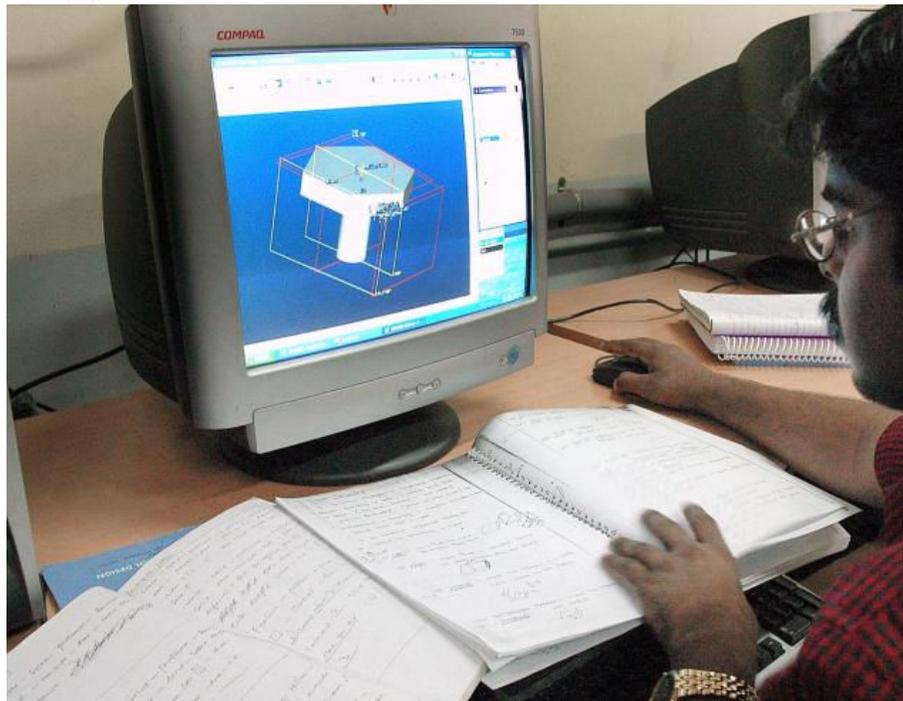


# THE HINDU Business Line

## Role of IT infrastructure in manufacturing

D. Murali



*Business Line* Computer-aided design is part of the picture.

*Learn about 5G and other factors that count.*

It is a refreshing '5G' that pops up prominently on the business card of Ananth Seshan Ph.D, Chairman & Managing Director, Fifth Generation Technologies India (P) Ltd, Chennai (<http://bit.ly/F4TSeshanA>). Our purpose is 'Enriching lives through Innovative Thoughtware,' announces his company's homepage. It explains the words 'Innovative Thoughtware' as 'the digital embodiment created from abstracted design thinking that enables a new perceived value to our ecosystem, by either alleviating misery and/or by improving quality.'

Were you to venture into the 'Research' section of the site, you will learn about 'Phi-T: Non-invasive data capture and wireless transmission,' and that 'Phi-T' gathers information from sensors, PLC, SCADA or DCS systems.

"There is no need to initiate the expensive metering and wiring project to implement Phi-T if your assets are not equipped with energy consumption measuring sensors. Instead, Phi-T will convert those assets into 'energy meters.' 5G has developed a wireless sensor which not only measures the consumption but also digitises and transmits the signals to the nodes. This sensor does not interrupt the equipment operations while installation..."

During a brief conversation with *Business Line*, on the sidelines of the recently-concluded SPICON 2011, Ananth discussed the difference that a good IT (information technology) infrastructure can bring to manufacturing. Our interaction continued over the email.

### Excerpts from the interview.

#### Why is a good IT infrastructure important for discrete manufacturing companies?

Manufacturing costs are controlled and minimised when there is no latency between material flow and information flow. Especially, in the practice of demand-based manufacturing, wherein the vendors that supply accessories to OEMs are based on JIT (just-in-time) or in-line sequencing methodologies, it is absolutely imperative that a good information technology infrastructure is put in place.

#### What about process manufacturing companies?

A good IT infrastructure in the process industry is absolutely necessary for not violating regulatory or safety norms, to improve performance and quality via real-time process monitoring, and finally, improve reliability via appropriate maintenance, driven by up-to-date information on equipment status.

#### Can you explain what a good IT information infrastructure should have?

A good IT information infrastructure in manufacturing has five levels. The lowest level is the 'control systems layer' which directly controls the equipment used for producing the product. At this level, the information gathered is control data and the output signal achieved from the said device/equipment for a certain input and controller.

The second level is the 'supervisory control layer,' wherein, 'Supervisory Controllers and Data Acquisition systems' (SCADAs) are installed for exercising supervisory control and acquisition of process data and information.

The third layer is that of the manufacturing execution systems – a 'production management functional layer' encompassing product life cycle management (including computer-aided design), management of all production operations such as scheduling of production, dispatch of production orders, data collection on production orders, production reporting and analysis, tracking materials and genealogy, etc.

The fourth layer is the 'plant to enterprise connection layer' wherein the business processes of the plant are connected to the business processes of the enterprise. The connection is established by a business rules engine that establishes the link between plant systems and enterprise systems for information sharing, analysis and reporting.

The final layer is the 'enterprise application layer' which has all of the enterprise level applications such as ERP, enterprise asset management, supply chain management, customer relations management, etc.

A good infrastructure will seamlessly tie in one layer with the other so that all of the layers are interconnected in real time.

### **Now, how do we implement this infrastructure?**

The technologies that are used for various applications include, but are not limited to, state-of-the-art in Web 2.0, database programming, service-oriented architecture, systems and network analysis, wireless communication, enterprise mobility, design, and application of new technologies in the domain areas of artificial intelligence, operations research, global optimisation, theory of constraints, simulated annealing, stochastic predictive modelling and so on. Real-time and non-real-time operating systems are used, based on the mission-criticality of the operations.

### **Would you like to describe the goal of this infrastructure?**

The main goal of this IT infrastructure is to enable zero latency within and between business processes that have stakeholders that are distributed across the organisation.

For instance, maintenance is a function that not only concerns the maintenance organisation within the company but has an impact on production (via the need for availability), inventory (for spares), purchasing (for procurement of spares, tools), finance (for budgeting, asset replenishment, replacement, etc.), logistics (for scheduling, dispatching and executing maintenance work orders), corporate executive management (business strategy for ensuring lower manufacturing cost, and/or increasing reliability in order to get better return on production assets) and so on.

This concept of achieving a unified synthesis of existing business processes, knowledge, data, etc., within the company, which are buried in disparate applications, divisions and departments using a zero latency infrastructure is now called 'enabling a real-time enterprise.'

By using the real-time enterprise infrastructure, a manufacturing organisation can assist its management and labour to maximise performance efficiency, manufacturing effectiveness, quality, reliability, and thereby increase the competitive advantage leading to better market share and better return to shareholders.

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