Building Data Products

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SADC

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The Data Economy

In the same way that oil was the defining resource of the 20th Century, data is now the defining resource of the 21st.

"Digital information is unlike any previous resource; it is extracted, refined, valued, bought and sold in different ways. To ingest it all, Enterprises are speedily building data refineries. The quality of data has changed, too. They are no longer mainly stocks of digital information—databases of names and other well-defined personal data, such as age, gender and income.

The new economy is about analysing rapid real-time flows of often unstructured data: the streams of photos and videos generated by users of social networks, the reams of information produced by commuters on their way to work, the flood of data from hundreds of sensors in a jet engine.

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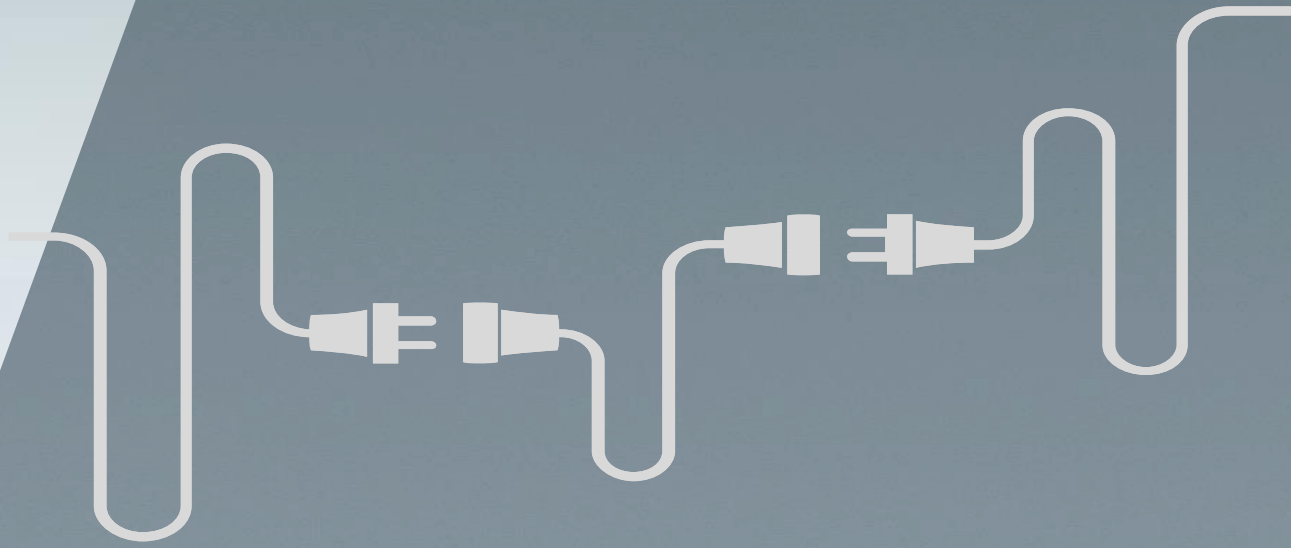
The Demands of the Data Economy: Create Value from All Data

CONNECTED

- Move from a focus on Analytical capabilities to serving information to Automated Decisioning, Execution and Control capabilities
- Leverage prebuilt content
- Value, advertise, share and begin to trade information in the Cloud (because that's where almost all of this data is going to be created).



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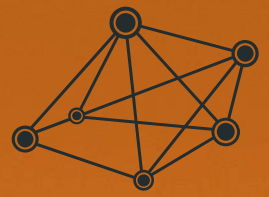
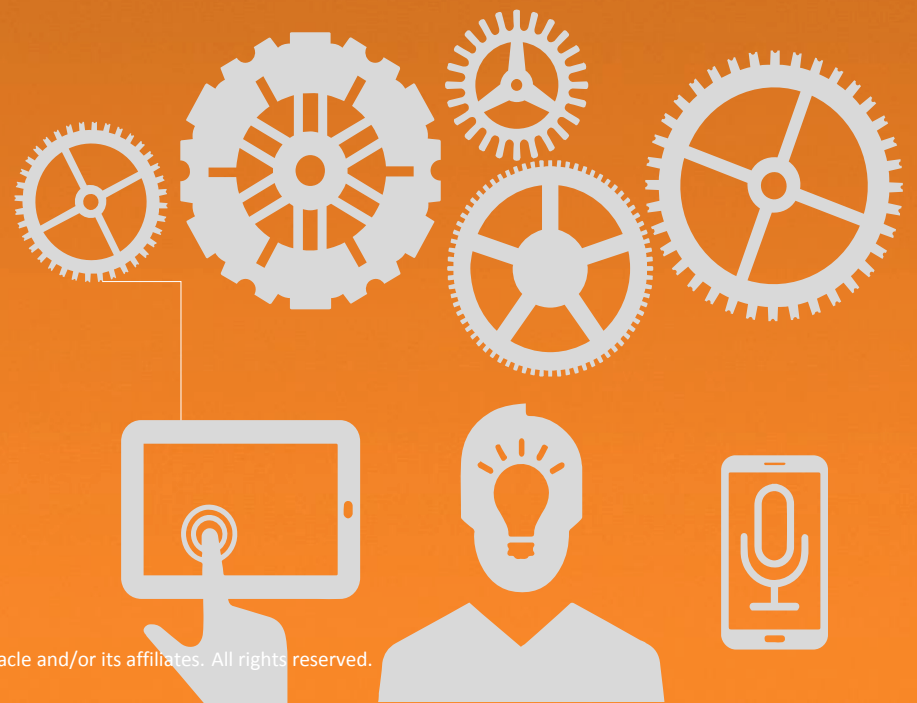
The Demands of the Data Economy: Simplify

COMPLETE



- Undertake all Information Management in an infinitely scalable, elastic platform
- Meet ever more stringent regulations across multiple geographies
- Discover, value and incorporate external data into existing sources of information within a timescale that enables outcomes to be changed and the value of that data to increase.



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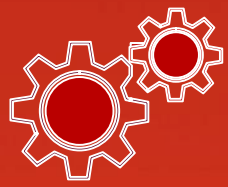
The Demands of the Data Economy: Change the Way We Work

- Machine-assisted human intelligence
- Relevant insights in real time, at the right time
- Enabling collaboration that boosts productivity
- Apply Machine Learning / AI and Cognitive technologies in real time across potentially all the data sources used by an enterprise.

COLLABORATIVE INTELLIGENCE



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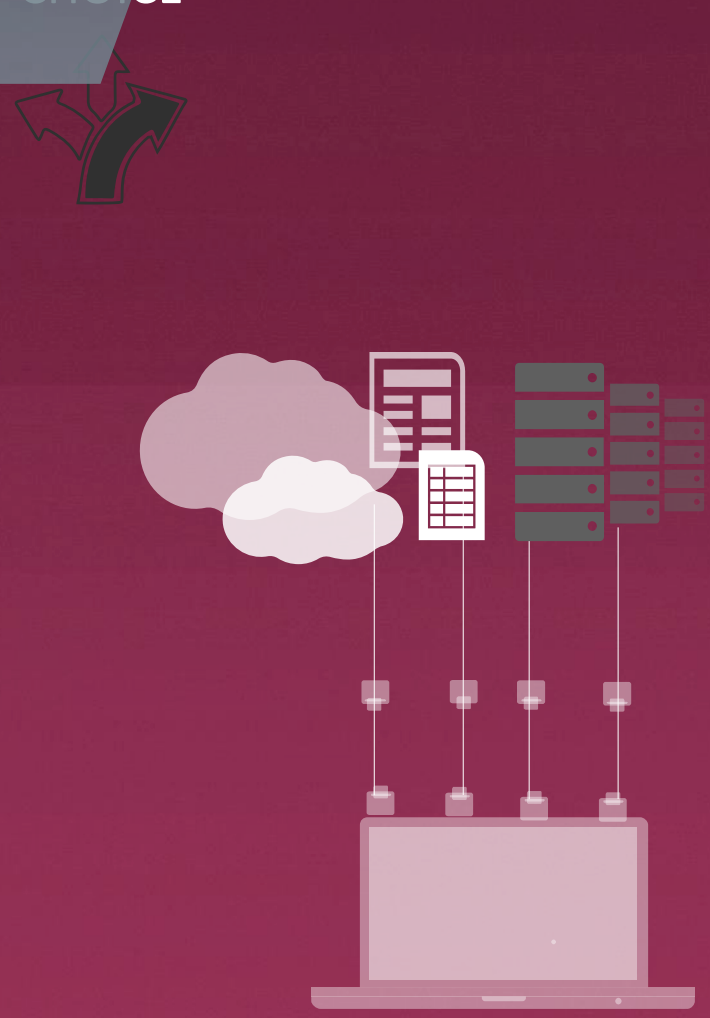
The Demands of the Data Economy: Flexibility

- Incorporating new technology approaches to delivering Database capabilities from the Data Reservoir through to atomised data management in a Microservice Architecture
- Data anywhere to fit your needs – on-premises, cloud, or hybrid
- Data Management to fit your purpose – RDBMS, NoSQL, Hadoop, Kafka, OLAP
- Elastic infrastructure – from hourly to long-term consumption model



What is Data Product?

A data product is the production output from a statistical analysis.

Coursera.org

A data product is digital information that can be purchased

Techtarget

What do these people have in common?




Alphabet

amazon

PayPal

TESLA

FOURSQUARE

They build their business around ‘Data Products’

www.inovex.de

Types of data products – classification 1

- **Data as a Service**

All data products that create direct revenue fall into this category. Companies offering this type of data product provide data for specific interests such as to-the-second accurate stock-market data or location-specific weather data.

- **Data-Enhanced Products**

Data products which enhance a physical or virtual product fall into this second category. The value of such a product is reflected in the change in revenue (price or quantity) of the enhanced product. Most recommenders fall in this category, as they improve the sales of products.

- **Data as Insights**

This category covers all types of data usage that analyse data in order to improve, for example, the sales or quality of a product without exposing the data to the end customer. The customer of the data product is thus an internal customer and the data product itself does not generate revenue.

Types of data products – classification 2

- **Raw data.** Starting with raw data, we are collecting and making available data as it is (perhaps we're doing some small processing or cleansing steps). The user can then choose to use the data as appropriate, but most of the *work* is done on the user's side.
- **Derived data.** In providing users with derived data, we are doing some of the processing on our side. We could, in the case of customer data, add additional attributes like assigning a customer segment to each customer, or we could add their likelihood of clicking on an ad or of buying a product from a certain category.
- **Algorithms.** Next we have algorithms, or algorithms-as-a-service. We are given some data, we run it through the algorithm — be that machine learning or otherwise — and we return information or insights. A good example would be Google Image: the user uploads a picture, and receives a set of images that are the same or similar to the one uploaded. Behind the scenes, the product extracts features, classifies the image and matches it to stored images, returning the ones that are most similar.
- **Decision support.** Here we are looking to provide information to the user to help them with decision-making but we are not taking the decision ourselves. Analytics dashboards such as Google Analytics, Flurry, or WGSN would fall into this category. We are doing most of the heavy lifting on our side; our intention is to give the user relevant information in an easy-to-digest format to allow them to take better decisions. In the case of Google Analytics, that could mean changing the editorial strategy, addressing leaks in the conversion funnel, or doubling down on a given product strategy.
- **Automated decision-making.** Here we outsource all of the intelligence within a given domain. Netflix product recommendations or Spotify's Discover Weekly would be common examples. Self-driving cars or automated drones are more physical manifestations of this closed decision-loop. We allow the algorithm to do the work and present the user with the final output (sometimes with an explanation as to why the AI chose that option, other times completely opaque).

Data products: types

Type 1	Type 2	Type 3
Data as a Service	Data-enhanced Products	Data as Insights
› Weather data	› Autonomous driving	› Marketing planning

www.inovex.de

Business models

Finding Value

- Direct revenue

Charging consumers for access to the data and analysis.

- Indirect revenue

Augmenting existing products or services, driving customer loyalty, generating cost savings or creating revenue through alternate channels.

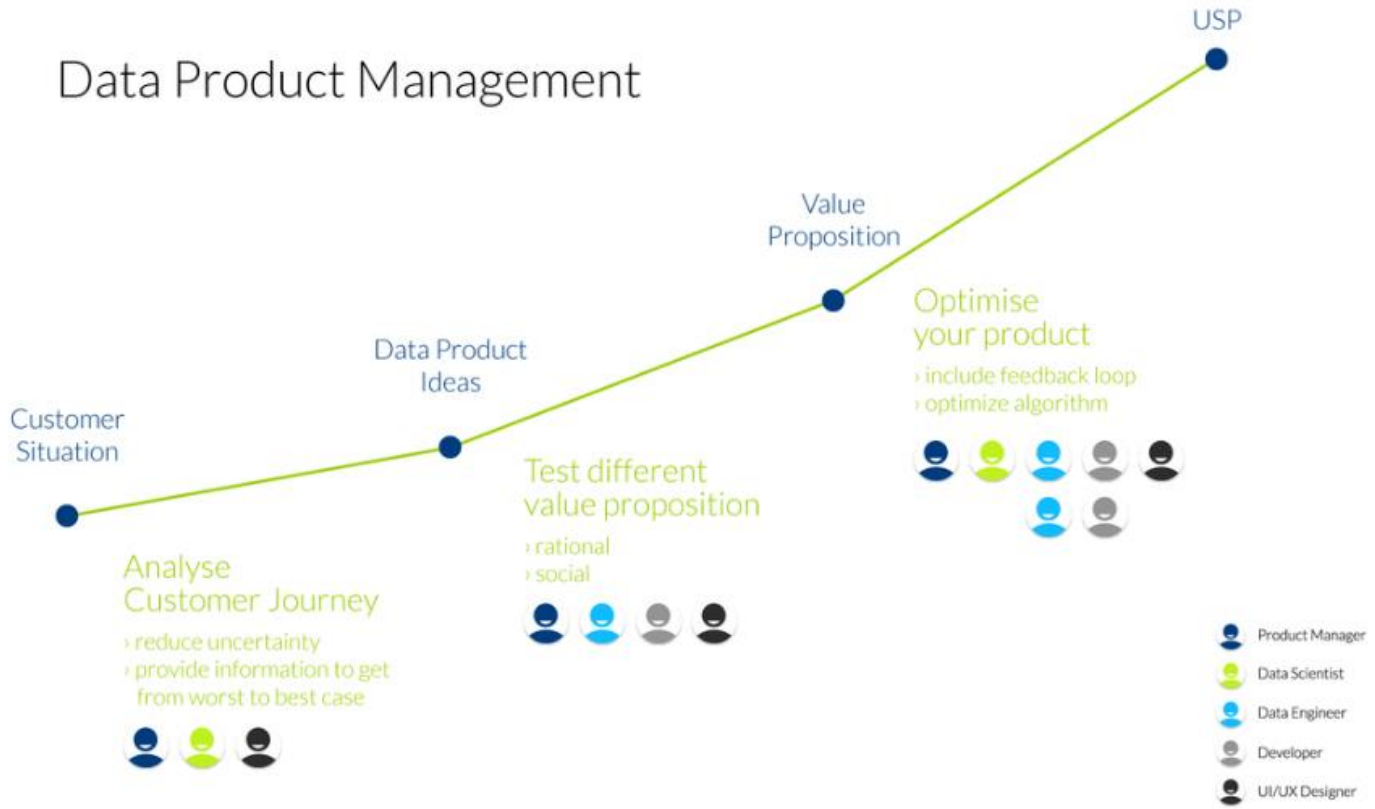
Steps to building a Data Product

1. Build your data product team
2. Identify your data consumers
3. Identify data sources
4. Design the product
5. Deliver the product

Step 1: Build your data product team

A Data product team will require these team roles:

- Product manager
- Data engineer
- Data scientist
- UX expert
- Front-end developer
- Back-end developer



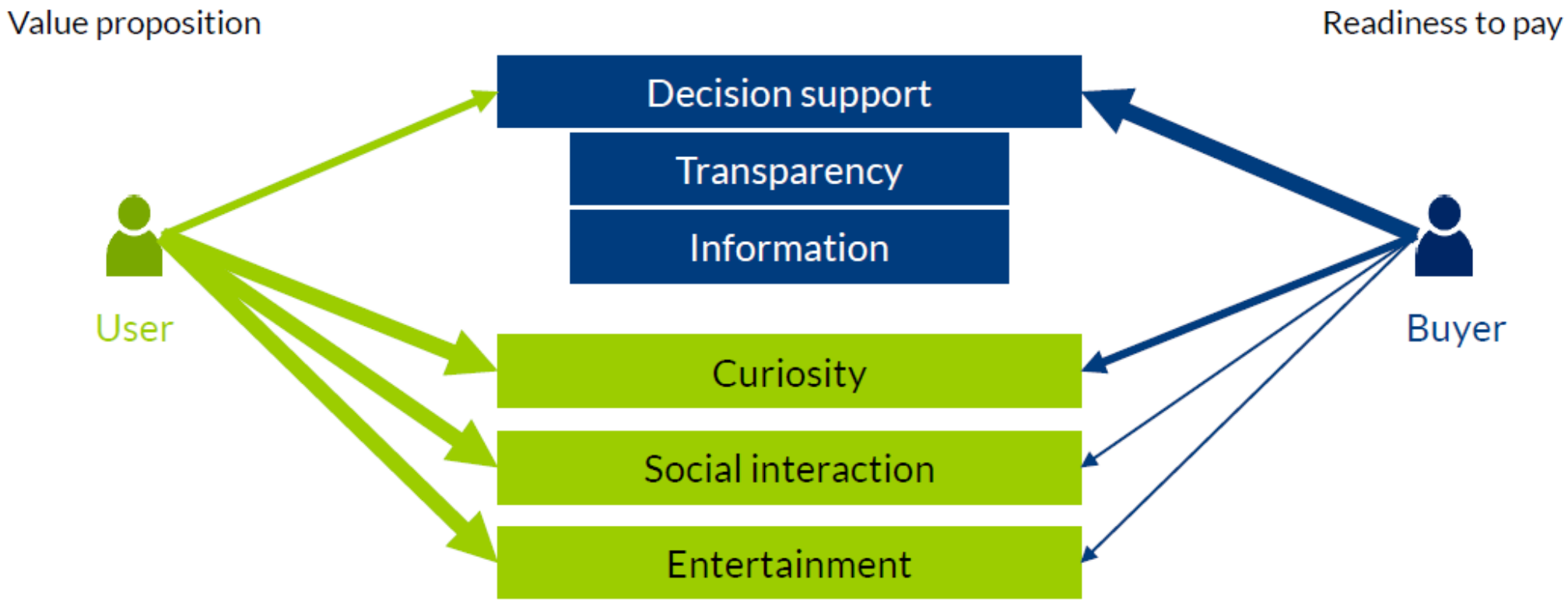
Step 2: Identify your data consumers

Actions	What we have learnt
Target users vs. target buyers	Look beyond the analysts who use the data to find the people who see the value and have the budget to back up their interest.
Understand users' data fluency	You'll find a lot of variation in the users' ability to work with data. How can you thrill data junkies while supporting novices?
Fit users' workflow	An engaging solution fits into users' existing processes, delivers data in the right format, and is timely for decision-making.
Inform user actions	Many solutions provide data that is interesting but doesn't connect to decisions. What information can people act on?
Balance flexibility vs. guided analysis	Too much flexibility puts the burden on users to find answers. Too little flexibility is frustrating and won't serve a broad audience.

http://media.juiceanalytics.com/downloads/JuiceChecklist-ProductManager.pdf

Value proposition and readiness to pay

Readiness to pay grows with value of supported decision



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Step 3: Identify data sources

Actions	What we have learnt
Get the right data	All data is not created equal. Find the best data with the most valuable insight.
Choose your metrics	Apply unique or specialized metrics that make the data highly valued in your industry.
Make your data special	Spend time with your data. Do the analysis and understand its value.
Know what's fair game	Be aware of the laws and constraints around sharing your data internally and externally.

http://media.juiceanalytics.com/downloads/JuiceChecklist-ProductManager.pdf

Step 4: Design the product

Actions	What we have learnt
Define product architecture	Content modules, visualizations, and features are woven together into a structure to make it easy for users to accomplish their goals.
Plan for data variation & outliers	The design needs to anticipate the worst-case scenarios for data. E.g. sparse data, null values, odd distributions, and long labels.
Enable sharing	Users will want to share your data, collaborate with colleagues, and distribute their findings. Consider features for capturing and exporting user parameters, configurations, and annotations.
Create logical flow	Provide a guided path for users to explore and find insights. Help your audience by giving them an obvious place to start and the visual indicators to deepen their analysis.
Write clear labels and description	Use plain, jargon-free language to explain the data. Craft titles, labels, and legends that explain the meaning of the data and descriptions of actions to be taken with the results.

Step 5: Deliver the product

Actions	What we have learnt
Focus on customer development	Start small by thinking about discrete data applications that solve real customer problems and answer their questions.
Prioritize features	Novel and fun features can outpace their need. Make sure features line up with company's goals.
Find the right price	Ask users how they plan to use the product and assess the value they will derive.
Run experiments	When you're not sure (and you rarely will be), create an experiment, learn and move on.
Reach customers	How do you get marketing budget without proven sales? Find early adopters, excel at service, and ask for referrals.

http://media.juiceanalytics.com/downloads/JuiceChecklist-ProductManager.pdf

Keys to a great data product - 1

- Collect Data Passively - Collecting user data should never interfere with the quality of the user's experience.
- Don't Exhaust the User - Give users an easy and engaging onboarding experience capable of collecting the necessary data without being overly burdensome.
- Constantly Validate with Data - Once users start to engage, it's important that you are continually validating your data product by tracking important, quantifiable metrics.
- Give Users Control - An overly eager machine learning system that makes too many decisions, however accurate, will leave users feeling bewildered and frustrated.
- Meet Unexpressed Needs - Tracking clickstream data, purchase data and any other user behavior data gives us the opportunity to create models of customer behavior that can be used to predict future behaviors.
- Invoke Discovery and Delight – Provide your users with high quality recommendations keeps them engaged by providing personalized content and product recommendations.

https://designmind.frogdesign.com/2017/09/nine-principles-designing-great-data-products/

Keys to a great data product - 2

- Build Trust with Transparency - Providing transparency into the inner workings of your data product can help earn the trust of users. E.g. Netflix
- Visualize the Complex - Making data easy to interpret is essential when designing great data products.
- Blend In - The best data products will be ones that work with the way people live today by integrating with the products they already use.

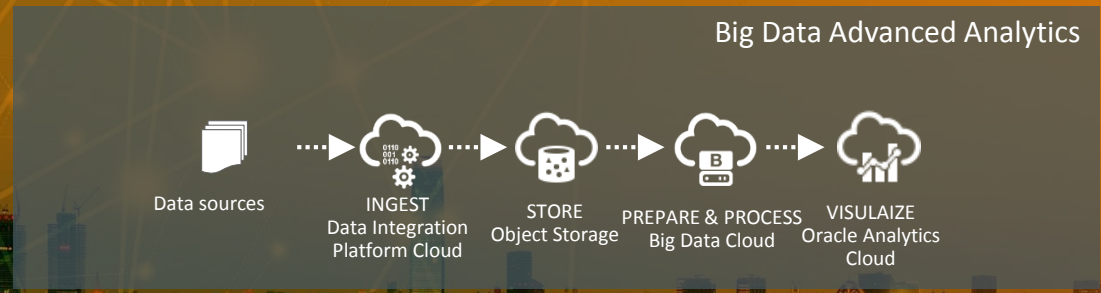
https://designmind.frogdesign.com/2017/09/nine-principles-designing-great-data-products/

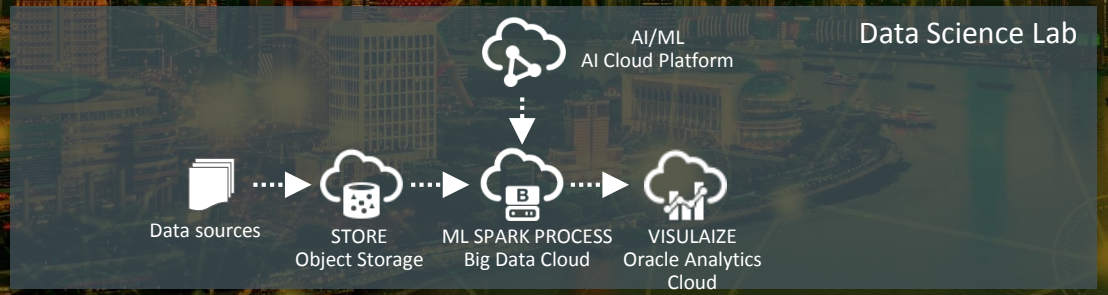
Important considerations

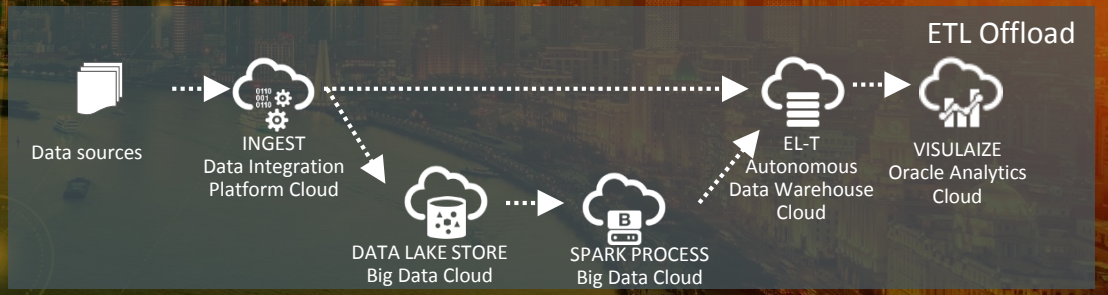
- Security
- Compliance with data regulations and obligations
- Ensuring availability
- Resources to scale and extend the product

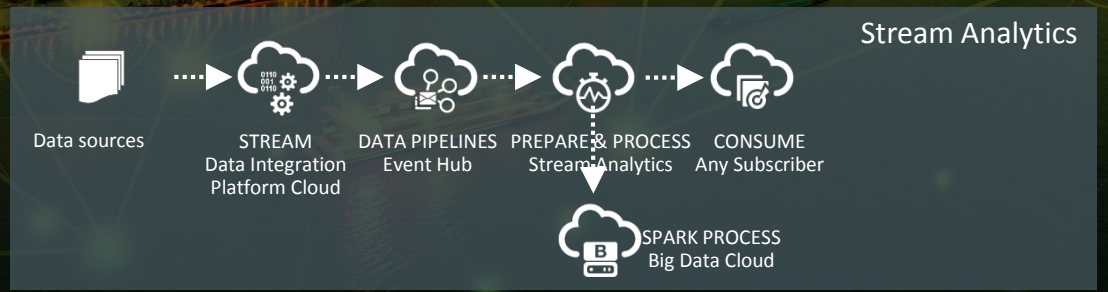
Big Data Solution Patterns

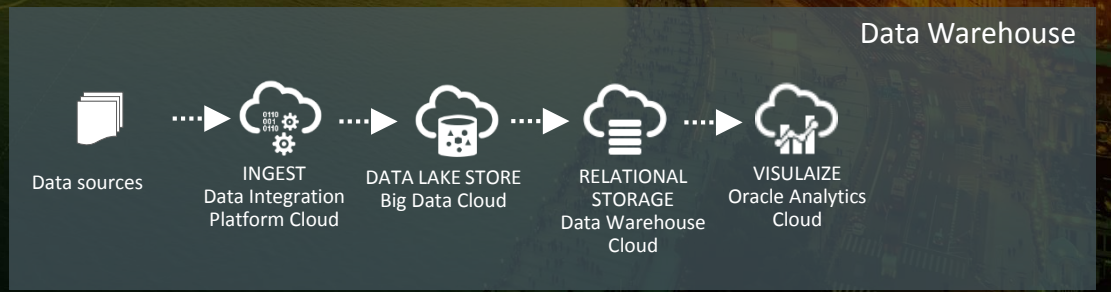
The enabler for Data Products











Autonomous Big Data Platform

Data Product examples

Data Monetization - Telco

DATA INSIGHTS

Aggregation of Network, Location and device data streams that:

- Generate new revenue streams by offering information as a service
- Generate Information products such as aggregated, anonymised subscriber, location and footfall data, sold to businesses as market intelligence
- Provides data to 3rd parties that use the data to enrich their own product/service offerings

BIG DATA BENEFITS

- Rich ecosystem of Data Visualization / Discovery tools that could be provided 'as-a-service' to key Enterprise customer as a key service differentiator
- Leverage increased availability of Data Scientist skillsets and tools (e.g. R)
- Improved margins through launch of differentiated services at lower cost

KPIs

Head of Enterprise Innovation

Net-new value-added services created/launched forming new Enterprise Bundle propositions or adding value to existing product propositions:

- M2M/IoT Data Hubs
- Location-Based APIs
- Industry Analytics-as-a-service

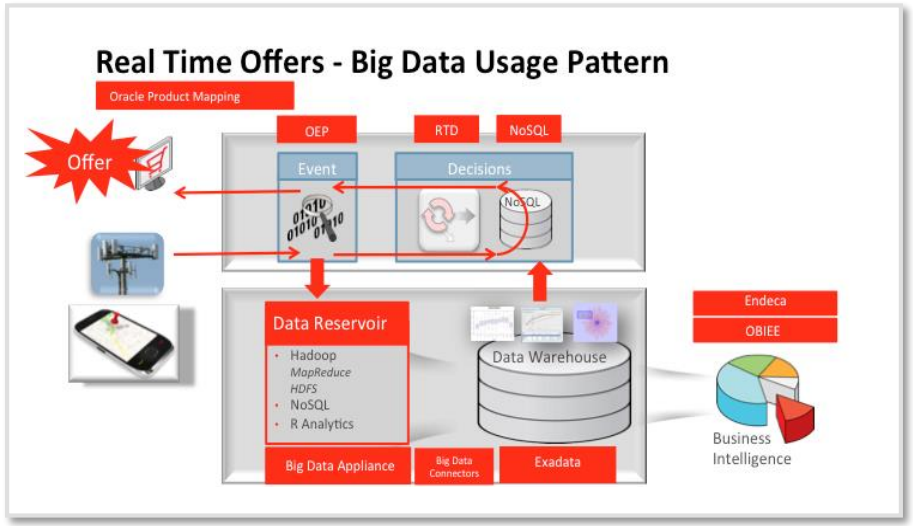
KPIs:

- Average revenue per Machine/Device
- Average revenue per user (of new value-added service)

Data Monetization

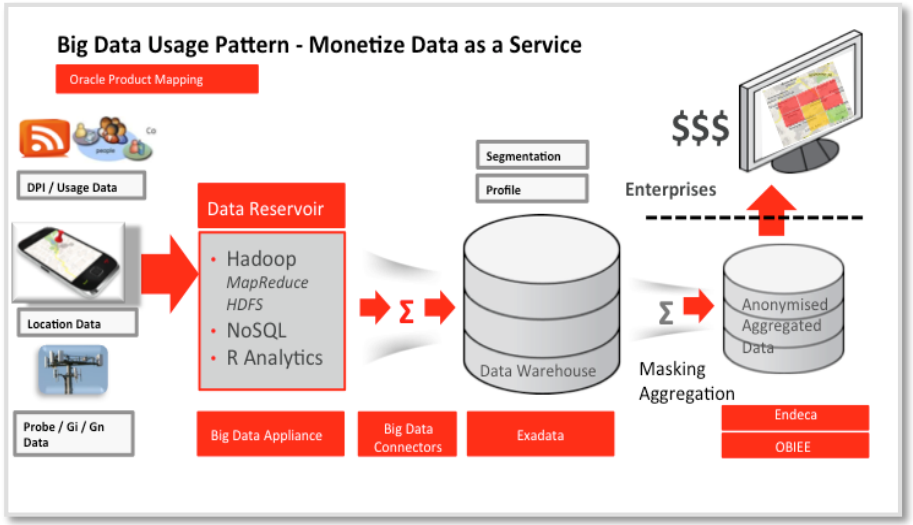
Generating New Revenues with Big Data

- Leveraging **complex event processing (CEP)** to capture and analyse network data for real-time actions and targeted, location-based offers

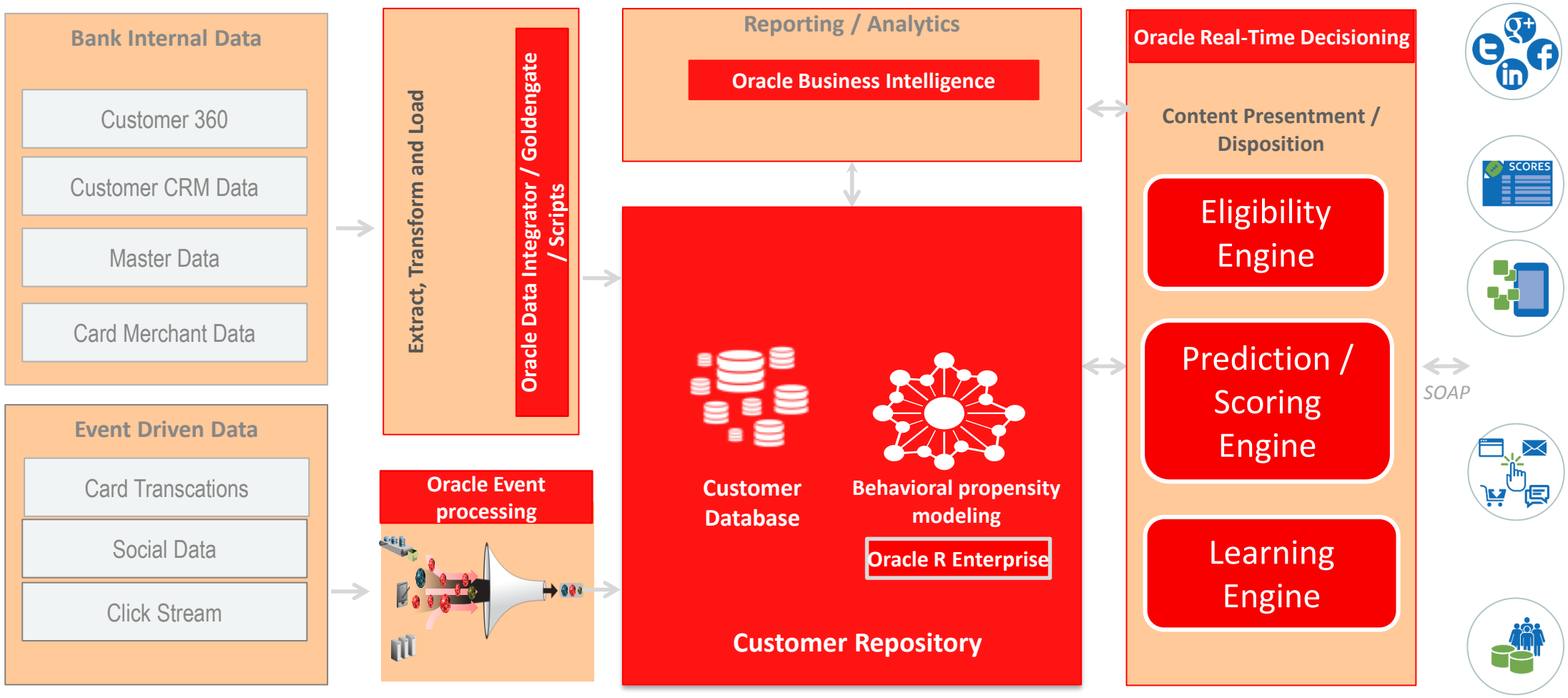


- **Generate new revenue streams** by offering information as a service

- **Information products** such as aggregated, anonymised subscriber, location and footfall data, sold to businesses as **market intelligence**



The Oracle Real Time Marketing Solution



KEY OBSERVATIONS

Insurers Forecast Increased Spending On Big Data Analytics To Improve Performance And Actionable Insight

The Big Data Use Case-Benefit Grid For Insurance Industry

	Use Cases	McKinsey Report - 5 different ways of VALUE creation				
		Increase transparency	Improve performance, near-real time analysis	Improve customer segmentation	Provide actionable insights	Create new business models to improve products,
1	ETL Performance Improvements		X			
2	Detecting Fraud	X	X	X	X	X
3	360° view of Customer				X	X
4	Call Center Optimization			X	X	
5	Telematics	X		X	X	X
6	Cross-Sell and Up-Sell		X	X	X	X
7	Sentiment Analysis				X	
8	Social media for new products and services		X	X	X	X
9	Closing loop between pricing risk and claims			X	X	X
10	External data for pricing			X	X	
11	Search on unstructured documents				X	X
12	Better customer surveys	X			X	

Insurers forecast average growth in annualized spending on **Big Data analytics** of **24% in life** and **27% in P&C**

DEMO

USING LOCATION BASED DATA PRODUCT


ORACLE®