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Abstract

We argue that staffs and their leaders play an important role in disaster response. The main contribution of this paper is a conceptual staff model. It based on scientific literature on leadership, command and control, emergency response coordination patterns, staffs, staff regulations and an empirical basis of three command post exercises.

Keywords: Emergency Response, Staff model, Command and Control

1 Introduction

Today's disaster response missions are characterized by high and even increasing complexity. They require intense collaboration of all organizations involved and the adaption and flexibilization of command and control approaches (C2 approaches) (Alberts & Hayes, 2003, Hewett et al., 2001, von Kirchbach, 2002). Disaster response organizations are requested to respond timely and effectively in case of a disaster. The implementation of disaster response is individual for each country and we consider the German disaster response system and here in particular the staffs.

To coordinate disaster response capabilities and to command and control disaster response, actors of the German disaster response system organize staffs. Staffs play an important role in the command and control system (C2 system) of disaster response. Staffs' work requires a large and complex set of skills, functions and processes. To prepare, staffs do staff exercises. So-called scenario-based exercises are suitable and widely used instruments to exercise command posts and C2 systems (e.g. Alexander, 2000, Hosseini and Izadkhah, 2010, Oregon, 1997). Scenario based exercises are however difficult to conceptualize and assess and both conceptualization and assessment are perceived to be unsatisfactory by practitioners. The guidelines on exercising available for practitioners focus on organization of exercises and the sections on assessment are rather brief and basic. Assessments are typically done in an unsystematic way. For a brief literature overview of guidelines and scholarly literature on staff exercises cf. Heumül-

ler et al. (2012). The authors address one shortcoming: the lack of models and theories to assess staffs and presents a first short version of our approach.

Our research partners asked for a scientific approach to support conceptualization and assessment of scenario based command post exercises for which we aim to develop a respective framework in our research. We were involved in the conceptualization, conducting and assessment of three command post exercises of staffs operating on tactical level.

Richter et al. (2010) present the analysis of the German disaster response system and the role of the respective staffs. The paper at hand presents the conceptual model of staff work that is designed to guide the conceptualization of staff exercises and the assessment of staffs´ performance in a command post exercise. We work with the THW (Federal Agency for Technical Relief) and the German Federal Armed Forces (Bundeswehr) to support command post exercise development, preparation, conducting and evaluation.

We did not concentrate on questions about e-Dependability with e-Structures or e-Processes for better staff performance. However, our contribution supports understanding of staffs' organizational structure and processes and can build a very first step to develop technological support for disaster response staffs.

The paper is organized as follows: We introduce the research approach with the empirical basis, present our respective findings of literature research, our staff model and make a conclusion regarding the development of our framework.

2   Research Design and Context

The overall approach to develop a framework for command post exercise conceptualization and assessment is an Action Research approach (Baskerville, 1999). We were and are still actively involved in conceptualizing command post exercises and develop a respective guideline together with our research partners (cf. Heumüller et al., 2012). During the conceptualization, conducting and assessment of the exercises we concentrated on participatory observation as data collection technique as Baskerville and Wood-Harper (1998) describe it in Action Research context. We were able to apply our obtained knowledge during the exercise preparation and linked practice findings with theory. Baskerville and Wood-Harper (1996) define this setting as ideal for Action Research.

This paper presents a "specifying learning" phase of our research. It represents an important step of our overall research. We present the current state of a disaster response staff model – after three command post exercises we have been involved in. Scholarly literature and literature for practitioners are further sources of our model.

As a basis for developing our exercise conceptualization framework and especially assessment criteria, we wanted to identify the organizational structure, its implementation in practice and the processes of our examined staffs. We hypothesized that the staffs' organizational structure is based on the German Incident Command Staff Model.

Research partner one is the THW located in Bavaria, in particular the coordination and communication units (Fachgruppe für Führung und Kommunikation). The THW is a German federal technical relief organization under superior of the Federal Ministry of

the Interior with the mandate to support technically in cases of civil defense or disasters. A coordination and communication unit is assigned to coordinate THW forces or forces of other disaster response organizations and to provide disaster response forces with communication tools. Such units set up staff elements responsible for C2-functions. These staff elements are called "Führungsstelle" (Teuber, 2007).

Research partner two is a part of the disaster response organization of the Bundeswehr at the lower tactical level in Mittelfranken, a northern Bavarian area. Our partners are liaison units at the county level called „Kreisverbindungskommandos" (AU, 2010). These liaison units support cooperation of Bundeswehr and civilian crisis headquarters. They predominantly advise and coordinate forces (VDR, 2011). Kreisverbindungskommandos are staff-organized and consist of reservists, usually officers.

We observed and evaluated the first exercise ("GERETSRIED", October 22nd-24th, 2010) in order to analyze the staffs' performance. Topic of GERETSRIED was the exchange of a whole staff on one Führungsstelle during an on-going mission. The scenario was a flood scenario in southern Bavaria. The second exercise ("GROSSER KREIS", July 15th/16th, 2011) was together with the reservists. We observed conceptualization, preparation, conducting of the exercise and were responsible for the evaluation. The topic was not specified, goal was the training of general processes in a Kreisverbindungskommando. The scenario consists of different fire disasters in the forests around Nürnberg (northern Bavaria). At the third exercise ("FEUERBALL", October 7th-9th, 2011), we were involved in conceptualization, conducting and evaluation. The topic was the management of an assembly area during a flood scenario in Munich.

In each exercise five different staffs were exercised. The reservists' staffs consist of three to six members and the THW's staffs of seven up to 15 members.

We developed our staff model following an iterative approach based on our understanding of staffs as army officers, observations in three command post exercises and literature findings. After GERETSRIED we designed a model for a Führungsstelle and took this as a basis for a Kreisverbindungskommando in GROSSER KREIS. We adapted our model only in detail so that it was suitable for both staffs and validated it with all commanders of Kreisverbindungskommandos in Mittelfranken. We discussed it again after FEUERBALL also with THW staff members, included literature findings and created our current version.

3   Staff models

In this section we review staff models as a basis for the development of our model. Recall that our overall approach is an Action Research approach and the communicability of theories and models is considered to be crucial (Baskerville, 1999, Checkland and Holwell, 2006). So, we selected a sequence to present our literature review, which is typical for the disaster response and military: first the organizational structure, then the processes. Also the special emphasis on Command and Control and leadership is typical. We tried to select authors well known in this area also for communicability reasons.

Staff's organizational structure

We identified two different approaches to structure disaster response staffs' organization. Figure 1 depicts on the left side the German Incident Command Staff System

(FwDV 100, 1999) and on the right side the Incident Command System (ICS, Bigley & Roberts, 2001, Perry, 2003a, FEMA, 2009, US DHS, 2004), which is common in the US.
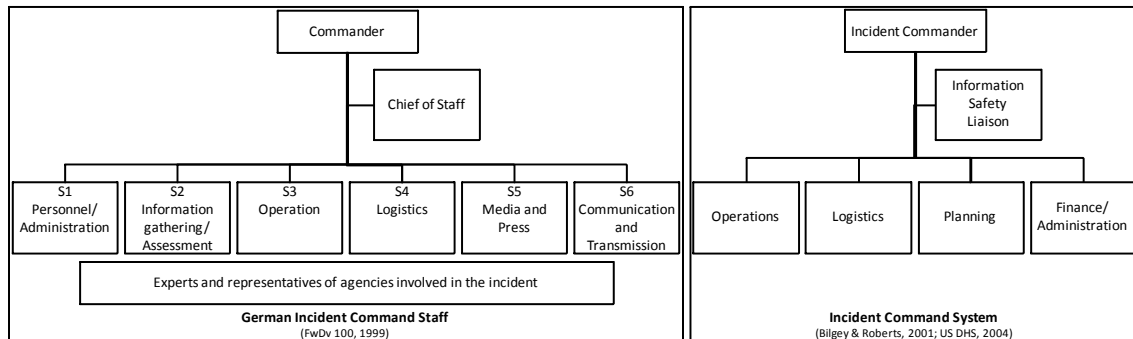

Figure 1: German Incident Command Staff and Incident Command System

A *German Incident Command Staff* is based on as well military and fire brigades' regulations. The staff is organized in six functionally specialized cells (S1 – S6), as depicted by Figure 1. The Chief of Staff organizes on the basis of regulations how the cells collaborate in staff work. A Commander, whom staff works for, controls by his explicit intent direction and aim of staff work. The staff's main task is to prepare and implement Commander's decisions which control actions of disaster responders. Besides the professional staff members of the respective disaster response organization, representatives of other organizations or governmental agencies join the staff to liaise or to support with expert knowledge.

The *Incident Command System* (*ICS)* distinguishes functionally specialized cells (Operations, Logistics, Planning and Finance/Administration). They are necessary in each kind of disaster mission (Bigley & Roberts, 2001). When the situation calls for special functions other than the mentioned in the model, the staff can be enlarged by branches, divisions or groups. In addition to the different functions the Incident Commander has responsibility for further functions like release of information to external constituents, safety of personnel and liaison to assisting agencies. The ICS approach is implemented in many disaster response organizations especially in the USA, Great Britain, Canada or Australia (Buckle et al., 2000).

Staff processes

Staffs have a coordinative function in the disaster response system. Accordingly we consider C2, leadership and coordination to understand staff processes and to identify starting points for the development of assessment criteria.

C2

The US department of defence defines C2 as "the exercise of authority and direction by a properly designated Commander over assigned and attached forces in the accomplishment of the mission" (DoD, 2010: p. 59). Thorstensson et al. (2001) consider C2 "as the key to mastering the dynamics of an emergency operation" (p. 52). Thus, C2 metaphors a leadership process established to command forces with a Commander fulfilling different C2 functions (Alberts and Hayes, 2006). C2 as a process generates output in four domains: social, cognitive, information and physical. Figure 2 depicts C2

functions and C2 output domains. The model of C2 functions and C2 outputs is the basis to assess C2 processes in a staff: the functions and their impact on the social cognitive, information and physical domain.
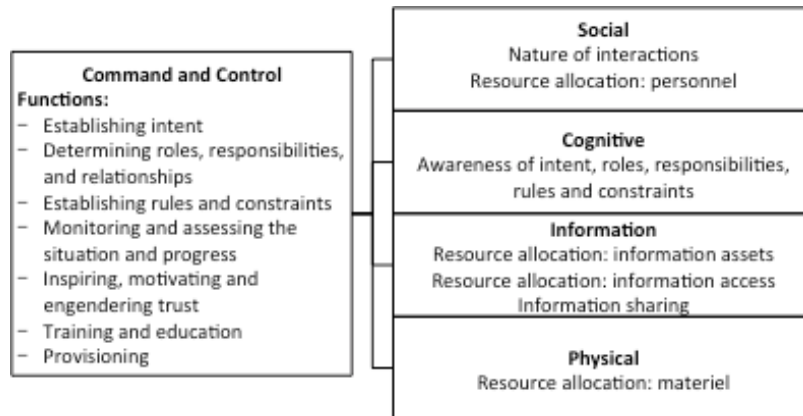

Figure 2: C2 and the four output domains (adapted from Alberts and Hayes, 2006, p. 58)
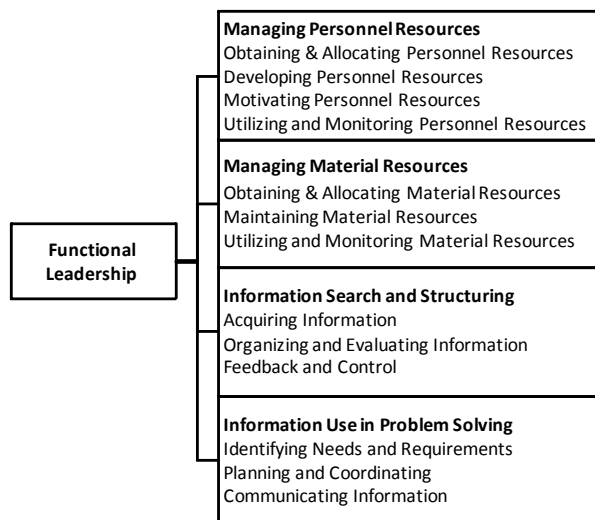
Leadership

Figure 3: Functions of functional leadership (adpated from Fleishman et al., 1991, p. 260/261)

A Commander has the central leadership function in the mission. The Chief of Staff is the leader and responsible for leadership in the staff. Commander and staff account for leadership in a disaster response operation. E.g. in the after action review of response to Hurricane Katrina, the House Selected Committee Report criticized the C2 system, because of leadership problems (USH, 2006). Waugh and Streib (2006) discussed problems of situational awareness, information management, collaboration and management of resources in this context. The functional leadership approach suggests that the leadership role is "to do, or get done, whatever is not being adequately handled for group needs" (McGrath, 1962: p. 5). Figure 3 depicts leadership functions as described by Fleishman et al. (1991). Based on a literature review Fleishman et al. (1991) and Zaccaro et al. (2001) define leadership functions of a functional leadership approach. We argue that Fleishman et al. (1991) and Zaccaro et al. (2001) with their functional leader-

ship approach address shortcomings of C2 in disaster response that the House Selected Committee identified in hurricane Katrina.

Note that the concepts of C2 and leadership differ in the role of the leader: whereas a leader is usually part of the team, a Commander is not. Thus, in the C2 point of view Commander's Intent usually explicitly formulated by the Commander is a crucial instrument to guide the staff's work. This intent is realized by the plans of the staff.

A Chief of Staff prepares the staff for future missions in training and daily business. He builds on an established organizational structure with a distinctive role model, standard operating procedures internalized by the staff and personnel trained and prepared for the respective job to do in disaster response missions. Hence, his leadership work in missions (or exercises) is supported by the preparation phase of the staff. During missions especially functions as information search and structuring or information use in problem solving but also motivating personnel and monitoring personnel or material resources are crucial.

We argue that leadership functions are key for the success of staff work and should be evaluated during staff exercises – in addition to C2 which is normally the only concept considered. However, we find both models to abstract to be used for assessment. We identified Emergency Response Coordination Patterns to be more adequate to analyse staffs.

Emergency Response Coordination Patterns

The special conditions during disasters as information uncertainty, time pressure and unpredictability of future events are inherent aspects of disaster situations. In such situations staffs cope with two modes of coordination - staff intern coordination (e.g. coordination of tasks and staff processes) and staff extern coordination (e.g. coordination of forces and resources). Chen et al. (2008) propose a framework to analyse coordination patterns in emergency response command units. Based on Raghu et al. (2004) they distinguish five elements as depicted by Figure 4: task flow, resource, information, decision and responder.

Figure 4: Patterns of Coordination in Emergency response Management (adapted from Chen et al. 2008, p. 70)

The elements of staff work plus the C2 and leadership functions serve as basis for a conceptual model to describe staff work. The conceptual model merging the coordination patterns of emergency response (Chen et al, 2008), C2 functions (Alberts and Hayes, 2006) and leadership functions (Fleishman et al., 1991) is explained below.

4   The staff model

Our staff model has three main elements: the staff process, the disaster scenario and the staff structure (see Figure 5).
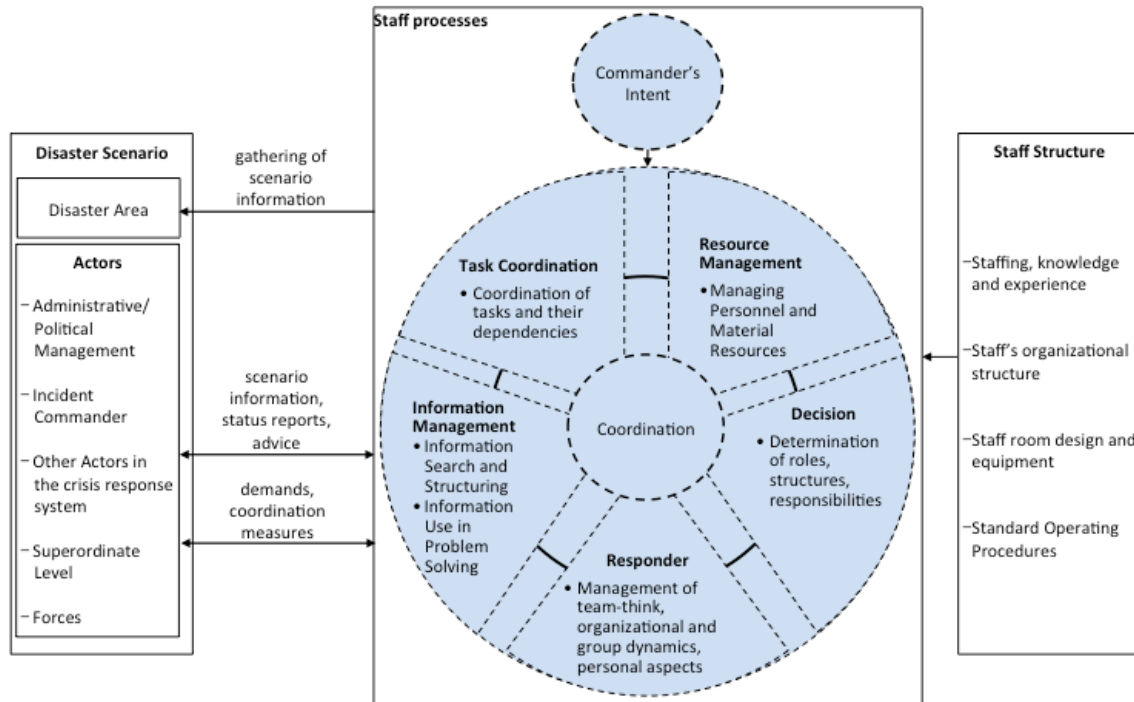

Figure 5: Staff Model

Subsequently we detail the elements of the model. The blue parts are based on literature findings, the white parts are particular to our model. We motivate the elements of our model and their relevance for assessment of staff performance with findings from the three command post exercises.

4.1   Staff processes

Our model of *staff processes* is structured according to elements of coordination by Chen et al. (2008). We added "Commander´s Intent" and "Coordination". Furthermore, we changed the original constructs by Chen et al. (2008). We used the Functions of Leadership from Fleishman et al. (1991) mainly for Task Coordination, Information and Resource Management ("Information" and "Resource" in the original). We used C2 and the output domains from Alberts and Hayes (2006) mainly for our items "Responder", "Decision" and "Commander's Intent". For details on the genesis of our constructs cf. Figure 6.

The Commander and hence the "Commander's Intent" play an important role. The Commander fulfils functions of C2 and leadership to command the staff and therefore

influences all staff processes. Note that in nearly all examined staffs the roles of the Chief of Staff and of the Commander – and consequently the commanding and coordinating of staff - were implemented by the same person. For brevity we refer to Commander and Chief of Staff as "Commander".

In Figure 6 we present elements of staff processes, the Commander's influence on them and link them with approaches of leadership and C2 from Alberts and Hayes, 2006, Zaccaro et al., 2001, Fleishman et al., 1991 as described in Sect. 3. We also give illustrative examples.

Element	Explanation	Influence of Commander	C2 / Leadership	Example
Commander's Intent	−Commander's expression of the purpose of the operation and desired end state −Based on situational assessment −Basis for planning process	First of all activities the Commander establishes Intent based on assessment of situation and goal of the mission.	C2 function: Establishing Intent	In all exercises Commanders established intent (also in discussions with their staff) and communicated this intent in briefings, that staff members can follow it.
Responder	−Management of relationships, team-think, organizational and group dynamics, personal aspects −Functional relationship is defined in staff structure, regulations or arrangements with other organizations	The Commander commands his staff members with their different functions, motivates staff for contribution, coordinates interaction with other responders	C2 function: Inspiring, motivating and engendering trust	In all final exercise briefings, participants emphasized that they were happy to work with their staff and were willing to work again together in mission.
Decision	−Decision roles, rules, structures	The Commander commands his staff and coordinates cooperation with other responders by giving orders, determining responsibilities	C2 function: Determining roles, responsibilities and relationships	In FEUERBALL Commanders changed roles and tasks of the S6 to support S4 in logistical tasks.
Task Coordination	−Coordination of tasks and their interdependencies	The Commander commands his staff by giving orders or coordinating tasks and processes	Leadership: Managing personnel resources	In FEUERBALL staffs had to coordinate forces entering the assembly area in order to support subsistence or accommodation.
Resource Management	−Management of material and personnel resources	According to respective tasks, the Commander provides resources for mission accomplishment	C2 function: Provisioning Leadership: Managing material resources	In FEUERBALL staffs had to manage their fuel resources to ensure fuel supply for forces in an assembly area. For that they had to coordinate the fuel-filling of forces and their own fuel stock.
Information Management	−Collection, assessment and distribution of scenario information −Use of information for problem solving	The Commander permanently gathers information, assesses them and decides if there is a need to act or to change or for further information	C2 function: Monitoring and assessing the situation and progress Leadership: Information search and structure Use in problem solving	In all exercises staffs got injects with scenario information. It was the task of them to aggregate and assess them to make a decision. Staff members told us that they could use every possibility (internet, phone calls, etc.) to get scenario information.
Coordination	−Alignment to Commander's Intent and coordination of all elements	The Elements or the staff members can directly be coordinated by the Commander or by the Chief of Staff.	C2 functions and leadership in general	In GERETSRIED staffs had to fulfil certain tasks at the same time with differently involved actors. Therefore the Commander had to coordinate the staff particularly.

Figure 6: Elements of staff processes

Commander's Intent

The Commander establishes an intent to command and control the staff and to accomplish the mission (Alberts and Hayes, 2006). It leads to an intentional goal-oriented act of the Commander to influence staff performance (Fleishman et al., 1991). This intent is to communicate to the staff and all staff processes have to orientate on it.

Responder

Inspiring, motivating and engendering trust are three interrelated functions affecting the nature of collaborative arrangements inside the staff and in interaction with others (like willingness to contribute or to be dependent on others for support of staff members; Alberts and Hayes, 2006). It is a C2 function of the Commander to keep team spirit high, engender trust and to increase the willingness of staff members to contribute - even in the next mission.

Decision

In the interrelation of decision and responder, we identified the C2 function "determining roles, responsibilities and relationships". Based on a staff's organizational structure and situational demands the Commander fulfils this function to accomplish the mission. We found out that the staff's organizational structure is implemented in a flexible way. Responsibilities and roles may change during a mission in examined staffs to increase flexibility and adaptability in mission and because of situational demands and differently available personnel resources.

Task Coordination

Disaster organizations arrange staffs to coordinate forces and resources in disaster response missions. "Managing resources" interrelates to the coordination of tasks (staff intern coordination and coordination of forces by staffs) and causes the implementation of a plan. Note that "Task Flow" of Chen et al. (2008) is "Task Coordination". This captures the Commander's influence and is an activity of the Commander. It also comprises "Management of personnel resources" (Fleishman et al., 1991) as a leadership function (cf. Figure 3 in Sect. 3).

Resource Management

Task fulfilment depends on the availability of resources. Providing resources – managing personnel and material resources – is critical for the success of any endeavour and a task/function of the Commander (Alberts and Hayes, 2006, Fleishman et al., 1991). This item comprises also "Management of material resources" (Fleishman et al., 1991) as a leadership function (see Figure 3) and captures the Commander's influence.

Information Management

Information is the most important input of a staff in form (gestalt) of messages, calls or status reports of the various actors or as information gathered or solicited by the staff. To assess a situation, a staff organizes, evaluates and – if needed – searches for further information. Situational assessment is the basis for the planning process to react or to solve the problem (identified concepts see Figure 6). (Thorstensson et al. (2001) defined this process as the Detect-Assess-Decide-Act loop.) "Information Management" distinguishes "Information Search and Structuring" and "Information Use in Problem Solving" (Fleishman et al., 1991).

Coordination

All identified elements implement the Commander's Intent. All elements and consequently the work of staff need to be aligned and consequently, coordination is of relevance. We call this core function "Coordination". Coordination can be implemented in different ways, depending e.g. on staff's organizational structure (cf. Sect. 3) and other parameters. E.g., a Chief of Staff coordinates staff members and staff process elements. In practice, "Chief of Staff" role and the "Commander" role can be executed by the same person. In GROSSER KREIS we observed that only little coordination was needed, because of reduced personnel and a high training and experience level of the staff members. This illustrates again the impact of the staff structure on staff processes (e.g. staffing).

4.2   Staff structure

The work of a staff is influenced by organizational stipulations: staff's organizational structure, the design of a staff room, staff's equipment and SOPs trained prior to disaster mission. These stipulations frame staff processes during training and daily business and are the basis when a staff enters disaster mission's theatre.

Each organization determines the staff's organizational structure. The staff's organizational structure with its functions determines the staffing. Staffing is the implementation of defined roles, responsibilities and preconditions (S1-S6). Organizations define training content and training levels for the roles. Apart from what the organization requires, staff members contribute with their personal knowledge and experience. E.g., staff members have regular jobs (e.g. the regular job of a Commander in FEUERBALL is teacher or insurance broker as it was in GERETSRIED) and can therefore contribute "job" knowledge, skills and personal and professional networks.

In FEUERBALL and GROSSER KREIS we observed staffs organizationally structured according to the German staff model (with the S1 – S6 cells) as explained above. However, there is an abstract and "ideal" approach and an implementation by every staff with some "individual" touch. The Chief of Staff changes structural settings to adapt according to the situational demands during mission or exercise. E.g. due to the fact that most members of disaster response organizations in Germany are volunteers and thus often unavailable in cases of disaster missions or exercises, Chief of Staff has to staff positions in the staff flexible and according to personnel available. In GROSSER KREIS, each staff differed in number and qualification of personnel. In FEUERBALL, S1 and S4 cells had the highest, S6 the lowest workload as the work necessary to manage an assembly area is predominantly about managing responders and logistics. Thus, one Chief of Staff decided to reduce S6 personnel and to increase S4 personnel. Another Chief of Staff even substituted S6 chief by S1 Chief. The members of the staffs we observed often have cross- or multi-functions during one mission (exercise) depending on disaster and personnel demands. E.g. the S2 and S3 functions have been implemented by a single staff member in GROSSER KREIS.

Equipment and layout of staff room are defined in regulations and represent material preconditions of the staff to do its work. E.g. in GROSSER KREIS we recognized that a laptop with a special map-software is provided as standard equipment.

Beside the fact, that a Führungsstelles staff room is set up in a truck and a Kreisverbindungskommandos staff room is in a building, we observed that the layout of a staff room supports flexibility in both cases: Staff members sit on a round table or in a circle or semi circle. On the front of the table of a Führungsstelle there is a situational map and in every corner there are the staff cells' overviews, so that everybody can check the situational development and the staff members' overviews. This architecture is common. In GROSSER KREIS we perceived staff members sitting on a round table in front of the situational map with some extra information and overviews. Everybody updated his respective overview on the front map. We also observed staff-rooms with a non-functional layout – hindering the staff in its work. Thus we consider this to be a relevant criterion for assessment.

Standard Operating Procedures (SOPs) are defined in regulations and provide process specifications. E.g. while conceptualizing FEUERBALL we reviewed the instruction for

the management of an assembly area to identify processes we wanted to exercise. They are in particular important for interaction with other actors (e.g. superordinated or subordinated level).

4.3   Disaster Scenario

The disaster scenario represents the environment of a disaster response staff in mission. It comprises the disaster area and the different actors involved in a disaster response mission. The interaction with the Disaster Scenario represents a staff's input and output.

The disaster area in our model depicts the area of damage and responsibility in case of disaster. In GROSSER KREIS the disaster area was around the city of Nürnberg composed of different forest fires and a helicopter accident in a sewage-works, were each Kreisverbindungskommando has its own area of responsibility. The staffs had to gather information about the disaster area as a basis for situational assessment. In the exercises scenario information was communicated to the staffs via injects on different communication channels (e.g. calls of victims, messages of radio stations or other agencies). The gathering of scenario information is a permanent task.

Depending on staff's mission and situational demands different actors are involved in coping disaster challenges. In GROSSER KREIS the staffs prepared briefings to advice representatives of politics (e.g. district administrator). If needed, a representative can demand a briefing and advices from a Kreisverbindungskommando for situational assessment. For instance, staffs can advice about own capabilities and competences in general or in specific situations. In GROSSER KREIS advicing the Administrative/Political Management was a focus of the exercise. In our model we added the Administrative/Political Management, which represents the emergency operation centre (EOC; Perry, 1995) of the respective state level (e.g. district level) to "Actors". An EOC "is the centre of coordination, resource assembly and deployment, and management strategy in large-scale disasters" (Perry, 2003b, p. 151, citing Perry 1995).

In all exercises we recognized, that staffs had to cooperate with or directly follow Incident Commander's instructions. In GROSSER KREIS we recognized that a Kreisverbindungskommando predominantly has an advisory function to actors of other organizations or agencies and even to the Incident Commander. In GERETSRIED and FEUERBALL we found out, that a Führungsstelle - especially operating on tactical level - has to follow Incident Commander's instructions directly, for example in commanding THW units. E.g. the Incident Commander demanded THW forces for water pumping from the staff.

Every staff that we examined has a superordinated staff in mission. The superordinated staff of a Kreisverbindungskommando is the Bezirksverbindungskommando (county command) and of a Führungsstelle in Bavaria it is the respective branch of Bavaria. To the superordinate level, a staff has to prepare status reports, can request reinforcements or material or gets coordinated by orders.

A staff coordinates forces and gets status reports and requests from forces. While a Kreisverbindungskommando is only responsible for Bundeswehr troops, a Führungsstelle – depending on mission demands – coordinates THW or other forces. In FEUERBALL exercise staffs were responsible for THW forces, but even got demands

from fire brigade units. The forces have special capabilities (e.g. water pumping or rescuing) and depending on situational demands, staffs have to manage these capabilities.

"Other Actors in the crisis response system" merges all other contacts of the respective staffs to other agencies or organizations. E.g. in GROSSER KREIS staffs got information from police forces and fire brigade units. As a specialist of the own organization and the local situation in disaster area, staffs can advice staffs of other organizations about the situation or own organization's capabilities.

Staffs interact with the actors by information exchange, demands, orders and status reports. Input triggers staff processes and leads to an output. E.g. in GROSSER KREIS the EOC requested pioneer forces. The Kreisverbindungskommando checked different criteria (e.g. availability of alternatives or legitimacy of mission), requested them at their superordinated staff and informed the EOC. Later Kreisverbindungskommando had to coordinate these pioneer forces.

5   The Use of the Model – Concluding Remarks

We have analyzed staffs in three command post exercises to develop a conceptual model for the development of a framework for exercise conceptualization. For that we included literature research focusing on C2, leadership and coordination in disaster response. Our background as army officers influenced our interpretation of observations and literature. How are we going to use this model? In Figure 7 we provide for some elements of the staff model hints on how they are considered in staff assessment or/and exercise conceptualization.

Staff model element	Finding	Conclusion: Framework shall support...
Disaster Scenario	Most staff actions are triggered by inputs from the disaster scenario through injects with pieces of information (messages, status reports, demands, orders, etc.).	-Scenario-based exercises (see also Alexander, 2000) with disaster area and actors. -Evaluation of staff processes triggered by inputs/injects.
	A staff interacts with different actors in specific relationships in a mission.	-Establishment of different roles interacting with exercise staffs.
	From different pieces of information from different sources, a staff has to identify and assess disaster situation as a basis for problem solving and decision making.	-Exercise screenplay, which comprises the whole disaster scenario and the separate injections of different pieces of information. Further it must support a situational assessment of the staff's reaction according to every inject.
	A staff's task is to prepare status reports, to advice other actors, to coordinate forces and to manage resources in disaster response.	-Exercising and evaluation of these tasks. -Identification of relationships between injects, triggered processes and outputs.
Staff processes	Elements of staff processes (e.g. Task Coordination, Resource Management) and their link to existing approaches for staff functions in literature (e.g. coordination, C2 functions).	-Exercising of these processes and evaluation of staff's respective performance. -Development of evaluation criteria of these processes oriented on specific exercise characteristics (topic, goal, etc.).
Staff Structure	Organization stipulates SOPs, staffing and layout of staff room and equipment.	-Exercising of staffs oriented on organizational constraints (e.g. "What has a Führungsstelle to consider, when it manages an assembly area?") -Evaluation of compliance of staff structure, constraints and regulations. -Testing and validation of defined SOPs.
	Organization stipulates training content and level.	-Identification and evaluation of training level
	Staffs' functional structure is based on German Incident Command Model with six major cells and is implemented very flexible.	-Evaluation of staff roles (e.g. S1-S6, Commander) based on role descriptions.

Figure 7: Use of the Staff Model in exercise framework development

We introduced our conceptual model of a staff and deduced requirements for the development of our framework. The next step will be to deduce criteria for performance as-

sessment of staffs and to develop the next version of our assessment instruments (questionnaires, observer checklists, etc.) on the basis of this new model for the next iteration of our Action Research approach. The assessment instruments are part of our framework for conceptualization and assessment of command post exercises.

Beside the fact, that e-Dependability was not in focus of our research we contributed a first step to identify starting points for further research about technological support. For example, it is conceivable to support staff processes or the presentation of situation with specified command information systems or to support resource management with further applications.

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