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# Barriers towards Resilient Performance among Public Critical Infrastructure Organizations: The Refugee Influx Case of 2015 in Sweden

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**Abstract:** During the autumn of 2015, Europe experienced a sharp increase in refugee influx, and many refugees arrived in the European Øresund Region. Refugees travelled through Denmark and over the Øresund Bridge, arriving in the third largest city in Sweden, Malmö. Private, public and voluntary organizations in Malmö had to change the way they worked to meet the new entry demands. Flexible adaptations to changing circumstances can be described as resilient performance and are supported or hindered by societal and organizational drivers and barriers. Qualitative interview data from Swedish organizations managing the refugee reception in Malmö were analyzed through the theoretical lens of Resilience Engineering (RE). The analysis results showed that necessary adaptations were not supported by the managerial design of the responsible public organizations. The analysis also showed that preconditions created from societal steering hinders value responsiveness at the public management level, i.e., the public management level has barriers towards becoming familiar with the organization's value structures. Familiarity with the system value and goal structure is essential for an efficient prioritizing of conflicting goals, which is why it is suggested that this aspect be explicitly included in RE principles.

**Keywords:** resilience engineering; emergency response; critical infrastructure resilience; vital societal functions; organizational resilience; public steering; public management; refugee reception; refugee crisis



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## 1. Introduction

Critical Infrastructure (CI) is, according to the European Union (EU), defined as follows: "... an asset, system or part thereof located in Member States which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a Member State as a result of the failure to maintain those functions" [1]. For securing the functionality of CI and vital societal functions, the focus has shifted from CI protection to CI resilience (CIR) [2], since full protection no longer is seen as possible when it comes to preparing for unexpected events [3]. However, the many different definitions of resilience [4] have transferred to the field of CI, where resilience could refer to a range of system properties [5]. Resilience is defined as flexible adaptation in the context of this work, and is used as the framework for an examination of the challenges experienced by organizations representing CI vital societal functions when managing the consequences of "the European refugee crisis of 2015". The goal is to form a deeper understanding of the relationship between the preconditions for Swedish public CI organizations representing vital societal functions and their ability to adapt.

Due to the wars and conflicts in the near and middle east, Europe experienced a sudden, and large, increase of asylum-seeking refugees during 2015 and 2016, an event often referred to as "the European refugee crisis of 2015". Refugees entering the EU should seek asylum in the first EU country they reach, but because of heavy pressure on countries

located at the EU border, refugees were often allowed to continue travelling through Europe. The EU countries had different attitudes towards refugees, and while some countries guarded their borders, other countries welcomed refugees, resulting in a higher pressure on their migration systems. Sweden was the country granting the most asylums per capita in the EU.

In Sweden, the refugee influx increased significantly during a couple of days at the beginning of September 2015. During the following months, the amount of asylum seekers doubled compared to the month before, until the Swedish government-initiated border controls in November of the same year. Many refugees travelled from Copenhagen, Denmark via the Øresund bridge, arriving in Malmö, the third largest city in Sweden. The fast increase of asylum seekers was unexpected compared to the prognosis and budgeting of the organizations managing the official migration system. The Swedish Migration Agency and Malmö municipality, which have a divided responsibility for housing and registration of arriving adults, families, and unaccompanied children, had to open several new accommodation sites and recruit a lot of new personnel. Despite this, autonomous non-governmental organizations (NGOs) in Malmö still housed up to 500 additional refugees every night, which testifies to the severity of the situation. All involved organizations were, to varying extents, forced to change the way they worked to meet the new demands. These flexible adaptations to changing circumstances could be described as resilient performance. Resilience Engineering (RE) is a theory within systems-oriented safety research that focuses on how and why organizations can uphold functionality while managing stressful events. A qualitative analysis of flexible adaptability, viewed through the theoretical lens of RE, gives the opportunity to interpret and bring new light to the management of surprising events and crises by highlighting factors that allow and hinder organizations to uphold their functionality despite changes in their operational context.

## 2. Theoretical Framework—Resilience as Adaptive Capacity

Resilience is a popular concept. Within different research fields this concept has come to represent diverse system properties [6], although it is rare to see consensus across fields [4]. Within each field and definition, the understanding and underlying models also vary. Woods [7] lists common concepts of resilience as bounce back to system equilibrium, robustness, and resistance towards falling outside system boundaries. These concepts all have reductionist and naturalist elements, assuming socio-technical systems could be decomposed, the future foreseen, and future events controlled. RE is found in this landscape, based on principles from complexity theory and advocating for a fourth systemic interpretation of resilience as sustained adaptability [7]. One of the latest definitions of RE is a system “adjusting its functioning prior to, during, or following changes and disturbances, and thereby sustaining required operations under both expected and unexpected conditions” [8] (p. 36). The RE definition of resilience assumes that surprises will occur, and every organization eventually must face events that fall outside of what has been foreseen.

RE is an organizational perspective on resilience formed in the systems-oriented safety research community, from a functional and structural critique of how traditional safety is modelled and practiced. From the 1980s and forward, different understandings and explanations of risks and safety started to divide the safety field into sub-communities. Based on such contributions as Cognitive Systems Engineering [9], Perrow’s normal accident theory [10] and later, Hutchin [11] advocating for a distributed contextualized view of cognition, the systems approach to safety was born. Important contributions to modelling system interactions and properties were, for example, Rasmussen’s system dynamic model [12], Leveson’s STAMP-model [13] and Hollnagel and Wood’s Joint Cognitive Systems Engineering concept [14]. Connected to RE specifically, definitions and concepts, and modelling and practical applications, are active research areas [15]. During recent years, the focus on implementing RE principles in practical safety work has increased [16,17], while the reflections and further development of RE concepts continue [18].

When studying crisis in organizations, the focus often becomes the relationship between pre-existing organizational conditions, the crisis probability and consequences [19], and organizational vulnerabilities that affect, amplify and manifest in crisis [19,20]. Because of the complex nature of socio-technical systems, the behavior of an organization is not only determined by its parts, but also interactions and couplings within the system [10]. In a taxonomy for interactions within socio-technical systems, Saurin and Patriarca [21] suggest that interactions take place between individual humans, human teams, technology hardware, software, natural agents and organizational agents, where human and organizational agents contribute to high variability. Van Laere [20], who has studied municipalities in crisis, widens the understanding of organizational agents to include concepts such as sense making, coordination, knowledge, values, beliefs and expectations. Thus, the organizational preconditions affecting the crisis and crisis response could be related to a wide range of factors. Van Laere concludes that a crisis gives a unique opportunity to observe these vulnerable organizational preconditions. This is not least shown in results from the safety field’s studying of organizations in stressful situations, which has contributed with insights regarding both safety work specifically and everyday organizational design in general.

The fact that systems safety research involves the overall organizational design and everyday work conditions is mirrored in RE principles. The RE principles framework used in the context of this work is presented in Table 1. The principles are a merge of RE principles found in RE literature, and the work performed in the EU project work of which the refugee crisis data were collected.

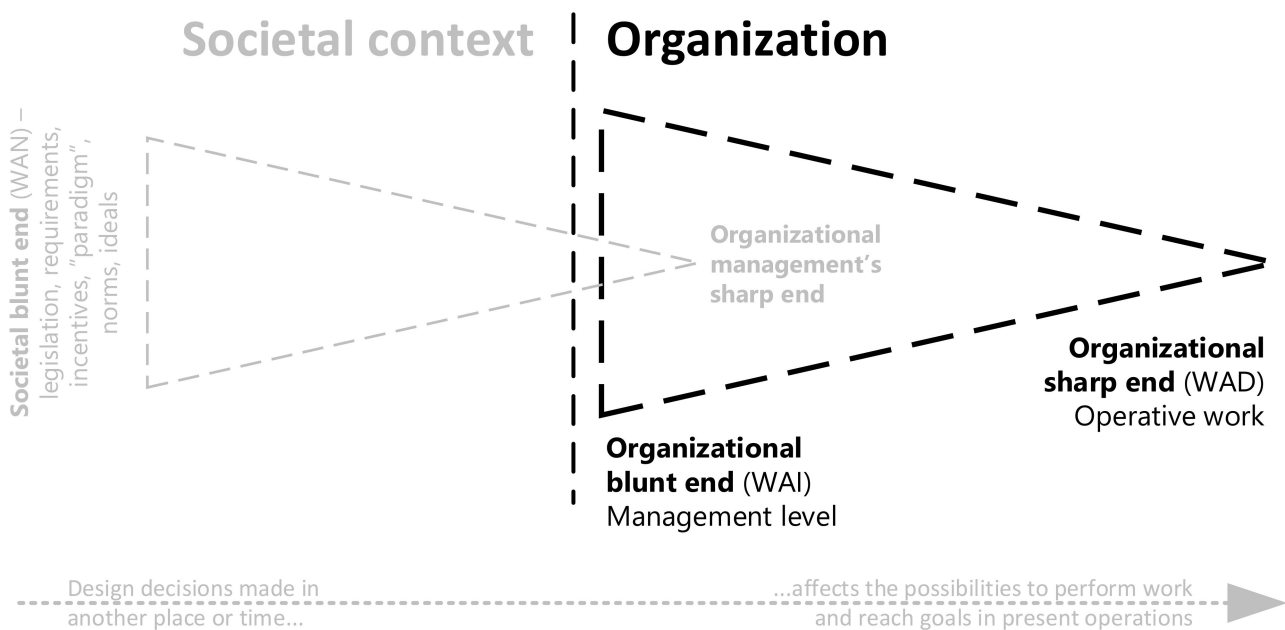
**Table 1.** The RE principles framework used is a merge of RE principles frameworks found in literature.

| RE Principle Theoretical Framework | Included RE Principles   |
|------------------------------------|--|
| Complexity as a prerequisite       | Complex systems view [22]<br>Not predicting the future based on scenarios from the past [22]<br>Variability and uncertainty is inherent in complex work [23]<br>Increasing organizational flexibility [24]   |
| Systems perspective                | Need for proactivity [22]<br>A systems view is necessary to understand and manage complex work [23]<br>Focus on what we want: to create safety [23]<br>An expanded system awareness directed towards, for example, goal conflicts and trade-offs [24]<br>A systems perspective [25,26] |
| The human contribution             | Human being as success factor [22]<br>Expert operators are sources of reliability [23]<br>Humans as an adaptive success factor [25,26]   |
| Understanding real work            | It is necessary to understand “normal work” [23]<br>Learning from both incidents and normal work and reducing the gap between management’s image of work and real operative work challenges [24]<br>Recognizing the difference between work-as-imagined and work-as-done [25,26]       |

The first RE principle, complexity as a prerequisite, expands the traditional focus of surprise and variability avoidance to building an organizational ability to manage radically uncertain events. The second RE principle, a systems perspective, recognizes system jointness, interactions and couplings, which is an alternative to today’s focus on system parts and division. The third RE principle, the human contribution, promotes and allows professional knowledge and creativity, compared to the traditional approach of implementing control measures. The fourth RE principle, understanding normal work, leads to use-centered design practices and incentives to show curiosity of unforeseen effects of design decisions, instead of assuming only intended effects of top-down implementations.

As seen in RE principles frameworks, recognizing normal work and the gap between work-as-imagined (WAI) and work-as-done (WAD) [27,28] is an essential ingredient in

systems-oriented safety theories such as RE. The concept originally stems from the activity analysis perspective of work [29], and is present in the fields of Ergonomics and Human Factors. WAI represents biased, often simplified and linearized assumptions about how work is carried out, and WAD represents actual complex work challenges and needs [27]. Even if the WAI bias is found among both workers and management, the organizational consequences of the dynamic between WAI and WAD could be connected to the model of organizational sharp and blunt end [30], and in Figure 1 a schematic illustration is found. The organization’s operative work is performed at the sharp end, while most organizational design decisions are made at the blunt end, i.e., the management level. Blunt end design decisions could enable or constrain sharp end work, and if the blunt end has a biased WAI perspective, the risk for constrains increases. One aspect which could be affected is the organizational formalization of work, e.g., policies, rules, procedures, and protocols. This formalized dimension of work can be described as work-as-prescribed (WAP) [31]. Management representatives also perform work in their relative sharp end, affected by the societal blunt end. Societal blunt end decision-makers also imagine how work is carried out and is affected by collective ideas and norms around how organizing is done. The societal blunt end mainly makes decisions regarding work-as-normative (WAN) [32] aspects such as steering, legislation, and requirements, which later affect the subordinated organizations. It is not uncommon to find tension or gaps between the WAN, WAI, WAP and WAD dimensions of work.



**Figure 1.** A schematic illustration of the relationship between organizational operative sharp end work and its corresponding blunt end, and organizational management’s relative sharp end operations, with preconditions created in the corresponding societal blunt end.

The RE principles, or lack thereof, affect the focus of organizational design, decision-making, and crisis preparedness and management. The principle of complexity is a foundation of RE and an alternative to the traditional mechanical linear system view suggested by Newtonian physics. Complexity theory claims that emergence is inherent in all organizational phenomena [7,10,33–35], which creates incentives to prepare the system to be able to reach its goals even in unforeseen radically uncertain events. Operating in radical uncertainty requires flexibility [36–44] and professionals that are able, and allowed, to use experience and professional knowledge in creative and novel ways to change processes on the go when circumstances change [39,45–47]. Thus, according to RE, pre-defined work descriptions, or the formalized WAP dimension of work, could never completely guide

decision-making [42]. A mandatory inflexible work procedure could instead become a risk [48]. Crisis research has also shown that pre-defined crisis plans seldom guide actions in stressful situations [44,49–51]. A design implication from a RE standpoint is therefore finding a balance between pre-defined planning and event-driven operations.

RE recognizes that all complex work, but stressful or crisis situations in particular, are characterized by goal conflicts [52,53], which is connected to the RE principle of expanding system awareness to include trade-offs. Work could be performed with different levels of detail and/or abstraction. When resources are strained and the circumstances do not allow ordinary work processes, the systemic safety models connected to RE often emphasize mobility within the system goal hierarchy [54]. Familiarity with the system goals and values are key factors for knowing how and when to change work, i.e., adapt [54].

### 3. Methodology

The empirical data were originally collected as part of a larger EU Horizon 2020 project with the purpose of creating indicators for CIR. One finding from the EU project was that the involved public CI organizations seemed to experience more challenges when it came to adapting, i.e., manifesting resilient performance [25]. For this article, empirical data from Swedish respondents were re-analyzed for gaining deeper insights regarding this specific finding. The methodology section therefore presents two research settings: (1) the research design of the original study where the refugee crisis case was chosen and empirical data collected, and (2) the qualitative data re-analysis that this article is based upon.

The European refugee crisis of 2015 in the Øresund region was originally studied within an organizational resilience work package, with the research design of a qualitative single case study [55]. The European refugee crisis in the Øresund region was chosen as a case study for two reasons; (1) the Øresund region was a “living laboratory” in the project—a geographical place where the project could conduct studies and co-create research results with CI operators, and the Øresund bridge was a big travel route for refugees in the then ongoing refugee crisis, and (2) the refugee crisis was a powerful case for examining organizational CIR because of the large number of participating organizations.

Yin’s case study method [55] creates the opportunity to generalize theories from unique and powerful events that fall outside statistical viability, such as an ongoing crisis. By examining the visible aspects of the unique event, it is possible to gain more insight into how underlying societal and organizational design could be developed [56]. The case study method was especially suitable since the boundaries of the refugee reception and the societal context were indistinct [55], and the incubation time of the event [57] was part of the societal context. Each participating organization functioned as embedded “units of analysis” within the case. In the case study methodology, so called “units of analysis” are bounded entities, but as the methodology postulates, these entities sometimes have blurry boundaries towards their context and each other [55].

#### 3.1. Respondent Selection

Selection of possible respondent organizations was made by following travel routes for refugees arriving in the Øresund region and listing organizations with which the refugees interacted. The following organizations in the Øresund region were interviewed: DSB Trains (Danish national railway operator), the Danish police force, the Øresund bridge consortium (Danish and Swedish sides), the Swedish Migration Agency, Malmö Municipality, the Swedish Civil Contingencies Agency, the Swedish Armed Forces, Jernhusen (operator of Malmö central station), the Red Cross (Danish and Swedish) and Kontrapunkt (a Swedish autonomous NGO). The focus in this article was the Swedish respondents, and they are listed in Table 2 below.

**Table 2.** The interviewed Swedish organizations and their responsibility in the refugee case.

| Interviewed Organization               | Responsibility Connected to the Event  |
|--|--|
| The Swedish Migration Agency           | Swedish governmental agency responsible for the asylum process. In the acute phase responsible for housing and registration of adults and families.  |
| Malmö municipality                     | A Swedish municipality, which has an overall responsibility for municipal services in the geographical area. In the acute phase responsible for housing and registration of unaccompanied children.  |
| The Swedish Civil Contingencies Agency | A Swedish governmental agency with the general responsibility of helping the society to prepare for crisis. In this event they supported the Migration Agency with crisis management knowledge.  |
| The Swedish Armed Forces               | A governmental agency, which supported the Migration Agency’s crisis staff.  |
| The Øresund Bridge Consortium          | A Danish-Swedish private infrastructure operator responsible for maintenance, traffic control of road traffic and the toll stations of the bridge connection. Most refugees arrived in Malmö by train, and some by car, via the bridge.                                |
| Jernhusen                              | A governmentally owned but private infrastructure operator and manager of the train stations in Sweden. Most refugees arrived at Malmö central station, where Jernhusen made some of the first official observations, and later helped with the official arrangements. |
| The Swedish Red Cross                  | Established international aid agency. In Malmö they were represented in the official arrival hub at Posthusplatsen square outside Malmö central station. Some volunteers also helped on the accommodations.  |
| Kontrapunkt                            | A local cultural association in Malmö. In the event they changed their focus and became an autonomous arrival center, housing and feeding several hundreds of refugees each night in their premises.   |

During 2016, the involved organizations were under additional pressure, which affected the possibility to get interview access. Besides ongoing public review processes, media and researchers asked for time and engagement. This caused the involved organizations to restrict external access, which in turn made recruitment of respondents a challenge. Despite this, all contacted organizations resulted in interviews, except for two NGOs and one public agency. Recruitment was mainly made by official communication channels within each organization, with two exceptions where better hierarchical coverage in the organization was necessary. In these cases, recruitment was complemented with personal network contacts. From an RE perspective, managerial and operational layers of an organization may have different understandings of operative success factors. Therefore, it was important to recruit respondents from different positions in the organizational hierarchy.

The analysis in this article was made on data from Swedish respondents and was collected in Sweden by the author and in one case by a colleague to the author. The data management adhered to the Swedish Research Counsel’s ethical guidelines. The consenting respondents were informed of the aim and purpose, and that participation was voluntary. Since no personally sensitive data were managed, the project did not fall under the regulations of a formal ethical review application. The ethical guidelines concern protecting the anonymity of human beings, which is why participation is only reported on an organizational level.

### 3.2. Data Collection

Data collection was primarily made through interviews, with the purpose of gaining a better understanding of the refugee crisis management from the perspective of different roles within different organizations. Since interviews are characterized by social interaction and become a co-creation of a possible representation of reality, a reflexive approach was taken [58]. The interviews were conducted during 2016, between 9 to 12 months after the peak of the event. In total, 28 semi-structured interviews were conducted. The interviews were digitally recorded, later transcribed, and were between 1 and 2 h each.

The concept of resilience was not explicitly discussed in respondent interactions and interviews, because of the risk of capturing the respondent's interpretation of resilience rather than the actual event descriptions and challenges thereof. Instead, RE principles were used as a theoretical lens when forming the interview guide. The respondents were asked questions regarding the event development, organizational changes, collaboration, decision-making, information flows, to what extent actions were controlled and/or guided by pre-defined procedures, changes in resource allocation, how the organization interpreted, managed, and responded to risks and how the organization manifested learning after the event; further, whether something changed and, most importantly, how and why.

A document study was conducted including two official event reviews: The National Delegation for Validation [59] and The Swedish National Audit Office [60]. The documents contributed to a richer understanding of the event, and, for example, the legislative ingredient in the exercise of authority.

### 3.3. Data Analysis

The analysis was characterized by abduction, where focus iteratively shifted between theory and empirical data [61]. For forming the theoretical framework of RE principles, a literature study on RE was made. For framing the crisis context, theory from crisis management was included.

The qualitative data analysis process consisted of data sorting, reducing, and relating; arguing and making claims [62]. The analytical process of qualitative data analysis is not clearly divided in practice, the sorting and reducing is, for example, part of the theoretical relating, since data is given labels and clustered into themes. Therefore, the qualitative data presentation is always part of the analyst's process of relating data to something.

In the beginning of the qualitative data analysis process, the transcribed Swedish empirical material was read-through several times. After getting familiar with the data, freer inductive read-throughs resulted in both descriptive and analytical coding. The coding is a way of reducing data, but also relating or "tagging" data to an idea or theme [63]. The descriptive codes captured, for example, the event development, the event timeline, the different organizations and explicit respondent statements. The analytical codes captured the essence of RE principles, for example, focus on organizational design, management decision-making, and the relationship between WAI and WAD. Read-throughs and coding were made iteratively until the work did not result in more codes. The coding technique was mainly "pattern coding", according to Miles and Huberman [64] (p. 69). The themes later functioned as baselines of more targeted read-throughs where the themes were reviewed, refined and sometimes merged or deselected. The targeted read-throughs also resulted in citations and syntheses of event aspects. The codes were in turn clustered into themes, similar to a thematic analysis [65]. The analysis focus became both explicit interview quotes on the topic, and underlying assumptions, clashes, paradoxes and gaps between empirical data. For explaining the emerging results, theories from system-oriented safety research and RE were applied and findings discussed.

## 4. The Increased Refugee Influx in Sweden 2015—Event Description, Organization Involvement and Organizational Preconditions

This section is a synthesis of the empirical data and the refugee crisis event development in Malmö. The presentation is built upon organizational design implications connected to RE principles. The section presents differences in early response speed related to organizational attitudes towards the need to adapt, the responsible public organization's managerial design related to their possibility to adapt, relationships between the blunt and sharp end, and the dynamic between WAI and WAD in different types of organizations.

### 4.1. Early Response at Malmö Central Station

The consequences of the refugee crisis in Malmö became acute in the beginning of September 2015, and the private, NGO and public organizations had diverse response speed, which could be connected to the RE principles of (1) complexity as a prerequisite,

and (2) systems perspective. If variability and the need of managing surprises is expected, the organization often has better actual possibilities to adapt, which in turn could speed up response time.

The security guards of Jernhusen, who owns and manages the Malmö central station area, made some of the first external official observations of the increased number of refugees arriving in Malmö. Jernhusen was described by other respondents as a spider in the web during the autumn, not least for their persistent effort of getting the attention of other organizations in the early response phase. A Jernhusen respondent said:

*“according to [the security guards] there started to arrive a massive amount of people with Syrian origin. We had heard on the news that people travelled by foot through Europe and then Denmark, but at the time we did not know if they wanted to seek asylum in Denmark, but it turned out that most of them had Sweden as the final destination, so it quickly became quite hectic. On the first day we had several hundreds who came to Malmö station and did not know where to go. No authority was represented because everyone was taken by surprise”*

A Jernhusen representative said that when it came to reacting, the voluntary organizations were much more dynamic than the public organizations. Volunteers arrived at the station in a matter of hours, which contributed further to Jernhusen’s engagement:

*“it was good that [the NGOs] came to help at the station, but it also fueled the chaos a bit, because there were a lot of civilians who probably had a good agenda, but who sometimes did things the wrong way. There were no leadership, instead 100 individualists who pulled in different directions [ . . . ], they put up tables and handwritten signs in the middle of the pedestrian flow. We had to control that in some way, and that’s how it all started”*

Jernhusen’s security manager had to fight to get the attention of both responsible public organizations, i.e., The Migration Agency and Malmö municipality. The Migration Agency was asked by Jernhusen to contribute to the developing situation at the station but instead referred to their standard procedures, e.g., that immigrants should simply report to the local office of the Migration Agency, even though they did not know the language, had no money and had nobody to guide them there. The Migration Agency explained that they were not allowed to exercise their authority anywhere but in their own premises:

*“our governmental authority mission is not to find people and ask them if they want to seek asylum in Sweden. If law and order are at risk, it becomes the Police’s responsibility. This was a big question at the beginning of the autumn where people didn’t know our mission, which led to false rumors spreading at Malmö central station”*

The Migration Agency also mentioned resource problems. They only had resources allocated for their everyday operations and had to make emergency recruitments of assistants.

#### 4.2. Public Responsible Organizations’ Response

The societal CI organizations, the Migration Agency and Malmö municipality, have a divided responsibility of housing and registration of asylum-seeking refugees, so their response was of high importance. Many respondents thought that these responsible public organizations did not act as effective as needed, which could be connected to all four RE principles from Table 1 in the theory section.

The responsible public organizations noticed a change in the number of refugees during spring 2015, where they had to start making beds in conference rooms and living rooms. In September the need for housing and registration became acute. Additional emergency accommodations had to open, and the existing accommodations had to house more people. In normal operations, opening new accommodations takes a long time. First, the procurement department has a one-year-long queue, then the necessary building permits and the actual construction takes additional time. During the autumn of 2015, in the words of a respondent, *“they speeded up the municipal normally slow process very, very much, extremely much”*. Still, there was a limit to the pace of expediting for some permits. Procurement of goods by the



normal process would have taken weeks, and the accommodation personnel had to go to IKEA themselves; *“we had three hours to open an accommodation for 100 people, because they were already sitting at the Migration Agency waiting. It’s like, you solved the situations as they emerged”*. The respondent said they kept their spirits up and were happy for all they achieved. A respondent from a Malmö municipality accommodation described creative solutions for managing the increased number of unaccompanied children. They abandoned the regular time-consuming registration forms and replaced them with whiteboards with easy access to all basic data and fulfilled privacy requirements by having locks on the whiteboard doors. According to interviews, they sorted out the most important parts of their work and quote *“just solved the situation”*. A respondent from Malmö municipality said:

*“I don’t think anyone could grasp how severe it really was. You could get a call at night saying that another accommodation has 130 kids in line, they have no place for them and neither did we. Then we had to have different strategies, ok, should social services arrange a bus for the time being, do we have something for them to eat, can they stay warm, until we found a place for them to stay. But it went well, I still think. Somehow, in some sick way, we succeeded. But it was also work around the clock”*

Respondents from the Migration Agency accommodation sites also testified to the difficult working conditions. They had hundreds of new asylum applicants every day, which, according to an accommodation employee, *“had to sleep on top of each other on the floor”*. The Migration Agency respondents highlighted that they solved emerging challenges and that the work was both satisfying and fun.

Interviews indicate that the management level of the Migration Agency experienced more challenges when working in operative crisis mode, not feeling fully at ease until getting hands-on guidance and support from the Swedish Armed Forces. A respondent not employed by, but connected to, the Migration Agency touched upon the WAP dimension of the Agency and said that *“breaking rules was a big challenge for them”* and that their necessary operative work adaptations to a large extent were said to be made in silence. The respondent continued:

*“I think it would have been better if they had said ‘Ok, now we have this situation, we, therefore, have to break this rule, but we try to meet the intention of the rule by doing like this instead’. Then everyone would have been aware of the need to change and the compensating measures”*

Instead, the Migration Agency management’s approach was described as administrative by other respondents. The respondent perceived the Migration Agency as not used to and not allowed to work in alternative ways, and they maintained the idea that a certain task always is performed in a certain way and therefore takes a certain amount of time. The public management respondents, and public strategic respondents, who were far away from the work at the accommodation sites, also mentioned the importance of *“having and following routines”*, i.e., pre-defined agreed upon work procedures and protocols, a pattern not evident among any other group of respondents. On the contrary, a private infrastructure operator respondent said that *“the situation was completely unknown, so no pre-defined routine could guide that”*. While public strategic or management roles highlighted the importance of following standard operating procedures, they also gave examples of adaptations and reflected upon the impossibility of following normal procedures. A respondent at the Migration Agency said:

*“we had quite a lot of [routines] and we could scale them up. But then we had to do simplified procedures to handle the large amount. [ . . . ] We had to do new routines and that routine could be changed from one day to another because we had to make it as easy as possible. So yes, we followed our routines but they had to be changed and I think that if we had not had the routines it would have been even more difficult to handle a situation like this. [ . . . ] Then, of course, we failed to do some things when it went at such a high speed for such a long time. And that is why it is important to have these routines in place so you know a little about where you are”*

In the empirical data the word routine was generally used with different meanings, both between respondents and within a data set from one specific respondent. A routine could, for example, represent both a detailed work and task procedure made before the refugee influx increased, and a new agreed upon way of handling aspects of the crisis situation, like the large amount of media proposals. In the official event review [59] routines also seem to mean different things and are used together with such words as clear, ordinary, well-defined or established, but without further definition. In the two review reports, conclusions on the functionality of an organization's routines, and connections between an organization's routines and their success rate, are made, but without additional presentation of empirical or observational data supporting the conclusions.

#### 4.3. Organizational Preconditions and Relationships

The empirical data attest to different organizational preconditions among the private, public and NGO organizations, which could affect the possibility to adapt. In this section empirical material related to the RE principles of (1) complexity—allowing and promoting flexibility, and (2) understanding normal work—recognizing the gap between WAI and WAD are presented. The data is also connected to the RE principle of the positive human contribution, since this often allows more operative autonomy in sharp end operations.

The two private infrastructure operators (Jernhusen and the Øresund Bridge Consortium) both mentioned that organizational sharp end workers were allowed to make autonomous decisions within the bigger organizational goals and purpose. A Jernhusen respondent said:

*“in other organizations, they must present for and ask the management level for permission [ . . . ], but here it does not work that way, if I think something is reasonable I can just make a decision and say “yes, let's do that”, and tell my management after the decision is made, which I think makes us more dynamic. But I need to be clear—we are not a public authority, we are owned by the government, but we are not an authority”*

Jernhusen also explained that the back office was used to make fast decisions according to guard reports and that all roles had some freedom. The situations that emerged on the station floor often required a fast, autonomous reaction. The empirical data from the Øresund Bridge Consortium employees indicates that they were also used to sudden, unexpected events:

*“this was nothing that stood out for us, a storm could come tomorrow or a severe accident next week that takes more effort than this. [ . . . ] When it comes to technical supervision and traffic control, stuff happens. It's their job”*

The two interviewed NGOs also attested to sharp end needs traditionally being used as a basis for management decision-making and that the understanding of the situation was largely shared between organizational levels. The NGOs reacted fast, and a Red Cross respondent said that it took them 48 h to get the entire organization to understand, and then organize the official response. Kontrapunkt was at the time of the event a local cultural association but started to work solely with the refugees. They had large premises, experience in housing, making food for a lot of people and leading events and activities. They had an infrastructure in place and adjusted their focus from cultural events and creativity workshops to an arrival center for refugees. At the peak they said they had about 300 people a night sleeping in their premises and 200 sleeping in the Turkish mosque, with whom they collaborated. Kontrapunkt was driven by humanitarian causes and made decision according to a consensus democracy model.

When the NGO and private infrastructure organizations had a mostly shared view between hierarchical levels, the interview results pointed towards a tension between public management level and public sharp end level. The interviews show that even though the Migration Agency management experienced ease when getting support from the Swedish Armed Forces with the crisis staffing, this ease was not carried through to the sharp end employees in their operative reality. From the sharp end perspective, a Migration

Agency respondent described getting flooded by information, information often changing and information that was sometimes impossible to find time to read and keep track of. A respondent expressed concern for missing important information, but also that they were busy performing work and decided to not overthink it; *“otherwise we wouldn’t have survived”*. A Malmö municipality respondent seemed to have similar experiences:

*“we experienced that [ . . . ] there was simply one process at central crisis management and another process here [ . . . ] and they didn’t match, it could have been a closer collaboration. We probably sometimes experienced that the representatives [from the central crisis management team] did not have full insight in our work, so it was difficult perhaps for them to make helpful decisions [ . . . ], it was never a real connection to our reality”*

Respondents at the accommodation sites of both Malmö municipality and the Migration Agency said that no or few management representatives visited to form their own view of the situation, which they thought made collaboration harder. At Malmö municipality a sharp end respondent said: *“I remember visiting the department office, it was like entering another world. I came from chaos, here everything was all calm”*. The public management level seemed to be aware of the gap between hierarchical levels and a public management respondent said: *“if you had asked many of our employees at the accommodations, it would sometimes have been a rather bitter retelling of the management’s actions”*, and the strategic and management level seemed to view the problem as an issue of communication. They thought that if they had explained their decisions better, the relationship would have been better. The sharp end personnel did not mention communication as a main cause, rather a lack of understanding of their reality and lack of practical support.

All interviewed public sector respondents referred to the exercise of authority in some way, and that being an official public authority means natural restrictions. One governmental agency management respondent said:

*“The parliament has decided something, and therefore we execute it. It is not about what we think or feel about an issue, we follow the laws that exist. We don’t invent our own laws here. We are given a set of rules and based on that, we make decisions”*

One respondent with a strategic role in Malmö municipality related the slowness of the crisis response to the municipal slowness in normal operations, created by the requirement to establish all decision-making at the political level. The respondent at the same time viewed the slowness as an honorable aspect of exercising authority in an orderly, legally secure manner. Even if the crisis resulted in an acute need for new recruitments, the ordinary high demands on new personnel were kept, and referred to as *“an inertia that we cannot tamper”*. Even though formalized employment requirements like these were preserved, the reality at the accommodations challenged the practical effect of the purpose of the formal recruitment process. An accommodation manager said that some nights newly recruited personnel had to be sent home. The professional assessment by the manager was that they were so unfit that the manager would rather work alone with several hundreds of children than let the new personnel stay.

## 5. Analysis and Discussion

Compared to private and NGO respondents, the public personnel in general experienced more challenges when adapting. Specifically, the public management level had trouble knowing what to do and where to direct their focus. In this section these findings are discussed according to two overarching themes:

- Public organizational design as a barrier to resilient performance
- Public steering as a barrier to value responsiveness

### 5.1. Public Organizational Design as Barrier towards Resilient Performance

Woods [66] says that experience shows that organizations are generally slow to adapt, but the empirical material from the refugee reception case shows that private CI operators

and the NGOs manifested fast adaptive behavior, or according to Woods, adapted in a rate corresponding to the threat or changed circumstances [ibid.]. The public organizations showed differences between hierarchical levels or roles when it came to adapting. The organizational design of the public organizations did not support adaptations, and interviews indicate bigger gaps between blunt end WAI and sharp end WAD within the public organizations. The operative sharp end personnel experienced needs for crisis adaptations, while their management did not have full insight in their operative reality and did not fully recognize the need to make work changes.

Whether adaptations are considered good or bad is a matter of perspective [67], and different respondents had diverse meanings linked to adapting and to the actual adaptations made. From the perspective of the public management level, the necessary adaptations when facing crisis circumstances did not seem to be expected, desirable or allowed. First, the fact that the system moved outside its foreseeable boundaries seemed to be interpreted as a failure in itself. This could be connected to an underlying linear system model; public operations are to a large extent built upon predicted future events that could be managed with actions planned beforehand. The RE principles of complexity as a prerequisite and systems perspective introduce an alternative underlying system model where surprising variability is expected. Second, quality and goal fulfilment seem to a large extent to be allocated to the public organization's administrative WAP structure, protocols and procedures. In that light, the idea of letting personnel work autonomously and creatively in new ways could be seen as threatening. The RE principles instead view the human being as an adaptive success factor, excellent at managing unexpected events where pre-defined work procedures and protocols fail to guide actions.

RE principles create incentives to recognize the gap between WAI and WAD [28,68] and the other varieties of work such as WAN and WAP [31,32], to be curious of operative work perspectives, i.e., normal work, and to design the organization for facilitating those needs. Within the responsible public organizations, however, the stressful situation demanding adaptations made two systems visible: the operative WAD system managing the emerging situation at the accommodations, and the formalized administrative WAP system. In interviews with public management and public strategic respondents, contradictory messages show a split focus between the two systems. Respondents could, for example, reflect upon normal work routines being impossible to follow, and in contrast state that they followed ordinary work routines, or reflect upon rational reasons why accommodation personnel had to go to IKEA themselves for faster procurement of goods, but in contrast add that they should not have done that or been there. It seemed to be challenging for public management respondents to officially recognize executed, necessary, adaptations, and the split focus between the operative system and the administrative system indicates that they could have conflicting goals, probably making the goal prioritization even harder.

The statements about following ordinary WAP routines in a situation where most ordinary work routines theoretically and technically cannot guide actions [44,47,49,51,68,69] spark curiosity about the drivers behind these statements. The pattern of references to ordinary standard procedures was also present in the two official review reports [59,60]. In the review documents, referring to established work routines seems to cause the review process to take a sideways direction or halt, which indicates that there is a strong meaning allocated to the term "routines" in the Swedish public context. Claims of following routines, standard procedures and protocols could be connected to fulfilling the goal and demand of legal certainty, which is a fundamental value for Swedish public organizations, and legal certainty was used in the interviews as an argument for creating and securing organizational predictability and consistency. The goal of consistency is then counteracting the RE principles advocating for the need for flexibility. The pattern of referring to routines could also be affected by retrospective event investigations. It is common to encounter event investigation biases and assign or demand individual accountability for complex abstract causal patterns, which can consequently foster fear of deviation from standard work procedures [70].

The statements about having and following ordinary routines in turn function as a barrier towards learning from adaptive behavior, as those conclusions are hard to further operationalize in usable ways [71].

### 5.2. Public Steering Creates a Barrier towards Value Responsiveness

Recognizing goal conflicts and trade-offs is connected to the RE principle of systems perspective. In the refugee case, not all organizations seemed to have clear, stable and well-known overarching goals. The interviews indicate that organizations who had goals that were shared throughout organizational levels found it easier to look for new ways to fulfil their goals. Some examples are the voluntary organizations that are driven by humanitarian causes, looking for ways to fulfil basic human rights and needs, or the Øresund Bridge, whose main objective is to keep the flow of traffic over the bridge. The public organizations seemed to have more conflicting goals throughout organizational levels and different roles within the public organizations manifested different abilities to adapt.

Woods mentions “value responsiveness” [66] (p. 99) as an essential resilience ability when contrasting two event cases from 2012: Hurricane Sandy and the Knight Capital Collapse. Value responsiveness could be traced back to Rasmussen’s [54] systems safety model, which emphasizes that familiarity with the value structures of the system is essential for being able to prioritize the level of abstraction or detail at which a goal should be considered. A detailed everyday WAP protocol is only one way of meeting the overarching goal; it could always be met in other ways, preferably less time- and resource consuming ways if the situation is stressful. If familiarity with the value structure, or the goal hierarchy, is essential for being able to do these prioritizations, a slow or strained response could be connected to a corresponding non-familiarity with the system value structure. Findings show that while public personnel working close to the refugees managed to make adaptations in order to meet their goals, their public management experienced more struggles in knowing what to do and where to direct focus and efforts. The question becomes ‘Why did the public management level struggle to find core values to preserve and prioritize in the crisis?’.

When studying the public management’s context, it became clear that directives from the political level could often shift. When it comes to being adaptive, public management is probably used to constantly adapting in their everyday operations, but not autonomously according to a static overarching goal. The public management level does not get a chance to create a familiarity with the value structure and overarching goals, since their main operative goal is to manage changes coming from outside their organization. The yearly regulation letter could lead to changes in how legislation is interpreted. The Swedish government could, for example, regulate how many refugees Sweden should welcome and from which areas, which unavoidably compels changing goals and evaluation criteria for the Migration Agency. Given this reality, the necessary familiarity with the value structures could become obstructed at the management and strategic level, and their core values are not so static that they cannot change because of the next year’s regulation letter. The personnel at the public accommodation sites, contrastingly, have better conditions for getting to know their goals, since they remain more static over time.

### 5.3. Future Resilience Engineering Research in the Public Sector

RE represents a complex systems view, while today’s society, to a large extent, has a linear reductionist view of society’s course of events. It is expected to find embedded resistance towards RE implementation when RE represents such a different system understanding compared to the societal norm. The probability is high that RE measures are either rejected or interpreted from a reductionist non-systems-oriented view—possibly changing the semantics but not the work processes. Thus, representing an RE perspective when suggesting future research focus or practical implementations becomes a challenge.

Everyday preconditions affect crisis probability, management and consequences [19,20], and the findings from this study also point towards societal and organizational preconditions negatively affecting the probability of resilient performance in the Swedish public

sector. It is not unusual that studying organizations in stressful situations results in rich insights, not just regarding safety activities specifically, but also organizational design in general. This has led to the safety research field sometimes advancing faster than the organizational context of safety. This leads to the question of whether it is time for safety research to re-integrate with the field of organizational theory, something which could accelerate implementation of insights from safety research in organizational designs.

This study has shown that organizational work adaptations in the public sector are made, but not always officially recognized, because of public management's split focus between the bottom-up operative work, WAD, and the top-down administrative system, WAP. This study points towards some aspects of public management's challenges, for example, the preconditions created in the societal blunt end, i.e., the WAN dimension of work. Future research could focus on gaining a more thorough understanding of public management's incentives, trade-offs, priorities and local rationality [72,73], navigating the landscape of shifting requests from the political level, incorporating wishes and feedback from official review mechanisms, citizens, users, and internal officials, while administrating large complex organizations. Future research needs to deepen the insight of the conflicting public goals and ask questions about which values guide public management in everyday work, as well as which values they preserve for crisis operations and why. The understanding of the drivers behind the public WAN and WAP dimensions could be deepened by cross-domain research combining theories from a diversity of fields, for example political science, business administration and systems safety.

## 6. Conclusions

The aim of this study was to gain a deeper understanding of the relationship between the preconditions of Swedish CI public organizations managing the Swedish refugee reception event of 2015 and their ability to adapt. According to RE, the ability to adapt to reach system goals, even if the circumstances change, is connected to RE principles. Private CI operators and NGOs manifested both fast and effective response, and traces of RE principles could be found. Their organizations expected future management of surprises, had room for work activity flexibility, allowed human autonomy, and had a shared image of the problem description and needs throughout hierarchical levels. Contrastingly, the public CI organizations' managerial design did not reflect RE principles nor support adaptive behavior, which negatively affected their resilient performance. However, differences in adaptive behavior were found within the public organizations that could not be fully understood by applying existing RE principles. The public management level had barriers towards getting familiar with the system goal structure, which hindered goal prioritizing. Even if familiarity with the system goals and value responsiveness are foundational for RE, this is not mirrored in RE principles. Thus, it is proposed that an RE principle of "clear and agreed upon system goals" should be considered when summarizing RE principles. This, in turn, leads to implications for research and practice in examining goals across different hierarchical levels, making invisible goals visible, and being curious about the practical and operative impacts of legislative decisions.

For accelerating implementation of the rich insights regarding everyday organizational design, originating from safety research's studying of organizations under stress, it is suggested that more cross-domain research is conducted.

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