

# Four Archetypal Networked Organisations

**Willem Treurniet**

IFV, the Netherlands  
willem.treurniet@ifv.nl

**Kim van Buul**

TNO, the Netherlands  
kim.vanbuul@tno.nl

## ABSTRACT

Complex and multifaceted problems such as emergencies typically require coordinated effort by a network of different organisations. These networks typically rely less on formal hierarchical structures and instead have a stronger focus on allowing the dynamics to emerge in the process of collaboration. A balance has to be achieved between the internal dynamics of the various member organisations that make up the network on the one hand, and the emerging dynamics of the network collaboration itself on the other – and the precise nature of this balance will depend on the context. To help those making decision on how to achieve that balance, we have developed a framework describing four archetypal networked organisations: fragmented, deconflicted, coordinated, and collaborative and agile. The four archetypes have two purposes. Firstly, they can be used to guide networked organisations as they adapt to changing administrative and societal contexts. Secondly, they can be used to express the dynamics of the development of a response organisation in a particular emergency situation.

## Keywords

Collaborative and agile, coordinated, deconflicted, emergency response

organisations, fragmented, networked organisations.

## INTRODUCTION

Modern western societies face various complex challenges such as climate change, urbanisation, digitalisation and globalisation. Organisations need to improve their agility in order to be able to respond effectively to these complex trends and the continuously changing conditions involved. Several organisational shifts are taking place, and these may be seen as strategies for coping with and responding to these new demands. For example, industrial ways of organising things are being replaced by ways that are more information-driven, and organisations are increasingly based on networks rather than hierarchies. Crisis response and management is a good example of an area in which such shifts are apparent. Emergencies these days are very complex and multifaceted. During a large-scale blackout, for instance, the dynamics and second-order effects of the emergency make it impossible for individual organisations to solve problems on their own, as each organisation oversees, owns and controls only a small part of the puzzle. The interconnectivity, complex dependencies and shared responsibilities between organisations require coordinated effort by a number of different organisations. This coordinated effort is typically adhoc in nature, and uncertainty, time pressures and diversity of interests make it impossible to direct the work on a centralised basis (Hayes, 2007).

In the literature, these types of organisation are commonly referred to as ‘networked organisations’, which are organisational structures with a dominant focus on emergent dynamics in collaboration and less reliance on formal

hierarchical structures. The ‘emergent dynamics’ within these networked structures are controlled through relationships based on reciprocity and trust (Whelan, 2012). These relationships and interactions come at a cost, however. As Kapucu, Arslan, and Collins (2010, p. 19) aptly put it: “Large, complex, and seemingly unsolvable problems, such as catastrophic disasters, are best approached from a cooperative effort combining resources and preventing duplication; however, organizing the cooperative effort is almost as difficult as the problems they are created to address”.

The term ‘networked organisation’ comprises a broad range of organisational structures with varying degrees of decentralisation and various topologies. A balance has to be achieved between the internal dynamics of the various member organisations that make up the network on the one hand, and the emerging dynamics of the network collaboration among the member organisations on the other. The precise nature of this balance will depend on the context the network is operating in. Sometimes the operational context asks for the member organisations to rely on their own autonomous actions and sometimes extensive interaction among the member organisations is required. To help those making decision on to how to achieve that balance we developed a framework consisting of four archetypal networked organisations. This framework combines existing theories and scientific debates with respect to networked organisations and command and control. Each of the four archetypes we describe is illustrated with an example from the development of emergency response organisations in safety regions in the Netherlands.

The paper is structured as follows. In the section on *Theoretical Basis* we identify and discuss the scientific debates which the archetypes are derived from, and in the section on *Four Archetypes* we then describe the framework. The paper concludes with our summary of the findings and suggestions for future research.

## THEORETICAL BASIS

The main sources used to develop the framework are Alberts, Huber, and Moffat (2010) and Whelan (2012). From Alberts et al. (2010) we used the five maturity levels for command and control (C2) organisations. The descriptions of our

archetypes are structured according to a slightly adapted version of Whelan’s five dimensions of network analysis.

The five maturity levels identified by Alberts et al. (2010) are defined, in order of progression, as *Conflicted C2*, *Deconflicted C2*, *Coordinated C2*, *Collaborative C2* and *Edge C2*. Moving from one level to the next implies simultaneous development along three different axes: allocation of decision rights to the collective; patterns of interaction among entities; and distribution of information among entities. The term ‘maturity level’ suggests that the higher the level an organisation reaches, the better. Alberts et al. (2010, p. 175) concede that greater C2 maturity is not without its costs: in each case moving to the next level requires trust, competence, information infrastructure, and training. We used these five maturity levels as a basis for developing our four archetypes. However, we prefer the neutral term *archetypes* rather than *maturity levels*. Our archetypes involve no notion of maturing from one level to the next because – as we will show – in any given context a supposedly high level of maturity may not necessarily be the best level per se.

Whelan (2012) developed a methodological framework which distinguishes between five dimensions of analysis: *structural*, *cultural*, *policy*, *technological*, and *relational*. These dimensions were introduced to support researchers and practitioners in their analyses and help them to understand the dynamics and effectiveness of networks as a form of organisation. To describe the archetypes of our framework we use a slightly adapted version of Whelan (2012) five dimensions of network analysis. Instead of *technology* we used the term *information infrastructure*. We believe this aspect should be broader than only information and communications *technology*. Therefore we regard *information infrastructure* as a more appropriate term as it includes the arrangements for managing the information process and the organisational aspects.

## FOUR ARCHETYPES

Our framework consists of the following four archetypes:

- *Fragmented*: the organisational collective functions as a number of disjointed organisations. This archetype is inspired by Alberts et al.’s

*Conflicted* maturity level. Disjointed organisations do not inevitably have to be conflicting, so we have chosen to call this archetype *Fragmented*.

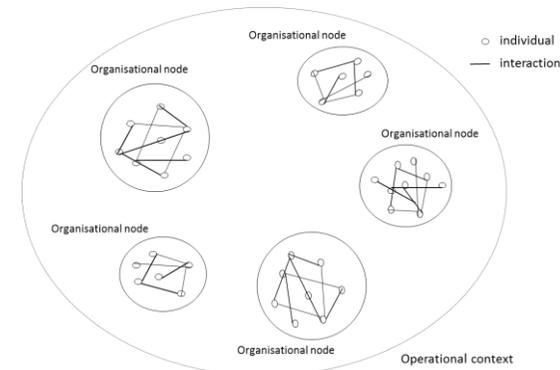
- *Deconflicted*: the participating organisations interact and exchange information at the organisation level, i.e., as interconnected monolithic entities. This archetype is inspired by the maturity level of the same name. The collaboration is primarily aimed at avoiding adverse cross-impacts.
- *Coordinated*: the participating organisations interact not only at the organisational level, as was the case in the deconflicted situation, but also at more detailed levels of operation. A common operational picture is typically used to guide the coordination process. Coordination is aimed not only at avoiding adverse cross-impacts but also at gaining mutual support that can help the organisations meet their objectives.
- *Collaborative and agile*: the collaborating organisations share a collective purpose and have a shared plan. This archetype is inspired by a combination of the *Collaborative* and *Edge* maturity levels. At this stage, the differentiation between these two levels seems to be too subtle to be of practical use. The emergent dynamics of the networked collaboration tend to prevail over the autonomous dynamics of the constituent organisations.

These four archetypes are described in more detail in terms of the following five different perspectives on networked organisations (Whelan, 2012): structure, culture, policy, information infrastructure and relationships. Each description is illustrated with the development process that the emergency response organisations in the Netherlands go through. As such, this paper builds on the work of Van de Ven, Van Rijk, Essens, and Frinking (2008) who described an earlier version of this development process.

### Fragmented Archetype

The organisations in a fragmented network (Figure 1) individually contribute to helping to address the emergency. They do not have a collective objective, or at

least not one that they explicitly agree on. The only way the nodes relate to each other is via the operational context they are operating in. The activities of any one organisation, and their outcomes, may be observed by other organisations in the network. As such, the network control may be characterised as an extreme form of reactive facilitation (Herranz, 2008) in the sense that the overall behaviour of the network emerges from inter-nodal interaction through the operational context. The organisations do not proactively share information about the situation and about their plans and activities and there is no integrated support for cross-organisational information sharing throughout the network.



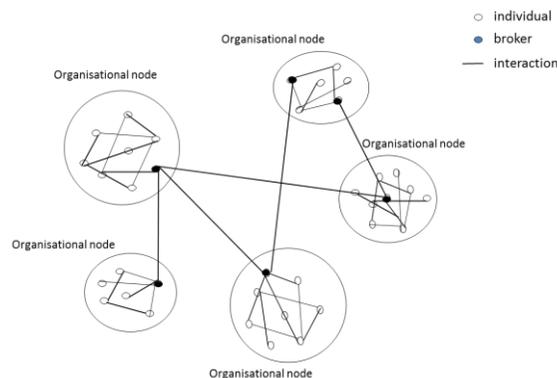
**Figure 1. Visualisation of fragmented network (after Alberts et al. (2010))**

In fragmented network organisation in its purest form, the organisations involved respond to the situation without any form of coordination. In a modern society it would never be a deliberate choice to organise an emergency response in this way. In the period before the Safety Region Act (Ministry of the Interior and Kingdom Relations, 2010) came into effect in the Netherlands, various instances of fragmentation could be observed in emergency response situations. ACIR (2005, pp. 11, 12) reports five examples. One of them concerns the leakage of a toxic substance from a tank wagon in Amersfoort in August 2002. This leakage had been reported to the incident rooms of the police and the fire services. The

ambulance incident room, located in the same premises, was not informed until forty minutes later. In the meantime people living in the neighbourhood were given inconsistent advice on whether to stay or to leave. The title of ACIR (2005), “Beyond permissiveness”, can be interpreted as a plea to address this fragmentation and was one of the triggers for the Safety Region Act.

### Deconflicted Archetype

The organisations in a deconflicted network (Figure 2) are loosely connected, and the connections are mainly at the organisation level. The inter-organisational relationships typically take the form of liaison officers. A deconflicted network is typically a *hub network* (Whelan, 2012, p. 43) in the sense that information and the task of internal network governance are coordinated predominantly through a central actor or broker, using a mild form of *contingent coordination* throughout the network (Herranz, 2008). The interaction between the organisations is limited and is largely aimed at avoiding adverse cross-impacts. As in a fragmented network, the organisations do not have a collective objective. There is virtually no common culture throughout the network and the cohesion of the network depends largely on formal arrangements. The information sharing is typically limited to exchange of situation reports.



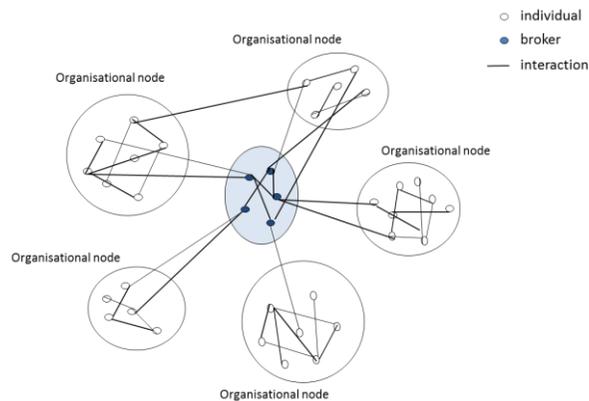
**Figure 2. Visualisation of deconflicted network (after Alberts et al. (2010))**

In the Netherlands, the Coordinated Regional Incident Control Procedure has been put in place to ensure that the coordination body of a regional crisis organisation can be alerted quickly (Institute for Physical Safety, 2012; Van de Ven et al., 2008). Although the procedure is meant to be used for alerting a coordination body, in practice it is often used as a blueprint for the crisis organisation itself. This approach is consistent with the nature of a deconflicted network where the structure is rather static in the sense that the set of organisations that make up the network is fixed. The division of work among organisations in the network is pre-planned. The organisations – typically emergency services – regularly inform each other and the higher organisational echelons via situation reports. These situation reports are discussed in periodic meetings by representatives from the collaborating organisations. In these meetings – in which crisis partners such as water boards and electricity providers are represented by liaison officers – the situation reports are then aggregated into new situation reports to inform people at the next level of the crisis organisation.

### Coordinated Archetype

A coordinated network (Figure 3) strikes a balance between a *hub network* and an *all-channel network* (Whelan, 2012, p. 43) in which *active coordination* (Herranz, 2008) is applied. The constituent organisations begin gaining mutual support that can help the organisations meet their objectives, and the whole tends to be more than the sum of its parts. Linkages between plans and actions of constituent organisations are considered proactively in the sense that tasks which need two or more entities to work together are made explicit. Compared to a deconflicted network, in a coordinated network the network culture and professional identity become more explicit (Helsloot, Groenendaal, & Warners, 2009; Lammers & Garcia, 2009). This common culture and identity makes it possible to bridge the gap caused by cultural differences (Wolbers & Boersma, 2013). The network design is dynamic in the sense that the network development and selection of members is done more deliberately, in response to the immediate needs of the developing situation and predicted future needs. A coordinated network needs an established network information infrastructure. A key element required for this

information infrastructure is a common operational picture as a powerful mechanism by which the dynamics throughout the network can be coordinated. Constituent organisations are encouraged to share information through the common operational picture.



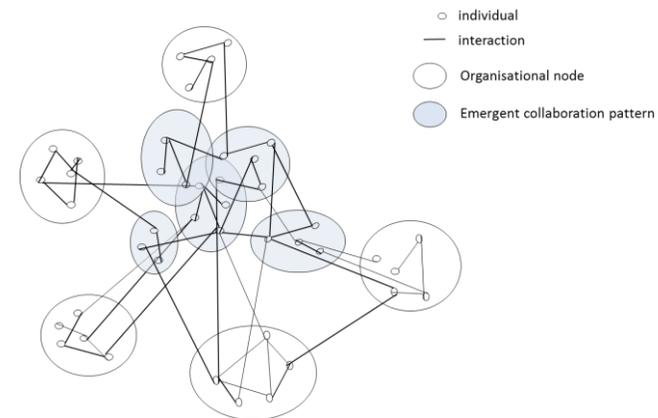
**Figure 3. Visualisation of coordinated network (after Alberts et al. (2010))**

The way crisis management is currently organised in the Netherlands can be seen as a coordinated network. Depending on the expected impact of an incident on society, the main coordination body of the crisis management organisation consists of an incident coordination centre, a regional operational team, and an administrative team (Van de Ven et al., 2008). The leadership of the crisis management organisation, including the leadership of the information management process, is assigned to this main coordination body. The network management is predominantly of the active coordination type. Legislation and regulations as well as emergency orders and decrees can be used by the main coordination body to ensure stability and fair and equitable treatment of citizens. They can also be used, if necessary, as a way of temporarily downplaying the priorities and values of individual organisations (Treurniet, 2014). A common operational picture is used to guide and direct the process of coordination. There

are already some faint signs of self-synchronisation because direct bilateral coordination between constituent organisations – based on the common operational picture but separate from the main coordination body – is encouraged.

### Collaborative and Agile Archetype

Figure 4 depicts a collaborative and agile network. A collaborative and agile network is an open, all-channel network. It has a very open network information infrastructure in the sense that it can easily be joined and accessed by hitherto external organisations. Throughout the network there is a dominant culture and the collaborating organisations share a common purpose and have a shared plan. Tasks are typically staffed inter-organisationally. Pooling and sharing of resources is the rule rather than the exception. The functioning of the network heavily relies on emerging dynamics of the network collaboration and self-synchronisation among constituent organisations.



**Figure 4. Visualisation of collaborative and agile network (after Alberts et al. (2010))**

In the very early and acute phase of a large-scale incident, the networked organisation should ideally be of the collaborative and agile type (Scholtens,

2008). The first responders need to get to work quickly, even before the main coordination body is established. They should proactively share information about the situation and about their intended actions through the common operational picture. We deliberately use the word 'should' in this illustration because we do not know of any practical emergency response situations in the Netherlands where a really collaborative and agile network has been deliberately chosen. In practice, in the acute phase networked organisations often exhibit characteristics of a fragmented network in the sense that the only way the nodes interact with each other is via the operational context they are working in. The activities of any one organisation, and their outcomes, may be observed by other organisations in the network.

A collaborative and agile way of organising is the only practicable way of getting things done in the acute phase of most emergencies. In later stages of crisis management, it may be better, if possible, to set up more active coordination. In these later stages, a collaborative and agile way of organising is likely to be the best choice only in extreme and chaotic situations, in which regular forms of sense-making persistently fall short and regular structures of coordination are seriously affected. This is often the form that emerges spontaneously when those within the community that is affected take the initiative. Solnit (2010) described a number of past examples where this has occurred, and also argued that in such situations professional responders and administrative organisations should refrain from applying active coordination measures too rigorously in an attempt to regain control. The professional organisations often do not have the means or the capabilities to follow up active coordination ambitions.

Organise the professional emergency response in a collaborative and agile way requires considerable preparation. Greater reliance on self-synchronisation is only sensible if there is already trust and a common culture throughout the network. Coordination organisations are only necessary for the really complicated decisions which demand more extensive exchange of perspectives and accounts by the various stakeholders.

## CONCLUSIONS AND FUTURE RESEARCH

This paper proposes four archetypal ways of networked collaboration among organisations: fragmented, deconflicted, coordinated and collaborative and agile. In the area of emergency response, these archetypes can be used for two different purposes. They can be used to guide the development of organisational emergency response arrangements towards a more networked and information-driven way of organising. As an illustration, the structure of the regional emergency response organisation in the Netherlands went through a development from fragmented, via deconflicted, to coordinated. Note that these transitions are made based upon the changing context and not upon a strive for maturing its nature as a goal in itself. The archetypes can also be used to express the dynamics of the development of a response organisation in a particular emergency situation. It is argued that in the very early acute phase of an emergency, the only way of organising is the collaborative and agile way. As stated in the illustration of that archetype, in the Netherlands the coordination of large-scale operations is done by temporary organisational bodies. First responders are already responding to the emergency while the organisations responsible for coordination are still working on their own deployment. As soon as the coordination body is in place and if the situation permits, a more active coordination approach can help to make the response operation more coherent and allow more complicated issues to be tackled in a multidisciplinary way.

One area for future research is how the nature of an emergency response organisation in terms of the four archetypes, correlates to its effectiveness. To this end, a longitudinal study of a developing emergency response organisation could be conducted.

A second area of future research links to the dilemma of how to build in agility necessary to be able to transit between archetypes. When there is an emergency, the response organisation typically makes a transition from collaborative and agile to coordinated. The performance of the emergency organisation during that transition phase is very critical. This criticality is denoted by the term 'golden hour', often used for the very first phase of emergency response. An important research question is what arrangements may be most appropriate to ensure the emergency response organisations can be relied upon during the very early phase of a crisis. At that point, decisive action by responders is crucial but at the same

time the response organisations should be starting to move towards a more coordinated way of working. The key issue here is, what is needed – and what is feasible – in order to ensure that the organisation can make this transition without any adverse effects on its performance?

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