

A Human-centred Internet of Things Platform
for the Sustainable Digital Mine of the Future

Project duration: from 01/05/2020 to 31/04/2024

GRANT AGREEMENT NUMBER: 869529

Project Coordinator: María García-Camprubí (ITAINNOVA)

Technical Manager: David de Paz (SUBTERRA)

Presenter: Amal Alrish (Ro Technology)

The Partnership



Project Details Summary

Partners

16

Project Number

869529

Person Months total

843

Project Acronym

Dig_IT

Number of Work Packages

10

H2020-SC5-2018-2019-2020

Number of Tasks

45

Starting Date 1.5.2020

Number of Deliverables

65

Duration in months 48

Number of Use Cases

5

Website

<http://digit-h2020.eu>

Topic

SC5-09-2018-2019

Countries by name and partners per country

Italy (3), Spain (2), United Kingdom (2), Norway (2), Greece (2), Finland (2), Germany (1), Belgium (1), Cyprus (1).

Coordinator

ITAINNOVA
INSTITUTO TECNOLÓGICO DE ARAGÓN





The Partnership: 16 Organisations

- 1 ITAINNOVA
- 2 CORE INNOVATION
- 3 BRUNEL
- 4 TAU
- 5 ROTECH
- 6 ICCS
- 7 SUBTERRA
- 8 STRATAGEM
- 9 EUROCORE
- 10 LIBRA
- 11 MARINI
- 12 TAPO
- 13 SINTEF
- 14 TITANIA
- 15 SEI
- 16 IOTA



Project Details Summary

Partners

16

Project Number

869529

Person Months total

843

Project Acronym

Dig_IT

Number of Work Packages

10

H2020-SC5-2018-2019-2020

Number of Tasks

45

Starting Date 1.5.2020

Number of Deliverables

65

Duration in months 48

Number of Use Cases

5

Website

<http://digit-h2020.eu>

Topic

SC5-09-2018-2019

Countries by name and partners per country

Italy (3), Spain (2), United Kingdom (2), Norway (2), Greece (2), Finland (2), Germany (1), Belgium (1), Cyprus (1).

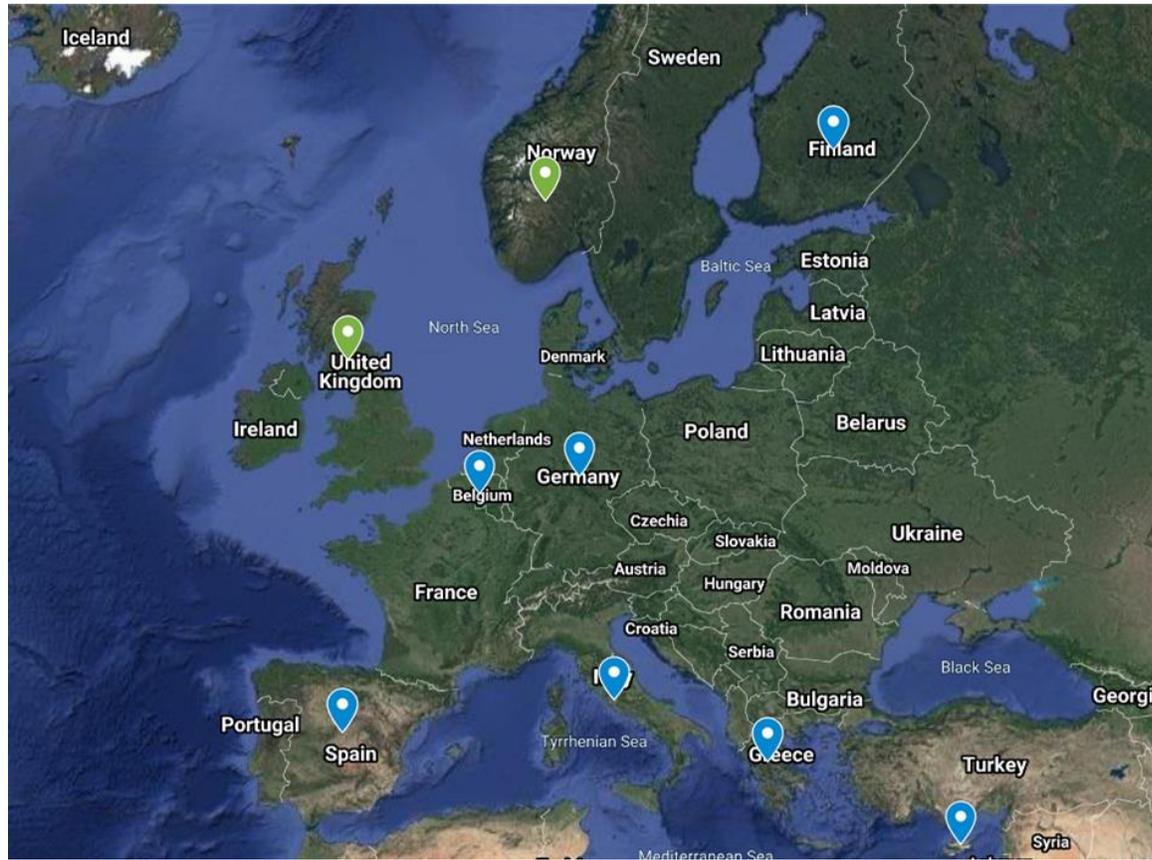
Coordinator





The Partnership: 9 Countries (7 EU members)

- Spain
- Italy
- Greece
- Cyprus
- Germany
- Belgium
- Finland
- United Kingdom
- Norway



Project Details Summary

Partners 16	Project Number 869529
Person Months total 843	Project Acronym Dig_IT
Number of Work Packages 10	H2020-SC5-2018-2019-2020
Number of Tasks 45	Starting Date 1.5.2020
Number of Deliverables 65	Duration in months 48
Number of Use Cases 5	Website http://digit-h2020.eu
Topic SC5-09-2018-2019	

Countries by name and partners per country
Italy (3), Spain (2), United Kingdom (2), Norway (2),
Greece (2), Finland (2), Germany (1), Belgium (1),
Cyprus (1).

Coordinator

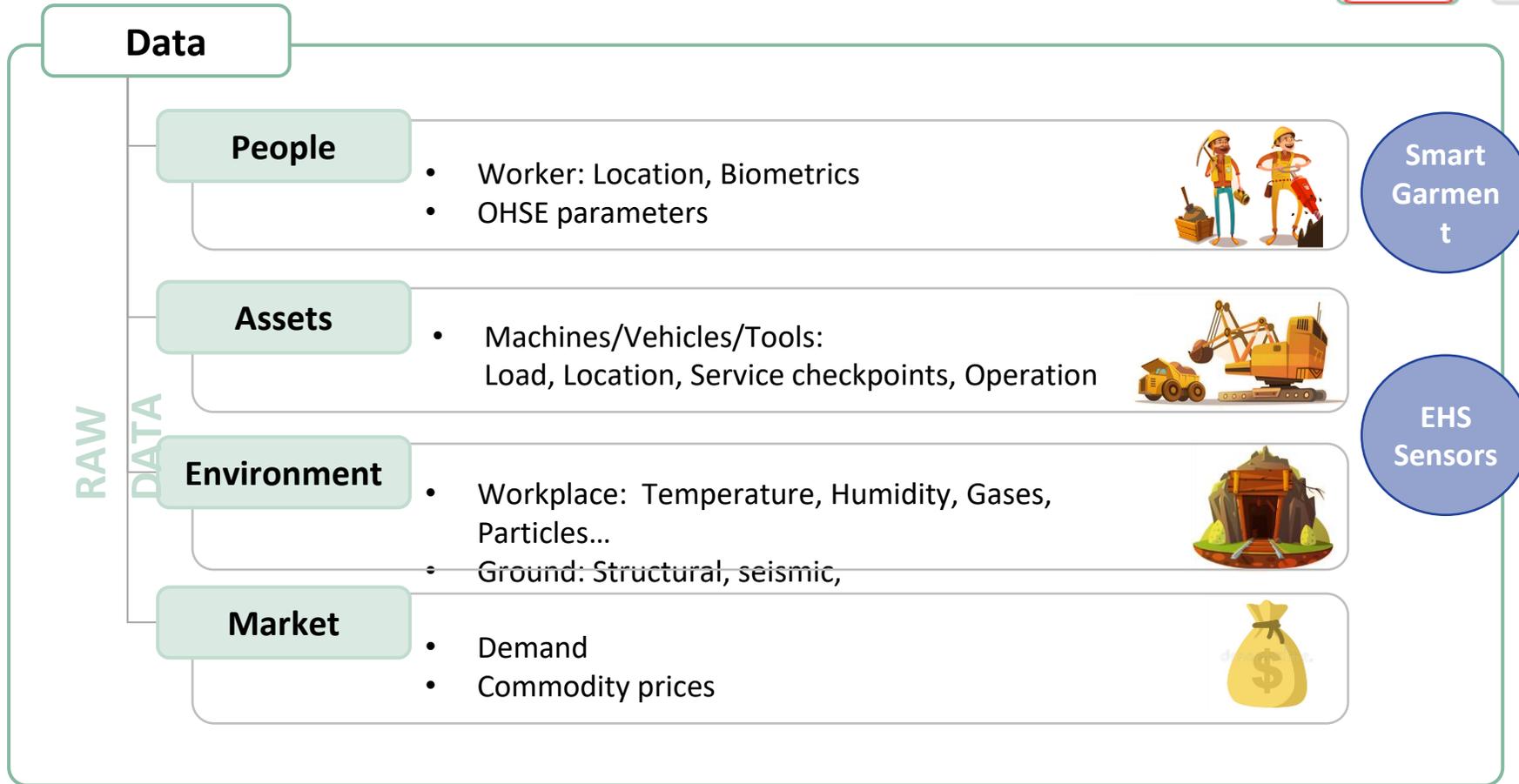




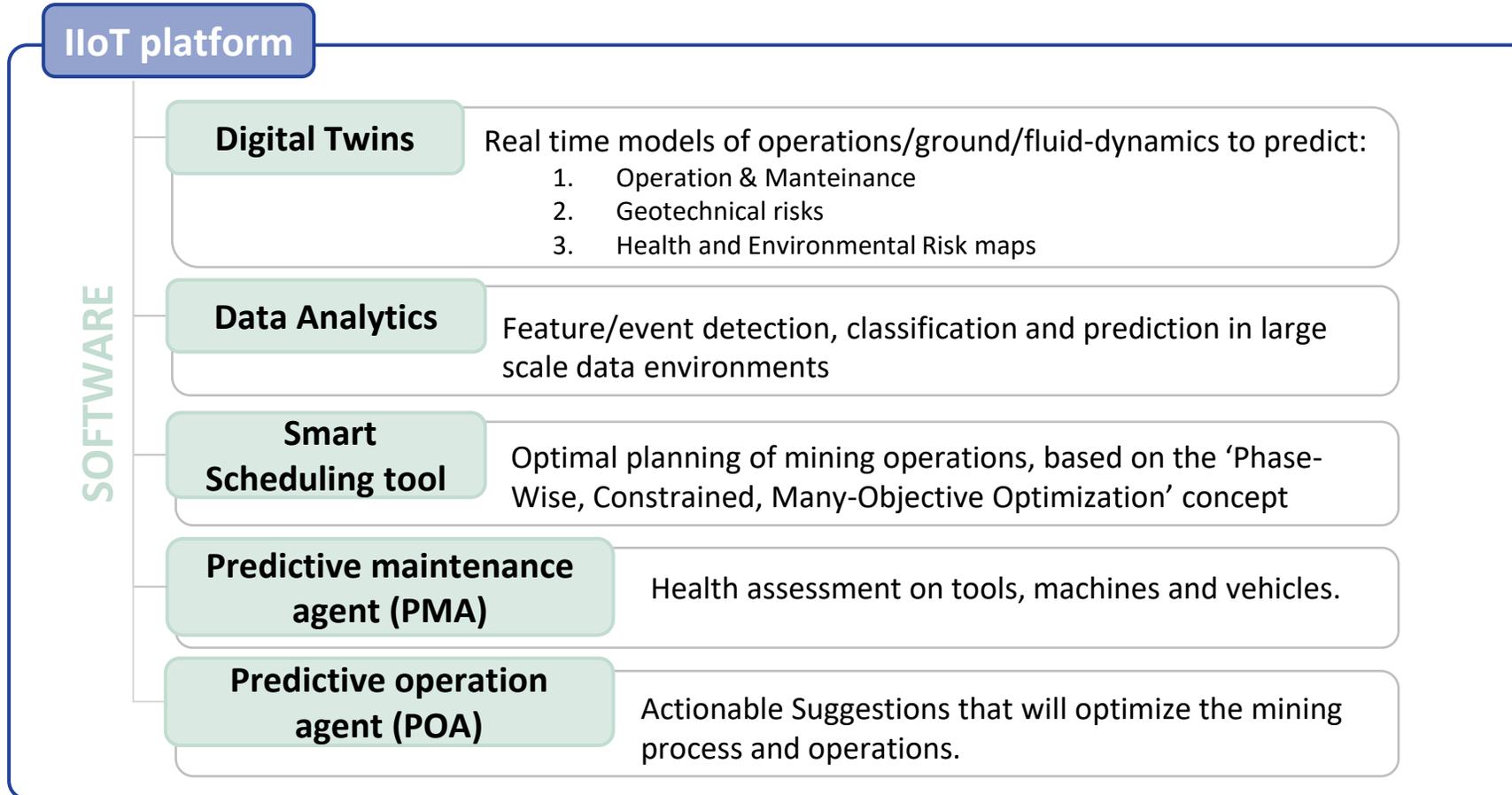
Concept



Concept



Concept





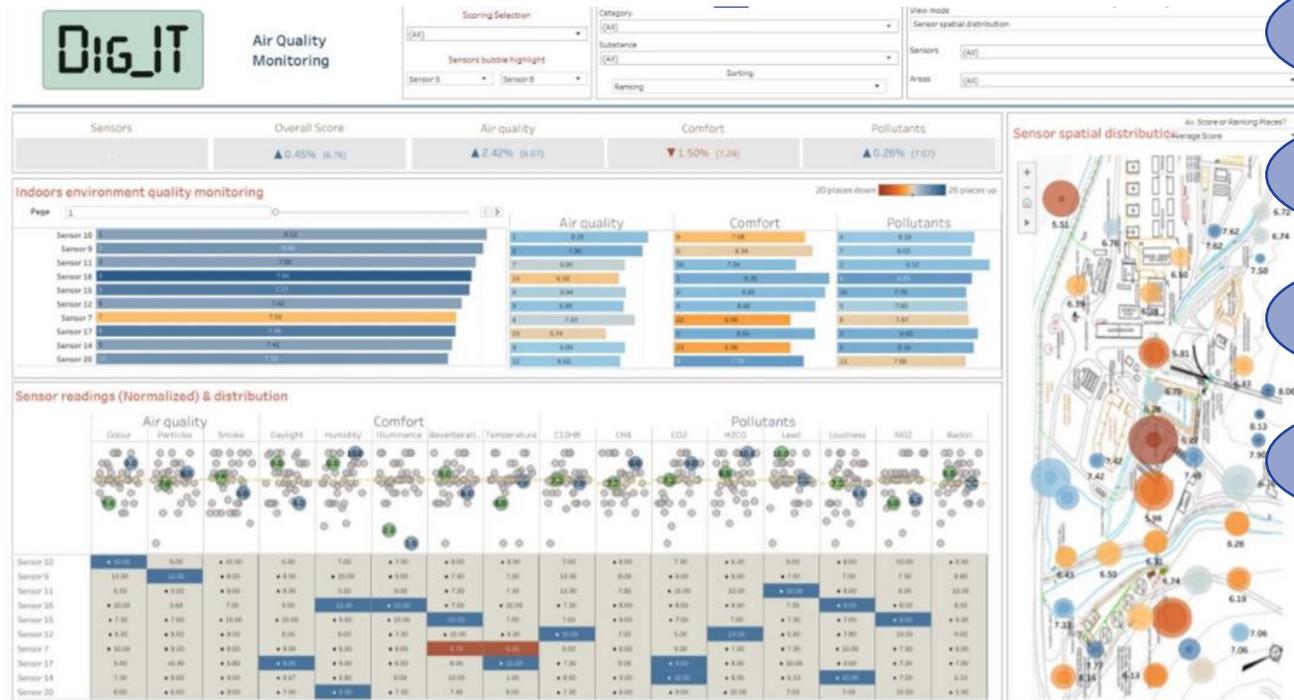
Concept



Interactive DSS

Fully interactive & customizable dashboards

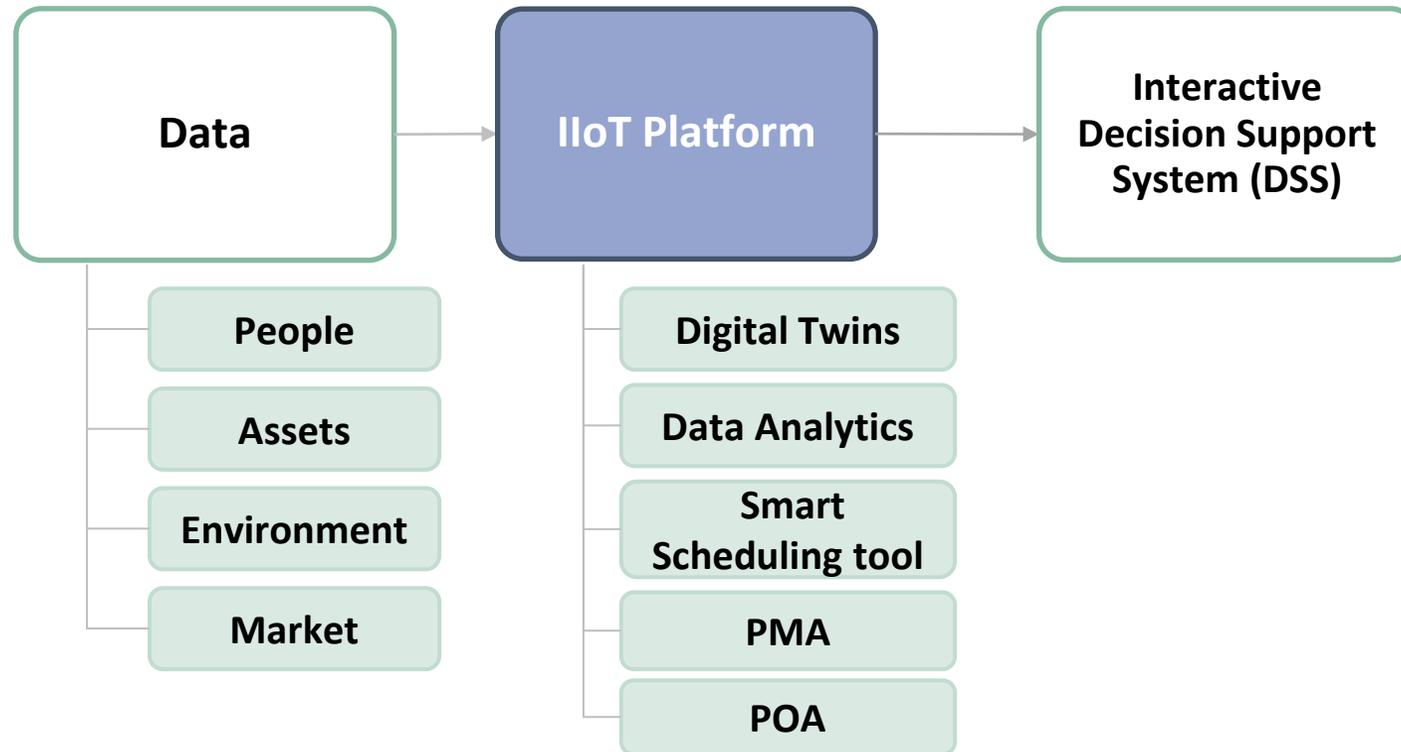
FRONT-END



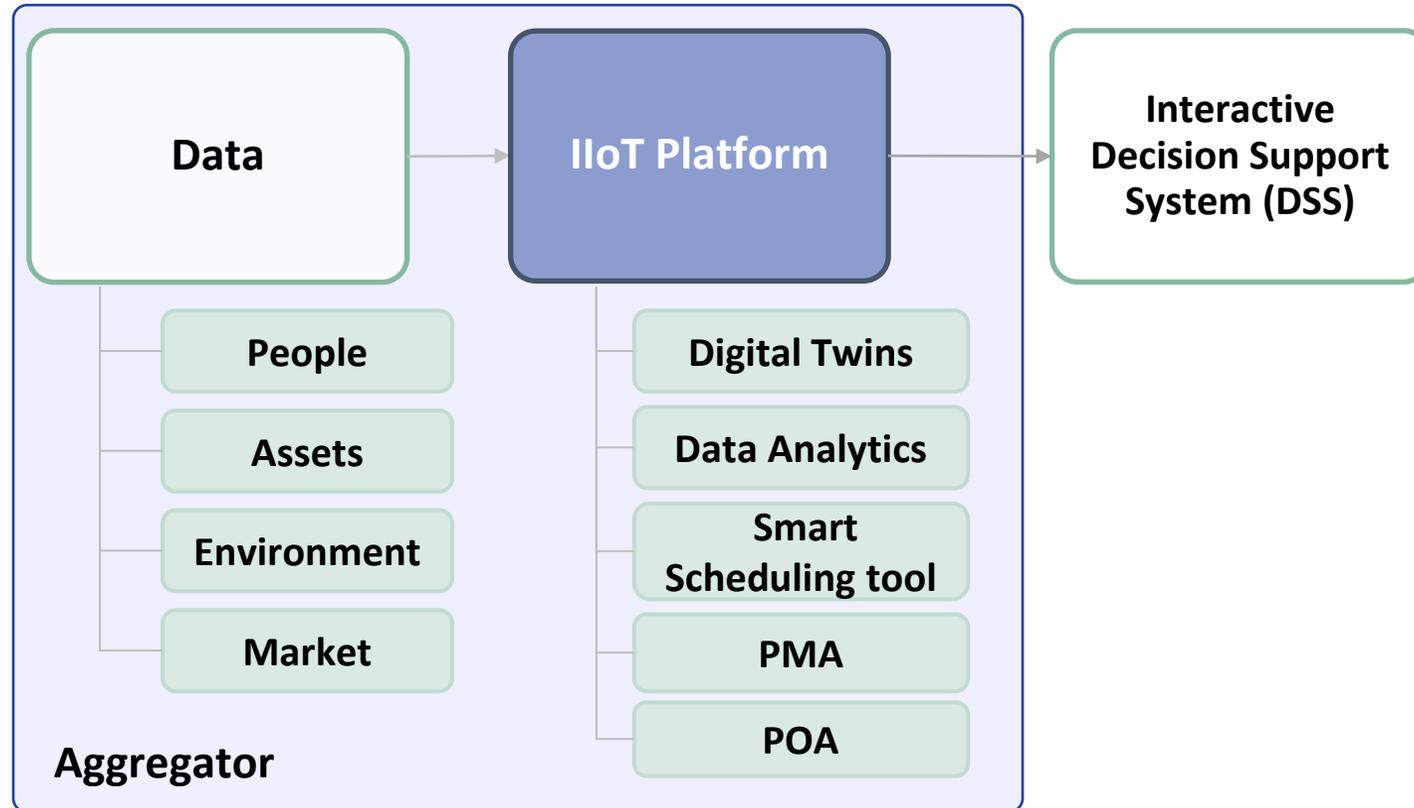
- Exploration
- Operation
- EHS monitoring
- Alerts



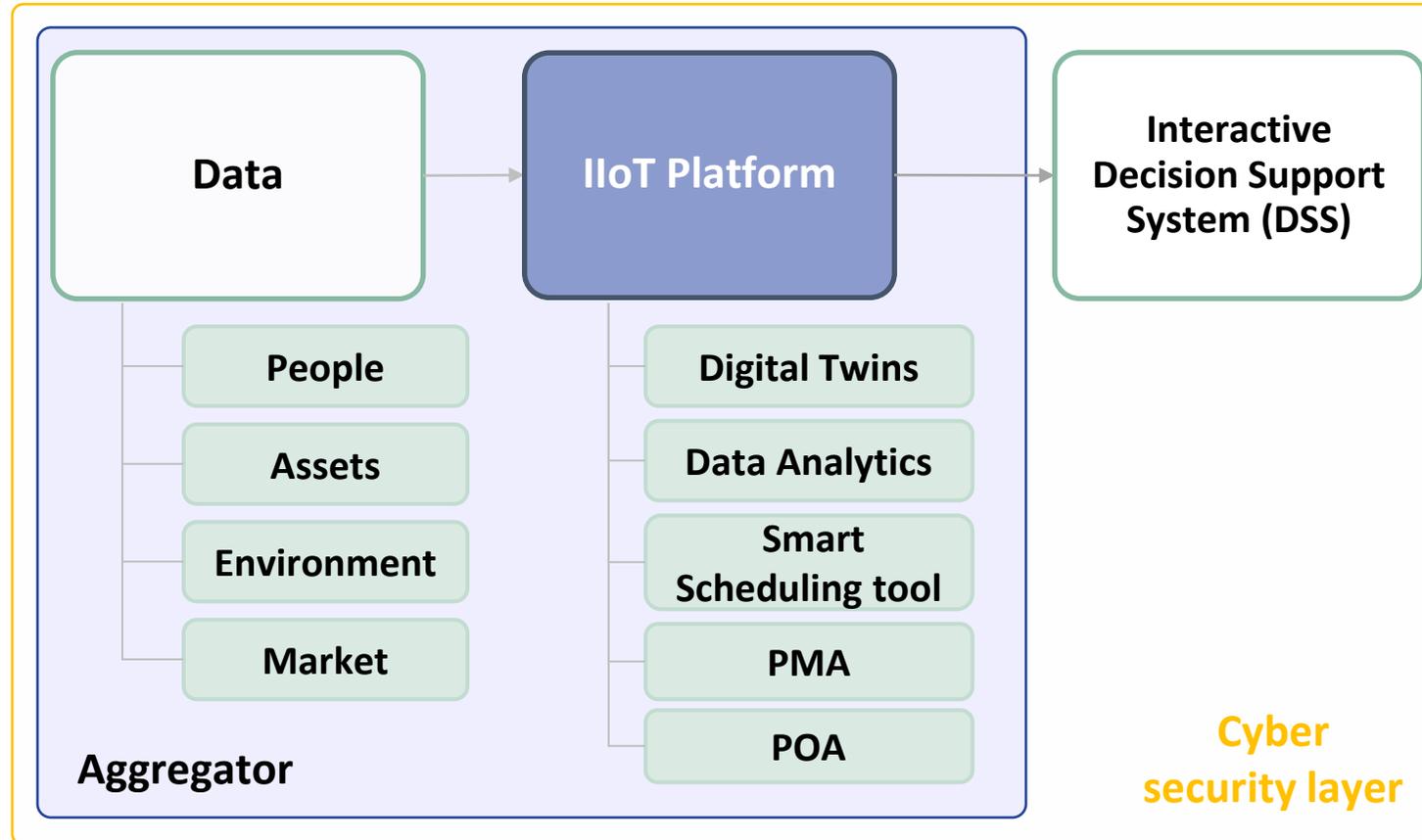
Concept



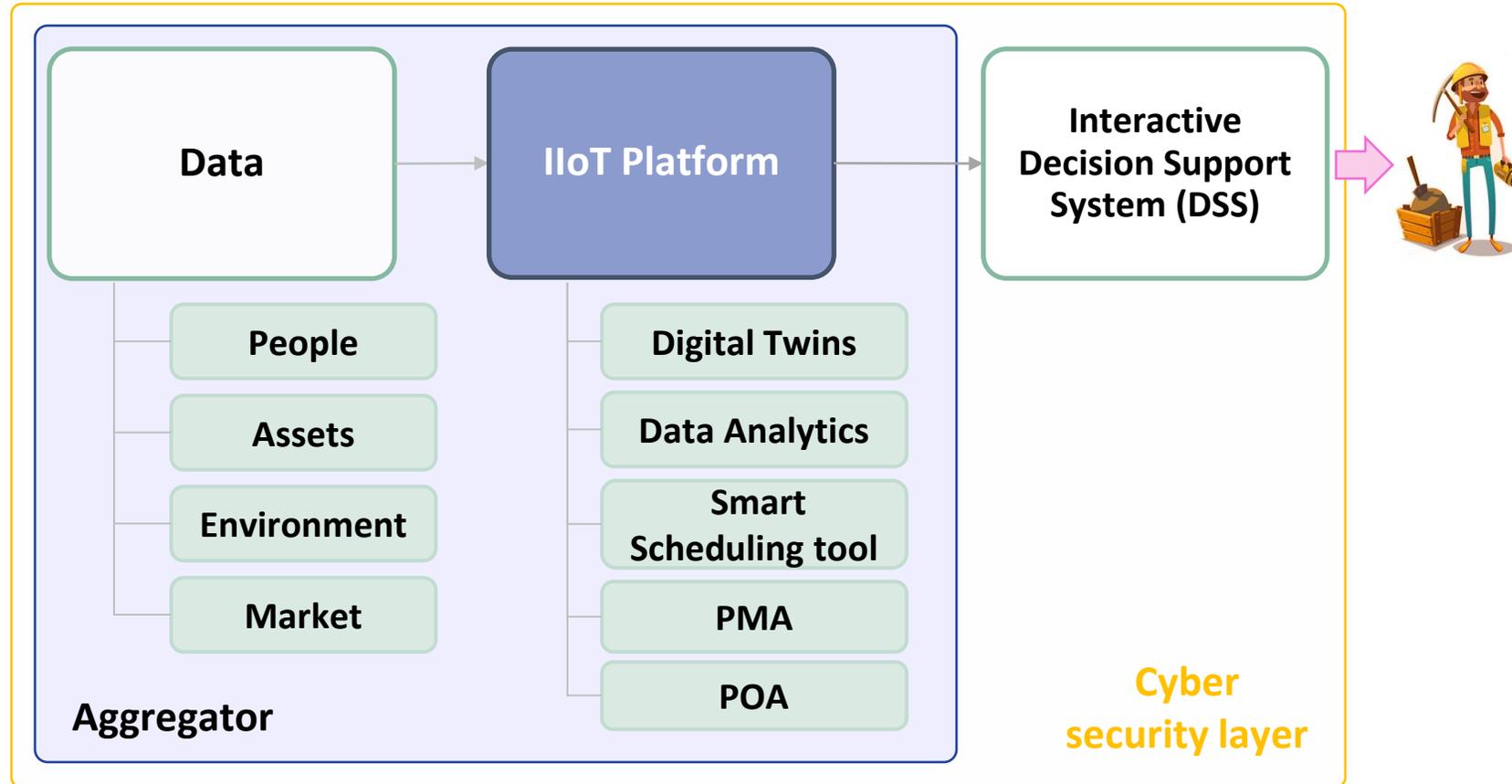
Concept



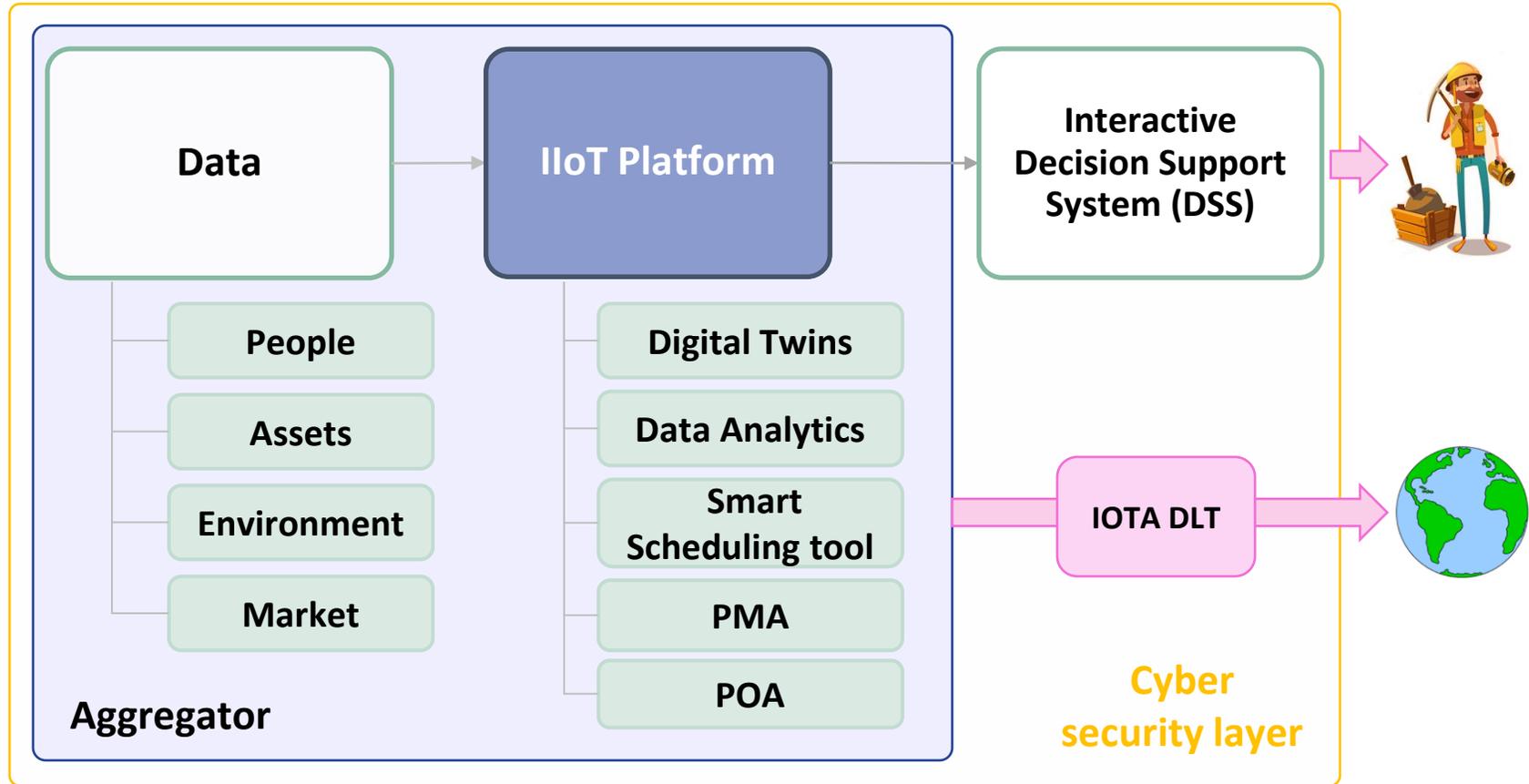
Concept



Concept

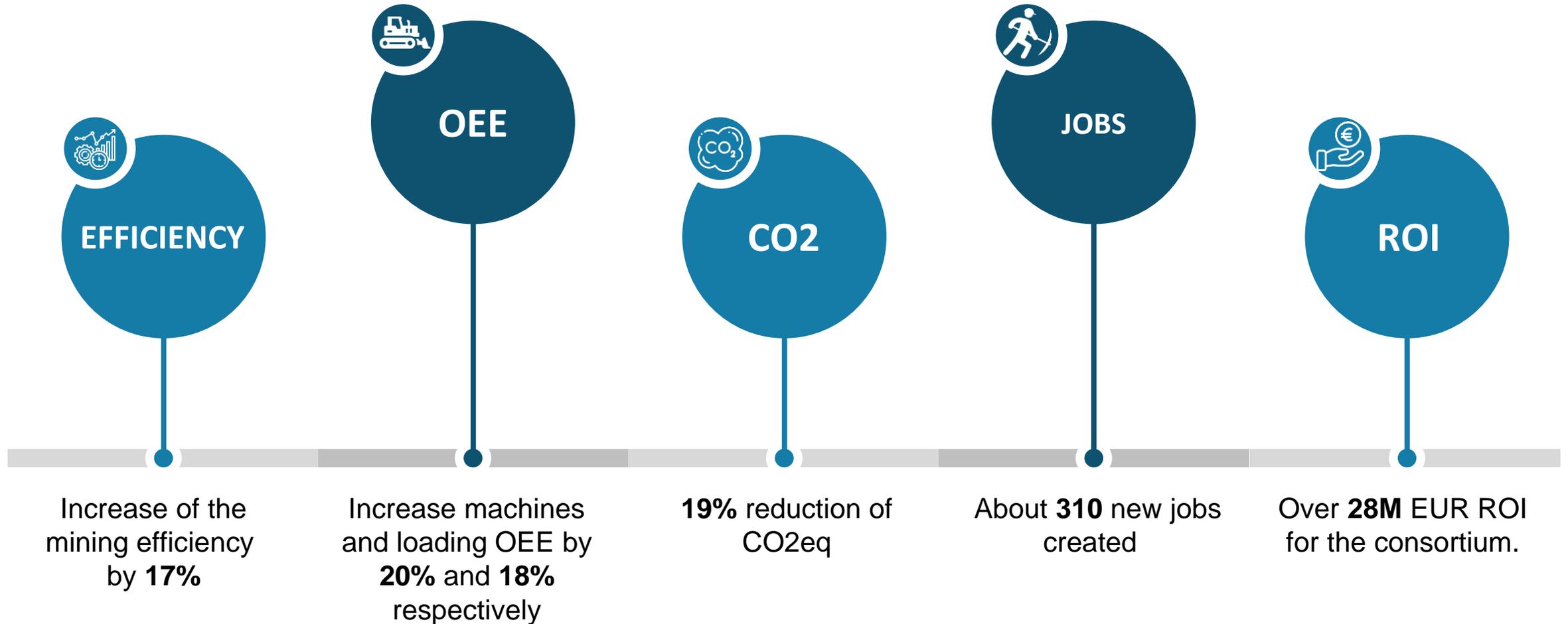


Concept





Dig_IT project impact





Use cases

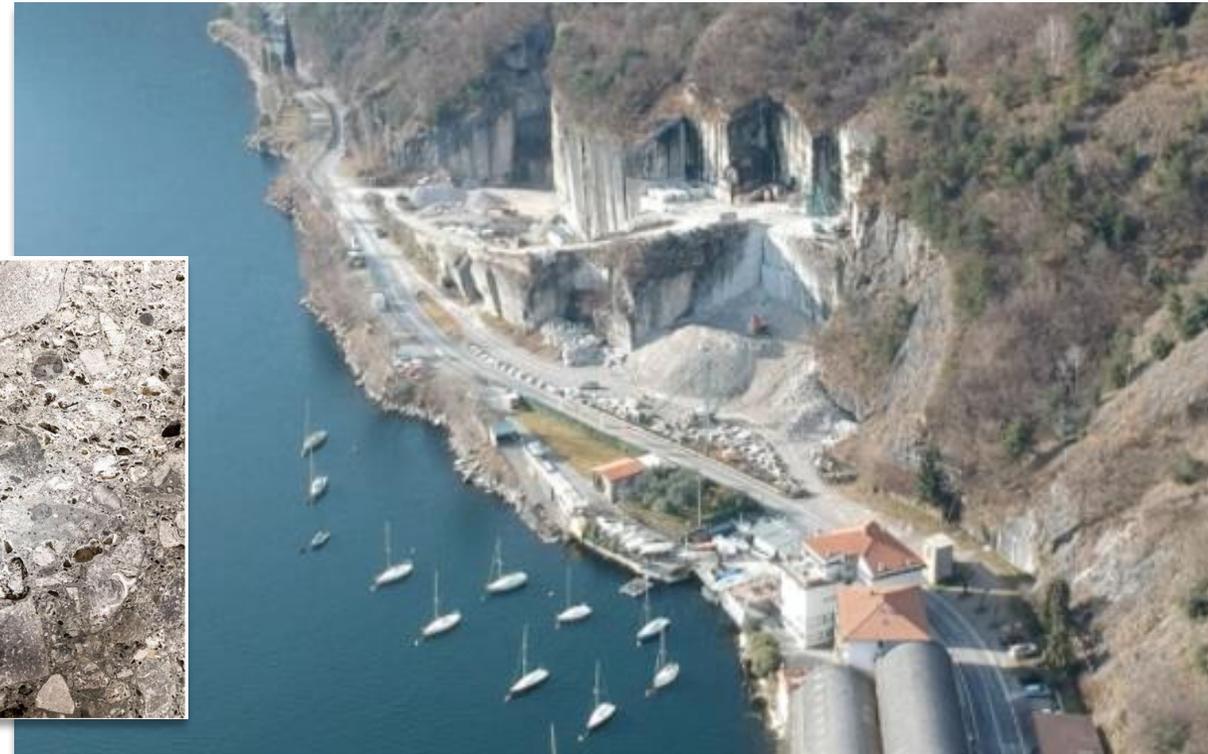
- 1 MARINI
- 2 LA PARRILLA
- 3 TITANIA
- 4 HANNUKAINEN
- 5 SOTKAMO



Use Cases: MARINI MARMI (Italy)

- Underground quarry
- Exclusive stones:
 - **Ceppo di Gré** (on the right) is a monogenic dolomitic breccia.
 - **Nuvolato di Gré** (on the left) is a sedimentary, carbonatic, veined and breccia textured.

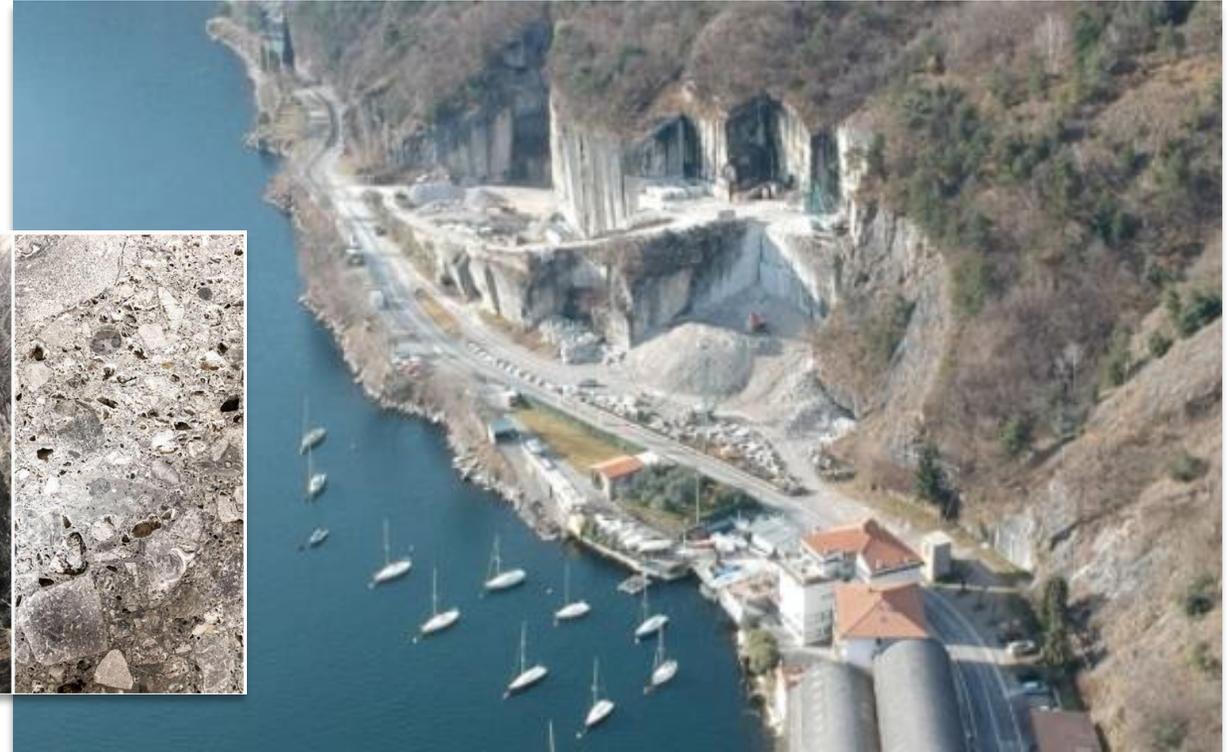
MARINI 1897



Use Cases: MARINI MARMI (Italy)

- Underground quarry
- Exclusive stones:
 - **Ceppo di Gré** (on the right) is a monogenic dolomitic breccia.
 - **Nuvolato di Gré** (on the left) is a sedimentary, carbonatic, veined and breccia textured.
- **Challenges and Needs:**
 - Safety of personnel.
 - Air quality.
 - Unplanned downtime.
 - Waste.
- **How Dig_IT addresses the needs**
 - Dig_IT predictive operation.
 - Predictive maintenance agent.
 - Dig_IT EHS online monitoring.
 - Smart Garment.

MARINI 1897



Use Cases: LA PARRILLA (Spain)

- Open-pit
- Tungsten mine



Use Cases: LA PARRILLA (Spain)

- Open-pit
- Tungsten mine
- **Challenges and Needs:**
 - Lack of maintenance.
 - Overall slope angle .
- **How Dig_IT addresses the needs**
 - Dig_IT geotechnical DT component.
 - Monitoring the main parameters of the slop behaviour .
 - Providing the framework for decision making based on the requirements .



Use Cases: TITANIA (Tellnes mine, Norway)

- Open-pit
- Ilmenites



Jøssingfjord Drying plant



Hommedal Mineral Processing plant

Use Cases: TITANIA (Tellnes mine, Norway)

- Open-pit
- Ilmenites.
- **Challenges and Needs:**
 - Water discharge monitoring.
 - Slope stability.
 - Personnel safety and equipment security.
 - Predictive maintenance of mine equipment.
 - Overall operation monitoring and scheduling
- **How Dig_IT addresses the needs**
 - Dig_IT EHS online monitoring.
 - Dig_IT geotechnical DT.
 - Dig_IT will assess the feasibility of implementation of POM.
 - Dig_IT smart scheduling component.



Jøssingfjord Drying plant



Hommedal Mineral Processing plant



Use Cases: SOTKAMO (Finland)

- Underground mine
- Silver

TAPOJÄRVİ



Use Cases: SOTKAMO (Finland)

- Underground mine
- Silver.
- **Challenges and Needs:**
 - Safety, availability and predictive maintenance of the data gathered from the assets.
 - Hazardous conditions at the charging and loading areas.
 - Changing rock conditions.
 - Traffic and unhealthy gases.
- **How Dig_IT addresses the needs**
 - Dig_IT predictive operation.
 - Predictive maintenance agent.
 - Dig_IT EHS online monitoring.

TAPOJÄRVI



Use Cases: HANNUKAINEN (Finland)

- Open pit mine
- Iron concentrate & Cu-Au concentrate

TAPOJÄRVİ



Use Cases: HANNUKAINEN (Finland)

- Open pit mine.
- Iron concentrate & Cu-Au concentrate.
- **Challenges and Needs:**
 - Lack of digitalization of OEHS.
- **How Dig_IT addresses the needs**
 - Dig_IT develops and tests EHS online monitoring.
 - Sustainability compliance Labelling (SCL) will be envisioned

TAPOJÄRVI





Current State and Outlook

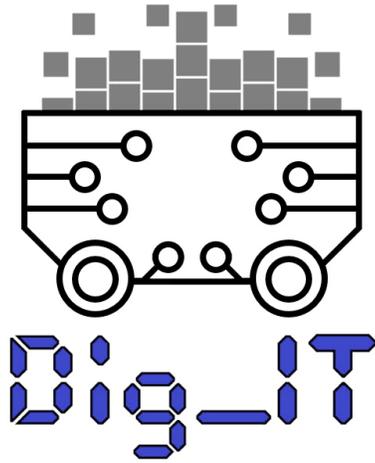
Achievements:

- User requirements, systems and assets of use-cases are mapped.

Next milestones:

- First cycle of data collection from the use-cases will be completed.
- Prototype of smart garment design will be ready.





A Human-centred Internet of Things Platform for the Sustainable Digital Mine of the Future

Thanks for your Attention



<http://digit-h2020.eu/>



<https://www.linkedin.com/company/digitproject/>



<https://twitter.com/digitproject>



<https://www.facebook.com/digitproject2020>

Project Coordinator: María García-Camprubí (ITAINNOVA)
mmgarcia@itainnova.es

Technical Manager: David de Paz (SUBTERRA)
dpaz@subterra-ing.com

Contact: info@digit-h2020.eu

