Modelling and Simulation in support of design of new Ships and Force training

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AGENDA

- Italian Navy New Warships Program
- M&S in support of design process
- Fleet Synthetic Training
- Conclusions
Design of new Ships

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NEW WARSHIPS WITH HIGH LEVEL OF INNOVATION:

- GREAT FLEXIBILITY
- DUAL USE
- MODULAR
- NEW GENERATION SYSTEMS, SENSORS AND WEAPONS
- SMALL CREW

«ONE SIZE FITS ALL»
MULTIROLE OFFSHORE PATROL SHIP
(PATTUGLIATORE POLIVALENTE D’ALTURA – PPA)
NEW ADVANCED AND CHALLENGING TECHNOLOGIES

SHORT TIME TO REALIZE THE PROJECTS

SUPPORT OF M&S
PROCESS

BLUEPRINT

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RENDERING 3D IN VIRTUAL ENVIRONMENT

IOT identify the best solutions (ergonomics, space, functionalities, etc.)

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Decision making process

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VALIDATION
SEVERAL WORKING GROUPS (WEAPONS, MODULAR SPACES, COMBAT MANAGEMENT SYSTEM, ETC.) WORKING IN PARALLEL AND PROVIDING THEIR INPUT TO THE M&S TEAM
METODOLOGY

EXAMPLE OF EARLY STAGE DEBUGGING
NEW SOLUTIONS

SPACE ALLOCATION IN MODULAR AREAS
NEW SOLUTIONS

TACTICAL SITUATION AND NAVIGATION TABLE
NEW CONCEPTS

«COMBAT BRIDGE»
CONDUCT NAVIGATION, OPERATIONS AND SELF DEFENCE WITHIN 25NM
Heavy workload requires:
- High level of integration and automation of systems
- New CMS (SADOC 4) easier than previous versions, user friendly, with new HMI (Full Map)
Force training

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**FLEET SYNTHETIC TRAINING (FST)**

- **FORCE LEVEL SYNTHETIC NAVAL TRAINING BASED ON A DISTRIBUTED NETWORK**

- **CONDUCTED IN A SIMULATED OPERATIONAL SCENARIO BETWEEN REAL UNITS, VIRTUAL UNITS AND SIMULATORS/COORDINATION CENTERS ASHORE**

- **ALLOWS FOR SINGLE UNIT AND / OR FLEET TRAINING, EITHER IN PORT OR UNDERWAY**
MAIN ADVANTAGES

• MULTIPLE TRAINING SCENARIOS WITH DIFFERENT LEVELS OF COMPLEXITY CAN BE REPEATED

• REDUCED COST OF TRAINING

• INTEROPERABLE WITH OTHER SIMILAR COALITION SYSTEMS (SUCH AS US NAVY FST)

• SAME LOGIC AND SAME TOUCH AND FEEL OF REAL COMBAT MANAGEMENT SYSTEMS
CONCLUSIONS

- ITALIAN NAVY IS DESIGNING NEW PERFORMING WARSHIPS
- TO ACHIEVE AMBITIOUS GOALS AND «DO MORE WITH LESS», ITN IS DEVELOPING:
  - AUTOMATED, INTEGRATED AND USER FRIENDLY NEW SYSTEMS
  - AFFORDABLE AND EFFECTIVE SYNTHETIC TRAINING TOOLS

M&S IN SUPPORT OF:
- DESIGN OF NEW SOLUTIONS
- VALIDATION OF CAPABILITIES
- FORCE LEVEL TRAINING
CONCLUSIONS

THE COMBAT BRIDGE: INNOVATION ALSO IN «MODUS OPERANDI»

NEXT STEP:
- USE OF VIRTUAL ENVIRONMENT OF NEW SHIPS FOR TRAINING PURPOSE, BEFORE THE SHIP IS DEPLOYED
- INTEGRATION OF FST WITH ALL SIMULATION ASSETS FOR A COMPLETE DISTRIBUTED TRAINING CAPABILITY
QUESTIONS?