Networks & Crises



Instigated by the case of the 2009 Schiphol train-tunnel fire, we analyze crisis situations







from an interdisciplinary perspective. The domain of organization science is merged with artificial intelligence approaches, first by modeling the events of the incident response and second by modeling agents and decision making processes involved in crisis response. Our main data source consist of primary data and secondary data, i.e. reports, which are complemented by interviews with practitioners.



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communication_from_to(CCS, AAS_DMS, requested(FF_MS, action(dispatch_to(Schiphol_station))), x)
communication_from_to(AFO, ProRail_EOC, at_location(strong_signs_of_fire, Schiphol_station), x)
₽—interval
           ⊡—F and
                       -communication_from_to(NPSA_Driebergen, CCS, at_location(strong_signs_of_fire, Schiphol_station), x)
                       -communication_from_to(NPSA_Driebergen, KMar_CR, at_location(strong_signs_of_fire, Schiphol_station), x)
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-communication_from_to(CCS, AAS_OM, at_location(strong_signs_of_fire, Schiphol_station), x)

---communication_from_to(CCS, AAS_OM, requested(FF_MS, action(dispatch_to(Schiphol_station))), x)

)		analysis, fire incident. ABSTRACT Communication and inter-organizational coordination is crisis management are of stremest important for all processes and can lead to fast and effective averting or cading of a crisis stration. In this paper, a real world incident of a fire in the Amsterdam Airport Schiphol train tuncel was formalized, based on a public inquiry report, and subsequently, the correspondent to the incident was analyzed by means of automatic property checking. It is shown how this appreach is a communication and coordination practices in crisis management and to evaluate what were wrong, where and when. DICODUCTION An and officient ormergency regions is crucial for public matry in critical areas such as tunnels, but the somination to realize this often fails. In the rare over of a crisis, various parties must be pregraded react in a timely, coordinated manner, which often does not occur. Crisis coordination problems are an internationed pharmement, but crise constitution is 1000, showed how farmented distribution of new information impaired	events as they unfold Restarch suggests that military contexpt of Network-Centric Capabili (NCC) could fulfill the need (Boughton et al. 20 Maynihan 2009; Von Lubitz et al. 2005). Th capabilities authorize first regenders to decide far suggested by communication systems that can dured situational awareness (Gorman et al. 20 Vang et al. 2009). In order to implement NCC improve conceptuary response, coordination proce- during crists must be better understood. Method analyse crists, however, are could and the intens The paper those how a formal stallying u automatic property checking, can provide a m efficient and gractical method to study of coordination processes (L.g. Mogendoom et al. 20 In general, empirical data is formalised in so cat traces. These traces can be analysed automatically checking if certain dynamic properties hold in traces, via a software tool based on the Temporal Language (Bosse et al. 2009). The case to Haurate method is a damagenous fire incident that occurred by 2 rd 2009 in the train tunnel and underground to mation of Amsterdam Airgott Schiphol. Differ modalities of crists management could be radied formal analysis, such as the beliefer those involved, as is done in (Sonse current restarch focuses on communications, because by using o	the ttics ttics ttics ools; heac dor, blic ools; and ools; and dor, and and and and and and and and
D	Paper	2: (ECMS 2	2012)	ire here ring iton ions and
	Formalisation & Analysis of			ved the the
	Communication during Fire			
	Incident in Amsterdam Airport			
	Train T	unnel.	J	

$P1B_EVACUATION_PERFORMED_WITHIN_15MINUTES_AT_FIRE_LOCATION =$
∀γ:TRACE , ∀t1,t2:TIME, ∀a,b: AGENT
state(γ, t1) = world_state(at_location(fire, tunnel2A)) &
∀t0:TIME < t1 [state(γ, t0) ≠ world_state(at_location(fire,
tunnel2A))] &
state(γ , t2) = communication_from_to(a,b, sign_clear(trains))
&t1≤t2
\Rightarrow
Ji: INTEGER
& i = t2 - t1
& i ≤ 30

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