



Demystifying intelligent forecasting

Tangible steps to get started on the road
to more dynamic and valuable forecasts

June 2022



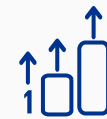
The required data and technology



Running a pilot to prove value quickly



Making it real



Start with Step 1

Enterprise planning initiatives often feel like the business world's version of a New Year's fitness resolution: You know you want to get your forecasts in better shape. You just don't know where to start.

AI and machine learning, right? Plus, some better algorithms and predictive analytics. More automation would be good, too. Oh, and data—lots of data.

Of course, that all sounds great. Who's against smarter business planning? But it also sounds like a pretty massive workout for the whole enterprise. Maybe next year.

The truth is, implementing intelligent forecasting is much more accessible than many business leaders realize, especially once they understand the step-by-step approach that delivers rapid, sustainable results. By design, successful intelligent forecasting initiatives are actually the polar opposite of the large-scale enterprise transformation efforts that give executives pause.

So, where to begin your intelligent forecasting journey? Like every effective workout, it starts with that first step. You don't need to check with a doctor first, but you will want to consult with key stakeholders, set (or reset) expectations, and prepare everyone for an iterative, improvement-by-improvement journey. It's a tested approach that can quickly demonstrate tangible results by establishing baseline capabilities on even just one high-value forecast to start and then extending those capabilities across other relevant forecasts and business units over time.

Initial planning and high-level roadmapping will identify the people, processes, and technologies that will be needed for the first pilot, broader rollouts, and ongoing governance. This planning should be business-led, by an invested business function such as finance or operations, while building cross-functional alignment from the start. You might start with just one forecast, or one business function, but the goal is to steadily expand from there, applying learnings and enhancements to additional forecasts that are increasingly integrated and work from the same data, predictive tools, forecast outputs, and business rules.

The goal in this setup stage is simply to identify potential technology enablers and the essential need for all teams to agree on and work from a common platform. It's an initial framework that will be tested and updated during the pilot and then expanded and evolved as part of the wider scale-up and ongoing governance. Crucially, this iterative approach means the required technology investment will scale with the project as it proves value, obviating the need for a large up-front commitment.

“You just need to start with that first step.”



The required data and technology

One of the biggest barriers we continue to see with the move from traditional forecasting to more advanced predictive forecasting is that it sounds complicated.

AI, machine learning, deep learning, external signals, model training, algorithms—it feels like you need a special encyclopedia to master the jargon before you can take even that first pilot step.

But as we've emphasized, intelligent forecasting is a learn-as-you-go process—for both the predictive models and the humans. You don't need to go from 0 to 100 in one giant leap, and that's rarely possible anyway. Some very accessible first steps can rapidly get you 90 percent there and then enable the ongoing learning and optimizations that can get you to 100 percent over time. This is how intelligent forecasting can deliver value quickly and then continue to expand that value on an ongoing basis, with increasing bottom-line impact. Let's take a look at some of the moving parts and set expectations.



01

Predictive models

These are the algorithms that provide the enhanced intelligence, using AI and machine learning to rapidly scan large amounts of data and create a continuous feedback loop that steadily trains and improves the models.

Where to start

There are hundreds of proven algorithmic models publicly available, but it's best to start by testing a handful, which can help establish initial capabilities and measure performance against current forecasts. Prebuilt software often falls short here, in our experience, since the modeling tools are not customized to a company's unique needs and logical drivers.

Where you can go

Once initial capabilities are established, companies can start to test additional models for incremental improvements. Some of the more advanced forecasts we have seen involved 100-plus models competing for the winning spot. Ongoing model updates—for example, new data or business drivers—will help ensure continuous learning and improvements.

Frequently used intelligent forecasting predictive techniques

Forecast category	Common predictive techniques	When to use
Trend-based forecasting	<ul style="list-style-type: none"> – ARIMA (AutoRegressive Integrated Moving Average) model – BSTS (Bayesian time series model) 	Situations where data is nonstationary with trend and seasonal components (e.g., sales forecasts, raw material cost forecasts)
Driver-based forecasting	<ul style="list-style-type: none"> – Multiple Linear Regression (MLR) – Random forecast machine learning model – Gradient Boosting Machine (GBM) 	Predict the change of an output variable based on value of input variables (e.g., change in sales volume based on price changes or external scenarios)
High-volume/ high-variability forecasting	<ul style="list-style-type: none"> – Deep learning/Neural network 	High-frequency data with multiple dimensions (e.g., demand forecasting of SKUs across many locations with different daily/weekly/monthly/yearly patterns)

Note: For more advanced intelligent forecasting, trend and driver-based forecasting techniques can be combined to provide more fine-tuned and accurate results.



02

Data and signals

The models need to eat to get smart, and so data is of course the main entrée. Broadly, data can include both internal company data and external data signals. Specifically, the types of data that provide value depend on the business function, but typically include areas such as historical sales, sales pipeline, cost of goods, and supply chain; other valuable sources can include CRM, customer demographics, and even internal staffing data.

Where to start

Don't overthink this: For most companies, the data they are already using is the best place to start. We often find that companies worry their data isn't "ready" for enhanced forecasting, but that's rarely the case. Starting with the current data allows rapid testing and helps establish a baseline from which to optimize. Simple enhancements—for example, extending historical data from three to six years or testing some publicly available macroeconomic indicators—can start to demonstrate increased accuracy using already available data that can be rapidly evaluated by the models.

Where you can go

Over time, companies can start to test the value of adding new data points such as real-time company data and external signals. For example, current staffing data can improve the accuracy of a sales and margin forecast by more accurately predicting a drag on revenue due to staff shortages—something that would never be apparent from historical data alone. And external signals from publicly available data can further expand value by identifying powerful new business drivers that correlate to company performance—for example, using weather data to model scenarios on the cost of raw materials. Sophisticated companies may test thousands of signals in their models to find just two or three new drivers, knowing that even incremental improvements in their models and related insights can mean real bottom-line value.

Commonly used signals to inform intelligent forecasts

Macroeconomic data	External – Inflation, Unemployment, Income, Manufacturing
Internal strategy	Internal – Marketing spend, M&A, R&D spend
Corporate financials	External – Public company financials, Competitor sales/Headcount
Environmental and geotagged data	External – Weather/natural disasters, Geospatial data, Census statistics
Market data	External – Commodity pricing, Sector ETFs, M&A activity, FX rates Internal – Customer surveys, Market research
Sales pipeline & backlog data	Internal – CRM/pipeline snapshots, Downstream sales, Order/Contract fulfillment
Consumer behavior	External – Credit card spending, Mobility and foot traffic, Online search trends Internal – Web traffic, App downloads, Social media activity, IoT/Telemetry data



03

Visualization and user interface

There are two things to consider here: How will the models be managed, and how will end users get their forecasts?

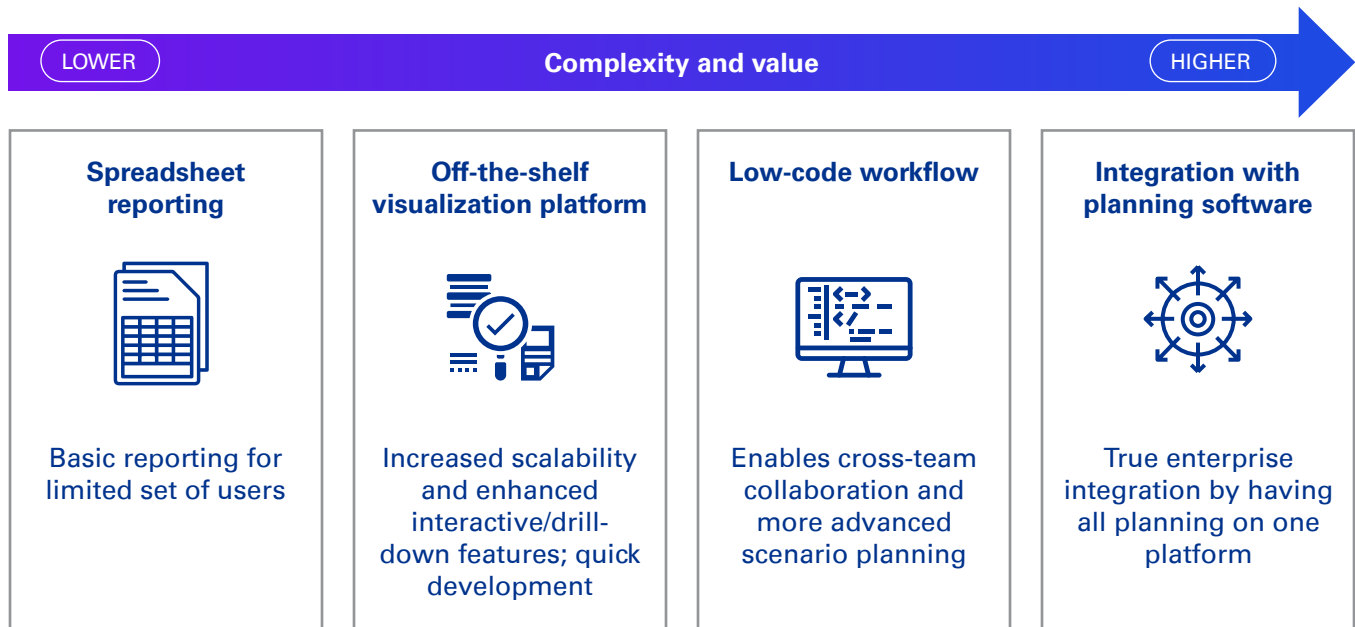
Where to start

Here again, many companies may be surprised to learn they can move quickly, especially with a pilot forecast. When forecasts are ready, they can be published through the existing dashboard tools that most companies already have in-house, or even in a simple Excel workbook for easy consumption. And for the model implementation, the business team can work with the appropriate tech and data teams to integrate directly with EPM systems.

Where you can go

Once the initial capabilities are in place, some companies then advance to more robust data visualization platforms that handle things like model management and more customized forecast outputs. This allows authorized power users to continue testing, tweaking, and enhancing the models and to add new data or additional models. These platforms can also support a wide range of forecast outputs—from spreadsheets to web interfaces to apps—and provide workflow tools that allow teams to collaborate and do sophisticated scenario modeling and planning.

Different visualization and user interface options offer varying complexity and value





04

Data integration

Where will the data live? As with all things intelligent forecasting, it's best to start simply and enhance and mature as the company's capabilities expand.

Where to start

For your initial intelligent forecasts, data collection and integration can be accomplished by leveraging data pulls from existing systems, coordinating with the data teams as needed. As additional forecasts and models are added, the data setup can be evaluated and scaled in parallel.

Where you can go

There is no single data pipeline template that will work for all companies, but many use a hybrid approach as the data in the forecasts gets more integrated, with data synchronized from multiple sources, including on-premise warehouses and cloud-based repositories. Automation and APIs can help establish this unified, virtual data foundation by ensuring the required data is pulled through and made available, regardless of the source. This pipeline can also manage the forecast outputs as well, distributing them into the reporting systems once they have been tested and approved.

Data integration maturity

	Initial time/effort to set up		
	Reusability across initiatives		
	Lowest	Medium	Highest
Internal data (e.g., sales, P&L, CRM)	Manual entry (copy/paste) from internal system reports into Excel input template	Automated interface scripts developed by IT	Cloud data warehouse integrated to intelligent forecasting models
External signals (Macroeconomics, consumer behavior, competitor info, etc.)	Manual download/collection from external websites	Automated IT script connects to external application protocol interfaces (APIs)	Development or subscription to a consolidated data/signals repository

Data integration can be achieved with minimal effort in order to get started quickly; however, development of automated data feeds leads to greater time savings in the long run.



Running a pilot to prove value quickly



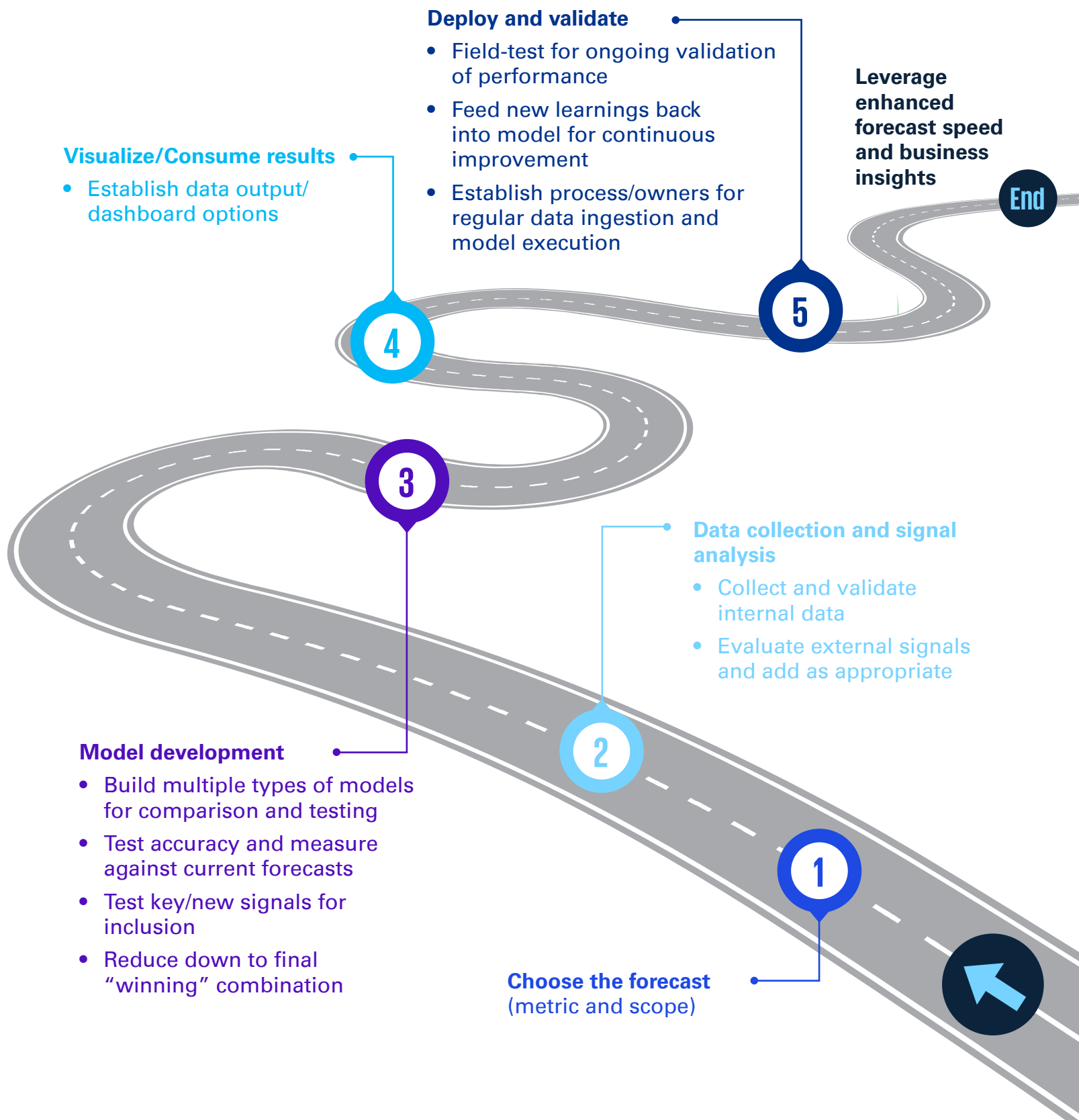
Just one use case. That's truly all it takes to get a meaningful intelligent forecasting initiative started. And, more often than not, that's also the best way to get moving. By definition, you don't know exactly which of the myriad combinations of data, predictive models, algorithms, drivers, and outputs will be right for your company's forecasts—so how can you build a comprehensive project plan up front? It's like trying to give directions to a destination that hasn't been identified yet.

Testing and learning on a single pilot is a great starting point.

It creates immediate value and an immediate feedback loop that continuously improves the initial forecast while establishing an extensible, evolving framework that supports additional forecasts and, ultimately, delivers more integration across all of them on the next page, we look at the first pilot forecast journey.



Steps for a pilot





Making it real

A tightly focused pilot is a start, but making intelligent forecasting real for the larger enterprise means ensuring that it scales up, expands out, and is meaningfully used by all relevant business teams

Active governance, ongoing oversight, and general evangelization are essential to ensuring both intelligent forecasting's staying power and its ability to continue to evolve, get smarter, and keep one step ahead of a constantly changing business world.

Well-designed change management will jump-start solution adoption and ease the sometimes jarring transition from "the way we always did the forecast" to the new forecasting processes, especially as new user interfaces and tools become available. Cross-functional intelligent forecasting "centers of excellence" or similar governance entities can further streamline adoption with training and mentoring for users at all levels.

Inevitably, the tangible increased accuracy and value of forecast insights—and the reduced time it takes staff to generate them—will go a long way toward utilization. A key goal of the pilot is to build early confidence and trust in the data and analytics, which allows the broader company to rely on the outputs with more comfort.

Successful intelligent forecasting will also start to change required skills across business teams, especially in the finance function. That means training and upskilling current staff, defining new roles, and recruiting data-driven talent, including business analysts, solutions architects, data modelers and even dedicated data scientists.



Areas to consider for an effective deployment

01

Field-test and mature the pilot solution

02

Build institutional "trust" in the solution through strategic change management

03

Consider the need for a center of excellence (CoE) that brings together functional ownership, technical enablement and digital capabilities

04

Formalize the intake process, pipeline management, and solution build

05

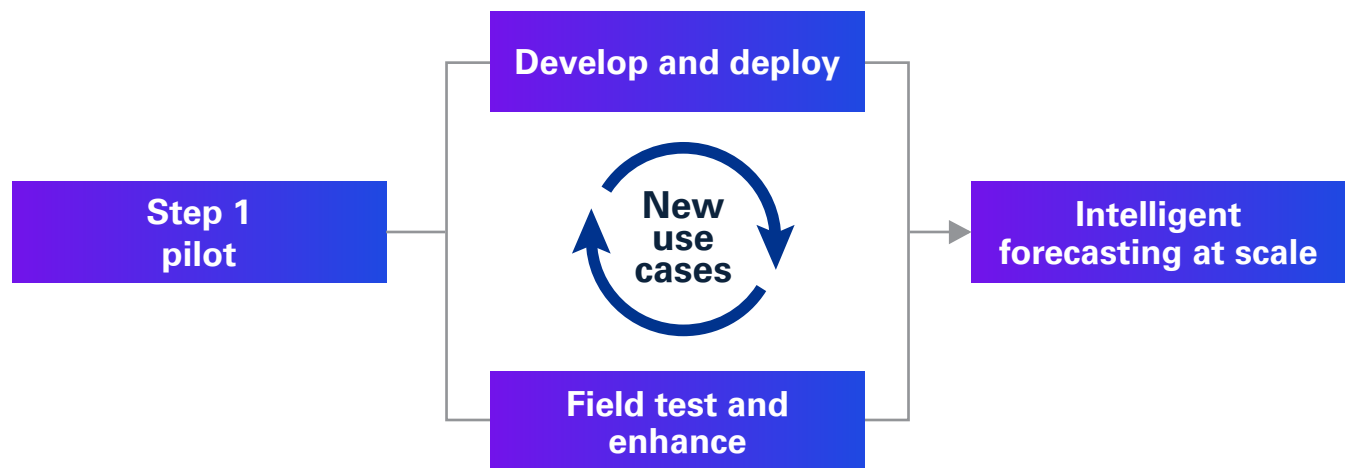
Expand the portfolio of use cases, but in a structured way



Start with Step 1

Like that unfulfilled New Year’s resolution, many business projects fail because they have unrealistic goals or try to do too much in one shot.

But developing enhanced, more intelligent forecasts is not that project. Done right, it’s an ongoing initiative that, by design, has no “workout complete” finish line. Start with one forecast that will establish baseline capabilities, demonstrate results, and point the way for wider execution and investment of the company’s time and money. You’re building the roadmap as you go, never sprinting too far ahead, with an iterative approach that will continually improve your business insights—forecast by forecast—while also directing the project’s overall pace and scale. **It just starts with that first step.**



Why KPMG

KPMG has worked with a wide variety of clients to transform their business planning and forecasting across multiple functions and time horizons. By bringing deep digital transformation expertise and a signature suite of intelligent forecasting services that spans project architecture, data and signals, and world-class data science and business talent, KPMG delivers leading digital solutions that unlock lasting value.

Let's start a conversation.



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