



BI & MII A Winning Combination

“The most meaningful way to differentiate your company from your competition, the best way to put distance between you and the crowd, is to do an outstanding job with information. How you gather, manage, and use information will determine whether you win or lose.”

– Bill Gates from ‘Business @ the Speed of Thought’

In the past, those businesses with access to information had an edge over those that didn’t. For manufacturers, the rise of process automation, execution systems, ERP investments and the like, all created an increase in the information base.

Background

The lineage of ‘business processes’ and Enterprise Resource Planning (ERP), and the world of ‘manufacturing processes’ evolved out of the same primordial soup of the industrial revolution, but that’s where the ancestry ends.

As the three-letter-acronym gathered momentum, the business world created CRM, HCM, SCM, ERP, PLM, ROI, while the manufacturing world created PLC, HMI, MES, OPC, CMS, DCS ... and on the list goes.

In essence the **type, frequency, granularity and disparity** of data are very different between these two worlds, and so the bridge between them has been elusive.

For the business world, if you have an ERP suite then one would expect that all the modules within the landscape ‘talk’ with each other. However, there are often cumbersome legacy systems lurking around the landscape that you’d like to retire, if only to have access to more modern data interchange technologies.

In the manufacturing world, equipment is often sourced from various vendors, smaller manufacturers are acquired by larger ones and the systems used in one facility may be completely different from those in another. Retrofitting the entire control system in a producing factory is almost impossible so typically, applying one communication standard across an entire manufacturing landscape is a pipe dream.

Today however, we have so much information from our various levels of process that we’re often overwhelmed by the quantity, frequency, myriad sources, and often its disparate nature.

It has also been estimated that an average manufacturing installation can produce more data in a single day than the entire New York Stock Exchange. Several hundred Mb/day is not uncommon, although most of it is very ‘low level’ and relates to the granularity of the manufacturing process, yet this information may still be valuable.

1. The Problem

How to filter, sort, contextualise and deliver the right information to the right people, is becoming a modern art form of the information age.

Information is not knowledge is not wisdom, however information can lead to knowledge and with experience and historical context, can lead to wise decisions.

Add the rapid pace of change, a global financial meltdown, fast-changing market conditions, the need for improved efficiencies, reduced manufacturing costs, higher safety standards, reduced inventory levels, leaner supply chains, improved quality, higher customer service standards, stricter environmental compliance (just to name a few!) and it becomes abundantly clear that the need for accurate, timely information about what's happening across the entire business is absolutely critical.

If, like most companies, you have wall-to-wall spreadsheets, contributed by many, massaged by the few and reported so retrospectively that the information is almost useless, there is life after Excel.

But before we address this, let's review some context as to why manufacturers find themselves in this bind.

2. The Solution

Enter the world of Business Intelligence (aka 'BI')

The word intelligence comes from the Latin and means to understand, so any process for sifting, sorting and delivering information in an intelligent way must start with the question, "what is it we wish to understand from this information?"

This is a business question rather than a technology question, so it is essential to start with a strategy to determine what initiatives will deliver the most business value.

While the range of information required to successfully run a business is vast, in the world of manufacturing we can approach this as follows. The plant manager needs to monitor and control the plant on a real time basis while the Manufacturing Director needs to understand whether manufacturing performance is in line with the overall business objectives of the company. These two objectives should be based on the same data but will have a different emphasis on the detail.

SAP Best Practice would suggest a focus on Manufacturing Performance Management and in this context to start with Overall Equipment Effectiveness (OEE). By combining SAP MII (Manufacturing Integration & Intelligence) with SAP BI (Business Intelligence) it is now possible to deliver "One version of the truth" from the Shop Floor to the Top Floor on the one SAP platform. The outcome of this is to allow businesses to make better decisions.

So what does Business Intelligence add to the world of Manufacturing?

Longer Term Trending;

- MII focuses on providing a real time version of events on the shop floor. By its nature, this means that the data is generally not stored. For longer term trend analysis this can create performance issues because of the volume of data required
- SAP BI is designed for the extraction and storage of high volume data. If the requirement is to analyse longer term trends then SAP BI is the appropriate technology to use

Improved Visualisation Tools

- The new suite of SAP Business Objects tools can now be used to enhance the data visualization capabilities of SAP MII
- This can be done either through running BOBJ tools on top of SAP BW queries or directly on top of SAP MII for real time data analysis

And what does SAP MII add to the world of Business Intelligence ?

Specialised Connectors to the shop floor level

- SAP BW has native connectors to SAP systems however the shop floor layer presents special challenges in extracting data due to their specialised data models
- SAP MII overcomes these through its extractor technology designed specifically for the major shop floor systems and historians, and it complies with ISA 95 (“International standard for the integration of enterprise and control systems”)

Specialised graphical representations

- Statistical Process Control and Statistical Quality Control Charts are a feature of SAP MII and represent a manufacturing specific capability which is not easily replicated in SAP BW

Plant Level Metrics

- The Manufacturing Director is focused on optimizing Business Metrics such as asset utilization, material cost and on time supplier performance
- SAP MII can add valuable data at the plant metric level such as machine availability, yields and cycle times which may not be available in SAP BW

The following table highlights the current positioning of SAP MII and SAP BI to deliver reporting and how their combined strengths deliver Enterprise Manufacturing Intelligence from the Shop Floor to the Top Floor:

Functionality or Focus	SAP MII	SAP BI	Combined
Responsibility	Plant Manager	Manufacturing Manager/ Director	Enterprise Wide
Reporting Scope	Shop Floor	Cross Functional Reporting	Shop Floor to Top Floor
Time Detail	Real Time (Daily and Below)	Days/Weeks/Months	All
Performance Management	Manufacturing Performance Management	Enterprise Wide Performance Management	Enterprise
Manufacturing Analytics	Plant Metrics	Business Metrics	Operational Excellence
Planning	Plant Level Scheduling	Enterprise Wide Planning	Enterprise Wide
User Interface	Web	BOBJ, Visual Composer	Best in Class
SAP Environment	SAP NW CE (Java)	SAP NW	SAP NW Platform
Data Persistence	Real Time (Optional Stored)	Stored (Optional Real Time)	Fit for purpose storage
Data Intergration	MI is the ETL for Manufacturing Shop Floor Intergration	Data Services is the ETL for connecting to Non SAP data sources	Access to all levels of data

As the leaders in SAP MII and BI technology, Plaut Australia is the only SAP Partner able to deliver the complete capability for shop floor to top floor implementations.

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