New business models with data
Point of View

Rotterdam, October 7th 2014
Organizations are looking to leverage the value that lies within the data they generate, process or acquire

<table>
<thead>
<tr>
<th>Situation</th>
<th>Complication</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complimentary technology forces of networked devices, mobile, cheap data storage and data analytics bring countless opportunities for businesses to learn about their customers wants and needs, diversify their products.</td>
<td>• Organizations not directly in the business of ‘doing something with data’ struggle to connect data opportunities to their current products and services.</td>
<td>To help companies define a data-driven strategy, the following questions need to be answered:</td>
</tr>
<tr>
<td>• The explosion of data also brings opportunities to create new business models with these assets</td>
<td>• This is usually caused by a lack of strategy, a lack of capabilities or of supportive processes and systems.</td>
<td>• What kind of data-driven business models are emerging in the market place today?</td>
</tr>
<tr>
<td>• Organizations that embrace big data can create new opportunities for strategic differentiation</td>
<td>• Often this results in failures of big data projects or difficulty to launch new initiatives due to skepticism.</td>
<td>• What value can be created using data to create a new business model with data?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• What is the approach to create and implement a new business model with data?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• What aspects does an organization need to think of in order to implement a new business model with data?</td>
</tr>
</tbody>
</table>
Six main business models across three categories are emerging in the market

<table>
<thead>
<tr>
<th>Data-enabled differentiation</th>
<th>Data brokering</th>
<th>Data-based delivery networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The product is still the primary source of value, but using data from the product is used to improve the product or service offering</td>
<td>• There are situations where company data only provides sufficient value when combined with other sources, or the company does not have the capabilities to fully tap the opportunity on its own.</td>
<td>• Multiple companies work together and share data to tap data opportunities</td>
</tr>
<tr>
<td>• Data-enabled differentiation is typically a solo opportunity – products from a single vendor are the dominant gateway to the opportunity</td>
<td>• When the opportunity cannot be tapped by a single vendor with a single product, data brokering opportunities arise.</td>
<td>• Companies specialize in one or two capabilities needed to enable the delivery network</td>
</tr>
</tbody>
</table>

1. **Product Innovators**
   - Enhance their products and services with data

2. **Systems Innovators**
   - Use data to integrate multiple product types

3. **Data Providers**
   - Gather and sell raw data without adding too much value to it

4. **Data Brokers**
   - Gather and combine data from multiple sources, create additional value with analytics and sell insights

5. **Value Chain Integrators**
   - Share data with system-integrator partners to extend product offerings or reduce costs

6. **Delivery Network Collaborators**
   - Share data to drive deal making, foster marketplaces and enable advertising

**Solo Opportunities**

**Collaborative Opportunities**

*Source: Harvard Business Review, Harbor Research*
Looking at data opportunities as a multi-stage value chain, companies can decide at which stage they want to operate, depending on maturity levels

**Data value chain stages**
- Data Generation
- Data Storage
- Data Analytics
- Data Usage

**Context**
- In a low level maturity business model, multiple stages are owned by a single company, because no other players exist.
- When competition increases and the data value chain matures, stages tend to be owned by separate, specialized companies.
- Knowledge about industry maturity, which companies work together to enable a data value chain and the company’s own capabilities can help to decide which business model to pursue.

**Solo opportunities**

**Data value chain maturity**

**Collaborative opportunities**

*Source: InnoSight*
Format to explain the business models (following pages)

Business Model
Schematic view of key elements of the business model using the business model canvas
- Key activity
- Value Proposition
- Customers
- Data Repository
- Channels
- ....

Characteristics
Key characteristics of the business model

Example
Example of a company that has implemented this business model

Value realized
What value does the example company derive from the business model?

Capability Requirements
Indication of the capabilities needed to implement the business model using the four stages of the data value chain:
- Data generation
- Data storage
- Data analytics
- Data usage

1. Product Innovator

<table>
<thead>
<tr>
<th>Business Model</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Activity</td>
<td>Value Proposition</td>
</tr>
<tr>
<td>Data Repository</td>
<td>Channels</td>
</tr>
</tbody>
</table>

Example: Twilight
Twilight is a Dutch start-up that has developed a smart streetlamp system. It is only light up in the presence of a person, bicycle or car and is turned off the rest of the time.

Value proposition (1) is design and manufacture of embedded streetlamp sensors.

The main value proposition (2) is a sensor-enabled wireless streetlamp which is sold to municipalities (3), enabling the customer to reduce their energy costs by 80%.

Monitoring data from individual streetlamps is sent wirelessly to Twilight’s Data Repository (4).

The data is used in a new value proposition (5) that improves the service offering: web-based software for remote monitoring, management and control of street lighting infrastructures.

Value realized:
- The original product is improved by sensors and wireless communication.
- Usage data gathered from the product is used to create a second value proposition.
1. Product Innovator

### Business Model

<table>
<thead>
<tr>
<th>Key Activity</th>
<th>Value Proposition</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

| Data Repository | 4 | 5 |

---

### Characteristics

- Usage or sales data from a single product type from a single vendor is used to add features to the product, improve the service offering or to create an additional product.

---

### Example: Tvilight

Tvilight is a Dutch start-up that has developed a smart streetlamp system. Lamps only light up in the presence of a person, bicycle or car, and remain dim the rest of the time.

- Key activity (1) of Tvilight is the designing and manufacturing of embedded streetlamp sensors.
- The main value proposition (2) is a sensor-enabled wireless streetlamp which is sold to municipalities (3), enabling the customer to reduce their energy costs by 80%.
- Monitoring data from individual streetlamps is sent wirelessly to Tvilight’s Data Repository (4).
- The data is used in a new value proposition (5) that improves the service offering: web-based software for remote monitoring, management and control of street lighting infrastructures.

---

### Capability Requirements

<table>
<thead>
<tr>
<th>Data Generation</th>
<th>Data Storage</th>
<th>Data Analytics</th>
<th>Data Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Data Generation" /></td>
<td><img src="image" alt="Data Storage" /></td>
<td><img src="image" alt="Data Analytics" /></td>
<td><img src="image" alt="Data Usage" /></td>
</tr>
</tbody>
</table>

---

### Value realized:

- The functionality of the original product (street lamp) is improved by sensors and wireless communication.
- Usage data gathered from the product is used to create a second value proposition (software for remote management).

---

Source: Tvilight.com, fd.nl, livewire.nl, CNN
2. Systems Innovator

### Business Model

<table>
<thead>
<tr>
<th>Key Activity</th>
<th>Value Proposition</th>
<th>Customer Relationship</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Repository</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Channel</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Example: Nike+**

In 2006 Nike introduced a new range of personal tracking and measurement products

- Key activity (1) of Nike is to manufacture sports apparel
- Value proposition (2) delivered to customers (3) is a range of related products: A running app for mobile phone, network-enabled tracking bracelet and sports watch.
- Product usage data is sent to Nike via mobile (4) and stored (5)
- The data is communicated to the user through the Nike+ Platform (6), where the athlete can track and analyze its sporting activities and share them with others.
- The Nike+ Platform provides a new channel to stimulate product sales in a context-specific way, or enable third-party advertising
- Customer engagement is realized by community building and allowing the user to share personal achievements on social media

### Capability Requirements

<table>
<thead>
<tr>
<th>Data Generation</th>
<th>Data Storage</th>
<th>Data Analytics</th>
<th>Data Usage</th>
</tr>
</thead>
</table>

**Value realized:**

- Customer lock-in – Products gain utility when combined, switching costs are high
- Customer engagement - social media integration, community
- New channel to sell and promote products (Nike+ Platform)

Source: Nike, Bigdatastartups.com, Competingoninformation.com
3. Data Provider

**Business Model**

<table>
<thead>
<tr>
<th>Key Activity</th>
<th>Value Proposition</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Repository</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

**Characteristics**

- In addition to the company’s core activity, raw data or aggregated data from its data repository are sold to another business customer for a fee or a share of the earnings.
- Two types can be distinguished: Raw data sales and sales of insights/benchmarking

**Example: Vodafone**

Since 2012 Vodafone sells anonymized raw network data to a partner company (Mezuro) for a fee.
- Key activity (1) of Vodafone is providing telecom services.
- Value proposition (2) delivered to customers (3) is voice call, text message and internet service through the company’s mobile network.
- Mobile phone usage data (4) is collected as part of the company’s core activity.
- Data (5) about the geographical location of the company’s mobile sites is added to the mobile phone usage data.
- The dataset is anonymized by hashing (6) and sold to a partner company, Mezuro (7) for a monthly fee.
- Mezuro uses the data in addition to other sources to provide crowd analytics to the public sector, estimating the usage intensity of city centers, train stations and roads.

**Capability Requirements**

<table>
<thead>
<tr>
<th>Data Generation</th>
<th>Data Storage</th>
<th>Data Analytics</th>
<th>Data Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Value realized:**

- Predictable revenue stream by using a subscription based model to sell data.
- Access to a new market / customer segment.

*Source: Vodafone press release, Mezuro.com*
4. Data Broker

**Business Model**

<table>
<thead>
<tr>
<th>Key Partners</th>
<th>Key Activity</th>
<th>Value Proposition</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Data Repository</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

**Characteristics**

- Companies acquire data from key partners, from open sources or through data mining.
- The Data Brokering company focuses on excellent Data Analytics and Data Usage and leaves Data Generation to others.

**Example: Glooko**

Glooko developed a blood glucose level logbook and analysis app based on existing blood glucose data streams.

- Key activity (1) of Glooko is database management and analytics.
- Glooko licenses the data specs and standards from glucose meter manufacturers (2) to make its product compatible.
- First of the value propositions is a link cable (3) that is sold to diabetes patients (4) to connect their phone to their blood glucose meter.
- Blood glucose meter data from the patient (4) is transmitted by the patient’s phone and added to a meter reading database (5).
- Second part of the value propositions (6) is a log book and incidence reporting solution that is delivered through a free app to patients (4) and for a subscription fee to hospitals (7).

**Capability Requirements**

<table>
<thead>
<tr>
<th>Data Generation</th>
<th>Data Storage</th>
<th>Data Analytics</th>
<th>Data Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Full</td>
<td>Partial</td>
</tr>
</tbody>
</table>

**Value realized:**

- Complimentary products are sold to the customer - a mobile app and a cable to link blood glucose meters to a mobile phone.
- A predictable revenue stream is generated by offering a subscription service to hospitals.
- Better effectiveness for hospitals and insurance companies.

Source: InnoSight, Bizjournals.com, Glooko.com, Valuechaingeneration.com
5. Value Chain Integrators

Business Model

Company 1: John Deere

1. Manufacturing farming equipment
2. Selling seeds and agricultural consulting
3. Farmers
4. Farming equipment outfitted with sensors, GPS and wireless transmission technology
5. Gathers data on crop yields, moisture and location
6. Wirelessly sent to a data repository owned by Deere
7. Precision farming software that uses field-specific data to support decision making

Company 2: DuPont

Characteristics

- Companies that serve the same customer segment exchange data with distributors and system-integrator partners with the aim to extend the existing product offering or reduce costs
- The business model is not geared towards sales or licensing out data, but rather towards integration to optimize operational results

Example: John Deere & DuPont

DuPont and John Deere are collaborating to deliver near real-time field level data to farmers – supporting decision making related to planting, field management and harvesting to maximize crop yields

- John Deere’s key activity is manufacturing farming equipment (1)
- DuPont’s key activity is selling seeds and agricultural consulting (2)
- Both companies cater to the same customer segment: farmers (3)
- Value proposition of John Deere is farming equipment outfitted with sensors, GPS and wireless transmission technology (4)
- John Deere equipment gathers data on crop yields, moisture and location, which is sent wirelessly to a data repository owned by Deere (5)
- DuPont integrates John Deere’s data (6) in its value proposition (7), precision farming software that uses field-specific data to support decision making

Capability Requirements

Data Generation: 
Data Storage: 
Data Analytics: 
Data Usage: 

Value realized:

- Products from both companies gain utility by sharing data
- Risks and revenues are shared and individual competitive advantage is improved
- A barrier to competition is created, because use of product-generated data allows to offer services more intelligently than competitors

Source: John Deere press release, Reuters
6. Delivery Network Collaborators (1/2)

**Characteristics**
- Stakeholders work together in a value creating network rather than a traditional value chain. Often it is unclear who is the vendor and who is the customer or consumer, all stakeholders benefit
- Companies share data to drive deal making, enable advertising and foster marketplaces

**Example: KLM & Hertz**
The delivery network depicted to the left is an example enabling advertising:
- KLM (light blue), an airline company, (1) sells flights (2) to travelers (3)
- Booking data is stored in a database (4), combined with flight scheduling information (5) and shared with an advertising agency
- The advertising agency (green) (6) can identify the traveler through a tracking cookie and determines the date and destination of the traveler’s flight (7)
- Hertz (dark blue), a car rental company (8), is looking to rent cars to travelers (9)
- Hertz shares data on available cars with the advertising agency to add to its algorithm (10)
- The advertising agency then shows available rental cars through websites that the consumer visits (omitted), on the city and date that the traveler will arrive there

**Value realized:**
- Hertz obtains a new channel to reach consumers
- A fee is paid by Hertz to the advertising agency and to KLM each time a consumer clicks the ad to rent a car

**Source:** Deloitte Analysis
6. Delivery Network Collaborators (2/2)

**Business Model**

- **Company 1**: Raw Data + Challenge → Data Models → Winning Model → Prize Money
- **Company 2**: Raw Data + Briefing, Money → Data Model
- **Kaggle Community**: Data Scientist → Winning Model Scientist → Top 0.5%
- **Kaggle Corp**: Community Access → Fee → Find best data scientist

**Characteristics**

- Stakeholders work together in a value creating network rather than a traditional value chain. Often it is unclear who is the vendor and who is the customer or consumer, all stakeholders benefit.
- Companies share data to drive deal making, enable advertising and foster marketplaces.

**Example: Kaggle**

Kaggle has made a delivery network business model, crowdsourcing data problems from businesses to a community of data scientists.

- The two key activities for Kaggle (dark blue) are fostering a community for data modelling competitions and connecting companies to top data scientists.
- Company 1 (green) pays Kaggle to organize a data modelling competition. It provides raw data and the challenge and receives the winning data models.
- Company 2 (light blue) pays Kaggle for matchmaking to the community’s top data scientists.
- Kaggle’s community of data scientists (yellow) partakes in competitions to solve data problems.

**Capability Requirements**

<table>
<thead>
<tr>
<th>Data Generation</th>
<th>Data Storage</th>
<th>Data Analytics</th>
<th>Data Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

**Value realized:**

- Kaggle – Fees through competitions and matchmaking
- Company 1 – Gets solution to data problem
- Company 2 – Finds skilled data scientists
- Data Scientist community – Exposure, connect with other experts, prize money for the top data scientists

*Source: Wired.com*
Another perspective: Data has the ability to transform business models at many different levels

Data enabled business model innovation

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clients</strong></td>
<td></td>
</tr>
<tr>
<td>Existing</td>
<td>Deep sell: selling more of current offerings to existing clients</td>
</tr>
<tr>
<td></td>
<td>E.g. Internal supply optimizations, data-enabled replenishments</td>
</tr>
<tr>
<td>New</td>
<td>Cross sell: Data-enabled sales of new offerings to existing clients</td>
</tr>
<tr>
<td></td>
<td>E.g. Amazon, Bol.com, (“other customers also bought…”)</td>
</tr>
<tr>
<td>Existing / new offerings</td>
<td>New sell: data-enabled sales of new offerings to new clients</td>
</tr>
<tr>
<td></td>
<td>E.g. Insurance companies, banking services, online retailers</td>
</tr>
<tr>
<td><strong>Offering</strong></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Added functionality to existing product categories</td>
</tr>
<tr>
<td></td>
<td>E.g. Smart metering, intelligent lighting</td>
</tr>
<tr>
<td>Systems</td>
<td>Combined offering categories, potentially in ecosystem</td>
</tr>
<tr>
<td></td>
<td>E.g. Lifestyle devices (Nike+, iPod with Itunes, FitBit)</td>
</tr>
<tr>
<td><strong>Pricing</strong></td>
<td></td>
</tr>
<tr>
<td>Unit based</td>
<td>Dynamic pricing per unit based on economic modeling</td>
</tr>
<tr>
<td></td>
<td>E.g. airline ticketing, online advertising</td>
</tr>
<tr>
<td>Volume based</td>
<td>Pricing based on (expected) volumes</td>
</tr>
<tr>
<td></td>
<td>E.g. Quantity discounts, freemium models (Spotify, LinkedIn)</td>
</tr>
<tr>
<td>Activity based</td>
<td>Pricing on (expected) time &amp; material</td>
</tr>
<tr>
<td></td>
<td>E.g. Engineering &amp; Installation companies; service organizations</td>
</tr>
<tr>
<td>Value based</td>
<td>Pricing based on client’s (expected) valuation</td>
</tr>
<tr>
<td></td>
<td>E.g. Stock markets; Telecom companies</td>
</tr>
<tr>
<td><strong>Channels</strong></td>
<td></td>
</tr>
<tr>
<td>Integrated value chain</td>
<td>Data enabled partnerships providing an extended offering</td>
</tr>
<tr>
<td></td>
<td>E.g. Tomtom &amp; Apple; John Deere &amp; DuPont</td>
</tr>
<tr>
<td>Delivery network</td>
<td>Data enabled delivery network to distribute content / products</td>
</tr>
<tr>
<td></td>
<td>E.g. KLM &amp; Hertz, Kaggle</td>
</tr>
</tbody>
</table>
Appendix
**Additional examples of companies applying one of the six business models**

<table>
<thead>
<tr>
<th>Business Model</th>
<th>Example Companies</th>
<th>Link</th>
</tr>
</thead>
</table>
| **1. Product Innovator**     | 1. Fed-Ex – Package tracking  
2. Emerson Network Power – Remote monitoring  
| **5. Value Chain Integrators** | 1. PepsiCo Social Vending System  
2. Opower, Honeywell & utility companies  
| **6. Delivery Network Collaborators** | 1. Amazon  
TomTom is an example of a company that has managed to own the whole data value chain - by using own platform and data from third parties

<table>
<thead>
<tr>
<th>Data value chain stage</th>
<th>Description</th>
<th>Example: TomTom live services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Generation</td>
<td>• Product or service that generates the raw data</td>
<td>• Own GPS-enabled vehicle fleet of TomTom users (connected and non-connected)</td>
</tr>
<tr>
<td></td>
<td>• Raw data is stored and combined with other sources for future analysis</td>
<td>• Purchased from third party data providers</td>
</tr>
<tr>
<td>Data Storage</td>
<td>• Analytics applied to the data to provide utility for a key stakeholder</td>
<td>– Telecom subscriber phone location data</td>
</tr>
<tr>
<td>Data Analytics</td>
<td>• Advanced algorithms to fuse and filter sensor data</td>
<td>– Fleet owners (large logistics companies/taxi companies)</td>
</tr>
<tr>
<td>Data Usage</td>
<td>• Optimal routing engine by travel time data using historical traffic data</td>
<td>– Government road agency (e.g. RWS for planned road works)</td>
</tr>
<tr>
<td></td>
<td>• Conversion of the output of the Data Analytics stage to a usable product.</td>
<td>• Real-time traffic information delivered to TomTom users on a personal navigation device or iPhone</td>
</tr>
<tr>
<td></td>
<td>• Real-time and historical traffic data delivered B2B and B2G</td>
<td></td>
</tr>
</tbody>
</table>
TomTom is an interesting example of a company transitioning from a collaborative to a solo business model.

TomTom starts with providing a free traffic data product on their navigation platform which consumes data that is available from 'standard' traffic data sources (e.g. road agency).

2. TomTom sets up an own data repository and develops a data analytics platform for fusing data from different sensor sources.

3. TomTom sources data from third parties. E.g. subscriber location data from telecom companies and GPS sensor data from fleet owners (e.g. large taxi or logistics fleets).

4. The data product becomes best in class due to the coverage and detail provided by using different data sources. The user base grows (especially the real-time data users, since incident data is mostly valuable when in real-time).

5. Sourcing of third party data is stopped because own user base provides enough coverage. TomTom covers the whole value chain.

Source: Deloitte Analysis
Contacts New business models with data

Jorg Schalekamp
Partner Consulting

JSchalekamp@deloitte.nl
+31 6 13 127 559
Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see www.deloitte.com/about for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms.

Deloitte provides audit, tax, consulting, and financial advisory services to public and private clients spanning multiple industries. With a globally connected network of member firms in more than 150 countries and territories, Deloitte brings world-class capabilities and high-quality service to clients, delivering the insights they need to address their most complex business challenges. Deloitte’s more than 200,000 professionals are committed to becoming the standard of excellence.

This communication contains general information only, and none of Deloitte Touche Tohmatsu Limited, its member firms, or their related entities (collectively, the “Deloitte network”) is, by means of this communication, rendering professional advice or services. No entity in the Deloitte network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.