

Flygteknik 2016, Stockholm 11-12 October

Dynamics of trust, control and risk in complex collaborative innovation projects

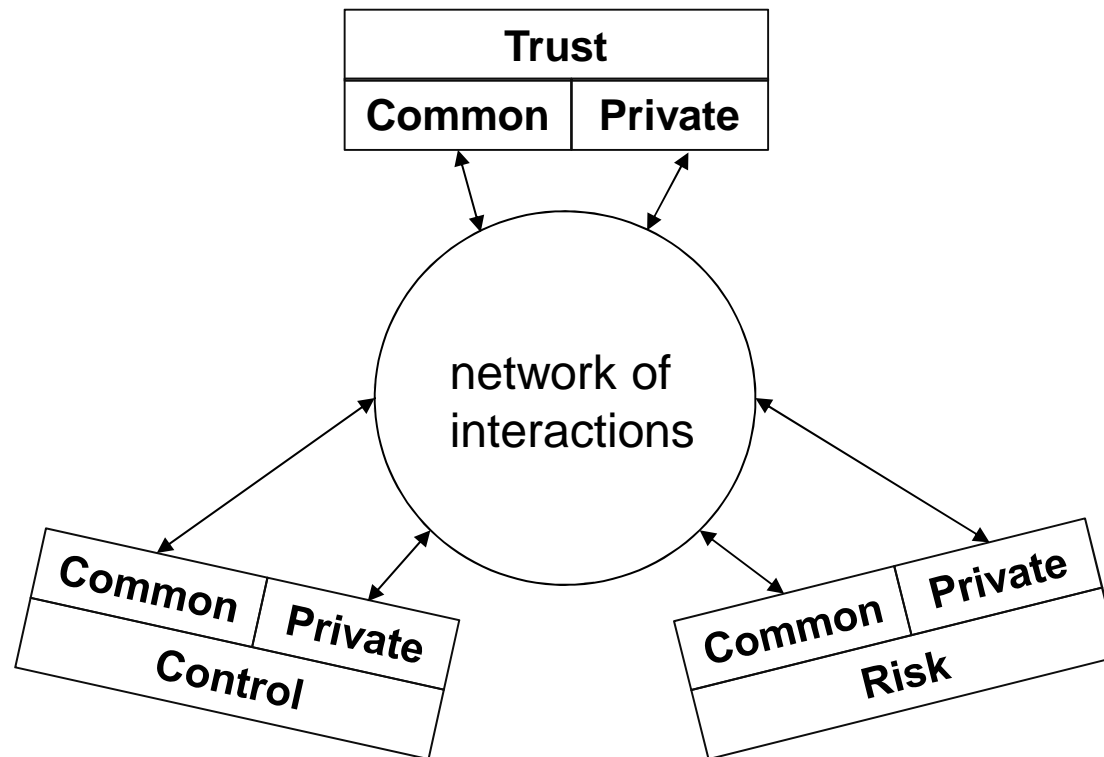
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Background and Purpose

- The growing complexity of aircrafts and their systems has made it impossible for a single actor or nation to master all the needed technologies. Aircrafts and their systems can be considered as Complex Products and Systems (Hobday, 1998)
 - collaboration with a wide range of partners, located in firms' supply chain as well as with competitors is an important part of innovation and development within the industry.
- Although strategic alliances have been extensively studied, less attention has been paid to alliances that involve many different types of partners such as alliance constellations or R&D consortia.
 - Yet, this type of complex projects seems to become increasingly common when knowledge from many different partners needs to be integrated.
- **The overall purpose of this paper is to explain the dynamics of and inter-relationships between trust, control and risk, and the consequences for managing CoPS projects.**

Analysis model



Das and Teng (2001)

Khanna et al. (1998)

Research Method

Based on inside-out and outside in perspective:

One of the researchers has an industrial background including a leading role in the preparation and execution of MIDCAS.

- data through participant observation
- full access to contracts and
- documentation from the 46 preparatory meetings

Two additional researchers (one of them the co-author of this paper)

- 6 interviews with key informants from the project's coordinating firm (project manager, chief engineer etc.)
- 7 interviews at 4 industrial partners in 3 countries
- Extensive secondary material, i.e. project presentations, workshops documentation, project documents, and reports.

The MIDCAS project is designed with focus on 3 main tracks with high level of interaction and interdependency:

- Progress on Standards for D&A
- Design of a generic D&A function to be tested in simulations
- Design of a D&A Demonstrator to be tested in manned and RPAS flights

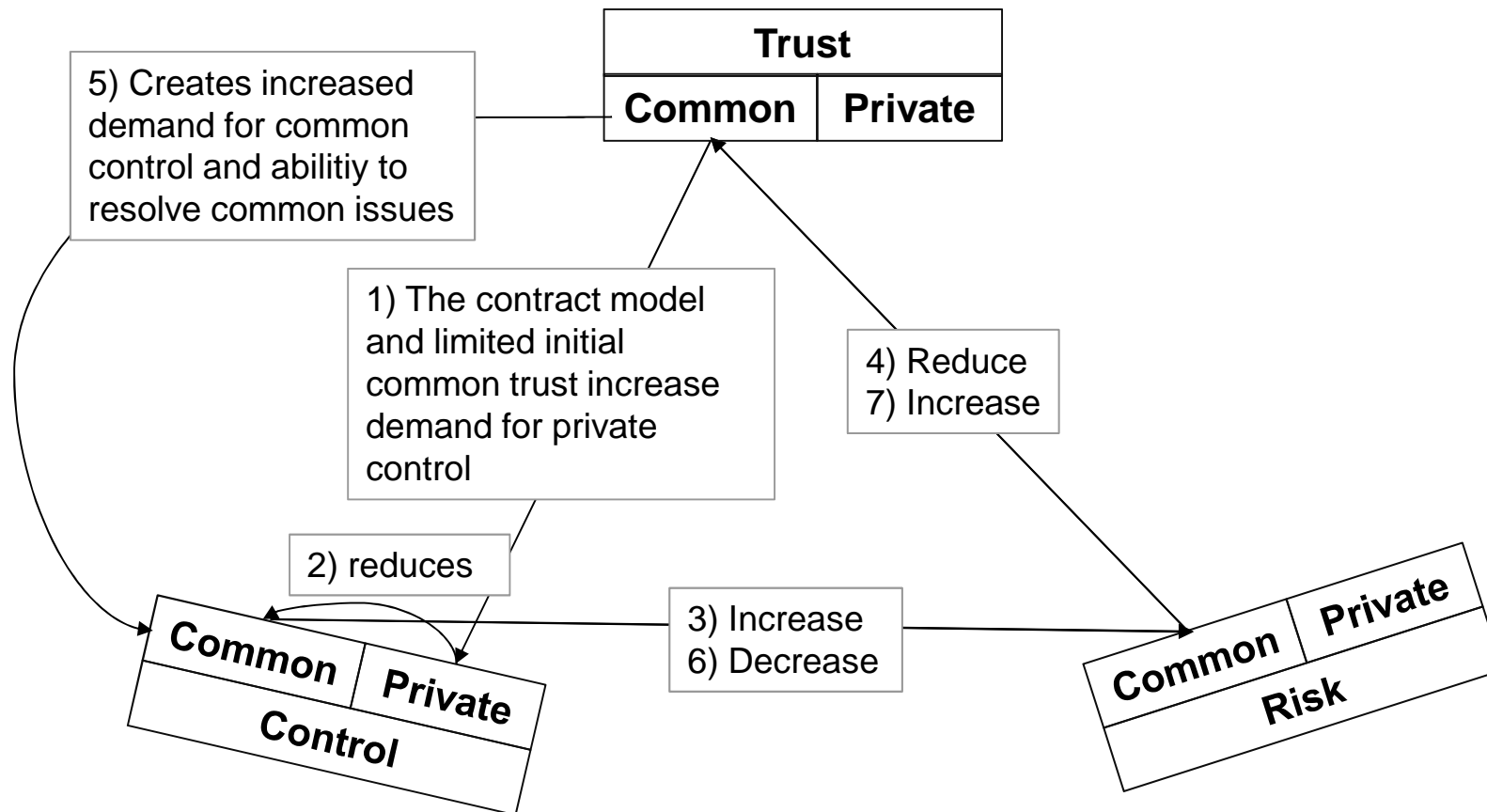
EDA Ad Hoc B project of 50M€, 2009-2015
led by Sweden with participation from
France, Germany, Italy and Spain



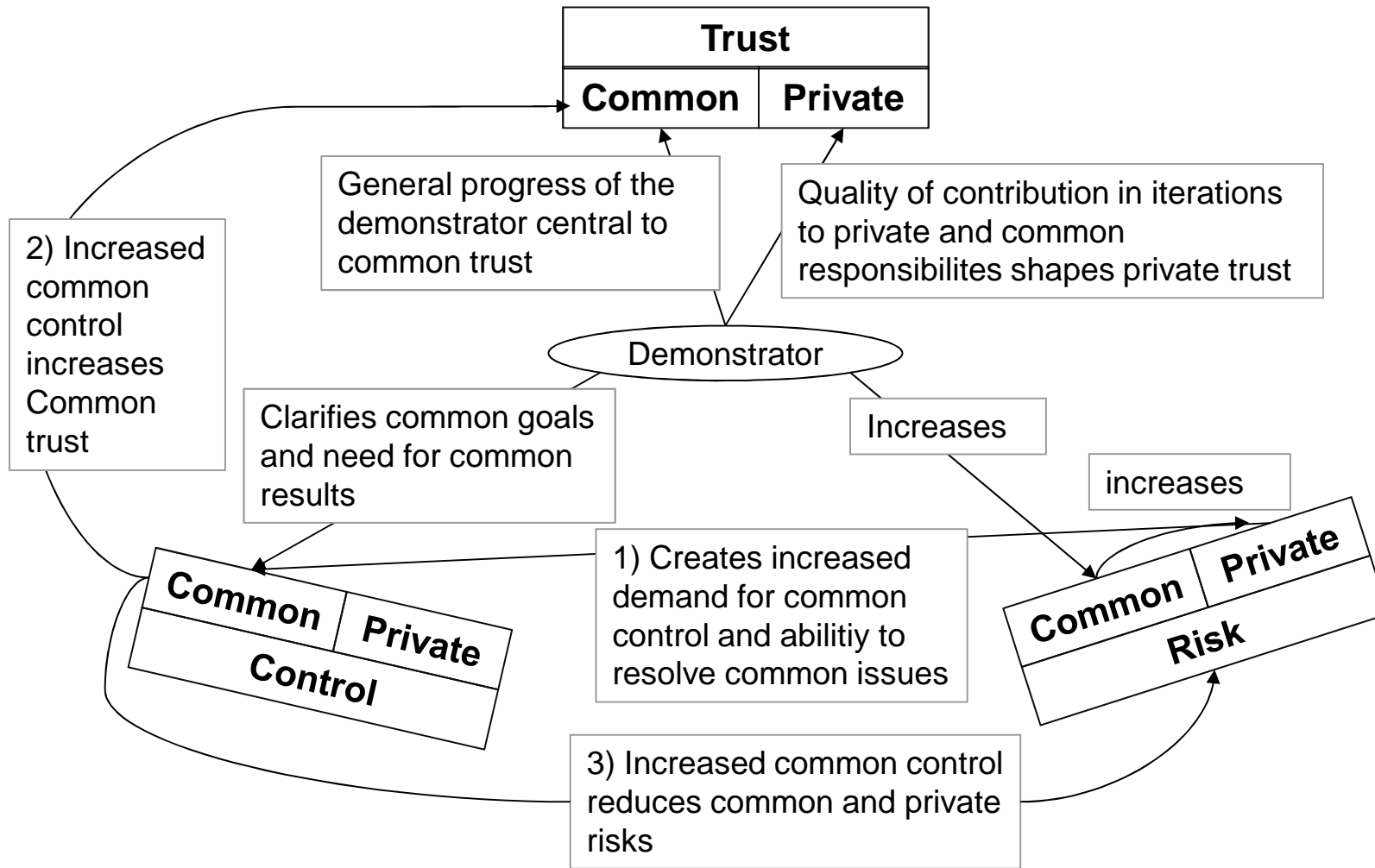
MIDCAS project stages, overview

	Constellation building		Proposal and Negotiation		Early execution		Final execution	
Goal	Define participation	Constellation freeze, May 2008	Win contract	Contract Signature, June 2009	Get project started and execute	Management review, Oct 2011	Improve efficiency and complete project	Completion, Sep 2015
Main activities	Candidate presentations and review against acceptance criteria Constellation setup Team building		Bid preparation: Workshare Management plan Commercial Conditions Negotiations Team building		Systems engineering and initial design iterations Simulations Design iterations Standardization		Design iterations Demonstrator design and build Simulations and Flight tests Standardization	

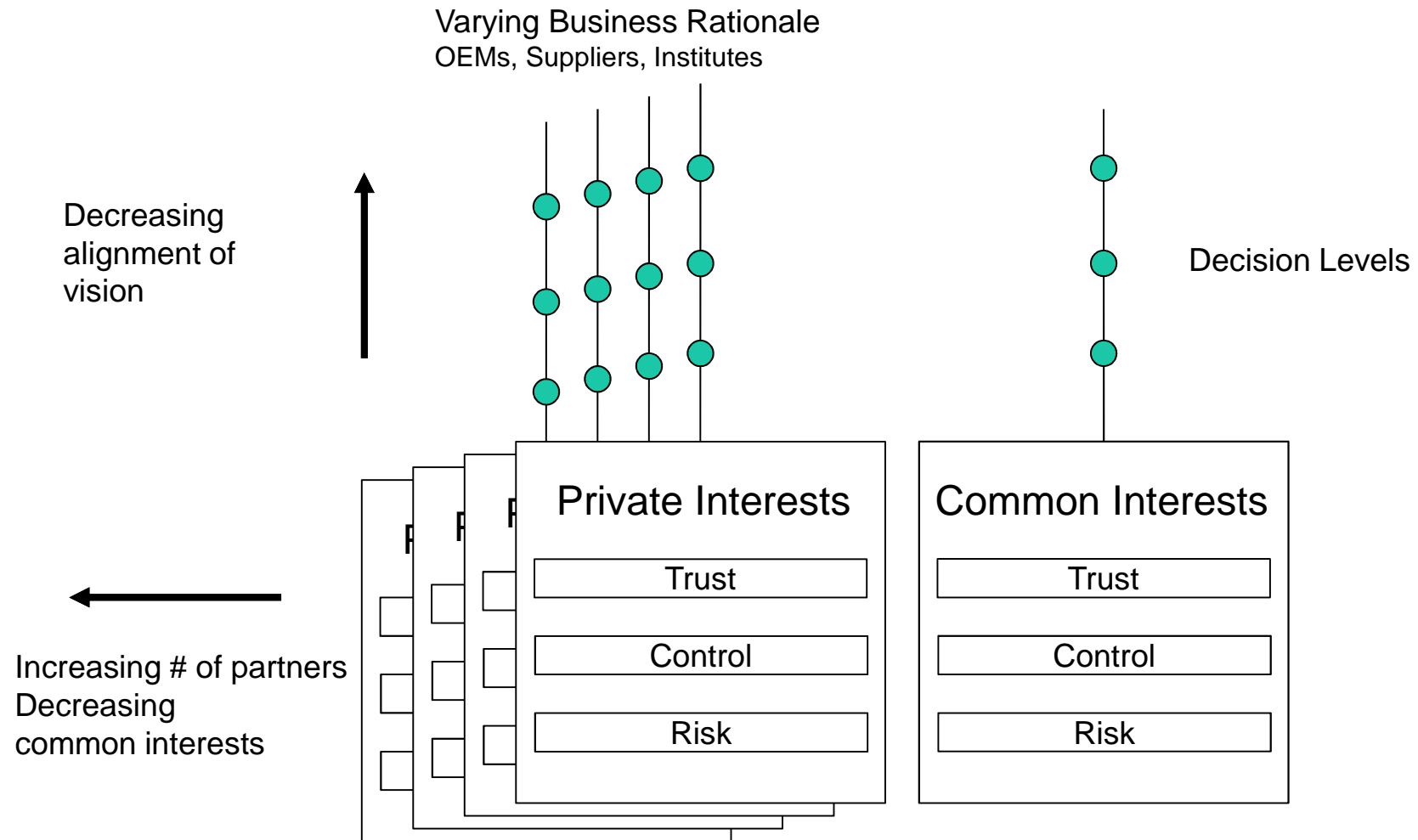
Decision Model Dynamics



Demonstrator Influence and Dynamics



Multiple Heterogeneous Partners



Conclusions for Trust, Control and Risk Dynamics

A Dynamic Equilibrium

- Constellations strive for an equilibrium between trust, control and risk
- As conditions change, the searched equilibrium evolves

A Step Change

- Transforming from internal technology supply to rely on an alliance constellation is a substantial change in conditions

Responsiveness

- The tensions between private and common interests have important effects on the promptness of reaching a new equilibrium
- Demonstrators offer efficient ways to improve responsiveness

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