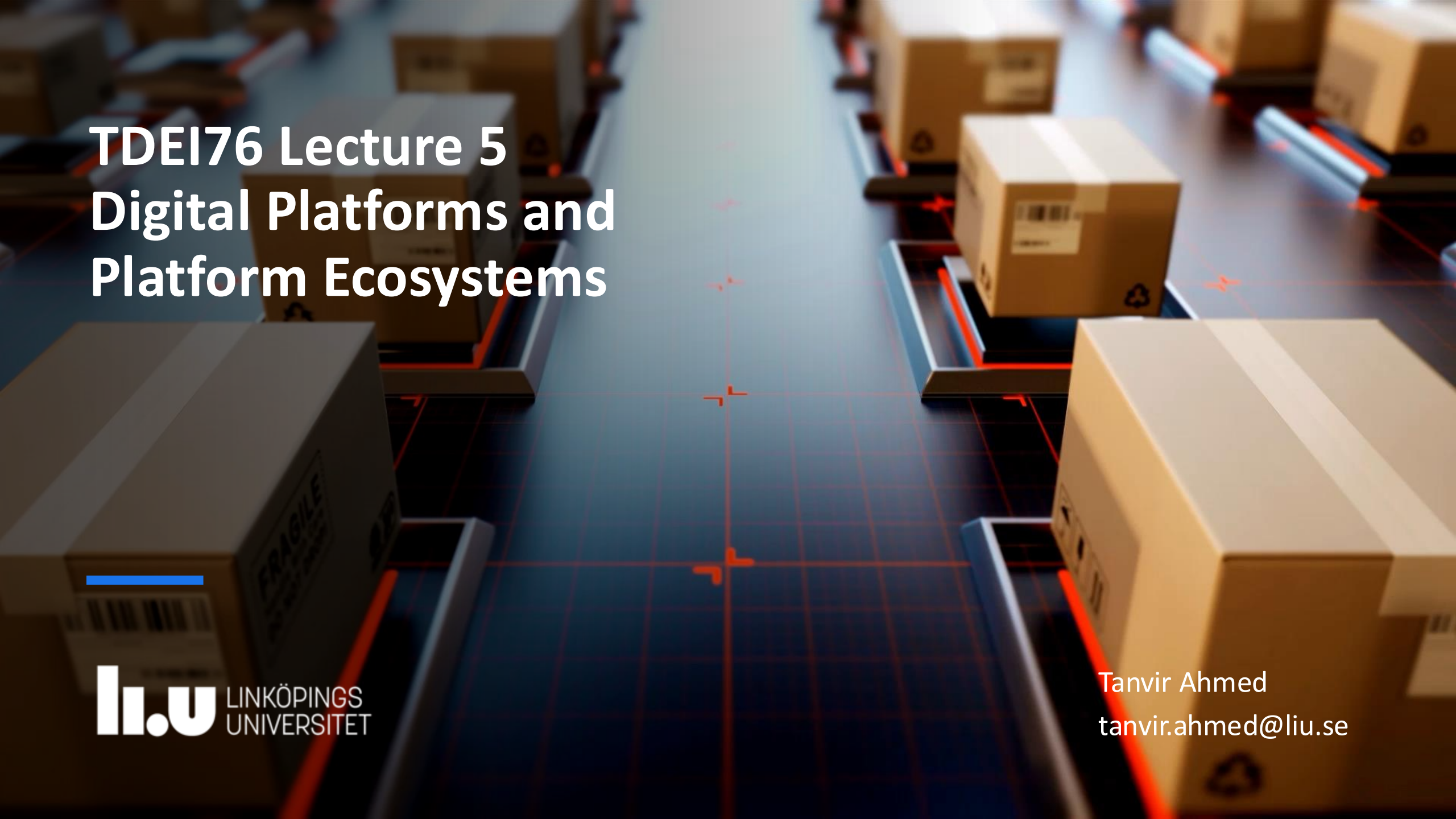

TDEI76 Lecture 5
Digital Platforms and Platform Ecosystems

LINKÖPINGS UNIVERSITET

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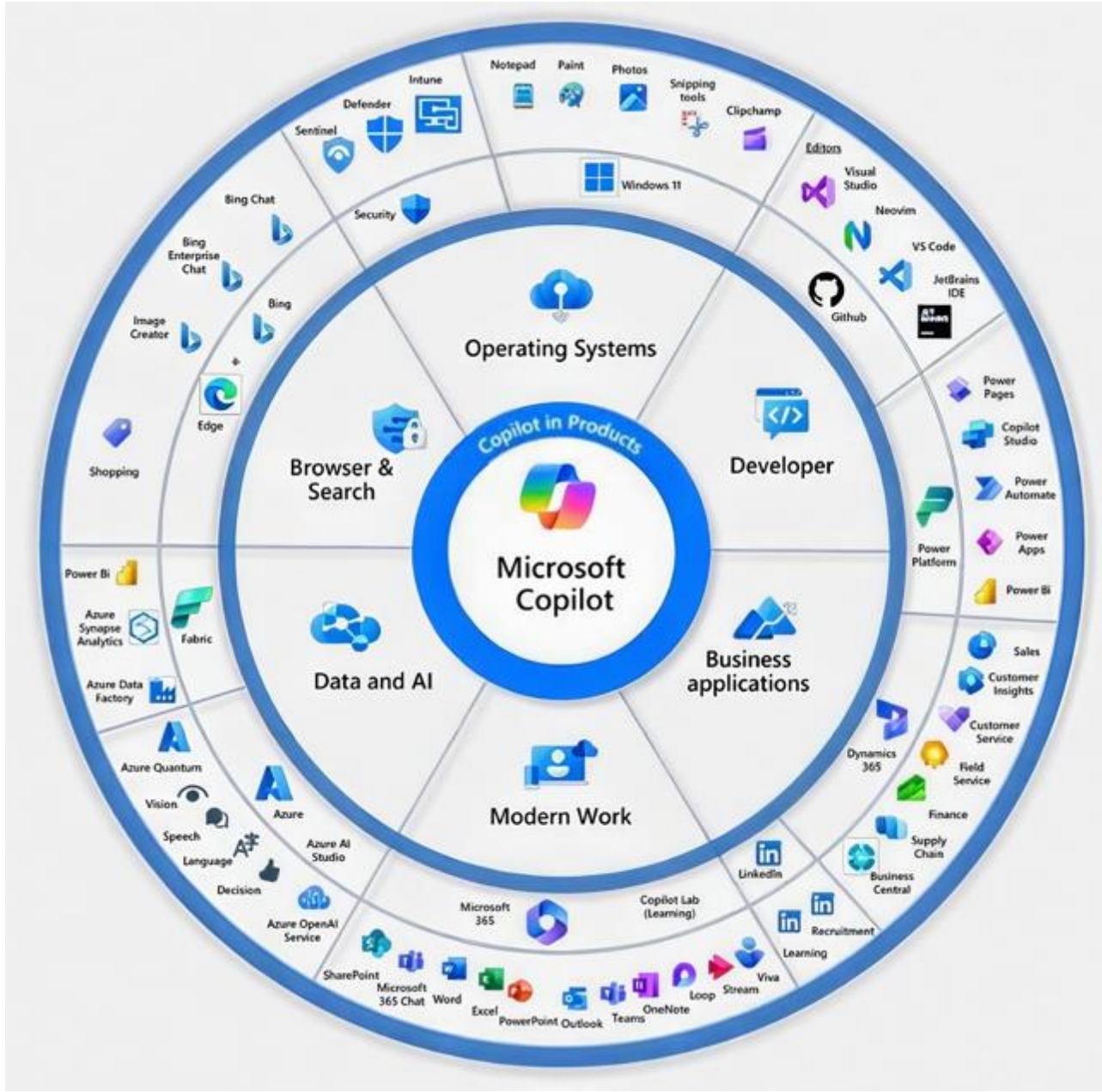
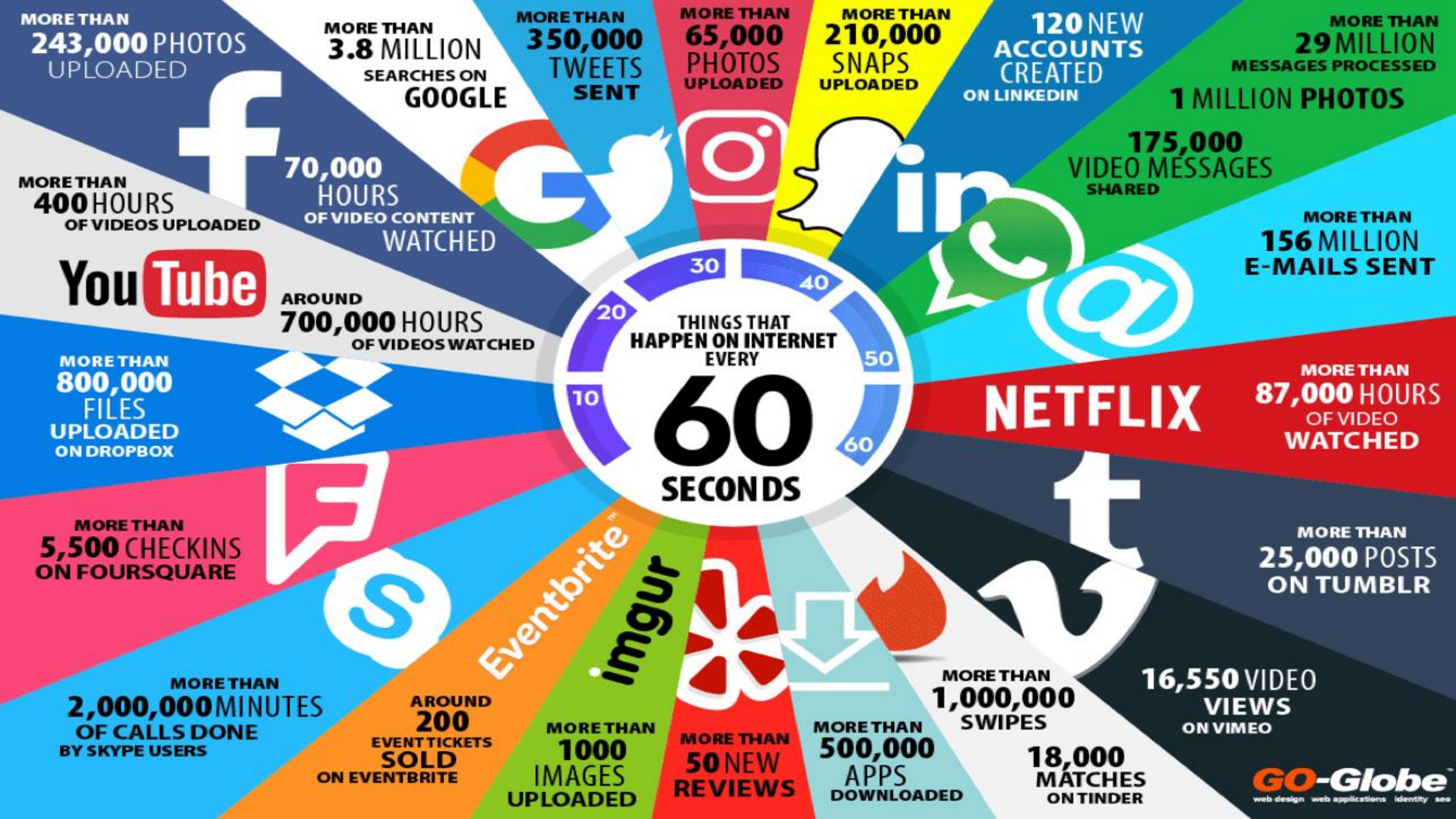
What are digital platforms and platform ecosystems

Microsoft Dynamics 365 Business Central
Microsoft 365
Developer Tools
Power Platform
Microsoft Azure
Identity, security, management, and compliance


Microsoft Copilot
Copilot in Products
Operating Systems
Developer
Business applications
Modern Work
Data and AI
Browser & Search
Windows 11
Notepad
Paint
Photos
Snipping tools
Clipchamp
Security
Intune
Defender
Sentinel
Editors
Visual Studio
Neovim
VS Code
JetBrains IDE
Github
Power Platform
Power Pages
Copilot Studio
Power Automate
Power Apps
Power Bi
Dynamics 365
Sales
Customer Insights
Customer Service
Field Service
Finance
Supply Chain
Business Central
LinkedIn
Recruitment
Learning
Viva
Stream
Loop
OneNote
Teams
Outlook
PowerPoint
Excel
Word
Microsoft 365 Chat
SharePoint
Microsoft 365
Copilot Lab (Learning)
Azure
Azure AI Studio
Azure OpenAI Service
Vision
Speech
Language
Decision
Azure Quantum
Azure Data Factory
Azure Synapse Analytics
Fabric
Power Bi
Shopping
Edge
Bing
Bing Chat
Bing Enterprise Chat
Image Creator


MORE THAN 243,000 PHOTOS UPLOADED
MORE THAN 3.8 MILLION SEARCHES ON GOOGLE
MORE THAN 350,000 TWEETS SENT
MORE THAN 65,000 PHOTOS UPLOADED
MORE THAN 210,000 SNAPS UPLOADED
120 NEW ACCOUNTS CREATED ON LINKEDIN
MORE THAN 29 MILLION MESSAGES PROCESSED
1 MILLION PHOTOS
175,000 VIDEO MESSAGES SHARED
MORE THAN 156 MILLION E-MAILS SENT
70,000 HOURS OF VIDEO CONTENT WATCHED
MORE THAN 400 HOURS OF VIDEOS UPLOADED
YouTube
AROUND 700,000 HOURS OF VIDEOS WATCHED
THINGS THAT HAPPEN ON INTERNET EVERY 60 SECONDS
10
20
30
40
50
60
NETFLIX
MORE THAN 87,000 HOURS OF VIDEO WATCHED
MORE THAN 800,000 FILES UPLOADED ON DROPBOX
MORE THAN 5,500 CHECKINS ON FOURSQUARE
MORE THAN 25,000 POSTS ON TUMBLR
MORE THAN 2,000,000 MINUTES OF CALLS DONE BY SKYPE USERS
AROUND 200 EVENT TICKETS SOLD ON EVENTBRITE
Eventbrite
imgur
MORE THAN 1000 IMAGES UPLOADED
MORE THAN 50 NEW REVIEWS
MORE THAN 500,000 APPS DOWNLOADED
MORE THAN 1,000,000 SWIPES
18,000 MATCHES ON TINDER
16,550 VIDEO VIEWS ON VIMEO
GO-Globe
web design web applications identity seo

RANK	NAME	COUNTRY/TERRITORY	SALES	PROFIT	ASSETS	MARKET VALUE
1	JPMorganChase	United States	$252.91 B	$50.05 B	$4,090.73 B	$588.09 B
2	Berkshire Hathaway	United States	$368.96 B	$73.42 B	$1,070.04 B	$899.14 B
3	Saudi Arabian Oil Company (Saudi Aramco)	Saudi Arabia	$489.07 B	$116.95 B	$661.54 B	$1,919.26 B
4	ICBC	China	$223.85 B	$50.38 B	$6,586.01 B	$215.2 B
5	Bank of America	United States	$183.28 B	$25.03 B	$3,273.8 B	$307.26 B
6	Amazon	United States	$590.74 B	$37.68 B	$530.97 B	$1,922.1 B
7	China Construction Bank	China	$199.84 B	$47.01 B	$5,403.8 B	$187.5 B
8	Microsoft	United States	$236.58 B	$86.18 B	$484.27 B	$3,123.13 B
9	Agricultural Bank of China	China	$193.5 B	$37.38 B	$5,832.95 B	$170.94 B
10	Alphabet	United States	$317.92 B	$82.41 B	$407.35 B	$2,177.68 B

3 out of 10 top firms are platform businesses

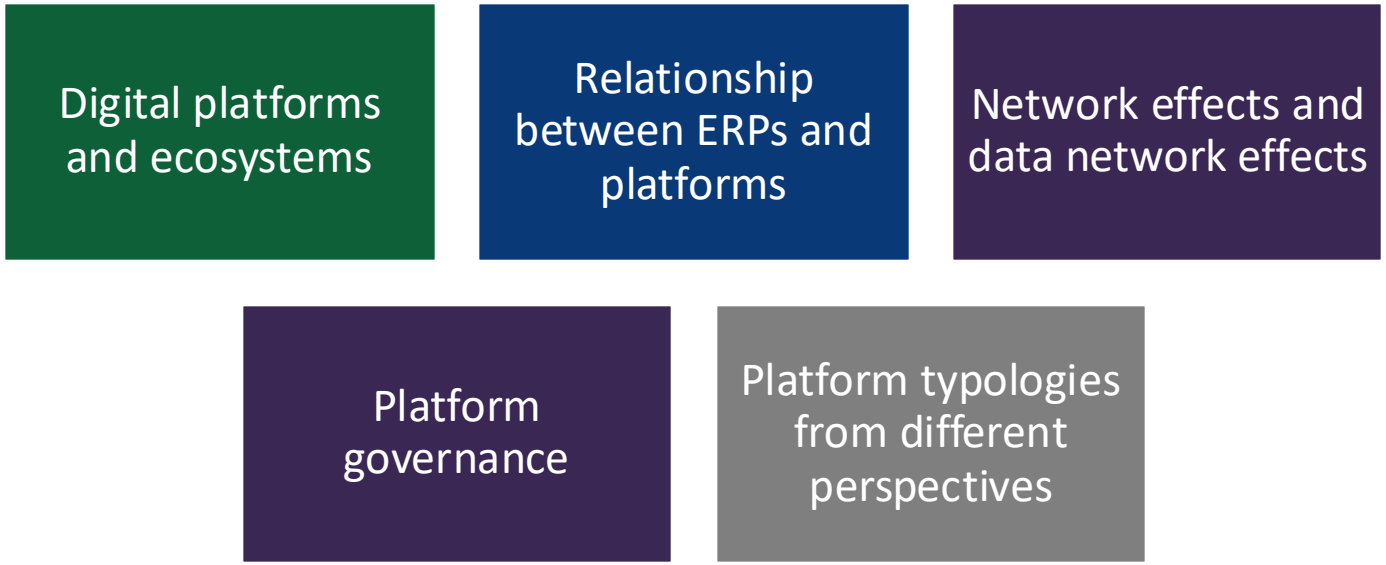
Mandatory readings

Boudreau, 2010:
Platform architecture

Cusumano, 2022:
Data platforms and network effects

Ahmed and Kowalkowski, 2025:
Distinct platform types and governance

Topics to be covered



Definitions

Digital platforms	Information technology artifacts with specific development affordances. They serve as amalgamations of digital resources that facilitate interaction and exchange among participants, enable the provision of interconnected products and services and optimize operational resource usage through effective monitoring and controlling.
Platform ecosystems	Systems characterized by multilateral connections among firms and their activities, fostering synergies and complementarities that would not emerge otherwise

Sources: Ahmed and Kowalkowski (2025)

Connection between ERPs and Platforms?

Basic

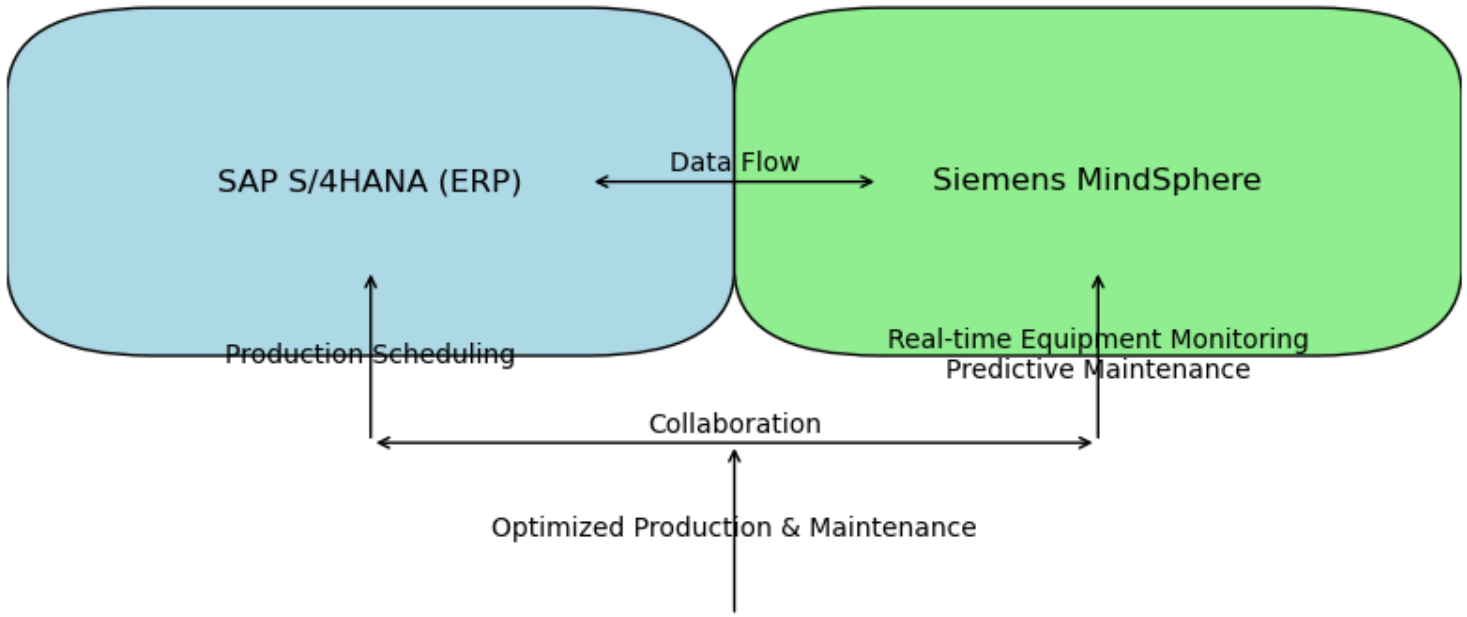
Modern

Era	Stage	Key Features
1960s–1970s	Early Beginnings	ERP began as materials requirement planning (MRP) systems focused on manufacturing and inventory management.
1980s	Expansion into business functions	MRP evolved into MRP II, adding finance and scheduling, forming modular, integrated systems.
1990s	Rise of ERP	ERP unified business functions on-premises with customizable, centralized platforms.
2000s	The shift to digital integration	ERP adopted internet technologies, enabling global data sharing, but remained functionally siloed–limiting innovation potential
Today	Modern ERP in the cloud	ERP is now cloud-based and AI-enabled '**platforms**,' offering real-time, cross-functional data integration and customer engagement–fostering innovation.

SOURCE: HTTPS://WWW.MICROSOFT.COM/EN-US/DYNAMICS-365/RESOURCES/WHAT-IS-ERP#:~:TEXT=MODERN%20ERP%20SOLUTIONS%20ARE%20CLOUD.WHILE%20MAINTAINING%20SECURITY%20AND%20PRIVACY

Connection between ERPs and Platforms? (contd.)

A manufacturing firm using **SAP S/4HANA** (ERP) might connect it to **Siemens MindSphere** (a digital platform). The ERP manages production schedules, while the platform enables real-time equipment monitoring and predictive maintenance using IoT data. These two work in tandem—ERP ensures execution, the platform drives insight and optimization.



How different are platforms from ERPs?

Aspect	Digital Platforms	ERP Systems
Primary Purpose	Enable interaction, value co-creation, and innovation across actors	Integrate and streamline internal business operations
Users	Internal and external (partners, customers, developers)	Primarily internal (employees, management)
Architecture	Open, modular, API-based; often multi-sided	Centralized, modular, often enterprise-specific
Data Flow	Multi-directional across ecosystem participants	Unidirectional, focused on internal processes
Value Creation	Through ecosystem participation and '**network effects**'	Through operational efficiency and process automation

Sources: Tiwana (2014); Yoo et al. (2010); Bharadwaj, A., et al. (2013)

Network effects on digital platforms

A fundamental concept in digital platforms, describing how the value of a product or service increases as more people use it. This phenomenon indicates that user interactions can enhance the platform's utility for all participants.

Direct or Same-side network effects:

The value of the platform increases directly with the number of users.

A social media platform becomes more valuable as more friends join and interact.

Indirect or Cross-side network effects:

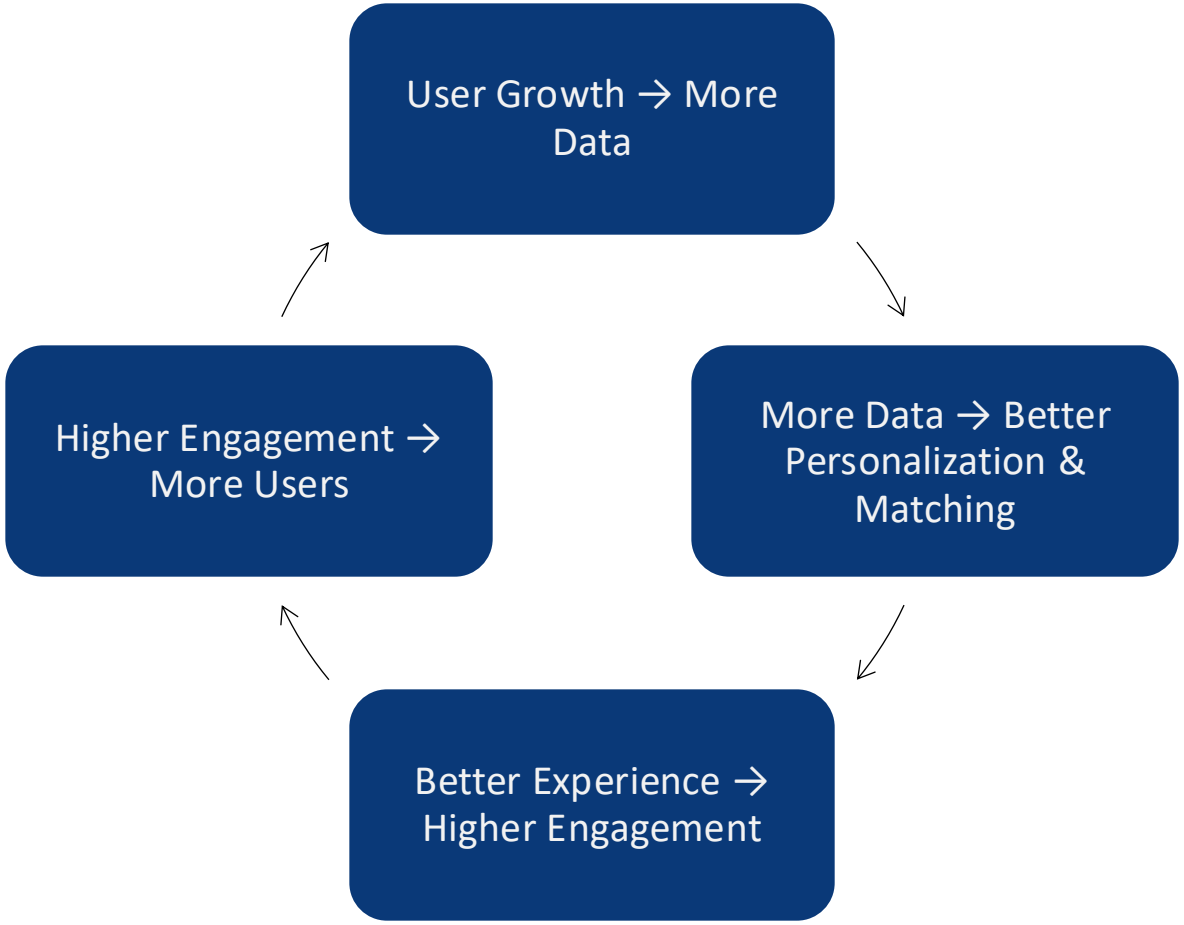
The value to one group of users increases as the size of another group grows.

More app developers on a mobile platform attract more users, and vice versa.

Sources: Bartels and Schmitt (2022); Cusumano (2022)

Data network effects on digital platforms

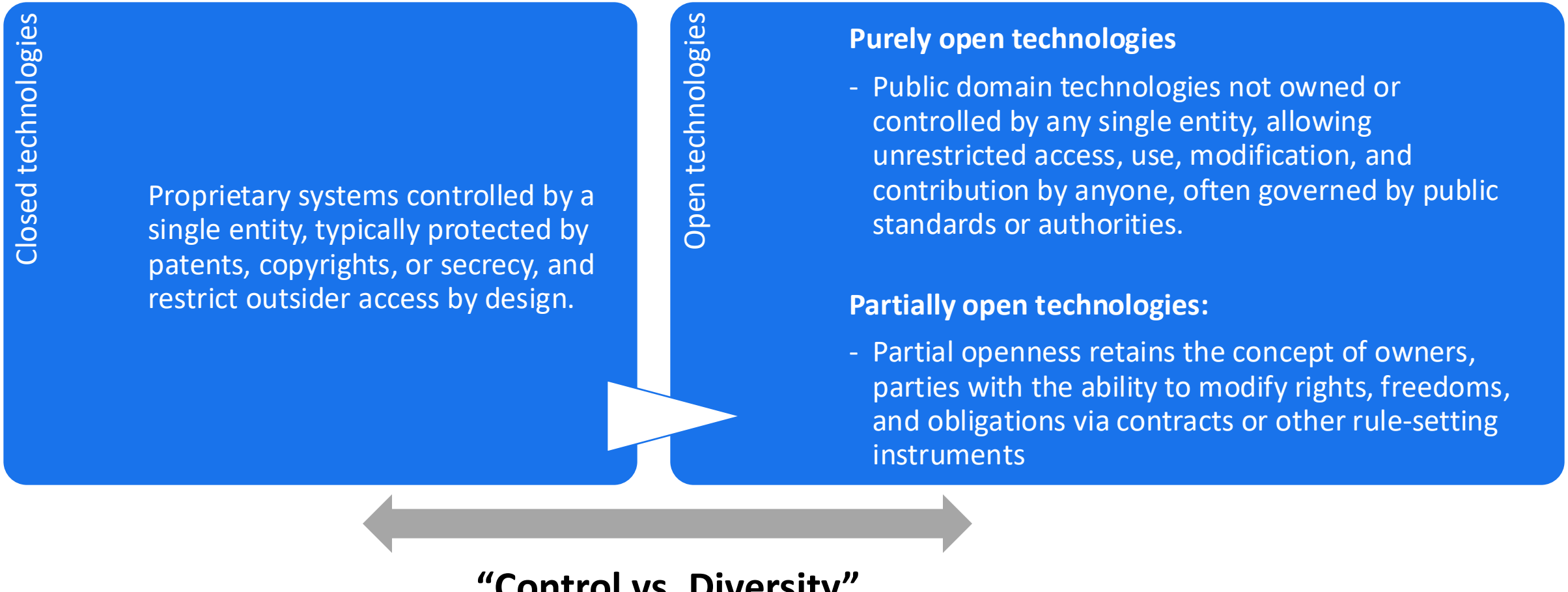
The data network effect *(resembling direct or same-side network effect)* on a digital platform occurs when increased user activity generates more data, which the platform uses to optimize its features, algorithms and services, leading to a better experience for all users, attracting even more users–thus, creating a self-reinforcing loop.



Sources: Parker et al. (2016), Cusumano et al. (2019)

Platform typology

Based on technology architecture



Sources: Bartels and Schmitt (2022); Cusumano (2022)

Based on value proposition

Transaction platforms

Facilitate exchanges between different user groups, such as buyers and sellers.

- Enable transactions by matching supply and demand efficiently.
- Centralized governance, with the platform owner controlling the rules of interaction, data access, and fee structures.

- Amazon, Uber, eBay.

Innovation platforms

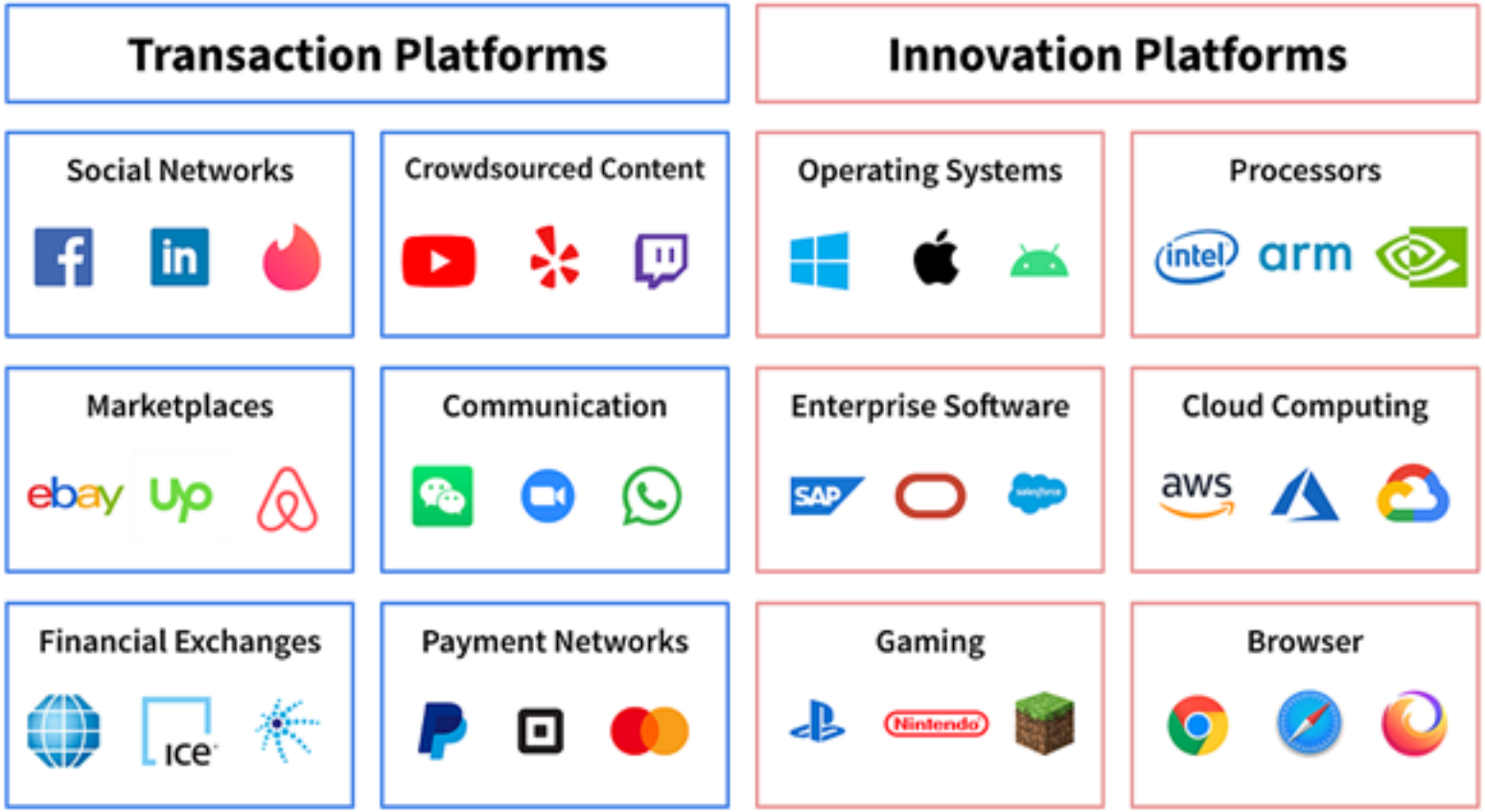
Provide a foundation upon which external developers can build complementary products or services.

- Foster innovation by offering tools, APIs, or services that others can use to develop new applications.
- More open governance, encouraging third-party contributions while maintaining certain standards and protocols.

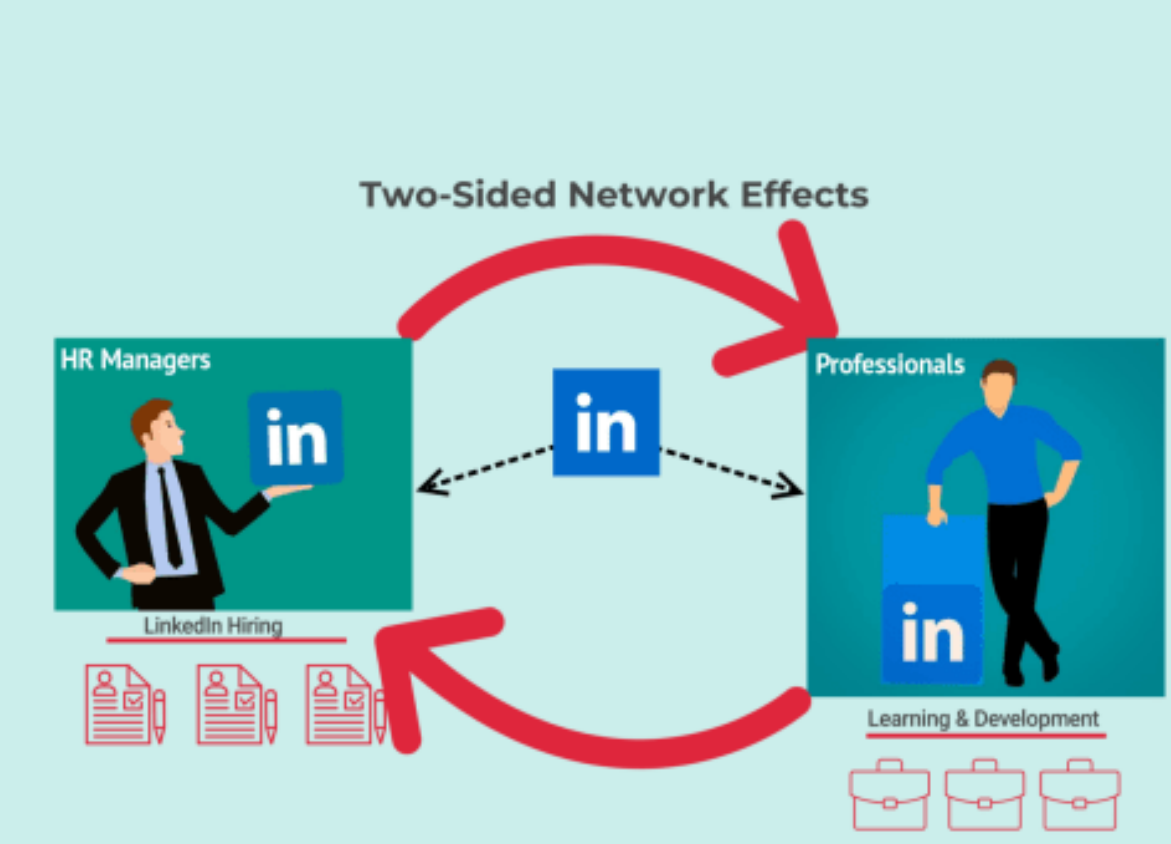
- Android, AWS, Apple's App Store.

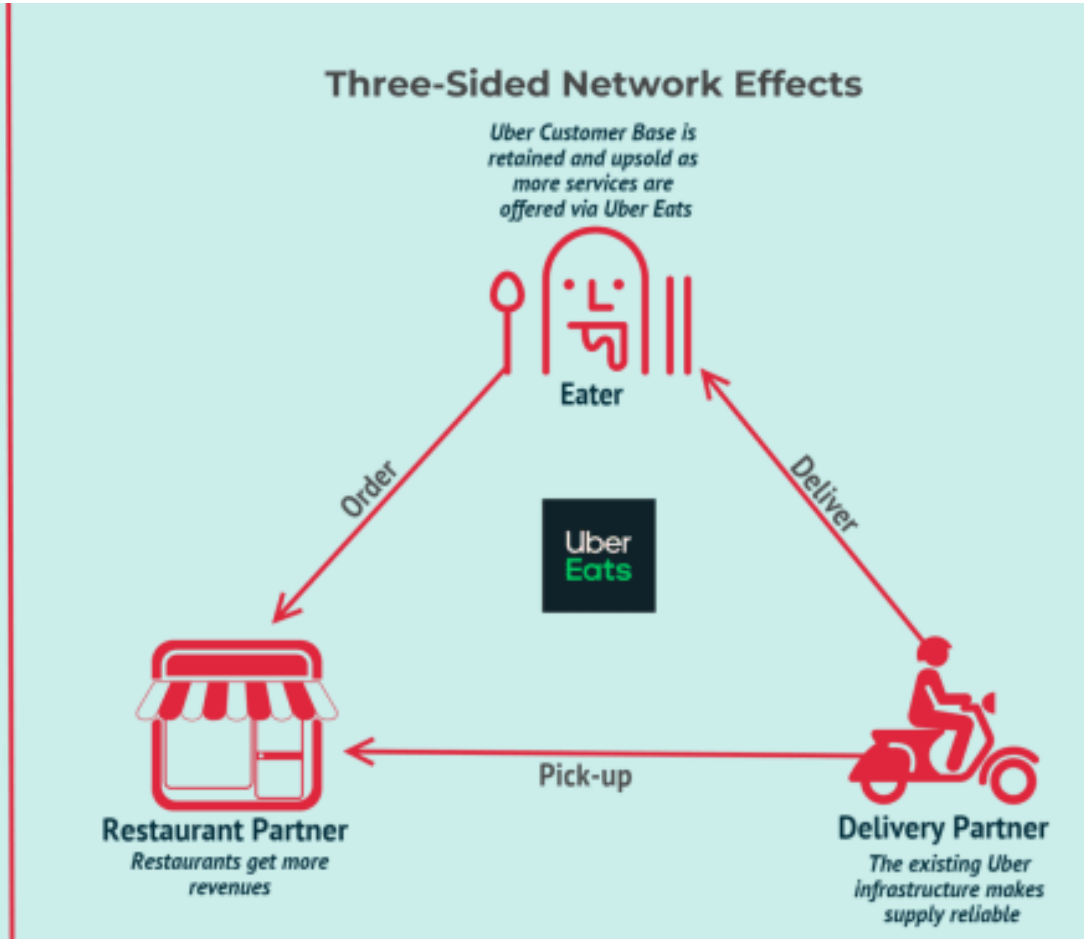
Sources: Bonina et al. (2021)

Examples of Transaction and Innovation platforms

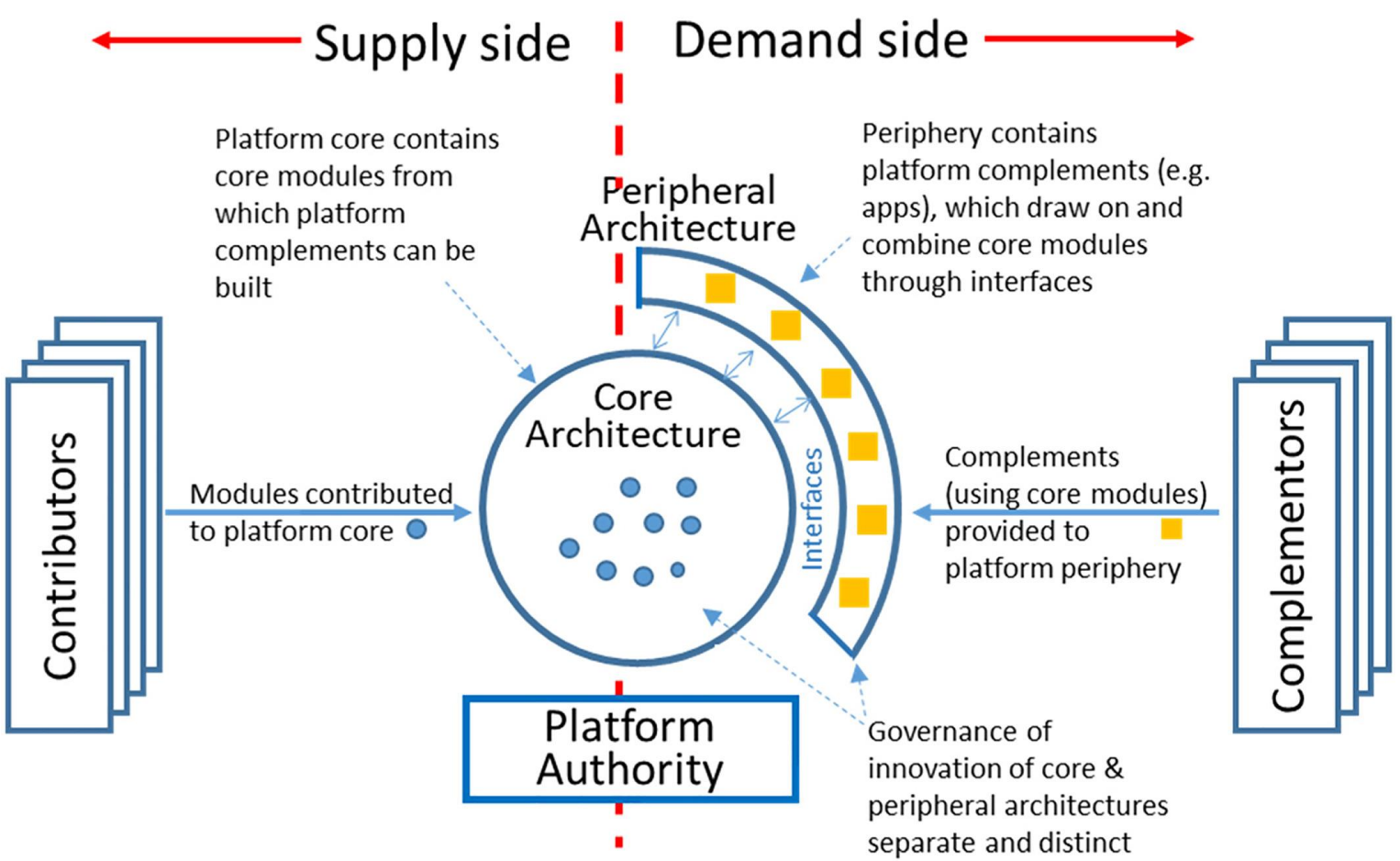


Transaction platforms





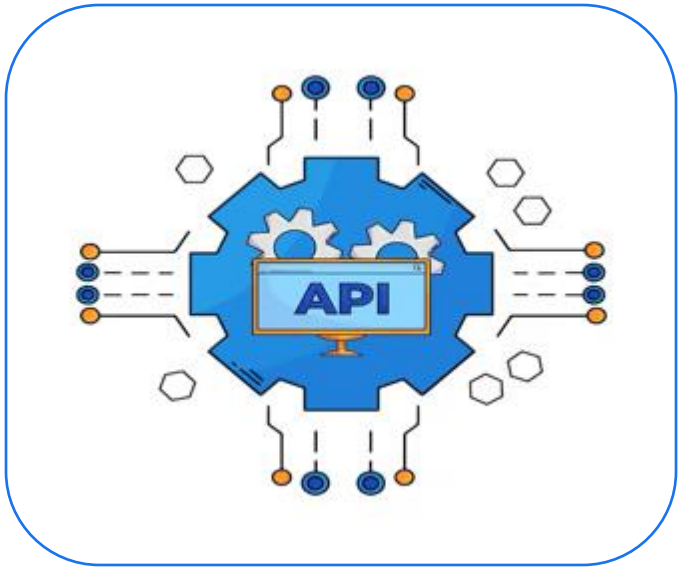
Innovation platforms



Sources: Bonina et al. (2021)

How do firms heighten platform governance?

Governance through boundary resources



- Ad-hoc APIs
- Standard/ generic technology adapters
- Customized technology adapters

- SDKs for app developers
- SDKs for the customer
  - ➢ Supporting Low-code and No-code development

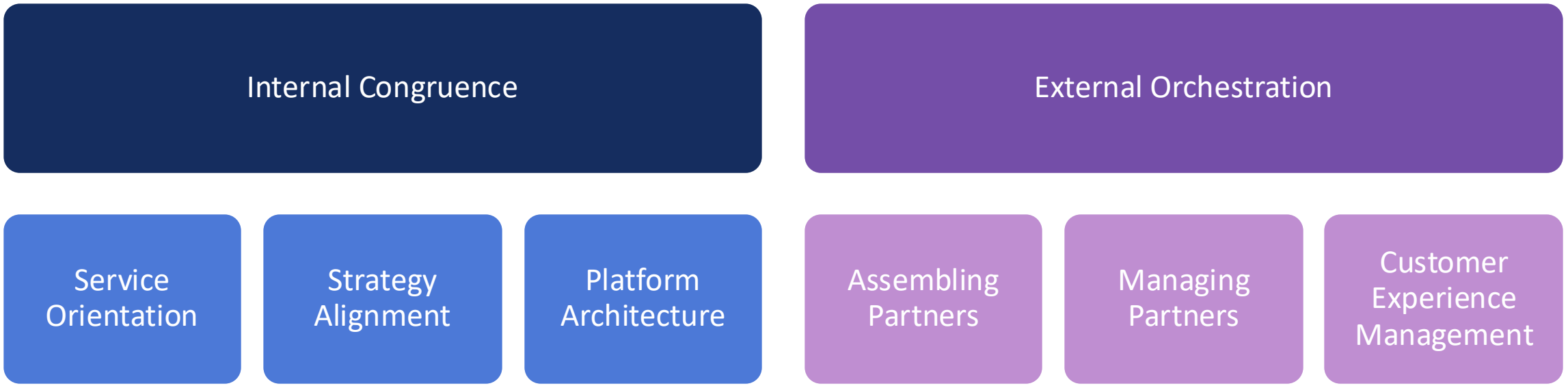
Sources: Bonina et al. (2021); Ghazawneh et al. (2015)

How do firms enable their platforms for interoperability?

Firms develop their platform architecture and governance gradually following a ”punctuated leap” pattern

Sources: Ahmed et al. (2023)

Activities undertaken for platform evolution



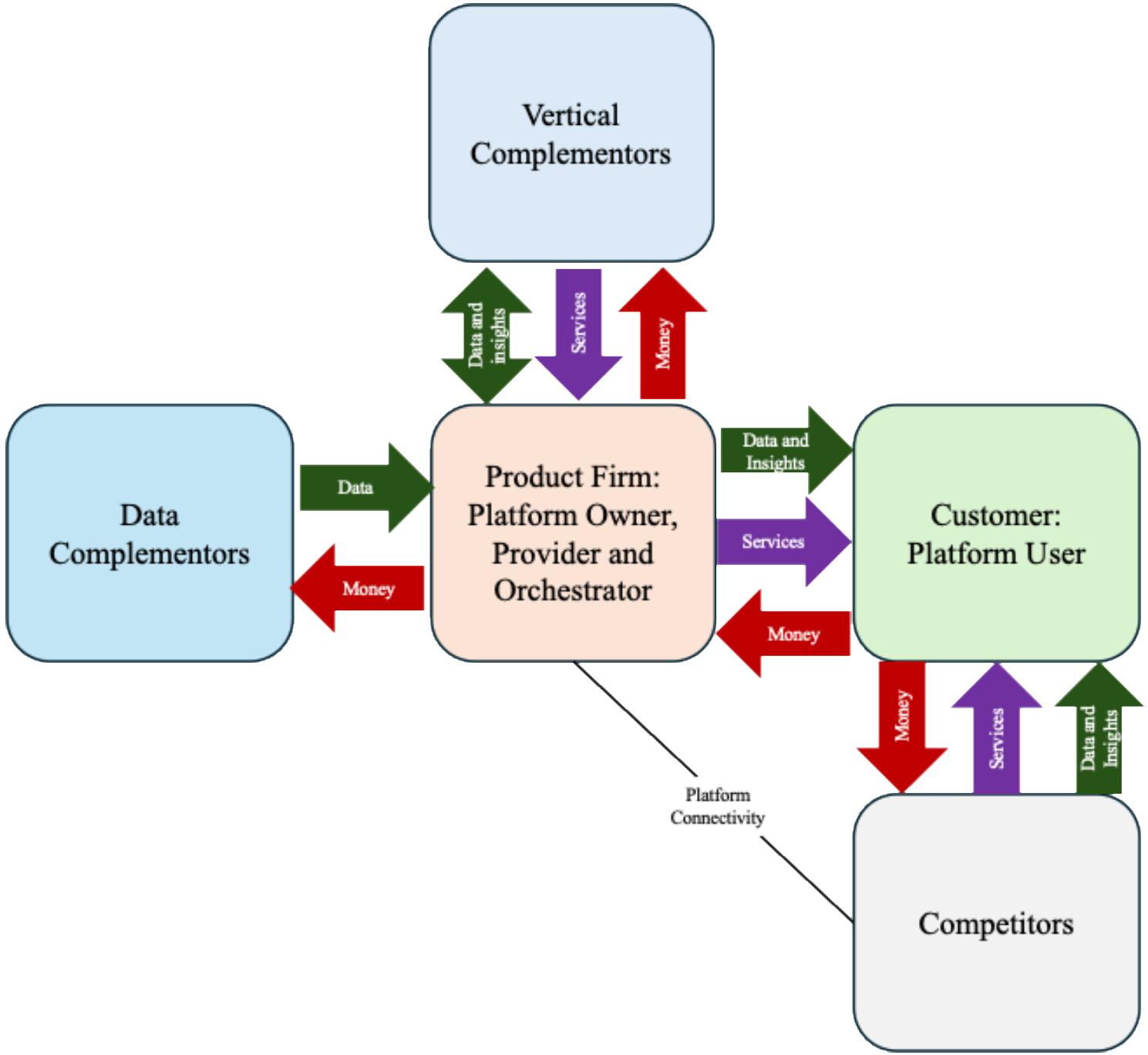
Sources: Ahmed et al. (2023)

Platform typologies based on

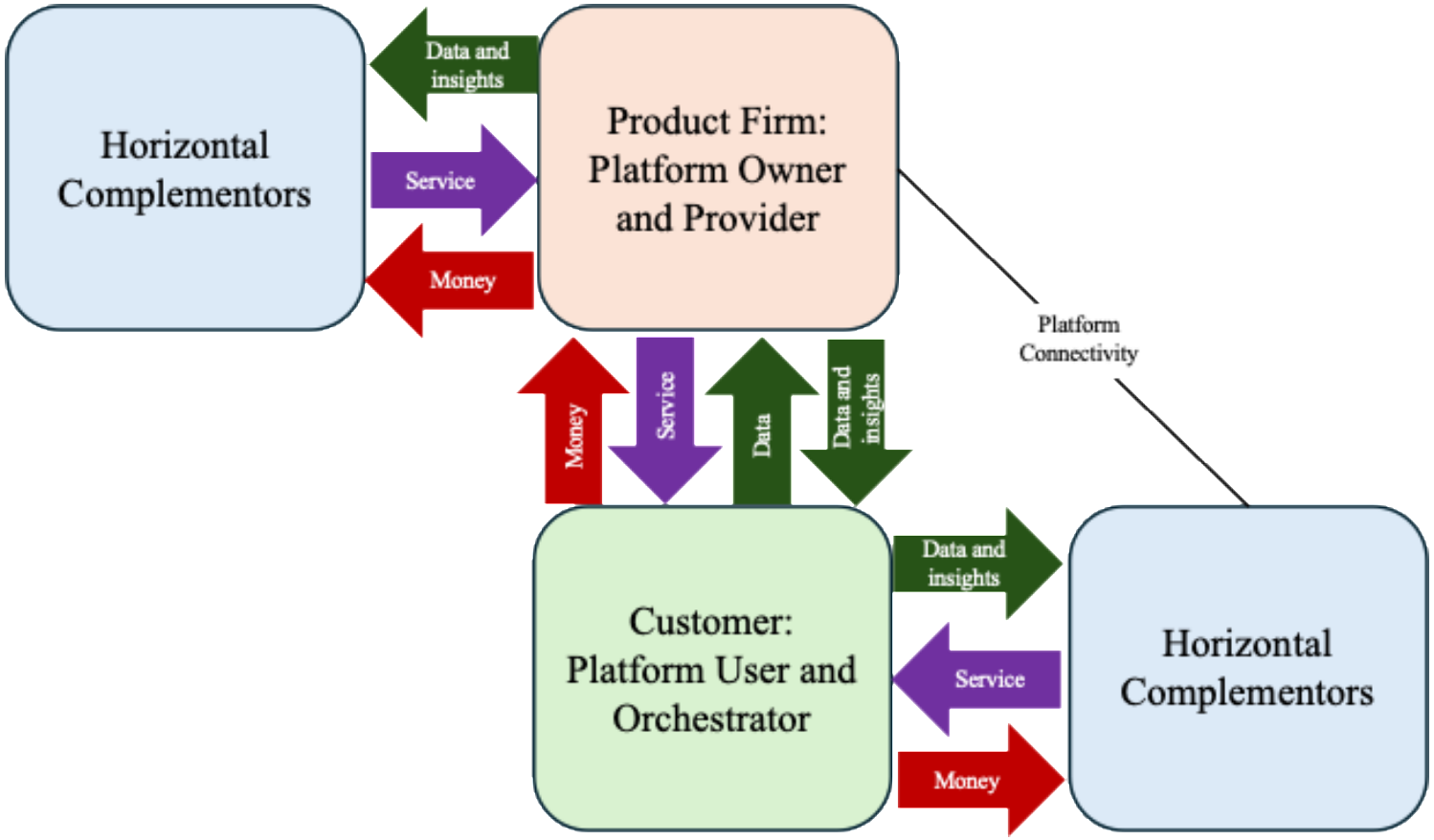
- Idiosyncratic Business Models
- Distinct platform orchestration and ownership

Sources: Ahmed and Kowalkowski (2025)

1. MANUFACTURER-LED PLATFORM

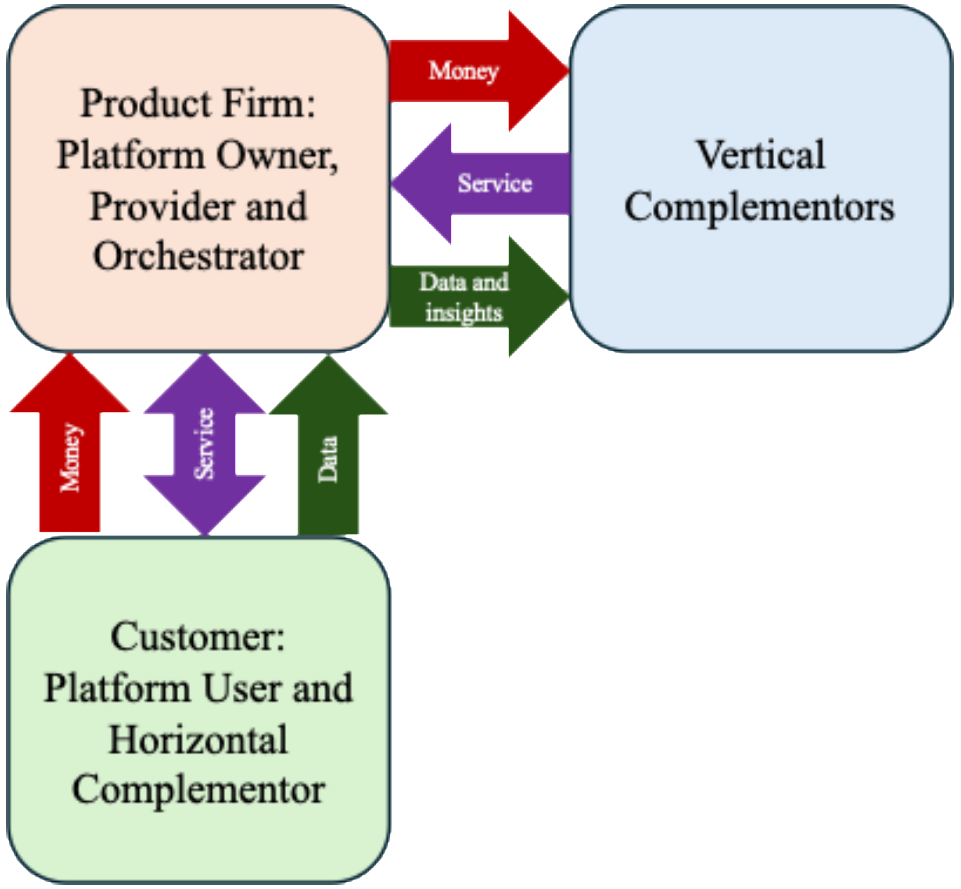


2. PROVIDER MEDIATED PLATFORM (SAAS)

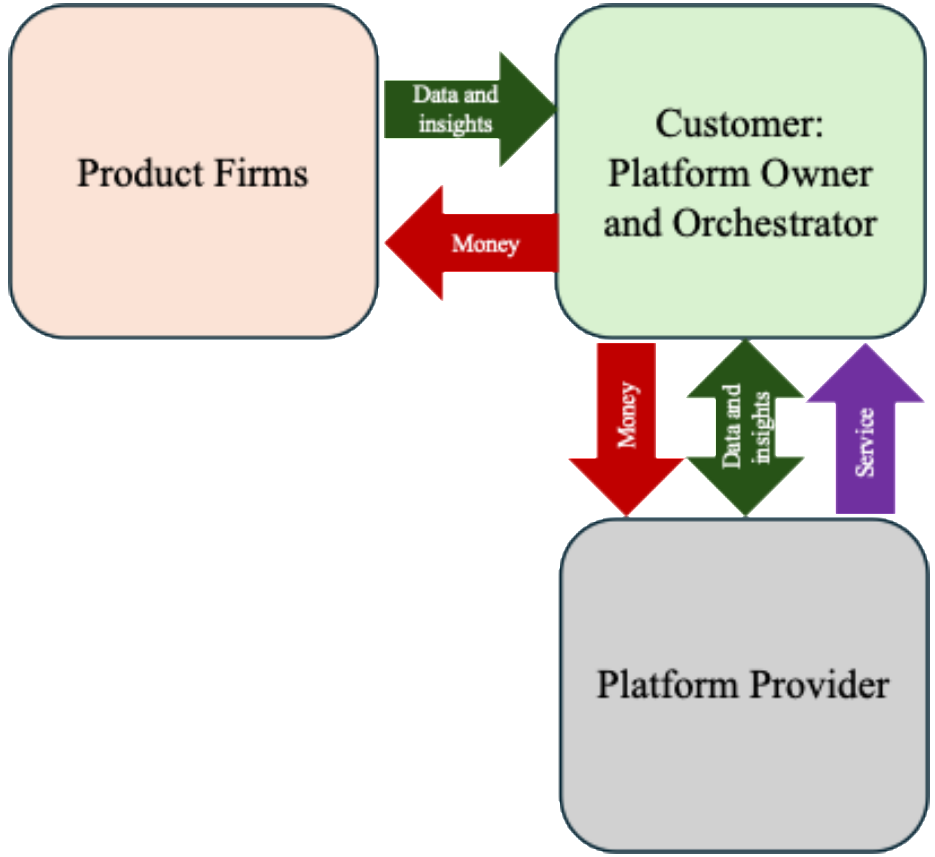


3. CUSTOMER INNOVATION PLATFORM (PAAS)

ENABLES LOW-CODE AND NO-CODE DEVELOPMENT BY PROVIDING SDKS



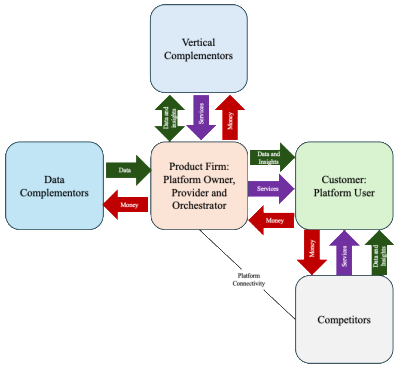
4. CUSTOMER-MODERATED PLATFORM



5. DATA BROKERAGE PLATFORM

MANAGES GENERIC AND CUSTOMIZED TECHNOLOGY ADAPTERS

Snapshot of nuanced platform characteristics

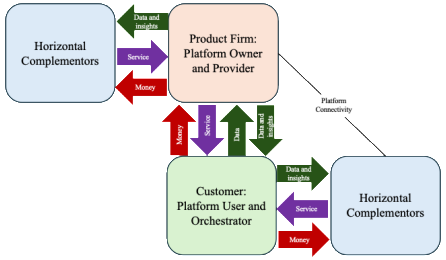


Manufacturer-led

Product firms are the platform owners and orchestrators: Integrate vertical complementors to add value, focus on data acquisition and analysis.

Expanded service offering by integrating complementarities

Significant cost for interoperability

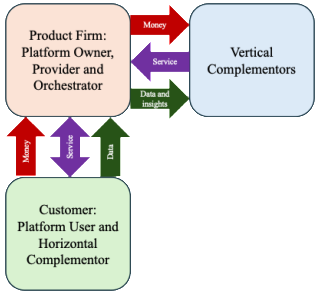


Provider-mediated

Product firms are owners and platform providers, while the customers are the Orchestrator: Use customer data for service optimization.

Optimizing service quality by integrating complementarities

Less freedom for data interoperability

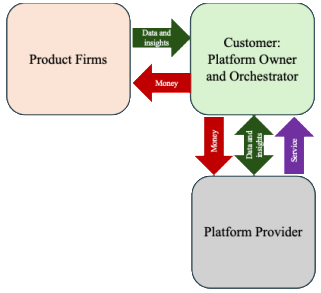


Customer innovation

Product firms are platform owners, providers and orchestrators: Provide tools for customer-led innovation and development.

Empowering customers to add value through innovation

Decentralized platform governance



Customer-moderated

Customers are platform owners and orchestrators, while software firms are providers: Utilize external insights for customers' innovations.

Customer-driven decision-making on service optimization

Limited external connectivity

Data brokerage

Data brokers own and operate platforms: Integrate data buyers and sellers to facilitate ecosystem-wide data sharing.

Creating data monetization opportunities for the ecosystem

Do not provide service innovation on platforms

Sources: Ahmed and Kowalkowski (2025)

Seminar instructions

•Form groups and discuss the questions.

•Based on your answers to the questions, create a recommendation to the BSI management team in 1-3 PowerPoint slides about:

• What should BSI do with BLUE going forward? Is it a good strategic option?

• How should BLUE be developed? Pick and explain one of these options:

1. *Adopt as-is*
2. *Adapt – how should it be adapted?*
3. *Dismiss, i.e., don't proceed and stop the platform development project.*

Thank you!