Innovative Technologies and Concepts for the Intelligent Deep Mine of the Future
Sub-Task: Mine-to-Mill Integration
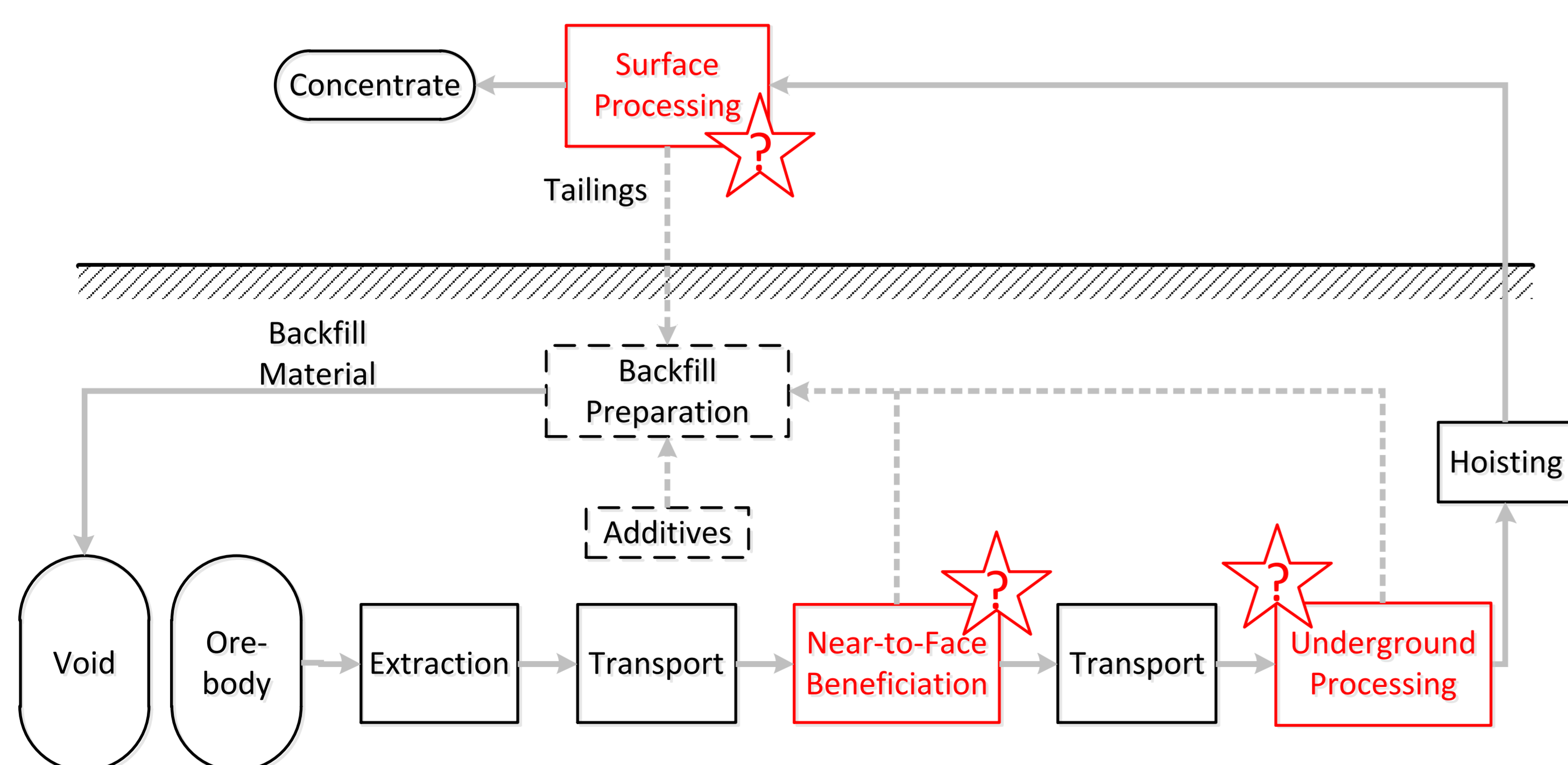
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Motivation and Background

The future of an improved EU supply of domestic mineral raw materials lies in deep seated deposits. A major pre-condition to utilize deep seated deposits is the availability of appropriate underground mining methods. A direct one to one application of currently available mining methods at great depth will not lead to acceptable solutions, e.g.

• increased subsidence trough and rock mechanical risks of mining methods associated with caving,
• decreasing extraction rate thus economical limits of regular stoping methods,
• increasing requirements for ground control and backfill for stoping methods with backfill and pillar extraction,
• increasing efforts for mass movement from underground to surface,
• increasing need for reliable and detailed geological data in reply to increasing investment and operating cost,
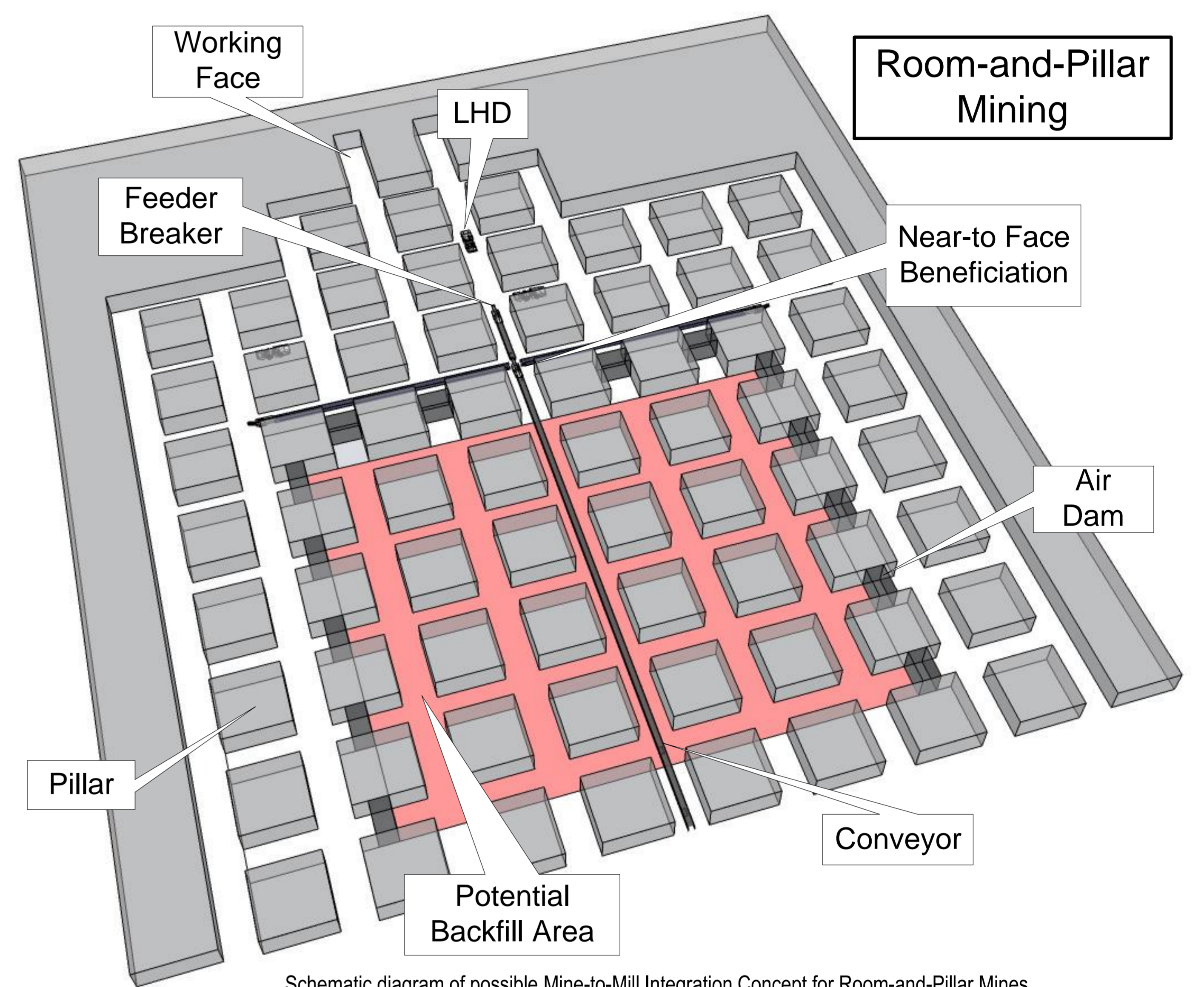
hence a united concept is required.

Goal

Generation of Mine-to-Mill Integration Models: The result will be a trend setting model of a future mine and recommendations on how to achieve the goal of a future "intelligent deep mine". This will include appraisals of possibilities of increased extraction rates and optimized use of given deposits und sustainability aspects, energy saving processes, mass movement minimization, selectivity of extraction and recommendations for achieving such goals.

Schematic diagram of possible Mine-to-Mill Integration Concept for Room-and-Pillar Mines

Principle flowchart regarding Mine-to-Mill Integration Concepts

Approach

• Comprehensive State of the Art Analysis for Mining Systems, Mineral Processing and Backfill
• Requirement Assessment for Sub-processes in Mining and Processing
• Model Mine Layout and Value Stream
• Conception of Mine-to-Mill Integration concerning different Mining Systems and Processing Methods
• Development of new or adapted Mining Systems
• Modelling of different Case Studies with I²Mine Partners

Project Partner

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SEVENTH FRAMEWORK PROGRAMME

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