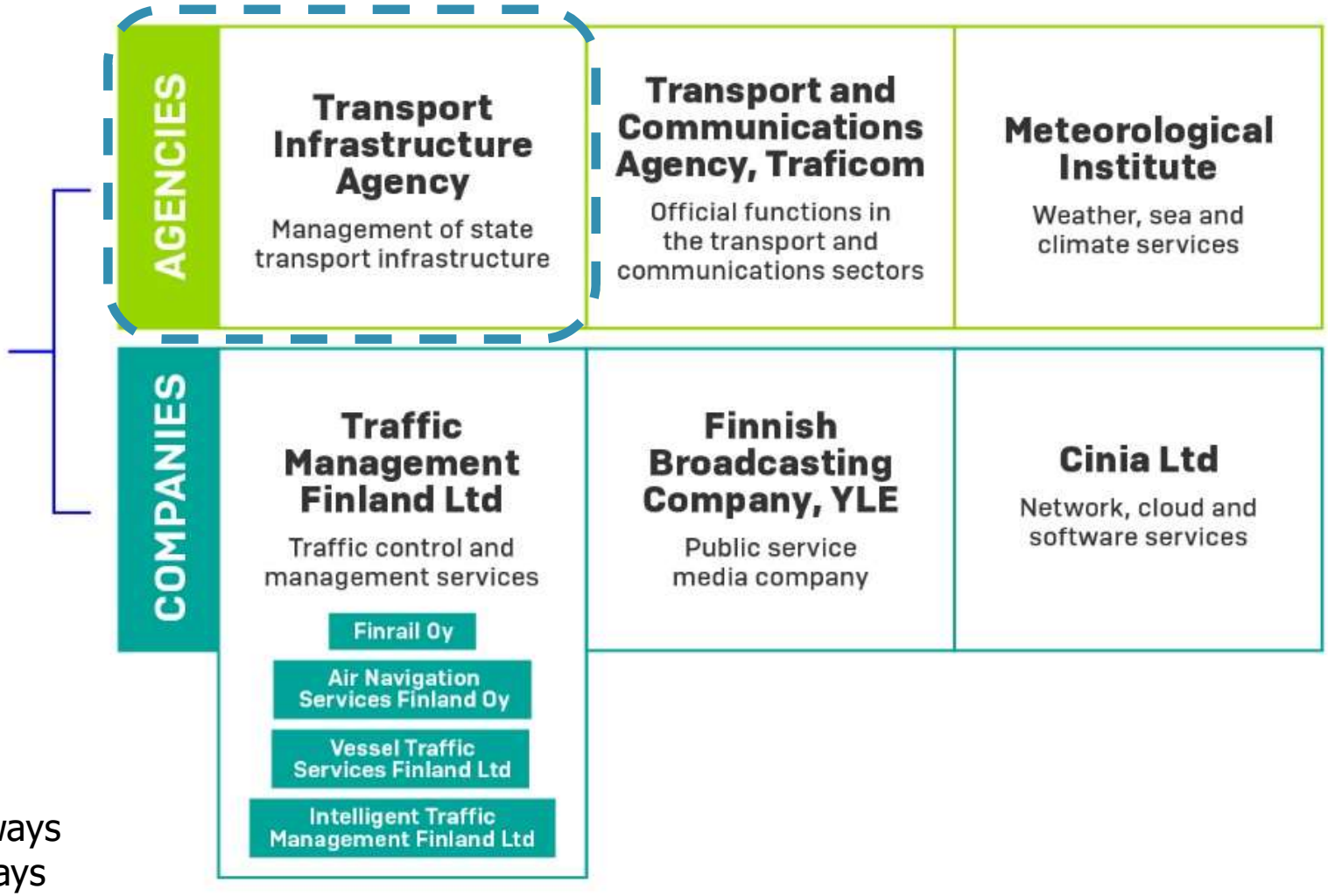
VÄYLÄ

Finnish Journey - Approach and Experiences to Integrated Project Delivery

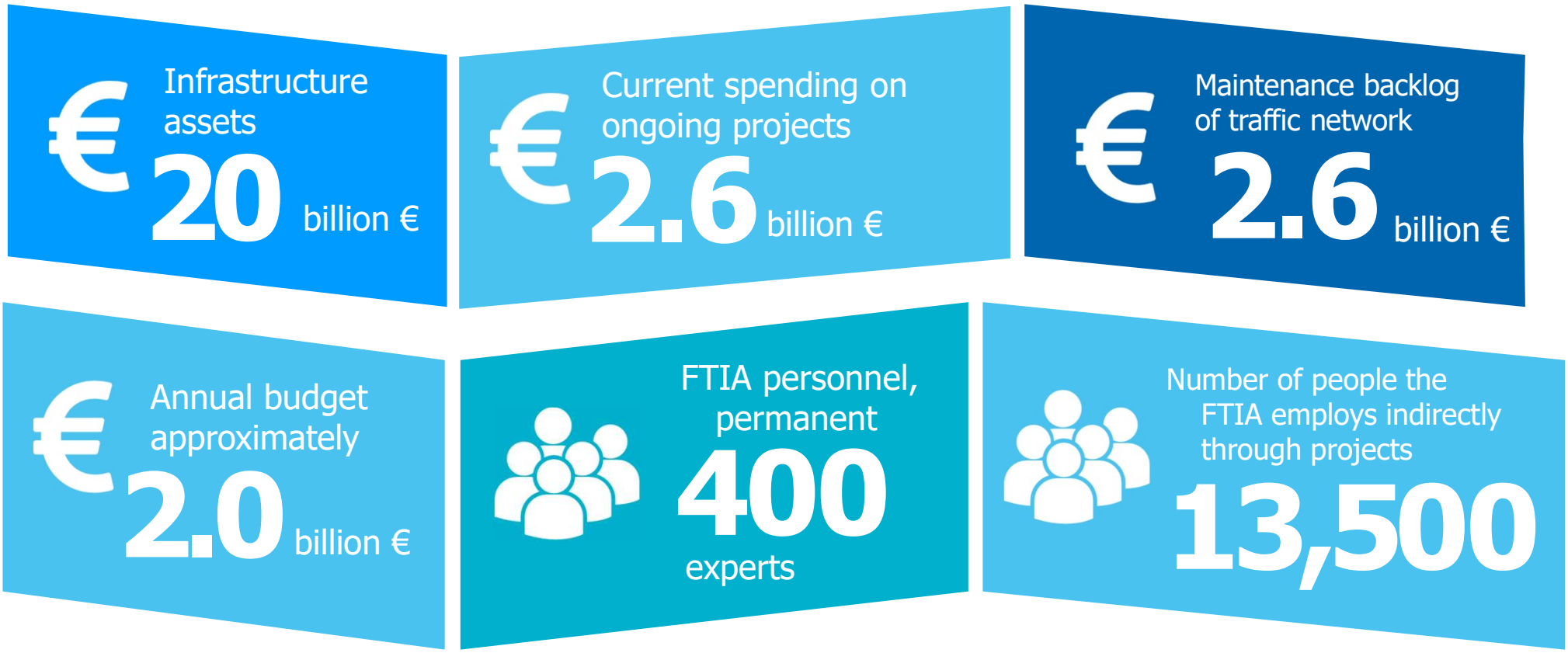
26.6.2019

MINISTRY OF TRANSPORT AND COMMUNICATIONS



- 78 000 km Roads
- 6 000 km Railways
- 8 000 km Coastal Fairways
- 8 000 km Inland Fairways

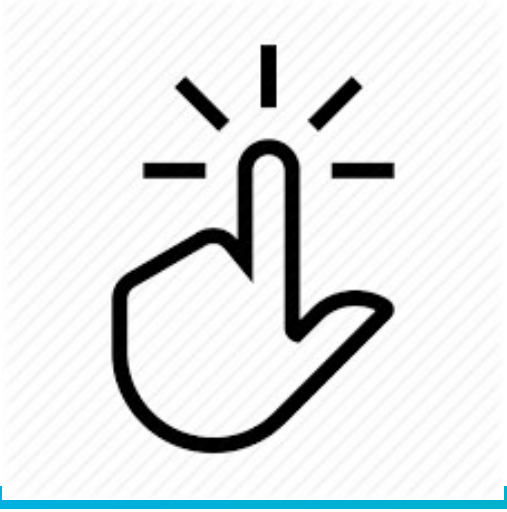
Infrastructure provides a platform for growth



My key points will be

VÄYLÄ

- FTIA set strategic goals 2011
- Why Integrated project delivery (IPD) and Lean Construction for construction projects
- To create IPD-culture, brave owner organizations and owner people are needed as far as great dialogue with the construction industry
- IPD-projects create great results
- Focus on people, challenge and educate them
- Co-operate with research institutes



Short History of IPD & Lean Construction in Finland

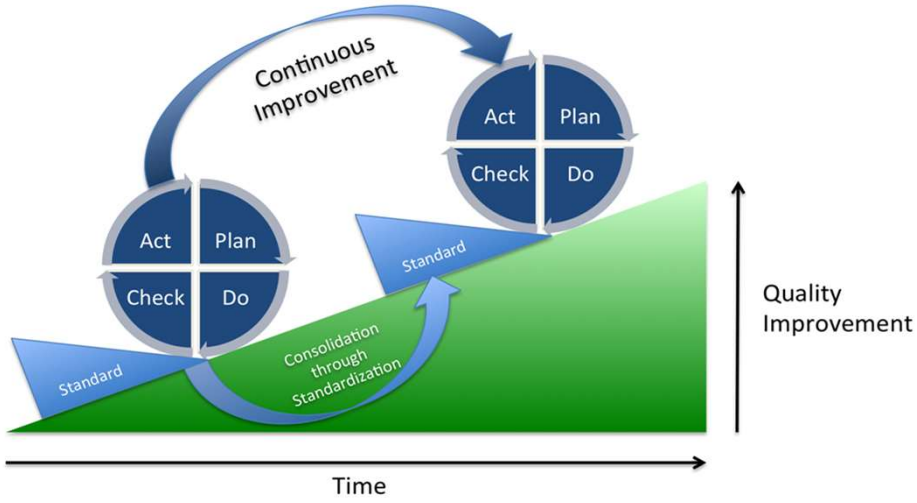
VÄYLÄ

- **2006-08: LCI comes to Finland**
- Some studies of Australian Project Alliance
- Some understanding of Lean principles and IPD's
- Establishing LCI Finland
- **2009: LIPS Karlsruhe, Germany**
- Introducing Project Alliance
- EU-legislation challenge public procurement
- **2010: LIPS Washington DC**
- 1st Joint LCI R&D Project 2010-2012 (3 M€)
- **2011 LIPPI Brisbane, Australia**
- 2 Project Alliances
- PATINA research and development project, Technical Research Centre of Finland
- **2012: LIPS Tampere, Finland**
- 4 Project Alliances
- **2013: LIPS Nottingham, UK**
- 6 Project Alliances + some hybrids
- 2nd Joint LCI R&D Project 2013-15 (4,5 M€)
- **2014: LIPS Berkeley, USA**
- 16 Project Alliances + 4 IPD Projects
- 1st Public Sector R&D Project 2014-16 (11 pilot Projects)
- **2015: LIPS Barcelona, Spain**
- 34 Project Alliances + several IPD Projects
- **2016: LIPS Elsinore, Denmark / LCI Berkeley**
- over 40 Project Alliances + more coming
- 1st Lean Production R&D Project 2016-18 (0,7 M€)
- **2017 ILCC Chennai, India / LCI Anaheim**
- over 60 Project Alliances + IPD Projects
- 2nd Public Sector R&D Project 2017-19 (12 pilot Projects)
- 20 participants in Anaheim from Finland
- **2018 LIPS Berkley**
- First ICT Alliances
- Over 70 Projct alliances total
- **2019**
- Publication of new Alliance Contracts and Guidelines

THEME 1

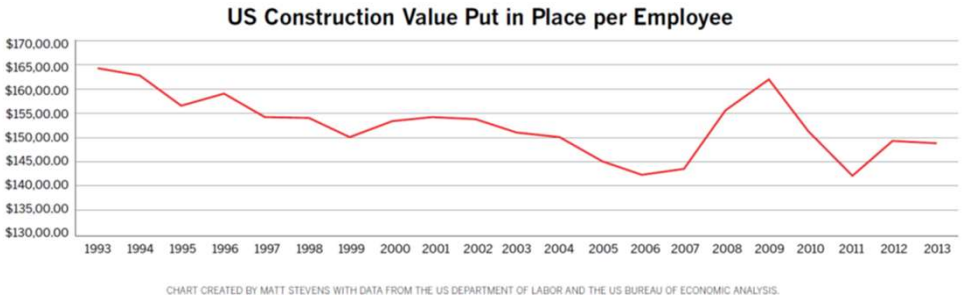
VÄYLÄ

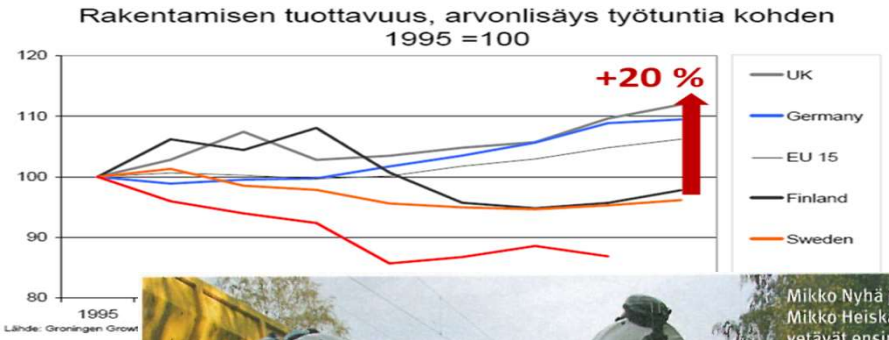
Why Integrated project delivery (IPD) and Lean Construction for construction projects?



FTIA Strategic Targets to use Lean & IPD

VÄYLÄ





- To improve productivity of the entire industry
- To change the culture into a more open and trusting way of working
- To improve the customer satisfaction for end products – faster, better quality and cheaper
- To develop innovativeness and knowledge
- We do believe there is huge potential, which is connected to the way of acquiring services and cooperating during the project

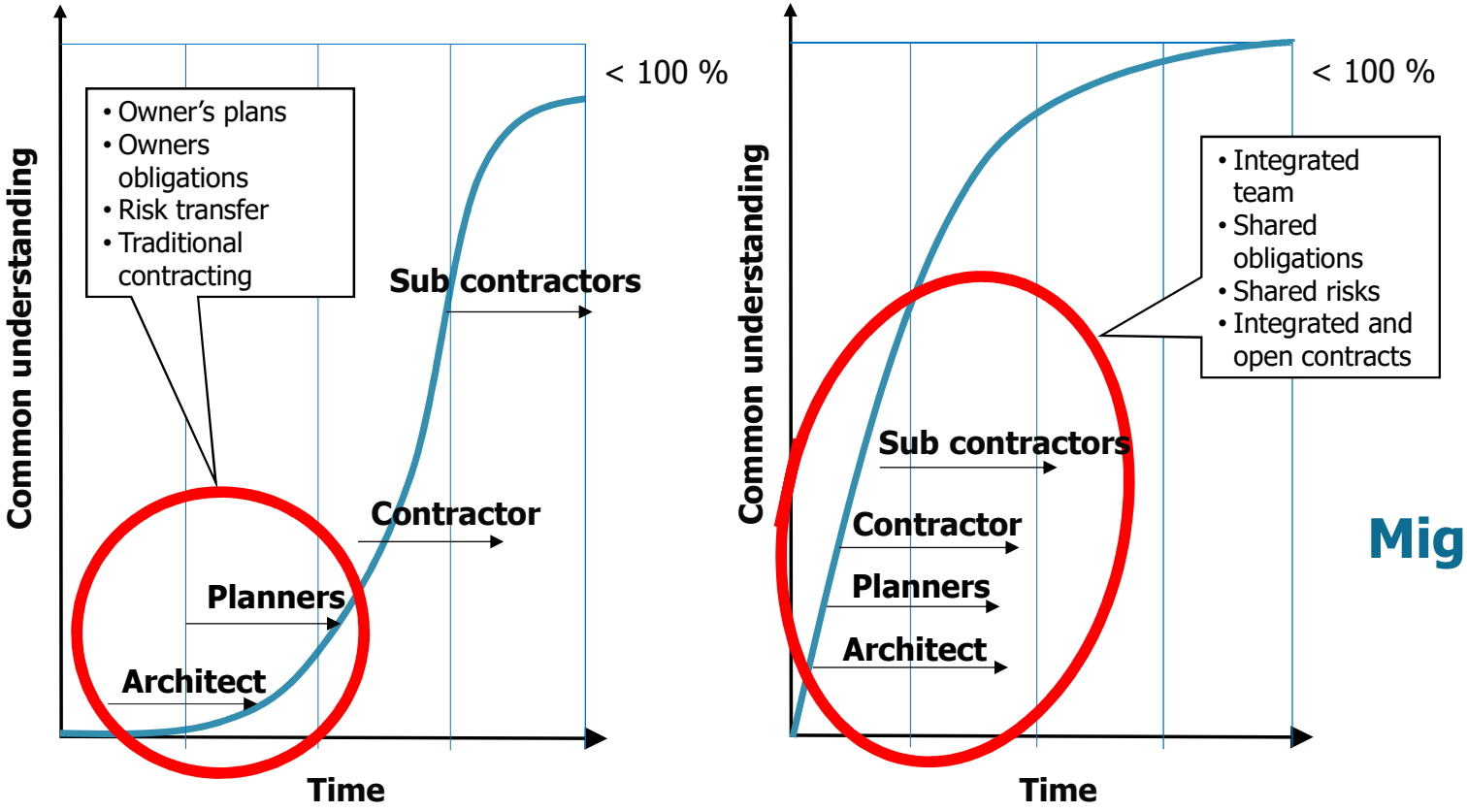
Working day consideration

Managing projects having risks and contingency

- Who are pricing risks? Who are bearing risks?
- How I am able to get different parties to collaborate together?
- How do I ensure, that different parties optimize the whole instead of optimizing their own (suboptimizing)?
- How do I create an project organization which deliver transparent information?
- How can we add value for money and customer?
- How can we eliminate waste and focus more on people?

Owner's consideration

Early involvement



Might this help a bit?

Alliance Contracting in a nutshell

Project Alliance is a project delivery system

- based on a **joint contract** between the key actors to a project
- whereby the parties assume **joint responsibility** for the design and construction of the project
- to be implemented through a **joint organisation**
- and where the actors **share both positive and negative risks** related to the project
- and observe the principles of **information accessibility**
- in pursuing **close cooperation**

Multi-party contract applied

No roles and duties defined in the contract

The owner is part of the organisation

Pains and gains are to be shared

Open books principle is followed

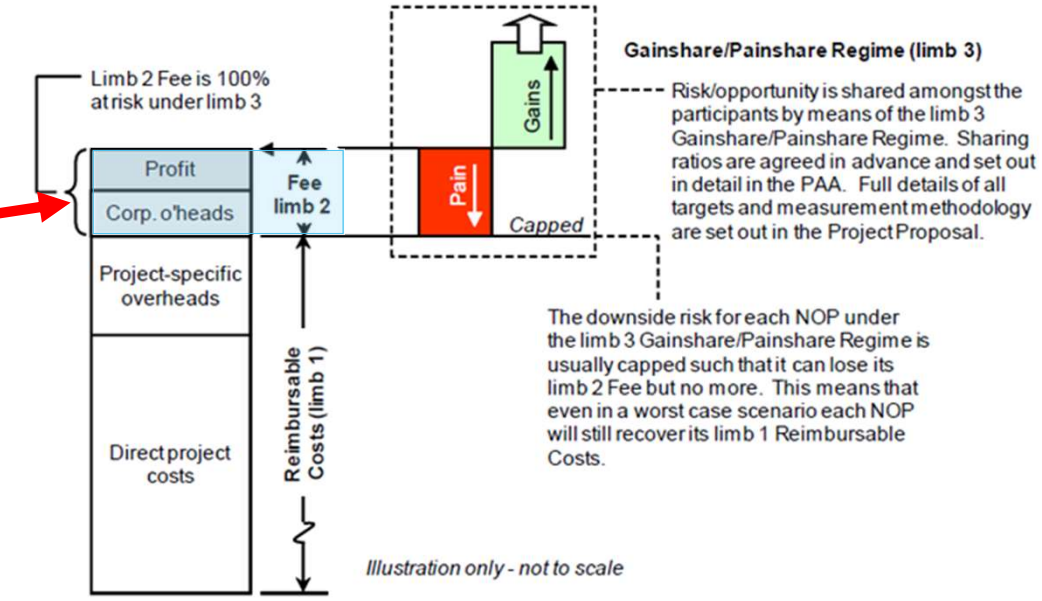
`No fault – no blame´ culture

Alliance and European Union procurement legislation

According to the EU directives and Finnish legislation:

- **The price should be used, when contracting authority is making comparison of tenders**
- **Two possible selection criterias:**
  1. **The lowest price, or**
  2. **the most economically advantageous tender (so-called quality and price)**
- **In Alliance, the limb 2 will be used as a price element.**
- **Contracting entities should write out justifications for every comparison criteria**

The European commission rejected claim against using Alliance Model September 2013



Project Alliancing
Building on the Australian experience – May 2010 Helsinki

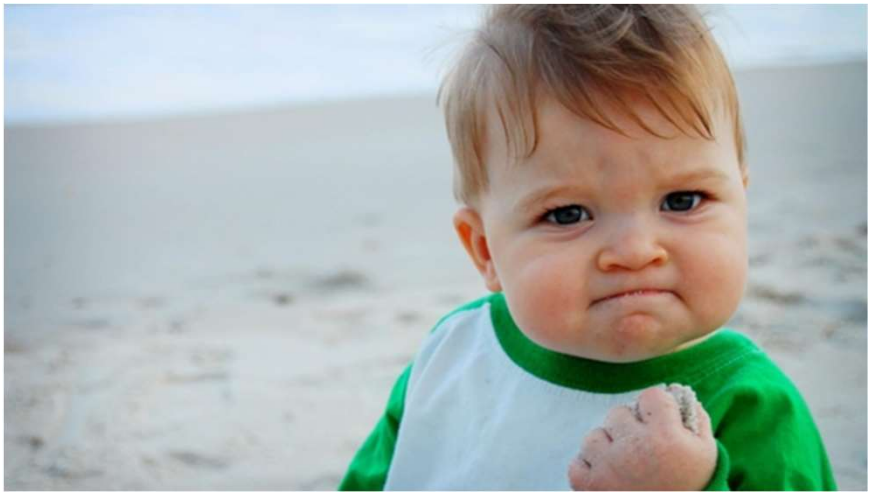
Lean thinking in IPD projects…

VÄYLÄ

- Last planner System through the supply chain
- Caves/BIM/VDC (CAVE = Computer assisted virtual environment)
- Big room environments
- Target Value Design/Delivery
- Problem solving tools and methods
- Continues improvement
- Prefabrication
- A3 reporting
- Takt time production has also started

…Leads huge Cultural change !

VÄYLÄ



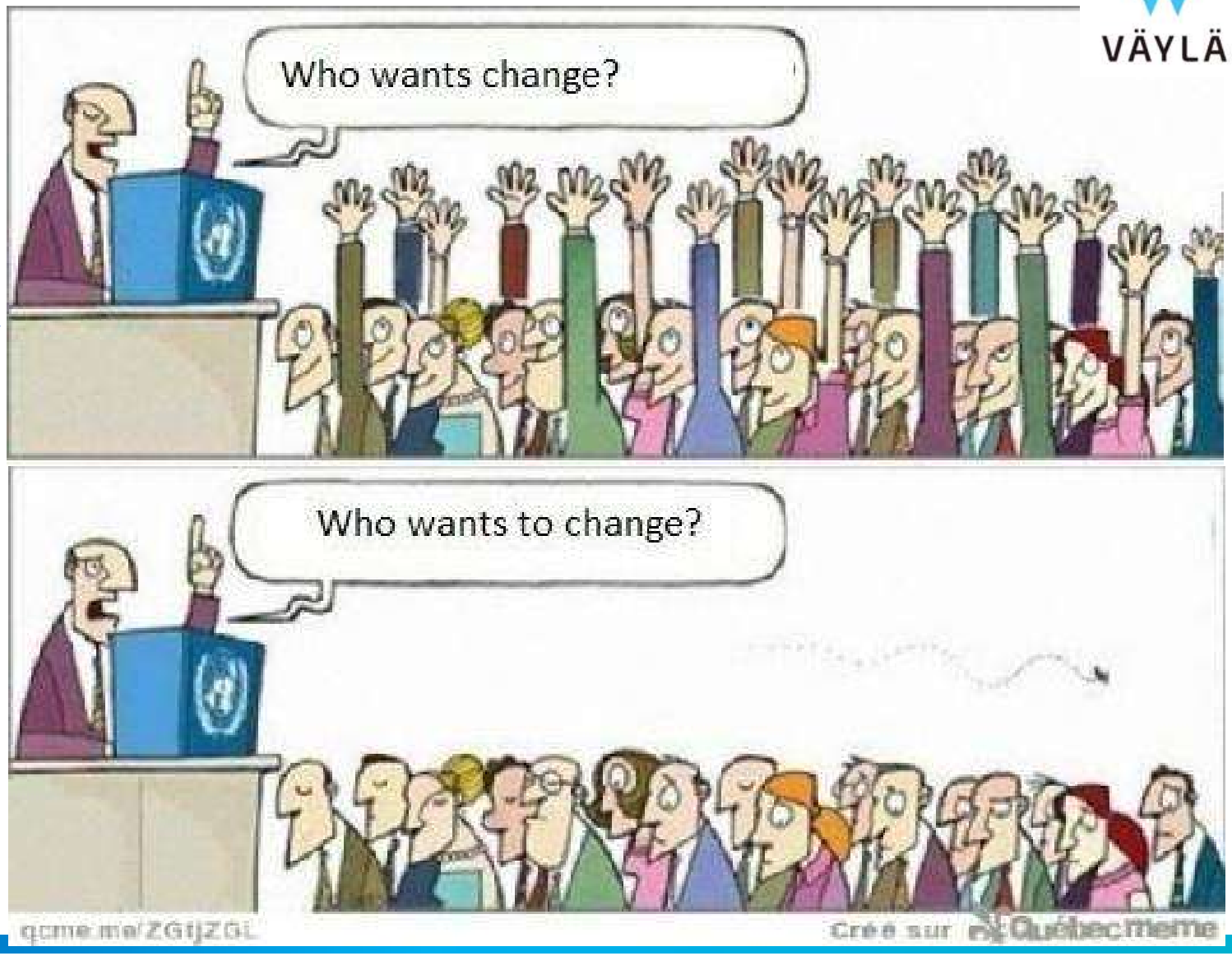
THEME 2

VÄYLÄ

To create IPD-culture, brave owner organizations and (owner) people are needed as far as deep dialogue with the construction industry

VÄYLÄ

If you want a change, you need somebody to kick it off !!!



First Pilot Projects 2011-12

VÄYLÄ

- Liekki-project (Railway renovation), ***Finnish Transport Agency***
- Tampere Tunnel, City of Tampere, ***Finnish Transport Agency***
- Vuolukiventie campus renovation, *University of Helsinki, Center for the Premises and Facilities*

Let's Go!

- *Alliance documents from Austaralia apply to EU legislation*

Rakennuslehti 15.12.2012 | nro 39 | www.rakennuslehti.fi | JOKA VIIKKO AMMATTILAISEN ASIAA

3000 M€ projects in 8 years

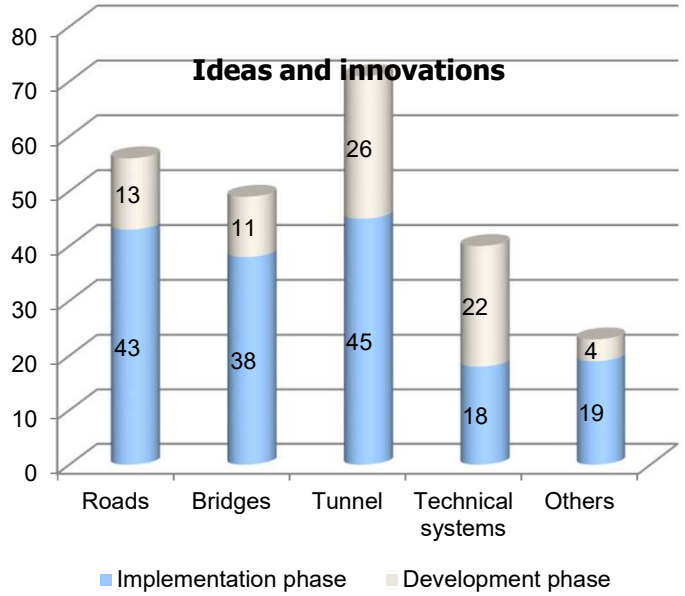
VÄYLÄ

	Project	M€	2011				2012				2013				2014				2015				2016				2017			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Lielahti-Kokemäki radan peruskorjaus	100																												
2	Vuolukiventie 1b:n peruskorjaus	18																												
3	Tampereen Rantatunneli	180																												
4	Helsinki-Vantaan liikennealueiden päällystystyöt [1)]	20																												
5	Terveyden ja hyvinvoinnin laitoksen päärakennus [2)]	18																												
6	Järvenpään sosiaali- ja terveystalo	51																												
7	Franzenian peruskorjaus [3)]	6																												
8	Lahden matkakeskus	19																												
9	Pakilan alueurakka	8																												
10	As. Oy Helsingin Retkeilijänkatu 3-7 [4)]	9																												
11	Jyrkkälän lähiön julkisivuperuskorjaus	28																												
12	As. Oy Gunillankallio 10	13																												
13	VTT:n ydinturvallisuustalo [2)]	30																												
14	Joensuun oikeus- ja poliisitalo [2)]	30																												
15	Naantalin voimalaitoksen allianssiurakka	45																												
16	Yliopistonkatu 4 peruskorjaus	25																												
17	Kainuun keskussairaalan peruskorjaus ja laajennus	120																												
18	VT 6 peruskorjaus	76																												
19	Kempeleen TK	14																												
20	Hiukkavaaran monitoimitalo	24																												
21	LaNa (Lasten ja naisten sairaala) [5)]	60																												
22	Kotkan poliisitalo [2)]	20																												
23	Espoonlahden kirkko [6)]	8																												
24	Tampereen raitiotie	280																												
25	Turun Syvälahden koulun allianssiurakka	28																												
26	Finavian Asematason allianssiurakka	100																												
27	Jakomäen keskiosan kehittäminen	50																												
28	Tammelan stadion	60																												
29	Pohjankartanon koulusaneerausohjelma [7)]	10																												
30	Pitkäkankaan koulusaneerausohjelma [7)]	10																												
31	Finavian terminaalilaajennus [6)]	200																												
32	Harppuunakortteli [7)]	100																												
33	Äänekosken radan peruskorjaus	80																												
34	Rataverkon KP2-palvelualliansi	25																												
35	Tesoman hyvinvointipalvelut	140																												
37	Suomenlinnan huoltotunneli	7																												
38	Ylimaarian koulu	22																												
39	Raide-Jokeri	275																												
40	Lahden eteläinen kehätie - Allianssi	150																												
41	Vantaan koulut 2 kpl	40																												
42	Kuopion uusi sairaala	120																												
43	Tiestötietojärjestelmä- ja palvelut	8																												
44	Tikkurilan kirkko	44																												
44	Keravanjoen yhtenäiskoulu	32																												
45	Vaasan sairaala H-uudisrakennus	110																												
46	Pakilan palvelurkanneukset -allianssi	40																												
47	Infra-alan kustannuslaskentajärjestelmä	8																												
48	Kruunusillat-allianssi	120																												
	Total	2981																												

THEME 3

VÄYLÄ

IPD-projects create great results

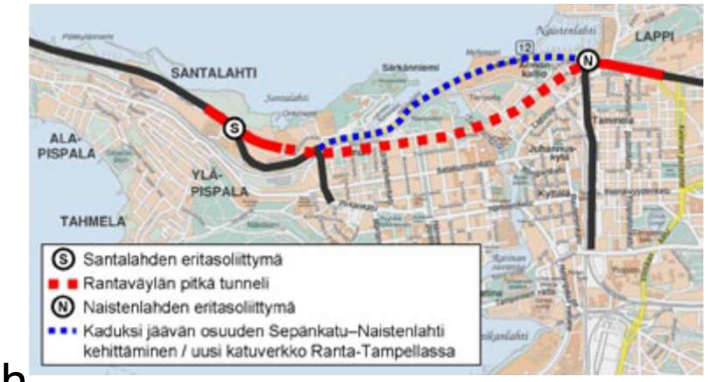


Tampere Tunnel Alliance project

VÄYLÄ

Project

- 2x one-way 2,3 km road tunnels
- Target cost 180,3 M€ + owners risks (eg. polluted soil)
- Development period (in Alliance) July 2012 – September 2013
- Implementation period October 2013 – completed 2017

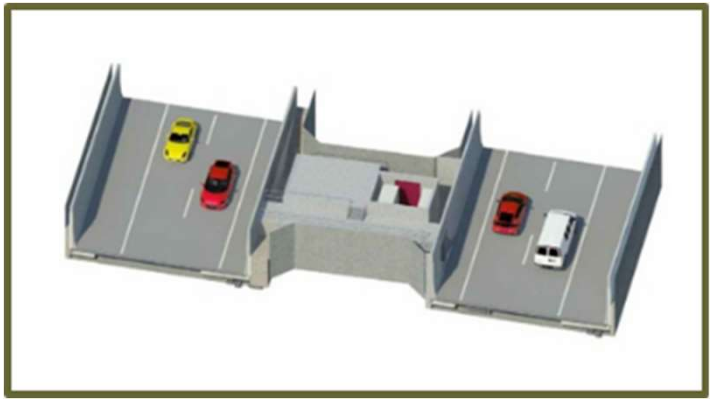


Idea

- Forming alliance with **two Owners** – City of Tampere and Finnish Transport Agency
- Improving Big Room activity and practices

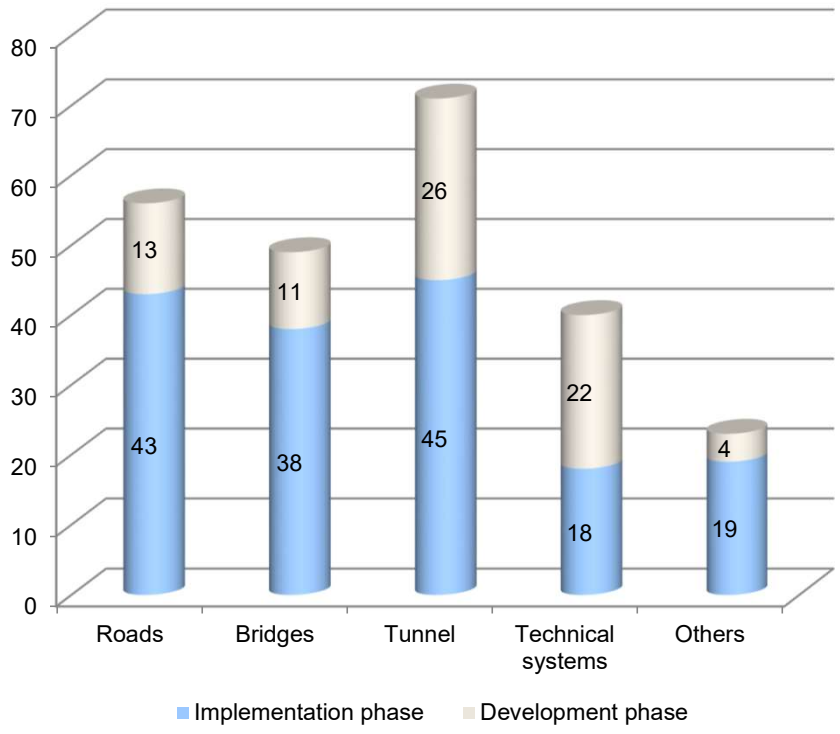
Impacts

- **Designing the project to client's budget from 220 M€ to 195 M€**
- **TVD-process was successfully applied in the project**
- **Successful Big Room activity**
- **Major innovations**
- **Delivered six months ahead and under budget**
- **All KRA´s exceeded**



What has been achieved & Lessons learnt

More than 200 ideas → More than 30 innovations (VfM over 20 M€)



Technology groups have taken the responsibility to develop the ideas

- **Clear evidence of innovation promotion, but ideas have to be systematically developed into innovations**
- **Less waste with internal processes since Alliance can define, plan and prepare what is best for the project => right things in the right time**
- **One and only Big room is a must**
- **Rather unanimous decision making is not workshop than a meeting**
- **Quick and a problem even with 5 parties in an Alliance**
- **You get what you measure (KRA)**

Helsinki Airport Terminal

VÄYLÄ

Project

- 300 M€ Terminal Expanding Investment
- Renovation of 157.000 m^2 + 25.000 m^2 of new passenger and baggage facilities + 9 gates for widebody jets
- Alliance members: Finavia, ALA Architects, HKP Archtiects, Ramboll Finland and SRV (Construction)

Idea

- The best Project Alliance in Finland & Lean everywhere
- 50 % increase in passenger and baggage handling capacity

THEME 4

VÄYLÄ

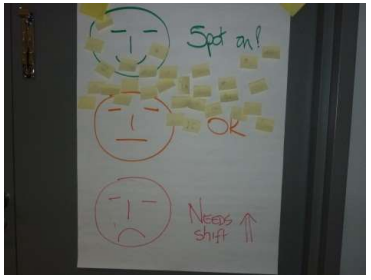
Focus on people, challenge and educate them

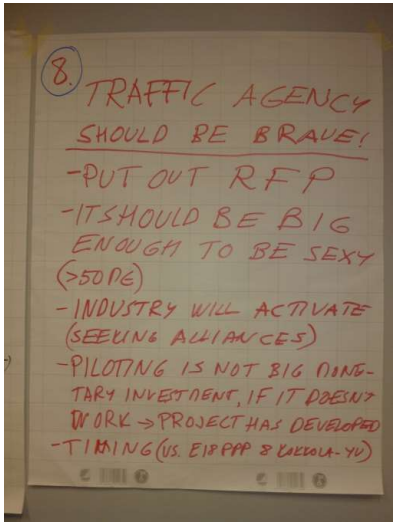
Changing culture is the issue
- Building trust, trust, trust

VÄYLÄ

Dialogue with the industry

- Started in May 2010
- General Information of the pilot projects in September 2010
- Workshop with the industry in November 2010. Focus on commercial framework and selection criteria
- More workshops during the selection processes in every project





Selection of Service Providers

VÄYLÄ

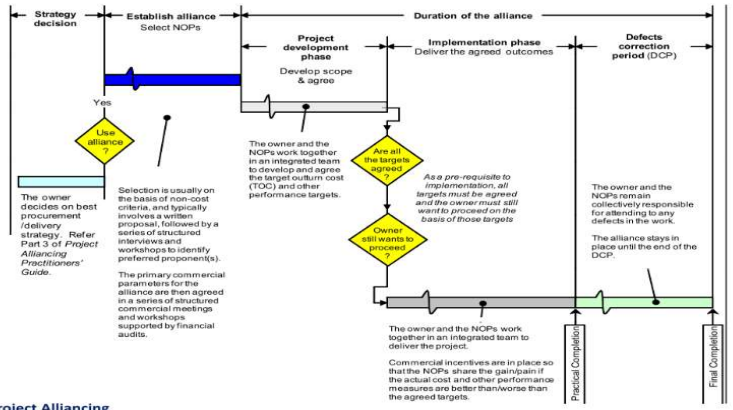
Selection of most suitable parties to build up an integrated team with an owner - to design and execute project and reach owner's targets and high performance

Process

- Competitive tendering process
- Non cost selection criteria

Selection criteria

- Technical, financial and management capacity
- **Understanding and commitment to the Alliance way of doing business**
- **Lean processes**
- **Tests and exams**
- Margin / Fee



Project Alliancing
Building on the Australian experience – May 2010 Helsinki
Slide 17

Evaluation criterion		Weight			
		Stage2		Stage3	
		total	sub	total	sub
A.	**Capability**	**100 %**		**75 %**	
A1.	**Project implementation plan and organsation**	**25 %**		**10 %**	
	A1.1 Project implementation plan and organisation		25,00 %		10,00 %
A2.	**Track Record**	**35 %**		**10 %**	
	A2.1 Track record in Key Result Areas		25,00 %		10,00 %
	A2.2 Learning from mistakes		10,00 %		no evaluation
A3.	**Value for Money**	**40 %**		**30 %**	
	A3.1 Setting the target outturn cost		25,00 %		15,00 %
	A3.2 The budjet critique		15,00 %		15,00 %
A4.	**Alliance ability and leadership**	**0 %**		**25 %**	
	A5.1 Alliance understanding and demonstrated leadership capabilities		no evaluation		25,00 %
B	**Price**			**25 %**	
B1	**Fee %**		no evaluation		25,00 %
	A+B Total	**100,00 %**		**100,00 %**	

Big Room Concept – Continuous Improving

VÄYLÄ

Shared workspace for all parties

Cooperation and collaboration

- Owner + designers + contractors + suppliers
- Stakeholders
- Information and data sharing

Building of Trust

- Open books
- Transparency

Commitment on continuous improvement

- Last planner
- Target value design etc.

Best for the project

Value for a money

Group projects 2014-2019 for Owners - learning, coaching, dialogue

VÄYLÄ

2014-16 Project level

Foundation

- 11 Public organizations
- 11 Pilot Projects
- IPD Procurement
- IPD Agreements and commercial models
- IPD phases
- Lean principles and some tools

2017-19 Organization level

Producing value and improving productivity

- **13 Public Organization**
- **13 Projects**
- **Building new culture**
- **Challenging and educating people**
- **Lean processes and tools**
- **Creating value and reducing waste**

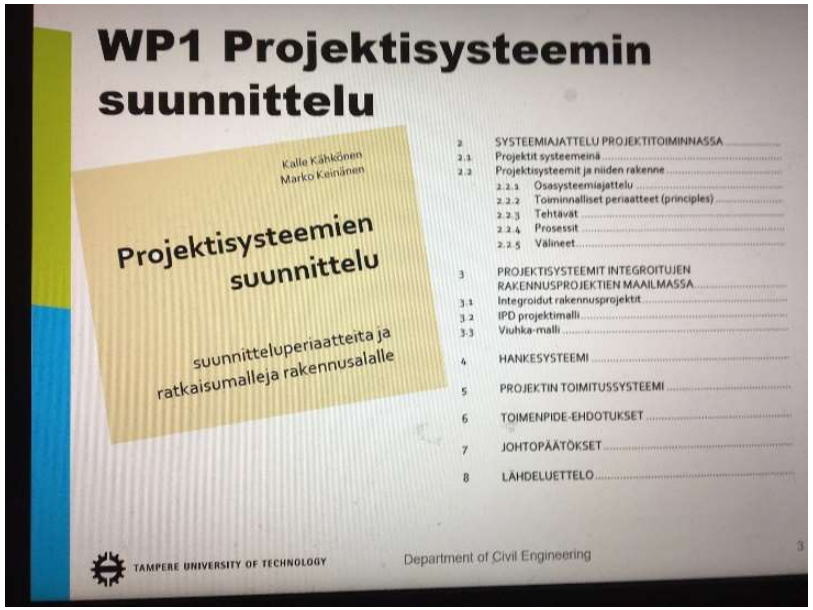
2020 -Industry level

#1 in Using Integrated Projects

- New strategies
- New business models and opportunities
- Focus to operational and lifecycle value
- Something we have not seen yet

THEME 5

Co-operate with Research institutes



Why LCIFIN research projects?

VÄYLÄ

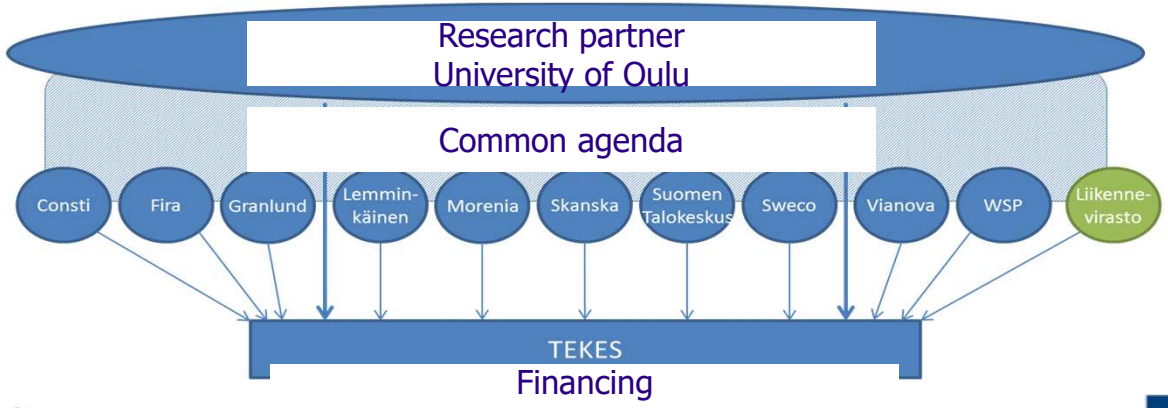
- We believe that Lean methods and Lean Construction are powerful philosophies and give us theoretical and practical platform to develop the whole industry
- We need forums where we can study together and share common understanding and lessons learnt
- We need to bring academy and industry closer to each other
- We need participants who represent the whole value chain. We can across the borders in joint R&D projects
- 1+1 > 2

LEAN CONSTRUCTION INSTITUTE - FI

LCIFIN Research Projects

VÄYLÄ

- ✓ LCI1 & LCI2
- ✓ 12 organizations
- ✓ Financing 8,0 M€
- ✓ Duration 2010-2015



LEAN CONSTRUCTION INSTITUTE - FI

OULUN YLIOPISTO
UNIVERSITY of OULU

Academic research

Research and papers	Number
Doctoral thesis	4
Master Thesis	30-40
Lower academic thesis	30-40
Scientific articles	10-120
Conference papers	several dozen
Presentations	> 100

RAIN- Project
(Integration in Construction)

VÄYLÄ

- 2,5 years joint program-> October 2018
- Five themes
- Joint R&D budget 450 000 €
- Companies together over 2 M€

Not the best players – but the best Team!

VÄYLÄ

Not the best players – but the best Team!

- The RIL Project of the Year in Finland 2016
- The IPMA Project of the Year in Finland 2017
- The IPMA Global Project of the Year 2018

My key points again…

VÄYLÄ

- Why Integrated project delivery (IPD) and Lean Construction for construction projects
- To create IPD-culture, brave owner organizations and owner people are needed and great dialogue with the construction industry
- IPD-projects create great results
- Focus on people, challenge and educate them
- Co-operate with research institutes

VÄYLÄ