



DMi article

“The key focus of digital twin is to exploit 3-D data and simulation deeper into the business”



From CIM to Twin

Back in the early 90s the premier manufacturing exhibition in the UK was referred to as the ‘Computers in Manufacturing Show’ – CIM. I remember looking forward to the event in the early days of my manufacturing consultancy journey which I had begun in 1987 after learning my S&OP/ IBP, Supply Chain, MRPII/ERP and change management ‘trade’ at Rolls Royce and Bentley Motor Cars in the 80s.

I was proud to be on the front page of the CIM edition of the Birmingham Evening Mail. I also wrote a CIM article back in the 90s (see attached). Despite the best intentions, the CIM Show never really



Dave Manning

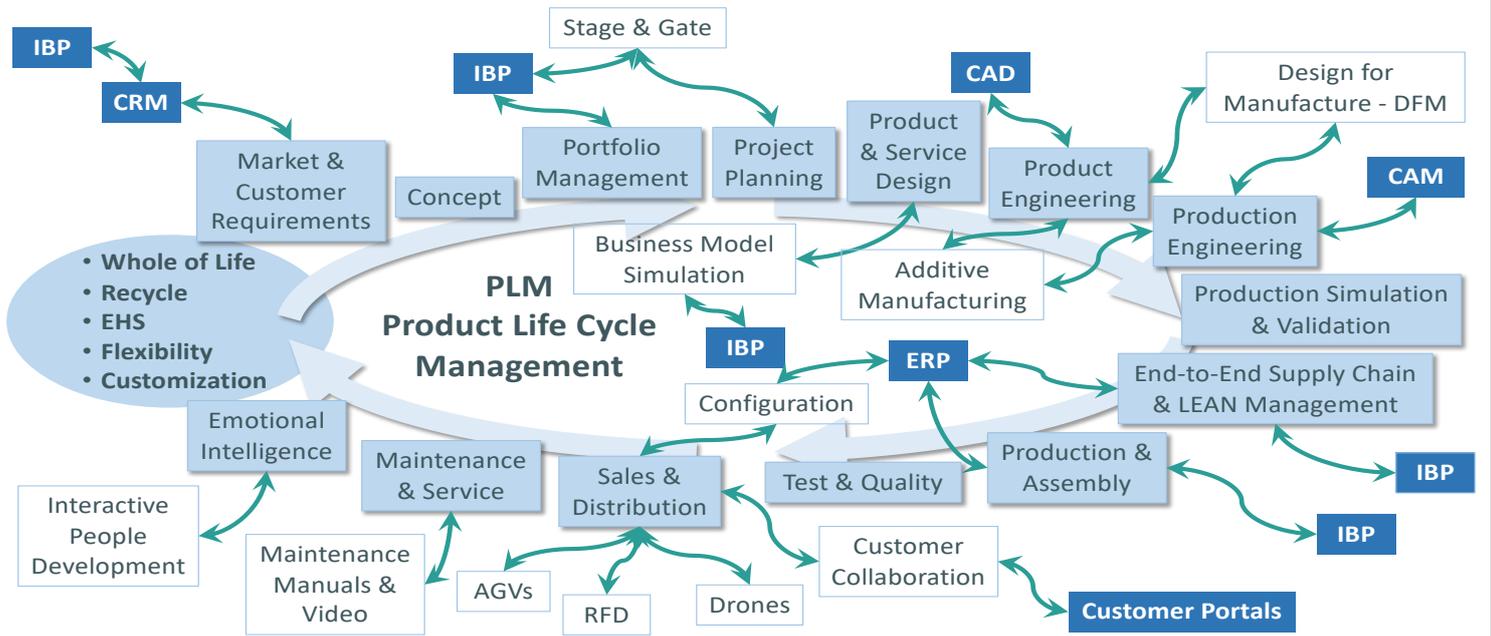
A prime mover in getting a division of Rolls Royce to Class “A” in the 1980’s, Dave has huge experience as an inspirational educator to many companies across continents in how to bring change through implementing Integrated Business Leadership. He spent 18 years with Oliver Wight, 5 years with The Delos Partnership and now runs his own company, DM Integration Limited.



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THE DIGITAL TWIN FLOW Systems & Process Landscape



based upon a flying hours model and not capital expenditure for the airlines which has resulted in the explosion of in services, sensors, predictive maintenance and spare management, often re-using spares to maximize the optimisation of spares and maintenance. Even using previously used spares and producing service and digital manuals, videos and 3D simulations.

Back to the 1991 CIM article the way to digital twin is systems, data and people integration. A few years ago, one of my clients BAT created an engineering spares finder system which allowed them to see which plant and equipment

spares were available anywhere in their global manufacturing network. Its weakness was that it was stand-alone but through a digital twin strategy this could not be fully integrated with the PLM swoop but once again systems and people integration will be the key to success.

Finally with the technology development in areas such as total internet connectivity, the cloud, data lakes, systems integration, RFD hand held technology, simulation and virtual and augmentation reality, social media apps, drones and additive manufacturing, 'CIM', 'Industry 4' or 'digital twin' the age of digitalisation looks like the

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future for thought leadership companies. If this becomes a reality, then it could be a game changer for business as well as the planet.

Dave Manning

DM Integration Ltd

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DISPENSING WITH ACRONYMS

Computer Integrated Manufacturing - The title alone is enough to trigger our 'gadget nerve, isn't it? To some people CIM means recabling the plant. Visions of computer systems spring to mind. Miles of cable stretch through every nook and cranny of the factory, with terminals everywhere except the toilets - and that's in next year's plan.

Is that what we really mean when we say integrated manufacturing? Well, it's not even close. When we say integrated manufacturing, we mean integrating the concepts and technology associated with - MRP II, JIT, TQ and many of the other systems into a single solution to make our manufacturing businesses more competitive.

These approaches are interdependent. Imagine the activities associated with MRP II grouped into a circle, JIT activities grouped into another circle and TQ activities grouped into a third circle. In the past we have seen these circles as separate islands of activities to focus on independently. It is becoming increasingly obvious, though, that these circles

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are overlapping, not separate islands. In fact, the circles approach being concentric; all parts of a single overall solution - **Integrated Manufacturing**.

For example, one of the goals of JIT is work-in progress (WIP) reduction. Yet an essential element to minimise WIP is valid capacity plans, a goal of MRP II. It's hard to imagine how management can expect vendors to reliably deliver with short lead times without giving the visibility of future requirements.

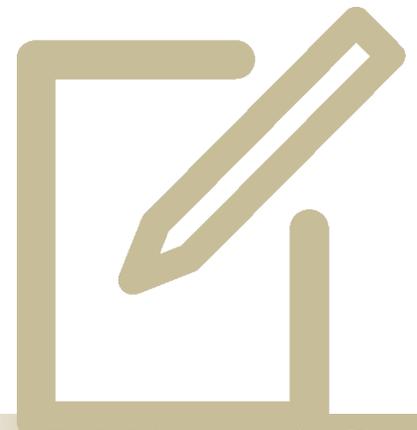
MRP II provides that long range visibility. **Shorter set-up times**, an element of JIT paves the way to smaller lot sizes, hence a faster feedback loop, which helps improve quality - a goal of TQ. And nothing is achieved if we make a small quantity of high-quality product that customers aren't buying. Integration of sales plans, and MRP II activities is essential to ensure manufacturers make what the customer needs.

Our mission is to be the world's best, the highest quality, lowest cost, and fastest responding supplier to our customers. Separate plans to implement MRP II, JIT or TQ can be a deterrent to the mission. We have seen so many internal wars' over which acronym will prevail - and does it really matter. We need unified, not separate education programmes and projects to PULL the organisation together not PUSH it apart.

Here's the bottom line: the big payback in integrated manufacturing is not getting computer-to-computer communications. But people communicating with people throughout the entire company.

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Integrated means getting everybody, not just the manufacturing department, to pull together. Sales plans are integrated with manufacturing plans. The financial plans are derived from and are not independent of sales and manufacturing plans. The entire team pulls together, focusing on the same single purpose - to make their company a tough competitor by becoming a high quality, low cost, quick response vendor meeting world class performance standards.

Dave Manning

1991



EXCELLENCE THE TARGET

MRP offers the road to success

THE challenge in 1993 and beyond will be to connect people — not technologies — according to one of Britain's premier educators in Business Excellence.

"Since 1960, companies have been implementing 'systems,' whether they be MRP II, JIT, TQ, SPC, CAD," said Mr Mike Salmon, founder and head of MRP Ltd.

"In recent years a school of thought has advocated a break with tradition. None of the magic acronyms provides the answer.

Integration the secret

"The secret lies in identifying with the real needs of the business and incorporating those parts which best fit individual business needs. This is called integration. The result is Business Excellence."

Since its foundation in 1981, MRP's purpose has been to assist manufacturing companies to become more competitive and profitable through better application of Manufacturing Resource Planning (MRP II), Just In Time (JIT) and Total Quality (TQ). "This combination of concepts we call Manufacturing Excellence," Mr Salmon said. "It is a step on the road to Business Excellence, to which all world-class companies aspire."

MRP firmly believes that a Business Excellence strategy based on the principles of Manufacturing Excellence and supported by MRP's own unique philosophy of implementation, integration, consultancy, realism and vision is the most effective route to achieving competitive advantage that any manufacturer can follow.

Rising efficiency

"Firms that have pursued our philosophy place themselves on an upward spiral of rising efficiency and profitability," Mr Salmon said.

"Costs tumble and product quality improves."

"Our clients become vastly more competitive and able to trade on the same terms as the best in their markets."

MRP points out that in the quest for Business Excellence, a major resource of every company is its people.

"Our Business Excellence seminars and courses focus on people and bringing them



■ ON HAND: Mr Manning at the NEC.



■ THE WAY AHEAD: Mr David Manning, director of MRP Ltd, explains the Business Excellence process to a potential customer.

together," Mr Salmon said — "the board of directors in our Top Management and SOP classes; Middle Management in our Fundamentals, MPS and Project Management courses; Manufacturing Managers and Supervisors in our World Class Manufacturing course; Buyers and Schedulers in our Purchasing Power Course."

To date, the MRP client base numbers more than 1,400 and reads like a "Who's Who" of many of the world's top companies.

At Computers In Manufacturing '92, MRP is spreading the message of Computer Integrated Manufacturing.

"When we talk about Computer Integrated Manufacturing," Mr Salmon said, "we mean integrating the concepts and technology associated with MRP II, JIT, TQ and many of the other systems into a single solution to make our manufacturing businesses more

competitive. These approaches are interdependent. Imagine the activities associated with MRP II grouped into a circle, JIT activities grouped into another circle and TQ activities grouped into a third circle.

Overlapping circles

"In the past, we have seen these circles as separate islands of activities to focus on independently."

"It is becoming increasingly obvious, though, that these circles are overlapping, not separate, islands."

"In fact, the circles are all parts of a single overall solution — Integrated Manufacturing."

"The big payback in Integrated Manufacturing is not getting computer-to-computer communications but *communicating* with people throughout the entire company."

Indeed, MRP believes that the whole team must pull together, focussing on the same single purpose in order to make their company a tough competitor by becoming a high-quality, low-cost, quick-response vendor meeting world-class performance standards.

"That which distinguishes MRP from our competitors is the total integration of the concepts within our courses," Mr Salmon said.

"Constant updating of course material means that we don't stand still. Our material is applicable across a wide spectrum of industry — food, chemicals, consumer goods, automotive and engineering."

"Moreover, the ability of our clients to use our material as the cornerstone of their own educational programme saves them both time and money."