



Environmental Oriented Information Systems Design

The Concept of Life Cycle Impact Modelling and its Application to Cloud Computing

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Zusammenfassung und Ausblick

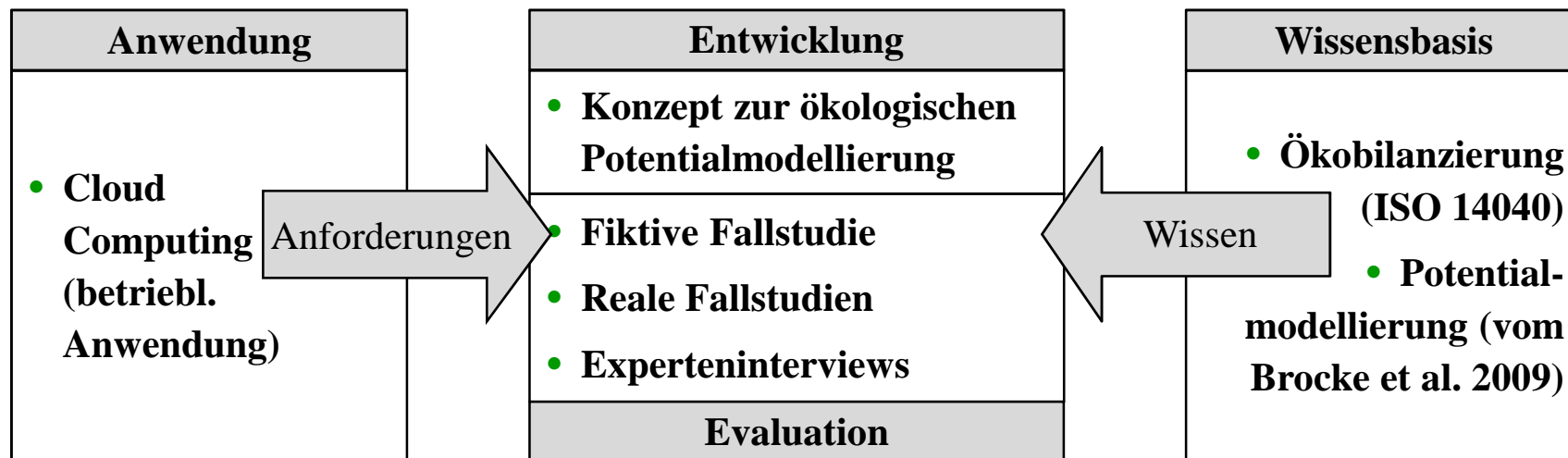
- IT/IS als...
 - ...Ursache ökologischer Probleme (Gartner, 2008)
 - ...Lösung ökologischer Probleme (vom Brocke et al., 2013; Melville, 2010; Seidel et al, 2013)

- Keine quantitative Ansätze zum ökol. Design betrieblicher IS
(vom Brocke et al., 2013; Yi and Thomas, 2007)

Wie können unterschiedliche **Design Alternativen** betrieblicher Informationssysteme unter **ökologischen** Gesichtspunkten miteinander **verglichen** werden?

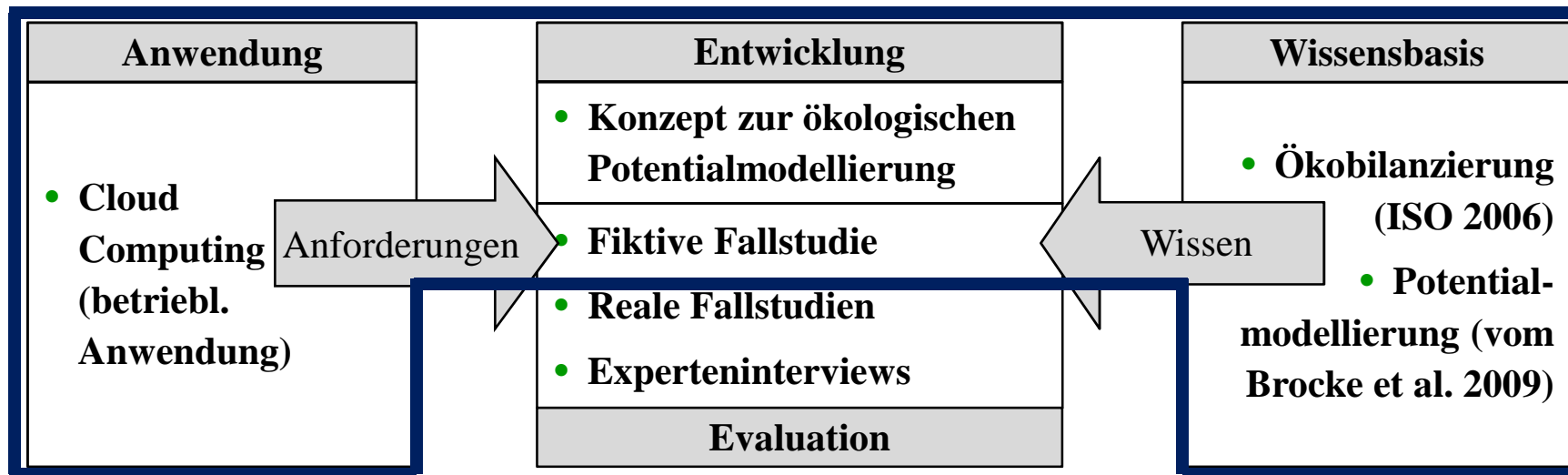
Einleitung – Lösungsweg

- Ziel: Konzeption eines Ansatzes zur ökologischen Modellierung von Design-Alternativen
- Gestaltungs-, bzw. Problemlösungsorientiert (Hevner et al., 2004; March and Smith, 1995)
- Anwendungsbeispiel: (Green) Cloud Computing



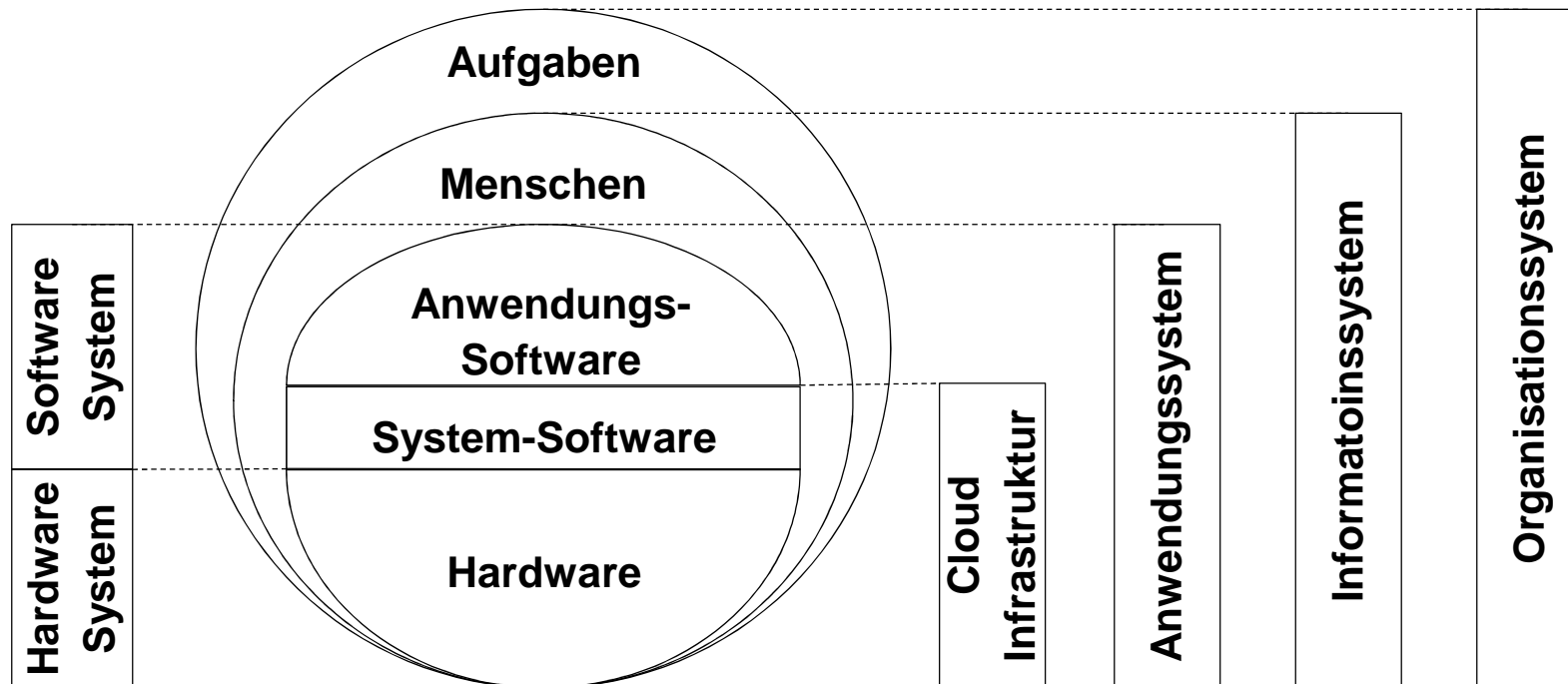
nach Hevner et al. (2004)

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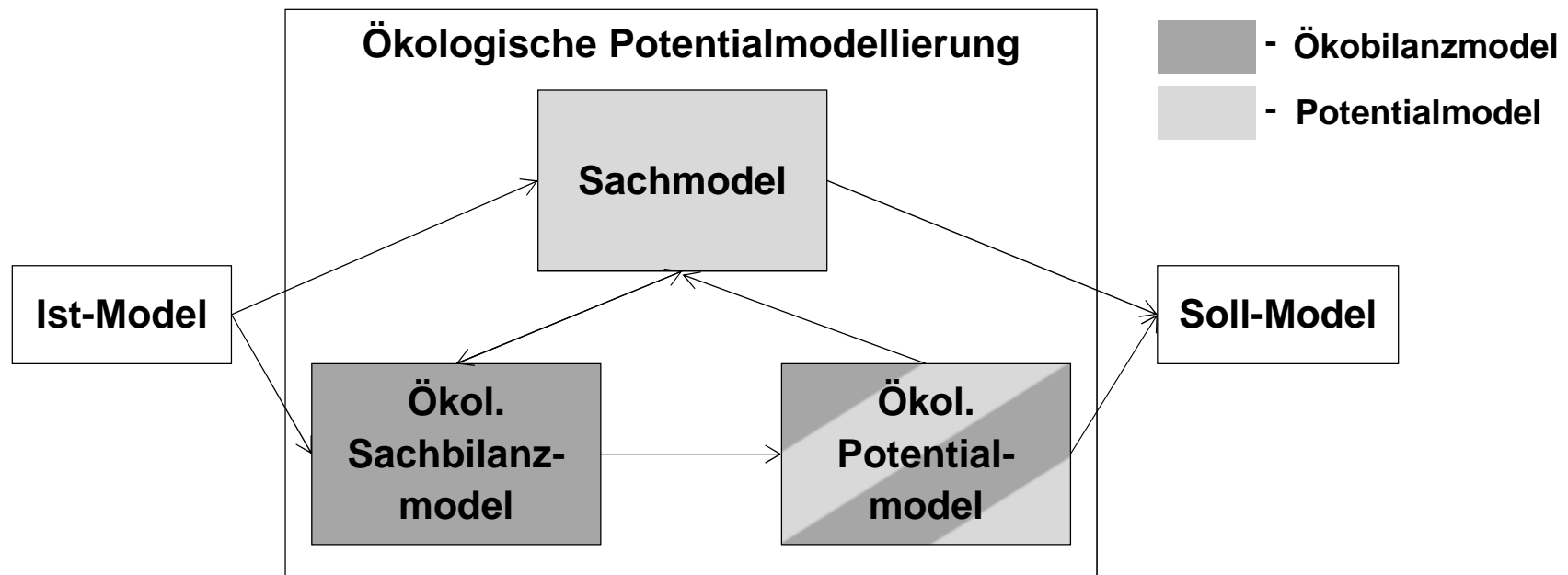


nach Hevner et al. (2004)

- Systemansichten betrieblicher Informationssysteme und Cloud Diensten (Vom Brocke et al., 2009; NIST, 2011; Teubner, 1999; Youseff et al., 2008)
- Informationssystem = Untersuchungsrahmen der ökologischen Betrachtung

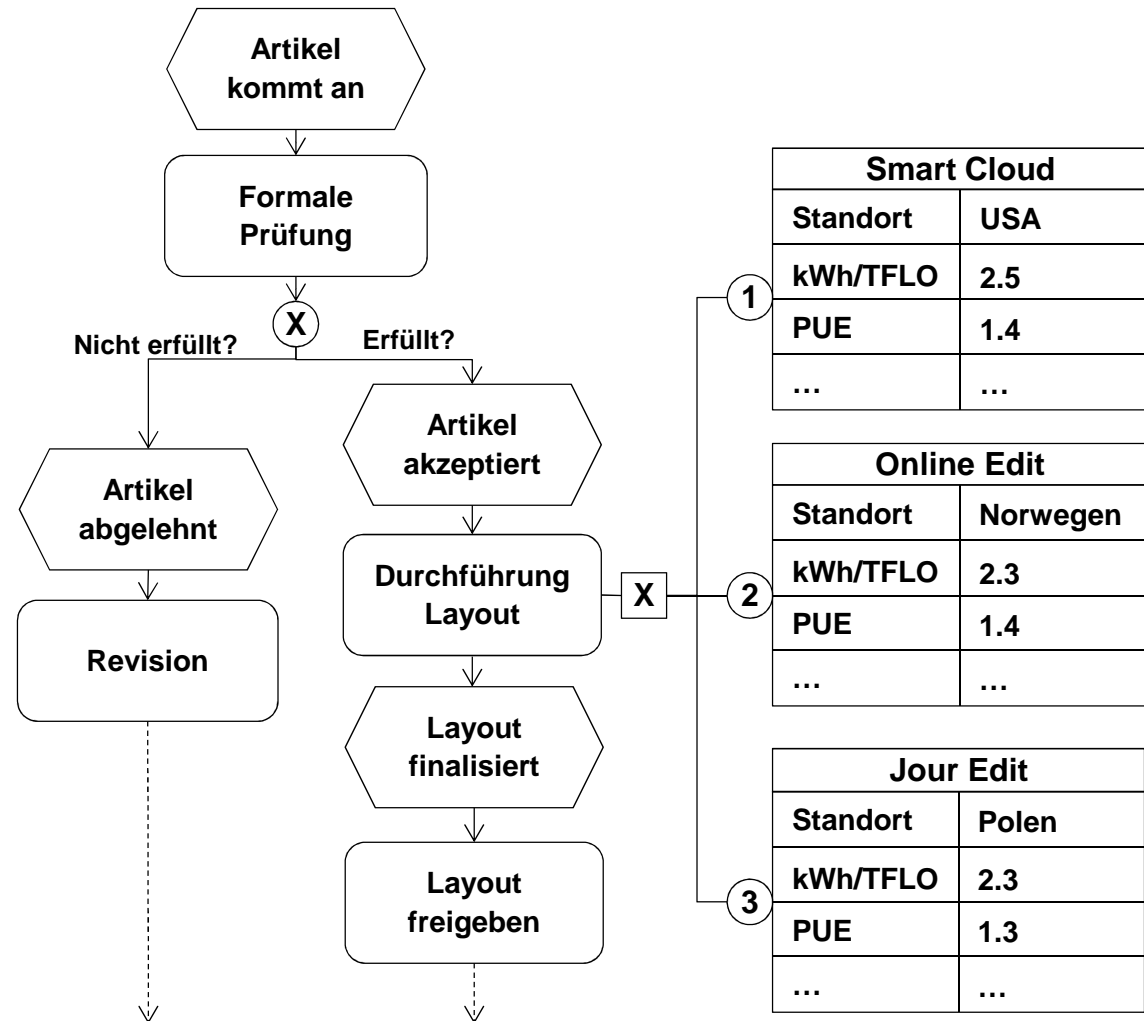


- Übersicht Grundmodell
- Synthese aus Potentialmodellierung und Ökobilanzierung (vom Brocke et al., 2009; ISO, 2006)



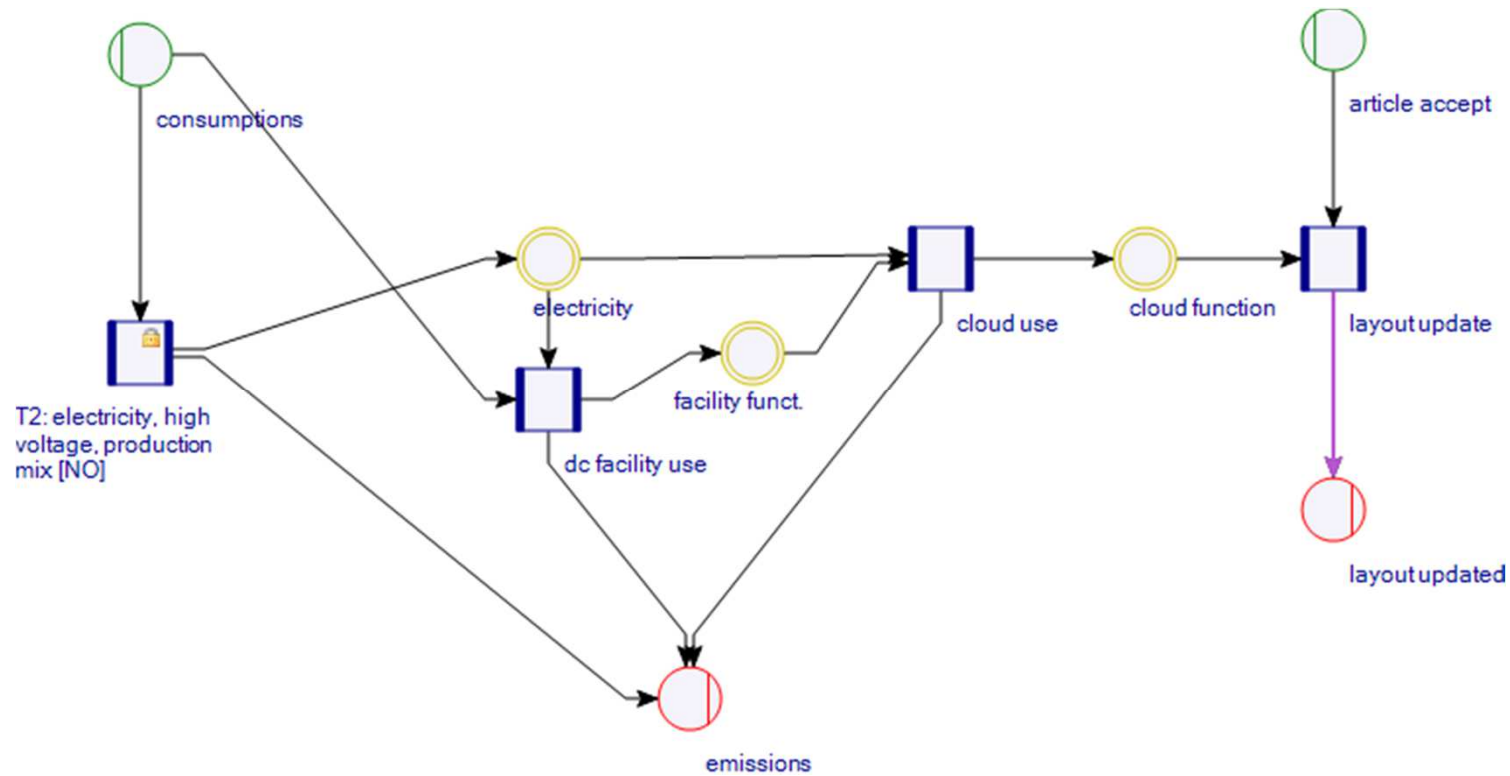
Anwendungsbeispiel – Sachmodell

- Demonstration an einem fiktiven Anwendungsbeispiel
 - Zeitungsredaktion
 - Ausschnitt aus Redaktionsprozess
 - Drei alternative CC Dienste zum Layouting



Anwendungsbeispiel – ökol. Sachbilanzmodell

- Erstellung eines Sachbilanzmodells
- Hier:
 - Fokus auf Energieströme
 - Softwaretool Umberto



Anwendungsbeispiel – ökol. Potentialmodell



- Ausschnitt aus ökologischem Potentialmodell
- Ökolog. Potentialmodell entspricht Sachbilanz oder Wirkungsabschätzung (einfachster Fall)

Project	Cloud Computing		
Net	Main Net		
Date	2/12/2014 5:54:45 PM		
Details			
Product: layout post [A15 (layout update -> layout updated)] (1.00 unit)			
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - agricultural land occupation w/ o LT, ALOP w/ o LT: 2.62E-03 m2a		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - climate change w/ o LT, GWP100 w/ o LT: 0.03 kg CO2-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - fossil depletion w/ o LT, FDP w/ o LT: 7.40E-03 kg oil-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - freshwater ecotoxicity w/ o LT, FETPinf w/ o LT: 3.17E-04 kg 1,4-DCB-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - freshwater eutrophication w/ o LT, FEP w/ o LT: 6.94E-06 kg P-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - human toxicity w/ o LT, HTPinf w/ o LT: 0.01 kg 1,4-DCB-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - ionising radiation w/ o LT, IRP_HE w/ o LT: 1.04E-03 kg U235-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - marine ecotoxicity w/ o LT, METPinf w/ o LT: 3.18E-04 kg 1,4-DCB-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - marine eutrophication w/ o LT, MEP w/ o LT: 6.00E-06 kg N-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - metal depletion w/ o LT, MDP w/ o LT: 6.76E-03 kg Fe-Eq		
	LCIA Method: ReCiPe Midpoint (H) w/ o LT - natural land transformation w/ o LT, NLTP w/ o LT: 3.45E-05 m2		

Zusammenfassung & Ausblick

- Zusammenfassung
 - Konzept zur ökol. Potentialmodellierung erstellt
 - Quantitative Ansatz zum ökol. Design betrieblicher IS
 - Evaluation/ Demonstration
- Implikationen & Limitationen
 - Ermöglicht Abschätzung der Umweltwirkungen von Entscheidungen
 - Evaluation lediglich fiktional zu Demonstrationzwecken
- Ausblick
 - Evaluation durch Fallstudien und Experteninterviews
 - Empirische Untersuchungen (Entscheidungsverhalten)



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