

GMV **PRESENTATION**

A GMV no Programa do Soldado do Futuro

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Seminário AFCEA
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WHO
WE ARE

WHO WE ARE

A GLOBAL TECHNOLOGY GROUP

<p>Multinational technology group</p> 	<p>Headquarters in Spain (Madrid)</p>	<p>Over 1,200 employees</p> 	<p>Aeronautics, Space, Defense, Security, Transportation, Healthcare, Banking & finances, and ICT industries.</p>		
<p>Founded in 1984</p>	<p>Private capital</p>	<p>Subsidiaries in 10 countries</p> 		<p>Roots tied to the Space industry</p> 	<p>Engineering, development and integration of systems, software, hardware, specialized products and services</p>



WHO WE ARE

INTERNATIONAL TECHNOLOGY LEADERSHIP



#1 Worldwide
Satellite Control Center
provider to commercial
telecom operators
(+300 Satellite
missions worldwide)



First ever
worldwide
intraoperative
radiotherapy
planning system



Responsible of
safety critical
systems of European
GNSS systems
(EGNOS and Galileo)



Leader of Intelligent
Transportation
Systems for the
**public transport
sector** (+100 cities in
Europe, Asia and
America)



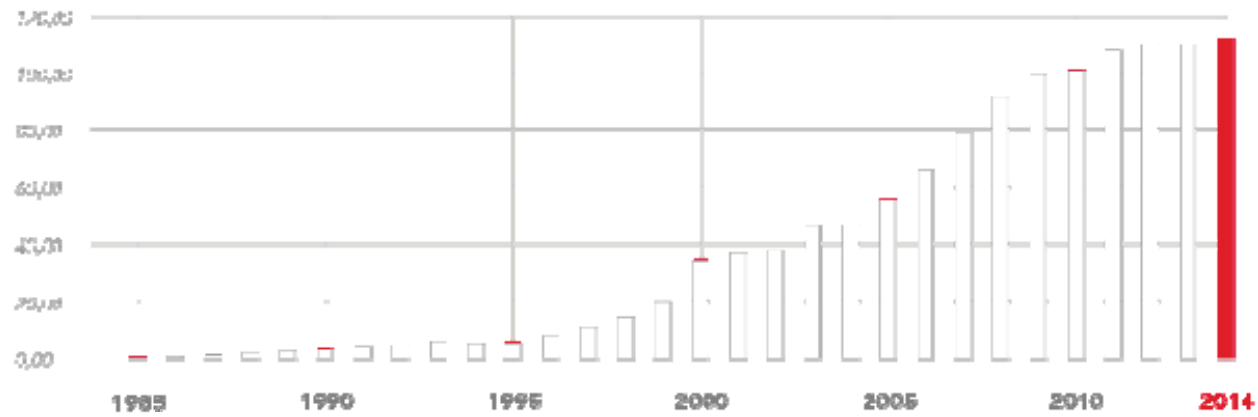
GMV's *checker*
ATM security is
the **worldwide
leader** as
multivendor cyber
security protection
for **ATMs**



WHO WE ARE

GMV IN FIGURES: SUSTAINED GROWTH

Turnover M€



WHAT
WE DO

WHAT WE DO
INDUSTRIES



Aeronautics



Space



Defense &
Security



Cybersecurity



Healthcare



Transport



Telecommunication



Public Sector
and Corporate
ICT



Banking &
Finances





AERONAUTICS

- Flight physics
- Safety critical software (DO-178B/C)
- Avionics and equipment design
- Integrated Modular Avionics (IMA)
- Remote Pilot Aircraft Systems (RPAs)
- Flight-training and engineering simulators
- Electronic-device test benches
- Mission planning systems
- Approach and landing systems
- Aeronautical communications
- Precision approach operations
- Performance based navigation
- Air Traffic Management (ATM) research and development



WHAT WE DO
AERONAUTICS



GMV has pioneered the development of GNSS based precision approach and landing systems.



GMV has developed modules for the flight simulators of a wide range of aircraft.



New cockpit solutions to reduce pilots workload and improve pilots situation awareness

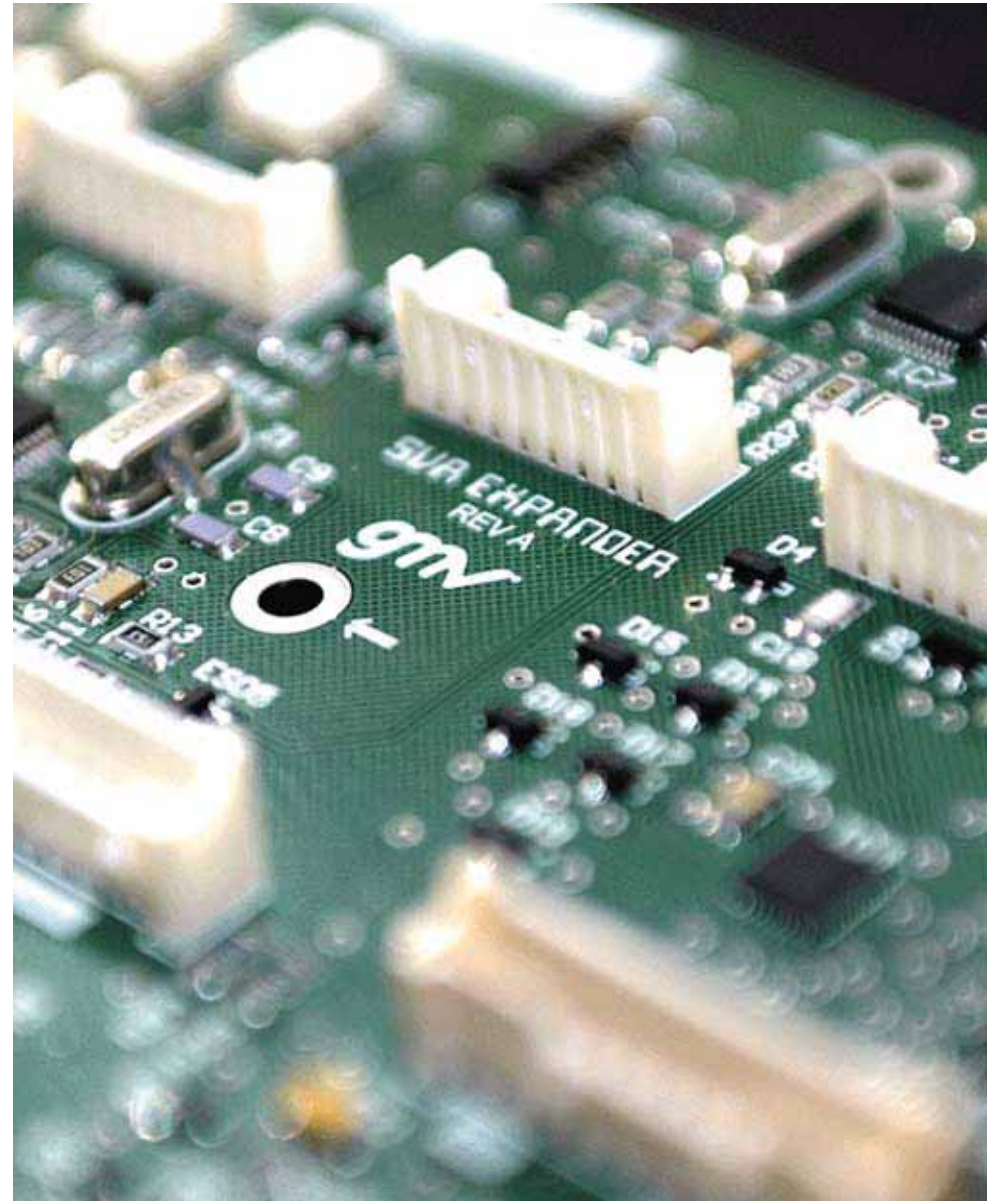


GMV is one of the few European firms with the capacity of developing safety critical onboard systems and **Integrated Modular Avionics**.



DEFENSE

- C⁴I systems
- Intelligence Systems
- Simulators
- GPS, EGNOS and Galileo based systems
- Airborne equipment and avionics software
- Test benches
- Systems maintenance
- Space applications for Defense
- Security systems
- Training tools



WHAT WE DO
DEFENSE



Pioneers in cybersecurity

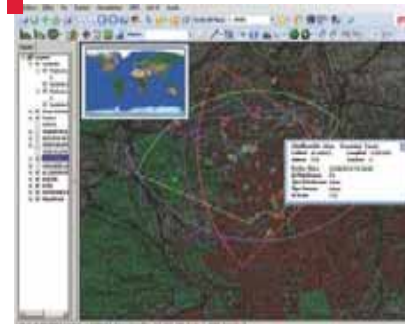
Overall security management system of Grupo BBVA for monitoring all security incidents

GMV's checker ATM security is the **worldwide leader as multivendor cyber security protection for ATMs**



Development of the C-295 Fully **Integrated Tactical System** for the Portuguese / Spanish /Chile Air Forces

Spanish MoD **C4I systems reference supplier**



ISR systems reference supplier

Main contractor for NATO MAJIIC Spanish contribution

Supplier of SIGINT data fusion and processing centers



Main contractor for the development of the **EUROSUR Network** for the FRONTEX border surveillance agency

Space surveillance for FRONTEX and EMSA (EU maritime safety agency)



GMV in

FUTURE

SOLDIER

DSS C3I

DISMOUNTED SOLDIER

- Goal:
 - To have a soldier, integrated in a squad/platoon, ready to operate in the digitized battlefield, not only as a weapon platform but also as an ISTAR asset.

- C3I provides the soldier with the following capabilities
 - Voice and data communications with the rest of squad/platoon members and with the section commander
 - Positioning and navigation integrated with GIS
 - Situational Awareness
 - Battlefield information - Common Relevant Operational Picture
 - BMS functionality
 - Orders & Reports
 - Alerts
 - Georeferenced sketches and drawings
 - Support functions
 - HW health monitoring system
 - Mission planning tool
 - After Action Review tool



GMV in FUTURE SOLDIER

DSS C3I

GMV SOLUTIONS

- Competences based on wide range of international projects, together with Command and Control Systems developed for Spanish Army and Spanish Marines

- C3I system with the following components:
 - Soldier radio. Voice and data and embedded GPS. GMV software tested with ITT Spearnnet, Harris 7800S and Kongsberg SR600 soldier radios
 - Soldier computer
 - Rugged Ultra-mobile PC
 - Rugged LGB-10 computer
 - Rugged PDA
 - Cabling integrated with carrying vest and ballistic protection
 - Sensors:
 - Helmet Display. LGB10 has been integrated with Rockwell Collins S035-A, Thales MiniDisplay and several models from Liteye;
 - Laser Range Finder. GMV DSS C3I software supports: Leica Vector & Mosquito and SAGEM Vigilens.



gmv

COMFUT

Role of GMV

- GMV responsibilities include:
 - Development of C3I software (100% developed by GMV)
 - Development of support tools:
 - ❑ Mission Planning Tool
 - ❑ After Action Review Tool
 - ❑ Logistic datasheet
 - ❑ Training environment

 - Selection and procurement of Soldier UMPC (Cobham Defence SDT-P)
 - Design and development of Soldier Interface Module
 - Design and development of Soldier Computer (LGB10)
 - Support vehicle C3I infrastructure design and equipments selection and procurement



GMV in FUTURE SOLDIER
COMFUT

ARCHITECTURE

■ Main components:

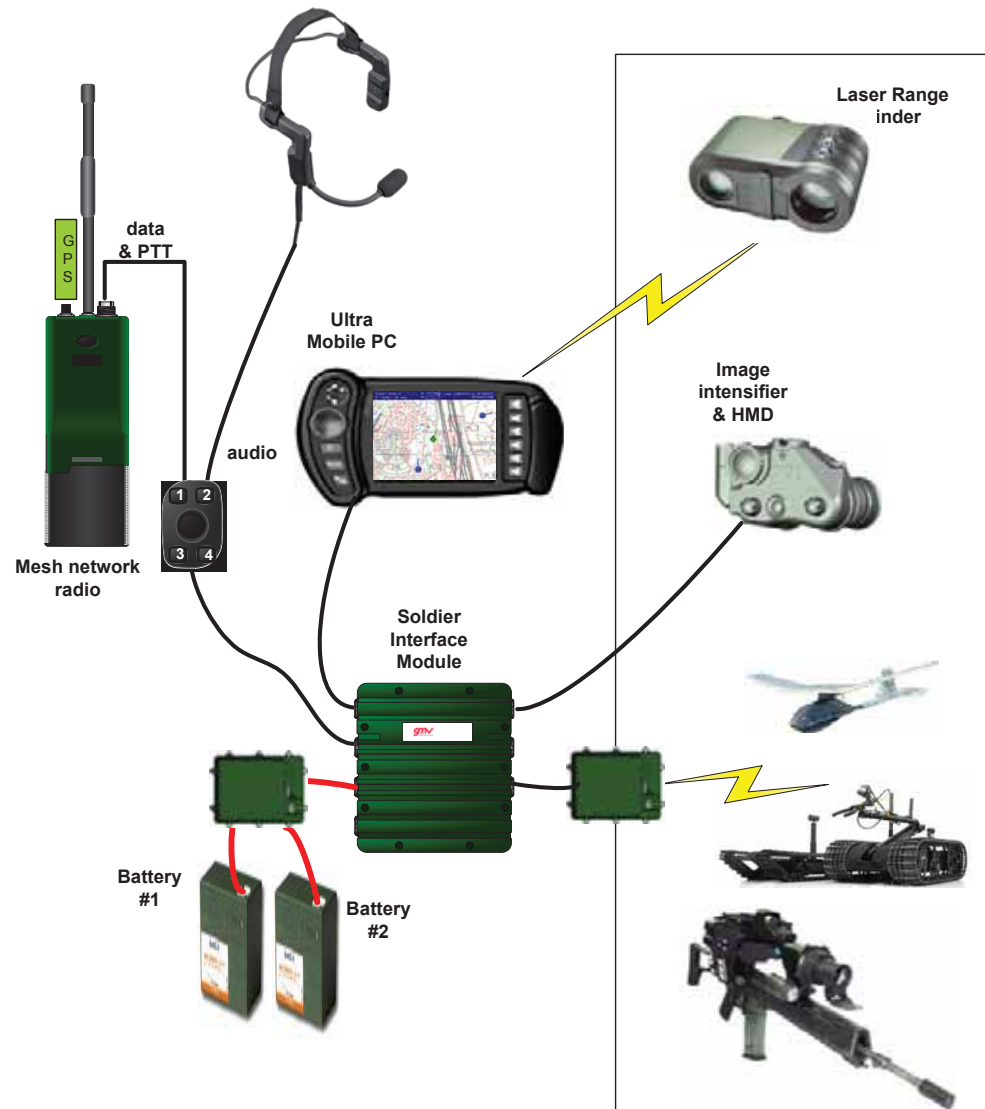
- Ultra Mobile PC (UMPC)
- MESH network radio
- Radio access unit & keypad
- Headset
- Soldier Interface Module
- Batteries and conditioning unit

■ Other devices:

- Mission memory stick
- Helmet mounted display + image intensifier

■ Sensor Interfaces:

- Weapon: 3D compass, shooting sensor, still images
- Bluetooth laser range finder
- Wireless video receiver
- Duel Laser
- Health monitoring system

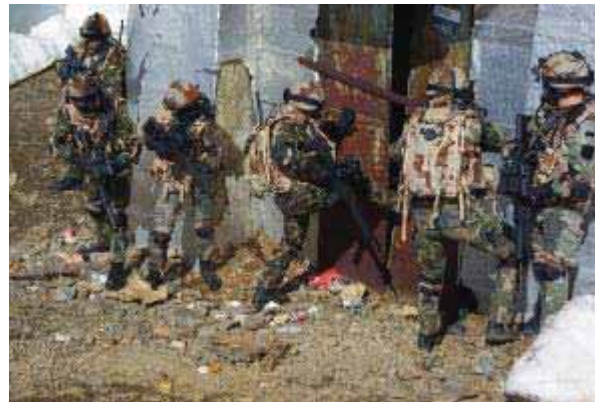


GMV in FUTURE SOLDIER
COMFUT

OPERATIONAL TESTS



Vehicle node



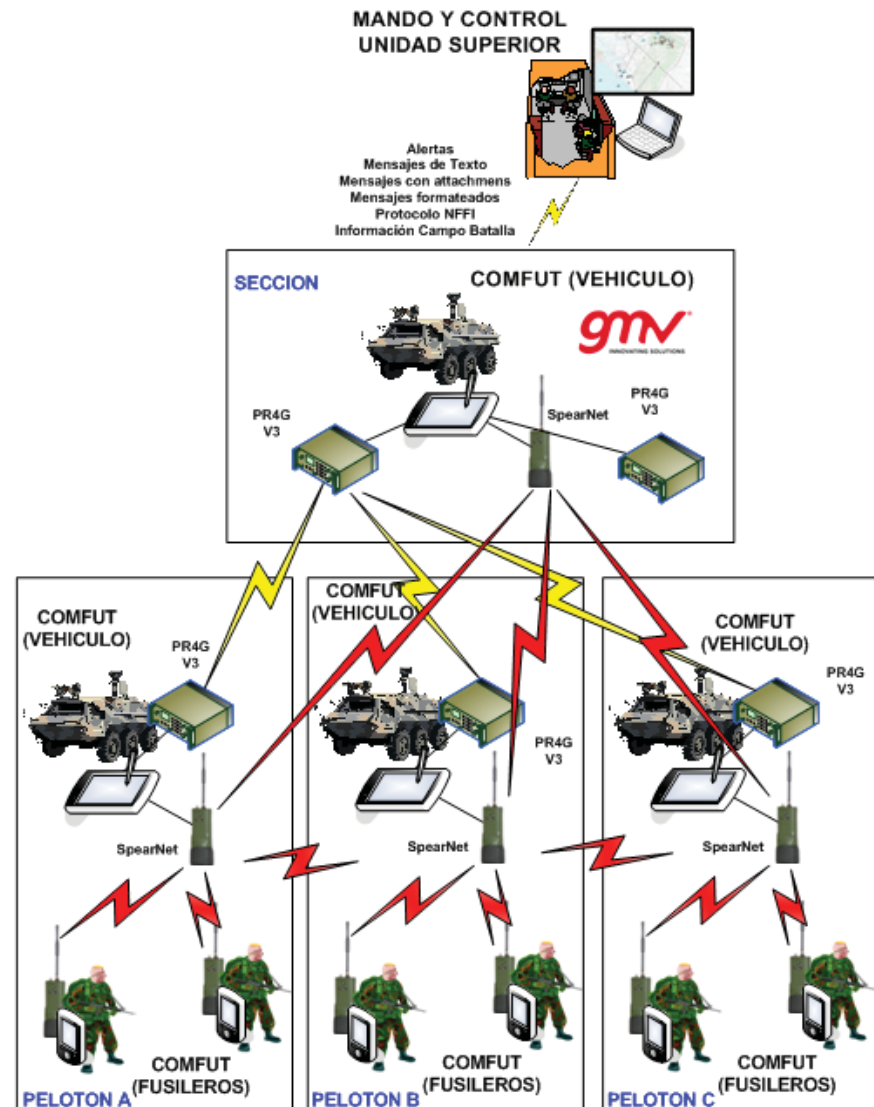
Toledo (Infantry
School Firing Range)



GMV in FUTURE SOLDIER
COMFUT

SUPPORT VEHICLE

- COMFUT program includes the installation of a C4I infrastructure in four Infantry Combat Vehicles (ICVs)
- GMV was responsible of vehicle C4I design and equipment selection and procurement
- Vehicle C4I equipment include
 - LAN network (rugged switch)
 - Rugged Tablet PC
 - SpearNet radio
 - PR4G V3 radio
 - Rear vision camera
 - Driver's display
 - Cabin display
- Vehicle Tablet PC runs C3I SW and the vehicle becomes another squad member



FUNCTIONALITIES

GIS with terrain model

Overlays with battlefield data & indicators



FUNCTIONALITIES

Situational Awareness
Routes and Navigation



FUNCTIONALITIES

Georeferenced sketches and pictures
Alerts & Emergency Procedures



GMV in FUTURE SOLDIER
COMFUT

VEHICLE COMPUTER 8,4"



F1
Ir a Mapa
Si estamos en mapa
conmutar opciones
de centrado

F2 -
Activar/desactivar
barra herramientas

F3
Menú acciones en
mapa

F4
Conmutar Radar
/Mapa

F5
Conmutar Entrada
Mensajes /Mapa

F6
Conmutar lista
Fusileros/ Mapa



Multi-Sensor Anti-Sniper System

- MUSAS Schedule:
 - Kick-Off Meeting 28/02/2008.
 - Final Presentation to JIP-FP MC 02/03/2011.
- MUSAS Objectives:
 - Obtain a real time reliable detection, localization and classification of the sniper
 - Disseminate this information optimizing the resources for neutralization
- MUSAS Achievements:
 - Development of innovative concepts and approaches for a sniper detection system
 - Definition of an architecture for this system and its integration into a generic Future Combat Soldier system.
 - Build a demonstrator
 - Field test campaign under real fire
 - Description of findings, recommendations and roadmap



Multi-Sensor Anti-Sniper System

- MUSAS promising results:
 - Exploitation of synergies between different sensory technologies.
 - Data Fusion provides better result than each technology by itself.
 - Improvement of Situational Awareness and keeping the Common Operational Picture.
 - Showing feasibility and utility for DSS system to incorporate sniper detection capabilities.
 - Showing feasibility and utility for a sniper detection system to exploit DSS capabilities.
 - Establishing guidelines for integration of a sniper detection system into any DSS system.
- Production of a deployable prototype
 - A sniper detection system effective in real operations and integrated with existing systems and equipment is affordable and feasible incorporating MUSAS achievements.



PRECISION TARGETING

Combat Equipment for Dismounted Soldier

- CEDS-FSP-PT Schedule: 2014 - 2015
- CEDS-FSP-PT Objectives:
 - Open reference architecture and recommendations for a future Fire Control Systems (FCS).
 - Improving the accuracy of the shot (assault rifles and 40 mm grenade launchers).
 - Usage of programmable ammunition.
 - Firing static and moving targets.
 - Operational day or night alike.
 - Interoperable with small arms rail standards
- CEDS-FSP-PT Achievements:
 - Operational Requirements for a Fire Control Systems (FCS).
 - Technology Review (small arms devices and rail standards).
 - Technical Requirements (Ballistics, Night Vision, Weapon Integration and HMI).
 - Definition of an Open Architecture Design for a distributed FCS.
 - Recommendations and Roadmap for the development of an operational FCS.



CEDS-FSP-PT
CEDS-FSP-PT

UGS STUDY

UNMANNED GROUND SYSTEMS LANDSCAPING & INTEGRATION

- UGS Study Schedule: 2014
- To support on-going works in various areas where the technology of UGSs with certain degrees of autonomy and their use are of relevance
- Objectives:
 - To identify the military tasks suitable for UGSs and define a set of operational requirements for them.
 - To identify the implications for military structures derived from the previous requirements.
 - To address critical legal challenges and ethical implications of using UGSs in military operations.
 - To perform a technology screening that provided a general overview of the current state of play in the UGS domain.
 - To define action plans aimed to bridge the existing (technological and non-technological) gaps.
 - To propose a roadmap for the development of future UGS solutions according to the proposed action plans

GMV in FUTURE SOLDIER

8x8 Programme

R&D PROGRAMME OF SPANISH ARMY

- GMV is involved in the following areas:
 - Electronics, Communications and Information Systems
 - Navigation system
 - Integration of Soldier C2 with Vehicle C2
 - Integration of vehicle C2 with TALOS Field Artillery C2 (TALOS system developed by GMV)
 - Fire Support.
 - Integration of Forward Observer vehicle configuration with TALOS. Sensor integration for target acquisition and fire control.
 - Increased Force Protection.
 - Gunshot detection system.



IoT

some notes

- Defence, to some extent, has been in the forefront of IoT
- The connectivity provided to sensors on the battlefield is based on a *military Internet of Things*, enabling decisions to be taken based on collected data, which is delivered through the chain of command & to be executed on the front lines
- This supports the integration and cooperation of the Operation Cycle (tactical level) with the JISR cycles (strategic level) to take advantage of possible synergies among the data acquired and the information provided across the echelons (both top-down and bottom-up).
- STILL, ...Defence has been slow to adopt true IoT applications that join together communications systems into effective interoperable, automated cycles. Often...communications remain within their given channels, not easily shared or aggregated.
- As well, the integration of "outside world" information to Defence and, the industrial commercial push of IoT that will greatly impact on the SWoP of systems, are subjects for future talks...

www.gmv.com

THANK YOU

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