



# President's Message



*Smart manufacturing integrates highly digitised production facilities, such as the Internet of Things (IoT), Cyber-Physical Systems (CPS), Big Data, and Machine Learning, to make the production process more intelligent and efficient.*

## **Foundry Fraternity, Namaste!**

### **Data Science and Data Analytics**

Today, data is ubiquitous—it is the new oil! In our modern world, data is collected with every purchase made, flight taken, ad clicked, and social media post liked, making it more accessible to organisations than ever before. Foundries must also learn to analyse and leverage this data to evolve.

Old-timers used to say that foundry work is an art, with every casting being unique and red-hot castings akin to a baby being born. They used to claim that inventory accuracy was impossible and that next month's customer demand was entirely unpredictable because it was controlled by the customers.

Gone are the days when people measured the quality of green sand by hitting it against a wall or identified the quality of metal by its ooze after pouring. Today, actionable data can be collected, measured, controlled, and analysed for any process in foundry operations. This month's topic focuses on data analytics, which entails analysing data to answer questions, extract insights, and identify trends.

### **Data Science in Business**

Data science is employed to collect, organise, and manage data, often to develop algorithms that enable large-scale analysis. Properly designed and thoroughly tested algorithms can identify information or trends that humans might overlook and can greatly accelerate the data gathering and analysis processes.

1. **Gain Customer Insights:** Analysing customer data can uncover patterns in their buying habits and past performance.
2. **Support Internal Finances:** Your financial team can use data science to generate reports, make forecasts, and analyse financial trends. Constantly gathered data on cash flows, assets, and debts helps financial analysts identify trends in growth or decline, either manually or through algorithms.
3. **Optimise Manufacturing:** Manufacturing equipment collects extensive data from production processes. When the data volume is too large for manual analysis, algorithms can clean, sort, and interpret it efficiently, providing insights for cost-saving improvements.
4. **Predict Market Trends:** Large-scale data collection and analysis can help identify emerging market trends. By understanding your target market's behaviour, you can make informed business decisions to stay ahead of the competition.

### **Data Analytics in Business**

The main goal of business analytics is to uncover valuable insights from data that organisations can apply to shape their strategies and achieve their goals. Business analytics serves several key functions:

1. **Budgeting and Forecasting:** By examining historical data on revenue, sales, and expenses in conjunction with future growth targets, analysts can determine the necessary financial allocations and investments required to realise those objectives.
2. **Risk Management:** Through the analysis of probabilities and potential costs associated with various business risks, analysts can recommend cost-effective measures to mitigate these risks.

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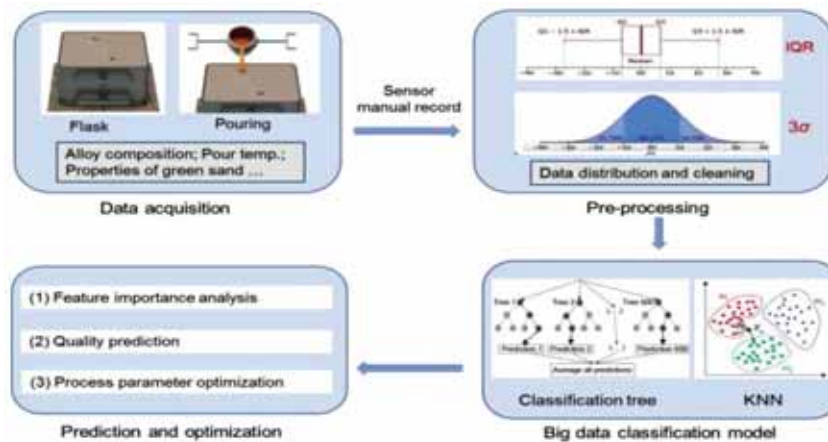
3. **Marketing and Sales:** Understanding crucial metrics such as conversion rates from leads to customers empowers marketing analysts to calculate the number of leads necessary to maintain a robust sales pipeline.
4. **Manufacturing:** Factors such as metal costs, metal and sand quality, material requirements planning (MRP), tool lifespan, and machine characteristics can be rigorously analysed based on the specific needs of the foundry.

### Common Tools

Common tools for data collection include Excel, Python, and SQL, while Excel and Power BI are commonly used for data analysis. However, the market also offers advanced tools supported by many firms, providing robust capabilities in data analytics.

### Data-Driven Casting Defect Prevention

An intriguing research article by Guan, B, Wang, Dh, Shu, D, et al, titled "Data-driven casting defect prediction model for sand casting based on random forest classification algorithm," published in China Foundry (2024), offers a detailed exploration of integrating highly digitised production facilities. This includes the Internet of Things (IoT), Cyber-Physical Systems (CPS), Big Data, and Machine Learning, all of which enhance the intelligence and efficiency of the production process. The process overview is illustrated in the accompanying figure.



### New Office Bearers at Regions & Chapters

Starting from June 24, the Regions and Chapters of the IIF have elected their new Office Bearers to serve for the upcoming year. I extend my best wishes to all the new Office Bearers for a power-packed and successful IIF year ahead. The new Chairmen of the Regions and Chapters have already planned their activities, which include the 75th Year Commemoration activities of the IIF. These commemoration activities will kick off on National Foundry Day, August 17, 2024, across all Regions and Chapters. I extend my heartfelt thanks to the outgoing Office Bearers of the Regions and Chapters for their dedicated, involved, and committed efforts during their tenure, which greatly benefited the IIF and its stakeholders. I look forward to a great tenure for the new Office Bearers, with 100% execution of the planned activities, dedicated service to stakeholders, and excellence in their responsibilities.

### Bharat Celebrated Democracy

The Election Commission of India announced the results for all 543 seats on June 5th. The ruling Bharatiya Janata Party (BJP) fell short of the halfway mark needed for a sole majority in the Lok Sabha and will rely on its allies to form the next government. Despite no single party securing a majority, all parties gained representation, highlighting the essence of democracy. With National Democratic Alliance (NDA) firmly in the saddle at the centre with the important portfolios held by previous ministers, we can expect continuity in policies, big ticket investments in infrastructure, foreign policies, which argues well for the manufacturing sector including Foundry & Related industries.

I hope the ruling alliance will make every effort to fulfil the aspirations of Bharat, while the opposition alliance plays the role of an effective and constructive opposition.

Best wishes,

**D S Chandrashekar**

*President IIF, 2023-24*