MULTISPECTRAL
MICROSCOPIC
TECHNOLOGIES, S.L.

The AMCO System

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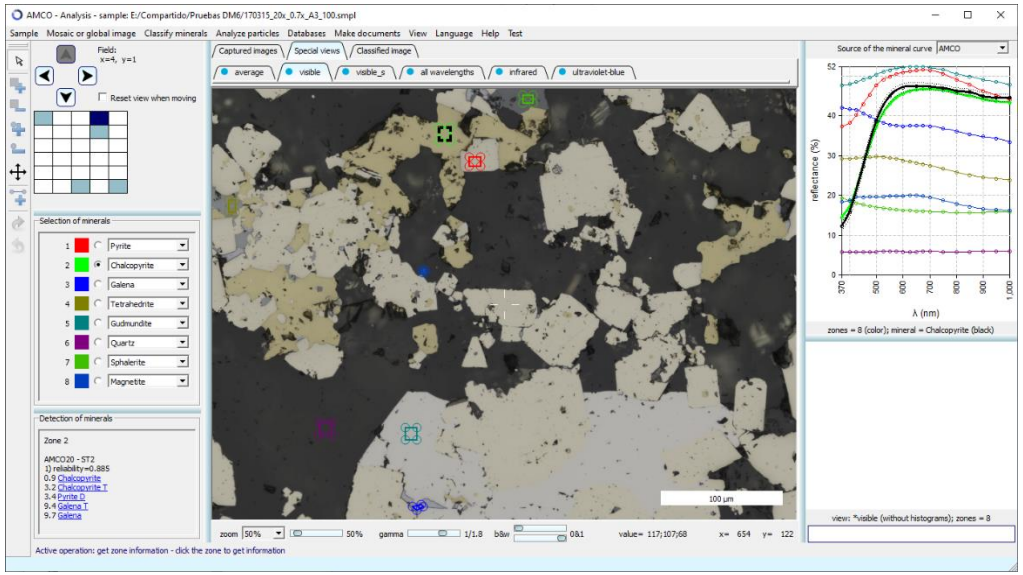
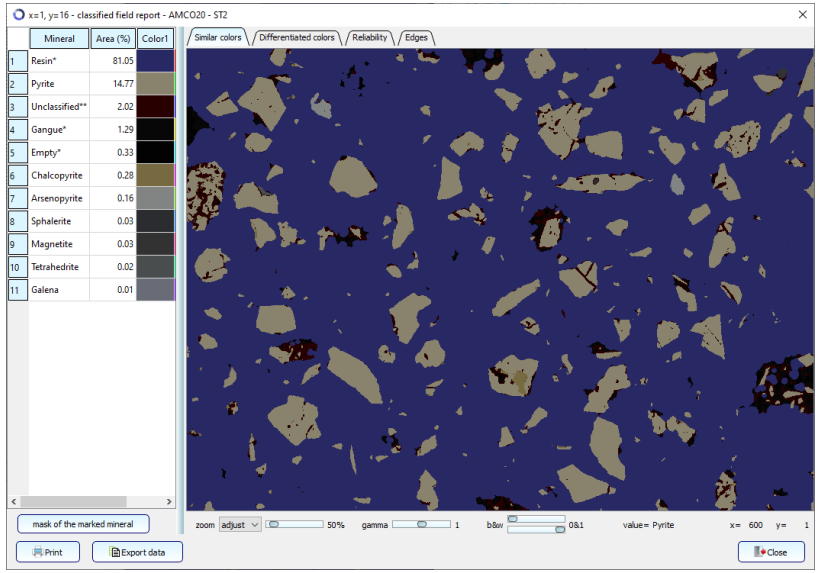
The problems we are solving

- Ore extracted from mines has to be treated in **processing plants** to obtain **concentrates** with metal contents allowing industrial use.
- Due to the changing characteristics of the ore, periodic **microscopic characterization** of the flows is needed to keep the plant optimized.





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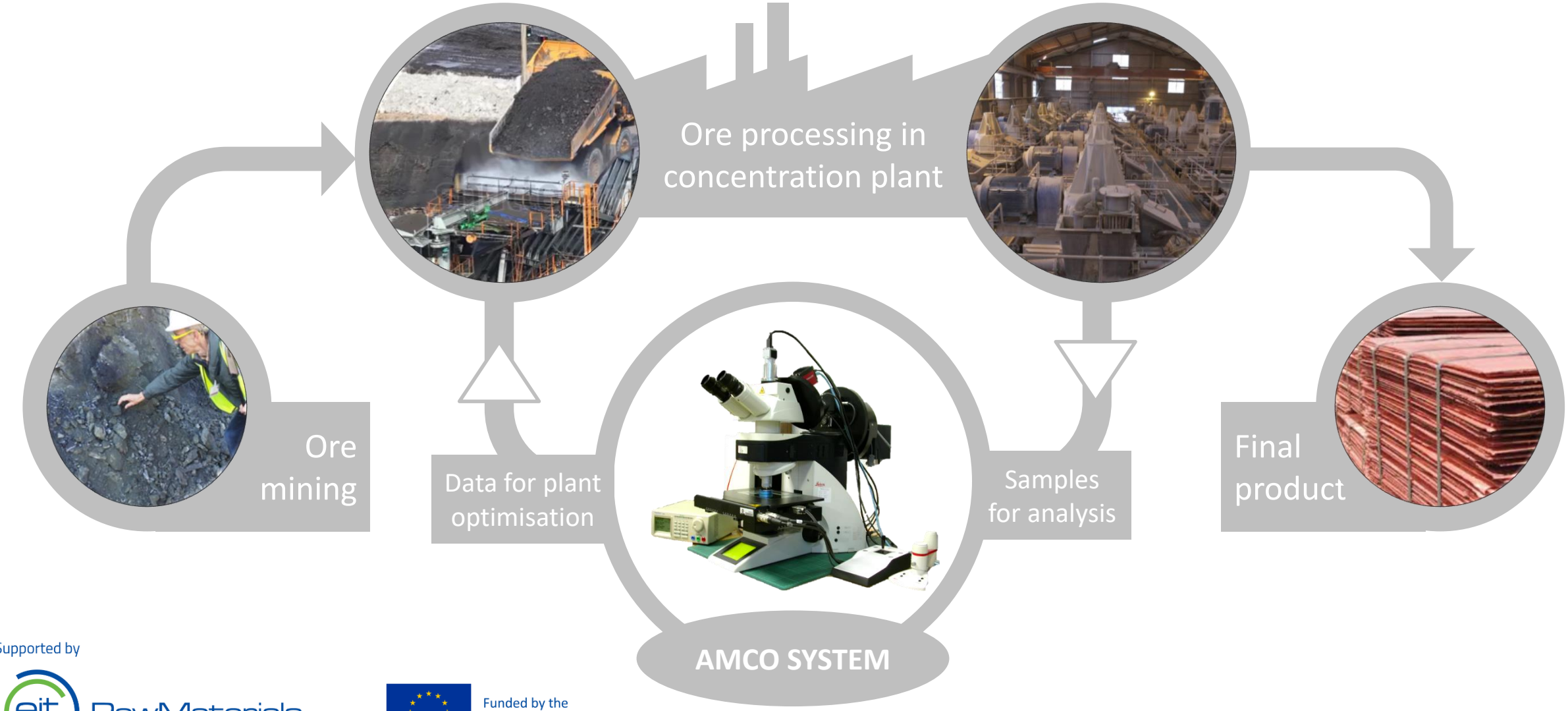
Metal mining concept diagram



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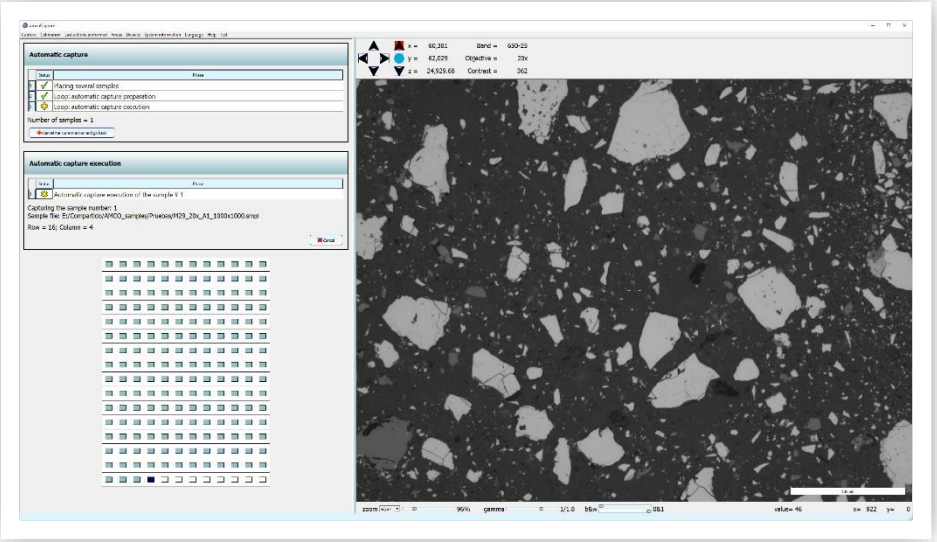
Our solution: AMCO System

- Performs **A**utomated **M**icroscopic **C**haracterisation of polished sections of metal **O**res
- Is a multispectral microscopy **system** composed of:
  - a modified **motorized reflected light microscope**
  - two proprietary **software applications**
- Development stage:
  - **TRL 8** – System qualified through pilot tests
  - **CRL 7** – System ready to market



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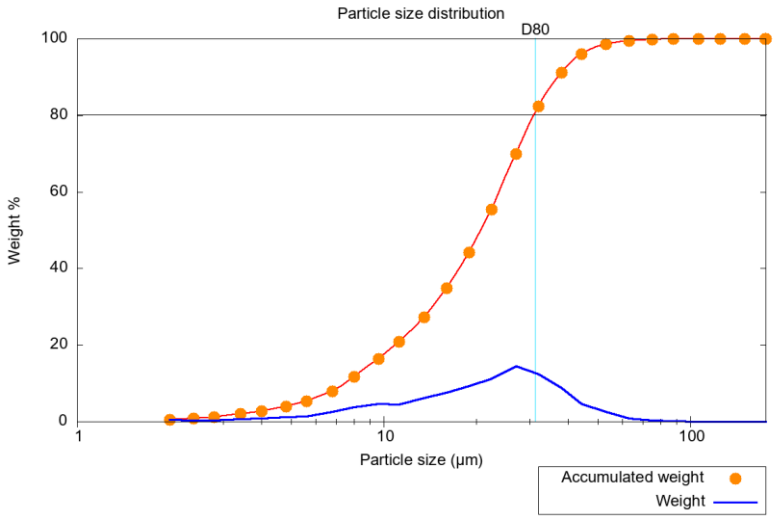
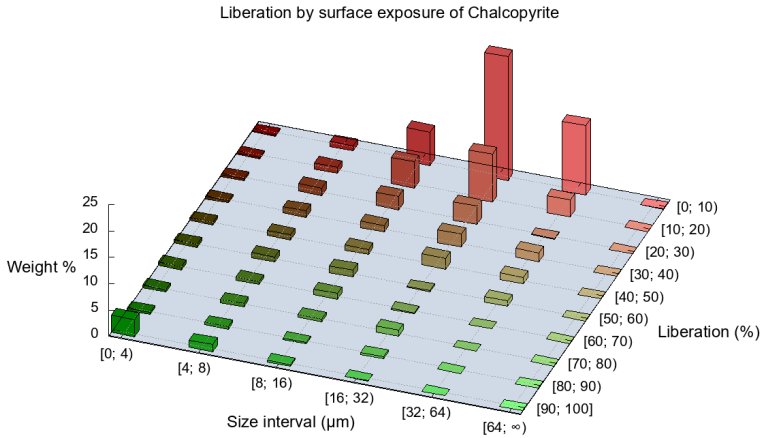
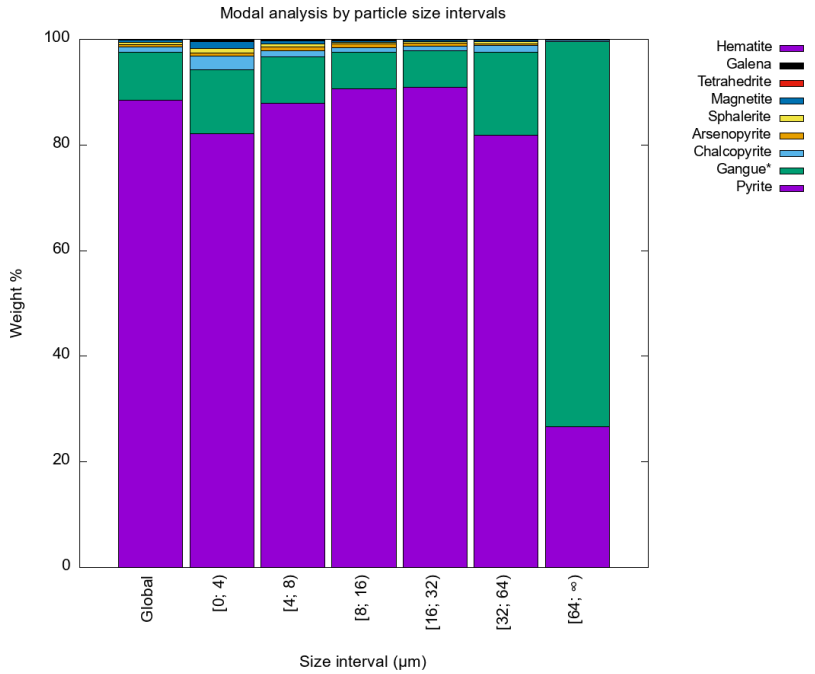
The results we are delivering

- AMCO delivers results similar to those obtained with SEM-EDS systems, performing **quantitative modal analysis** and detailed **particle analysis**.
- The software individualises each particle, providing **particle size** distribution, mineral **liberation** and minerals **association** information.







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The advantages we provide

- These **data** allow the plant technicians to **adjust** the operation of the various plant elements (mills, flotation cells, hydrocyclones, etc.) to the actual ore characteristics.
- Potential **benefit** to customers can be **huge**: a 1% rise in Cu recovery will increase revenue of a typical plant by several M€ per year.
- Existing solutions require **highly skilled personnel**, and are either slow or very costly and impose stringent infrastructure requirements.

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Our innovation features

- Offer affordable ore characterization for users in the metal mining sector

Feature	Benefit	Value
Based on an optical microscope	Much lower cost and infrastructure requirements than SEM-EDS	Save money and infrastructure resources
Does not require specialist for its operation	Can be handled by typical laboratory staff	Save wages and avoid relying on critical staff
Identifies the mineral at each and every pixel of acquired images	High resolution analysis, very high data throughput	Provides much more detailed information for plant tuning
Identify minerals by their specular reflectance (linked to crystalline structure, not to atomic mass)	Much better than SEM-EDS at discrimination of polymorphs, iron ores, graphite, organic matter…	Reliable identification of polymorphs, optimal results for iron ores

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Competitive advantage

	Product Performance (F.A.B.)	Product Quality (consistency)	Unit Cost (pricing)	Product Delivery (service)	Total Cost of Ownership	Customer Support (service)	Ease of Use (ergonomics)	Product Styling
Our product								
SEM-EDS								
Point counter								
Our unique Value proposition	***Fast and effective analysis without specialized personnel***							
	Much lower acquisition and operating costs than SEM-EDS							
	Much more performant analysis than point counter							

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Our team

Juan Carlos Catalina
Chief technology officer (CTO) and interim CEO

MEng in Mining Engineering at UPM, in 1986. PhD in 2018. Expert in machine vision and systems integration with extensive experience in coordinating R&D projects.

David Alarcón
Chief information officer (CIO)

MSc in Computer Engineering at UPM in 1986. Expert in software development and image processing.

Úrsula Grunwald
Deputy chief scientific officer (DCSO) and Administrator

MSc in Geological Engineering at UPM in 2020. PhD candidate at Universitá La Sapienza di Roma. Specialist in ore microscopy.

Ricardo Castroviejo
Chief scientific officer (CSO)

PhD in Mining Engineering at UPM in 1977, BSc in Mineralogy at Univ. Heidelberg, BSc in Geology at Univ. Salamanca Professor of Mineralogy with extensive experience in mineral resources research (ore microscopy, geometallurgy, etc.)

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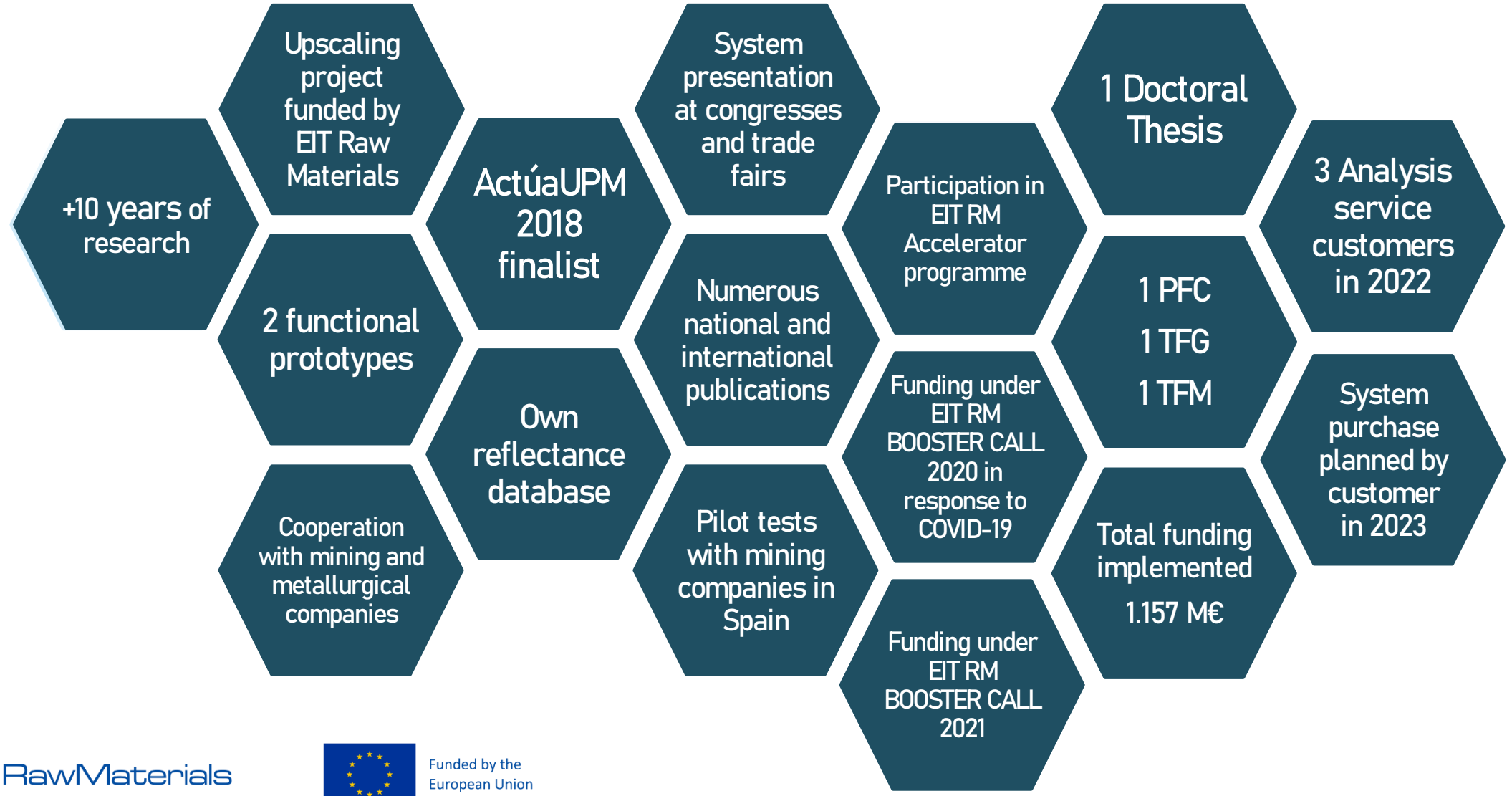
Accomplishments



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Contact

Juan Carlos CATALINA

jc.catalina@mmt-systems.com

+34 669 790 130

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C/Félix Boix 3, 8º Centro

28036 Madrid, Spain

http://www.mmt-systems.com

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