# NEMO D1.1 → Discuss Modelling

**Excerpts from NEMO Deliverable_D1.1_vfinal.pdf**

**V1.1**
**= Komplette Grob-Übersicht**
**und bis Seite 17 detailliert**

## Auszüge aus Executive Summary:

- two core questions of NEMO:
  - how can we appraise 'desirable' network structures?
  - how can we obtain these structures?

- agreed on common / interoperable conceptualisations of knowledge

- Agents are forming network links either to **acquire or to create knowledge**
- **knowledge endowment** ("Ausstattung") of the prospective partner is one of the key features for partner choice

- variety of actors: private companies, universities and public research organisations

- collaboration motives:
  - **Transaction costs theory** considers inter-firm partnership as a 'hybrid' form of organisation that arises when transaction costs are large enough for the market to function efficiently, but not high enough to favour the integration of production in a single firm.
  - **resource based theory** takes into account that resources are scarce, inimitable, and only imperfectly substitutable. To gain access to resources of other organisations a firm can establish a long-run relationship.
  - according to **organisational learning theory** the primary motive for collaboration is learning. Thus, collaborations serve as a vehicle of knowledge transfer.

- Structural:
  - a high degree of **structural embeddedness** may be attractive since repetitive and redundant connections within a group of organisations create trust and help to deal with the problems of coordination and opportunism, and hence improve the efficiency of transactions within the group.
    At the same time, embeddedness may lead to encapsulation of information and other resources within the group, and may cause greater separation between different groups, reducing the overall efficiency of the network.

- the existence of nonredundant ties generates arbitrage opportunities for the holder; this is called the **structural holes** argument. Organisations that connect otherwise disconnected parts of the network, are more powerful in the sense of controlling information flows between the groups. This argument suggests that it is attractive to take up distant partnerships, but also risky because of potentially opportunistic behaviour of the prospective partner.

- **Political influence** is widely seen to take place **in the development phase** of a programme, not in the process of proposal evaluation.

- **Intra-project linkages**
  - Fully connected vs. structured sub-networks
  - Co-ordinator, Work-package leader, ..."The co-ordinator or workpackage leader is more likely to be invited to the next consortium than an 'ordinary' project partner."

- basic conceptual elements
  - **'rules of the game',** network formation, partner selection endogenous rules on the actor level, governance rules (exogenous rules)
  - formal **network structures,** result of formation process according to the rule sets.
  - **network processes,** learning and knowledge exchange processes that are more or less favoured by different network structures.
  - **network performance** in terms of specified process (e.g. creation and diffusion of knowledge).

- **NEMO: fundamental narrative of network formation**, a potentially recursive loop ranging from incentives and rules, consortium formation, proposal production and evaluation, R&D collaboration, and finally performance evaluation.

- set of **relevance criteria:** 'importance assessment' on the changing EU rule sets inthe FPs. ; allows concentrating on those rules that are perceived as most important.
- set of **feasibility criteria** will be delivered by the modellers. the feasibility of different models will have to be taken into account when devising further modelling strategies.

## Auszüge aus Main report:

- Network formation rules:
  - Collaboration motives and incentives from literature
  - political governance rules of consortium formation in the FPs from desk research and field work
  - insights into intra-project structure and performance from case studies.
- transformed into a narrative on collaboration in the FPs (chapter 7)

- comparing simulated and empirical network structures
  - methods and tools for structural classification are developed
  - characterise network structures
  - empirical network structures can be compared with the simulated ones, which can now be recursively adapted

**bis Seite 17 extrahiert,**
**Rest hier ist grober Überblick/Stichworte**

- **Knowledge exchange in cases where it is not a public good**
- **Exchange and creation of knowledge in networks**
- **Trust**
- **Sending new knowledge**
- **Receiving new knowledge**
- **Knowledge transfer requires time**
- **Dynamic positive feedbacks**

***Knowledge* Representation**

- ***Knowledge as a single type***
- ***Knowledge of several types***
- ***Knowledge as collection of ideas***
- ***Knowledge as a collection of expertise***
- ***Knowledge as action space***

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- **Transaction costs economics**
- **Resource-based view**
- **Organisational learning**

**Network formation rules**

- **Trust, reputation, and redundant ties**
- **Weak ties and non-redundant information**
- **Network formation rules and network structure**

**Intra-project linkages and project performance**

**Key knowledge functions in R&D networks**

- **Knowledge networking and exploration**
- **Knowledge production**
- **Knowledge diffusion and exploitation**

**Intra-project network structures**

- **co-ordination and management**,
- **research and development** groups within the project.
- **network characteristics**
- **key players**
- centrality measures
- plus?
    - network reputation (within FP)
    - scientific reputation (publications)
    - general economic indicators (patents)

**Stylised facts on network structures: network role and visibility matter**
**Other influences on effective co-operation structures**
**Stylised facts on partnerships: history matters**
**Stylised facts on network impact: network capital matters**

**The common ground for modelling**

- **Rule sets**
- **Network structures**
- **Network processes**
- **Network performance**

**narrative of network formation**

- **incentives and rules**
- **consortium formation / partner choice**
- **proposal production**
- **proposal selection**
- **R&D co-operation**
- **performance evaluation**
- **rule formation for a new FP**

**Integration of modelling contributions**

**Inputs and further integration requirements**

[...] A second set of **feasibility criteria** will be delivered by the modellers. In interaction with the empirical groups, the feasibility of different models will have to be taken into account when devising further modelling strategies.

The next NEMO consortium workshop in November is dedicated to rule formation issues. There, the most relevant empirical rule sets will be confronted with the possibilities of different modelling approaches. The discussion shall lead to the **specification of tractable modelling strategies and tasks**.

**Ausschnitte aus** NEMO Deliverable_D1.1_vfinal.pdf

**NEST-2006-028875 - NEMO - 2007-09-16 - Deliverable D1.1 - Conceptual and empirical foundations of R&D network dynamics -** **Manfred Paier, Petra Ahrweiler, Michael Barber, Andreas Brandes, Barbara Heller-Schuh, Nicolas Jonard, Magnus Kutz, Andreas Pyka, Bulat Sanditov, Petra Wagner-Luptacik, Matthias Weber**