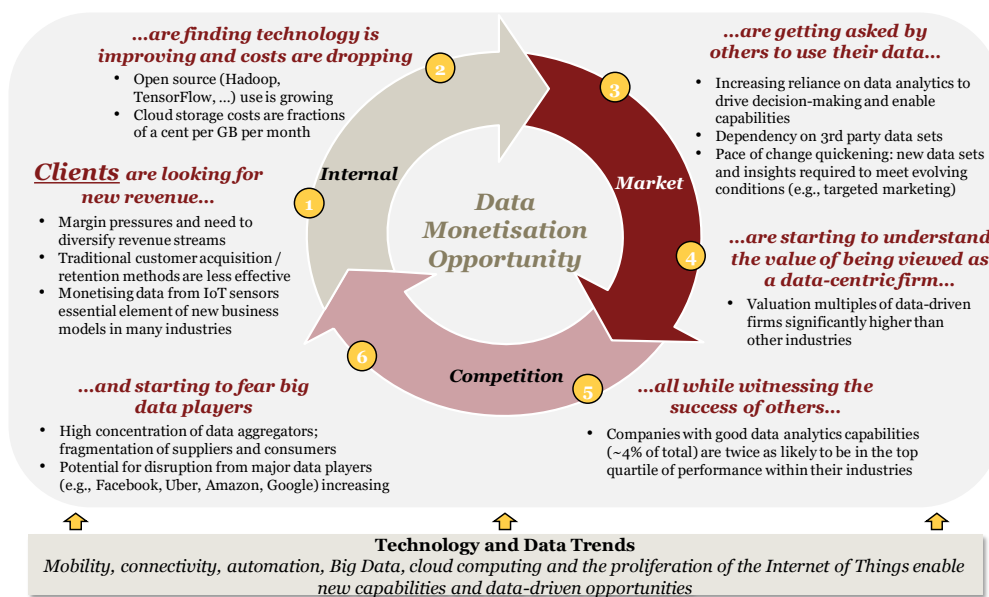strategy&

Creating Value from Data

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Why you need to take a strategic approach to maximise the value of your data

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Creating Value from Data

As advanced economies continue their transition from physical production to services and intangible assets, the importance of information has never been greater. More and more organisations are thinking about how they harness the power of data analytics, artificial intelligence and 'big data' and how they can make significant investments.

But, we believe that you can't start with data, you need to start with where and how you want to create value in your business, then move to data.

Organisations increasingly believe there is untapped value in data...

...are finding technology is improving and costs are dropping
- Open source (Hadoop, TensorFlow, ...) use is growing
- Cloud storage costs are fractions of a cent per GB per month

Clients are looking for new revenue...
- Margin pressures and need to diversify revenue streams
- Traditional customer acquisition / retention methods are less effective
- Monetising data from IoT sensors essential element of new business models in many industries

...are getting asked by others to use their data...
- Increasing reliance on data analytics to drive decision-making and enable capabilities
- Dependency on 3rd party data sets
- Pace of change quickening: new data sets and insights required to meet evolving conditions (e.g., targeted marketing)

...are starting to understand the value of being viewed as a data-centric firm...
- Valuation multiples of data-driven firms significantly higher than other industries

Internal

Market

Data Monetisation Opportunity

Competition

...and starting to fear big data players
- High concentration of data aggregators; fragmentation of suppliers and consumers
- Potential for disruption from major data players (e.g., Facebook, Uber, Amazon, Google) increasing

...all while witnessing the success of others...
- Companies with good data analytics capabilities (~4% of total) are twice as likely to be in the top quartile of performance within their industries

Technology and Data Trends
Mobility, connectivity, automation, Big Data, cloud computing and the proliferation of the Internet of Things enable new capabilities and data-driven opportunities

Finding value in data

Many organisations are looking to make significant investments in data assets, but without the appropriate strategy, they run the risk of putting the cart before the horse and making poor and regressive investment decisions.

To help organisations reduce risk, PwC has developed a robust approach to succeeding in data.

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...But, first and foremost, start with value before data

As a first step, you should spend less time thinking about how much data you have, where it comes from and how to can use it. Instead, you should start by identifying where your organisation might create more value than your competitors and then understand what data assets you need to make that happen. Only at that point you can develop a clear understanding of the investments you need to make in data.

These investments need to be consistent with your business strategy and you will have to spend money on the boring but important "utility processes" like data integrity and plumbing before you spend on "shiny objects" such as predictive models and AI.

> *Myth-busting: Data is not, despite the headlines, the new oil. To continue the analogy, most data is hidden, polluted, unprocessable and too expensive to extract in a meaningful format. There are 'supermajors' in Amazon, Google, Apple, Facebook, etc., but there are no 'national data companies' other than China, and very few nimble, independent data miners and traders. You're unlikely to be fit and ready to join this highly competitive 'data industry'. Oil has a variety of uses, is freely traded and is in constant high demand globally. Your data is currently none of those. Data, unlike oil, is non-rivalrous, an economic term meaning it can be used multiple times by multiple parties, thereby, in most cases, limiting its value. Most of your data has little value internally and almost no value externally, so you don't yet have a treasure trove of data that will create a new high margin revenue stream with little cost and a hedge fund won't come knocking to improve their investment strategies.*

We've seen many cases where clients were excited about the prospect of creating entirely new businesses and new sources of revenue in what seems to be the lucrative and accessible new area of big data, analytics, AI and 'rich content'.   In a few cases they were right, but more often, they weren't. The opportunity, which seemed large at the outset, turned out to be small and difficult after a costly, unfocused and inefficient implementation that left them fearing repeating the process.

Conversely, organisations that took the effort to truly understand the potential strategic uses of and value of their data were able to execute appropriately, and they were able to avoid costly technology implementation programs that fell short of expectations.

By following a robust, strategic led process, you can link explicitly your strategy to your data, clarify what data you own and understand how valuable it is and to whom. You can create realistic aspirations for monetising your data, and you can prove your right to succeed by testing and overcoming areas of potential failure. You can move from an unsubstantiated assumption about the value of your data to a more informed and business linked understanding of its worth in terms of its use to current and prospective customers, its stand-alone commercialization potential, and, most importantly its potential to enhance your current business. That is the true value of data.

Practical steps

Here are seven practical steps to understand how you can monetise your data:

1. Understand how you create value today
2. Develop investment options
3. Review your data assets
4. Confirm the options
5. Develop realistic aspirations for monetisation
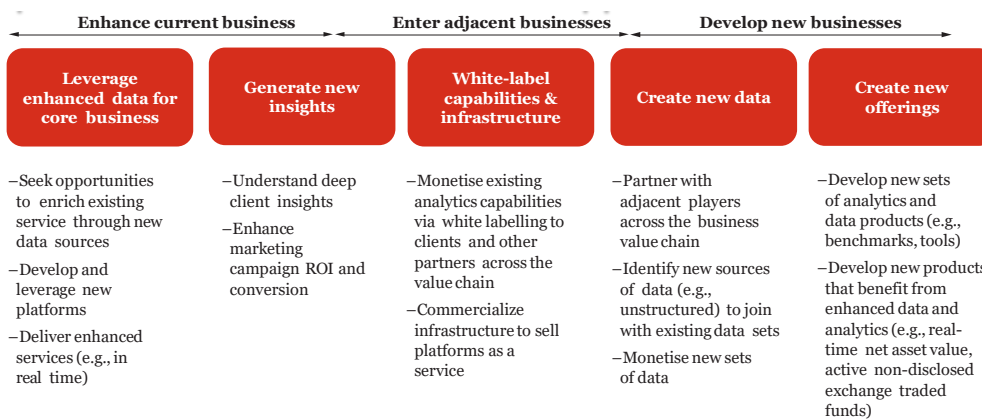6. Trial it, learn and refine
7. Do it, scale it

Understand how you create value today

The value of data, be that yours or of others', ultimately lies in its usefulness in achieving your strategic goals. Start by articulating what your strategy is currently; what products and services you offer and what you don't, who your customers are and who they are not and how you currently go about efficiently delivering these to create sustainable economic value. Linking strategy to data should contain firstly, a diagnosis of what processes you conduct now, what information you need to do this currently and how you create value; secondly, how these existing services might be enhanced, grown or be disrupted in the future by more or richer data, irrespective of whether you do or don't currently own or have access to the data.

Develop investment options

Next, you should develop a few well thought out investment options based on the three step model below:
- Enhance current business
- Enter adjacent businesses
- Develop new businesses

Enhance current business		Enter adjacent businesses		Develop new businesses
Leverage enhanced data for core business	**Generate new insights**	**White-label capabilities & infrastructure**	**Create new data**	**Create new offerings**
−Seek opportunities to enrich existing service through new data sources	−Understand deep client insights	−Monetise existing analytics capabilities via white labelling to clients and other partners across the value chain	−Partner with adjacent players across the business value chain	−Develop new sets of analytics and data products (e.g., benchmarks, tools)
−Develop and leverage new platforms	−Enhance marketing campaign ROI and conversion	−Commercialize infrastructure to sell platforms as a service	−Identify new sources of data (e.g., unstructured) to join with existing data sets	−Develop new products that benefit from enhanced data and analytics (e.g., real-time net asset value, active non-disclosed exchange traded funds)
−Deliver enhanced services (e.g., in real time)			−Monetise new sets of data	

Options to create value from data

But, in addition, leveraging data is not always about revenue generation, organisations can use data strategically to reduce costs through better planning and optimisation of operations, as well as reducing and managing risk. Examples of cost reduction strategies include using data to enable better management of customer credit, reduced fraud risks and sharing data with suppliers to optimise inventory management and improve working capital in the supply chain. Cost reduction initiatives tend to be more certain investments than revenue growth.

Review your data assets

Data Monetisation Approach

Stock taking of data assets

① **"What"**
What data sources, assets, capabilities do we have today?

- Survey existing data assets and determine which are valuable. Conduct quick review of capabilities
- Identify use cases, competitors, substitutes and evaluate new monetisation ideas and data products
- Brainstorm additional external data that could be combined to increase value of these assets

Considerations for Data Valuation Framework

② **"Who"**
Who are the right target customers and strategic partners?

- Identify likely buyers for proposed data products
- Assess value proposition among identified customer segments. What decisions will be improved? What does data enable that is difficult or impossible today? How does this data enhance or simplify customer processes?
- Identify potential sources of data and partners (potential distributors, collaborators who control complementary data)

③ **"How"**
How do we build the right capabilities and business model?

- Determine how to approach the market (distribution and sales strategy)
- Define capabilities needed to win in the market (Sales, Product management, Operational support, Technology infrastructure)
- Draft roadmap to operationalize data products and bring to market

Key Considerations

- ***Data ownership & use****: giving consideration to legal ownership and appropriate use of data*
- ***Data privacy & confidentiality****: safeguarding sensitive information, adhering to regulations related to data security across lifecycle*
- ***Liability concerns****: providing consideration to potential problems due to inaccurate or regulated data distributed in the market place*
- ***Product management:*** *building product mgmt. discipline, including cost, pricing and development*
- ***Infrastructure****: ensuring necessary maturity of data mgmt. and technology infrastructure*

The PwC Approach to Data Investment Appraisal

"What" comprises a stock-take of your organisation's existing data assets and how they link to the strategic options you have. You should also consider the gaps you have in the data and how you will fill these.

"What" data assets have you got? As the necessary next step in appraising a data investment, you need to identify what data assets you have available and any gaps. Those could be gaps in the data itself or in the skillsets needed to monetise it. Also, be clear on what categories of data you have as each have differing uses and differing levels of structure and hence ease of use and monetisation.

Data source	Data category	Sub-categories	Illustration
Authored Data • Typically created through some kind of creative, human process. • E.g. Architectural drawings, photographs	**Master Data** • Describes people, places, and things that are critical to a firm's operations.	Customer data Supplier data Product data Employee data …	Customer address Contact details Products, Features Employee name …
User Provided Data • Data purposefully provided by users into a system without any expectations • E.g. Social media, ecommerce reviews	**Transactional Data** • Describes an internal or external event or transaction.	Sales data Payment data Touchpoint data Geospatial data …	Customer purchase history Payment date Call record Current location …
Captured Data • Recorded from events occurring in the real world or in software. • E.g. Financial transactions, Web browsing logs	**Reference Data** • Information that is used solely for the purposes of categorising data.	Jurisdictions Control data Currencies Industry standard data …	Provinces Holiday calendar Currency codes Country codes …
Derived Data • Generated by combining, aggregating and otherwise processing other data. • E.g. Credit scores, aggregated transactions	**Metadata** • Characterizes other data, making it easier to retrieve, interpret, or use the data.	Descriptive data Tables, columns Lineage data Audit trail data …	Author, Abstract Type, Relationship Modifications Accesses, Changes …
	Unstructured data • Data lacking a consistent format or syntax to describe objects and attributes	Audio data Text data Video data Picture data …	Recordings Reports Surveillance footage Social media postings …

Be clear on what categories of data you have

"Who" involves further developing possible use cases by identifying potential customers for the options and building the value proposition. This could be internally focused with a view to generating incremental revenues/reducing costs in your organisation itself, or externally focused with a view to selling valuable data to others to exploit.

"How" addresses the question of delivering on the investment and the operational changes which may be required to monetise it.

Confirm the options

Having catalogued the data assets, the next step involves understanding whether these sufficiently meet your strategic options and further developing the use cases.

Much of the work to identify and flesh out the options and use cases will be done through discussion and primary research. As with more traditional products, having market experience, understanding sector trends and the wider stakeholder value chain is key to developing use cases for data. Organisations need to understand:

- *Who to sell to* – You will need to think more broadly than you may be used to doing. Potential customers for data may be upstream or downstream in your value chain and may also be one or more layers removed from your direct customer and supplier base. Identify target customers and perform detailed customer interviews to establish demonstrable potential value. Test user perceptions with a range of potential data offerings. End users vary significantly in their level of sophistication of data usage, and some may immediately see the value of the raw data, whereas others may want to be given visual examples of the value the data can bring. Ask prospective customers to assign a ranking to the individual datasets and metrics as representative of their overall assessment of value, utility, and willingness to pay.

- *Who to compete with* – The competitive landscape can be very different when it comes to data assets. Traditional competitors may be less of a threat than nimble, disruptive new players who are used to

leveraging data in innovative ways. You need to be realistic about whether their data is valuable enough and whether they have the appropriate talent (see "How") to exploit it.

- *Who to partner with* – Relying solely on your own data is one approach, but frequently more value can be found by combining data from the different tiers to create an array of potential data products.

- *What business models* - Understanding in advance what business models work best in your industry or for your strategic option is key to success. Transporting one model that's been successful in another adjacent industry is no guarantee of success.

Loyalty Programs	▪ Retail - exchanging purchase information for loyalty tracking (e.g., Starbucks, Walgreens)
Data Services	▪ Financial Data – providing custom indices to financial investors (e.g., MSCI Barra, Premise Data)
Information Exchanges	▪ Payments Networks – facilitating the movement of money by managing related information (e.g., PayPal, Venmo, Square)

Risk Based Management & Pricing	▪ Telematics – identifying new data streams to inform pricing and preventing risk ▪ Insurance – data loss coverage
Intangible Assets/ Liabilities	▪ Airlines – balancing frequent flyer liabilities, customer satisfaction and profit maximization (e.g., MileagePlus)
Entertainment	▪ Online Games – games are created with information based goods, services and currency (e.g., Hasbro, Zynga)

Example business models for monetising data in different industries

Develop realistic aspirations for monetisation

At this point, many companies leap to preparing detailed financial projections that show how revenue and profit will grow and what the proposed pricing models are. But what if the monetisation potential is not really that big or, more likely, you're not sure? How do you ensure that your investment and execution is commensurate with the revenue opportunity?

- Set yourself a target that is big enough for you to pursue and that you feel is worth your organisation's time and effort.
- What would it take to get to that target? Data can be commercialised in a number of ways: via annual subscriptions, via pay per use, via custom content development, via research and advisory services, and via new analytics development.
- How many of these are truly viable. What are the comparable offerings from your competitors and what are the pricing structures used? Which of these pricing models are most appropriate for you?
- What are the 25th and 75th percentile estimates for revenues and where is breakeven for the option? This is an important sanity check and allows you to consult others and diligence the "most likely" outcome as well as understanding what "moderate success" looks like in the early stages.
- At this point you can develop a clear understanding of the investments you need to make to achieve the projected revenues. The investments ought to be consistent with your business strategy and you will have to spend money up front on the boring things like data integrity, data availability, service levels and technology plumbing

that may not deliver returns in the first few projects you invest in, but will enable you to have a robust platform for growth.

Test, learn, and refine

Now that you have realistic revenue goals linked to your business strategy, you should turn to execution. If you're sure about the opportunity in front of you and your ability to execute, this may work. This is easier where you are enhancing existing services, but much more opaque with new offerings.

- Highlight the areas in which you think you may fail, and create test processes to evaluate your ability to execute. For example, will customers really pay? Do you have the ability to provide real-time data 24/7? Will your data distribution partner really be motivated to work with you, or will they have other priorities? These are some of a longer list of questions that will determine whether your data can really be commercialised.
- Create measurable success criteria that will allow you to determine whether you can solve the problem or can learn something more that will help you make a go/no-go decision.
- Implement the test process with defined roles and responsibilities for the execution team. The results can help get you a more informed view on whether you go ahead with implementation, stop, or need to make some modifications to your business model and/or execution.

Scale it

We've listed in the diagram below the areas where we believe you need to consider in detail when planning the scale phase of the investment option. They fall into three categories:

- Commercial
- Data Management
- Supporting
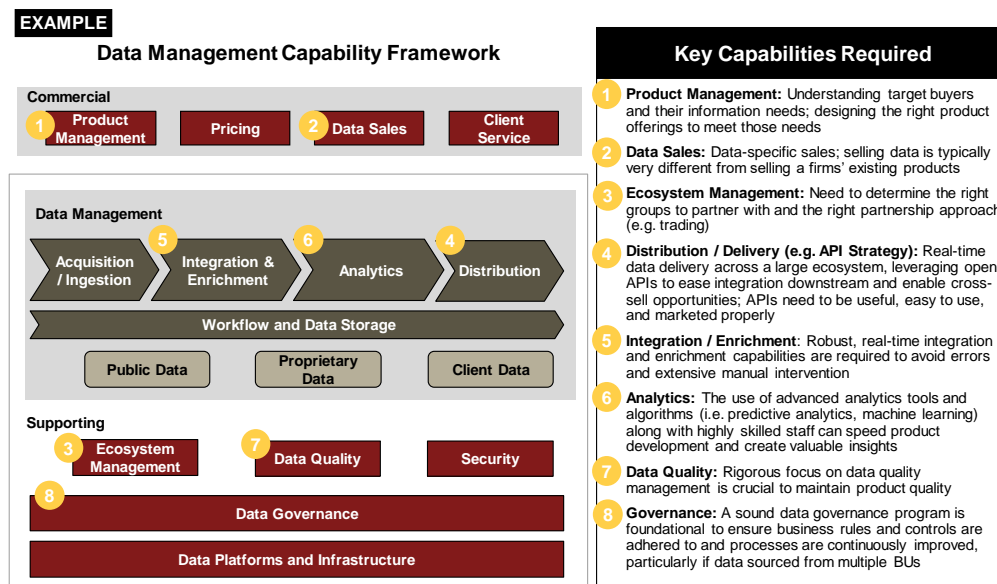
Data Management Capabilities framework

Your ability to exploit the potential value of data is contingent upon having the right technical infrastructure and management processes, as well as the

right talent. A properly implemented technical infrastructure should not only support your basic ability to gather and store data, but also your ability to transfer/share the data in a secure manner that also complies with any industry or government standards. Interoperability, both short term and long term, should also be a consideration, along with the ability to incorporate new data solutions or analytics tools enabling greater long-term applications.

The data management process involves three key stages: data sourcing, data consolidation and storage as well as data processing and exporting. At each stage, distinct technical infrastructure and human resources are necessary to produce the robust data architecture which enables effective data analytics.

	Data source	Data consolidation and storage	Data processing and export
Description	• Data are generated and retrieved from internal or external sources.	• Data are compiled and converted into a readable format, then loaded into a long-term or intermediate storage system.	• Raw data are processed using a variety of tools to derive insights. Insights are exported to relevant stakeholders or sharing partners.

Processes	• Data retrieval	• ETL (Extract-Transform-Load), ELT (Extract-Load-Transform)
		• Data virtualisation
		• Data governance, metadata management, materials management
			• Data visualisation
			• Data analytics:
			  ○ Statistical analysis
			  ○ Data mining
			  ○ Predictive analysis
			• Machine-learning algorithms

Technical Infrastructure	• Internal sources:
	  ○ Databases
	  ○ Sensors
	  ○ File-based
	  ○ Data providers or organisers
	• External sources:
	  ○ Data sharing agreements
	  ○ Open data sources
		• Data warehouse (DW)
		  ○ Traditional
		  ○ Cloud
		• Operational data store (ODS)
		• Data mart (DM)
			• Technical delivery mechanisms:
			  ○ File transfer
			  ○ API
			  ○ Platform

Talent	• Source system application expert	• Data architect • Data governance SME • Security SME	• Business analyst • Data engineer

Data Management Processes

Where talent is concerned, traditional data management roles are evolving from data governance, data quality and regulatory compliance focused roles, into roles that are focused on realising the value of the data in ways that impact the bottom line of the business.

In summary

It is tempting for organisations in to jump on the data investment bandwagon for fear of being left behind. Those that adopt a strategic, systematic and diligent approach to appraising data investments will make the right investments and reap the rewards.

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