

## INTELLECTUAL OUTPUT

NOV 2015-MAR 2016

*Research on psychological methods/techniques  
for 112 dispatchers in Italy*

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FORENSICS GROUP

## Introduction



*The following report was produced by Forensics Group, with the contribution of Igor Vitale, within the project called "One Minute may save a life" 2015-2017. It starts with the analysis of the unique European emergency call number 112. As this report has shown, there is still no a widespread distribution in Italy, with sporadic initiatives in some areas, and above all, little attention is paid to informing citizens about this.*

*While there are several contributions in terms of methods and procedures, on the other hand, it's evident the problem of a substantial heterogeneity in protocols, and especially in the specialized training of 112 dispatchers involved. Moreover, it seems to be a concealed struggle for power between the organizations involved and their workers, including memberships, rights and duties. There is no shortage of technologies to facilitate the handling of emergency calls, or advanced communication systems. The key problem remains, once again, the human factor. It is becoming clear that standard protocols need to be adopted, and, at the same time, they need a psychological, and not purely technical training.*

*This report contains 9 different chapters that analyse over all sociological and psychological methods and researches. Starting from the historical evolution of emergency numbers in Italy, we analyse the progressive unification difficulties, the various procedures and protocols adopted, and finally the need to deepen the aspect of training. In this report, in addiction to specialized studies, we also refer to*

***surveys raised by short semi-structured interviews, and we finally arrive to the need of a standard model that contains, first, procedural clarity and later, pragmatic application in a particular and sensitive area, just like the Rescue Service.Tec***

- 1. The unique Italian emergency call number 112.***
- 2. The role of psychological training for the 112 dispatchers.***
- 3. The use of Dispatch protocols.***
- 4. Measure the effectiveness of the protocols.***
- 5. The role of the dispatchers in the 118 emergency service.***
- 6. The role of the dispatchers with the Local Police.***
- 7. The theoretical framework of CSCW.***
- 8. The role of Sensemaking in the 112 Dispatcher work.***
- 9. Towards a standard unified model.***

## 1. The unique Italian emergency call number 112.

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In Italy, 112 was the only call number used to contact the operating centers of Carabinieri from 1981 to 2010. Whereas 113, activated in 1968 and connected with the Police operating centers, was traditionally known as call number for emergency public rescue services, to call for any kind of emergency.



113 replaced other short emergency call numbers that were not functional yet. It switched emergency calls to some other institutions spread in their area of responsibility. Today there are in Italy some different call numbers drawn up for different services required:

- Public Safety: 112, 113, 117;
- Technic Rescue: 115, 1515, 1530;
- Medical assistance: 118;
- Child emergency: 114.

In addition to these numbers, there are other socially useful short numbers which, as provided by the European Commission, must turn into short numbers with the 116 area code (1550 for health emergencies, such as epidemics, 1522 for the topic 'woman anti-violence'). 116 call number for roadside assistance is turned off for a few years. It was replaced by various toll free numbers of private bodies. 114 short number is for alerts of children in adversity, it is a service assigned to ChildLine by the Ministry of Communications, and it is classified as emergency number.

This premise shows that Italy has, on one side, a lot of initiatives to look after and to face up the emergencies, on the other side, it is very fragmented and lacks common standards.

With the introduction of a unique European emergency call number (91/396/CEE), the calls are directly transferred to the operating centers of Carabinieri. Then they switch them to other services, and emergency operating centers.

It is easy to imagine that calls to 112 have gradually increased since 2002 for various reasons:

- Users who use mobile phones are more than 90% of the Italian population, with almost one mobile line per inhabitant. The number 112 is in the instruction booklets of mobile phones as the only connectable number and is, in fact, the only number without the SIM / USIM card into the telephone.
- Foreign citizens who do not know the various emergency numbers, using their mobile phone or landline, call emergency numbers and, if known, the 112. With the latest mobile phones, they use 112 also for calls directed to 999 (UK) or 911 (U.S.A.), without knowledge from the customer of which service they are calling.
- There is a growing awareness that the unique emergency call number in Europe is the 112, although some Eurobarometer data shows that only 10% of the population is aware of it!

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While Italy was adopting the unique European number 112 for emergencies, a particular step was in 2004, when the Ministry for Technological Innovation announced the start of a trial in the provinces of Salerno, Catanzaro and Palermo (in reality the experiment was then limited to Salerno). In the same year, we concretely saw the birth of:

1. A "Working Group for the establishment of the Unique European Emergency Number" (Prime Minister's Decree of 04 August 2003); or a mission structure called "technical-operational Unit for the establishment of the Unique European Emergency Number" (DPCM 30/06/2005 published in the Official Journal no 237 of 11 October 2005).
2. An inter-ministerial committee with the task of analysis and conduct a feasibility study to determine how the 112 operation headquarters in Italy should be structured and organized.

The warrant of these committees has expired in the first of 2006 and the Salerno experimentation has led to the construction of the model "NUE 2009 Integrated".

### **"NUE 2009 integrated" model**

This model, deriving from the experience of Salerno, provides the processing of the phonecalls between the operating Police stations and Police State (the processing is organized according to the territorial bodies of the two police skills), with the caller location via "Pull", and the transfer of emergency calls to the operating centers responsible of the Fire Department and First aid, which have access to caller location system for calls received on lines 115 and 118. The "NUE 2009 Integrated" model is active in the following provinces:

- Biella;
- Brindisi;
- Rimini;
- Salerno.

## 112 Tech.

In Italy, there are now hundreds of operating centers, some of these at a provincial level (mainly those of the 118 and the Fire Department), and many of them at a telephone district level (Carabinieri and State Police).

The correct size of the operating stations of 112 must be related to factors like population density, complexity of the territory and technological solutions, while continuing to be able to handle any spikes in traffic due to extraordinary events (disasters or major events) and to any failure situations (e.g. many national operations centers continued to function without serious problems during the blackout of 2003, but with different difficulties to keep in mind).

The 112 emergency centers in Italy should have a regional structure (for regions up to 3 million inhabitants), or organized with supra-provincial jurisdiction.

As matter of fact, under certain traffic conditions, or particular call peaks, you should guarantee citizens to obtain, however, response in a short amount of time (up to 1 minute, with an average of about 15 seconds for a response). Prolonged waiting for the response to an emergency number (whatever), creates a lack of confidence in the effectiveness of the service in the caller.

For these reasons, many operating plants abroad are organized with a system that allows to route calls that can't be answered by a control center (for example failure situations or heavy traffic), to that one nearest territorially, or at least to the one able to answer even if the nearest one is committed (so-called backup or overflow depending on the situation).

The subsequent management and the electronic transmission of the call to the second level operations centers (PSAP2), should take place according to standardized parameters, so that allowing the control of the event and the communication with the units on the territory.

The regional organisation also causes the enhancement of the capacity of the operators, allowing, for example, to conduct conferences when it is necessary to reply in a foreign language.

Alternatively, some operations centers (eg. In Lombardia) are supported by some organisations able to provide with an interpreter h24 available in a few seconds.

Application of advanced software and telematics advantages are:

1. Receipt of the call and the beginning of the telephone interview.
2. Receiving from 2 to 6 second of location information of the caller from telecom providers and (if the call is from a landline) information also of caller data.
3. Verification of location information received from the system with that one required to the callers at the end of the interview.



4. The automatic warning and sending (with a video-message that confirm the activation) of the vehicles and crews deemed necessary.
5. Receiving information of the dispatch, the arrival on site, ecc., by the media / crews submitted, or the confirm of the contact and the take-over by the PSAP2 staff.
6. The ability to communicate by radio with the crews to supply better directions or to receive subsequent requests of detail (eg. The need for other interventions).

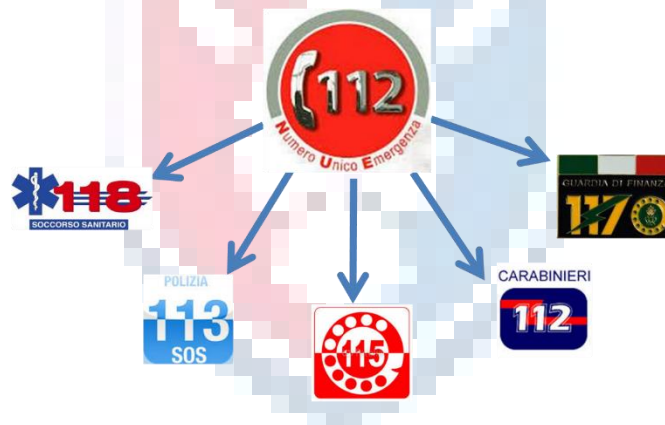
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The aims of advanced technological solutions are being able to reduce the time of receipt, dispatch and intervention of emergency vehicles or police.

This is done by giving the operator the possibility to simultaneously manage the reception, the localization and the alerting / dispatching through procedures that don't require vocal information. In this way you can continue the call if it's necessary to provide guidelines to face the emergency.

The caller location is also used to discourage any false calls, jokes, silent calls and any other abuse (eg., The cases of alerting the police in opposite locations to the place where the wrongdoers want to make criminal acts, such as robbery).

Technology and software solutions have been developed by some major producers of telecommunications systems.



It is easily understood by these raw specifications, that Italy nowadays is characterized by different sectors specialized in answering to telephone requests of the citizens. The complexity for the user is related to the different roles and different requests for each of these sectors and the different reference numbers. This situation obliges the citizen to have – in case of need – some problems to choose.

The Rescue Facilities that deal with the management of an accident or critical issues are activated, sometimes in a complicated manner. The deriving information is fragmented, and for that reason an additional effort of cooperation and communication among stakeholders is necessary to ensure, at a first phase, the quality and also the sharing of information.

Different technological systems, systems that map and monitor the territory, specialized staff training, communication protocols, are quite differentiated in Italy and in some cases, they appear weak.

For instance, some interviews conducted by the Forensics Group with 118 medical staff and the operations centers of the State Police, show that the management of an emergency call is based, in addition to the standard rules of communication, on a kind of intuitive Psychology, or the classic "common sense", trusting more the personal characteristics of the dispatchers rather than a specialized training.

The theme of the unique emergency call number is not new. Already in 1936, in the UK, a national emergency number was tested, it was called 999. 911 was born later, thanks to this idea, and it is commonly used in the USA and Canada. In some areas there is also a number linked to emergencies, but with a more informative function, that's the 311. This number is designed to redirect all users interested in obtaining information, without overloading the line dedicated to the priorities.

The unique call number allows a better coordination of the efforts and resources among the various bodies involved, and then to implement the operativeness on the territory.

The European Council decided to establish a unique emergency call number (NUE - 112) for emergencies of all EU states, with mandatory since 2002. Italy, until now, still doesn't respect this rule.

The need of a unique emergency number, however, is a result of the decision of the European Council (91/398 / EEC). This directive proposes that all EU states should use the number 112. In any case, the 2002/22/EC Directive establishes that the information, concerning the place where the caller is, should be shared with the emergency services, in order to improve the protection of citizens.

The first Italian region to apply the unique emergency call number is Lombardy. Implementing the number doesn't only mean to convey all calls in a unique telephone number, but it means to organize the work in a completely different way which fully integrates and speed up the answer of the forces involved.

The complexity of this issue depends on three aspects: the legal framework, the great diversity and the large number of operational centers in Italy and the diversity of actions taken by the various forces involved.

Emergency communication center can be defined as the workplace, organizations in which the error rate is greater than the benefit of the lesson learned. The dispatcher, sometimes supported by computer software, must constantly take decisions on actions and communications with the caller, and he is often compressed between the management of low resources and the requests of the callers. The dispatcher suffers a significant cognitive stress, because it is constantly in the process of decision-making, and also an emotional stress, because communicates with people who are experiencing a time of difficulty and / or crisis.

Operating centers have a normative role. In fact, the caller may not accept the choice, but he can't modify it according to his own preferences. It is not the caller who decides what kind of ambulance needed, and he cannot ask - at will - for the RIS intervention. The average citizen, however, sufficiently knows the various emergency numbers in Italy (112 Carabinieri, 113 Police, 115 Fire Department, 118 emergency health service). But it must be considered that in situations of risk, danger or crisis, however, the memory can easily falter.



The main problem of the lack of a unified number for emergencies seems to be the one of an immediate location of the emergency, and then the delay in the response. According to data provided by Gary Machado, delays in emergency location are estimated to be between 4 and 12 billion Euros. According to data provided by insurance, the damages caused by delayed responses in case of fires, costing approximately 1% of GDP of EU member states! However, the main commitment at the time, seems to be the precise protocols description in order to standardize training and technological support.

As mentioned above, Italy decided to comply with European directives by establishing a unique emergency number in some provinces of Lombardy region: Regional Emergency Urgency Company (AREU - l'Azienda Regionale Emergenza Urgenza) of Lombardy has been identified as the responsible institution to ensure 112 NUE activity, designed to receive calls targeted to various emergency numbers. On June 21<sup>st</sup>, 2010 112 NUE was activated, as an experiment, in the province of Varese - Lombardy, with the creation of a central operational NUE 112 Varese at the 118 Emergency/Urgency Operations Centre helping about 1,100,000 people.

Italy chose a model in which the first level PSAP answers all calls to 112, and, after the caller's location and a short interview, it switches them to the PSAP level II (public security, fire departments or health emergency) as they are more adequate to manage the situation.

The operations center NUE 112 Varese covers the provinces of Varese, Monza, Bergamo, Como and Lecco serving about 3,750,000 users. From December 3<sup>rd</sup>, 2013, 112 NUE was also extended to the province of Milan: the operations center 112 NUE Milan serves about 3,120,000 people.

On May 19<sup>th</sup>, 2015, the 112 NUE service started operating in the remaining Lombard provinces of Brescia, Sondrio, Mantova, Cremona, Lodi and Pavia with the opening of a new operations center 112 NUE in Brescia.

With the advent of the Jubilee the activation of the unique number was necessary also in Rome and its province, it is equipped with 34 seats that will double in emergency cases, on which about 80 employees in the region will work. The languages available are 14. The users covered by the service are around 3.5 million, to which other 2.5 million are added for the activation of the second site in Frosinone, for a total of 6 million.

On January 20<sup>th</sup>, 2016, so recently, the Council of Ministers approved the implementation decree for the introduction in Italy of the unique emergency call number.

The adoption of the unique emergency number in Italy would represent a great organizational change.

While the recognition of the value of local differences often becomes excellence, it should be emphasized that various organizational aspects may lead to unjustifiable inequalities. The latest survey on the Italian CO dates back to 2008 and highlights how the delivery of services to the citizens isn't uniform. Every emergency health system acts on the basis of the characteristics and variables of the territory with some differences: identification, uniforms and institutionally tasks performed; this aspect is unthinkable for the State Police or the Carabinieri whose skills are known to all citizens.

## Economic impact.

Gentiloni's 2008 decree obliged telephone providers to transmit to the Police and Carabinieri the location of the phone (fixed or mobile). The equipping of the Police, Carabinieri and the Interagency stations will cost about 270 million euro split among 65 million roughly to Carabinieri, 15 million to Interagency, 190 million to Police, besides it must be added the amount of money to rend technologically compatible 115 and 118 operations centers. European infractions procedure was withdrawn on March 14<sup>th</sup>, 2011 as a result of two measures: the first one related to the activation of the first Central 112 in Varese, the second one was a temporary solution that saw the involvement of the operating centers of Carabinieri who provided with the location service of the caller, but only for requests destined to 112. Below there is the description of the used method: Carabinieri OC contacted first the caller's number manually filling out a web module of the inter-data center which, in turn, transmits the location information request to all telephone providers. Then this information will be transmitted to Carabinieri OC. Health or technical assistance requests collected by the OC of the Carabinieri are submitted to the competent OC. Carabinieri's OC transmits manually, via fax or via email or via other means the location information details. Actually, the NUE 112 management requires the presence of Carabinieri and the simultaneous maintenance of access points regarding technical and health assistance, with further increase in costs for the taxpayer. What's more, another aspect must be added: the calls are localizable only if they reach 112; if a user logs directly to 118 and he can't tell where he is, it will be impossible to locate him quickly. However, due to an appeal to the TAR of Lazio by telephone providers, it might be totally impossible to get a location for "privacy reasons".

The European Charter of Fundamental Rights, recognized with full legal force by the Lisbon Treaty of 2009, primarily requires the integrity of the public health and safety, also specifying the criteria of making the access to emergency services easier for citizens with disabilities. This document, signed by all member Countries, represents the starting point of a challenge to improve the service to citizens. The infraction procedure against Italy is only temporarily suspended because it received numerous complaints from EU citizens that underline the problems of the system, and the recent EENA conferences on this topic held in Riga and in Santiago de Compostela discuss about the restoration of the sanction. Moreover, the EU is considering to extend the legislative competence regarding the 112 through the Charter of Fundamental Rights in order to protect the right to life (art. 2), the right to integrity of the person (art. 3), the right to liberty and security (article 6), the inclusion of people with disabilities (article 26), the right to protection of health (art. 35).

## Technologies.

In the nineties, the scientific Anglo-Saxon world developed the concept of **emergency timeline** (the arrival on site of rescue may be subdivided in the following times):

- damaging event: time zero;
- activation of the emergency system: up to five minutes;
- answering evaluation: one minute;
- the research of most appropriate means: up to one minute;
- Data transmission to the medium: up to one minute;
- departure of vehicles: up to three minutes;
- Travel time: up to thirty minutes.

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None of these times is resettable, but the duration of each of them can be reduced by an appropriate use of technology. For example, the search of the vehicles might be carried out by a computer algorithm, while the transmission of data can be almost instantaneous using digital transmission mechanisms. A network of interconnection between hubs may solve numerous problems, compensating for any crash of OC through the processing of requests from an interconnected hub.

No user will remain unanswered, and it would even be possible to completely separate the OC territorial jurisdiction from the management of routine cases. This means that if an event occurs in Pavia and the local OC is not able to respond, the event itself could be run from Alessandria, while ordinary calls are processed by Piacenza.

## Operating models.

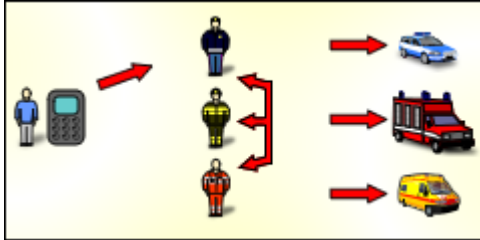
Below the description of some parts of existing operating models.

The operating asset of an answering system is mainly composed of the following variables:

- The existence of PSAP – Public Safety Answering Point, divided in one or two levels, in that case PSAP1 filters the event and transfers it to PSAP2 that will manage it;
- The existence of laic PSAP1 laici, it means not belonging to government offices (ERO – Emergency Response Organization);
- The garrison of OC by the call-takers (CT), responsible of the telephone interview, and by call-dispatchers (CD), responsible of the dispatch and of the coordination of the emergency vehicles, or the presence only of the CT accomplishing both functions;
- The possibility to transfer the relative calls from an Office to the competent OC (call forwarding).

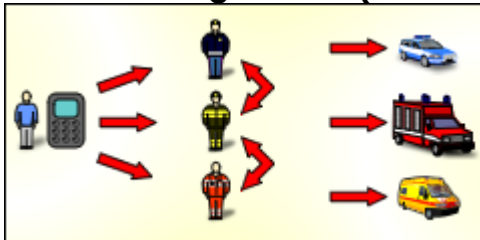
The operating models of 112 CO within Europe refer to the following typologies:

- **Overriding Authority** (PSAP1 with eventual call forwarding to PSAP2)



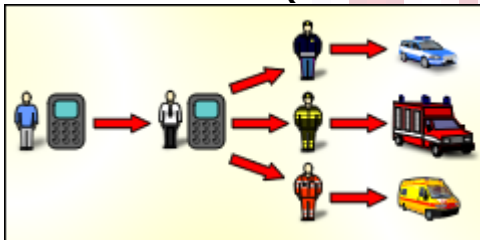
the call reaches only an institution, in the example the constabulary. If the problem concerns a different institution, the operator will transfer the call.

- **Local management** (PSAP1 with eventual call forwarding to PSAP2)



there are several emergency numbers. The first institution to receive the alert transfers the relative data of the call to another institution.

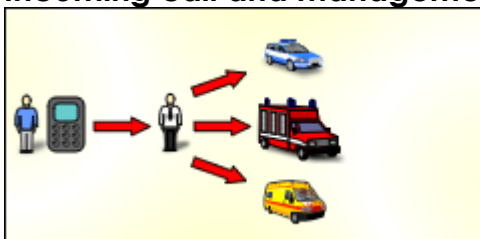
- **Laic filter** (PSAP1 with call forwarding to PSAP2)



the first answer is processed by a laic CT (not belonging to any ERO) which establishes the competent institution and transfers the call. This model includes high costs because it requires the creation of an additional structure, the laic PSAP1. What's more, it increases the first aid timing and it does not take in account the aspects connected with the emergency communication.

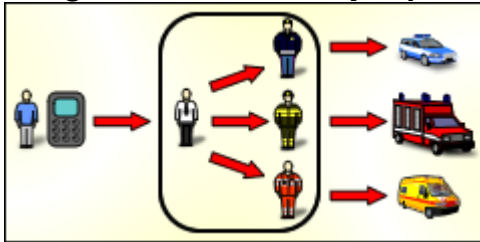
The task of who answers is not exclusively technique: relational skills are necessary to manage the emotional aspects of the caller allowing him to become the first rescuer on the scene. These skills have specific rules among which the need that the full call must be managed by a unique person: in any moment the rescue caller should be said: "...please hold on, I will pass..."

- **Incoming call and management** (only PSAP1 without call forwarding)



it foresees a laic CT highly trained either for the answering or for the first aid dispatch.

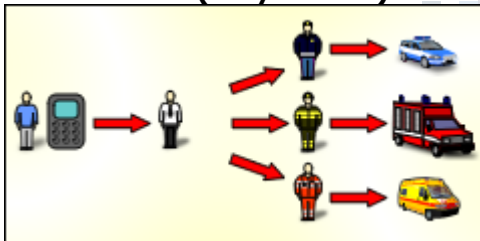
- **Integrated room (only PSAP1 with the support of experts)**



the answer is committed to laic CT but in the same room there are members of all the involved institutions. It is an extremely effective but highly expensive model and difficult to maintain.

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- **Laic answer (only PSAP1)**



The CO are guarded by laic operators who completely manage the call and send data to the competent institution.

- **Interconnected commands** (alternative of the previous system in which CO are interconnected)



the call to an area can be managed from a complete different area.

The request for emergency services is continuously increasing and the regional health systems reforms impact on the whole organisation of services linked to the sanitary emergency.

While the scientific literature about hospital efficiency is very wide, low attention is given to the emergency services, in Italy in particular. Furthermore, scientific works facing the problem through an interdisciplinary approach do not exist, so that they could integrate the analysis results of economic, statistic, epidemiologic studies, of operating researches and of the management.

Italian emergency services, in particular those ones referred to the health system, recorded in the last years a high increase of requests partially due to the lack of alternative welfare solutions and partially due to an indiscriminate use of 118: during 2010, the Italian company of 118 service recorded more than eight millions of incoming calls.



European countries tendency, on the contrary, is oriented towards always better prevention activities, discouraging abuses and defining incoming uncompliant requests to emergency systems socially reproacheable just like tax evasion.

An aspect not noticeable in the future government decisions is the activation of the unique European number 112; besides the economic impact of this kind of choice is with no doubts benefic considering that organisation models compliant with the real exigences must be used.

Currently, the comparaision table about organisational models is managed by **European Emergency Number Association –EENA**, the institution aiming to spread the culture of the unique number through several initiatives all over Europe.

In pratice, the cheapest and most effective organisation model consists to create a unique integrated center where the institutional members of aid (health, tecnique, of safety) will merge in a unique solution. The interconnection at a national level among Operations centers would allow the management of overloads and would guarantee queues elimination with an increase of safety indexes.

The main objective is the creation of an interdisciplinary system as decision-making support to manage the emergency line being compliant with the laws of this kind of activity. The unique number so should mean a Unique Center through the daily integration of three different components as regards procedures, roles, tasks and law connotation but often cooperating during assistance interventions.

### **Is Italy ready?**

Actually, despite the several discussions and the prepared metodoligies it is not still clear if our country is ready to this unification. Below some articles' titles, just as examples, telling the actual situation.

**112-Unique European Number for emergencies. A chimera wasting safety and money: After 18 years, the activation date is still unknown.** By Domenico Murrone, ADUC, 15th June 2009

**Colto da infarto chiama aiuto: trovato tardi.**

**Caught by heart attack, call for help: late rescue**

La Repubblica, 7th July 2012

**Camionista muore per un malore nell'area di carico a Rivalta.**

**Trucker dies for an illness in the Rivalta's loading area**

Luna Nuova, 10th July 2012

**Centrali senza numero unico: mezzo miliardo buttato via.**

**Hubs without a unique number: billion trhown away**

Il fatto quotidiano, 19th August 2013

**Tragico errore del 112. Acquisiti file e audio della chiamata.**



**Tragic error of 112. Acquired the call's files and audiotapes**

Expansione Tv, 9th October 2013

***112 Numero Unico Emergenza, doppio centralino.***

**112 Emergency Unique Number, double switching room**

RadioLombardia, 19th January 2014

***Mamma uccide le tre figlie a Lecco. Simona, la telefonata muta al 112 per fermare la madre impazzita.***

**Mum kills her three daughters in Lecco. Simona, the mute call to 112 to arrest the crazy mother.**

Il Giorno, 12th March 2014

***I computer non si parlano e il 112 è sempre più lento: ritardi e incomprensioni sul numero unico emergenze.***

**Computers are not allowed and 112 is always more slow: delays and misunderstandings about the emergency unique number**

Il Giorno, 11th January 2014

***Emergenze, numero unico: «No ad un call center».***

**Emergencies, unique number: "no for a call center".**

Giornale di Brescia, 19 gennaio 2014

***Comunicazioni sbagliate tra 118 e ambulanza: l'errore può capitare.***

**Wrong communications between 118 and the ambulance: the error must occur.**

Varese News, 6th February 2014

***Un unico sistema di sicurezza e intervento.***

**A unique system of security and intervention.**

di Marco Torriani, Giornale di Brescia, 8th January 2015

***Omicidio Cantamessa: l'audio della telefonata e i filmati di videosorveglianza.***

**Cantamessa Murder: the audio of the call and the movies of videosurveillance.**

Eco di Bergamo, 14th January 2015

***Omicidio Cantamessa, la telefonata infinita ai soccorsi.***

**Cantamessa Murder, the infinite call for rescues.**

Giornale di Brescia, 16th January 2015

***Emergenza lenta: in Italia il nuovo numero unico va a singhiozzo.***

**Slow emergency: in Italy the new unique number goes in fits and starts.**

Oggi, 8th April 2015, p.63

***Difficoltà nei soccorsi, il nuovo 112 parte male.***

**Difficulties of rescues, the new 112 has a wrong start.**

Giornale di Brescia , 2nd June 2015

***Trattore si ribalta a Brione: il 112 allerta i soccorsi in Trentino.***  
**tractor overturns in Brione: 112 alerts rescues in Trentino.**

Giornale di Brescia, 6th June 2015

***I primi 40 secondi.***  
**the first 40 seconds.**

Valle Sabbia, 12th June 2015

***Il 112 non soccorre ma smista le richieste di intervento.***  
**112 doesn't rescue but dispatch the intervention requests.**

Giornale di Brescia, 29th June 2015

***Quel passaggio (non semplice) fra 118 e Soreu.***  
**that passage (not easy) between 118 and Soreu.**

Giornale di Brescia, 3rd November 2015

***Dopo l'attesa al 112 ho sparato in aria per cacciare i ladri.***  
**after waiting for 112 he shot in the air to make thieves go away.**

Giornale di Brescia, 8th December 2015

**Recent law.**

**DECREE of Telecommunication Ministry 22nd January 2008: European Unique number for emergency 112 (S.O. on G.U. 10th March 2008) Access to the service 112NUE and obligation of localising the caller.**

**DECREE of Economic Development Ministry 12th November 2009: Orders regarding the service of the European Unique telephone number for emergency 112 (G.U. 6th February 2010) Extension of the service 112NUE to the calls to the numbers 115 and 118 (page. 13).**

**LAW 7th August 2015, n.124: Proxies to the Government regarding the reorganisation of public administrations (G.U. 13th August 2015) setting-up of European Unique number 112 all over Italy (page. 7 art. 8 comma 1 letter a).**

## 2. The role of Psychological training for the 112 operator

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According to some scientific researches available in Italy and some interviews, the psychological training can have a determining role in the Quality of the dispatcher service 112. In Italy, they might adopt some models representing a real example in this sense.

The Emergency 112 Center in Madrid represents an example of quality, where they focus a lot on the psychological aspect. The considered shifts are of eight hours per each with a thirty-minute break every two hours. The center includes many activities for the psycho-physic recover and the relaxation of 112 operators like Fitness Gym, an internet point, bookshops, libraries, and restaurants. A dispatch room coordinator has also the task to attune the activities performed by dispatchers. It is clear that **the Service Quality is linked to complex and articulated aspects of human factor**.

In Italy, although existing laws underline the importance of stress work-related (Dlgs 81/08), they don't exist "subsidies" for the management of stress and of the different psychological difficulties of an operator 112. There is not a training unified protocol about 'difficult' calls management except in rare cases and usually important but short-term initiatives. In some Italian situations, there is only a shift rotation.

As matter of fact, the activity is particularly challenging: facing up the caller difficulties is often complex. During some training courses for novice dispatchers, they perform blindedfold communication exercises with the aim to understand what communication means without a direct view of the scene.

The stress, as known, can cause a series of cognitive, emotional and behavioral problems, in addition to health and psychological problems. This can provoke the human error within the organisation and at the expense of the quality of the service aside from representing a psychosocial risk for the operator.

Indeed, a great variety of factors can cause the dispatcher's mistakes:

- **Protocol's inaccuracy/inadequacy,**
- **Lack of structured strategies to face particular problems,**
- **Human error,**
- **Lack of communication skills from the operator,**
- **Stress work-related,**
- **inadequacy of used technologies.**

Some researches focus on psychological variables representing a risk for psychological status of the dispatcher 112.

A study of Piyal, Kaya and Celen (2006) focuses on the wellness of the 112 operators. In this study, they analysed the related issues of some psychological variables of the operator like:

- Fear of violence,
- verbal and physical damage,
- verbal threat,
- physical assault.

Therefore, there are some differences among the studied variables. In particular, women show a higher level of fear of violence, of verbal threat and physical assault. Age seems not to be an element influencing the presence level of the examined characteristics. These risks concern all the ages in the same way from a statistic point of view. In terms of education elements, we can observe some significant differences related with the manners. Those who have a degree in medicine, probably because more directly involved in the relationship with users, declare a higher incidence of fear of violence, verbal threat and verbal harassment.

With a view to prevention but also and above all to information and training, these observations should be wisely weighted.

A recent research conducted by U.O.C. – U.S.L. 118 on nurse coordinators of Italian 118 systems and a further survey among telephone operators of emergency numbers (Police, fire fighters and 118 console nurses) right on the future institution of NUE 112, reveals interesting results.

The requests for health aid represent a good part (36%) of all the emergency cases happening. The computer systems and the technological platforms are already compliant with the laws for the NUE 112. The health alert system has a pluriannual experience in the use of the software for the emergencies management even through a coordination with other Institutions. Emerging data from this research, however, can represent excellent sources to think about exactly the theme of the organisation change.

The involved coordinators, most of them (95%) consider that it is important to create working teams to manage the change. All coordinators (100%) consider training fundamental. The 90% of them consider the NUE 112 constitution within their own operating unit as an opportunity. People motivation is considered as "important or very important" in the 90% of cases. Even team involvement is in the 85% of cases "important or very important" while a specimen consider useless to delegate some organisation aspects (90%).

It results "important or very important" (90%) the creation of focus groups on the change as well as periodical staff meetings (95%). Technological innovation is considered "important or very important" (80%); operating procedures review is considered "important" in the 40% of cases like also the introduction of new methodologies of approaching clients results "important" for the 50% of involved people. Team working ability and training methodologies for not health aid components are efficient managerial models.

The second survey (operators 118, 113, 115) highlights how most of operations centers workers (77%) consider that the introduction of NUE 112 is a useful change to reply properly to citizens needs. A low majority (59%) of the operations room's workers consider that 112 is not an opportunity for the organisations to which they belong. To the Police it is effectively a utility (71, 4%), while to the whole first aid nurses is not so at all (100%). Only 44% of the specimen consider that their own organisation is ready to manage the change. Police is the most confident Institution (57, 1%), while Fire Fighters (80%), on the contrary, consider that their organisation is not prepared. 118 substantially is uncertain between two options. It is evident that training aspect should be organised (43, 3%). Police believe that

they should also develop the technological scope, while 118 hopes a training increase.

51% of interviewed consider that rivalries or conflicts among the different aid institutions might occur. The three involved institutions equally distributed between the two options. Despite there is a tendency from the operators to consider its own service to be the most suitable to constitute NUE, 118 is considered the most skilled institution (48, 7%). 118 workers unanimously (100%) believe that their operations centers can implement it.

In order to establish common working plans, crossfunctional meetings are useful (48, 7%) and Ministry guidelines (44, 4%). Decisions imposed by line managers are not taken in account. As regards the suggested method to manage the change, all interviewed institutions tend to create an interforces operations center. In the end, it seems that, according to the above hypothesis, nursery coordinator function as "middle manager" has a fundamental role in the organisation and in the innovation management.

### 3. Dispatch's protocols use.

After the growing interest towards the emergency unique numbers, some calls and dispatch's management systems in the different operations centers have been developed. From a medical side, the most commonly used point of reference is **Medical Priority Dispatch System (MPDS)**. This model is based on 33 protocols aiming to find the fundamental symptom and to give suggestions to the operator about critical issues to be identified. The model is based on closed questions that the operator must follow. It is not possible to eliminate some questions because they all are considered fundamental. Additional protocols of Police's calls management exist (Emergency Police Dispatch) and for fire fighters (Emergency Fire Dispatch). Each protocol, drawn up in English, must be translated with a back-translation and a semantic analysis of the meaning in order to be validated in Italy.

In the scientific literature, the theme of questions standardisation, necessary and useful in some specific cases and complex in other ones. In some situations, it is fundamental to be extremely precise and adherent to the protocol.

Therefore, the protocol is very useful, because it can standardise and provide with a shared basis from a technique point of view, but there is the high risk to waste much time before taking a decision.

From a macrosociologic point of view, it is correct to start with the population's sensibilisation through information campaigns that facilitate the attentive and effective use of the emergency telephone.

A second kind of intervention is psicologic and acts on the particular relationships between operator-caller. About this subject, it might be necessary a lot of training from what emerges in Italy.

After some interviews conducted by the Forensics Group to specific sector experts as regards health aid, it is evident how the operator of the hub treats every rescue



request according to a **Critical Issues Code's Scheme** endowing a "color code", where red is the most critical event, followed by yellow and then green and white. The operator makes a series of questions according to a flip chart, with the aim to detect in a quick and accurate way the current situation and to give an optimum answer.

The basis scheme is the following one:

1. Where is the place of the event?
2. Caller's identification and telephone number.
3. What happened.
4. Kind of the event.
5. How the event happened.

The average time of a similar interview should be limited and however no more than 90 seconds. This protocol has the objective to rend homogeneous the answer to the emergency all over the Country.

Probably, an underestimated aspect is that the quality of the offered answer from the operations room affects on aids but establishes, at the same time, the image of the service from the citizens. The operator of the room and of the operations center, indeed, is the one who comes in direct contact with the citizens managing the image of the institution interested.

The caller, regardless of the objective situation, always lives a tension status and his request is always prior from a subjective point of view. The subject is usually afraid, impatient and does not want to answer to too many questions sometimes uselss. On the other side, we find a skilled person who has to make questions, to get to know some information just to give an immediate and adequate answer. Therefore, the established conversation is an information's exchange with the aim to take a decision using only, in reality, the verbal communication channel in a short-term period. To this objctive, it is necessary that three elements must appear:

- **A collaborative caller.**
- **A standard protocol.**
- **A skilled operator.**

The operator, enrolling this role, must own adequate technical competences to identify the danger and the eventual exigences of aid but equally, additional competences are required. As matter of fact, the operator must be able to imagine in his mind what is happening on the "scene", he must obtain strategic information, he must take decisions and he must manage the caller sensibility (Pietrantonio e Prati, 2009).

These "non technical" competences are complementary to those technical ones. The ability of a correct representation of the situation on the scene and its future evolution is however a crucial point in the rescue organisation. In this sense, the international literature is taking into account communication abilities and strategies that must be applied by the emergency operators in the call's management (Clawson, e Sinclair, 2001; Forslund, Kihlgren, e Kihlgren, 2004).



Words to use are considered very important. Many citizens might have difficulties to understand operations terminologies (e.g. "we activated procedures"). In the same way, the operators could underestimate eventual ambiguities of their own expressions and overestimate their explicative and communicative clarity.

Similar errors could create ambiguities and misunderstandings. In this sense, the key rule of communication should be in force so that **"what communicated is measured on the basis of that other understood"**. Therefore it is strategic the use of the so-called feedback, readback or cross talk. Whether the operator does not repeat the information to the caller, for example the name of a street, there is the risk of inconveniences in the answer to the rescue.

The communication efficiency is shown when you take on the speaker's perspective (e.g. in case of a route accident, it is important to ask for the running direction). It is required to the operator to drive the call, without hitches, breaks, overlaps, even with the aim to obtain useful information and to reduce the anxiety of the caller.

A calm tone of voice but at the same time resolute, sure communicates to the citizen that the operator has the control of the situation. Therefore, it is relevant that the same operator will not feel involved by the person and / or the situation.

If the anxiety of the caller is too high, it will be necessary to carry the communication on in an authoritative way. On the contrary, of the common thought, an anxious user can become collaborative. We have already named some techniques like the so-called "broken record" it means the repetition with the same tone of voice of the same sentence. This system produces a calming effect. Similarly, judging and aggressive sentences would not have any effects.

Use sentences like for example "it is not our responsibility", "what you would like us to do" are, obviously, little adequate or transmit a negative image of Aid Service.

#### **4. Measure protocols efficacy.**

The dispatcher follows protocols of calls sorting with the support also of a technology that automates partially his work. To measure protocols efficacy, although, it is necessary to apply a series of checking procedures. It would be wrong to linger only on technical accuracy of the suggested indications to the dispatcher and consequently to the user, as the effect of some communication on the user should be checked, compared to the specific individual characteristics, like for example the education level and the emotional status.

For example, if it is true that all protocols of telephone interaction regarding health problems have been written by persons specialized in medicine and so technically correct, this does not mean that their correspondence to "reality" is complete.

They exist, indeed, a series of processes that influence the 'final result'. Below some examples:

- a) Comprehension and clarity of dispatcher and of the user.
- b) Technical telephone issues.
- c) Texts comprehension ability from dispatcher.

- d) Limited time from the operator.
- e) Lack of gestures and nonverbal communication.
- f) Development and quality of technologies used by dispatcher.

Being adherent with protocols, they exist some statistic indexes that allow to discriminate a good protocol from the one with areas for improvement.

One of the fundamental qualities of a good protocol is that to distinguish a high priority situation from a low priority one. This is to distribute the efforts and to tidy temporarily up interventions, to guarantee the right priority to the high acuity situations.

One of the classical ways to measure a protocol's efficacy in this sense is the use of indexes like **PPV**, **NPV** and of **indexes true positive, true negative, false positive and false negative.**

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Table. Efficacy check table.

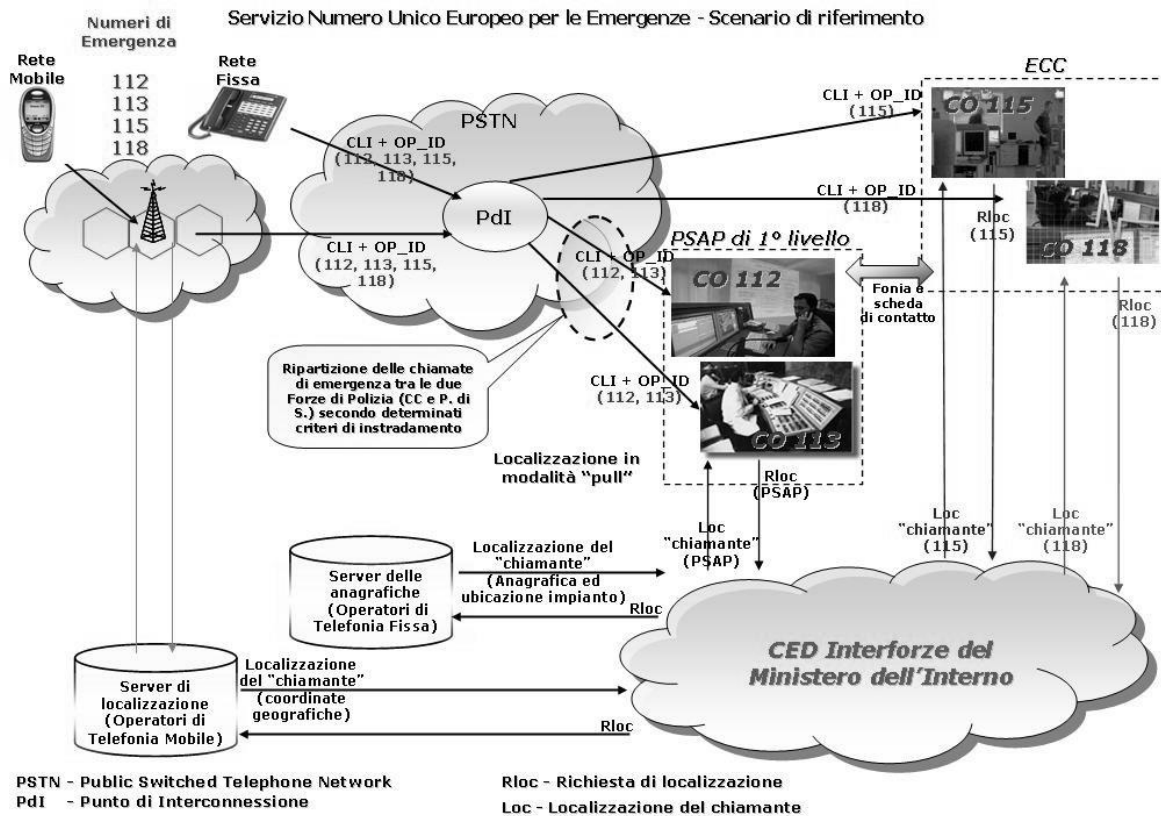
	High Acuity	Low Acuity
High priority	True positive	False positive
Low priority	False negative	True negative

To obtain indexes true positive, true negative, false negative, false positive, it is necessary to have at least two methods. A dispatching method giving to specific calls high or low priority, and a method of description of the physical problem acuity that, once rescuers are on the scene, defines the acuity level of the problem. Some models study the relationships of these data with a third kind of data: the patient's status in the moment when he arrives at the hospital. In reality, this detail is very important, even if someone does not use it, as it does not depend only on the dispatch quality but also on many other factors (place of the accident, distance to the hospital, road's status where vehicles move, etc.)

The cases true positive and true negative show the efficacy. Giving low priority to an acute and serious situation is certainly the biggest mistake, because there is the risk that user's health could be rapidly compromised, giving high priority to not acute situations, on the contrary, it is a mistake as it expresses badly the efforts, maybe giving priority to a solvable situation even in a longer time.

Each protocol is therefore more or less efficient according to this, but even according to other factors. As matter of fact, some protocols could be better to detect a truly acute situation (high priority + highy acuity), or better to exclude that the situation is serious, giving low priority (low priority + low acuity).

Just as an example, to show that in Italy technic contributions on the unified management of the emergency calls, in reality, are not missing and it is the one called "interconnection between interforces CED and telephone operators", published on the italian Official Gazette, the 6th February 2010, gen. series N. 30. Below, the image showing the referring scenario of the computer solution within European Unique Number Service for the emergencies.



This solution derives from the assumption of using the actual Rooms/Hubs of Carabinieri and Police even for tasks of interforces coordination. The dispatcher to all the emergency calls with selection 112 or 113 will transfer them to the Rooms/Hubs of Carabinieri and Police PSAP (Public Safety Answering Point) of first level –competent area (according to specific criteria of division). The emergency calls with selection 115 and 118 will be directly and respectively transferred to the Rooms / Hubs of Fire Fighters (CO 115) and of Health Aid (CO 118) – competent area.

The unique PSAP of first level that will receive the emergency call, therefore, will carry on the management as well as the eventual switching or involvement of other Emergency Control Centers (CO 115 and CO 118).

The unique ECC (CO 115 or CO 118) that will receive the emergency call (respectively and directly to 115 or 118) will carry on, therefore, the management as well as the eventual switching or involvement of PSAP of first level (CO 112/113) or of other ECC.

It is required that the computer systems of each telephone company – during an emergency call – rend the location's information available – in high load conditions – approximately within 4 seconds starting from the receiving of localisation request coming from Interforces CED. Once again, the less considered or however "weak" side in Italy is always Human Factor.

Another interesting work as regards aid procedures is training Manual for 118 voluntary rescuer, Piemonte Region, which refers to the use of alphanumeric Intervention Codes in a pragmatic way.

After a rescue call and through a series of specific questions, the operator makes the "alfanumeric intervention code". The code allows identifying rapidly the intervention event's typology. It is composed of two numbers and a letter that mean:

- First number – critical issues code.
- 2nd number – pathology number.
- Letter – place code.

Based on this detail, the most suitable aid vehicle will arrive.

The alfanumeric intervention code has three advantages:

1. It allows communicating via radio and via cable the relevant data protecting the privacy of the person to rescue.
2. It allows summarising the information so that the radio channel is not busy for a long time.
3. It allows standardising the communications among the different components of 118 Health aid system.

Within the rescue to a citizen, it is necessary to consider that the caller will show a series of needs to which it is important to refer, in any case, it is always prior "starting" from the person (the caller), concentrating on some key elements:

- Physical status: considering the actual status but also the previous one eventually.
- Sensory deficit: the person can have lacks that can affect the relationship.
- Physiological needs.
- Emotional factors: the affective-emotional status is fundamental in the relationship.
- Age: it affects the relationship and the kind of communication to adopt.
- Culture and belonging group: understand immediately social status, culture level ...

It will be also relevant to concentrate on an environmental analysis of the event. Therefore, it will be necessary to analyse the following aspects:

- Environmental and main place conditions.
- Lighting.
- Noise.
- Place safety.
- Interruptions.
- Time at disposal.
- Other subjects presence.

Another kind of fundamental statistic to measure is that one of **technical errors**. This kind of procedure can allow the understanding of the situations to prevent and – retrospectively – and which actions could be started up to improve the performance. In this sense it is certainly useful the study of Andersen and his collaborators in 2014.

The 112 emergency calls can really produce some errors, as it is necessary to take some rapid decisions on a limited number of information. In this study, they analysed some errors causing death have been analysed and how they could



have been avoided. Focus, in particular, has been on the calls number considered of low or no risk where no ambulance has been sent but where the patient has died the same day of the call. In reality, they did not fulfil these studies, even if interesting, in Italy.

## **5. The role of emergency telephone operator in 118 service.**

In order to gather operators' exigences, they did some semi-structured interviews to 118 telephone operators in Italy.

As regards 118 emergencies, operators have had a specific training in the caller's management and they use specific protocols to make questions to the caller even if in particular situations they use some adjustments and some different investigative questions to interact with the caller.

The operators feel responsible of people's life and the average perception of the operator's stress is moderate. What's more, some operators show a moderate level of turnover linked to their stress level. The interviewed feel the longterm effects of their job, a job which requires a high level of resilience and of stress moments management. According to the interviewed people, about one third of received calls contains communication difficulties. The interviewed operators consider psycological and stress management training very useful for their job as emergency telephone operator. The system to define priority of calls is satisfactory even if in some cases they have some errors or application difficulties of protocol. In the analysed sample, specific training about how to recognise false calls does not come out; nevertheless in the analysed sample the false calls number represents only a small proportion of calls.

The most common requests are collapse, accidents, injuries and heart problems. According to the interviewed operators, the most difficult calls to manage are those ones when there is a problem of psycological nature as panic crisis and psychiatric problems (usually there is an incident increase of these problems during holiday's period). Specific protocol of interaction for the management of panic crisis, of people making self-harm actions or threatening suicide, of violent behaviours are not used. The interviewed people underlines how stress impacts not only on the health but also on the quality of the service.

A particular role also occurs in the management of the different operators that go to rescue victims. Several inconvenience, conflict and misunderstanding situations among operators exist and it is necessary to face them through a mediation activity. Therefore, it is necessary in this case a relative support to the active listening, mediation and resources management techniques during the intervention.

Some highlighted difficulties mostly in the operators of less seniority in the role regard:

- **Maintain a high concentration level.**
- **Understand real needs of the caller.**
- **Make a correct dispatch.**
- **Maintain a good relationship and a good climate among colleagues.**
- **Manage the psychiatric patient.**

- **Difficulties to find the place where to do the rescue.**
- **Emergency management with people not knowing the area.**

A research by Pecetta and Giusti (2015) has studied the behaviour and the activity of dispatch 118 in Italy, analysing the role of operations centers 118. The used method to collect data has been the telephone survey on the operations centers in different Italian regions: Emilia Romagna, Toscana, Marche, Umbria and Lazio.

Data reveal that enormous differences exist in terms of relationship among population, calls numbers done and interventions done. As it is possible to observe from the data in the table (Pecetta, Giusti, 2015), there is a sensibly increased calls number, almost the fourfold compared with the calls done in Emilia Romagna, in front of a population higher than one million of inhabitants. Interventions done rates are particularly different among the regions. Just as an example, we can notice that the number of interventions done in Lazio is lower compared with that one in Emilia Romagna, although the starting calls number is completely different. There are many ways to interpret this detail.

From one hand, there might be a tendency to the rescue higher in Emilia Romagna compared with other Regions; this means that there is an intervention for most all the calls. The different calls number in the regions, in addition to the influence – obviously – coming from the population, can change according to a different sensitiveness and cultural diffusion of the emergency call use. Data are of a difficult interpretation and underline certainly a different approach to the call either by the caller or by the operator.

Table. Data about the calls to 118 in some regions in Middle Italy.

Regione	Popolazione (dati anno 2011)	Numero C.O. 118	Numero Chiamate totali (dati anno 2007)	Numero interventi totali (dati anno 2007)
<b>Emilia Romagna</b>	4446354	3	444.662	342.592
Toscana	3750511	11	780.889	413.772
Lazio	5870451	5	1.676.411	317.725
Umbria	896742	1	112.825	57.081
Marche	1553138	4	445.197	142.619

From this research, we can deduce the importance of the development of tracking system of false calls and of their incidence on the use of protocols. There is an agreement with the research authors thought (Pecetta, Giusti, 2015), and the detail reveals a difference of approaches in the protocol which renders their evaluation complex.

A research by Maccarri (2012) has shown that substantial differences exist in the job of the operations centers in Italy. The proportion between population/number of operators is sensibly different. In particular, the south includes regions with the highest proportion population/number of operators 164410, then the North with 126074 and subsequently the middle with 97909. The number of rescued persons / number of operators is also in this case almost different. The north includes the most efficient operations centers from this point of view, with a total amount of



8.852 rescued persons every operator, then the operations centers of the middle with 6858 and then the South, with the worst proportion of 6043. Maccarri's research (2012) tells that, even in this case, there is a high difference in the ways the operations centers are organised, as well as dispatch's systems are different in every Country.

In the case of emergency calls towards 118, the first contact is with the nurse operator of an operations center. The nurse, in agreement with D.P.R. 27/3/92, has the responsibility of what he says. A doctor coordinates and checks his job. The role of the nurse in an operations center is to assign the seriousness level to the situation, always in accordance with a doctor. Mainly, the nurse must be able to:

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- Be autonomous in the communication with the user.
- Send the aid vehicle according to the accident's seriousness.
- Use a clear communication with the user, collect information to manage the trauma.
- Inform people about actions to accomplish before the rescues.
- Maintain the connection with the First Aid point.

The 118 operators make a series of questions to the operator in order to provide with a correct dispatch. Mainly, there are four important columns on which questions of the nurse will be based:

1. The place: first communication is about "where it is required the ambulance intervention".
2. Subject of the call: on this theme it is necessary to make some questions to specify what happened, how many people are injured and their general conditions (consciousness status, presence or not of breathing).
3. Time: since when the accident/trauma has occurred.
4. Subject: who is the person involved, eventually additional people involved, the individual characteristics (in particular the age).

According to this set of information, the operator assigns a code of priority and sends the ambulance with the adequate equipment for the intervention. In this phase, it is fundamental to determine the right vehicle without overestimate the required resources (not to waste them), neither to underestimate (being without the necessary equipment to rescue the victim).

One of the possible method to use and investigate in order to analyse the 118 operators' communication is the **content analysis**. A research by Prati, Petroncini, and Pietrantonio has applied this method to an operations center in Emilia Romagna. This kind of technique allows to understand which techniques the operators effectively use and to estimate eventual importance of the sample compared with some variables (for example genre). The sample was composed of 217 emergency calls. From the research, it has been underlined that the used techniques are:

1. **Active listening:** sentences recognised as underlining the active listening presence like for example the following particles "yes", "of course", "I understand", and they are sentences that the operators repeat to confirm

their listening. The full silence can be equally effective from the listening point of view but it does not communicate actively the listening and does not reassure the person.

2. **Broken record:** this kind of technique consists of repeating the same instructions, it occurs in about one twentieth of calls. Usually it is used with not cooperating callers.
3. **Reinforcing feedback:** it is the complete repetition from the operator of the information about who is calling; the technique has the task to confirm the correct receiving of information. Usually these requests regard: place, age, symptoms, event's description.
4. **Reassurance:** it is a behaviour aiming to calm anxious people. It is often a behavioural message: "I'm taking in charge the problem". Usually reassurance is about four themes: the rescues dispatch, the patient's conditions, the quality of the service, the expression of closeness.
5. **The caller's name use:** to create empathy and to activate the attention of the person.
6. **Partial Reiteration:** it consists in the repetition of a part of the caller's speech in order to investigate about a part of it. For example, the caller: "my boy fell down from the stairs", "he told that the boy had fallen down from the stairs...".
7. **Hypothesis/confirmation:** this kind of technique consists of formulating some hypothesis about what the caller said. It is a sort of deductive communication.
8. **Multiple questions:** some cases in which the operator makes many consecutive questions without any answer from the caller. For example "How many vehicles are involved?".
9. **Repetition.**
10. **Development of the caller's behaviour:** it consists of confirming to the caller that what he is doing is correct, it is like a positive reinforcement: "this is what you can do to help the person", "you did a right action".
11. **Confirmation of the emotional status of the caller:** it is an empathy technique and it consists of recognising the mind status of the caller.

The study developed by Pietrantonio and his collaborators is pioneering in the sector, as a few studies about analysis of the calls' quality exist.

For future studies, besides the take-over of the used techniques, it can be very useful to classify the techniques according to the problem shown by the user and to measure their efficacy with the aim to:

- Make the operator aware of the techniques used.
- Suggest to the operator new techniques according to those more efficient ones in a specific call.
- Implement – in the technology – an automatic prompter who in reality helps the decision making process.

According to Ghiselli et al. (2003), there are **three fundamental factors to build a good telephone investigation**, even if similar suggestions are not illuminating:

- **Cooperation of the citizen.**

- **The use of protocol.**
- **Training of the operator.**

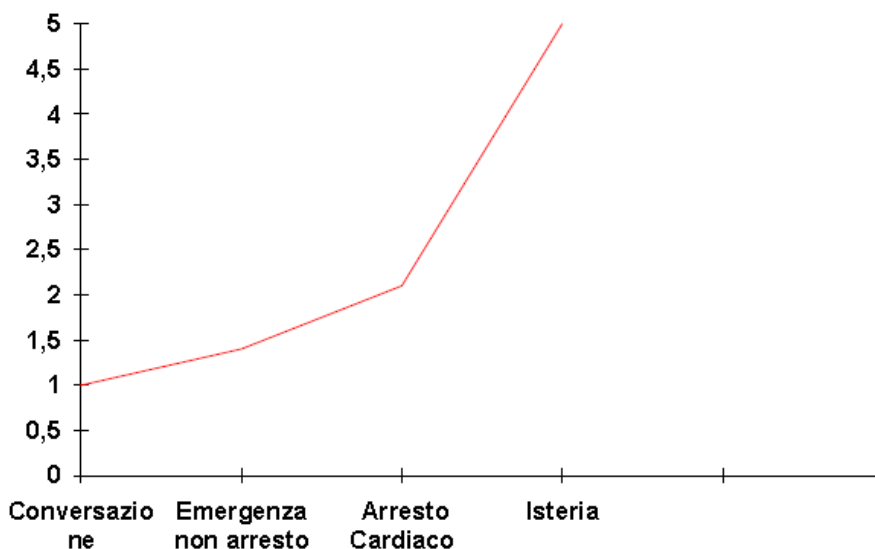
Factors that, according to Ghiselli, can determine the cooperation of the citizen are:

- **Emotional status.**
- **Ignorance of the situation.**
- **Basic Health Education.**

The emotional status of the user is determining as it can allow understanding which is his control on the situation and on the event. The operator's voice must be calming for the user. Besides, it is necessary to lead the caller to a manageable situation through techniques of repetition hooking him to reality.

Knowledge grade of the situation is similarly determining. Sometimes the caller is the same victim but if the caller is a second person present in the scene or even a third person not effectively present in the scene but aware of the situation, the information's accuracy goes down making the selection of adequate questions more complex.

#### LIVELLO EMOZIONALE DELL'UTENTE



In the table taken from Ghiselli (2003), we can notice a particular element as regards **a low control of the situation**. As it is possible to imagine, the control's loss value compared with the conversation is higher in the emergency cases without heart attacks, this increases in case of heart attack but it considerably increases the emotional status in case of hysteria. This kind of chart confirms that psychological aspects can then determine a loss of control even worse than medical factors like heart attack. For this reason, the role of the person answering to the phone is determining even and above all from a psychological point of view and not only to provide with technical information.

On an operations level and as regards possible training actions, it is necessary to consider the emotional status of the caller as a sort of "protection" (emotional) of the same operator, mainly considering the exposure to psychosocial risks typical of arduous professions (es. burnout). Who provides help can highly feel the weight of

his own responsibility and of his role with the risk to live a progressive emotional attrition. From a training point of view and with a view to design interventions of rescue subject it will be necessary to consider these aspects.

## **6. The role of the emergency telephone operator of Local Police.**

With the aim to gather the operators' needs, they conducted some semi-structured interviews on a sample of members of Local Police.

From the interviews outcomes specific protocols for the incoming calls management are not used. It exists a form to write down basic information of each call with time, motivation and content. The staff of Local Police interviewed does not have received a particular training neither about recognising false emergency calls, nor about psychological techniques of calls analysis and of the interaction with the caller.

Main difficulties declared by the participants to the interview regard the management of the relationship with the caller, in particular when an immediate solution is required. The situations considered the most difficult ones in cases are the requests for the Mandatory Health Aid, the dogs' aid, the communication about false emergencies or about not prior requests, the interaction with persons in a particular difficulty (living in uncomfortable conditions due to problems with condominium mates and living conflictual situations with other).

The relationship with the caller is complex mainly when it is compelling as it looks for an immediate intervention in any case. Some difficulties depend on the role of Local Police and to the coordination with other Public Order Institutions.

The theme of calls priority doesn't arise from the interviews as in this case, the most serious situations to consider as the most prior remain – in a large scale – the calls for serious car accidents and they can be easily recognised by people interviewed. Therefore, it is almost clear to understand the real emergencies according to the interviewed operators, but it is difficult to manage the calls as in general everyone pretends an immediat intervention even in not serious cases. This kind of ineffective interaction creates problems mainly in the time management. In general, the number of the telephone operators is enough to manage the calls. During summer period, an increase of calls is remarkable and it rends the management more complex. According to the interviewed people of this sector, false calls are really a few in one week.

One improving area from a technologic point of view regards the telephone system. A very useful instrument for the calls management might be the geographic mapping.

Through the geographic mapping and the use of some statistic models, it is possible to formulate estimations of calls volume and of the areas highly interested in a city. This allows subsequently giving indications that are more precise to the emergency operators so that he can interfere in a more prompt way and save useful seconds.

Besides, the statistic estimation of the emergency calls volume in a city can help the managers of 112 hubs to organise the work according to the calls estimated number in a specific moment.

## 7. The theory framework of Computer Supported Cooperative Work (CSCW).

One of the reference frameworks studying the dispatches work is certainly the Computer Supported Cooperative Work (CSCW). According to Bruni and Gherardi (2007), this method depends on the ethnography living also a historical evolution. Traditional methods of the activity are based on the tasks analysis and on their consequences according to how they are prescribed and how they should be developed. What is missing to this kind of analysis is just the separation between the prescribed activity and the practical work, between the enrollment of a series of tasks in a perfectly compliant context and the numerous unforeseen events that an emerging contest presents and that a fixed work absorbs.

The theory framework of Computer Supported Cooperative Work has a particularly important role as regards the job of Dispatcher 112 for two reasons:

1. The use of technology in the sector is always more rampant and continuous, for this reason subjects like ethnography and techniques like the participating observation and the constant application of ergonomics are very suitable for this work.
2. Coordination among different offices and operators play a key role in the efficacy of the real service. The Dispatcher 112 switches the calls to the different offices (public order institutions, fire fighters, health operators ...) for the reason it is necessary to guarantee a good coordination among people in addition to the call's management. Even these suggestions do not have, in practice, an innovative impact. In Italy, indeed, the scientific reflexions are in abundance but, for many reasons, an immediate, applicable and sharable practical reaction lacks.

## 8. The role of Sensemaking in the Dispatcher 112 work.

The dispatcher 112 operator is absorbed by a series of complex relationships with technology, people, operators, requests, pain, aid, risk, organisation, ecc. It is just from this complex interaction that giving a sense to his own actions represents a fundamental process for the comprehension of the accident from all the operators. According to Depolo (1998), sensemaking is "a human activity justified by the fact that reality is continuously under construction, it is not a fix detail: the sensemaking activities concern flows of events, continuous changes. Through the interactions among operators, it is necessary to remember that there is a mutual construction of the intervention sense influencing it.

A research by Landgren and Nulden (2007) has studied the factors of telephone interaction in the emergency work. In particular, authors refer to the pragmatic part of reasonable talking of **enacted sensemaking**.

Authors in this research have gathered the outcomes of the time organisation regarding the emergency answer. They analysed the schemes of the interaction at the mobile phones showing the role of social competences that the authors show to organise and to give sense to the emergency.



Accidents and disasters are still today an unavoidable part of everyday life. In a complex society, crisis and emergency continue to exist. In the last years, they introduced technological innovations in the study of emergencies like supports for the road indications in the vehicles, access to the information through mobiles and other interesting materials. All that also provokes an increase of workload to the dispatcher, above all from an operating point of view.

## 9. Towards a unified model.

Below there is the full text of what established and foresaw in Italy – [www.nue112.eu](http://www.nue112.eu) regarding the Emergency Unique Number. The document represents a basic part of the following studies and of the present and future applications. Here are some relevant sections:

- **Communication Criteria.**
- **Caller's Localisation.**
- **Interconnection unique hub.**



### 1. Elements of the territory health emergency systems.

The territory health emergency systems are described as High Reliability Organisations (HRO), it means organisations in which the cost of the operations failure is higher than the earning coming from the learnt lesson.

This description is compliant with precise rules among which the following ones:

- HROs manage high complex operations events;
- for each error thousands of correct operations are recorded;
- it is a team work;
- members fulfil functional tasks under stress psychic conditions;
- There are not unchangeable procedures which give a solution for each event.

Some rules derive and are applicable to the aeroport control tower as well as to the offices regulating financial choices of a multinational company. It is important though to consider that, in these rules, the decision making process originates in a discontinuous environment characterized by dynamic procedures, where the same solution can be not reusable in different cases.

## 2. Access to the system.

Following the entry into force, on August 28th, 2015, of the L. 124, the access to the emergency system must occur through a dedicated number: the Unique Number for Emergencies (NUE) 112. So finally the traditional numbers are replaced (113, 115, 118) dispatching the requests to a unique number and, equally, a fundamental concept is reaffirmed: the dedicated number of the access to the system is exclusively reserved to the users. *Teams on the job must not communicate with the operations centers through the institutional number.*

## 3. Two-phase and three-phase models.

In a two-phase system, in an Operations Center will process the request and the teams directly solve the intervention on the scene, assuming its coordination: this is the asset used by Public Order Institutions and Fire Fighters.

In the territory health emergency systems, the coordination maintained by the Operations Center until the conclusion of the three-phase overlapping the hospitalisation.

The difference is substantial as in the conjunt scenario every role on the scene must report to its own department. It is not due to the health workers on the scene to interact directly with the operations centers of Fire Fighters or of Public Order Institutions, but the requests will be transferred to the competent people on the scene.

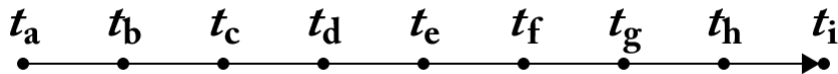
Equally, it is not due to the Public Order Institutions workers to provide with health aids in addition to the operations center, but health workers on the scene must evaluate and manage similar requests.

*Every request follows its own obligation line.*

Moreover, it is necessary to consider that the territory health emergency system is subject to laws and rules, therefore the caller, anyone he is, cannot agree with the given answer but he cannot adjust it for his own use; so he cannot ask for a specific resource.

## 4. Timeline of the rescue.

In the operations centers that have an evaluation team and a functional management team, the first one is supposed to manage the requests arriving, the second one to manage the switch, rationalisation and coordination of the requests. Phase's description characterising the emergency rescue is in any case shown by "the rescue time line".



Below a sequence of points:

- $T_a$ : injurious event
- $t_b$ : access to the emergency system
- $T_c$ : evaluation's conclusion
- $t_d$ : data trasmission to the vehicle
- $T_e$ : vehicle's departure
- $t_f$ : arrival on the scene
- $t_g$ : departure for the hospital
- $t_h$ : arrival at the hospital
- $t_i$ : intervention's conclusion

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Determine the following segment of the line:

- $t_a \rightarrow t_b$ : time between the event's happening and the call to the operations center. It is highly variable from few seconds in shattering emergencies to many minutes in medical emergencies.
- $t_b \rightarrow t_c$ : localisation and evaluation time. About 90 seconds average.
- $t_c \rightarrow t_d$ : identification and data transmission to the vehicle or vehicles time, eventually followed by the contact with other institutions if it is necessary to interfere together (person's rescue, road accidents, attack, evolutive risk presence, ecc.).
- $T_d \rightarrow t_e$ : departure time
- $t_e \rightarrow t_f$ : treading time
- $t_f \rightarrow t_g$ : stay on the place time depending either on the patient's recovering need and on the team's ability to achieve it, or on the necessary time to find the most suitable destination, exclusive task of the Operations Center.
- $T_g \rightarrow t_h$ : transport time
- $t_h \rightarrow t_i$ : delivery time

## 5. Internal information flows.

Communication processes have an important weight for the safety of the operations conducted on the field: these are fundamental point:

- The need to identify a unique person unrolling the task on the place to avoid overlapping errors.
- The knowledge of the reference actors.

The correct management of communications, in addition to be a true and own discipline, allows to plan effectively a wide range of cases and to solve the majority of problems occuring during the rescue even in variable and uncertain conditions: so the systems must foresee, within the ALS team, a person encharged

to communicate with the Operations Center. Giving this task to the nurse means to recognise that he represents the link between the scene and the operations room, characterised by logic-health competences necessary to perform a good rescue.

A good plan allows gathering the fundamental information in a unique point filtering the needless parts of a message in order to underline exclusively the relevant ones. Below an example of communication:

"Male, twenty years old, embedded polytrauma, GCS at the arrival 7. Intubated, stable ABC, boarding in three minutes. Question for the destination."

It is syntetic, confidential; containing all relevant data to alert and transmitted via radio. It does not contain above all words or data that can interfere with the processing action causing errors of comprehension or distortion.

## 6. External Communication.

In February 2014, the Operations Center 118 received a request coming from Turin alerting the presence of a boat in the Sicily channel; the speaker, in turn contacted by one of his contacts on board spread the alert of a near shipwreck.

The contact with the Harbor Office in Savona, the telephone conversation with the Hub in Rome and the localisation of the boat allowed a good outcome of rescue operations. The news, apart from the saved lives number, is not relevant for media broadcasts, even if the choice is shareable and puts the accent on the law aspect of the systems.

In the world of professional information, the word *gatekeeping* refers to the possibility of selecting the access or the block to the different voices coming from the society in order to produce the news. The *gatekeeper* is who selects facts that, adequately re-elaborated, will become news. It corresponds to the nurse of the evaluation team or the operator of First Aid.

The criteria to make worthy news do not focus on discretional choices, but on parameters shared in the west worlds like for example: proximity, negativity, brevity of time scale and event's dimensions. Usually a negative or dramatic event has a higher value, as a news, than the one with a successful conclusion.

Nowadays there is a great change in the news world connected with the different sources. Agencies like Ansa or Reuters are supported by the social production through webpages dedicated to citizens who want to inform; the technological expansion and the digital culture have even determined the invention of the word *citizen journalism*, as every user in the net becomes potential source.

## 7. Foundations of communication processes.

Communication as generally oriented is a transitive relationship between two terminal points as in the following order: *source and receiver*. The element passing

between the two parts named *information*, and the difference in the transmission way between one point and the other one defines the kind of communication:

- One way: transmission model;
- Go and return: exchange model.

Science to which the study of these events is inspired is sociology of communication; it analyses the communication processes among social actors and, until now, the transmission model, where the transmission follows a typical linear flow of the machines still anchored.

The school of thought, spread by the Communication Research in the early 40s of the last century, clarified and introduced the concept of "active audience".

This specification is important to avoid some conceptual errors: the external communication processes consists of two levels. The first one, from a sociologic point of view, applies the transmission model and aims the sensibility about the correct use of the emergency service, through information campaigns bringing their effects in a long term. The second level, from a psychological and microsociological point of view, applies the exchange model and depends on the relationship user-operator. As the communication in this model is a process established between two active subjects, it is deductible the use of telephone interview protocols with questions of close answers during the evaluation does not offer certainty about the understanding of the given message.

On site, they have didactically studied the psychological relationship with the person to rescue for twenty years; the decision and communication process obeys although to different logics and until now disregarded. The application of techniques ALS, must take in account the obstacles due to the weather and environmental conditions at the presence of the persons, of the Police, of Fire Fighters and of mass media.

The phenomenon is unrestrainable and even if behavioural rules and the attitudes based on minimum ethic requirements according to the public order service, this is not enough. A meaningless event like posture, a sentence, a video can enlarge a smile that, put in a specific framework of different meaning, assumes a negative connotation.

Institutional rescue services do not escape from the image logic; Police and Fire Fighters have dedicated departments for the relationships with media and for spreading information to the audience.

The introduction of the new media has affected the communication features. The relationship with the communication world derives from the displacement of forces today partially balanced by the introduction of social media; the transmission of a phone call to 118 or a video loaded on YouTube, don't represent negative factors, as there are some events that won't never catch the audience attention without



the new technologies. The settling element is the contextual framework in which they are as it can point out the efficiency of the system or minimise its reliability.

**It is certain that the new configuration of the relationships makes people's training necessary and no more to postpone.**

## 6. Conclusions.

Exactly as any other activity performed during the intervention, **communication is fundamental even if its consideration always remains in this way on site.** The reported dialogue describes the problem:

October 21st, 2013 – dispatch of a vehicle ALS in a red code zero one sierra; after 15 minutes from the arrival on site no news arrive. They contact the vehicle:

- CO: "here is the management center, can I have an update of the situation? "
- Vehicle: "actually I don't have time, I'm working!"
- CO: "find it! Me too, I'm working ".

This kind of communication shows that **the often-existing distance between the Operations Centers and the territory together with the knowledge of the mutual needs and the sharing of common objectives, represent the pivot of the application of the system. There can be complete integration between expertise on site and from the Operations center, too, an objective to achieve to improve patients and operators safety on site.**

### Localisation of the caller.

Localisation phase is the most critical activity of the evaluation process: while an error of priority allocation will subsequently compensate when rescues are sent, an error of place detection can easily provoke failure of rescues and have important legal consequences.

The idea that the user must provide with data about the exact location is a frequent mistake. It is important to consider that nobody while moving is always able to establish accurately where he is and the users often might need help to provide with the necessary information for the correct detection of the event. For example, a person in the motorway can easily provide with the direction but not always remembers the name of the last vehicle passed.

Another serious error is to trust localising automatic systems that, even if working well, can be late in updating the database or cannot be so precise: a user localised through a fix telephone number could have moved since a few days. A localisation network has an average accuracy of 500 meters that in isolated areas it can become kilometers.

## Localisation way.

The localisation starts with the place code identification. This code, defined in the attachment 1 («coding system») by D.M. May 15th, 1992 («Criteria and requirements to classify the emergency interventions»), published on the G.U. of the 25th May 1992 is defined as: « (omissis) identification of the place typology where the event happened». The typology is so deductible exclusively from the place where the user must be rescued, and not by what he was doing in this place.

The place identification will be distinguished by a code among the following ones:

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<b>S</b>	<b>Street</b>	All events occurred in the private or public streets or that have been caused by those ones described as happened in the street.
<b>P</b>	<b>Offices and public exercises</b>	All events happened in parts of buildings mainly used as offices or trade activities (for example shops, post offices, hotels, pensions) are defined as occurred in the offices or public exercises.
<b>Y</b>	<b>Sports clubs</b>	All events happened in buildings mainly used for sporting activities (for example gymnastic centers) are defined as occurred in sports clubs.
<b>K</b>	<b>Home</b>	All events happened mainly in buildings used as houses are defined as occurred at home.
<b>L</b>	<b>Working buildings</b>	All events happened in buildings where they do works or manufactures in an exclusive and structured way (for example plants, laboratories, yards) are defined as occurred in working buildings.
<b>Q</b>	<b>Schools buildings</b>	All events happened in places where preschool or school activities are mainly performed to teach one or more disciplines (for example nurseries, primary schools, universities) are defined as occurred in schools buildings
<b>Z</b>	<b>Further places</b>	All events happened in places different from the ones previously described are defined as occurred in further places.

The description of offices refers to «parts of buildings»; so an office located in a building mainly used as houses is however considered an office.

What's more, the description of a working building refers to premises where "they do exclusively and in a structured way works or manufactures». So a work injury,

when it does not happen in plants, yards or similar places, it must be classified according to the site it happens.

It is useful to remember that it is a good practice, mainly in the isolated or unprecise areas, to ask someone to wait for the rescues in the street in a visible place so that he can show the exact position of the user.

### **Events happened at home.**

The way to localise in case of events happened at home is asking for the address.

An address always identifies an access to a public street, for this reason it always indicates a precise place where a rescue vehicle has to go. Although a precise localisation of the user implies the knowledge of the information about the cadastral unit, in particular in areas, where there are many flats and a unique access. A precise localisation must always include:

- A common access to the public street (street or road or square, ecc.; house number; interior number)
- The identification of the house (stairs, floor, flat or family)

It is important to notice that the user does not always know or remember all these information. However, often, with a minimum of patience, it is possible to recover them. A possibility, for example, is to read the address from the electricity bills: the electric users can activate only providing with cadastral data and therefore it is certainly univocal.

A serious error is to trust exclusively the provided data automatically to the computer system: data are not update or the applicant could call from a different address.

### **Events happened in the street.**

The events happened in the street are those ones presenting more difficulties to be localised. If the event happens in a city often it is enough an address or a crossroads. In this case, it is important to be careful to the fact that there can be multiple crossroads of two streets or one street and a square. For large squares or open spaces, it is necessary to require a known reference or a cardinal point (north, south, east, and west).

If the event happens on urban roads to expressway, on country roads or under the tunnels it is necessary to think about the following items:

- A name of the street or a house number could not be available: in this case it can be useful to obtain a road number and the progressive kilometer or a crossroad;

«Can you see a milestone? What does it point out? »

«SS10 Km 20».

«Can you see a crossroad? Can you read the panels, please? »

«They indicate Piobesi at 1,2 km, Carignano at 2,3 km and Carmagnola at 8,6 km».

- In case of a traffic island among roadways, or under a tunnel, the direction towards it is necessary to interfere is extremely important. Although it is also important to consider that the traffic in that direction could be completely stopped and it could be necessary rescues to interfere in the wrong direction;
- In the roads without flush crossroads (motorways, highways, ecc.) it can be enough to identify a stretch of road several kilometers long, even if in this case it is fundamental to define the running direction. If a rest or service area is given as reference it is necessary to consider the fact that there could be two (for example Stura north and Stura south);

«Which is the last exit you noticed? »

«Chivasso East».

«In which direction were you going? »

«Towards Milan».

«The accident happened in his running direction? »

«No, it didn't. It happened in the opposite running direction».

- If the user is not able to give the name of a village or of a street it can be useful to know the departure and the destination of the caller and to restrain the research through the last elements noticed;

«Where did you leave from? »

«From Chivasso».

«Where were you going? »

«To Ivrea».

«Through the motorway or the highway? »

«Through the highway».

«Can you remember the name of the last area you crossed? »

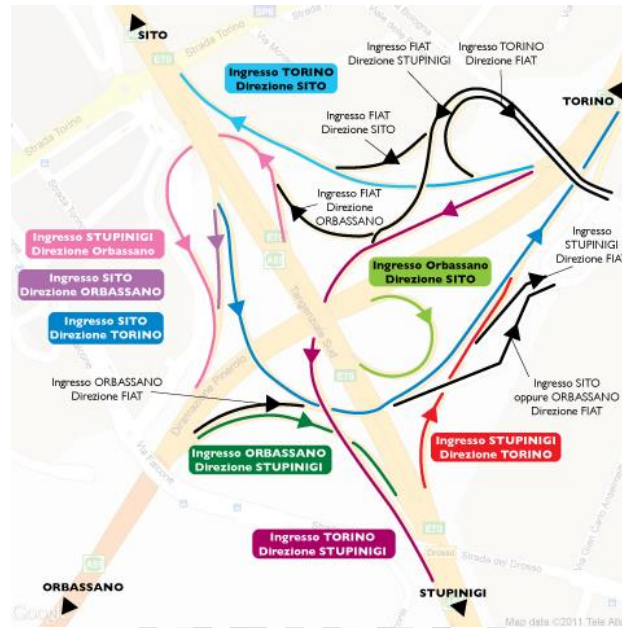
«Mosche».

«Since when? »

«Since 2-3 minutes».

- If the user has at disposal, a switched on navigator it can be useful to ask for the noticed position or the GPS coordinates.

In all these cases it is important to identify a unambiguous area more than a precise address, or better a stretch of road that, once taken, will certainly lead to the event. A stretch of road between two divergent intersections (traffic flows dividing) is unambiguous and therefore it is characterised by an origin and a destination. Considering a complex interchange (Drosso di Beinasco), it is possible to identify the unique stretches in the following way:



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Usually the user can give as origin point any entrances before the stretch and as direction any exits after the stretch. It is important to take in account that often it is misleading to try to identify a unambiguous stretch without using adequate cartographic systems and it can cause some errors.



Cossa Street corner Pianezza street in Turin: there are different crossroads on a distance of 900 m.

Square Statuto in Turin: In this case, it is necessary to ask for precise references.





*An accident within the underpass of Square Republic in Turin would constrain to interfere from the wrong direction.*



*In a road stretch like this one (SS 11, Pescara's turn) it is necessary to interfere in the right direction of the accident.*



*An interchange apparently easy like In case of the interchange Drosso of Bauducchi of Moncalieri has however, Beinasco, defining the stretch of twelve univocal possible stretches. intervention can be very complicated.*

### **Events happened in offices and public exercises.**

The localisation of offices and public exercises is not very different from those ones of the houses. Often the public exercises are at the street level, and in this case, it is sufficient to obtain an access from the public road, the kind of trade activity and the signboard.

For the offices situated in house buildings the localisation will foresee the steps to recognise the house units.

There is a different speech for the extended activities as for example trade centers or buildings entirely used as office (banks, assurances, courts, ecc.). These activities often foresee many entrances, and who is not expert it can be difficult to reach the user. For example, an ipermarket often has an entrance for customers, an

entrance for employees and an entrance for goods. In this case, it is fundamental to clarify where the user is (changing room, offices, lanes, desks, pay desks, ecc.).

In all these cases, if there were a security or supervision service, it would be necessary to require people to wait for the ambulance at the entrance communicated and to take the rescue staff until the user.

It is necessary to remind that in the trade activities, the telephone could connect to a POS equipment (Point of Sale) and it could result busy when recalling obtaining additional information.



*A trade center usually has many entrances for customers.*

### **Events happened in working buildings.**

Even in the case of working buildings it can be often sufficient for most of the cases to find the access from the public street, to know the kind of trade activity and the signboard (laboratories, workshops, ecc.).

Nevertheless it is necessary to consider that some kinds of manufacturing activities can be expanded, and in this case, it is fundamental to define correctly the access and to require the staff's assistance.

In case of yards it is important to underline that it could not be still present a street or a house number as they have not been assigned yet (for example in an area of townhouses under construction). In this case, it is essential to establish a meeting point to the access and to require that the yard workers take the rescue staff to the user.



*Even an industrial plant can have many entrances.*

### **Events happened in the schools buildings.**

Even in the events happened in the schools buildings it can be difficult to join the user for not expert operators. A school can have internal halls, corridors, rooms, laboratories, gymnasiums, offices and sometimes coffee shops: it is important so to define since the beginning the kind of place where the event happened so that it is clear for the rescue staff towards which area going. Even in this case it will be necessary to ask for schools workers support.

### **Events happened in sports buildings.**

In case of sports buildings, besides the access from the public street, it is necessary to ask for more information about the gymnasium, about the field or about the swimming pool to join. In case of particularly big sports buildings or with many spaces inside (changing rooms, sauna, massages rooms, ecc.) it is certainly useful to ask for the equipment staff's support.

### **Events happened in further places.**

All buildings or parts of them not included in the above listed typologies are "further places". For example and in general in this category there are doctors' surgeries, nursing homes, therapeutic communities, hospitals, ecc. Buildings whose localisation is not very different from the previous ones.

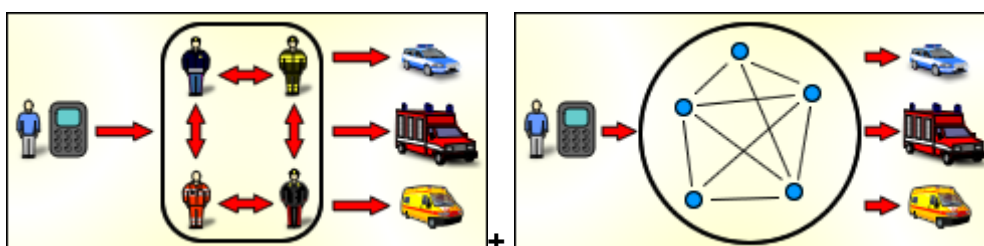
The large variability of the category characteristics although includes not only buildings but also all not exactly identifiable places. For example, interventions in the mountains, in the woods or on the water mirrors are considered interventions in "further places".

Not willing to list all the possibilities offered by this typology they will treat only some samples places with peculiar features. The institutions to which asking for help can change according to the local protocols.

Place	Description
Nursing homes	Asking for eventual building block, department, doctor surgery, floor and user's name.
Places of worship	Ask for the exact position of the user
Cemeteries areas	Ask for the entrance and for the field
Museums	Ask for the floor and for the room
Places of detention	Ask for the building block and the user's name and prison officers will always accompany the rescue staff.
Rivers	Ask for the point from where the user was the last time. If necessary, ask for divers' intervention.
Lakes and beaches	Ask for the nearest point to the user reachable by a vehicle and the path to reach the precise place. In case of presence of many people, ask someone to be noticeable for example waving a blanket. If necessary, ask for the divers' intervention.
Sea	Ask for the intervention of Coast Guard.
Woods	Ask for the CNSAS help.
Interventions in the mountains	Ask for the CNSAS help
Speleological interventions	Ask for the CNSAS help

In all these cases, as already said before, if possible it is useful to have the accompaniment of a person who knows the user's position.

### The model of a Unique Interconnected Hub.





Three departments guard CO. The operator of one of the institutions answering to the call takes charge of the request and continue to remain in contact with the user; the presence of the other institutions members stimulates the supply of a multidisciplinary answer.

A similar organisation allows using staff partially trained. The issues are of the organisation (application of common procedures among different institutions) and legal ones.

From an organisation point of view, the coexistence of fire fighters and health rescuers in a unique operations room opens high complex scenarios; nevertheless there are no reasons to think that they can apply common procedures in the operations room.

The metaphor of the survival chain lay the foundations to reinforce the weak ring of the same chain that is definitely the rescue call through the three universally know functions:

1. Localisation of the target and evaluation of the urgency and of the magnitude;
2. Dispatch of the vehicle or of the alternative answer;
3. Administration of pre-arrival instructions (IPA).

CO use standard procedures to identify the requests, and the use of telephone instructions to provide to the users waiting for the rescue vehicles arrival is today a standard property whose utility is universally recognised either in the health field or in a technique and public security fields.

In Italy, it is still a problem to share and to merge the fragmented 118 system; it makes us still distant from a unitary work philosophy: if from a side the procedures differences can come out indifferently among near regions (or even provinces), from the other side, the evolution of the emergency medicine is not in line with the expansion of the new digital culture.

The expressed concepts have an important validity in the continuous update to which experts of the system must refer: ERC, AHA, ILCOR, only some of the most known scientific organisations, they spread guidelines and orientations every five years, even if there are some scopes, like the law one, with a higher stability in the longtime.

The territory emergency systems activity frequently depends on the one of fire fighters and police officers; all the services put the person in the middle of their own objectives and also they differ from uniforms, procedures and competences, their mechanisms of activation are the same. It derives **the need to communicate and integrate the relative competences in a higher way compared to the past to avoid abuses, obstacles and errors according to a common intervention philosophy**. In addition, this is not a novelty!



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