

Ihku

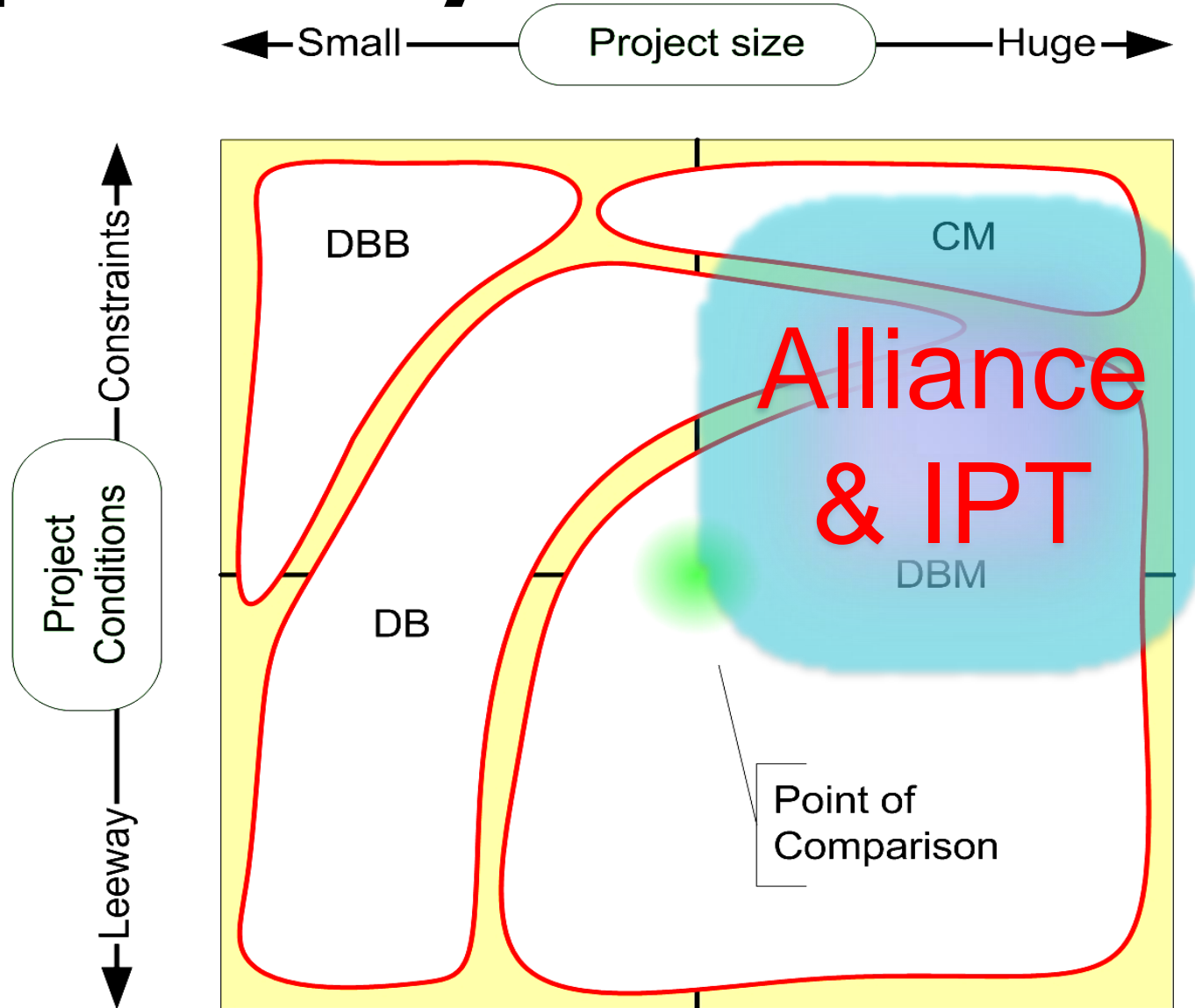
Infrastructure Cost Management System Alliance Project



Contract Models in FTA – all in use

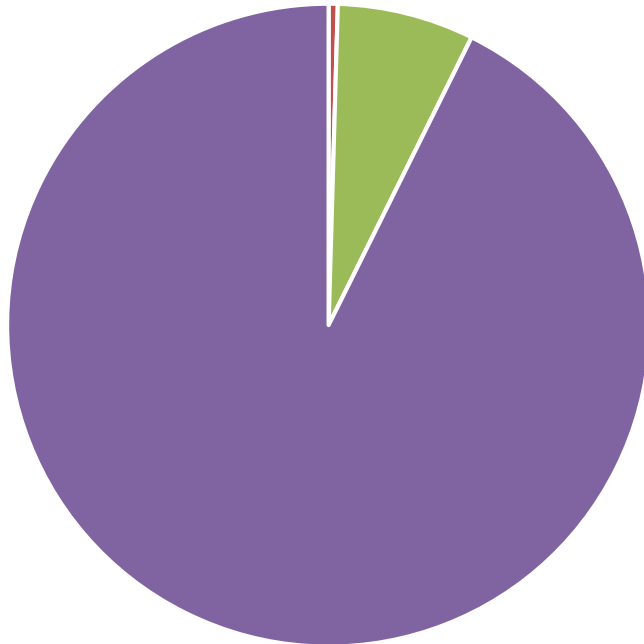
- **D-B-B** = Design Bid Build, all the phases under separate agreements, traditional method used all around the world
- **D-B** = Design-Build, Design and Build phases are combined to the same agreement, coming more popular method
- **CM** = Construction Management, provides Owner with a central focal point for managing and administering all phases of project construction. Treats planning, design, construction as integrated tasks
- **DBOM / DBFO** = Design-Build-Operate-Maintain phases are combined to the same long term agreement / private financing is combined to the DBOM-agreement, also known as **PPP**
- **Alliance, Integrated Project Team (IPT)** = Owner and one or more service providers (designer, constructor, supplier etc.) are working as an integrated project team

Applicability of Procurement Methods



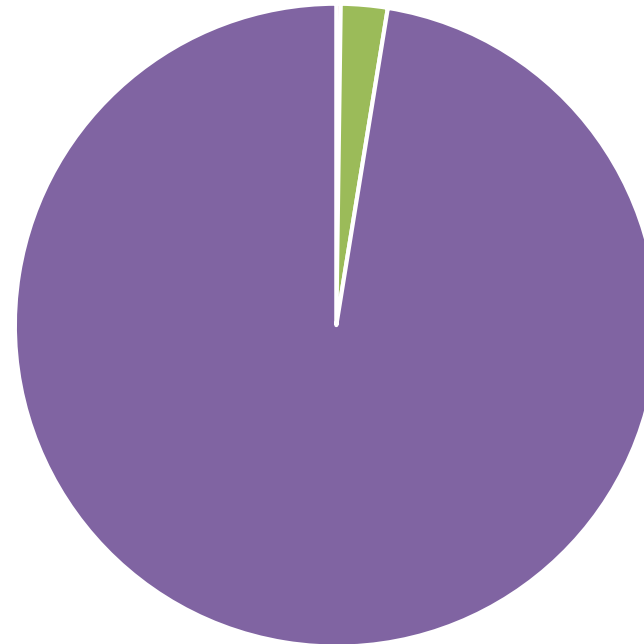
Railways, contract models (number and €)

Railways (number)



■ PPP ■ Alliance ■ D-B ■ D-B-B

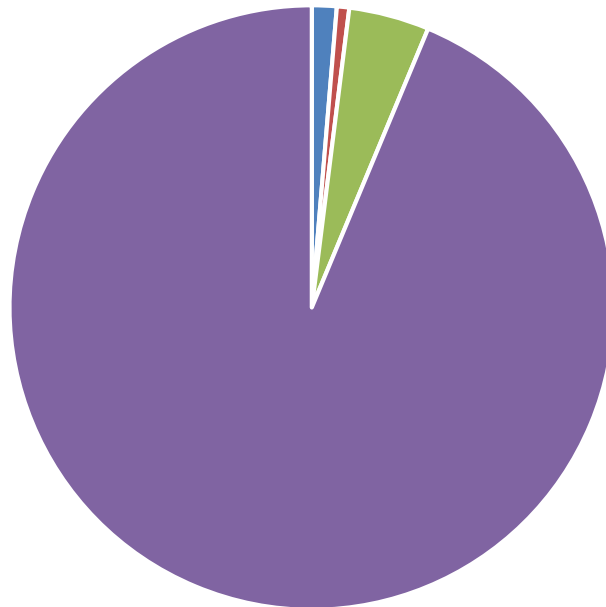
Railways (€)



■ PPP ■ Alliance ■ D-B ■ D-B-B

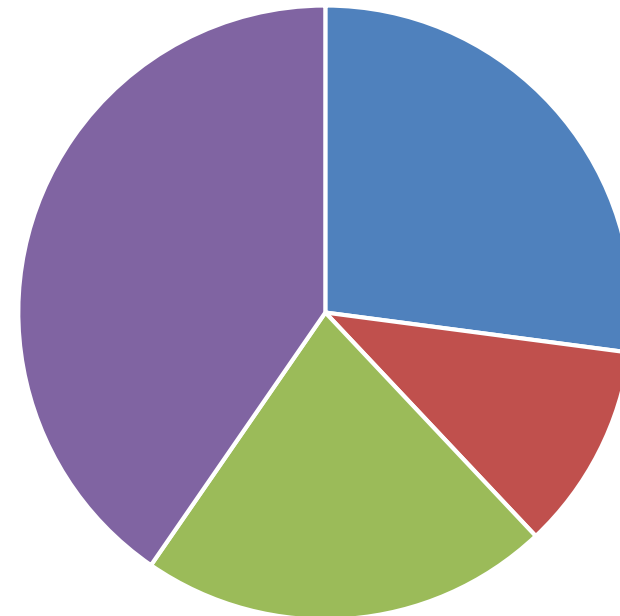
Roads, contract models (number and €)

Roads (number)



■ PPP ■ Alliance ■ D-B ■ D-B-B

Roads (€)



■ PPP ■ Alliance ■ D-B ■ D-B-B

Which Ihku?

- New Cost Management System producing **open** and **real time** cost management data to infra sector
- Target: to fulfill future needs and challenges
- Organization Model: Alliance Project
- Planning Phase 08/2018-01/2019, **Implementation Phases 02/2019**
 - Target: Support Services 2021

Project Goals

- Collaboration across infra sector
- High quality calculation
- Support process developing (*planning, tendering, construction, ..*)
- User-friendly software and helpdesk
- Accumulating database (*e.g. pattern recognition and machine learning*)
- Transparent and flexible view for all the calculation data (*e.g. cost and risk estimations*), open data
- Utilizing new innovations (*e.g. InfraBIM data integration*) and implementing new technologies (*Open API*)
- Long term functionality, easy to develop for future needs

Vision

Ihku supporting project processes and enriching the data



Open data supporting purchase



Data supporting work during construction



Data structure based on standards



Support of life cycle and property management



The new services and innovations with open data

Alliance Partners

- Client organization formed by The Finnish Transport Infrastructure Agency and cities of Helsinki, Espoo, Vantaa, Tampere, Turku and Jyväskylä
- Service provider formed by CivilPoint Oy, Mittaviiva Oy, Ramboll Finland Oy and Solita Oy



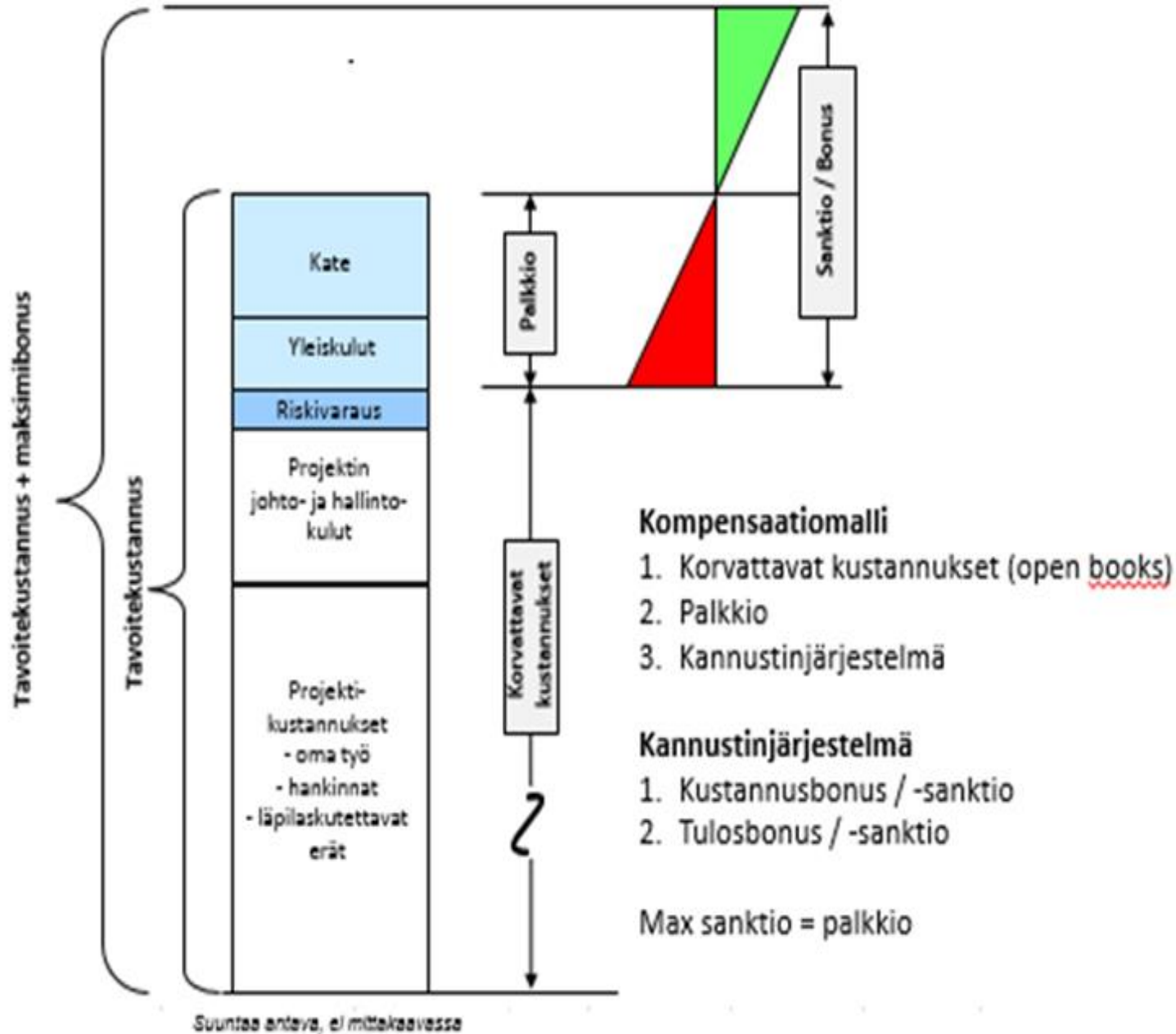
Competitive bidding

- Market information: 01/2018
- Invitation for tenders: 03/2018
- Preliminary tenders: 04/2018
- Workshops: 05/2018
 - Two workshops with all tenderers
- Final tenders: 06/2018
- Contract: 06/2018

Evaluation and points

- **Project team** **10%**
 - References, know how etc.
- **Project competence and co-operation ability** **20%**
 - Working in bigroom, prjobject leading, team performance ...
- **Preliminary project plan** **20%**
 - One hour after 2. workshop
- **The logic of cost calculation** **20%**
 - How the system would work, no unit price based
- **Price (fee)** **30%**

Compensation model



The background image shows a close-up, low-angle view of a bridge's steel truss structure. The bridge is illuminated by warm, golden light, likely from the setting or rising sun. The sky is filled with soft, wispy clouds in shades of purple, blue, and orange. In the distance, a calm body of water reflects the sky, and a faint silhouette of a city skyline is visible on the horizon.

More reliable cost management for decision-making processes



Transparent and reliable cost management for infrastructure projects

Infrastructure Cost Management for Individual Structural Elements

- Cost Management System and Price Database content based on the Finnish Infra Classification System
- Use case: Detailed and technical design for construction
- Suitable for different infrastructure projects (*e.g. roads, rail systems, bridges and tunnels*)

Example: Construction Part (by Infra classification)

1612	Earth excavation (rural)				m3ktr	
Work phases	Resource	Amount	Unit price	Capacity	Price (€)	
Earth excavation and loading	Excavator, 20 ton	1	100 €/h	40 m3ktr/h	2,50	
Mass hauling, 3-6 km	Dumper truck	2	60 €/h	20 m3ktr/h	3,00	
Spreading and levelling	Bulldozer	1	50 €/h	40 m3ktr/h	1,25	
Compacting	Vibration roller	1	50 €/h	40 m3ktr/h	1,25	
				Total	8,00	m3ktr
1612	Earth excavation (city)				m3ktr	
Work phases	Resource	Amount	Unit price	Capacity	Price (€)	
Earth excavation and loading	Excavator, 17 ton	1	80 €/h	20 m3ktr/h	4,00	
Manwork	Worker	1	30 €/h		1,50	
Mass hauling, 3-6 km	Truck, 20 ton	2	60 €/h	10 m3ktr/h	6,00	
Spreading and levelling	Bulldozer	1	50 €/h	20 m3ktr/h	2,50	
Compacting	Vibration roller	1	50 €/h	20 m3ktr/h	2,50	
				Total	16,50	m3ktr

What we need in Ihku

Price Database Related Needs:

- Construction Element Unit Prices
- Construction Element Resources
- Work Results
- Resource (machinery/tools, labor, material/product) Unit Prices

Scope of Work

PLANNING PHASE

08/2018–01/2019

- Creating a foundation of the Alliance project
 - Commitment and building trust (people)
 - Definition of Common goal (scope of work)
 - Common tools and processes (technology)

IMPLEMENTATION PHASES

02/2019–08/2028

- 02/2019-12/2020
 - Cost management for structural elements (Use case: Detailed and technical design for construction)
- 01/2021-12/2022
 - Cost management for project elements (Use case: Feasibility study and preliminary design)
- 01/2022-08/2028
 - Further version deliveries and integrations (TBD)

SUPPORT SERVICES

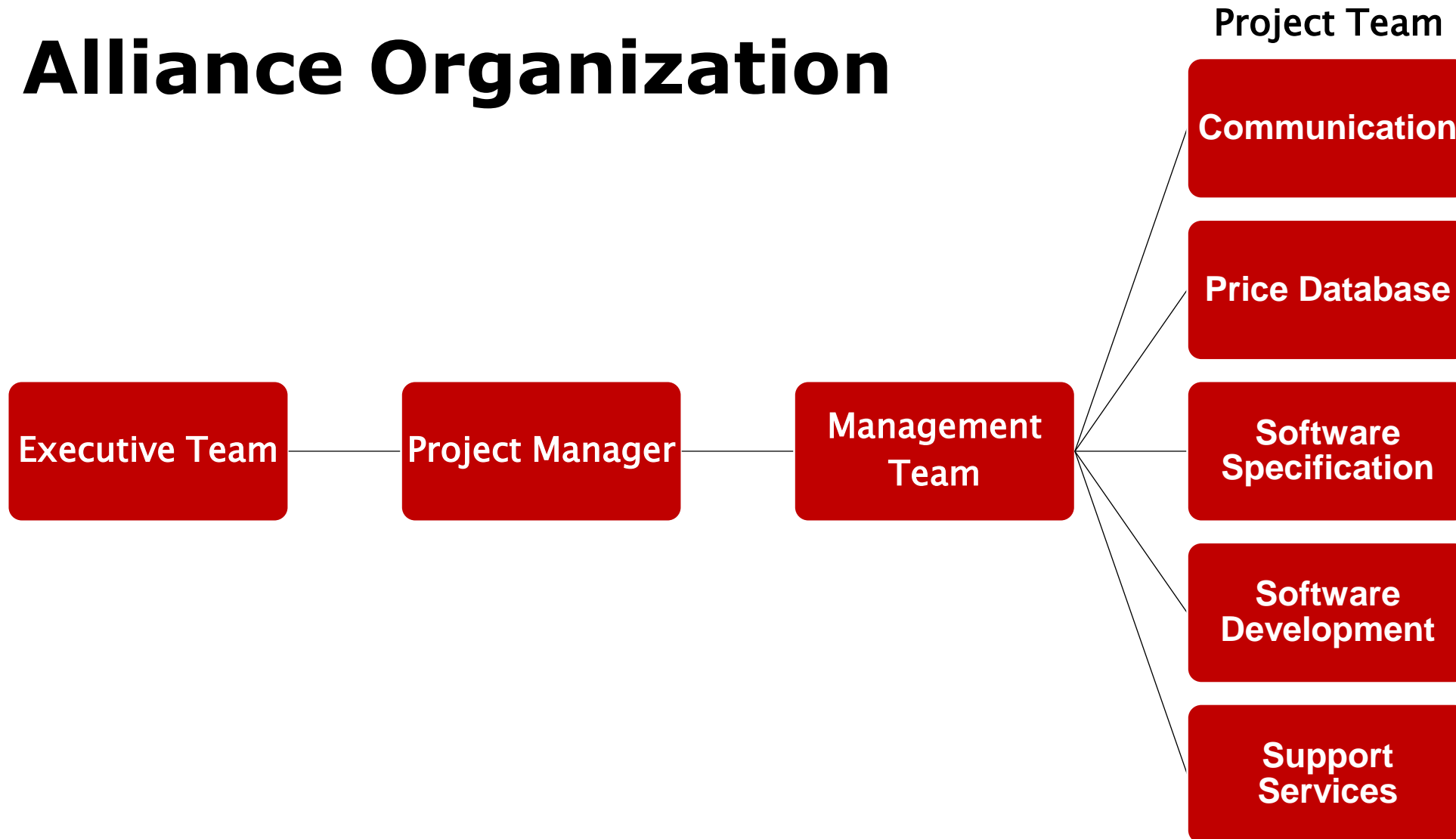
03/2021–08/2028

- Helpdesk
- Software version deliveries
- Price database accumulation

Implementation with the Alliance Model

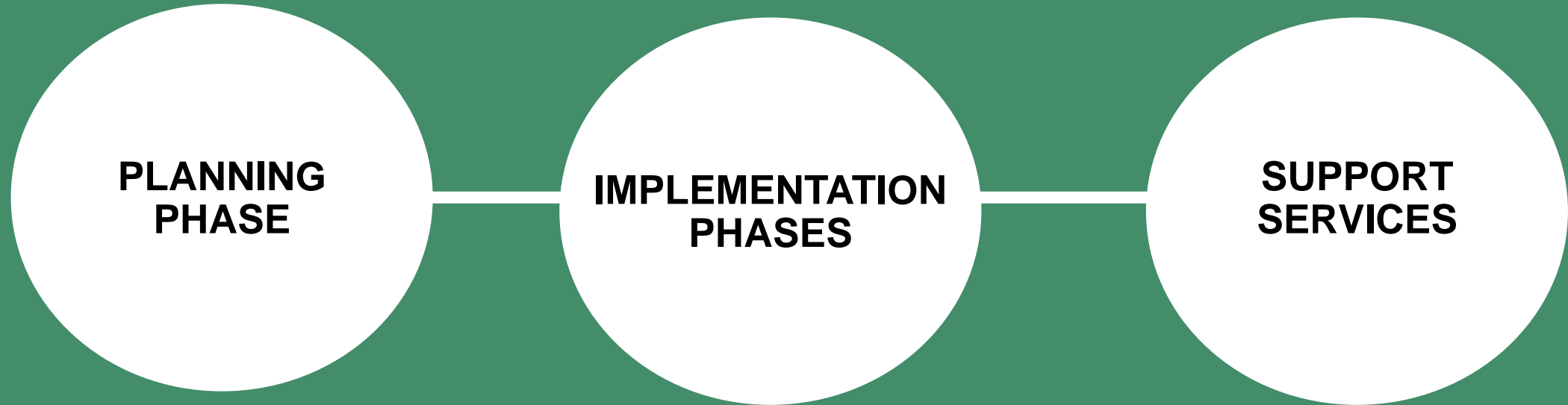
- Alliance partners share the risks and benefits related to the project's implementation:
 - early integration
 - mutual targets, contract and commercial model
- The operating principles of an alliance organization are working for the best for the project, building trust and continuous improvement (product, services, processes).

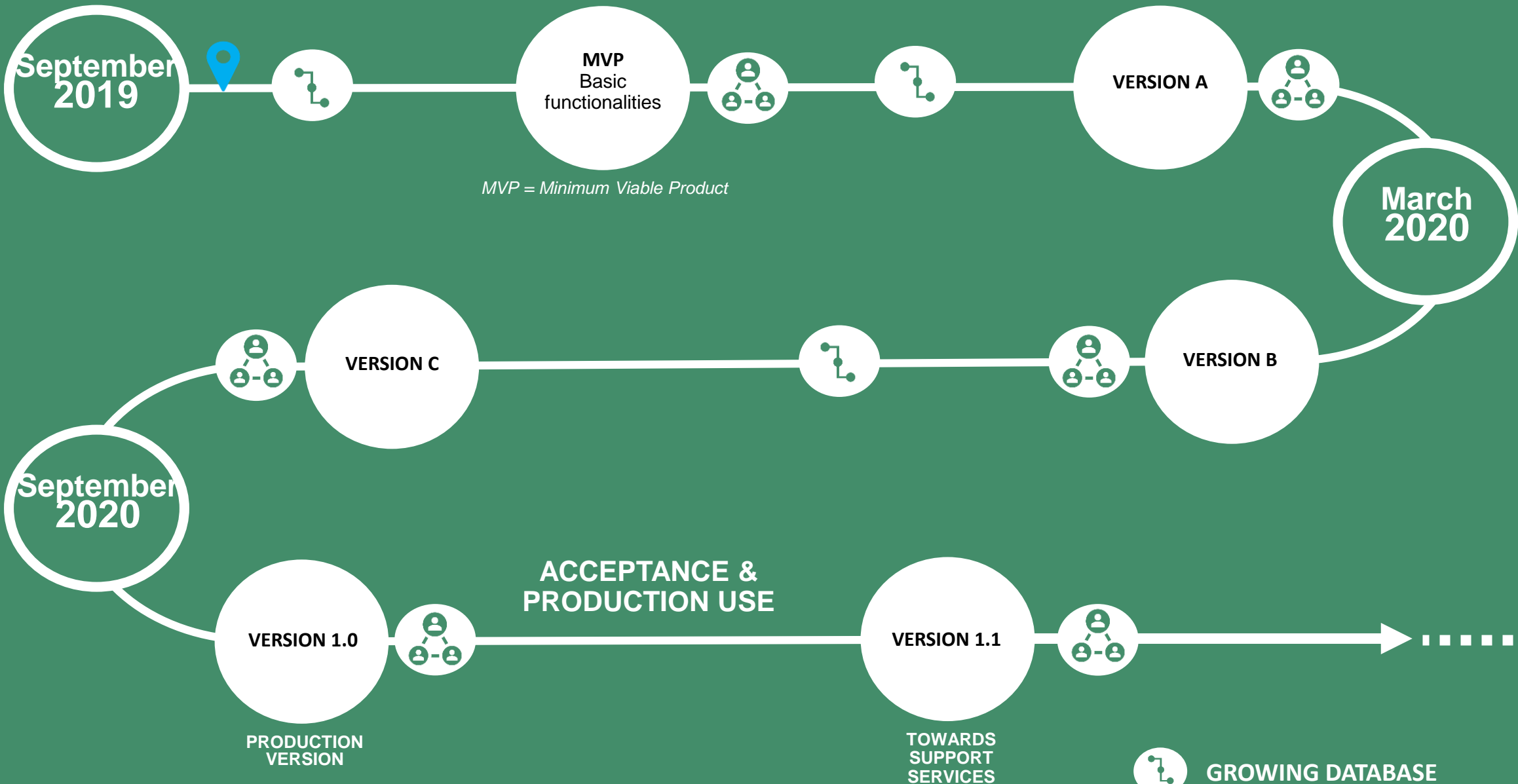
Alliance Organization






Collaborative Work Space

- Big Room brings all project stakeholders, teams and work groups together under one roof so it's easy to ask questions, seek answers and find inspiration in unexpected ways.
 - Ihku Big Room is located at the Finnish Transport Infrastructure Agency's head office in Pasila, Helsinki
- The open Big Room is fostering lean project management and scrum framework.
- All parties are committed, involved and work together to overcome challenges when people can quickly gather to solve problems.





-  GROWING DATABASE
-  END USER TESTING
-  WE ARE HERE



IMPLEMENTATION PHASES: ROADMAP

Thank you for your attention

Connection to Infra BIM:

One of the most important BIM-conferences of the world is held in Tampere, Finland on 3-5 February 2020.

There will also be a presentation of Ihku.

Wellcome to the pages <https://www.ril.fi/en/events/infrabim-open-2020.html> and the conference.

www.ihkuallianssi.fi

