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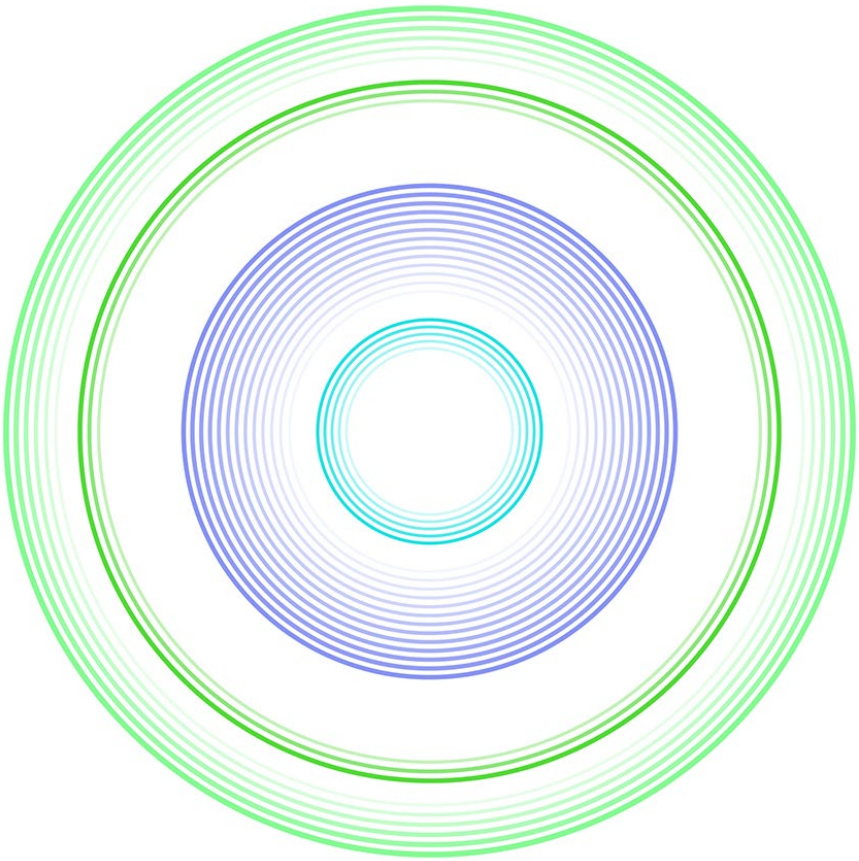


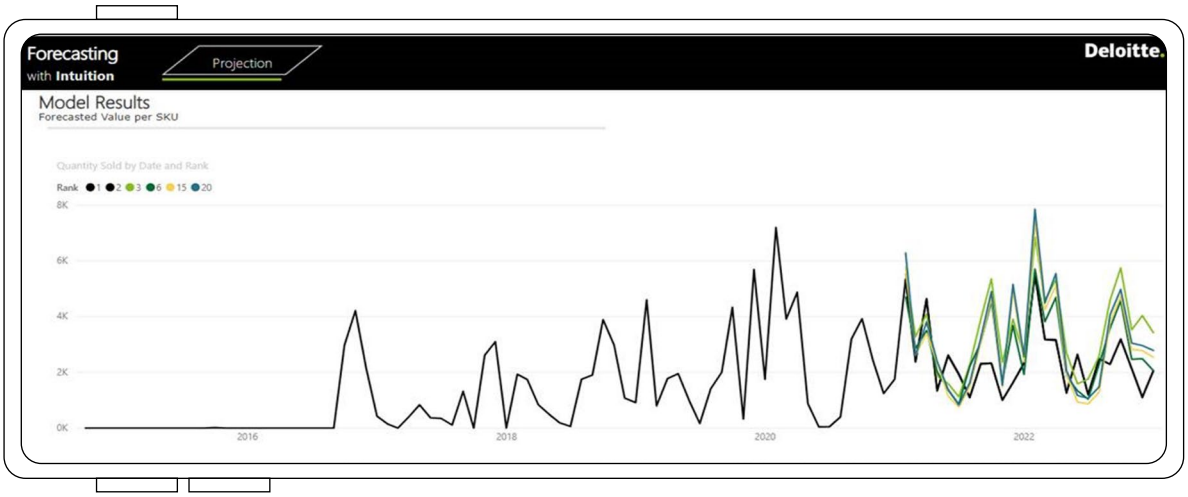
Technology enabled forecasting for the Real Estate sector

Combining Artificial Intelligence and Real Estate Market expertise to support strategic decision making

March 2021

The understanding of the current and future supply-demand dynamics and underlying macro-economic factors play a key role in setting out the direction for urban planning, asset management and investment decision making. The integration of Artificial Intelligence (AI) with real estate and financial planning expertise can help support new ways of analysing historic data in an attempt to improve future decisions.

The availability of robust real estate market data varies across geographies. Incorporating disparate datasets into a forecasting algorithm, in a structured and standardised manner enables the user to visualise how the different data layers interact, for instance, in complex environments such as an asset register for large real estate portfolios. The overarching purpose of enriching the data layer with as much internal, external and macro-economic data as possible, is to give the forecasting process more information to help understand the impact on future trends. Ultimately this can arm decision-makers with customised, interactive analytics, made available in easily digested mobile formats, where needed.



Source: Deloitte Analytics

Four-stage approach

Integration is vital to the successful delivery of large-scale projects and should be implemented at the organisational, portfolio and asset lifecycle levels. Forecast algorithms and scenario analysis, such as those used by Deloitte's *Intuition* accelerator, can serve as important tools in considering and setting out the integration required for real estate planning.

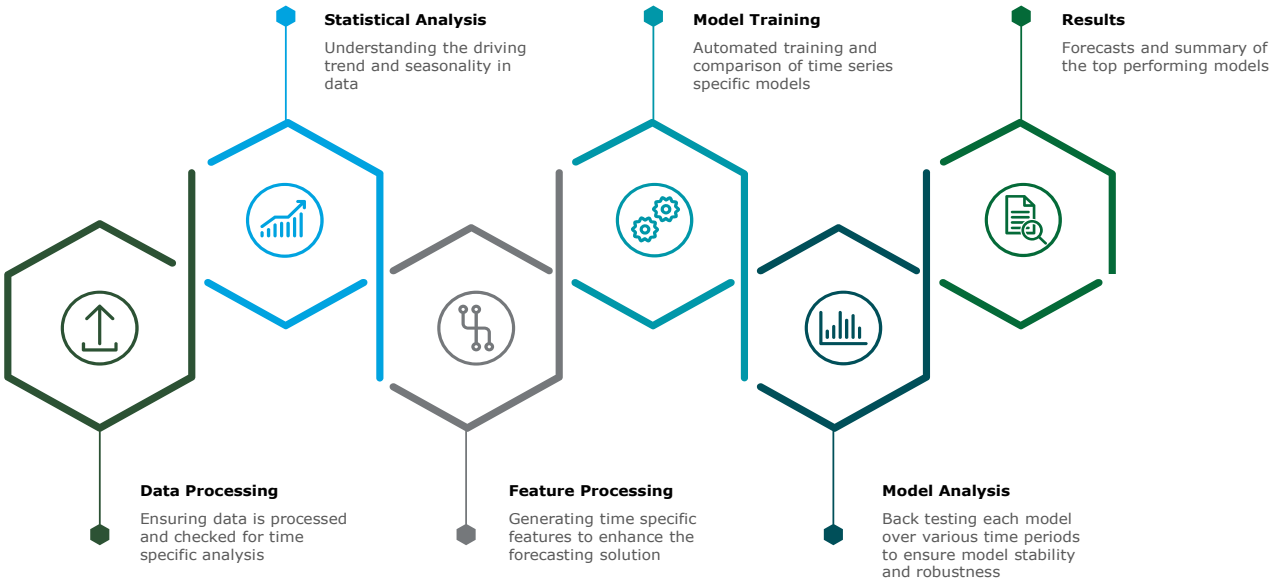
- **Stage 1: Data discovery**
  Reliable, quality data is essential for a meaningful forecast model and we first need to ensure that the data is cleansed, enriched and structured in a manner that aids the forecasting process, as well as allowing us to discover insights and connections. For instance, to study the change in residential prices, historic data on price performance, supply additions each year and investment

yields can be enriched using macro-economic variables such as Gross Domestic Product (GDP) and currency fluctuations, that will provide an additional dimension to insights and projections. The local real estate expertise plays a critical role in this stage.

- **Stage 2. Technical infrastructure**
  Technical infrastructure is needed to support the forecasting algorithms. This requires an understanding of the current state of supporting technical infrastructure, costs and compliance needs, to ensure that the tool is fit-for-purpose. Leveraging cloud technologies is a way to significantly increase the speed, overall accuracy and decrease the overall cost of a solution like this.

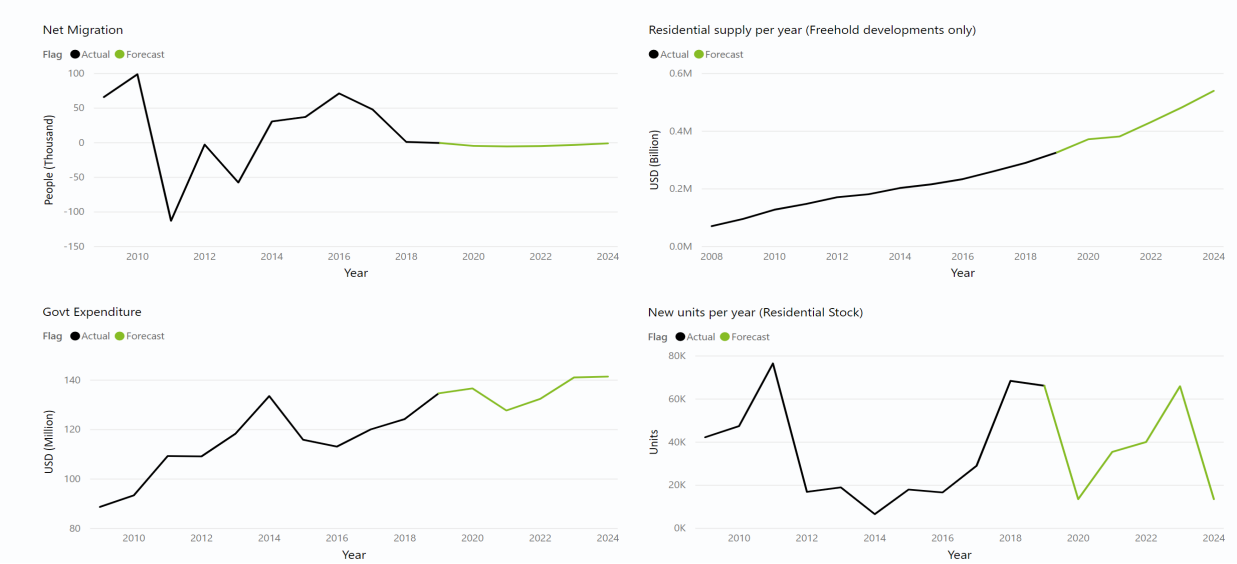
- **Stage 3. Forecast Algorithm and Scenario Analysis**
  Deloitte's time series accelerator, *Intuition*, is a bespoke forecasting engine that automates the process of identifying unique and complex trends within a data set, by passing the data through different algorithms to pair the most predictive algorithm, with the provided data. Additionally, it gives users the ability to explore the effects of changing key metrics that drive the forecasts.

  Through advanced pattern recognition and machine learning, the forecasting tool can support real estate strategy by highlighting previously unrecognised patterns in data and supporting ongoing learning from those patterns.



Source: Deloitte Analytics

- **Stage 4. Consume results and influence strategy**
  A fully customisable consumption layer allows key stakeholders in the real estate development lifecycle to access the forecasts and combine them with descriptive analytics to give users a full view of the real estate landscape.



Source: Deloitte Analytics; Deloitte Middle East

Supporting strategic decision-making

As a machine-learning based tool, the entire system gets smarter and improves over time, thus linking socio-economic factors such as the number of jobs by key economic sectors, with the real estate asset demand over time, to assess how this might impact future performance including price. The tool is fully customisable and can also provide absorption forecasts for planned assets and help define the appropriate phasing strategy for each. The forecasting tool can be further integrated within business planning and financial feasibility models to drive a market-based response to real estate development.

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