

Interreg
Europe



European Union | European Regional Development Fund

Clusters: Driving the Green and Digital Twin Transitions

Senior Adviser
Ilkka Nykänen
Business Joensuu

Online Workshop

10 December 2021 | Online

BUSINESS
JOENSUU



*International Network of Bjoee mining related operations
connected to REMIX action plan in a last 3 years*

Global level

*OECD- Mining regions and cities
Australia, South America, USA, Canada, Northern
countries*

European level

*S3P Mining Industry
and global value
chains*

*REMIX
9 european regions*

*Outokumpu
Sustainable Mining
Solutions Hub*

*MIREU
16 european
countries +Chile*

State and Regional level

*Business Joensuu
North Karelia*

Outokumpu Sustainable Mining Solutions – business Hub

The core of OSM is based on the Geological Survey of Finland GTK's more than a hundred years of experience in utilizing the raw materials of the earth's crust.

The hub is strongly anchored in Outokumpu Industrial Park and its surroundings, but at the same time networking nationally and internationally

Objective is:

- 1. to create an internationally leading center of excellence in the extractive industries*
- 2. provide sustainable innovation and development services to the mining industry globally*

GTK Mintec 2.0 vision

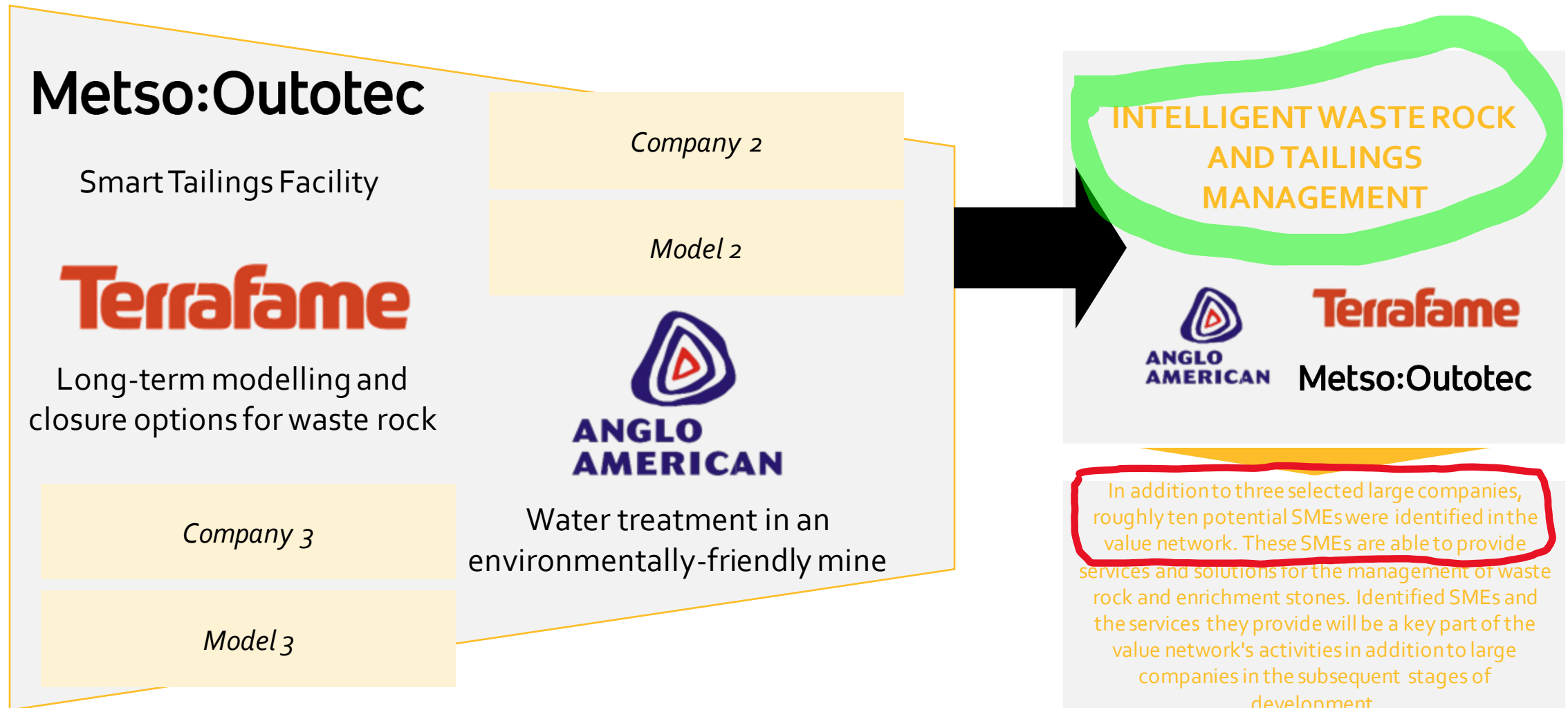


GTK Mintec 2.0 vision



LARGE COMPANIES A FUNDAMENTAL PART OF THE NETWORK

12 large companies were interviewed, 5 of which advanced to the workshop phase. The result was a model that combines the expertise of 3 large companies with Mintec.



OSM is working as part of a solution to reduce emissions from the mining industry

Reducing emissions and striving for carbon neutrality

- Reducing emissions and operating more sustainably are key themes that have surfaced in the mining industry.
- One of the goals of GTK Mintec and its associated value network is to shift the industry closer to carbon neutrality.
- The starting point for creating a value network has been sustainable development and the reduction of emissions through increased process efficiency and the circular economy.
- A central stakeholder in building the value network has been circular economy companies. These companies have been identified as one of the key SMEs to support solutions to the identified growth challenge.



At the heart of the value network are waste-free mines and a closed water cycle

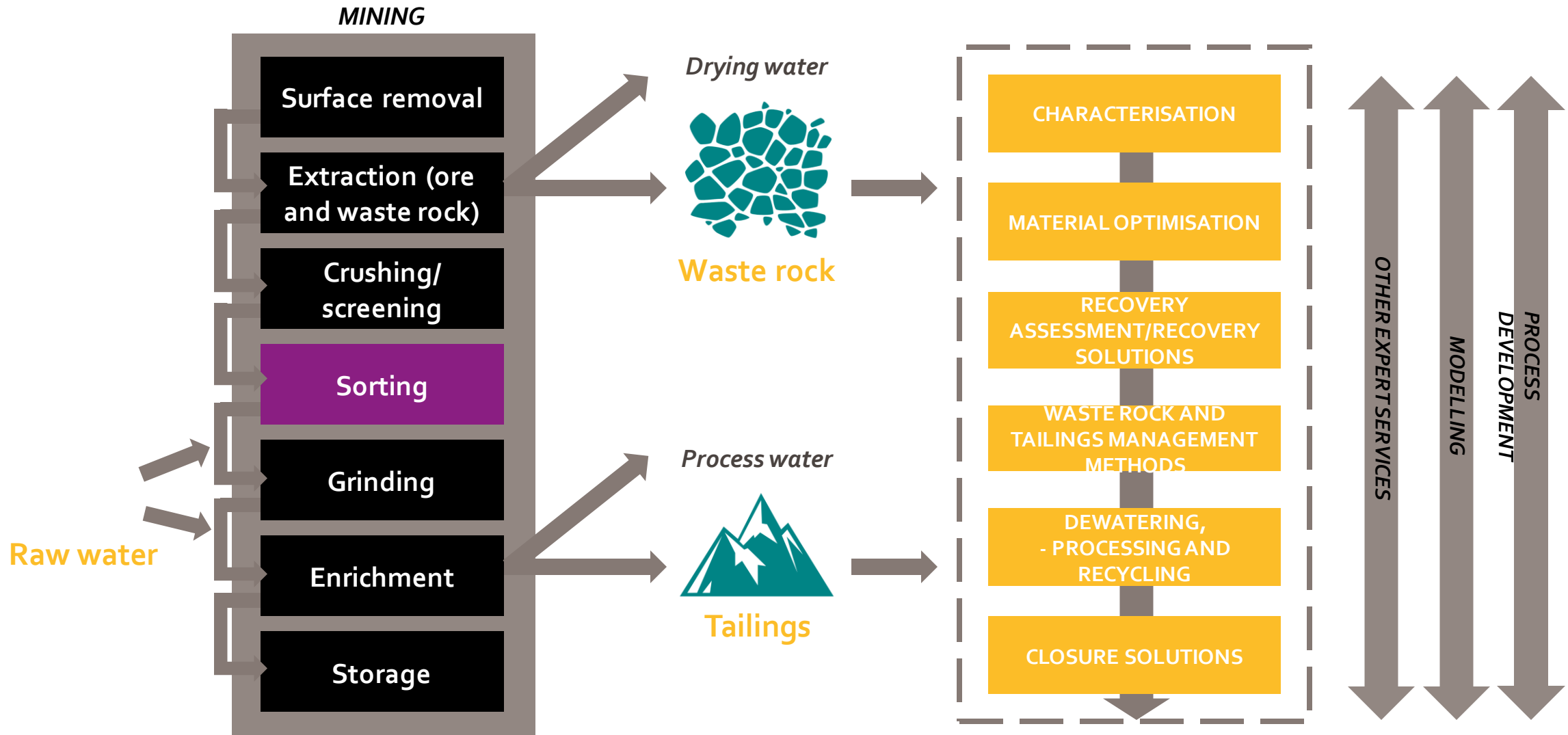
- Circular economy is a key part in the implementation of more environmentally friendly mines.
- A key task of the value network is to promote a closed water cycle in order to reduce and use water more efficiently. A central part of the value network's service offering is water use solutions, for which several partnerships have been identified to support development.
- In addition, an essential part of the value network's activities is to make better use of the potential of waste rock and tailings.

Moreover, the network focuses on optimizing the use of waste rock and tailings in order to increase the utilization rate of extractive waste and achieve the most waste-free mining activity possible. This goal can be achieved especially with optimization and modeling solutions, which are addressed by the value network service provider.



INTELLIGENT WASTE ROCK AND TAILINGS MANAGEMENT CORE ACTIVITIES

The value network consists of processes for the smart processing of waste rock and tailings that emphasise the thematics of modelling and reuse of materials



INTELLIGENT WASTE ROCK AND TAILINGS MANAGEMENT SERVICE OFFERING

A waste rock-oriented service package that could be produced in a value network together with partners

korkia

MATERIAL CHARACTERISATION

Service offering

- Determining mineralogical and geochemical composition for the assessment of recovery and environmental impact

FORECASTING LONG-TERM BEHAVIOR AND EMISSIONS

Service offering

- Forecasting the behaviour, emissions and environmental impacts of waste rock material on the basis of characterisation and modelling

MANAGEMENT METHODS TO PREVENT ENVIRONMENTAL IMPACTS

Service offering

- Assessment, modelling and development of disposal solutions to minimise negative environmental impacts
- Placement of waste rock



CLOSURE SOLUTIONS, TESTING AND SIMULATION

Service offering

- Simulation and testing of closure alternatives
- Environmental impact assessment
- Measurements related to construction

WATER RECYCLING AND TREATMENT SOLUTIONS

Service offering

- Water entering structures
- Surface and leachate
- Environmental impact assessment

ASSESSING THE USE OF WASTE ROCK

Service offering

- Waste rock material recovery assessment and productisation
- Development of separation techniques to exploit waste rock - material modification

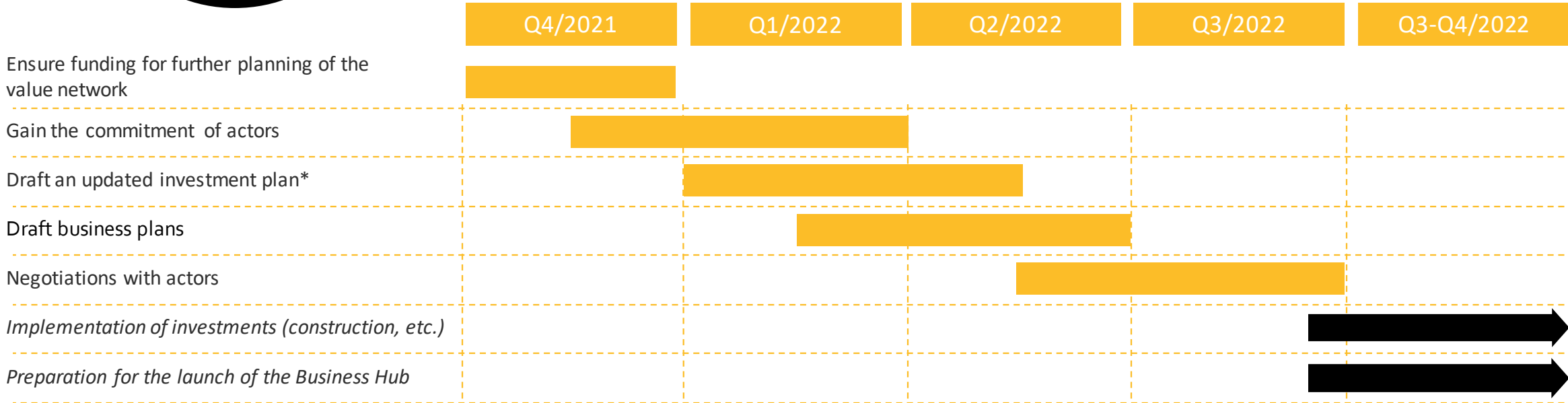
OTHER EXPERT SERVICES

Service offering

- Official statements
- Theme reviews
- Reports
- Process development of the entity

Outokumpu Sustainable Mining Solutions – Business Hub

**TIME TO
LAUNCH:**
+1
year



*This is GTK's internal plan of the needed investments and their timetables

Thank you !

<https://www.youtube.com/watch?v=GeOCrOcXrp8>

Ilkka Nykänen

Senior Adviser , Extractive Industry

+358 50 5185736

Ilkka.nykanen@businessjoensuu.fi

**Interreg
Europe**



European Union | European Regional Development Fund

**BUSINESS
JOENSUU**



Regional Council of
NORTH KARELIA