

Knowledge Collaboration: The Role of Open Innovation Platform Ecosystem

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Agenda

- Purpose
- Digital Business & Digital Transformation
- Digital Platforms & Ecosystems
- Open Innovation Platform Ecosystem
- Conclusion. Main Frameworks



Purpose

- We investigate an opportunity for cross-fertilization between Digital Business, Digital Platforms, Open Innovations and the field of sustainability with related disciplines.
- We develop framework by analyzing different dimensions and layers of Platform Paradigm, Knowledge and sustainability concepts.
- In our main research we aimed for a Platform value chain, Platform ecosystem, and data-driven platform business models to develop taxonomies in order to facilitate understanding, analysis and structure of Digital Business, Platform and sustainability relationship.



Design/Methodology/Approach

- Knowledge (especially related with Big Data) is a subset of different features and could be presented by developed taxonomy that includes data, compute and storage infrastructures, analytics, visualization, security/privacy and industry domains.
- Based on theoretical conceptualization, combined with empirical evidence, we propose a framework for Platform Knowledge governance related with multi-level taxonomy with more than 100 entities. This framework provides new Knowledge/Big Data dimensions of Platform research.



Research design

We collected **qualitative data** through semi-structured expert interviews. Our interview partners were members of the Technologies groups, founders and CTOs of **Russian National Technology Initiative** (NTI - <http://www.nti2035.ru/>; <https://asi.ru/eng/nti/>) data-driven ventures for emerging NTI markets.

The NTI is seen as a set of the projects and programs designed to involve Russia directly into the development of future global market standards and to gain a significant market share in these markets.

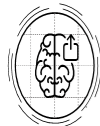
We conducted **one interview per NTI market** with an average duration of 50 minutes. All interviews were recorded, transcribed and coded.



Successful implementation of the NTI up to year 2035



The NTI markets form 50% of the Russian economy



Russian Federation enters top 10 major intellectual property exporters



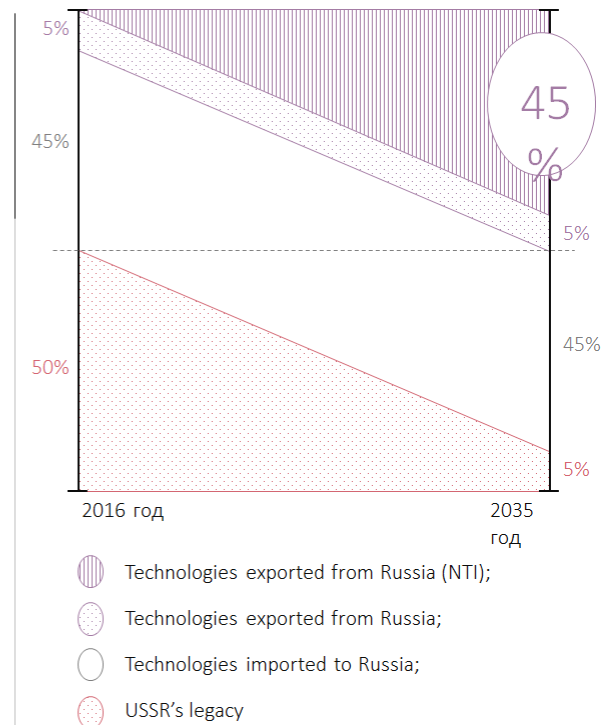
Russian Federation makes the top three technological empires



Russian companies and talents with an "NTI gene" establish new global technological brands



Skill and knowledge cult draws on international intellectual assets to the country



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Research design

We analyzed following emerging NTI markets:

- **EnergyNet** (distributed power from personal power to smart grid and smart city);
- **FoodNet** (system of personal production and food and water delivery);
- **HealthNet** (personal medicine);
- **AeroNet** (distributed systems of unmanned aerial vehicles);
- **AutoNet** (distributed network of unmanned management of road vehicles);
- **SafeNet** (new personal security systems);
- **FinNet** (decentralized financial systems and currencies);
- **NeuroNet** (distributed artificial elements of consciousness and mentality).



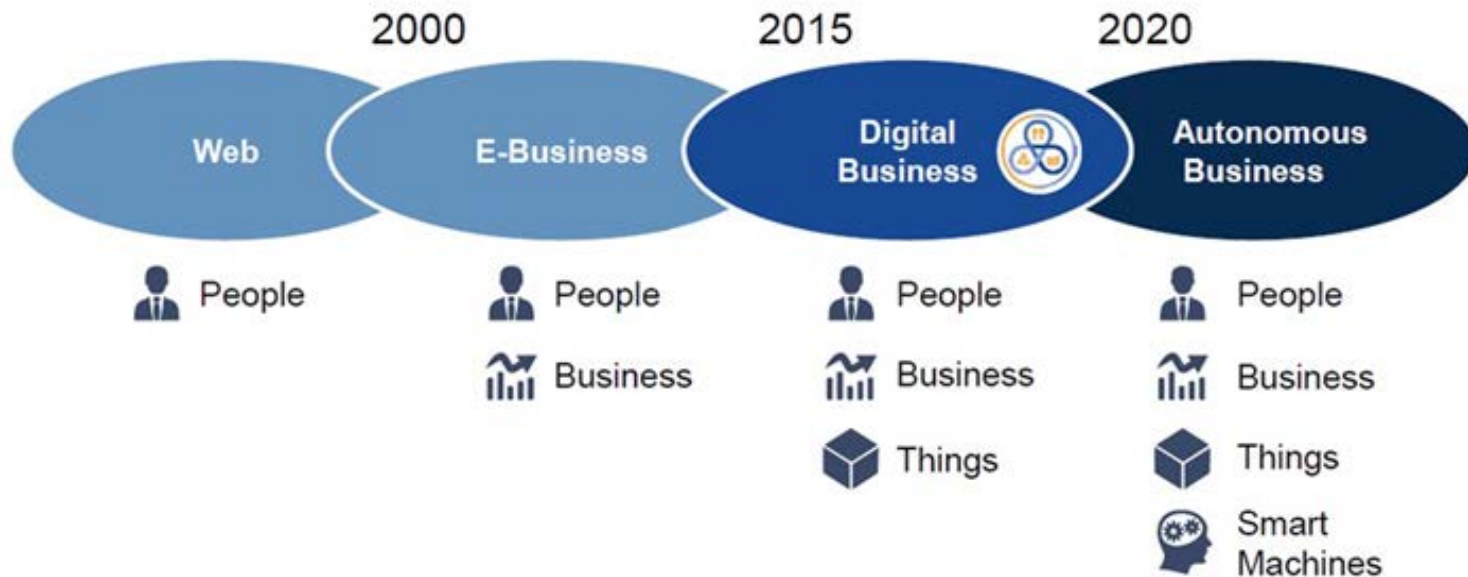
Research design

We initiated our process through a conceptual-to-empirical approach by defining the primary 5 components/dimensions of an established data-driven business model pattern conceptualization. Such dimensions were specified for each side of data-driven business platform:

- Target Group of Customers,
- Target Ecosystem partners.
- Value Proposition,
- Value Creation,
- Value Capture.



The Era of Digital Business



What Is Digital Business?

The creation of new business designs reached by blurring the digital and physical worlds ... via an unprecedented convergence of people, business and **things** (*Gartner*).



Is Digital Business the Answer to the Climate Crisis?

More IT = Less CO2

By rolling out information and communications technologies (ICT) across the global economy, total emissions of carbon dioxide equivalent could be cut **12.1 gigatons by 2030** and help forestall temperature increases, **GeSI research has concluded**. **GeSI** is an **ICT industry association** working with, among others, the United Nations Framework Convention on Climate Change to improve its members' sustainability performance and promote technologies that foster sustainable development.



New Sources of Revenue & Sustainability Enabled by Digital Business

Less transformative -----> More transformative

Digitalizing Product or Service

- E.g., Whirlpool Smart Appliances
- Adding IoT functions to product
- Selling connected-services (e.g., IoT monitoring)
- Selling/Participation via ecosystem
- Selling via API
- Selling via 3D printing

Metered Revenue

- E.g., Pay-as-you-drive insurance
- Pay-as-you-utilize asset ("Servicization")
- Aircraft engine "power by the hour"
- Zipcar

Outcome-Based With Risk Sharing

- E.g., Hitachi Group train-as-a-service
- Risk sharing based on outcome
- Pay-as-you-deliver outcome
- Quantified self-insurance (e.g., Vitality)

Becoming an Ecosystem Platform

- E.g., Uber, Apple HomeKit, Alibaba Group
- Sharing economy
- Multisided markets
- Listing fee, advertising revenue, percentage take of transaction
- Blockchain
- Connected B2C ecosystems (home, car, self/health)
- B2B next-generation marketplaces

Moving Into Adjacent and New Industries

- E.g., Monsanto Precision Planting
- Adding sensors to lamp posts or fiber-optic to rail lines
- Internet companies building autonomous cars (Google)



Digital Business Transformation



Food :: FoodNet

FoodNet is a food products market square that provides intellectualization, automatization and robot-based application by all technological processes at every life stage of a product — from production to consumption.

FoodNet focuses also on development of biotechnologies



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FoodTech transformation

While smart factories and smart homes are slowly becoming everyday life, technology has also entered the food industry.

- FoodTech Trend #1: 'robot' restaurants
- FoodTech Trend #2: smart packaging
- FoodTech Trend #3: sustainability
- FoodTech Trend #4: augmented transparency



FoodTech transformation

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- FoodTech Trend #3: sustainability
- FoodTech Trend #4: augmented transparency



FoodTech Trend #2: smart packaging

Packaging is another aspect of the food industry that will be changed by digital transformation. Smart packages will be able to monitor the condition of wrapped foods during transport and storage and thereby determine their edibility.

Sensors incorporated on smart labels, e.g. using nanotechnology will be able to detect microorganisms or gases present in the package.

Another upcoming solution is a counting process for fresh food that starts right after opening the groceries package and shows how many days ago it was opened or how long it will be edible. This will avoid food been thrown away and will therefore help to accomplish **trend number 3**.



FoodTech Trend #4: augmented transparency

The demand for information about nutrition, ingredients and origin of food has been growing in the past years and therefore has created the demand for Augmented Transparency. Through smart labels we will be able to dive even deeper into the catalogs of information about our food and additional service information will be integrated to overcome the limited space available on printed product labels.

All data could be filtered based on personal preferences, offering usage instructions, educational events, customized recipes and much more!



Helth Transformation :: HelthNet

Personalized medicine market square that includes segments of IT industry and platforms in healthcare, sports medicine, preventive medicine, new medical materials and biological prosthesis, artificial organs, personal medicine, aging treatment and prevention



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HealthNet Transformation

<p>How you compete</p> <p>Who you compete against</p>	Improved Operations and Engagement	Sporting Goods Reduce costs with IoT and 3DP in factories	Healthcare (hospital) Improve productivity with IoT in hospital
	New Revenue Products/Services	Launch new products: wearable fitness monitor & connected equipment	Launch new service: remote home health monitoring
	New Business Models	Launch joint ventures with health insurers, gyms, hospitals	Establish new points of care: retail locations, gyms, community centers
	New Competitors	Retail pharmacies, fitness gyms, smartphone makers, health portals, seniors' homes, sporting goods brands, apparel brands, medical devices	
	New Hybrid Industry	New industry created: Connected "Lifecare", etc.	



Power of platform business models

Enterprises that leverage the power of platform business models have grown dramatically in size and scale over the past decade. The rise of platforms as new organizational form is now active in North America, Europe, Asia, Africa and Latin America. No longer the sole domain of social media, travel, books or music, platform business models have made inroads into transportation, banking and even healthcare and energy (Evans, Gawer, 2016).



Why study platforms?

Global market:

- A total of **176 platform companies**. The list includes large publically traded companies as well as smaller private companies, such as Uber and Airbnb that have burst onto the scene in the past few years (Evans, Gawer, 2016).
- The total value of these companies exceeds **\$4.3 trillion** demonstrating the size and scale that platform companies have achieved in recent years.



Why study platforms?

Large and growing share of global economy

- Not just digital industries
 - Financial services (credit cards); Transportation (airlines, travel agents; Retail (shopping centers)
 - Energy, e.g., grid + appliances, energy trading
 - Real estate, e.g., home buying
 - Health care, e.g., HMOs
 - Enterprise administration, e.g., recruiting, B2B procurement
- **60** of the world's 100 largest companies earn most of their revenue from platform- mediated networks



Two- or Multi- sided market

According to definition (Evans et al, 2006; Hagiu, and Wright, 2015b) a multi-sided market exists, when at any point in time there are

- **two or more** distinct groups of customers;
- the value obtained by one kind of customers increases with the number of the other kind of customers; and
- an intermediary is necessary for internalizing the externalities created by one group for the other group.



Multi-sided Platforms

Such intermediaries are known as Two- or Multi-Sided Platforms. Hagiu, and Wright (2015) proposed definition that provides a more precise notion of Multi-Sided Platform by requiring that they enable direct interactions between the multiple customer types which are affiliated to them:

Multi-sided platform (henceforth, MSP) is an organization that creates value primarily by enabling direct interactions between two (or more) distinct types of affiliated customers.



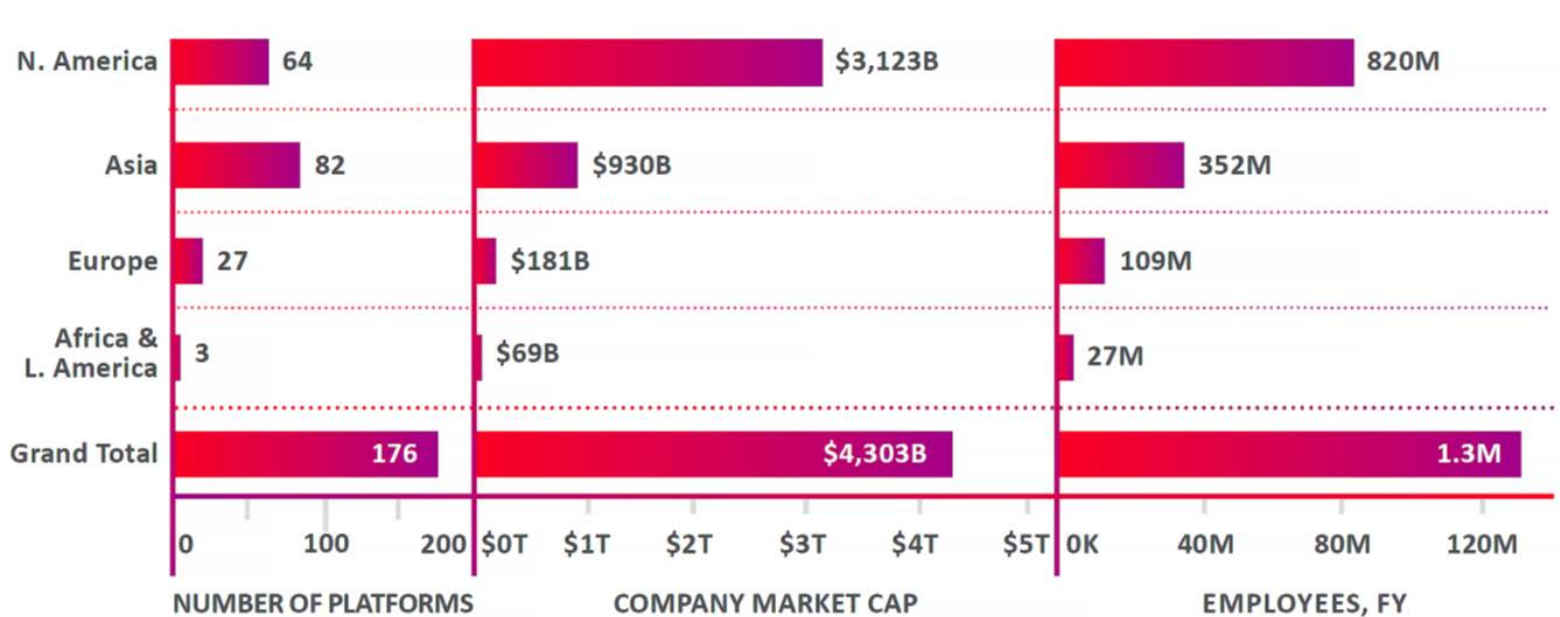
Multi-sided Platforms

At the most fundamental level, MSPs have two key features (Hagiu, and Wright, 2015):

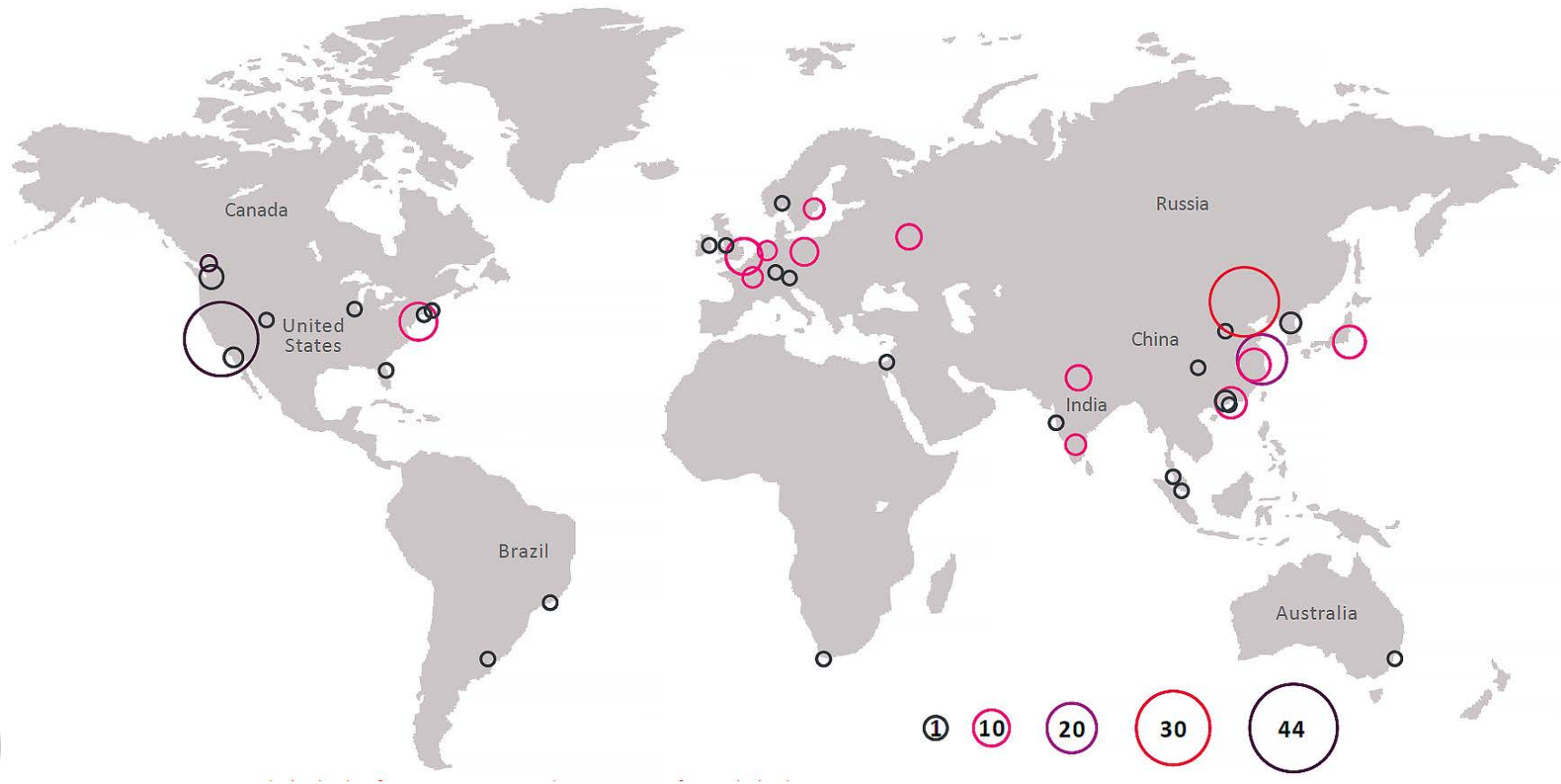
- They enable direct interactions between two or more distinct sides.
- Each side is affiliated with the platform.



PLATFORM COMPANIES BY REGION

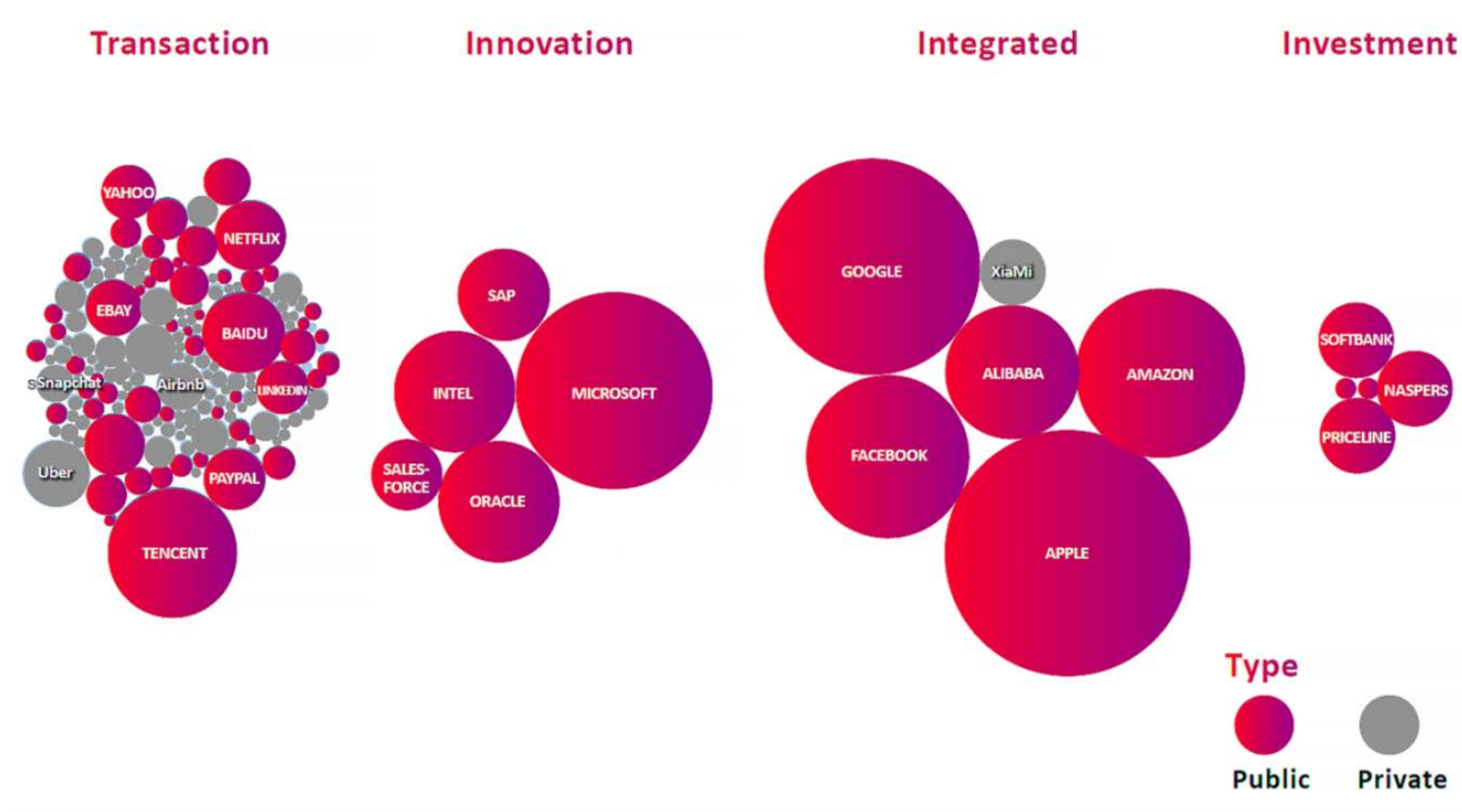


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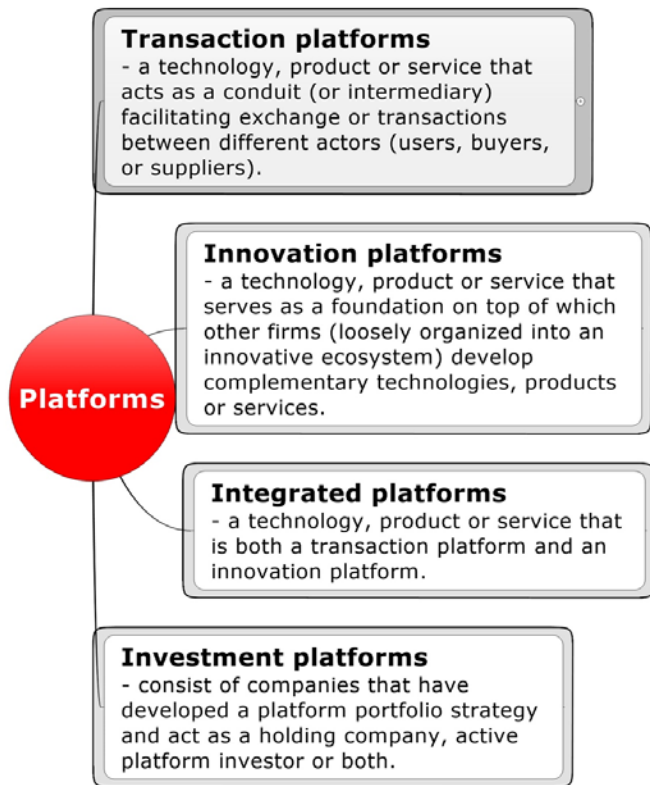


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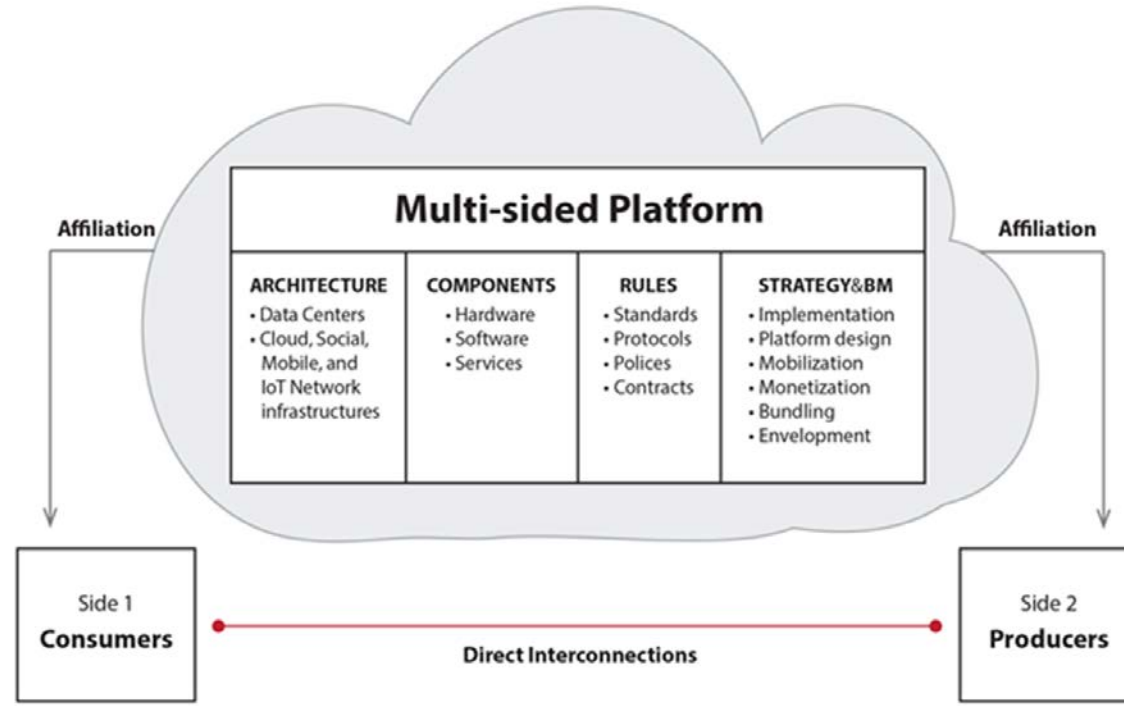
PLATFORM COMPANIES BY TYPE



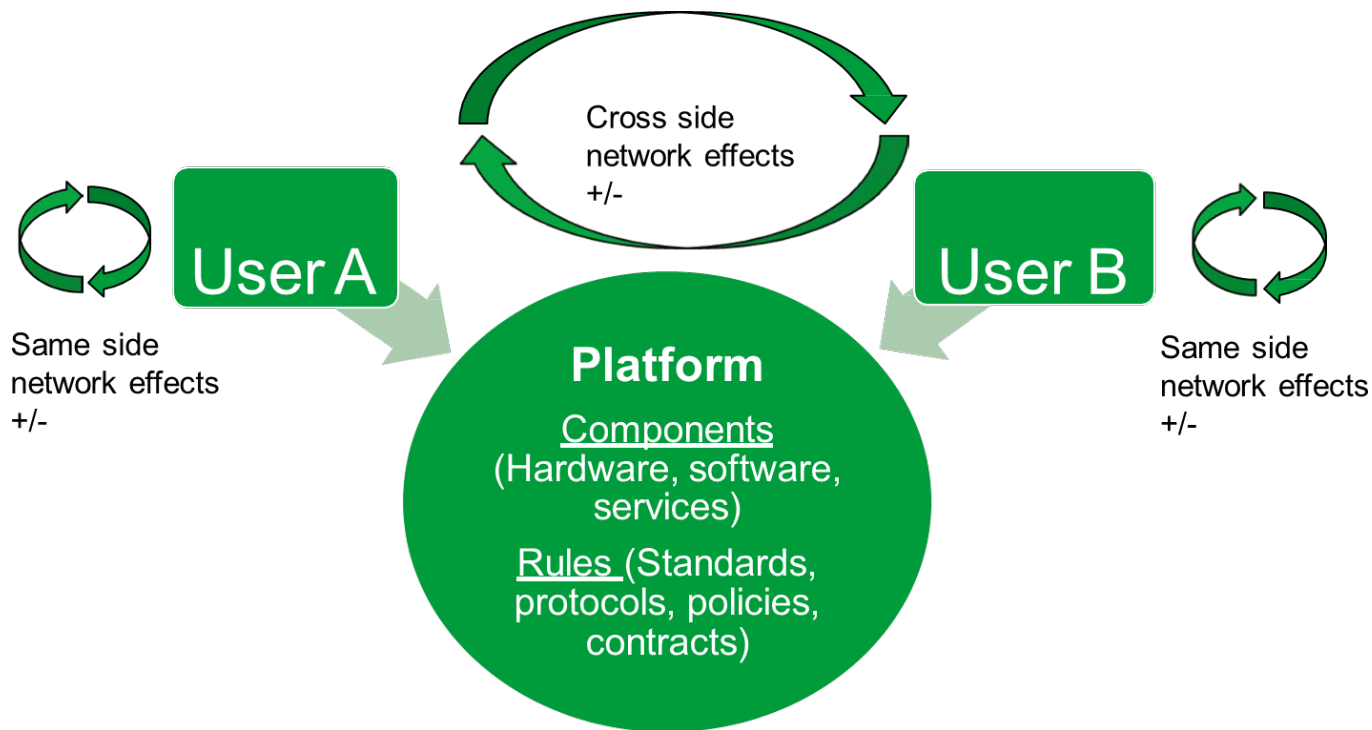
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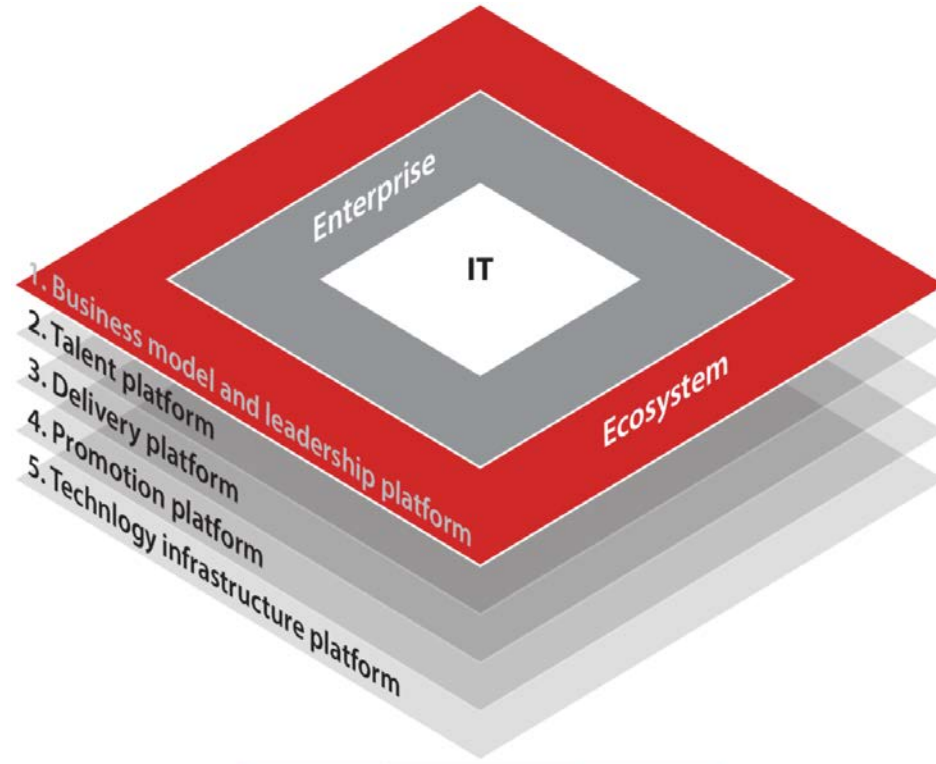
Business Platform Building Blocks



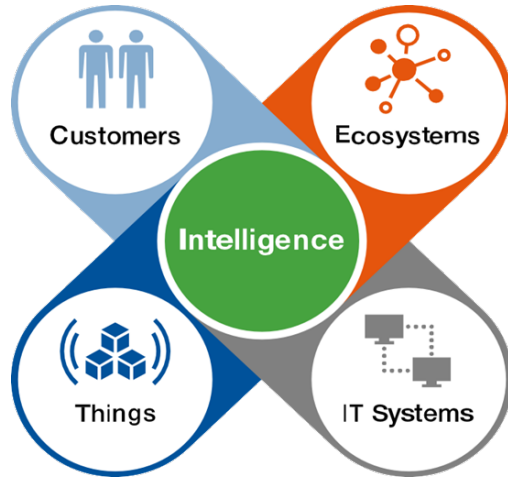
Two-Sided Platform Network Effects



The New Digital Business Platform Paradigm



The New Digital Business Platform Paradigm



Digital Business success depends on the creation and leverage of the new Digital Business Platform Paradigm. Only one of these components (IT Systems) is internal to the enterprise and under its control



A platform-based ecosystem

A platform-based ecosystem consists of

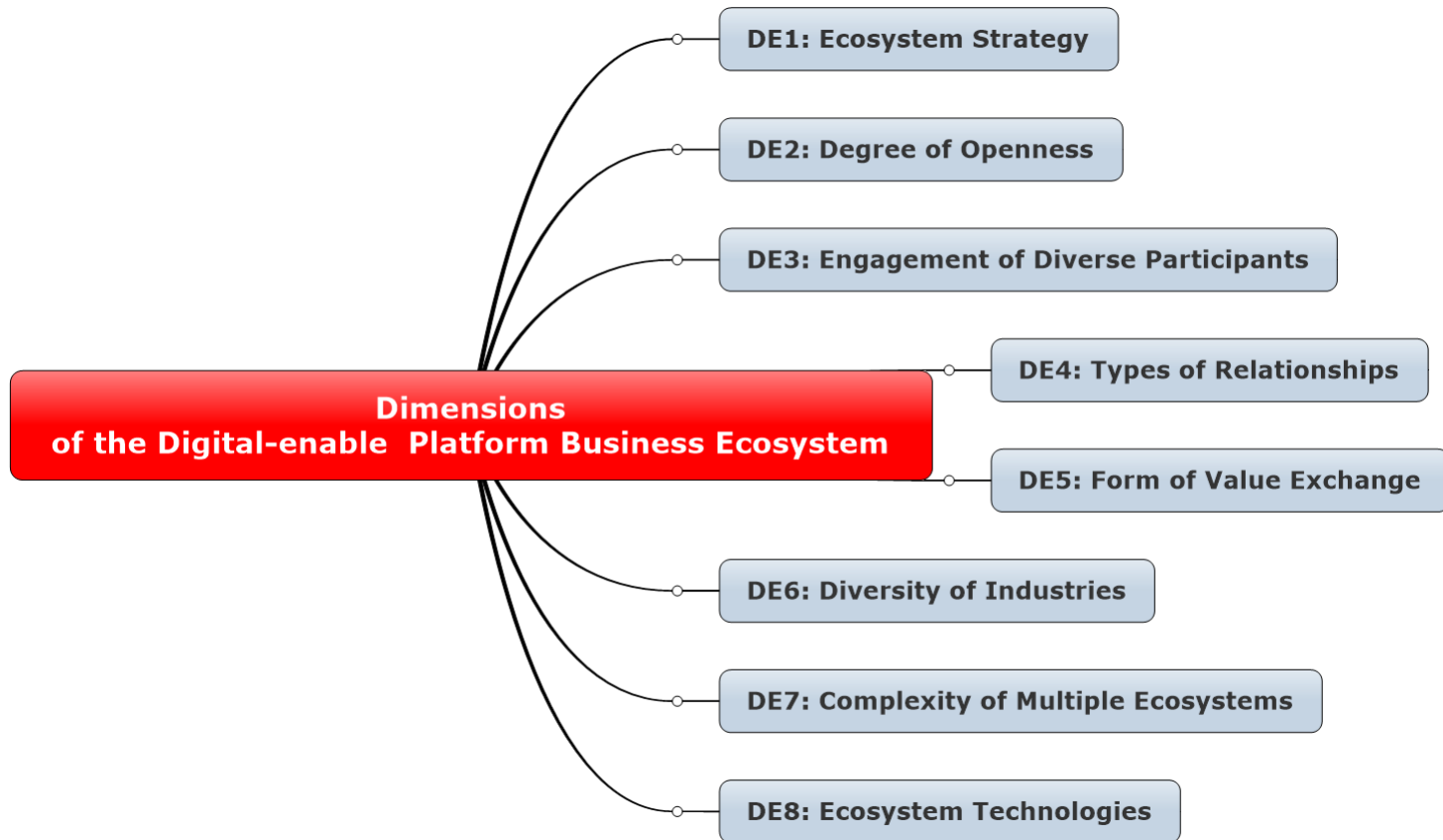
- a platform,
- Target Group of Customers,
- Target Ecosystem partners,
- complementary products and services,
- rival platform ecosystems, and
- the competitive environment in which they exist, upstream and downstream parts of a platform value chain (Tiwana, 2014).

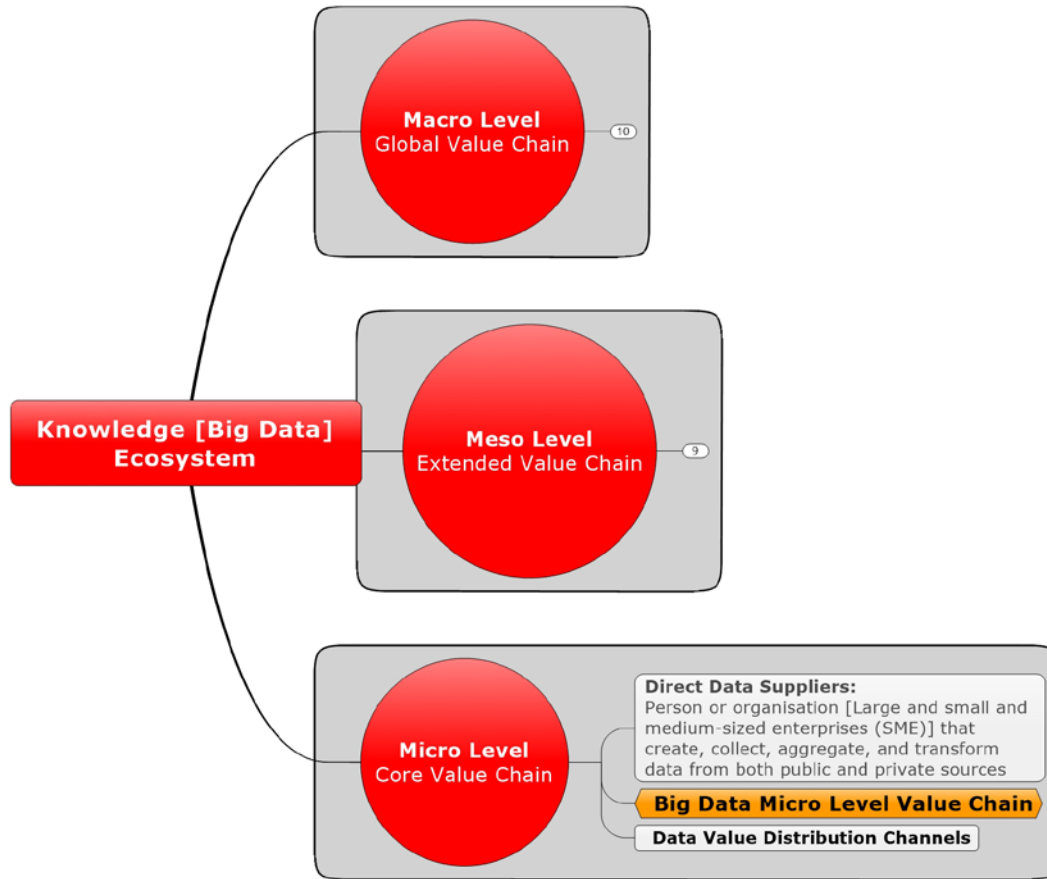


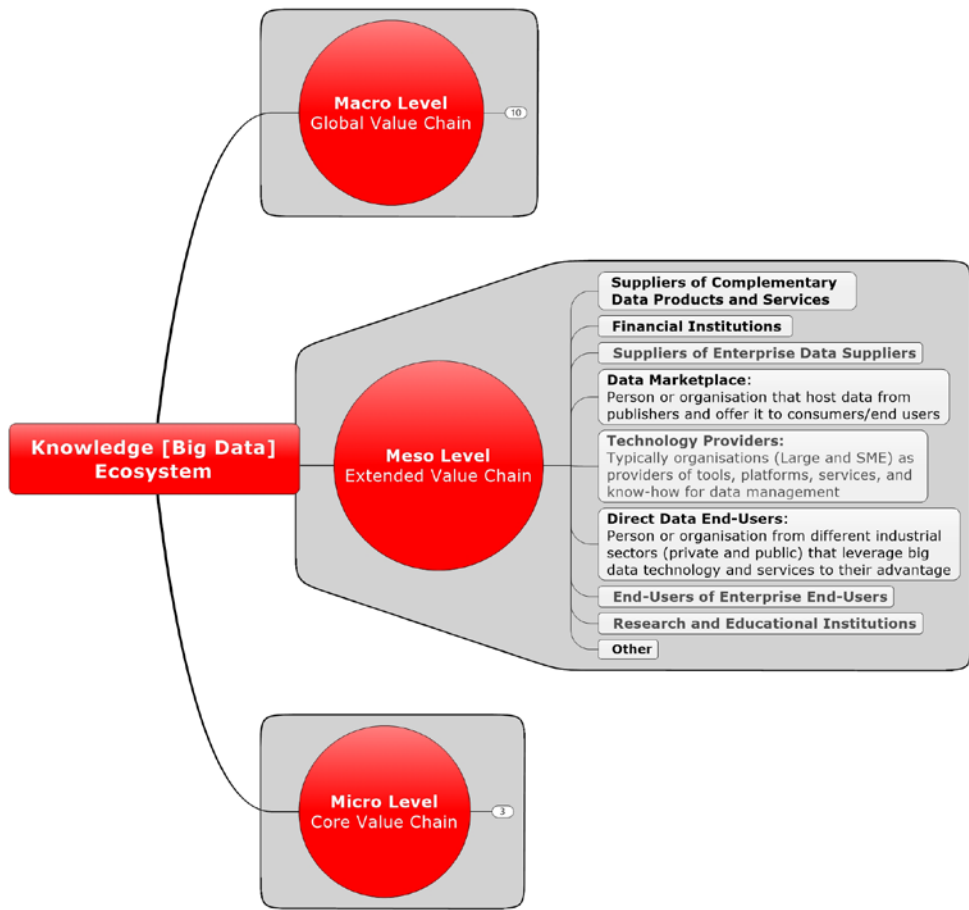
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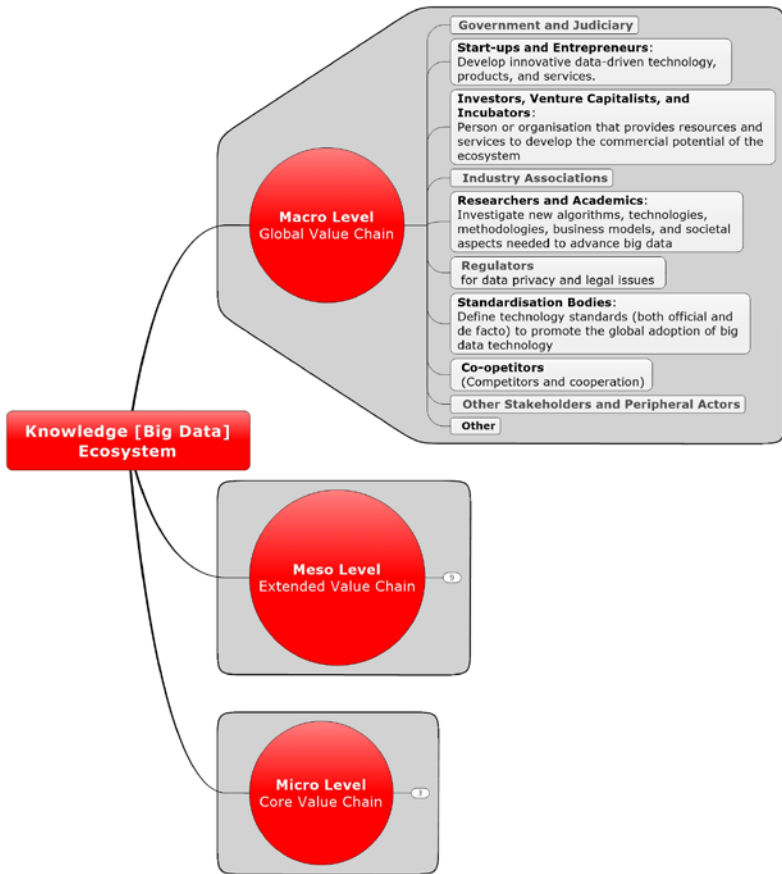
- The ***upstream part*** of the value chain is what goes into producing the platform itself (component and hardware suppliers, software licensors, manufacturing partners, network connectivity providers).
- The ***downstream part*** includes platform complement producers (primarily app developers and complementary service providers), affiliated customers who adopt it, and other intermediaries between the platform owner and side users such as retailers and carriers.



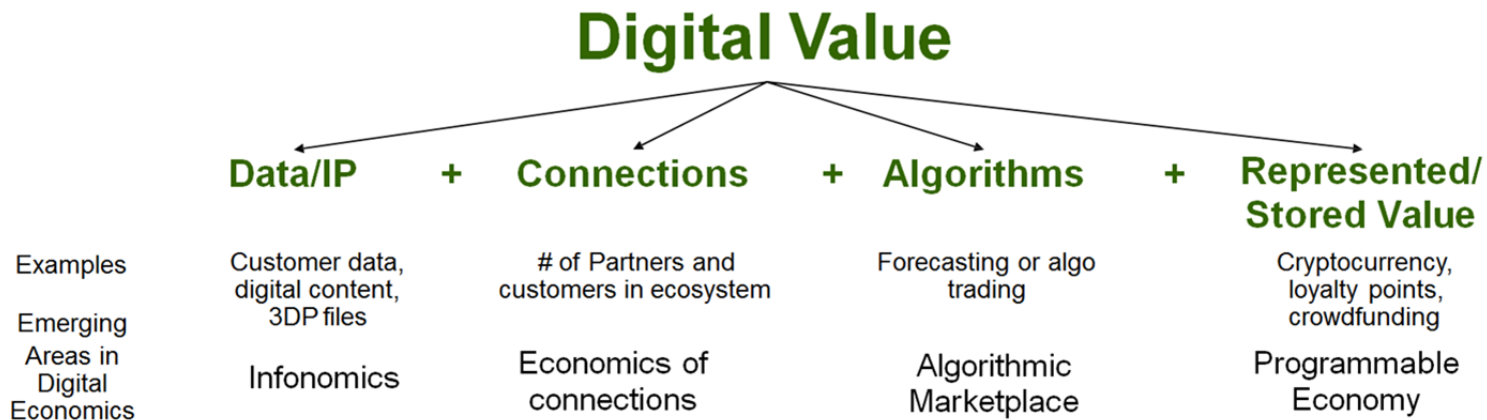








Where is Digital Value in Platform Ecosystem?



Conclusion



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Digital Business Transformation

**Current
Business** +

Digital Technologies

Internet of Things

Smart machines

3D printing

Other

Digital Trends

Sharing economy

Unbanked coming online

Other

New Digital Business Models

Multisided platforms

Other

New Regulations

Legalization of autonomous vehicles

Legalization of remote prescriptions

Taxation and trade policies on 3D printed goods

Other

=

**Digital
Business**



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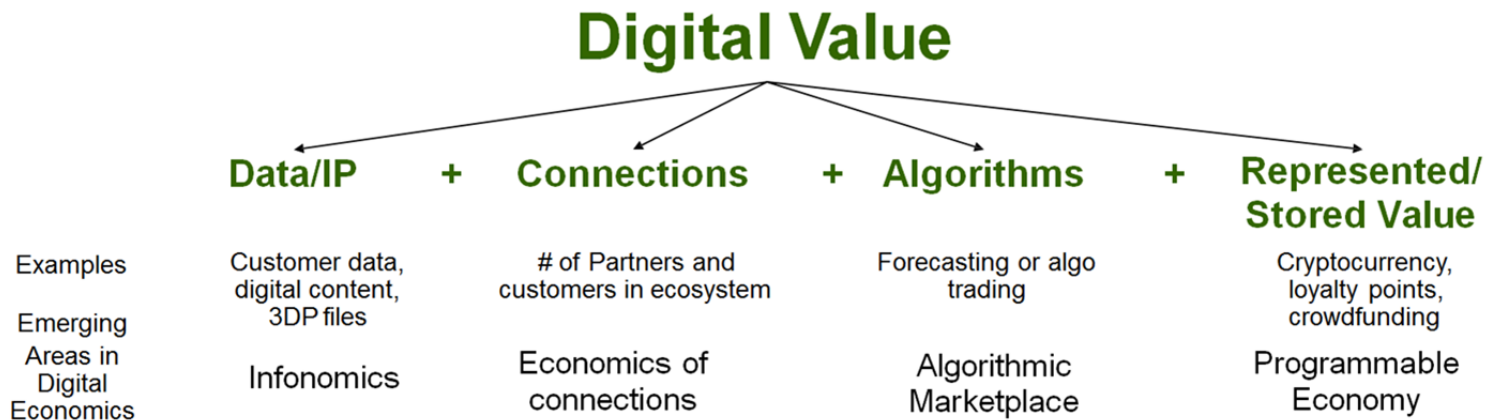
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Where is Digital Value in Platform Ecosystem?





Operation

Centralized

Decentralized

Distributed

Governance/ Business Model	Centrally Controlled	Community Controlled	Autonomous
Stability/Resilience	Unstable	Bounded Stability	Stable
Scalability	Large Throughput/ Small Number of Nodes	Small Throughput/ Medium Number of Nodes	Infinite
Speed of Enterprise Development	Fast	Medium	Very Slow
Architecture Evolution/Diversity	Permissioned/Private	Hybrid	Permissionless/Public
Tokenization	No	Possibly	Yes
Trust Control	High Traditional/ Low Algorithmic	Medium Traditional/ Medium Algorithmic	Low Traditional/ High Algorithmic



References



Yablonsky, S. (2018). Multi-Sided Platforms (MSPs) and Sharing Strategies in the Digital Economy: Emerging Research and Opportunities, IGI Global, 192 p.

<https://www.igi-global.com/book/multi-sided-platforms-msps-sharing/189158>



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Thank you! Questions?



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