

Digitization in the Spanish army

DOCEX, the seminar about doctrine annually organized by the CDES/CREDAT and the MADOC doctrine direction had for subject in 2002 the battle space digitization and more precisely the engagement of the digitized brigade around the year 2006. Like the other main European countries, the Spanish army is conducting studies about the digitization of the information systems, starting from the central staffs down to the brigade units. The initial studies are starting from the American definition of digitization written in the document Joint Vision 2010 “...the information technologies must help to have a clear and accurate picture of the area of interest and to facilitate the planning and conduct of operations ...” The “*intellectual*” realization of digitization, a technological evolution of the information systems, to help commanders and not as an end in itself, is presently completed. It remains to make more interoperable the different information systems fielded (or to be fielded) in the army, which represents an important technological challenge, but quite achievable in the years to come.

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The doctrinal process which took place around the theme of battle space digitization will not be mentioned in this article since it is based on established facts shared by all modern armies ; on the other hand, some aspects dealing with its implementation in the units will be developed. But mainly will be presented the different systems, coming from the national industry, that are the digitization medium in the Spanish army : these ones are already fielded or in the process to be fielded, or still in the development phase.

The project materialization

Digitization is above all one concept stemming from a technological revolution, aiming at facilitating the commander's job in the battlefield ; if all the levels of the command structure are concerned, it is nevertheless interesting to observe the



implementation of that concept in the brigades, the fighting tools intended to win the day.

In the absolute, all the brigades might be digitized, nevertheless the light brigades (*legion, airborne, airmobile, mountain*) the battalions of which are not motorized (*or only partly*) will not

benefit from a system as complete as the other heavier brigades. In all cases, the full digitization of one or several brigades in the mid-term seems to be out of the question. The traditional transmission means will keep co-existing with integrated systems within the same major units. As for the lowest implementation level of digitization, the Spanish army considers that it must be the level of the tactical taskforce (or battalion), being also aware that the Leopard tanks and the Pizarro FIV (but not the Centauro wheeled armored vehicle) are planned to be fitted with a SIMACET terminal. As for the small units (*from company to section*) they will not be digitized since, for the time being, it is first necessary to privilege the integration of all the existing or future information systems. Finally one can stress that the "Future combatant" program which is roughly developing at the same rhythm as its French equivalent rules out the extension of digitization to all combatants except for the sole platoon leader who will have a SIMACET terminal at his disposal.

Presently the Xth Mechanized Brigade in Cordoba, the best equipped mechanized unit, is beginning to be fully digitized down to the vehicle, for its battalions equipped with Leopard tanks and Pizarro FIV.

On the other hand, it is inevitable that the development of new information systems, and the modifications they entail on how to conduct actions, have some consequences on the units functioning and first on brigade CPs.

-The brigade CP will not necessarily be grouped as it is presently the case, some of its elements may be deployed outside of the operation zone. As regards command and control, the organization of the future digitized CP should enable the brigade commander to conduct the operation from any point of the battlefield.

-Digitization should contribute to lighten their manpower and to render them more mobile and reactive. Of course, if going into details, the

intelligence cell should rather increase when taking into account the importance of the information flow that will be forwarded and requiring to be analysed, but on the other hand, the brigade logistic cell should become only a mere mailbox; it must be noted that the subordinate unit CPs will be strengthened in order to be able to face the great amount of data requested by the system, at least until the new information systems will not be fully operational.

-Retaining an alternate CP seems almost necessary to make up for the main CP during the change of locations or to replace it if destroyed; but the rear CP, which still exists in the Spanish brigades, should disappear due to the technical impossibility to digitize two CPs; the logistics of the brigade presently managed within the rear CP will then be ensured by the main CP.

-Finally, it is clearly stated that the technological systems set up within the framework of digitization must remain in the service of the commander who, as a last resort, makes the decisions and conducts the operations. But precisely, in emergency, will digitization permit to be rid of some hierarchic levels? This technical possibility which would make possible, for example, to have a task force commander directly speaking to a tank commander is not looked for in Spain. As well, the option consisting in having recourse only to very specialized people to operate the systems, is a priori excluded.

The systems

The project represented by digitization in Spain relies mainly on the techniques used; it is fundamentally supported by a central system, while having to integrate other functional systems.

The digitization core in the Spanish army is the Army Command and Control System (SIMACET), the



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SIMACET terminal

development phase of which started in 1999. The third version has been successfully tested by the end of 2002. It is a global system which largely goes beyond the framework of the brigade; it permits:

- to obtain a global picture of the battlefield for all the users, through terrain representation and thanks to tactical symbols.
- to help for planning, decision making and conduct, it facilitates the drafting of free or formatted messages.
- to ensure interoperability with the other army systems and with the nets of the other services (SIJE, SACOMAR, SIMCA, etc...) and of the allied countries (SICF, ISIS, HEROS).

As a unique information system to command the operations, it must therefore connect, at national level:

- the highest level i.e. the central staffs (*Defense staff and each of the staffs of the three services*)
- the intermediate level represented by the major units operational staffs. In this respect the operational evaluation of the rapid reaction NATO CP, established at Valence, in November 2002, confirmed the efficiency of the SIMACET system which connected the HQ CP, the two CPs of the Corps under trial, two division CPs, six brigade and several battalion CPs.
- the lower level ranging from the battalion to the fighting vehicle.

The connections must also be realized with the projected forces and the networks from other countries. The most important components of SIMACET are its data base and its mailing system.

The data base uses data structured according to the ATCCIS standard in order to permit interoperability with other systems existing in NATO : it is the MDC2ET base. In the same way ,an identical picture of the battlefield will be provided to all the users from a cartographic base (GIS) which will reach the NATO interoperability level 5 (on a scale from 1 to 6).

The mailing system uses the NATO standards ; it permits to send and to receive secured messages while offering the possibility to have a personal Lotus (non secured) mailing system.

Within a brigade, the SIMACET nodal centre is composed of two servers fitted in a shelter ; the users can be connected to the local net with portable computers. In the battalions, two portable computers connected to the SIMACET system constitute the link; the battalions and the brigades are linked together thanks to the Area basic net (RBA).

The RBA is the tactical telecommunication medium of the SIMACET ; very similar to the RITA system ; it relies on a meshing of nodal centres covering the operation zone of the deployed major unit ; it permits the integration with the *Combat Radio Net* (RRC), the main radio set of which is the PR4G, and with the armed forces infrastructure communication net (RCT) ; finally, it is totally interoperable with the NATO net and the RITA system.

The integrated system for the Army logistic management (SIGLE) aims at permitting an integrated management of the logistic activity, through its different functions.



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The main present difficulty is in the RBA small data transmission flow which is not compatible with the importance of the flows accepted by the SIMACET ; however this deficiency is on the way to be solved. On the contrary, the problem is more difficult with the RCC, the equipment of the PR4G family being able to process data not exceeding 1.2 kilo bits.

The Spanish army also uses functional information systems ; some of them require a modernization or at least an adaptation to become compatible with the SIMACET. Others are under development.

-*The Ground Information System (SIS)*, already old, collects data provided by the sensors aimed at collecting intelligence, these data are then given to an intelligence processing centre which analyses them and then introduces them in the SIMACET.

-*The integrated system for the army logistic management (SIGLE)* aims at permitting an integrated management of the logistic activity, through its different functions ; an important adjustment will be necessary for the system to be integrated into the SIMACET.

-*The Air defense artillery information system.*

-*The field artillery information system (PGCACA).*

-*The engineer information system (INFOING)* under development.

-*The electronic warfare information system (GESTA)* also under development.

-*The Leopard tank information system (LINCE)* which permits to each tank to communicate with the higher echelon in real time : transmission

and reception of orders during action, requests, awareness of the tactical situation, logistic data, etc... this system is from now on fully compatible with the SIMACET and constitutes therefore a SIT (for the Leopard tank). This system is beginning to also equip the Pizarro combat infantry vehicles.

Finally, the polluted zones reconnaissance vehicle (the VRAC-NBQ), an equipment currently under trial, is fitted with a terminal which is automatically integrated in the NBC domain of the SIMACET. The major challenge for the whole of these very varied systems relies on their adaptation to the SIMACET system ; it has been decided that the systems should reach the interoperability level 6 (at national level, level 5 with the allied countries) before 2006.

Like in the other modern armed forces, the digitization process is considered in Spain as a major stake ; if the concept is now clearly defined and numerous soft wares effective, the employment procedures of the digitized forces are still to be studied, or a new planning method is still to be adopted (which is on the right track) ; In fact, the impact of the concept on the Army future evolution is considerable. Nevertheless, it is clearly stated that digitization remains a tool to help the operational commander, which must contribute to develop his freedom of action and to speed up decision taking.

In the Spanish army, digitization relies, technically, on the SIMACET, an interoperable system, the efficiency of which is recognized by the other countries. From now on, integrating the different functional information systems (intelligence, acquisition, support, logistics) within a single digitized system still remains to be done as well as to carry on the system development into the units.