

Analysis and Description of Design Options for the Establishment of a Sustainable Mobility Ecosystem

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1. Introduction, Motivation

2. Thesis

3. Current state

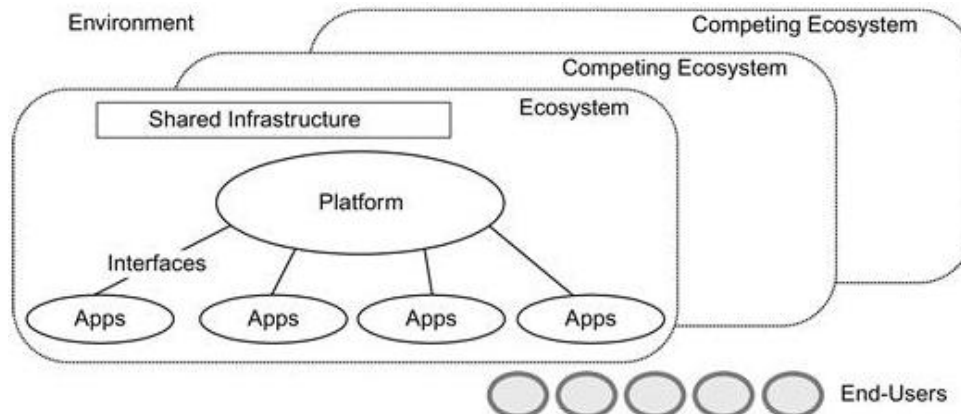
4. Next steps

- Transportation as we know it has reached its limits
 - Megatrends influencing transportation
 - Increase of world population (up to nearly 10bn in 2050)
 - Urbanization (66% of the world population are projected to be urban in 2050)
 - Results are increasing congestions in urban areas
 - Congestions spill resources, time, and money
 - 19 gallons (~72 litres) of fuel per auto commuter in the US (2014)
 - 42 hours of delay per auto commuter in the US (2014)
 - \$960 of congestion cost per auto commuter in the US (2014)
 - Congestions also pollute air quality in urban areas, which is an increasing problem
- Possible solution: “digital age transportation system”
 - Mobility is becoming a service entirely (vs. product “car”) → „Mobility as a Service“
 - Bill Ford: *“Now is the time for all of us to be looking at vehicles the same way we look at smart phones, laptops and tablets: as pieces of a much bigger, richer network.”*
 - *“The challenge, then, is to harness the extraordinary innovation taking place to make far more efficient use of the existing transportation system.”*

– Platform business models are increasingly used in lots of different business domains, especially software-based platforms („the Age of Platforms“)

- Mobile devices
 - Android
 - iOS
- Facebook
- Amazon
- Credit Cards
- *TCP/IP*

– Characteristics of platforms are yet very heterogenous depending on their application domain, only basic common understanding in literature



Example of platform ecosystem illustration

Sources: Suarez/Kirtley (2012), Tiwana (2014)

Governance

- Need for platform governance
 - Governance = “key enabler/key inhibitor” of value co-creation
 - *“Technical architectures are inseparably intertwined with governance of the platform ecosystems [...]”*
- Governance has to create incentives for external contributors of the platform
 - *„the right incentives must be in place for firms to share their proprietary knowledge for a collective good. All partners must perceive mutual value from knowledge sharing and use.”*
- Governance has to ensure that certain policies are enforced within the ecosystem
 - Protection of personal data
 - Interaction between external applications and the platform (defined interfaces, intertwined with platform architecture)
 - Design rules for end-user applications (usability)

- „TUM Living Lab Connected Mobility“
- Open Service Platform for digital mobility (in Bavaria)
- Goals:
 - “provide an essential contribution to an open **service-platform for digital mobility** in Bavaria”
 - Research and develop “innovative **platform-services** and **use cases** for digital mobility platforms”
 - Evaluate their “scalable and safe implementation in production-related environments of the Bavarian industry”
 - „Applying customer-centered design thinking to drive the development of the digital service platform”



*School Kids, Taxi Drivers, Business Travelers, Disabled People, Elderly People, ...
Mobility and Information Demands, Contexts (planning, meeting traveling, accounting)*

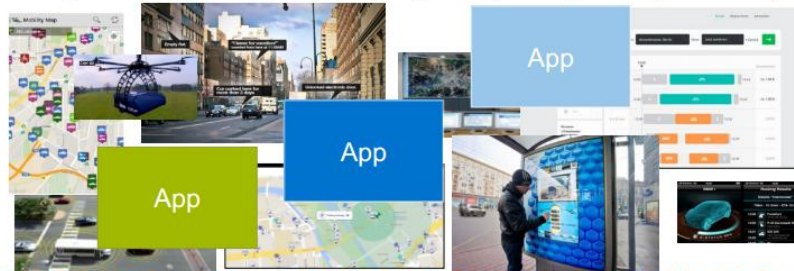
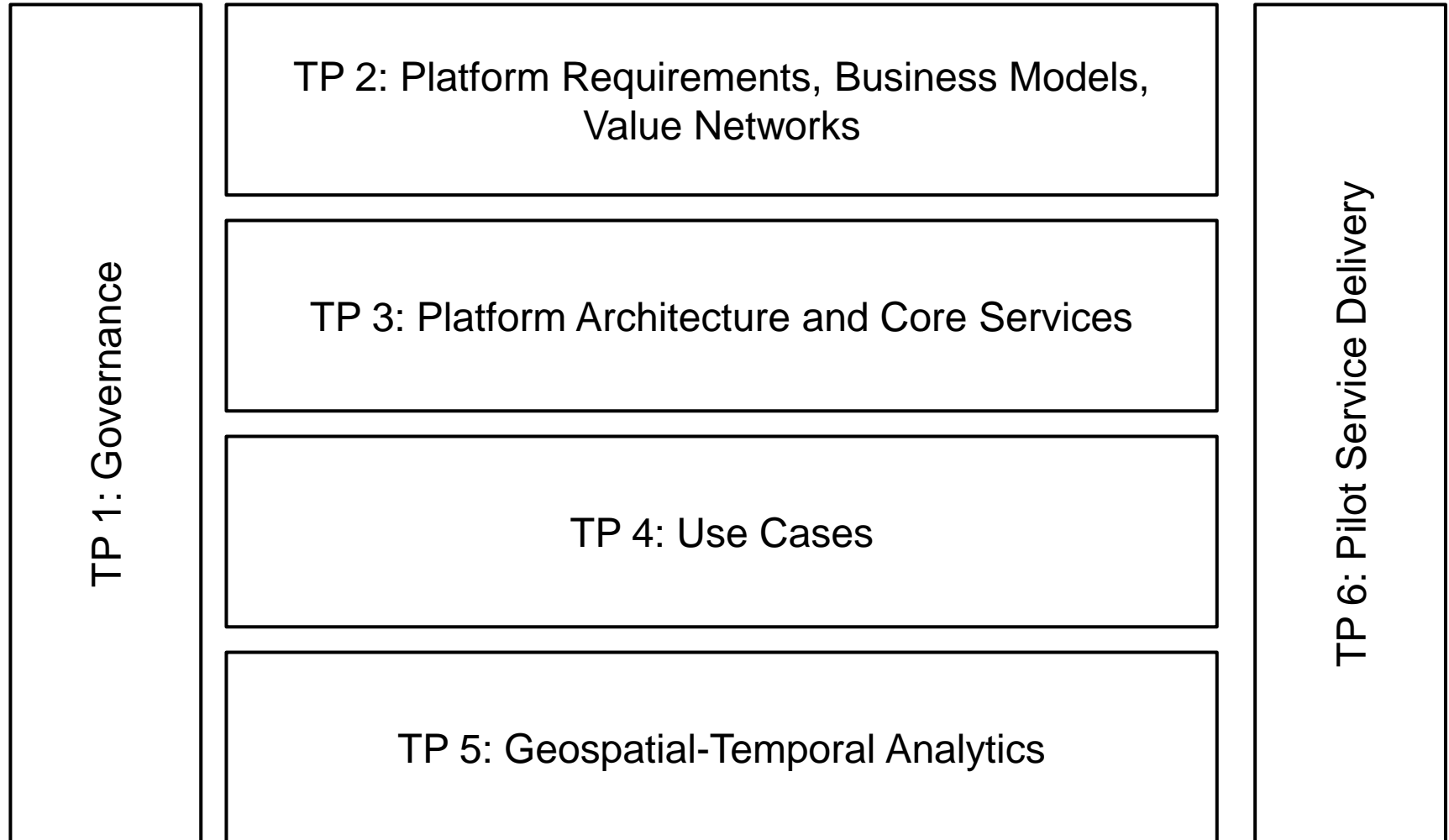


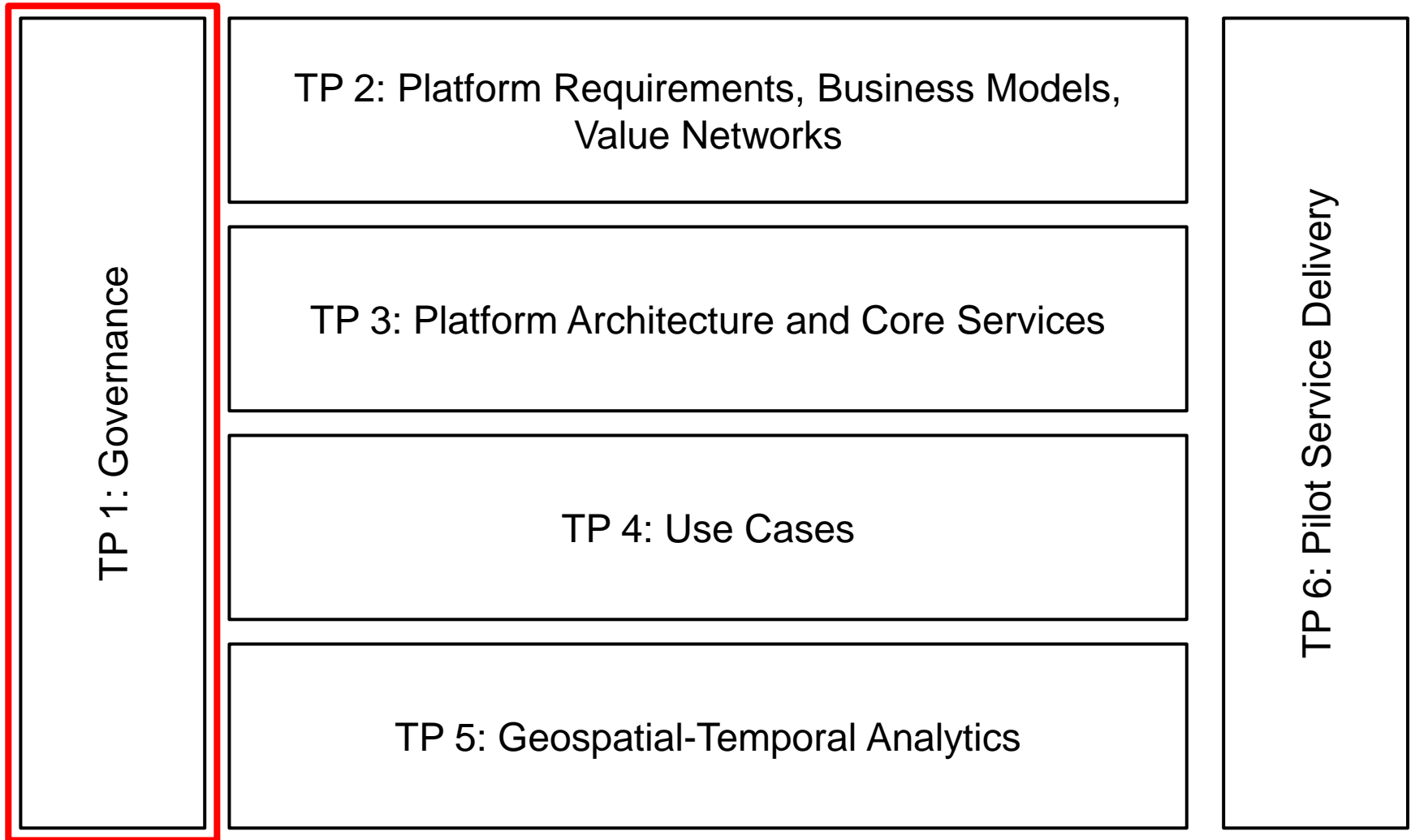
Illustration of the TUM LLCM mobility platform



Sources: Technische Universität München (2016), Matthes (2015)



Source: adapted from Matthes (2015)



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Tiwana/Konsynski/Bush (2010)

Propose to research the question how platform governance influences the development of the platform:

“how platform governance influences the evolutionary dynamics of ecosystems and modules in platform settings”

Manner et al. (2012)

Propose to research what influence platform governance has on the success of platforms:

„Studying how the analysed governance configuration influences the success of platforms would enable a more proactive development of mobile service platforms.”

“Analysis and Description of Design Options for the Establishment of a Sustainable Mobility Ecosystem”

- **Research Question 1:** How can platforms, their players and interconnections be characterized according to existing literature?
- **Research Question 2:** What have been factors for the successful establishment of platform businesses in the past?
- **Research Question 3:** Which design and governance options do exist to successfully establish a mobility platform and ecosystem?

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- Relevant literature for RQ 1&3 mostly identified
 - Literature only concerning “platform ecosystems”:
 - ~ 40 Journal Papers
 - ~ 20 Conference Papers
 - Several relevant monographs
- Structuring process
- Actual task: defining all relevant terms related to platforms, e.g.
 - Platform
 - Platform Ecosystems
 - Actors in platform ecosystems

Product development research

Platform = products that „meet the needs of a core group of customers but [are designed] for easy modification into derivatives through the addition, substitution, or removal of features“

Example: Volkswagen Group’s “Modular Transversal Toolkit”

Technology strategy research

Platform = „valuable point of control (and rent extraction) in an industry“

Example: Microsoft Windows

Industrial economy research

Platform = „products, services, firms or institutions that mediate transactions between two or more groups of agents“

Example: Credit Card Payment Network, Dating Service

Sources: Baldwin/Woodard (2009), Wheelwright/Clark (1992), Rochet/Tirole (2003)

- TUM LLCM has to be evolvable by „easy modification [into derivatives] through the addition, substitution, or removal of features”
 - Definition from product development research is adapted such that the platform itself can be evolved (instead of deriving products from it)

- TUM LLCM is a valuable point of control
 - Influence on user’s mobility (by preferring specific services over others on the platform → transparent rules needed → Governance!)
 - Control over user’s data
 - Which user data should be retained
 - Data security
 - Which data is made available to service providers

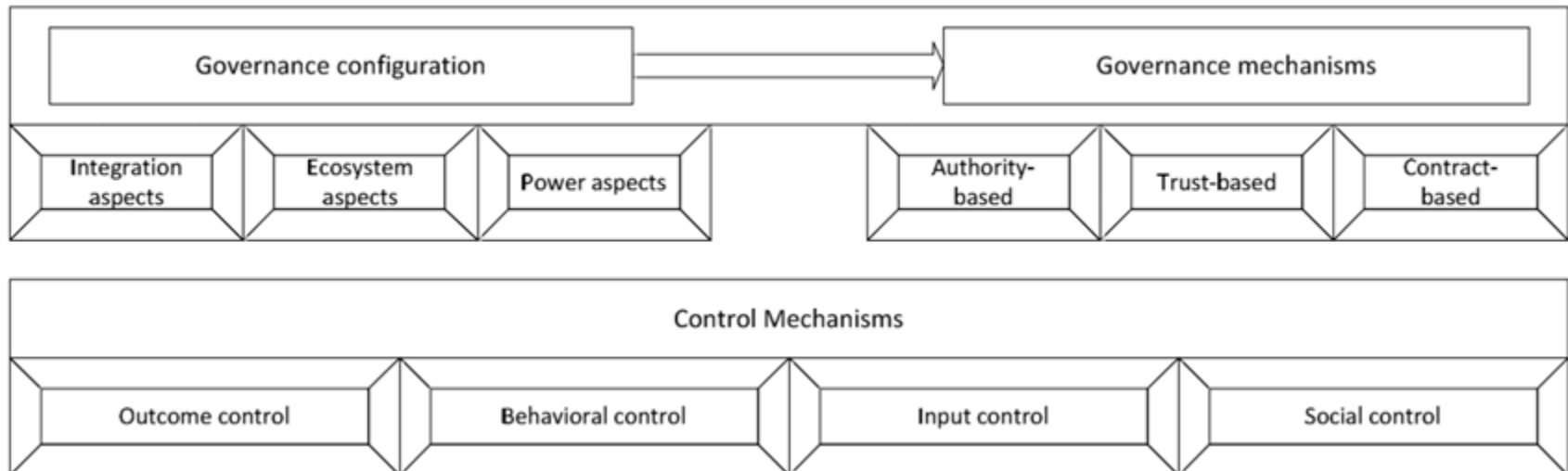
- TUM LLCM mediates transactions between one or more groups of agents
 - „Mobility users“
 - Service providers
 - Mobiltiy
 - Accomodation
 - ...

Platform governance (Tiwana/Konsynski/Bush 2010)

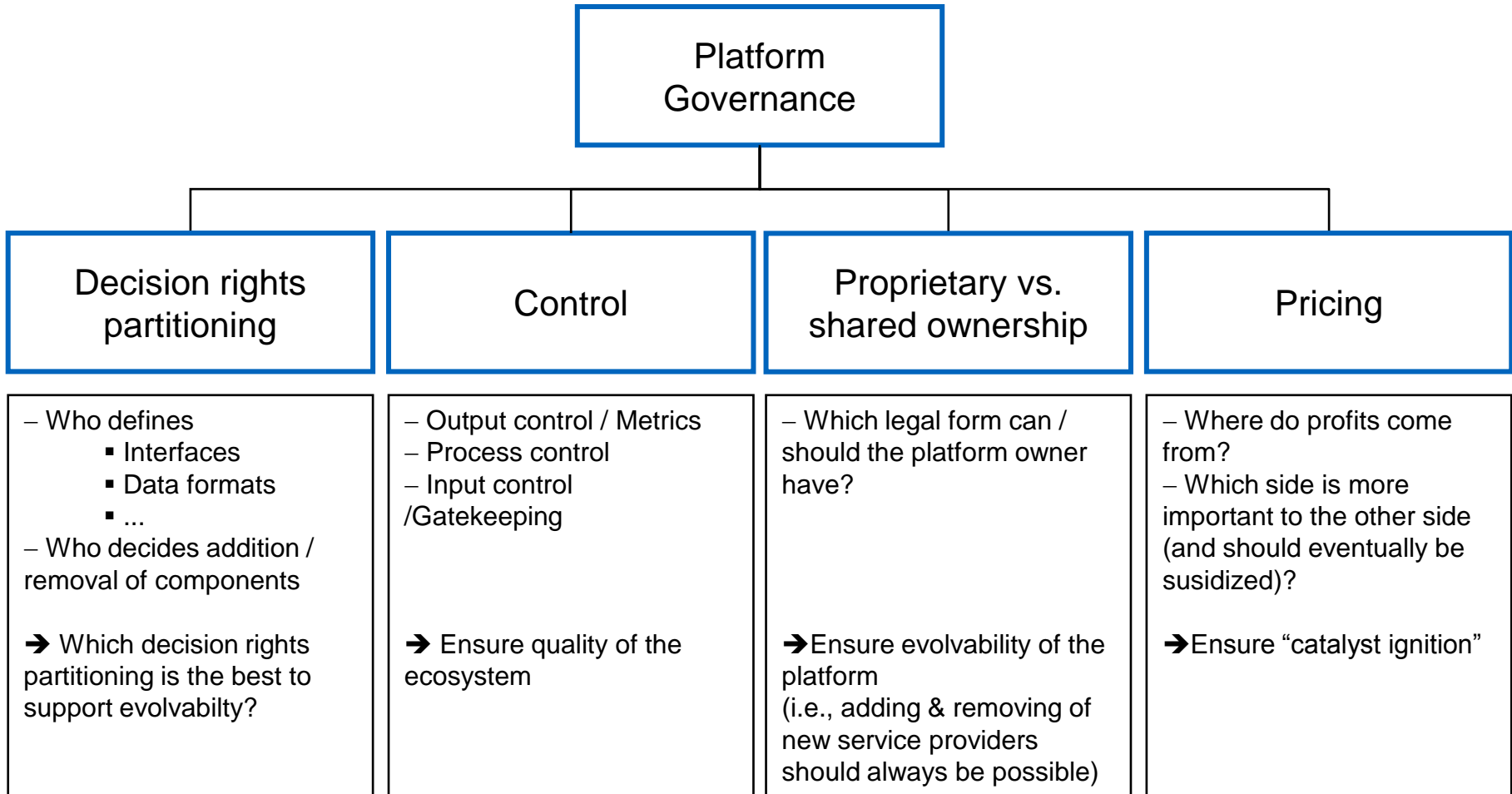
- Decision rights partitioning
- Control
 - Output control (e.g. App review by Apple before release)
 - Process control (e.g. use of certain programming methods)
- Proprietary vs. Shared ownership (← Tiwana (2014): third dimension of platform governance is pricing)

Platform governance (Manner et al. 2012)

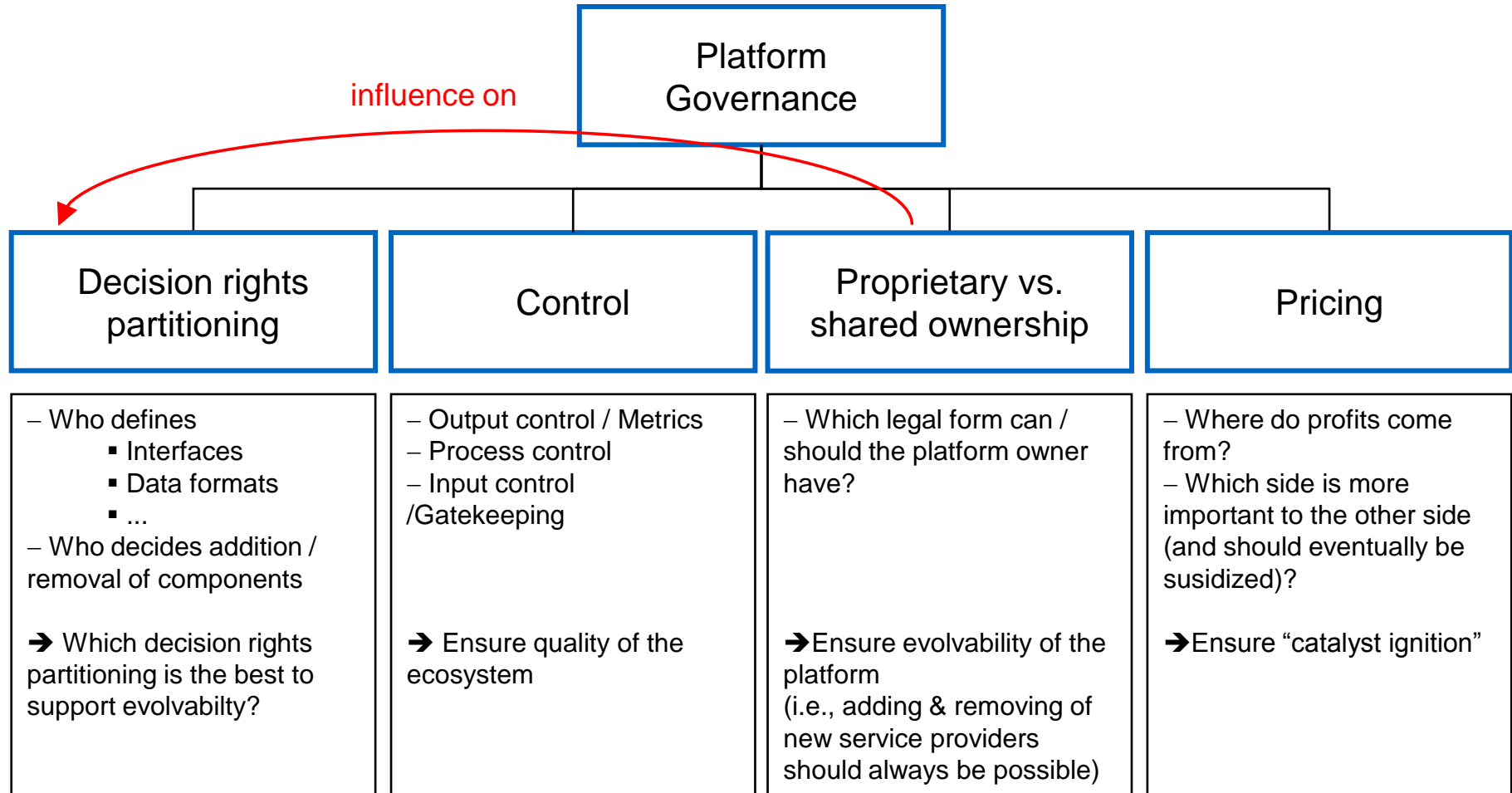
- Extended the framework above



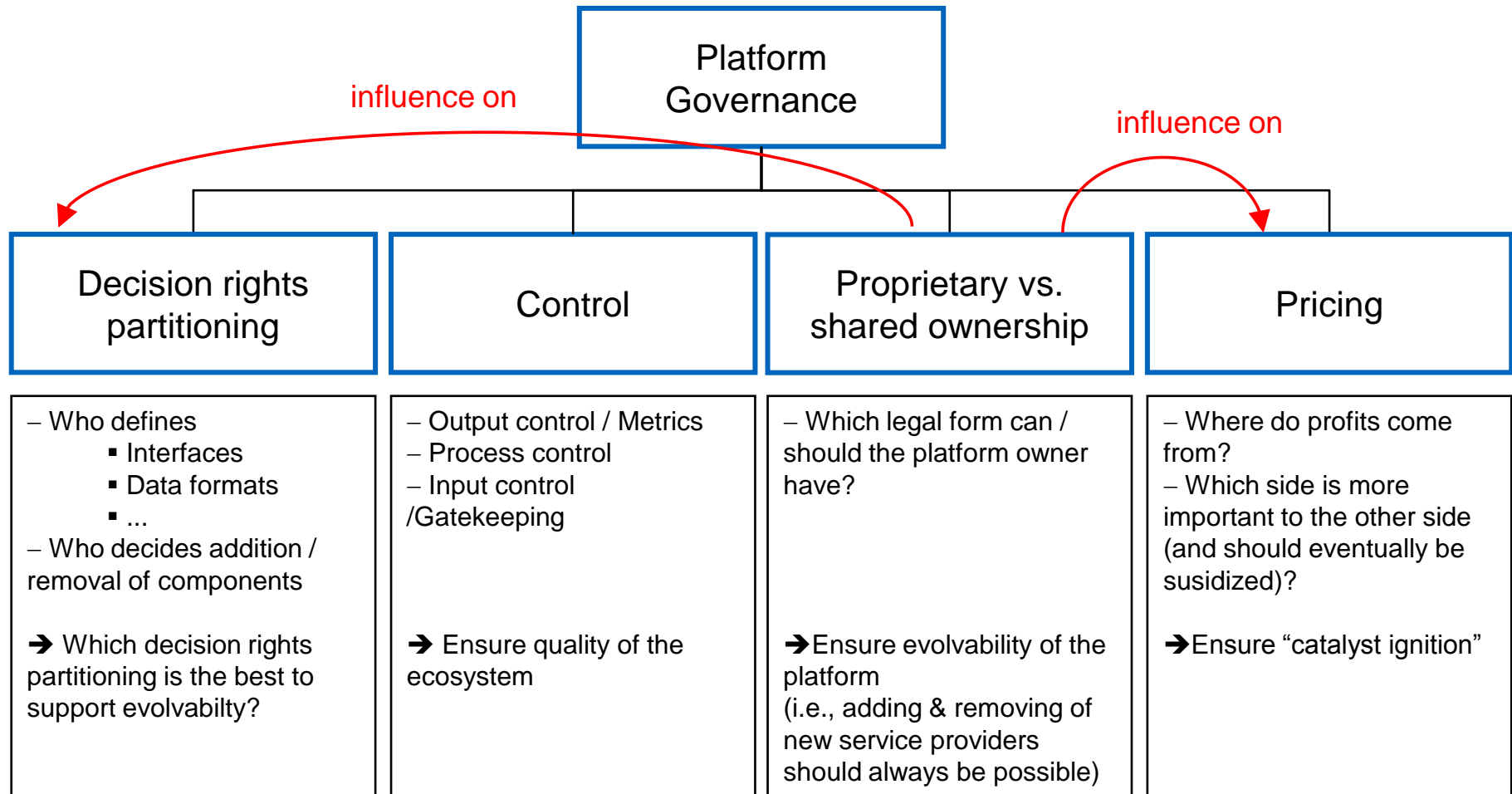
Sources: Tiwana/Konsynski/Bush (2010), Tiwana (2014), Manner et al. (2012)



Source: own illustration, adapted from Tiwana/Konsynski/Bush (2010) and Tiwana (2014), Evans (2009)

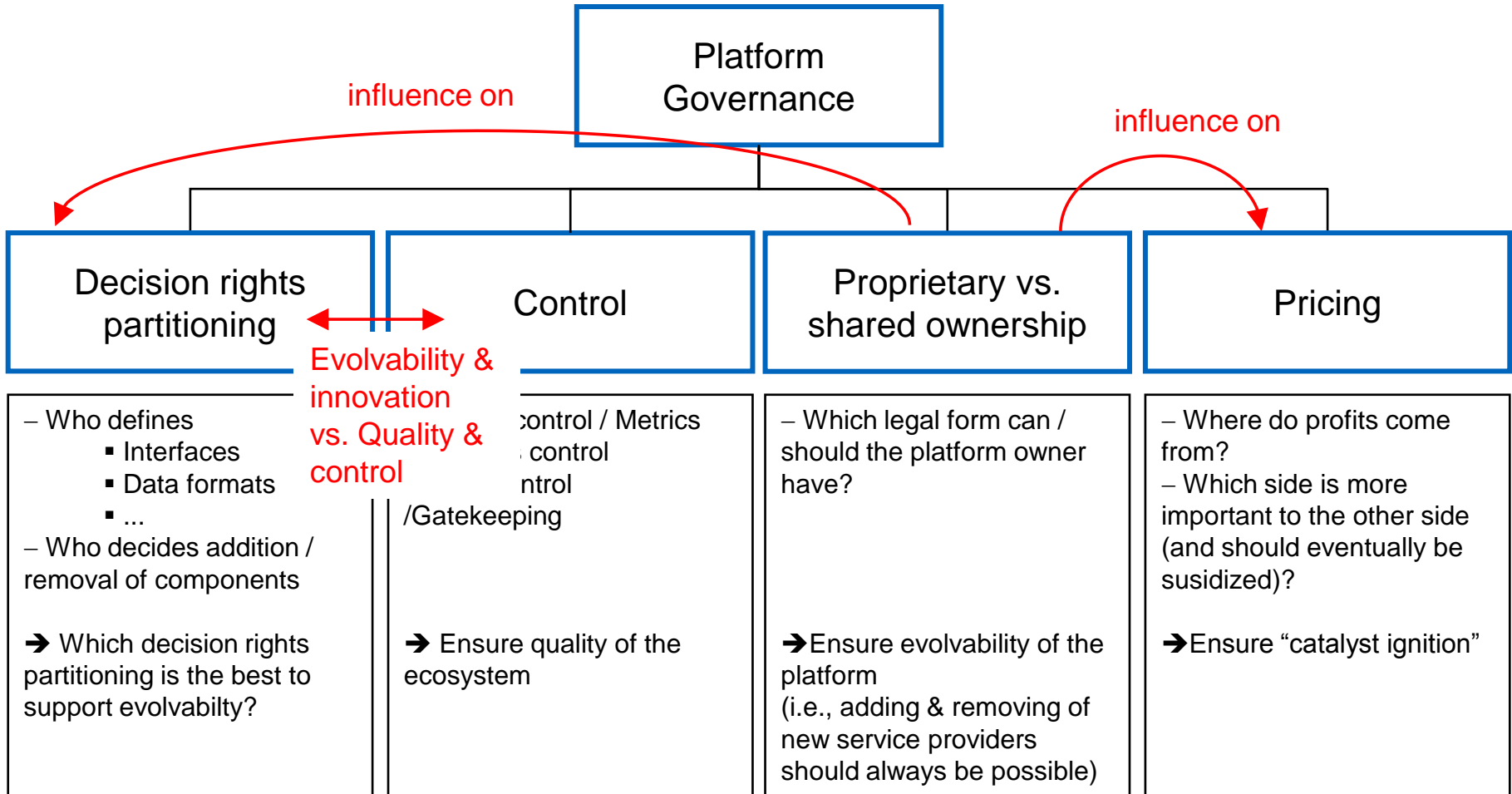


– Which legal form can or should the platform owner have to ensure evolvability?



– Which legal form can or should the platform owner have to be able to develop a successful business model?
– Which pricing policies should be put in place to ensure innovation and business model success?

Source: own illustration, adapted from Tiwana/Konsynski/Bush (2010) and Tiwana (2014), Evans (2009)

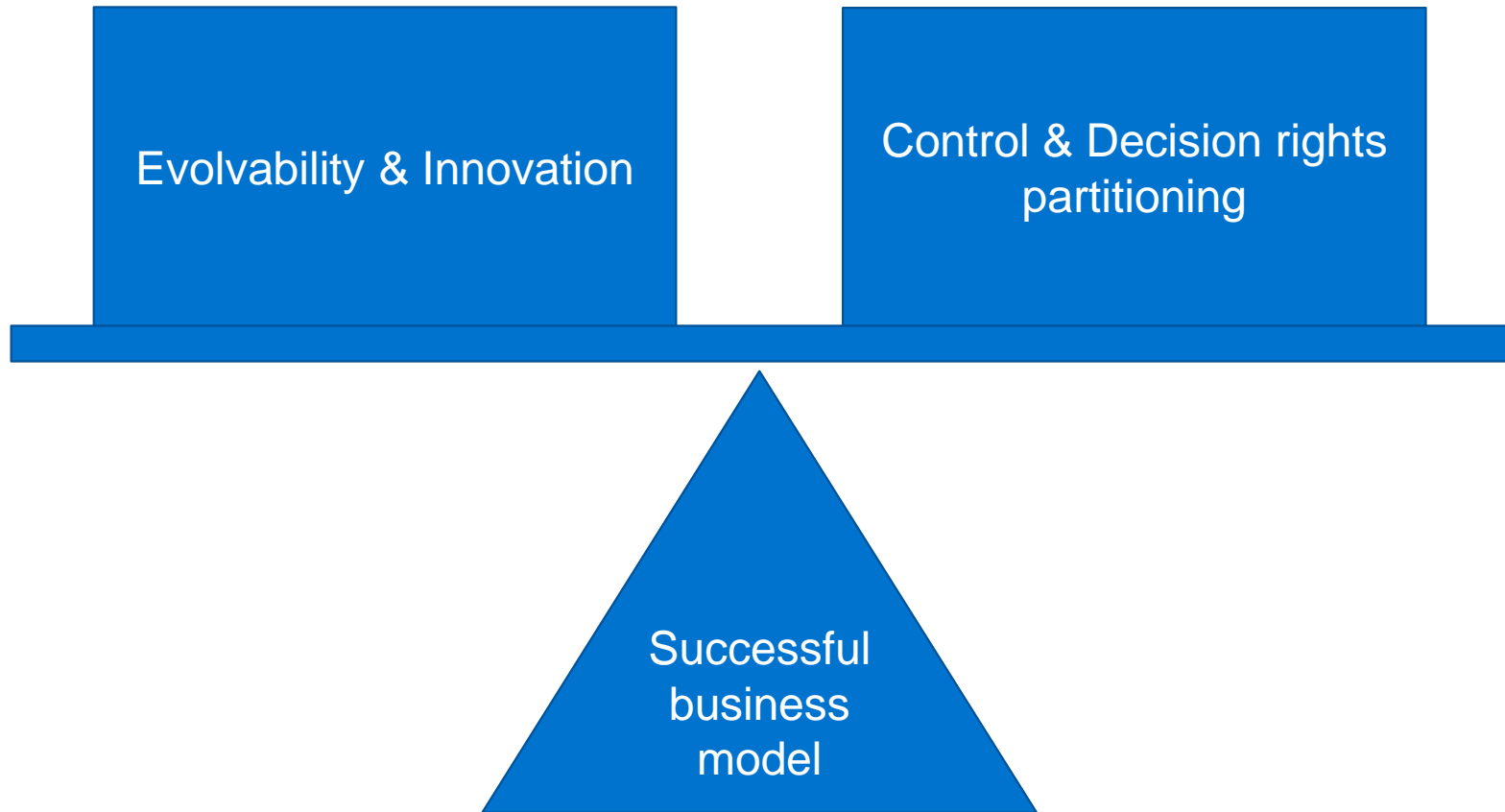


- Do concentrated decision rights and tight control lead to higher quality, but less innovation and evolvability?

Source: own illustration, adapted from Tiwana/Konsynski/Bush (2010) and Tiwana (2014), Evans (2009)

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Successful business model requires balanced governance approach



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Thank you for your attention!
Any questions?



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Backup

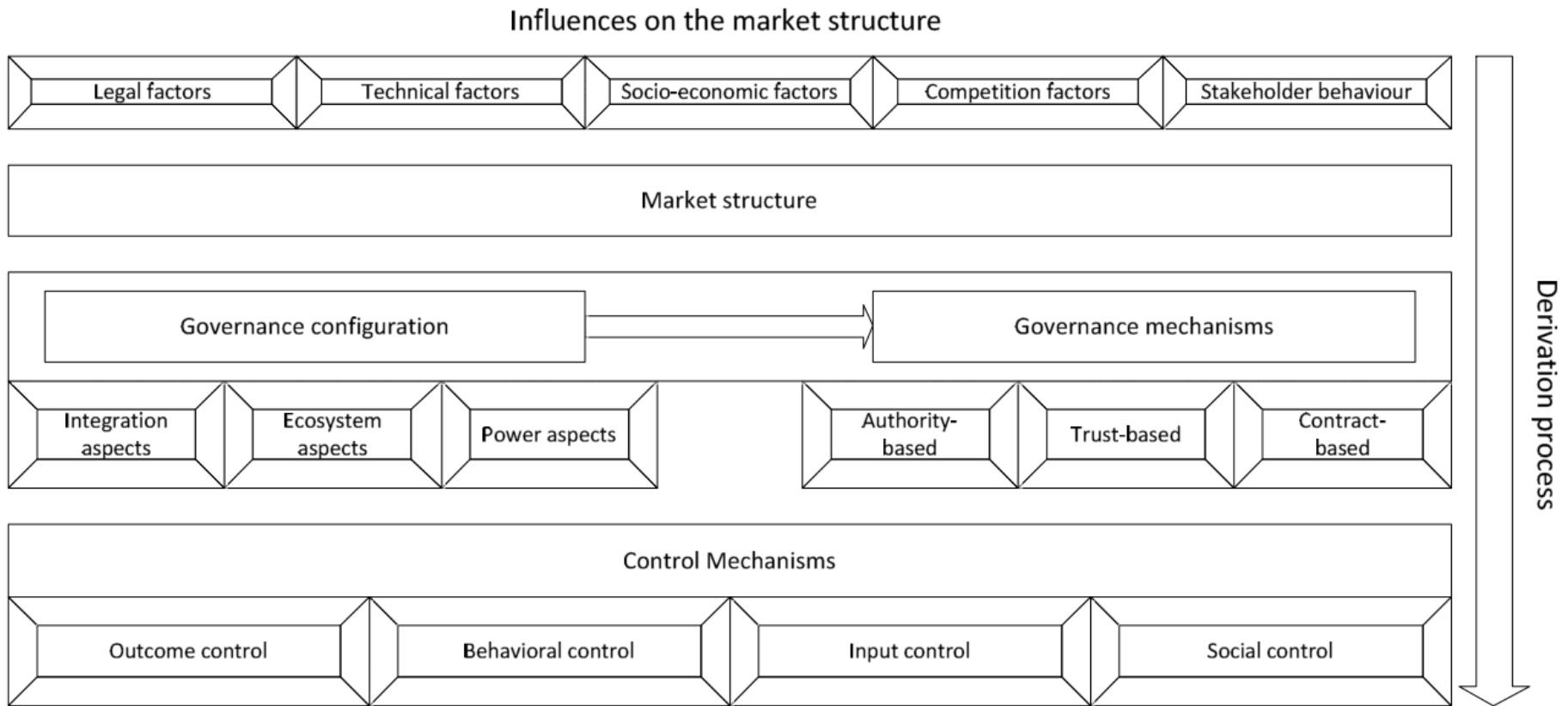
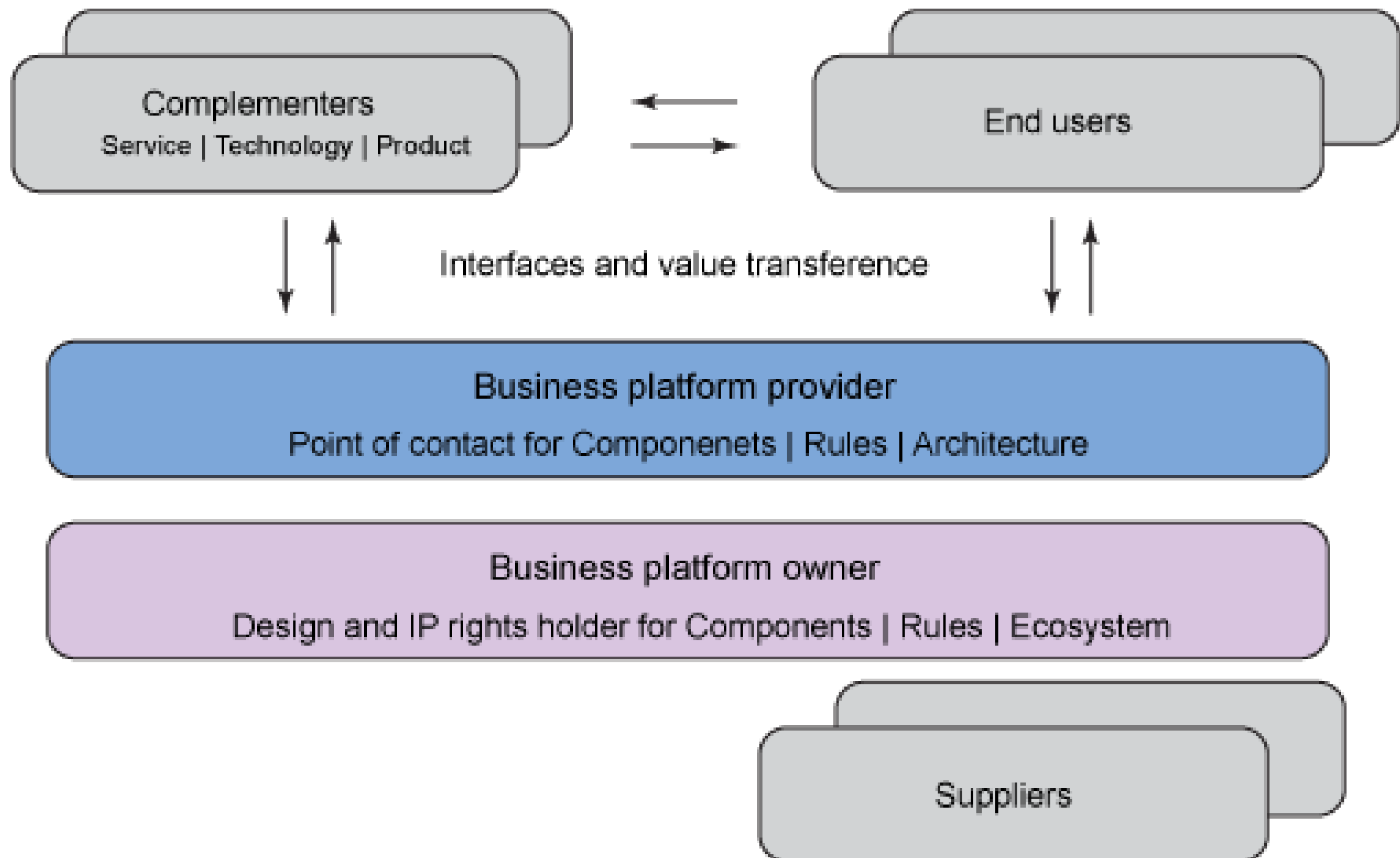


Figure 3. Framework for the analysis and implementation of platform governance

IBM's vision of a platform ecosystem



Source: <http://www.ibm.com/developerworks/cloud/library/cl-cloudecosystem/>