DISASTER

Data Interoperability Solution At Stakeholders Emergency Reaction

285069

D2.31 Overview of linguistic similarities and relevant differences

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Abstract

The focus of this deliverable is to point out the different symbols that are used in the partner countries for the same personnel, vehicle or operation. The database contains all relevant technical terms (English, German and Dutch) used in common fire scenarios. Furthermore this document handles the differences between descriptions used in Emergency Management Systems (EMS).

Executive summary

To be able to model ontology in an appropriate way and for a clear understanding between the DISASTER project partners as well as the end users, a linguistic basis needs to be established.

This deliverable points out the differences between the symbology used in each emergency management system. It also compares the advantages and disadvantages of each system. The EMS in the United Kingdom, Germany and Denmark each use a core symbology that is extended by colours and text to describe the special meaning of the mentioned unit, incident or place. The Dutch system, however, approaches the symbols differently by using defined pictograms for each unit which has to be drawn. Thus the Dutch system has a translatable semantics. The easiest way to try to translate commonly used terms and symbols into the different EMS would be to find a common semantics. Based on those semantics then, a core symbology might be developed, which then furthermore enables translating tactical values into terms and symbols used in every country.

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Abstract **(for dissemination)**	The focus of this deliverable is to point out the different symbols that are used in the partner countries for the same personnel, vehicle or operation. The database contains all relevant technical terms (English, German and Dutch) used in common fire scenarios. Furthermore this document handles the differences between descriptions used in EMS.
Keywords	Linguistic, similarities, differences, moor fire scenario, definition, symbol

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1   Introduction

1.1   Translation of commonly used core symbol sets

Target: "Ensure the same language-usage and understanding of symbols used in Emergency Management Systems (EMS)"

1.1.1   Problem definition

The language and understanding of emergency management is very different throughout all countries of the European Union. Therefore, a successful project implementation depends on a common understanding of definitions used in EMS. Although EMS in member states are differently organized, they basically manage common scenarios. Regarding the processes in EMS, it is conspicuous that these processes are the same. Even if the management methods are different, they handle the same incidents with the same process. So fire will nearly always be extinguished by water. However, all EMS use their own semantics to describe the processes and the units and tools used. So there has to be a way to describe these processes with a commonly usable semantic in all of the involved countries.

1.1.2   Problem-solving approach

EMS often use maps to display incidents, key aspects, hazards, units, personnel and so on. In these maps, information is mostly provided by symbols. But these symbols are unique for all EMS. This depends on the definition of the technical values, and technical information used in the management processes. The difficulty in that case is that all EMS uses their own approach for developing their symbology.

For this deliverable, the semantics in the symbologies of the UK, Denmark, Netherlands and Germany are investigated for similarities. This should allow DISASTER to provide a translation of semantics between the EMS.

The table in this document includes a comparison of commonly used symbols and terms used in fire brigades and public safety / health.

Therefore, a literature review was done to include as many existing symbols as possible at the moment.

This information was used to set up a table that includes the symbols of every stakeholder and the translation for every country as far as they exist. This table is based on the information given in:

- Civil Protection Common Map Symbology [1] (British cabinet office)

- Fire and Rescue Manual [2] (British Stationery Office)

- Guidance on emergency procedures [3] (British national Policing improvement Agency)

- UK Civil Protection Lexicon [4] (British cabinet Office)

- DIN 102 [5] Empfehlungen für Taktische Zeichen im Bevölkerungsschutz   (German Ständige Konferenz für Katastrophenvorsorge und Bevölkerungsschutz)

- FwDV3 [6] Einheiten im Lösch- und Hilfeleistungseinsatz (German Ausschusses für Feuerwehrangelegenheiten, Katastrophenschutz und zivile Verteidigung (AFKzV)

- NEN 1414 [7] (Dutch)

- "Standaardisatie Kaartsymbolen Operationele Informatievoorziening Veiligheidsregio's" (Dutch)

- Map Marking Symbols (Danish)

1.1.3   Proposal for solution

The database contains all relevant technical terms (English, German and Dutch) used in common fire scenarios. For all this terms, the database contains a common description/definition and the symbol/icon.

Table 1 Translation of commonly used terms

Personnel			
UK	**D**	**NL**	**Description**
Fire fighter	Feuerwehrmann	Brandwacht	Responsible for day-to-day firefighting and fire safety work.
Squad	Trupp	1 Ploeg	small (the smallest) tactical unit used for fire fighting
Squad leader	Truppführer	NA	Leader of one squad
Squadron	Staffel	2 Ploegen	A tactical unit that has more fire fighters than a squad but less than a pump crew.
Squadron leader	Staffelführer	Bevelvoerder	Leader of one squadron
Crew	Gruppe	Bezetting Tankautospuit	A tactical unit that has more fire fighters than a squad / squadron.
Crew manager	Gruppenführer	Bevelvoerder	In charge of the watch at smaller fire stations or the crew of a fire appliance. Carries out day-to-day fire fighting and fire safety work. Will attend incidents as officer in charge of an appliance and will also take command of small-scale incidents.
Platoon	Zug	Peloton	A tactical unit that has a various number of pump crews and different vehicles. This group size is usually used for a room fire response.
Watch manager	Zugführer	Pelotonscommandant	In charge of the watch at larger fire stations. Carries out day-to-day firefighting and fire safety work.
Station manager	Verbandführer	Ploegchef	Responsible for management of a fire station or day-to-day work in a specific policy area. Will take charge of large-scale incidents or undertake specialist tasks such as support at an incident.

Group manager	Verbandführer	Postcommandant	Responsible for management of a group of fire stations or day-to-day work in a specific policy area. Will take charge of major incidents or undertake specialist tasks such as support at an incident.
Area manager	Verbandführer	Districtscommandant	Responsible for day-to-day management of an area of fire brigade operations or policy. Will take charge of major incidents or undertake specialist tasks such as support at an incident.
Deputy chef fire officer	Verbandführer	Plaatsvervangend brandweercommandant	Deputises for the Chief Fire Officers during their absence. Will take command of major incidents.
Brigade manager / chief fire officer	Verbandführer	Brandweercommandant	Is head of the organisation. Will take command of major incidents.

Table 2 Translation of commonly used vehicles

Vehicles			
UK	**D**	**NL**	**Description**
Ambulance (general)	Rettungsfahrzeug	Ambulance	Vehicle with medical and technical equipment for treatment and transportation of patients
Ambulance	Krankentransportwagen	Ambulance	Vehicle with medical and technical equipment for treatment and transportation of sick/ill patients
Breathing apparatus unit	Gerätewagen Atemschutz	Ademluchtvoertuig	Fire appliance with extra breathing apparatus sets for use at major accidents
Chemical incident unit	Gerätewagen Chemie	OGS (ongevalsbestrijding gevaarlijke stoffen) – eenheid / OGS-peloton	Fire appliance, especially for incidents with hazardous materials
Command car / control unit / command and control appliance	Einsatzleitwagen	Commandovoertuig	Commanding officer car equipped with radio and other command aids
Control unit	Kommandowagen	CoPI-bak	Fire appliance equipped as a mobile control room for use by the commanding officer at major accidents
Dry powder appliance	Pulverlöschfahrzeug	Poederblusvoertuig	Fire engine with fixed mounted foam and/or powder unit mainly used for powder attack
Emergency ambulance	Rettungswagen	Ambulance	Vehicle with medical and technical equipment for treatment and transportation of injured patients
Emergency tender	Rüstwagen	Hulpverleningsvoertuig	Vehicle equipped fix mounted technical devices used for rescue operations
Fire engine / pumping appliance	Löschfahrzeug	Blusvoertuig	Vehicle equipped and used for fire fighting
Foam tender	Schaumlöschfahrzeug	Schuimblusvoertuig	Fire engine with fire pump, water tank, foam concentrate tank, foam monitor and fire fighting equipment, mainly used for foam attack

Medical unit	Notarztwagen	Traumateam	Vehicle equippedin such a way that an accompanying doctor can render lifesaving first aid
Radioactive incident unit	Gerätewagen Strahlenschutz	NA	Fire appliance especially equipped for incidents with radioactive materials
Rescue tender	Gerätewagen	Materieelwagen	Fire appliance which carries a wide range of equipment for use at rescue operations
Turntable ladder	Drehleiter	Autoladder	Turntable ladder
Water tender	Tanklöschfahrzeug	Tankautospuit	Fire engine equipped with a fire pump driven by the vehicle engine, a water tank, hose reels and fire fighting equipment

Table 3 Translation of commonly used operational terms

Operational			
UK	**D**	**NL**	**Description**
Command of the operation	Einsatzleitung	Commando	Incident command
Control room	Leitstelle / Einsatzzentrale	Alarmcentrale	Permanently staffed room in which emergency calls are handled and subsequent action taken to mobilize the emergency services
Fire station	Feuerwache	Brandweerkazerne	Building, housing fire service personnel, appliance and equipment
Mutual aid	Nachbarschaftshilfe	Bijstand	Organized operations by additional fire or rescue units from neighbouring operational districts
Officer in charge	Einsatzleiter	Officier van Dienst	Officer in charge of an fire engine/appliance (responsible leader of a fire or rescue service operation with power of command over all crews at his/her disposal)
Operational tactics	Einsatztaktik	Operationele inzettactiek	Appropriate application of personnel, appliances and equipment at the fire ground or at the scene of any other emergency
Rescue service	Technische Hilfeleistung	Technische Hulpverlening	Measures taken to fight against the threat of life environment and property caused by other emergencies than fire

Table 4 Translation of fire brigades

Fire brigades			
UK	**D**	**NL**	**Description**
Harbour fire brigade	Hafenfeuerwehr	Blusboot havendienst	Fire service established by the harbour authorities and especially equipped for fighting fires in ships and harbour areas
Private fire brigade (industrial fire brigade)	Werkfeuerwehr (Betriebsfeuerwehr)	Bedrijfsbrandweer	Fire brigade established and financed within an organisation to provide fire protection to its own assets and personnel
Professional / public fire brigade	Berufsfeuerwehr	Beroeps brandweer	Public fire brigade with professional, full time personnel (sometimes include part time or Retained Duty Fire service Personnel (RDS)
Volunteer fire brigade	Freiwillige Feuerwehr	Vrijwillige brandweer	Public fire brigade with voluntary, part time personnel

Table 5 Translation of fire brigade symbols

Fire brigades				
Keyword	**Symbol D**	**Symbol NL**	**Symbol UK**	**Symbol DK**
fire fighter	NA	NA	NA	NA
squad		NA	NA	NA
squad leader		NA	NA	NA
squadron		NA	NA	NA
squadron leader		NA	NA	NA
crew		NA	NA	NA
crew manager		NA	NA	NA
platoon		NA	NA	NA
watch manager		NA	NA	NA
station manager		NA	NA	NA
group manager		NA	NA	NA
area manager		NA	NA	NA
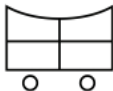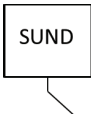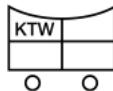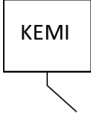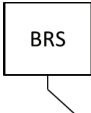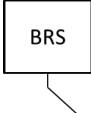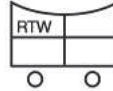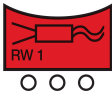
deputy chef fire officer		NA	NA	NA
brigade manager / chief fire officer		NA	NA	NA

Table 6 Translation of vehicle symbols

Vehicles				
Keyword	**Symbol D**	**Symbol NL**	**Symbol UK**	**Symbol DK**
ambulance (general)			NA	SUND
ambulance	KTW		NA	NA
breathing apparatus unit		NA	NA	NA
chemical incident unit		NA	NA	KEMI
command car / control unit / command and control appliance	NA	NA	NA	BRS
control unit	NA	CoPI	NA	BRS
dry powder appliance	NA	NA	NA	NA
emergency ambulance	RTW	NA	NA	NA
emergency tender	RW 1		NA	NA
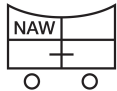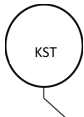
fire engine / pumping appliance	LF 8/6		NA	NA
foam tender	NA		NA	NA
medical unit	NAW	NA	NA	NA
radioactive incident unit		NA	NA	NA
rescue tender	NA		NA	NA
turntable ladder	DLK 23/12	RV	NA	NA
water tender	NA		NA	NA

Table 7 Translation of operation symbols

Operational				
Keyword	**Symbol D**	**Symbol NL**	**Symbol UK**	**Symbol DK**
command of the operation	EL	NA	NA	KST
control room	LtS	NA	NA	NA
fire station			NA	BRASN
mutual aid	NA	NA	NA	NA

officer in charge			NA	NA
operational tactics	NA	NA	NA	NA
rescue service	NA	NA	NA	NA

2   System of Symbols in Germany

In Germany, the symbols used in the EMS are usually a combination of one or more basic symbols that have a certain colour. In Table 9, the colours and their meanings are listed. Dependent upon the organisation, colours and acronyms have to be inserted. Common abbreviations used in the German EMS are defined in the German DIN 13050 and DIN 14011.

Table 8: German basic symbols

Basic Symbols		
Nr.	**Symbol**	**Meaning**
1.1		Tactical formation, authority
1.2		Command post
1.3		Facility
1.4		Person
1.5		Area
1.6		Action
1.7		Incidence
1.8		Hazard
1.9		Stationary
1.10		Building
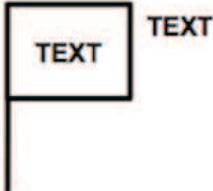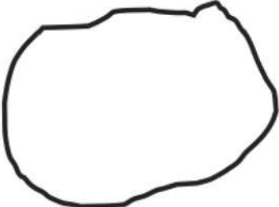
Table 9: Colours of German symbols

Colours for display of organisations and facilities			
Nr.	Base colour of the symbol	Frame and writing	Organisation / facility
2.1	Red	White or black	Fire service
2.2	Blue	White or black	Federal Agency for Technical Relief, THW
2.3	White	Black	Relief organisation
2.4	Yellow	Black	Command facility
2.5	Green	White or black	Police
2.6	Orange	Black	Other (authorities, agencies, assigned companies etc.)

3 System of English symbols

The English symbology was developed by the Cabinet Office in partnership with the Ministry of Defence of the government of the United Kingdom to enable interoperability between the different organisations in emergency management systems. However, up to now, there is only a core symbol set that was released in March 2012. Presently, it does not include individual symbols of the different organisations like fire departments or medical services. These symbols are used as follows: To identify incidents, the symbol is anchored with a line to the specific point. The meaning itself is inserted by adding acronyms or abbreviations into that symbol. Therefore, the lexicon of civil protection terminology is used [4]. But as in the German system, there is kind of semantics used in that symbology.

Table 10 System of English symbols

Basic symbols		
Nr.	**Symbol**	**Meaning**
3.1		Incident / Hazard
3.2		Command, Control, Coordination or Communication
3.3		Asset
3.4		Infrastructure
3.5		Known Area

3.6		Unclear Area
3.7		Presumed Area
3.8		Exclusion Zone
3.9		Inner cordon
3.10		Outer cordon
3.11		Access
3.12		Exit

If one of these symbols is used, the core symbol is taken and placed in the map. Then it is extended by text to describe the exact type [1]. For example, the Command Posts. As we can see in fig. 1, the Command Post is an Incident Command post (ICP) and responsible for Police and Ambulance (P/A).
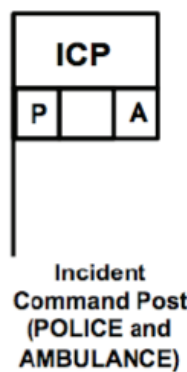
Figure 1 Command Post (ICP P/A)

4   System of Dutch symbols

The Dutch system also uses symbols to describe the different things in a map. Although there are symbols for vehicles, facilities, units and hazards, there is no semantic usage as in the Danish, British and German systems. That might make it easier for untrained people to understand the symbology, but on the other hand it is much more complicated to translate this symbology to other languages. This can only be done by translating every symbol in its very special tactical value, which then can be translated into the other languages.

Table 11 Dutch Symbols

Nr.	Symbol	Meaning
4.1		Pier Mooring
4.2		Road Block
4.3		Emergency goods supply
4.4		Fire hose water tap / Hydrant
4.5		Emergency source location
4.6		Risk object: Medical
4.7		Risk object: Hotel
4.8		Risk object: Office

4.9		Risk Object: Public building
4.10		Risk Object: School
4.11		Risk Object: House (elderly or disabled person)
4.12		Emergency distribution point
4.13		Digital communication support mast
4.14		Public alarm horn
4.15		Broadcasting mast
4.16		Ambulance
4.17		Presence fire brigade
4.18		Vehicle fire brigade personnel
4.19		Location command container (Bronze)

4.20		Presence emergency city personnel
4.21		Vehicle emergency city personnel
4.22		Presence medical personnel
4.23		Location general practitioners first aid
4.24		Press centre
4.25		Presence police personnel
4.26		Vehicle police
4.27		Central location corpses
4.28		Disaster tourism
4.29		Major risk object
4.30		Risk object: Pipeline

4.31		Risk Object: Military
4.32		Risk Object: Dangerous materials
4.33		Risk Object: Liquid propane gas
4.34		Risk Object: Nuclear
4.35		Risk Object: Explosive
4.36		Ship:Yachts
4.37		Shipyard
4.38		Ship: Passengers
4.39		Ship: Tanker
4.40		Casualty: Deceased
4.41	UGS	Emergency services rally point

4.42		Road block
4.43		Mental health
4.44		Home for the elderly and disabled
4.45		Red Cross
4.46		Medical Doctor
4.47		Pharmacy
4.48		Risk Object: Child care centre
4.49		Hospital
4.50		Risk Object: Mental health institute
4.51		Risk Object: Addiction care
4.52		Forest Fire

4.53		Biological incident
4.54		Nuclear incident
4.55		Earthquake
4.56		Flood/ Tsunami
4.57		Industrial accident
4.58		Wind storm
4.59		Large fire

5 Danish Symbol Set

The Danish symbol set is also based on some core symbols. These symbols are then extended by pictograms and colours to describe their special meanings.

Table 12 Danish Symbols

Nr.	Symbol	Meaning
5.1		Incident
5.2		Facility
5.3		Units and resources
5.4		Hazard or damage marker

Nr.	Symbol	Meaning
5.5		Radioactive incident
5.6		Incident with chemical substances
5.7		Incident with biological substances
5.8		Dangerous weather
5.9		Water supply
5.10		Terror
5.11		Robbery
5.12		Weapons

5.13		Bomb/Explosives
5.14		Car accident
5.15		Meeting point of forces
5.16		Command Station
5.17		First aid and triage
5.18		FEMA rescue unit
5.19		Emergency Medical Service unit
5.20		Police unit
5.21		Radioactivity
5.22		Chemicals
5.23		Biological

This symbol set uses different colours to describe the context they are used in.

Table 13 Colours of the Danish symbols

Colour	Meaning
White	Terror
Yellow	Biological
Blue	Water

6   Technical and tactical information used in EMS

Regarding cross boarder incidents (moor fire scenario) and incidents affecting more than one organisation (air cargo scenario), it is conspicuous that the kind of information that has to be exchanged differs significantly. Therefore it is important to describe all of the information that has to be exchanged. Otherwise a translation would not be possible.

6.1   Technical information

In the air cargo scenario, the fire brigade, customs, police and government are involved. So information between these organisations has to be exchanged. Taking the IATA Codes as examples, the information which is needed is available and has just to be provided and exchanged among the organisations. In fact, the IATA Code just transports technical information. This technical information just provides data that is usable without translating them into other languages.

Table 14 IATA code example

IATA Code	Meaning
AMS	Schiphol Airport

In this case, the provided information has to be sorted and directed to all the persons involved in processes connected to that information.

6.2   Tactical information

Taking the moor fire scenario as the other example, the need of translation in the common sense is shown. If there are fire engines on each side of the border, the officers in charge would like to know where they are and what they are able to do.

Looking at the X side for example, the standardized engine is able to pump $5.0m^3$ per second. At the Y side, the standardized engine is able to pump $1.2m^3$ per second. One of them is called "fire engine", the other "Löschgruppenfahrzeug". If only the common word is translated into the other language, then merely the information that there is a vehicle for fighting fires is provided.

Table 15 Translation of tactical information

UK	D
Fire engine	Löschgruppenfahrzeug

However, this is not the information that is needed by the officers in charge. They want to know:
- Who is the contact person at that vehicle? (officer in charge)
- How can the officer be contacted? (mobile phone, radio etc.)
- What are the capabilities of the crew? (able to extinguish medium fires without external aid, to establish a connection to the extinguishing media , providing first aid to injuries, etc.)
- How many are they? (4-8 persons)
- What are the capabilities of that truck? (able to provide up to, e.g., $12m^3$ of water, foam or powder, transport capabilities for the crew and the extinguishing equipment, etc.)
- When did they arrive at the incident? (one hour ago)

For example, the information that is provided by the expression "Löschgruppenfahrzeug" is defined in the standard in the DIN 14530-27 [8]. This standard needs 19 pages to describe the information. The following is a selection of the information:

- The truck must be able to carry a trailer with 2000kg weight
- Space for 8 Persons
- 2 sets of breathing apparatus in the cabin
- Radio in front of the truck and one at the pump manual
- Lighting capabilities at the roof
- A pump
- A hose and delivering unit with the capability of 230l/min
- A hose of min 50m with min 230l/min
- $1.6m^3$ of water at that truck
- etc.

By just translating the expression, lots of information is lost. So we need more than just translating "fire engine" into the other language. Furthermore, we require translating the capabilities of each unit into the unit at the other side. So the tactical value can be split into classes and child information.

Table 16 Tactical values of a fire engine [8]

Class	Child	Sub information
Fire engine	Truck	Vehicle
		Carrying $1.6m^3$ water
		Space for 5-8 Persons
		Equipped with hoses and pumps
		Operated by 5-8 People
	Crew	Humans
		Specially trained
		Able to extinguish medium fires without external aid
		Able to provide first aid to injuries

That also makes it possible to sort out information that is not needed. The police for example might then show a fire engine on their map whereas the fire brigade shows which kind of engine it is and at which point on the map it is located.

These two kinds of information types make it very important to differentiate them, regarding the approach of translating them into symbols. Both types of information are necessary for the command tactics and therefore the tactical values are needed as well as the technical information.

Including both information types in one system also enables filtering the information by the organisation. So every unit might just display the data which is relevant for their target. Such an example is given below.
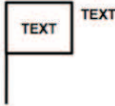
Police officers do not need to know if there is $1.5m^3$ of water in that engine. They want just to know that there is an engine. But the crew of the engine wants to know if there are some hazardous goods in the plane that just crashed.

7   Conclusion

As shown above, there are some similarities between the mentioned EMS.
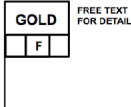
But every system uses a different approach for its symbols. Although the English and German symbol semantics is quite similar, there are no symbols for vehicles yet on the English side. But they are presently being developed [1]. On the other hand, the semantics that is used to describe points is nearly the same. The symbol is based upon a standardized monochrome form. This form is then extended by colours and text to describe its actual meaning. For example: a gold level fire brigade command post in Germany and the UK.

Table 17 Base symbol

Base Symbol	
D	**UK**
	TEXT TEXT

These symbols are then extended with colours and text as follows.

Table 18 Extended base symbol

Extended base symbol Fire Brigade	
D	**UK**
	GOLD FREE TEXT FOR DETAIL F

As we can see, the German symbol just shows that there is a command post of the fire Brigade whereas the English symbol also shows the level of command. In the German symbology this is done by adding the sign for the gold level officer to that command post.

Figure 2 Gold level Fire Brigade Commander

The Dutch symbology instead does not use any symbol for that command post up to now.

Due to the different semantics used in each system, a true comparison is not possible. It furthermore needs a deployment of a single European semantics, which will then be used in incidents covering more than one country or organisation.

As mentioned in the introduction to the German Spec. DV102 [5] symbols used in EMS should be

- Logical and unique

- Unambiguous and self-explicating

- Easy to reproduce

- Possible to draw with or without aid of electronic devices

- Comprehensive all over the organisations

- Adaptable by different laws and structures of EMS

An extendable core symbology would be the easiest way to take care of the above mentioned requirements.

Regarding the different languages, it can be seen that there are some expressions that cannot just be translated, especially in terms of EMS descriptions, e.g., the crew of a fire engine. With this expression, a group of people with some special intentions are basically being described. In that example, the tasks are to:

- Save people's lives,

- establish a connection to the extinguishing media,

- extinguish the fire.

These tasks are the same all over the world. With this, we can introduce the tactical value of every unit, which is used in EMS.

The English expression tells us that there is a "crew". Without more context, this just says that there is more than one person, which could be any crew, e.g., police, firefighting or ambulance crews. The German expression "Löschgruppe" denotes that there is more than one person and that they have the task to extinguish fires, but not necessarily that they in an engine. The Dutch expression "Bezetting Tankautospuit" tells us that we are talking about people in fire engines. However, none of these expressions tell us anything about how many people we are talking about or what they are able to do. If there was a table showing the tactical values of each of these expression, we could see that every of these groups has the task of extinguishing fires, that there is one group leader, one person who is in charge of whatever they do and so on. Based on that table, data interchange would be much more efficient. Examples for tactical values for firefighting are shown below.

For example:

- Person who is able to extinguish a fire

- Person who is able to establish a connection to extinguishing media

- Person who is able to operate the mechanic parts of the supporting machines

- Person who is responsible for getting the firefighters to the fire

- Person who coordinates the firefighting in general

- Person who coordinates the firefighting at small fires

- Person who coordinates the firefighting at medium fires

- Person who coordinates the firefighting at large fires

- Person who is responsible for the firefighting in general

- Person who is responsible for the firefighting at small fires

- Person who is responsible for the firefighting at medium fires

- Person who is responsible for the firefighting at large fires

- Group which is able to independently get to the fire, establish a connection to the extinguishing media and extinguish a small fire (for example, a burning car)

- Group which is able to independently get to the fire, establish a connection to the extinguishing media and extinguish a medium fire (for example, a burning house)

- Group which is able to get independently to the fire, establish a connection to the extinguishing media and extinguish a large fire (for example, fires in industries, moors, forests)

- Group of people who coordinate the firefighting

- Group of people who is responsible for the firefighting

These tactical values then have to be described by symbols. This would enable data exchange between all the involved countries and organisations.

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