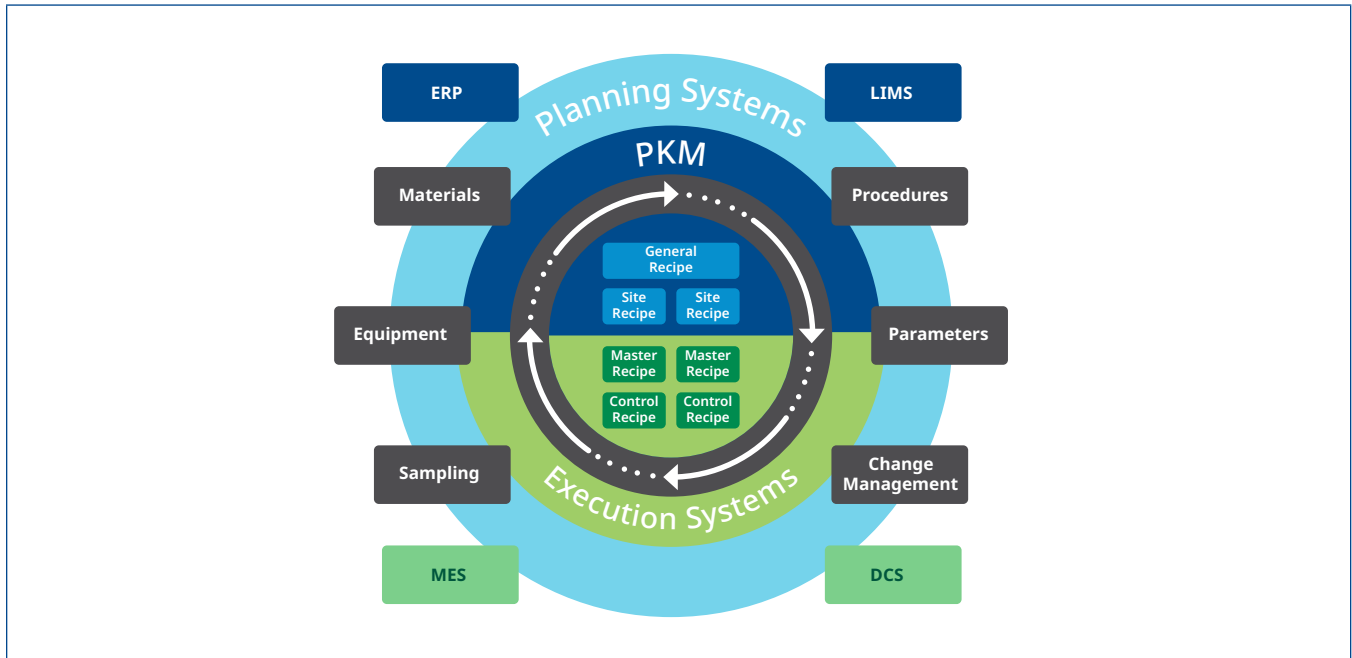


# DeltaV™ Recipe Transfer Management



Emerson's PKM™ provides a flexible integration model that facilitates data transfer from and to other systems.

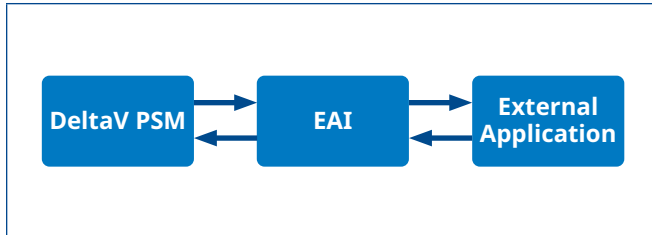
- Flexible integration framework to leverage a comprehensive digital ecosystem
- Standard and Customized system interfaces
- Commonly used data exchange formats such as B2MML
- Independent validation

## Introduction

Drug development involves multiple systems across different disciplines. Emerson's Process Knowledge Management (PKM™) software suite provides a recipe management solution with the ability to integrate with other systems such as Enterprise Resource Planning (ERP), Electronic Lab Notebooks (ELN), Laboratory Information Management Systems (LIMS), Manufacturing Execution Systems (MES), and Distributed Control Systems (DCS). This integration approach leverages a comprehensive digital ecosystem and targets best practices in a given area rather than trying to have a "single system" that attempts to meet all requirements for Tech Transfer across the full product development lifecycle. PKM software suite includes:

- DeltaV Process Specification Management (PSM)
- DeltaV Process Risk Assessment (PRA)
- DeltaV Recipe Transfer Management (RTM)

DeltaV RTM uses an integration framework to create different external application interfaces (EAI), also known as extensions, that are decoupled from the DeltaV PSM software. EAIs enable external applications to exchange data with DeltaV PSM.



### External Application Interfaces.

There are three main types of extensions within DeltaV RTM:

1. Application Programming Interface (API) extensions
2. Data Pipeline Extensions (DPE)
3. Report Extensions

## Benefits

The DeltaV RTM extension framework provides a flexible integration model that delivers significant benefits.

**Flexible Integration Framework.** Multiple interfaces and data formats are available for exchanging data to and from PKM.

**Standard and Custom System Interfaces.** DeltaV RTM provides standard interfaces for integration with external applications. Apart from these standard interfaces, DeltaV RTM also allows users to register their own custom interfaces.

**Commonly Use Data Exchange Formats.** DeltaV RTM standard interfaces use commonly used data exchange formats, including JSON and XML. Custom interfaces can define any required data format.

**Independent validation from DeltaV PSM Software.** Extensions have their own lifecycle allowing for independent validation from the DeltaV PSM software.

## Product Description

### Self-serving Integration Module

PKM enables users with specific roles to create and register extensions in DeltaV RTM via a self-serving module. These users can create three types of extensions: APIs, data pipelines, and custom reports.

SNo.	Pipeline Name	Description
1.	MES Pipeline v1.4	Data pipeline for MES system integration using the B2MML message for mat.
2.	MDMS v3.4	MDMS Integration Pipeline

### Interface Configuration within PKM.

### Data Pipeline Extension

Data pipeline extensions allow data exchange between DeltaV PSM and external systems through the DeltaV RTM. For example, a data pipeline can be defined to exchange information with an MES system, while a second data pipeline can be defined to communicate to the system handling material information. Data pipelines can utilize different formats, such as B2MML or JSON. Data exchange can occur on a pre-defined schedule or be initiated on demand from the DeltaV RTM application. The execution status of the pipeline can be monitored from the Data Load Pipeline page in DeltaV RTM.

Users can exchange information for all recipes or limit the data exchange to a specific recipe in DeltaV PSM. Users can also define communication based on production lines, as data pipelines can be configured for a Site-Building-Line combination, allowing recipes to be filtered by specific production lines.

### API Extension

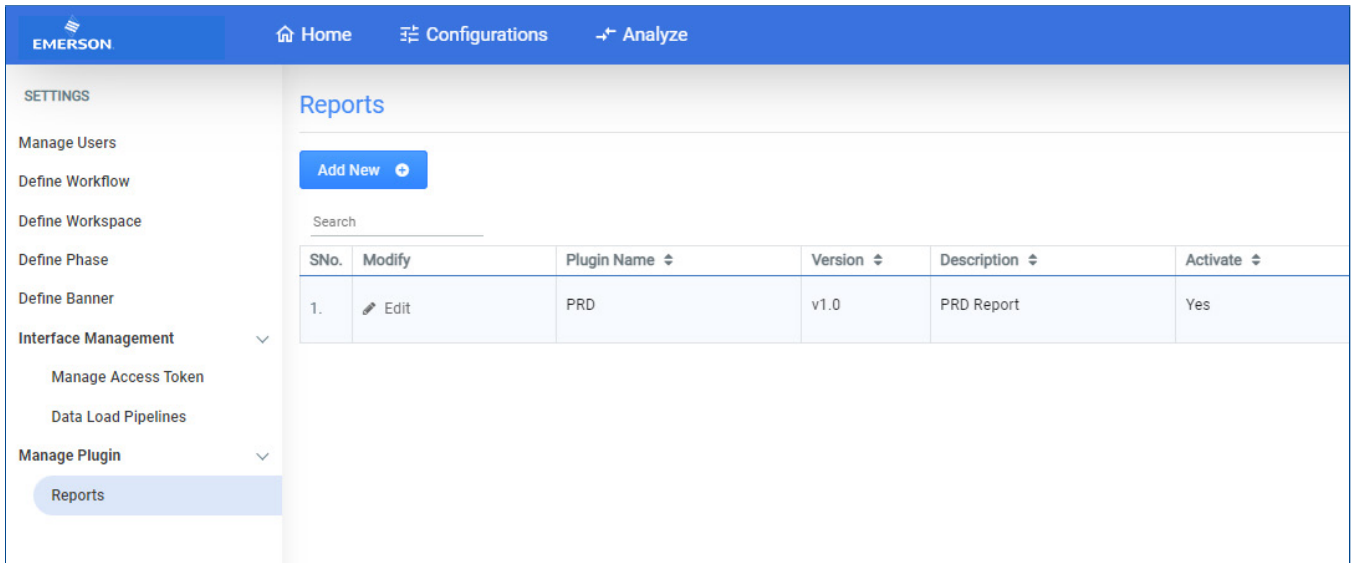
In addition to the data pipelines, DeltaV RTM can communicate via API interfaces. An MES can exchange data with PKM via a custom API. Unlike data pipelines, API extensions act as communication endpoints, and they do not provide scheduled execution or run history. API documentation for the API endpoints is available within the extension.

## API Tokens

Communication for both PKM APIs and API extensions is secured using API tokens which are created and managed in DeltaV RTM. These tokens ensure that only authorized users can use the API extensions. In addition, the API usage details can be viewed in the access token usage history.

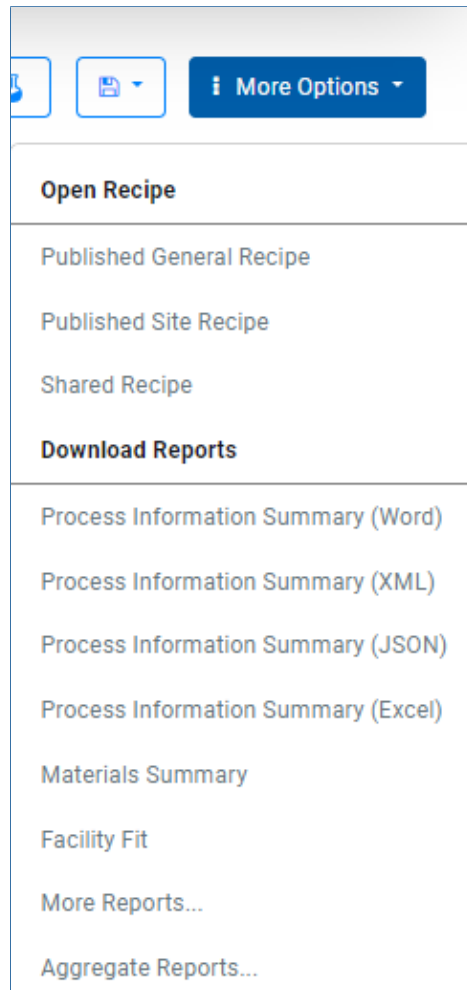
## Report Extension

Users can also extract information from DeltaV PSM using customized reports which are managed via plugins. Report extensions support Word, Excel, and custom report types. Emerson can provide custom report development using either the report extensions (plugins) or data pipeline extensions.



Custom Reports Plug-ins.

Once the plugin has been defined, the custom reports will be available within the DeltaV PSM 'More Reports' option.



*Launching Standard and Custom Reports within DeltaV PSM.*

DeltaV PSM can use its integration framework for additional reporting capabilities. DeltaV PKM can communicate with document management systems such as Informetric AgileDoc™ with the API interface. Using the API interface, an external system can generate custom reports. For example, Informetric AgileDoc can generate Master Batch Records using the recipe information in DeltaV PSM to support sites that still execute batches manually.

## Related Products

- **DeltaV Process Specification Management** digitizes process specifications throughout the drug development lifecycle.
- **DeltaV Process Risk Assessment** leverages process information to perform risk assessments such as FMEA studies.
- **DeltaV MES** improves manufacturing operations to drive production goals and creates an optimized manufacturing environment for Life Sciences organizations.
- **DeltaV DCS** is an easy-to-use automation system that simplifies operational complexity and lowers project risk.
- **DeltaV Real-Time Scheduling** allows customers to visualize the facility constraints, accommodate variability, maximize production, and understand the implications of any change in the manufacturing process.

- **Informetric AgileDoc** is a Software Lifecycle (SLC) documentation suite. When connected with DeltaV PSM, it allows for the automatic generation of custom reports such as Master Batch Records. Informetric is a member of the DeltaV Alliance Product Program, which brings together best-in-class companies with complementary core competencies. Only products that provide the highest value and have passed Emerson's strict approval process are added to the Alliance Program.

## Licensing Information

DeltaV RTM is licensed based on the type of interface. Please contact your local Emerson sales office or representative for pricing specific to the intended interface.

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