

Unified Production Planning

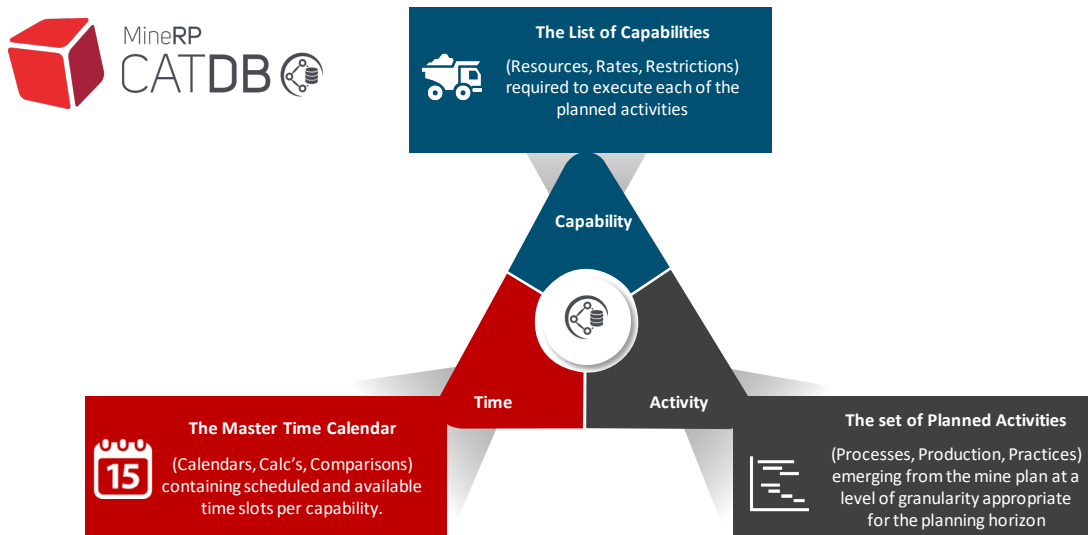
MineRP's Unified Production Planning solution extends Unified Business Planning to take bring alignment between the logically interdependent, yet isolated schedules that exist in business processes that are involved in operational execution, yet might not be addressed during Unified Business Planning.

Alignment of schedules is the basis for enterprise wide control. MineRP facilitates alignment through the integration of capabilities (i.e. resources), activities (i.e. tasks) and timelines (i.e. calendars) across the MTS and ERP scheduling domains.

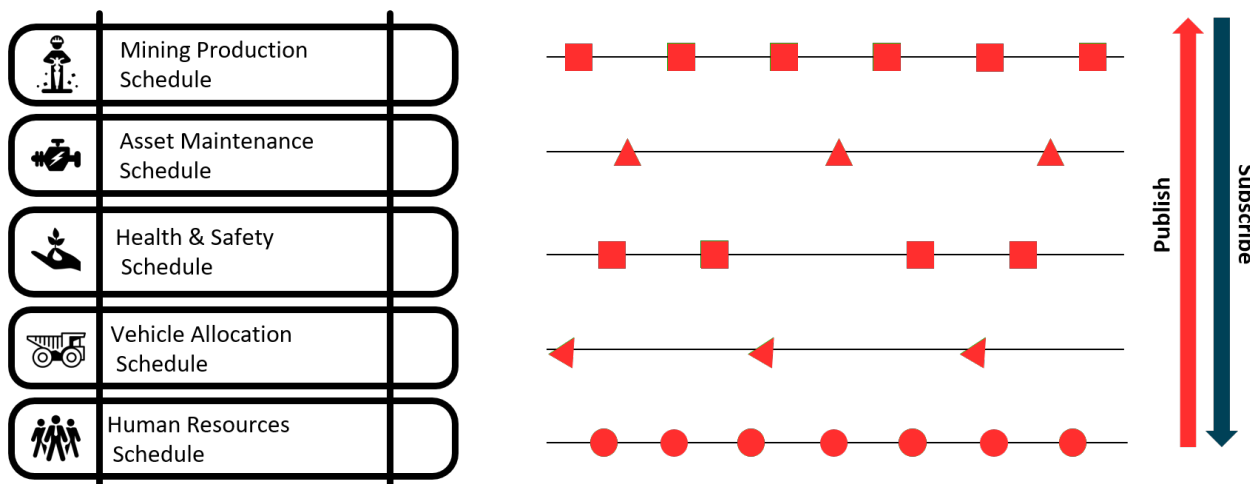
What emerges is an amalgamated Master Business Schedule (MBS) containing all interrelated activities in a single repository. This MBS does not only provide enterprise visibility and oversight over all operational schedules, but can also be optimized through the application of advanced analytical solutions.

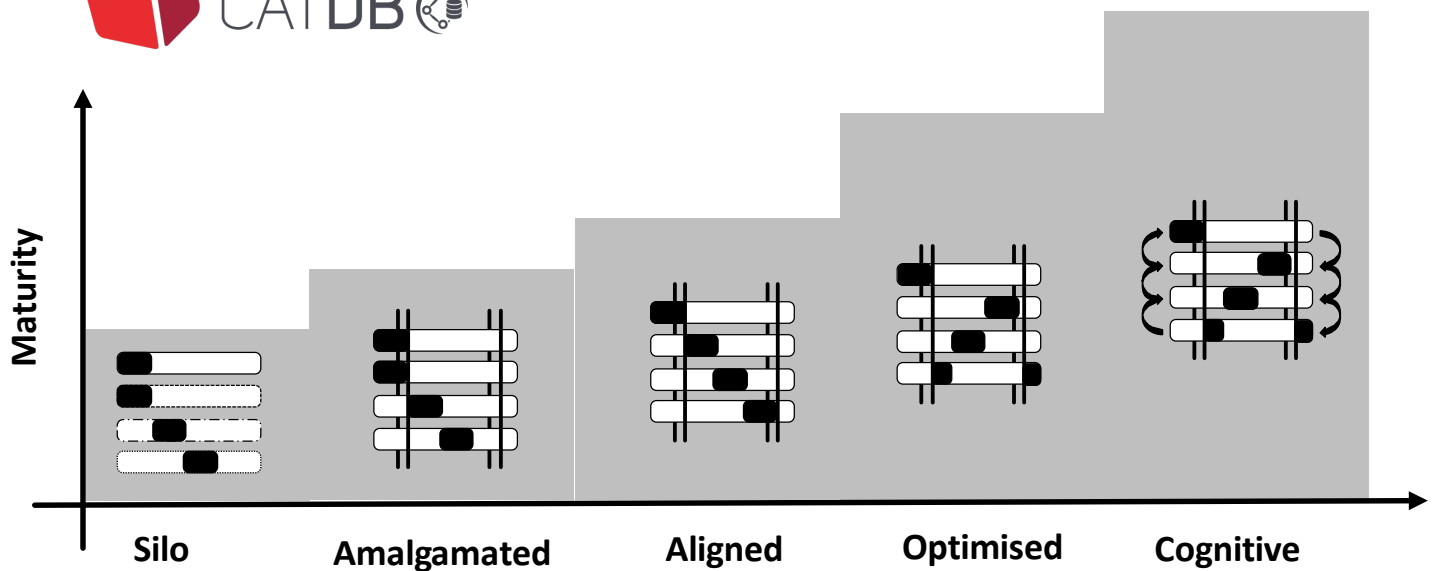
The benefits of a Master Business Schedule that extends across the organizational planning silos include:

- Coordinated feedback loops to multiple systems of record
- Alignment of capabilities, activities and time across the scheduling domains
- Rationalization of scheduling tools across multiple technical domains
- Common granularity of scheduling information
- A common basis for the establishment of a Digital Orchestration Centre (DOC)



MineRP Master Business Scheduling





Achieving operational excellence is highly dependent on the ability to optimally schedule all of the tasks involved in the operational cycle. Maturity in this domain is characterized as follows:

- **Silo-based Scheduling:** Mines start with discipline-based planning and scheduling, where planning is done according to business-as-usual assumptions and rules, to
- **Amalgamated Schedules:** Mines collect and amalgamate fragmented schedules into a single area, where scheduling clashes become visible, and resolution is typically done manually through negotiation between colleagues
- **Aligned Schedules:** Submitting the amalgamated schedules to simple resource leveling and critical-path resolution exercises, (whether manual or computerized), mines are able to remove clashes and downtime resulting from inter-dependent tasks scheduled to happen simultaneously, or at times when they would require shared resources
- **Optimised Schedules:** Various advanced optimization engines have been utilized with great success in other industries, including aviation, supply-chain and retail. By submitting activities with their dependencies, priorities and constraints to optimization engines using objective function mathematical optimization, we are able to create mathematically provable optimal scheduling solutions for targets such as maximum NPV, minimum costs, maximum tonnes, maximum recoverable metal etc. Optimization engines are highly dependent on the availability and accuracy of input data and accurate mathematical models.
- **Cognitive Schedules:** Creating digital representations of physical systems, and modeling behavior of these systems in an environment where interdependencies can be explicitly stated, cognitive systems and artificial-intelligence or machine learning solutions can be developed that are able to suggest or even prescribe specific tasks or strategies that will lead to desirable outcomes.

Maturing through these levels of Unified Production Planning unlocks the ability to make informed decisions with regards to enterprise asset maintenance, logistics and supply chain optimization, asset utilization improvements and even transformational improvements in the physical, spatial planning of mining activities.