Simulation Team

NATO needs of Future Strategic Engineers

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Objectives

To identify possibility to continuous pursue for effectiveness improvements in E&T for Decision Makers

Address necessity to attract and assess people with high potential

To Evaluate the benefits provided by M&S and AI to support Strategic decision making, particularly in various non-technological areas.

To Define a roadmap for additional research in Strategic Engineering a crucial resource to support NATO needs in E&T

To Contribute in defining a program for Strategic Engineering Education as an approach leading to the revitalization of operational research principles implemented in "social-everyday" practice, integrated with IoT, Big Data and Data Farming concepts for decision support

MDMP

Military Decision Making Process

Key Input	Steps	Key Output
Higher HQs' Plan or order or a new mission anticipated by the Commander	**Step 1:** Receipt of Mission	Commander's Initial Guidance Initial Allocation of Time
	Warning Order	
Higher HQs' Plan or order Higher HQs' Knowledge and Intelligence Products Knowledge Products from other Organizations Design Concept (if developed)	**Step 2:** Mission Analysis	Mission Statement Initial Commander's Intent, Initial Planning Guidance & Initial CCIRs & EEFIs Updated IPB, running estimates Assumptions
	Warning Order	
Mission Statement Initial Commander's Intent, CCIRs & EEFIs, Planning Guidance Updated IPB, running estimates Assumptions	**Step 3:** COA Development	Revised Planning Guidance COA Statements and Sketches -Tentative Task Organization -Broad Concept of Operations Updated Assumptions
Updated running estimates Revised Planning Guidance COA Statements and Sketches Updated Assumptions	**Step 4:** COA Analysis (War Game)	Refined COAs Potential Decision Points War-game Results Initial Assessment Measure Updated Assumptions
Updated running estimates Refined COAs Evaluation Criteria War-game Results Updated Assumptions	**Step 5:** COA Comparison	Evaluated COAs Recommended COAs Updated running estimates Updated Assumptions
Updated running estimates Evaluated COAs Recommended COAs Updated Assumptions	**Step 6:** COA Approval	Commander-Selected COA and any modification Refined Commander's intent, CCIRs & EEFIs Updated Assumptions
	Warning Order	
Commander-Selected COA with any modification Refined Commander's intent, CCIRs & EEFIs Updated Assumptions	**Step 7:** Order Production	Approved Operation Plan or Order

CCIR Commander's official Information Requirement
COA Course of Action
EEFI Essential Element of Friendly Information
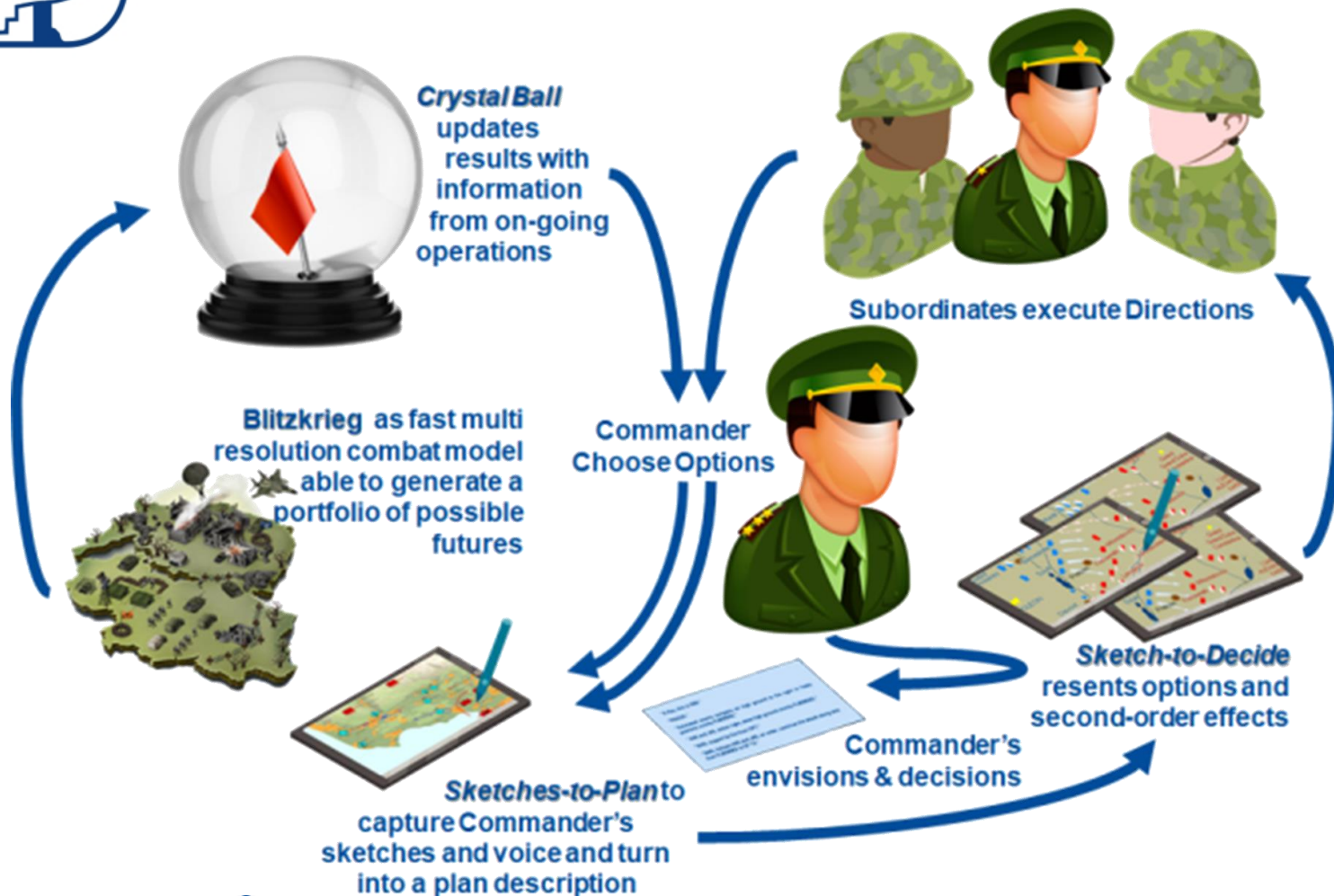IPB Intelligence Preparation of the Battlefield

Deep Green… Project

CRYSTAL BALL – Performs analysis of possible futures generated from the blitzkrieg, and determines the "best" choices by measuring flexibility, usefulness, and likelihood of each. It picks the best of these choices and presents them to the commander. Also updates model of battlefield situation with information pulled from the field. This might include reports from soldiers, through a program similar to the Communicator program that was developed under the Information Awareness Office or through automated RSTA systems such as HART.

COMMANDER'S ASSOCIATE – this is the user interface and visualization component. It consists of "SKETCH-TO-DECIDE" which presents the commander with a list of options, and "SKETCH-TO-PLAN" which is a screen on which the commander can draw up a plan, which Deep Green will interpret and put into action

BLITZKRIEG –analyzes current situation and determines possible future outcomes for use in planning. When a plan is presented, Blitzkrieg analyse the plan to point out possible results of that course of action to the commander. Blitzkrieg itself does not plane the action/operation, it merely determines the likely results of a plan formulated by a human commander.

Deep Green Architecture

Crystal Ball updates results with information from on-going operations

Subordinates execute Directions

Blitzkrieg as fast multi resolution combat model able to generate a portfolio of possible futures

Commander Choose Options

Sketch-to-Decide resents options and second-order effects

Commander's envisions & decisions

Sketches-to-Plan to capture Commander's sketches and voice and turn into a plan description
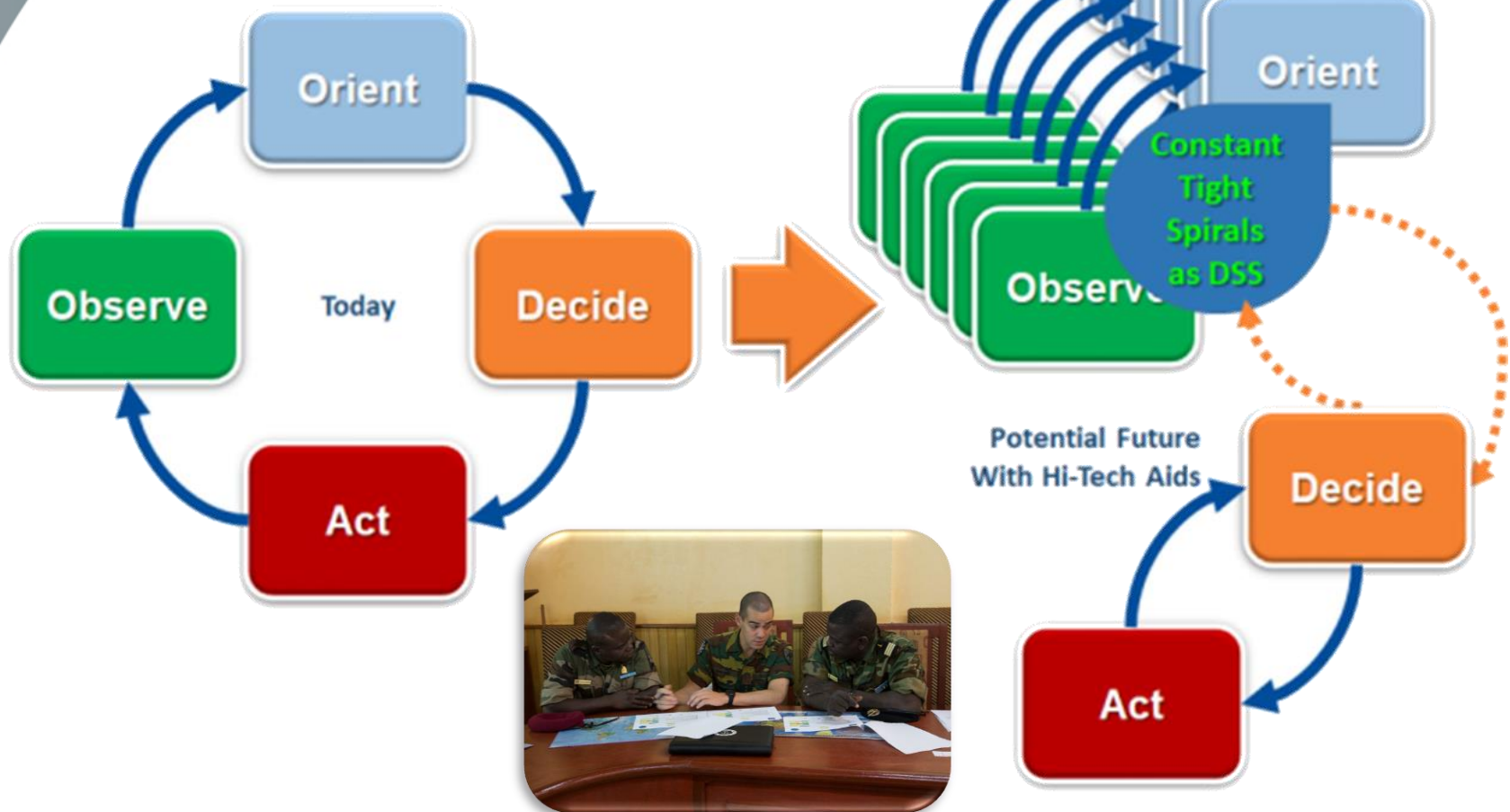
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SIMCJOH & Commander E&T

SIMCJOH VIS & VIC are new HLA interoperable immersive framework for immersing Commanders and Staffs in Strategic Decision Making over critical Joint Multi Coalitions Scenarios

SIMCJOH project lead by Simulation Team used at NATO M&S COE

Evolution of Decision Loops

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E&T and NATO NMSG-152

Identify and quantify gaps or needs in current programs

Evaluate the potential synergy in E&T with civilian education is highly possible and some serious research activities

Present the achievements of NATO Initiatives such as STO NMSG-152 NATO Modelling and Simulation Professional Corps Development

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Conclusions

It is important to identify the contemporary trends and future needs in different areas such as Defence & Homeland Security

There is a necessity to use innovative technology as well to use them to support quantitative decision making processes

Many case studies demonstrate that this vision is already available, but there is a fundamental need to prepare a new generation of decision makers and analysts able to work together

The potential perspectives, solutions, architectures are suggesting to activate new Master Programs n in Strategic Engineering

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References

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