

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

May 30<sup>th</sup>

Stefan Hefele, Master Thesis – Final Presentation

Software Engineering für betriebliche Informationssysteme (sebis)  
Fakultät für Informatik  
Technische Universität München

[www.matthes.in.tum.de](http://www.matthes.in.tum.de)

## 1. Motivation

2. Research Questions

3. Definitions & Framework

4. Analysis Results

5. Recommendations for TUM LLCM

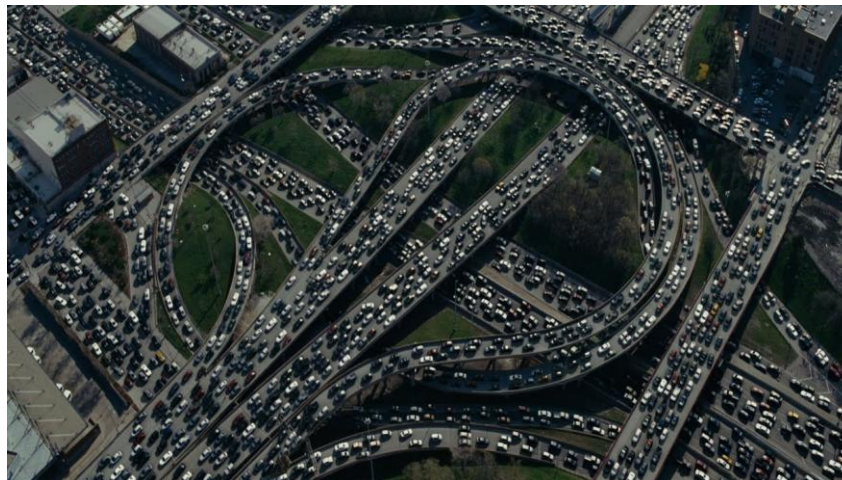
6. Summary & Outlook

# Transportation Has Reached Its Limits



World population growth

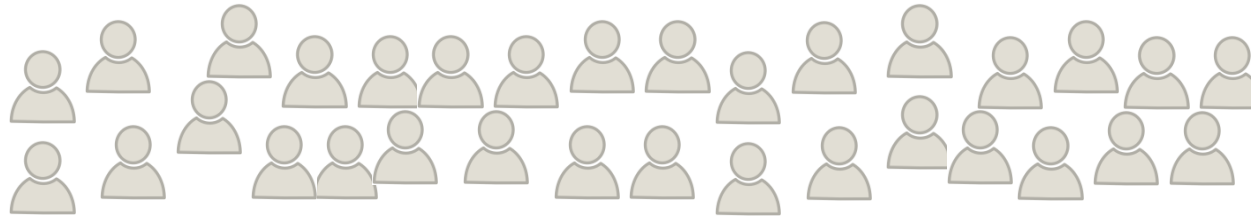
Urbanization



Sources: <https://i.ytimg.com/vi/1qn15qtKqvY/maxresdefault.jpg>  
[http://cornerstonemag.net/wp-content/uploads/2015/06/shutterstock\\_151488392.jpg](http://cornerstonemag.net/wp-content/uploads/2015/06/shutterstock_151488392.jpg)  
<http://cdn2.spiegel.de/images/image-167959-galleryV9-epem-167959.jpg> (all 20.01.2016)

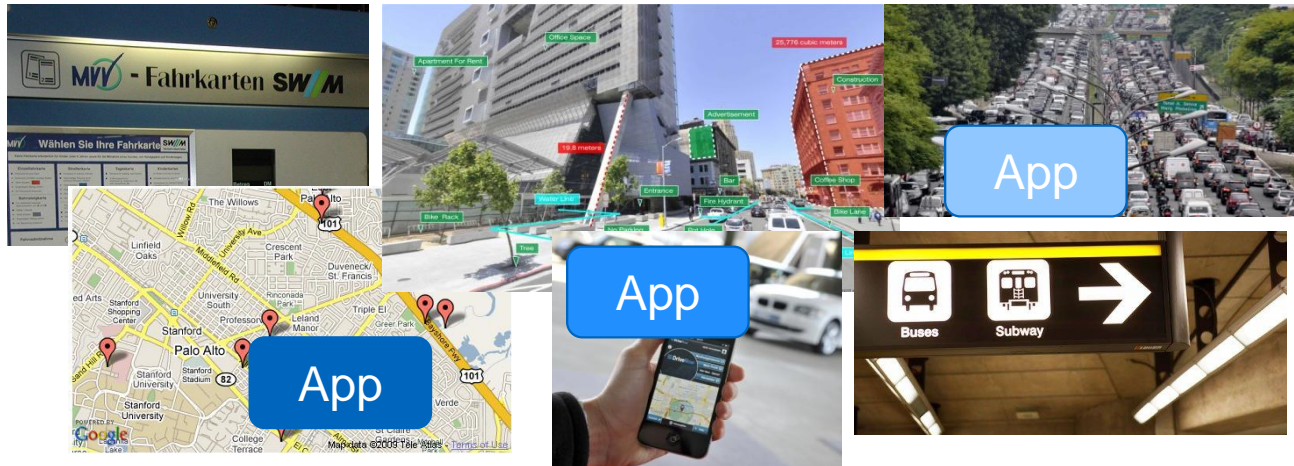
# An Open Service Platform for Digital Mobility

The TUM Living Lab Connected Mobility

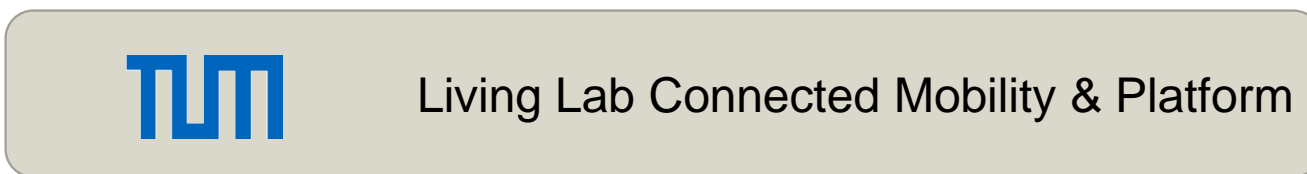


**Customer-centered approach**

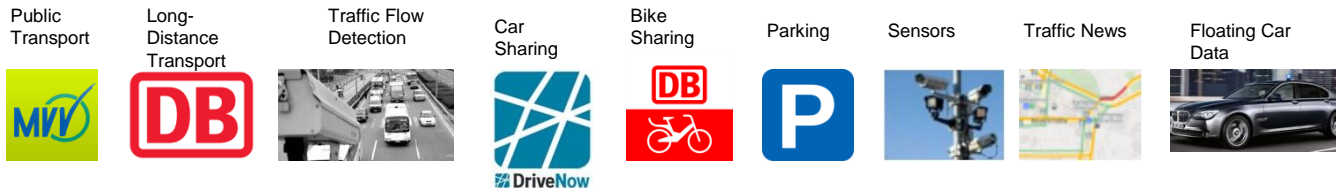
**Use cases**



**Innovative platform services**



**Evaluation of industrial application**



Sources: Technische Universität München (2016), adapted from Matthes (2015), <http://content.southuniversity.edu/assets/marketing/Insite/Public-Transportation-Main-jpg.jpg>, [http://cdn1.abendzeitung-muenchen.de/media/media\\_d357c411-4e86-48b9-ac48-620e5e052373.normalized.jpeg](http://cdn1.abendzeitung-muenchen.de/media/media_d357c411-4e86-48b9-ac48-620e5e052373.normalized.jpeg), [http://www.codeproject.com/KB/web-image/Google\\_map/sampleMap.JPG](http://www.codeproject.com/KB/web-image/Google_map/sampleMap.JPG), <http://infospace.ischool.syr.edu/files/2012/02/aug1.jpg>, (all 20.01.2016)

# “The Age of Platforms“

Platform Business Models Are Everywhere

## “Analog“ Platforms



## Software-Based Platforms



Sources: Suarez/Kirtley (2012), [https://upload.wikimedia.org/wikipedia/commons/thumb/5/5e/Visa\\_Inc.\\_logo.svg/2000px-Visa\\_Inc.\\_logo.svg.png](https://upload.wikimedia.org/wikipedia/commons/thumb/5/5e/Visa_Inc._logo.svg/2000px-Visa_Inc._logo.svg.png), [https://commons.wikimedia.org/wiki/File:Riem\\_Arcaden\\_Logo.svg](https://commons.wikimedia.org/wiki/File:Riem_Arcaden_Logo.svg), <http://media2.giga.de/2012/01/Android-logo.png>, [http://www.freelargeimages.com/wp-content/uploads/2015/05/Facebook\\_Vector\\_Logo\\_Hd\\_02.png](http://www.freelargeimages.com/wp-content/uploads/2015/05/Facebook_Vector_Logo_Hd_02.png), <http://desktopsolution.org/wp-content/uploads/2015/12/iOS-logo.png>, <http://www.pnglogo.com/wp-content/uploads/2015/10/Amazon-Logo-PNG-02507.png> (all 20.01.2016)

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## “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?

1. Motivation

2. Research Questions

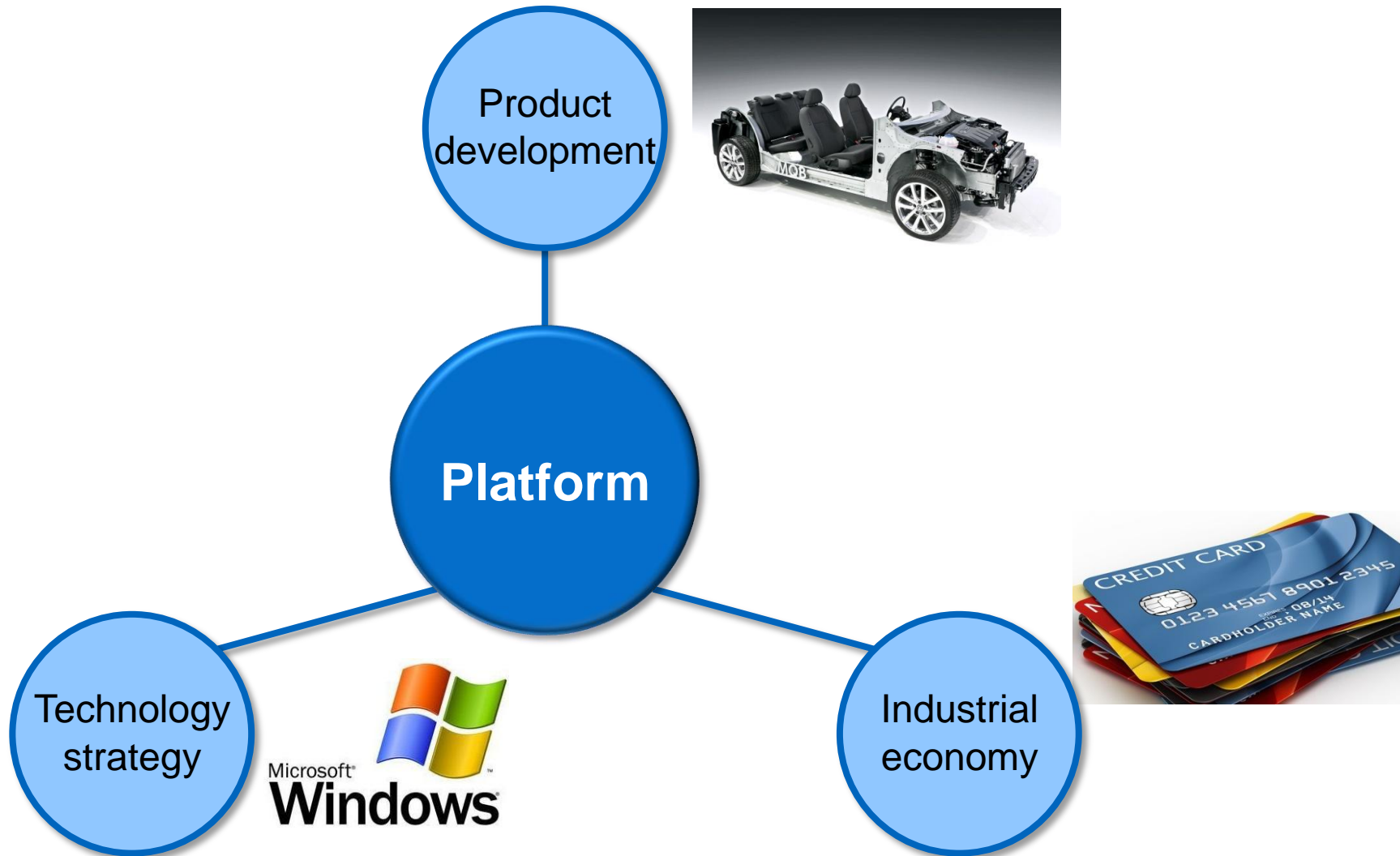
**3. Definitions & Framework**

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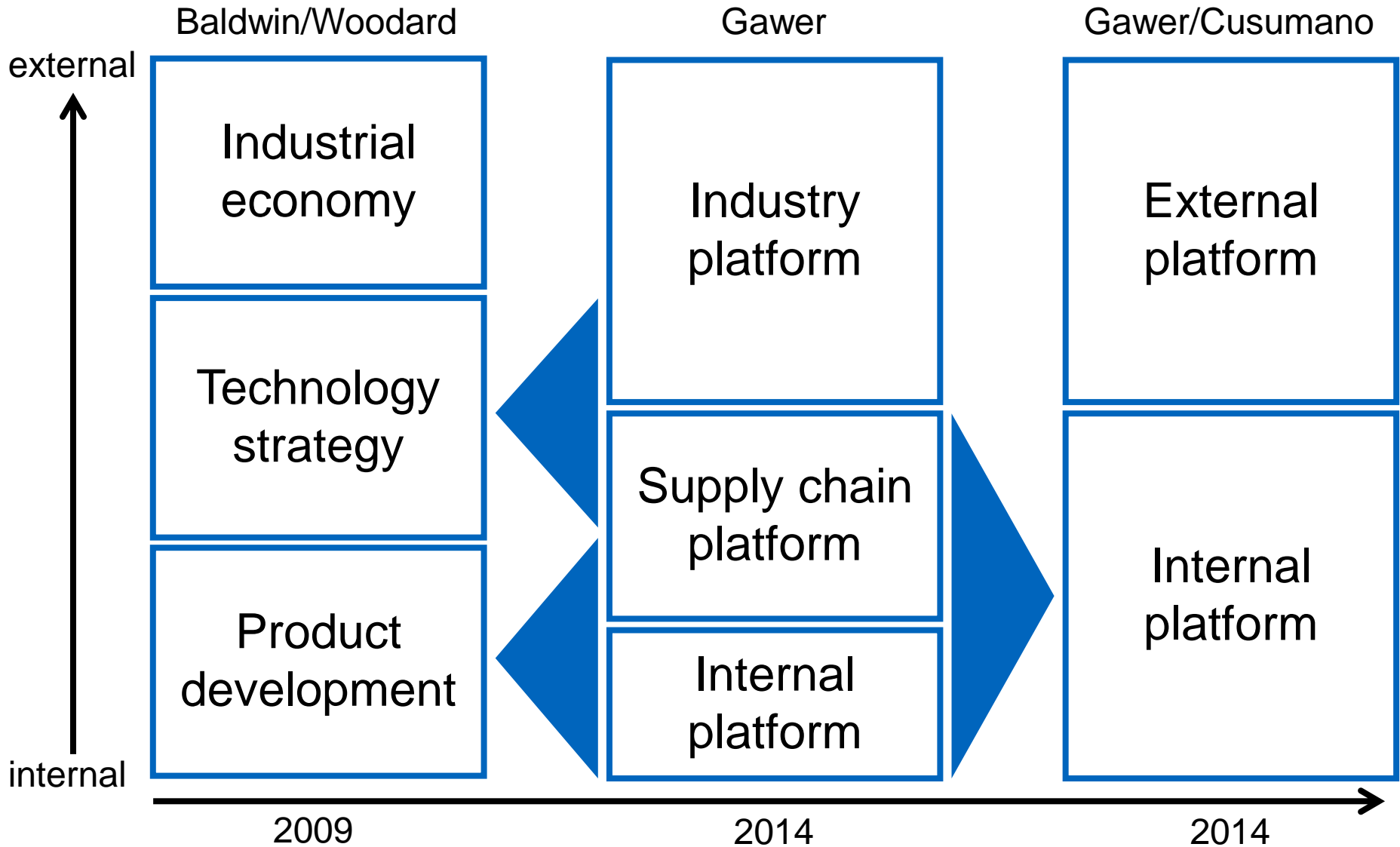
6. Summary & Outlook





Sources: Baldwin/Woodard (2009), <http://www.autobild.de/bilder/vw-golf-vii-auf-mqb-plattform-2855187.html#bild2>, <http://www.smartchoice.pk/blog/wp-content/uploads/2015/08/credit-card-images1.jpg#>, [http://praxistipps.s3.amazonaws.com/windows-xp-startet-nicht\\_28859987.jpg](http://praxistipps.s3.amazonaws.com/windows-xp-startet-nicht_28859987.jpg) (all 20.01.2016)

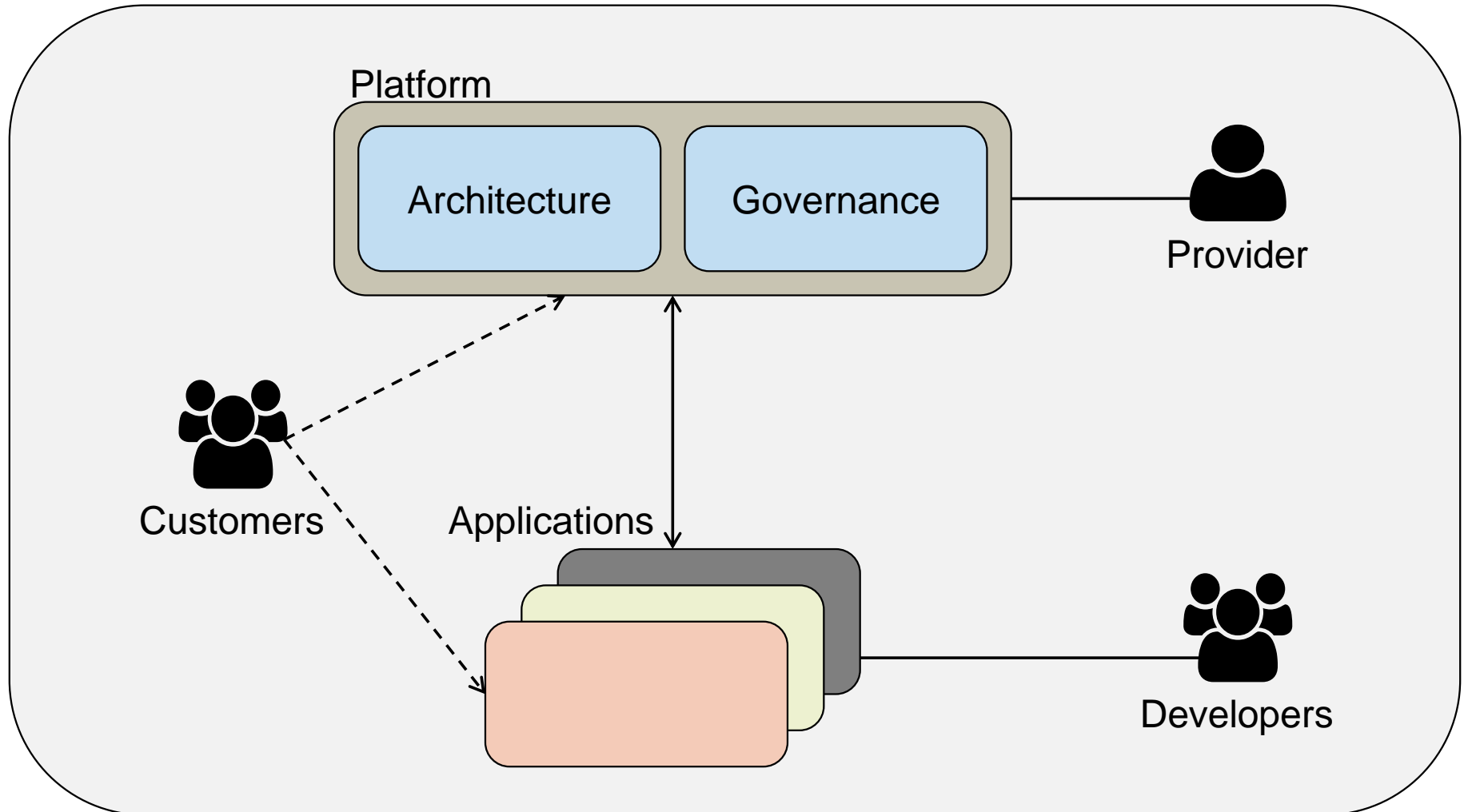
# Existing Definitions

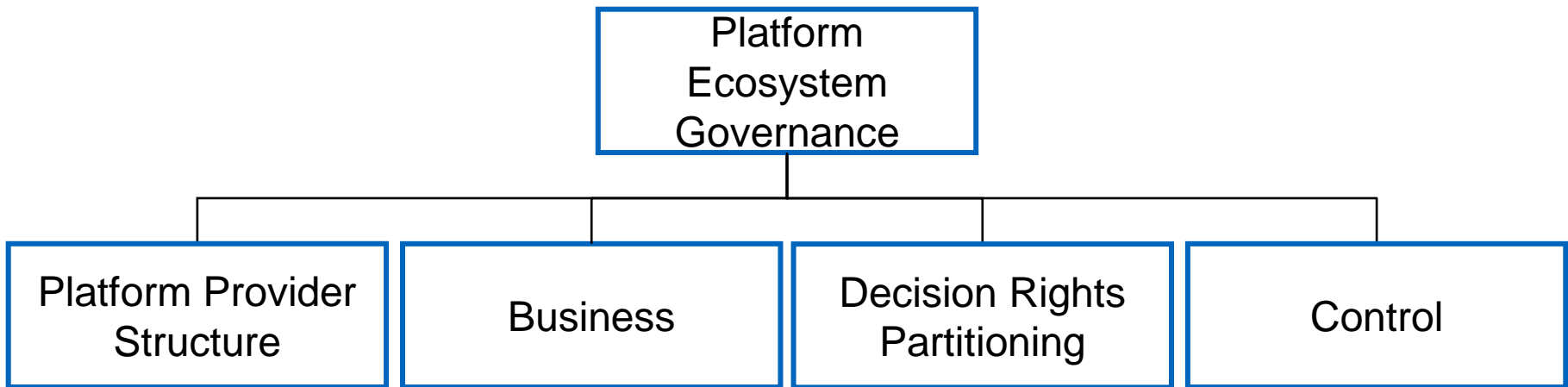


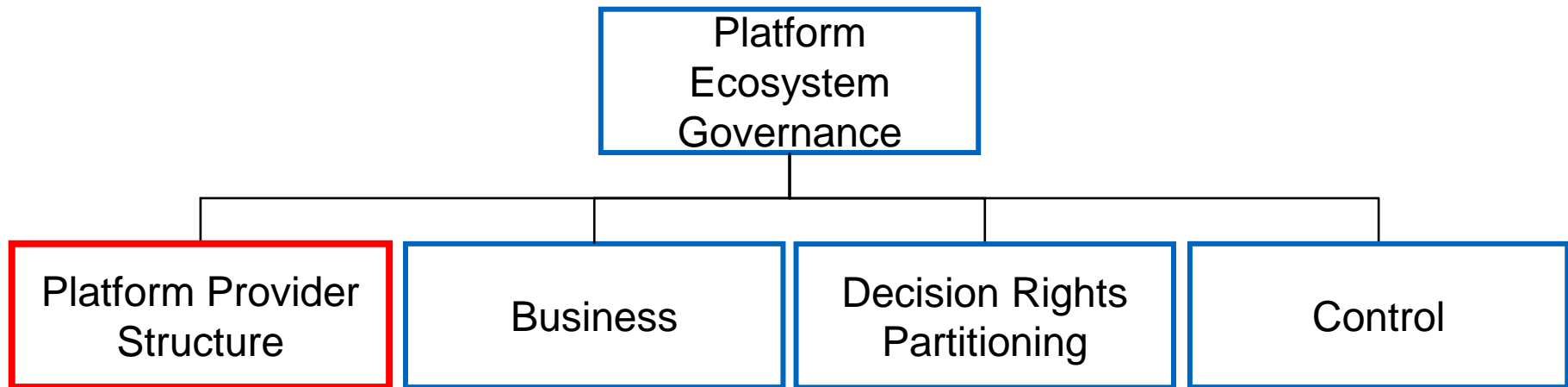
Sources: Baldwin/Woodard (2009), Gawer (2014), Gawer/Cusumano (2014)

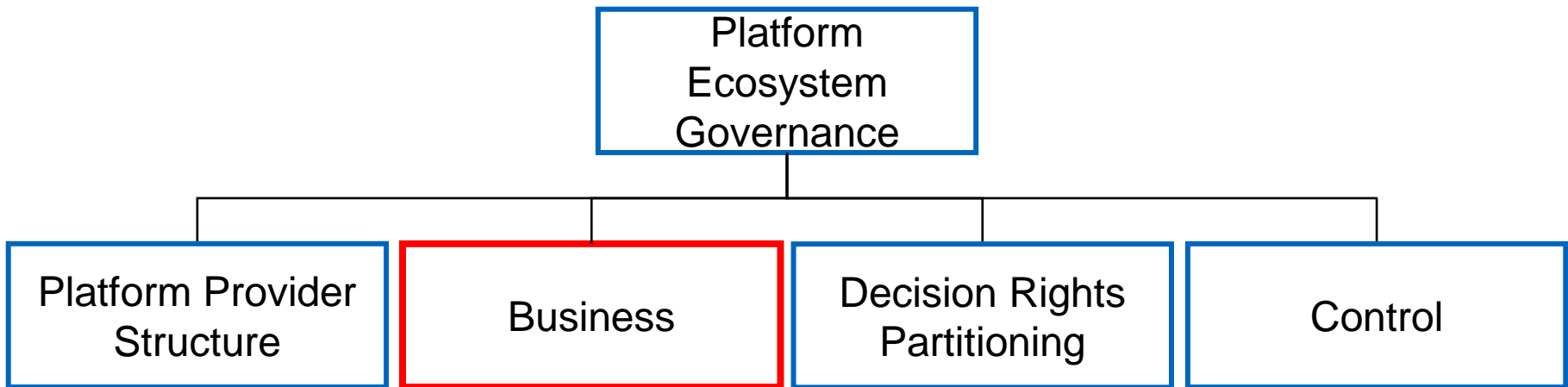
# Definition of "Platform Ecosystem"

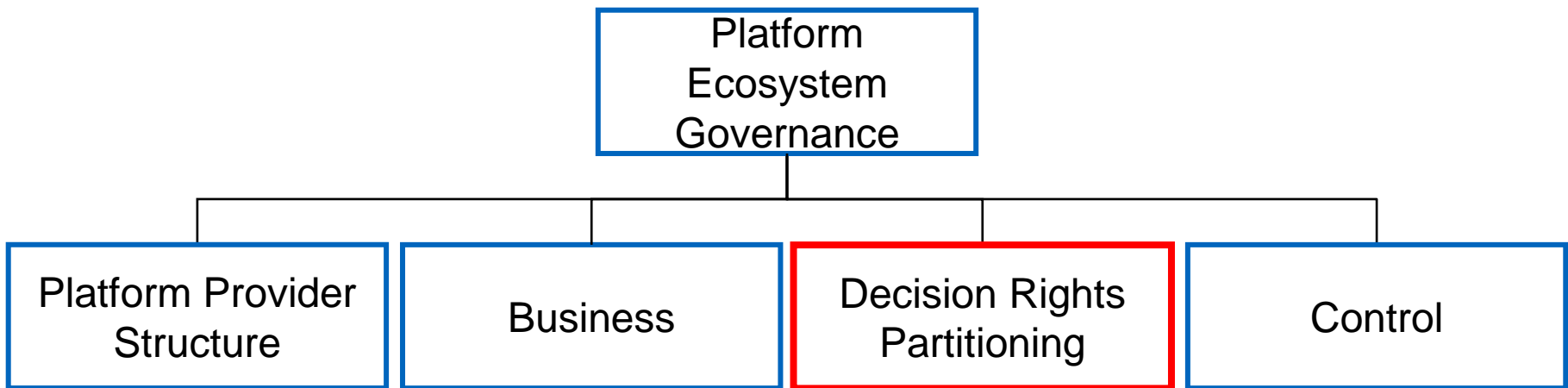
## Platform Ecosystem

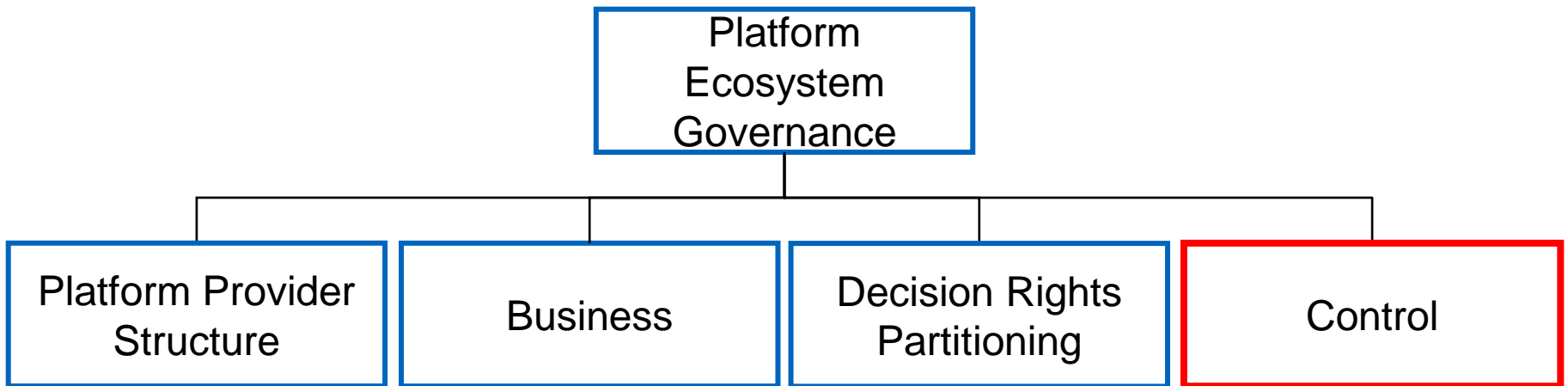










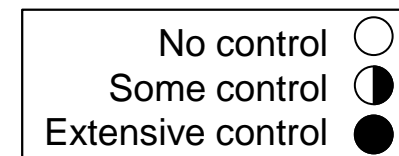
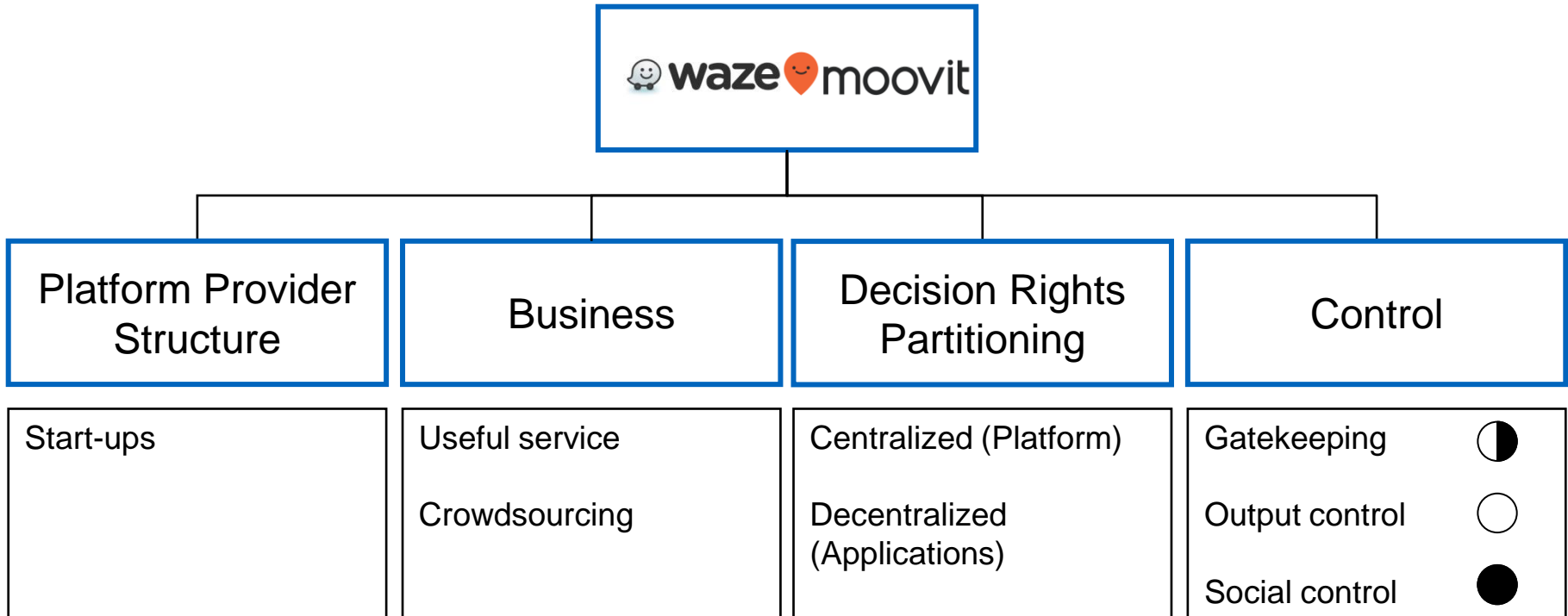


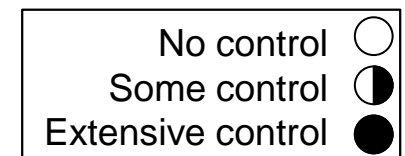
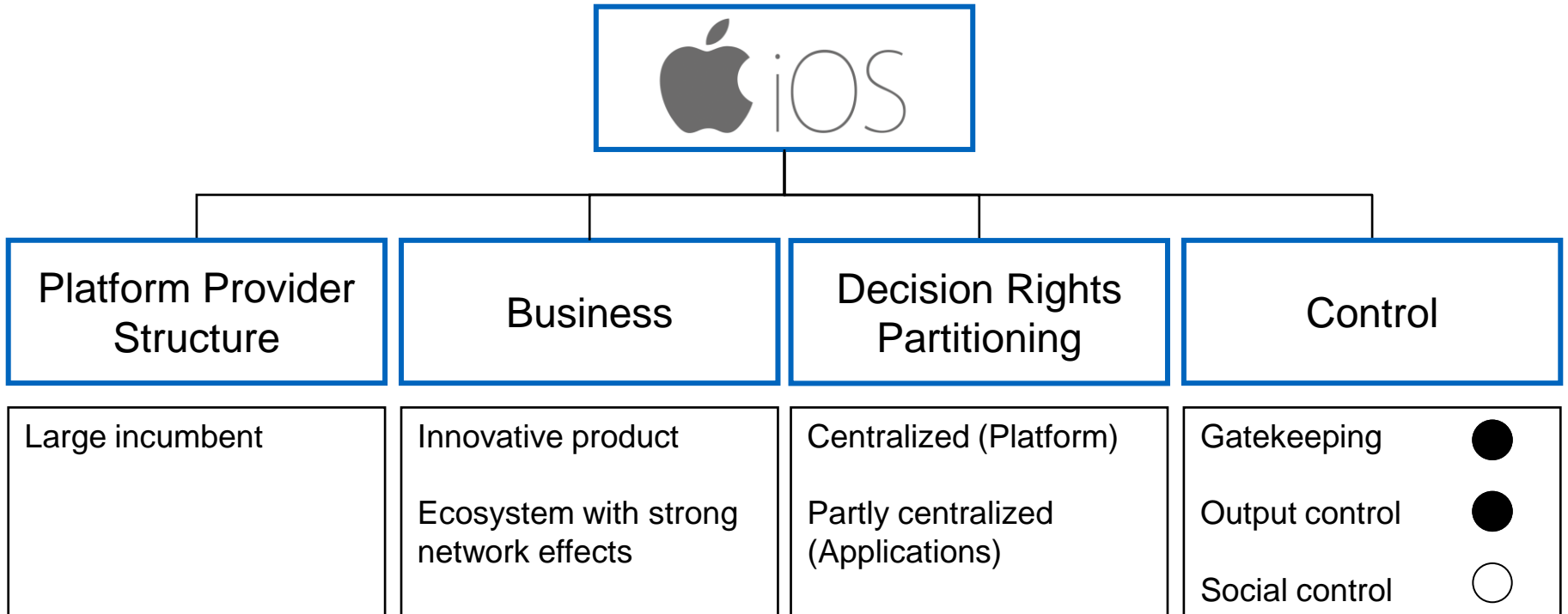


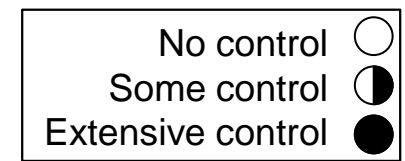
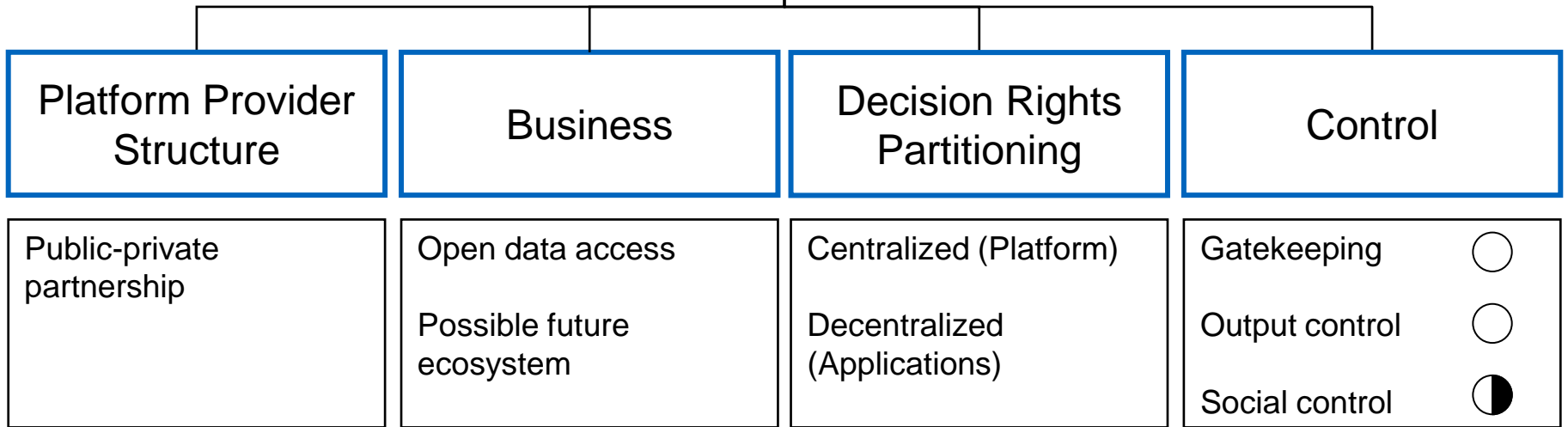
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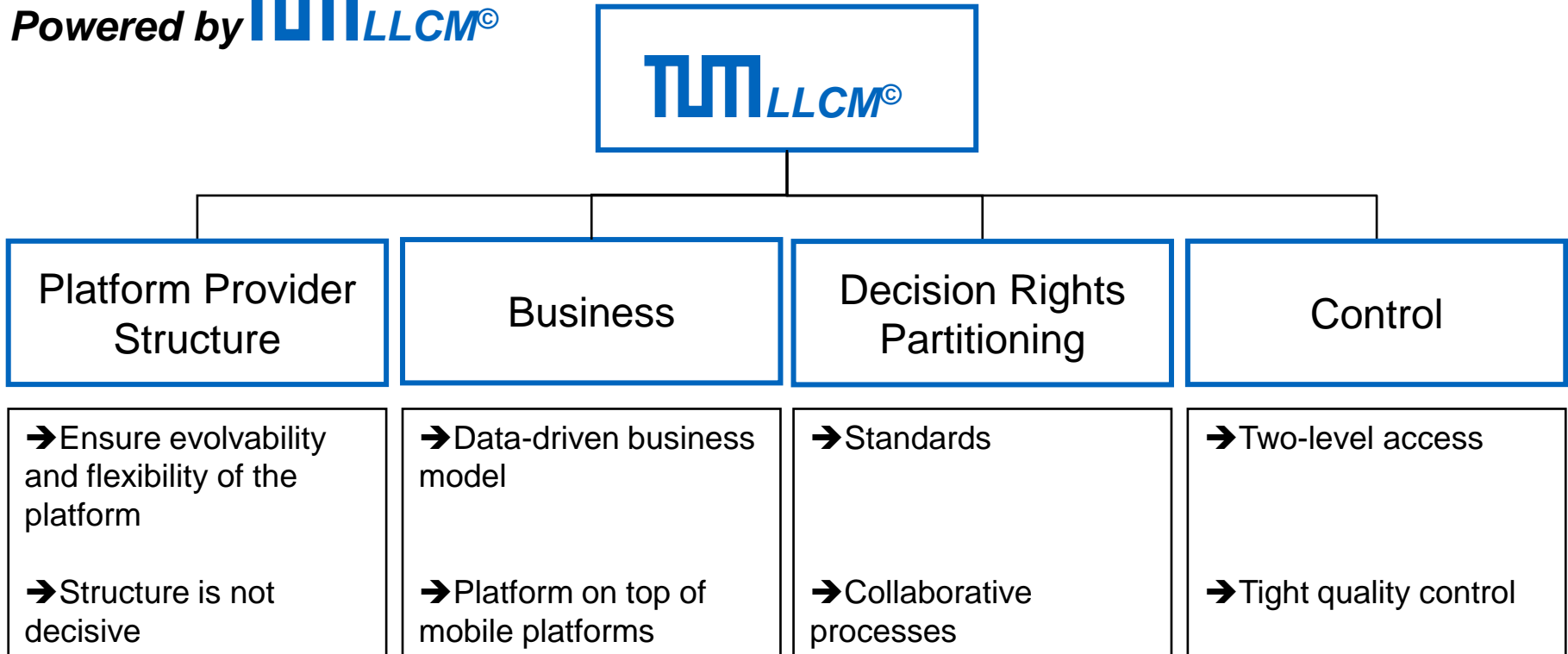




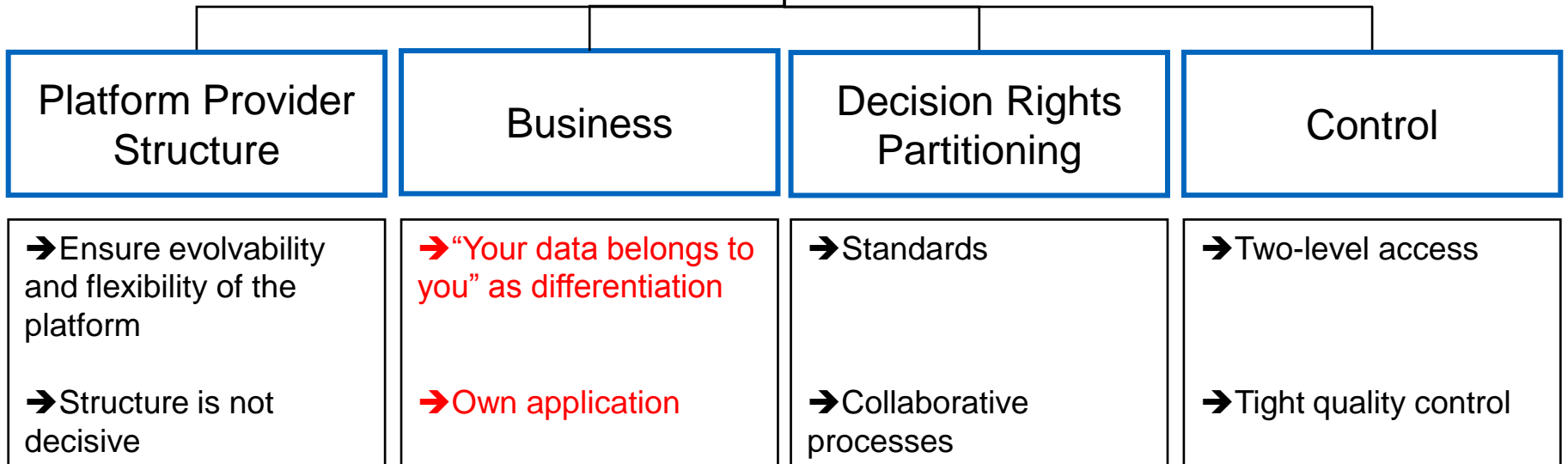


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TUM LLCM<sup>®</sup> App

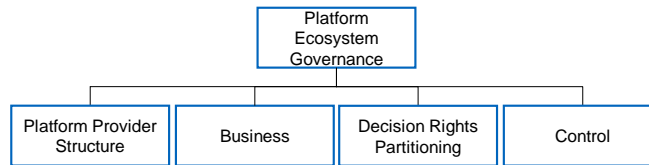
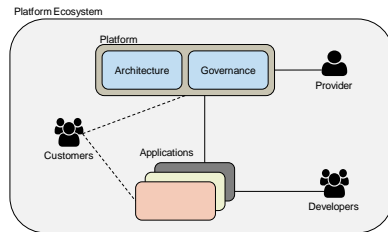


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## Contributions



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## Limitations

- Low number of cases
- Only publicly accessible information analyzed

## Possible Future Research

- Validation of the framework with more cases
- Quantitative evaluation

Thank you for your attention!  
Any questions?



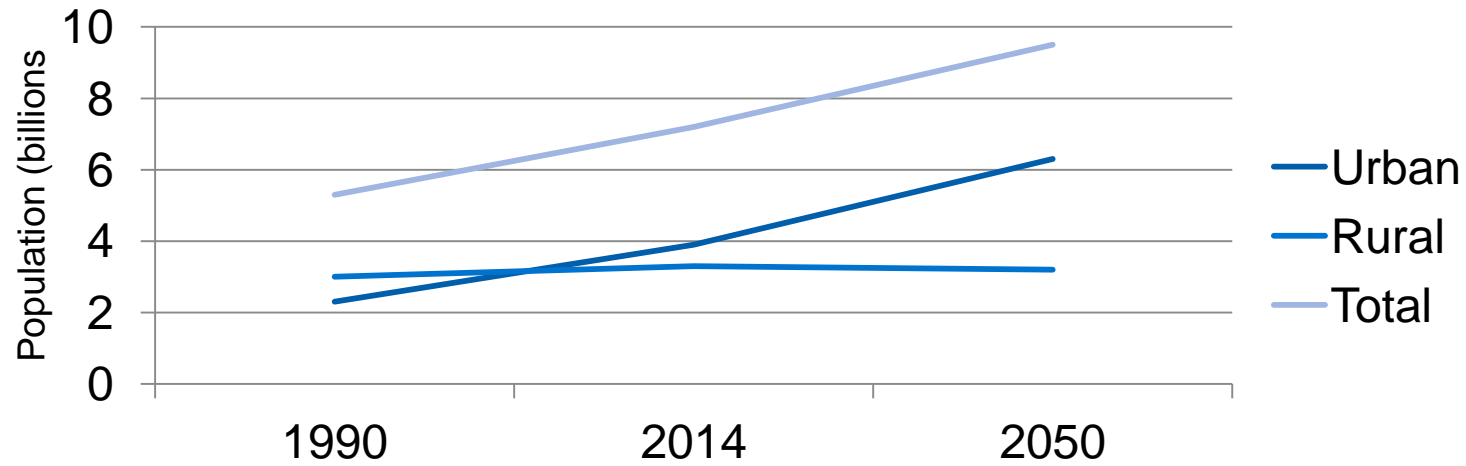
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# Backup

## World Population (2050)



## World population development



Spilled resources per auto commuter in the US (2014)



**19 gallons (~72 litres) of fuel**



**\$960 congestion cost**

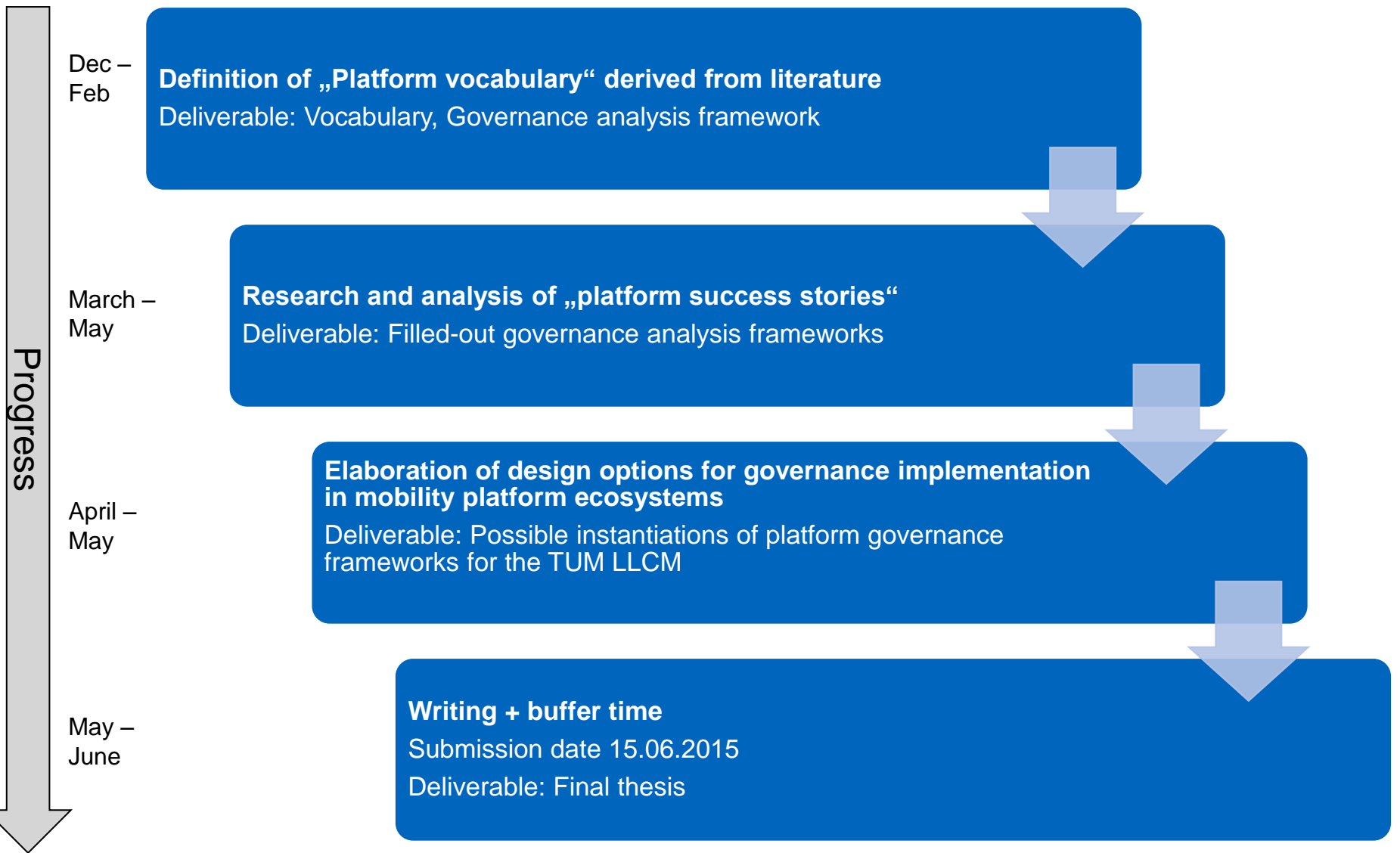


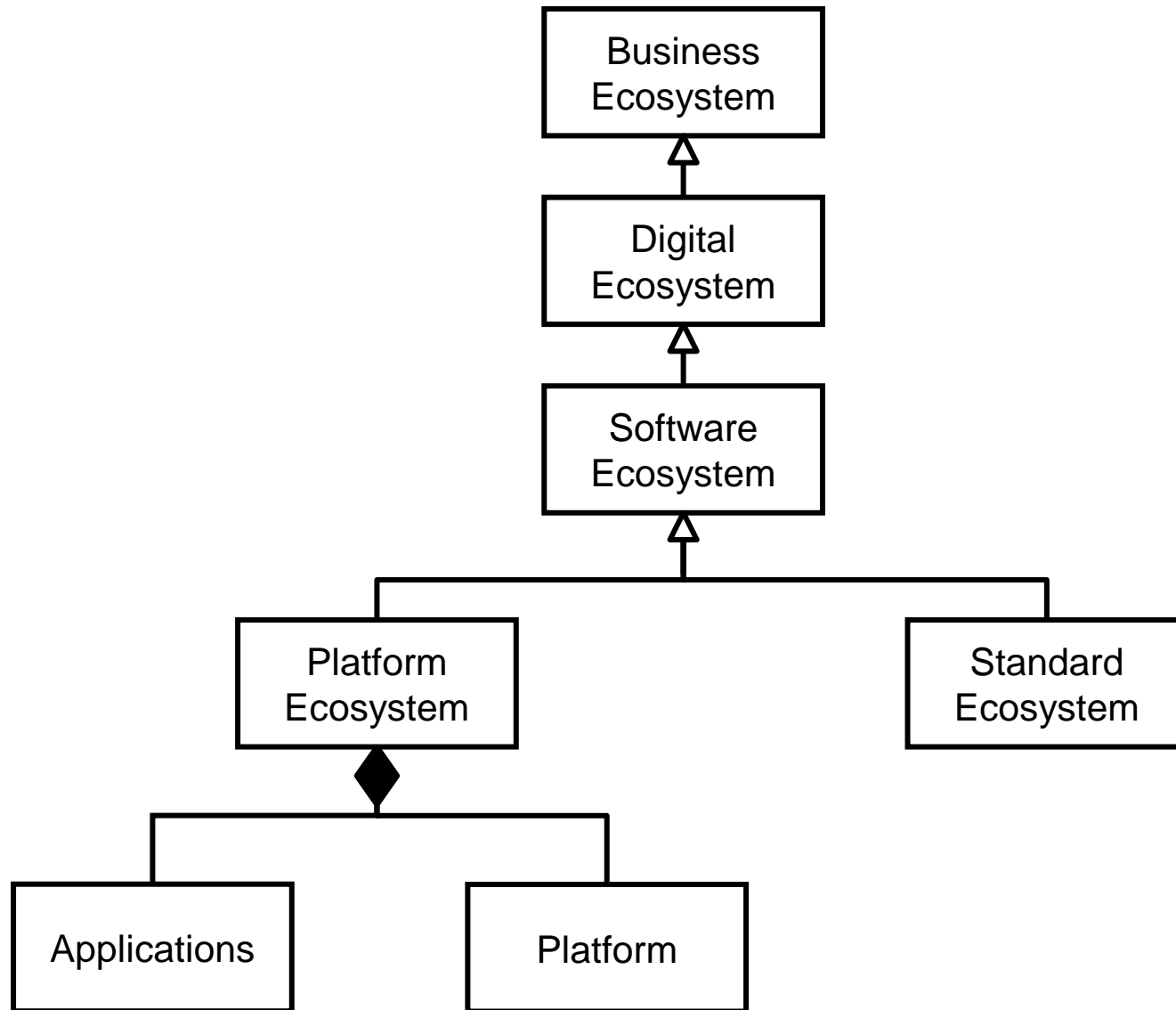
**42 hours of delay**

Sources: Schrank et al. (2015),

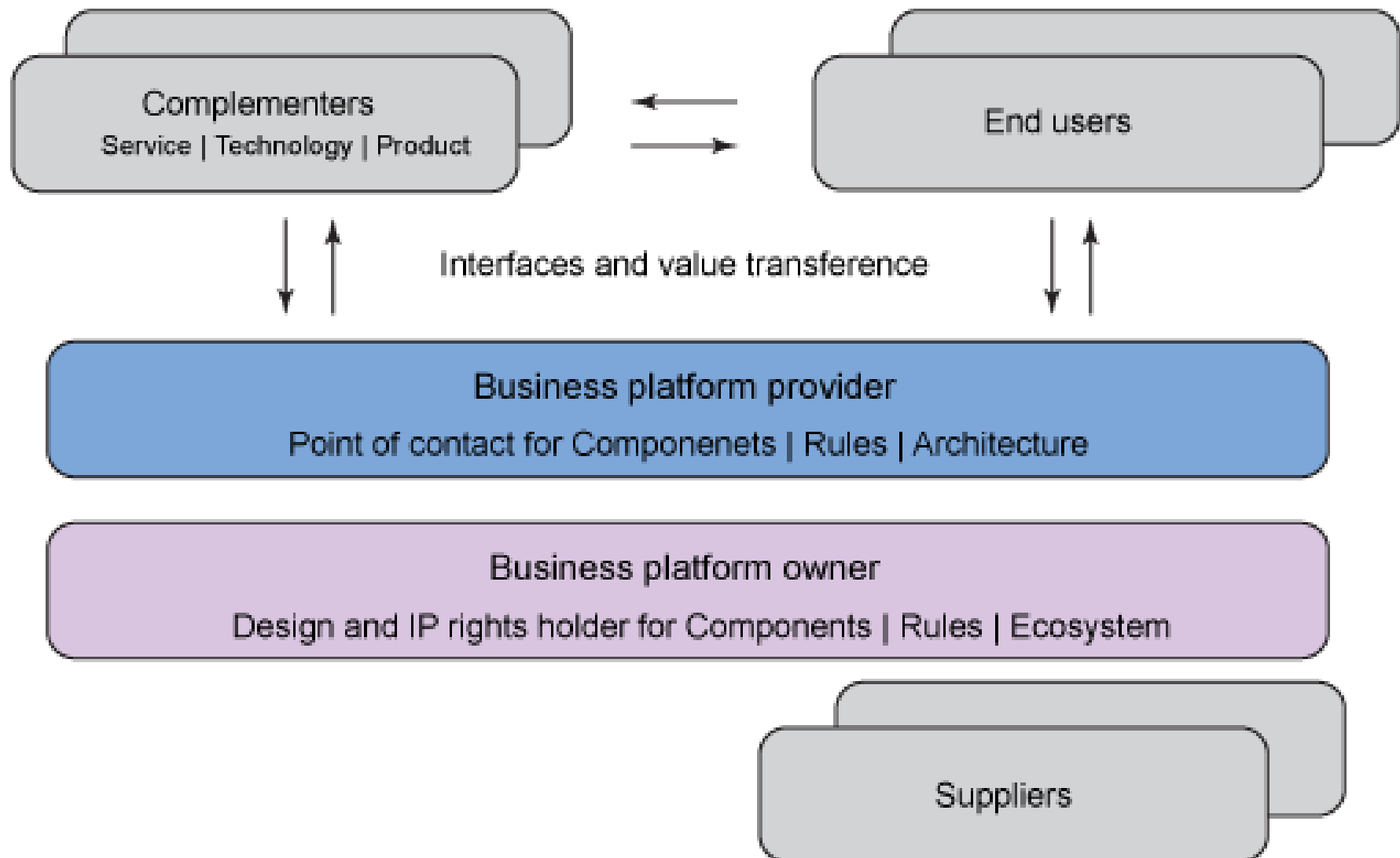
<http://www.thegreenage.co.uk/wp-content/uploads/2013/02/crude-oilbarrel.jpg>,

[http://shirta.de/media/catalog/product/cache/1/small\\_image/295x295/9df78eab33525d08d6e5fb8d27136e95/s/a/sanduhr-d76216801.png](http://shirta.de/media/catalog/product/cache/1/small_image/295x295/9df78eab33525d08d6e5fb8d27136e95/s/a/sanduhr-d76216801.png), <https://www.colourbox.com/preview/4282123-dollar-banknotein-a-sack.jpg> (all 25.01.2016)









## “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 Method:

Literature Review according to Webster/Watson (2002)

- 35 Journal Papers
- 21 Conference Papers
- 2 books
- 1 edited book

## Literature review according to Webster/Watson (2002)

- Databases: ACM Digital Library / EBSCO Business Source Premier / EBSCO Library, Information Science & Technology Abstracts / IEEE Xplore / Google Scholar / Science Direct

- Search terms **Platform** **Platform ecosystem**  
**Platform governance** **Two-sided market**  
**Software(-based) platform** **IT value co(-)creation**

## Relevant literature for RQ 1&3

- 35 Journal Papers
- 21 Conference Papers
- 2 books
- 1 edited book

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



### Research Question 2:

What have been factors for the successful establishment of platform businesses in the past?

### Approach:

Analysis of successful platforms with the help of framework from RQ1:

- Waze / Moovit
- Apple iOS
- ITS Factory Finland

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



### Research Question 3:

Which design and governance options do exist to successfully establish a mobility platform and ecosystem?

### Approach:

Transfer of assumed success factors from RQ2 to TUM LLCM

- Which combinations of success factors are possible?
- Special characteristics of TUM LLCM