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Internal collaboration rules in international R&D collaboration projects - Analysis of seven NEST projects

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Abstract

This paper describes the interview study investigating the network formation and dynamics of knowledge production within EU Framework Programme funded R&D projects. Drawing from seven projects in EU's New and Emerging Science and Technology programme (NEST) in the Sixth Framework Programme, this qualitative study explores how the partnerships in EU-funded R&D collaboration projects are formed and dissolved, what motivates individuals and organisations for collaboration or non-collaboration with certain partners, and how knowledge production and learning takes place in the inter-organisational collaboration projects. The aim of this paper is to record the research design and present the internal collaboration rules extracted from the studied cases, as well as to formulate a set of stylised rules for the purposes of the NEMO's agent based model (SKEIN).

1 Introduction

Network Models, Governance and R&D Collaboration Networks (NEMO), is an interdisciplinary research project using different analytical methods and models to study optimal structures of R&D collaboration networks for creating, transferring and distributing knowledge. The aim of this study as part of NEMO, is to investigate the network formation and dynamics of knowledge production within EU Framework Programme funded R&D projects. Those projects involve various different types of actors, such as departments, research institutes or research groups within higher education institutions public or private research institutions or enterprises. The general research task is to study how the partnerships in EU-funded R&D collaboration projects are formed and dissolved, what motivates individuals and organisations for collaboration

or non-collaboration with certain partners, and how knowledge production and learning takes place in the inter-organisational collaboration projects.

The aim of this paper is to record the research design and present the internal collaboration rules extracted from the studied cases, as well as to formulate a set of stylised rules for the purposes of the NEMO's agent based model (SKEIN).

2 Design of the study

The dataset is focussed on the EU's New and Emerging Science and Technology programme (NEST) in the Sixth Framework Programme (FP6). The NEST programme is a new initiative introduced in the FP6, which aims to support unconventional and visionary research with the potential to open new fields for European science and technology. The NEST programme was chosen as the focus of the study, because the characteristics of the research task in NEST projects, i.e. searching for new and innovative approaches in high-risk settings, was seen to lend a common framework for the projects. It was also seen to complement the other datasets used for identifying the internal collaboration rules, namely a survey of FP5 funded research projects, and case studies of five selected Integrated Projects in FP6.

The NEST projects are characterised by high risk and high reward. Interdisciplinarity is encouraged and there are no restrictions on the scientific fields to be addressed except that the research carried out under NEST should cut across or lie outside the thematic priority areas. The NEST programme is divided into three parallel action lines. Adventure projects are 'visionary' research projects that will develop new scientific and technological opportunities in areas identified by the researchers themselves, Insight projects assess new discoveries or newly-observed phenomena which could indicate risks or problems to society; and finally Pathfinder initiatives focus on specific, highly challenging objectives in emerging scientific and technological fields, and involve groups of complementary projects. The NEST projects may be Networks of Excellence or

Specific Targeted Research Projects. They are mostly small, more often academic than industrial projects.

In selecting the individual projects amongst the NEST programme, five criteria were taken into account. The projects should represent the different action lines of the NEST programme: Adventure, Insight and Pathfinder. They should represent different disciplines, and have different types of organisations as participants. They should also represent a broad geographical spectrum, but ideally it should be possible to identify certain geographical areas where there would be several participants from different projects, to facilitate economies of scale in conducting face-to-face interviews. The projects should still be ongoing at the time planned for interviews in Spring 2008. Finally seven projects were selected, comprising three to ten partners from three to six countries. The projects represent Adventure or Insight action lines, and comprise multidisciplinary applications in physics, medicine and biology, basic research in physics and application in engineering.

Prior to the interviews, interview protocol was designed. It included 34 questions under seven broader themes: History of the project, Structures and roles in the project, Previous collaboration history, Future plans, General collaboration rules, Knowledge production, learning and internal dynamics and finally, Evaluation. The list of interview questions can be found in Annex 1. The interview themes were sent to the interviewees beforehand.

Altogether 22 in-depth qualitative interviews were conducted with 25 individuals working in the selected research projects. For all projects, the coordinator and at least one work package leader were interviewed, but also managers, ordinary participants and subcontractors representing universities and research institutes. Most of the interviews were conducted by telephone, the remaining eight were conducted face to face. In order to analyse self-organisational features of the projects, the recorded interviews were transcribed, then coded using the qualitative data analysis software ATLAS.ti.

The coding produced 71 first order codes. These first order codes were mostly low abstraction level codes (content codes) describing the content of each segment of data, such as various aspects of communication, structures, knowledge production, partners or proposal. Some first order codes were at a higher level of abstraction (analytical codes), indicating the phenomena the interviewees were describing, such as team work, science or unpredictability. Additionally, twelve background codes were used to denote the academic status, project role, organisational background and gender of the interviewees. Of these background characteristics, the formal role of the interviewee (coordinator, work package leader etc.) was deemed to be the most important for selecting cooperation partners (see Nokkala et al 2008¹). The codes may be found in Annex 2.

At the second stage, all interviews were analysed from the perspective of if-then conditionals representing rules and/or patterns of behaviour. All activity guidelines or prescriptions which could be formulated as if-then –rules were extracted. These second order categories benefitted from the first order coding process, but did not derive directly from it. The second order categories outline broader rules pertaining to the internal organisation of the collaboration projects at the different stages of the collaboration process. In order to be implementable in the agent based NEMO model, the rules found were formulated as if-then rules. This amounted to 333 rules in the 22 interviews.

Those were also coded with the ATLAS.ti, and their co-occurrence with the first order codes was checked. As most of the first order codes described the content of the data segment, the rule codes mostly co-occur with low abstraction level content codes (Example 1).

¹ Nokkala Terhi, Heller-Schuh Barbara, Paier Manfred & Wagner-Lubtacik Petra (2008). Internal integration and collaboration in European R&D projects. NEMO Working Paper #13, University of Surrey & ARC System Research.

Example 1**Rule code:**

If the partner has special expertise in particular task, he will be selected as a work package leader for that task.

Co-occurring content code:

structures – work package leader

Co-occurring background codes:

male
ordinary participant
professor
university

In other cases, the data segment indicating a rule also contains other, analytical or higher abstraction level codes (Example 2).

Example 2**Rule code:**

If one partner has to pull out of the project, there are other partners in their work package to take over the task.

Co-occurring content code:

structures - more in a work package

Co-occurring analytical code:

unpredictability

Co-occurring background codes:

female
coordinator
MSc
research institute

Data segments may also contain more than one rule code (Example 3). However, there are also data segments which contain only a rule code and background codes, but no content or analytical codes.

Example 3**Rule code:**

If I am a coordinator in this project, I will be a coordinator in a new project based on this project

Co-occurring rule code:

If project is successful, it is likely for the same partners to continue collaboration in the future

Co-occurring content code:

future - continue

Co-occurring analytical code:

teamwork

Co-occurring background codes:

male
coordinator
professor
university

At the next stage, the rules were formulated into if-then -constructs across the empirical data, and duplicates were removed. The basic if-then rule was only counted once even when additional modifiers were added to it. Also too abstract rules (Example 4) were removed, because they would be too difficult to implement in the model.

Example 4**Removed, abstract rule:**

If you are writing one proposal, it is helpful for writing another proposal at the same time.

The rules were categorised into six categories, which included principles for (A) consortium formation, (B) proposal submission, (C) funding decision and (D) task division, (E) intra-project collaboration structures, processes and context, and finally, (F) the future collaboration and its framework conditions. This amounted to 90 rules. These will be described further below.

3 Collaboration rules

In the NEMO model rules refer to if-then conditionals which are applied to the activities of the agents. They may be internal to the projects and participating agents, or they be externally imposed by the European Union in the form of governance rules and application guidelines for the Framework Programmes. While the external rules have

been extracted from the European Union documents, the purpose of this study has been to extract the internal collaboration rules of the agents within the projects themselves. The interviewees were not directly asked or prompted about rules of behaviour. Instead, they were asked about typical actions in certain situations, such as how they would proceed when inviting other partners to join a project; or what they thought the European Commission paid attention to when selecting which projects to fund. The “rules” were identified based on content analysis of the transcribed data describing either what interviewees have done, or what they would do under certain circumstances. The concept “rules” was imposed on them in order to comply with the requirements of the agent-based NEMO model. Thus, rather than strict rules which would command compliance, our rules comprise norms and patterns of behaviour or even expectations of causality in events independent of the actor. Some of the conditions (“ifs”) refer to the conditions of the call, or other regulations of the European Union. They may also refer to intra-consortium factors, intra-partner factors, personal factors, or to the research project itself. Similarly the outcomes (“thens”) may refer to activities of the individual, partner, consortium, or to the outcomes of the project. Thus the “rules” pertain to the activities of the project partners, some either directly or indirectly to the activities of the European Commission, or its evaluators. However, many of the rules do not directly describe an animate actor (although would naturally be dependent on the activities of such), but refer e.g. to attributes of the inanimate objects such as proposals, and what effect these attributes might have on their success of being funded.

Many of the rules also have a counter-rule to it, as interviewees may have presented contrary opinions. As agents can be programmed to follow different sets of rules, it was decided that these rules as well as their counter rules would not be excluded at this stage. Whether they will actually be used on the agent based NEMO model will be decided later on. The rule pairs comprising a rule and a counter rule may either be formulated “if A then B”, and “if A then not B”. They may also take form “if A then B” and “if A then C”, with B and C cancelling each other out. One rule may also have two counter rules, or it may have rules which seemingly complement rather than counteract it. Whether an additional rule supplements rather than supplants the rule may vary from interview to

interview.

Example 5

Rule:

If partners represent different types of organisations, it has no consequences for collaboration.

Counter rule:

If partners represent different types of organisations, that has positive effects on the dynamics of the project.

Counter/additional rule:

If partners represent different disciplines/different types of organisations, communication is slower/more cumbersome.

For each rule, the number of people and their role positions presenting the rule was marked. For this purpose, the five previously coded role positions (Coordinator, Manager, Ordinary participant, Subcontractor, Work Package Leader) were grouped into three broader role categories: a) coordinator and manager, b) work package leader and c) other. The role categories were assigned based on the role of the individual, not of the organisation. Thus e.g. in a coordinating organisation, or organisation which acted as a work package leader, there could nevertheless be interviewed individuals who were not coordinators or work package leaders. The decision to code the role categories based on individuals rather than organisations, was taken because the people were seen to be speaking from their personal experience rather than representing an organisation. Whether this categorisation can be taken into account in the agent based NEMO-model, will be decided later. In the following section, the main findings of the study will be described. For this purpose, the aforementioned rule categories are used. The complete tables of rules can be found in Annex 3.

3.1 Consortium formation rules

Consortium formation rules pertain to a situation where a partner is being invited to a project; or a situation where a partner is inviting other potential partners to the project.

Joining the project when invited was the most widely quoted rule in the entire rules list, being mentioned 14 times. However, many additional qualifiers were attached to it: partners reported they would join a project if they knew the coordinator, if the project

was interesting, if it fit the research profile, if it had a good chance of being funded, and so on. Other rules for situations when one was being invited include e.g. only joining projects which were not overlapping with other projects, not joining projects if one already had too many other commitments, not joining projects which did not provide enough resources, or being asked to join projects when one had relevant expertise in the area. Rules pertaining to situations where one was inviting other partners to join include e.g. inviting partners one already knows or partners with suitable expertise; and not inviting potential partners with the same expertise an existing partner already has. If the inviting partner does not know suitable partners personally, they might rely on the recommendation of another partner, or other trusted person, or look for partners in the CORDIS database or EU seminars.

3.2 Proposal submission rules

Proposal submission rules pertain to procedure of proposal submission, to the call for submissions, as well as issues related to funding and research needs of the partners. These rules would include e.g. submitting a proposal whenever there is a suitable call, or following the rules of a specific call when writing a proposal for that call. Preparing a project proposal could be sparked of e.g. by need for funding, or having previously conducted a pilot study on the field.

3.3 Funding decision rules

Funding decision rules address the importance of the attributes of the proposal, knowing the “right people”, or the importance of the country or organisational background of the partners in terms of the project getting funded. Having a sound and innovative proposal, and geographically balanced groups with abundance of expertise was seen to be conducive of a successful application. Proposals in line with EU’s policy goals were also seen to be likely to be funded, as well as applications by well known organisations or opinion leaders.

3.4 Task division rules

Task division rules address the role of the coordinator or the work package leader. The rules pertaining to coordinators included e.g. that the partner coming up with the research idea would be coordinator, and that in a situation of having too many other duties, or already coordinating another project, the partner could not be a coordinator. Similarly, some other partner might take up coordinating role if the EU rules or unexpected factors prevented the partner who originally came up with the idea from being the coordinator. The rules also include e.g. partners with specific expertise in relation to a specific research task being invited as work package leaders for that task.

3.5 Collaboration rules

Collaboration rules address issues related to the significance of the organisational, disciplinary and country backgrounds of the participants for the collaboration; rules related to knowledge production and communication within the project, success of the project, management and structures of the project and possible extension of the project. For instance different disciplinary or organisational backgrounds were respectively seen to make communication slower and more cumbersome, or to be conducive of learning and positive dynamics within the project. Smaller projects were seen to facilitate collaboration, and larger projects were seen to require dividing the project into smaller subgroups. Communication was indicated to take place primarily within the work package.

3.6 Future rules

The future rules pertain to the desired roles and expected collaboration opportunities in possible future projects, as well as continuing proposals and procedures in future projects. If the project at hand reached good results, many interviewees wanted to continue with the same partners for a future proposal. Being a coordinator or a work package leader was respectively seen to facilitate further collaboration opportunities, or to have no consequences for them.

4 Validation of rules

The textual analysis of the interviews produced 90 rules, as described above. In the next step, the rules from this dataset were scrutinised in the light of two other datasets. Of these, the first dataset is based on qualitative and quantitative analysis of collaboration structures in five Integrated Projects (IPs) in the Sixth Framework Programme (FP6). IPs are multi-national, multi-functional RTD ventures, comprising usually a large number of partners with an obligatory minimum of three partners from three different countries. The sample of IPs represents three thematic fields: information society technology, sustainable development, and aerospace. The second dataset comprised a quantitative data from a representative survey among FP5 participants on the researcher level provides the broad perspective of the patterns of collaboration and joint knowledge production. The survey was conducted in 2007 as an on-line survey by the Austrian Research Centers GmbH. It yielded 1,686 valid responses, representing 3% of all relevant FP5 participants, and covering 1,089 (12% of all relevant) FP5 projects. As the two other datasets did not directly address similar questions as the interviews in the NEST-study, their input in the formation of the rules is somewhat limited, and not all rules can be supported by data from the other datasets. However, they may support the rules in some cases, or may produce other valuable rules for the agent-based model.

In the validation process, the rules were scrutinised from the perspective of the other two datasets, to see which rules might be supported either by the case studies of the Integrated Projects from the FP6, or the survey amongst the participants of FP5 collaboration projects.

The rules were also analysed from the perspective of how feasible their implementation in the model was deemed to be. Some of the rules produced by the textual analysis addressed the perspective of individuals, whereas in the SKEIN model, the agents are organisations. Thus individual rules would not be implementable in the model. As the rules were based on textual rather than quantitative analysis, it was not feasible to argue that those rules which were mentioned by larger amount of respondents would be more important than other rules. It is possible that some rules were considered so self-evident

that they did not prompt a separate mention, although if confronted with them, the respondents would probably endorse them.

Example 6		
Rule number:	Rule:	Interviewee:
B2	If you are writing a proposal for a particular call, you have to follow all the rules related to that call.	2Wa

The rule is only mentioned by one interviewee. However, it is hard to imagine that anyone would object to it. It is rather more likely that it is so self-evident, that others did not think it worth mentioning.

This final round produced 68 rules, of which 36 have so far been implemented in the model. These final rules, along with comments about the rules, are described in annex 4.

5 Implementation of the rules in the SKEIN model

The agent-based NEMO model, SKEIN,² includes agents with their own individual knowledge base, “kene”, which comprises research direction, capability, ability and expertise. The agents also have other characteristics and opportunities, such as capital stock and partnering strategies. The model also includes descriptions of conditions and procedures under which agents form consortia and apply funding for collaborative research projects, the European Commission allocates funding to the project proposals; and the partners then conduct research. These conditions are determined by a set of external governance rules and internal collaboration rules. The rules described in this paper contribute both to the descriptions of the attributes and properties of the agents, such as their kene, partnering strategy or research network; or to the other basic assumptions and decision conditions in the model.

² Pyka, Andreas & Scholz, Ramon (2008). A narrative Description of the Agent Based NEMO-Model. NEMO Working Paper #11. University of Bremen.

Example 7

Rule number:	Basic rule:	Implementation in the model:
A1	If we get invited to join the project, we join the project.	Basic assumption
	Additional conditions:	
	[AND (we have had prior cooperation with the coordinator or other partners)	Research networks of the agent
	OR (we want to broaden our network and increase our visibility)	Basic assumption
	OR (it fits our research profile/priorities)	Part of kene/ partnering strategy
	OR (we are looking for funding)	Basic assumption
	OR (it's in a field we want to expand to)]	Part of kene/ partnering strategy
:		

Some of the rules, pertaining to either attributes of the agents or to the basic assumption and decision conditions of the model, are binding, whereas others can be modified by the users of the model. These modifiable rules include e.g. the number of agents, the size of the projects, or the maximum number of initiated proposals/period/agent.

In the next stage, additional rule sets should be formulated based on the IP case studies and the FP5 survey, in order to be able to address issues and patterns of behaviour which have not been addressed by the NEST-study.

Annex 1: Interview Questions

Themes

The interview will address the following seven themes:

- A) History of the project
- B) Structures and roles in the project
- C) Previous collaboration history
- D) Future plans
- E) General collaboration rules
- F) Knowledge production, learning and internal dynamics
- G) Evaluation

A) History of the current project

A1. Can you tell me something about the history of the project, why did you decide to establish the project? (Can ask further questions, e.g. Who was the initiator of the project?)

A2. Why did you get involved in the project? What do you expect to gain by joining the project?

A3. Who took the decision to join the project, the individual, the research group or the department?

A4. How was each invited to participate, in which role, at which stage and by whom? (Can reformulate, e.g. Who invited you to the project?)

A5. How did you look for possible partners? (Can elaborate, e.g. Do you e.g. have a core group of actors with whom you discuss possible projects, do you ask other local institutions, do you ask already selected partners about whom they would suggest etc.?)

A6. What were the most important issues you took into account when selecting partners? (Can elaborate, e.g. Are you looking for complementary knowledge (similar or dissimilar), compatible institutions, prior experience, locality etc.)

A7. Were you involved in preparation of several projects? If yes, why did you choose to participate in this one?

A8. Were you considering applying funding from several sources? If yes, why did you decide eventually to go for EU funding, what favourable characteristics does the FP have?

A9. How were the coordinators and WP leaders selected?

A10. What is most important to you when you are preparing a proposal in an EU framework programme?

B) Structures and roles in the project

B1. Can you tell me something about the management structures of the project? What is your role in the project?

B2. Has your role evolved or changed in the different stages of the process and if yes, how? Have the roles of other partners changed? (Can elaborate e.g. when you first started planning the project proposal, when your proposal got accepted etc)

C) Other collaboration history

C1. What types of collaboration was there previously between you and the other partners? (Can elaborate e.g. by listing previous EU-funded projects, some other research projects, joint teaching, writing papers together, personal contacts)

C2. Which organisations did you consider as possible partners, but the partnership failed to materialise, perceived reasons for it?

C4. Were you a coordinator or WP leader before? Do you think that being a coordinator or a WP leader matters for future cooperation?

D) Future plans

D1. What would you do differently in the future? (Can elaborate, e.g. what would you do differently in selecting partners, preparing proposals, conducting the research etc.)

D2. Are you collaborating with the same organisation in the FP7 or do you have any other future collaboration plans with the same organisations? Can you elaborate as to why?

D3. Would you like to have a different role in future collaboration or future EU-projects?

E) General collaboration rules

E1. What do you think EC is paying attention to when selecting which projects to fund? Did you take those into account when forming the consortium or writing the proposal? What do you think is the most important issue for them?

E2. Have you heard any rumours that the EC might have some hidden rules or additional criteria which they take into account when selecting projects? If yes, have you ever taken them into account during your career?

E3. Did you agree upon any explicit working rules and principles in the consortium when you started the project, if so, what kinds of rules?

E4. Do you think that cooperation is different with different types of organizations (e.g. university, company, research lab etc.)?

E5. Do you think there is an optimum amount or composition of partners, and what would that be and why?

F) Knowledge production, learning and internal dynamics

F1. What knowledge and outputs does your project produce (minutes, working papers, conference papers, patents, equipment etc.) (not necessarily asking that at all)

F2. How is the knowledge your project produces disseminated and used later on? (If need to elaborate, can ask e.g. whether all the partners participate e.g. in the dissemination of knowledge)

F3. Who would you say is the primary actor in the project, individuals or research groups/departments?

F4. What do you expect to learn or what have you learned from the other partners, what do you think the other partners have learned from you?

F5. Do you communicate equally with all partners, or more with some partners than others? (Can elaborate e.g. Are there any factors you think may have an effect on the way you communicate with other partners, e.g. the work package structure, language or geographical location, if yes, how)

G) Evaluation

G1. What is your opinion on how the project is going, what are its strengths and problems?

G2. How do you know your work is successful, how do you evaluate it?

G3. Do you think EU is evaluating your project in some way? If yes, what do you think about it?

G4. In general, which issues do you perceive as promoting or impeding collaboration?

G5. What would you like to see changed in the future FP's?

G6. Is there anything else you would like to add, or anything that I may have overlooked??

Annex 2: First order codes

First order content and analytical codes with file identification and description

communication (com)

issues related to communication within the project

cooperation - advances - bureaucracy (cab)

factors advancing cooperation related to regulations or procedures

cooperation - advances - culture (cac)

factors advancing cooperation related to cultural issues or people's backgrounds or contexts

cooperation - advances - funding (caf)

factors advancing cooperation related to funding

cooperation - advances - other (cao)

other factors advancing cooperation

cooperation - hinders - bureaucracy (chb)

factors hindering cooperation related to regulations or procedures

cooperation - hinders - culture (chc)

factors hindering cooperation related to cultural issues or people's backgrounds or contexts

cooperation - hinders - funding (chf)

factors hindering cooperation related to funding

cooperation - hinders - other (cho)

other factors hindering cooperation

EU - policy (EU_p)

all matters related to EU policy, either what EU wants, or what actors want from EU

evaluation - consortium (evc)

evaluation of the project done by the consortium

evaluation - EU (evEU)

evaluation of the project done by EU

evaluation - other (evo)

other issues related to evaluation

excellence - other (exo)

other issues related to or hinting at excellence or its conceptualisations

excellence - partners (exp)

issues related to the excellence of partners

excellence - proposal (expr)

issues related to excellence of the proposal

future - change (fch)

Things and partners to change in possible future projects, plus motivations and explanations

future - continue (fco)

Continuing with the same partners in the future projects, plus motivations and explanations

future - cooperation opportunities (fcop)

cooperation opportunities arising for future projects from current cooperation, plus motivations and explanations

future - maybe (fma)

possible activities in the future

future - none (fno)

no future projects envisaged

getting along (ga)

issues related to the actors getting along with each other

KP - all consortium (kpac)

knowledge production and dissemination activities where all the partners participate

KP - alone (kpal)

knowledge production and dissemination activities done alone by the partner

KP - other (kpo)

other issues related to knowledge production and dissemination activities

KP - within WP (kpwv)

knowledge production and dissemination activities done in cooperation by the actors in a workpackage

learning - other (lo)

other issues related to learning during the project

learning - communication (lcm)

issues related to learning communication and understanding during the project

learning - content (lcn)

issues related to learning content during the project

learning - meta (lme)

issues related to learning EU protocols, coordinating, human skills and other meta-skills during the project

metaphore (met)

using a metaphore to describe something

motivation - funding (mf)

motivation for initiating or joining the project related to acquiring funding

motivation - new field (mnf)

motivation for initiating or joining the project related to wanting to move to a new research field

motivation - other (mo)

(other issues related to motivation for initiating or joining the project)

motivation - own field (mof)

motivation for initiating or joining the project related to the project being in one's own research field

motivation - prior cooperation (mpc)

motivation for initiating or joining the project related to the project being with partners one has had previous cooperation with

motivation - prior research (mpr)

motivation for initiating or joining the project related to having done previous research related to the same topic

motivation - science (ms)

motivation for initiating or joining the project related to science, its philosophical or practical aspects

NEST (nest)

Issues related to the NEST programme

organisations - advantages (oa)

advantages related to working with people from different types of organisations, disciplines or countries

organisations - difficulties (od)

difficulties related to working with people from different types of organisations, disciplines or countries

organisations - other (oo)

other issues related to working with people from different types of organisations, disciplines or countries

partners - expertise (pe)

choice of partners related to their expertise, or other issues related to partners' expertise

partners - infrastructure (pi)

choice of partners related to available infrastructure

partners - other (po)

other issues related to partners and choice of partners

partners - prior cooperation (ppc)

choice of partners related to prior cooperation with them, or other issues related to prior cooperation with partners

partners - recommendation (prc)

choice of partners based on somebody's recommendation, or other issues related to recommendations on partner choice

partners - reputation (prp)

choice of partners based on reputation, and other issues related to reputation of partners

primary - other (prot)

other issues related to the primary actors in the project

primary - individual (pri)

individuals as the primary actors in the project

primary - organisation (pror)

organisations as the primary actors in the project

primary - research group (prrg)

research groups as the primary actors in the project

project initiation process (pip)

issues related to the initiation of the project

Proposal - criteria (proc)

issues related to the proposal criteria as determined by EU or perceived by participants

proposal - other (proo)

other issues related to the proposal

proposal - success (pros)

issues related to the success of the proposal and factors actors perceive as promoting its success

science (sc)

practical and philosophical issues related to science

scientific friendship (scf)

descriptions of friendship between scientists

scientist (sct)

issues and perceptions related to the actor as a scientist

structures - coordinator (stc)

issues related to the coordinator's role and capacities

structures - management (stm)

issues related to management of the project and procedures in it

structures - more in WP (stmw)

issues related to the number of partners in a work package

structures - size (sts)

issues related to the number of partners in the project

structures - WPL (stwpl)

issues related to the role and capacities of the work package leader

success - project (sup)

issues related to the success of the project

teamwork (team)

issues related to and description of teamwork and social cohesion within the project

trust (tru)

trust amongst potential or actual partners and other things related to it

unpredictability (unp)

unpredictability and risks in the project, relating to partners or to science in general

usefulness (use)

issues related to the usefulness and external value of the projects and its results

workload (work)

issues related to the workload of the application process, within the project or general workload of the actor

Young researchers (yr)

philosophical and practical issues related to young researchers and phd students, their role, capacities and future

Background codes

Academic status

MSc (msc)

background code MSc

Dr (dr)

background code Dr

Professor (pro)

background code professor

Role in the project

coordinator (coo)

background code coordinator

manager (man)

background code manager

ordinary participant (orp)

background code ordinary participant

subcontractor (sub)

background code subcontractor

WPL (wpl)

background code work package leader

Organisational background

research institute (rei)

background code research institute

University (uni)

background code university

Gender

female (fem)

background code female

male (mal)

background code male

Annex 3: Internal collaboration rules

Key to interviewee codes

- the first number stands for project
- the capital letter stands for role: C=coordinator/manager, W=work package leader, O=ordinary partner/subcontractor
- the small letter after W stands for the alphabetical order of work package leader
- the number after C stands for coordinator task, 1= coordinator, 2=manager

Rule Number	Rule	Cycle stage <i>Consortium formation</i>	Special theme	Interviewee	Comment
A1	If we get invited to join the project (and we have had prior cooperation with the coordinator or other partners) (and the project is interesting/innovative) (and it fits our research profile/priorities) (and we trust the people) (and it is not overlapping with other projects) (and we are looking for funding) (and it has a good chance of being funded) (and it's in a field we want to expand to) we join the project.	Consortium formation	Being invited	1Wa 1Wb 1Wc 4Wa 6O 3Wb 3O 5O 6W 3Wb 1Wd 2Wb 5W 2O	(no input from IP) The rule corresponds with IP data but questions formulated differently <ul style="list-style-type: none"> - which partners you collaborated previously - would you collaborate again - who are your partners now - -> like to collaborate with the same partners - Supports: funding, new field, prior collaboration - - could add: and if we want to broaden our network and increase our visibility
A2	If I am the head of the department/head of lab/a professor (and I have the support of the head of the department), I can take the decision to join/establish a project.	Consortium Formation	Being invited	1Wb 1C 2Wa 3C	Individual level, so can't be implemented
A3	If the project is outside the scope of our research (and thus we think we cannot manage it) we do not participate even if we are invited.	Consortium Formation	Being invited	4Wa 6O	Already A1
A4	If someone we consider a key partner joins the project, (and the project is	Consortium formation	Being invited	5W 1Wd	Remove qualifier, add rule as qualifier into A1

	in our field of expertise) we join the project.				
A5	If we are participating as coordinators in two proposals, and we get invited as a participant to a third one, we decline	Consortium formation	Being invited	5C	Workload rule
A6	If I was asked to join a project that was overlapping with another project I am already a partner in, I would not join.	Consortium formation	Being invited	6W	IP does not include information about this, and this is an individual level rule
A7	If I have many other obligations at the same time, I do not joint the project.	Consortium formation	Being invited	6O 1Wd	Workload rule
A8	If we have more than one project being prepared at the same time, we can join all of them.	Consortium formation	Being invited	3O	Model may have the possibility to join only one project/ cycle, but reality contradicts this
A9	Unless (If not) enough money is to be acquired by joining the project, we do not join the project.	Consortium formation	Being invited	1Wd	Does not apply to all types of organisations ? Relevant for universities, research institutions, maybe companies?
A10	If a partner moves away from the specific research are, it can no longer join projects in that particular research area.	Consortium formation	Being invited	1Wd	Kene rule
A11	If there already is a partner who is an expert on a particular research task, we don't invite another partner with the same expertise.	Consortium formation	Inviting	1Wa 1C	Kene, on the other hand higher absorptive capacity . Significant but depends on other proposal rules (see how is in model, page 7-8)
A12	If potential partners (who have relevant expertise or needed equipment) have previous collaboration with existing partners/are known to the coordinator, they will be invited to join.	Consortium Formation	Inviting	1Wb 1C 7C1 5W 4C1 6C 3Wb 2C 6W 1Wc 3C 3O 2O 6O	Break this into two? - Known by coordinator - Known by other partner IP sample: being known by coordinator is more important that being known by other partner
A13	If I am not a coordinator, I	Consortium	Inviting	4Wa	Difference: deciding or

	am not involved in selecting other partners	Formation			suggesting? Could be self-evident and is already in the model (coordinator selects partners in the model) model: first stage not involved, second stage you are involved
A14	If we have previously unsuccessfully applied for an EU project with another partner, and they have necessary expertise, we will invite them to collaborate again.	Consortium formation	Inviting	4C1	Already in the model, but is it realistic that expertise goes down if the proposal is not successful? Should we support that expectation of the model?
A15	If we do not know suitable partners for the project, we rely on the advice of someone who knows suitable partners and whom we trust.	Consortium formation	Inviting	5C 2Wb 7C2 3C	Already in the model , second selection stage , supported also by IP
A16	If we are putting a consortium together (and the project is large) we invite partners from all over Europe.	Consortium formation	Inviting	5C 6W	Geographical rule (there are other rules which support this rule and could be joined together) (hidden rule?) <ul style="list-style-type: none"> - Survey and IP: neighbours are more likely to collaborate (this refutes my rule) - But is it at the collaboration phase or consortium formation stage? - Rule: certain percentage of neighbours, smaller percentage of distant partners?
A17	If I do not know suitable partners beforehand, I do not invite them to participate.	Consortium formation	Inviting	6C	Model is opposite, invite others on the second stage, so should construct three-stage-rule
A18	If I do not know suitable partners beforehand, I will (look for them in the internet/EU seminars/CORDIS and) invite them based on their scientific expertise.	Consortium formation	Inviting	6W 7C1 5O 2Wb 7C2	As above, last stage
A20	If there are several possible partners for a particular task to choose from, I choose the one I know	Consortium formation	Inviting	6O	Model is opposite: you look at your network and choose the people with suitable kenens, not vice versa like this (and the

	personally.				model is more realistic)
A21	If there are several possible partners for a particular task to choose from, I choose the one with the best expertise.	Consortium formation	Inviting	3Wa	Applies at all three stages
A22	If I am inviting partners to participate a project, the competencies of the organisation (research group) matter more than the competencies of an individual	Consortium formation	Inviting	7C2	Model equates individuals with organisations
A23	If I am inviting partners to participate in the project, the expertise of individual people matters more than the organisation.	Consortium formation	Inviting	5C 6O	See above
Rule number	Rule	Cycle stage Proposal submission	Special theme	Person	
B1	If there is a two stage procedure for submitting proposals, in the first stage the coordinator will write the proposal outline, and in the second stage each partner will write their own contribution for the full proposal.	Proposal submission	Procedure	4Wb	Too fine grain for the model
B2	If you are writing a proposal for a particular call, you have to follow all the rules related to that call.	Proposal submission	Procedure	2Wa	This is in the governance rules, and is important
B3	If we have proposed a research project and it has been rejected, we will propose it again later.	Proposal submission	Procedure	6C	See above A14, but the call would not be exactly the same? CF ancient charm broadened the scope . This sort of rule already in the model?
B4	If there is a suitable call (and we want to extend our research into a new area/we have a good research idea)(and long collaboration with suitable partners) (and we have done a pilot project on the same topic) we submit a proposal.	Proposal submission	Call	5C 6W 1C 4C1 6C 3C	Workload rule? But this is an important rule, and that the call is suitable (call+keneset, kene of the coordinator makes the call suitable) Model: initiate one per cycle, but how many can you have running at the same time

B5	If we need funding/ we do not get enough national funding /we are dependent on external funding/project can't be done with national funding, we apply for EU funding.	Proposal submission	Funding	1Wb 4C2 5C 6O 1Wc 5O	Model starts with the idea that you always need funding but IP data and NEST data does not always support this?
Rule number	Rule	Cycle stage Funding decision	Special theme	Person	
C1	If you have a lot of experience in getting funding for EU projects, you are more likely to get funding also in the future.	Funding decision	Proposal	7C2	c.f. coordinator status, does this stay in the next time step? c.f Kene, but not the same thing. Unlikely to be included in the model, so maybe leave out.(or some sort of metaexpertise code?)
C2	If the project proposal is in line with EU policy goals, it is more likely to get funding.	Funding decision	Proposal	2Wb 6C 6O 3O 5C	Governance rule? Aggregate rule on calls?
C3	If the proposal is good quality and innovative, and the consortium consists of experts, (and management and economy is sound)(and the partners come from different European countries) (and it can't be funded on national basis) the project is likely to get funded.	Funding decision	Proposal	1Wc 7C2 1Wa 6O	Different countries: see above Can't be funded on national basis: remove? Basic rule: good quality of the proposal Management and economy: metaexpertise rule? /expertise like coordinator, expires after while?
C4	If the partners are geographically balanced, the project is more likely to be funded.	Funding decision	Country	2C	See yellow above, maybe this would be some sort of hidden rule which could be turned on or off?
C5	If you are from a country which has a good track record/is good at lobbying coordinating projects, you are more likely to get funding from a project.	Funding decision	Country	5O 1Wd	C5+C6 together, but possibly leave out because difficult to do on a model ? or external attribute of attractiveness (used at the national level) – stimulated countries (governance rules?)/experienced partners Three levels: expectations of the partners, evaluators preferences, eu policies
C6	If you have a partner from a country which is being	Funding decision	Country	1Wd 2Wa	Possibly leave these out?

	specifically stimulated through FP's, you are more likely to get funded.				
C7	If you know the EC research officers/evaluators, you are more likely to get funding for your project.	Funding decision	Contacts	1Wb 1Wa	Hidden rule, as above
C8	If you are a well known organisation/opinion leader/large research centre in a particular area you are more likely to get funded.	Funding decision	Organisation	2Wa 7C2 5O 1Wa 4Wa	External parameter of attractiveness, which could have many attributes. Supported e.g. by centrality in the survey. Part of this is in the kene? Ask ramon, how he would implement this?
Rule number	Rule	Cycle stage Task division	Special theme	Person	
D1	If I have too many other obligations, I cannot be a coordinator	Task division	Coordinator	1Wa 4Wa 6W	Workload rule
D2	If my field is field A, I cannot be a coordinator in a project in field B.	Task division	Coordinator	4Wa	Obsolete, remove? If call has a keneset, would have to match the kene of the coordinator. Only works if the model allows for someone else to be coordinator rather than the one who comes up with the idea. (model should allow for emergence of genuine innovation, a capability which is not already there, ask ramon)
D3	If someone comes up with the research idea, (s)he will be the coordinator of the project	Task division	Coordinator	4C1 1C 6O 2C 1Wd 7C2	Already in the model
D4	If the project is very large, I do not want to be a coordinator.	Task division	Coordinator	5C	Workload rule? Or Institutional attribute, which allows for a certain portfolio of project sizes (e.g. cannot have only large projects , largest project is arbitrary but limited, but it's not likely such would be added? (something added to the governance rules, first check what the governance rules would say, before other decision steps) are the actors

					looking for a call to fit their kenes, or is there first a call with specific kene, potential coordinators search whether they have the required kene.
D5	If I have long experience of EU projects, I am more likely to become a coordinator.	Task division	Coordinator	1C	How could long experience be defined? Is it part of expertise in kene, or an additional attribute?
D6	If we have a project idea, but cannot be the coordinator due to EU regulations, we ask someone else to be the coordinator.	Task division	Coordinator	2Wa	Not in the model?
D7	If I am coordinating a project proposal, I cannot coordinate another project proposal.	Task division	Coordinator	2Wa	Model: 2 initialised proposals / period
D8	If a person comes up a research idea, but is unable to be a coordinator, another colleague from the same organisation will take over coordinating task	Task division	Coordinator	2C 6C 7C1 7C2	Erase, no individuals in the model
D9	If a partner has needed expertise in relation a research task, he will be invited to be the work package leader of that task.	Task division	Work package leader	1Wb 5C 1C 3C 2Wb 1Wc 7C2 2C 5O	Expertise in the kene, if one has relevant kene, he will be invited to the WP, the best expert as WPL? Currently WPL's not in the model?
D10	If one partner has to pull out of the project, there is another partner in their work package to take over the task.	Task division	Work package leader	5C	Would require a rule that a WP needs to have a minimum amount of partners.
D11	If we don't have specific expertise in relation to a particular task, we are not involved in the work package relating to that task	Task division	Work package leader	1Wc	Implemented
Rule number	Rule	Cycle stage	Special theme	Person	
E1	If partners represent different types of institutions, it has no	Collaboration	Background	1Wb 5W 4Wa	In the model, different organisations have a different kene, capital etc. Once the

	consequences for collaboration.			6C 6O 3O 2Wb 4Wa 7C1 4C1 5C	consortium is established, collaboration is assumed.
E2	If partners represent different disciplines/countries they learn from each other	Collaboration	Background	4Wa 5W 6C	Through modifications of the kene.
E3	If the partners represent different types of organisations, that has positive effects on the dynamics of the project.	Collaboration	Background	1Wc 4Wa	This could be implemented by establishing a link between types of organisations (which could be selected by the user) and success/output?
E4	If partners represent similar fields, their communication is easier.	Collaboration	Background	3O	As above? In the model as spillover/absorptive capacity?
E5	If partners represent different disciplines/ different types of organisations, communication is slower/more cumbersome	Collaboration	Background/ communication	5C 6W 3O 2Wb 4C1 5W 7C1 1Wa	As above?
E6	If we produce a book at the end of the project all partners and some external contributors will contribute to it.	Collaboration	Knowledge production	2C	Not in the model.
E7	If we write articles/build equipment we collaborate with (at least) one other partner in writing them.	Collaboration	Knowledge production	3O 2Wb 1Wa	Implemented
E8	If you have less than 15 people/5 partners you might miss important expertise/quality is lower.	Collaboration	Success	5O 2Wb	Can be implemented by building a link between number of partners (range chosen by user) and outcome? Reformulate?
E9	If we can cope with unexpected problems, the project is successful.	Collaboration	Success	1C	no eternal factors in the model
E10	If there are external factors complicating the research, the project/deliverables will	Collaboration	Success	1C 6W 2C	as above

	be delayed.			6C	
E11	If one partner does not do his job, the entire project may fail	Collaboration	Success	4C1	Assumption of perfect collaboration?
E12	If one partner makes an unsuccessful recruitment decision, the project may suffer.	Collaboration	Success	1Wc	No individuals in the model
E13	If we achieve our deliverables and milestones, the project is successful.	Collaboration	Success	1Wc 2Wb	Definition of success in the model?
E14	If we do not have qualified personnel, we cannot do our task well.	Collaboration	Success	1Wd	Part of kene?
E15	If we share a research task/work package (work on a similar type of task) with another partner (another partner is important to our research task) we communicate more with that partner than with other partners	Collaboration	Communication	1Wa 5W 2Wa 6C 6W 3Wb 4Wa	Basic assumption
E16	If the research task is something completely new for all the partners, there is close interaction between the partners.	Collaboration	Communication	5C	Can't be completely new, as can only participate in projects that are supported by the kene.
E17	If a project has more than 10-12 partners communication becomes more difficult than with smaller amount of partners.	Collaboration	Communication	2Wa 6W 2O 2Wb 1Wd	no measure of communication?
E18	If we are partner in a work package, we only communicate with the other partners in that work package.	Collaboration	Communication	3O 5W	basic assumption
E19	If we are a subcontractor, we primarily communicate with the partner who involved us in the project.	Collaboration	Communication	2O	no subcontractors
E20	If I am the coordinator or manager, I communicate equally with all partners.	Collaboration	Communication	7C2 2C	no measure of communication?
E21	If there are more than 10-12 partners in a consortium/consortium is very large, the project	Collaboration	Management and structures	1Wb 1C 3Wb 5O	Implemented

	needs to be divided into substructures.			4C1 4Wa 7C1	
E22	If you are a coordinator, you need to be able to trust the other partners to do their job.	Collaboration	Management and structures	4C1	Trust is assumed
E23	If there is little overlap in the areas of each partners, the roles of the partners are not likely to change during the project.	Collaboration	Management and structures	5C	Not in the model
E24	If project has more than 6-8 partners, managing becomes more difficult	Collaboration	Management and structures	5C	no measure of management?
E25	If work packages/ research tasks are clearly defined, managing the project is easier/ the cooperation between partners is more smooth and productive	Collaboration	Management and structures	5C 6O	not in the model?
E26	If I am a coordinator, I will learn to be a better coordinator in the future.	Collaboration	Management and structures	1C	Could be implemented if the coordinator status had an additional benefit ("aura"), which could be phased out or strengthened over time periods.
E27	If people trust each other, no strict written rules/contracts are needed to steer the cooperation.	Collaboration	Management and structures	7C2 2O	Basic assumption of trust, contracts always in the model
E28	If the project parts are integrated, partners cooperate more.	Collaboration	Management and structures	5O	too fine grain for the model?
E29	If the project is delayed/we have not achieved our goals in time we ask for extension	Collaboration	Extension	1Wa 1Wb 5C 1C 1Wd 3C	Could extension be implemented?
Rule number	Rule	Cycle stage <i>Future</i>	Special theme	Person	
F1	If I was participating in a future EU project, I would not want to be a coordinator.	Future	Role	1Wb 2Wb 3Wa	No individuals in the model, but would this be possible in the organisational level? Would in bring anything useful? Could the use define that some organisation by nature would not initiate

					projects?
F2	If I am invited to a further project/continue the project in a new proposal, (and it was a similar task) (if my expertise was only relevant to one limited part of the project) I will/want to continue on the same level	Future	Role	4Wa 6W 3Wb 1Wc 3O 4C1 1C	Implemented, on organisational level, but are the additional conditions implemented? Write out additional conditions.
F3	If there are only very big projects funded in FP7, we do not participate as a coordinator.	Future	Role	5C	This could be implemented, if the used defined a large size for projects, and assigned some agents an not being able to initiate projects.
F4	If I will participate in a future EU project and the project is in my core area (and I don't have too many other projects to coordinate) (and I have less other obligations), I would like be on a higher hierarchy level (<i>WPL instead of ordinary participant, coordinator instead of WPL</i>)	Future	Role	5O 3O 6O 2O	Implemented for organisations, as any organisation can initiate projects. Write out additional conditions.
F5	If you are well-known/expert in your field/have participated in EU-projects before/have good networks, you are likely to be invited to future projects.	Future	Collaboration opportunity	6W 1Wd 3C 3Wb 2Wa	Implemented, Expertise in the kene?
F6	If you are a work package leader or a coordinator, it has no consequences for future collaboration opportunities.	Future	Collaboration opportunity	5W 5C 1Wc 1Wd 6W 2Wa	Counter rule to official position bringing more network value (F8). Could be decided by the user which one to implement?
F7	If you do not perform well in one project, you are not invited to the next proposal.	Future	Collaboration opportunity	4Wa 7C1 3O	Implemented.
F8	If you are a coordinator/manager or a work package leader, and the collaboration is successful, you are more likely to be invited to future projects/ people are more	Future	Collaboration opportunity	3O 1Wc 6W 4Wa 7C2	Implemented

	likely to want to join your projects in the future.				
F9	If you are retired/about to retire, you cannot participate in future EU projects.	Future	Collaboration opportunities	2Wa 1Wd	No individuals in the model.
F10	If project is successful/ if we find a suitable call, we will apply for another project based on that/ we are likely to continue collaboration with the same partners.	Future	Continuing proposal	1Wa 1Wb 1C 3O 6O 5W 6C 2O 2Wb 4Wa 4C1	Should be implemented.
F11	If I was to do this again, I would make the proposal less specific and more flexible.	Future	Procedure	5W	Not in the model.
F12	If I was doing a proposal again, I would start preparing the proposal earlier/ take more time for finalising the research proposal.	Future	Procedure	4C1 5C	Not in the model? Proposals do not fail to materialise due external factors.
F13	If I was to do this again, I would start publishing earlier on in the project.	Future	Procedure	7C2	Not in the model.
F14	If I was to do this again, I would not start actual project until the contract was signed.	Future	Procedure	1C	Not in the model

Annex 4: Final rules

Key to interviewee codes

- the first number stands for project
- the capital letter stands for role: C=coordinator/manager, W=work package leader, O=ordinary partner/subcontractor
- the small letter after W stands for the alphabetical order of work package leader
- the number after C stands for coordinator task, 1= coordinator, 2=manager

Rule Number	Rule	Cycle stage <i>Consortium formation</i>	Special theme	Interviewee	Comment
A1	If we get invited to join the project and (we have had prior cooperation with the coordinator or other partners), or (the project is interesting/innovative) or (it fits our research profile/priorities) or (we trust the people) or (it is not overlapping with other projects) or (we are looking for funding) or (it has a good chance of being funded) or (it's in a field we want to expand to) or (if we want to broaden our network and increase our visibility) or (if someone we consider a key partner) joins the project we join the project.	Consortium formation	Being invited	1Wa 1Wb 1Wc 4Wa 6O 3Wb 3O 5O 6W 3Wb 1Wd 2Wb 5W 2O - funding, new field, prior collaboration, broadening network and increasing visibility supported by IP's, prior collaboration supported by survey	(no input from IP) The rule corresponds with IP data but questions formulated differently <ul style="list-style-type: none"> - which partners you collaborated previously - would you collaborate again - who are your partners now - -> like to collaborate with the same partners - Supports: - - could add: and if we want to broaden our network and increase our visibility
A3	If the project is outside the scope of our research (and thus we think we cannot manage it) we do not participate even if we are invited.	Consortium Formation	Being invited	4Wa 6O	Counter rule to A1
A5	If we are participating as coordinators in two proposals, and we get invited as a participant to a	Consortium formation	Being invited	5C	Workload rule

	third one, we decline				
A7	If I have many other obligations at the same time, I do not joint the project.	Consortium formation	Being invited	6O 1Wd	Workload rule
A8	If we have more than one project being prepared at the same time, we can join all of them.	Consortium formation	Being invited	3O	Model may have the possibility to join only one project/ cycle, but reality contradicts this
A9	Unless (If not) enough money is to be acquired by joining the project, we do not join the project.	Consortium formation	Being invited	1Wd	Does not apply to all types of organisations ? Relevant for universities, research institutions, maybe companies?
A10	If a partner moves away from the specific research are, it can no longer join projects in that particular research area.	Consortium formation	Being invited	1Wd	Kene rule
A11	If there already is a partner who is an expert on a particular research task, we don't invite another partner with the same expertise.	Consortium formation	Inviting	1Wa 1C	Kene, on the other hand higher absorptive capacity. Significant but depends on other proposal rules (see how is in model, page 7-8)
A12	If potential partners (who have relevant expertise or needed equipment) have previous collaboration with existing partners/are known to the coordinator, they will be invited to join.	Consortium Formation	Inviting	1Wb 1C 7C1 5W 4C1 6C 3Wb 2C 6W 1Wc 3C 3O 2O 6O	Break this into two? - Known by coordinator - Known by other partner IP sample: being known by coordinator is more important that being known by other partner
A13	If I am not a coordinator, I am not involved in selecting other partners	Consortium Formation	Inviting	4Wa	Difference: deciding or suggesting? Could be self-evident and is already in the model (coordinator selects partners in the model) model: first stage not involved, second stage you are involved (counter rule)
A14	If we have previously unsuccessfully applied for an EU project with another partner, and they have	Consortium formation	Inviting	4C1	Already in the model, but is it realistic that expertise goes down if the proposal is not successful? Should we

	necessary expertise, we will invite them to collaborate again.				support that expectation of the model?
A15	If we do not know suitable partners for the project, we rely on the advice of someone who knows suitable partners and whom we trust.	Consortium formation	Inviting	5C 2Wb 7C2 3C	Already in the model , second selection stage , supported also by IP
A16	If we are putting a consortium together (and the project is large) we invite partners from all over Europe.	Consortium formation	Inviting	5C 6W	Geographical rule (there are other rules which support this rule and could be joined together) (hidden rule?) <ul style="list-style-type: none"> - Survey and IP: neighbours are more likely to collaborate (this refutes my rule) - But is it at the collaboration phase or consortium formation stage? - Rule: certain percentage of neighbours, smaller percentage of distant partners?
A17	If I do not know suitable partners beforehand, I do not invite them to participate.	Consortium formation	Inviting	6C	Model is opposite, invite others on the second stage, so should construct three-stage-rule
A18	If I do not know suitable partners beforehand, I will (look for them in the internet/EU seminars/CORDIS and) invite them based on their scientific expertise.	Consortium formation	Inviting	6W 7C1 5O 2Wb 7C2	As above, last stage
A20	If there are several possible partners for a particular task to choose from, I choose the one I know personally.	Consortium formation	Inviting	6O	Model is opposite: you look at your network and choose the people with suitable kenes, not vice versa like this (and the model is more realistic)
A21	If there are several possible partners for a particular task to choose from, I choose the one with the best expertise.	Consortium formation	Inviting	3Wa	Applies at all three stages
A22	If I am inviting partners to participate a project, the competencies of the	Consortium formation	Inviting	7C2	Model equates individuals with organisations

	organisation (research group) matter more than the competencies of an individual				
A23	If I am inviting partners to participate in the project, the expertise of individual people matters more than the organisation.	Consortium formation	Inviting	5C 6O	See above
Rule number	Rule	Cycle stage <i>Proposal submission</i>	Special theme	Person	
B2	If you are writing a proposal for a particular call, you have to follow all the rules related to that call.	Proposal submission	Procedure	2Wa	This is in the governance rules, and is important
B3	If we have proposed a research project and it has been rejected, we will propose it again later.	Proposal submission	Procedure	6C	See above A14, but the call would not be exactly the same? CF ancient charm broadened the scope . This sort of rule already in the model?
B4	If there is a suitable call and (we want to extend our research into a new area/we have a good research idea) or (long collaboration with suitable partners) or (we have done a pilot project on the same topic) we submit a proposal.	Proposal submission	Call	5C 6W 1C 4C1 6C 3C	Workload rule? But this is an important rule, and that the call is suitable (call+kene set, kene of the coordinator makes the call suitable) Model: initiate one per cycle, but how many can you have running at the same time
B5	If we need funding/ we do not get enough national funding /we are dependent on external funding/project can't be done with national funding, we apply for EU funding.	Proposal submission	Funding	1Wb 4C2 5C 6O 1Wc 5O	Model starts with the idea that you always need funding but IP data and NEST data does not always support this?
Rule number	Rule	Cycle stage <i>Funding decision</i>	Special theme	Person	
C1	If you have a lot of experience in getting funding for EU projects, you are more likely to get funding also in the future.	Funding decision	Proposal	7C2	c.f. coordinator status, does this stay in the next time step? c.f Kene, but not the same thing. Unlikely to be included in the model, so maybe leave out.(or some sort of metaexpertise code?)
C2	If the project proposal is in	Funding	Proposal	2Wb	Governance rule? Aggregate

	line with EU policy goals, it is more likely to get funding.	decision		6C 6O 3O 5C	rule on calls?
C3	If the proposal is good quality and innovative, and the consortium consists of experts, (and management and economy is sound, (and it can't be funded on national basis) the project is likely to get funded.	Funding decision	Proposal	1Wc 7C2 1Wa 6O	Different countries: see above Can't be funded on national basis: remove? Basic rule: good quality of the proposal Management and economy: metaexpertise rule? /expertise like coordinator, expires after while?
C4	If the partners are geographically balanced, the project is more likely to be funded.	Funding decision	Country	2C	Maybe this would be some sort of hidden rule which could be turned on or off?
C5	If you are from a country which has a good track record/is good at lobbying coordinating projects, you are more likely to get funding from a project.	Funding decision	Country	5O 1Wd	Difficult to do on a model? External attribute of attractivity (used at the national level) – stimulated countries (governance rules?)/experienced partners Three levels: expectations of the partners, evaluators preferences, eu policies
C6	If you have a partner from a country which is being specifically stimulated through FP's, you are more likely to get funded.	Funding decision	Country	1Wd 2Wa	Possibly leave these out?
C7	If you know the EC research officers/evaluators, you are more likely to get funding for your project.	Funding decision	Contacts	1Wb 1Wa	Hidden rule, as above
C8	If you are a well known organisation/opinion leader/large research centre in a particular area you are more likely to get funded.	Funding decision	Organisation	2Wa 7C2 5O 1Wa 4Wa	External parameter of attractivity, which could have many attributes. Supported e.g. by centrality in the survey. Part of this is in the kene? Ask ramon, how he would implement this?
Rule number	Rule	Cycle stage Task division	Special theme	Person	
D1	If I have too many other obligations, I cannot be a coordinator	Task division	Coordinator	1Wa 4Wa 6W	Workload rule
D3	If someone comes up with the research idea, (s)he will	Task division	Coordinator	4C1 1C	Already in the model

	be the coordinator of the project			6O 2C 1Wd 7C2	
D4	If the project is very large, I do not want to be a coordinator.	Task division	Coordinator	5C	Workload rule? Or Institutional attribute, which allows for a certain portfolio of project sizes (e.g. cannot have only large projects , largest project is arbitrary but limited, but it's not likely such would be added? (something added to the governance rules, first check what the governance rules would say, before other decision steps) are the actors looking for a call to fit their kenes, or is there first a call with specific kene, potential coordinators search whether they have the required kene.
D5	If I have long experience of EU projects, I am more likely to become a coordinator.	Task division	Coordinator	1C	How could long experience be defined? Is it part of expertise in kene, or an additional attribute?
D7	If I am coordinating a project proposal, I cannot coordinate another project proposal.	Task division	Coordinator	2Wa	Model: 2 intitilised proposals / period
D9	If a partner has needed expertise in relation a research task, he will be invited to be the work package leader of that task.	Task division	Work package leader	1Wb 5C 1C 3C 2Wb 1Wc 7C2 2C 5O	Expertise in the kene, if one has relevant kene, he will be invited to the WP, the best expert as WPL? Currently WPL's not in the model?
D10	If one partner has to pull out of the project, there is another partner in their work package to take over the task.	Task division	Work package leader	5C	Would require a rule that a WP needs to have a minimum amount of partners.
D11	If we don't have specific expertise in relation to a particular task, we are not involved in the work package relating to that task	Task division	Work package leader	1Wc	Implemented
Rule	Rule	Cycle stage	Special	Person	

number		Collaboration	theme		
E1	If partners represent different types of institutions, it has no consequences for collaboration.	Collaboration	Background	1Wb 5W 4Wa 6C 6O 3O 2Wb 4Wa 7C1 4C1 5C	In the model, different organisations have a different kene, capital etc. Once the consortium is established, collaboration is assumed.
E2	If partners represent different disciplines/countries they learn from each other	Collaboration	Background	4Wa 5W 6C	Through modifications of the kene.
E3	If the partners represent different types of organisations, that has positive effects on the dynamics of the project.	Collaboration	Background	1Wc 4Wa	This could be implemented by establishing a link between types of organisations (which could be selected by the user) and success/output?
E4	If partners represent similar fields, their communication is easier.	Collaboration	Background	3O	As above? In the model as spillover/absorptive capacity?
E5	If partners represent different disciplines/ different types of organisations, communication is slower/more cumbersome	Collaboration	Background/ communication	5C 6W 3O 2Wb 4C1 5W 7C1 1Wa	As above?
E7	If we write articles/build equipment we collaborate with (at least) one other partner in writing them.	Collaboration	Knowledge production	3O 2Wb 1Wa	Implemented
E8	If you have less than 15 people/5 partners you might miss important expertise/quality is lower.	Collaboration	Success	5O 2Wb	Can be implemented by building a link between number of partners (range chosen by user) and outcome? Reformulate?
E13	If we achieve our deliverables and milestones, the project is successful.	Collaboration	Success	1Wc 2Wb	Definition of success in the model?
E14	If we do not have qualified personnel, we cannot do our task well.	Collaboration	Success	1Wd	Part of kene?

E15	If we share a research task/work package (work on a similar type of task) with another partner (another partner is important to our research task) we communicate more with that partner than with other partners	Collaboration	Communication	1Wa 5W 2Wa 6C 6W 3Wb 4Wa	Basic assumption
E16	If the research task is something completely new for all the partners, there is close interaction between the partners.	Collaboration	Communication	5C	Can't be completely new, as can only participate in projects that are supported by the gene.
E17	If a project has more than 10-12 partners communication becomes more difficult than with smaller amount of partners.	Collaboration	Communication	2Wa 6W 2O 2Wb 1Wd	no measure of communication?
E18	If we are partner in a work package, we only communicate with the other partners in that work package.	Collaboration	Communication	3O 5W	basic assumption
E20	If I am the coordinator or manager, I communicate equally with all partners.	Collaboration	Communication	7C2 2C	no measure of communication?
E21	If there are more than 10-12 partners in a consortium/consortium is very large, the project needs to be divided into substructures.	Collaboration	Management and structures	1Wb 1C 3Wb 5O 4C1 4Wa 7C1	Implemented
E22	If you are a coordinator, you need to be able to trust the other partners to do their job.	Collaboration	Management and structures	4C1	Trust is assumed
E26	If I am a coordinator, I will learn to be a better coordinator in the future.	Collaboration	Management and structures	1C	Could be implemented if the coordinator status had an additional benefit ("aura"), which could be phased out or strengthened over time periods.
E27	If people trust each other, no strict written rules/contracts are needed to steer the cooperation.	Collaboration	Management and structures	7C2 2O	Basic assumption of trust, contracts always in the model
E29	If the project is delayed/we have not achieved our	Collaboration	Extension	1Wa 1Wb	Could extension be implemented?

	goals in time we ask for extension			5C 1C 1Wd 3C	
Rule number	Rule	Cycle stage <i>Future</i>	Special theme	Person	
F1	If I was participating in a future EU project, I would not want to be a coordinator.	Future	Role	1Wb 2Wb 3Wa	No individuals in the model, but would this be possible in the organisational level? Would in bring anything useful? Could the use define that some organisation by nature would not initiate projects?
F2	If I am invited to a further project/continue the project in a new proposal, (and it was a similar task) (if my expertise was only relevant to one limited part of the project) I will/want to continue on the same level	Future	Role	4Wa 6W 3Wb 1Wc 3O 4C1 1C	Implemented, on organisational level, but are the additional conditions implemented? Write out additional conditions.
F3	If there are only very big projects funded in FP7, we do not participate as a coordinator.	Future	Role	5C	This could be implemented, if the used defined a large size for projects, and assigned some agents an not being able to initiate projects.
F4	If I will participate in a future EU project and the project is in my core area (and I don't have too many other projects to coordinate) (and I have less other obligations), I would like be on a higher hierarchy level (<i>WPL instead of ordinary participant, coordinator instead of WPL</i>)	Future	Role	5O 3O 6O 2O	Implemented for organisations, as any organisation can initiate projects. Write out additional conditions.
F5	If you are well-known/expert in your field/have participated in EU-projects before/have good networks, you are likely to be invited to future projects.	Future	Collaboration opportunity	6W 1Wd 3C 3Wb 2Wa	Implemented, Expertise in the kene?
F6	If you are a work package leader or a coordinator, it has no consequences for future collaboration	Future	Collaboration opportunity	5W 5C 1Wc 1Wd	Counter rule to official position bringing more network value (F8). Could be decided by the user which one to implement?

	opportunities.			6W 2Wa	
F7	If you do not perform well in one project, you are not invited to the next proposal.	Future	Collaboration opportunity	4Wa 7C1 3O	Implemented.
F8	If you are a coordinator/manager or a work package leader, and the collaboration is successful, you are more likely to be invited to future projects/ people are more likely to want to join your projects in the future.	Future	Collaboration opportunity	3O 1Wc 6W 4Wa 7C2	Implemented
F10	If project is successful/ if we find a suitable call, we will apply for another project based on that/ we are likely to continue collaboration with the same partners.	Future	Continuing proposal	1Wa 1Wb 1C 3O 6O 5W 6C 2O 2Wb 4Wa 4C1	Should be implemented.