

RPMGlobal enterprise planning framework

Mining companies are starting to realise the immense value in eliminating distinctions between front and back office processes. It will be enterprise applications and solutions that will provide organisations with increased integration and depth whilst removing the silos and creating the business optimization and step-change currently required.

RPMGlobal's Enterprise Planning Framework (EPF) builds on this foundation. EPF extends the capabilities of existing desktop solutions and provides a platform for enterprise applications across mine planning and execution. EPF is a strategic platform that allows a mine operations business process to exchange information with the ERP, BI tool, mine planning and command and control fleet management systems (FMS). This

sophisticated data exchange and extraction can only be achieved through the adoption of standards. This is where ISA-95 will be the catalyst for the current change that is happening. For the first time, vendors who adopt ISA-95, have the opportunity to create a cohesive mining vendor ecosystem that removes the existing silos of information, people and resources.

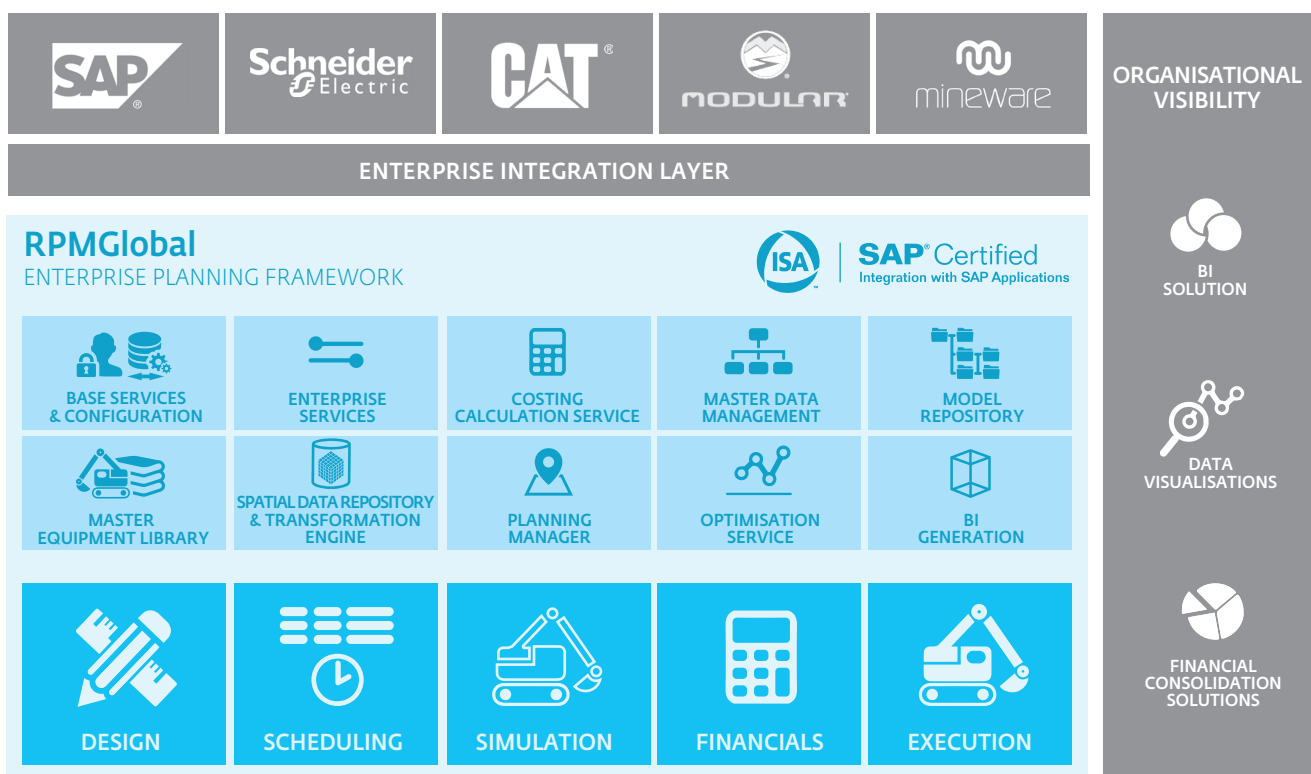


Figure 1: RPMGlobal's Enterprise Planning Framework

RPMGlobal's platform is designed to support management processes, eliminate reliance on disconnected spreadsheets, individual departmental point solutions, and fragmented Business Intelligence (BI) technologies. Most organisations use different versions of the truth to make decisions, face challenges in consolidating plans and forecasts, struggle to predict future performance, and lack alignment in resources across functions.

To achieve management excellence, these organisations must rationalise their analytical tools and management systems to eliminate the noise and provide actionable insights to all stakeholders within the enterprise. This requires a solution that is complete, open and integrated. That solution is provided by RPMGlobal's vision for an enterprise solution underpinned by the Enterprise Planning Framework.

Data Exchange and Control Modules

Base Services and Configuration



1. Base Services and Configuration

This includes the base services, SQL databases and configuration framework for EPF. A SQL database stores the transactional data from RPMGlobal's applications. This data is then used by other services to provide integration to third party systems and other enterprise applications. This data can then also be used by the Business Intelligence Generation module to deliver corporate reporting tools in a structured manner. The IMS application is also included as the EPF configuration user interface.

1.1 Authentication Service

The Authentication Service implements enterprise security across the RPMGlobal Enterprise Planning Framework and associated applications. A role based model is used giving each assigned user one or multiple roles, with users being identified through Microsoft Active Directory integration. Permission to access specific or secure data such as Datasets or Locations is then granted on a role basis which provides control across all levels of data managed through the EPF.

1.2 Auditing and Validation

All data transfers that use EPF's Enterprise Services use the Auditing and Validation Services to ensure there is a complete audit trail of all transactions. All data movements are validated before they occur between RPMGlobal's applications and the designated source or destination system. Further validation is done to ensure that data published via the Enterprise Services conforms to the relevant Master Data standards employed.

1.3 Service Lifecycle Management

All EPF services are managed by the Lifecycle Manager. The Lifecycle Manager ensures that the accessible by the appropriate enterprise applications.

1.4 Location Service

The location service forms the basis of the organisation hierarchy. This is used to control access to the framework (say to corporate or mine level data), and as the basis for aggregation and role-up of reporting data.

Data Exchange and Control Modules



2. Enterprise Services

SAP® Certified Integration with SAP Applications

These services provide the adaptors, through published connectors, that connect RPMGlobal's products with other Enterprise software across an organisation. These services are SAP Certified for their integration into SAP solutions.

For SAP this includes the connectors that are required for each adaptor that enables data integration across MII, PI and also direct to SAP's ECC through an ABAP service.

This service also provides adaptors to other third party enterprise applications/solutions that are not serviced by the Business Intelligence Generation module.



3. Master Data Management (Global Assumption and Logic)

This module controls the master data between source systems and the destination applications. This ensures that any notifications of updates or changes flow through to the destination applications creating one single source of the truth allowing the corporate office to set key corporate assumptions such as exchange rates, consumable pricing, escalation etc. that can be automatically applied to user models. Basic logic can be controlled in this module, however to control more advanced logic and the workflow in XERAS models, RPMGlobal's Model Repository is utilised.



4. Model Repository

Model Repository is a complete data storage repository purpose built for mine planning data. The repository allows for a range of associated metadata, version control and the ability to publish the current or approved budget information.

The Model Repository also enables the ability to control model workflows and logic from a central location through planning templates.

Other data such as haulage, geological design and simulation models can all utilise this repository. All data is stored in its native format and requires its original source systems to utilise the models stored.



5. Business Intelligence Generation

These are the services and a reporting cube required to generate the operational planning intelligence information. This includes preconfigured views that allow third party business intelligence software to access the data and provide enterprise wide reporting and dashboards. The business intelligence generation module allows the consolidation of data from individual scheduling, simulation, financial and execution models.

Application Services



A. Master Equipment Library

RPMGlobal's master equipment library is the largest independent database of its kind. It contains detailed performance specifications for over 1300 pieces of mining and ancillary equipment. The library can be modified to include client specific equipment configurations and related data ensuring the right assumptions are consistent across the enterprise. Through the enterprise framework the equipment library can be shared across planning, simulation and financial applications, managed and updated centrally.



B. Spatial Data Repository & Transformation Engine

Spatial Data Management is used to store Spatial Data and its related properties, in an open format that can be accessed by any application for further processing, reporting or visualization. This is suitable for situations where immediate access to Spatial "Big Data" is required without requiring the source applications. This is most suitable for spatial data that has been finalized by engineering desktop applications, and is required by external systems.



C. Costing Calculation Service

RPMGlobal's costing calculation service is the financial spreadsheet based calculation engine that has been developed over more than 27 years. The service is the underlying calculation engine for the XERAS Enterprise financial modelling application. The service enables the calculation of capital and operating costs, along with revenue, for the entire mining and processing operations, turning a physical mine plan into a financial mine plan.



D. Optimisation Services

RPMGlobal's Optimisation service is an Enterprise product optimiser that runs on our EPF. The service can call on any commercially available Optimisation engine (Lindo, CPLEX, Gurobi) and utilises this to optimise the mine plan. Currently this is utilised in the Dynamic Product Optimisation option for RPMGlobal's XECUTE product. The system is configured to automatically assign material to specific locations based on product specifications in the short term horizon. This inclusion ensures that the physical mine production plan and product processing are integrated and optimised together. For example a higher quality material maybe assigned to ascertain processing plant based on the quality parameters within the geological model.



E. Planning Manager

Planning Manager utilises the EPF to pull together all mine production plans across different planning horizons and scheduling geological definitions, synchronises them all into a single unified plan. This ensures that the short term plan has continuity to the medium term plan and other strategic planning horizons. Plan manager also incorporates the ability to review and approve plans before they become live in and published using the ISA95 (BSMML) format to subscribers across the operation.

RPMGlobal's Strategic Partnerships

