Education – knowledge – innovations.

Challenges and solutions for the transport industry (ALLIANCE EU Project)

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TransBaltica 2017, 25-26 May

OUTLINE

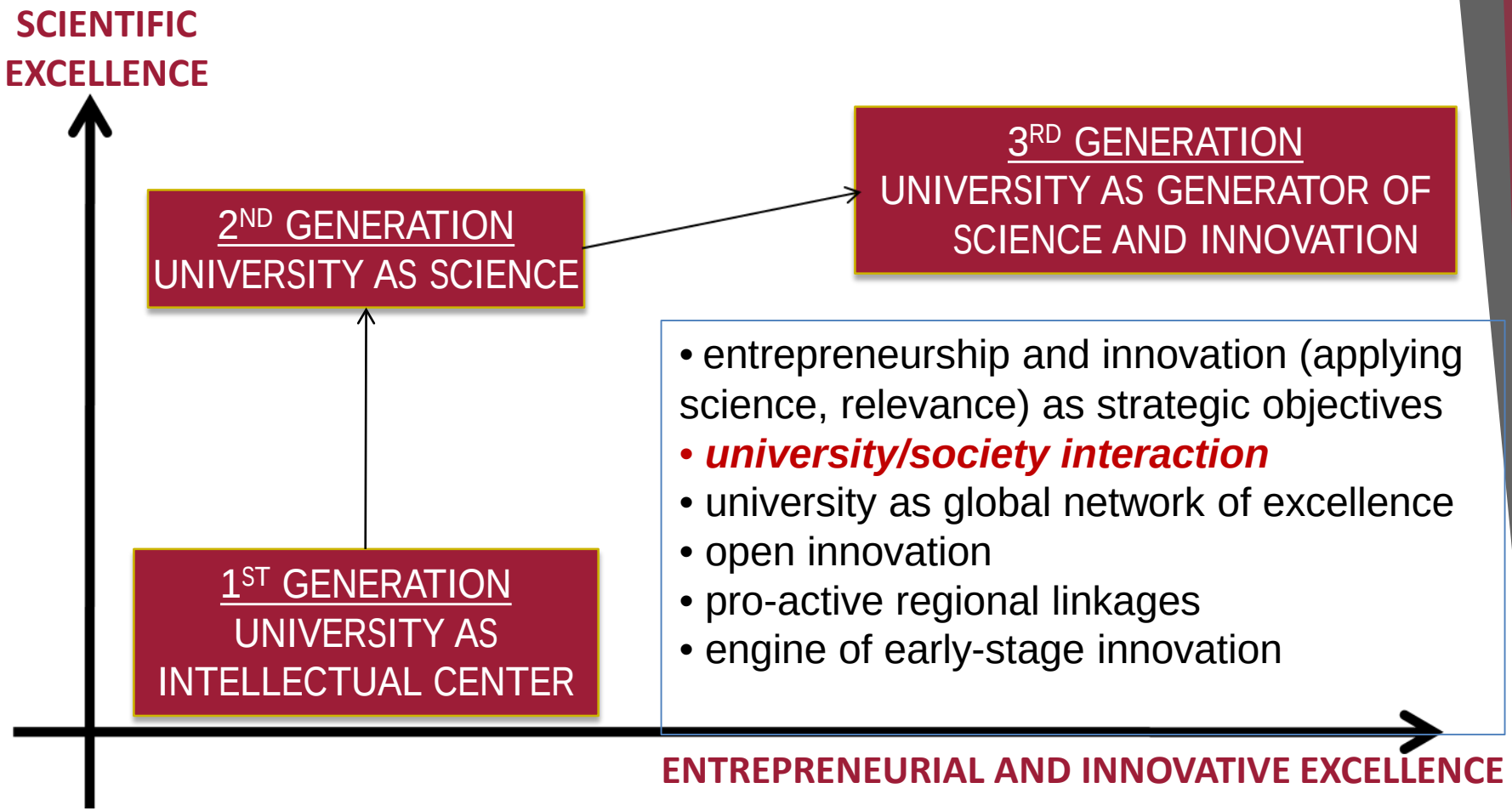
- Motivation
- Transformational Technologies in Transportation (4+3)
- ALLIANCE Project Short Description
- First Phase of the ALLIANCE Project
- Knowledge Sharing Strategy of the ALLIANCE Project
- 1st Summer school "Sustainable Transport Interchanges. Freight transportation“

Motivation

- One of the strategic objectives of Latvian National Development Plan 2020 (Latvijas Nacionālais attīstības plāns, 2015) is to have **advanced research and innovation and higher education**

- The most progressive of world universities aspires to be **'third generation' (3GU),** but it requires a new approach to strategy program development

3rd Generation Universities



Objectives of high education establishment (HEE) in the 3GU era are in contributing high quality teaching and research to the higher education system of the world, and in exploitation of know-how

(Wissema, J. (2009). Towards the third generation university. Cheltenham, UK)

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3rd Generation Universities

1. **Exploitation of knowledge is .core business and becomes the third objective**
2. Operate on an international, competitive market
3. **Open universities, collaborating with many partners and institutions at various levels**
4. **Trans-disciplinary research and rise of University**
5. Multicultural organizations; **mass and elite education**
6. **Cosmopolitan University**
7. No direct state financing. No state interference
8. **Applied research from industrial and state grants**

@Wissema, J. (2009). Towards the third generation university. Cheltenham, UK

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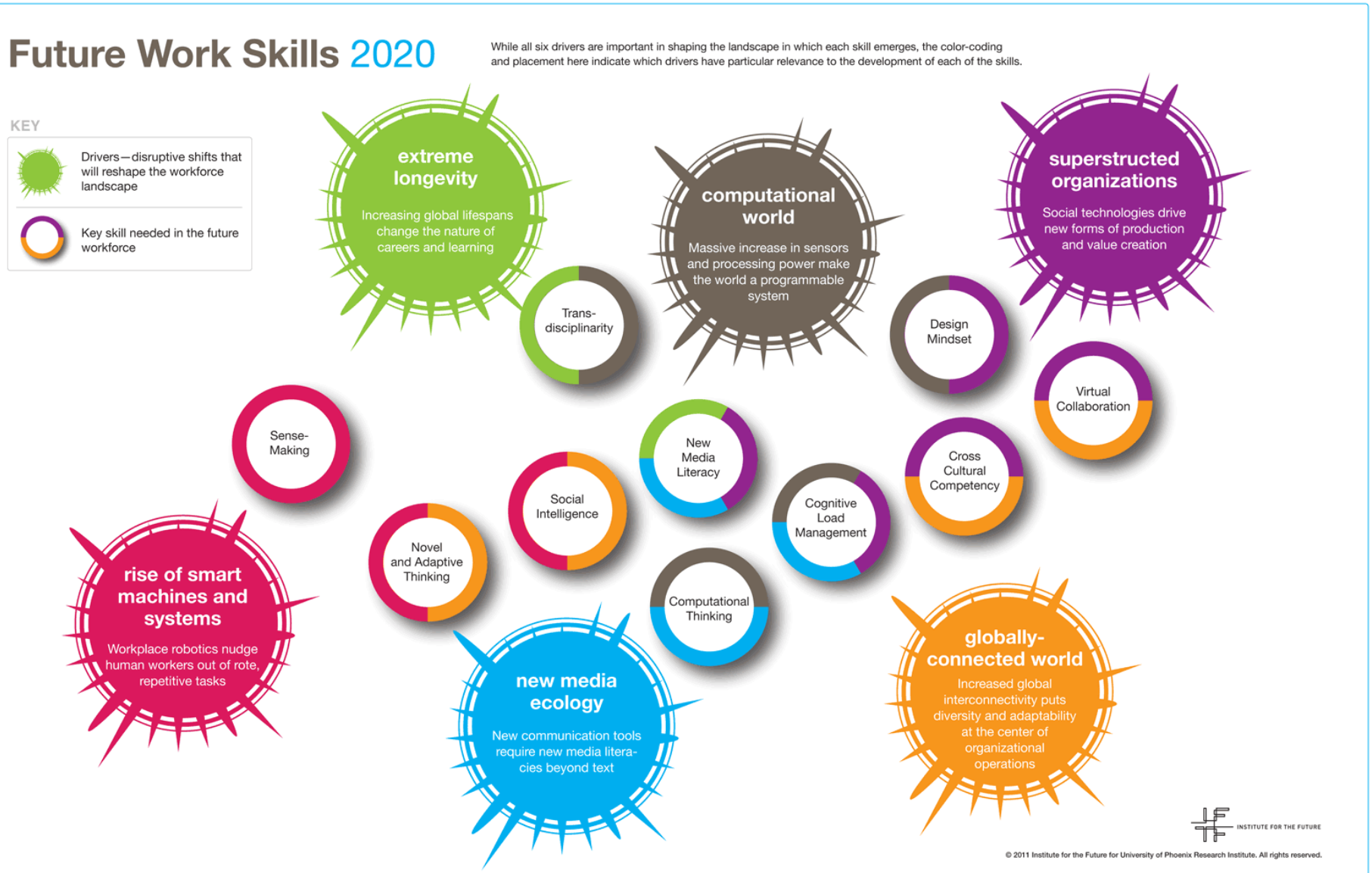
World Economic Forum (2015)…

"65% of the future labor force will work in completely new job types that don't yet exist"



http://www.iftf.org/futureworkskills

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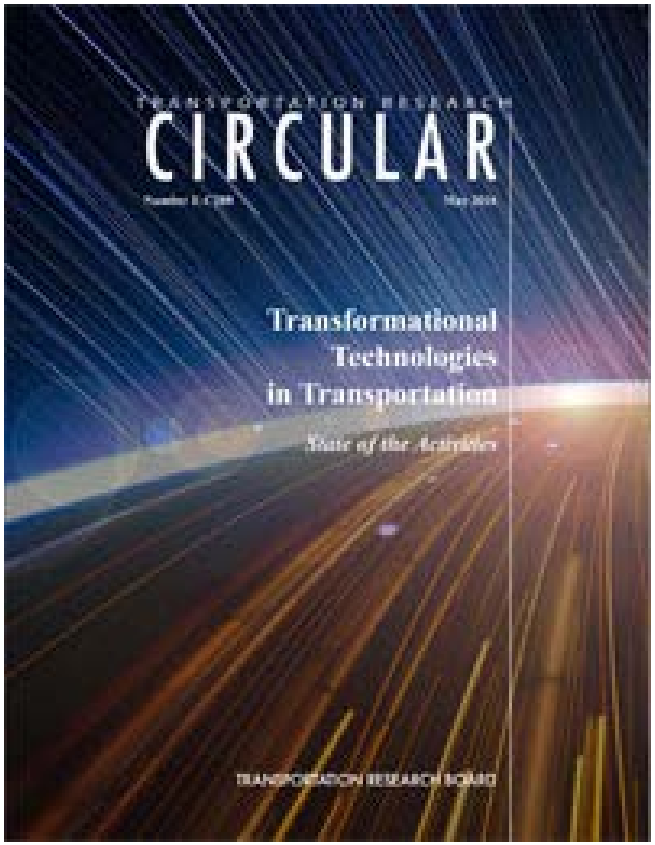


The transformational technologies and that have potential to be transformational ones

- ✓ **connected and automated vehicles, including shared use services**
- ✓ **unmanned aerial systems (drones)**
- ✓ **Internet of Things (including smart cities)**
- ✓ **cybersecurity**
- ✓ **NextGen**
- ✓ **3-D printing**
- ✓ **and Big Data.**

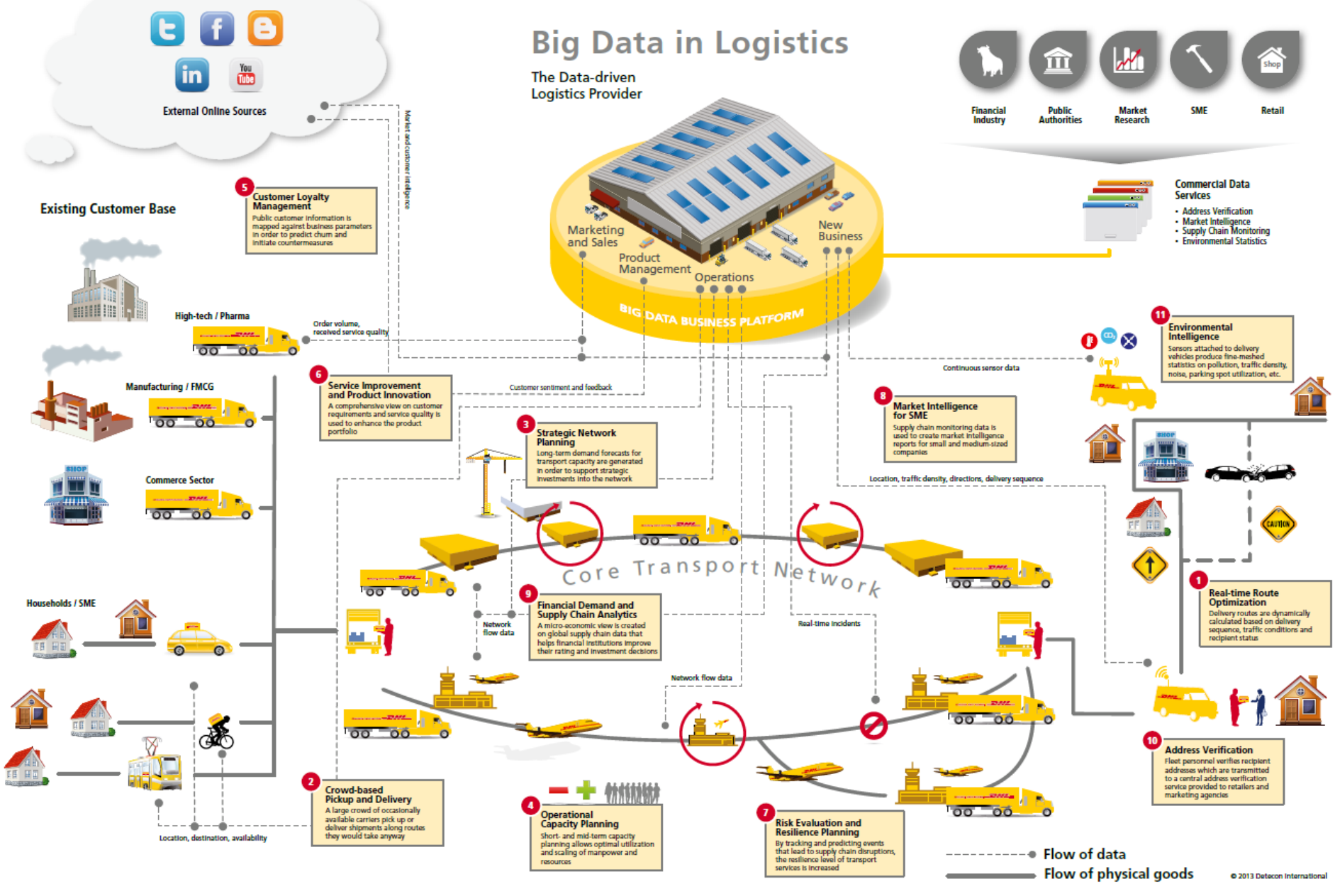
TRB's Transportation Research E-Circular 208:

Transformational Technologies in Transportation: State of the Activities

This technical memorandum provides the review and findings of state of the activities conducted by CAVita relative to the transformational technologies identified by TRB.

Impacts of Big Data on PT

Planning Phase. Demand Modelling.		**Authorities can** **•generate more precise understanding of the customer demand on different routes** **•map customer journeys across multiple modes of transportation – trains, buses, private modes of transportation etc** **•use all this data to improve planning on the future public transport routes, frequency on existing routes and size of vehicles** **•also optimally plan for additional services such as stores on the routes through better understanding of customer journey maps**
Operation phase	**Optimization of transport infrastructure utilization**	Can improve forecasting and help to nudge behavior in ways that improve the reliability of transport infrastructure and increase its efficiency and utilization. In fact, some of this is already happening.
	Event Response	Can have an intimate understanding of customer journeys – start and end points involving different modes of public transport and even private modes of transportations. One of the most useful data source – social networks. It is very important to have fast and optimal response especially during unplanned events.
	Predictive Maintenance	Can predict: optimal maintenance requirements of the equipment (buses, trains etc.) at much faster rate upcoming faults at the individual component levels and to schedule maintenance of the equipment precisely at the right time
	Personalized Services	Can tailor communication to each rider via preferred communication channel



@Big Data in Logistics. DHL perspectives on how to move beyond the hype, December 2013

Challenges

- **The relationship between the higher education and industry/business will deepen**
- Industry/business plays **multiple roles** as
  - ✓ customer
  - ✓ **key partner of higher education institutions**
  - ✓ increasingly, as a competitor in specialist professional programs
- Research higher degree programs and applied research will increasingly be run in partnership with industry
- Research commercialisation will go from being a fringe activity to being a core source of funding for many universities' research programs.

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HOW?

Significant role of **technology providers, financiers, and a range of industry groups** to create **value providing services** within the higher education value chain, such as

- **content distribution**
- **commercialisation**
- **industry placements**
- etc.

! might be provided on a stand-alone basis

! **more likely are partnerships with institutions that bring market credibility and academic capability.**

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Enhancing excellence and innovation capacity in sustainable transport interchanges (1.01.2016 – 31.12.2018)

TSI TRANSPORTA UN SAKARU INSTITŪTS

UNIVERSITY of THESSALY

TTLog Traffic, Transportation and Logistics Laboratory

Fraunhofer IFF

www.alliance-project.eu

This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 692426

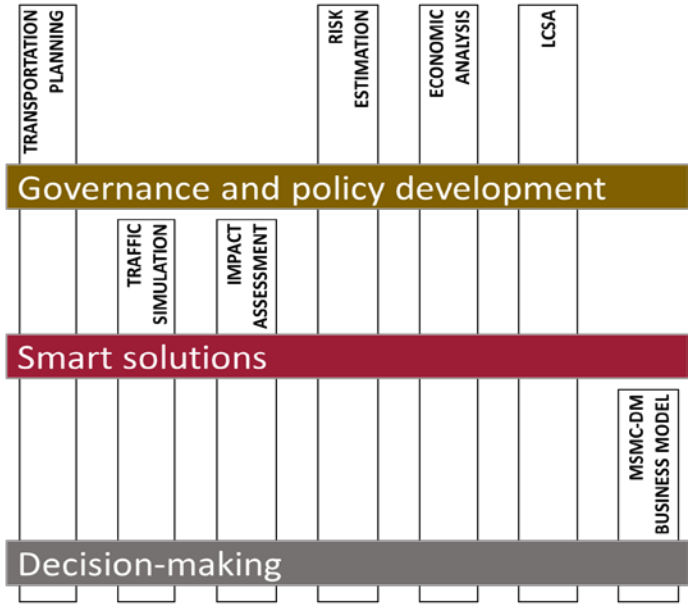
Enhancing excellence and innovation capacity in sustainable transport interchanges

Scope

- Link Transport and Telecommunication Institute (TTI) with University of Thessaly (UTH) and Fraunhofer Institute for Factory Operation and Automation (Fraunhofer)
- Provide knowledge to TTI research staff in the field of smart interconnecting sustainable transport networks
- Facilitate stakeholder collaboration and develop strong linkage among education, research and industry
- Create a doctoral programme in Transport Economics and Management at TTI

Concept

- Needs' analysis of Latvia and the surrounding region of the Baltic sea (Lithuania, Estonia, Poland) on intermodal transportation terminals
- Consideration of the relations among policy makers, industry and education/research
- Development of a coherent educational/training program, structured around 3 pillars:
  - ✓ Organizational/governance
  - ✓ Operational/services
  - ✓ Service quality/customer satisfaction



Program's thematic areas

Partners

TSI TRANSPORTA UN SAKARU INSTITŪTS

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Scope of ALLIANCE

- is the enabling of **stimulating and strengthening the scientific and technological capacity of Latvia and the raising of the profile of the research staff and their institution, by providing knowledge in the field of smart interconnecting sustainable transport networks**.
- This **knowledge transfer** will build the grounds for a common understanding of the main components affecting sustainable **intermodality** and support the selection and management of the most optimal and applicable solutions for **transport interchanges**. It will also facilitate stakeholder collaboration and the development of strong linkage among **education**, **research** and **industry**.
- Future research activities (out of project scope) related to multimodal transport networks will be enhanced in TTI, which will also push forward the institute's scientific visibility and enlarge the region's researchers' and professionals' horizons towards **intermodality.**

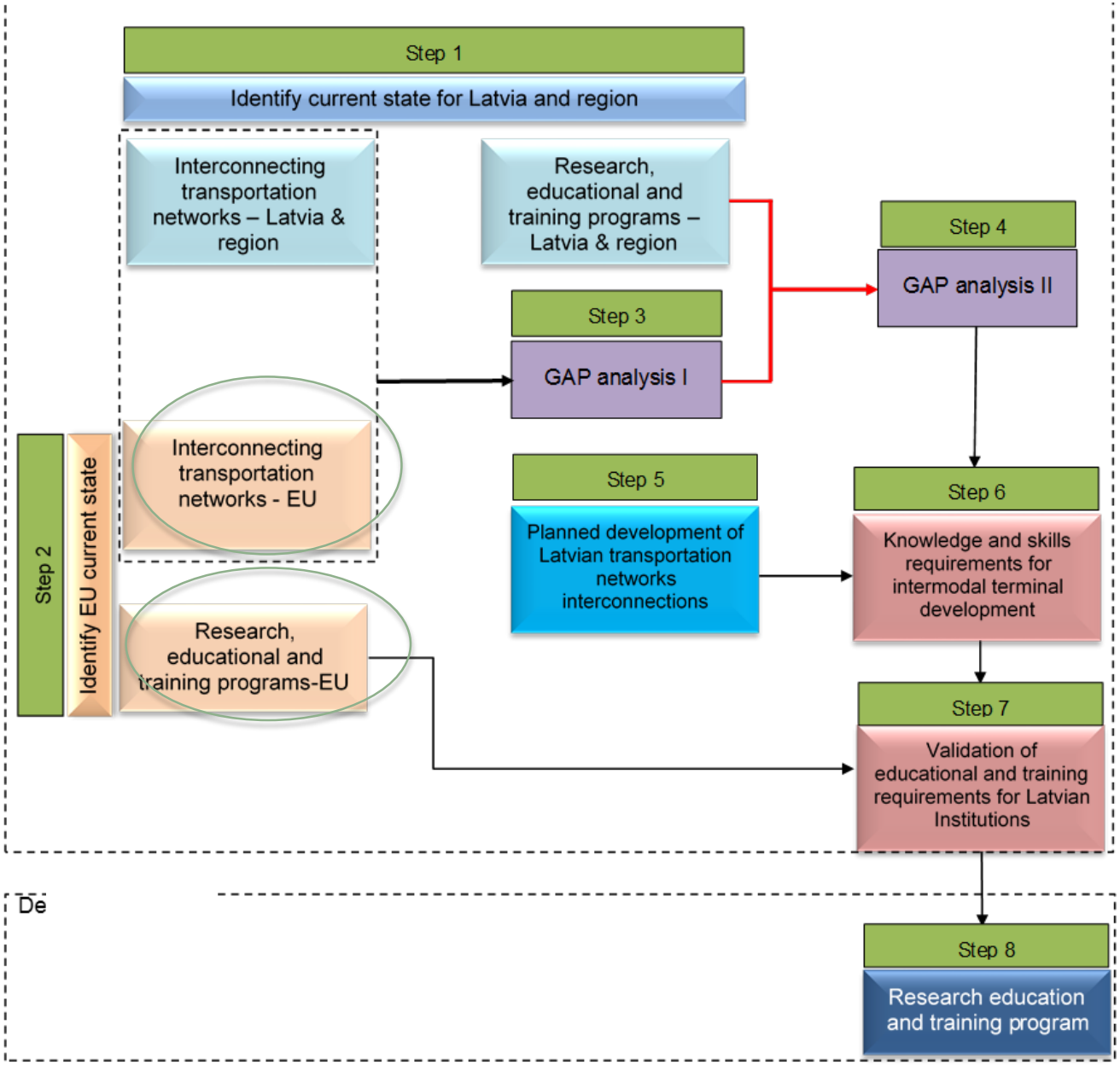
ALLIANCE Core Objective

- the **knowledge transfer** from two partners of international recognition, one as an innovation leader (Fraunhofer, Germany) and another as moderate innovator (UTH, Greece), who have expertise in smart solutions for sustainable intermodal transportation networks, and transport interchanges.
- Close collaboration of TTI with UTH and Fraunhofer will help to achieve the goals through the following activities:
  - **Organization of young researchers' seminars and workshops**
  - Organization of summer schools for trainers and young researchers
  - Development of educational programme for graduate and post-graduate students
  - Development of training programme for trainers and practitioners
  - Provision of grants for participation as authors in per reviewed conferences
  - Facilitation of Short-Term Staff Exchanges (STSEs) with the aim of international collaboration, mainly publications
  - Establishment of a guidance strategy for preparing scientific publications
  - Creation of an educational forum as on-line tool for distance learning and knowledge sharing.

ALLIANCE Specific Objectives

- Analysis networking gaps and differences between the research institutions of low performing Member States and regions and internationally-leading counterparts at EU level.
- This will set the scene for building the strategy (in WP2 and WP3) for formulating special curricula to be offered
  - as summer schools
  - life-long education
  - establishing a framework for knowledge sharing and scientific excellence
  - generating new innovative ideas for future research work through the project's activities
  - through preparation of mutual research to be published in peer-reviewed journals and conferences with peer-reviewed publications.

alliance First Phase of the Project



ALLIANCE gap analysis

The gap analysis in this study is implemented in two levels to determine the gaps that might exist between:

1. The interconnecting networks in EU and the Latvia and the region, and
2. The interconnecting networks in EU and the Latvia and the region (i.e., Gap analysis I) and the existing research, educational and training programs in Latvia and the region.

The gap analysis for both the current interconnecting networks and the research, educational and training programs is performed with respect to three thematic areas:

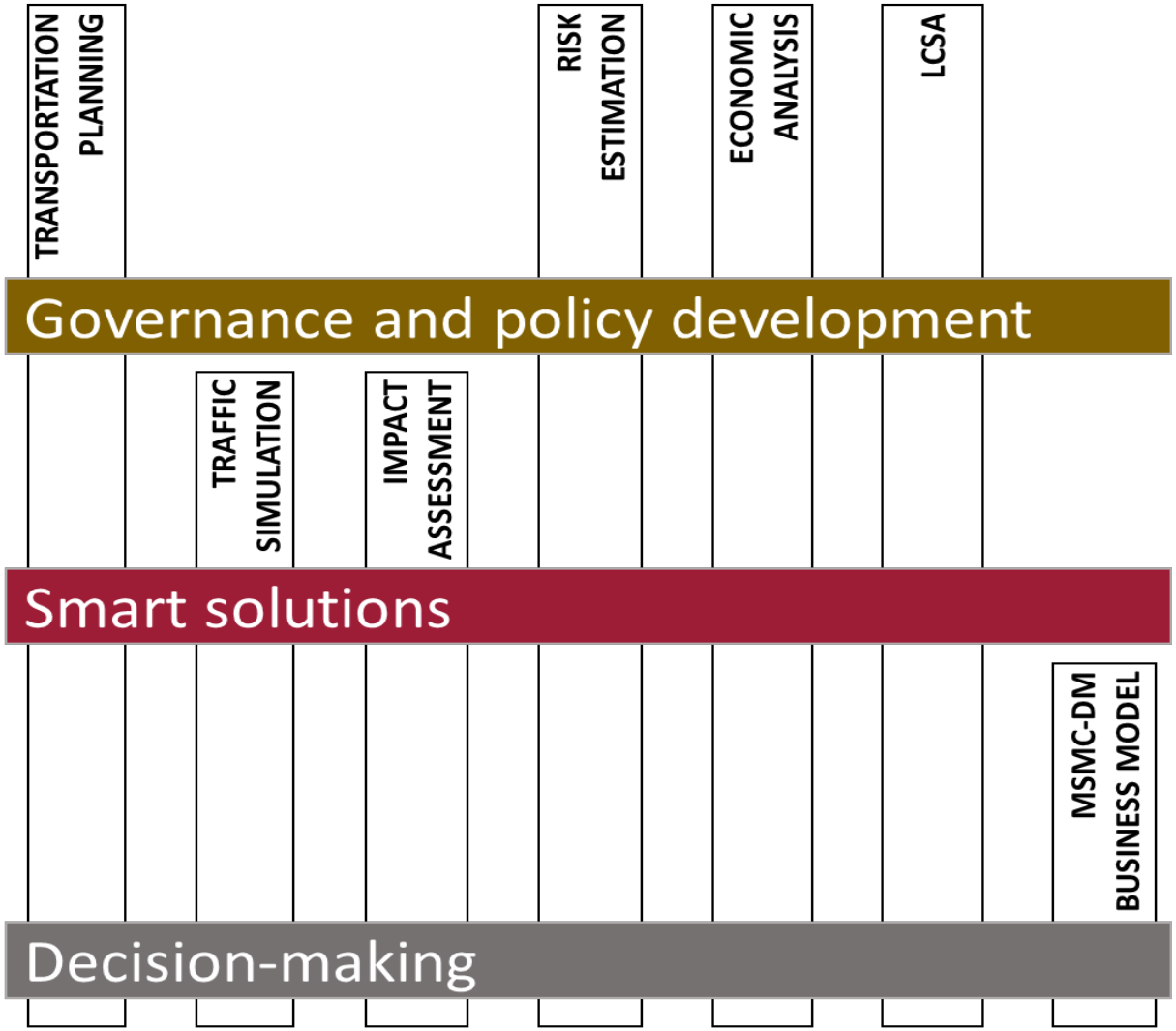
1) Governance and policy

2) Smart solutions

3) Decision-making

Each thematic area is divided in topics that are used to organize the collected information on transportation interchanges and facilitate the analysis by providing specific requirements per topic and thematic area.

Program's thematic areas



alliance Gap analysis I for freight transport

Thematic area	Topic	EU requirements	Latvia and region – state of practice	Gap I	Requirement
Governance	Stakeholders	Clear identification of the roles and responsibilities of multiple stakeholders.	Roles and responsibilities clearly identified (e.g. in Rimi Latvia distribution center).	-	-
	Policy	Harmonized policy.	National transport policies are in line with the EU transport policy. Fragmented focus on intermodality, in some cases effective integration of different modes of transport (e.g. in Vilnius Intermodal Terminal). Segmented policy on tariffs (for different transport modes).	Not harmonized policy for interchanges.	Harmonization of policies.
	Ownership	Access to all companies to terminals under equal conditions of ownership.	Public and private ownership. Poor use of public-private partnerships.	Limited business models development.	Development of business models for different ownership schemes.
	Sustainable development	Involvement of private sector and pursuit of private funding.	Sustainable development is foreseen in strategic plans (e.g. in Noord Natie Ventspils Terminals).	Limited incorporation of interchanges in regional and national development plans.	Integrated development planning.
	Management	Development of Master Plan.	Master Plan exists for each freight terminal.	-	Enhancing administrative and cooperative schemes between public and private sector.
	Operation	Integrated coordination among transport operators and modes.	Provision of high-level productivity, fast and reliable services (e.g. in Noord Natie Ventspils Terminals). Effective integration of different transport modes (e.g. Vilnius Intermodal Terminal).	-	Enhance administrative and cooperative schemes between public and private sector.
Smart solutions	New consolidation/distribution and logistics cooperative concepts	Establishment of urban consolidation centers. Business and transport operational plan.	Consolidated distribution centers continue to develop (e.g. in Rimi Latvia distribution center).	Individually planned urban consolidation centers. Limited business and transportation operational planning.	Development of a rational strategic plan of urban consolidation/distribution centers taking into account market demand. Establishment of coherent cooperative logistics schemes.
	Information technologies	Use of Information and Communication Technologies for developing Truck Management Systems and Warehouse Management Systems.	IT systems introduced and used for supply-chain management, trip planning and fleet management, e.g. in Rimi Latvia distribution center, high standard technologies in Noord Natie Ventpils Terminals.	Limited cooperation between publicly owned and operated Intelligent Transport Systems and enterprise-level software for supply-chain management, trip planning and fleet management.	Promotion of cooperative logistics solutions and other smart solutions.
	Smart transshipment	Use of equipment for loading-unloading operations and movements within the interchange facilities.	Use of equipment for loading-unloading operations and movements. Fragmented use of energy effective and environmentally friendly equipment.	Limited use of alternative, friendly to environment and energy equipment.	Application of alternative fuels and propulsion technologies.
Decision-making	Decision-support methods	Agent-based modeling approach and multi-stakeholder multi-criteria analysis.	Several decision support tools used such as environmental impact assessment, traffic forecasting, economic analysis and risk assessment (e.g. in Baltic Coal Terminal). Fragmented data collection and analysis.	Limited sharing of data.	Exploitation of BIG data opportunities.

GAP Analysis II

Thematic Area	Topic	Gap I	Educational requirement
Governance	Stakeholders	-	Incorporation of organizational and business models in course material.
	Policy	Legal framework does not focus on interchanges.	Improvement of course content on transport legal frameworks with reference to EU and partial coverage of interchanges and environmental legislation. Special attention on interchanges and environmental legislation in the courses oriented on EU transport policy issues.
		Not harmonized policy for interchanges.	Improvement of course content on transport legal frameworks with reference to EU, freight transport and environmental legislation
	Ownership	Limited involvement of several authorities.	Incorporation of courses oriented on public private partnerships (PPP) models and mega infrastructure financing schemes in educational and training the program.
		Limited business models development.	Incorporation of innovative business models in course material.
	Sustainable development	Limited incorporation of interchanges in regional and national development plans.	Incorporation in the program of topics with integrated development plans with reference to sustainable development and the environment.
		Limited incorporation of interchanges in regional and national development plans.	Incorporation in the program topics with integrated development plans with reference to sustainable development and the environment.
	Management	Interchange Management Plan not including all aspects of interchange functionalities and interests.	Development of material on integrated coordination and operation of mega infrastructure facilities with special reference to interchanges and the utilization of technological advances.
		-	Incorporation of innovative business and management models in course material.
	Operation	Limited coordination among modes and operators.	Incorporation of transport operations education and training materials that will focus on multimodal systems.
		-	Development of education material on integrated coordination and operation of mega infrastructure facilities with special reference to interchanges and the utilization of technological advances.

Yellow shaded cells refer to freight transport

GAP Analysis II

Thematic Area	Topic	Gap I	Educational requirement
Smart solutions	Information	Limited multimodal information.	Exploration and utilization of technologies to respond to transport information based needs.
	Services	Limited integrating ticketing. Existing services do not offer travelers real-time information across all stages of a multimodal trip Possible conflicts between vehicles and pedestrians. Not sufficient security level.	Development of course that integrates public transport with smart solutions (technology and policy oriented) and potential sustainability impacts. Incorporation in the program topics with interchange and terminal design and planning with reference to their special characteristics and safety issues.
	Physical properties	Limited access for all. Insufficient cycling and walking facilities. Environmental concerns vary depending on facilities' age.	Development of education materials on transport planning and design of intermodal terminals for all users to satisfy user needs and fulfill sustainability principles.
	New consolidation/distribution and logistics cooperative concepts	Individually planned urban consolidation centers. Limited business and transport operational planning.	Development training materials for case studies of planning urban consolidation centers.
	Information technologies	Limited cooperation between publicly owned and operated Intelligent Transport Systems and enterprise-level software for supply-chain management, trip planning and fleet management.	Study of ITS characteristics and utilization in case studies for the effective supply chain management and trip planning.
	Smart transshipment	Limited use of alternative, friendly to environment and energy technologies.	Review of policies related to alternative fuels and propulsion technologies, and estimation of environmental impacts for intermodal terminals.

Grey shaded cells refer to freight transport

GAP Analysis II

Thematic Area	Topic	Gap I	Educational requirement
Decision-making	Interchange status assessment and users' feedback	Not obligatory. Insufficient information for decision-making: only few surveys, data not reliable; no network assessment at the strategic level, etc. Limited data sharing.	Development of integrated course material that will focus on assessment practices with focus on interchanges and life cycle impacts (society, environment and economy) by including users' satisfaction.
	Decision-support methods	Limited sharing of data.	Incorporation of novel data collection methods and exploitation of big data opportunities in decision-making and analytics of freight transport.

Grey shaded cells refer to freight transport

http://alliance-project.eu/

Transport Courses

Following the gap analysis II, the requirements per thematic area are linked with educational areas and transportation courses:

- **Identification of educational areas: 20 educational areas** were created for **passenger and freight transportation interchanges** given the existing research, educational and training programs offered at research and educational institutes at EU level.
- **Conversion to courses.** The 20 educational areas are combined based on their content (where applicable) to shape **12 courses** for passenger and freight transportation interchanges.
- These 12 courses are used for training and education in Latvia

http://alliance-project.eu/deliverables/

Educational areas

Thematic Area	Topic	Gap I	Educational requirement	Educational areas
Governance	Stakeholders	-	Incorporation of organizational and business models in course material.	1. Building business models for passenger transport interchanges
	Policy	Legal framework does not focus on interchanges.	Improvement of course content on transport legal frameworks with reference to EU and partial coverage of interchanges and environmental legislation. Special attention on interchanges and environmental legislation in the courses oriented on EU transport policy issues.	2. Development and implementation of sustainability and transport policies in the EU region
		Not harmonized policy for interchanges.	Improvement of course content on transport legal frameworks with reference to EU, freight transport and environmental legislation	3. Development and implementation of freight transport policies in the EU region
	Ownership	Limited involvement of several authorities.	Incorporation of courses oriented on public private partnerships (PPP) models and mega infrastructure financing schemes in educational and training the program.	4. Public Private Partnerships in transport: Theory and schemes
		Limited business models development.	Incorporation of innovative business models in course material.	5. Building business models for freight transport interchanges
	Sustainable development	Limited incorporation of interchanges in regional and national development plans.	Incorporation in the program of topics with integrated development plans with reference to sustainable development and the environment.	6. Sustainable passenger transportation planning
		Limited incorporation of interchanges in regional and national development plans.	Incorporation in the program topics with integrated development plans with reference to sustainable development and the environment.	7. Sustainable freight transportation planning
	Management	Interchange Management Plan not including all aspects of interchange functionalities and interests.	Development of material on integrated coordination and operation of mega infrastructure facilities with special reference to interchanges and the utilization of technological advances.	8. Operation and management of urban public transport systems
		-	Incorporation of innovative business and management models in course material.	9. Operation and management of urban freight transport systems
	Operation	Limited coordination among modes and operators.	Incorporation of transport operations education and training materials that will focus on multimodal systems.	10. Multimodal transport optimization for passenger transport
		-	Development of education material on integrated coordination and operation of mega infrastructure facilities with special reference to interchanges and the utilization of technological advances.	11. Multimodal transport optimization for freight transport

Grey shaded cells refer to freight transport

Educational areas

Thematic Area	Topic	Gap I	Educational requirement	Educational areas
Smart solutions	Information	Limited multimodal information.	Exploration and utilization of technologies to respond to transport information based needs.	12. Information systems for passenger intermodal terminals
	Services	Limited integrating ticketing. Existing services do not offer travelers real-time information across all stages of a multimodal trip Possible conflicts between vehicles and pedestrians. Not sufficient security level.	Development of course that integrates public transport with smart solutions (technology and policy oriented) and potential sustainability impacts. Incorporation in the program topics with interchange and terminal design and planning with reference to their special characteristics and safety issues.	13. Integrated ticketing and time table coordination 14. Design and safety principles of transport terminal infrastructure
	Physical properties	Limited access for all. Insufficient cycling and walking facilities. Environmental concerns vary depending on facilities' age.	Development of education materials on transport planning and design of intermodal terminals for all users to satisfy user needs and fulfill sustainability principles.	15. Passenger terminal design
	New consolidation/distribution and logistics cooperative concepts	Individually planned urban consolidation centers. Limited business and transport operational planning.	Development training materials for case studies of planning urban consolidation centers.	16. Urban freight terminals design
	Information technologies	Limited cooperation between publicly owned and operated Intelligent Transport Systems and enterprise-level software for supply-chain management, trip planning and fleet management.	Study of ITS characteristics and utilization in case studies for the effective supply chain management and trip planning.	17. Information technologies for intermodal freight transport
	Smart transshipment	Limited use of alternative, friendly to environment and energy technologies.	Review of policies related to alternative fuels and propulsion technologies, and estimation of environmental impacts for intermodal terminals.	18. Smart transshipment and alternative transport fuels

Grey shaded cells refer to freight transport CC

Sustainable Transport Interchange Program – STIP

Code	Course	Code	Course
C0	Research methodology and teamwork setup	C7	Information systems for intermodal freight transportation
C1	The European policy on intermodal transportation	C8	Design of passenger transport interchanges
C2	Building business models for intermodal transport interchanges	C9	Design of freight transport interchanges
C3	Sustainable development and transportation planning	C10	Smart technologies for efficient logistics
C4	Operation and management of intermodal transport systems	C11	Decision making methodologies
C5	Optimization of intermodal transport systems	C12a	Data collection methods: Surveys
C6	Intelligent services for passenger transportation	C12b	Data collection methods: Historical and observed data

Key points of Knowledge Sharing Strategy

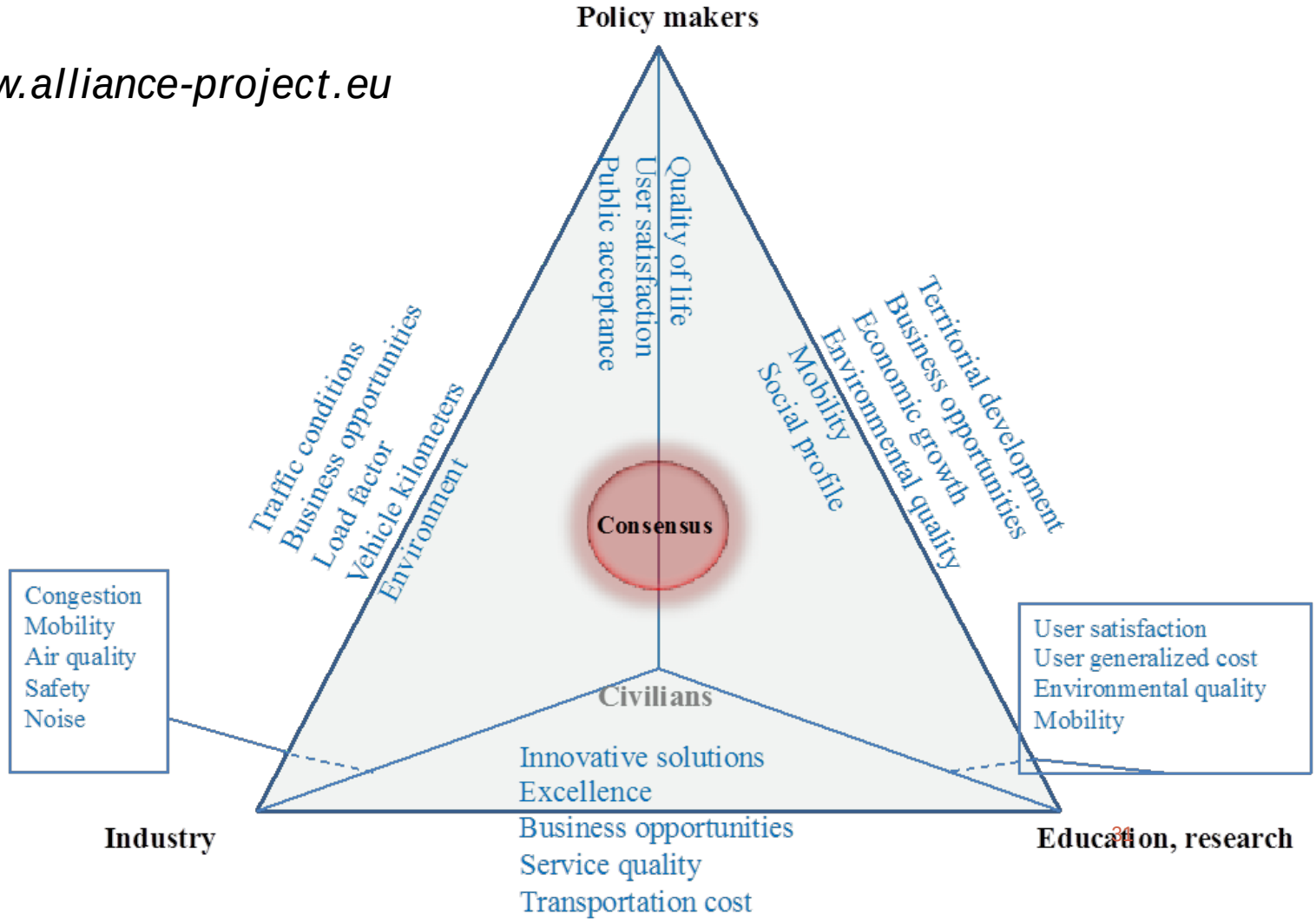
- ✓ Knowledge sharing is the process of exchanging knowledge (skills, experience, and understanding) among different target groups
- ✓ The purpose of the ALLIANCE Knowledge Sharing Strategy is the clear definition of the activities, beneficiaries and tools which will be implemented in order to support effective knowledge sharing and transfer the practices.
- ✓ **To Define**
- ✓ ALLIANCE project knowledge sharing beneficiaries
- ✓ Tools of knowledge sharing and matrix of coverage
- ✓ Framework for knowledge sharing evaluation and impact assessment

**O'Dell, C., & Hubert, C. (2011). The new edge in knowledge: How knowledge management is changing the way we do business. Hoboken, NJ: John Wiley and Sons.*

ALLIANCE Practice

Stakeholders: interconnections and impacts

www.alliance-project.eu



Knowledge sharing target groups: External

Target groups	Potential interests
Local and regional authorities	In adopting coherent decision-making frameworks based on international good practice experience
Transport and terminal operators	In adopting innovative approaches for the design of interchange terminals, using ICT tools, developing strategies for the integration of land use planning, and applying flexible management and business models
Transport policy makers and influencers	In guidelines for the provision of information to travellers and professional drivers, development of innovative approaches for the design of efficient interchanges and their implementation framework, integration of a coherent framework regarding all involved stakeholders
SMEs, business and industry	In the establishment of successful business models
General public/demand side users	In the development of advantageous transportation in terms of accessibility, timing, safety and security, cost, comfort etc.

Knowledge sharing target groups: Internal

Target groups	Potential interests	Expected benefits and impacts
Academic staff	Knowledge necessary to raise the quality of teaching of PhD and master students in predefined research area	Prepared set of studying courses and knowledge, which could be supported by qualified academic staff
Research staff	Innovative research topics, common publications, new areas of collaboration, new projects	Raise a number of scientific publication, new projects areas, new consulting services for the local and regional authorities, private companies etc.
PhD, master students	New knowledge regarding interchange terminals, new master and PhD research topics, double supervising of PhD and master thesis	Qualified young academic and research staff in topic of interchanges terminals with different aspects

Knowledge sharing tools

Educational /Training programs	**The main output of ALLIANCE.** The obtained education and training programme will be based on the knowledge from UTH and Fraunhofer, which cover the gap of the currently existing study and training programmes in TTI, Latvia; the surrounding BSR
Summer schools	Provides intensive learning in project partner promises with involving the experts in the preselected areas from all three ALLIANCE partners
Short-Term Staff Exchanges	The STSEs aim - international collaboration in preparing exploitation of background research, publications, PhD, master thesis supervising, additional study
e-resources (website, e-platform)	New knowledge regarding interchange terminals, new master and PhD research topics, double supervising of PhD and master thesis. Additionally, the knowledge about writing highly cited research articles, publication ethics etc. will be provided
Collaborative research activities	In order to make knowledge sharing more intensive and reach scientific excellence for TTI, it is necessary to implement direct activities, which involve the following: collaborative publication in scientific journals with high impact factor participation in international conferences double supervising for PhD and Ms students special issue of T&T Journal with best research results from common teams special session in the frame of International Conferences

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ALLIANCE project impact → **TTI Strategy and Research programme for 2016-2020 impact** → **National Development Plan of Latvia**

Knowledge Sharing Tools

- e-resources
- Summer schools
- Short-Term Staff Exchanges
- Educational /Training programs
- Collaborative research activities

Increase of papers indexed in Scopus, Web of science by 50%

Increase of number of jointed papers written by the international team of researchers at least twice

Increase of number of join publications written in cooperation with Latvian business entities at least twice

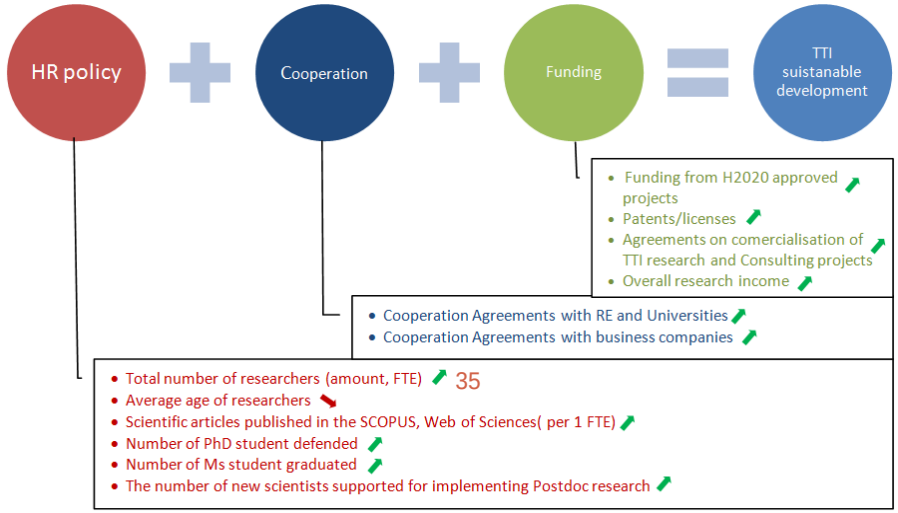
Increase of the number of PhD students who have worked in TTI till 2020 by 50%

Increase of the research work for industry by 20%

TTI journal development

- Increase H-index to 8
- Change the quality of the journal in following categories: Computer Science - from Q4 to Q3; Engineering from Q3 to Q2
- Increase SJR iby 15%
- Increase indicator cites per document by 15%
- Increase indicator "international Collaboration" by 20%

	Base value (year)	2014	2017	2020	2030
[172] Private sector investment in research and development in 2020 reaches at least 48% of the total investment in research and development (private sector investment in research and development, as a percentage of the total investment)	37 (2010)	42	46	48	51
[173] Number of researchers employed in the private sector, as a percentage of the total, full-time equivalent	16.2 (2010)	18	21	23	27
[174] Number of students obtaining degrees or qualifications at universities and colleges, thousands	24.8 (2011)	23.9	24.1	24.6	28.6
[175] Higher education (percentage of the population aged 30 to 34 with higher education)	36 (2012)	37	38	40	>40
[176] European patents granted, applied for by researchers residing in Latvia	11 (2011)	13	18	26	35



Activities

No.	Activity	Location	Date
1	Training school within UTH's Graduate Program during the 3rd Conference on Sustainable Urban Mobility	Volos, Greece	May, 2016
2	Young Researchers' Seminar and Train the Trainers Seminar during the 16th International Conference on Reliability and Statistics in Transportation and Communication	Riga, Latvia	October, 2016
3	International Logistics Doctoral Student Workshop organized by Fraunhofer	Magdeburg, Germany	June, 2017
4	**ALLIANCE 1st Training School**	**Riga, Latvia**	**July, 2017**
5	ALLIANCE Special Session during the 17th International Conference on Reliability and Statistics in Transportation and Communication	Riga, Latvia	October, 2017
6	ALLIANCE Special Session during the European Transport Research Arena Conference (TRA)	Vienna, Austria	April, 2018
7	ALLIANCE Special Session during the 4th Conference on Sustainable Urban Mobility	Volos, Greece	May, 2018
8	ALLIANCE 2nd Training School	Riga, Latvia	July, 2018
9	Special Session and ALLIANCE Final Conference during the 18th International Conference on Reliability and Statistics in Transportation and Communication	Riga, Latvia	October, 2018
10	Short-Term Staff Exchanges (STSEs)	*To be defined*	2016-2018
11	Provision of grands for participation as authors of peer reviewed publications in conferences	*To be defined*	2017-2018

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1st Summer school: "Sustainable Transport Interchanges Program (STIP) Part I: Freight Transportation"

will be held on 16-22 July, 2017, in Riga, TTI, Latvia.

- The common vision for the Summer Schools is the preparation of a new generation of transportation researchers and professionals in the area of Transport Interchanges
- The objectives are:
  - to enable the international networking of young transport researchers
  - to train young researchers on specialized topics, defined as vivid for Baltic States through intensive courses
- The outcomes of these Summer Schools are scientific excellence, along with skills and ability to put science into practice

TSI TRANSPORTA UN SAKARU INSTITŪTS

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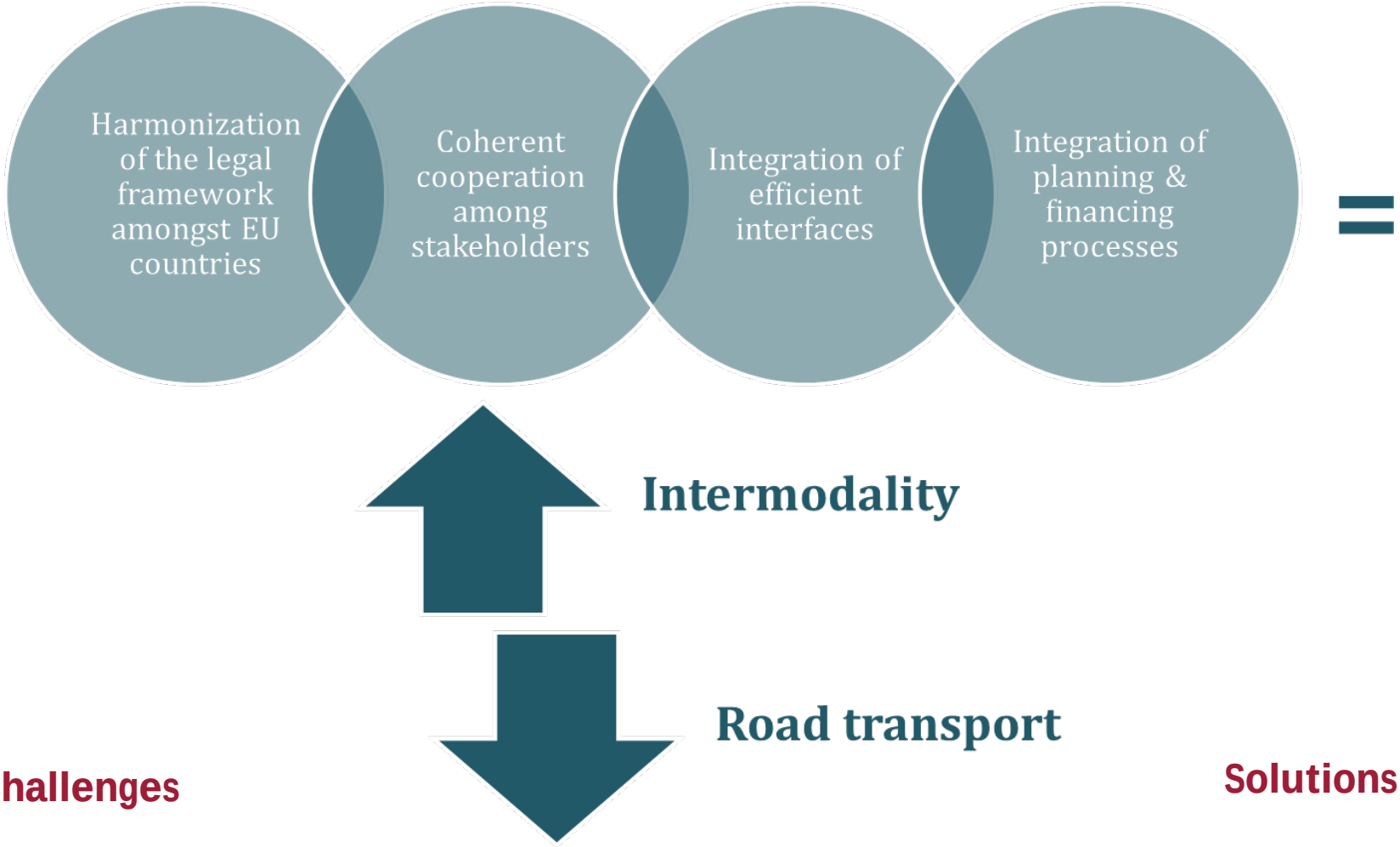
What does the 1st Summer School cover?

- The offered courses are:
  1. The European policy on intermodal transportation
  2. Sustainable development and transportation planning
  3. Building business models for intermodal transport interchanges
  4. Operation and management of intermodal transport systems
  5. Optimization of intermodal transport systems
  6. Design of freight transport interchanges
  7. Information systems for intermodal freight transportation
  8. Smart technologies for efficient transport logistics
  9. Decision making methodologies
  10. Data collection methods
  11. Research methodology and team work setup

Main Aspects on Following Slides (Project Materials)…

Transportation in an era of change

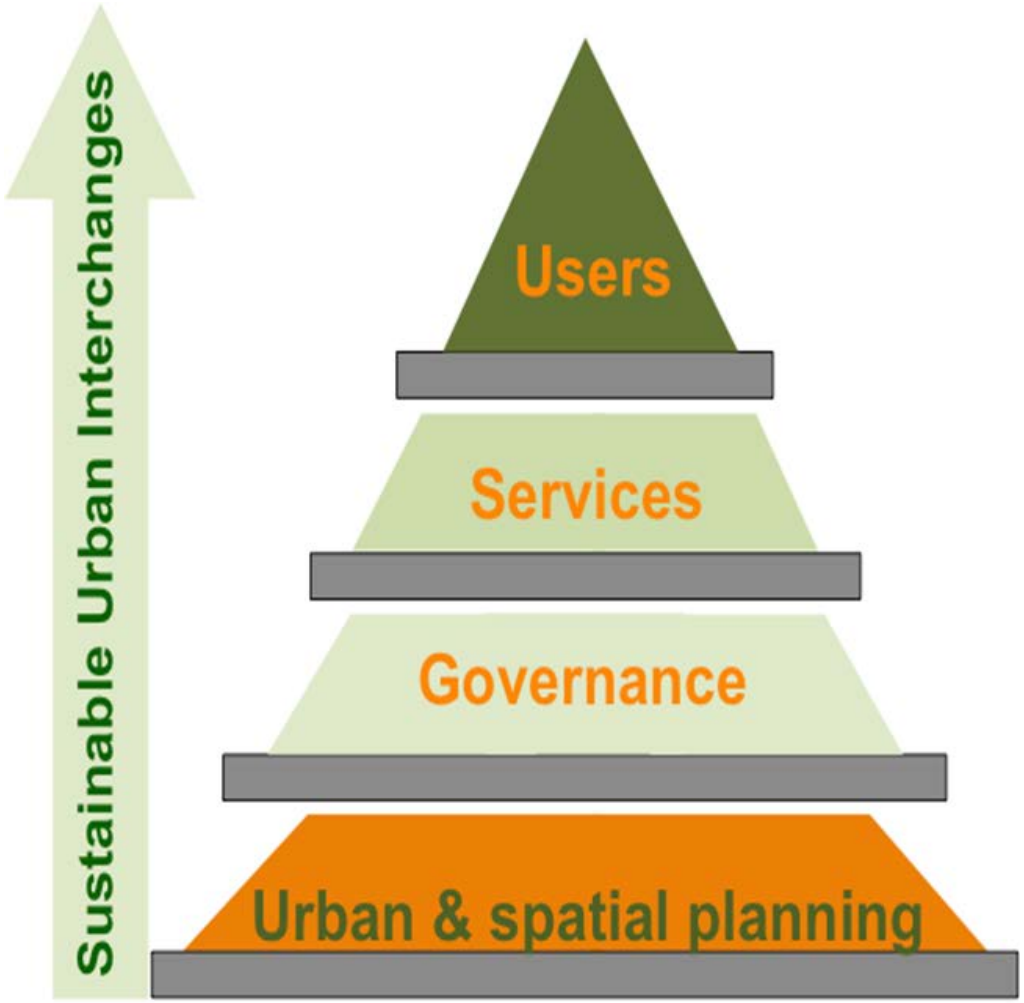


Challenges

Solutions

@ Module C1

The role of interchanges in urban planning



-The pyramid of urban interchanges elements-

@ Module C3

Source: Adamos et al., 2015

Background

Elements of Freight Transport Interchanges

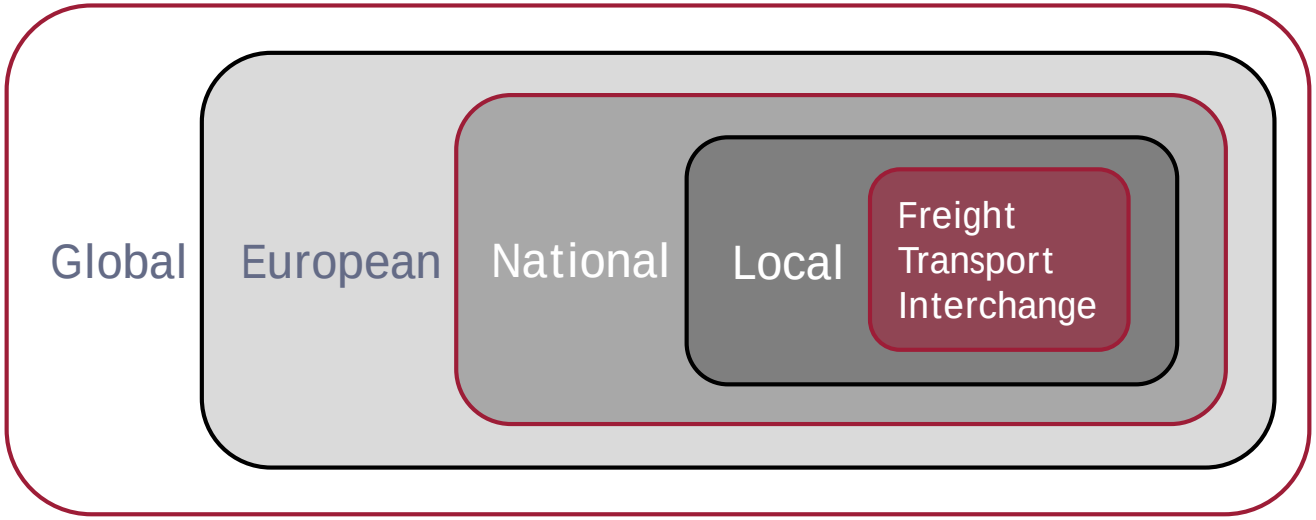
Freight transport interchanges

Accessibility

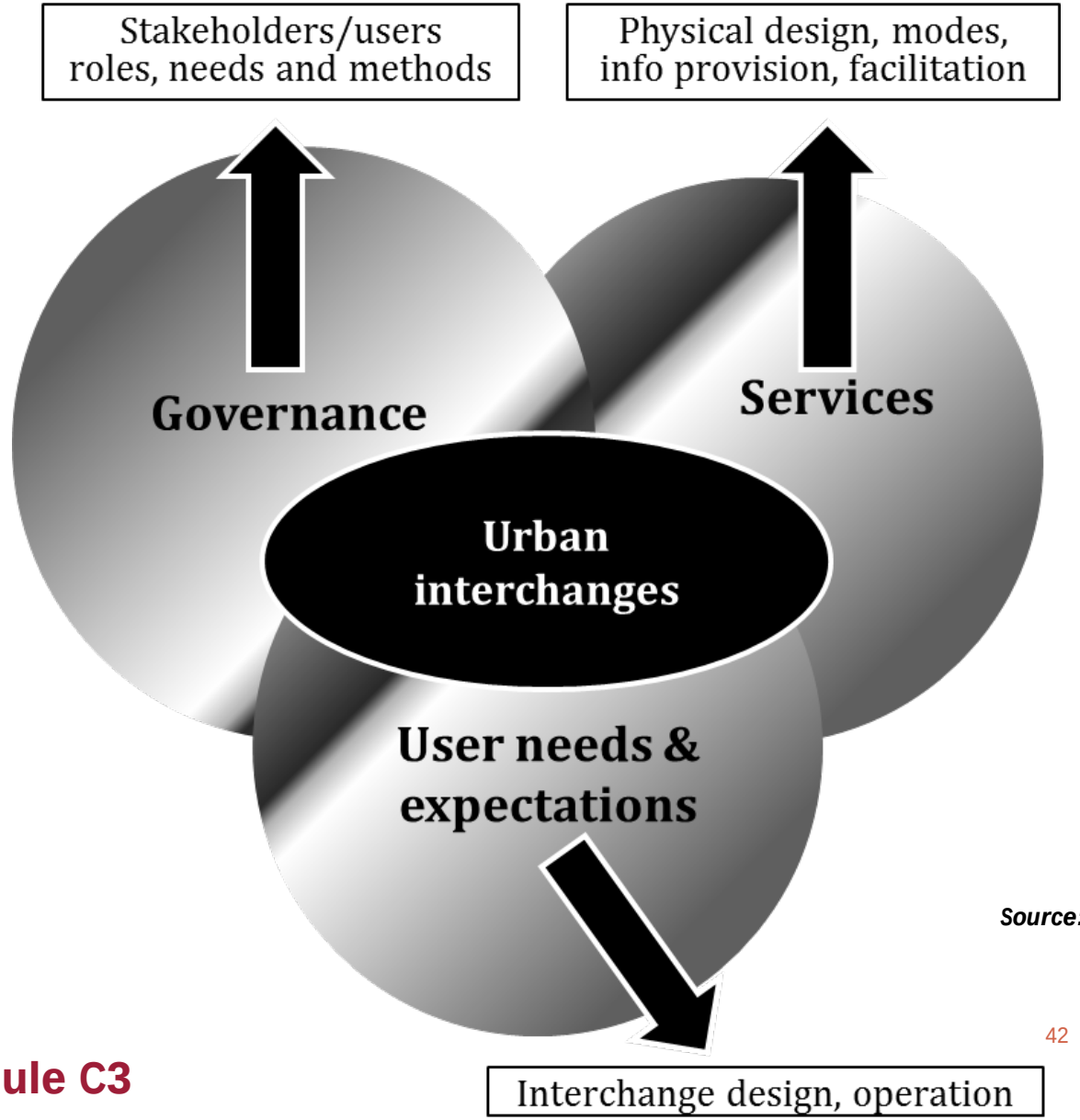
- Connection with other transport interchanges
- Connection with the regional transport system

Infrastructure

- Cover the needs of handling and transhipment of freight
- Provide material and technical equipment to serve current and future trends



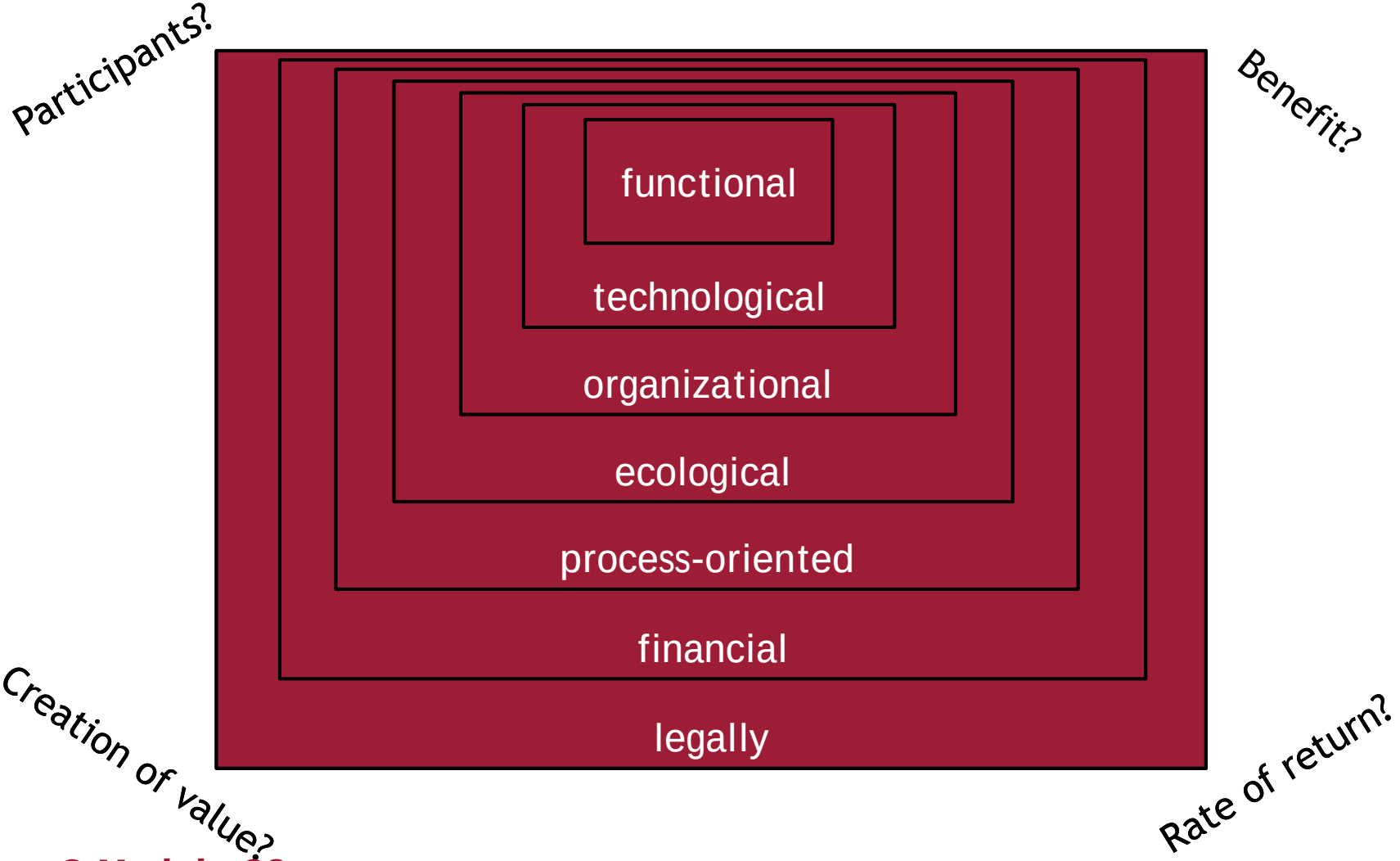
Methodology



Source: Adamos et al., 2015

Building business models for intermodal transport interchanges

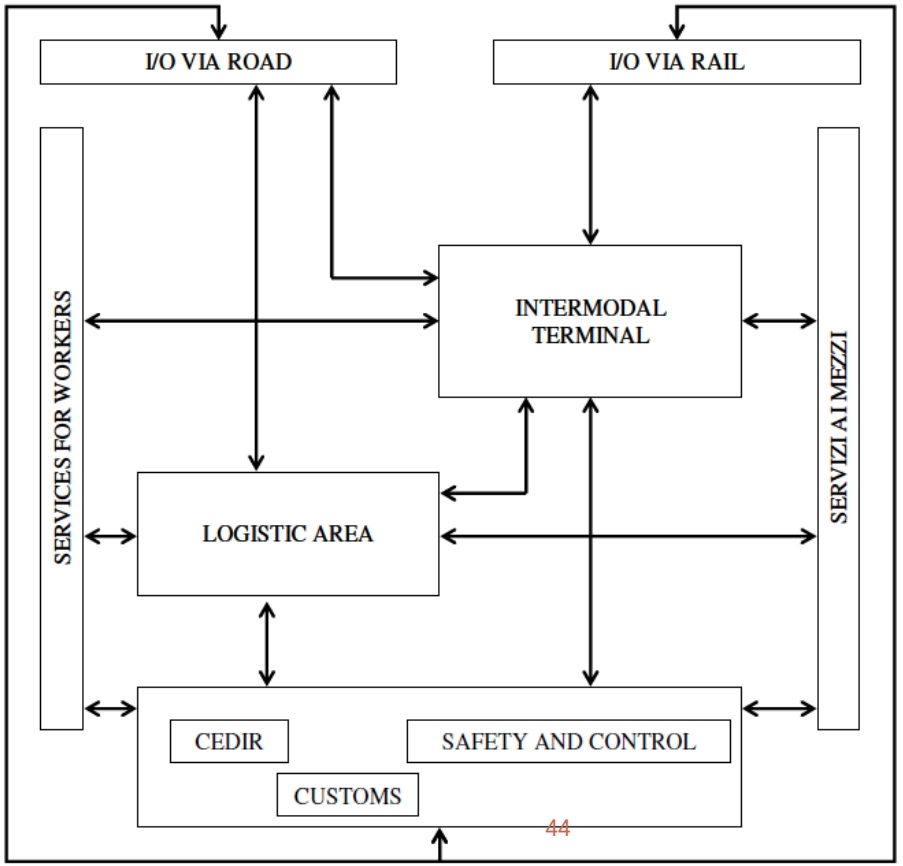
Different points of view on a business model



Categories of Freight Transport Interchanges

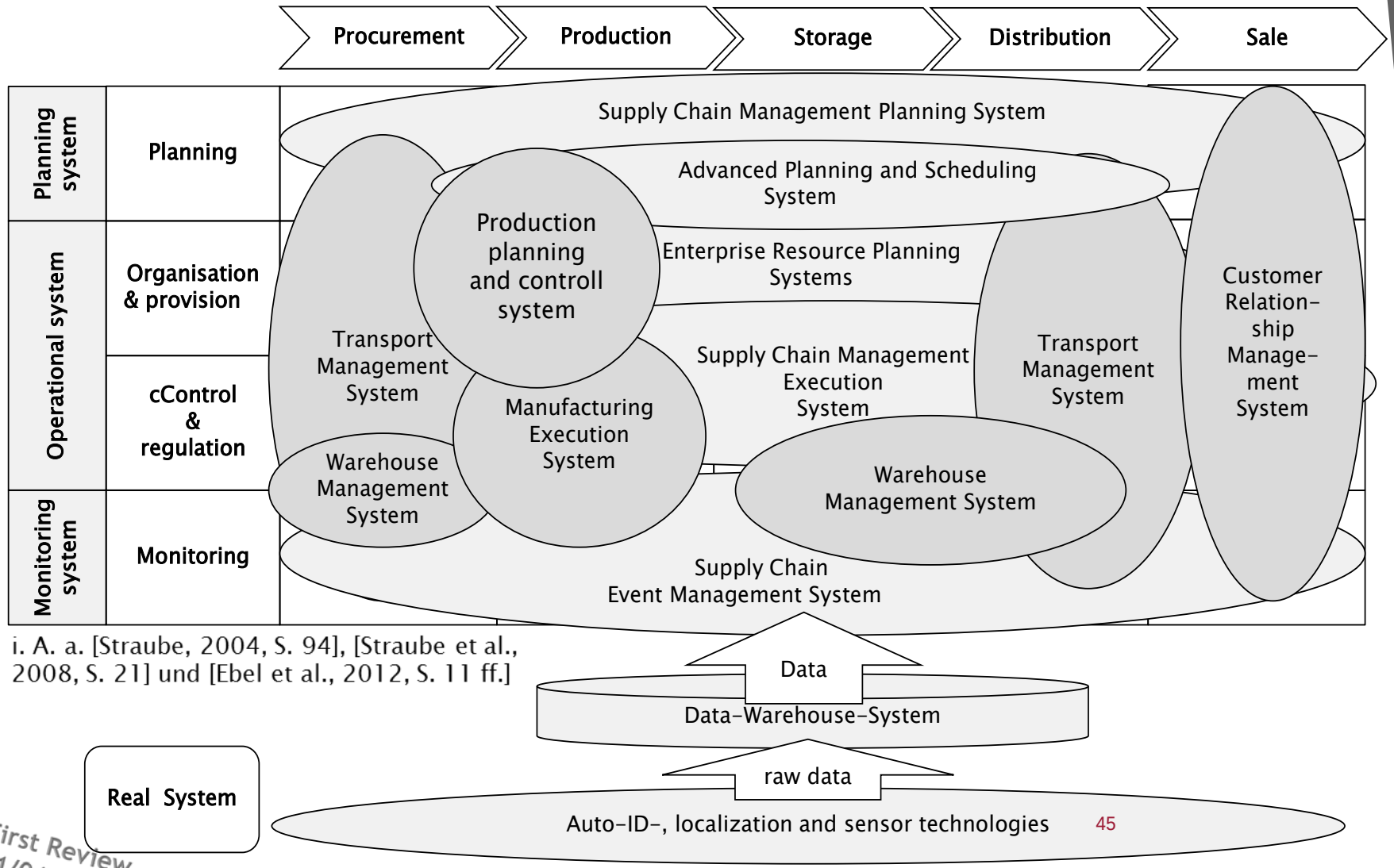
City Terminal	Freight Village	Industrial & logistic park	Special logistic area
Road-road Road-rail	Road-rail (barge)	Road-road Road-rail	Road-sea/air Road-rail-sea/air

- A freight village is the hub of a specific area where all the activities related to transport, logistics and goods distribution, both for national and international transit, are carried out, on a commercial basis.
  - at least two different transport modes
  - accommodation of other services
  - managed by various operators/providers
  - promotes cooperative activities to achieve synergies



(Cassone & Gattuso, 2010)

Logistical information systems. Classification

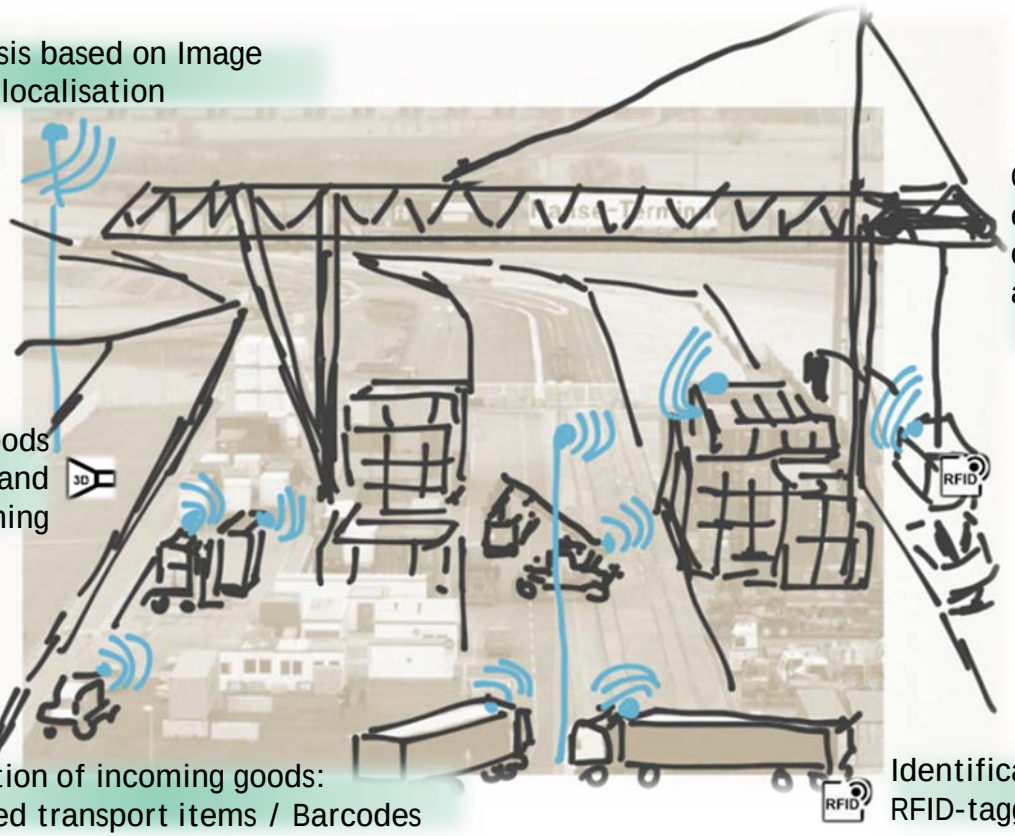


i. A. a. [Straube, 2004, S. 94], [Straube et al., 2008, S. 21] und [Ebel et al., 2012, S. 11 ff.]

Smart Technologies for Efficient Transport Logistics

The technologies discussed are relevant to the basic logistics processes in logistics operation – e.g.:

Situation Analysis based on Image processing and localisation



Collision detection based on image processing, object identification and localisation

3D-Scanning of goods for storage and transport planning

Identification of incoming goods: RFID-tagged transport items / Barcodes

Identification of outgoing goods: RFID-tagged transport items / Barcodes

@ Module C10

Decision-making framework

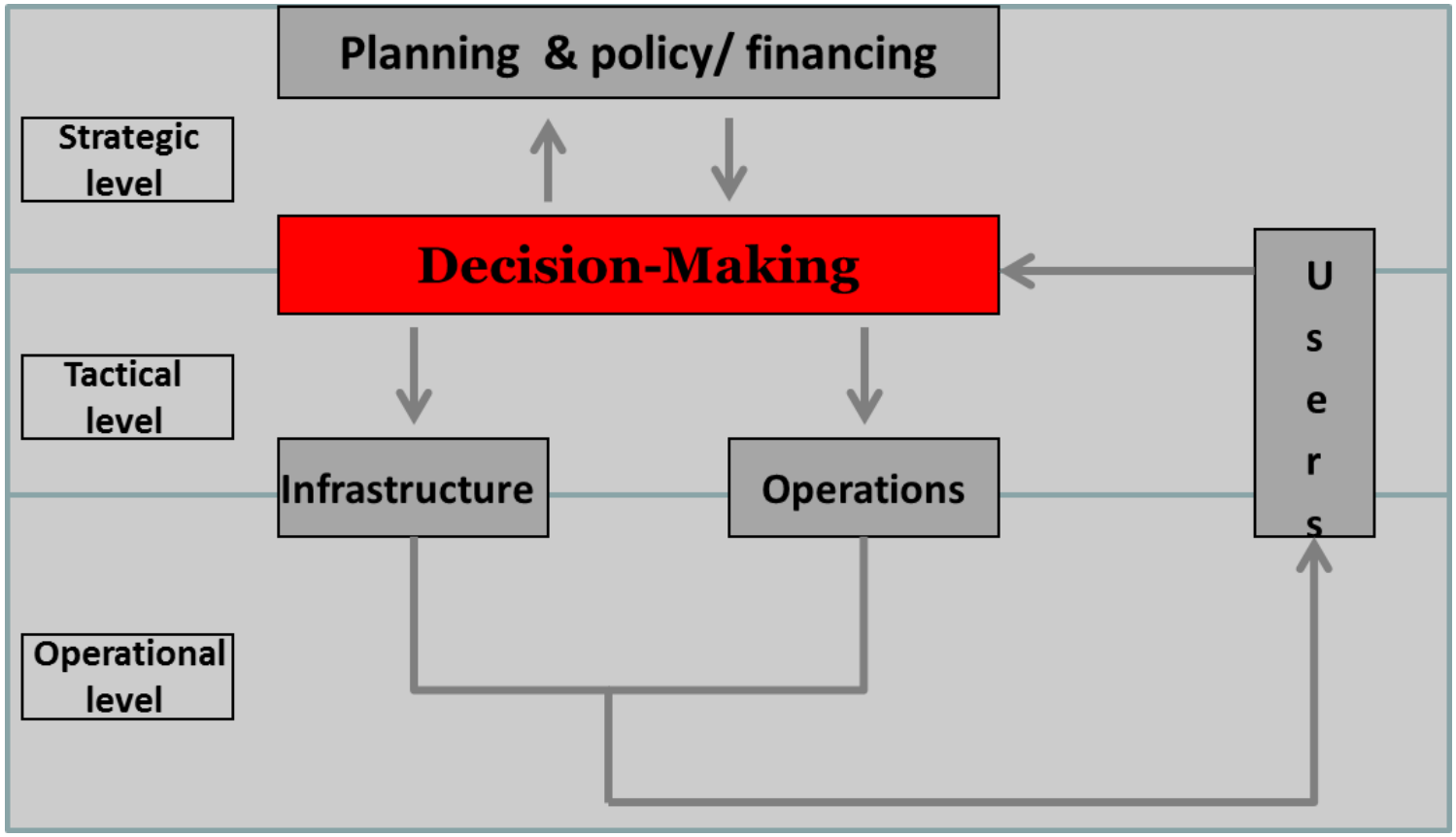


Illustration of D-M processes in intermodality

Source: CLOSER, 2012

Academics and business contributions to innovations should be balanced

"Innovation has nothing to do with how many R&D dollars you have. … It's not about money.

It's about the people you have, how you're led, and how much you get it"

Steve Jobs…

alliance

TSI TRANSPORT AND TELECOMMUNICATION INSTITUTE

Thank you very much!

and
Welcome to TTI
and
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