

Future challenges for ICT in Transport Logistics

5th ECITL

Gothenburg, Sweden

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- ◆ Market Drivers
- ◆ The Role of ICT
- ◆ ICT and Logistics
- ◆ Thematic orientation of ECITL
 - ◇ Logistics Service Platforms
 - ◇ Seamless Information Exchange in Freight Transport and Logistics
 - ◇ Security and Risk Assessment in Logistics
 - ◇ Sustainable Innovations in Logistics
- ◆ Conclusion



¹ Strang, R. (2007). *Programs/Educational*. Retrieved 10 22, 2012, from Institute for Supply Management Services Group : http://www.ismservicesgroup.com/presentation/2007BL_CavinatoStrang.pdf

Importance of ICT – Key IT trends¹

Flexibility



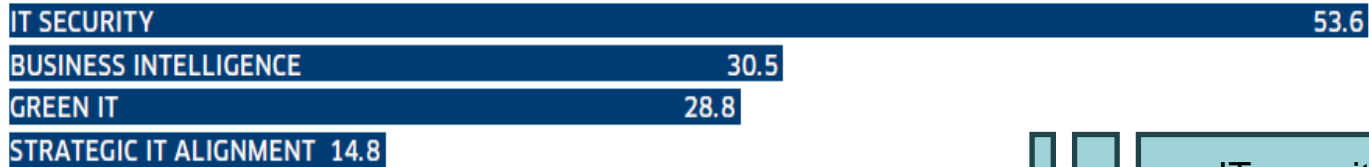
Mobility



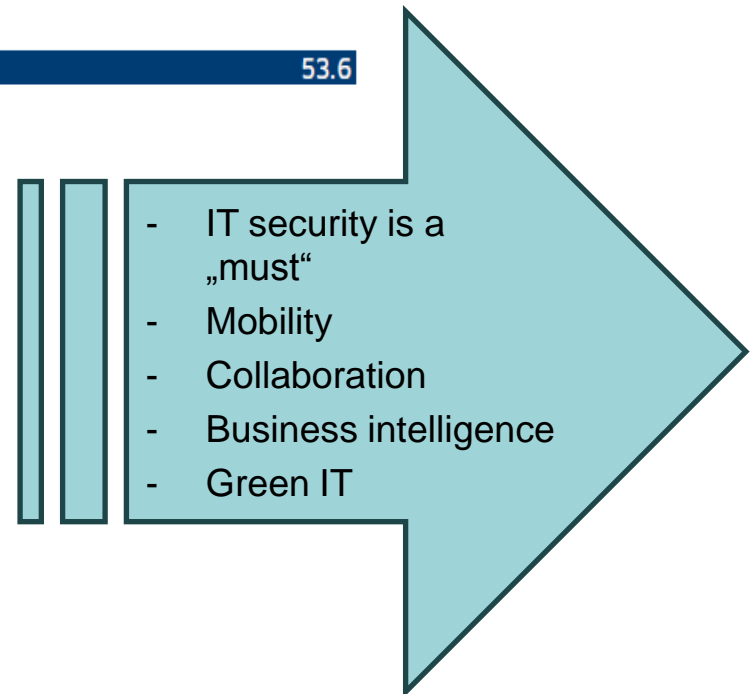
Cooperation



General Trends



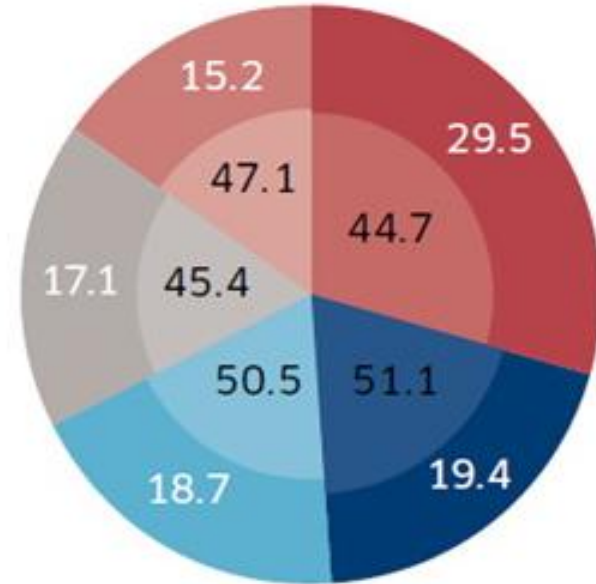
Survey of ICT executives, weighted n = 1,559. Total, Expressed as a percentage (Ranks 1-3).



¹ “LIFE” (2010). *LIFE Studies*. Retrieved 10 23, 2012, from Life 2 –Importance of ICT:

Transport – the Challenges¹

- ◆ According to ICT executives for the field of „automotive, traffic & transport“
- ◆ Outer circle
 - ◇ Which do you consider to be the greatest challenges to be faced in the next few years in the field of automotive & transport?“
- ◆ Inner circle
 - ◇ How important is ICT in your opinion with respect to the solution of the transport problems mentioned above?



1 2

- Ecological challenges
- Safety aspects
- Avoiding traffic congestion
- Financing infrastructure (e.g. toll systems)
- Maintenance and expansion of the infrastructure

1) Survey of ICT executives, n = 136 persons questioned who work in the field of "Automotive, traffic and transport". Total, Expressed as a percentage "ranking 1".
 2) Survey of ICT executives, n = 136 persons questioned who work in the field of "Automotive, traffic and transport". Expressed as a percentage of the 2 top-rated boxes "Very important", "Important".

¹ "LIFE" (2010). *LIFE Studies*. Retrieved 10 23, 2012, from Life 2 – Automotive and transport:

Mega Trends ICT¹

- ◆ Digital Data Deluge
- ◆ Data-intensive science
- ◆ E-Infrastructure
- ◆ Virtualization (incl. Web 3.0, Mobile technologies, Social networking)
- ◆ Data warehousing (incl. Data Mining, OLAP tools)
- ◆ Cloud computing
- ◆ Electronic data interchange
- ◆ Open source software
- ◆ Security (data privacy)

Mega Trends Logistics²

- ◆ Elongated supply chains
- ◆ Potential for disruption
- ◆ SCM considered a strategic competitive advantage
- ◆ Need for automated processes
- ◆ Constantly shifting sourcing options
- ◆ Need for global visibility
- ◆ Need for global compliance and security
- ◆ Consolidation among global SCM providers
- ◆ Reverse logistics - green logistics
- ◆ Outsourcing of non-core functions

¹ The European Commission. (n.a.). *Cross-Portal EU*. Retrieved 10 17, 2012, from Horizon 2020 Annex 4 - Megatrends in ICT: <http://www.cros-portal.eu/page/annex-4-megatrends-ict>

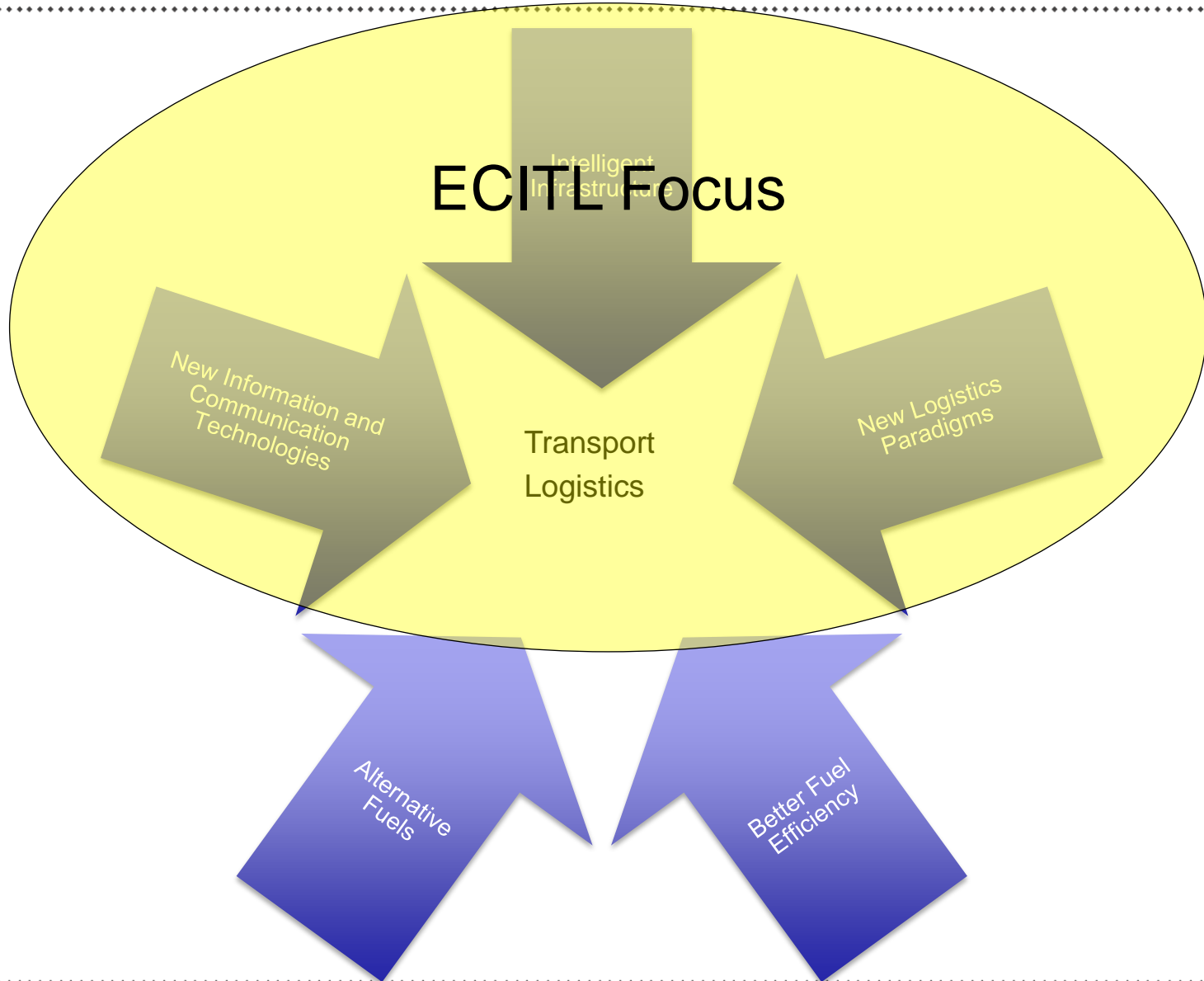
² Strang, R. (2007). *Programs/Educational*. Retrieved 10 17, 2012, from Institute for Supply Management Services Group : http://www.ismservicesgroup.com/presentation/2007BL_CavinatoStrang.pdf

Transport Logistics - Challenges

- Freighttransport accounts for ca. 10% of the GHG emissions
- Utilization of the resources is insufficient
- External Price for Transport is not covered

Transport Logistics - Opportunities

- Need for Logistics and Transport is increasing
- European Logistics Network represents the Aorta of Europe
- Production and Manufacturing is again important in Europe

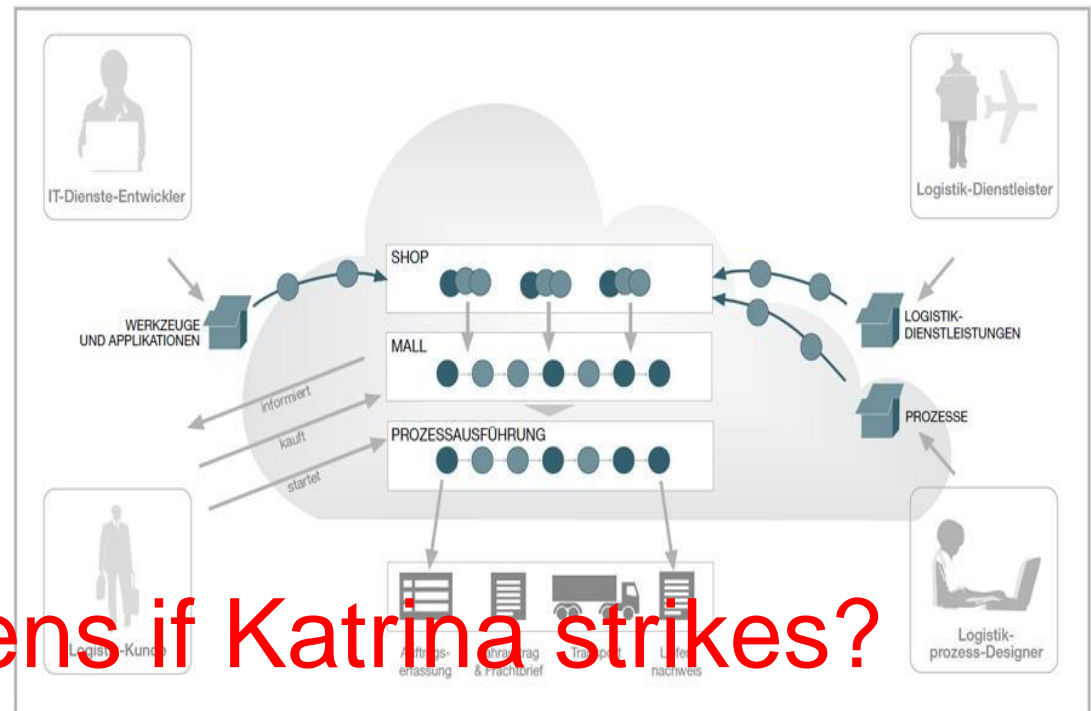


Research Strands:

- ◇ Logistics Service Platforms
- ◇ Seamless Information Exchange in Freight Transport and Logistics
- ◇ Security and Risk Assessment in Logistics
- ◇ Sustainable Innovations in Logistics

- The Role of Cloud Computing in the future
- New Organisational Models
- Vertical vs. Horizontal Integration
- Centralised vs. De-Centralised
- Standards

Example: Logistics Mall¹

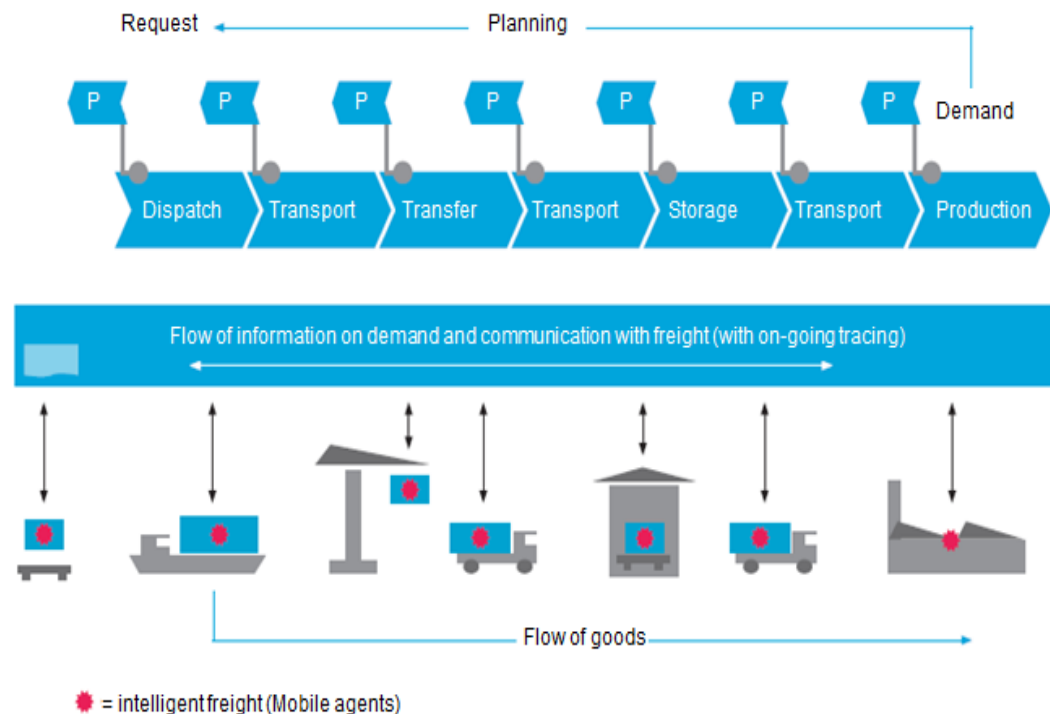


What happens if Katrina strikes?

¹ Fraunhofer-Institut. (n.a.). *Logistics Mall*. Retrieved 10 25, 2012, from Fraunhofer-Institut:

- „Internet of Things“
- Impact of Autonomous and Self-control Systems
- New Business Models
- Robustness
- Context based operations
- Ubiquitous computing

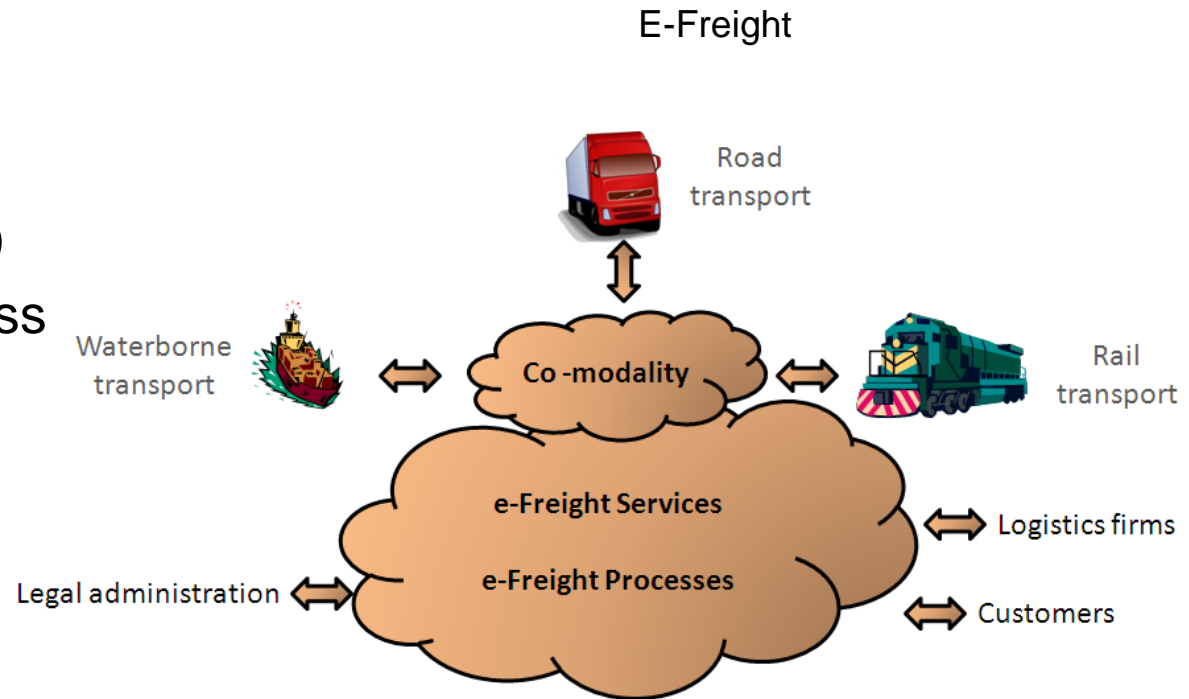
Example: EURIDICE¹



¹ Euridice project. (n.a.). *Intelligent freight*. Retrieved 10 29, 2012, from Euridice Project:

<http://www.euridice-project.eu/index.php/web/pubdocs/58>

- Involvement of Stakeholders
- Framework character
- Integration (semantics)
- Integration into Business Processes
- Legacy Systems



<http://www.inf.mit.bme.hu/en/research/projects/e-freight>

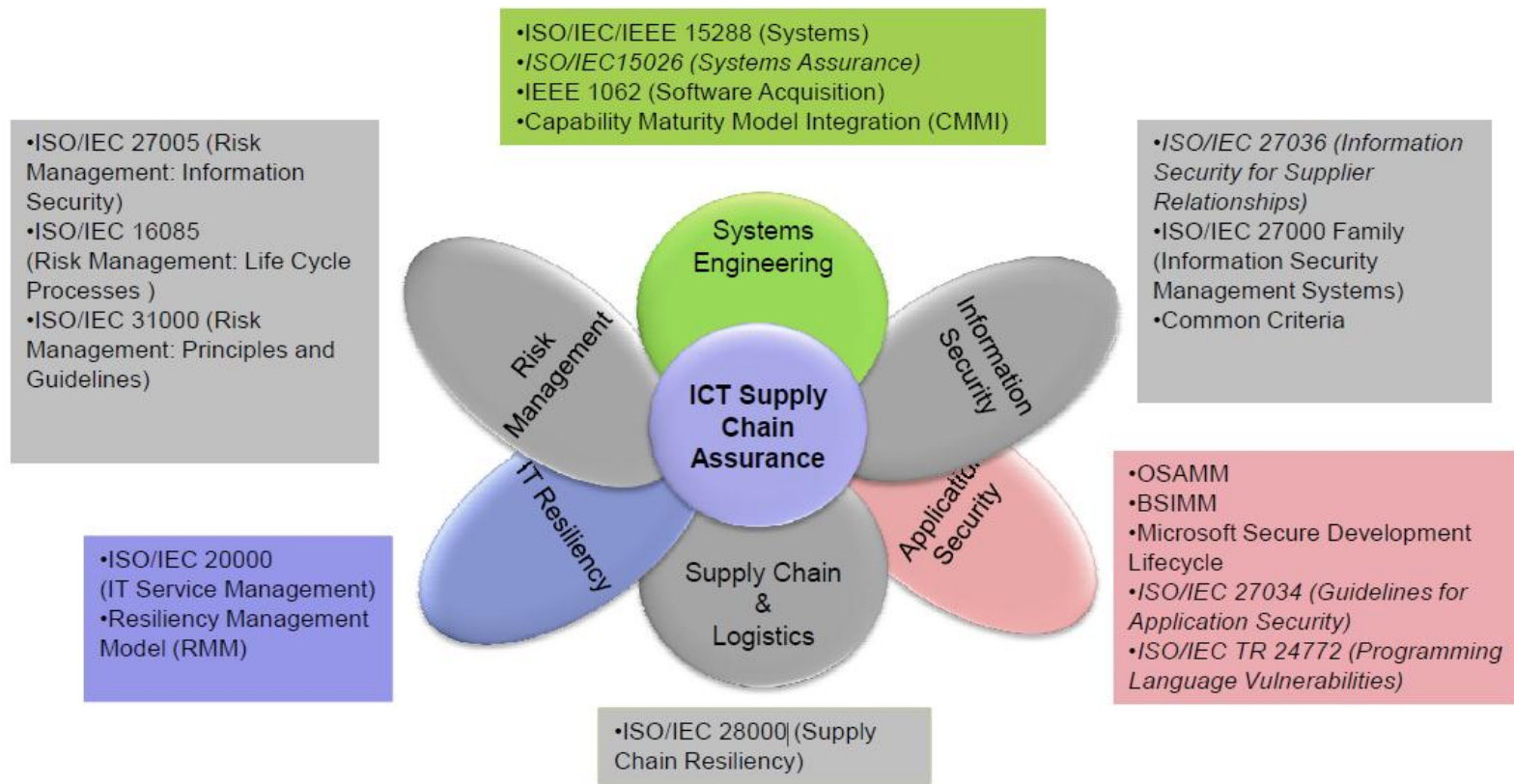
- Integration of Information Security with Physical Security
- Stakeholder Involvement
- Enabling Door-to-Door Security
- New B2A Processes
- New Value Added Business Processes

Integrity



<http://www.eskema.eu/logistics4life/defaultinfo.aspx?topicid=324&index=6>

Some Standards¹



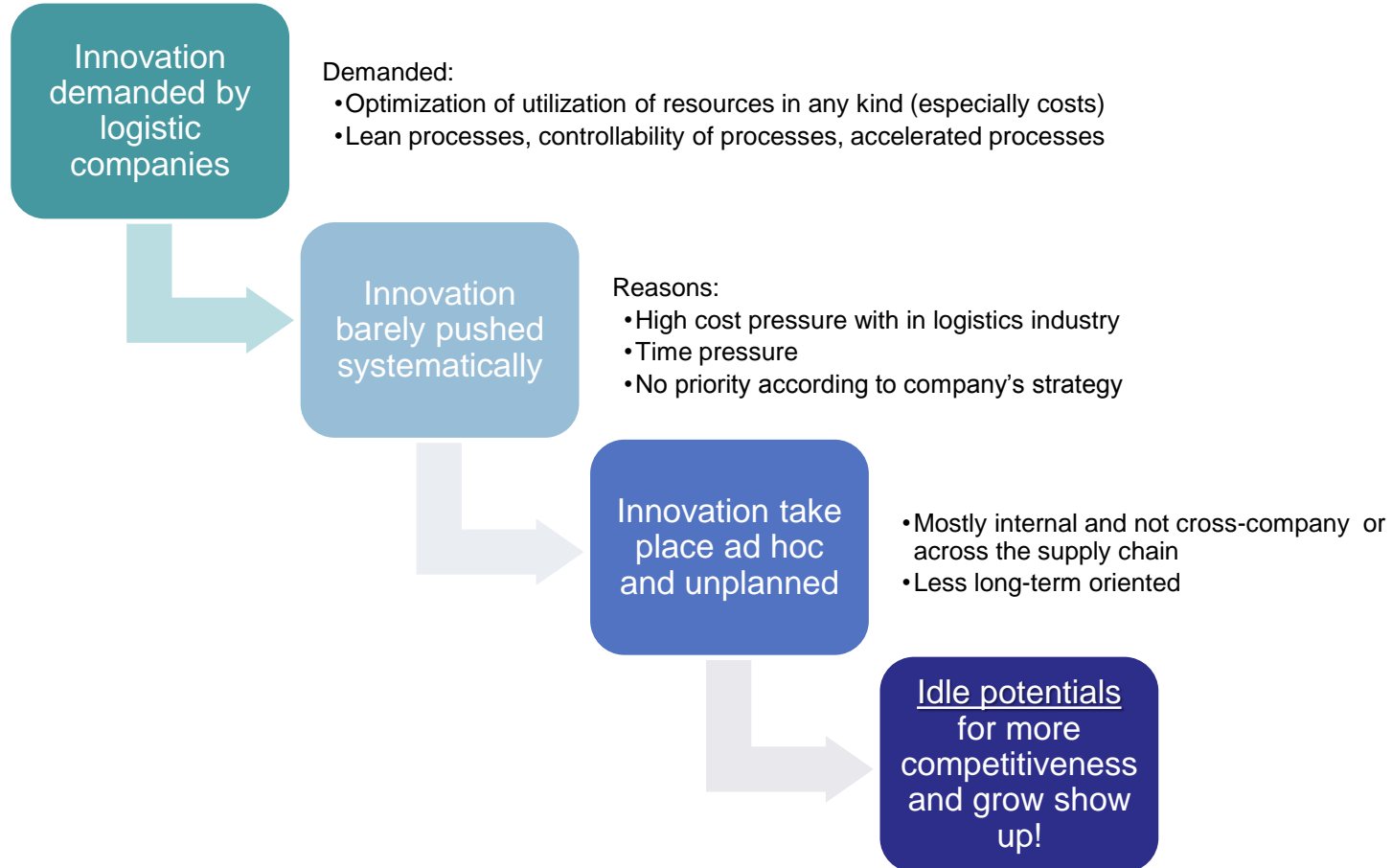
¹ Michele Moss (2010). *Trusting ICT in today's Global Supply Chain – Understanding and Implementing Government and Industry Best Practices*.

Retrieved 10 29, 2012, from Defense Technical Information Center: <http://www.dtic.mil/dtic/tr/fulltext/u2/a557868.pdf>

Innovation in logistics

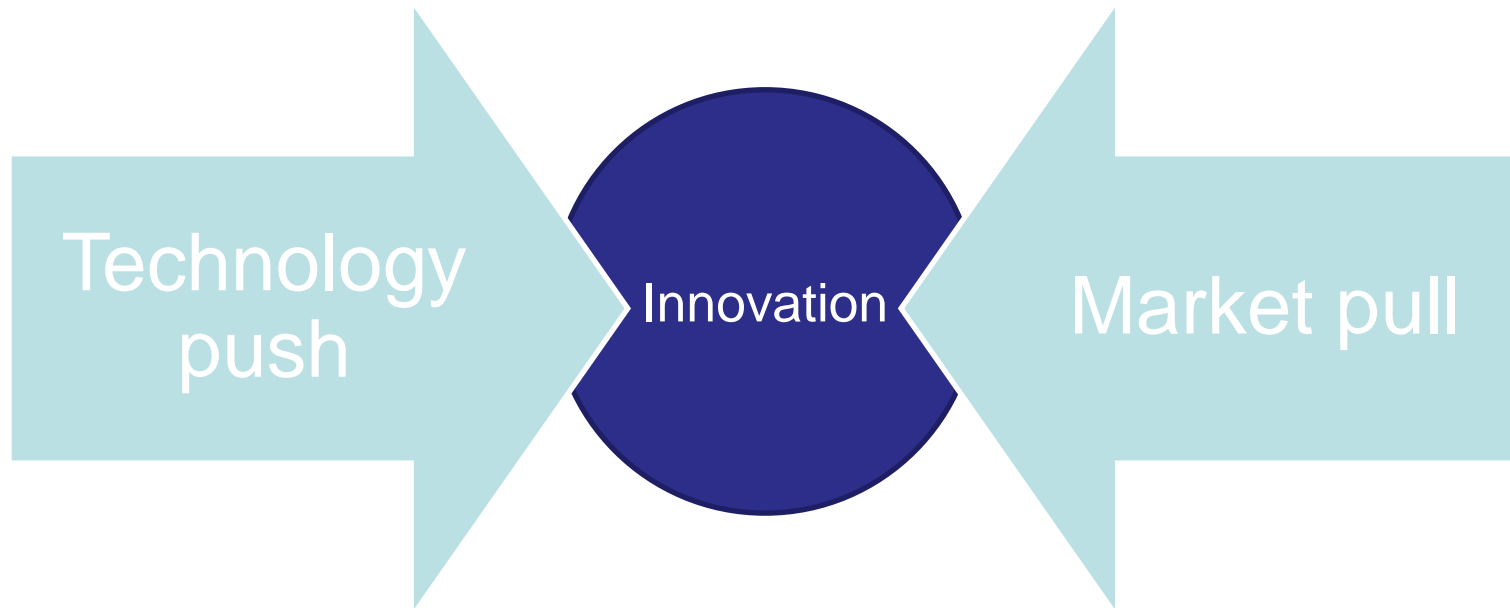
or

How to make Money out of Research?



¹ Bundesvereinigung Logistik (BVL) e.V. (n.a.). *Innovationen in der Logistik*. Retrieved 10 25, 2012, from Bundesvereinigung Logistik:

<http://www.bvl.de/service/arbeitskreise/abgeschlossene-arbeitskreise/innovationen-in-der-logistik>



- ◆ Technological development independent from identified customers' needs
- ◆ Radical innovation, but with high revenue potential
- ◆ highly risky (e.g. finding no market for innovation) and time-intensive
- ◆ R&D activities induced by demand of customers
- ◆ Requirement: Identification of unsatisfied customer need (market research)
- ◆ Relatively low-risky and a fast realization is possible

¹ Bundesvereinigung Logistik (BVL) e.V. (n.a.). *Innovationen in der Logistik*. Retrieved 10 25, 2012, from Bundesvereinigung Logistik:

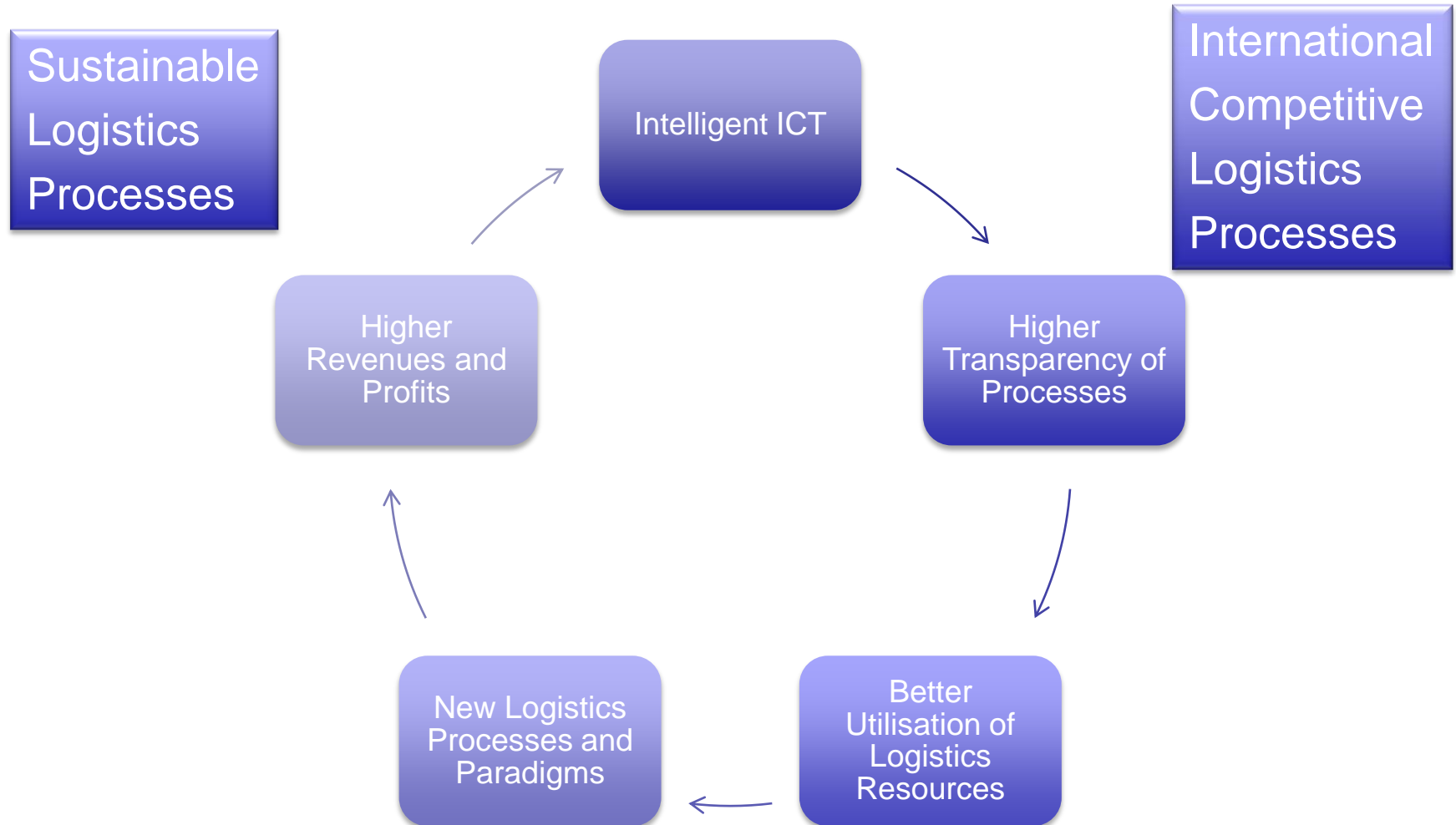
Analysing Innovation:

“IRONICALLY, WE HAVE VASTLY MORE EVIDENCE FOR RESULTS [IN INNOVATION] LINKED TO LUCK THAN TO THOSE COMING FROM THE [PLANNED RESEARCH PROGRAMS]...”
- NASSIM NICHOLAS TALEB, STATISTICIAN

7 Innovation Properties

- ◆ The **Long-gamma property** – At some level (undefined in his work), it pays off more to free-form experiment than planned projects. It is actually better not to invest in deep knowledge but rather to emphasize experimentation.
- ◆ The **Dispersion property** – It is better to spread innovation across more projects than fewer; the payoff tends to happen over the longer-term of experiments.
- ◆ The **Cliquet property** (Serial opportunity) – Individual experiments need to stay focused on shorter-terms to allow them to have flexible direction, rather than getting locked into long-term plans
- ◆ The **Optionality property** – VCs “harvesting in Black Swans” or looking for those breakthrough innovations tend to invest in people, beyond the narrative of the business plan itself. In other words, it isn’t as much the business plan but the social network of experience and interest behind it.
- ◆ The **Non-teleological property** — Theory is born from practice, more often than the reverse. Textbooks make it seem like technological implementations ‘come out of’ science, when the inverse is much more accurate: most theory comes after random experimentation (except, perhaps, in sciences like physics). “In such developments as the industrial revolution..., there is very little historical evidence for the contribution of fundamental research compared to that of tinkering by hobbyists“
- ◆ The **Less-is-More property** – This is the KISS principle: ‘Keep it Simple, Stupid.’ “In practice there is no premium for complexification; in academia there is. Looking for rationalizations, narratives and theories invites for complexity.” And as is attributed to Einstein, “Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius — and a lot of courage — to move in the opposite direction.”
- ◆ The **Via-negativa property** — You get better information through documenting and learning from failure.

- Rawn Shah, CONNECTED BUSINESS



- ◆ Sustainable Logistics Services are getting more and more important
- ◆ Before optimization, transparency of the operations (and related costs) has to be achieved
- ◆ ICT is the Tool to achieve this Transparency in Logistics
- ◆ Similar to e.g. Production the usage of Advanced ICT concepts (Logistics Mall, Intelligent Cargo) will lead to organisational Changes in the Logistics Industry

**Don't be Afraid –
Every Challenge includes an Opportunity**