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Business Modeling and Design in the Internet-of-things Context

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THE IMPACT OF IOT



BILLIONS OF DEVICES

- More than 50 billion in 2020
- Heterogeneous architectures
- Big Datas and broadband communications

Source: Intel



MANY APPLICATION DOMAINS

- Consumers (i.e., wearable, home automation, wellness)
- Commercial (i.e., retail, building, logistics)
- Industrial (i.e., manufacturing, energy, transportation)
- Public Sector (i.e., Smart Cities and regions, public safety, security, healthcare)

Source: Beecham

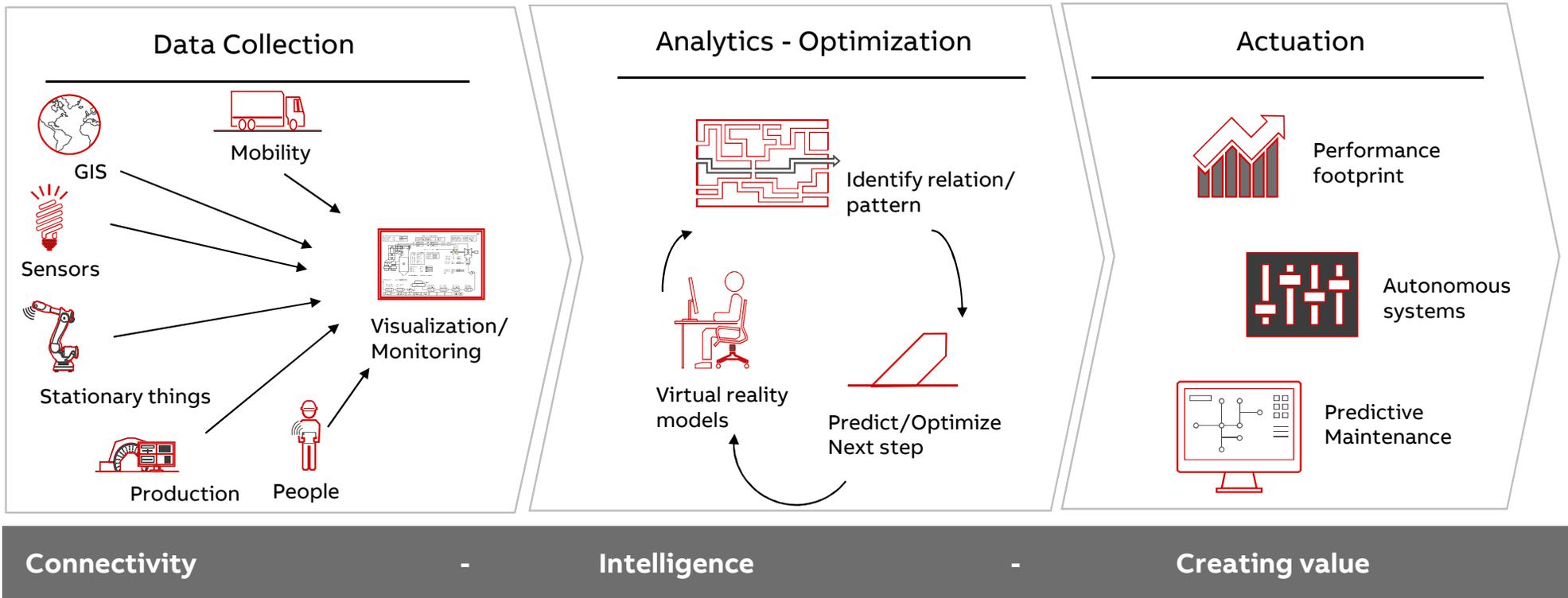
DIFFERENT BUSINESS APPROACHES

- Intelligent services
- Open ecosystems
- Different value chains
- Many different business models
- New actors (e.g., Makers)

Source: Freescale



A Shift in Focus to Service and Value



Business Model Definitions

1. Describes the rationale of how an organization creates, delivers, and captures value.
2. Defines the way in which a company delivers value to a set of customers at a profit.
3. Representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network.
4. ...

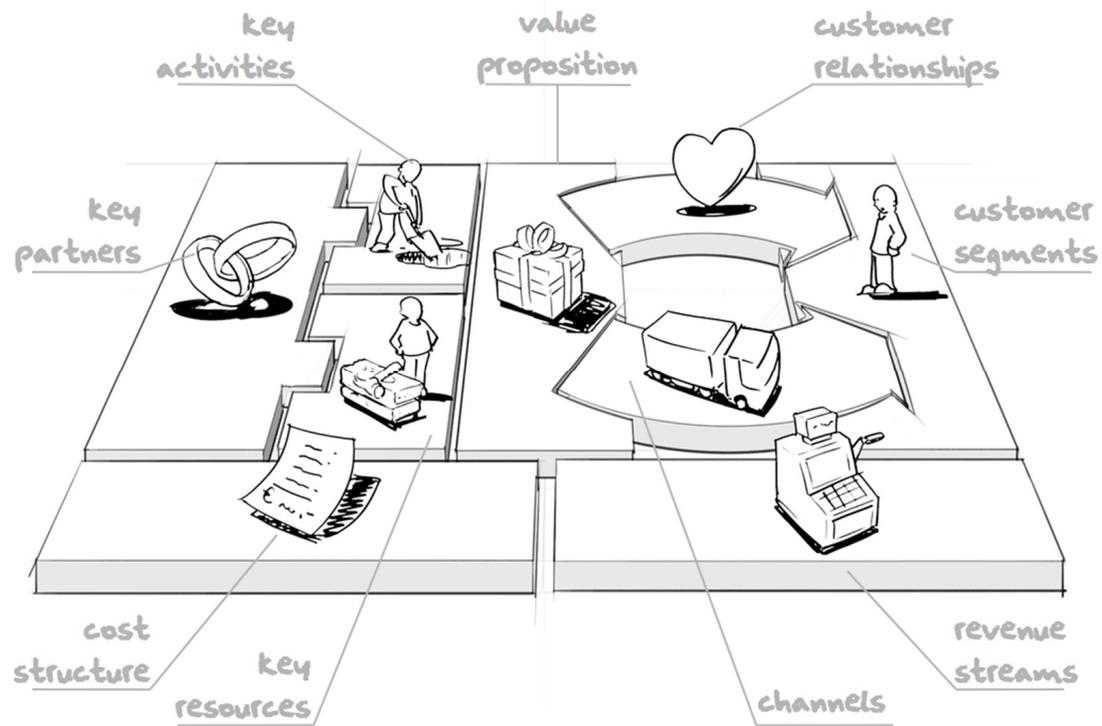
Value Creation

Perform activities that increase the value of a company's offering and encourage customer willingness to pay

Value Capture

Monetization of customer value

Business Model Canvas – An Example



images by JAM

Business Modelling Methods

- Business model canvas
- Four-box business model
- Six-function business model framework
- Four-factor business model framework
- Value networks analysis
- Wide-lens toolbox
- E3-value ontology and methodology

Business Model

A blueprint of how a company creates and captures value



The Internet-of-things Requires a Mindset Shift (1)

Create value differently

Traditional product mindset

- Identifying enduring customer needs and manufacturing well-engineered solutions.
- Offering standalone product

Internet-of-things mindset

- Through updates over the air, new features and functionality can be pushed to the customer on a regular basis.
- The ability to track products in use makes it possible to respond to customer behavior.
- Products can be connected to other products, leading to new analytics and new services for more effective process optimization, and customer service experiences.

The Internet-of-things Requires a Mindset Shift (2)

Capture value differently

Traditional product mindset

- Setting the right price to maximize profits from physical product sales.
- Commodity cost advantage, patents, or brand strength are usually the key points in the value chain.
- Focus on building and developing company-internal core capabilities, e.g., competences, resources, and processes.

Internet-of-things mindset

- Other possible revenue streams after the initial product sale, e.g., value-added services, subscriptions, and apps.
- Focus on things that generate recurring revenue.
- Add personalization to create customer “lock-in” that are gained through information over time, and network effects scale as more products join a platform.
- Focus on emphasizing and growing partnerships by understanding how others in the ecosystem make money.

Business Modelling Methods for the Internet-of-things

Adapted from traditional business models

- Adapted from business model canvas
 - Outcome-based business model concept
 - Business DNA model
 - Business model for IoT applications
 - IT-driven business model design methodology
 - IoT service business ecosystem design method
- Adapted from six-function business model framework
- Adapted from value networks analysis
- Adapted from E3-value ontology and methodology

Other IoT business models

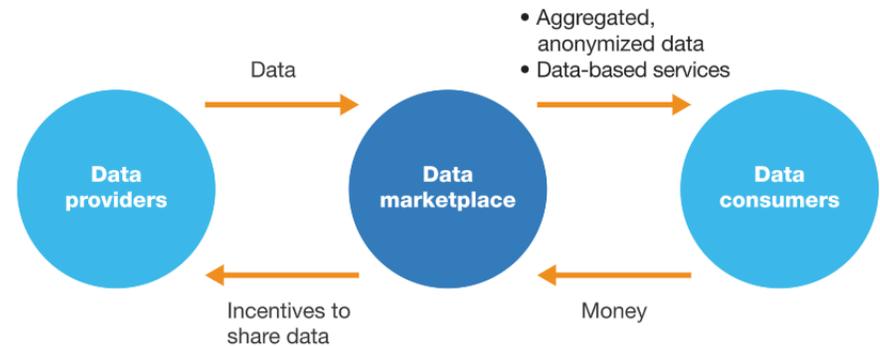
- Network-centric 3D framework
- 6C framework
- Multiple open platform business model
- Four-quadrant business model framework

Business Model Pattern “Sensor as a Service”

Collecting, processing and selling the sensor data for a fee from one subsection to other subsections.

The data-generating products or the resulting services are no longer the central focus in this pattern but rather the data itself -> multi-sided market for sensor data (Data marketplace)

Aggregated data can be an incentive for providers to share information.



McKinsey&Company

Challenges in Business Model Transition (1)

Data perspective

- How to ensure data privacy, confidentiality, integrity, ownership, and traceability?
- How to ensure data quality and trust between data provider and data consumer?
- Value co-creation through data sharing and integration
- How to build a common platform/API for data sharing with other existing and future partners?

Service perspective

- How is pricing determined?
- How to achieve recurring revenues?
- Trust between service provider and service consumer
- Ease of use
- Quality of service

Challenges in Business Model Transition (2)

Transition perspective

- How is the organization influenced due to the transition from product-dominant to service-oriented business model?
- Step-wise transition from existing business model to adapt to Internet-of-things context?

Legal perspective

- Compliance with regulations
- SLA legal aspects
 - A binding contract between service provider and service consumer
 - Outlines responsibilities, describes the services to be provisioned, defines the service commitment guarantees, and penalties for non-compliance.

Future Perspectives of Business Model Design

Value design shifting from a firm to designing business models for ecosystems

- Integration of actors, various resource flows, and value exchange between them

Value design shifting from data sharing to co-developing

- Greater level of collaboration and sharing - all actors collaborate and co-develop high value analytics solutions (creating value and wins for all actors involved)

Value design to embed sustainability thinking

- Make sustainable choices to reduce material consumerism and enhance product lifecycles

Summary

- Survey existing business modelling and design methods
- Discuss the impact of IoT on mindset shift in value creation, value capture, business ecosystem thinking
- Discuss the challenges in business model transition process for organizations
 - Data
 - Services
 - Transition process
 - Legal and regulation



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