

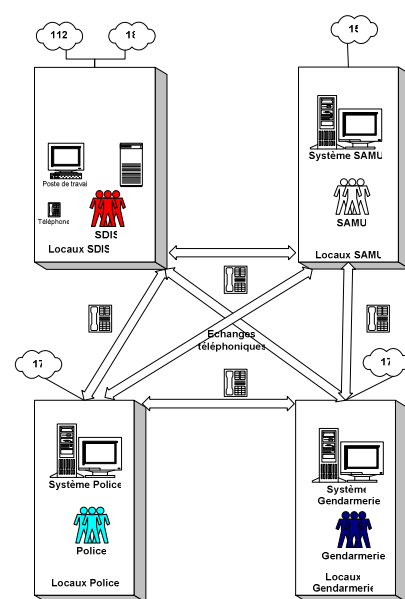
### Proposing organisational diagrams

Four different functioning diagrams for 112 emergency call management and the management of the shared reference repository were analysed and compared to see to what extent they respected the following principles:

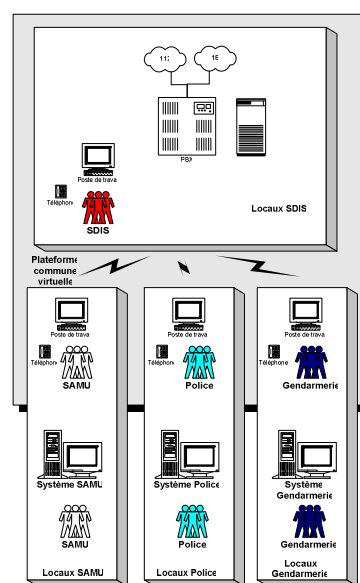
- ▶ a common physical platform enabling the sharing of necessary means for the management of these calls, with the repository and coordination tools in the same location,
- ▶ a common virtual platform managing 112 calls and the common repository, with partners being located in their respective premises,

- ▶ a split architecture, corresponding to the existing situation, a reference repository being developed to ensure the interoperability of the different systems (interface management for re-routing or coordinated interventions),
- ▶ a cooperative architecture in which the shared functions of each actor are grouped together in a joint system ensuring the management of reference repositories and the sharing of data between partners.

After the completion of the study, the general consensus of the services was to have a **common virtual platform**.



Current organization



Common virtual platform

### How ACTIF helped

Above all else, what ACTIF clearly brought to this project is a method and practically non-questionable common working principles that made it possible to do the spadework on the initial project phases and then rapidly move on to general shared functioning principles.

The use of the method in the initial project stages enabled a clear geographic and functional scope to be defined, limiting the number of actors and precisely defining the functional limits of the emergency services coordination project, within the scope of the development of the 112 emergency number. Later project stages, from the interviews with partners to the common architecture development, enabled the functioning logics of each partner to be described, so as to establish a thorough analysis of the current situation and define shared functioning principles.

In this sense, the ACTIF model seems to be a particularly efficient means of establishing a common vocabulary: the different services questioned issued only minor remarks after the study, linked to their individual functioning specificities.

Finally, the presentation of different architecture scenarios on the basis of a set of functional systems and their interfaces (emergency services, road operators, shared repository and coordination) enabled open dialogue, extending beyond the logics of each body and without predisposed opinions on solutions.

Today, the choice of a functional and organizational architecture, founded on the principle of a common virtual platform appears to be not only shared at a local level, but also applicable to other counties.

**Project:** within the scope of the development of the 112 emergency number, propose a coherent framework for the coordination of emergency services from call reception to processing.

**Challenge:** successfully apply the "112" European directive, whilst maintaining an adapted processing of calls on existing numbers and at the same time improving the efficiency of interventions and the coordination of each service.

**How ACTIF helped:** it assisted decision-making by proposing different scenarios, analysed on the basis of shared functioning principles.

### The general context

The different emergency services, such as the county fire brigade (SDIS), the emergency ambulance services (SAMU), the national police force and "gendarmerie" are called upon to deal with emergency situations :

- ▶ either through the detection of an abnormal situation (handled internally),
- ▶ or more often when a user dials a specific emergency number (15, 17, 18, ...),
- ▶ or through the transfer or "re-routing" of calls from other services (emergency services or road operators).

These call transfer practices are common-place in many services and well accepted, in so far as they are reciprocal and limited: users' knowledge of the specificities of emergency numbers generally enables the right pre-selection of the relevant service.

However, the creation of a single emergency number, "112", through the 1991 European directive, has increased the need for re-routing in addition to the number of "unwanted" calls received by certain services.

The aim of the directive is to enable anyone travelling within the European territory to dial 112 and obtain an adapted response in their own language to a request for assistance in a situation that they cannot deal with alone. This goes beyond the notion of an emergency in its strictest sense.

The operational implementation of this number has been organized at a county level under the aegis of the prefects. In the Côtes D'Armor, as in most counties in France, the prefect has decided to entrust the SDIS (county fire brigade) with the reception of calls, through a call processing centre.

The logics of the proposed service highlighted coordination requirements that go far beyond the simple transferring of calls. This has led the home secretary to call for the experimentation of a common platform satisfying service requirements of the 112 directive: the Côtes d'Armor county has been designated for a pilot study.

### The role of ACTIF

It is within this context that the Côtes d'Armor prefecture called for a diagnosis to be made through the use of ACTIF. Assistance was provided by the ACTIF teams at the end of 2004-beginning of 2005. It consisted of various interviews with the services concerned, in order to :

- ▶ compare current practices within services with a theoretical functioning proposed by the ACTIF model,
- ▶ highlight requirements (in terms of service objectives and therefore functions and interfaces to be provided between partners and systems), the constraints of each partner (such as standards, languages, communication means, but also the level of service required by the outside) and current or planned projects,
- ▶ propose different functional and organizational scenarios,
- ▶ analyse these scenarios on the basis of principles defined with the various partners.

### A project ?

The ACTIF team can assist you with your projects and pilot studies :

#### Contacts details:

Yannick DENIS (CERTU)  
Tel : +33 4 72 74 59 46

Jean-François JANIN (DGMT MTI)  
Tel : +33 1 40 81 21 22

<http://www.its-actif.org/>

### A comparison of current practices and theoretic functioning

The functioning of emergency services can be analysed through information system logics as proposed by the ACTIF model. Emergency service professions can be broken down into three levels of action :

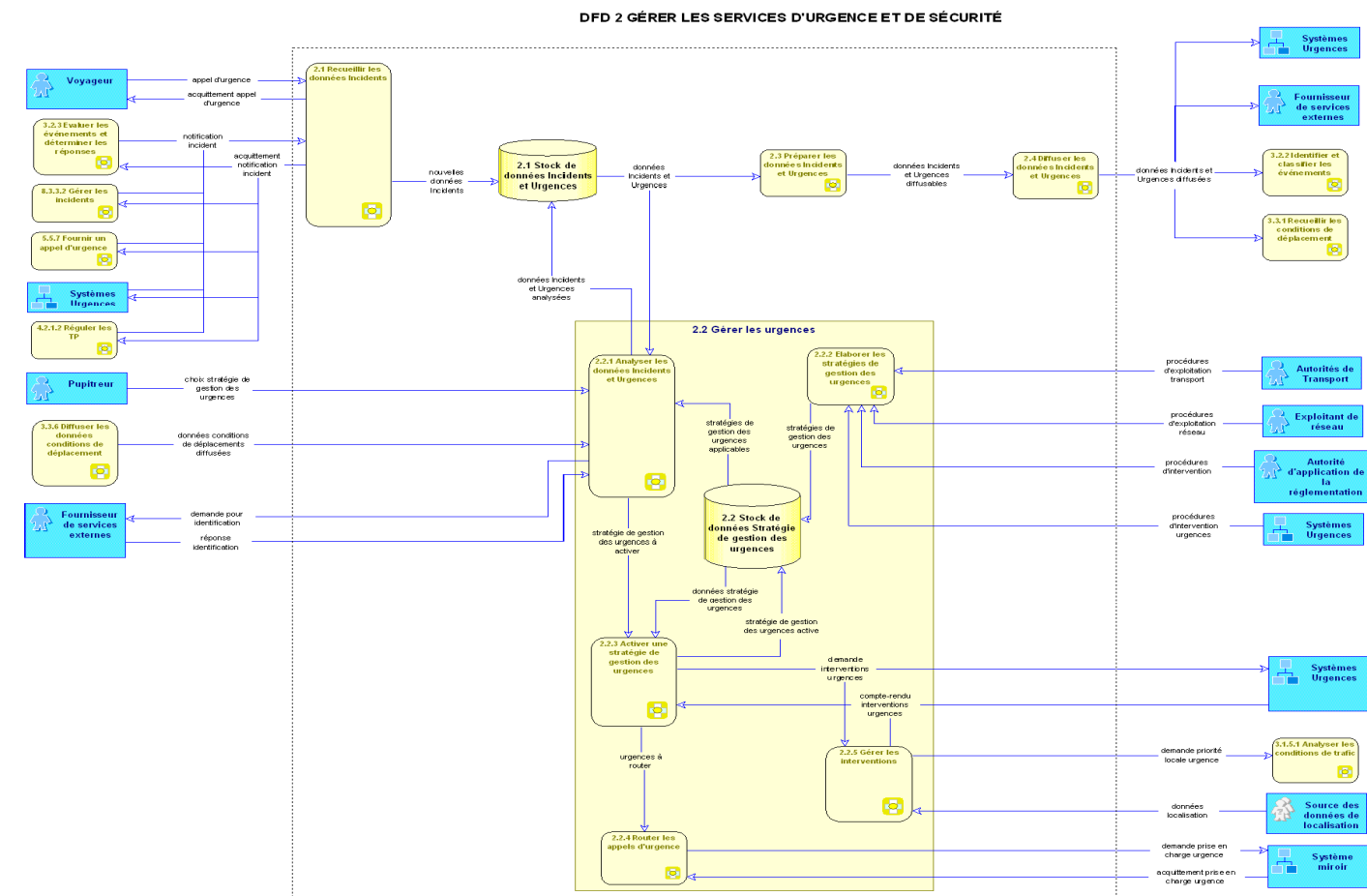
- Emergency call management: from the reception of the call to the intervention request or re-routing to the relevant service,
- Intervention management: this includes all functions from the request for intervention and the activation of an intervention strategy and its monitoring, to the end of the emergency situation,
- The definition of intervention strategies: this is located upstream from the other levels and uses information from data stores (paper or computerized log books) to assess interventions and if necessary, adapt strategies.

The diagram below (taken from the ACTIF model), can be applied to the SDIS, SAMU, the police force and the gendarmerie. The only differences are linked to the actual practices of each of the partners and service requirements.

The various message flows present in the model are those that could exist in reality, in particular those that arise from the data collection, processing, storing and dissemination process chain, which present aspects for which interoperability requirements can be highlighted. It is within this framework that the need to define functions relating to the management of a common repository can be seen.

In fact, it is at this level that a real service interoperability strategy can be built. It is not enough to simply describe continuous chains enabling a visualization of how information passes from one service to another. If it is to be usable, this information must first be understood and therefore expressed through grammar and vocabulary that is comprehensible (or at least translatable) for each partner.

The analysis of actual practices can highlight redundancy problems (multiple calls for a same event that activates different services), but also and especially insufficiencies (precision and monitoring of given information, absence of consolidation, lack of assessment) that lead to disruptions or losses in terms of efficiency. The following points have therefore been noted and have led to a clear expression of requirements and constraints, whilst locating this expression within local or national projects.



Fonctionnel aera « manage the emergency services  
Data flows diagram - ACTIF - Version 4

### Expressing requirements and constraints

#### ► Emergency call management

One of the difficulties often faced by emergency services is the number of calls that do not lead to an intervention. Although callers generally make a correct use of numbers 17 and 18 and choose the competent service, their use of numbers 15 and 112 is less precise. This can lead to saturation of the dedicated lines by calls sometimes considered as "pollutants", but which correspond to a situation of distress that needs to be handled in an adapted manner. From this fact stems the principle of maintaining specific numbers organizing the pre-selection of services by callers (applied to 24 hour chemists, for example) and that of organizing an adapted response to "varied" demands in the long term.

#### ► Intervention management

The activation of intervention strategies is done autonomously within each service. The diversity of means available to the different organizations means that they cannot fix the same objectives in terms of service and attitudes when faced with a call. The need for improved exchange with road operators has been highlighted: this is generally insufficient and rarely provided in a continuous manner. However, it is essential for the choice of route, and must be based on correct cartographic information and information on traffic conditions (congestion, road works, etc.).

The need for continuous information dispatching relating to the processing of an emergency situation, in addition to the monitoring of equipment, can clearly be seen and should enable decisions and responses that are better adapted (radio links to control centre, positioning through GPS equipment..).

### Highlighting common functioning principles

The functioning principle that is described integrates existing activities that were listed during the interviews with the various actors, in addition to activities that are lacking and required if the system is to be fully operational. These activities are mainly related to coordination and the implementation of a reference repository. They have been taken from the ACTIF model. The necessary cooperation between services and systems is based on strong principles :

- **Subsidiarity** : each actor remains master of his field of competence
- **Cooperation** : the sharing of information and simultaneous intervention if necessary
- **Coordination** : cooperation on the basis of pre-defined strategies

#### ► Coordination

This is dependent on the needs that arise. It often only concerns two or three different services. The needs that are expressed are of two types :

- intervention coordination plans that can be activated automatically prior to interventions; the obstacle for the practical application of these plans is the difficulty for each service to guarantee the actual intervention of means in the event of specific emergency situations, as in the case of crisis.
- shared tools enabling an objective assessment of field interventions and the means used, which in the event of a major crisis enable an effective management by the emergency services coordination authority.

#### ► Repository

It appeared essential to propose a coherent system enabling comprehensible information exchange between each of the services: data must therefore be described on the basis of shared references. The need for a common reference repository, continuously managed by a shared tool concerns:

- updated cartographic aspects (geocodes) and road aspects, for a knowledge of the best routes,
- the intersection of information between services enabling the reduction of redundant calls,
- the knowledge of available means in other services.

The absence of a reference repository curbs the efficiency of services and especially their coordination.

- **lack of hierarchy** : no hierarchical dependence between services (with the exception of prefectural hierarchy),
- **data exchange in asynchronous mode** : a system can continue to function in spite of the absence or unavailability of another system,
- **confidentiality**, each actor must guarantee the integrity and the completeness of its data by managing access rights.

.....and on two rules :

- the **independent developments** of each system, linked to changes in terms of regulations or functions,
- the use of **standard tools**, enabling each actor to develop its system using standard profession-based software packages available on the market.