



## APPLICATIONS



Pavements



Foundations



Buildings



Civil works



Offsite manufacturing



Spayed concrete



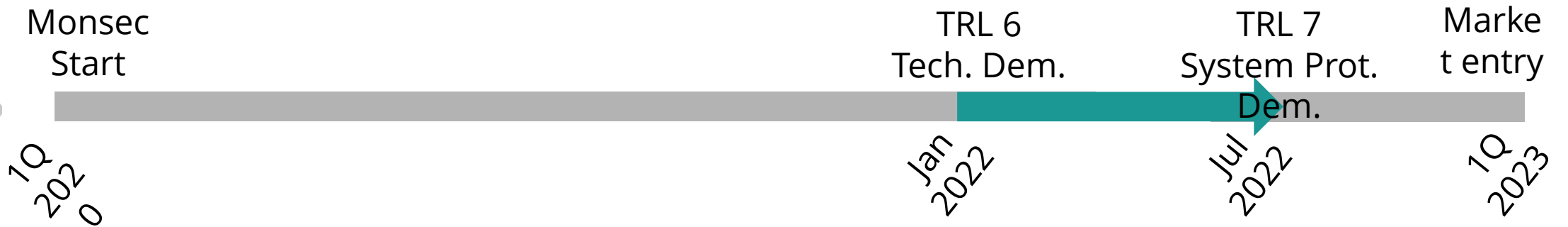
# METABUILDING FINANCING



# MONSEC PROJECT



## METABUILDING FINANCING



**Task 1: Sensor validation**



**Task 2: Sensor & Station product design**



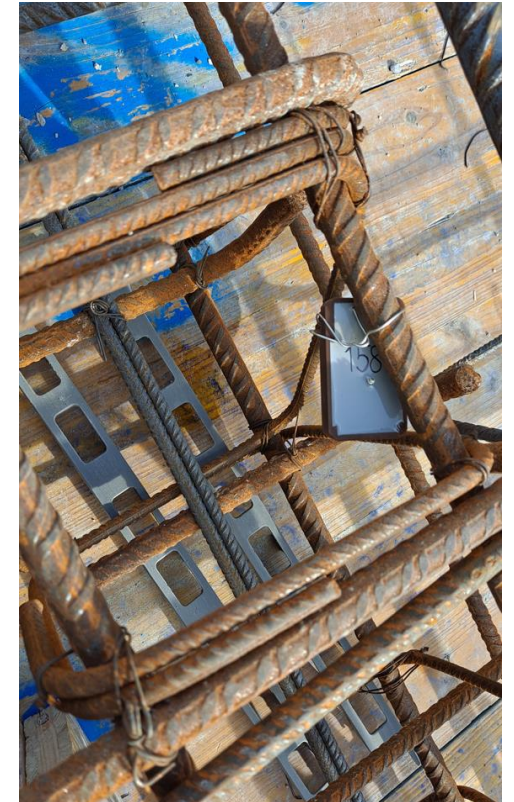
**Task 3: Temp. and strength forecasting AI algorithms**



# MONSEC PROJECT



## METABUILDING FINANCING



**Companies collaborating in Pilot trials interested  
in METABUILDING Project Results.**





# MONSEC PROJECT



## METABUILDING FINANCING



**Layout #1**



**Layout #2**



**Layout #3**



**Layout #4**



**Layout #5**



## METABUILDING FINANCING

**“ I am a METABUILDER because the funded project will promote innovation and productivity in the construction sector by improving concrete quality assessment, while advancing our internationalization.”**

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Thank you for your kind attention

Project :

[www.metabuilding-project.eu](http://www.metabuilding-project.eu)



Platform :

[www.metabuilding.com](http://www.metabuilding.com)



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