

Joint Simulation

During these last decades, the importance of simulation increased in the decision-making process and in the training of high-level officers. Thus, simulation appears as **a privileged tool for the armed forces**. It should enable to study, to validate and to upgrade concepts and doctrines, to support defense planning, to prepare for specific operation planning, to assist in planning and in conducting actual operations and to carry out operational readiness at the lowest cost.

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Joint simulation challenges

Permanent changes in our environment, in particular in the strategic framework, compel us to permanently adapt capabilities, concepts, doctrines and operational training for the forces. France must have the **capability to support strategic decisions, defense planning and operational planning**.

When facing the challenges of a new international framework, it is compelled to define its strategy within the framework of standing or contingency alliances. Moreover, France must retain the **capability to plan and conduct multinational operations and a self-contained capability for situation assessment** if it wants to keep its role as a “framework nation” and to be prone to it because of its UNO Security Council’s permanent member status.

Within this framework, carrying out joint simulation should enable:

- to widen the thought area (from the tactical level to the political-military level) ;
- to favor (armed forces, interagency, allied) synergies;
- to ratify choices.

Effects to be achieved

In order to be able to have a national simulation system available that would provide us with the capability to support decision-making processes and operational planning and with assets interoperable with those of the European Union, of the Alliance and of the armed forces, simulation **should primarily:**

- carry out a determining role by providing France with specific anticipation, conception, planning

and conducting capabilities in the fields of capability and force employment;

- provide the armed forces with a staff training capability at operational level and interoperable with the Allies;
- take part in the coherence of all the simulation systems that are being used by armed forces and agencies.

Joint simulation gathers all the simulations implemented by the Joint Staff, the Joint Force and Training Headquarters (“EMIA-FE”), special operations forces, command and control operational structures (Joint Operations Planning and Command & Control Center, Operation HQs, Force HQs, etc.), as well as the Joint Defense College, the Joint Concept, Doctrine and Experimentation Center (“CICDE”) and the Simulation Center for Education, Training and Testing (“CSFEE”). If necessary, it is also likely to include simulations shared among the various Services and among the different agencies dealing with strategic planning (Directorate, Strategic Policy; Directorate, Military Intelligence; General Secretary for National Defense; other agencies...).

The various fields

The **joint simulation master plan for decision-making support and operational planning** was agreed upon on May 12, 2006. The fields that are included into it are the following:



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Support to strategic decision-making

Support to strategic decision-making includes **two parts**: strategic anticipation and pre-decision planning.

The purpose of **strategic anticipation** consists in making the decisions that will be *in fine* forwarded to the military strategic level.

Strategic anticipation: we have to establish the drawing up of a worrying sophisticated geopolitical situation. This description includes the major items of permanent strategic watch and it enables to consider the “global maneuver margin” within the various relevant power fields. At this level, simulation provides the assistant decision-making group with aid, in order **to describe the “situation model” in a more rigorous and comprehensive way**, then **to assess the probable answer selection when using this model**.

For this purpose, simulation relies on the modern technologies of operational analysis: morphological analysis and multivariate analysis, clever agents and Bayesian networks, optimization techniques, etc...

Pre-decision-making planning: its purpose consists in determining a “specific desired end state” when a crisis breaks out; we have to complete the analysis of the effects to be achieved and of the actors to be tasked to. Then, simulation provides us with direct support when **clarifying and updating the “strategic situation” model** that highlights the important decision factors. It provides us with support **to draft and assess the “strategic option” proposals** within the various possible power fields in order to reach the specific end state, while complying with the limitations set up by the political decision-maker.

In both cases, simulation relies on the same kind of tools to be used by experts that support the decision-making process. Within this framework, simulation - in support of decision-making - accumulates the knowledge of concepts and doctrines within a cognitive process.

The development of these tools highlighted the advantages provided by the use of methodological synergies with civilian partners. For example, the SIMULIA-ADS demonstrator relies on a methodological innovation that

materializes the works of the academic world in the field of strategic long-term planning and decision-making assistance. Research workers from the strategic innovation and long-term planning laboratory in the CNAM of Paris contributed to set up its conceptual bases. Currently, they are still supporting us.

As regards the objectives of the joint simulation master plan, **a first operational strategic decision making assistance capability is expected to be procured from 2009 onwards** with the SADES (Strategic Decision Making Assistance System) program; its FCM (Operational Requirement Document) will be completed through the example of the SIMULIA-ADS demonstrator that will be made reliable and used on an operational basis as early as 2007.

Planning and conduct support

Defense planning consists in defining an armed forces model and the corresponding capabilities under strategic, political and budgetary constraints. **Simulation brings forward an essential support as regards planning for the future.**

Operational planning consists in describing the part of the military consequences of an operation planned within a global framework according to the agreed military strategic option. At joint level, it starts with a specific analysis of the situation - generally limited to a specific theater. In a first stage, it produces the effects to be achieved in order to meet the desired end state, then the alternate suggested military COAs (Courses of Action) leading to it - synchronized and coordinated in time and space ; eventually, force's strength and the chain of command. After having been agreed upon, the outcomes of the various stages are put into an operation concept.

In this approach, simulation assists in making decisions and optimizing the effects to be achieved by taking the direct and induced, positive or counter-productive effects into account. In this decision-making process, we have to optimize, on the one hand COAs according to expected enemy's COAs, on the other hand the size of the force depending upon available assets.

When conducting an operation, simulation also provides **an immediate support to facilitate the operational handling of information**, in particular for operation's appraisal and follow-up functions. Discrepancies between planned effects - indicators developed during planning - and observed effects are determined with the support of simulation. Moreover, simulation also provides us with a **short-term anticipation capability** when conducting an operation.

As regards the aims of the joint simulation master plan from the SIMULIA - APD / APO demonstrator - that will be made reliable and fielded as early as 2007 - we anticipate **to have a first defense and operational planning support capability from 2010 and conduct support capability from 2011.**

Operational preparation

Operational preparation includes all training requirements from strategic level to the conduct of maneuver's level.

Simulation is used to assist in command and control education and for training.

Training assistance includes:

- The training of high-level officers and NCOs in order to update the knowledge of decision-makers-to-be about crisis management;
- Basic training pertaining to methods for planning and conducting operations;
- Local training within the various agencies.

Training support is provided by the Joint Theater Level Simulation (JTLS) installations in the French Joint Defense College and on specific studies. The aim is to **implement a first capability** in the Simulation Center for Education, Training and Testing ("CSFEE") by 2008. This capability will be resumed in the MENTOR project by 2010.

Simulation supports **training** for:

- Decision-makers with their headquarters at strategic level within the framework of CMX (*Crisis Management eXercises*);
- Headquarters at operational and tactical levels within the framework of CAX (*Computer Assisted eXercises*).

Exploring the various simulation capabilities provides us with **an additional wealth in the field of crisis detection and crisis management.**

Being able to have capabilities for assisting in decision-making and operational preparation provided by joint simulation is a **required prerequisite to carry out the various tasks that are the province of a framework nation.** Besides, joint simulation plays a major role **for a nation to have appreciation estimate.** With performing capabilities available in this field, it means that we are in the brains of European defense and not only in the muscles.