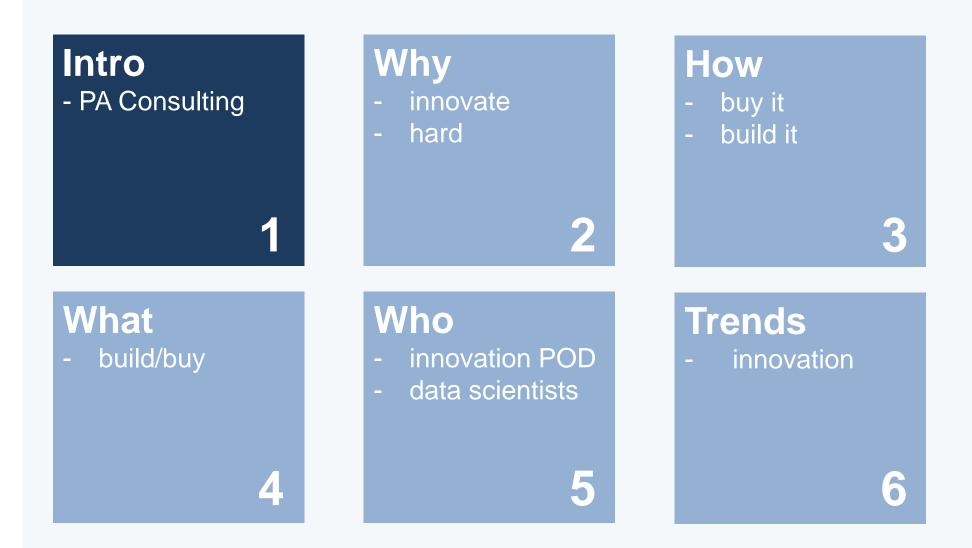
Velocity to Value: How data science can accelerate innovation in the age of turbulence.

Bringing Ingenuity to Life paconsulting.com





Bringing Ingenuity to Life

PA in years

EUROPE Increased national productivity at a time of crisis for the UK government	NORDICS Developed the first private digital telephone exchange EUROPE Pioneered maintenance of Shell's first North Sea oil	EUROPE Established the UK's first competitive market for electricity supply US Delivered a baggage handling system for Denver International Airport US Developed the first breath-actuated metered dose inhaler	GULF Helped source one of the world's first WIMAX networks for Mena Telecom EUROPE Helped transform the Republic of Georgia's collapsed electricity supply system Boosted Nissan's production by 30 per cent using existing car-making facilities	EUROPE Developed test equipment for the 4G mobile networks US Helped the US Navy define a cost reduction strategy to achieve savings of \$400m per submarine	EUROPE Helped deliver a new biometric UK passport, saving the taxpayer £160m Helped Onzo develop an innovative home 'Smart Energy Kit' US Developed new 'fresh air' technology that protects against superbugs	EUROPE Transformed Carnival UK's supply chain to deliver annual savings of £2.5m Helped to protect troops' lives in Afghanistan with an innovative explosive device	EUROPE liil Put innovation at b Put innovation at b UK's Royal Air E Force H Helped Adlens d break into new th markets with world-first technology U for glasses T A MEXICO Defined the tariff and business model Gor Mexico's newly D liberalized energy ft	 vely to transform usiness in the future UROPE lelped Rentokil Initial ecome a more datariven business using the Internet of Things S ransformed IT at straZeneca to reduce bosts by a third ULF resigned a blueprint for ture growth for Etihad viation Group
1943	1970s	1990s	2006	2008	2010	2012	2015	2017
1950-60	0s 1980s	2000-05	2007	2009	2011	2013	2016	2018
EUROPE Helped the Bank of England dramatically reduce banknote forgery ASIA PACIFIC Coordinated completion of the Sydney Opera House	EUROPE Helped pioneer a single-union agreement for Nissan's UK workforce Advised the European Community on Japanese trade and investment	an iconic bottle design for Evian ASIA PACIFIC Planned Sydney's hosting of the highly acclaimed 2000 Olympic Games	EUROPE Created a next-generation heart disease probe for Thermocore Medical NORDICS Helped implement a new air traffic management system for Naviair	EUROPE Developed the world's first pre- filled, single use, disposable injector Developed the UK's first real-time advertising verification system for JCDecaux	EUROPE Helped the UNHCR transform its IT department to improve protection and shelter for refugees Launched an online weather community that helped the UK Met Office capture two million readings in five weeks	EUROPE Supported the creation of the Prudential Regulation Authority, helping transform financial regulation in the UK Developed and delivered Ora, a revolutionary new kitchen towel, taking it from concept to store within 12 months	EUROPE Used augmented reality technology to make training better, faster and cheaper at IMI Critical Engineering Supported Sir Ben Ainslie and the Land Rover BAR team in their bid to win the America's Cup GULF Worked with the Ministry of Interior (UAE) to enhance public safety and security by developing more efficient emergency services	focused and efficient organization US Speeded up delivery of key technology for

GLOBAL

Helped the United Nations understand the technologies most

PA in numbers



ABU DHABI BASEL BELFAST BILBAO BOSTON CAMBRIDGE CINCINNATI COPENHAGEN DENVER DOHA DUBAI EDINBURGH FRANKFURT LONDON LOS ANGELES MANCHESTER MEXICO CITY MUNICH NEW YORK OSLO STOCKHOLM UTRECHT

2,800+ Technologists, innovators, strategists, leaders and developers \$612m Fee income from clients, generating \$100m EBITDA 12+9 12 core capabilities 9 industry teams

City locations

We buy

We've been combining strategy, innovation and digital skills for years to make organizations faster on their feet and help them understand and connect with customers.

And we've been growing the PA family, to ensure we're positioned to continue delivering exceptional client value in the future. We've added to our world-class capabilities, acquiring new global teams in the UK and US as well as opening a new digital hub in Belfast, UK.

These new and diverse skills and experiences are enabling us to deliver inspiring new work.

Essential

Boston-based Essential Design is an innovation strategy and product design business. Formed in 2001, they're experts in usercentered design, customer experience and getting innovation to market. Together, we're helping our clients transform how they bring new products and experiences to market.

We Are Friday is a specialist digital service design and engineering agency. Working together, we're helping clients reimagine and design their customer experience, improve the technology that powers their organization and develop the capability to better manage their technology themselves. Sparkler is a leading Londonbased digital insight and strategy consultancy. Their expertise in customer insight, brand strategy and service design is helping us steer clients through rapid disruption to new customers and markets. We understand how consumers think and behave in the digital world, helping brands like Microsoft, eBay, Diageo, Electrolux, Sainsbury's, Sky and Uber.

sparkler

Nyras

Nyras is a leading international aviation consultancy. Their expertise in areas of complex strategic and operational change and business restructuring in aviation complements our position in the aerospace and defense industries. The addition of Nyras enables our global aviation team to offer additional world-class support to an industry facing significant change and disruption.

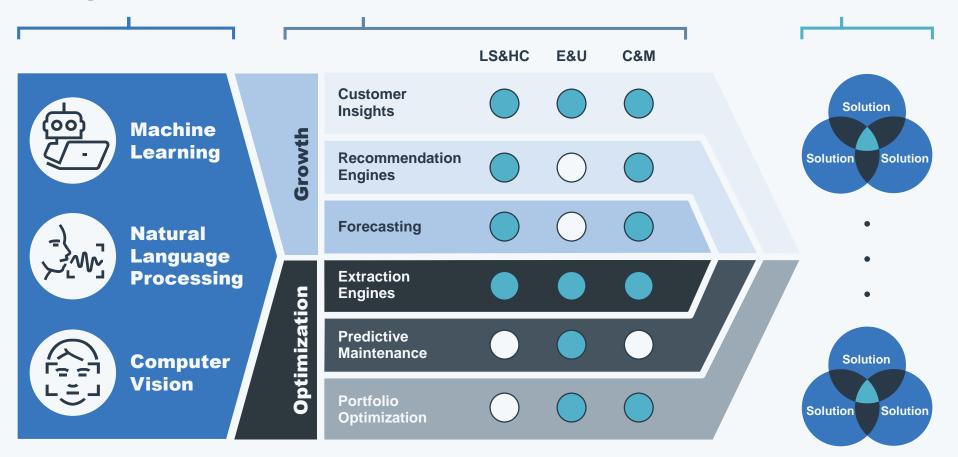
We build

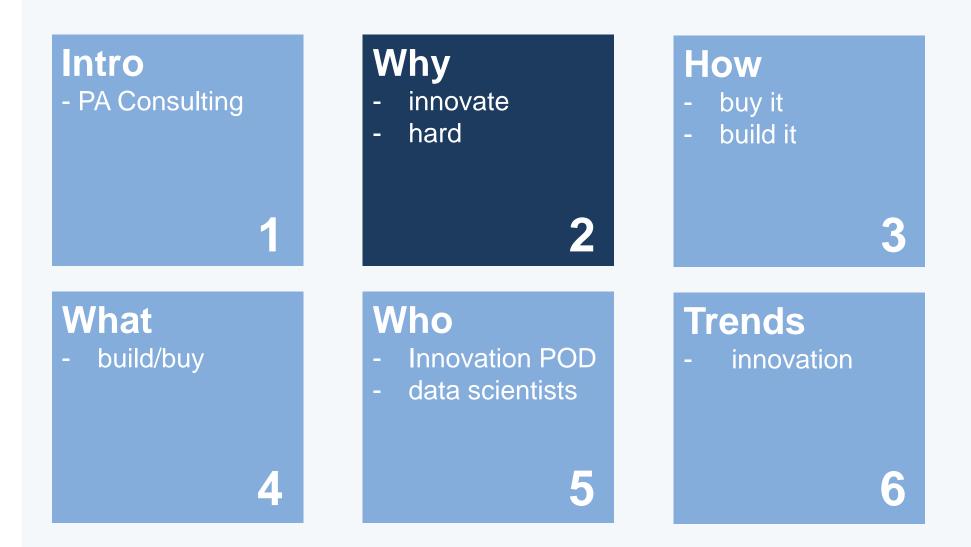




We focus data science on NLP, Computer Vision, and Machine Learning solutions & accelerators

Our **Capabilities** power our **Solutions**, which come together to form business **Accelerators**.

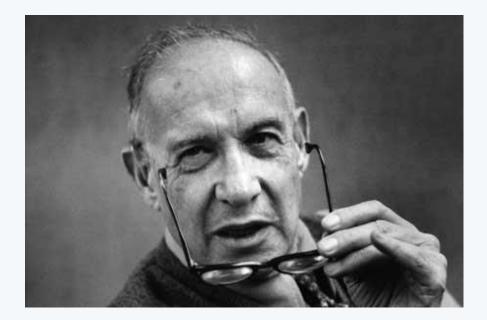




Purpose and functions of a business

"

The purpose of a business is to ...



"

Business has two-and only two-basic functions that produce results; all the rest are costs.

Nature of progress

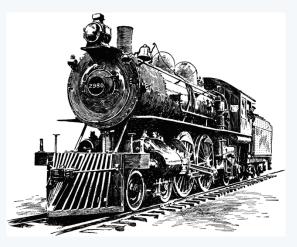


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Our intuition about the future is linear. But the reality of information technology is exponential, and that makes a profound difference.

How we got here



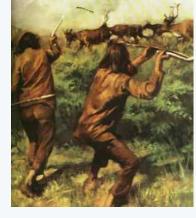


1700's





100,000 BCE



12000 BCE



Today

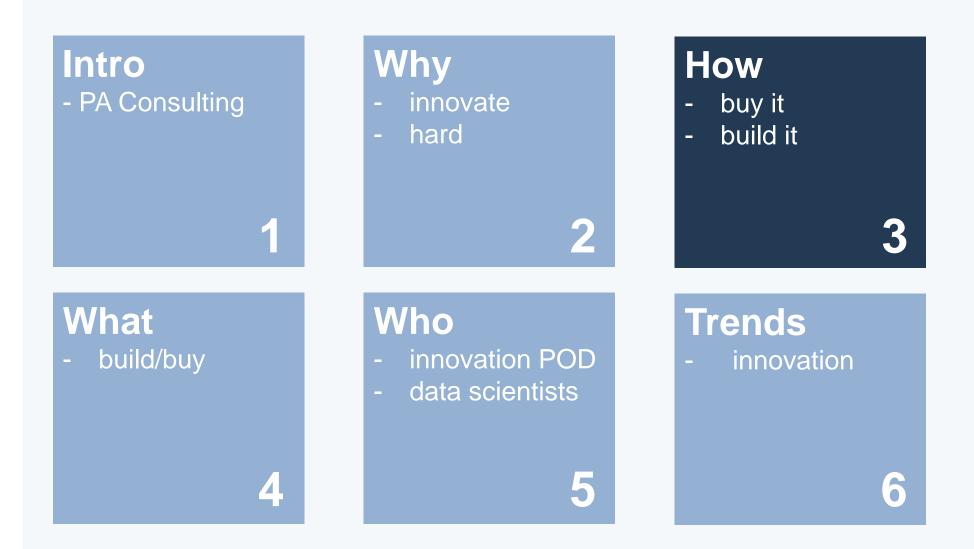
Innovation is Hard

"

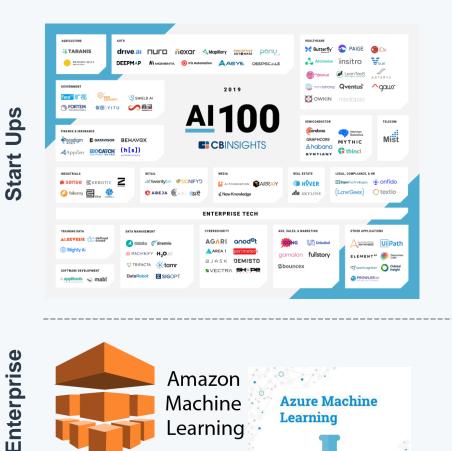
In a recent survey corporate executives reported that 85% have started programs to create data-driven cultures, but only 37% report success thus far.

- New Vantage Partners Survey

Speed to
MarketTalentBusiness
SponsorshipMarketChanging
ExpertiseEnterprise
Execution



Buy It



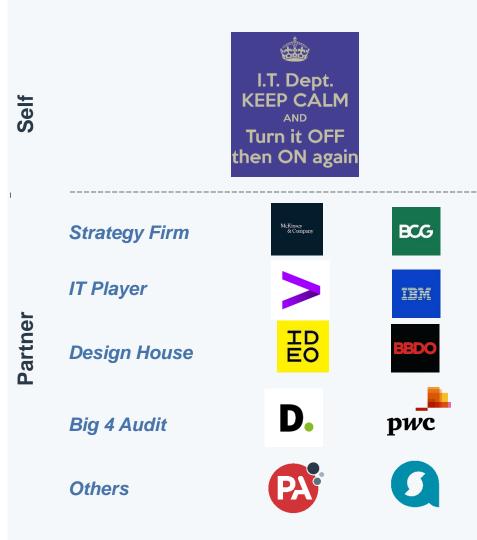
Pros:

- Fast(er)
- Leverage existing libraries, solutions
- Learn from competitors' concepts
- Tailored to your industry

Cons:

- No IP control
- No price control long term
- Expensive
- Time to customize to firm
- If start up
 - > Threat of acquisition
 - > Thread of collapse
- If enterprise cloud player
 - > Must bet on system

Build it



Pros:

- Complete IP control
- Long term more affordable> (initial "build" spike)
- Customized to your customers
- Independent of technologies

Cons:

- Slower (learning takes time)
- Only learn from your data
- If partner
 - > Must manage to learn
 - > Get best practices
- If self
 - > Must fire people after build

Hybrid Innovation Strategy



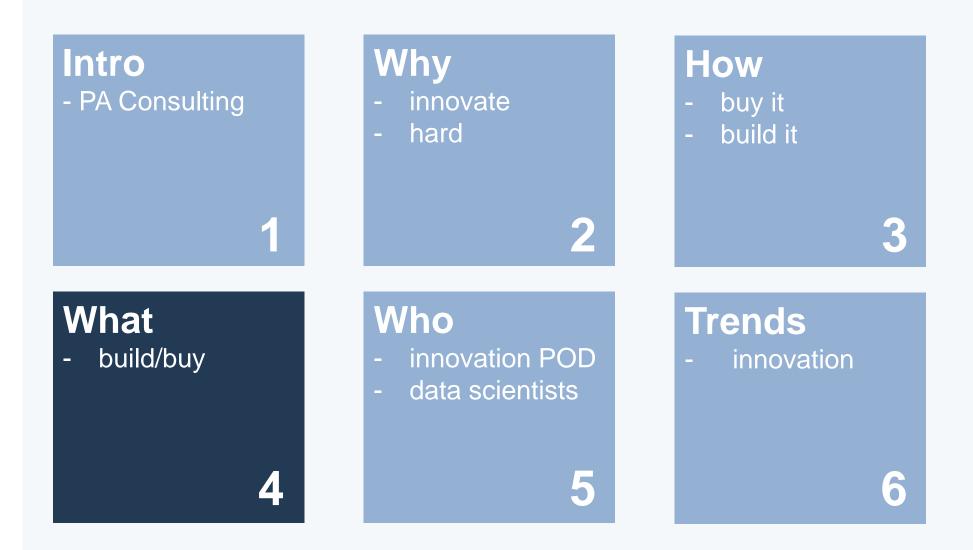
- Start w/ quick PoC
- Focus on doing vs. designing to get demonstrate quick wins

Hybrid

Top Down

- Design a roadmap and approach
- Establish timelines
- Create governance
 framework

- Start pilots and 1-2 yr roadmaps in parallel
- Generate quick wins while designing an agile organization with light governance



What is a Use Case

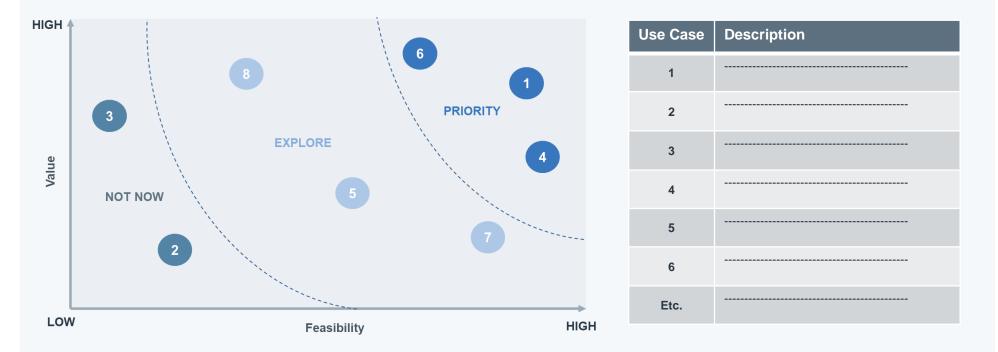
Descriptio	n
------------	---

Charter		Description			
Sponsors					
Criteria for success					
Target customers					
Internal Value Drivers	Value Drivers External (cus Drivers		Data Readiness	System Readiness	
Characterize and quantify business impact of use case "customers" an growth / marke		nd quantify	Dimensions: • Completeness • Accuracy • Size • Metadata • Frequency • Integrity	Characterize systems and tools to build: • Environment • Infrastructure • Code	

Use Case Prioritization Framework

A prioritization framework will map individual use cases against feasibility and value.

- **Feasibility** will be a function of criteria such as accessibility, price and time to perform the required analysis.
- Value will be an estimation of the potential for the data source to provide the desired outcome and proof the hypotheses.





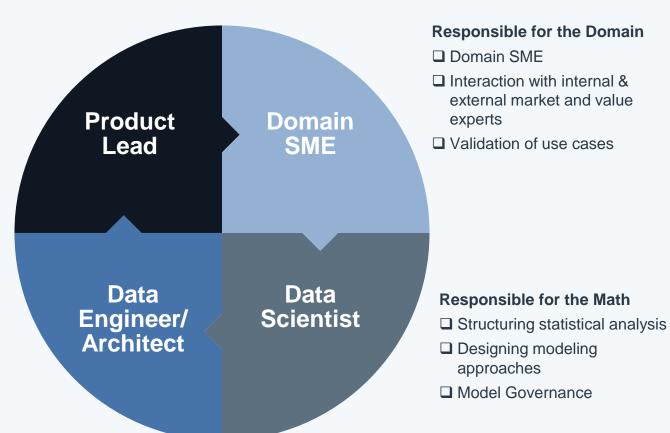
Innovation POD

Responsible for the Business

- □ POD leader
- Interaction with business sponsors
- Execution and delivery of program
- Linking analytics to insights

Responsible for Production

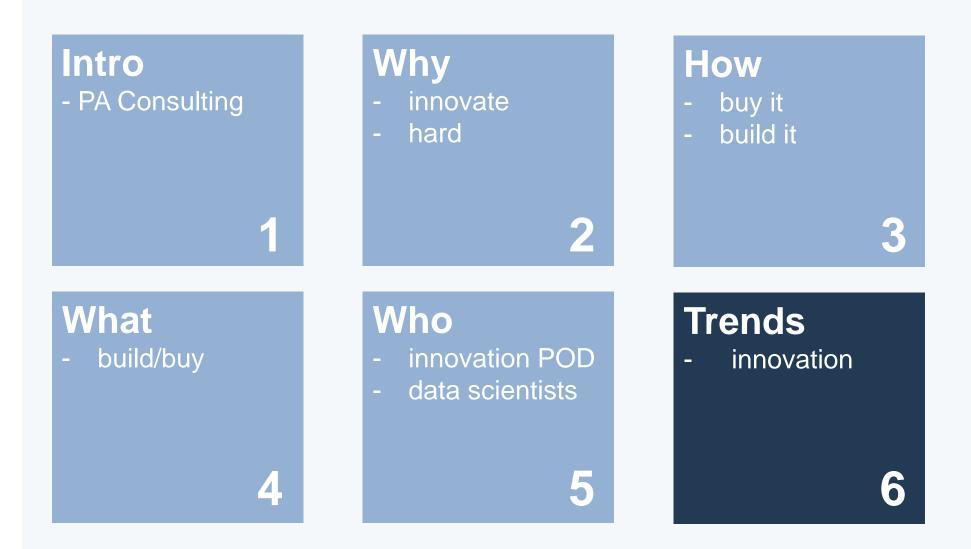
- Productionizing models & pipelines
- Scaling Algorithms
- Optimizing Compute



Data Scientists

Research Data Scientist

CITAR Data Scientis



Select (Consulting) Trends

- **Trend n°1:** Consumer focus & the "death" of B to B
- Trend n°2: Shift of analytics spend from IT towards business and digital
- Trend n°3: Collapse of service & product
- Trend n°4: Outcome and value based pricing
- **Trend n°5:** Ecosystem models for Fortune 100



We believe in the power of ingenuity to build a positive human future in a technology-driven world.



About PA.

ALEX VAYNER

We believe in the power of ingenuity to build a positive human future in a technology-driven world.

As strategies, technologies and innovation collide, we create opportunity from complexity.

Our diverse teams of experts combine innovative thinking and breakthrough technologies to progress further, faster. Our clients adapt and transform, and together we achieve enduring results.

An innovation and transformation consultancy, we are over 2,800 specialists in consumer, defense and security, energy and utilities, financial services, government, healthcare, life sciences, manufacturing, and transport, travel and logistics.

We operate globally from offices across the Americas, Europe, the Nordics and the Gulf.

PA. Bringing Ingenuity to Life.

Partner

Americas Data & Al Lead