

Restructuring the fire service

A case on organizational design and management

Abstract

This teaching case describes how the Antwerp Fire Brigade reacted to a reform by the Belgian Federal Government to introduce Emergency Rescue Zones. It focuses on why and how the Antwerp Fire Brigade chose to fundamentally change its traditional organizational structure. The case describes the situation ante and post reform as well as the portfolio measures that the Antwerp Fire Brigade (AFB) has used for its transition, such as appointing company commanders and altering its unit grouping. The case prompts students to explore what organizational design entails, how to develop a network organizational structure, and draw the position of the company commander for network management.

How to design and manage a Fire Brigade in the context of reform?

KEYWORDS: Organizational design – Management – Change management

The use of case studies offers, especially in business studies, the possibility for students to deal independently with complex, economic questions and problems, so that networked thinking and problem solving are promoted.

The present case study can be assigned to the **Case Problem Method**¹, which in this case has the following characteristics:

- The problems are roughly mentioned and the necessary information is given.
- The students identify possible causes, further partial problems and interdependencies. They independently develop varied solutions and make a decision.

¹ inspired by Kaiser 1983, p. 23

TEACHING NOTE

1. Intended audience

1.1. Student group

The teaching case is suitable for students of business-, management studies, and public administration with basic knowledge in the fields of management and/or organization sciences.

1.2. Required previous knowledge

Students should have a basic knowledge of business administration and be familiar with the basic concepts of management.

2. Case background

We present the case of the Antwerp Fire Brigade and illustrate how the brigade adapted its organizational design in response to the federal reform that introduced emergency rescue zones in Belgium. Two pivotal issues characterize the new organizational design en route to becoming a network organization. The first adaption is the company commander: a new position in the organizational structure to manage the network of public service delivery. The second adaption is transforming the organizational structure from a market focused one, where fire stations were grouped on the municipal level—towards a functional structure in which the four companies were grouped on the emergency rescue zonal level. In doing so, the Antwerp Fire Brigade aimed to develop the flexibility and specialization it needs to deal with public safety of the city and port of Antwerp.

The teaching case allows mapping the Antwerp Fire Brigade as a network organization from a whole network perspective in which multiple levels and units of analysis are provided (cf. Provan, Fish, & Sydow 2007). This case puts readers in the situation of the Chief Operating Officer and examines his idea to solve the challenges of the Antwerp Fire Brigade reform.

3. Didactic instructions

3.1. Learning goals

3.1.1. *General learning goal*

Students learn how to design and manage a Fire Brigade in the context of reform.

3.1.2. *Specific learning goals*

Content competences:

In line with the EQF (level 6), the formal learning goals of this case for the students are:

- Students understand the elements of organizational structuring.
- Students analyse how the elements of organizational structuring can be used to change the current structure towards a network structure.
- Students evaluate what network management entails and recognize what intricacies and tensions are involved with managing networks.

Social competences:

Social competencies are not the special focus of learning in this case study. The learning success is therefore not explicitly identified and measured. Nevertheless, cooperation in groups implicitly enhances team competence, including conflict resolution.

Self-competences:

Self-competences are not the special focus of learning in this case study. The learning success is therefore not explicitly identified and measured. Nevertheless, it can be assumed that, for example, time management, self-learning competence or the assessment of one's own performance are also implicitly promoted.

4. Organisation

4.1. Procedure and time

The case study can be used with the following progress, but of course it can also be adapted structurally or temporally depending on your preferences.

Depending on the preparation and expectations this case can be taught in 45-120 minutes settings. Students should always be asked to read and prepare the case before class. We sketch the two alternative 45-60 minutes settings that can also be taught subsequently to form a 120 minutes session.

45-60 minutes setting on organization design:

Take 15 minutes to discuss the “old” (traditional) organizational design of the fire brigade (how and why). Use the next 15-20 minutes to discuss the changes that the reform in to Emergency Rescue Zone (ERZ) involves, i.e. how does this result into organization design challenges? In the final 15-25 minutes, discuss if JB’s measures are suited to accommodate these changing requirements.

60 minutes setting on the network organization:

Use the first 20 minutes to collect and synthesize the features of the network type of organization and the contexts in which it is particularly useful. Take the next 20 minutes to reflect how the situation of the Antwerp fire service is congruent with a fitting context for the network organization (i.e. where it does fit and where it does not fit). The final 20 minutes can be allotted to have students develop specific suggestions on the design of the network organization for the Antwerp fire brigade.

5. Teaching tips

The case takes up a core issue of organizational design. How can organizations be structured that face complex and dynamic environments, and what do they need to do to be able to deliver quick and reliable services. The traditional organizational design literature provides ample instruments on designing jobs, grouping them to units, organizing lateral linkages and coordinating work within and between these units; as well as typical organizational configurations for selected contexts (e.g. Miles, Snow, Meyer, & Coleman 1978; Mintzberg, 1980). Special conditions such as those that we address with the present teaching case, however, bring together potentially conflicting organizational demands – to speak with Mintzberg, the professional bureaucracy and the adhocracy would need to be blended here. In general the fields of strategic management, organization sciences, public management and –administration are more and more proposing that a network organization has been called for in such environments. But, this comes with specific organizational design challenges both including particular advantages and disadvantages and, maybe most importantly, a network organization is also subject to a great variety of different design options, which will be illustrated with the present case.

5.1. Use in the university context

- Recommended group size: Up to 4 students.
- Resources: Lecture or seminar room, in the best case with group tables and information or research facilities such as access to the internet.
- Accompanying material: As a lecturer, you decide which material you want to give, when you want to add it or to what extent you want to differentiate internally.
- Adaptation to learning group: This case study is designed for Europe-wide use. However, you can of course adapt or modify it to your learning group and their environment or professional orientation, previous knowledge and competences.

5.2. Role of the lecturer

As a lecturer, you merely take on the role of a learning advisor and moderator when working with the case study. The students should work on the case independently in groups, acquire the necessary knowledge, identify problems and find solutions by themselves. You do not give tasks, instructions or directions. Only if a group of students does not progress and the learning process is prevented, you can act as a learning guide and help through impulses or clarify difficulties in understanding.

5.3. References

This case study deliberately does not include any possible solutions or outcomes, as from a pedagogic point of view, openness to solutions is an important criterion for the learning process. As the lecturer, however, it may still be necessary to know the underlying concepts. Therefore, we would like to provide at least some literature tips:

- Mintzberg, H. (1980). Structure in 5's: A Synthesis of the Research on Organization Design. *Management science*, 26(3), 322-341.
- Milward, H. B., & Provan, K. G. (2006). *A manager's guide to choosing and using collaborative networks* (Vol. 8). Washington, DC: IBM Center for the Business of Government.
- Milward, H. B., & Provan, K. G. (1998). Principles for controlling agents: The political economy of network structure. *Journal of Public Administration Research and Theory*, 8(2), 203-222.
- Milward, H. B., & Provan, K. G. (2000). Governing the hollow state. *Journal of public administration research and theory*, 10(2), 359-380.
- Provan, K. G., Fish, A., & Sydow, J. (2007). Interorganizational networks at the network level: A review of the empirical literature on whole networks. *Journal of management*, 33(3), 479-516.
- Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. *Journal of public administration research and theory*, 18(2), 229-252.
- Provan, K. G., & Lemaire, R. H. (2012). Core concepts and key ideas for understanding public sector organizational networks: Using research to inform scholarship and practice. *Public Administration Review*, 72(5), 638-648.
- Saz-Carranza, A., & Ospina, S. M. (2010). The behavioral dimension of governing interorganizational goal-directed networks—Managing the unity-diversity tension. *Journal of Public Administration Research and Theory*, 21(2), 327-365.

5.4. Questions for reflection

A case study is for students to discover problems themselves, control the learning process and develop their own solutions. Tasks or questions within the case study therefore are unnecessary. These reflective questions should only be asked, if the discussion stops or remains too superficial. They only serve to give new impetus in the final discussion at the end or to open up other perspectives. Ideally, students should consider and discuss these questions and interdependencies/considerations themselves.

- Why and how does the governmental reform to introduce emergency rescue impact the organization design of the Antwerp Fire Brigade? What are students' perspectives on the degree of separation between autonomy and control between governmental responsibility and (public) service delivery?
- In how far does a transformation to a network organization form address the new complexities of the Emergency Rescue Zones? What are the disadvantages that a transformation to a network organization brings for an organization such as the Antwerp Fire Brigade? Under what situational conditions is a network organization preferred over? What are students' perspectives on educational and training requirements to be able to manage within a network organization?
- Provide a specific and detailed recommendation for the organization design of the Antwerp Fire Brigade as a network organization (please refer explicitly to relevant design parameters (values), their contingencies, and the interplay among them. What are students' perspectives on how to cultivate inherent network tensions?

Further case studies of this kind, a Manual for your own development of didactically high-quality case studies as well as an Online-Planning-Guide for the digital, cross-location use of case studies in cooperation with other universities and a partner-tool for contacting interested institutions can be found at: <https://www.e3cases.uni-koeln.de/en/>.

CASE

Restructuring the fire service

A case on organizational design and management

Five years ago Jack Braes was promoted to the ranks of major in the Antwerp Fire Brigade² (AFB). Little did he know that in those five years the fire service would endure so much change. The organization is different compared to when he was a captain in station South and even unrecognizable when he first started as a firefighter volunteer 25 years ago. The main driver of this change was the legislation to reform the civil security (in particular the fire brigades and the Civil Protection) by the federal government. Because of this in 2015 all municipal fire brigades were distributed and centralized into 34 Emergency Rescue Zones (20 for Flanders). For the city and port of Antwerp this meant an integration of three municipal fire brigades as well as setting up a public safety collaboration based on the principal of Appropriate Rapid Response (ARR) with three surrounding Emergency Rescue Zones³ (ERZ).

The fire chief and his board appointed Jack as Chief Operating Officer (COO) to develop and execute a new operational model that would provide the blueprint of the organized activities among the eight stations, the four companies, and the Antwerp Fire Brigade as network organization. A complex challenge since this required an arrangement of various groups of people that need to exchange information smoothly and efficiently and work together in various constellations during day and night shifts.

The board trusted that Jack was the right man for the job because he had shown efficacy both with reorganizing station South as well as his ability to deal with extreme crises and disasters. For instance, Jack was second in command during the Paardenmarkt explosion last year (15.01.2018). During this incident his cooperative efforts to enable the fire service to work together effectively with the police and emergency medical services made an impression on the fire chief and the board. The board believes Jack can innovate the fire service by implementing the principle of Appropriate Rapid Response (ARR). Contrary to before the reform municipal fire brigades had designated service areas that they needed to serve. Consequently, differences existed among municipalities in response time, quality of services, and costs. With the reform the federal government—in particular internal affairs, warranted homogeneity in various services provided. In addition, the principal of Appropriate Rapid Response aimed to create harmonious and efficient public service delivery among various Emergency Rescue Zones so that public security and safety is guaranteed no matter where citizens are living or when visitors visit.

² Fire brigade and fire service are used interchangeably throughout the teaching case.

³ Emergency Rescue Zone and Safety zone are used interchangeably throughout the teaching case.

It is Monday morning 08:00 AM when Jack parks his car at the parking lot of fire station North. He has 30 minutes before his first meeting as the new COO. The last couple of days he has been reflecting on the decision that AFB made last week on its organizational design. In the last decade, the AFB has slowly but steadily developed from an organization based on market grouping following its output, client and districts among the city of Antwerp towards a more functional grouping comprising knowledge, skill, work process, and fire services for the whole city area. As such, the AFB like many other public and nonprofit organizations has transformed into what is popular being addressed as a “network organization”.

The Antwerp Fire brigade focuses on the city of Antwerp and in collaboration with Emergency Rescue Zone Waasland they protect the port of Antwerp. Back then the Antwerp Fire Brigade in reality consisted out of fragmented municipal fire brigades active across the city and province of Antwerp. But, with the introduction of the Emergency Rescue Zones these municipal fire brigades were grouped and placed under the centralized control of the single authority of the Emergency Rescue Zone. In effect, this created four Emergency Rescue Zones across the city, port, and province of Antwerp.

The Emergency Rescue Zone creates an organizational layer acting like a Network Administrative Organization (cf. Provan & Kenis 2008). This organization was set up in station North acting like an HQ in which skills and knowledge needed to be standardized by training and indoctrination through centralizing strategic decision-making and concentrating administration. By clustering the eight fire stations across so-called companies and in turn placing companies under the direct supervision of company officers, the AFB aimed to consolidate its means to produce effective crisis response and disaster management. But, this meant abandoning their previous strategy by focusing on various (local) ends each characterized by the various characteristics of each district in the city of Antwerp.

The transition of the fire service was highly disputed by the union despite being forced upon by the federal government. The fundamental debate in AFB was how activities needed to be grouped. The officers in the Antwerp Fire Brigade (its strategic decision makers) recognized that this debate entailed much more than just a conceptual discussion on organizational design. Some officers like Jack recognized with the rapid advancement of technology and the ever-changing political climate that organizing the AFB differently will not only have short-term consequences, but also can affect long-term what the role of the fire service is in the city and port of Antwerp.

Therefore, as the newly appointed Chief of Operations, the challenge of the fire service was to design a network organization that emphasizes multilateral collaboration across fire stations and companies, rather than focusing internally on historical clusters of groups and individuals among stations. What they have experienced in the past is that various ways of grouping firefighters encouraged strong coordination within a station (which they were designed to do), but doing so at the expense of coordination efficiency between stations. Accordingly, various firefighting units and stations (cf. figures

1 and 2 and table 1) have become differentiated in their goals, orientations, time perspectives, and structures, which create problems with understanding each other.

Jack enters station North of the Antwerp fire service and walks towards the elevator. Although he has been working on the top floor most of his career, he now enters more anxiously. Where he used to be part of the men, he now is their leader. With this leadership comes great responsibility. And as such, his mind has been running overtime because he is about to propose what he believes will be an overall solution to the issues the fire service in general is facing.

What do fire services do?

The traditional core mission of the fire brigade is firefighting, complemented by such tasks as:

- As an ambulance service for emergencies,
- In case of road accidents, to rescue people who are stuck in their vehicle,
- To clear public roads after a big accident,
- In case of floods, explosions, buildings falling down, and finally,
- In case of small daily problems: people who are stuck in elevators, ...

To be effective in these tasks the fire service closely works together with the local police zone(s) and emergency medical departments in Antwerp. In the case of large incidents they also cooperate with the Civil Protection Agency. In such cases they can directly call the operational units of the Civil Protection Agency to reinforce them.

Fire prevention

An important part of firefighting is prevention. Among others fire brigades advise and evaluate citizens and businesses on fire safety and prevention. The fire brigade relies on the one hand, on legal obligations that apply to buildings, installations or events. In that case fire prevention technicians make sure the regulations are applied. They do this by checking plans and visits on the spot. On the other hand, the fire department also wants to increase the consciousness of the citizens on the subject of fire prevention and to point their responsibilities out to them. To do so, one can count on fire prevention advisers who provide advice to reduce the fire risks in and around the house. They give advice for free, answer questions, organize information sessions for groups, visit people at home, etc.

The city of Antwerp has two major location-specific risk factors. The first risk area is the Port of Antwerp (harbor). The port of Antwerp with its strategic location is home to the largest maritime integrated chemical cluster in Europe. The oil and chemical cluster is a major factor in the port's success, as demonstrated by the increasing volumes of freight that it generates.

The second risk area is the Doel Nuclear Power Station. This Nuclear Power Station is one of two nuclear power plants in Belgium. The plant includes four reactors. The site is located on the bank of the Scheldt River, near the village of Doel in the Flemish province of East-Flanders, on the outskirts of the city of Antwerp. Both the port and the station are located in one of the most densely populated area in Europe, with 9 million inhabitants within a radius of 75 kilometers.

Organization of the Antwerp Fire Brigade

Traditionally, the Antwerp Fire Brigade has been a hierarchical organization that consists of a hierarchy of professional fire fighters (operations) and a parallel hierarchy of support and administration. Currently the fire service employs 788 employees of which 708 are working in operations and 80 in support and administration (see figure 1).

Unit grouping

In operations three categories are used to divide employees by rank. Like the police and the army—the fire service also functions according to a system of ranks. The fire brigade uses the ranks of firefighter, corporal, sergeant, adjutant, lieutenant, captain, major, and colonel. Each rank corresponds to a particular position in respect to the operations of the fire service.

The first category includes firefighters and corporals (n=610). The second category includes petty officers (n=70) such as sergeants and adjutants. The final category is officers (n=28) that range from captain to major and colonel. The 708 firefighters are also divided into four companies. The company is the largest organizational unit in the fire service. Generally, a company is composed of 142 firefighters on average—varying in rank from lieutenants, adjutants, sergeants, corporals, to firefighters. Companies switch with each other on continuous shifts. Each shift lasts 12hours. This means that company 1 starts on the day shift from 07:00 until 19:00 and is being replaced by company 2 for the night shift. Accordingly, company 3 replaces company 2 in the night shift at 07:00 in the morning and so forth.

Each company controls the eight stations during a day or night shift. Adjutants and sergeants manage the companies by dividing each company of 142 firefighters among the eight fire stations in the service area of the emergency rescue zone (figure 6). Station North is the largest fire station in the service area posting 64 people at day and night shifts. On the other seven stations 8 firefighters are stationed per fire station. Optimally this would results in having 22 persons vacant in each company for either being on leave of absence or sickness.

The numbers of firefighters for each fire station are based on operating the fleet of vehicles. The fleet of the Antwerp fire brigade is next to its buildings its largest asset. The fire brigade owns the following types of vehicles: the classical fire engines and the fire engine tanks—also referred to as the large fire engine; the ladder trucks and the platform truck; quick response vehicles or technical support vehicles; foam extinguishing vehicles; the command vehicles or command autobus (CP OPS or Command

Incident Vehicles); and hook arm vehicles and containers. Remark that in general 20+ various types of standardized containers and specialized vehicles are stationed in the garages of fire station North.

Job specialization: fire station officers

Before the reform in 2015, the main mechanism for determining the division of labor was a responsibility of the fire station officer together with its petty officers of that particular company working its day or night shift. This means that if for instance somebody was ill for a shift the fire station officers mutually adjusted (often at the start of the shift) with each other how to replace the vacant position at the fire station. If they were not able to arrive at a solution the officer on watch (highest rank) at that shift was contacted to resolve and handle the issue at hand. Consequently, outputs were merely standardized on the level of the fire station because specific decisions and action were made among petty officers within the company. Often, petty officers that have worked closely with each other in the past quickly sorted out such issues. In general few after-the-incident performance was measured or particular decisions and actions at the level of the company recorded. This created an overall absence of a centralized planning and control system for the Antwerp fire brigade. For instance, if officers wanted to compare fire stations or companies with each other they needed to contact each fire station officer to integrate data and measurements of performance.

Behavior formalization: standard operational procedures (SOPs)

A large part of what makes fire brigades successful are carefully drafted and massively practiced and enforced standard operational procedures (SOPs). These SOPs are continuously being developed and trained to guarantee the interventions by firefighters are most effective and safe for both professionals and people in need. The fire brigade relies on standardization of coordination (both for operations and work processes). The fire station officer is directly supervising formalization and coordination of behavior. In case of doubt they mutually adjust among each other how to formalize and coordinate firefighters work processes. The fire station officer together with other petty officers of the company reinforced certain behaviors such as job mutation among companies, attendance to training, education, and development programs, work division and allocation, and information provision.

Each fire brigade—before as well as after the reform, have the obligation to purchase fire equipment and personal and collective protective equipment, such as pumpers, ladders, protective clothing, etc. The central purchasing body of the Directorate-General Civil Security (Federal Government) issues public tenders to open tenders to purchase equipment and vehicles the emergency rescue zones can order from. Furthermore, the Directorate-General also concludes the necessary maintenance contracts of its buildings and fleet of vehicles.

The Directorate-General Civil Security pays special attention to the development of standard operational procedures and trainings and to the acquisition of advanced equipment. Consequently, indirectly the Federal Government has a large impact on which work processes are standardized, through (safety)

rules, procedures, policy manuals, job descriptions (requirements), work and training instructions (education requirements).

Training & indoctrination

All firefighters in Belgium are educated by following an intensive basic training, in-service exercises and developments, and the possibility to follow specialized (tailor-made) trainings in one of the 11 training centers for the civil security in Belgium. The Directorate-General Civil Security and the Centre of Expertise for the Civil Security coordinate the development of the training, education and the in-service trainings, in cooperation with the training centers, the emergency rescue zones and the operational units of the Civil Protection.

Training and indoctrination are major instruments used by the Antwerp Fire Brigade by which skills and knowledge are standardized through permanent training by the fire station officers and secondary vocational training through extensive federal educational programs of the fire school. Secondary vocational training occurs outside the organization and starts before the firefighter official begins his job as a professional at a fire brigade.

Permanent training to teach job-related skills and knowledge was decentralized at the level of the fire station. By assigning each fire station an officer they could personally govern the process by which necessary job-related skills and knowledge gained. Secondary vocational training education, and development is purchased from the Federal Government (through provincial fire schools), but taught by experts in the field (fire brigades)

Resulting organizational structure before the reform

The previous COO devised a multidivisional structure that aimed to balance decentralization with coordinated control among 7 fire stations (fire station number 8 was finished after the reform in 2015). From coordination we get economies among stations and companies, while decentralization provides initiative, responsibility, and development of firefighters and alike. To balance decentralization with coordinated control each fire station was assigned a fire station officer (assisted by petty officers) per company (four companies in total) whose sole purpose was formalize behavior, organize training and education, and administer the operation, planning, and direct supervision of its station. To oversee central coordination, control, and incident command two watch officers (high ranked officers) were assigned per each shift (see figure 1 and 2).

Reform of the civil security: from municipal to Emergency Rescue Zones

On January 1, 2015 a reform of the Belgian fire services has taken effect. With this reform the 250 Belgian fire brigades have been grouped into 34 Emergency Rescue Zones and the fire department of Brussels in a step towards closer alignment of quality standards and working methods, intensive cooperation and more innovation.

The Emergency Rescue Zone is an institution that integrates municipal fire service departments into a central fire service brigade, spanning multiple municipalities (and thus, creating a zonal system). In the province of Antwerp, five Emergency Rescue Zones are active. Together these zones are referred to as “Network Fire Service Antwerp” (NFSA), covering not only the city of Antwerp, but also its port and three arrondissements (federal administrative geographical division) of 70 municipalities: Antwerpen, Mechelen, and Turnhout. In addition, the 20 Flemish Emergency Rescue Zones are members of what is referred to as the Fire Service Network (FSN). This network governs the fire services for the Flemish community / Dutch-speaking region in Belgium.

The Federal Government created the Emergency Rescue Zones due to three reasons; (1) the zone should lead to a better service delivery to the citizens and visitors, (2) the zone should further increase the safety of its people it serves, and (3) the zone should facilitate professionalizing governance and administration of the fire services with regard to education, material and equipment, standard operating procedures (SOPs), and uniform employees statues (incl. professionals and volunteers).

The Federal Government developed five basic principles to guide the institutional change from fire service on municipal level towards a fire service brigade on a zonal level (<https://www.civieleveiligheid.be/nl/inhoud/hervorming>):

1. An uniform method of operation covering all fire service brigades in the country that would preclude the same efficient and safe manner of incident crisis response,
2. An established and efficient collaboration based on a division of labor among various fire zones and other units of public safety such as police and emergency medical departments,
3. Innovation based on the best means, education, procedures and best practices that are interchanged on a frequent basis among each other,
4. Standardization and reevaluation of the employee statue including both professionals and voluntary personnel,
5. Economies of scale that in turn yields a more efficient governmental apparatus and spending of budget

Designing and governing the Antwerp Emergency Rescue Zone

Chief operating officer (COO) Jack Braes (JB) is responsible for operations in the Antwerp Emergency Rescue Zone (AERZ). This zone is composed of three municipalities covering a service area of 230 square kilometers and dealing with more than half a million citizens and 3 million visitors (Q4 2018 - <https://stadincijfers.antwerpen.be/dashboard/>).

The Antwerp Emergency Rescue Zone closely works together with its neighboring zones (see legend figure 3). In the province of Antwerp these neighboring zones are ERZ RAND and ERZ Rivierenland.

In addition, the Scheldt River physically separates the Antwerp Emergency Rescue Zone with ERZ Waasland from the province of East-Flanders (Gent). The Antwerp Emergency Rescue Zone and ERZ Waasland share the responsibility for the safety of the port of Antwerp—each Emergency Rescue Zone protecting the banks of the river (see legend figure 3).

The reform to emergency rescue zone had two main implications for the strategy and organizational design of the Antwerp Fire Brigade. The first implication was the introduction of Rapid and Appropriate Response (RAR) throughout Belgium. Before the reform, in case of an emergency, the standard operating procedure (SOP) is that the fire brigade dispatches two fire engines, one ladder vehicle, one technical support vehicle and one command vehicle. After the introduction of the ERZs the SOP changed towards the principle of RAR. This principle includes that those vehicles that are most close to the incident are dispatched. Hence, this also means that if vehicles located on a station in AERZ are faster to the emergency in another ERZ i.e., Waasland, Rand, Rivierenland than they are dispatched despite the emergency not being present in their service area (see figure 6).

The second implication of the reform was that the focus of organizing shifted from intra- to interorganizational. Concretely this meant that emphasis was placed on the fire brigade as a whole instead of the various fire stations among the municipalities. By transcending multiple municipalities towards the level of arrondissement / province the fire brigade could centralize a method of operation among 34 areas in Belgium. In addition, it would provide the means to fire brigades to specialize on particular functions of fire fighting (i.e., protecting the port of Antwerp that included divers, special equipment, and assistance from civil security etc.). Furthermore, by centralizing to the Emergency Rescue Zones and creating Flemish and Wallonia governance networks particular *modi operandi* were installed to produce the best means, education, procedures and best practices that could be interchanged on a frequent basis among each other. Finally, centralization of the fire service was also believed to produce economies of scale (by collective bargaining etc.) that in turn would yield a more efficient governmental apparatus and allocation of budgets and costs.

Job specialization: company commander

After the reform of the Antwerp fire brigade strategic decision-making shifted from the fire stations towards the aggregated level of the companies and Antwerp emergency rescue zone. In the course, two established principles of the “old” organizational design were changed: the fire brigade replaced the fire station officers by company commanders and based the grouping of units on function instead of market. During the reform the fire brigade came to realize that training, education, and development was their most important mechanism to improve the organization as a whole. Therefore to guide the reform into a success they abandoned the position of the fire station officer and replaced it by four company commanders.

From the pool of 28 officers a number of company commanders need to be divided among the 4 companies of the Antwerp fire brigade. Also officers need to be appointed to the Fire Commander (CEO) and the Chief Operating Officer (COO) as well as other staff and support functions (Finance, HRM, ICT, and Logistics).

Having an officer job in the fire brigade is complex and often requires unspecified skills and bodies of knowledge, especially in dealing with switching between crisis and non-crisis situations. With the creation of the position of the company commander another issue raised, namely how to facilitate organizational learning both intra- and interzonal.

Before the reform in 2015 learning within the fire brigade was decentrally appointed to the fire station officer. But, with the new position they have to devise how learning happens between the four companies as well as make sure that various specializations are dispersed among the eight fire stations. By centralizing officers at the companies they can be able to guard organizational ideology and put new recruits through a standardized indoctrination program that promotes rotation among fire stations and companies within the fire brigade. This also provides means for organizational design since they can now educate officers, petty officers, and firefighters on particular functions (work processes, skills, and knowledge).

Based on their experience with the fire station officers it turned out that officers instead of petty officers were best suited to manage this coordination and cooperation. But this created a new issue. Many officers struggled with the choice whether or not they wanted to become detached from operations inside the fire brigade and focus more as administrators on work processes among Emergency Rescue Zones and federal educational programs.

Grouping based on function

The previous market grouping with the fire stations as hubs proved to establish a decentralized system of supervision among positions and units in the fire brigade. This inhibited standardization in the fire service, but promoted mutual adjustment within and among companies (mostly through the social networks among petty officers).

With the rise of the Emergency Rescue Zone it was required that outputs became standardized on the level of zone and that company commanders were able to make central decisions and coordinate joint efforts. Previously only fire stations that dealt with neighboring fire brigades focused on interorganizational coordination and cooperation. But, with the introduction of Emergency Rescue Zones the fire brigade needed to develop strategy and policies with regard to its neighboring provincial partners in the Network Fire Service Antwerp (NFSA) and with its Flemish partners in the Fire Service Network (FSN).

A direct effect of the introduction of the ERZs was the centralization of support and administration in fire station North to deal with this interorganizational coordination. One resulting aspect of the organizational reform was the challenge of organizing well-defined workflows of operations (SOPs) among specialized fire stations and companies in the province of Antwerp as well as among emergency rescue zones in Belgium and in some instances even with the Netherlands, France, and Germany.

A centralized planning and control system was needed that allowed to functionally organize the AERZ to flexibly dispatch a variety of combinations of vehicles and units of firefighters among its eight fire stations. However, to achieve such a centralized planning and control system (MIS) that allowed the company commanders to coordinate and control joint efforts they needed to reinforce new behaviors such as rotation (instead of mutation) among companies, increased attendance to training, education, develop new tailor-made learning programs for firefighters, petty-officers and officers alike, create a central work division and allocation plan, and build an information architecture.

Setting up task forces and building the network organization

Jack enters his office and greets his colleague captain Eric who is already setting up his presentation. Today Jack and Eric are going to redraw the organizational chart of AERZ. Jack walks towards the whiteboard next to where the presentation is projected. He looks at Eric and smiles.

He picks up a whiteboard marker and writes down three questions:

1. How are the men, fleet, fire stations, and companies of the Antwerp emergency rescue zone functionally structured?,
2. What is the degree of specialization of the company commander's job? And,
3. What task forces do we superimpose on the functional structure to formalize behavior and enhance training and education?

Eric, did you read that article of Milward and Provan (2006) about networks I sent you? For me—and I think my fellow officers agree with me here, we cannot contract out fire services to third parties, right? However, we are also not able to organize public safety just by ourselves. Perhaps the most recent example is the collaboration we set-up to organize the emergency medical services. By outsourcing medical treatment to private partners we can focus on fighting fire and assisting them by providing elevators or ladders in case of an emergency. What this means is that the fire services, the police, the municipalities, the medical services, etc.—all these parties exists not by themselves, but in relation to each other.

In addition, public service delivery took considerable effort to become established and sustained—thus we are constrained by historical and political motives in our ability to adapt to changing circumstances. I mean, if we get an increased budget next year, the local police's budget will decrease. We, therefore, have to build an understanding with all involved partners in the domain of public safety that we forego

the right to pursue our own interests at the expense of others (individual services to citizens) and instead focus on attaining network goals (a set of services to citizens).

The logic that follows from this is goal-directed collaboration. Each organization that joins the network is capable to tackle a part of the problem at stake. Nowadays problems are simply too large to handle (i.e., producing public safety for a city / port / province). But, before we can even collaborate with others we need to understand more clearly what kind of functions and tasks need to be structured in order for us even to join such collaborative efforts.

Jack starts drawing a network in which the various agents in- and outside the emergency rescue zone referred to as “nodes” (ERZs, NFSA, FSN, civil service, federal and local police, emergency medical services, port-of-Antwerp, hospitals, and other public, nonprofit, or forprofit organizations) with present or absent type of relationships among them, referred to as “ties” (contracts, information, etc.) are being displayed. When Jack is almost finished with his drawing he raises his voice. In other words, the challenge for us is two-fold:

First, we have to devise a solution how we as an organization handle the non-routine, consequential events that cannot be anticipated and planned for in advanced; that is how do we organize our core business of crisis incident response?

Second, when not in crisis how do we set goals, design our hierarchy, and set rules to organize our emergency rescue zone as a whole?

Jack is finished explaining his idea. Do you understand where I am heading, Eric? Eric nods politely and feels where this conversation is heading. Jack smiles and says: by now you understand what I want you to do, right?

MATERIAL

Figure 1: overview of Antwerp Fire Brigade as an Emergency Rescue Zone

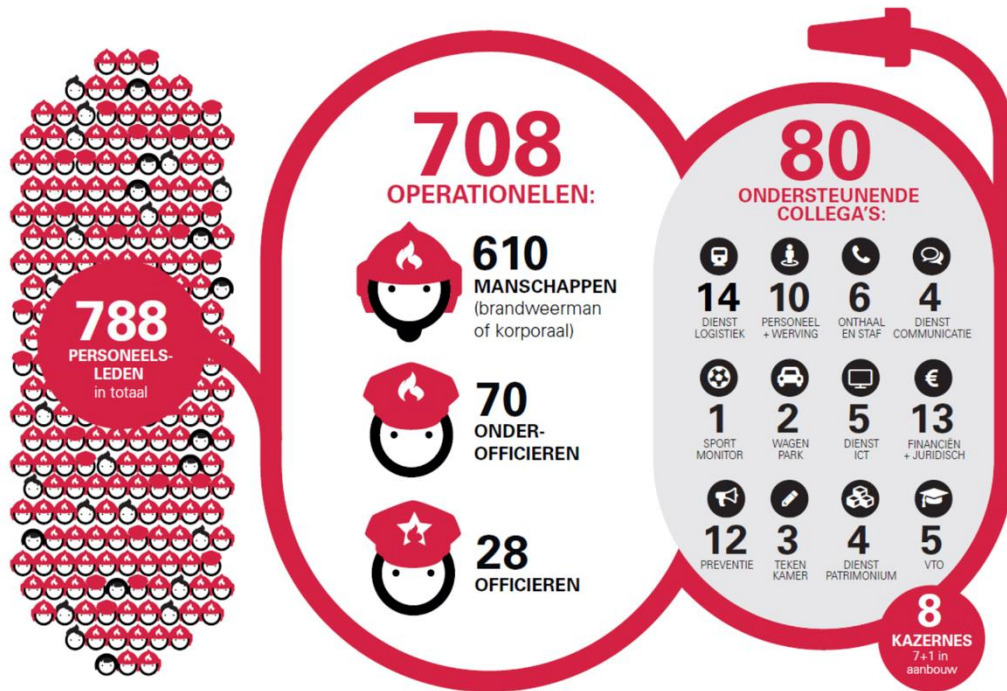
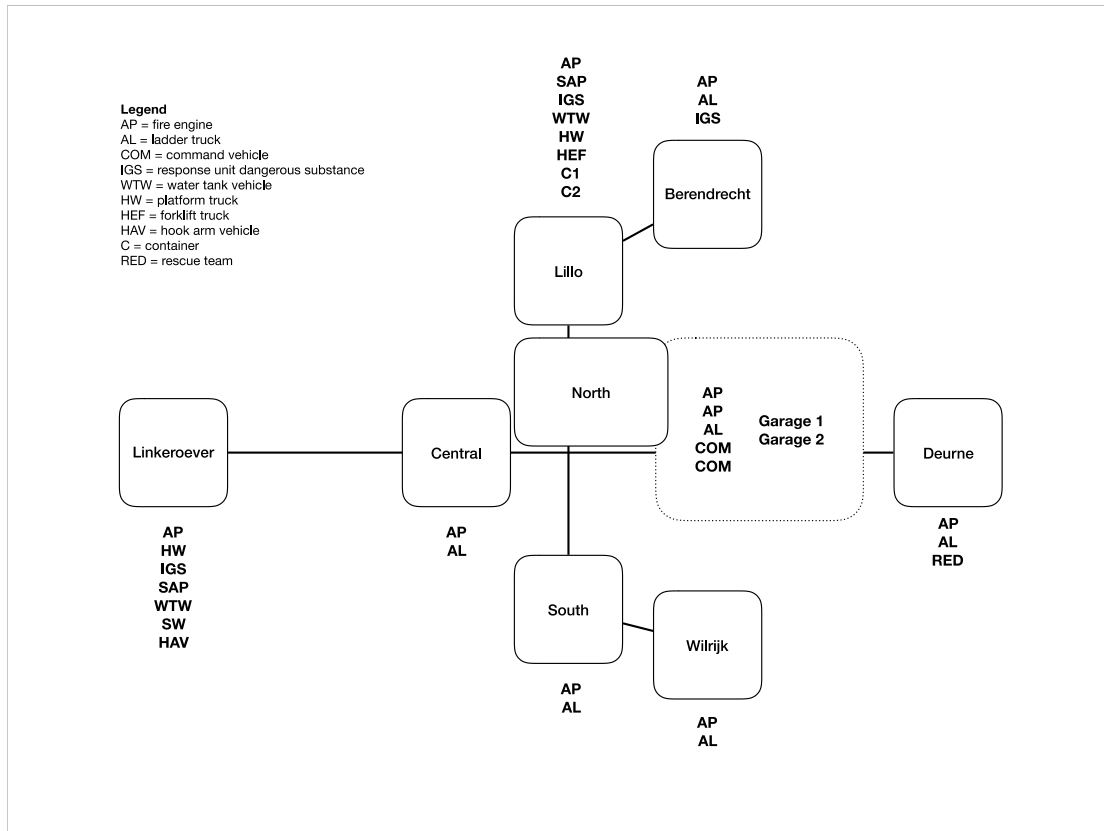


Table 1: standard types of fire fighting vehicles. LTC is a fire engine, RTC is a ladder vehicle, BLC is a technical support vehicle, BRC is a command vehicle.

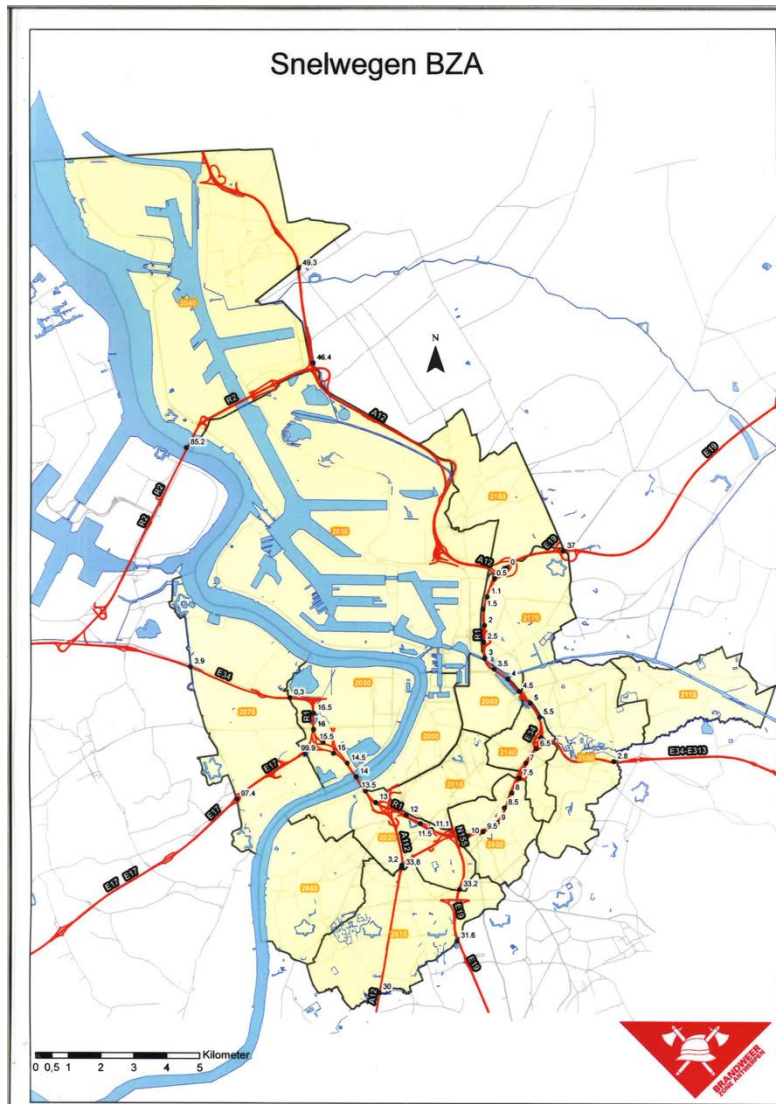


Figure 2: overview of vehicle types and fire stations for RAR



In the emergency rescue zone the command vehicle always dispatches from fire station North and the technical support vehicles either dispatch from fire station North or South.

Figure 3: Highways crossing Emergency Rescue Zone Antwerpen - 2016



LEGEND: bordering Emergency Rescue Zones (BE) and safety region (NL)

- Safety region Zeeland / Midden- en West Brabant (NL) borders on the north (harbor)
- Emergency Rescue Zone Rand borders on the north, east, and south
- Emergency Rescue Zone Waasland borders on the west
- Emergency Rescue Zone Rivierenland borders on the south

Figure 4: density of population - 2016

Hulpverleningszone Antwerpen 1: Bevolkingsdichtheid

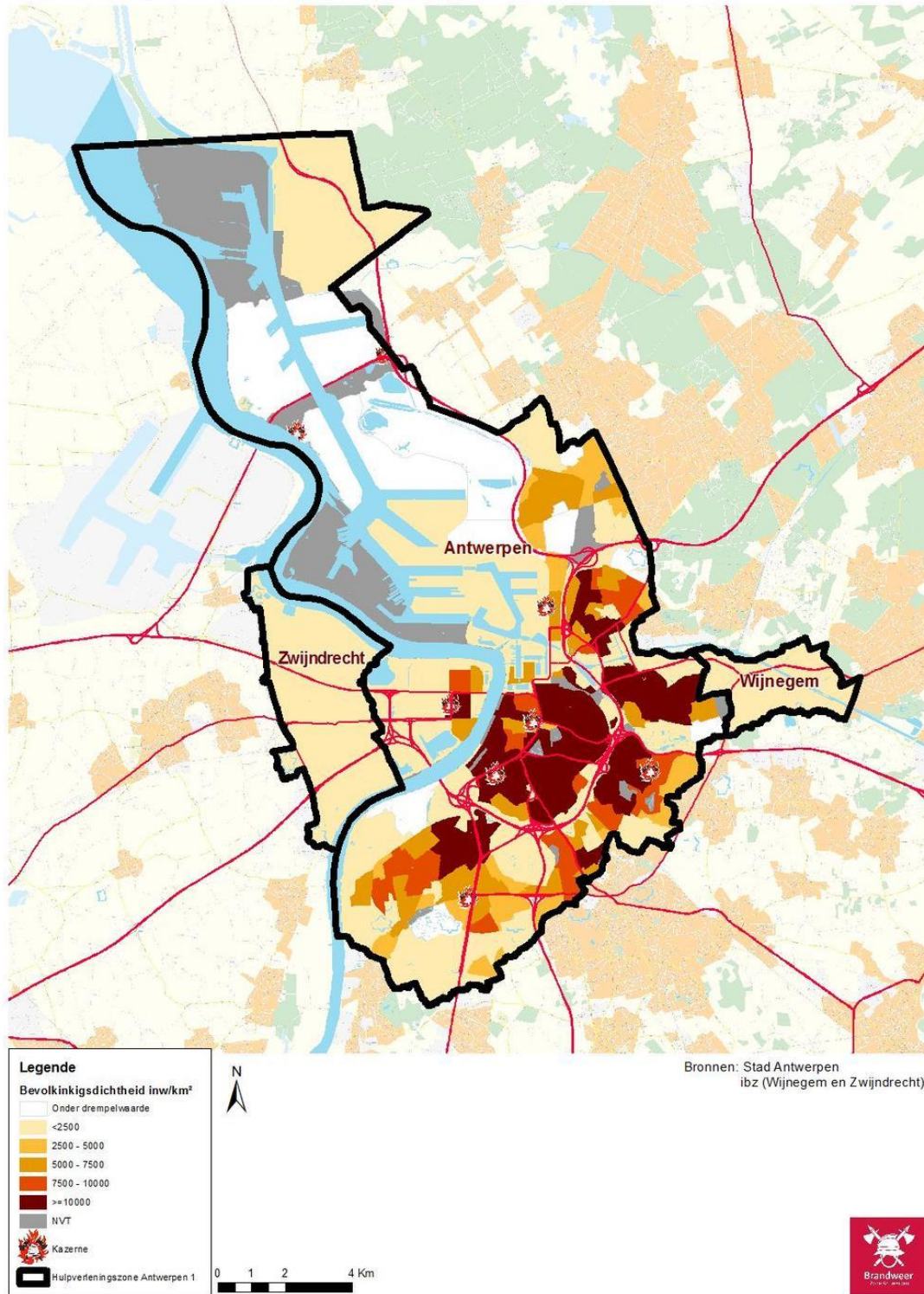


Figure 5: concentration and density of fires in building - 2016

