



**ecoocom**<sup>13</sup>

**Ökonomie der Kommunikation**  
Kommunikation in Wirtschaftskreisläufen

<http://www.eco-com.net>



# Information & Communication Technology (ICT) & Sustainability

1. Research & Projects
2. ICT & Economic Context
3. ICT as an Instrument for Sustainability





# In welchem Studiengang studieren Sie?

<http://pingo.upb.de/8225>





# 1

## Research & Projects

---

- ▶ SPiRIT Group Magdeburg
- ▶ Lab
- ▶ ROSI-3D
- ▶ Empirical Analytics
- ▶ Conferences





*Michael A. Herzog (ed):  
Economics of Communication.  
ICT Driven Fairness and Sustainability for Global  
and Local Marketplaces, GITO 2015*



21/11  
2017

ICT & Sustainability

Michael A. Herzog

Follow up our Book!

5



# QPL Fachbereichsprojekt



<https://www.hs-magdeburg.de/hochschule/einrichtungen/zhh/fachbereichsprojekte.html>



21/11  
2017

ICT & Sustainability

Michael A. Herzog

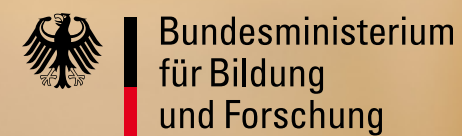
Background: QPL Projekt Wirtschaft





# karriereLEBEN

SocialMedia-Portal for Career- and Alumni-Development



gefördert durch:

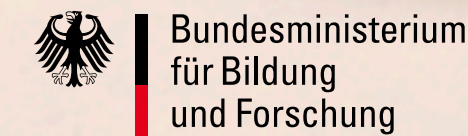


Research group  
Science Projects in Radio and Information Technology



# ROSI-3D

RFID locating in consideration of moving objects in a radio field with 3D-simulation



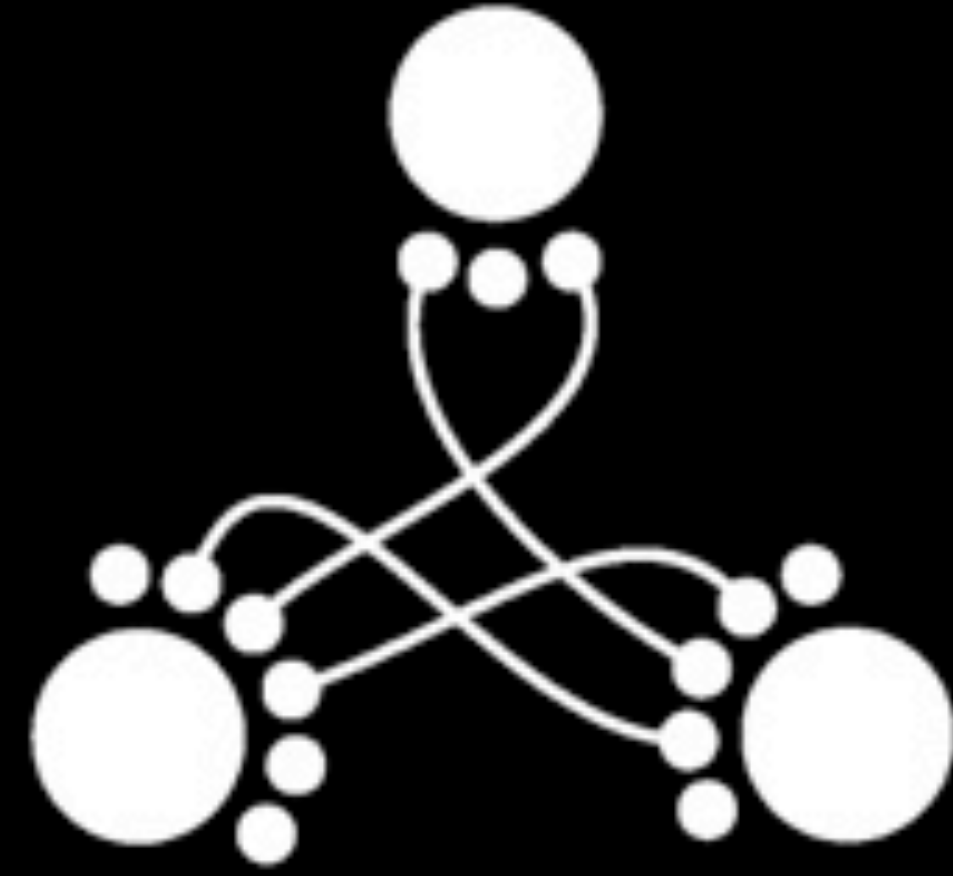
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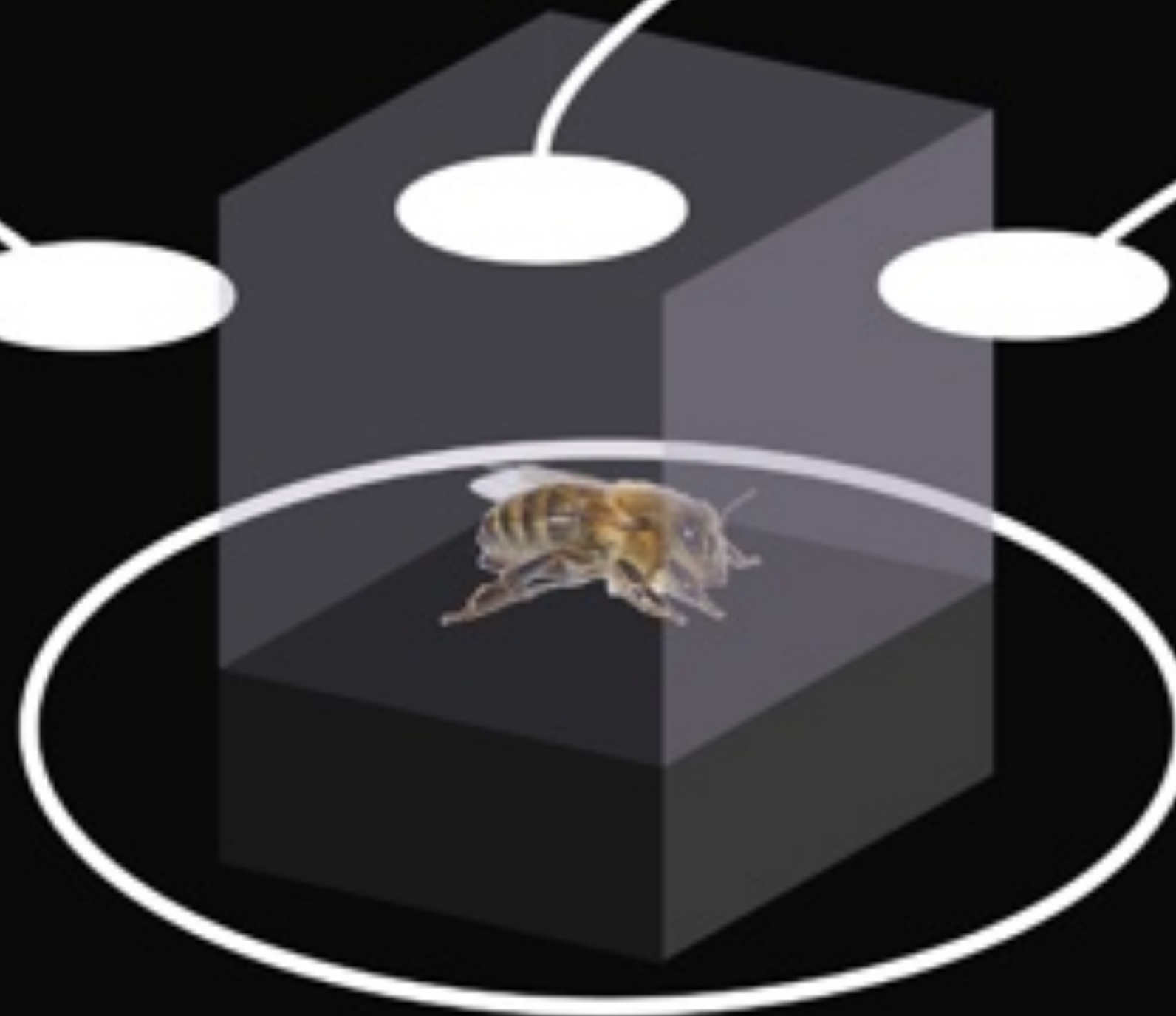


# connectibition

<https://medium.com/extended-exhibition>



Technical setting: Keep it as simple as possible!



Die Westliche Honigbiene (*Apis mellifera*), auch Europäische Honigbiene, meist einfach Biene oder Honigbiene genannt, gehört zur Familie der Echten Bienen (Apidae), innerhalb derer sie eine Vertreterin der Gattung der Honigbienen (*Apis*) ist. Ihr ursprüngliches Verbreitungsgebiet war Europa, Afrika und Vorderasien. Da sie Honig erzeugt, wird sie durch den Menschen genutzt (Imkerei) und wurde weltweit verbreitet; so bereits während der Kolonialisierung anderer Kontinente durch die Europäer. Für die Landwirtschaft ist die durch die Westliche Honigbiene erfolgte Bestäubung der Blüten von Bedeutung, was sie zu einem der wichtigsten Nutztiere macht.







L.u.m.e.n.

# L.u.m.e.N.





Project **Extended Exhibition**, Jens Wunderling, Michael Herzog et. al. 2016

<https://medium.com/extended-exhibition>

L.U.M.E.N Mareike Gabele, Robert Klank, Nicolas Pepping, Eric Schmieder





SACHSEN-ANHALT

SACHSEN-ANHALT

6

Nieders

teza


B 30

Logo of the European Union and other smaller logos.





Interdisciplinary Security Research  
Solutions for Leveraging  
Heterogeneous Multicore Computing  
Security for Smarter Mobility  
KASTEL - Kerckhoffs' principle Software Protection  
Augmented Reality for  
Smart Data Analytics in Industry 4.0

 Bundesministerium  
für Bildung  
und Forschung

 CeBIT  
INNOVATION  
AWARD 2014





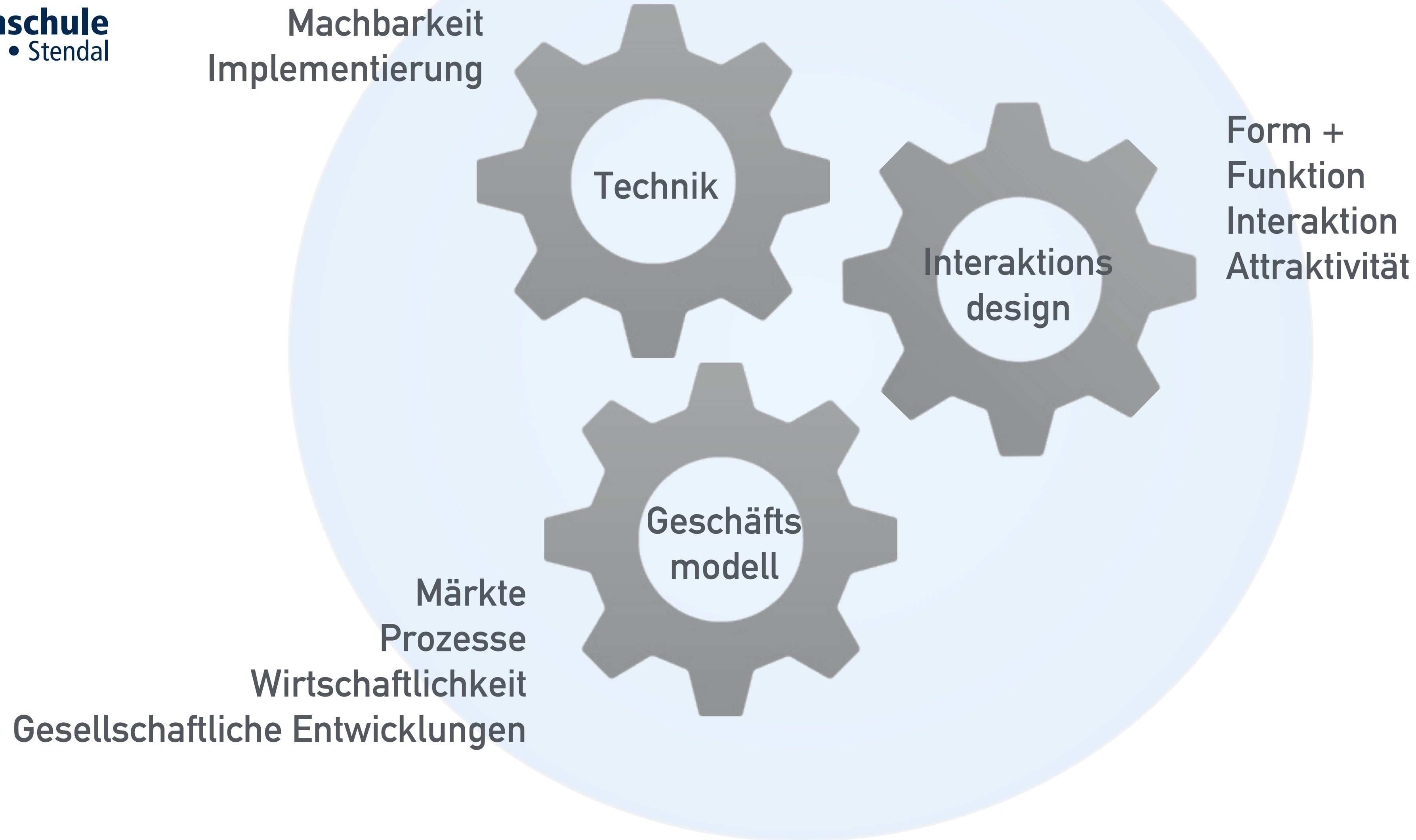
# Kontextsensitivität, Kontextadaptivität

		Malerczyk, 2004 [8]	Rudametkin, et al, 2008 [7]	Zabulis, et al., 2010 [9]	Suh, et al., 2011 [6]	Rocchetti, et al., 2014 [14]	Tesoriero, et al., 2014 [5]	Bohnert, et al., 2014 [10]	Confalonieri, et al., 2015 [12]	Alletto et al., 2016 [11]	L.U.M.E.N	I.D.C.	S.I.V.E.	Connectibition
Seamless integration	use of mobile devices / BYOD		■		■	■	■				■	■		
	seamless integration of technology	■		■							■	■	■	■
	explorative access to information	■		■	■		■			■		■	■	■
	navigation support						■				■			
User Experience / Personalization	influence / communicate with exhibits			■							■	■	■	■
	adjustment to needs of individual user	■		■			■	■		■		■		■
	personal configuration using locating technology		■	■			■	■		■	■	■	■	■
	addressing specific target groups		■	■							■	■		
	narration / storytelling	■		■							■		■	
	establishing connection between subjects	■												■
Expanding exhibition space	access to new kinds of exhibition formats			■			■				■		■	■
	reactive / interactive exhibition ground			■								■	■	■

Herzog, M.A., Wunderling, J., Gabele, M., Klank, R., Landenberger, M., Pepping, N.: Context Driven Content Presentation for Exhibition Places. Four Interaction Scenarios Developed for Museums. Electronic Imaging & the Visual Arts Conference EVA 2016, St. Petersburg



# »PRODUKT«





# Entwicklung der Wirtschaftlichen Verwertung

- ▶ Systematische Geschäftsmodellentwicklung
- ▶ Marktanalysen, Kalkulationen, Projektplanung





# Museumsmarkt?



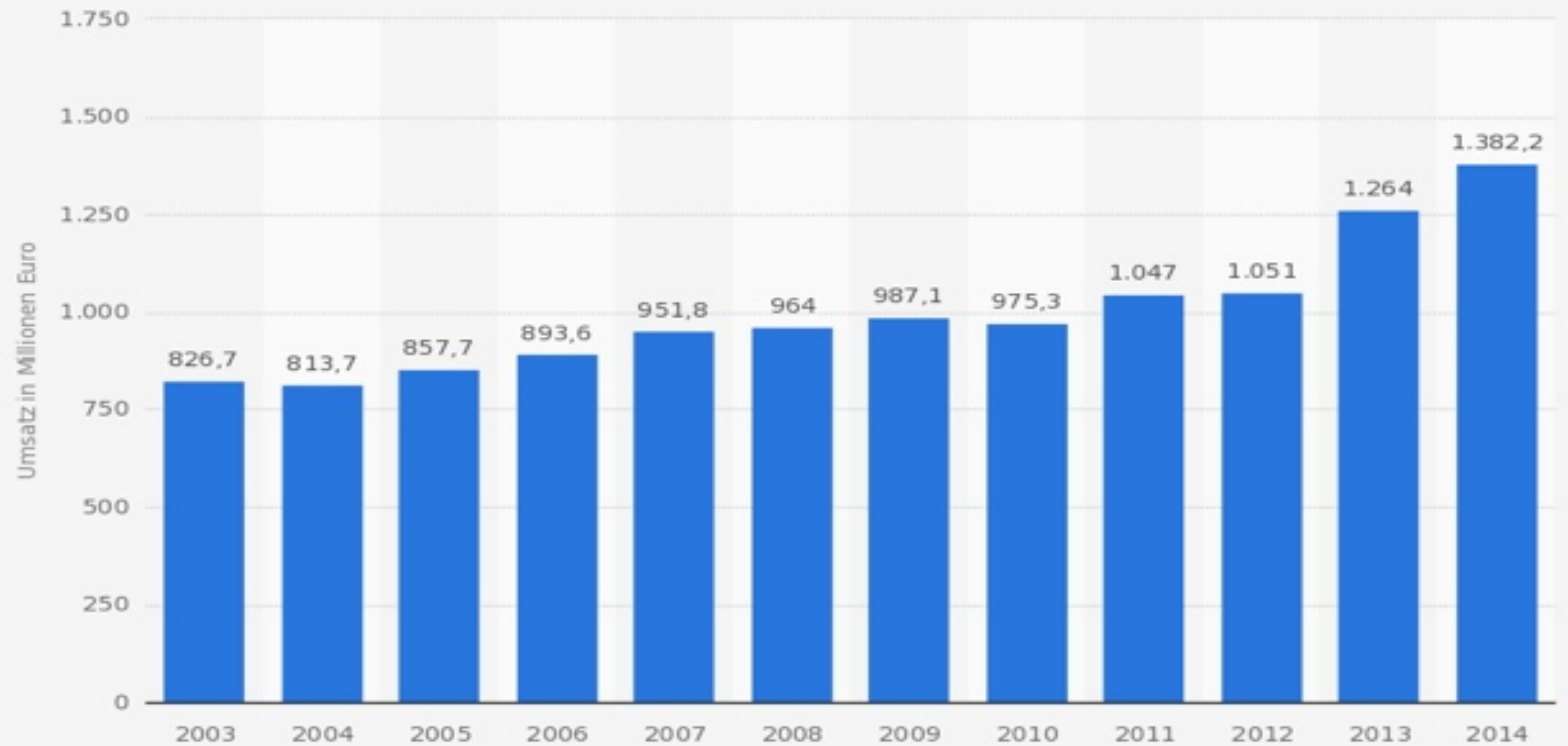


# Andere Märkte adressieren





## Umsatz der Vergnügungs- und Themenparks\* in Deutschland von 2003 bis 2014 (in Millionen Euro)



Quelle:  
Statistisches Bundesamt  
© Statista 2016

Weitere Informationen:  
Deutschland



# Ertragsmechanik konstruieren

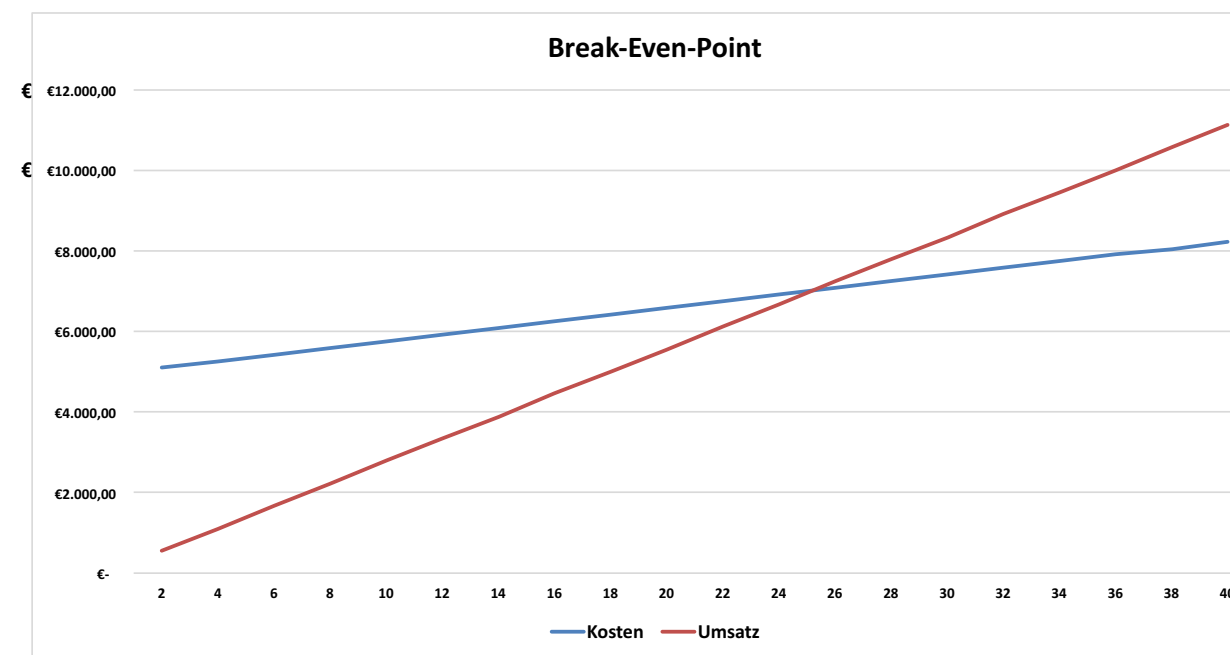
Kostenrechnung LUMEN

Rohstoffe		Jahreszins:	2,07%
LED	4,49 €	Preis vor Gewinn:	190,00 €
Kühlkörper	1,03 €	Gewinnzuschlag:	120%
Linse	2,29 €	Gesamter Kredit:	100.000,00 €
Arduino	21,45 €	Unterdeckung für Menge X	231,96 €
Bluetoothmodul	5,67 €	UST	19%
Akku	21,90 €		
Lautsprecher	4,99 €	<a href="https://www.conrad.de/de/25-zoll-breitband-lautsprecher-chassis-visaton-fr-7-5-w-4-305266.html">https://www.conrad.de/de/25-zoll-breitband-lautsprecher-chassis-visaton-fr-7-5-w-4-305266.html</a>	
Kompassensensor	2,36 €	<a href="https://www.conrad.de/de/linearer-positionssensor-honeywell-ss495a-45-105-vdc-sip-505291.html">https://www.conrad.de/de/linearer-positionssensor-honeywell-ss495a-45-105-vdc-sip-505291.html</a>	
GPS-Empfänger	12,99 €	<a href="https://www.conrad.de/de/gps-empfaenger-navilock-nl-69atsma-3m-378865.html">https://www.conrad.de/de/gps-empfaenger-navilock-nl-69atsma-3m-378865.html</a>	
SD-Karte	4,00 €		
SD-Adapter	1,00 €		
<b>Summe</b>	<b>82,17 €</b>		
Audiokosten			
Tonstudio	1.000 € pro Stunde	100,00 €	
Synchrsprecher	3.500 € 20min Text	350,00 €	Investitionskosten 7560,00

<b>BGA</b>		<b>Personal</b>	<b>Pro h</b>	<b>Pro Monat Brutto</b>	<b>Lohn Nebenkosten</b>
Möbel	1.000,00 €	<b>Handwerker</b>	10,50 €	1.365,00 €	1.631,22 €
Computer	500,00 €	<b>Bürokräft</b>	10,50 €	1.820,00 €	2.174,96 €
Telefon	40,00 €				
Internet	20,00 €	<b>Laufende Kosten monatl.</b>			
Büro 3 Räume	750 € monatl.		4.722 €	<b>Für Lampen</b>	100
Versicherungen	91,67 €			12.939,02 €	129,39 €
Strom/Wasser	40,00 €				174,68 €
Abfallgebühren	34,17 €				
Kaution	1.500,00 €				

Freizeitparknachfrage 36millionen 2mio mehr als das Jahr davor

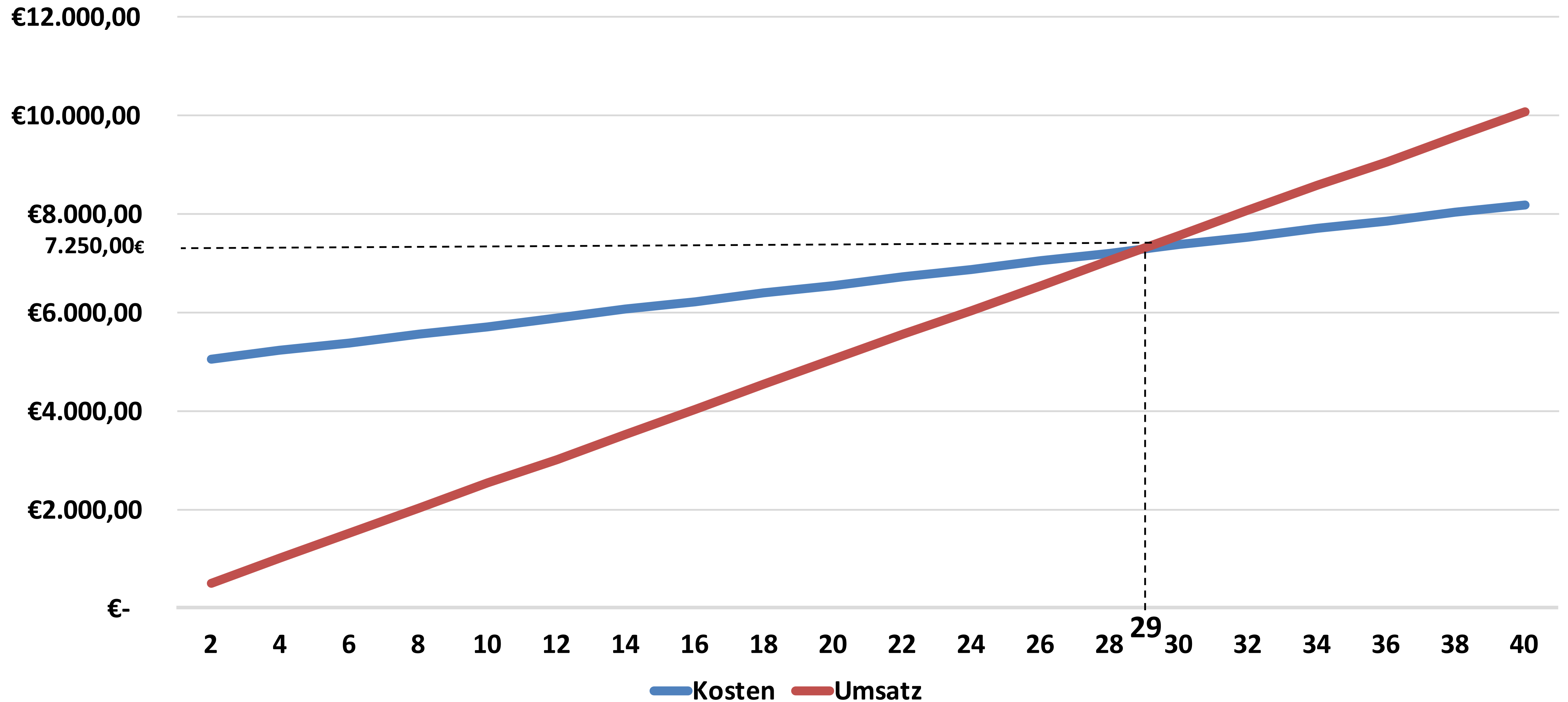
	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
<b>Eigenkapital</b>	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €
<b>Investition</b>	7.560,00 €	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Abschreibung Inv. (13J.)</b>	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €	48,46 €
<b>Laufende Kosten</b>	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €	4.722 €
<b>Stückkosten</b>	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €	82,17 €
<b>Stückmenge</b>	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30
<b>Ca. benötigter Absatz:</b>	64,64	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	32,79	31,73
<b>Förderkredit</b>	100.000,00 €	99.827,50 €	99.655,00 €	99.482,50 €	99.310,00 €	99.137,50 €	98.965,00 €	98.792,50 €	98.620,00 €	98.447,50 €	98.275,00 €	98.102,50 €	97.930,00 €	97.757,50 €	97.585,00 €	97.412,50 €	97.240,00 €	97.067,50 €	96.895,00 €	96.722,50 €	96.550,00 €	96.377,50 €	96.205,00 €	96.032,50 €
<b>Kreditzinsen</b>	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €	172,50 €
<b>Verfügbares Kapital</b>	109.827,50 €	103.846,88 €	99.618,14 €	96.968,78 €	95.898,79 €	96.408,19 €	98.496,96 €	102.165,12 €	107.412,65 €	114.239,56 €	122.645,85 €	132.631,53 €	144.196,58 €	157.341,01 €	172.064,81 €	188.368,00 €	206.250,57 €	225.712,51 €	246.753,84 €	269.374,54 €	293.574,63 €	319.354,09 €	346.712,93 €	375.651,15 €
<b>Break-Even-Preis</b>	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €	231,96 €
<b>Plus Gewinn 20%</b>	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €	278,35 €
<b>19% UST</b>	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €	331,23 €
<b>Umsatz</b>	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	9.185,51 €	8.350,46 €
<b>Kosten</b>	14.993,63 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.606,13 €	7.359,62 €
<b>Kum. Überschuss</b>	-	5.808,12 €	-	4.228,74 €	-	2.649,36 €	-	1.069,98 €	509,40 €	2.088,78 €	3.668,15 €	5.247,53 €	6.826,91 €	8.406,29 €	9.985,67 €	11.565,05 €	13.144,43 €	14.723,81 €	16.303,19 €	17.882,57 €	19.461,95 €	21.041,33 €	22.620,70 €	24.200,08 €
<b>Monatl. Kreditrate</b>	3.459,12 €	nach	Freijahren																					
<b>Stückzahl</b>	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40				
<b>Kosten</b>	5.107,32 €	5.271,66 €	5.436,00 €	5.600,34 €	5.764,68 €	5.929,02 €	6.093,36 €	6.257,70 €	6.422,04 €	6.586,38 €	6.750,72 €	6.915,06 €	7.079,40 €	7.243,74 €	7.408,08 €	7.572,42 €	7.736,76 €	7.901,10 €	8.065,44 €	8.229,78 €				
<b>Umsatz</b>	556,70 €	1.113,39 €	1.670,09 €	2.226,79 €	2.783,49 €	3.340,18 €	3.896,88 €	4.453,58 €	5.010,28 €	5.566,97 €	6.123,67 €	6.680,37 €	7.237,07 €	7.793,76 €	8.350,46 €	8.907,16 €	9.463,85 €	10.020,55 €	10.577,25 €	11.133,95 €				





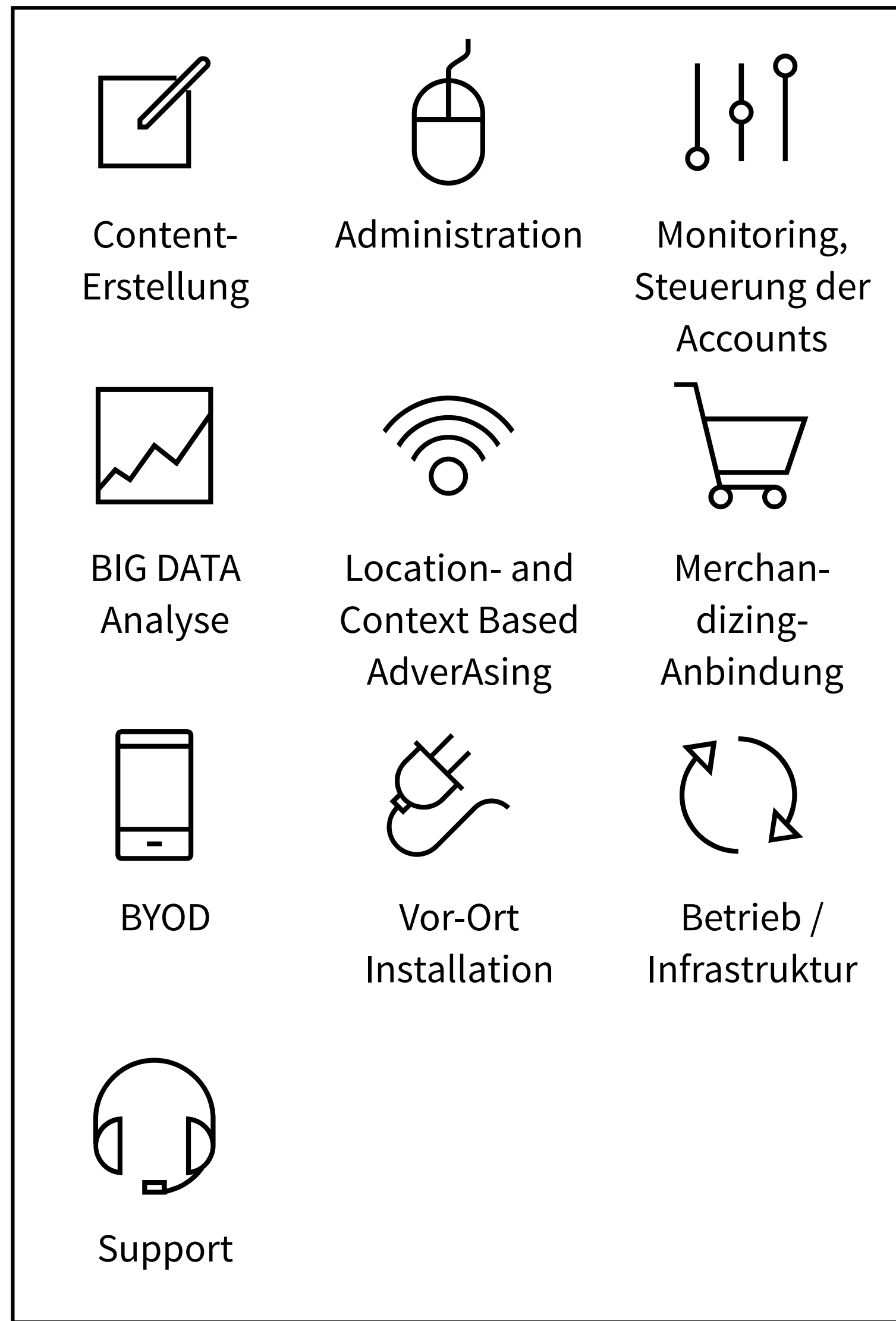
# Ertragsmechanik konstruieren

## Break-Even-Point

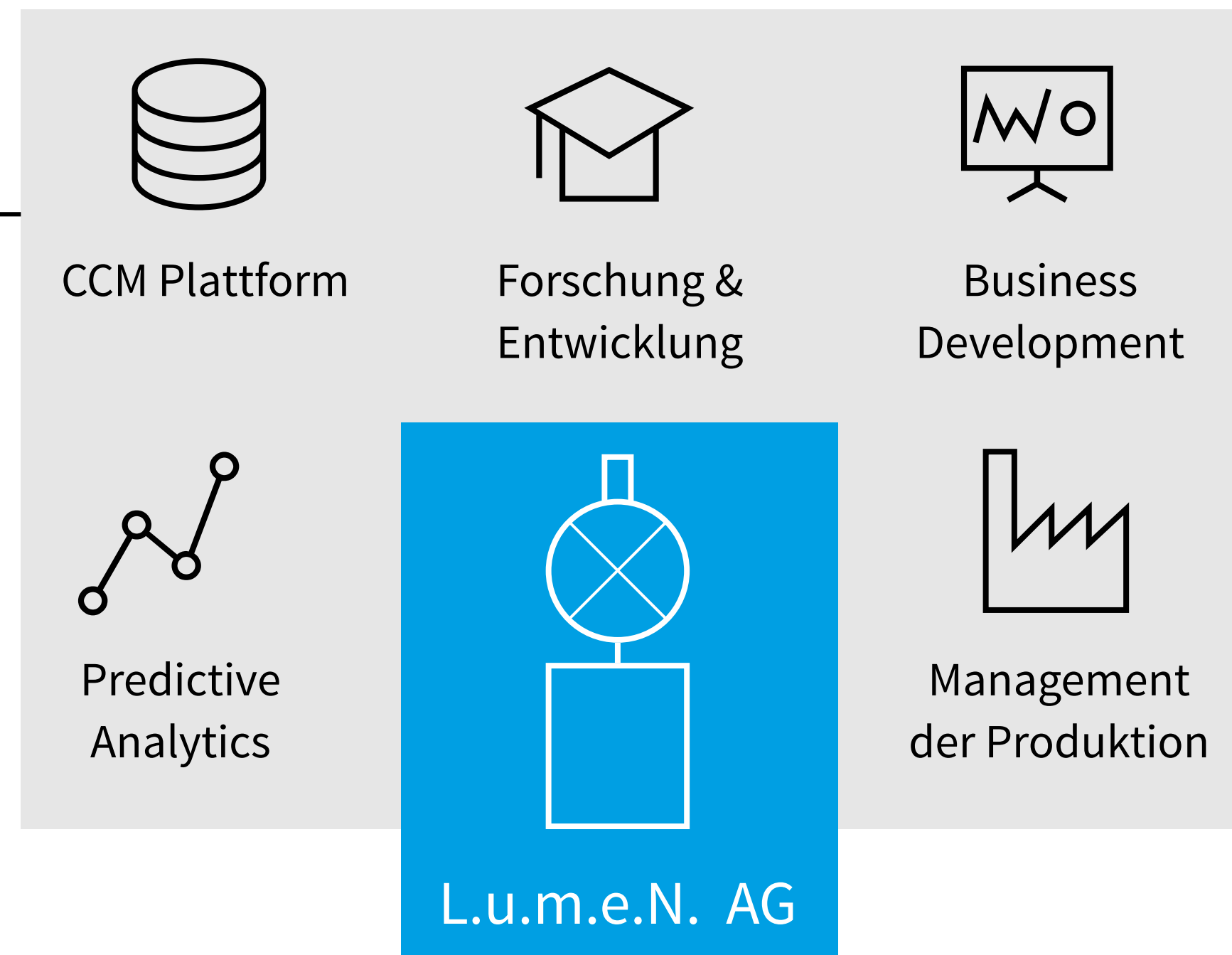




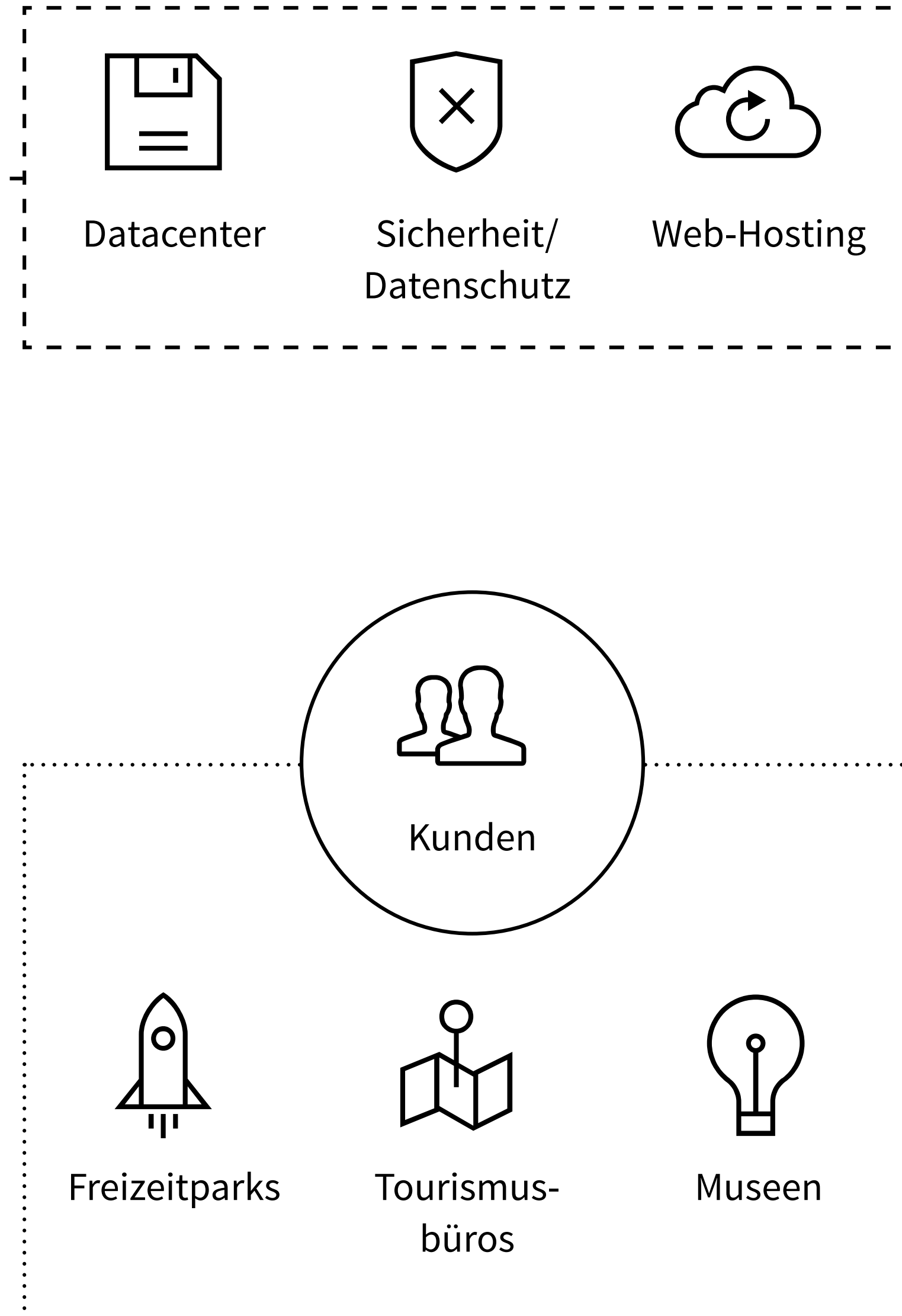
## Dienstleistungssystem



## Kernkompetenzen



## Basisleistungen Outsourcing







SACHSEN-ANHALT  
Ministerium für Wirtschaft,  
Wissenschaft und Digitalisierung



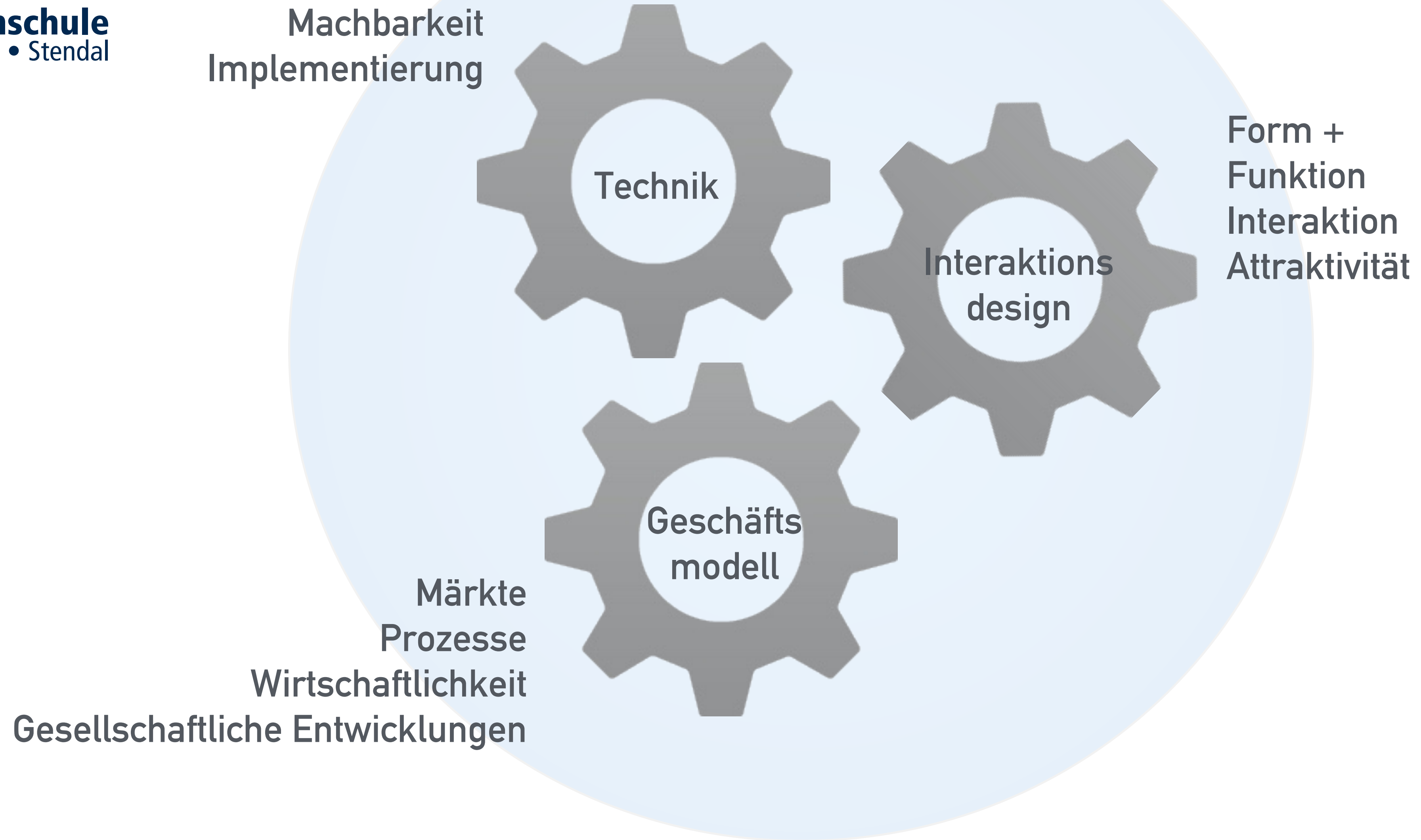
HUGO  
JUNKERS  
PREIS

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RE  
DEE

ANMELDU



# »PRODUKT«





# MyUniversity: »To all information from one interface«. E-Portfolio. Alumni-Portal.

**My h2**

Activity | Blogs | Bookmarks | Files | Groups | More

Search

Add widgets

**Michael Herzog**  
 Profile Type: Mitarbeiter und Professoren  
 Studium  
 Studienrichtung: Informatik  
 Adresse  
 Website: http://www.mherzog.com  
 Job  
 Firma: Hertha+Pauline-Universität-Magdeburg  
 von: Mon 04 Jan 2010  
 Position: Professor  
 Standort: Magdeburg

Geo Alumni Finder  
 You are located in .  
 These users live there

Pinboards  
 E-Portfolio 2  
 E-Portfolio Planwand

Photo Albums  
 EcoCom 2013

Latest Photos

Pages  
 Dokumentation zur E-Portfolio-Arbeit

Activity  
 Michael Herzog is now a friend with...  
 Michael Herzog is now a friend with...

**My h2**

Activity | Blogs | Bookmarks | Files | Groups | More

Search

Pinboards > Erika Mustermann > Über mich

**Über mich**

Schreiben ist wie Reisen...  
 ... ein Abenteuer mit ungewissem Ausgang nach einem oft mühseligen Weg.

Abschlüsse  
 2007 Promotion in Kulturwissenschaften (magna cum laude), Europa-Universität Viadrina  
 2007 Zertifikat wissenschaftliche Schreibberatung, PH Freiburg  
 2000 Magistra Artium Novae Deutsche Literatur, Deutsch als Fremdsprache, Hispanistik, Humboldt-Universität zu Berlin  
 1990 Abitur, Dietrich-Bonhoeffer-Gymnasium Hildesheim

Freiberufliche Tätigkeiten  
 seit 2000 gebe ich Trainings für wissenschaftliches Schreiben und coache Schreibgruppen, insbesondere für Promovierende. Auftraggeber sind u.a.  
 • Career Center Universität Hamburg  
 • Scribento Mentoring-Programm für Nachwuchswissenschaftlerinnen in den Naturwissenschaften in Hessen  
 • CoachingPlus für angehende ProfessorInnen den Universitäten Bochum, Duisburg-Essen und Bochum  
 seit 1991 stifte ich Menschen zum literarischen und biografischen Schreiben an, u.a. im Rahmen von  
 • Schreibreisen (kreative Stadtrundgänge mit Stift und Papier in Berlin)  
 • Friedrichshainer Kaleidoskop der Erinnerungen (generationsübergreifende biografische Schreibgruppen)  
 • Theodorat Literaturlab

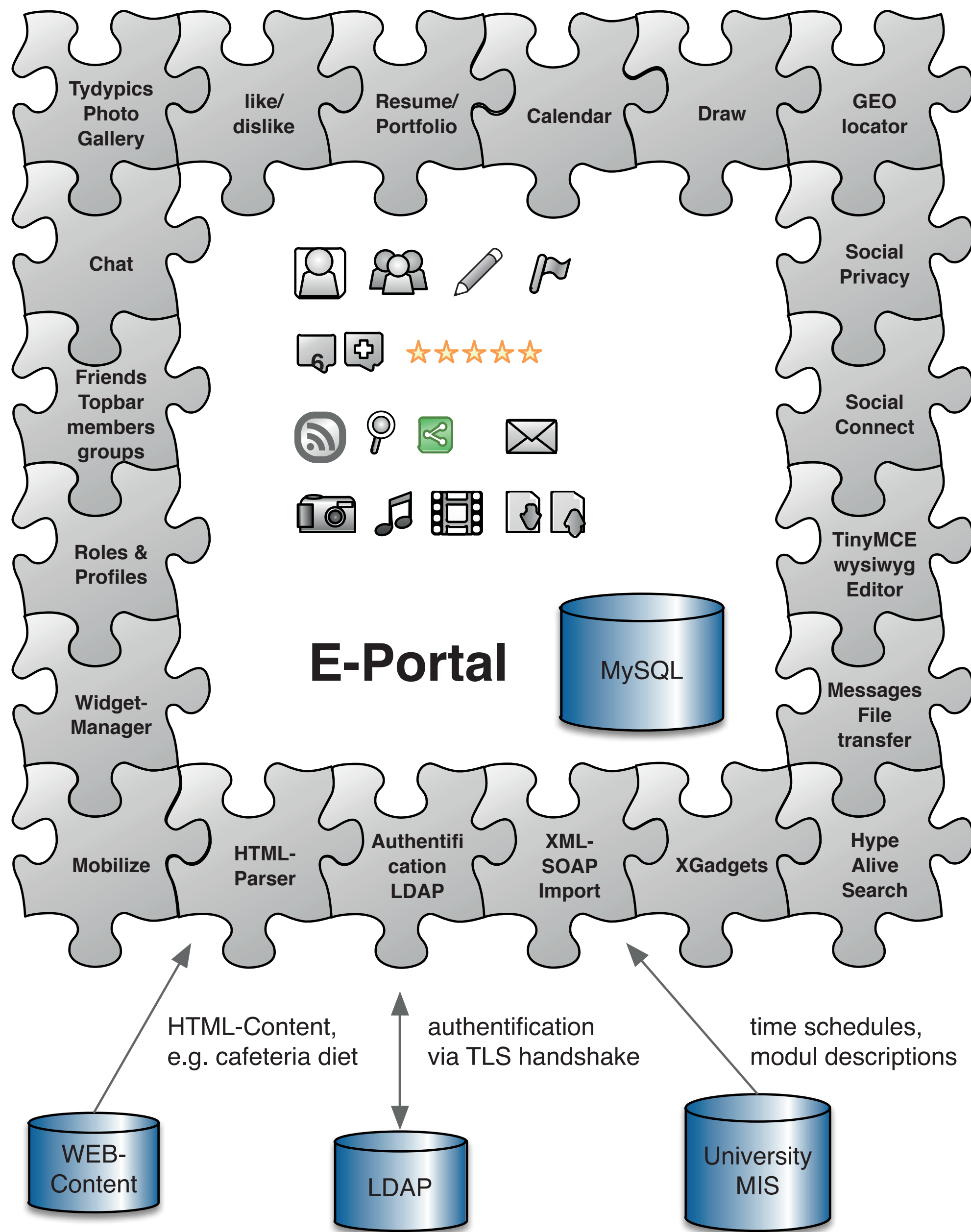
Universitäre Tätigkeiten (Auswahl)  
 seit September 2012: wiss. Leibung Zentrum für Schlüsselkompetenzen und Forschendes Lernen, Europa-Universität Viadrina, Projekt Peer Tutoring (i.Vertr.)  
 seit 2011: Rehabilitationsprojekt "Strategien zur erfolgreichen Implementierung von Schreibzentren an Hochschulen", 2011-2012 Forschungsaufenthalt USA mit DFG-Förderung zur Datenerhebung  
 seit 2009: Konzeptionelle und ausführende Mitarbeit im internationalen Konsortium „International Literacy Management“, Implementierung Weiterbildung "Schreibzentrumsarbeit und Literacy Management"

Interview zu meiner Schreibzentrumstätigkeit  
 Susanna Diehm hat mich für das Buch "Die Macht der Worte" interviewt. Das sehr empfehlenswerte Buch über Schreibberufe ist erschienen im mitp-Business Verlag. Zum Interview (mit freundlicher Genehmigung von mtp).

Helmich, O., Herzog, M., Neumann, C.: Seamless and secure integration of SocialMedia, E-Portfolio and Alumni services into University Information Architecture.

In: International Journal of Computing, CISJ. 2014, Vol. 13, Issue 2





Helmich, O., Herzog, M., Neumann, C.: Seamless and secure integration of SocialMedia, E-Portfolio and Alumn services into University Information Architecture. In: International Journal of Computing, CISJ. 2014, Vol. 13, Issue 2









# ROSI-3D

- ▶ RFID-Ortung unter Berücksichtigung ortsveränderlicher Objekte im Funkfeld mit einer 3D-Simulation
- ▶ 11/2012-03/2016, 330 TEUR
- ▶ 5 Partner
  - Hochschule Magdeburg-Stendal
  - Centiveo GmbH Magdeburg
  - metraTec GmbH Magdeburg
  - ifak - Institut für Automation und Kommunikation e.V. Magdeburg
  - Otto von Guericke Universität, Fakultät für Informatik (FIN), Prof. Dr. Myra Spiliopoulou

gefördert durch:



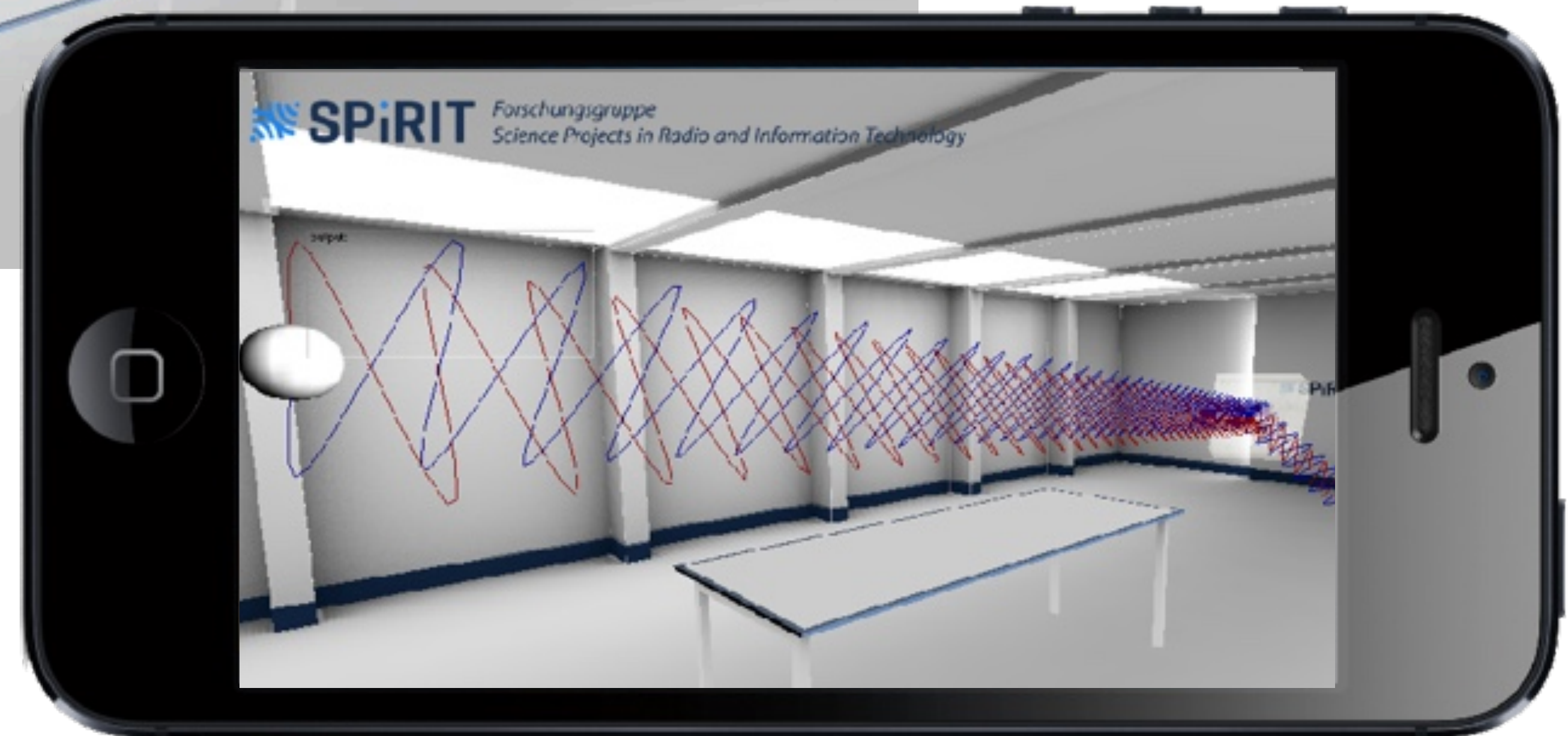
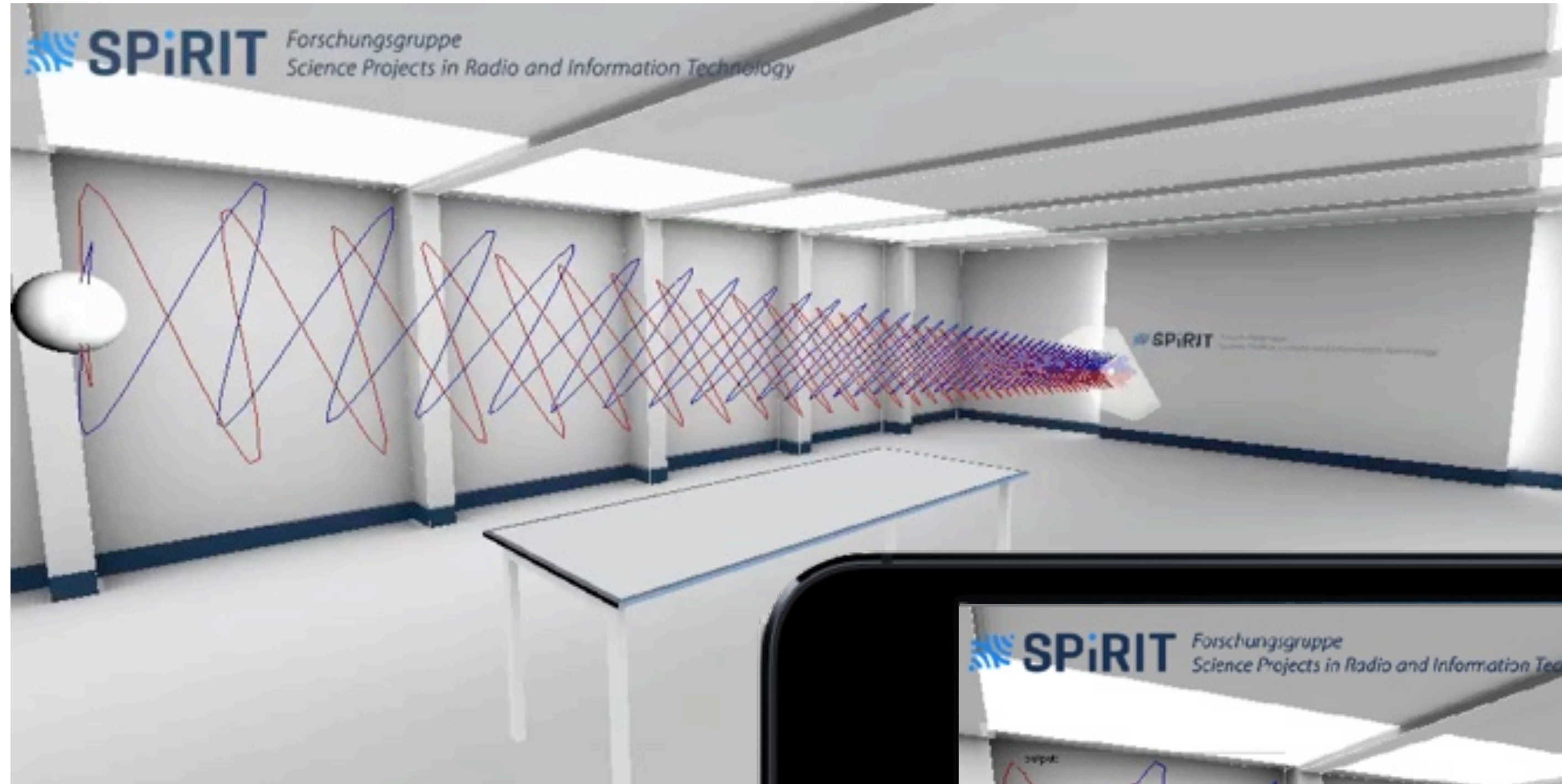
Bundesministerium  
für Bildung  
und Forschung

profUnt 

Forschung an Fachhochschulen mit Unternehmen



# Localization and Simulation



## ROSI-3D

RFID locating in consideration of moving objects in a radio field with 3D-simulation

gefördert durch:

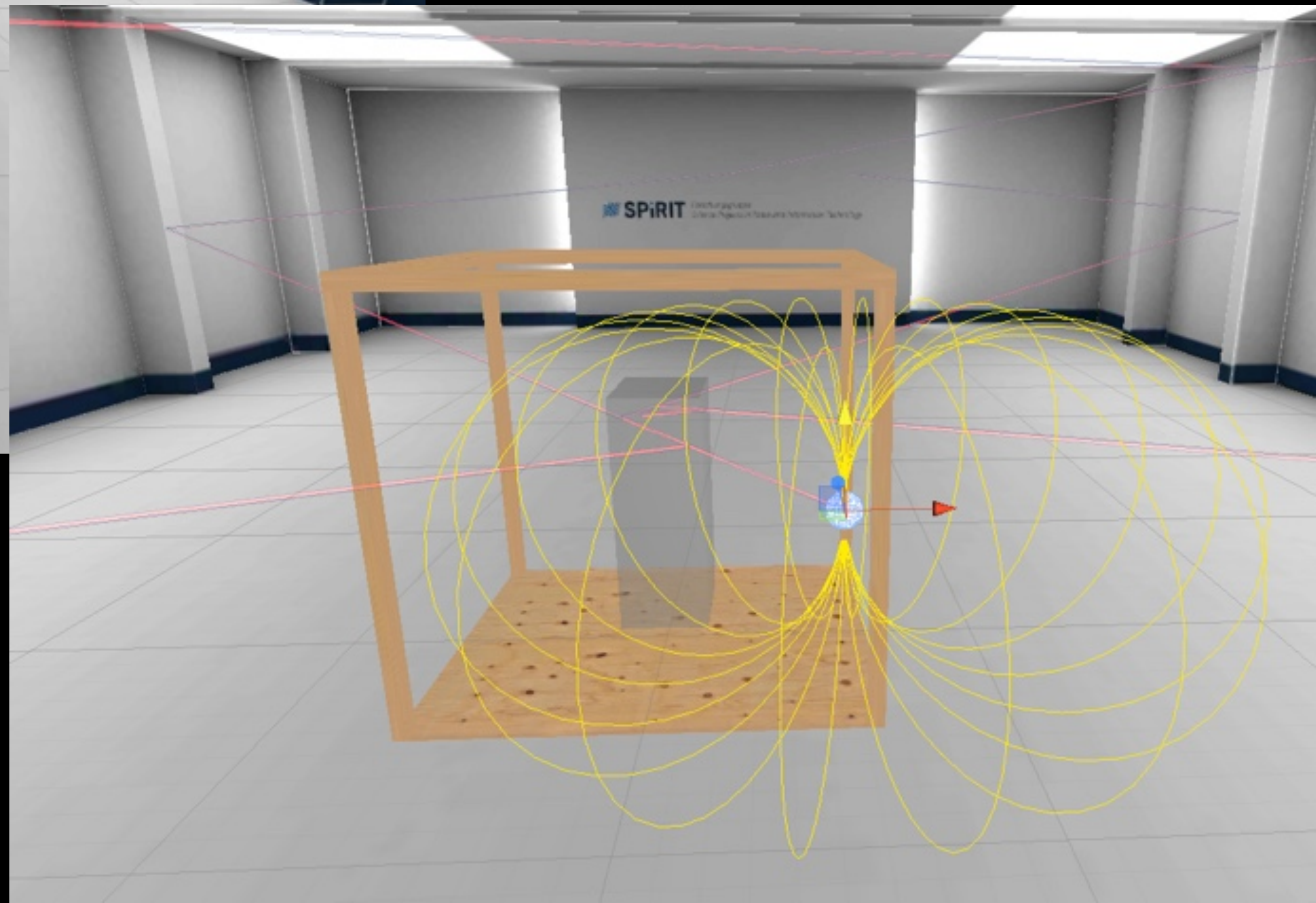
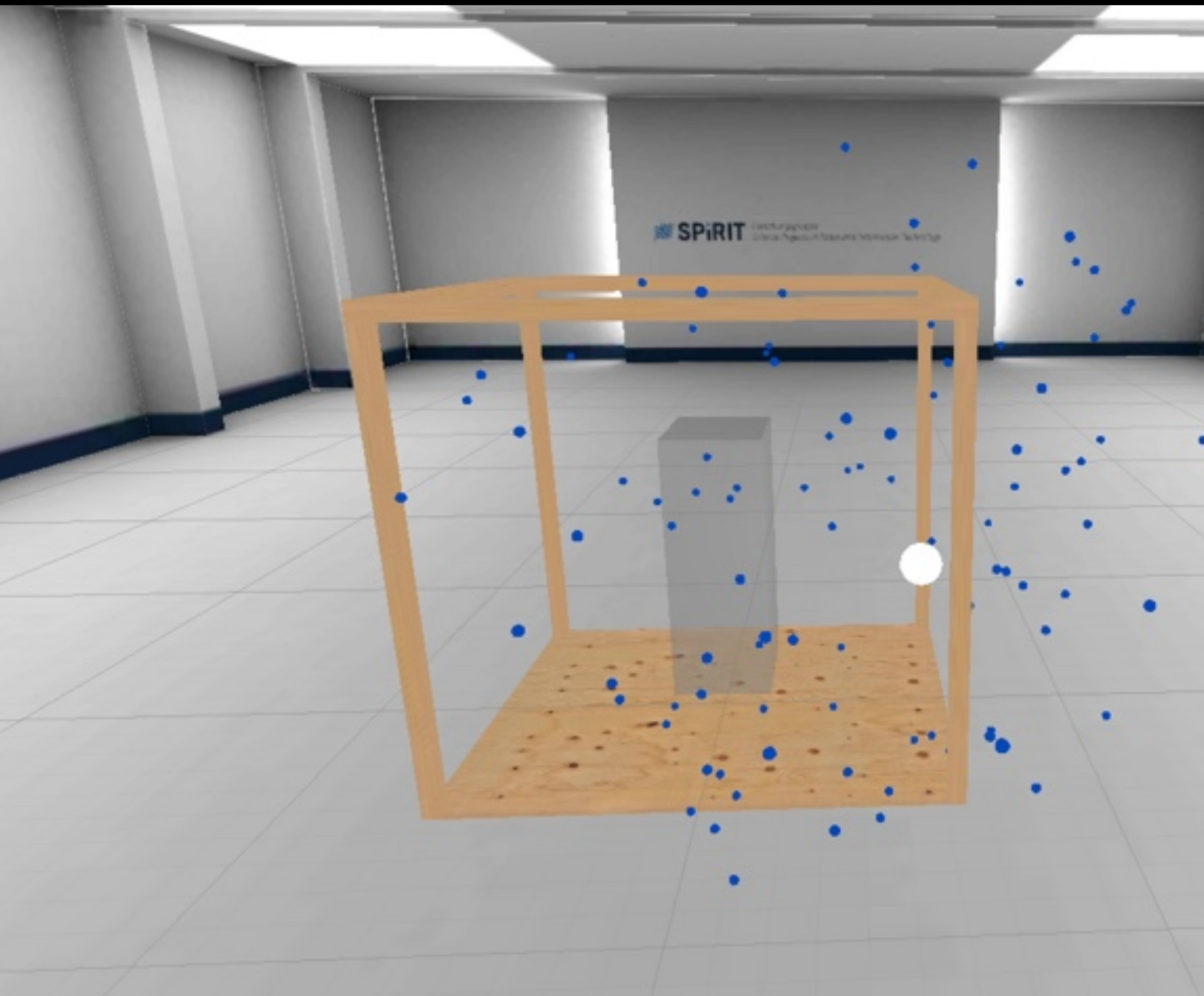


Bundesministerium für Bildung und Forschung

profUnt <sup>FH</sup>

Forschung an Fachhochschulen mit Unternehmen





Hatscher, B., Herzog, M.: Partikel- oder Wellensimulation?  
Zwei Ansätze zur Indoor-Lokalisierung auf Basis passiver  
RFID-Technik, Von der Digitalen Fabrik zu Industrie 4.0,  
Multikonferenz Wirtschaftsinformatik (MKWI) 2016





Hatscher, B., Herzog, M.: Partikel- oder Wellensimulation? Zwei Ansätze zur Indoor-Lokalisierung auf Basis passiver RFID-Technik, Von der Digitalen Fabrik zu Industrie 4.0, Multikonferenz Wirtschaftsinformatik (MKWI) 2016







# Empirical Work

## ▶ CrossTeaching Survey, a cooperation with Linz University (JKU) since 2010

- N>760, 15 Publications, etc.
- Katzlinger, E., Herzog, M.: Wiki Based Collaborative Learning in Interuniversity Scenarios. In: Ciussi, M. (ed): The Electronic Journal of e-Learning EJEL, Volume 12 Issue 2, pp 149-160, ECEL, Academic Publishing International, May 2014
- Katzlinger, E., Herzog, M.: Intercultural collaborative learning scenarios in e-business education. Media competencies for virtual workplaces. In: Issa, T., Isaias P., Kommers, P.: Multicultural Awareness and Technology in Higher Education: Global Perspectives. IGI Global Press, 2014
- Herzog, M., Katzlinger, E.: The Multiple Faces of Peer Review in Higher Education. Five Learning Scenarios developed for Digital Business. In: EURASIA Journal of Mathematics Science and Technology Education. Jan 2017

## ▶ SocialMedia Study Saxony-Anhalt 2012, 2016

- Sens, L., Herzog, M., Albers, E.: Chancen und Risiken sozialer Medien im Unternehmen. Eine Studie mit Schwerpunkt in Sachsen-Anhalt. In: Fischer, A.: 14. NWK, VWH Verlag 2013

## ▶ ICT Sustainability since 2013

- Herzog, M (ed.): Economics of Communication. ICT driven fairness and sustainability for local and global marketplaces. GITO Verlag 2015

## ▶ AutoID + IoT Study Health 2015/16 (in progress)



# Speed Dating: Scholarly Communication Meets Digital Archiving

Lunch lecture\*

The area of digital scholarly communication has been studied extensively over the last decade and continues to be the focus of numerous international research projects at scale. This helps to improve our understanding of, for example, relationships between scientific disciplines based on the analysis of co-authorship, shared references, and usage data.

Digital preservation efforts such as Europeana or the Digital Public Library of America (DPLA) have been initiated to preserve our cultural heritage. It is (mostly) understood that we need sustainable, scalable, and business-oriented preservation models for the vast amount of digital content we create today.

In this talk I will touch upon the nexus of these two areas. As digital scholarship is no longer just a single PDF document but is rather becoming a complex object with references to websites, datasets and software, we are in need of enhanced preservation approaches. I will provide examples to motivate this need and demonstrate pro-active solutions available today to the conscious scholar. And yes, I will talk about time travel!

7.11.2013  
12:00 Uhr-13:00 Uhr  
Hörsaal HS4, Haus 14

about Martin Klein

Martin Klein received his Diploma in Computer Science from the University of Applied Sciences Berlin (2002) and his Ph.D. in Computer Science from Old Dominion University (2011). From 2002 to 2005, he was a scientist at the University of Applied Sciences in Berlin conducting research in the realm of e Learning and mobile computing. At Old Dominion University, he was part of the Web Science and Digital Libraries Research Group and a part-time lecturer in the Computer Science Department. He currently is a Postdoctoral Research Associate at the Research Library of the Los Alamos National Laboratory. His research interests include scholarly communication, digital preservation, temporal aspects of the web, and information retrieval and extraction.



For more information see: <http://www.cs.odu.edu/~mklein/>

\* Der Referent steht bei einem gemeinsamen Lunch direkt im Anschluss für individuelle Gespräche zur Verfügung.



**SPIRIT** Forschungsgruppe  
Science Projects in Radio and Information Technology

# E-Business Financing Lehrstücke aus dem Silicon Valley

Lunch lecture\*

Was kann ein Start-Up Entrepreneur über unterschiedliche Financing Modelle und Strategien vom Silicon Valley lernen? Sollte es das erklärte Ziel jedes deutschen Start-Ups sein von Silicon Valley Venture Capitalists Funding zu bekommen und welche Vorteile bringt das? US Venture Kapital oder Minimalfinanzierung vor Ort? Exit-orientiert oder solides langfristig geplantes KMU?

Die Verwerfungen in der Szene sind längst nicht mehr nur durch eine neue „Internet Bubble“ definiert – das Konzept „Start-Up“ erfordert ein grundlegendes Überdenken und neue innovative Wirtschaftsformen haben gerade in Deutschland bessere mittelfristige Chancen.

24.6.2014  
14:00 Uhr - 15:00 Uhr  
Haus 14, Hörsaal 5  
Campus Herrenkrug

about Florian T. Brody

Digital media specialist | Advisor for marketing and strategy – Brody & Partners, San Francisco

Florian Brody is an international marketing and digital media specialist with more than 20 years of experience in his field of business. He has been working as an adviser for a huge number of known companies in a wide range of industries. Moreover, he has co-founded several start-ups and has acquired a reputation as an internationally acclaimed speaker. Brody co-invented the first electronic books and built the multi-media market for Apple Austria. Furthermore, he teaches courses in digital media, entrepreneurship and mobile payment strategies at universities in Austria, Germany and the US. He began his career in Vienna where he studied computer linguistics, worked at the Cinéma-mathèque Française in Paris and as a fashion photographer.



For more information see: <http://www.brody.org>

\* Der Referent steht bei einem gemeinsamen Kaffee direkt im Anschluss für individuelle Gespräche zur Verfügung.  
Moderation der Veranstaltung: Prof. Dr. Michael A. Herzog



**SPIRIT** Forschungsgruppe  
Science Projects in Radio and Information Technology

# Digital Preservation

Lunch lecture

Intro: Prof. Dr. Michael A. Herzog

18.09.2015  
13:30 - 14:30  
House 7, R 0.06  
Campus Herrenkrug

## Web Archiving: A Brief Introduction

The Web is present in a broad range of fields of our lives including education, research, governance, news, entertainment, communication, publishing, shopping, social interactions, and many more. We collectively create and consume the Web more than ever before and are truly living in the Web era. However, the Web has a volatile nature. Very often web services disappear and content gets modified, deleted, or moved to other places. We need to preserve our trail on the Web in order for the historians of the future generations to know about us accurately. Apart from the long term preservation of the history there are other advantages and use cases of the archived Web such as personal satisfaction, storytelling, legal evidences, and many more.

In this talk we will briefly discuss the following:

- Archiving and Web archiving
- Purpose and importance of the Web archiving
- Scope of the web archiving (personal or institutional)
- Issues and challenges
- Tools and techniques
- Memento: Time Travel for the Web
- Archive X-Ray: High level summary of the archives' holdings
- Research opportunities in Web archiving
- Our Web Science and Digital Libraries Research Group

about Sawood Alam

Sawood received his B.Tech. degree in Computer Science from Jamia Millia Islamia, New Delhi, India in 2008 and his M.Sc. in Computer Science from Old Dominion University, Norfolk, Virginia in 2013. His Master's Thesis title was "HTTP Mailbox - Asynchronous Restful Communication". Sawood is currently working on his Ph.D. thesis titled, "Archive X-Ray - Web Archive Profiling for Efficient Memento Aggregation". Apart from his academic research in Web Science and Web Archiving field, he is also interested in solving technical challenges of Urdu and other Right-to-Left complex script languages.



A full list of his publications, presentations, research, and development efforts can be found at <http://www.cs.odu.edu/~salam/>.

## Using Web Archives to Enrich the Live Web Experience Through Storytelling

The web has become an integral part of our lives, shaping how we get news, shop, and communicate. When critical events occur, social media and news websites cover the stories as they break and continually revise them as the story evolves. Unfortunately, much of the content around these stories is vulnerable and prone to loss. Thus, web archives have become a significant repository of our recent history and cultural heritage. Meanwhile, "storytelling" is becoming a popular technique in social media for selecting representative tweets, videos, web pages, etc. and arranging them in chronological order to support a particular narrative or "story".

I will explain how to semi-automatically integrate archived collections with social media to create stories that summarize the holdings in these archived collections through identifying a set of resources that best represent the topic of the collection, then place this set of resources in an interface that users are already familiar with, such as Storify (a storytelling service that allows users to create their narratives). We can sample from the collections and provide one or more summaries or abstracts of the entire collection.

about Yasmin AlNoamany

Yasmin is a researcher and Ph.D. Candidate at Old Dominion University in USA majoring in Computer Science with a focus on Information retrieval and Web Preservation. She received her Bachelor's and Master's Degrees in Computer Science from Mansoura University in Egypt. Yasmin had two internships at the Internet Archive, one of the largest and oldest public web archives in the world, in San Francisco as a software engineer in 2014-2015. She has multiple awards on the academic field, such as "the best teaching assistant award" from the college of science and "the best student paper award" in the International Conference on Theory and Practice of Digital Libraries (TPDL) in Sept. 2013. Her research interests include digital preservation, web mining, information retrieval, and digital humanities.



More information: <http://www.cs.odu.edu/~yasmin/>



**SPIRIT** Research group  
Science Projects in Radio and Information Technology



# Co-designing technologies

Guest lecture

with indigenous and marginalized communities in Namibia

Knowledge representations and conceptualizations of the world differ profoundly across cultures and knowledge systems. Current technology designs are deeply anchored in a Western epistemology which is often conflicting with indigenous conceptualizations. Thus we pursue a locally situated approach to co-creating a new digital reality with indigenous knowledge holders in Namibia. We have developed a number of prototypes to support the preservation of indigenous knowledge. Lessons learned and open research questions are shared in the presentation. Furthermore, we have been engaged in co-designing technologies with unemployed youth in an informal settlement of Windhoek. Namibia has an exceptionally high youth unemployment rate and increasing rural-urban migration leading to a number of socio-economic challenges. Thus over the last 3 years we have dedicated substantial efforts into a digital transformation to improve the livelihood of marginalized youth. Challenges and success stories of the interventions will be shared in the presentation.

16.5.2017  
16:00 Uhr-17:00 Uhr  
Raum 0.09, Haus 3

Prof. Dr.  
Heike Winschiers-Theophilus

As a Professor in the Computer Science Department of the Namibia University of Science & Technology, she has instructed and researched in Namibia since 1994. Her research has been on cultural issues in human-computer interaction (HCI), cultural appropriation of design and evaluation, re-design, representation and retrieval of indigenous knowledge. She promotes a dialogical and community-based co-design approach following principles of action research in the development of technologies. Heike has co-chaired a number of international conferences and co-authored more than 80 peer-reviewed publications.



Moderation: Prof. Dr. Michael Herzog



**SPIRIT** Forschungsgruppe  
Science Projects in Radio and Information Technology



21/11  
2017

ICT & Sustainability

Michael A. Herzog

Research • SPIRIT • Lunch Lecture series

36



# Old Dominion University, Norfolk, VA, USA















Veranstaltung  
Fernurst und Wissensweh  
»Forschen, Lehren und Leben in Virginia«  
19.1.2017, 12:00 Uhr  
Campus Magdeburg



# 2

## ICT & Economic Context

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21/11  
2017

ICT & Sustainability

Michael A. Herzog | Dept. of Economics | Magdeburg-Stendal University



## Device Convergence Timeline

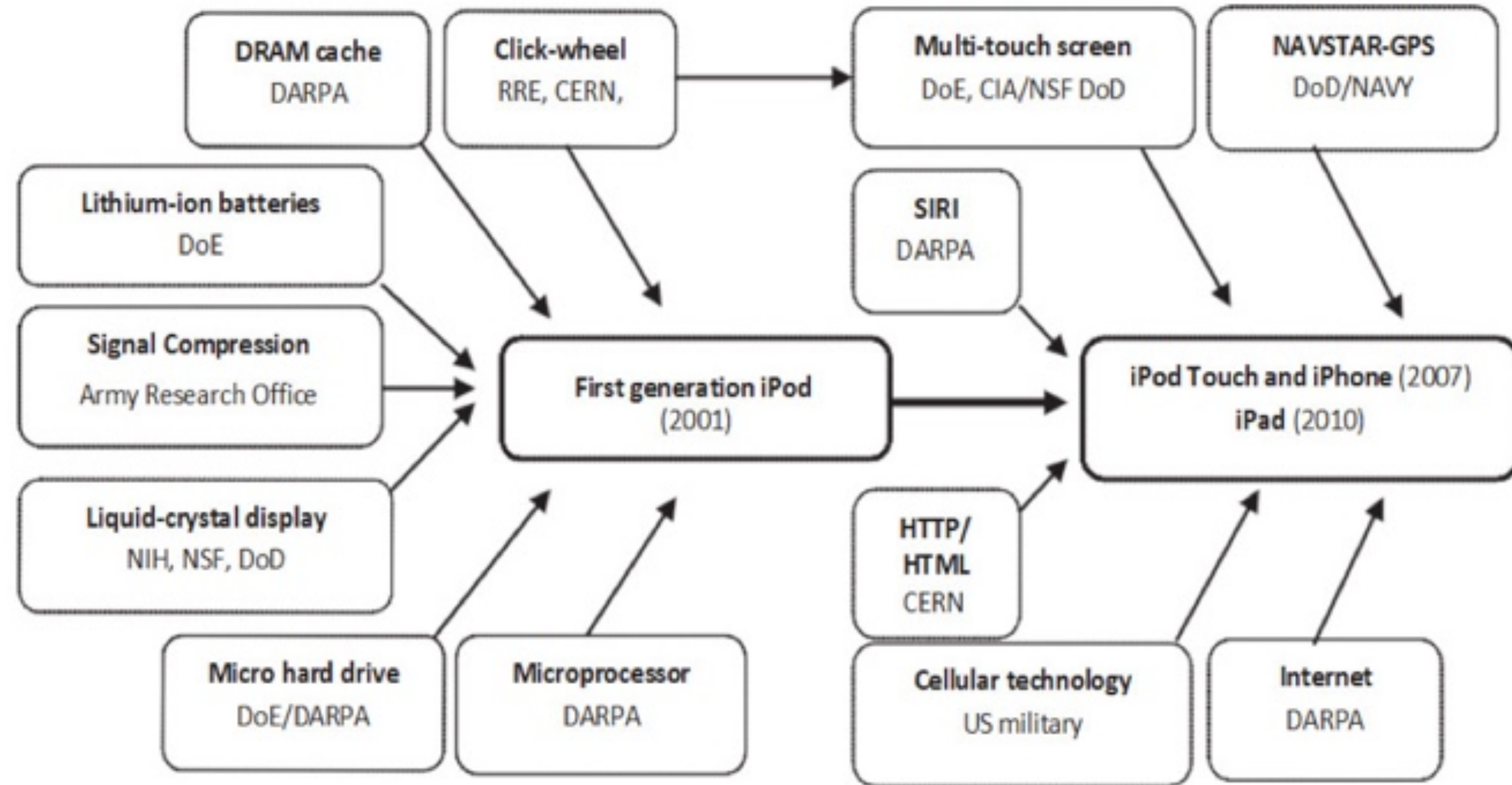
	2005	2010	2015
Vision	<p>One Bill, Triple Play</p> 	<p>One Device, 1000s of Apps</p> 	<p>One Ecosystem, 10s of Screens</p> 
Focal Point	Network	Device	Ecosystems
Compete Based On	Price of Service	Number of Apps	Experience Roaming

[Grafik: Detecon, Daniel Kellmerit, 2014]



# Yesterday 10 years ago: Birthday of iPhone 1

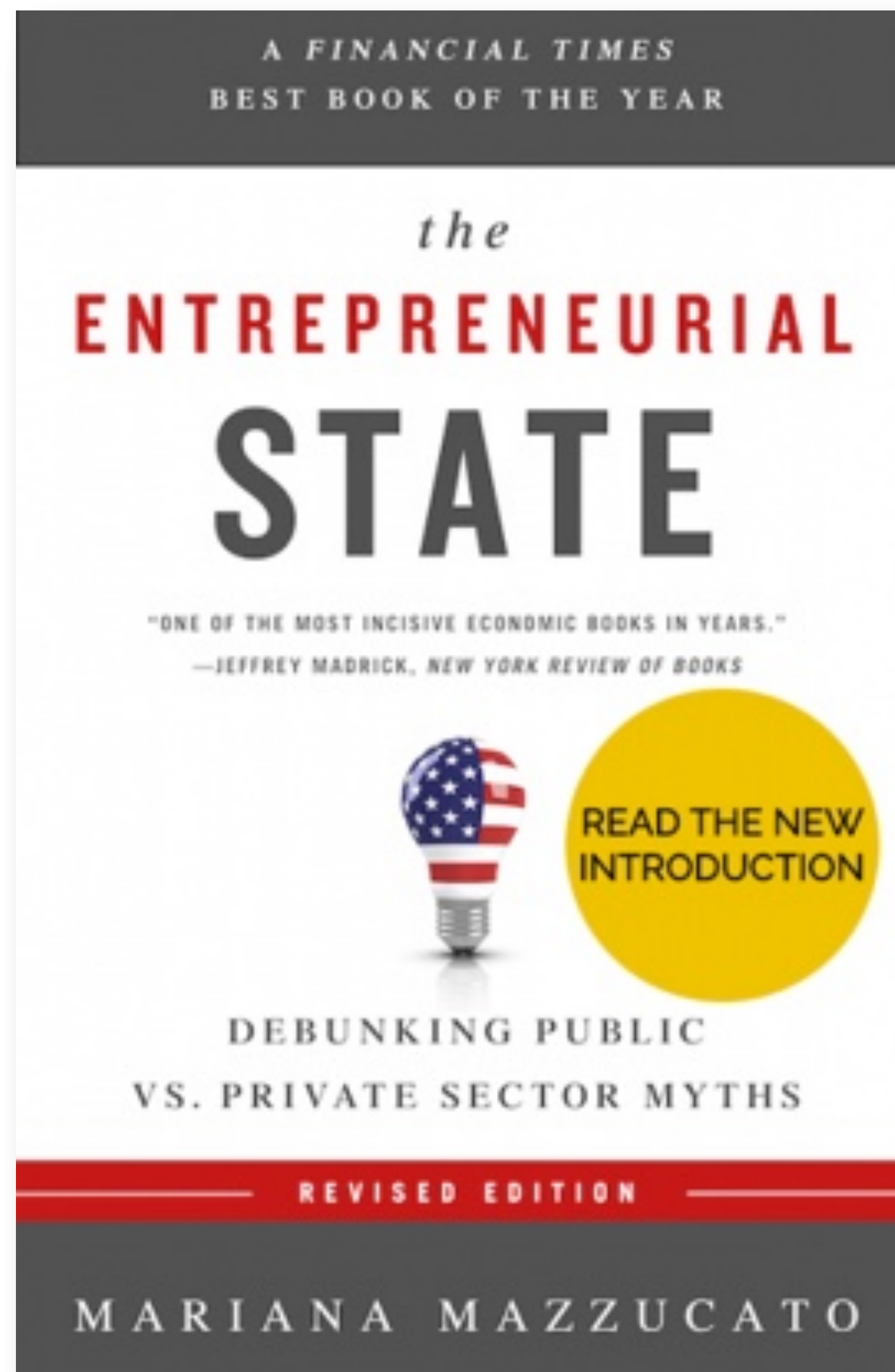
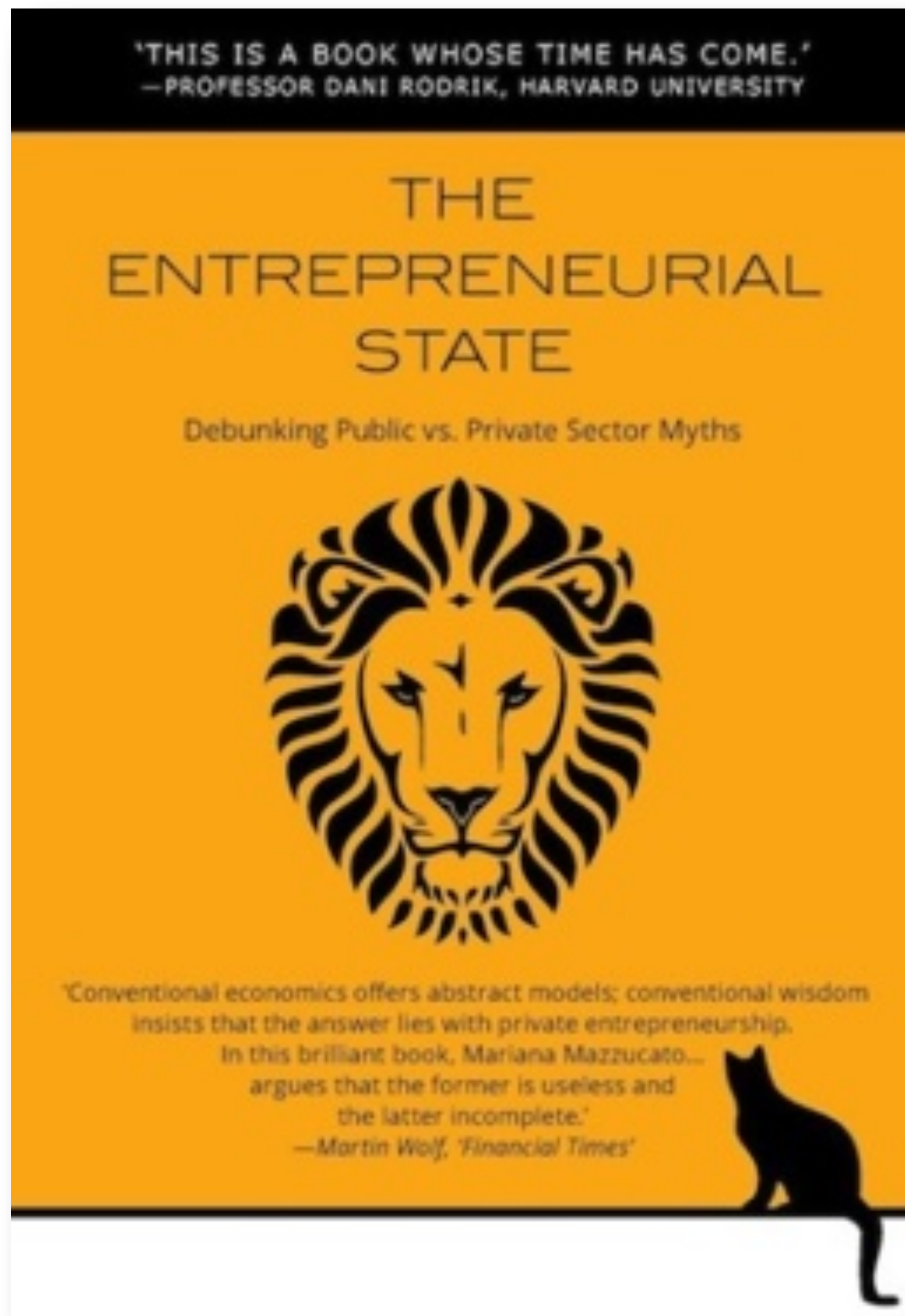
## What Makes the iPhone so Smart?



<http://marianamazucato.com/the-entrepreneurial-state/>

Figure 13 from *The Entrepreneurial State: debunking public vs. private sector myths* (2015, p. 116)



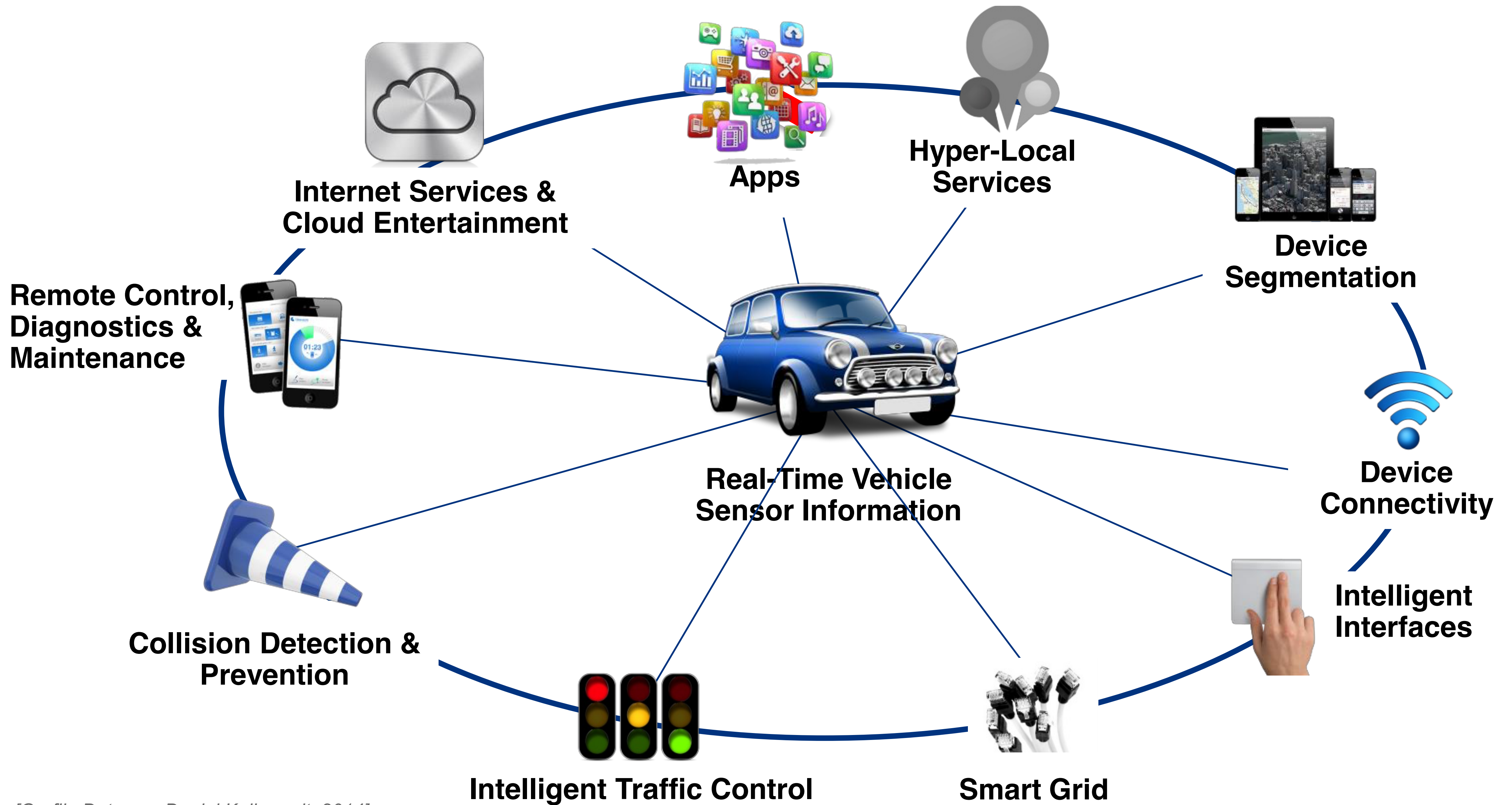


The myth of a lumbering, bureaucratic state versus a dynamic, innovative private sector.



<http://marianamazzucato.com/the-entrepreneurial-state/>





[Grafik: Detecon, Daniel Kellmerit, 2014]



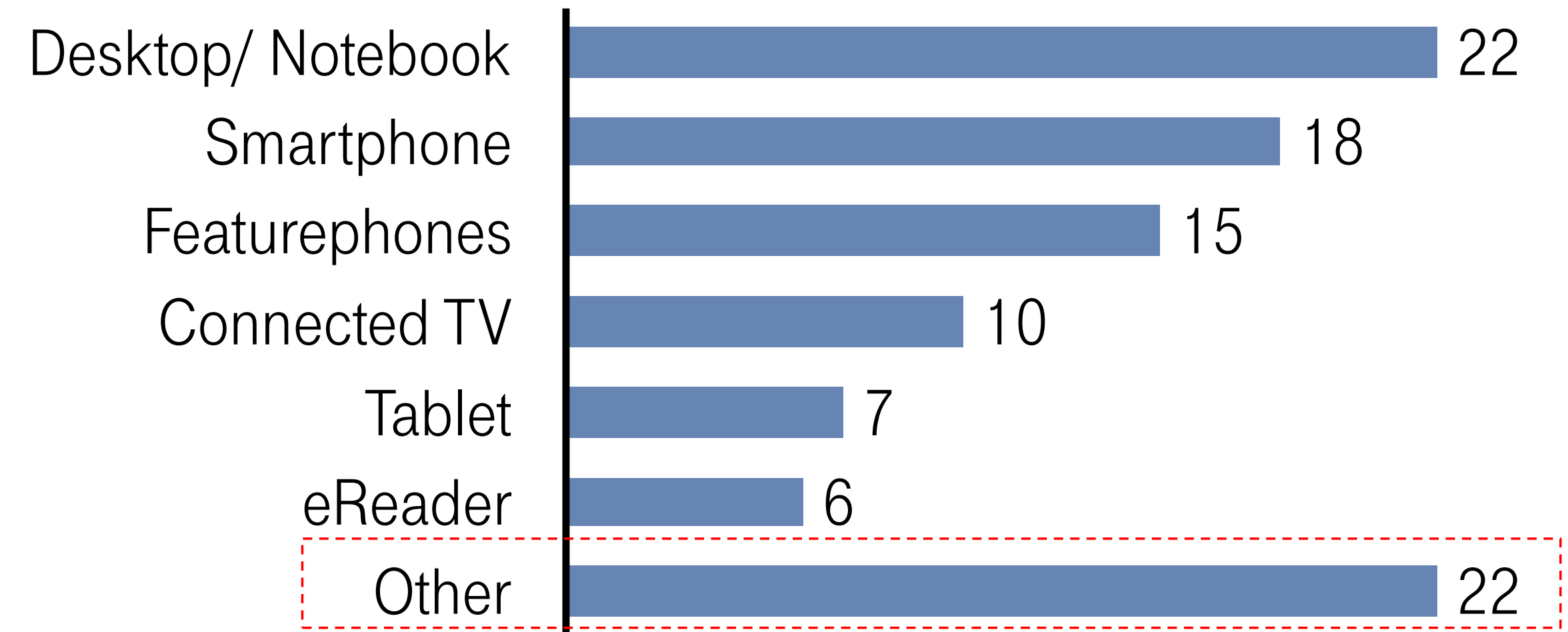
## Bluetooth

~2B Bluetooth-Enabled Devices Shipped globally in 2012E, Up 87X in 10 Years

## Wi-Fi

~1.5B WI-Fi Enabled Devices Shipped Globally in 2012E, Up 5X in 4 Years

## Connected devices in the United States in 2012, by device type



■ % of Connected Devices in US (Q3'12)

nest.





## Vacation & Real Estate Sharing

## Skill Sharing & Micro Jobs

9flats.com

Wimdu  
travel like a local

airbnb  
Travel like a local.

LIQUIDSPACE



taskrabbit

Zaarly

Vintask  
Let us take care of your to-do list

Gigwalk

## Car Sharing

## Everything & Anything

zipcar

CAR  
2GO

Wheelz

Getaround

RelayRides



{Snap}goods

rentoid.com

DogVacay

liquid

lyft

Side-car  
a whole new way to get around

ParkingPanda



[Grafik: Detecon Analysis, Daniel Kellmereit, 2014]





## Personalized Remote Treatment

- Cloud connected devices
- Analytics for diagnosis



## Research and Trials

- Data continuously fedded
- 3<sup>rd</sup> party APIs for research



## Public health

- Geolocated data
- Solutions for mass diseases



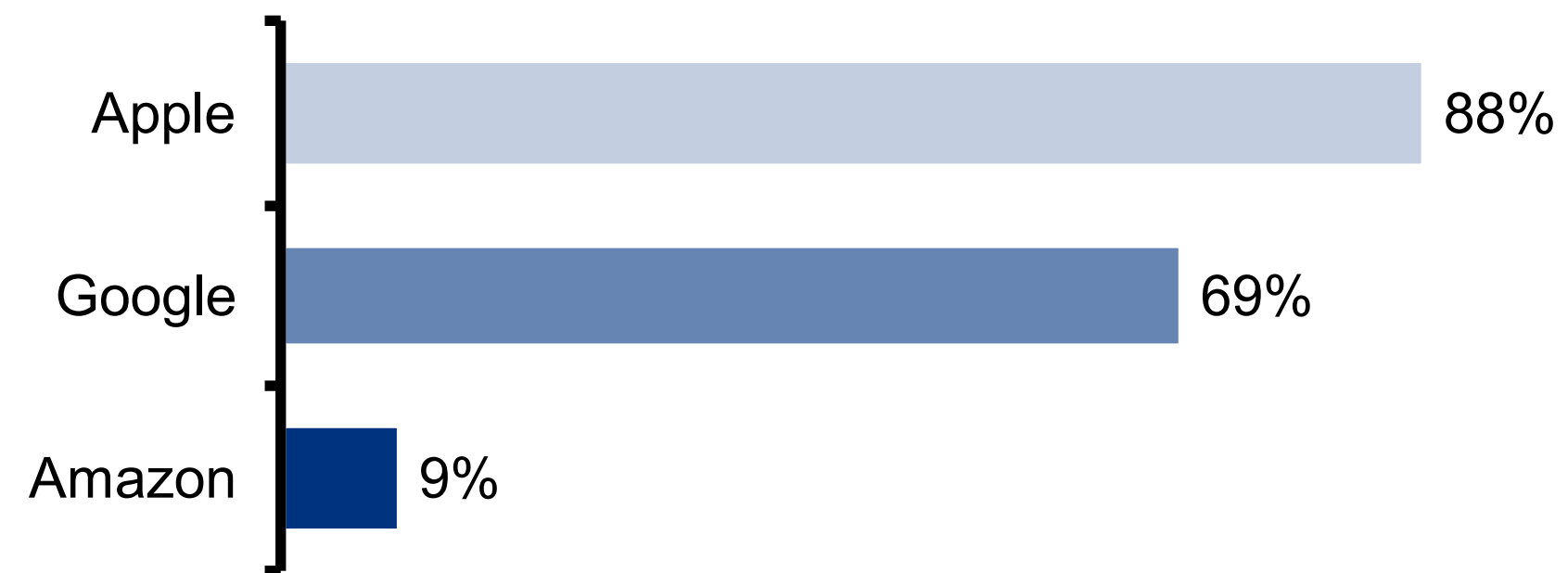
## Intelligent assistant

- AI for doctors
- Help in decision making



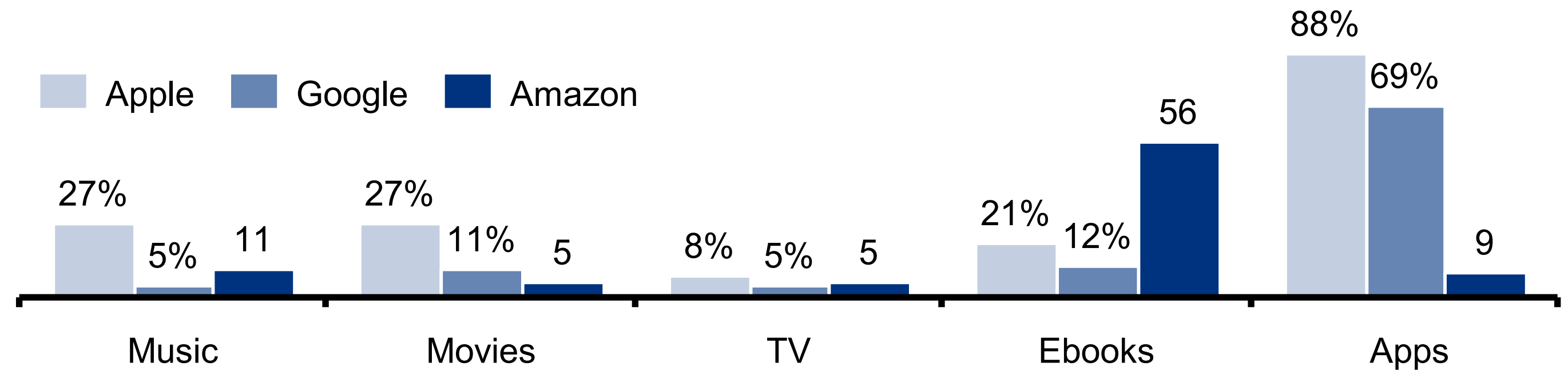



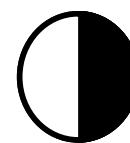
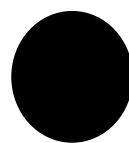
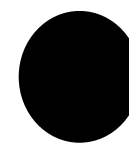
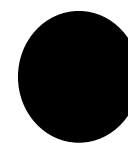
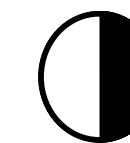
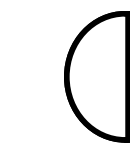

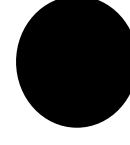
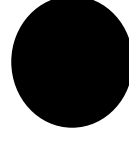
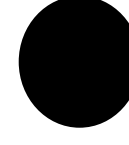
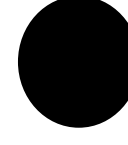




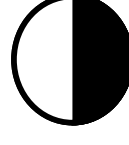

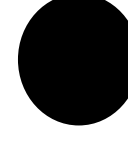
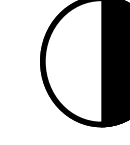

**Access to World Population**  
(% of World Population)



Source: Macstories 2012

**Access to World Population by Type of Service**  
(% of World Population)



Player	Cloud Services	Connected Devices	Sales Channels and Billing	On-demand content	Value-add Services	Targeted Advertising
						
						
						

Source: Detecon Analysis (2012)

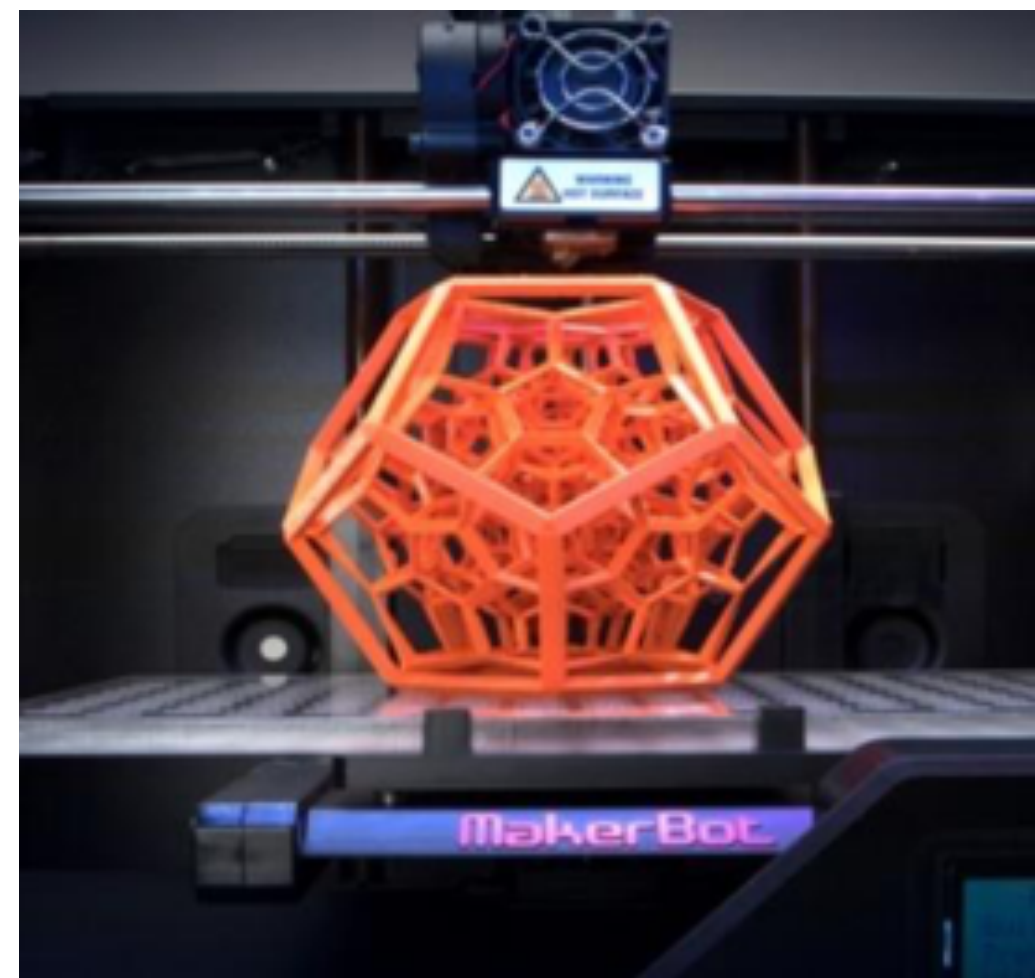




## Personal Drones



## 3D printing in The Home



## Build your own Gadget



## Disruptive AI



[Grafik: Detecon Analysis, Daniel Kellmereit, 2014]



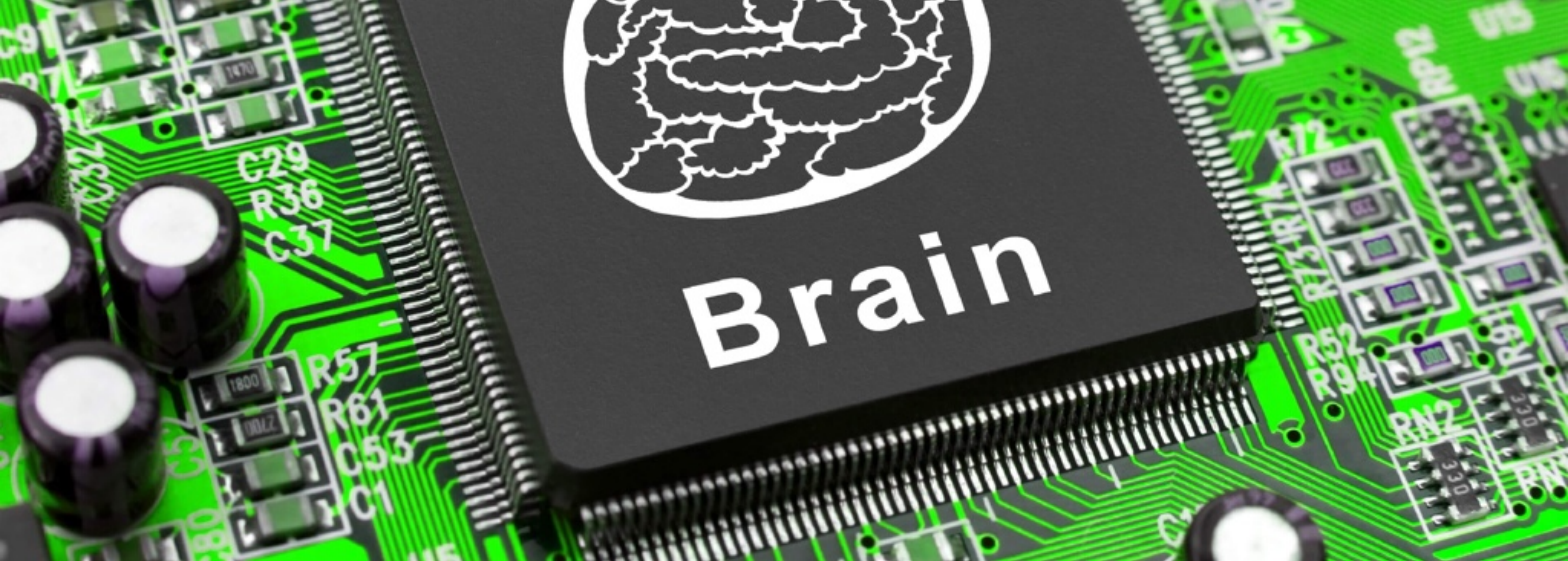
# Robotics



Boston Dynamics: What's new, Atlas?

Festo's Fantastical Flying Robots





Artificial Intelligence,  
Big Data, Neural Networks,  
Machine Learning, Deep Learning





»Unser Smartphone ist ein riesiger psychologischer Fragebogen, den wir beständig ausfüllen, wissentlich und unbewusst.«

»Wer Lady Gaga folgt ist höchstwahrscheinlich extrovertiert, während diejenigen, die philosophischen Themen folgen, eher zu Introvertiertheit neigen«

(Michael Kosinski, Stanford University)

»Fast jede Nachricht, die Trump im Wahlkampf 2016 getwittert hat, war datengetrieben.«

(Cambridge Analytica CEO Alexander Nix)



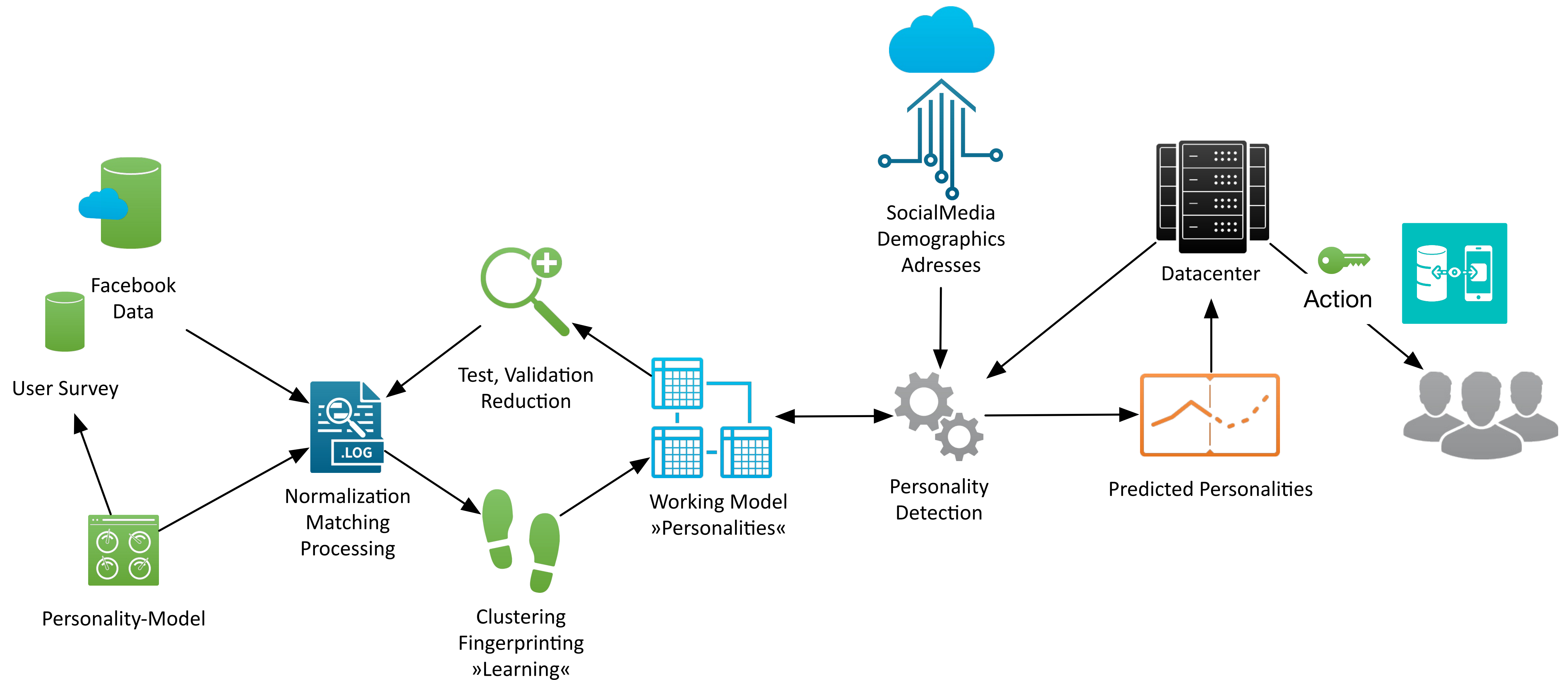
»Our smartphone is a vast psychological questionnaire that we are constantly filling out, both consciously and unconsciously.« (Kosinski)



Groundgame, an app for election canvassing that integrates voter data with "geospatial visualization technology," was used by campaigners for Trump and Brexit.  
Image: L2, [https://motherboard.vice.com/en\\_us/article/how-our-likes-helped-trump-win](https://motherboard.vice.com/en_us/article/how-our-likes-helped-trump-win)

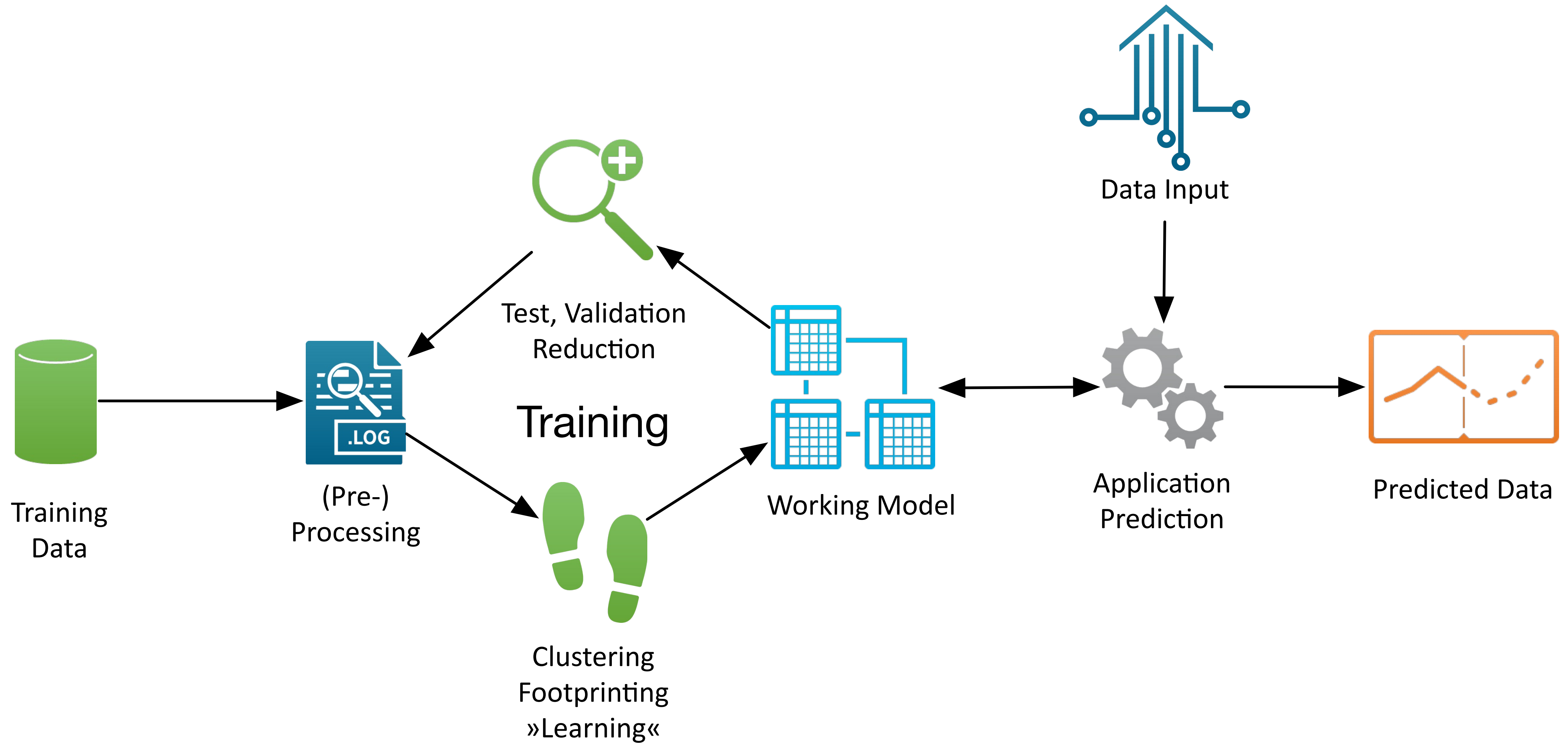


# Cambridge Analytica Case (US Election, Brexit, 2016)





# Machine Learning Principle





# ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement.



# MACHINE LEARNING

Machine learning begins to flourish.



# DEEP LEARNING

Deep learning breakthroughs drive AI boom.



1950's

1960's

1970's

1980's

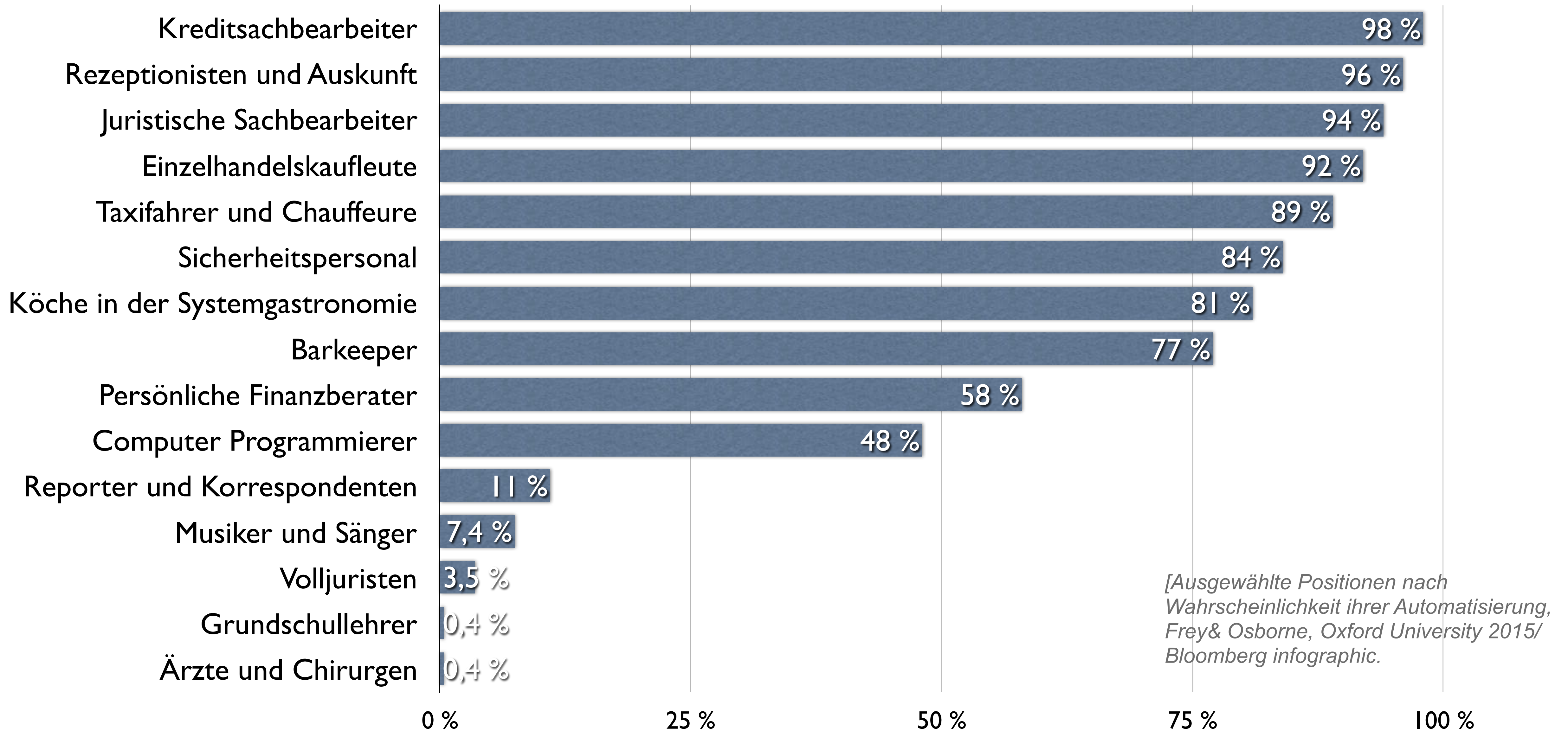
1990's

2000's

2010's

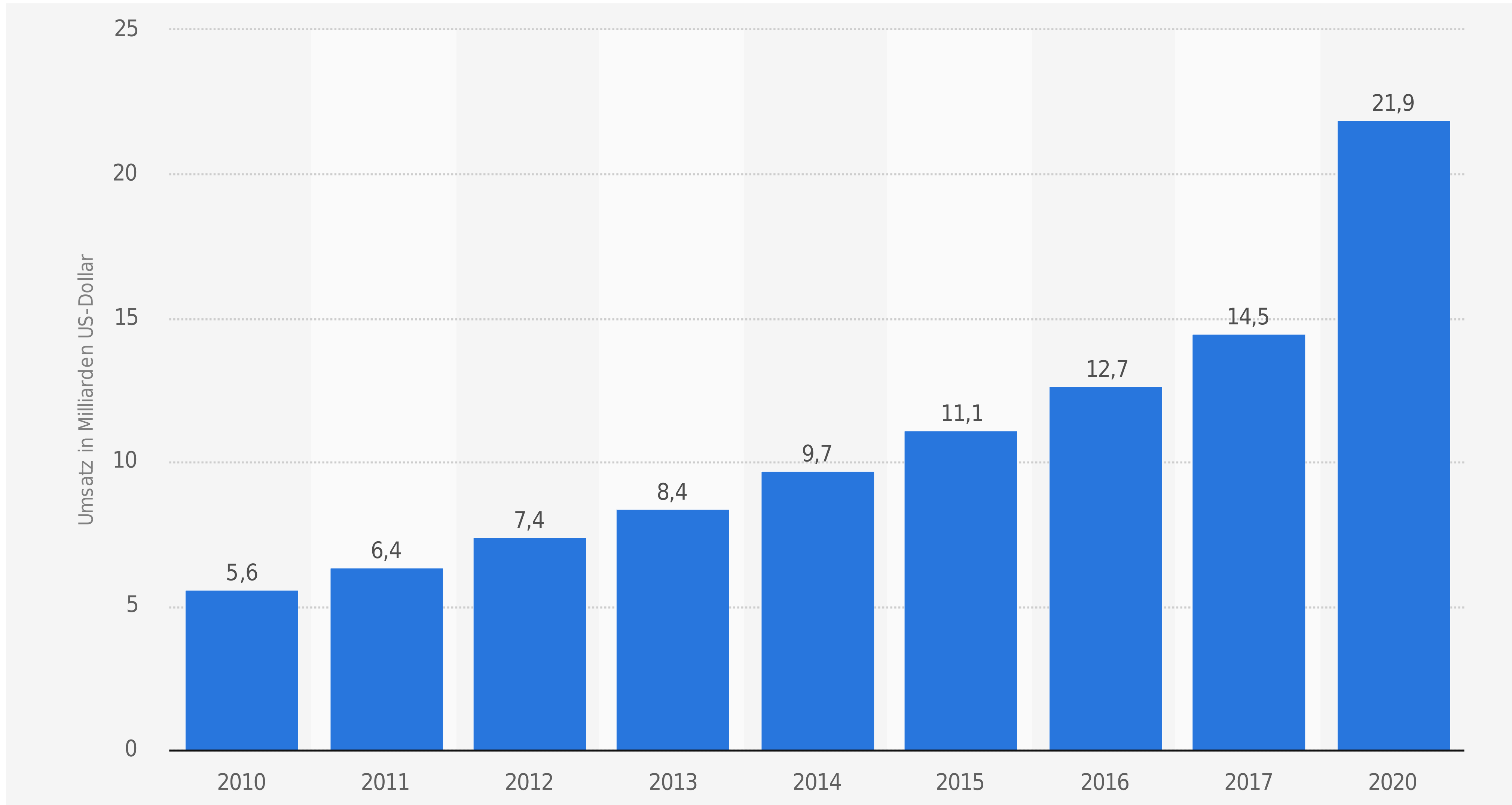


# Was wird aus unseren Jobs !?





# Prognose zum weltweiten Umsatz mit RFID-Transpondern

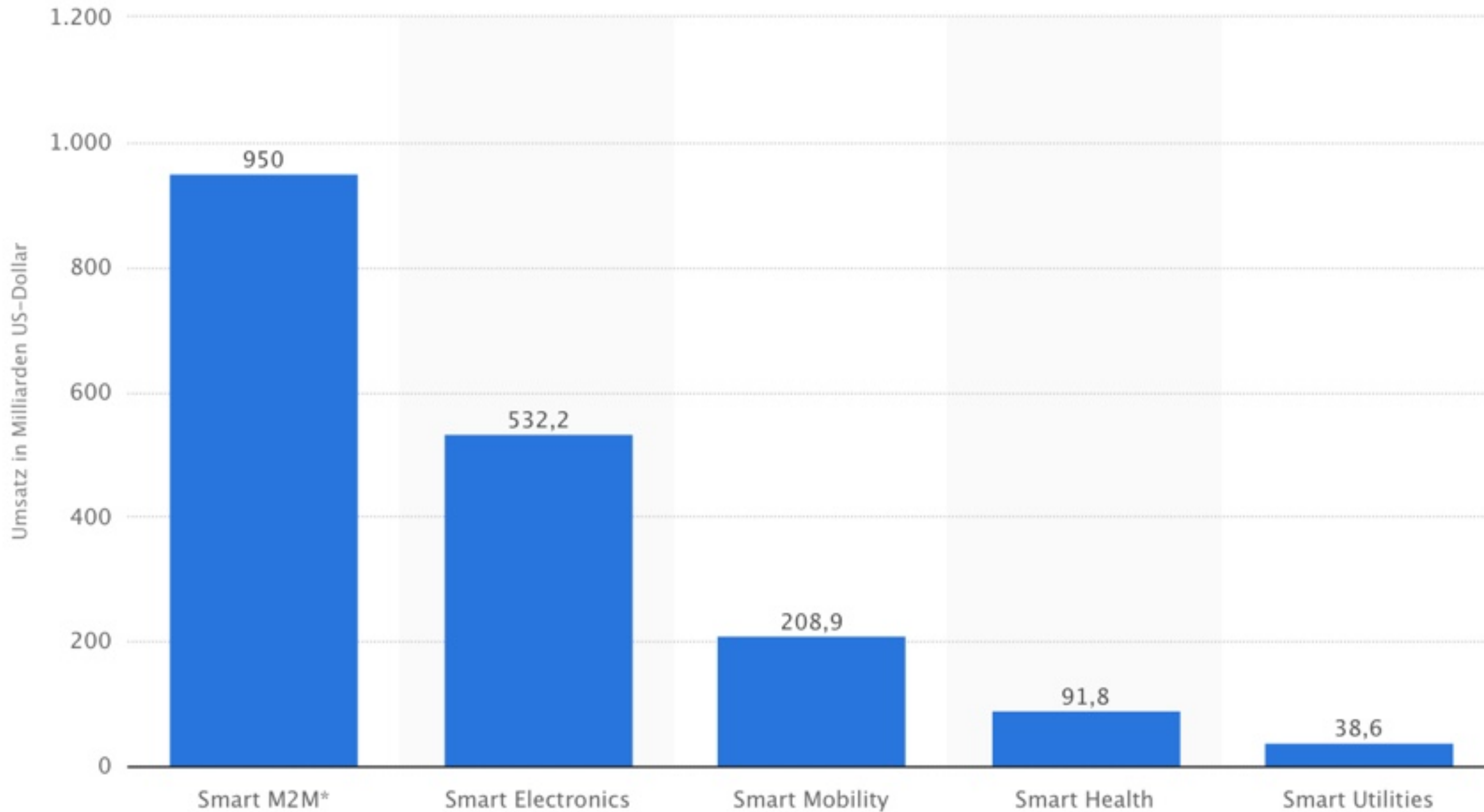


*University of Jyväskylä.  
Internet-of-Things  
Market, Value  
Networks, and  
Business Models: State  
of the Art Report  
2015-17, p 16, via  
statista*





# Prognose zum weltweiten Umsatz mit vernetzten Geräten nach Sektor im Jahr 2020



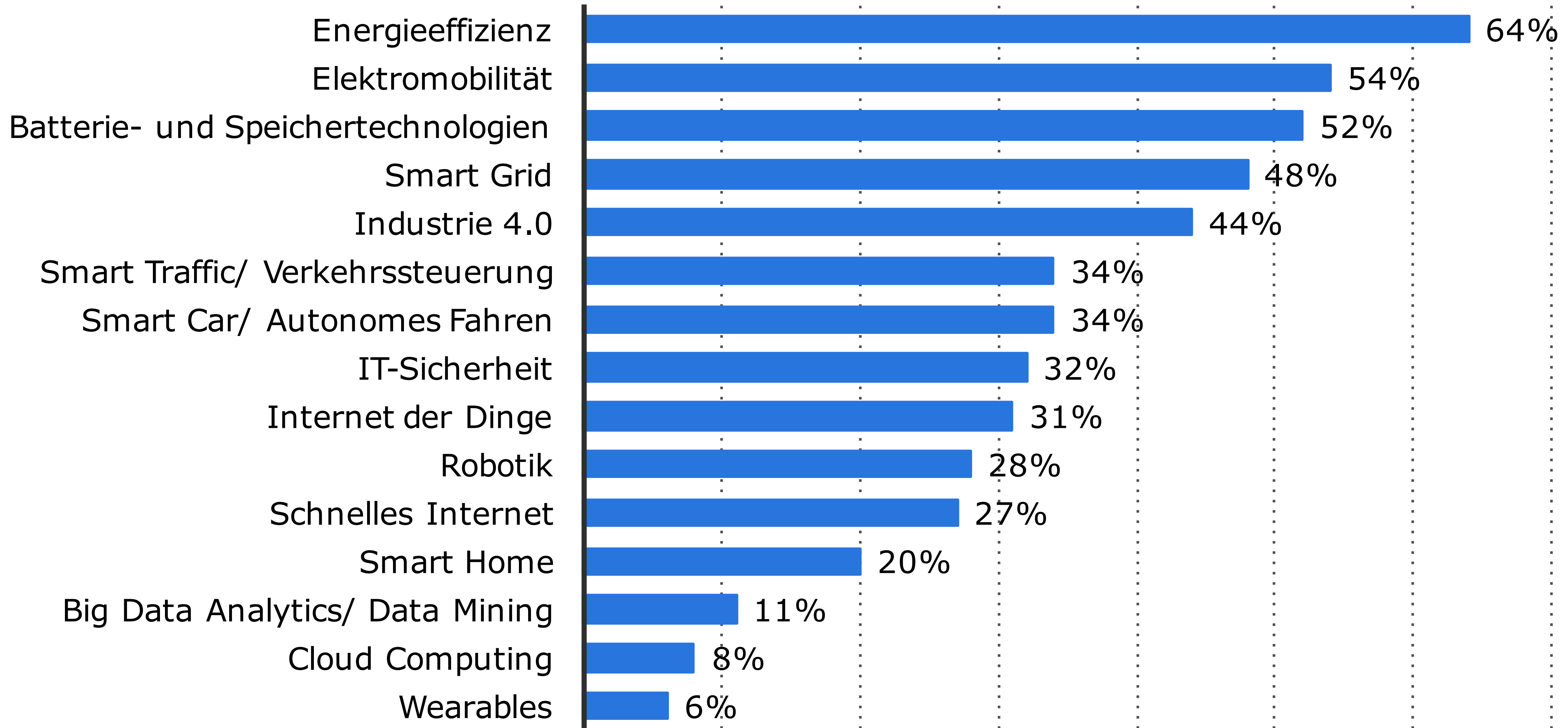
*University of Jyväskylä.  
Internet-of-Things  
Market, Value  
Networks, and  
Business Models: State  
of the Art Report 2013,  
p 16, via statista*



In welchen Technikbereichen sind ihrer Meinung nach besonders große Potentiale für den Standort Deutschland zu erwarten?

**Anteil der Befragten**

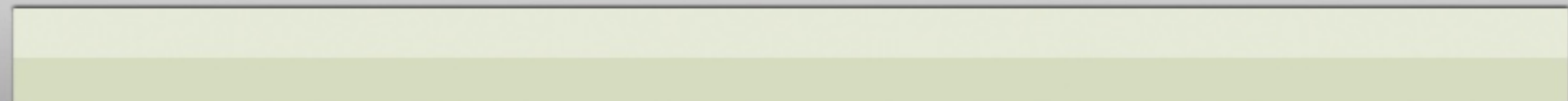
0% 10% 20% 30% 40% 50% 60% 70%



VDI Trendreport 2016,  
S.10, via statista

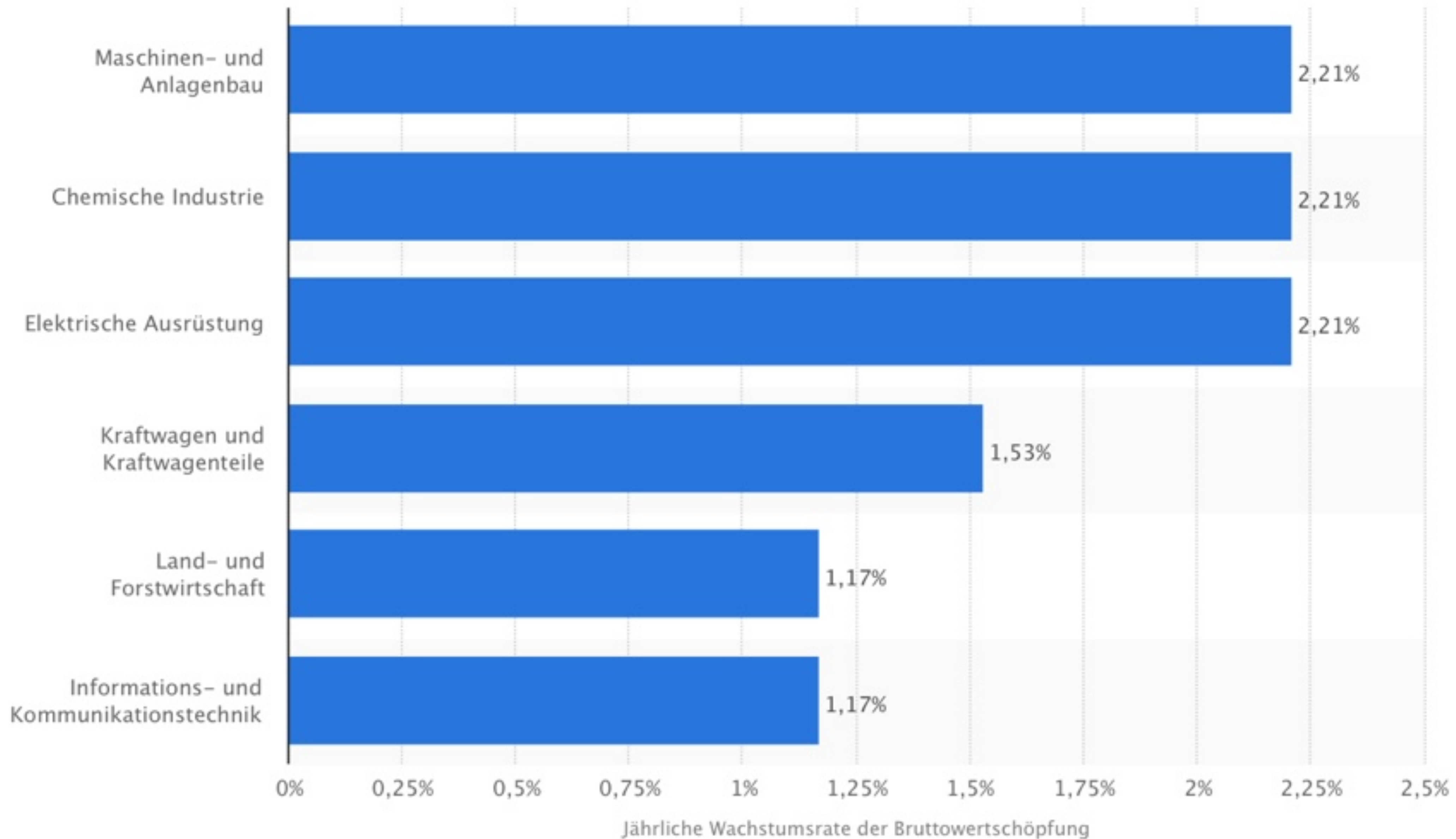


21/11  
2017





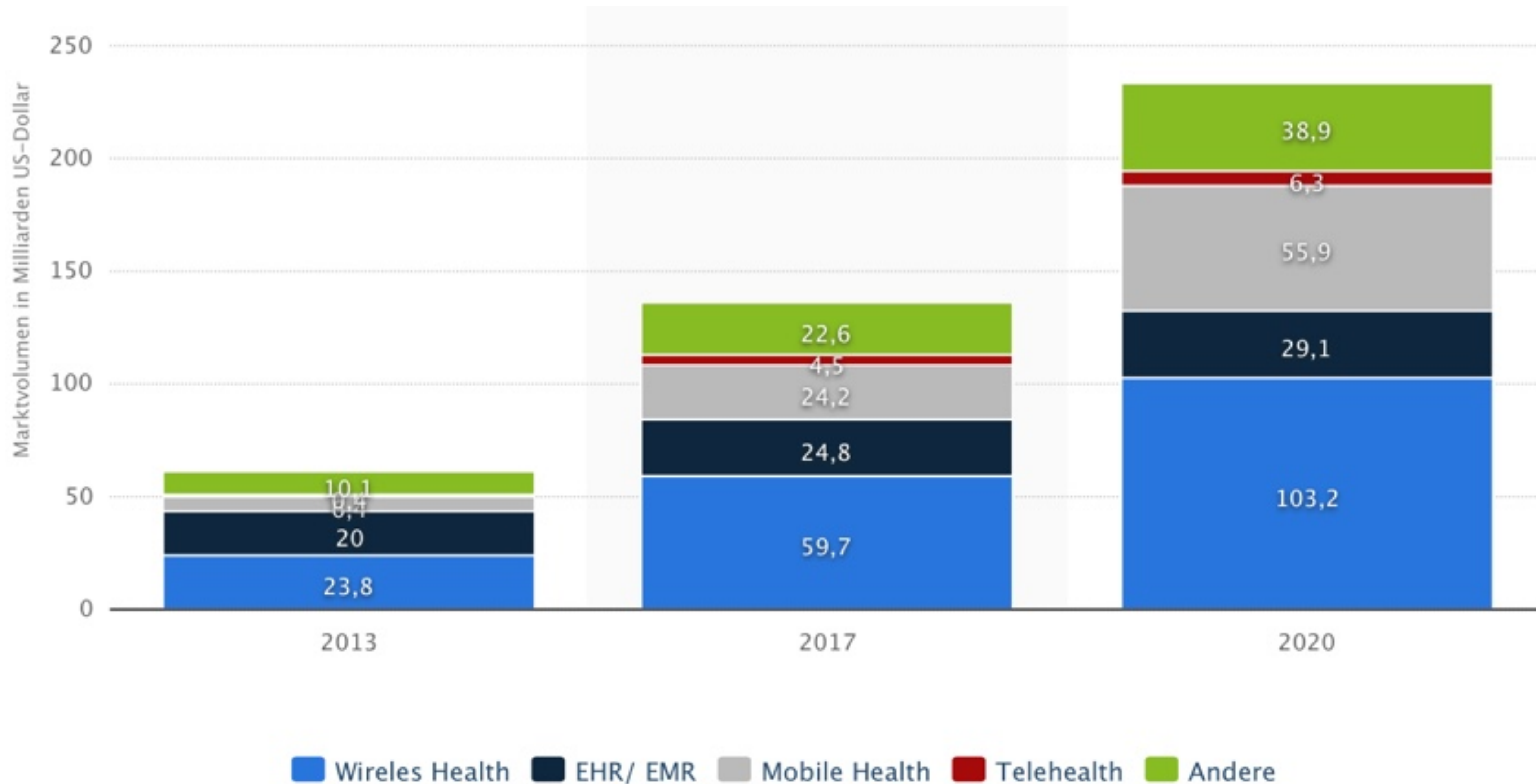
# Jährliche Steigerungsrate der Bruttowertschöpfung durch Industrie 4.0 in Deutschland, 2013 bis 2025



[BITKOM; Fraunhofer IAO: Industrie 4.0 - Volkswirtschaftliches Potenzial für Deutschland, Seite 36, April 2014 via statista]



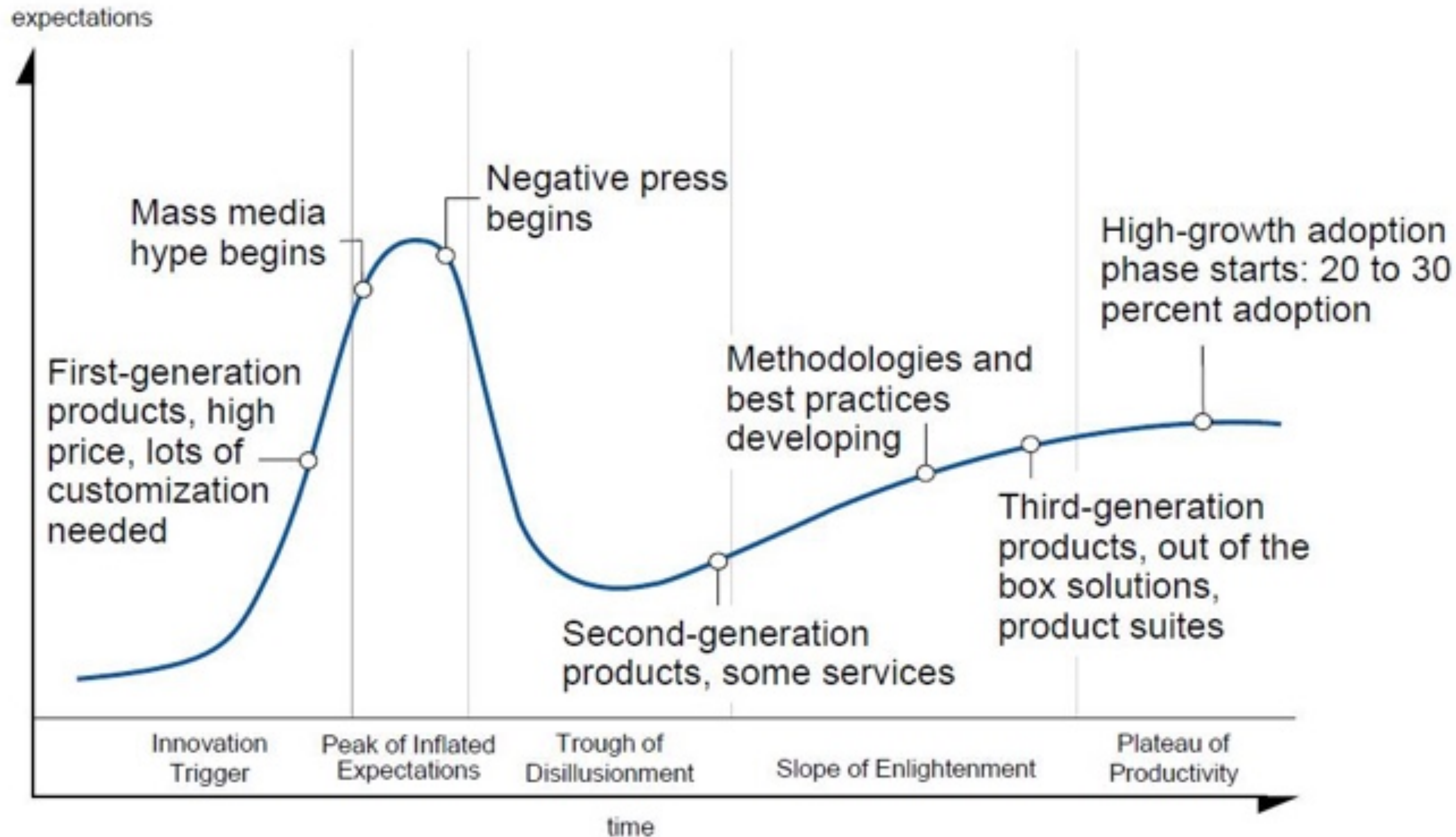
# Umsatzprognose zum weltweiten digitalen Gesundheitsmarkt



[Arthur D. Little:  
Succeeding with Digital  
Health - Winning  
Offerings and Digital  
Transformation, p. 4,  
7/2014 via statista]

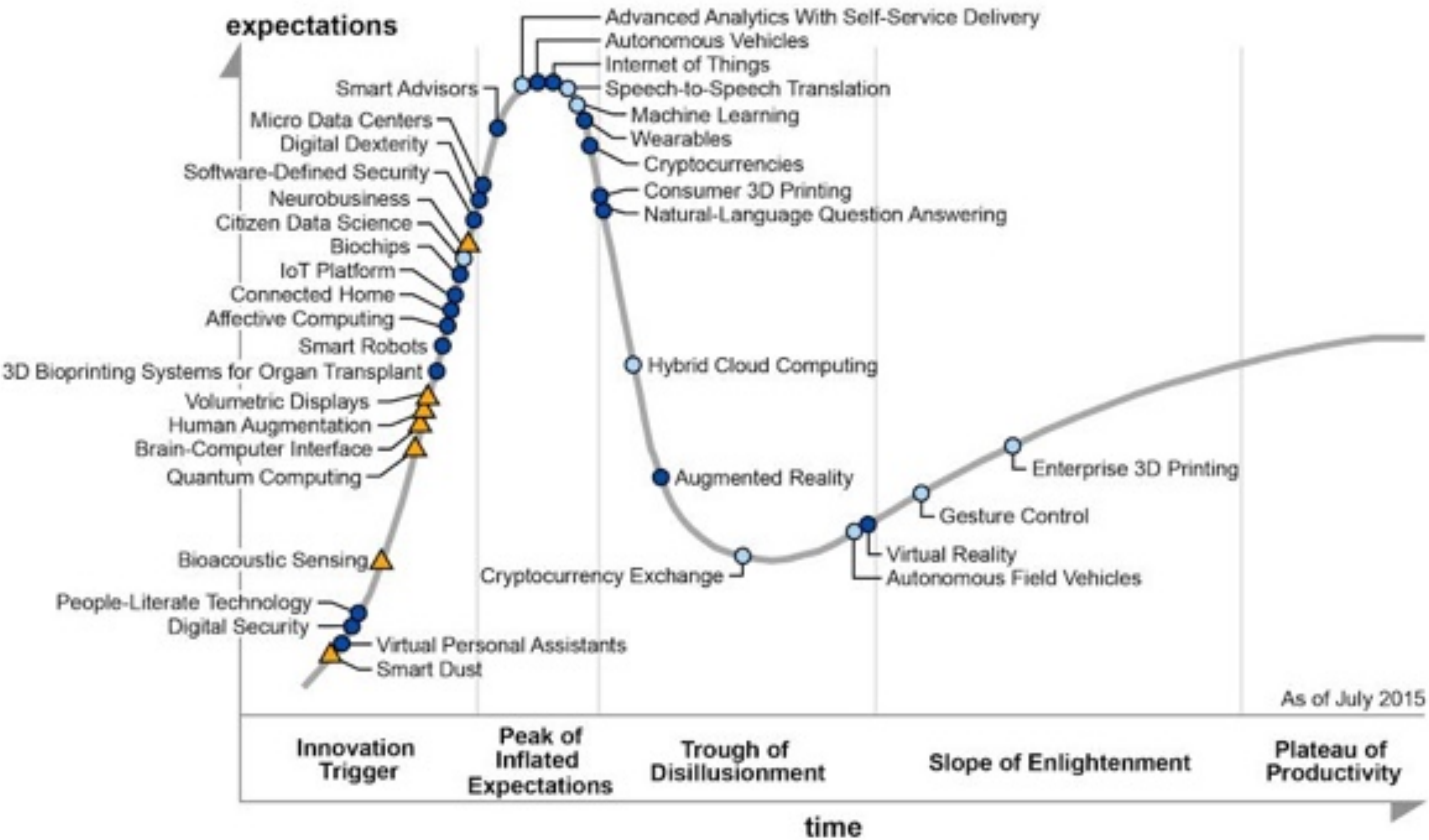


# The Hype Cycle of Innovation



*Gartner's Hype Cycle for Emerging Technologies: Gartner 2013*





As of July 2015

Plateau will be reached in:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau

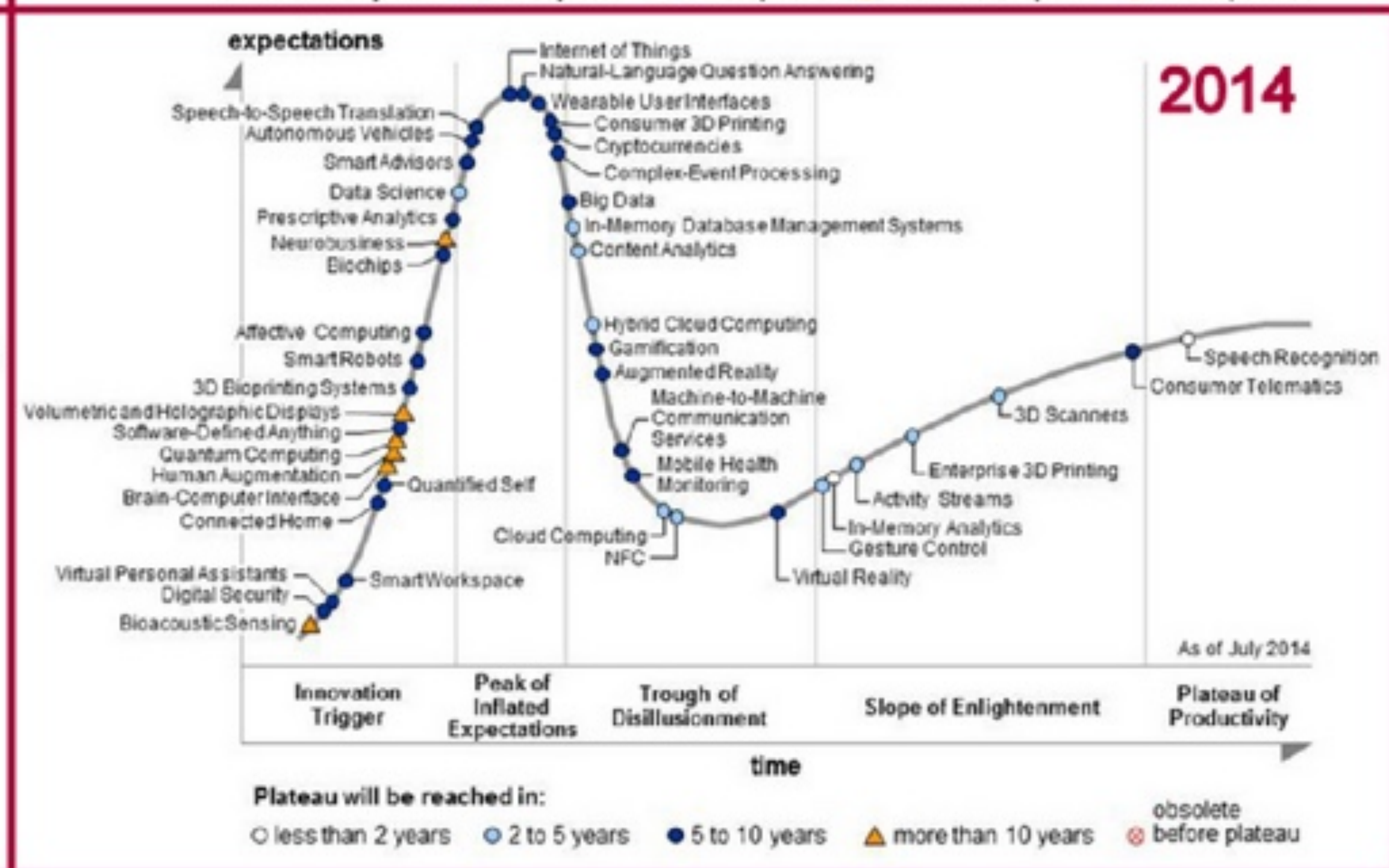
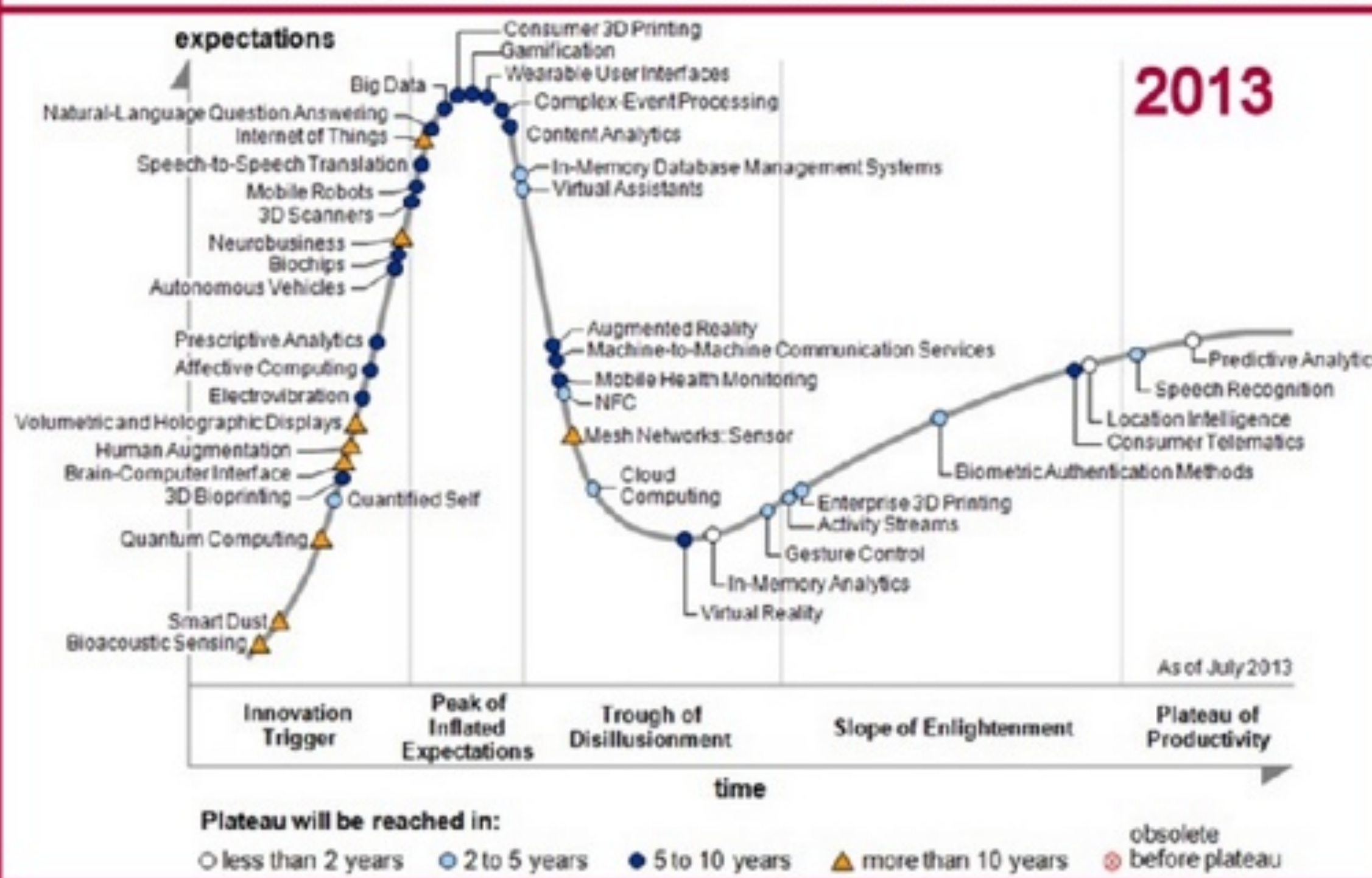
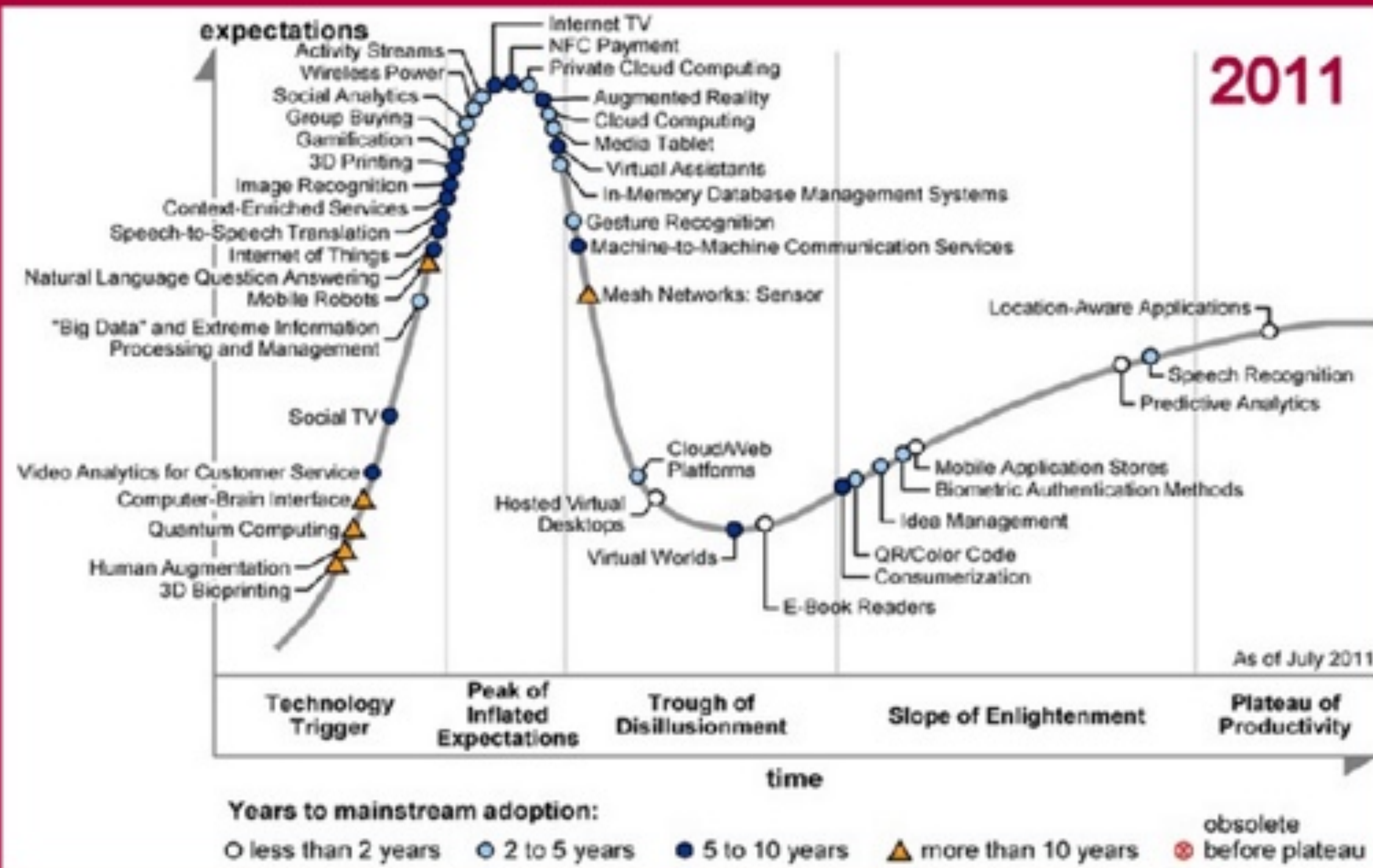
Gartner's Hype Cycle for Emerging Technologies. Sources: Gartner 2015





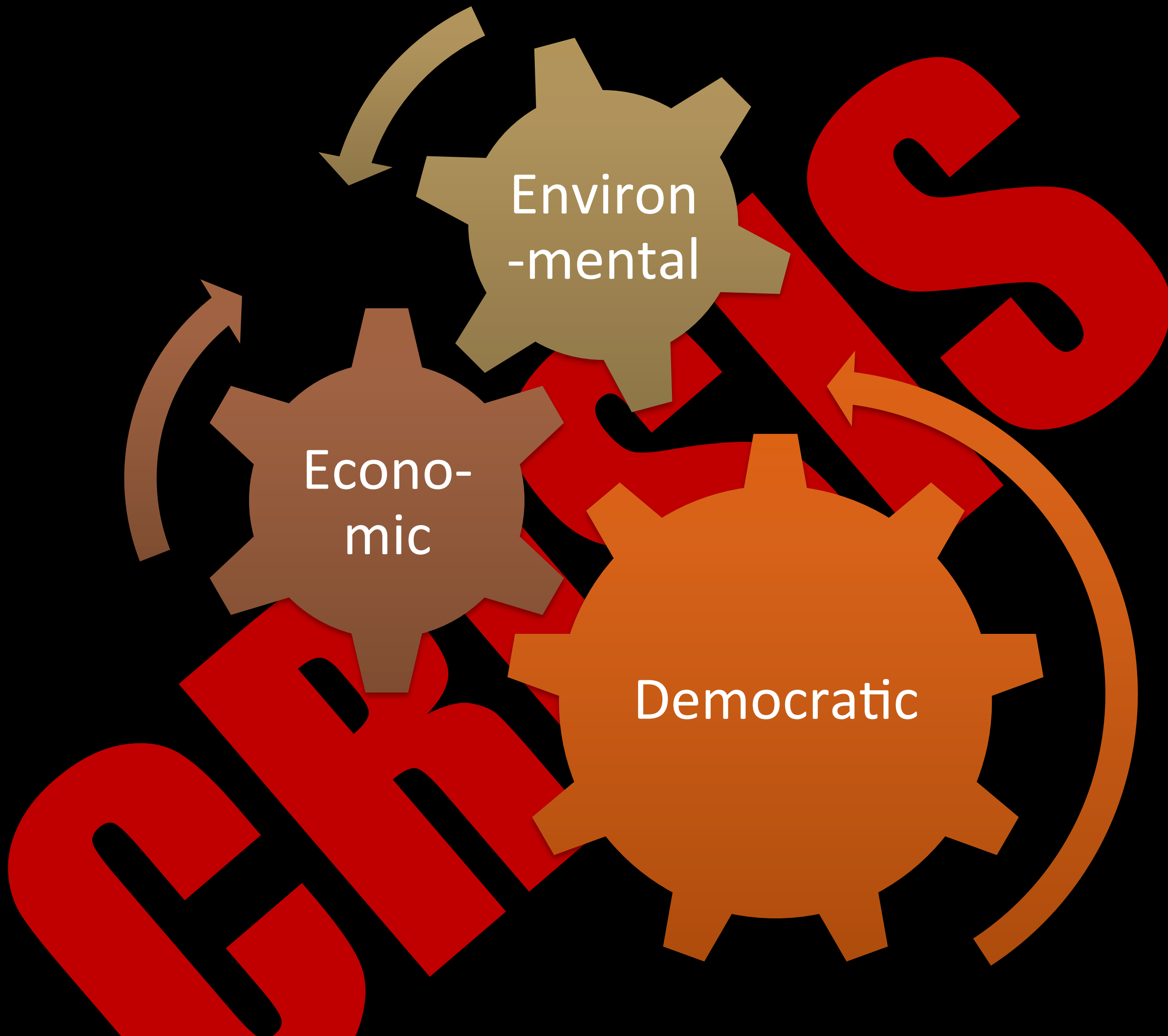
Gartner's Hype Cycle for Emerging Technologies. Sources: Gartner 2016





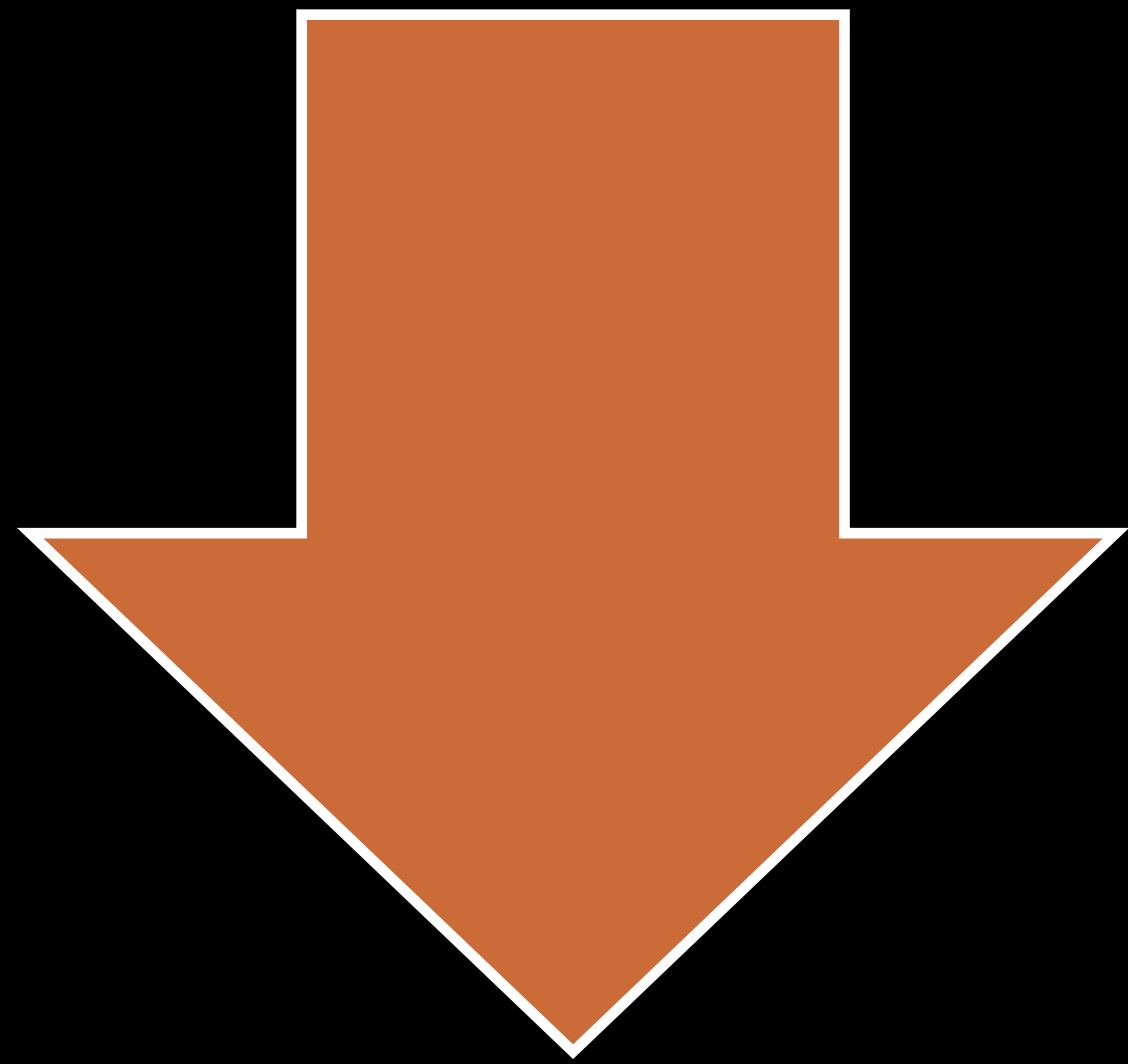
Gartner's Hype Cycle for Emerging Technologies, 2011-2014. Sources: Gartner 2014





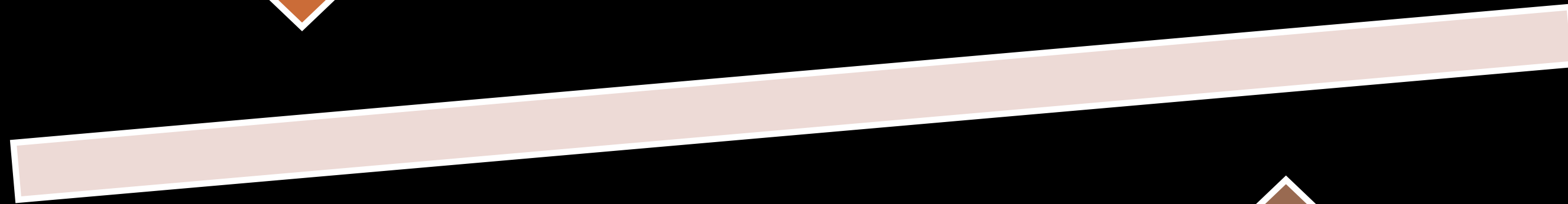
[Jesse Marsh: think virtually local ecologies of new economic models. EcoCom, 08/11/2013, Berlin, Germany]





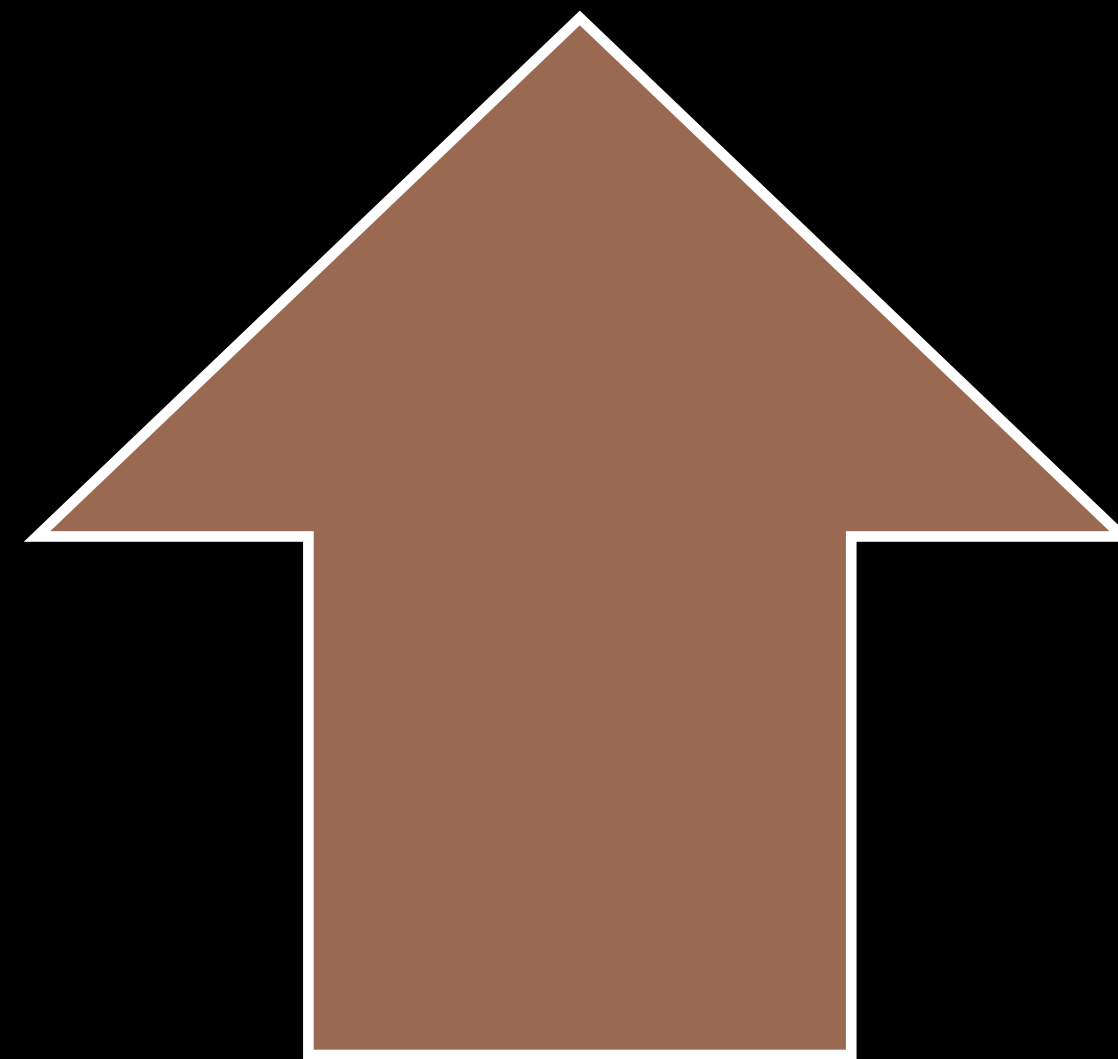
## Macro

- Globalisation
- Financialisation
- Growth imperative



## Micro

- Local economies
- De-monetisation
- Survival



[Jesse Marsh: think virtually local ecologies of new economic models. EcoCom, 08/11/2013, Berlin, Germany]



## Traditional business

- We are competing
- Market regulations

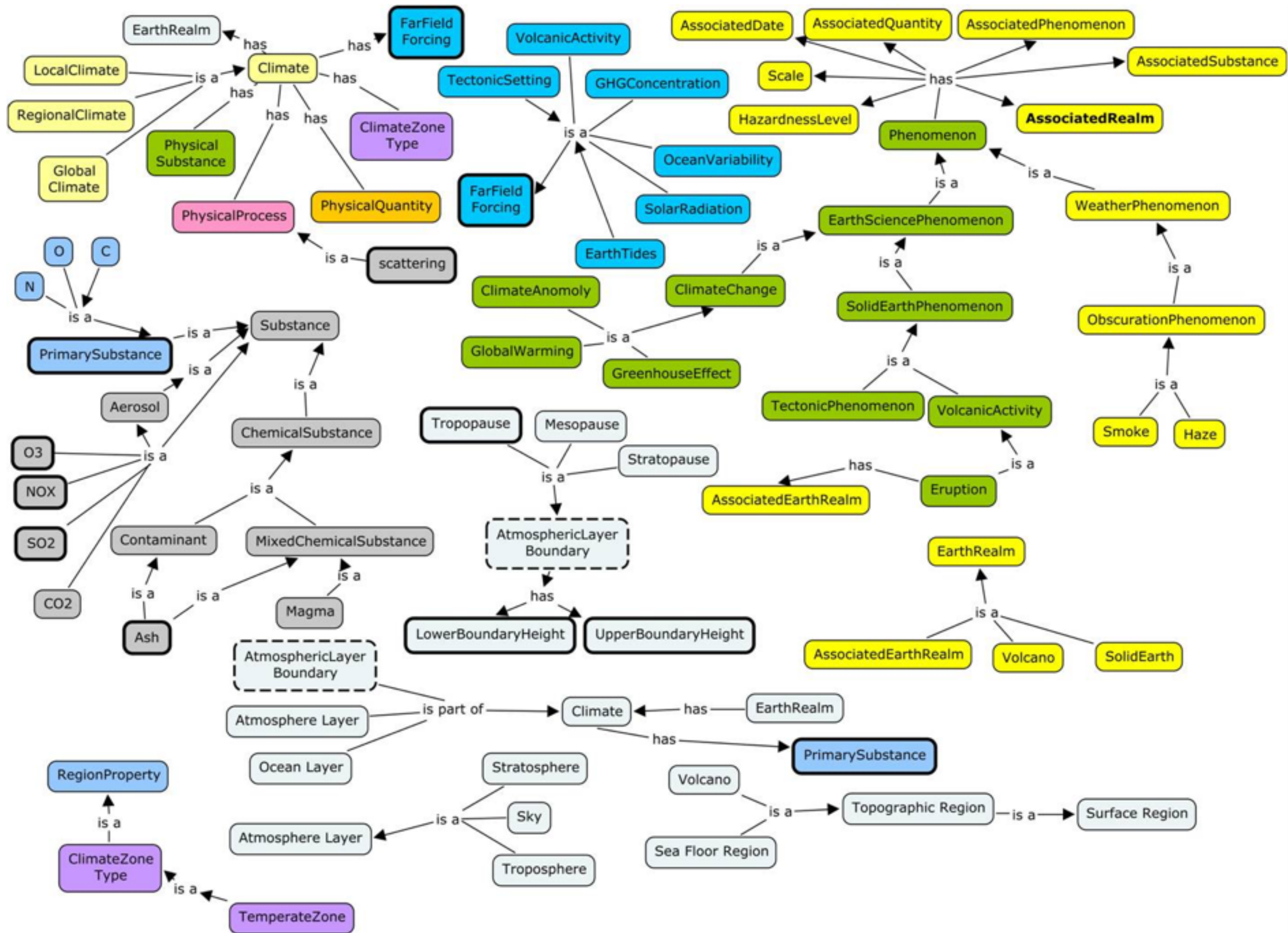
## Emergent ecosystems

- We are collaborating
- Ethical principles

[Jesse Marsh: think virtually local ecologies of new economic models. EcoCom, 08/11/2013, Berlin, Germany]

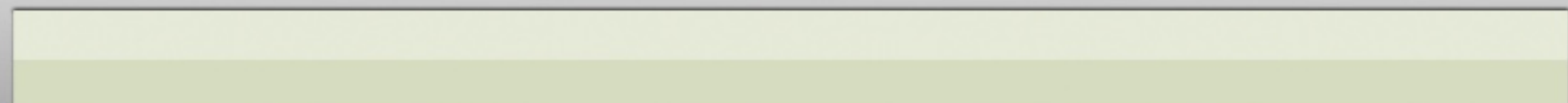






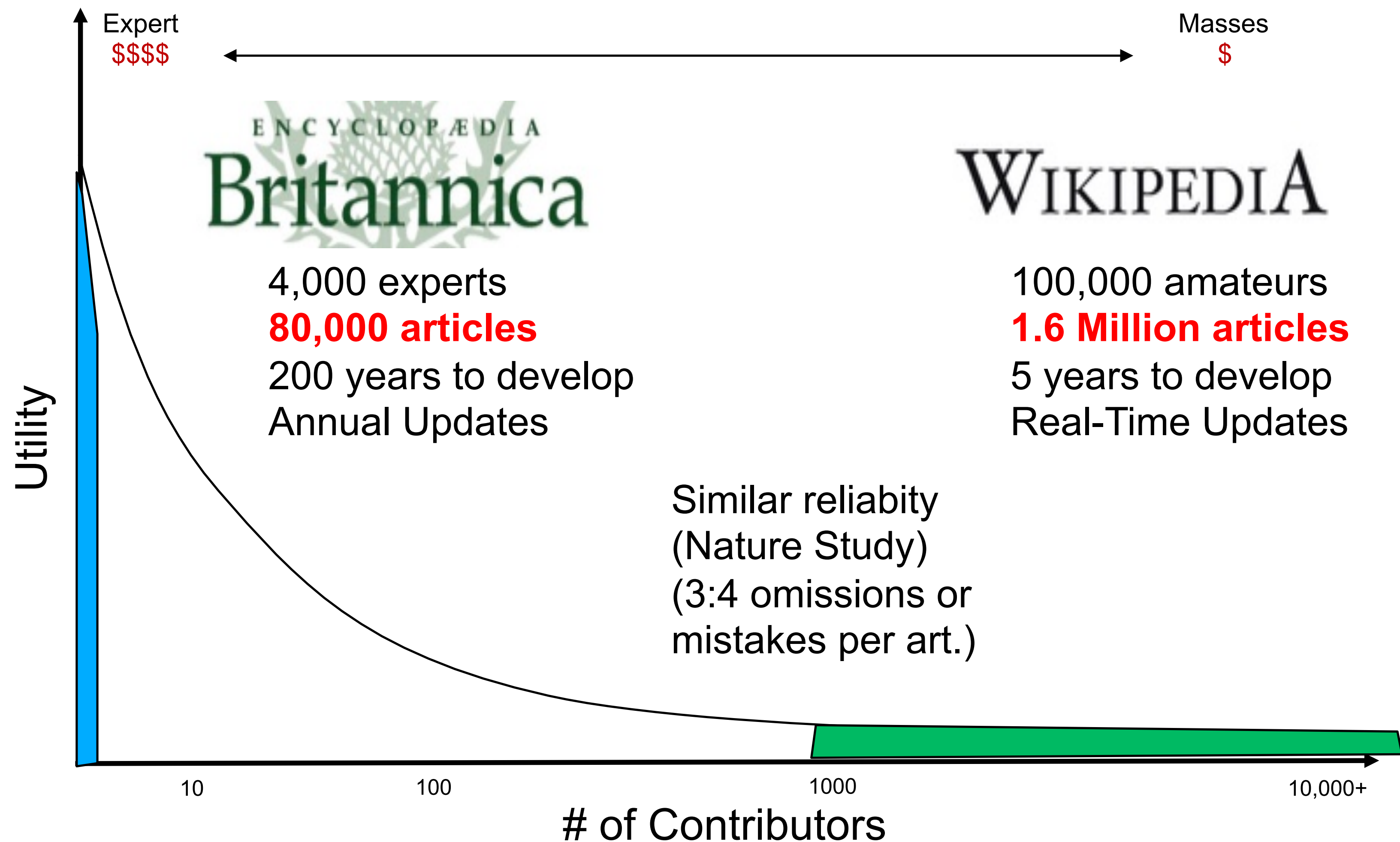
ICT codifies knowledge to manage it

[Jesse Marsh: think virtually local ecologies of new economic models. EcoCom, 08/11/2013, Berlin, Germany]





# Economics vs. Wikinomics



Nature, 2005. Cited in: Cook (2008): The Contribution Revolution, HBR, Oct 2008, pp. 63

[Matthias Trier: Sociality of Online Market Interaction: Challenges and Implications. EcoCom, 08/11/2013, Berlin, Germany]

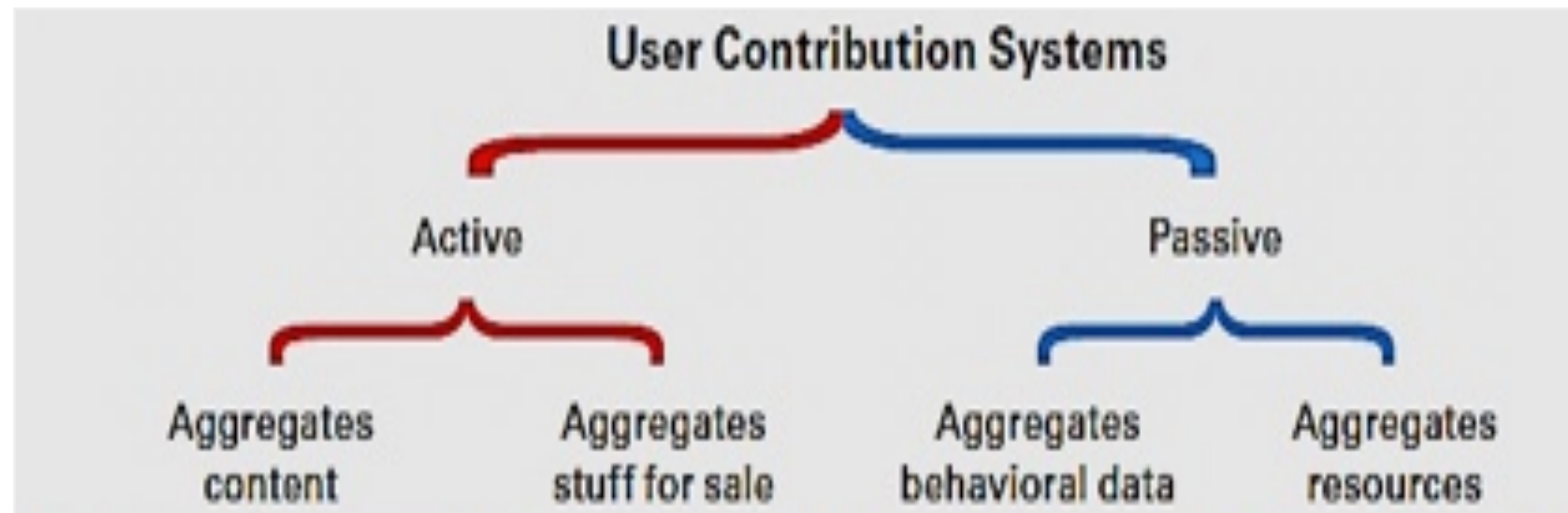


# New Market Mechanisms? The Contribution Revolution (Cook, HBR, 2008)

Users often expect things to cost 0 Money.



But they also often contribute for free.



- From money payments to **new value streams** for your **business models**?  
→ **aggregating and leveraging** people's contributions or behaviors

[Matthias Trier: Sociality of Online Market Interaction: Challenges and Implications. EcoCom, 08/11/2013, Berlin, Germany]



# Different types of interactions

Fiske's unified framework of

## elementary forms of relationships

Money market vs. a social market

Pricing (Markets)

Sharing in Networks

Ranking (Authority)

[Matthias Trier: Sociality of Online Market Interaction: Challenges and Implications. EcoCom, 08/11/2013, Berlin, Germany]





## We even need to change our economic theories!

- ▶ 30% behaved selfish – but 50% cooperative
- ▶ Neural and even genetic evidence for cooperation
- ▶ „We can recognize ourselves in the story of rational self-interest”

Instead of controls, we need **NEW MODELS**  
relying on engagement, communication, identity, reputation and reciprocity

[Matthias Trier: Sociality of Online Market Interaction: Challenges and Implications. EcoCom, 08/11/2013, Berlin, Germany]



If money is the currency of the money market,  
what is the „currency“ of the „social market“?

▶ **TRUST**

[Matthias Trier: Sociality of Online Market Interaction: Challenges and Implications. EcoCom, 08/11/2013, Berlin, Germany]



# 3

## ICT as an Instrument for more Sustainability?

- ▶ Why it is not that easy

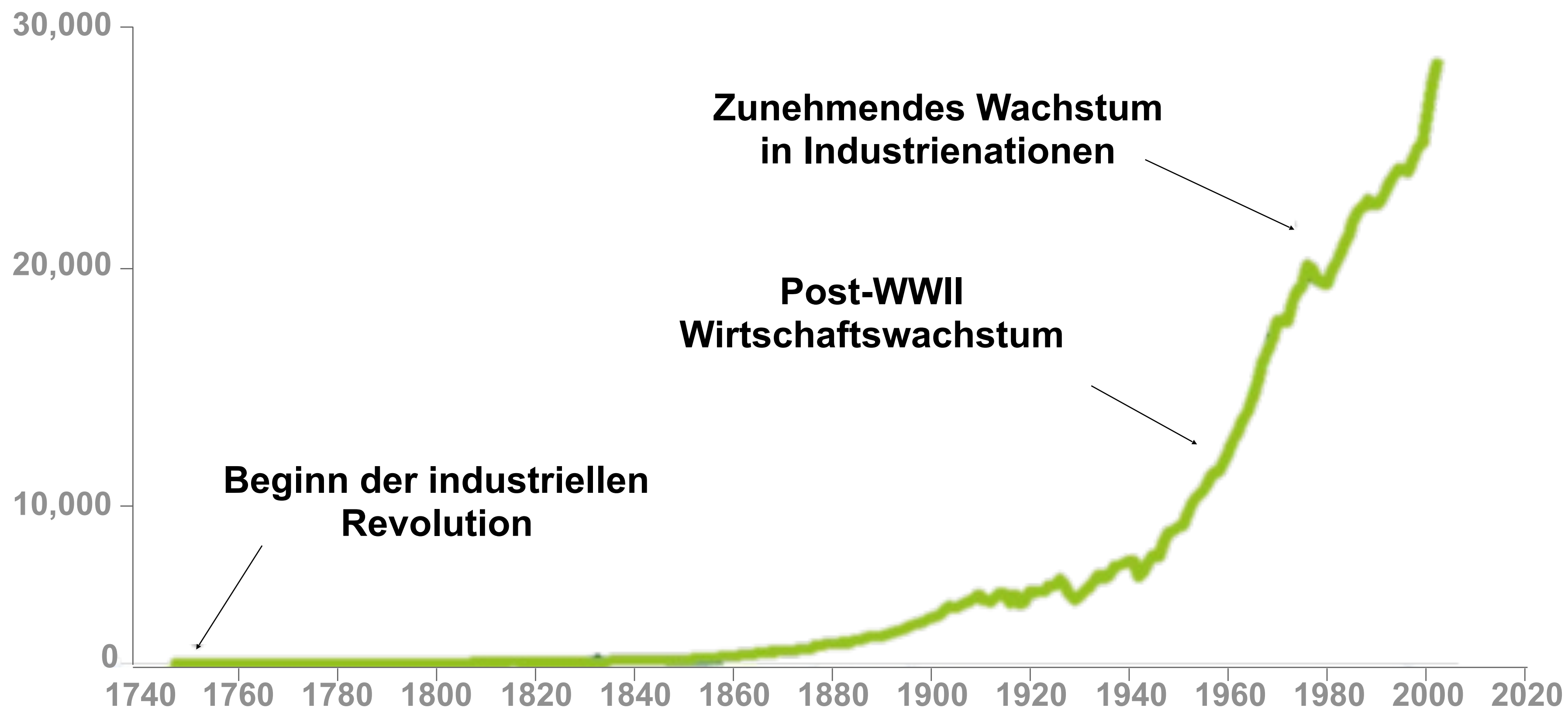


# Welche Nachhaltigkeitseffekte können mit der Informations- und Kommunikationstechnik erzeugt werden?



# Seit Beginn der industriellen Revolution wächst der weltweite CO<sub>2</sub>-Austoß und überschreitet 32.000 Mio. Tonnen im Jahr 2012

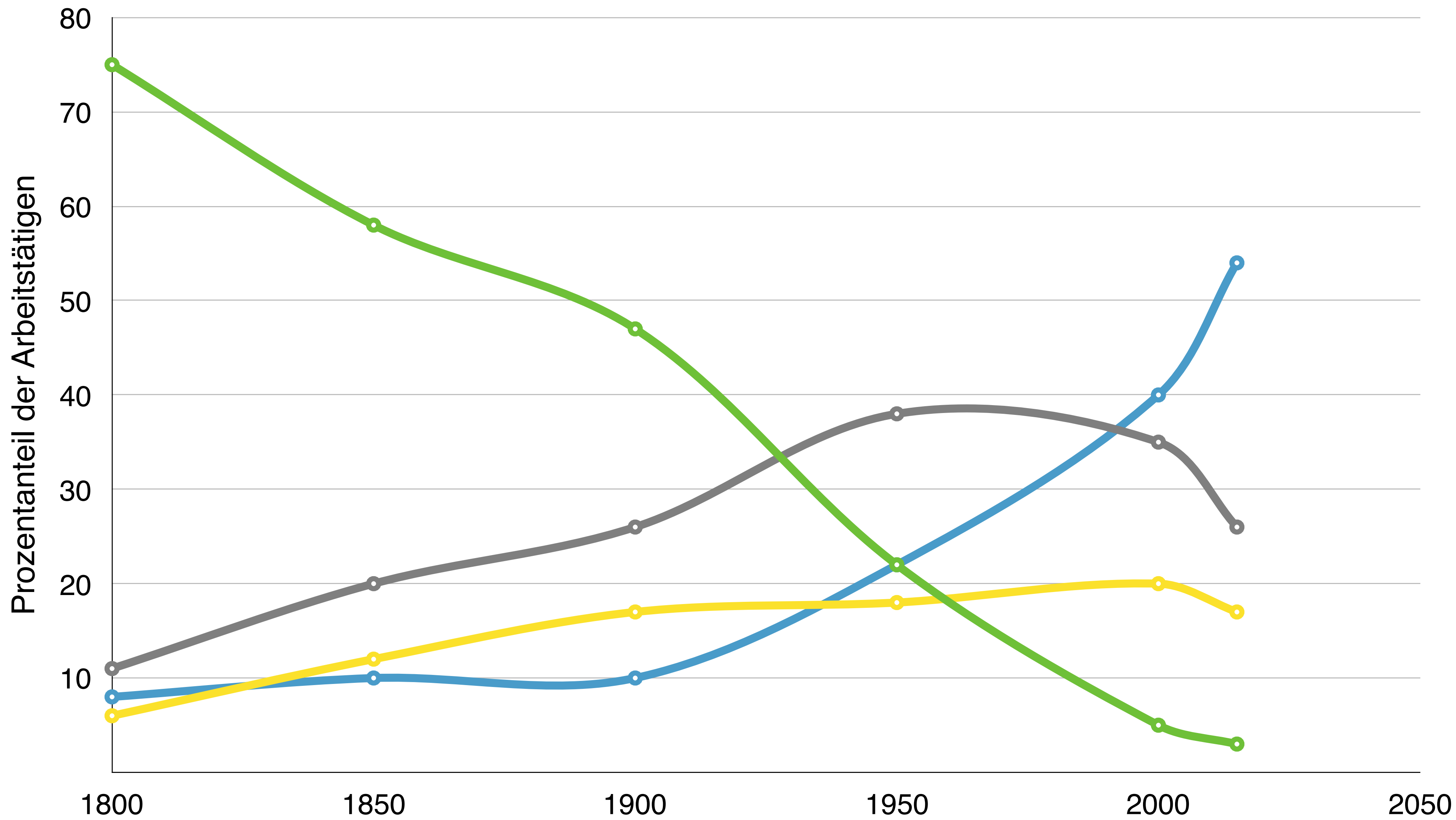
**Weltweite CO<sub>2</sub> Emissionen  
(in Mio. Tonnen)**



*[Arnold Picot, Stefan Hopf: ICT as an Instrument for More Sustainability: Why It Is Not That Simple. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015] GeSI (2012)*



# Arbeitsmarkt (Langfristiger Strukturwandel nach Gries)

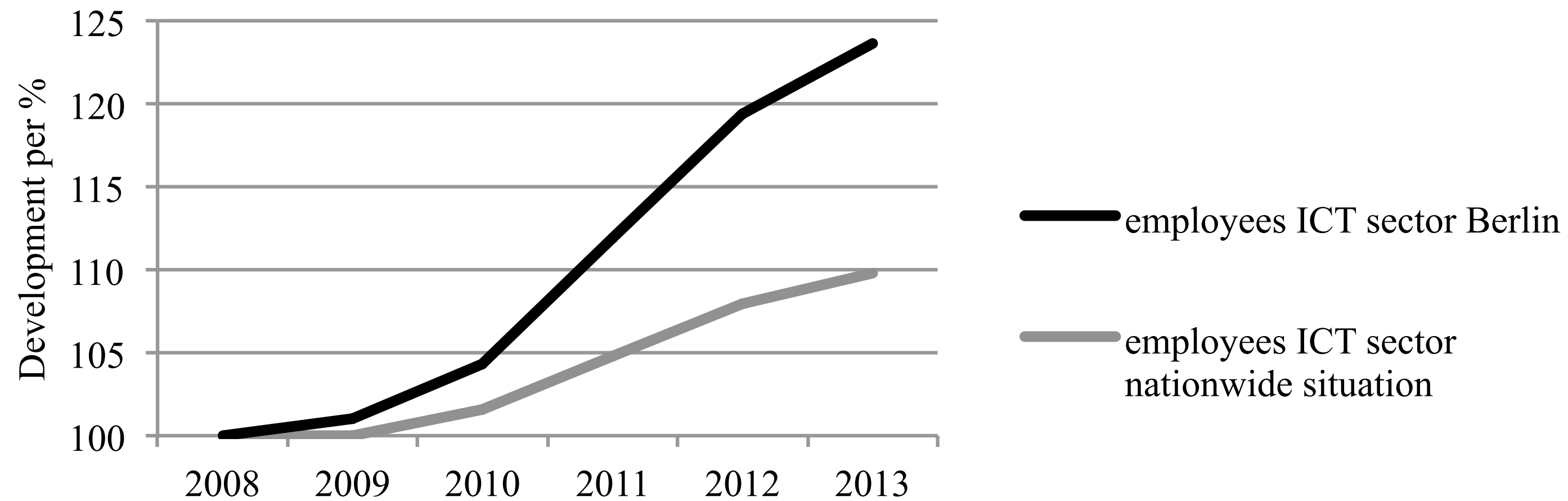
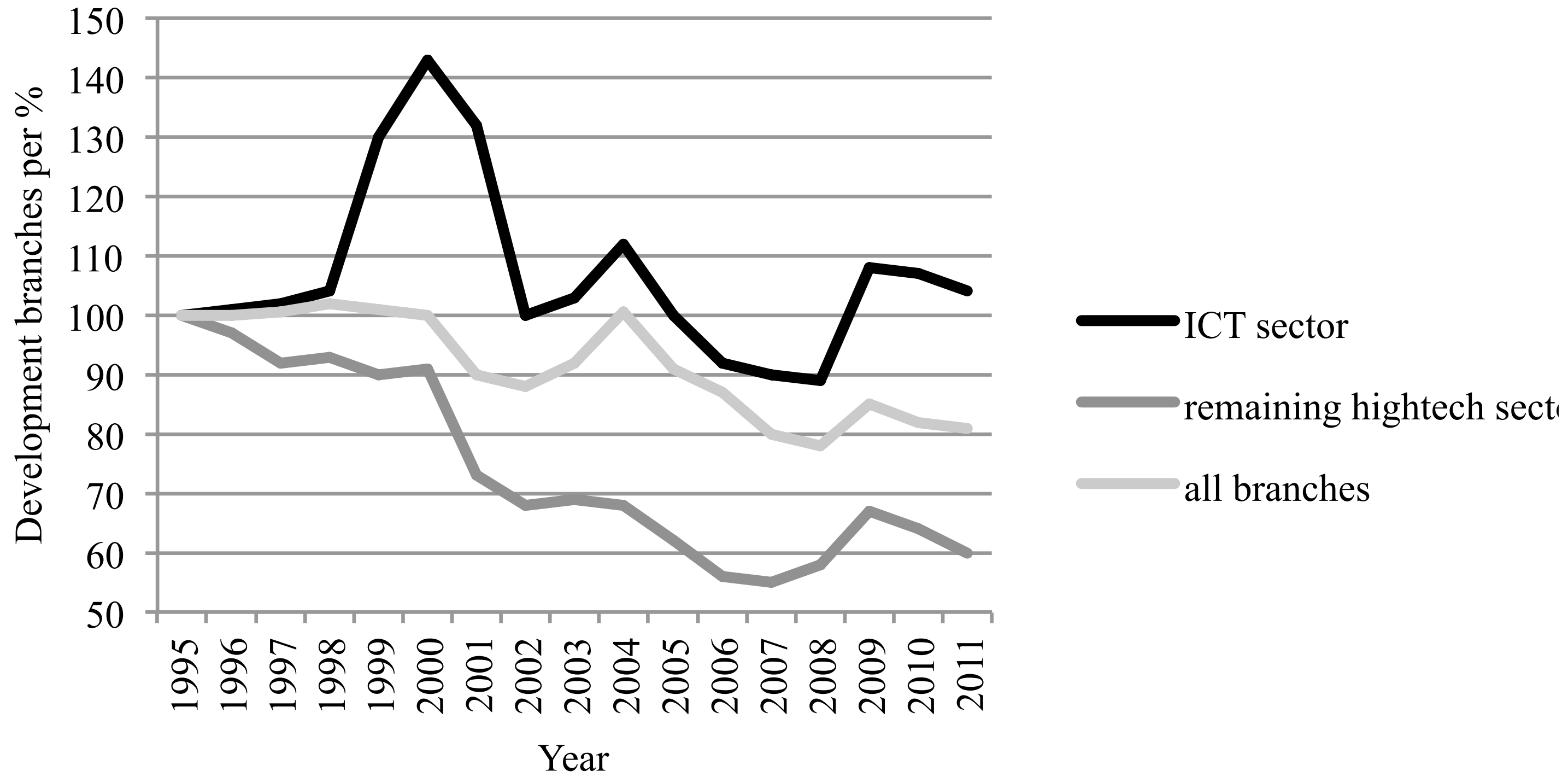


- Landwirtschaft
- Produktion
- Klassische Dienstleistung
- Informationsdienstleistung

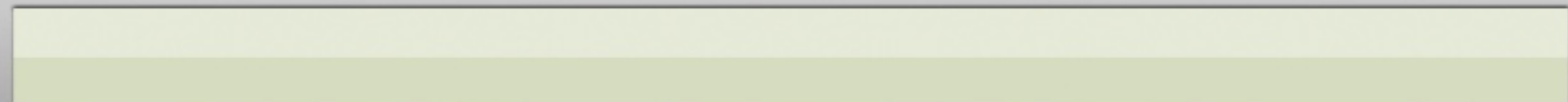
[Gries, W.: Dienstleistungen für das 21. Jh – Chancen nutzen, Risiken bewältigen. In: Bullinger, H-J. (Hrsg.): Dienstleistungen der Zukunft – Märkte, Unternehmen und Infrastrukturen im Wandel, S. 3-23, Gabler 1995]  
Ergänzt durch akkumulierte Daten des statistischen Bundesamtes vom September 2000 und September 2015



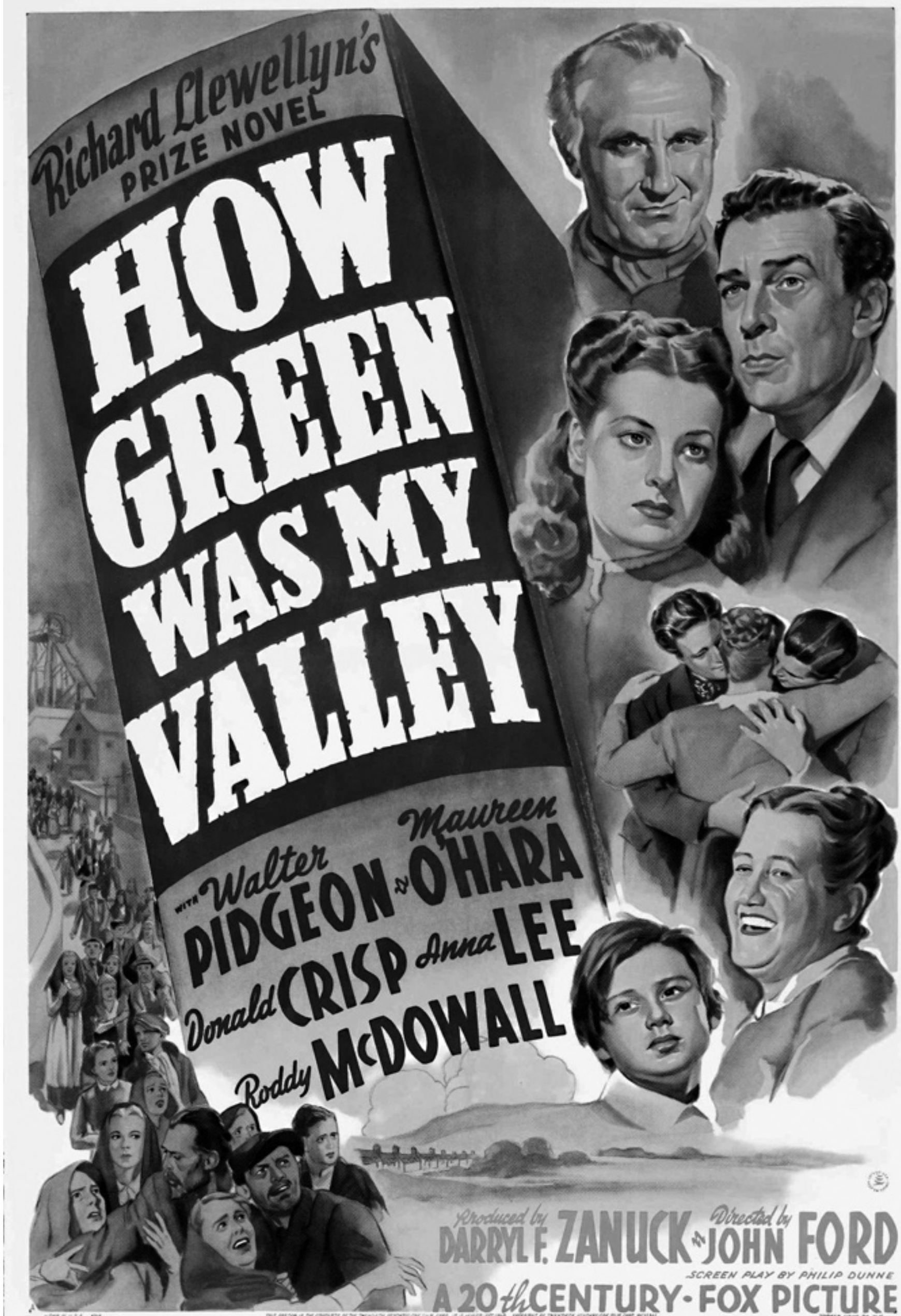
# Structure Change in Berlin area vs. Germany nationwide



*[Thomas Probian, Julia von Mandel, Michael Wiegmann ICT Sector Berlin - Paradise for Company Formations and Job Creation Machine at once. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]*







*[Florian Brody: How Green is the Valley? ICT Markets Are Going Green: The Other Story from Silicon Valley. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]*



21/11  
2017

ICT & Sustainability

Michael A. Herzog

ICT as an Instrument for more Sustainability?

82





[Michael Rost 2015  
Folien Ringvorlesung:  
Mit Wachstum in die  
Katastrophe, S. 98]

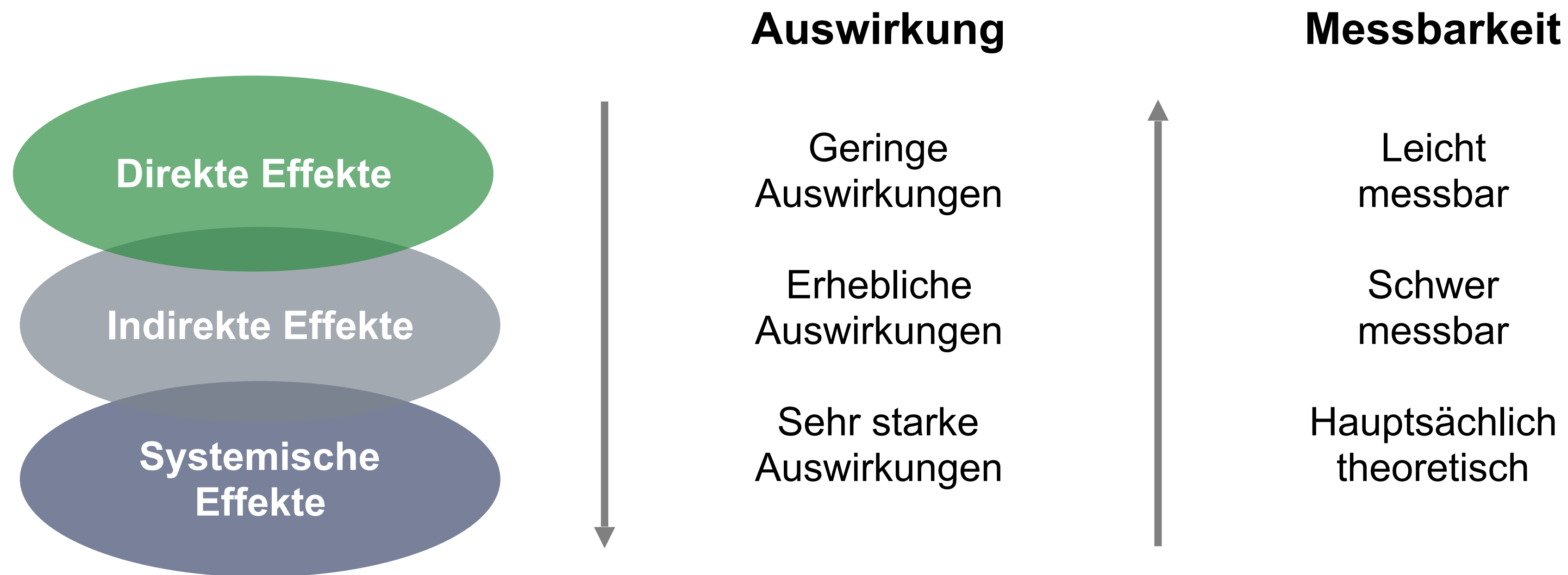


**Welche Nachhaltigkeitseffekte können mit der Informations- und Kommunikationstechnik erzeugt werden?**

**<http://pingo.upb.de/8225>**



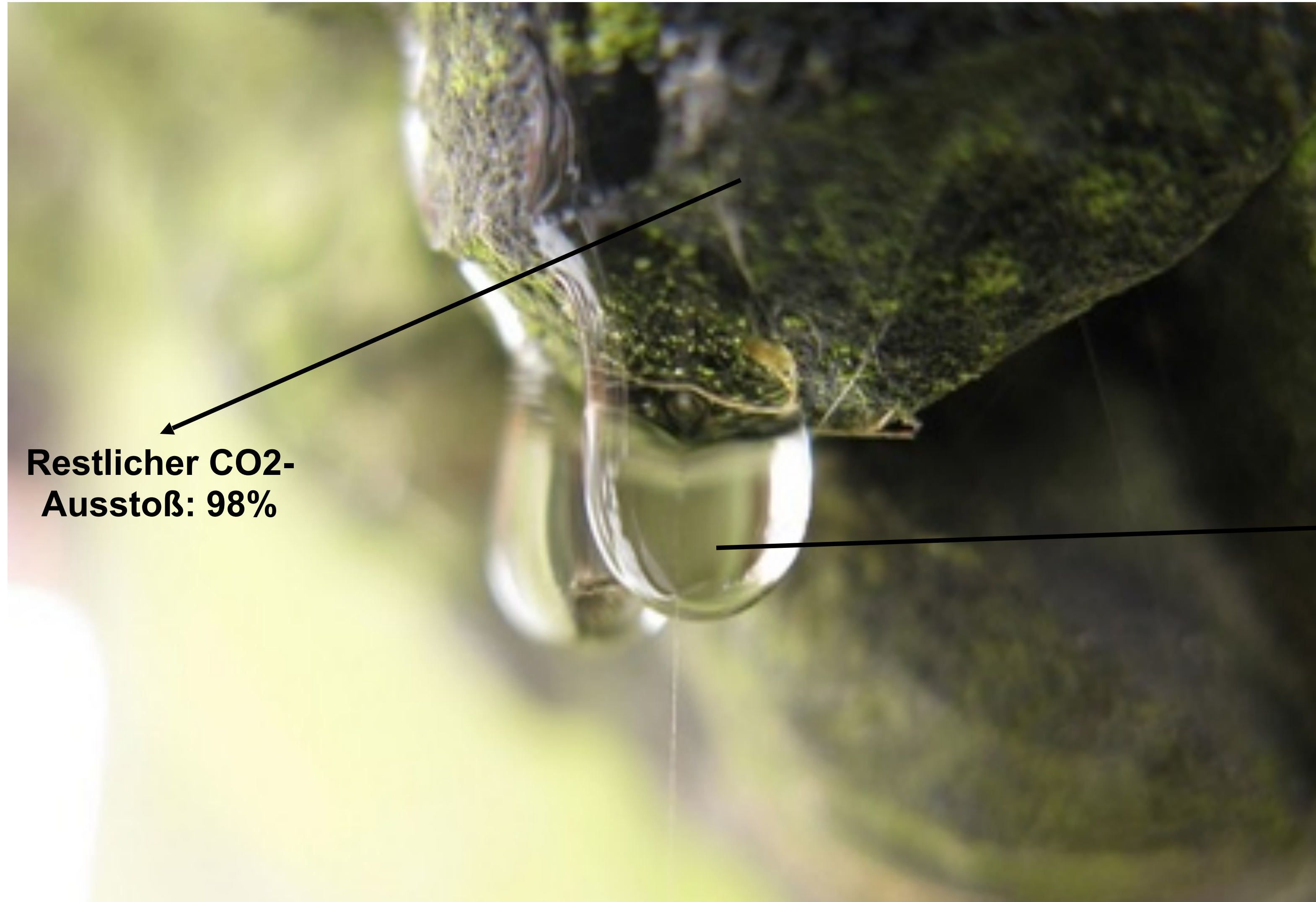
# Effekte von Informations- und Kommunikationstechnologien können anhand ihrer Auswirkungen und Messbarkeit strukturiert werden



*[Arnold Picot, Stefan Hopf: ICT as an Instrument for More Sustainability: Why It Is Not That Simple. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]; Etno/WWF (2007)*

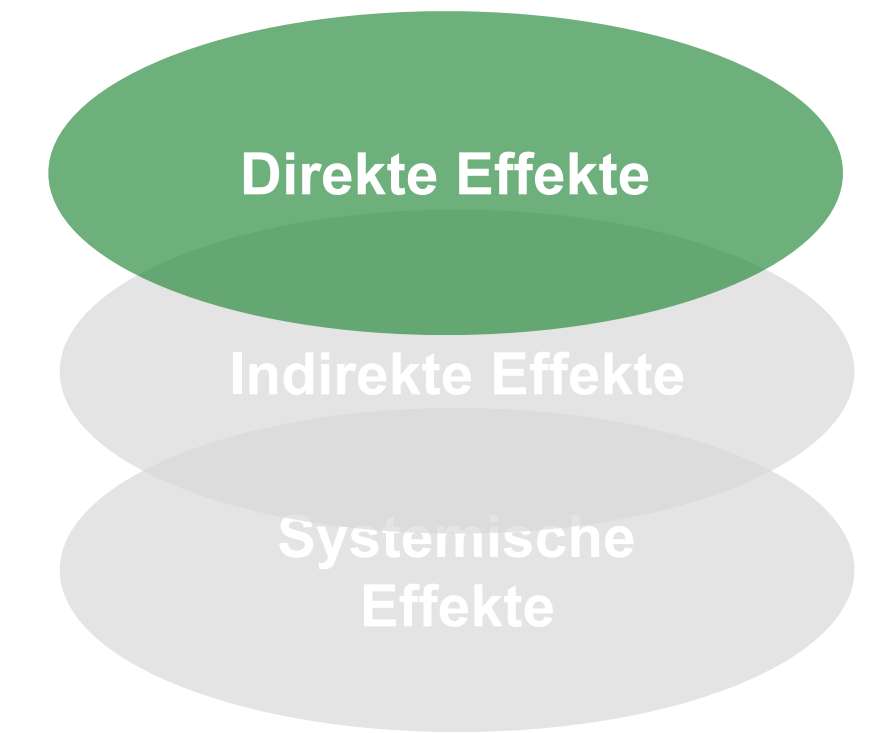


# Der Anteil von Informations- und Kommunikationstechnologien am gesamten CO<sub>2</sub>-Ausstoß beträgt ca. 2%



**Restlicher CO<sub>2</sub>-Ausstoß: 98%**

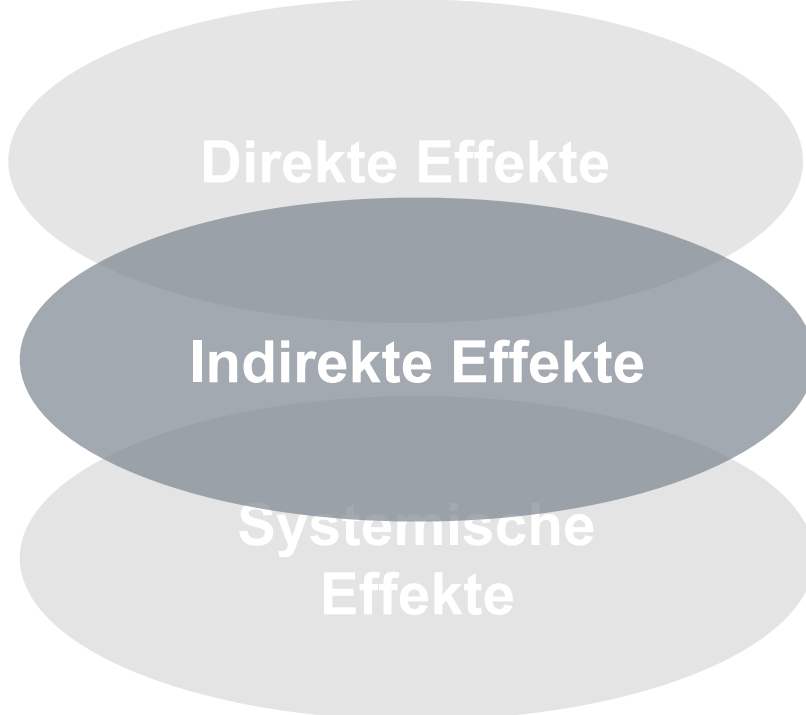
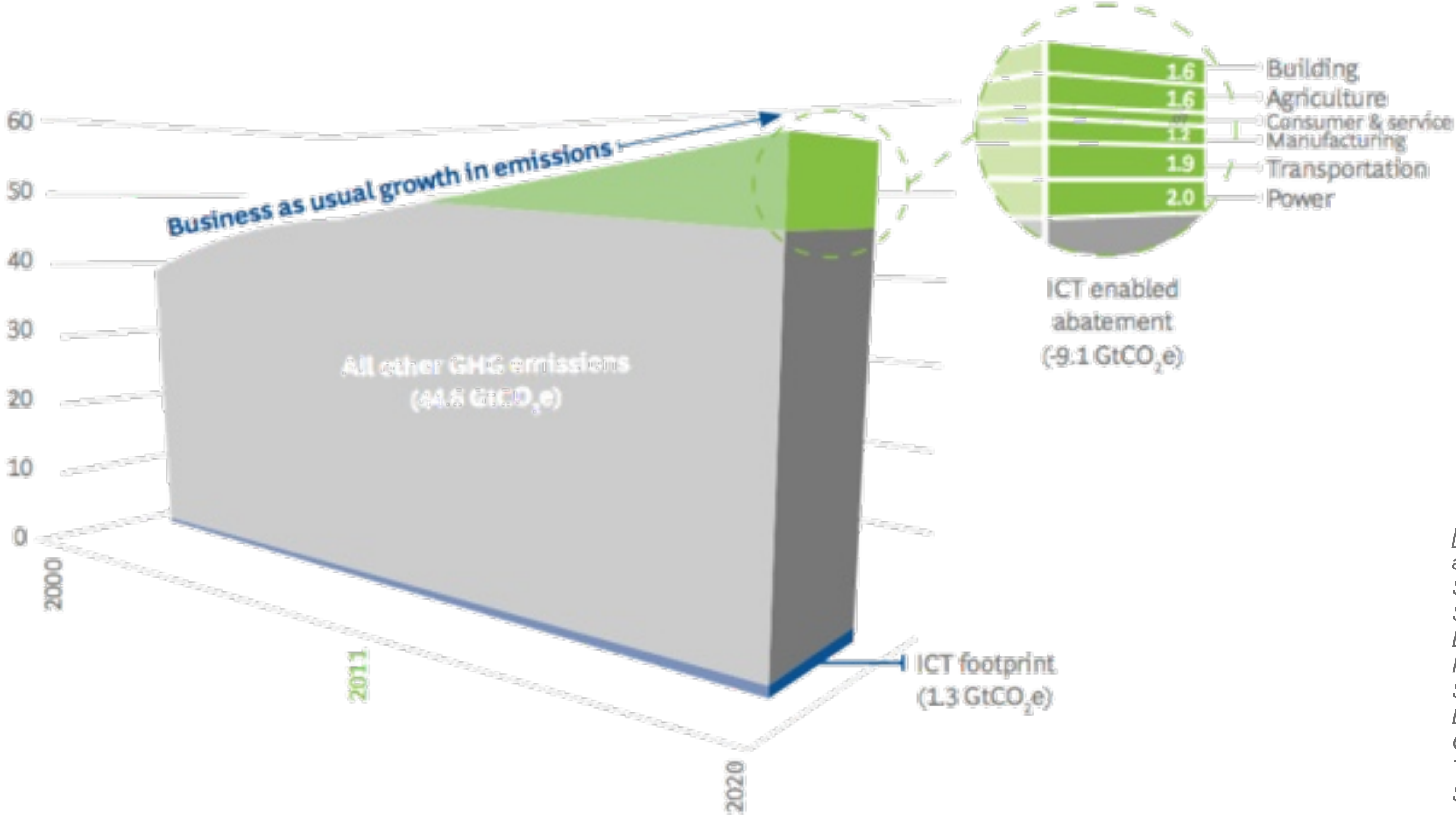
**CO<sub>2</sub>-Ausstoß IKT: 2%**



*[Arnold Picot, Stefan Hopf: ICT as an Instrument for More Sustainability: Why It Is Not That Simple. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]; GeSI (2012)*



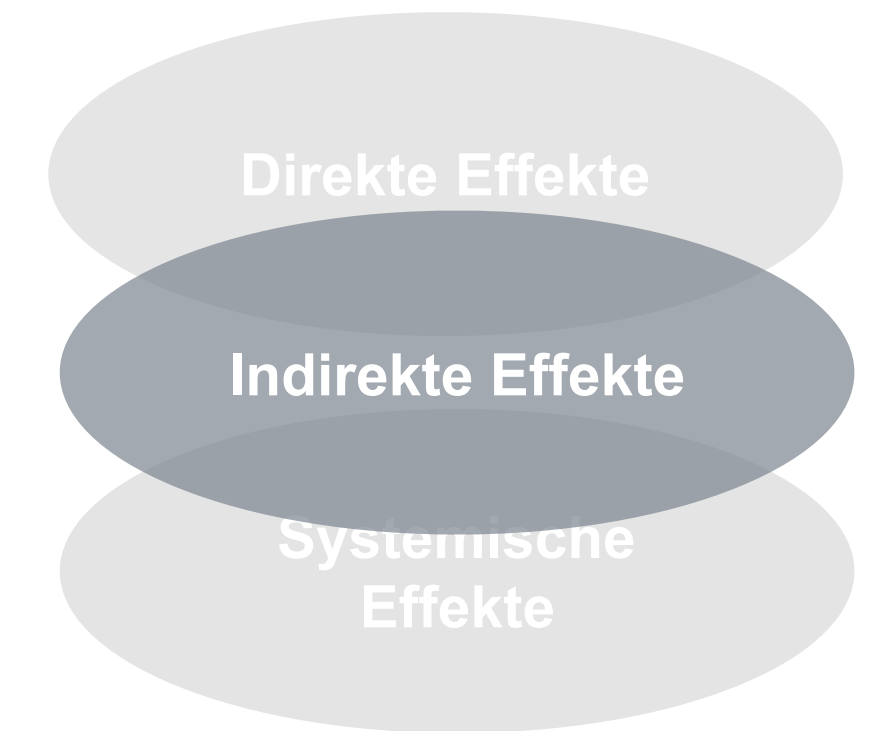
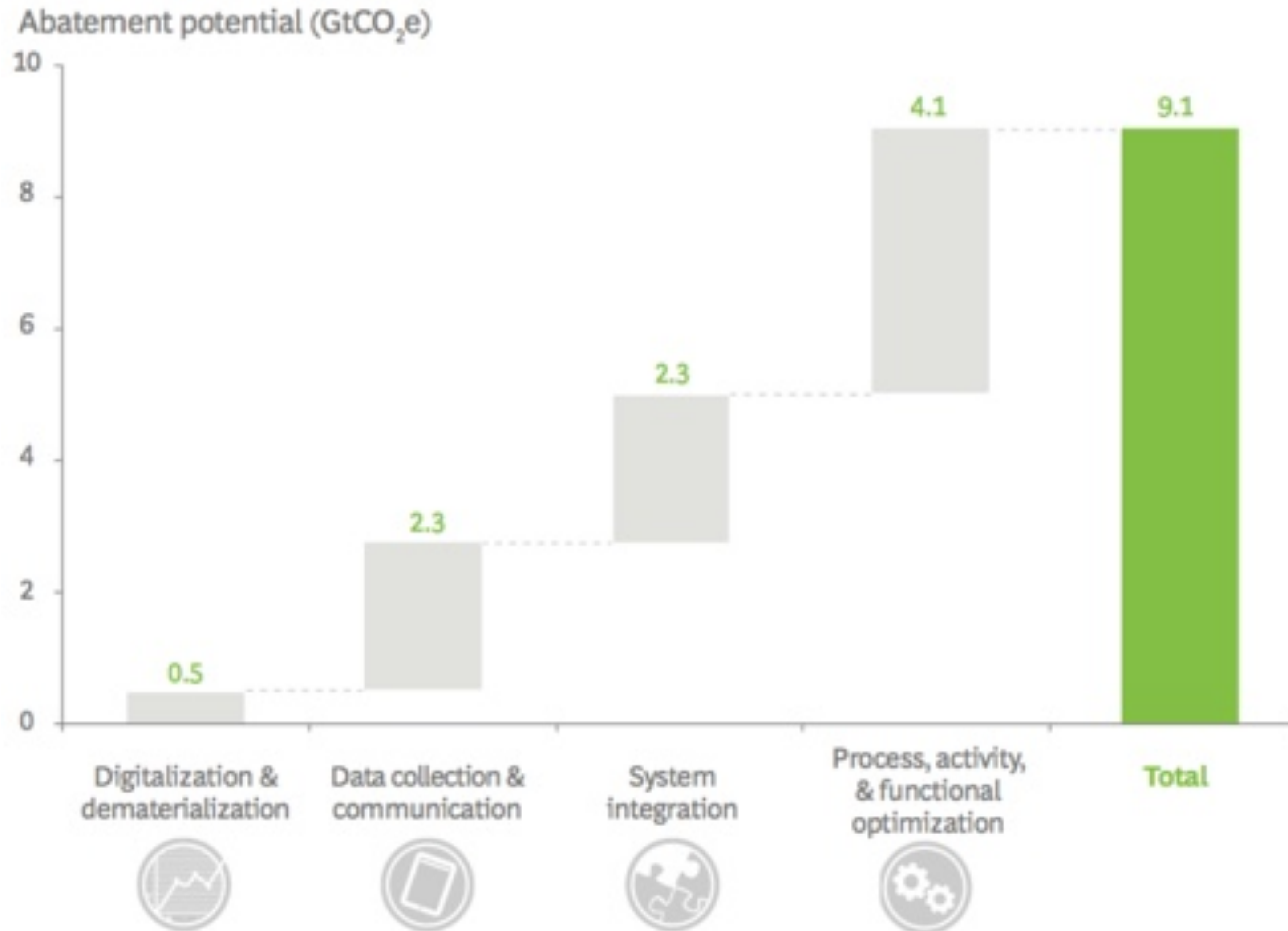
# Experten erwarten durch IKT insgesamt ein erhebliches CO<sub>2</sub>-Einsparungspotential von ca. 16,5% (9,1 GtCO<sub>2</sub>) in anderen Sektoren



[Arnold Picot, Stefan Hopf: *ICT as an Instrument for More Sustainability: Why It Is Not That Simple*. In Herzog, M.A.: *Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces*, GITO 2015]; *GeSI SMARTer2020: The Role of ICT in Driving a Sustainable Future*, 2012, online



Der CO<sub>2</sub>-Austoß von IKT kann hauptsächlich durch Virtualisierung wie z. B. Cloud Computing, aber auch durch Effizienzzuwächse verringert werden

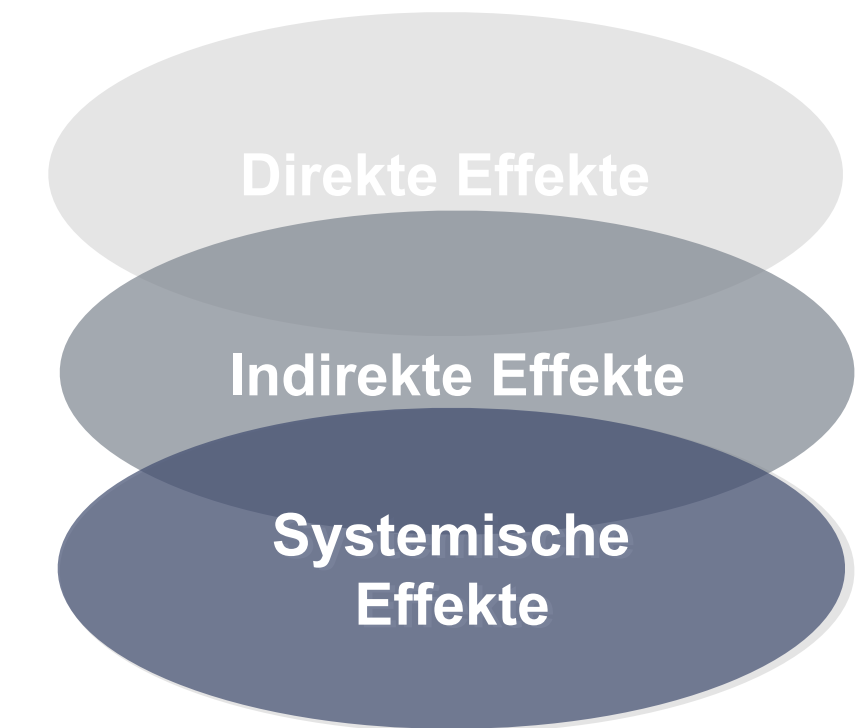


[Arnold Picot, Stefan Hopf: *ICT as an Instrument for More Sustainability: Why It Is Not That Simple*. In Herzog, M.A.: *Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces*, GITO 2015]; GeSI SMARTer2020: *The Role of ICT in Driving a Sustainable Future*, 2012, online



# IKT als Instrument für mehr Nachhaltigkeit: Warum das nicht so einfach ist

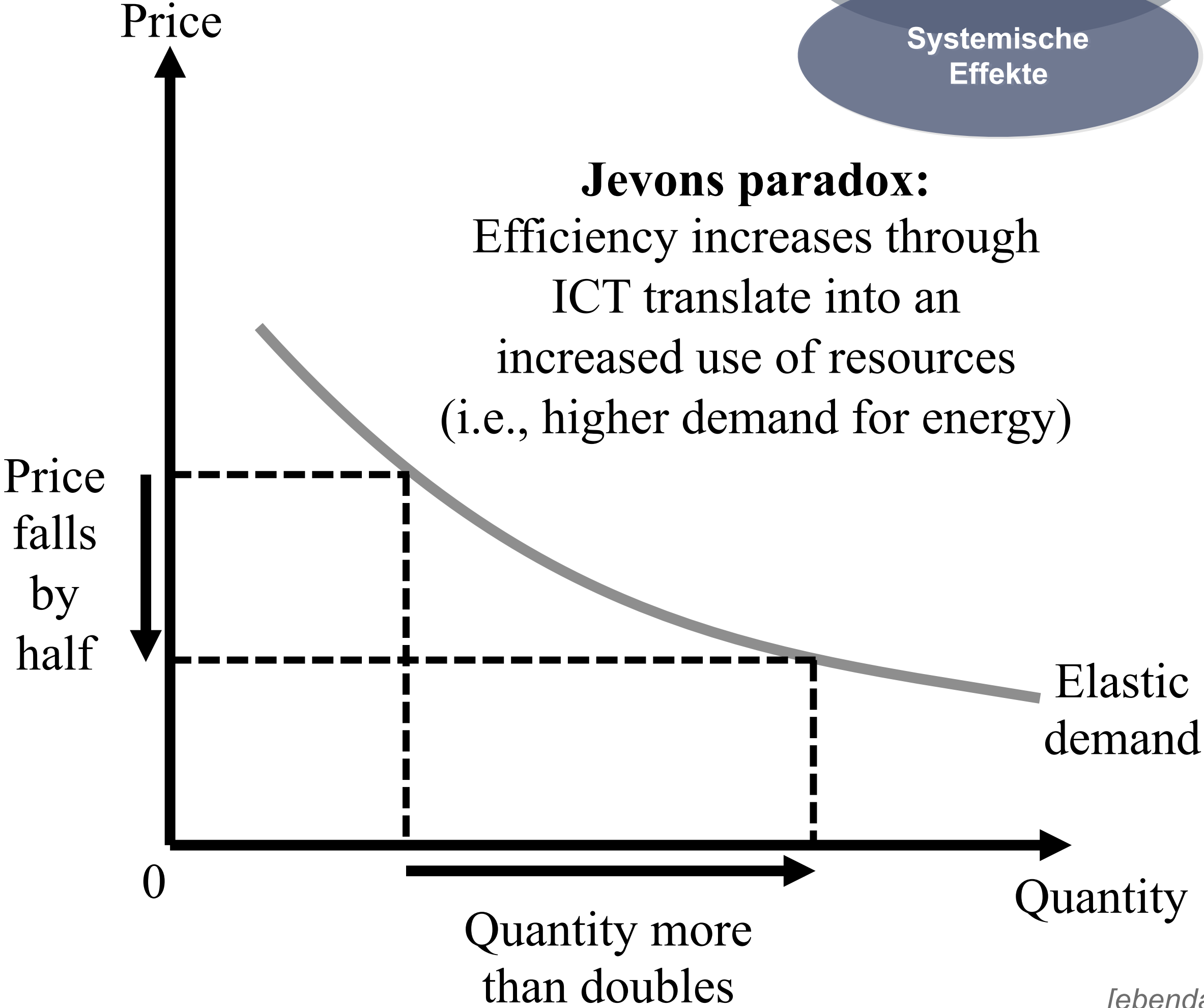
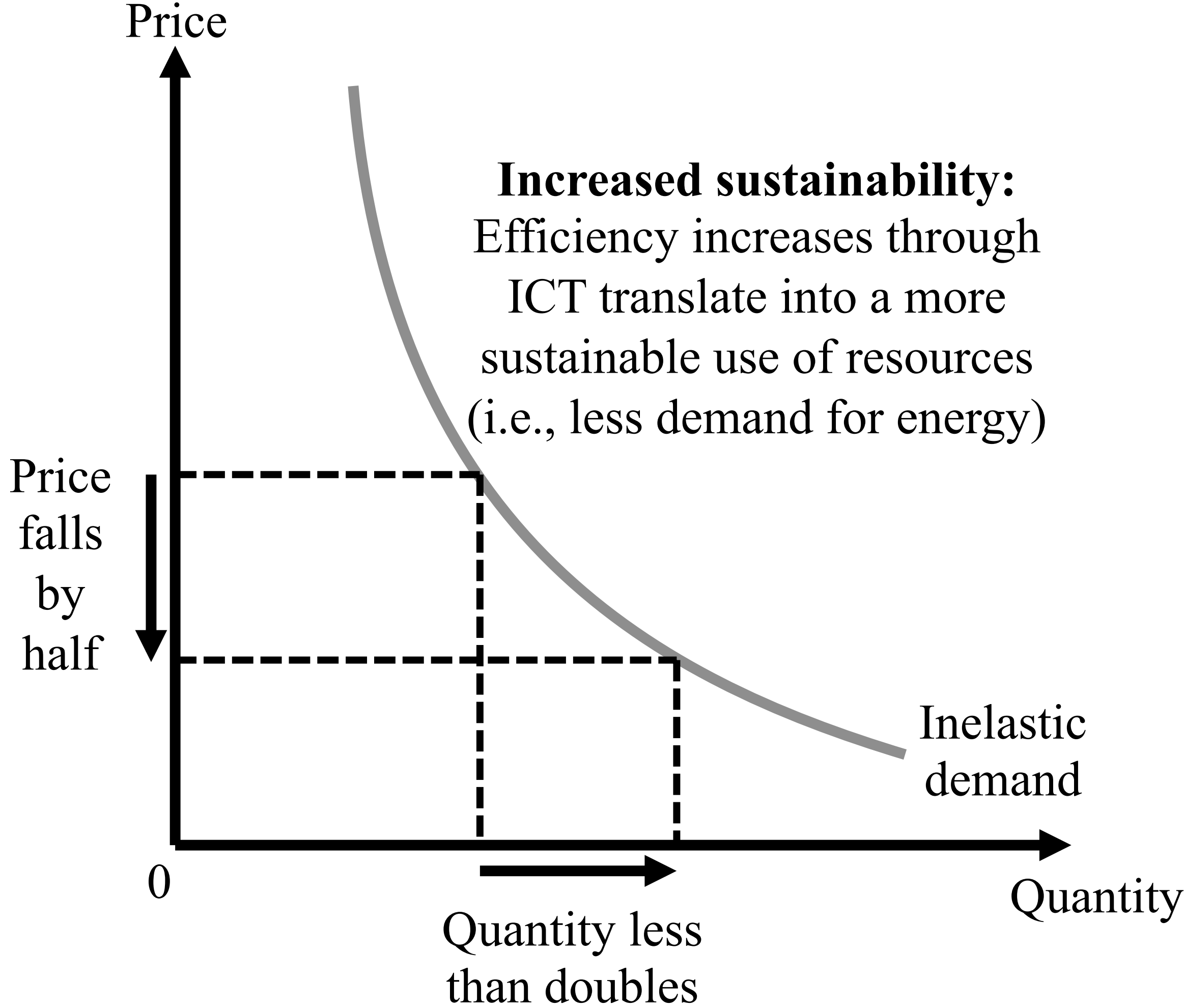
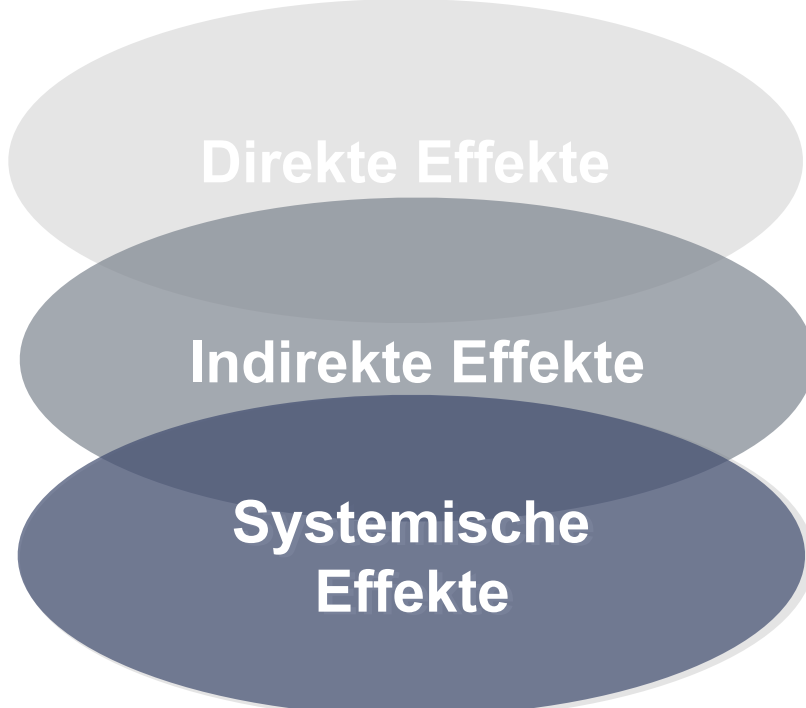
- ▶ Indirekte und systemische Effekte erschweren die Bestimmung des Nettoeffekts von Informations- und Kommunikationstechnologien
  - Indirekte Effekte: Erfüllung existierender Bedürfnisse durch IKT-Fortschritt
  - Systemische Effekte: Entstehung neuer Gewohnheiten, sozialer Strukturen und Konsumverhalten durch IKT-Fortschritt
- ▶ Jevons' Paradoxon: Technologischer Fortschritt, der eine effizientere Ressourcenverwendung ermöglicht, kann letztlich zu einer erhöhten Nutzung (statt Reduktion) dieser Ressourcen führen (Rebound-Effekt)
- ▶ Eine ganzheitliche Betrachtung von Nachhaltigkeit umfasst neben umweltpolitischen Zielen auch soziale und ökonomische Aspekte



*[Arnold Picot, Stefan Hopf:  
ICT as an Instrument for More  
Sustainability: Why It Is Not That  
Simple.  
In Herzog, M.A.:  
Economics of Communication.  
ICT Driven Fairness and  
Sustainability for Global and  
Local Marketplaces, GITO 2015];*



# Direct rebound effect and sustainability



[ebenda]



# Beispiel Energie

## Chancen

- Integration dezentraler fluktuierender erneuerbarer Energiequellen
- Fernwartung und Management der Netze durch Sensor- und Controllernetzwerke
- Entstehung virtueller Kraftwerke
- Flexibles Lastmanagement

## Herausforderungen

- Zunehmende IKT-Durchdringung des alltäglichen Lebens (z. B. durch Softwaresysteme, Kommunikation, Data Center, Vernetzung, Sensoren) erzeugt neuen Energiebedarf
- Steigender Energiebedarf kann (noch) nicht ausschließlich durch erneuerbare Energien gedeckt werden

**IKT verbessert u.a. die Energie-Erzeugung, -Übertragung und -Verteilung, aber verändert auch das Nutzungsverhalten und die Energienachfrage der Verbraucher**

*[Arnold Picot, Stefan Hopf: ICT as an Instrument for More Sustainability: Why It Is Not That Simple. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]*



# Beispiel Transport

## Chancen

- Heim- und standortunabhängige Arbeit durch Videokonferenzlösungen und Telecommuting
- Optimierung von Logistiknetzwerken
- Intelligentes Verkehrsmanagement
- Echtzeit Routenführung
- Car-Sharing und intermodale Transport-Angebote

## Herausforderungen

- Weltweite Vernetzung (privat und geschäftlich) führt zu steigendem Reise- und Transportbedarf
- Information organisiert und fördert Transport
- Stark wachsende Weltbevölkerung und steigende Lebensstandards in Entwicklungsländern erhöhen Netto-Mobilitätsnachfrage

**IKT ermöglicht Effizienzvorteile und substituiert teilweise physischen Transport, fördert aber durch weltweite leistungsfähige Vernetzung neue Mobilitäts- und Transportnachfrage**

*[Arnold Picot, Stefan Hopf: ICT as an Instrument for More Sustainability: Why It Is Not That Simple. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]*



# Beispiel Urbanisierung

## Chancen

- 50% der Weltbevölkerung lebt in Städten – Tendenz steigend (bis 2030 knapp 5 Milliarden Menschen)
- Volkswirtschaftliches Potenzial – Städte leisten einen überproportional hohen BIP-Beitrag
- Hohes IKT-Unterstützungspotential v.a. im den Bereichen: Energie, Wasser, Transport & Logistik und Sicherheit

## Herausforderungen

- Überproportional hoher Energie- und (66%) Trinkwasserverbrauch (60%), sowie CO<sub>2</sub>-Ausstoß (70%) in Städten
- Erneuerung und Modernisierung existierender Infrastrukturen
- Schaffung intelligenter Netze zur effizienten Steuerung und Koordination städtischer Infrastrukturen

**Ökologische Ineffizienzen durch zielgerichtete IKT-Unterstützung („Smart Cities“) abbauen und die Attraktivität der Städte durch Attraktivität des Landes („Smart Country“) kompensieren.**

*[Arnold Picot, Stefan Hopf: ICT as an Instrument for More Sustainability: Why It Is Not That Simple. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]*



# Beispiel Medien

## Chancen

- Intelligente Technologien ermöglichen eine selbstbestimmte und personalisierte Mediennutzung
- IKT-Unterstützung fördert Transparenz, Echtzeitberichterstattung und interaktiven Informationsaustausch
- Digitale Medien lösen zunehmend Druckprodukte ab

## Herausforderungen

- Veränderter Medienkonsum und neue Distributionskanäle stellen etablierte Finanzierungsmodelle auf den Prüfstand
- Digitaler Zugriff und zunehmende Finanzierungsprobleme können zu einer Verarmung des Angebots hoher qualitätsvoller Medien führen (z.B. Qualitätsjournalismus in Gefahr)

**Individuelle und flexible Mediennutzung mit breitem Angebot, aber Gefahr der Verschlechterung von inhaltlicher Qualität und Finanzierungsprobleme  
(→ erhöhter Bedarf von Qualitätsmedien als öffentliche Güter?)**

*[Arnold Picot, Stefan Hopf: ICT as an Instrument for More Sustainability: Why It Is Not That Simple. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]*

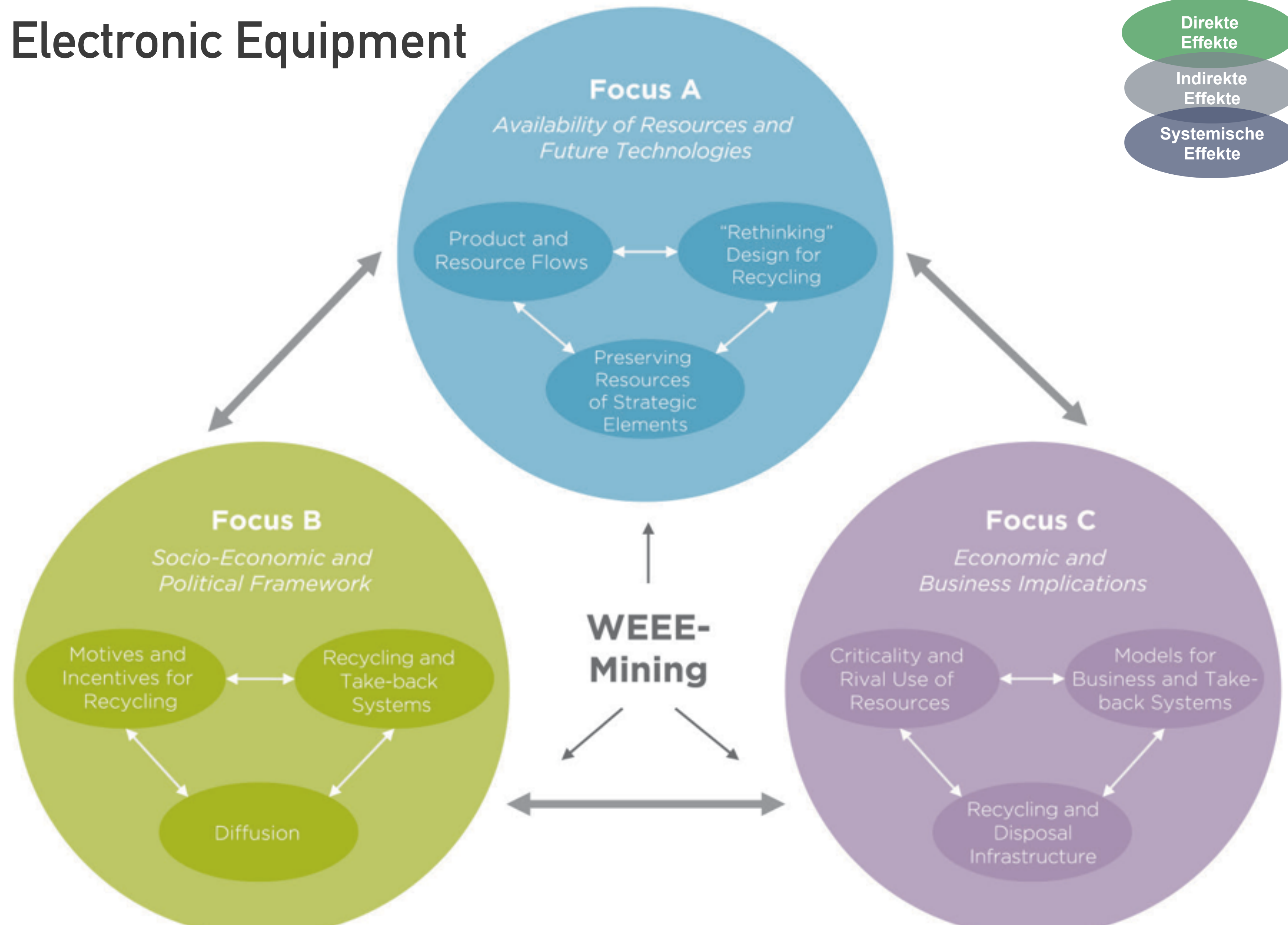






# Waste Electrical and Electronic Equipment (WEEE)

- Direkte Effekte
- Indirekte Effekte
- Systemische Effekte



[Andreas Bühn, Silke Niehoff, Britta Bookhagen and Mario Tobias: WEEE-Mining: A Research and Stakeholder Network on Material Flows in the Anthropocene  
 In: Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]



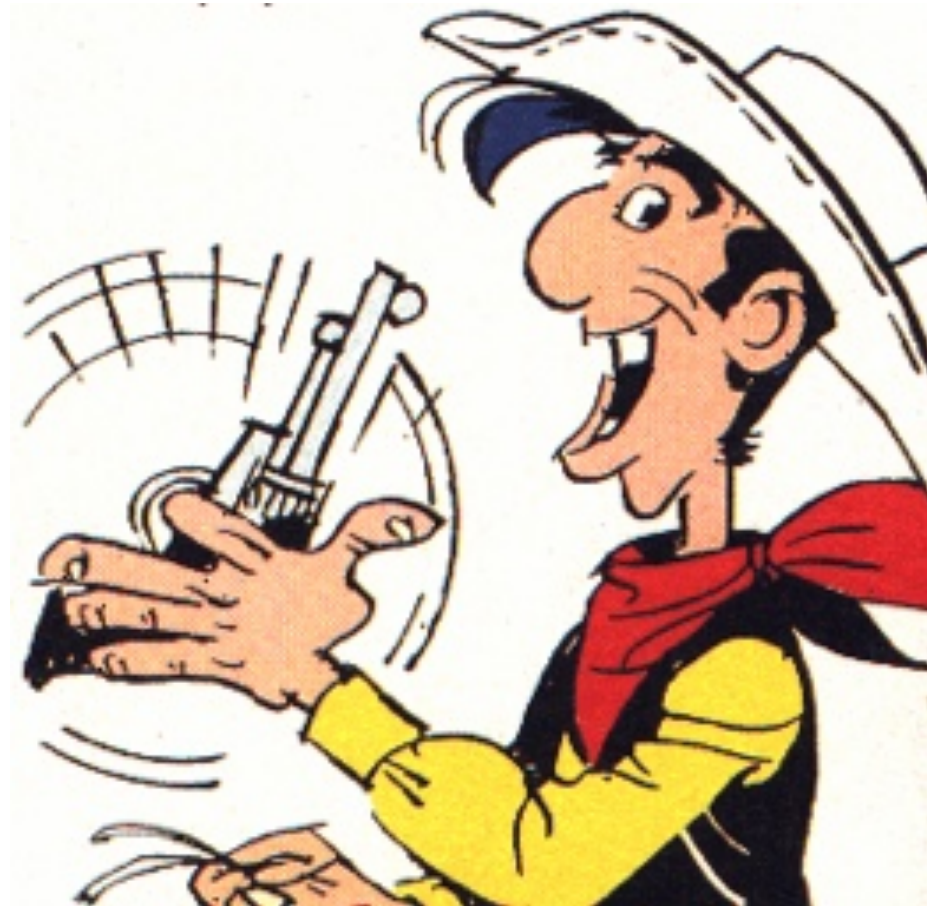
# Risikomanagement





**Risiko**

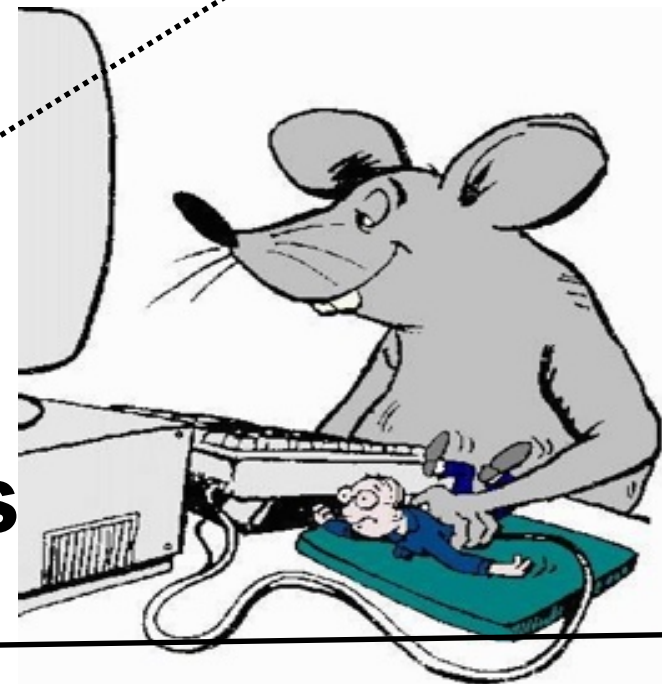
**Risikoignorant  
„Cowboy“**



**Risikobewußt  
„Kontrolliert handelnder  
Unternehmer“**



**Risikoavers  
„Maus“**

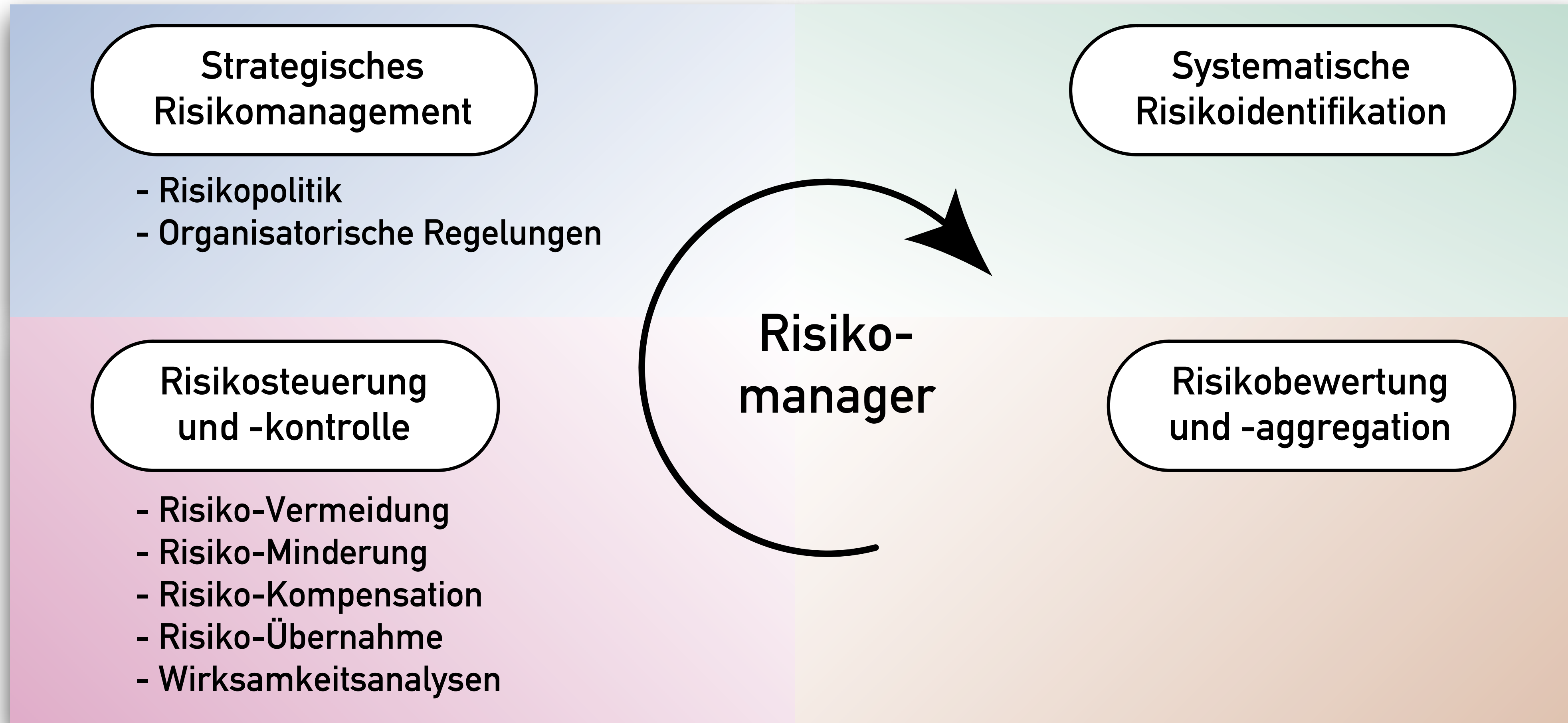


**Risikopenibel  
„Bürokrat“**



**Kontrolle**





In Anlehnung an RM-Kreislauf, M. Hoffmann: Master Risikomanagement, Präsentation 2011, Hochschule Magdeburg-Stendal



# Digital Archiving

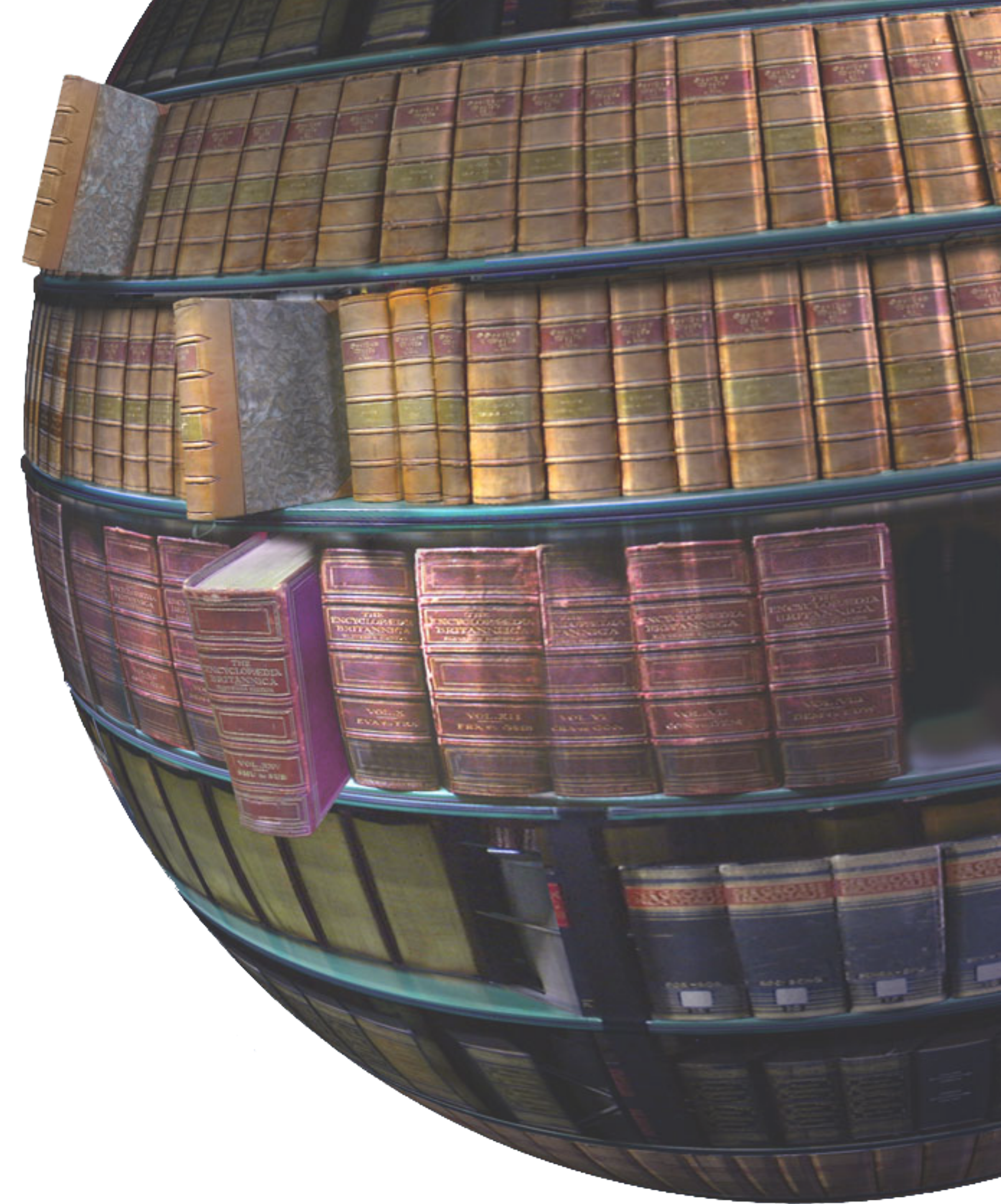
## ► Durchschnittliche Lebensdauer von Webseiten

**44 Tage**  
(Scientific American 1997)

**75 Tage**  
(IEEE Computer 2001)

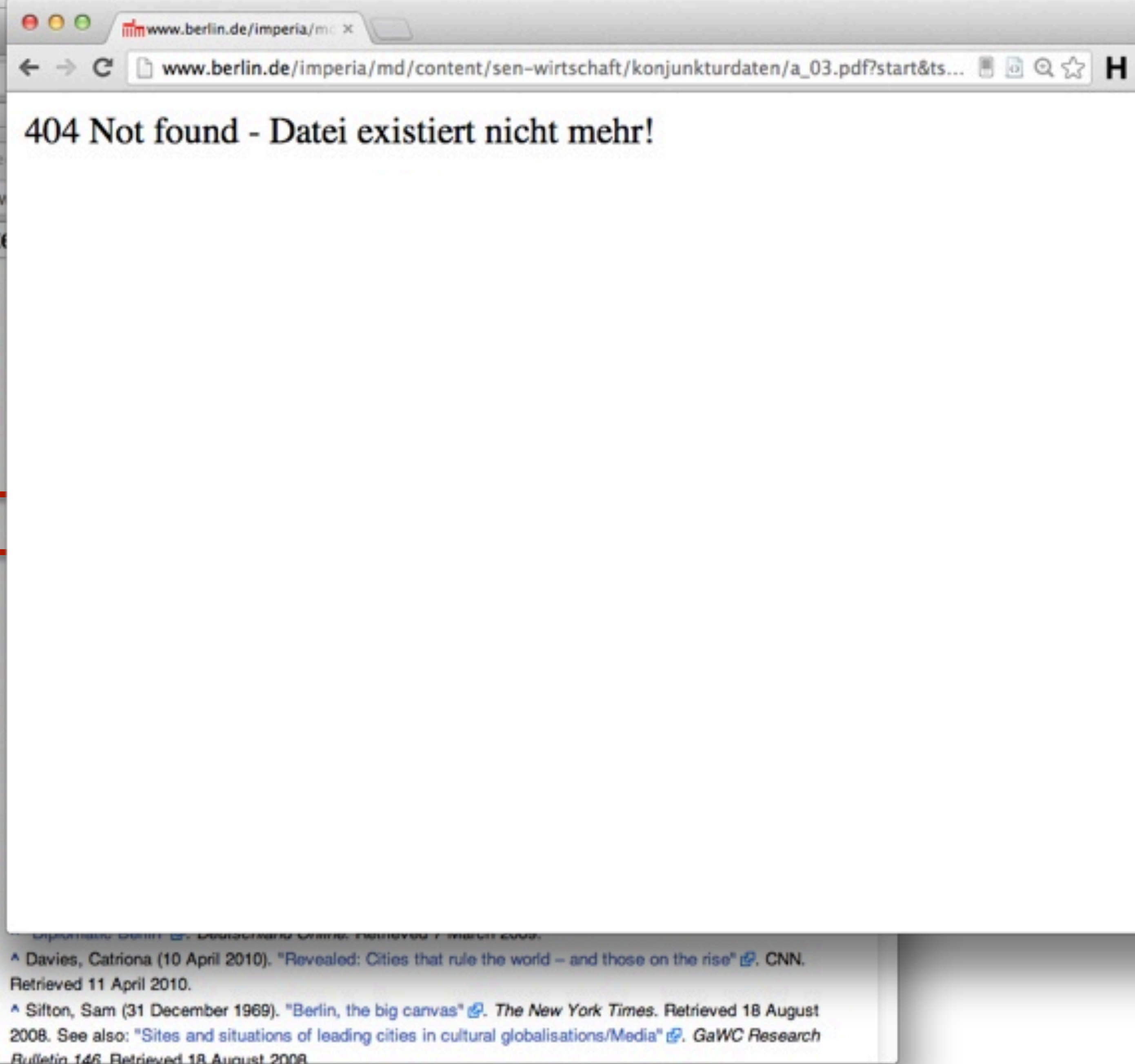
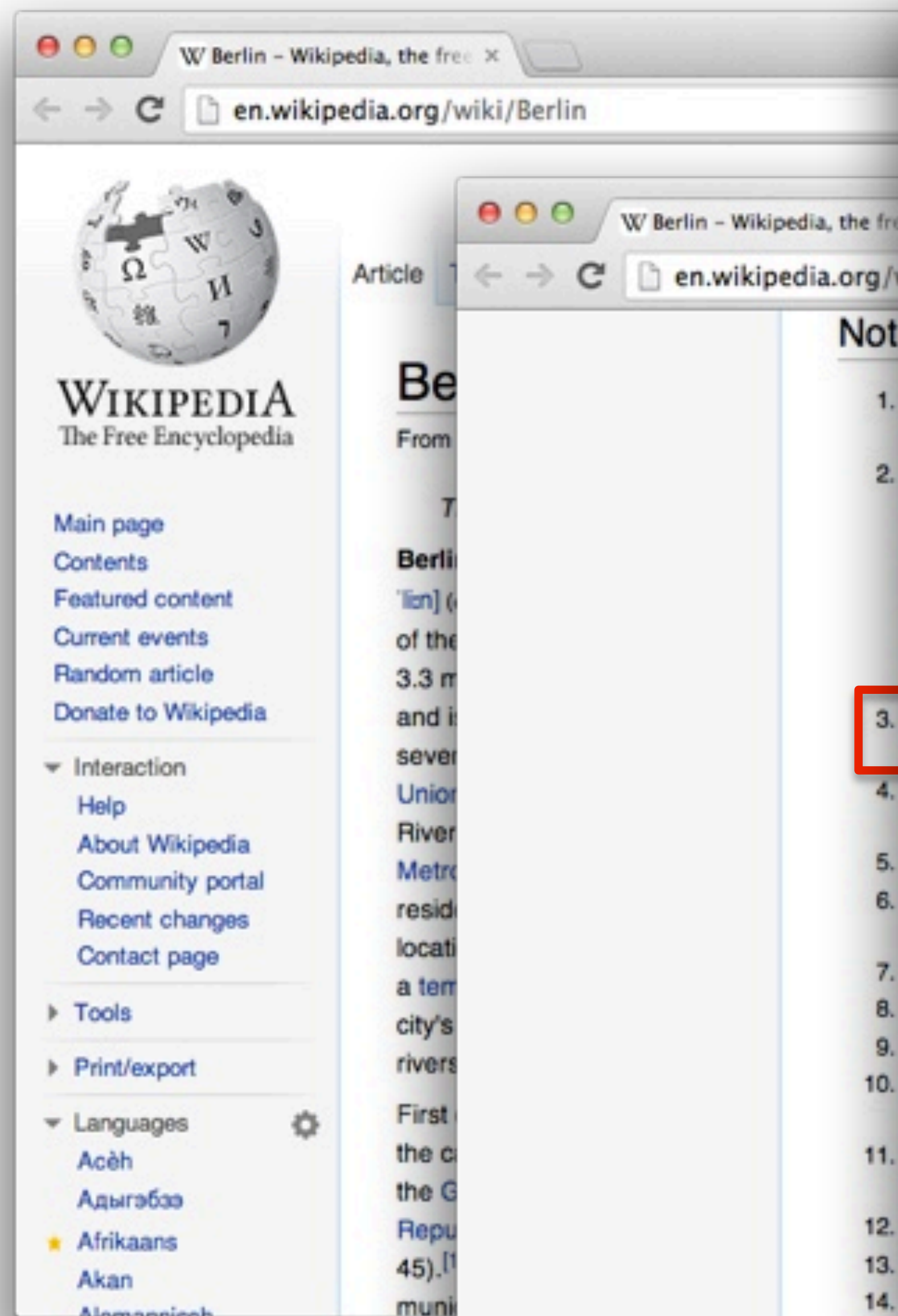
**100 Tage**  
(Washington Post 2003)

*[Martin Klein: A Closer Look at  
Web Archives and Accessibility –  
Essential Ingredients for  
Sustainable Digital Data  
Preservation EcoCom,  
08/11/2013, Berlin, Germany]*



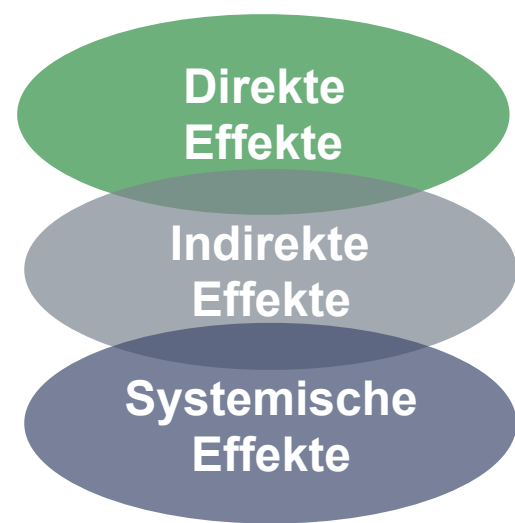


# Link Rot





# Digital Archiving – Fakten



- ▶ **Harvard Law Review**
  - 75% aller Links führen ins Nichts
- ▶ **top 1% Impact Factor Journals**
  - 10% aller Links führen ins Nichts, lediglich 15 Monate nach Publikation
- ▶ **US Supreme Court Schriften**
  - 29% aller Links resultieren in Fehler

*[Martin Klein: A Closer Look at Web Archives and Accessibility – Essential Ingredients for Sustainable Digital Data Preservation EcoCom, 08/11/2013, Berlin, Germany]*

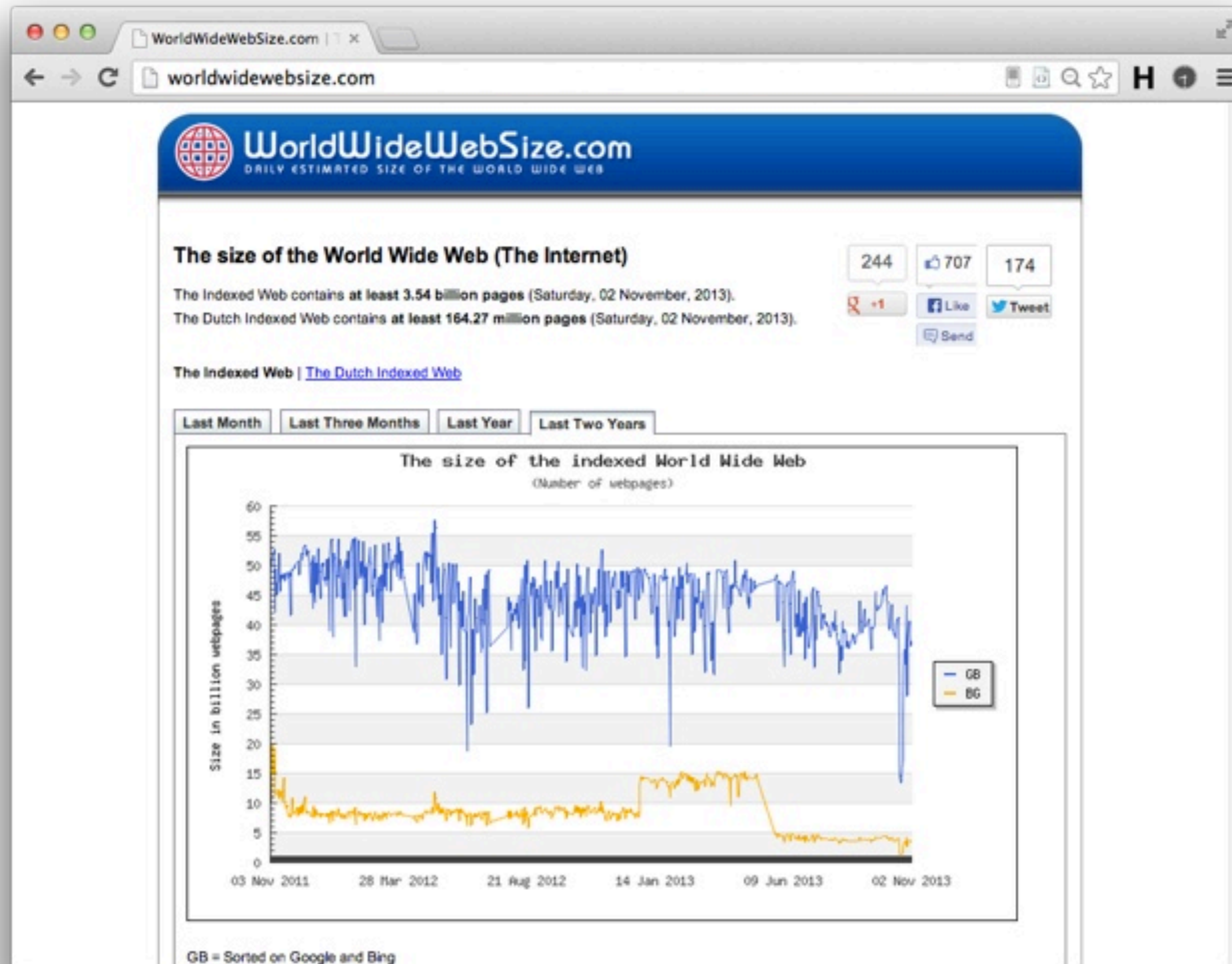


# Ist das Web archiviert?

Direkte  
Effekte

Indirekte  
Effekte

Systemische  
Effekte

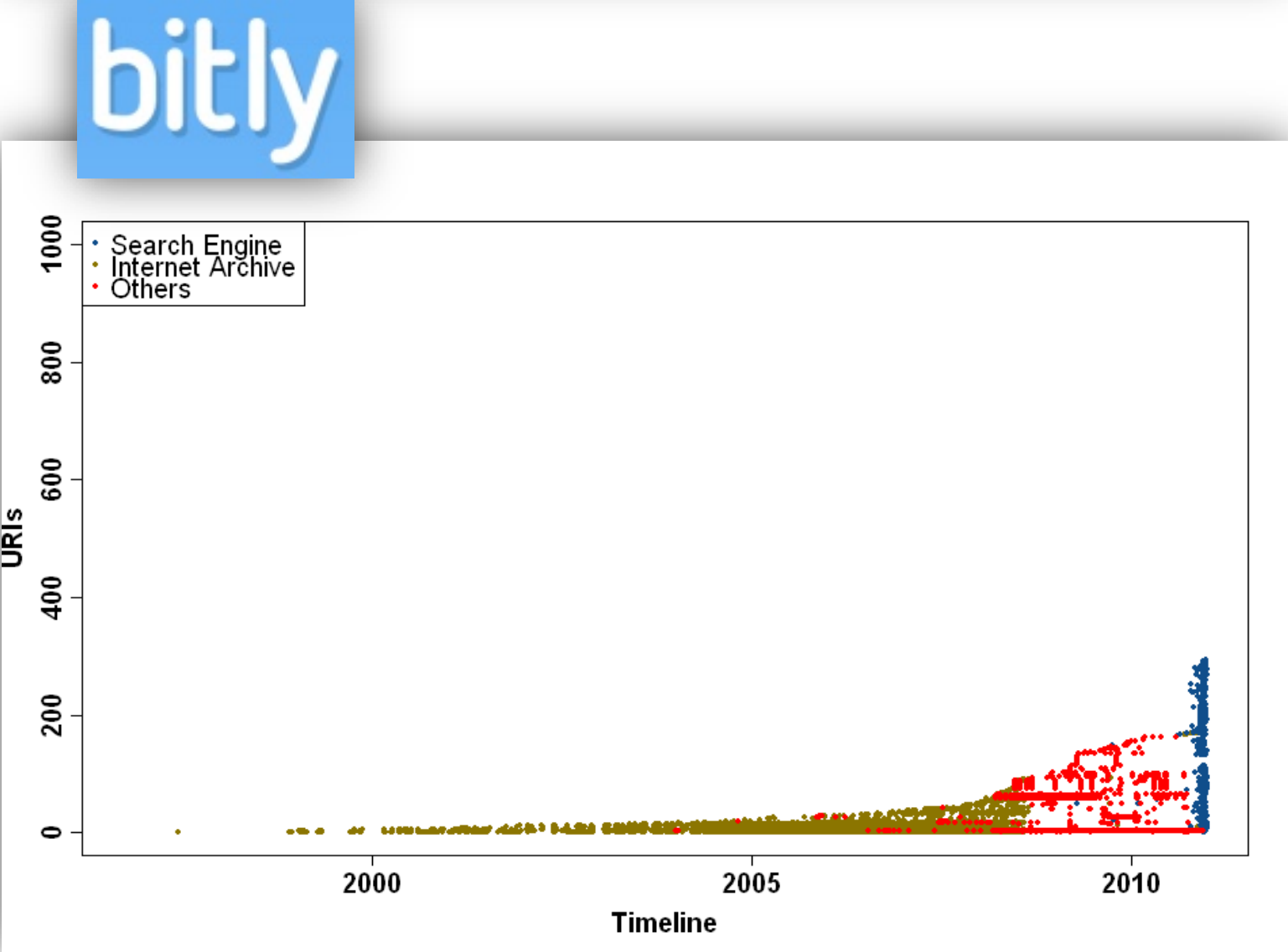
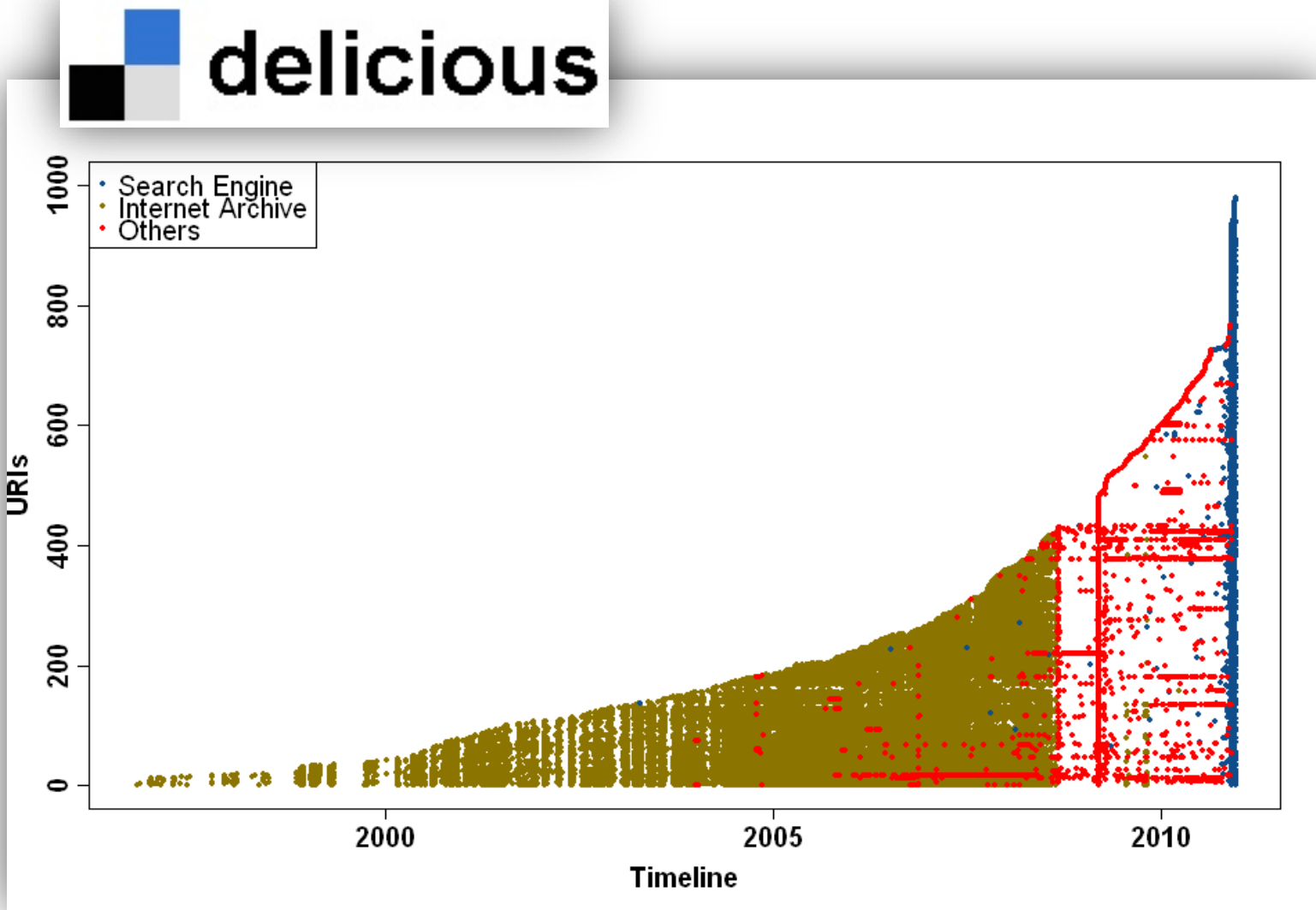
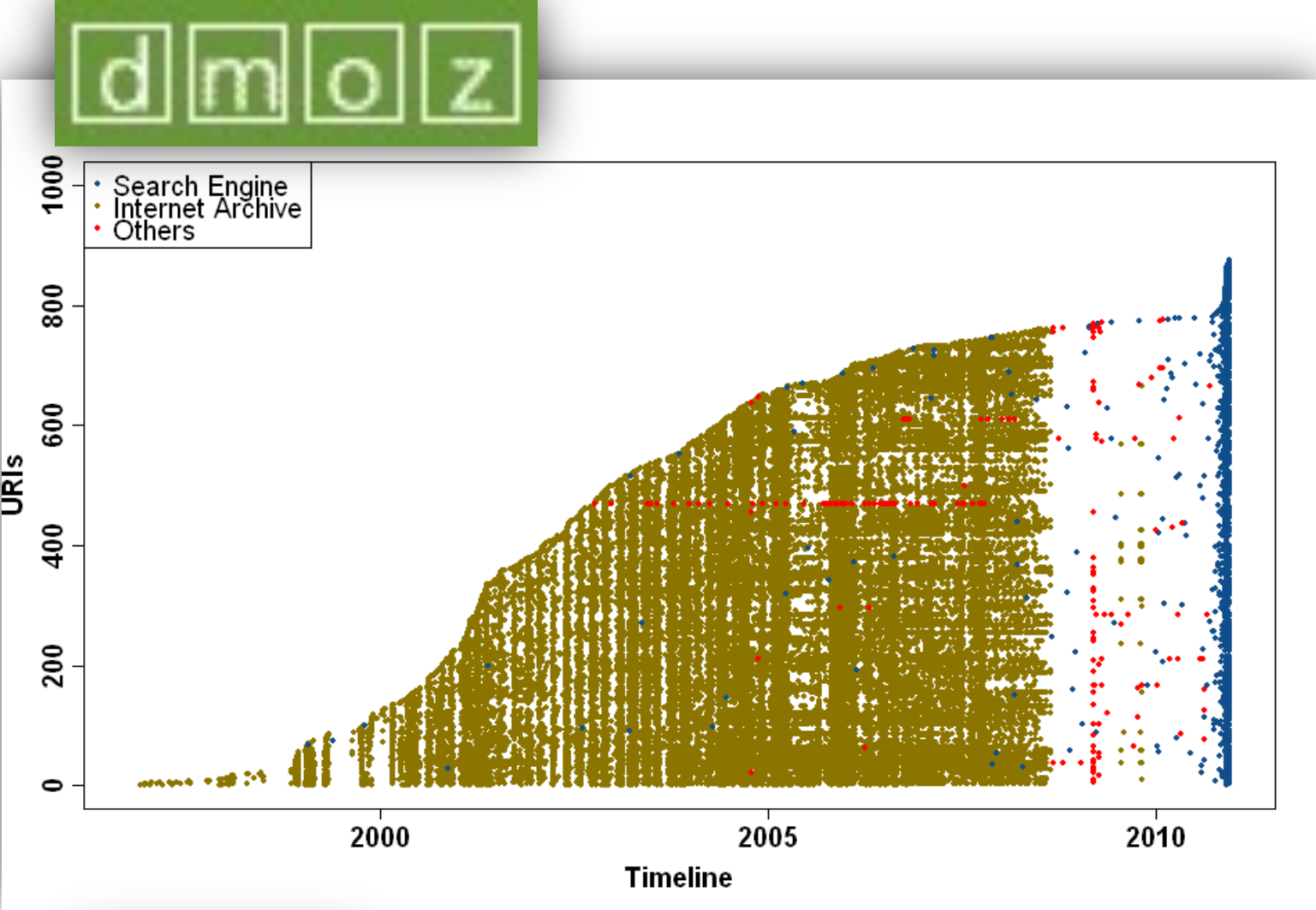


[Martin Klein: A Closer Look at Web Archives and Accessibility – Essential Ingredients for Sustainable Digital Data Preservation EcoCom, 08/11/2013, Berlin, Germany]



# Wieviel davon ist archiviert?

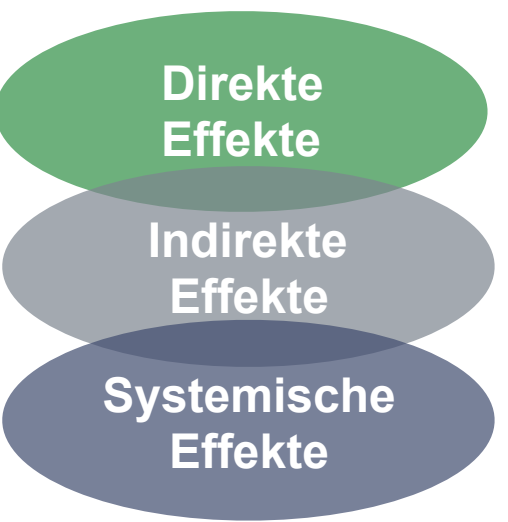
- Direkte Effekte
- Indirekte Effekte
- Systemische Effekte



“How Much of the Web Is Archived?”  
 Scott G. Ainsworth, Ahmed AlSum, Hany SalahEldeen, Michele C. Weigle, Michael L. Nelson  
 JCDL 2011  
 See also: <http://ws-dl.blogspot.com/2011/06/2011-06-23-how-much-of-web-is-archived.html>



# Wieviel davon ist archiviert?



- ▶ Welches Web (DMOZ vs Bitly)?
  - 23 ... 95%
- ▶ Youtube und Facebook zusammen = 200PB pro Jahr  
Web Archive ~ 12PB total
  - 0% ???
- ▶ NSA...
  - 100% ???

*[Martin Klein: A Closer Look at Web Archives and Accessibility – Essential Ingredients for Sustainable Digital Data Preservation EcoCom, 08/11/2013, Berlin, Germany]*



# Vertrauenswürdige Archive?

Direkte Effekte

Indirekte Effekte

Systemische Effekte

WayBack Machine

Enter Web Address:  All  Adv. Search Compare Archive Pages

Searched for <http://www.dl00.org/> 56 Results

Note some duplicates are not shown. [See all.](#)  
 \* denotes when site was updated.

Search Results for Jan 01, 1996 - May 03, 2005									
1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
0 pages	0 pages	0 pages	1 pages	12 pages	11 pages	5 pages	13 pages	11 pages	0 pages
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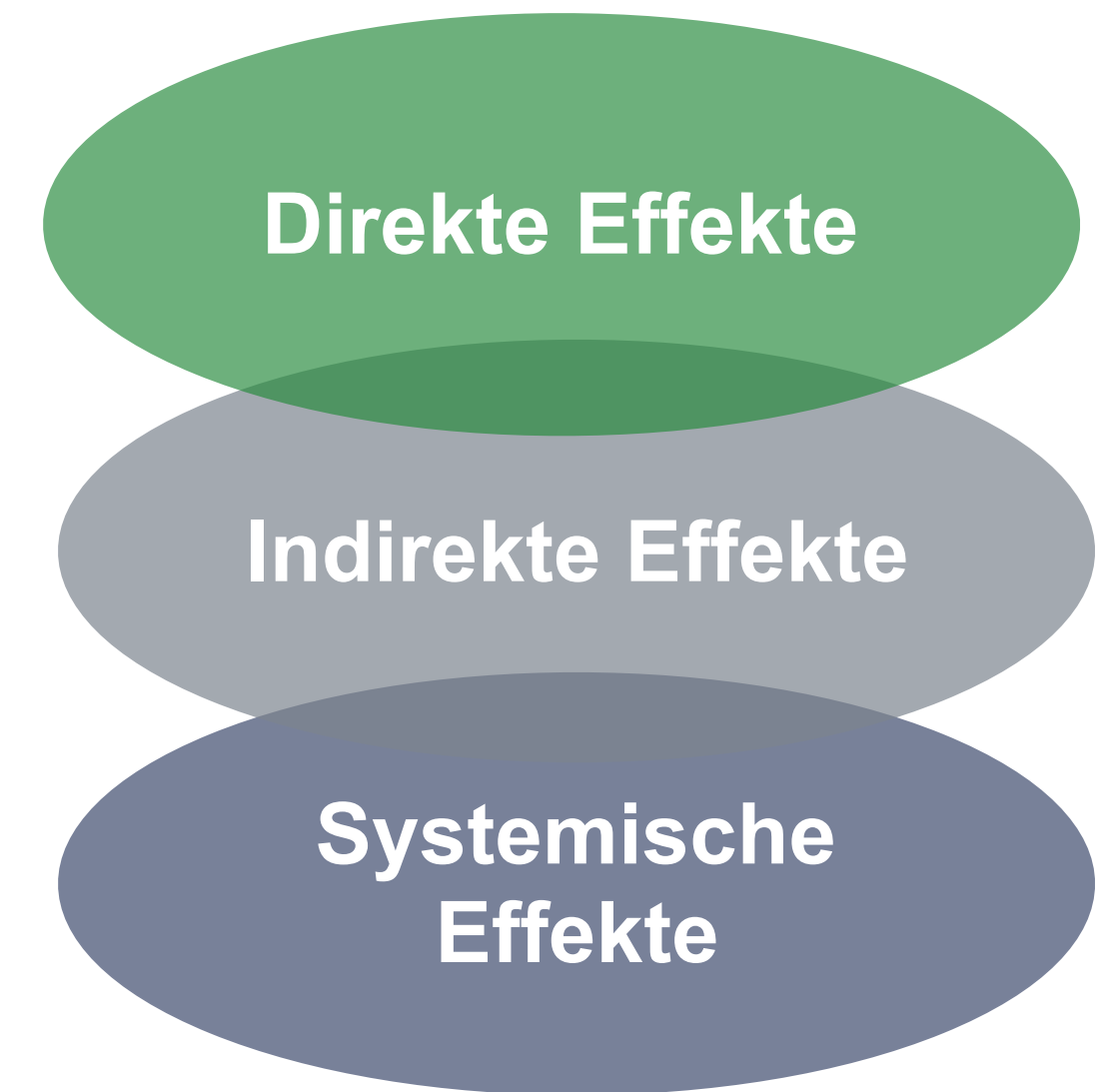
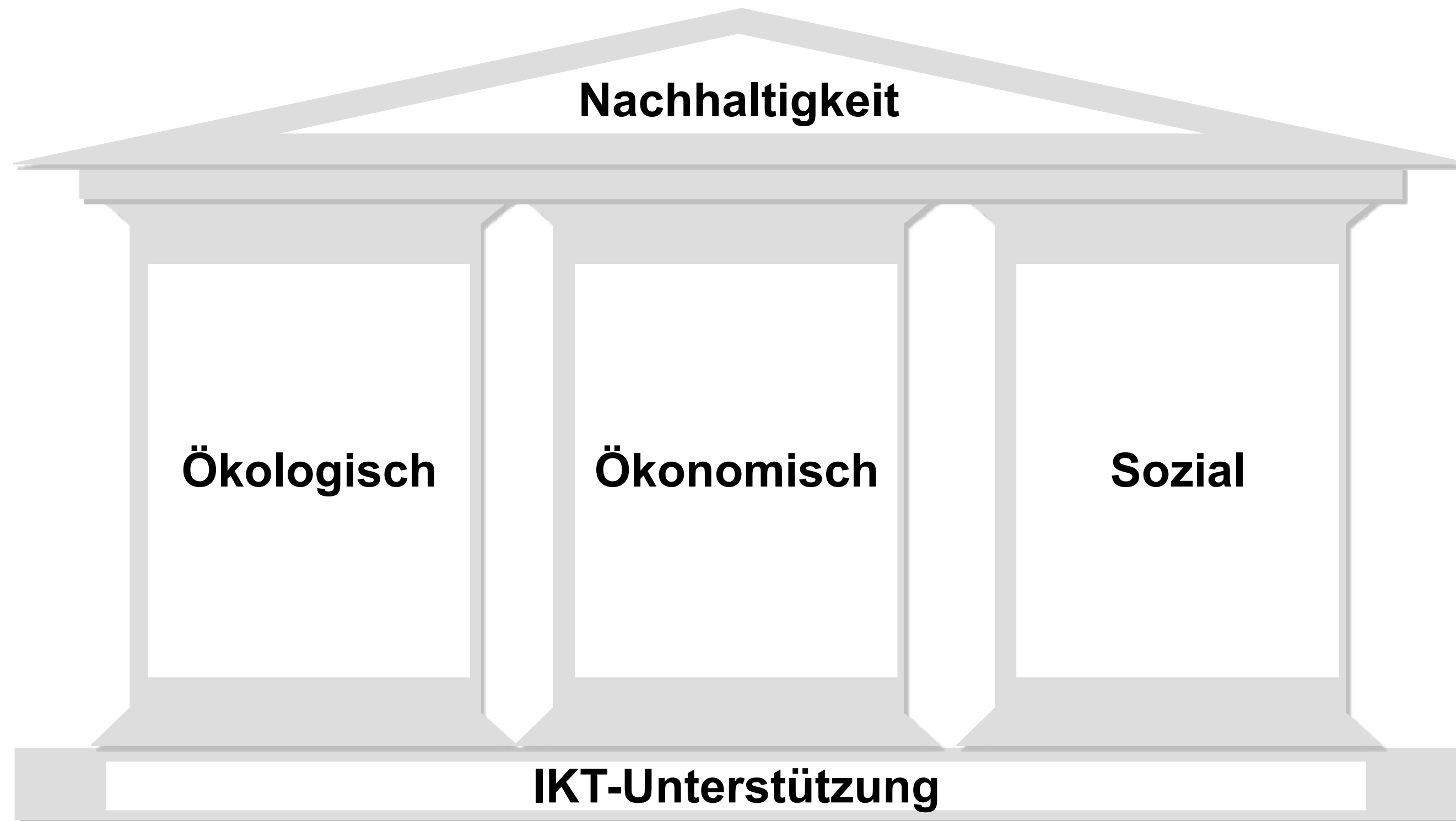
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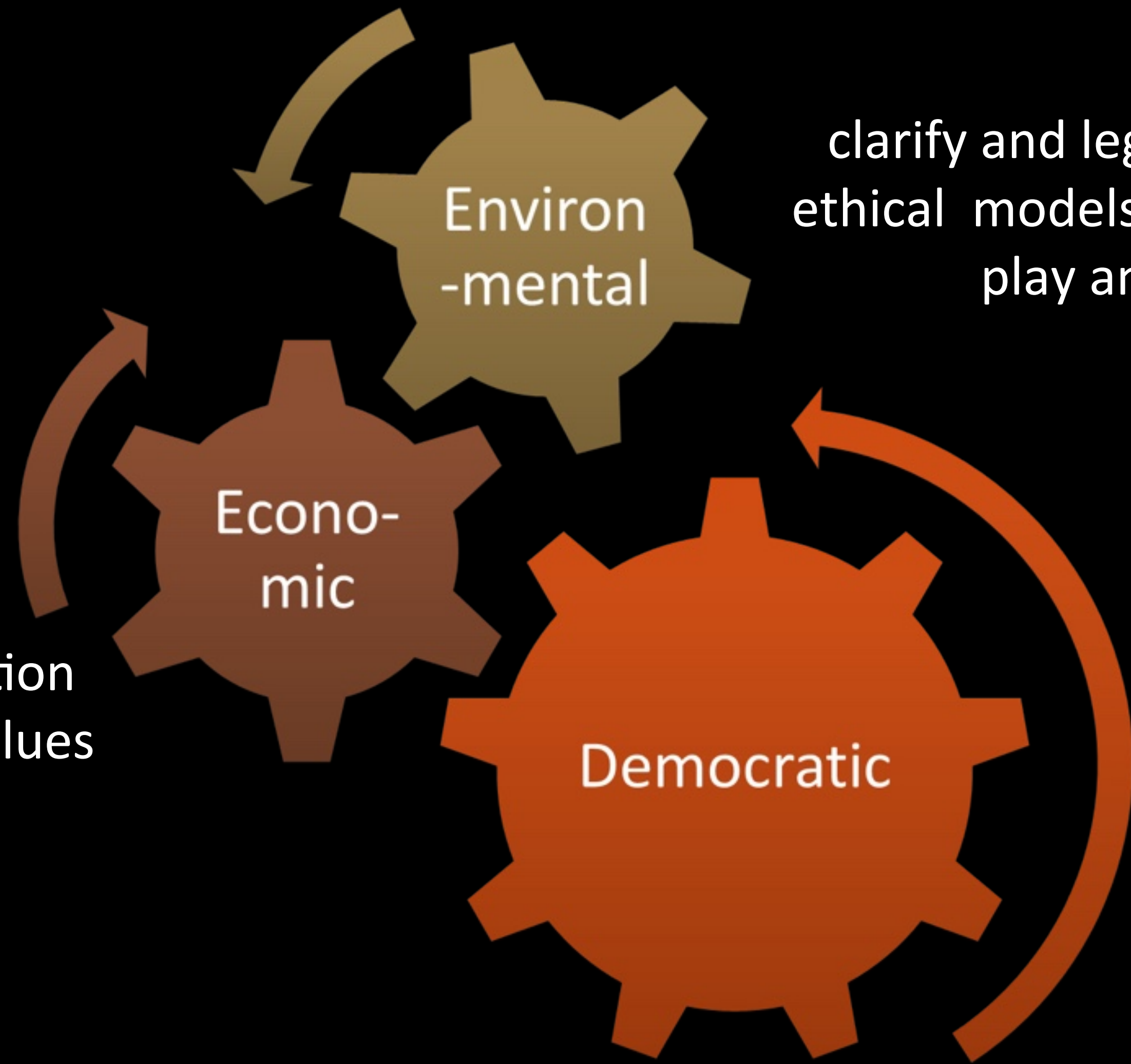
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*[Arnold Picot, Stefan Hopf: ICT as an Instrument for More Sustainability: Why It Is Not That Simple. In Herzog, M.A.: Economics of Communication. ICT Driven Fairness and Sustainability for Global and Local Marketplaces, GITO 2015]*





clarify and legitimise new ethical models for work and play and life

steer communication tools to support values that count

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[Jesse Marsh: think virtually local ecologies of new economic models. EcoCom, 08/11/2013, Berlin, Germany]

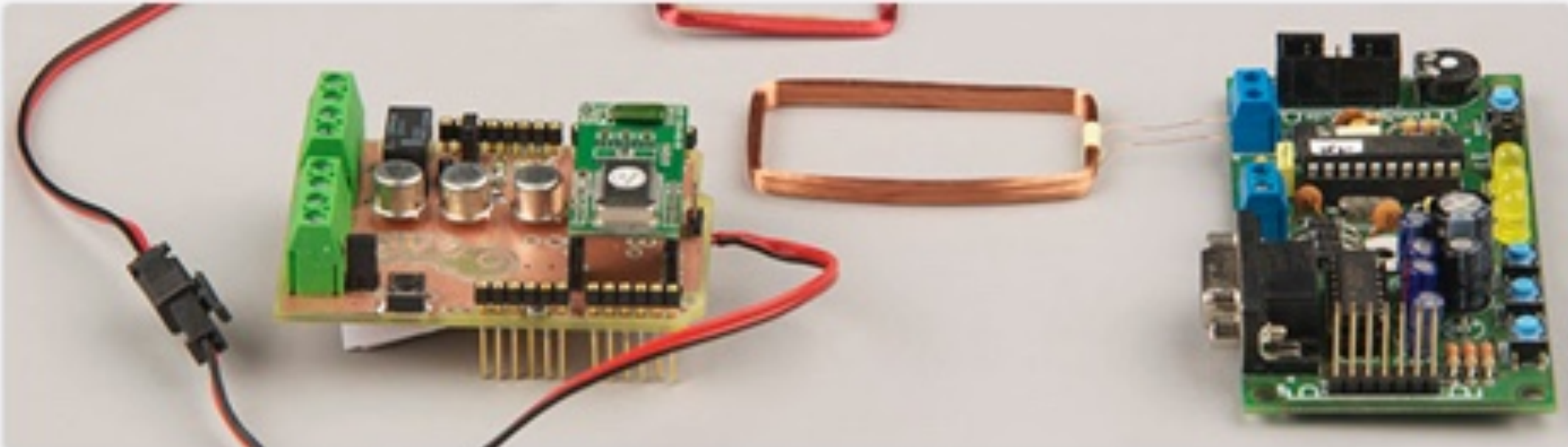


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**Michael A. Herzog**  
Prof. Dr.-Ing.; Wirtschaftsinformatik  
Wissenschaftlicher Leiter der Forschungsgruppe SPiRIT

Ort: Campus Magdeburg: Haus 7, Raum 1.10  
Campus Stendal: Haus 3, Raum 0.11

Telefon: 0391 886 4805

E-Mail: [michael.herzog\(at\)hs-magdeburg.de](mailto:michael.herzog(at)hs-magdeburg.de)




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**Olaf Friedewald**  
Prof. Dr.-Ing.; Elektrotechnik  
Wissenschaftlicher Leiter der Forschungsgruppe SPiRIT

Ort: Campus Magdeburg, Haus 8, Raum 2.18

Telefon: 0391 886 4472

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## CONTACT:

**Prof. Dr.-Ing. Michael A. Herzog**

Campus Magdeburg, Haus 7, Raum 1.10

[michael.herzog@hs-magdeburg.de](mailto:michael.herzog@hs-magdeburg.de)

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