

# Comparative Analysis of Learning Conditions across Different Roles in a Large National Crisis Management Exercise

**Peter Berggren**

Linköping University, Linköping Sweden  
peter.berggren@liu.se

**Anton Björnqvist**

Center for Disaster Medicine and  
Traumatology, Region Östergötland,  
Linköping, Sweden  
anton.bjornqvist@regionostergotland.se

## ABSTRACT

Large-scale crisis exercises are commonly treated as shared learning events, yet participation within such exercises is often differentiated across organisations. This Work in Progress examines how differentiated participation in a national crisis exercise series shapes organisational learning conditions and coordination demands. Drawing on empirical material from the Swedish KBÖ24 exercise series, the study compares organisations participating partly and fully in the exercise series as different activity positions within the same exercise system. Using Activity Theory as a sensitising analytical lens, the analysis focuses on differences in exposure to decision-making under uncertainty, operational roles, participation in evaluation processes, and learning trajectories over time. The results suggest that large-scale exercises function as differentiated learning environments, where exercise design and role allocation shape the visibility of system-level coordination challenges and opportunities for reflective learning. Complementary sensemaking perspectives help explain why learning outcomes are position-dependent rather than performance-dependent. The paper contributes to early analytical insights into how exercise design influences learning across complex, multi-organisational crisis management systems.

## Keywords

Crisis management exercises, Organisational learning, Activity Theory

## INTRODUCTION

Large-scale crisis exercises are a central mechanism for developing preparedness, coordination capacity, and decision-making competence in complex, multi-organisational crisis management systems. At national levels, such exercises typically involve a wide range of actors who operate under a shared scenario but participate under different conditions, roles, and levels of engagement. Exercises are therefore not only instruments for testing plans and procedures, but also structured environments for learning about interdependencies, coordination mechanisms, and system-level decision-making, where participants must continuously interpret evolving situations and make sense of uncertainty under time pressure (Berlin & Carlström, 2008; Comfort, 2007). Prior research has shown that crisis exercises involve not only coordination and action, but also ongoing processes of interpretation and sensemaking, particularly under conditions of uncertainty and time pressure (Weick, Sutcliffe, & Obstfeld, 2005).

Previous studies have shown that exercises function as socio-technical interventions that shape how organisations interpret roles, responsibilities, and coordination structures under conditions of uncertainty (Baxter & Sommerville, 2011; Dieckmann, Gaba, & Rall, 2007). However, much of this work treats exercises as relatively uniform events, focusing either on specific organisations or on system-level outcomes, rather than on how different forms of participation within the same exercise influence learning conditions. Within the ISCRAM research community, crisis exercises have been studied from multiple perspectives, including training effectiveness, coordination processes, socio-technical system design, and organisational learning (cf. Olsén et al.,

2019; Noori et al., 2017; Heumüller et al., 2013).

In practice, large national exercises rarely constitute a uniform experience for all participating organisations. Practical constraints, strategic priorities, and pedagogical considerations often lead to differentiated participation structures. Some organisations engage at a baseline level, participating in core exercise activities and contributing to overall system functioning. Others are assigned more specialised roles, involving extended decision-making responsibilities, higher exposure to uncertainty, and deeper involvement in preparatory and evaluative processes. Such differentiation is a common and necessary feature of large-scale exercises, enabling the concentration of decision pressure and complexity in selected parts of the system (Berlin & Carlström, 2008).

Despite its prevalence in practice, differentiated participation has received limited analytical attention in the literature. Exercises are often evaluated in terms of overall performance, learning outcomes, or coordination effectiveness, without systematically examining how variation in participation depth shapes what different organisations learn.

Research on organisational learning and crisis exercises suggests that learning is shaped by exposure to uncertainty, responsibility for decision-making, and opportunities for reflection. Actors positioned close to disruption and decision pressure are more likely to encounter tensions, trade-offs, and contradictions within the system, whereas actors in supporting roles may primarily interact with the crisis through formalised coordination channels. As a result, learning from exercises is likely to be unevenly distributed across participants, not because of differences in competence, but because of differences in position within the exercise system (Argyris & Schön, 1978; Weick, Sutcliffe, & Obstfeld, 2005).

To analyse such differences, a socio-technical perspective is required, one that treats exercises as structured collective activities rather than neutral training events. Activity Theory provides such a perspective by conceptualising collective work as activity systems oriented toward shared objects and shaped by tools, rules, roles, and division of labour (Engeström, 2001; 2014; 2018). From this viewpoint, learning emerges through participation in collective activity, particularly when actors encounter contradictions between demands, resources, and coordination structures.

Applied to exercises, Activity Theory suggests that learning could depend on participants' positions within the exercise activity system. Organisations that are exposed to decision pressure, uncertainty, and system-level tensions are more likely to engage in reflective processes that challenge existing logic. Conversely, organisations positioned primarily in supporting roles may contribute critically to system functioning while encountering fewer opportunities for system-level reflection. This perspective does not imply differences in organisational capability, rather highlighting how exercise design distributes exposure to complexity and reflection across participants (Engeström, 2001; Berlin & Carlström, 2008).

This paper explores these issues through an analysis of the *Katastrofmedicinsk beredskapsövning 2024 (KBÖ24)*, a national Swedish exercise series involving all public healthcare regions and the National Board of Health and Welfare. KBÖ24 was designed as a progressive exercise series combining knowledge-enhancing, learning-oriented, and test-oriented components, culminating in a large-scale functional exercise focused on national coordination during a complex mass-casualty scenario. Within this shared exercise framework, participating organisations engaged at different depths. All public healthcare regions took part in the core exercise activities, while a subset of regions, together with the national authority, participated to a greater extent. These organisations participated in an additional decision-focused exercise, assumed a primary role in the demanding large-scale functional exercise, and contributed directly to the structured evaluation processes. A distinction can therefore be made based on the organisations' level of participation, where some participated partly and some fully.

Rather than interpreting these distinctions as indicators of performance or maturity, this paper treats them as analytical ideal types reflecting different activity positions within the same exercise system. The comparison between organisations participating partly and fully is used to examine how variation in participation depth shaped exposure to decision-making under uncertainty, role allocation during the functional exercise, and access to reflective learning processes.

The purpose of this paper is to explore how differentiated participation within a national crisis exercise series shapes conditions for organisational learning. The paper aims to provide early analytical insights into how exercise design choices influence learning trajectories within complex, multi-organisational crisis management systems. Therefore, the focus of the analysis is not to evaluate organisational learning outcomes or performance. The differentiated participation is understood in terms of the two categories of "partly participating" and "fully participating" throughout the text.

## METHOD

This study adopts a comparative qualitative research design to examine how differentiated participation within a national crisis exercise series shaped organisational learning conditions. The analysis focuses on the *Katastrofmedicinsk beredskapsövning 2024* (KBÖ24), a national Swedish exercise series involving all public healthcare regions and the national health authority.

The paper presents an initial analytical interpretation of the KBÖ24 material. The focus is on comparing two analytically defined participation categories - *partly participating organisations* and *fully participating organisations* - in order to identify differences in participation and activities and how these might have affected conditions for organisational learning. The study follows an interpretive, qualitative tradition in crisis and organisational research, where exercises are treated as socio-technical settings that generate insights into coordination practices and learning processes (Berlin & Carlström, 2008; Comfort, 2007).

### Empirical context: KBÖ24 exercise series

KBÖ24 was designed as a progressive national exercise series to increase healthcare crisis preparedness, combining knowledge-enhancing, learning-oriented, and test-oriented components. The series included preparatory lectures, a decision-focused exercise, a seminar-based exercise, and a large-scale functional exercise simulating a complex mass-casualty scenario requiring national coordination of healthcare resources. Following the large scale exercise, evaluation activities were conducted.

All public healthcare regions participated in the core exercise components. A subset of regions, together with the National Board of Health and Welfare, were designated as *fully participating organisations*. These organisations participated in the decision-focused exercises, were directly affected by a mass-casualty event during the functional exercise, and actively took part in the structured evaluation processes following the exercise.

Such differentiated participation structures are common in large-scale exercises, where different actors are assigned different roles and levels of exposure to decision pressure and uncertainty (Berlin & Carlström, 2008). This structure created two distinct participation profiles within the same exercise system, providing a basis for comparative analysis.

### Data sources

The analysis is based on the empirical material generated during the planning, execution, and evaluation of KBÖ24. The data consist of multiple sources collected throughout the exercise series, including:

- structured observer notes from exercise sessions,
- documentation of decisions and coordination activities during exercises,
- evaluation workshop materials,
- synthesised development areas and proposed measures,
- and supporting exercise documentation used in the evaluation process.

These materials were originally collected as part of the national exercise evaluation process and subsequently analysed to identify system-level development areas. For the purposes of this paper, the same empirical material was revisited with a comparative analytical focus on differences between partly participating organisations and fully participating organisations. In total, approximately 75 pages of observation notes, documents, and other written material were included as basis for the analysis.

The use of exercise-generated data as a basis for qualitative analysis is consistent with prior research treating crisis exercises as empirical settings for studying coordination, learning, and organisational processes (Berlin & Carlström, 2008; Moynihan, 2009).

### Analytical approach

The analysis followed a comparative, theory-informed qualitative approach. Rather than coding for performance or effectiveness, the analysis focused on identifying differences in activity conditions associated with the two participation categories thereby indicating potentially different conditions for organisational learning.

The analytical process proceeded in three steps. First, the exercise structure was reviewed to identify systematic differences in participation, roles, and responsibilities between partly participating organisations and fully participating organisations across the different exercise components. Second, the empirical material from observations, decision documentation, and evaluation processes was examined to identify patterns.

Third, the emerging contrasts between the two participation categories were interpreted through an Activity Theory lens. In this interpretation, partly participating organisations and fully participating organisations were treated as occupying different positions within the same exercise activity system, characterised by different degrees of decision pressure, uncertainty, and access to reflective learning arenas.

This theoretical lens was used as a sensitising framework rather than as a formal coding scheme, consistent with interpretive and activity-theoretical research traditions (Engeström, 2001; 2014; 2018). The aim was not to test theory, but to use activity-theoretical concepts, such as object orientation, division of labour, and exposure to contradictions, to structure the comparative interpretation.

### Analytical positioning

In this study, the distinction partly and fully participating organisations is treated as an analytical ideal-typical distinction, reflecting differences in exercise configuration rather than differences in organisational capability. The analysis therefore focuses on learning conditions created by the exercise design, not on how well organisations performed. In other words, the focus is on conditions for organisational learning, rather than individual learning or organisational learning outcomes.

This positioning is consistent with socio-technical and organisational learning perspectives that emphasise how roles, responsibilities, and system positions shape opportunities for learning and coordination (Argyris & Schön, 1978; Baxter & Sommerville, 2011). From this viewpoint, differences in learning are expected to emerge from differences in activity position, role allocation, and exposure to decision-making pressures.

Through this approach, as emphasised in the three analytical steps and the analytical positioning, contrasts in participation, potentially affecting conditions for organisational learning, were identified.

## RESULT

The KBÖ24 exercise series involved all public healthcare regions and the national health authority within a shared scenario and overall exercise architecture. However, the exercise design assigned participating organisations to two distinct participation categories: *partly participating organisations* and *fully participating organisations*, where the latter participated in an additional decision-focused exercise, where directly affected by a mass-casualty event during the functional exercise, and actively took part in the structured evaluation processes following the exercise.

From an Activity Theory perspective, these categories can be understood as representing different positions within the same exercise activity system, rather than different organisational capabilities. The analysis of the empirical material revealed systematic contrasts between these positions across four main dimensions: (1) exposure to decision-making under uncertainty, (2) operational role during the functional exercise, (3) access to reflective learning loops, and (4) temporal learning trajectories across the exercise series. These contrasts are grounded in recurring patterns identified across the empirical material.

### Contrast 1: Exposure to decision-making under uncertainty

A first major difference between partly participating organisations and fully participating organisations concerned how decision-making was experienced and practised during the exercise series.

All participating organisations engaged in coordination and decision-making activities during the seminar-based and functional exercise components. However, only the fully participating organisations participated in the dedicated decision-focused exercise. This exercise was explicitly designed around strategic and operational decision-making under uncertain and evolving conditions, where participants were required to:

- formulate and communicate decisions,
- prioritise between competing demands,
- anticipate consequences of their decisions across organisational boundaries,
- and negotiate decisions with other actors under time pressure.

In contrast, decision-making as practiced by the partly participating organisations primarily concerned coordination and execution during the seminar and functional exercises, which was also the case for fully participating organisations. In these two exercises, decisions were made, but they were not the explicit object of practice or reflection. Instead, decision-making was integrated into tasks such as assessing available capacity, responding to coordination requests, and maintaining alignment with national guidance.

This difference produced distinct decision environments and opportunities for learning and preparation before the seminar and functional exercises. Fully participating organisations encountered explicit decision problems that required articulation, justification, and negotiation of choices under uncertainty during the decision-focused exercise, something which provided opportunities and prepared them extensively for the seminar and functional exercises. This in turn might have made decision-making an explicit focus within these organisations during these two exercises. Partly participating organisations, by contrast, did not receive any formal preparation before the seminar and functional exercises, meaning that they engaged in implicit decision-making within established coordination routines without having an explicit focus on decision-making.

From an activity-theoretical perspective, this contrast reflects different degrees of proximity to the object of activity. For a fully participating organisation, the object (decisions to enable effective coordination under overload) were emphasised and became directly contested through decision dilemmas and competing priorities during the decision-focused exercise. Due to the formal preparations offered by the decision-focus exercised, decision-making might also have been, knowingly or unknowingly, taken into special consideration during the functional exercise. For partly participating organisations, the object was encountered more indirectly, through requests, reports, and coordination procedures during the functional exercise, and was not particularly emphasised based on previous experiences from the decision-focused exercise.

### **Contrast 2: Operational role during the functional exercise**

A second major contrast concerned the operational roles assigned during the functional exercise. The scenario design differentiated between fully and partly participating organisations.

Fully participating organisations were assigned the role of primarily affected regions, each responsible for managing a mass-casualty incident. In this role, they were exposed to high operational load, resource scarcity, and uncertainty regarding future demands. These conditions created situations where established routines were insufficient to resolve emerging tensions. Something which in turn resulted in challenges related to prioritisation of patients, coordination with national and regional authorities, and ambiguity in decision authority.

Partly participating organisations, in contrast, primarily assumed supporting roles. Their tasks focused on, assessing available capacity, reporting available resources to the national level, and preparing to receive patients if requested by directly affected public healthcare regions (fully participating organisations). While these tasks were essential for overall system functioning, they involved fewer immediate contradictions between demands and resources. The operational context for partly participating organisations was more structured, with more stable coordination routines.

From an Activity Theory perspective, this difference reflects unequal exposure to contradictions within the activity system. Fully participating organisations encountered tensions between available resources and incoming patient flows, local priorities and national coordination demand, formal authority structures and practical decision needs. These contradictions required active negotiation and improvisation.

### **Contrast 3: Access to reflective learning loops**

A third contrast concerned participation in evaluation and reflective learning processes.

Following the exercise series, a structured evaluation conference was conducted to prioritise development areas and formulate proposed measures. Fully participating organisations were involved the evaluation conference, which resulted in a list of which development areas to prioritise and recommendations targeting the most prioritised areas.

Partly participating organisations, in contrast, did not participate in the evaluation conference. Instead, they simply received the results from the evaluation conference, which included the list of the most prioritised development areas and the finalised recommendations.

This created a difference in access to reflective learning loops. Through their extended involvement in all previous exercises and in the evaluation conference, fully participating organisations participated in the full cycle of experiencing decision pressure and operational contradictions, articulating experiences in evaluation settings and contributing to interpretations of development areas, and generating recommendations. On the other hand, partly participating organisations primarily received operational experience and the outcomes of the evaluation.

From an Activity Theory perspective, this difference reflects unequal participation in expansive learning actions, particularly those related to reflection, conceptualisation, and redefinition of the object of activity, that is, how the core coordination problem addressed by the exercise was collectively understood and framed. Fully participating organisations were involved in shaping how system-level problems were defined and interpreted, while partly

participating organisations were primarily positioned as recipients of these interpretations.

#### **Contrast 4: Temporal learning trajectories across the exercise series**

Whereas the previous contrasts focus on differences in activity conditions at specific points in the exercise, this contrast examines how participation unfolded over time across the exercise series. This fourth contrast emerged when examining the temporal structure of participation across the exercise series.

KBÖ24 was designed as a progressive exercise series, moving through:

1. knowledge-enhancing lectures,
2. a decision-focused exercise,
3. a learning-oriented seminar exercise,
4. a large-scale functional exercise,
5. and a structured evaluation process.

All organisations participated in the initial knowledge-enhancing and the seminar-based exercise, as well as in the functional exercise. However, only fully participating organisations participated in the decision-focused exercise and the evaluation conference.

As a result, the two participation categories followed different learning trajectories through the exercise series. Fully participating organisations experienced a more continuous learning cycle, involving, preparation and explicit decision practice, operational testing under high demand, and structured reflection through active involvement in the evaluation process. Partly participating organisations experienced a more segmented trajectory, involving preparation, participation in a supporting role in the functional exercise, and reception of aggregated evaluation results.

This difference was not a result of capability, but a direct consequence of the exercise design. The temporal structure of participation shaped how experiences accumulated and how learning processes unfolded across the exercise series.

From an Activity Theory perspective, this reflects different degrees of participation in the full cycle of activity and reflection. Fully participating organisations moved through a sequence that linked preparation, action, contradiction, and reflection. Exercising organisations primarily engaged in selected stages of this cycle.

#### **Summary of contrasts**

Across the four analytical dimensions, the comparison between partly participating organisations and fully participating organisations revealed systematic differences in activity conditions:

1. **Decision-making exposure**
  - Fully participating organisations: explicit decision practice under uncertainty and embedded decision-making within coordination tasks
  - Partly participating organisations: embedded decision-making within coordination tasks
2. **Operational role**
  - Fully participating organisations: primarily affected regions facing overload and contradictions
  - Partly participating organisations: supporting regions operating within structured coordination interfaces
3. **Reflective learning loops**
  - Fully participating organisations: direct participation in evaluation and co-production of recommendations
  - Partly participating organisations: reception of aggregated evaluation results
4. **Temporal learning trajectories**
  - Fully participating organisations: full progression through preparation, decision practice, operational testing, and reflection
  - Partly participating organisations: partial progression through selected exercise stages

## DISCUSSION

The results indicate that the distinction between partly participating organisations and fully participating organisations in KBÖ24 is best understood not as a difference in organisational capability, but as a difference in activity position within the exercise system.

From an Activity Theoretical perspective, exercises can be understood as temporary activity systems oriented toward a shared object and shaped by rules, tools, roles, and division of labour (Engeström, 2001; 2014; 2018). The findings of this study are consistent with this perspective. Organisations assigned to positions with higher decision pressure and operational responsibility were more likely to encounter contradictions and to engage in reflective processes around them.

This interpretation aligns with prior research suggesting that exercises function as socio-technical learning environments rather than neutral testing mechanisms (Berlin & Carlström, 2008; Baxter & Sommerville, 2011). In KBÖ24, the exercise architecture distributed complexity and decision pressure unevenly across the system. Fully participating organisations were positioned closer to the centre of disruption, while partly participating organisations were primarily positioned in supporting roles. These positions created different learning conditions, even though the organisations participated in the same overall exercise.

### Contradictions and decision-making as drivers of learning

A central insight from the results is that exposure to decision-making under uncertainty appears to be an opportunity for system-level learning. In the decision-focused exercise and in the functional exercise, fully participating organisations were required to formulate and justify decisions in situations characterised by overload, competing priorities, and ambiguous authority structures. These conditions created tensions between established routines and emerging demands, forcing participants to negotiate new solutions.

Within Activity theory, such tensions are understood as contradictions, structural misalignments within or between elements of an activity system that can trigger reflection and change (Engeström, 2001). The findings suggest that fully participating organisations were more frequently exposed to such contradictions, for example between local resource constraints and national coordination demands, or between formal decision structures and practical needs for rapid action.

In contrast, partly participating organisations primarily encountered decision-making as an embedded part of coordination routines. Their roles involved capacity reporting, alignment with national requests, and preparation for patient transfers. While these tasks were critical for system functioning, they involved fewer situations where established routines broke down or required reinterpretation. As a result, the kinds of contradictions that can trigger deeper reflection were less visible in these activity positions.

This pattern is consistent with organisational learning theory, particularly the distinction between single-loop and double-loop learning (Argyris & Schön, 1978). Partly participating organisations were primarily positioned for single-loop learning, focused on improving coordination practices within existing frameworks. Fully participating organisations, by contrast, encountered situations that challenged underlying assumptions about coordination, decision authority, and resource allocation, creating conditions for double-loop learning.

### Sensemaking under asymmetric crisis exposure

The results also indicate that learning conditions were shaped by asymmetric exposure to uncertainty and disruption. Fully participating organisations, as primarily affected regions, were required to make sense of rapidly evolving situations under high operational load. They faced serious incidents, competing priorities, and uncertainty about future demands. These conditions required active interpretation and continuous adjustment of decisions.

Sensemaking theory suggests that meaning-making processes are strongly influenced by proximity to disruption and responsibility for action (Weick, 1995; Weick, Sutcliffe, & Obstfeld, 2005). Actors who must make decisions under uncertainty are compelled to construct interpretations of what is happening and what should be done, whereas actors in supporting roles may rely more heavily on established coordination frameworks.

In KBÖ24, partly participating organisations encountered the crisis primarily through structured coordination channels (capacity requests, reporting procedures, and national guidance). While these interactions were essential for system functioning, they provided a more stabilised and formalised interface to the crisis. Fully participating organisations, in contrast, experienced the crisis more directly, encountering ambiguity, conflicting demands, and incomplete information. In these situations, coordination problems could not be managed through established routines alone. This suggests that differences in learning outcomes reflected differences in roles and

responsibilities within the exercise, rather than differences in organisational performance.

### **Reflective learning loops and ownership of system knowledge**

A further important contrast concerned participation in the evaluation process. Fully participating organisations were directly involved in the evaluation conference, where development areas and proposed measures were prioritised and generated. Partly participating organisations received aggregated results but did not participate directly in the evaluation process. Fully participating organisations were therefore involved in both experiencing and interpreting system-level challenges, whereas partly participating organisations primarily received the outcomes of these interpretive processes. From an Activity Theory perspective, this difference can be understood as unequal participation in expansive learning actions, particularly those involving reflection, conceptualisation, and redefinition of the object of activity (Engeström, 2001).

. This distinction reflects differences in what can be described as learning ownership, the degree to which organisations participate in defining what has been learned and what should change. Similar dynamics have been observed in studies of crisis exercises and inter-organisational learning, where actors closer to decision-making and evaluation processes tend to shape the interpretation of system-level challenges (Moynihan, 2009; Berlin & Carlström, 2008). The KBÖ24 results suggest that exercise design can concentrate such interpretive authority in particular parts of the system, depending on how roles in the evaluation processes are structured.

### **Temporal learning trajectories and cumulative understanding**

The progressive structure of the KBÖ24 exercise series created different temporal learning trajectories for partly participating organisations and fully participating organisations. Fully participating organisations participated in the full sequence of preparation, exercises and evaluation, while partly participating organisations participated in a subset of these stages.

From an activity-theoretical perspective, learning emerges through cycles of action, contradiction, and reflection (Engeström, 2018). Fully participating organisations were exposed to more complete cycles of this kind, moving from preparation to decision dilemmas, operational challenges, and structured reflection. Partly participating organisations, by contrast, experienced a more segmented trajectory, with fewer opportunities to connect operational experiences to system-level reflection.

This difference suggests that exercise series can produce uneven accumulation of system understanding over time. Even when all organisations participate in the same overall exercise, their learning trajectories may diverge depending on their activity positions. This observation resonates with earlier research showing that organisational learning in crisis contexts is shaped by role, responsibility, and access to reflective processes (Argyris & Schön, 1978; Moynihan, 2009).

### **Implications for exercise design and evaluation**

Participation structures, role allocations, and evaluation processes shape where contradictions become visible, where sensemaking is most active, and where reflective learning processes are concentrated.

This has several implications for exercise design and evaluation. First, differentiated participation should not be understood solely as a logistical necessity, but also as a pedagogical design choice. Assigning certain organisations to high-pressure roles concentrates complexity and decision-making challenges in specific parts of the system. While this may be necessary for realism and manageability, it also concentrates opportunities for system-level learning.

Second, evaluation processes play a critical role in determining who participates in the interpretation of system-level challenges. When only a subset of organisations are involved in reflective evaluation processes, this may shape which perspectives are represented in the final evaluation results.

Third, the results suggest that exercise designers may need to consider how learning trajectories are distributed across participants. If some organisations consistently occupy supporting roles, they may have fewer opportunities to encounter system-level contradictions or participate in reflective learning processes. While the first implication concerns how learning opportunities are distributed within a single exercise, the third points to how learning opportunities accumulate, or fail to accumulate, over time across an exercise series.

These implications do not suggest that all organisations should always experience the same roles or levels of decision pressure. Rather, they highlight the importance of understanding how exercise design choices may shape learning conditions across the system.

### Limitations and future research

This study has several limitations. The analysis is based on a single national exercise series, and the contrasts between partly participating organisations and fully participating organisations reflect design choices within this particular exercise context. Further research is needed to examine whether similar patterns emerge across other exercise series and domains. The study does not distinguish between individual and organisational learning processes, as the available data primarily capture system-level activities. This represents an area for future research.

In addition, the present analysis is based primarily on exercise-generated data and evaluation processes. Future work could incorporate interviews, longitudinal follow-up, or comparative studies across multiple exercises to better understand how differentiated participation influences organisational learning over time.

### CONCLUSION

This Work in Progress has examined how differentiated participation within a national crisis exercise series shapes organisational learning conditions. Drawing on empirical material from the KBÖ24 exercise series and using Activity Theory as a sensitising analytical lens, the paper compared organisations participating partly and fully as different activity positions within the same exercise system. Rather than treating participation differences as indicators of organisational capability or performance, the analysis focused on how exercise design and role allocation structured exposure to decision-making, contradictions, sensemaking, and reflective learning processes.

The results show that large-scale crisis exercises function as differentiated learning environments. Organisations positioned in high-pressure, decision-intensive roles encountered greater uncertainty, more visible system-level contradictions, and more extensive opportunities for reflection and interpretation. Organisations positioned in supporting roles contributed critically to system functioning, but were exposed to fewer situations that triggered system-level sensemaking and expansive learning. These differences were not accidental, but followed directly from how participation, roles, and evaluation processes were configured within the exercise design.

From an activity-theoretical perspective, the findings highlight the importance of activity position for understanding learning in crisis exercises. Learning was shaped not only by what organisations did, but by where they were positioned in relation to the object of activity and by their participation in complete or partial learning cycles over time. Complementary sensemaking perspectives help explain why coordination challenges became more visible where decision pressure was highest, and why learning outcomes should be understood as position-dependent rather than performance-dependent.

The paper contributes to ISCRAM research by offering an analytical approach to studying uneven learning within shared exercise systems. For practice, the findings suggest that differentiated participation should be recognised not only as a logistical necessity, but also as a pedagogical design choice with consequences for how learning opportunities are distributed across the system. As a Work in Progress, the study is limited to a single exercise series, and future research is needed to examine how these dynamics unfold across multiple exercises and over longer time horizons. Nevertheless, the analysis provides a basis for more deliberate reflection on how large-scale crisis exercises can support system-level learning in complex, multi-organisational settings.

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