

Safety Rings Principle and Energy and Information Networks Coupling

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Principle

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Introduction

Motivation and Introduction:

- energy and information → back coupled systems
- algorithms or information order structures → order increase (1) in information systems (2) applications

Method and Goal:

- Systems Theory, Orgiton Theory: Cybernetic elements of *information, energy and mass*
- System theoretic tool: Rings of Safety Principle → how to build systems with high survivability
- Example in Information & Energy Networks

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Axiom 1

*A Safety Ring (SR) can be regarded as a system that encloses a system **sympiotically** (co-evol.), **hedging** & hence giving **survivability**.*

Axiom 2

The order increase is double or multi-folded: By a distance measure from the inner core to the outer environment, and by a hierarchic self-functional distance to the inner outer border.

Axiom 3

The SR comprises a multi-level border membrane structure from the inner to the outer system.

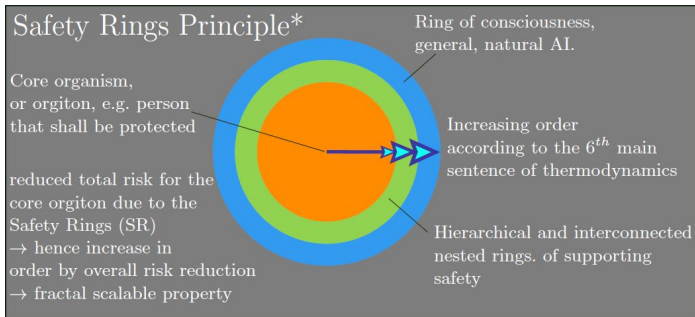


Figure 1: Rings of Safety - * cf. also [HT20; HT22; HAT20].

- → one system (even when trans-border connections are sparse)
- shift how to to what for → impact/sustainability need ↑
- SR core is emergent border → 6th MS Thd.

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- Energy-material information system → algorithms → energy efficiency↑
 - Cooperation & concurrence balance for optimal efficiency (human brain) [Gro21]
 - Logistics: Vulnerable → Glocal processes, local and global information simultaneously in real time
 - real time decreases distances & ↑possibilities
 - local autonomy = SR
 - fractal scalable property of orgitons → Fig. 2
 - basic (elementary) orgitons (cores) transcend all membranes (bidirectional information flow local-global, e.g. money, virus as medium) → shift from global/local to glocal control as emergent base orgiton.
- survivability, multiple osmotic paths (osmotic paradigm)

- AI can be regarded as outer (informationally) **uniting shell** → Fig. 1

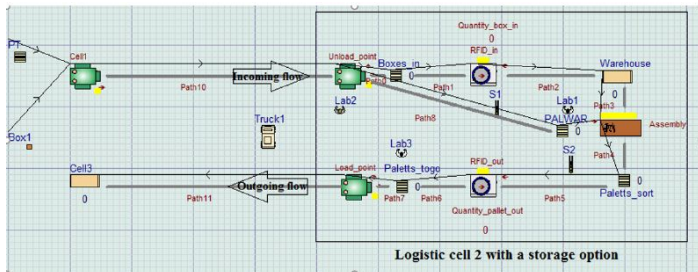


Figure 2: Model of scalable logistic cell with storage option in WITNESS [HAT20]

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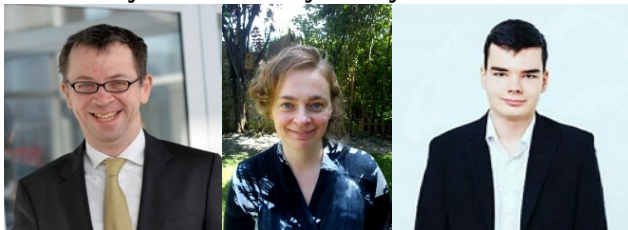
Discussion:

- Axiom 1 → **room-time distance** increase = slowing down effect, therapy, take pressure out, sustustainable growth → increase in possibilities
- Axiom 2 → each core = ecosystem (colors, clocks in Fig. 1), orgiton (cybernetical unit of mass, energy & information)
- Axiom 3 → osmotic flow of information: ↔ core orgiton possible, shells/borders/membranes = media/intermission → **emergent order**

Conclusion & Outlook:

- Shown how to build orderd and intrinsically safe orgitonal, cybernetic systems
- quantification (distance measures, bifurcation analysis) & simulation

Thank you cordially for your attention!



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PS.: The presentation can later also be found at:

<http://www.dr-heiden.com/Vortraege.htm>



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