Real-time foresight : preparedness for dynamic innovation networks

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6 From planning to preparedness

This chapter answers RQ 5: how should a well-qualified management team plan and manage dynamic innovation processes? It does so in two parts. In the first part, the five dynamic network patterns (identified in Chapter 4) serve to outline a collaborative real-time foresight (RTF). This RTF constitutes a managerial solution for the switch from planning to preparedness. The second part proposes two indicator tools for identifying DINs and measuring their performance while they act (RTETs). The indicator instruments are also derived from the pattern findings.

In at least three environments, in real-time operating global markets, flexible business incubation and multi-sector partnerships, leadership can no longer follow the traditional predictable methods of control, guidance, and management (cf. Sydow, 2009; Hamel & Prahalad, 2013). The traditional coordination mechanisms of hierarchy and standardisation have lost their grip. In high velocity environments, it has become important to know how to manage strategic uncertainty (see, e.g., Branzei et al., 2004; Weick & Sutcliffe, 2007; Ries, 2011) and how to initiate unpredictable long-term collaboration (cf. Thomson & Perry, 2006).

That is why a great deal can be learnt from successful disaster management. To qualify management teams for ad hoc collaboration across businesses, public administration, and non-profit organisations, a new preparedness is needed. The challenge of real-time collaboration is an invitation to a dynamic innovation process, but to collaboratively create a DIN, management should be prepared: the network dynamics that underlie successful network governance should be known and expected.

Section 6.1 starts by reviewing and transforming the five identified DIN patterns into RTF terminology. In section 6.2, the new method is set out as a management agenda, proposing RTF as a public and corporate foresight approach. Consequently, it addresses the change question: what could a turnaround from planning to preparedness mean for a new collaboration between public and private actors in (a) innovation regions and (b) for the existing transnational humanitarian structures? (cf. Duffield, 2002; Harmer, 2005; Donini, 2012). In section 6.3, the five network patterns are used with five different intentions: the section outlines their aptitude to measure successful innovation processes as they happen. Manifold actors have an interest in rapid identification of successful innovation teams. The study findings allow us to craft real-time evaluation tools (RTETs) that measure successful collaboration not by an end-of-pipe but by an in-the-pipe approach. Section 6.4 concludes the chapter by answering RQ 5.

Overall, the chapter looks at two different contexts: ad hoc response and management of business innovation processes. The tools it suggests are depicted as indicator catalogues for flexible business incubation (cf. Callegati, Grandi, & Napier, 2005; Jones & Lichtenstein, 2008; Caliendo et al., 2012), and for a sustainable and innovative global disaster management (cf. Tomasini & Van Wassenhove, 2009; Kapucu, 2015).

6.1 Dynamic network patterns for a real-time foresight

In chapter 4, in a cross-case network analysis, the study detected five dynamic elements of collaborative governance. They are the five dynamic

network patterns of successful real-time collaboration. Taken from sustainable collaboration in rapidly emerging innovation networks in global-local relief (cf. Rodriguez, Trainor, & Quarantelli, 2006), they offer important insights into all volatile environments for management teams. In a foresight perspective (cf. Cagnin et al., 2013), management has to be prepared for crises (cf. Boin & MacConnell, 2007). This can be arranged by being prepared for dynamic innovation processes, simply by expecting characteristic network dynamics. Technical *and* managerial readiness for ad hoc collaboration can be obtained by adaptation to knowledgeable network patterns.

Managing in the ways of a real-time foresight (RTF) switches organisations from advance planning, initial goal setting, and control (cf. Ordóñez et al., 2009) to awareness of strict and continuous network patterns. For leadership, as shown in Figure 2-2, this means starting collaboration by turning away from planning routines. Two steps have to be performed. First, it is necessary to drop individual management tools and organisational strategies (cf. Weick, 1996) to become aware of one's own but not independent position, in a plural context of real-time and socio-technical environment (see, e.g., Haddon, Mante-Meijer, & Loos, 2012). Second, and parallel to real-time collaboration, it means striving for interest alignment and process integration (cf. Orlikowski, 2009). In such collaboration with other actors, a DIN can emerge.

The remainder of this section explains again the five DIN patterns (see also Section 4.3) in the form of five principles of collaborative innovation management (see Section 4.5) and formulates appropriate managerial activities with the results of the collaborative DIN principles in mind (see Table 5.1).

(1) Identification of heterogeneous actors and early alignment of interests (initial, alert)

Elaborating and signalling an agenda of own interests; identifying central problems in the surrounding ecosystem; identifying heterogeneous actors' interests; identifying infrastructures and devices related to the agenda.

(2) Development of a shared vision (continuous)

Readiness to explore, find and fix a shared vision, each time with heterogeneous partners; a shared vision for collaborative governance of the complete process that fits one's own interests.

(3) Mindful use of boundary objects (strict)

Awareness of parallel interaction on multiple global, virtual or local levels in complex processes; identification and co-creation of potential boundary objects; strict use of boundary objects to mobilise heterogeneous actors.

(4) Punctual directedness and distance (adaptive)

Awareness of unexpected and iterative CIs in complex collaboration processes; creation of adaptive space for change of actors and one's own actor role in a long-term process; preparedness for disruptive events and awareness of times of punctual distance, silence, or lack of transparency of partners.

(5) Double-sided focal actor orientation (coherent)

Orientation towards focal actors in local implementation of the DIN shared vision; interoperability of technology; identification and support

of the focal network actor, its profile, and its resources for a coherent network strategy.

By incorporating these five principles into managerial practice and technical infrastructures, organisations become highly sensitive to both (a) the initial conditions of a dynamic process, and (b) the sustained network mechanisms of governance.

Not all response situations are realisable. In decision-making by well-qualified management teams, there should always be a caveat on collaboration: “Don’t do it unless you have to!” (see Huxham & Vangen, 2005, p.37). This is a statement from the experts by which we abide. Even successful dynamic innovation processes imply a struggle with multiple CIs and the vexing uncertainty of an open end (see Chapter 4). For DINs to emerge, a shared problem has to be recognised as such by heterogeneous actors to which the collaborative challenge has to be worth the investment (see DIN pattern 2 in Subsection 5.5.2). The alignment of multiple heterogeneous interests in an ad hoc situation depends on a shared vision that is not replaceable by forecasting, prediction, and individual goal setting (cf. Blomqvist & Levy, 2006; Fatemi, van Sinderen, Wieringa, & Razo-Zapata, 2012; Weigand et al., 2014).

Still, in complex situations, open collaboration is a better option (cf. Huxham & Vangen, 2005) than business routines. In such situations, adoption of the patterns identified in this thesis could be beneficial to management. They switch the strategic agenda towards ad hoc collaboration, by implementation of five DIN principles.

6.2 The RTF agenda to manage real-time collaboration

In the near future, the rising complexity and novelty of issues (cf. McGuire, 2006) will increase demand for additional resource pooling and sharing of risks (see, e.g., Newbert, 2008; Wukich & Steinberg, 2013); for example, where multi-sector collaborations increase, as required in the case of new technologies that need further exploration and development (cf. Gay & Dousset, 2005; Van den Herik & de Laat, 2016) or in the case of breakthroughs in academic knowledge that will be exploited in a new market. Here there is a need for real-time foresight (RTF). In such situations, an RTF agenda is applicable for collaborative management of innovation processes between heterogeneous actors.

The following three subsections develop an RTF agenda for two different realms. They do this as follows. Subsection 6.2.1 discusses the dynamic innovation network principles of an RTF agenda. Subsection 6.2.2 applies these principles to public and corporate environments as preparedness for dynamic innovation processes. Subsection 6.2.3 applies them in an environment of preparedness for more sustainable collaboration and building back better in global relief.

6.2.1 *The dynamic innovation network principles of an RTF agenda*

The dynamic innovation network principles of an RTF agenda are illustrated in Figure 6-1 as a visual aid to the explanation below.

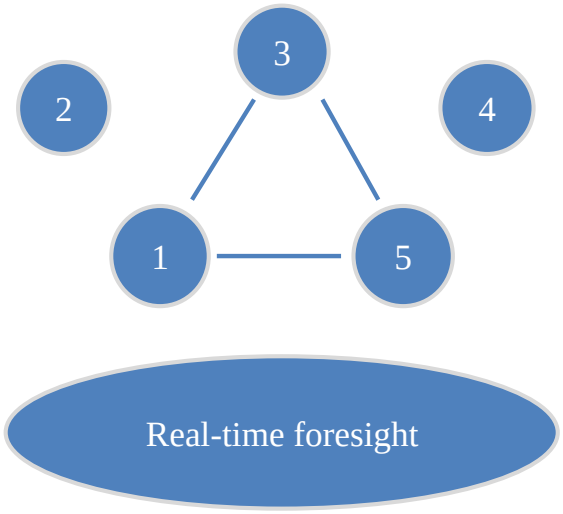

Figure 6-1: Real-time foresight agenda

There are five bullets that can contribute to a real-time foresight. The five bullets represent the five DIN principles of successful innovation collaboration. The explanation is as follows.

(1) The first DIN principle is to become aware of a networked situation, to signal one's own position and to identify other actors that are relevant to a collaboration.

(2) The second DIN principle is to seek the early development of a shared vision. It should align the heterogeneous interests of focal actors which is the most important managerial element. As a continuous governance instrument, it decides long-term success.

(3) The third DIN principle consists of boundary objects. They need to be identified or created for strict use to mobilise commitment,

communication and network mutuality. The more heterogeneous the DINs are, the better the use of boundary objects must be.

(4) The fourth DIN principle is to prepare for time-outs of particular network-actors. In dynamic long-term processes, partial non-visibility and temporal passivity of actors must be tolerable. Intermediary actors can be included to release DINs and to deliver network support.

(5) The fifth DIN principle deals with coherent collaborative leadership. Leadership has to switch from traditional strategic management to a process orientation and adequate *implementation* according to the focal actors' profiles. Thus, in one and the same network, focal actor roles may change over time.

In the Figure 6-1, three of the RTF principles have time bound and adaptive impact (the triangle 1-3-5). The other two (2+4) are of continuous managerial relevance for structuring a successful dynamic innovation process (see also Figure 4-10). From the process study (see Chapter 4) and dynamic network literature (cf. O'Brien, 2010; Ai et al., 2015), the dynamics are best understood as follows.

The alignment of different interests has to happen rapidly for network to emerge in real-time challenges, and this becomes more unlikely with the passage of time. An OPP has to occur early in order to satisfy all, and to avoid the loss of relevant heterogeneous interests. In addition, through an early OPP, the focal actors make themselves indispensable (see, e.g., Akrich et al., 2002) to a DIN. This conveys a degree of irreversibility (cf. Kasimin & Ibrahim, 2010) to the dynamic collaboration process.

The shared vision developed in initial collaboration is of continuous and central importance (2). It has to include the core actors' heterogeneous interests in a future-directed claim that is clear and sufficiently brief to be easy to communicate and use (cf. Alvesson & Spicer, 2010). For flexible global-local and virtual collaboration, it is crucial that heterogeneous socio-technical actors (1) develop a shared understanding of "both a collaborations' overall vision and of what they need to do practically" (see Steen, Buijs, & Williams, 2014).

In the same steady ways and perhaps as the most difficult principle, punctual directedness and distance (4) need to be balanced between multiple actors. This affords enduring and iterative effort and awareness of all network-actors to maintain a reciprocal communication (Caliendo et al., 2012). The use of boundary objects (3) on the one hand, and of the double-sided network roles of focal actors (5) on the other hand are continuous, time adaptive governance elements (see Figure 4-9). Such collaboration facilitates output orientation and mobilises local interaction (see Subsection 4.5.3), for communication between different worlds and cultures. Successful and sustainable innovation collaboration needs the sustained use of intermediaries (cf. Katzy, Turgut, Holzmann, & Sailer, 2013; Sprinkart, Gottwald, & Sailer, 2014).

In summary, the incorporation of RTF in organisational contexts is itself an "emergent strategy" (Mintzberg, 1990) that helps to cope with strategic uncertainty by facilitating a context, time and actor-bound network management of collaboration (cf. Klein & Poulymenakou, 2006; Provan & Kenis, 2008).

The five components of the RTF agenda are interdependent and mutually reinforcing. From a collaborative perspective, the last component

implies handling the tensions between competitive corporate or organisational and collaborative interests. The implementation of that principle concerns different actors in different ways: especially public, private, or corporate actors.

6.2.2 *Preparedness for dynamic innovation processes*

This subsection embeds the RTF agenda in the foresight literature context and addresses both public and corporate actors' (see Table 6-1) foresight perspectives. In section 6.2.3, Table 6-2 describes what a turnaround from planning to preparedness means in RTF for global relief and locally sustainable disaster management.

For public administration, real-time collaboration has become a challenging imperative. Accelerated technological change, devolution, scarcity of public resources and rising organisational interdependencies challenge the public agencies (cf. Salge & Vera, 2012). Altough scepticism about networking with private actors prevails in many administrative agencies (cf. Herranz, 2008) it has recently been seen that many pressing problems can only be solved with external partners (see, e.g., Huxham & Vangen, 2005; Sennett, 2012; Bryson, Crosby, & Stone, 2015).

One reason for scepticism over collaboration is the high level of temporal investment for co-working actors (cf. Thomson & Perry, 2006). In particular, doubts may arise when the demands and duration of a collaboration process are not clear from the beginning. However, parts of this process uncertainty can be removed. By adopting RTF, public managers can look inside the former "black box of the collaboration process*"* (cf. Thomson & Perry, 2006, p.21) and co-create dynamic network processes.

This readiness is catered for by the above five DIN principles transferred into foresight activities (see Table 6-1).

A main difference between corporate and public foresight processes is that the former are performed in pursuit of private interests and rather behind closed doors (see Chapter 2). They serve to achieve competitive advantages in specific markets (cf. Barney, 2001; Wade & Hulland, 2004; Rohrbeck, 2012). In contrast, public foresight processes (1) pursue an (inter) national collective interest and (2) address broader technical and societal topics and market trends.

The proposed real-time foresight (RTF) adds to both of the above stated points with a new network orientation. In this way, it advances the traditional limits of technological foresight (TF) and introduces heterogeneous perspectives of affected and interested socio technical actors in a given ecosystem. Still, there are different directives for public and corporate RTF. Table 6-1 transforms the RTF agenda into a guidebook by which the five managerial DIN principles (see Table 5-1) can be implemented in both sectors.

Table 6-1: Public and corporate activities of collaborative real-time foresight

	Public foresight activities (DIN processes for community and societal development)	**Corporate foresight activities** (DIN processes in co-venturing and co-incubation)
1	Issue identification, communication of identified issues and interessement of heterogeneous actors (on public platforms)	Identification of potential business issues and potential network-actors in a market; visibility strategy to signal own ideas and interests
2	Identification of emerging DINs for public support; signposting of national or regional visions; co-creation and development of shared visions	Co-creation of various shared visions with heterogeneous actors; openness for foreign actors' input; readiness to translate unfamiliar ideas
3	Support of intermediaries in DINs and identification of boundary objects; invention of boundary objects that attract citizens and corporate actors to the public sphere	In dynamic innovation processes mindful use of boundary objects to attract, include and mobilize distant (or virtual) actors and potential customers
4	In long-term collaboration, acceptance of non-transparency periods; flexibility in budget and information flows of funded programs where possible	Scouting for potential intermediaries for innovation processes and match making with polar partners; awareness of CI frequency in long-term collaboration
5	Identification of local network partners for foreign organisations interests and influx	In a DIN adaptation to the focal actors profile for success on the market; integration of socio-technical actors

Following the RTF activities row by row Table 6-1 shows how the RTF method depends in many of its principles on visibility and identification of heterogeneous actors and their interests. Visibility and interoperability are significant components of the successful management of ad hoc collaboration. The more DINs rely on public donor or private investor support, the more indispensable media usage, visibility, and collaborative communication become.

To avoid duplication, the relevance of visibility will be discussed in subsection 6.2.3 with regard to the managerial field of global relief.

6.2.3 *Preparedness for sustainable recovery in global relief*

In global relief, visibility has strong effects on emerging global and local network elements. Visibility is a topic of rising interest in disaster management, especially since there are major shifts from public to private funding in the humanitarian fields (see, e.g. Harmer, 2005; Chang et al., 2011; Donini, 2012).

There are many contributions of the new method of RTF to local sustainable recovery and entrepreneurial disaster management. In the cross-case analysis of patterns that facilitate DIN emergence, this study pursued the LNGO perspective on collaborative reconstruction (see Chapters 3 and 4). This perspective is often neglected in the standard crisis management literature (cf. Karan & Subbiah, 2011: 6; Phillips, 2014), mainly due to the difficulty of gaining access to the field and obtaining valid and valuable data.

With long-term data and pattern findings in hand, this study is privileged to use a rare perspective to inform people about the focus of actors

that are quite important for sustainable ends in humanitarian relief. RTF is proposed as a method to change the traditional management styles of global humanitarian players since they have been given a market-like structure (cf. Twigg & Steiner, 2001; Duffield, 2002; Twigg & Steiner, 2002) in this often chaotic and sometimes desperate global collaboration field. In response to global disasters, the typical actors meet repeatedly, but still, too often, they are not prepared for successful real-time collaboration. TNGOs, LNGOs, governmental actors, and global donors have built a transnational structure of asymmetric partnerships. Collaborations between partners and beneficiaries, between small local and powerful global actors unfold again and again, but in most cases, this does not lead to sustainable ends.

Planning and budget lines of emergency assistance and rehabilitation of international donors should allow more flexibility for innovative local solutions. In global relief, as in all successful real-time innovation processes, heterogeneous actors should focus more on initial network formation and insist less on *initial goal targeting* and traditional strategic management. In the author's experience, it is difficult to stop planning ahead and setting initial goals as targets (it is so self-evident) in traditional management, but goals set at an early stage do not suspend uncertainty concerning collaboration to build back better. However, goals may mislead actors when they do not stem from real-time enroled actors and affected local stakeholders.

From the perspective of this study, it is recommended that, to achieve innovative and sustainable ends in global relief, governmental and TNGO actors should incorporate RTF to switch into managerial network modes and to facilitate the emergence of DINs.

Put into an RTF agenda, this reads as presented in Table 6-2.

Table 6-2: Real-time foresight in global relief

	Governmental activities of RTF	**TNGO activities of RTF**
1	Virtual platforms to facilitate real-time matches in identified critical collaboration dimensions; as heterogeneity of actors is valuable only sparse restrictions should be imposed on enrolment of actors from third parties	Problem identification, public communication of interests and interessement of heterogeneous actors (partners, virtual platforms)
2	Identification and support of DINs; enhancing the development of shared visions for sustainable reconstruction	Rapid exchange of interests and translation of affected interests and engagement; identification of interoperable infrastructures; development of shared vision
3	Facilitation of technical and legal infrastructure for participation of heterogeneous actors; allocation and support of intermediary actors	Ongoing scouting for boundary objects; identification of heterogeneous actors; mobilisation of intermediaries and mindful use of boundary objects
4	Support of local and global media for information flow; role of media as 'watchdog' for actors' rehabilitation efforts and international visibility; own responsible positioning in DINs	Calculating CIs and justifying periods of non-transparency of LNGOs; flexibility in information flow and budget lines where possible; monitoring of mutuality of contacts
5	Support of small LNGOs and canalization of foreign aid; support of local markets and entrepreneurial solutions; local sustainability as principle of global relief	Respect of LNGO and reaction to local demand as foreign relief partner; decision to *step out* or *step in* to affected regions not to be based on own interests

With rising digitalisation and the predominance of ICT, the visibility of actors can become central to RTF principles. In addition, for NGO actors, start-ups, and SMEs, visibility can be in their own interest (cf. Keck & Sikkink, 2014), but also an onerous requirement of donor-based aid (cf. Hermann et al., 2012) or of markets.

In disaster relief, nowadays, all NGOs brand the livelihood items they provide to the chosen beneficiaries. The practice has become a ubiquitous part of visibility strategies for the consumption of donors and stakeholders. It assures donors of a responsible spending of their money and of specific quality standards realised on a fare-away place (cf. Mitlin, Hickey, & Bebbington, 2007).

However, through an ANT lens, attention has to be paid to the fact that an over-emphasis on single actors will handicap the network-actor process: the forced visibility of *one* network-actor, probably a powerful TNGO, superimposes the impact of boundary objects or even a shared vision. This can counteract sustainable ends by hampering

(a) a network translation process (see Table 2-1) based on the LNGO as focal actor, and

(b) the formation of a necessary local ownership (cf. Jordan & Javernick-Will, 2013) as the network shifts to more local network activity over time (see Section 4.3) could be blocked.

Instead, for a co-evolution of DINs and local sustainable recovery, a mindful use of boundary objects is recommended to support overall network mobilisation (cf. Trompette & Vinck, 2009).

Trust and distrust play crucial roles in the alignment of interests and network evolution (see, e.g., Rousseau, Sitkin, Burt, & Camerer, 1998;

Dyer & Chu, 2003; Patzelt & Shepherd, 2008; Caliendo et al., 2012) in dynamic innovation processes in all societal fields. Owing to the limitations of this thesis the topic is only touched upon, but its importance is clearly seen. Data analysis of CIs in the study sample suggests that visibility practices are added to disturbances and are creating distrust[62]. It is important to further investigate how trust, transparency, punctual directedness, and distance are related in real-time communication and collaboration, and how visibility practices trigger CIs over time. These questions are indicative of a need for further research (see Chapter 7).

6.3 Evaluating dynamic innovation processes

Starting from the need to improve and measure dynamic innovation processes, this section presents a new method of evaluating collaborative innovation processes. It is based on the assumption that successful collaboration follows the underlying dynamic network patterns. For the transformation of the five dynamic innovation network patterns into indicator questions, two real-time evaluation tools (RTETs) are developed. These tools (a) facilitate a real time identification of emerging DINs in entrepreneurial processes, and (b) also allow us to measure and compare the performance of network formation that leads heterogeneous actors in a networked way to innovative ends.

The outlined instruments contrast with existing tools for end-of-the-pipe evaluation. The section contributes in explorative ways, providing

[62] Code: CI competition; CI local people disaccord; CI distrust.

process management oriented and real-time feedback on non-linear innovation processes. A real-time tool can be applied before failures are irreversible. Real-time feedback saves time and money. The most important implication thus is a practical one: the instruments enable leadership to identify, select and support entrepreneurial collaboration while it happens.

Two tools are constructed, based on the following four assumptions.

(a) The dynamic network principles found provide five benchmark dimensions with which to evaluate and measure dynamic innovation networks in different social contexts.

(b) The similarities between collaborative innovation processes in global-local relief and in startup collaboration with established firms have been outlined in the literature (Sheperd & Williams, 2014; Weber et al., 2014) and are grounded in data shown in earlier chapters of this study.

(c) In both fields of asymmetric collaboration, initial goal uncertainty, competition between multiple unfamiliar and heterogeneous actors and real-time pressure - due to time-to-market and time-to-rescue - challenge the actors.

(d) In asymmetric collaborations, heterogeneous actors have divergent objectives and a different level of resource scarcity or abundance, therefore they need different levels of flexibility to be able to collaborate.

The results of this study confirmed that sustainable rehabilitation is deeply entrepreneurial in nature. Sustainable entrepreneurship is inherent

in successful reconstruction, and different innovation strategies were observed in different emerging DINs. New ideas, materials and products changed a former dominant and then disrupted socio-technical structure in place, the same is true of innovation as creative destruction on global and local markets (cf. Schumpeter, 1934; Karan & Subbiah, 2011). The evaluation instruments suggested in this section will therefore be specified for both realms of real-time innovation collaboration, co-incubation, and global relief.

The study first proposes an instrument for measuring high performing DINs in co-incubation and start-up processes (6.3.1), then turns the 'pattern skeleton' back to the context of collaboration in global relief (6.3.2) to specify an evaluation tool for innovative recovery in true contexts of building back better.

6.3.1 *An evaluation tool for DINs in co-incubation*

Business incubation and co-creation programmes are designed to accelerate the successful development of entrepreneurial companies through an array of business support resources and services. They are developed or orchestrated by an incubation programme management. A business incubation programme's main goal is to produce successful firms that, when they leave the programme, will be financially viable and freestanding.

Startup processes nowadays are also accompanied by academic and public education institutions. Here, the intention is slightly different in most cases: the aim is to foster an entrepreneurial culture and to enable young people to work in the industry 4.0. Co-incubation involves unique and highly flexible team work. ICT infrastructure and people nurture

ideas for new and small businesses and help them to "survive and grow through the difficult and vulnerable early stages of development"[63]. The concept of co-incubation "has been gaining prominence to increase the supply rate of entrepreneurs, create jobs and assist in economic development" (Ramkissoon-Babwah & Mc David, 2014, p.13). Business incubators are viewed as entrepreneurial hubs that can channel DINs and allow them to unleash their shared visions on business enterprises to markets. Nonetheless, there is competition for resources and business incubation placements, and the success of a programme hinges on the performance of the clients. Where innovation teams start in mass collaboration, the identification of high performers is desired.

The evaluation tool provided by the study is an outline as indicator catalogue: the indicator questions are derived from the five dynamic network patterns. Just as above, when transformed for RTF, they need further adaptation to a selected sample and the local context of collaboration. The indicator questions to assess incubation processes in Table 6-3 propose benchmarks for real-time feedback and evaluation. The results can be used by investors, stake-holders and entrepreneurs for decision making in collaborative innovation processes. The tool makes it possible to evaluate ongoing dynamic innovation processes. The precondition is that the collaboration went on for an initial time so that some past activities can already be investigated and observed. They may be documented in various forms. Data generation is a part of business operations and online

[63] *www.diogenes-incubator.com/incubation/business-incubation-definition*

communication is indispensable for most start-ups. The data analysis depends on the concrete operationalisation of the indicator questions to evaluate a chosen specific sample.

The methods used to conduct a real-time evaluation are staff surveys with open questions or multiple choice formats. The advantages of a rapid computability of answers have to be balanced against the level of interest in the generation of new insights (versus preselected constructs to tick and cross). Hard copy or online survey, paper based or online analysis are choices that need to be made before introducing the measurement tools to the DIN actors. This flexibility in the use of the instrument means that evaluations can be conducted in many different situations. The tool can be adapted to virtual and analogue collaboration processes in similar ways.

Table 6-3: Indicator tool for evaluating DINs in co-incubation processes

	DIN pattern	**Indicator catalogue for evaluating co-incubation processes**
1	Early identification of heterogeneous actors, alignment of interests	1 Percentage of the people who eventually lead the startup who have been engaged from the beginning/ before a central investment/ before any significant CI. 2 On which socio-technical infrastructure does production /do services depend?
2	Collaborative governance by an early found shared vision	1 What does the startup stand for? What is the most important thing that this startup is able to deliver? 2 Percentage of identical answers in the startup team. 3 Online or document analysis in search of the shared vision.
3	Mindful use of boundary objects	1 Percentage of people who know the logo/have built a product/ have sold a service of the startup. 2 Percentage of people in a founder team/ supplier group that relate the brand/ a specific wording/ a boundary object to the startup. 3 Which objects represent best the aims/the USP/the goals of the startup? 4 Objects that iterate in administrative data/ PR and marketing documents/ technical infrastructure.
4	Punctual directedness and distance amongst implementing actors	1 Balance to be measured and weighted in contacts between founders and staff, founders and established companies, founders and consumers (calculate the weighted average - on *duration/ content/ kind of contact or communicative frequency* - one direction is +, the other - and a zero sum would be perfect).
5	Local integration of and network orientation on a local actor	1 How many local/foreign founders does the startup have? 2 Percentage of customers that are local. 3 Percentage of investors/resources a startup uses that are local (*Quantitative sum weighted for how far away local ones are*) 4 Agreement and disagreement of partners over bargains, and media visibility, and in meetings.

6.3.2 *An evaluation tool for DINs in global relief*

This subsection takes the real-time evaluation tool for DINs back to the humanitarian field (see Table 6-4).

Table 6-4: Indicator tool for evaluating DINs in sustainable global relief collaboration

	DIN patterns	**Indicator catalogue for evaluation of sustainable relief**
1	Early identification of heterogeneous local and global actors, alignment of interests	1 At peak times of response, how many of the NGOs have been there? 2 Percentage of actors enroled:-at the beginning/ at important parallel CIs, at the passing of important legal acts/ at international meetings. 3 On which technical devices and artefacts does the networked process depend? 4 Which artefacts are obligatory elements in recent standard processes for rehabilitation programmes?
2	Collaborative governanace by a shared vision	1 What is the main goal of the collaboration? 2 Percentage that gives a same answer (*open question/multiple choice).* 3 Online or document analysis in search of the shared vision.
3	Mindful use of boundary objects	1 Percentage of people in a given region/ group who do recognise a specific boundary object. 2 Percentage of people relating the boundary object to the main goal of the collaboration. 3 Data mining: -Frequency of occurrence of a specific artefact in official documents/PR/ corporate identity/media use of DIN actors.
4	Punctual directedness and distance amongst implementing actors	1 Balance of information/contacts between actors.(weighted average - *on duration/ content/ kind of contact or communicative frequency/* one direction is +, the other -, a zero sum would be perfect)
5	Local integration of network orientation on a local actor	1 How many local contributors/ local staff does a DIN/LNGO have (quantitative sum weighted for locals) and from which distances do they come? 2 Quantitative sum or percentage of resources and donors that the NGO uses that are local. 3 Agreements and disagreements of global and local partners in meetings/ media/ collaboration.

On the one hand, the outlined instruments for designing and conducting process evaluations allow an assessment of DINs by external actors. On the other hand, the tool can be used for strategic process management by the enroled actors themselves. Direct field access, open collaboration and availability of primary data from collaborating NGOs are necessary for valuable results and indispensable for an improvement of collaboration in relief projects.

6.4 Conclusion

RQ 5 was: how should a well-qualified management team plan and manage successful dynamic innovation processes. The answer is, through a new network management. Network governance is the answer to RQ 5. This chapter has outlined how to change planning into preparedness and foresight for successful ad hoc collaboration in dynamic innovation processes. It has shown how the application of the real-time foresight method (RTF) involves restructuring organisational routines and infrastructures, and has also shown that a DIN evaluation tool allows for identification of high performing networks in different contexts. The tool derived from pattern findings enables real-time feedback and evaluation of dynamic innovation processes.

While the evaluation tool is designed to evaluate and improve the management of dynamic real-time process, the RTF approach aims at preparedness for the challenging task. In many failed collaborations, and particularly in response to disasters, the lack of awareness, foresight and proactiveness of actors spoils the results.

The three most important RTF insights are consolidated below as recommendations to improve the management of dynamic processes.

(1) Dynamic means early: The study results confirmed the importance of initial process dynamics for sustainable ends, and they confirmed the sometimes neglected and sometimes overestimated role of technical infrastructure in real-time interaction. The early identification of all relevant actors for a problem solution is extremely important, but this identification has to address, confront and align the heterogeneous interests which different actors have.

(2) Collaboration means heterogeneity: Dynamic network emergence does not lead to a common situational awareness. Instead, the early development of a shared vision is a crucial element of network governance. It can easily cross lines of digital business, physical life world, organisational routines and innovation activities. Actors may be experts in a particular field and discipline, but for DIN emergence additional knowledge and expertise are essential.

(3) Visibility should not be confused with trust: A DIN pattern discovered (see Subsection 4.5.4) in relation to temporal disruptions of successful collaboration processes reveals an interesting insight for adherents of perpetual transparency. It is a difficult finding for management and leadership that in dynamic processes time-outs for actors are necessary. The challenged network-actors might need their scarce resources for local problem solving, and if they can employ them fully, without paying attention to the network partners for a while, this can be part of the success.

Following on from the three most important RTF insights, this chapter concludes with a straightforward statement based on the evidence from

the study sample: that actor-roles are time dependent in a successful innovative and networked collaboration. For the enroled actors, dynamic processes in a dynamic ecosystem shift from contact overloads to punctual distances over time. Real-time collaboration therefore requires the actor to morph into passive and active network-actor modes (cf. Rief, 2008).