ADVENT

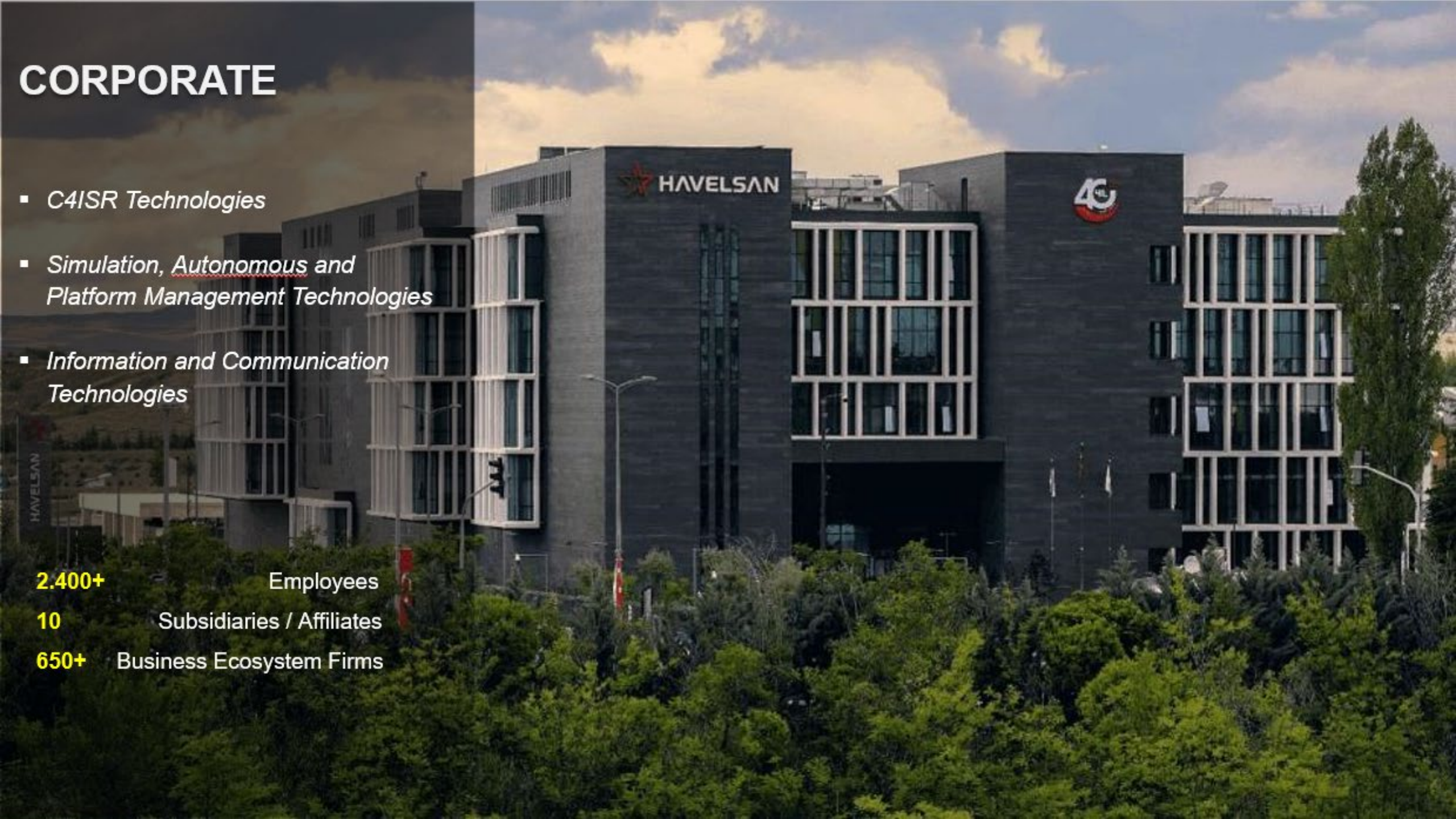
NETWORK ENABLED DATA INTEGRATED COMBAT MANAGEMENT SYSTEM

Dr.Ekrem SERIN (Ret.Captain)
System Architect

HAVELSAN, is an establishment of Turkish Armed Forces Foundation.

CORPORATE

- *C4ISR Technologies*
- *Simulation, Autonomous and Platform Management Technologies*
- *Information and Communication Technologies*



2.400+ Employees

10 Subsidiaries / Affiliates

650+ Business Ecosystem Firms

ARMED FORCES

GOVERNMENT

LOCAL AND GLOBAL COMPANIES

1982 _____ 2023

20+
COUNTRIES

C4ISR Technologies

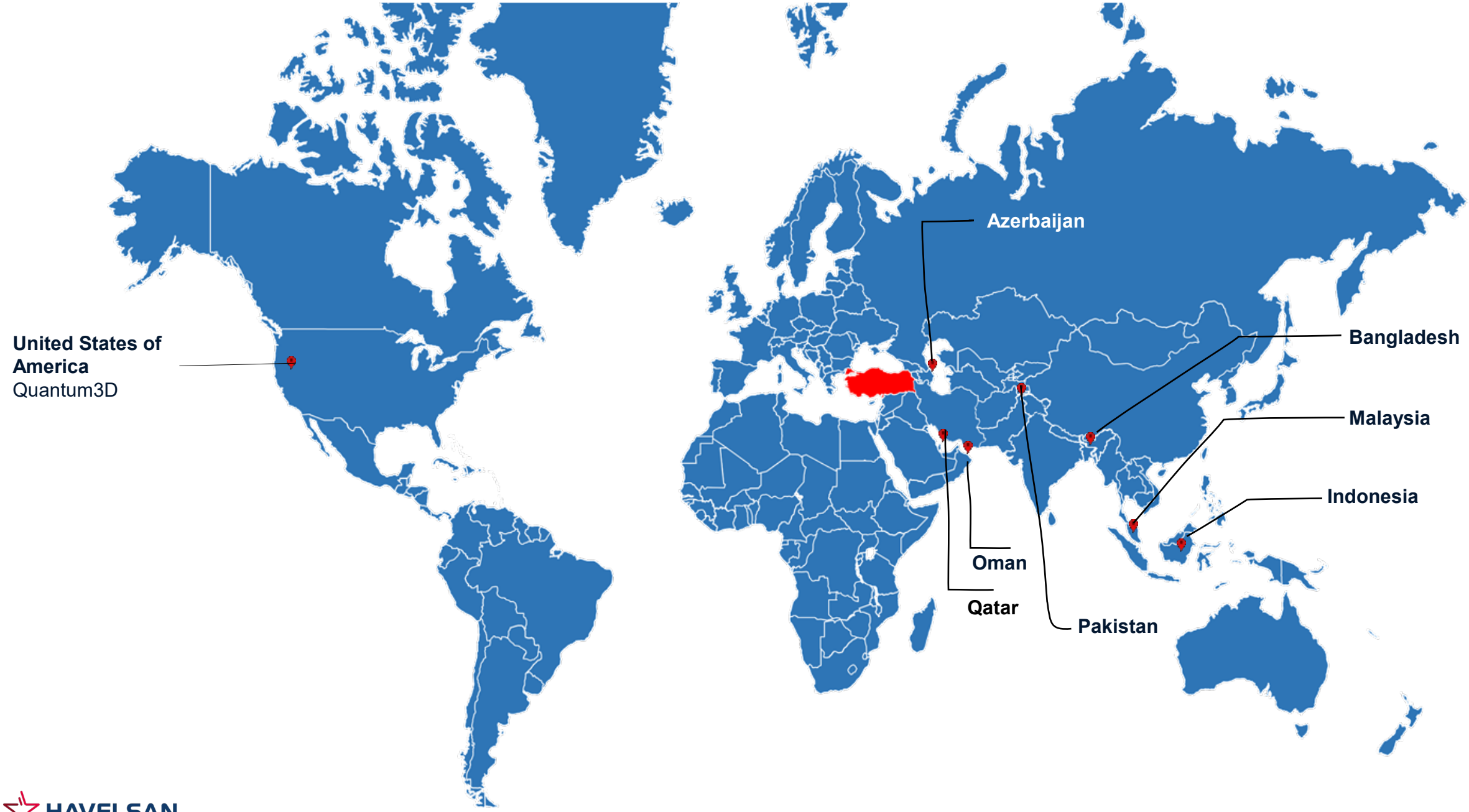
- SURFACE
- UNDERWATER
- AIR
- LAND / JOINT
- SURVEILLANCE AND TRAFFIC MANAGEMENT SYSTEMS
- HARDWARE

Simulation, Autonomous and Platform Management Technologies

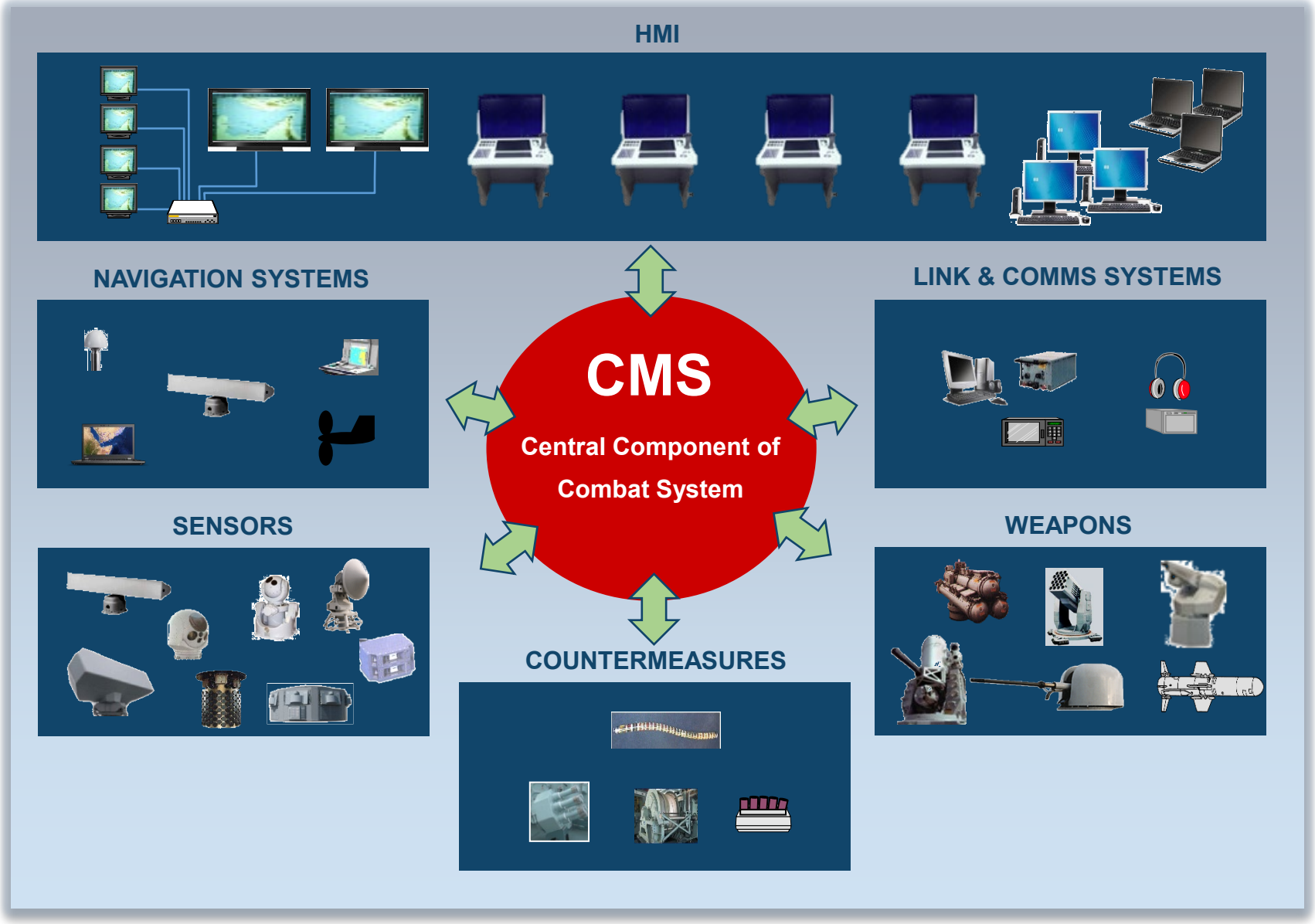
- SIMULATOR TRAINING CENTERS AND SYSTEMS
- ELECTRONIC WARFARE TEST and TRAINING RANGE
- ROBOTICS and AUTONOMOUS SYSTEMS
- TF-X NATIONAL COMBAT AIRCRAFT
- CIVIL AVIATION
- TRAINING SERVICES

Information and Communication Technologies

- DIGITAL TRANSFORMATION
- IMAGE PROCESSING
- BIOMETRIC DATA AND DATA MANAGEMENT
- INTERNET OF THINGS (IOT)
- OPEN SOURCE
- CYBER SECURTY SOLUTIONS


United States of America
Quantum3D
Azerbaijan
Bangladesh
Malaysia
Indonesia
Oman
Qatar
Pakistan

WHAT IS COMBAT MANAGEMENT SYSTEM (CMS) ?



- Controls Combat System
- Increases Situational Awareness
- Provides Decision Support
- Provides effective use of Sensors and Weapons

HAVELSAN NAVAL CMS EXPERIENCE

GENESIS
Combat Management System

GABYA (PERRY) Class Frigates
GABYA 1-8

ADA (MILGEM) Class Corvettes
MILGEM 1-2

LST Ships
LST 1-2

HAVELSAN started CMS development activities in the early 2000s.

HAVELSAN NAVAL CMS EXPERIENCE

OPERATIONAL REQUIREMENTS

Network Enabled Capability
- Common Engagement
- Common Training
- Common Operation

- Additional Warfare Capabilities
- New Assignment Types

USER DEMANDS

- Ease of Use
- Situational Display
- Multi Language Support

- Rapid Reaction
- High Performance & Capacity
- Redundancy & Fault Tolerance

FULLY INTEGRATED TDL

FORCE CENTRIC APPROACH

NETWORK ENABLED CAPABILITY

DECISION SUPPORT SYSTEMS

TECHNOLOGICAL INDEPENDENCE

TECHNOLOGY

- Weapon & Sensor Technology
- Software Technology
- Hardware Technology
- Communication Technology

HAVELSAN NAVAL CMS EXPERIENCE

ADVENT
Combat Management System

COMPLETED PROJECTS

MILGEM 4

UFUK

BEYKOZ

LHD

SUBMARINE Link System

ADVENT Link System

ONGOING PROJECTS

SANCAR AUSV

MILGEM 3

BARBAROS

TN OPV

SUBMARINE Link System

MELTEM

I-CLASS MILGEM 6-8

DERYA

I-CLASS MILGEM 5

UU-IMSS

ONGOING EXPORT PROJECTS

POTENTIAL PROJECTS

TF-2000

NATIONAL FAC

NATIONAL SUBMARINE

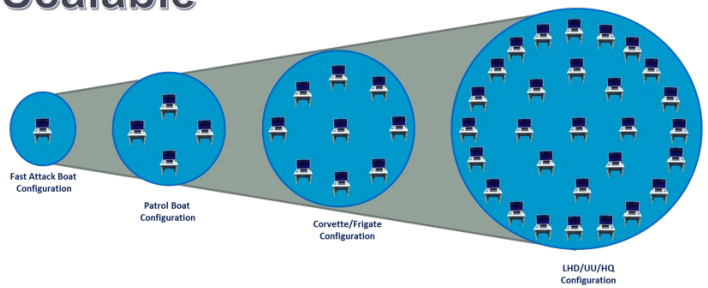
MARTI

POTENTIAL EXPORT PROJECTS

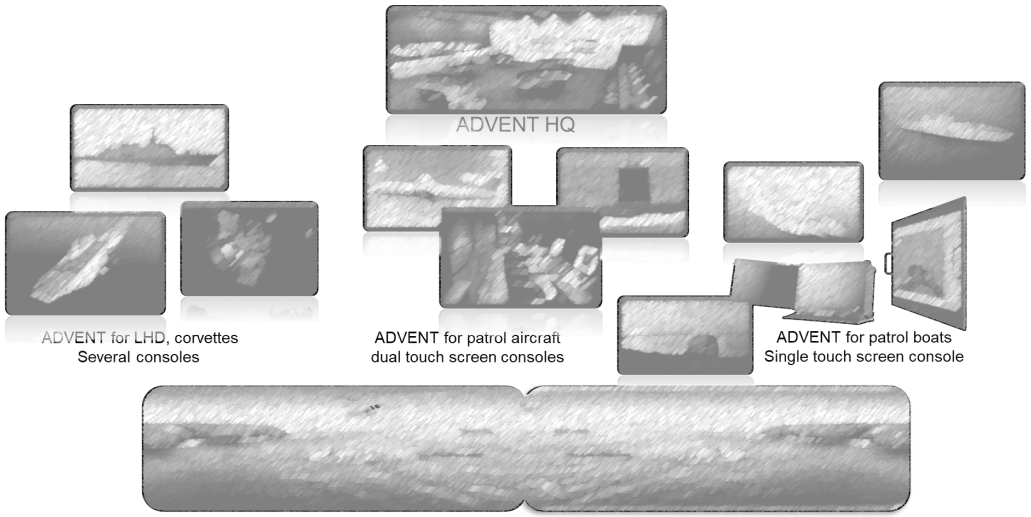
HAVELSAN CMS provider for more than 15 years

ADVENT CMS

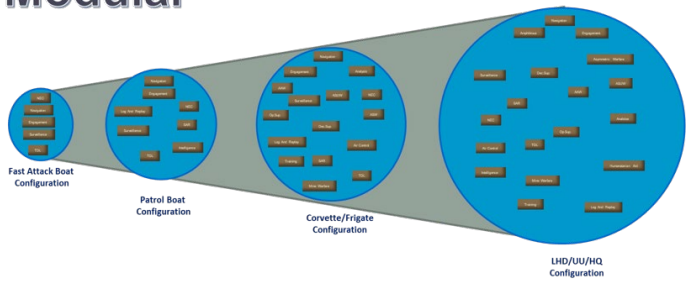
Scalable



Scalable CMS Solutions for different types of platforms



Modular



Configurable CMS Solutions for different types of platforms

ADVENT CMS Product Tree

ADVENT is developed

WITH

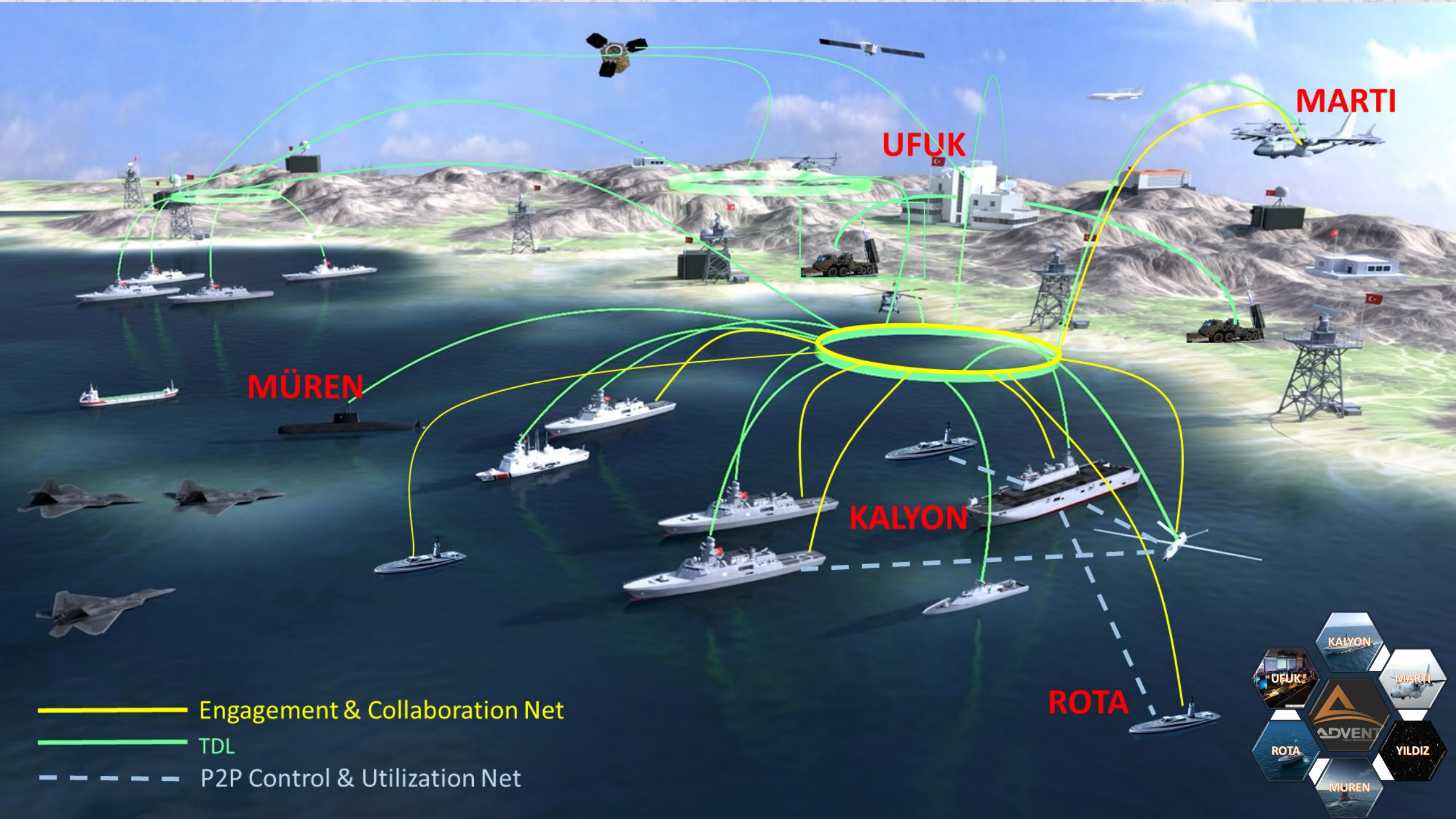
Turkish Navy R&D Command

Cooperative

Requirement Analysis, Design,
Development, Test,
Acceptance, Maintenance
User Feedbacks

Surface Platforms **KALYON**	Air Platforms **MARTI**	Subsurface Platforms **MÜREN**	Land Installations **UFUK**	Unmanned Vehicles **ROTA**
• Patrol Boats • Corvettes • Frigates • OPVs • LPDs	• MPA • MSA • MMA • Helo • ISR	• TDL • FCS	• Surveillance Systems • Operation Centers • Head Quarters	• UAV • USV

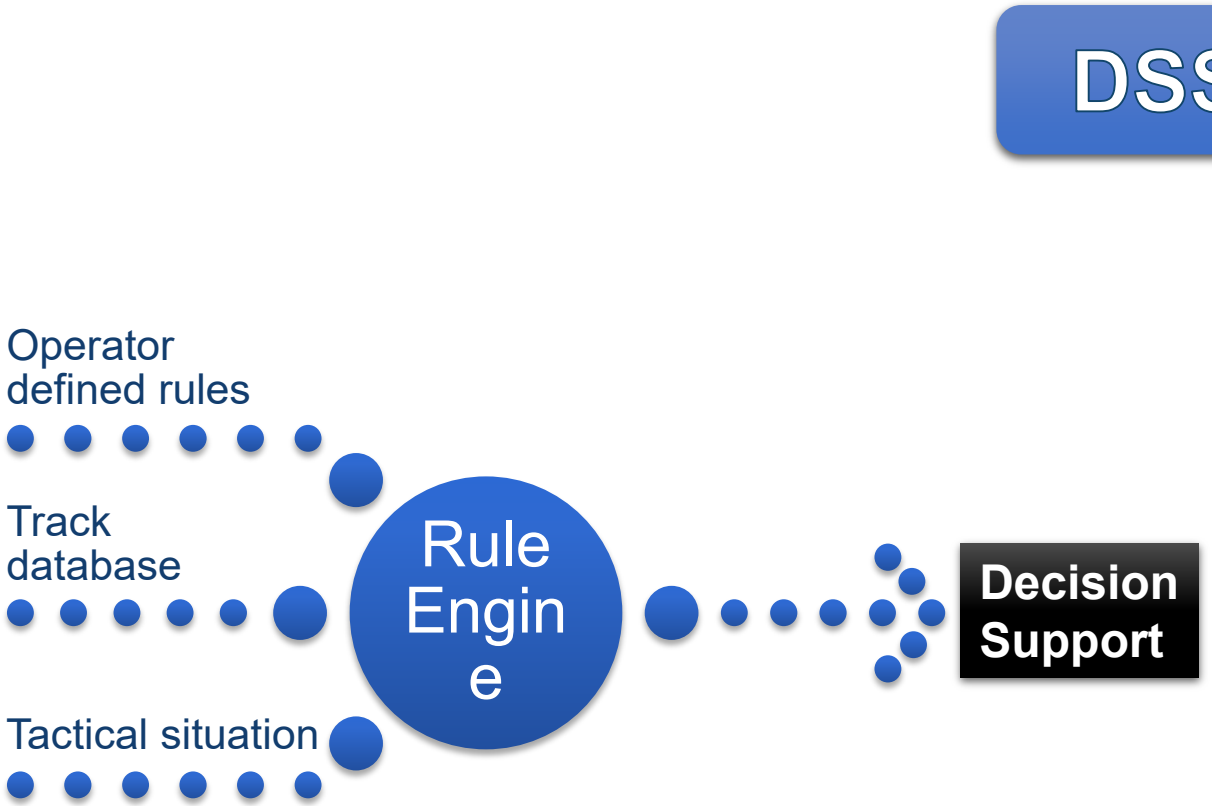
Turkish acronym stands for; "***Network Enabled Data Integration***" to fulfil future requirements for Naval Platforms


MARTI
UFUK
MÜREN
KALYON
ROTA
Engagement & Collaboration Net
TDL
P2P Control & Utilization Net
KALYON
UFUK
MARTI
ADVENT
ROTA
YILDIZ
MUREN

ADVENT provides all the capabilities of a modern CMS.

- ✓ Advanced training capabilities offered in virtual and real environment.
- ✓ Supported with real weapon/sensor systems simulators.
- ✓ Fully interactive training environment.
- ✓ Single ship CIC training / Joint force trainings with NEC.

Decision Support System



- Rule based decision support system
- Decision support for
  - Threat evaluation
  - Identification and classification
  - Execution of operations
  - Area access control
- Supported with alert warning

CMS INTEGRATION

- Integrated to more than 95 systems
- Flexible & Dynamic integration model
- Plug play like approach with runtime registry mechanism
- Fully integrated systems (SONAR, ESM, TDL and FCS)
- reduces integration costs
- provides redundancy

Success in naval operations requires;

- strict coordination and fast data exchange
- interoperability among platforms

Interoperability requires;

- convenient infrastructure
- communication environment
- Interoperable software - **ADVENT**

With NEC it is aimed to;

- Jointly be aware of the situation in the area of operation
- increase the speed of command
- increase the rhythm of operation
- make the naval force more effective
- establish self synchronization among the platforms

FORCE MULTIPLIER, GAME CHANGER

NEC is FORCE MULTIPLIER - GAME CHANGER

- Common Engagement
- Common Training
- Common Operation

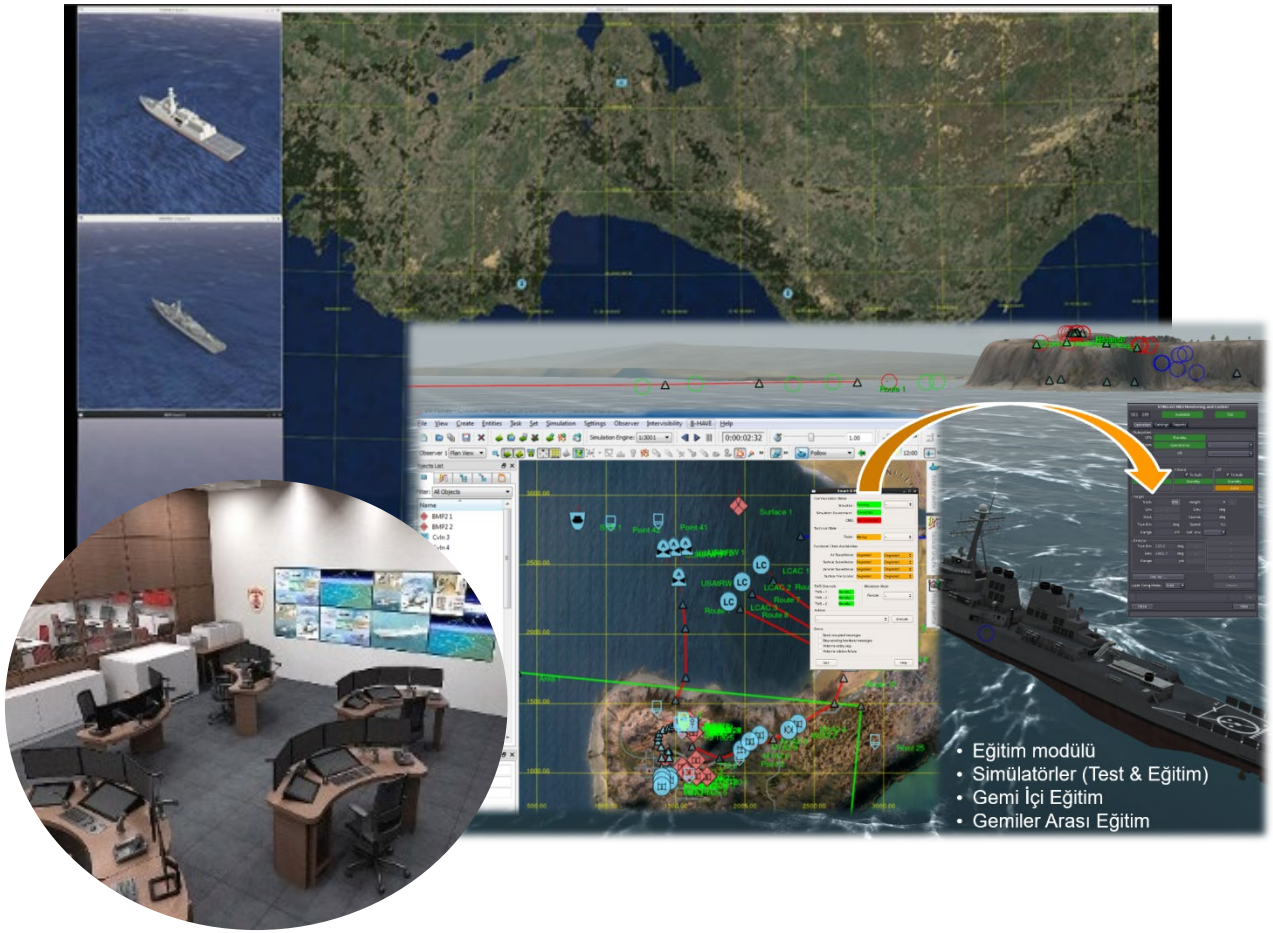
ADVENT NEC capability is an important asset to perform cross-platform interoperability

the entire ADVENT force fights, trains and operates as a **Single Unit**

Common Engagement

- Common threat evaluation
- Central planning and distributed execution of anti air warfare,
- Optimized use of warfare resources
- Increased effectiveness of anti-air warfare
- Providing engageable track data to other platforms for engagement;
  - During radar silence
  - In case of sensor malfunction
  - To increase weapon coverage
- Goalkeeper capability for HVU's,
- Sharing battle damage assessments

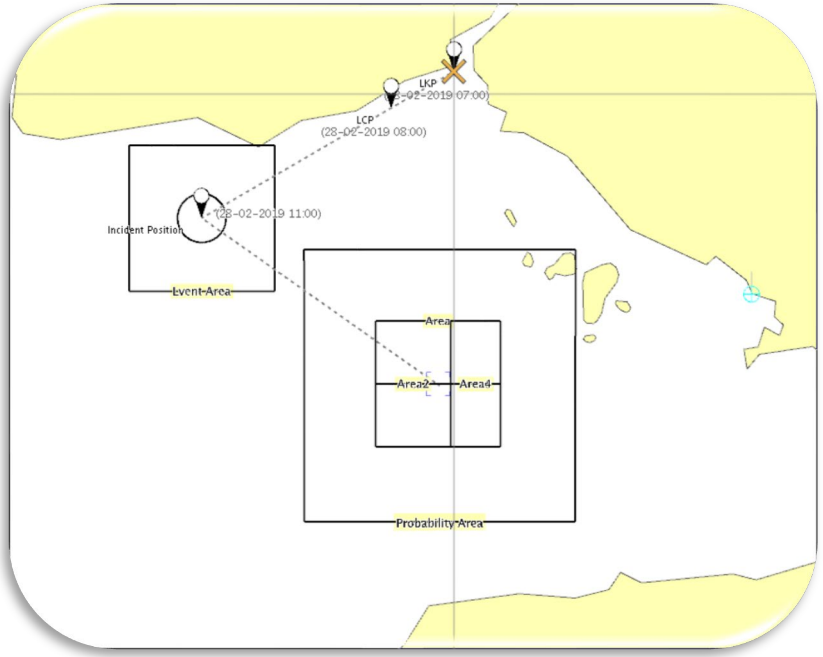
Common Training

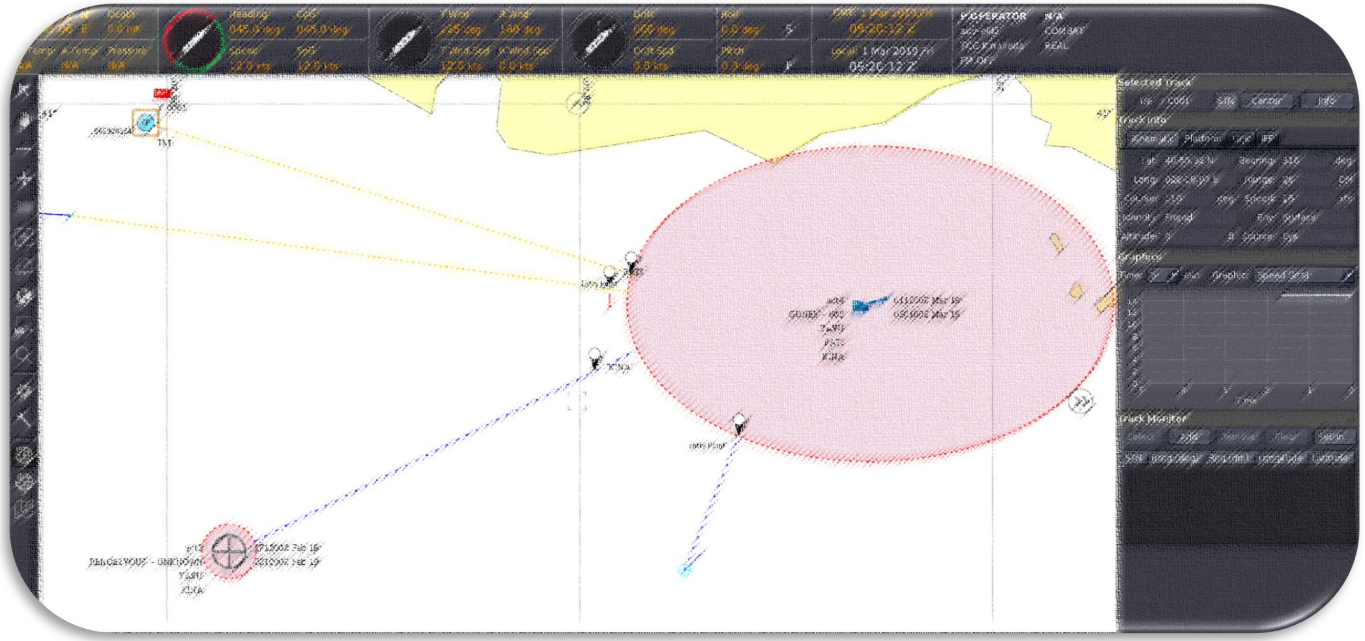


- Shared virtual environment, with synthetic objects
- System simulators interact with simulation environment
- Controlled by a training center or a platform
- Interactive joint training capability
- Simulator supported on board training system

Advanced training capabilities are offered both in virtual environment and in real environment. Trainings can be carried out on a single platform basis and can be realized together with other platforms that are operated with NEC.

Common Operation





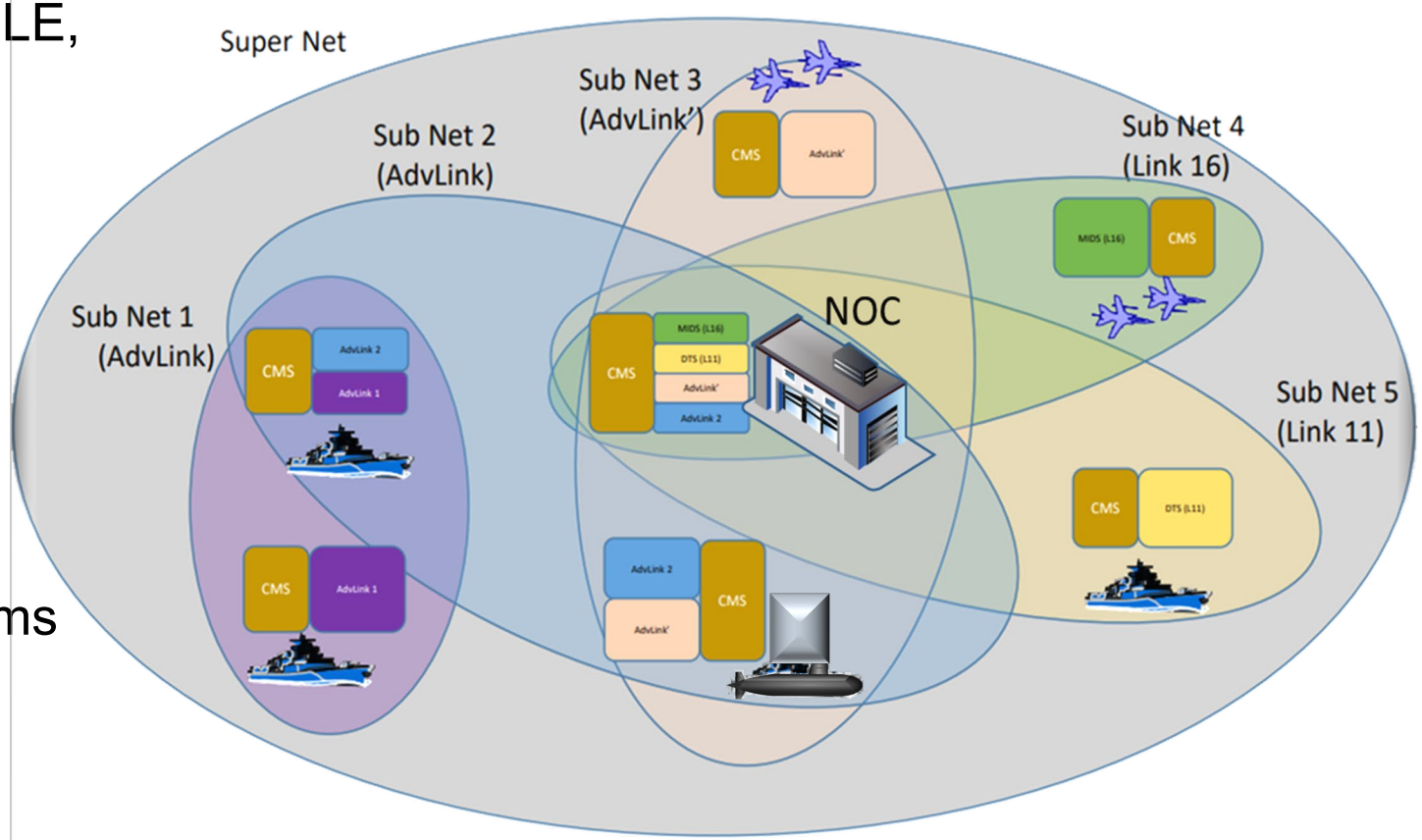
Ship-oriented CMS Capabilities (navigation plans, operation plans, search and rescue, etc.) will be planned and presented by taking into account other platform capabilities where operations are carried out jointly.

TACTICAL DATA LINK (TDL)

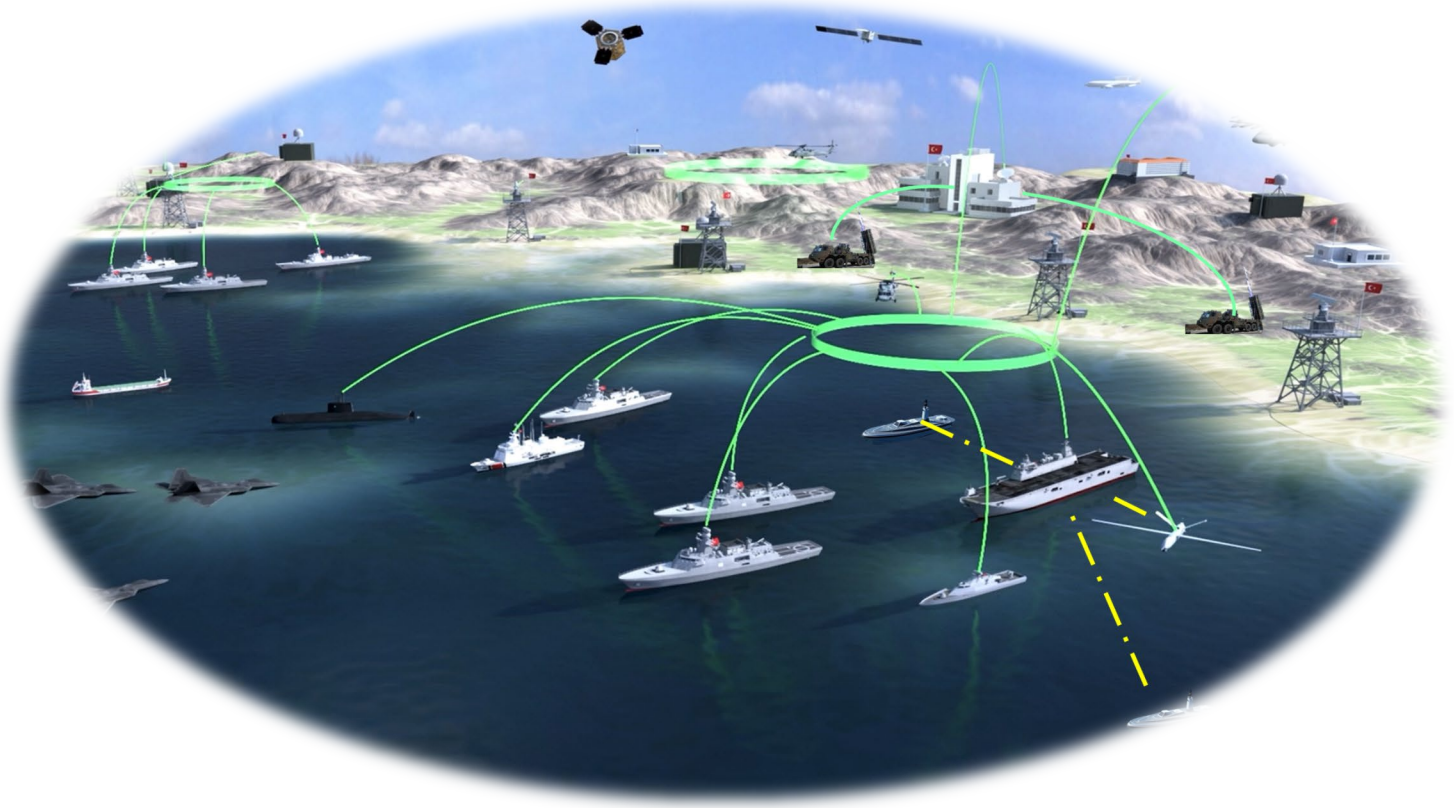
Key Features

- Built-in TDLs
  - NATO Links- Link 11/16/22, JRE, SIMPLE, VMF
  - National Links, Link-Y
  - LINK-H
- Fully customizable Native Link Capability
- No additional HW/SW for processing link
- Fully integrated multilink capability
- Unlimited number of subnets
- Simultaneous access to different link systems
- Data forwarding among TDLs
- Integration of legacy link systems

Fully Interoperable TDL



Interoperability aims for units to carry out operation, training and warfare together in high coordination.



To achieve this goal, units need to exchange large-scale data very fast.

CMS approach of Interoperability

Interoperability requires

- Channels to communicate
- Exchange of vast amount of data
- Common understanding of data

To succeed this

Units must have

- Common data interfaces
- Common data definitions
- Common data exchange media
- No conversion or adaptation of data

Standard Interfaces

Same CMS

CMS approach of Interoperability

Same CMS with different configurations

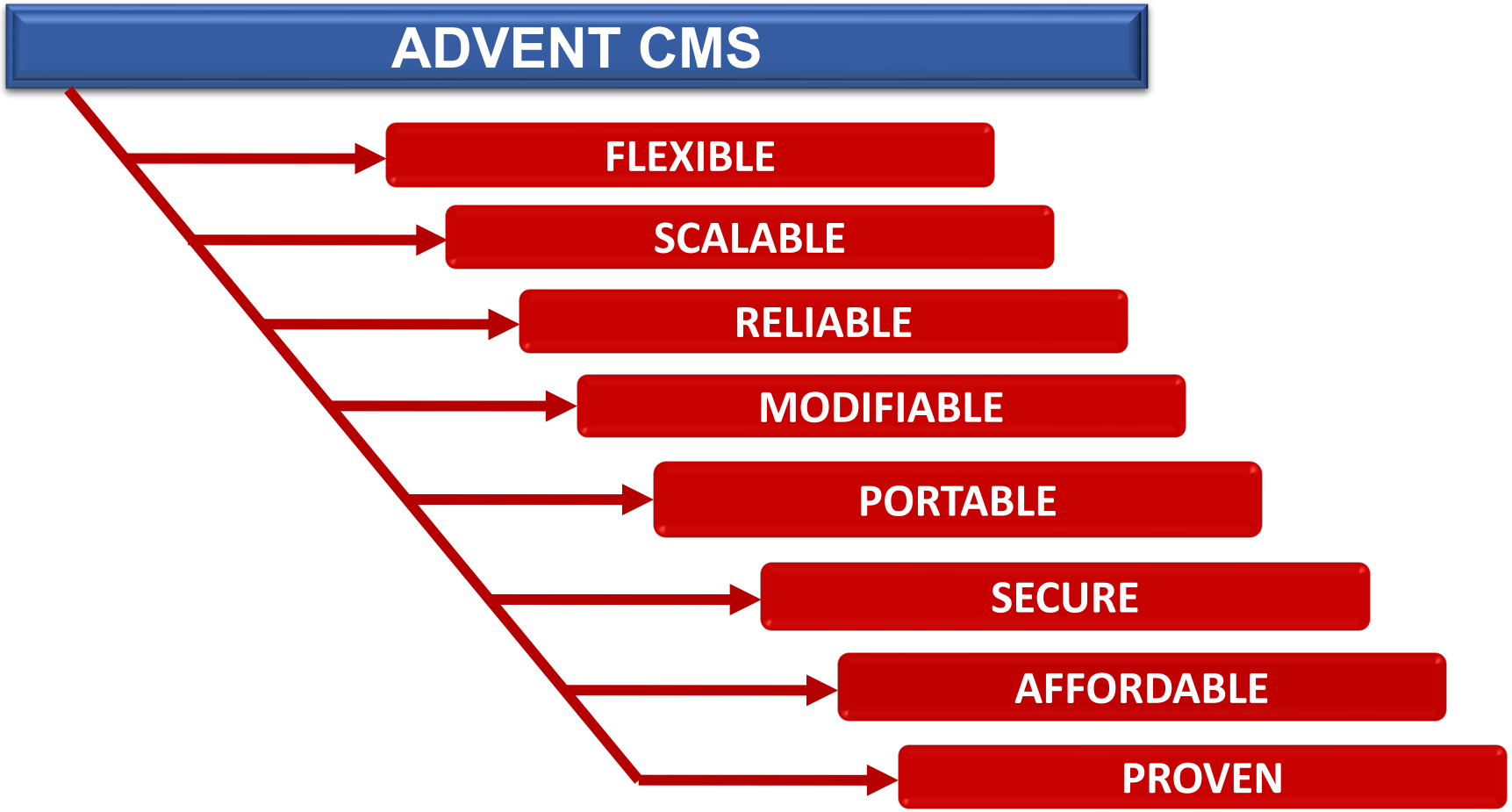
What is common?

- Common Services
  - TM, SM, DRC, AM…
- Common Capabilities
  - NAV, C&I
- Common Data Definitions
  - International Standards
- Common Message Interfaces
  - STANAG 5516/5518/4586/4609..

What is different?

- Platform Specific Capabilities
  - Warfare, Air Control …
- Platform Specific Weapons/Sensors
- User interactions

CONCLUSION


ADVENT CMS
FLEXIBLE
SCALABLE
RELIABLE
MODIFIABLE
PORTABLE
SECURE
AFFORDABLE
PROVEN

HAVELSAN

Thank you