

Dynamic assembling in project networks: Learnings from the humanitarian context

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Abstract

Project networks link specialists from different fields and organizations to work jointly on a shared activity for a limited period. In this structure, the central actor – the project owner – plays a key role acting as host, sponsor or parent of the project network. But, how do owners fulfil their role? We argue that the role of the project owner is to continuously reconfigure the relationships among the networks to quickly develop temporary organizations that respond to emerging needs. Using a humanitarian organization, we consider the important activity of the project owner as dynamic assembling. This capability relies on the owner's capacity to conceive, combine, coordinate and control the network. By adopting a dynamic view of the project, businesses could increase their capability to rapidly respond to trends. Playing a central role on multiple project network contributes to the owner's capability to dynamically combine resources and increase its innovation capacity.

INTRODUCTION

Today's dynamic environment is characterized by volatile markets, short product life-cycles, voracious competition and geographically dispersed firms. These characteristics force firms to develop new temporary organizational forms that respond to specific –sometimes ephemeral– needs.

Construction, tourism, events and disaster relief operations, among others, are some examples of these organizational forms. They can be considered as project-based networks, as they link specialists from different fields and organizations to work jointly on a shared activity for a limited period of time (Jones & Lichtenstein, 2008). These inter-organizational temporary systems are intertwined with more permanent systems (Sydow et al., 2004).

Project-based networks are temporary organizations that involve individual organizations – *actors* – that are put together to fulfill a specific task – *a project* – but maintain long-term relationships that can lead to future projects.

Actors in the project network are likely to play different roles from one project to another, which illustrate the dynamic feature of these organizations (Arto et al., 2008). In project networks no actor has total authority over the network. The owner of the project acts as a hierarchical top with formal contracts, regulating the obligations of contractors and others during the life of the project. This actor can be seen, to some extent, as the focal organization of the project and plays a strategic role in the creation of the offer.

There are four roles actors can play in operations – designer, supplier, producer, and marketer or distributor. These actors are organized around a focal firm – the broker – operating across organizational hierarchies, having the capacity to conceive (design), coordinate and control the network. Comparing this broker with the project owner tasks performed, it is easy to realize that both actors play the same role. But there is some difference. The broker has capacity to coordinate a group of firms in a stable network activating those that are required to respond to a specific need or perform a specific project (Paché and Paraponaris, 2006).

DYNAMIC ASSEMBLY

The broker plays different roles. Miles and Snow (1992) three broker roles include: (1) the architect, who initiates and builds the network; (2) the lead operator, who coordinates operations that link the organizations; and (3) the caretaker, who nurtures and maintains the network. Fréry (1997) expands these roles and qualifies the central actor as *pivot* proposing a 3C model:

- Conception: The selection of the network members and the choice of a common strategy
- Coordination: The limitation of hierarchic inherent costs maintaining coordination mechanisms from the market
- Control: The avoidance of opportunistic behavior inside the network that could interfere with the well-functioning and the efficiency of the network.

The definition of broker roles have evolved. In addition to the 3Cs, a 4th C – Combination – has been introduced. Combination is the ability to dynamically combine organizations and their capabilities.

In project-based industries – for example construction, filming, events, R&D projects, humanitarian aid – the capability to combine resources can influence project success or failure. Combining allows the network to rapidly adapt to potential threats. Combining is a dimension of a broader concept we define as *dynamic assembly*.

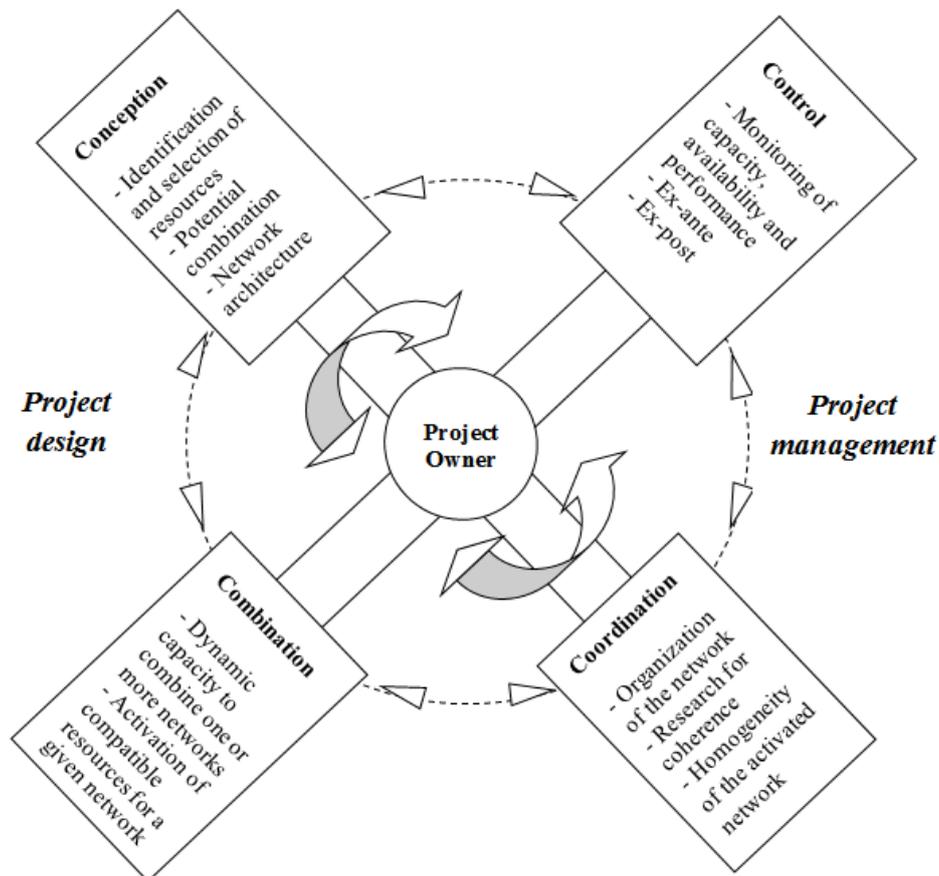


Figure 1. The dynamic assembly helix

Figure 1 shows the metaphorical idea of a wheel in motion – dynamic assembly operation – through four removable blades. Two blades are related to temporary organization effective relations. These two blades are for the management of the project in a project-based network which includes control and coordination. The other two blades represent temporary organization *latent* relations including the project design (Starkey et al., 2000).

These four blades revolve around a pivot axis. The actor who serves as the pivot completes these activities and is at the center of the assembly system. Depending on the circumstances – the market opportunity, natural disaster, type of product or service, or the destination or location – the pivot can play different roles to ensure project success.

The pivot can exist in one or several multi-stakeholder networks. They are found at the heart of the temporary partner network assembled for an event.

HUMANITARIAN RELIEF AS A PROJECT NETWORK

Humanitarian aid is a global industry comprising a myriad of actors. Donors, governments, international and local non-governmental organizations (NGOs), service providers, the military, and commercial firms are included in this litany of actors (Kovács and Spens, 2007).

These actors participate in a permanent network that evolves from one operation to another. The structure of the network changes on a temporary basis to respond to different and often simultaneous crises. These crises vary based on source – natural or man-made – and the warning time – sudden onset or slow onset.

For example, earthquakes and tsunamis are natural sudden onset disasters. Responses to these events are unique. Geographical location, the needs and access to beneficiaries and resources are highly variable. This variability in these events is similar across natural disasters in, for example, Haiti 2010 when compared to Japan 2011; or of similar man-made disasters, for example, the Yemeni conflict compared to the Syrian conflict.

Variability means that for each response to a humanitarian crisis – the project – an international NGO as a project owner must identify which actors are needed for each situation. The project owner needs to build the right mix of actors, coordinate the deployment, and continuously assess operations success. This capability to dynamically assemble various project networks is characteristic of most major international humanitarian organizations.

Dynamic assembly of networks is important for either immediate response to an emergency event or in long term development projects.

Consider a French medical emergency response international organization as the project owner. This organization has been major humanitarian actor for the past 50 years. They are active in more than 60 countries. Similar to other major international humanitarian organizations, this NGO is located in several countries. The locations are relatively independent. Coordination and strategic decision making takes place at the headquarters.

Headquarters is the same place where operations – emergency response or continuous aid – are designed, built, coordinated and evaluated through a number of ‘desks’ focusing on groups of countries. Each desk has experts from different domains including medical doctors, logistics, communications, human resources and management. The desks work together in response to operational needs arising

from the field. For sudden onset disaster events the emergency desk takes over the country desk to build a temporary network linking the necessary resources to respond the emergent crisis.

DYNAMIC ASSEMBLY IN HUMANITARIAN RELIEF

Regardless of humanitarian operation type, a project owner goes through a dynamic assembly process of. The dynamic assembly goal is to respond in the best possible way to field requests while simultaneously managing several temporary networks. Using a relatively permanent network of suppliers, service providers and field staff – doctors, nurses, logisticians, epidemiologists, social workers, architects, and technicians – each desk activates the project network following the 4Cs.

Conception

As pointed out earlier each crisis is different. The network built to respond to these crises also differs. Depending on crisis type, the project owner identifies potential actors who can contribute to operations.

In the case of a flood crisis aftermath deploying an epidemiological team is of great importance. The urgency of deploy such a team is not as great in the aftermath of an earthquake crisis. While in both cases it is eventually necessary, floods increase the transmission of water-borne diseases such as cholera, hepatitis A, typhoid fever and vector-borne diseases such as malaria, dengue fever and yellow fever.

Along the same thought process the team of epidemiologists can vary depending of the region of the world; some epidemics are more likely to occur in certain regions. Alternatively, medical doctors – particularly traumatologists – will likely be needed to perform surgeries such as fixation of long bone fractures, in earthquake crises.

The physical resources needed to respond to each crisis will also fluctuate. Depending on the type of project, the infrastructure could be as simple as a few tents for a vaccination campaign, to a disease treatment centre for Ebola which requires disinfection, triage, hospital, and waste management units. It can include a fully operational inflatable field hospital set up to perform first-class fracture surgeries, X-rays and laboratory analyses, as examples.

The project owner determines the type of equipment or material to be sent in response to medical needs. They need to determine who is able to supply equipment or material in the right quantity and at the right time. Transportation requirements, service providers capable of linking the different project actors, and setting the baseline for the network architecture are all issues that must be addressed at the conception stage. Additional activities and complexities include following international regulations and permits requiring identification during this stage.

Combination

After identifying potential actors from the permanent network, the project owner analyses the best possible way to connect the potential project network members. The project owner considers the overall performance goals given the boundaries and constraints.

As an example of constraints, major emergency product suppliers must be capable of delivering goods in less than 24 hours. This is necessary so that a logistics actor can consolidate the shipment and deliver it to the field.

This situation also exists for internal orders. The project will likely have several logistical centres and storage facilities around the globe. Relief items are stocked and prepared in the form of kits in these centres.

Service suppliers must respond to these requirements rapidly and reliably. For instance, during the cholera outbreak in the aftermath of the Haiti 2010 Earthquake, most international aid organizations experienced a stock out of Lactated Ringer's injection – a sterile solution that is used to replace fluid lost by the body. This stockout occurred during a period where there was a worldwide shortage of the product.

The project owner had to buy small amounts from almost every producer in the world and ship them by plane through international couriers to fulfil field demand. They had to manage a small, short project network within the broader crisis management project.

Longer-term development and continuous aid operations have similar concerns after a network is built. Given variances in project type, the project owner prioritizes constraints differently. Most funding in humanitarian organizations is allocated to emergency response. Humanitarian development projects must be cost efficient. Geographical location of suppliers and transportation mode – for example, sea rather than air – drastically change network architecture designs. This constraint is true even if the type of actor (supplier) and the recipient are the same.

In some cases, governments have in place regulations such as import bans for medicines produced in certain countries. While this further limits the potential project network members list, it forces the organization to identify alternate ways to combine the right suppliers with the right transportation. In development projects this will mean that shipments can last for weeks or months before arriving at a field destination.

Coordination

With the architecture and infrastructure constructed, the project owner moves into the management phase and activates the project network. Tasks in humanitarian operations are mostly performed in sequence, given operations activity dependencies.

During a continuous aid operation, such as a vaccination campaign or food distribution, teams, goods, technical and administrative support must arrive concurrently or at least within a short period of time of each other. In some specific cases, such as dealing with controlled temperature items, timing is crucial as cold chains can be broken and the entire operation can fail. This result can be particularly true for remote areas where access to electricity is not guaranteed. Vaccines and diluents are packed into cold boxes – insulated containers lined with coolant packs – with a minimum cold life of 48 hours. Coordination between the actors is thus key for the project network to successfully achieve goals and maintain efficiencies.

High stakes, human lives, of a post-disaster context leave little room for error. The project owner runs a network based on minimal information aiming to fulfil affected population needs to the best of their ability. This fulfilment needs to be completed in less than 24 hours with little or no infrastructure.

Field assessment teams arrive with the first deliveries of relief items. These items are determined in advance using crisis characteristics – type of disaster, region, and demographics, for example. Simultaneously heavy and oversized items, such as an inflatable hospital, are sent by sea. This lag in time allows for teams in the field to find a location, access to electricity and water, and determine the required infrastructure to unload the materials and transport it to the chosen location.

Once an assessment is conducted and the specific needs identified, the project owner activates the actors. These actors were defined in the previous C-phases to perform their tasks. Given the dynamic character of the crisis event, the project network is likely to change over time.

Control

There are varying complexities for measuring performance in humanitarian operations. Performance measurement depends heavily on the type of task undertaken. Indicators such as number of medical consultations, number of tons of food distributed, number of litres of clear water provided, or the number of shelters built can be useful when the goals are stable and clear.

In continuous aid, the project owner monitors the overall performance of the operation based on ex-ante information. Once the goal is reached, a project closure leads to a report evaluating and analysing the project's overall performance. This report serves as a basis for future projects such as including what actors to involve, timeliness, and quality criteria. Emergency response operations add another layer of complexity.

The immediate aftermath of a disaster is unstable. Basic communication and transportation infrastructure might be damaged. The project owner faces a lack of information and must constantly adapt to meet constantly changing demand from the field.

Although an established network architecture serves as a basis, evaluation and performance measurement sometimes identify new challenges that need to be addressed expeditiously. For instance, after Hurricane Mathew destroyed various regions of Haiti in 2016, many villages were cut off from basic services. The project owner had to arrive with a solution to provide basic health care in remote areas. A fleet of donkeys used as mobile clinics was created to achieve the broader project's goal.

This small project within the temporary network is just one example of the many adaptations for the project owner to attain the overall objective. To create and manage these small projects these must be conceived. New actors must be combined to existing actors, their deployment must be coordinated with the ongoing operations, and their performance must be assessed.

LESSONS AND OPPORTUNITIES FOR BUSINESS

Projects are initiated to solve complex tasks of almost any type and size and can be found in most industries (Engwall et al., 2003). Humanitarian relief is not an exception.

Despite the difference of purpose, business projects and humanitarian operations share the same characteristics. They face a unique task, consisting of several complex or interdependent activities. They have a specific time for delivery. They are subject to performance goals.

Given these characteristics, humanitarian organizations and project-based business share the same matrix structure and similar processes. Both can be viewed as project owners from a classic project management perspective. Nevertheless, some specifics of the humanitarian context call for alternative ways of functioning; especially given the highly volatile, high stakes, and dynamic environment.

Most project-based business organizations design, coordinate and control projects based on well-established goals and tasks. But there are usually the possibility of unforeseen events from which they try to respond as best as possible. In today's fast-moving business environment this 'best as possible' may not be enough.

Companies in relatively stable settings – for example construction – must leave room for some adaptation. In many cases this slack is included in a project blueprint. In more dynamic industries – such as fashion or technology – changes in the demand or supplier disruptions are sometimes difficult to foresee. The company's ability to adapt is crucial. Humanitarian organizations in that sense have managed to face volatility by developing the ability to mobilize resources from different networks and plug them together to ensure the continuity of the project. They do this while responding rapidly to the needs from the field.

This capability to dynamically assemble actors can represent the difference between a successful operation and a failure.

Adopting a dynamic view of the project, in the same way humanitarian organizations view their operations, could help businesses to increase their capability to rapidly adapt and respond to emerging trends. Understanding the project owner as a pivot of several simultaneous project networks where resources are assigned contributes to this adaptability. With experience, the pivot organization learns how to dynamically combine resources. This ability can increase organizational innovation capacity by assembling new actors that normally would not be part of the network.

Building a dynamic assembly system for private organizations will require rethinking partner relationships. Not all partners will be needed for all situations. Different partner abilities will need to be judged and evaluated. Private organizations may be constrained with long-term agreements, regulations, and various logistical concerns. Humanitarian organizations may not always have these similar limitations. These and other variations need to be carefully considered. Investing in flexibilities will require careful evaluation of the various industry and product contexts.

CONCLUSION

Over the past decade, much has been written on how commercial businesses can learn from humanitarian efforts and organizations. Yet, this learning process can also exist for the opposite direction.

Many small and medium humanitarian organizations acknowledge a gap exists between the 'state of the art' business practices and their own practices. Their limitation begins with a need to adapt commercial innovations into a complex context with many constraints.

Major international humanitarian organizations have already adopted many such business practices. They have found better ways to perform their tasks without losing the know-how of working in a highly uncertain humanitarian crisis environment.

In this paper we propose that learning is bi-direction. Businesses can also respond to crises and uncertain events by adapting humanitarian operations and project practices to their commercial world. Dynamic assembly – and the 4Cs – is one such important project activity.

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Bio

Diego Vega is Assistant Professor of Supply Chain Management and Social Responsibility, esp. Humanitarian Logistics and Deputy Director of the HUMLOG Institute at Hanken School of Economics in Helsinki, Finland. He's also Associate Researcher at CRET-LOG in Aix-en-Provence, France. Diego's current research interests include logistics services in humanitarian operations, temporary organizations, competence-based strategic management for humanitarian organizations and supply chain maturity.