»Sharing Economy in Urban Environments«

Fraunhofer IAO
Helge Spindler
İstanbul, 25.9.2014
What will the society look like in 2025?
The next ten years will shape society for the 21st century…

Rising energy consumption
Environmental awareness

Wealth
New Consumption Patterns
New Lifestyles

Demographic Change
Gender Diversity
Cultural Diversity

Urban Production
Industry 4.0
Smart Factory

Knowledge Economy
Flexible Work
Work-Life-Balance

Participation
Interaction

Urbanization

Rising overall mobility demand
Global Logistics
Transformation towards electric mobility

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Factor Analysis
Eleven key factors

- Change in economic clusters
- Energy Portfolio
- Degree of commonly shared resources
- Big data and predictive analytics
- Internet of things
- Diverging technical acceptance
- Scarcity of resources
- Digitization of work
- Mobile work
- Changing values of status symbols
- Energy prices
- Energy prices
Sharing Economy in a nutshell...

A set of practices and models that, through technology and community, allow individuals and companies to share access to products, services and experiences.

Pillars and influence factors of Sharing Economy

- Trust in Strangers
- Idle Capacities
- Belief in Common property
- P2P-Technologies
- Increasing Community Awareness
- Environmental Aspects
- Cost Sensitivity
- Reputation vs. Status
- Values of Benefit & Experience vs. Property
- Service Orientation
- Distribution Markets (Global Village)
- Innovative Life Style

Example: The German »Sharing Economy«-Landscape

Carsharing

Swap Meets

Lending & Give-aways

Financing & Insurances

Baby’s & Kid’s Outfits

Mobility

Flatsharing

Coworking

Source: https://www.friendsurance.de/blog/a/infografik-shareconomy-landschaft


Source: http://max-attachments.prod.hlpstr.de

Source: http://lightninglab.co.nz

Source: http://octavaplanta.es

Source: http://www.gruenschnabel.at
Sharing / Collaborative Economy enhancing its focus – a trend or just wishful thinking?

B-to-B

Investment Goods

tomorrow

Development trend for the Sharing Economy?

B-to-C

today

Consumer Goods

P-to-P

E.g. automotive manufacturer as corporate fleet operator

Foto: © Andres Rodriguez

Illustration IAO

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Manifestations of Collaborative Economy

Collaborative Consumption
Gaining access to products, goods and services
- Redistribution markets
- Product-Service-Systems
- Collaborative Services (Collaborative Lifestyles)
- ...

Collaborative Learning
People share resources and knowledge to learn together
- Open courses and courseware
- Skillsharing
- Crowd-sourced knowledge
- ...

Collaborative Production
Networks collectively design or produce and distribute goods
- Collaborative product design
- Makerspaces
- Peer production
- ...

Collaborative Financing
Funding, lending, investments by individuals and groups outside traditional financial institutions
- Crowd funding
- Social lending
- Alternative currencies
- Collaborative insurance
- ...
Consumer-sided motivating factors
(National study by Campell Mithun, 2012)

Ranked Order of **Rational Benefits**
- **Financial** – saves me money
- **Environmental** – is good for the environment
- **Lifestyle** – provides me flexibility
- **Lifestyle** – is practical
- **Trial** – provides access to goods/services

Ranked Order of **Emotional Benefits**
- **Generosity** – I can help myself and others
- **Community** – I'm valued and belong
- **Lifestyle** – I'm smart
- **Lifestyle** -- I'm more responsible
- **Cultural** – I'm part of a movement

Source: http://www.shareable.net/blog/study-finds-sharers-want-value-with-meaning, 25.7.2013
Source: http://wsa.wesleyan.edu
Source: http://advancebackandneck.com
Source: http://lightninglab.co.nz
The New Social Economy

By trying to provide everything themselves classical businesses miss out on the larger opportunity

The "micro-entrepreneurs" generation

Revolution or Evolution?
1st Research Focus: Incumbent businesses affected by Sharing Economy

Sharing / Collaborative Economy

- Negative competitive effects through Collaborative Economy
- Economic Benefits through offers of Collaborative Economy
  (Shareable products and services as input for business activities)
- Direct activities within Collaborative Economy
  (compensating declining markets, developing new markets, sharing-mechanisms for existing markets)
- Indirect activities within Sharing Economy

Impacts and effects on „non-sharing” businesses

- Passive Role
- User Role

Incumbent businesses and sectors

Active players
(as provider of “shareable” value propositions)

“Supplier Role”
(product or service provider for sharing companies (i.e. ICT-solutions))
Transformational challenge for the incumbent economy: Adopting the collaborative value chain

Company-as-a-Platform
- Co-ideate
- Co-fund
- Co-build
- Co-distribute
- Co-market
- Co-sell
- Co-revenue share

Collaborative Economy

Company-as-a-Marketplace
- Resell
- Co-op
- Swap

Marketplace

Company-as-a-Service
- Rent
- Subscribe

Service

Products

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2nd Research Focus: Potentials and downsides for urban systems

Urban Communities

**Socio-political effects**
- Taxation, Regulation, Consumer Protection, Data Privacy, Employees’ Rights…

**Economic effects**
- Economical growth, Innovation, Business Incubation, Employment…

Impacts and effects on “non-sharing” businesses

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Incumbent businesses and sectors

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Urban Communities

Active players

Incumbent businesses and sectors

Passive Role

User Role

Active players

“Supplier Role”
Shareable resources for a Collaborative Economy in Urban Environments

- **Products & Services**
  - Automobiles
  - Consumer goods
  - Real estate
  - Human resources
  - ...

- **Equipment & Facilities**
  - Means of production
  - Manufacturing equipment
  - ...

- **Infrastructures**
  - Transportation, Mobility
  - Logistics
  - Telecommunication Infrastructures
  - ICT-Systems
  - ...

- **Information**
  - Knowledge
  - Data
  - Ideas
  - Experiences
  - ...

Illustration: IAO

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Collaborative (shareable) solutions as cross-sectional functions of urban systems
Urban collaborative economy – a network task

Urban population
- Individuals
- Consumers
- Providers of shareable resources
- ...

Sharing City as economic zone & industrial area

Research & Development
- Research institutions
- Technology research
- Applied systems research
- Economic research
- Joint collaborative research
- Corporate R&D
- ...

Urban economy
- Typical sharing companies
- Incumbent business sectors
- Design of shareable products & services
- New business opportunities
- Start-ups & new ventures
- ...

Cities – policy & decision makers
- Urban planning
- Economic policy & development
- Providers of shareable resources
- ...

Sharing City as living space

Prospects – Strategies – Integrated concepts – Shared Solutions – Pilotprojetcs …
Research Approach: Identifying and seizing sharing potentials for innovative cities

<table>
<thead>
<tr>
<th>Demand Analysis Value Benefit Analysis</th>
<th>Application fields for Shared Systems Solutions</th>
<th>Shared System Concepts Feasibility Studies Implementation Strategies</th>
</tr>
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<tbody>
<tr>
<td>future users / clients / resource providers</td>
<td>energy</td>
<td>Resource sharing solutions targeting particular urban systems</td>
</tr>
<tr>
<td>relevant stakeholders</td>
<td>mobility</td>
<td>Resource sharing solutions for integrated urban systems</td>
</tr>
<tr>
<td>urban economy</td>
<td>urban Processes</td>
<td>Trade-offs between direct economic effects and “secondary” mediate effects</td>
</tr>
</tbody>
</table>
| social trends | ICT | e.g. Profitability, Cost, Investments, ...
| Scarce urban resources? | Building | e.g. ecological sustainability, quality of living, social value, ...
| Idle public or private assets? | Security | |
| | Production logistics | |
| | Governance | |

Scarce urban resources?  
Idle public or private assets?

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Economically successful sharing concepts:
The system perspective is what counts!

E-Mobility and carsharing - Sample for a “Shared System”

Product technologies
Core-Infrastructure technologies
ICT-technologies
Utilisation concepts
(demand models, product-service-systems…)
Connected Car
ICT-technologies for use phase

Operating models

Business models

Infrastructural technologies
New components
Product technologies
Equipment technologies
Energy storage
Integration
Connected Car

Source: Dr. Tobias Lösche-ter Horst, VW AG, D4, MobilitätsTalk der METROPOLREGION in Hannover, 30.11.2011

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Fraunhofer “Shared Systems Design”-Approach

- **Appropriate Business and Operating Models**
  *(Concepts and Implementation)*

- **Models of Resource Utilisation**
  *(Development and Realisation)*

- **Required infrastructures and enabling technologies**
  *(Identification, Evaluation and Planning)*

- **Shareable products, services and resources**
  *(What can be shared? What is the demand for sharing? What is the benefit for the city and for the economy?)*
Evolutionary prospect: From shared systems to *multi-usage* shared systems

- **Single User System**
  - Single Usage System: e.g., Sunglasses
  - Multi Usage System: e.g., Carsharing

- **Multi User System**
  - Single Usage System: e.g., Sunglasses
  - Multi Usage System: e.g., Free floating shared Pedelecs, Smartphone, Free floating shared Pedelecs, Smartphone
Shared resources in urban environments: Sample applications of “Shared Infrastructures”

- Mobility
- Utilities (Energy / Water)
- Collaborative Manufacturing
- Construction / Facilities
- Health Care / Telemedizin
- Transportation & Logistics
- Telecommunications & Data Exchange

E-Charging Infrastructures

Source: http://compass.ptvgroup.com

Micro Smart Grids

Source: http://i1.ce.cn

Smart City Data Infrastructures

Source: http://sites.middlebury.edu

Logistic Hubs

Source: http://cohealo.com

Maker Spaces


Medical Asset Mobilisation

Source: http://siliconrepublic.com

Mast-/Network-Sharing

Source: http://http://cohealo.com

Source: http://www.blog.telecomfuturecentre.it

Source: http://www.iff.fraunhofer.de

Source: http://www.blog.telecomfuturecentre.it

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How Fraunhofer IAO addresses Collaborative Economy…

It’s not about single but about integrated solutions for achieving sustainability!

Innovations emerge at the interfaces of Technologies and application fields!

Sharing / Collaborative Economy

Shared Systems & Infrastructures

Urban Systems

Mobility

Source: © iassdesigner|fotolia.com

Source: © EDAG-GmbH
Collaborative Economy Initiative of Fraunhofer IAO

Envisaged fields of research

**Value creation patterns**
New or modified patterns of value creation by collaborative use of (physical) infrastructures.

**Innovative business and operating models**
Potentials and design of innovative business and operating models for shared infrastructures.

**Competitiveness and cost reduction**
Approaches for cost reduction mechanisms and improved competitiveness through resource effectiveness by means of shared resources.

**Collaboration and cooperation models**
Intelligent resource utilisation through (regional or local) collaboration and cooperation models.

**Collaborative research infrastructures**
Potentials of collaborative research infrastructures (within/between science and industry).

**ICT-solutions for collaboration and coordination**
Leverage of ICT and software solutions for collaboration and coordination regarding shared resources (infrastructures in particular).

**Maximised economic & social value creation**
Through minimised resource utilisation by means of collaborative sharing of resources.

**Ecological and economic sustainability**
Guidance for design of ecological and economic sustainability (resilience) of shared infrastructures.
Objectives of Initiative

- Cooperation platform
- Adressing (public) calls for proposals
- Events for networking and exchange
- Bilateral research and consulting projects

Constituing international network of partners

City representatives
Research institutions
Industrial enterprises
Industry associations
We cannot address these challenges by ignoring them, by going on strike, or by trying to ban these innovations out of existence …

We need to work with them not against them.

(Vice president of the European Commission Neelie Kroes)