



# ***UTILISING SMART DIGITAL BACKBONES***



ARMADA

**Rear Admiral  
Francisco Antón Brage**

**Helsinki , FEB25**

# WAY AHEAD

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INTRODUCTION

USE CASE: INTEGRATED SERVICES SYSTEM  
ISS

DESCRIPTION

EXAMPLES OF FUNCTIONALITIES

MATURITY PATH



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# INTRODUCTION: DIGITAL BACKBONES



## NAVAL WARFARE GOES DIGITAL

Adaptability to future military challenges

Enabling a secured environment

Achieving data superiority

Accelerate agility, resilience and survivability

## DIGITAL TRANSFORMATION

Data centric security



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# INTRODUCTION: DIGITAL BACKBONES

## FROM “TRADITIONAL” PLATFORMS TO DIGITAL PLATFORMS TRANSITIONAL PATH

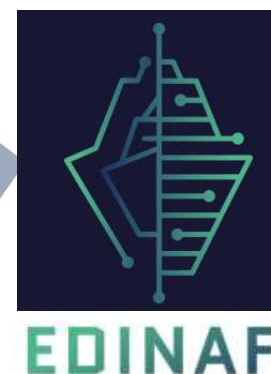


TRADITIONAL

DIGITAL TWIN/ISS



NATIVE DIGITAL



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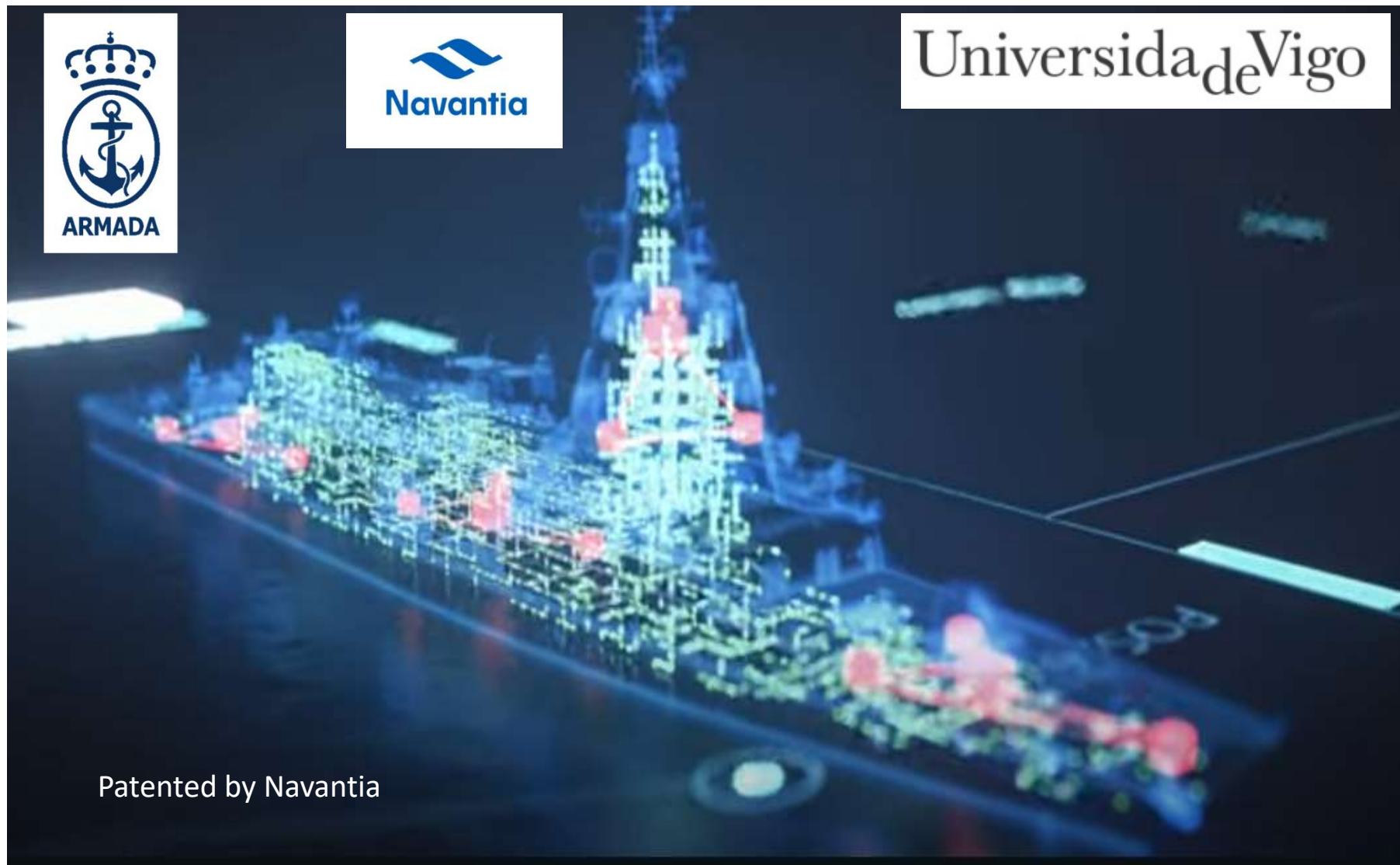
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# INTEGRATED SERVICES SYSTEM (ISS)



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Patented by Navantia

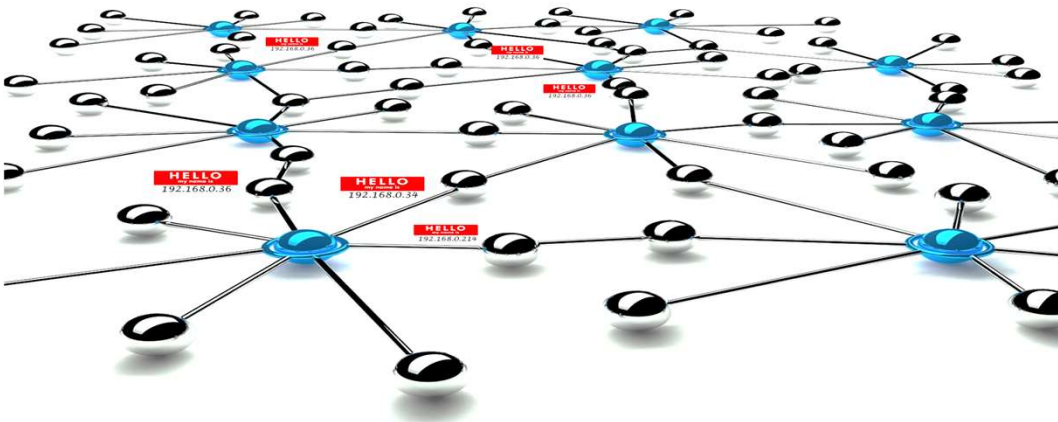


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# INTEGRATED SERVICES SYSTEM (ISS )

A secure digital infrastructure, distributed along the ship, constitutes its **nervous system**, providing support and coverage everywhere to a set of services and new capabilities allowing the integration of crew with the ship systems and spaces.



 Lighting	 Positioning Biometric surveillance	 CCTV		
 Interior Comms Switching	 PA, warnings Bridge Recording	 Wireless Access		
 Sensors	 Voice Assistant ASR	 Edge computing		
 Monitoring	 Audio/Video	 Unmanned Ship	 Support to DT	

# DESCRIPTION\_TECHNOLOGIES

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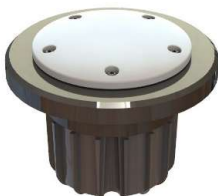
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# DESCRIPTION\_ELEMENTS



**Indoor nodes**  
(NM/NB/NB<sub>A</sub>)



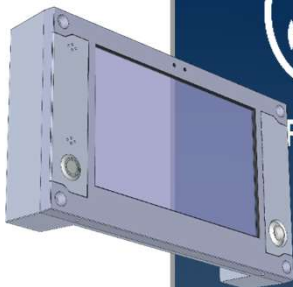
**Deck node**  
(NEC) flush mounted



**Outdoor light node**  
(NEL) bulkhead mounted



**Outdoor speaker node (NEA)** bulkhead mounted



**Fixed terminal**  
Bulkhead & Console terminal (FT)



**Identification tag**  
(DIP) (DIE)



**Push buttons**  
No wires, no batteries



**Network Servers**  
(x4) Fire Zones



**User Terminal** Secured  
(TU/TUA)



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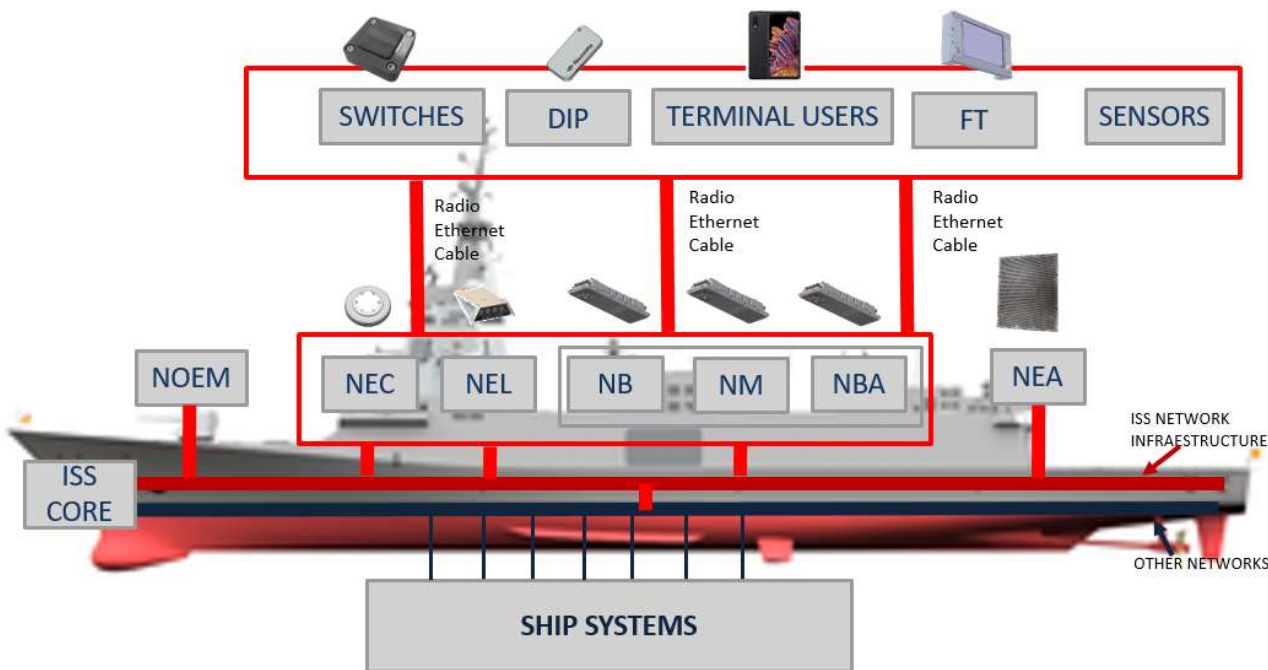




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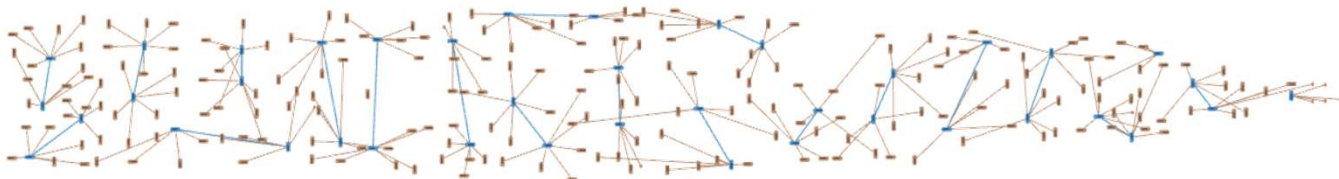
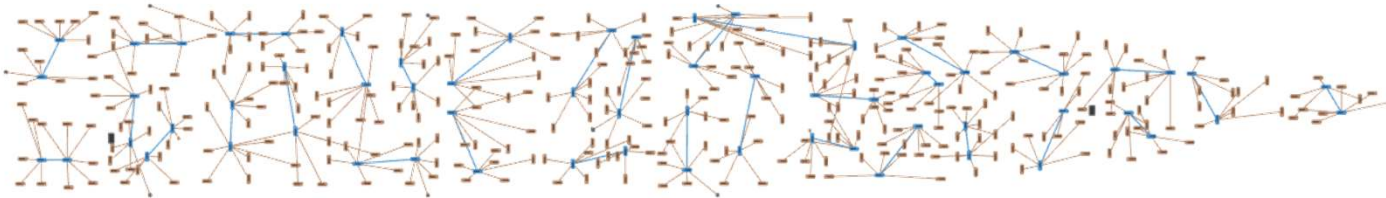
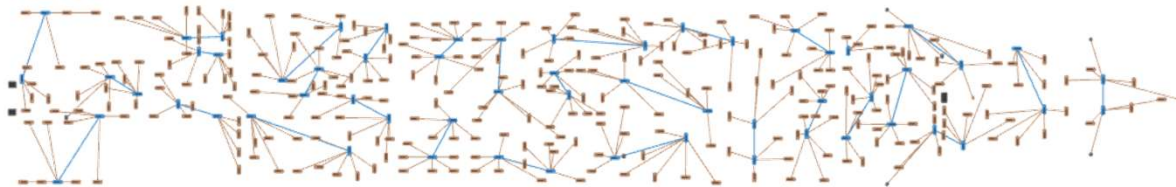
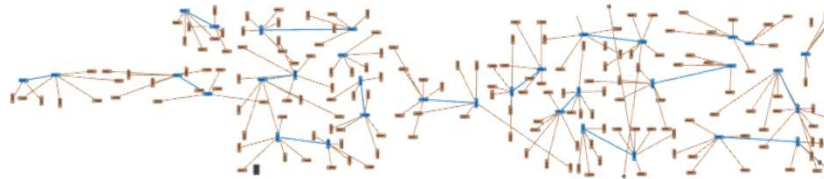
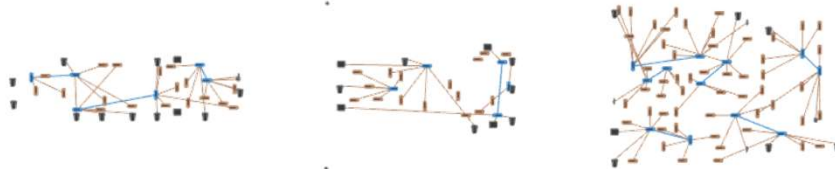
# DESCRIPTION\_THE DIGITAL BACKBONE



- **ISS replaces &/or enhances +12** traditional systems functionalities
- Designed for both **new & ship retrofits**
- **Integrated** with ship **IPMS, ICCS,** and **DT**
- **Redundant** architecture, **high survivability.**
- **Modular design** for an easy upgrade path (tech. upgrades)
- **Low maintenance** design (i.e. OEM parts designed for additive manufacturing certified replacement)

## Enabling Platform for the deployment of new capabilities

# DESCRIPTION\_THE DIGITAL BACKBONE



## ROM FIGURES

**~3000** components

**+15%** Up to Cable reduction

**+5 tons** Weight savings

**30%** Up to Welding savings



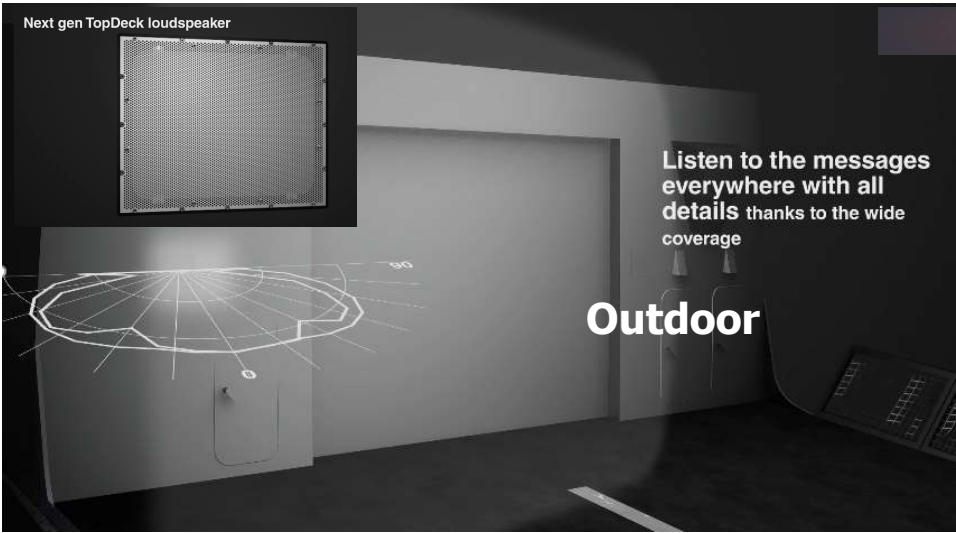
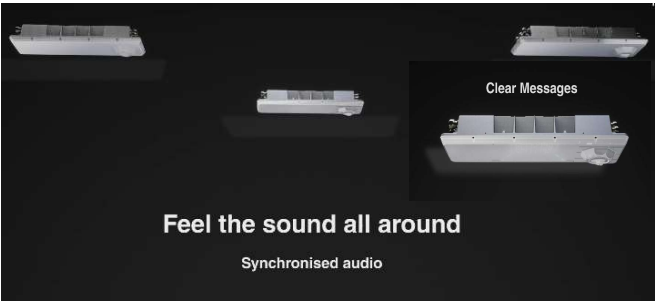
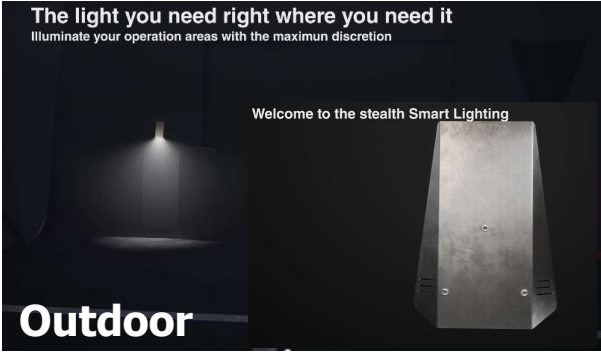
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# ISS \_EXAMPLE OF FUNCTIONALITIES



## SMART LIGHTING & AUDIO



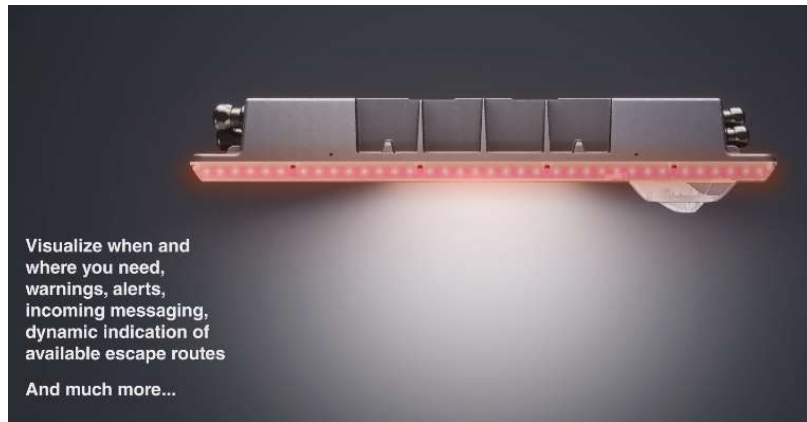
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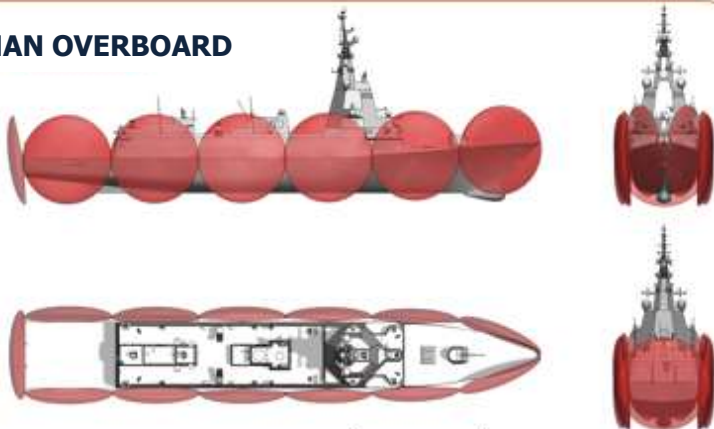
# ISS \_EXAMPLE OF FUNCTIONALITIES



## DAMAGE CONTROL & SAFETY\_ EVACUATION ROUTES



### MAN OVERBOARD



13 NEC Hull mounted



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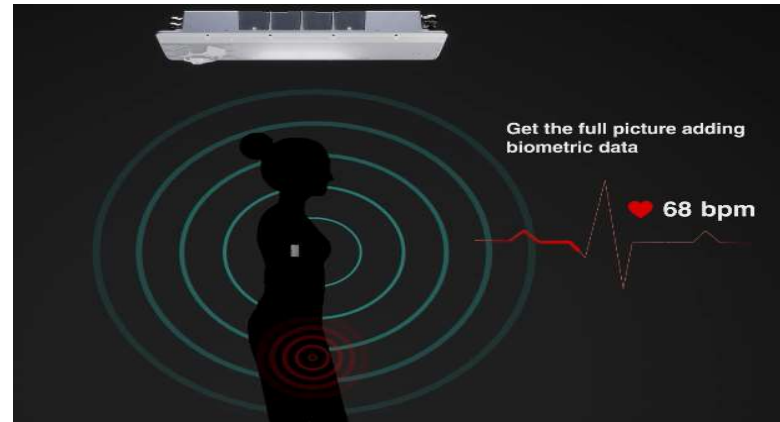
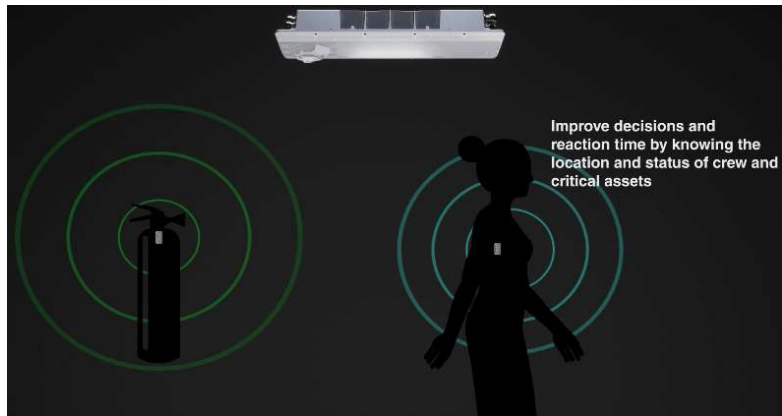
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# ISS \_EXAMPLE OF FUNCTIONALITIES



## CREW POSITIONING & HEALTH MONITORING



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# ISS \_EXAMPLE OF FUNCTIONALITIES

## CIBERSECURITY



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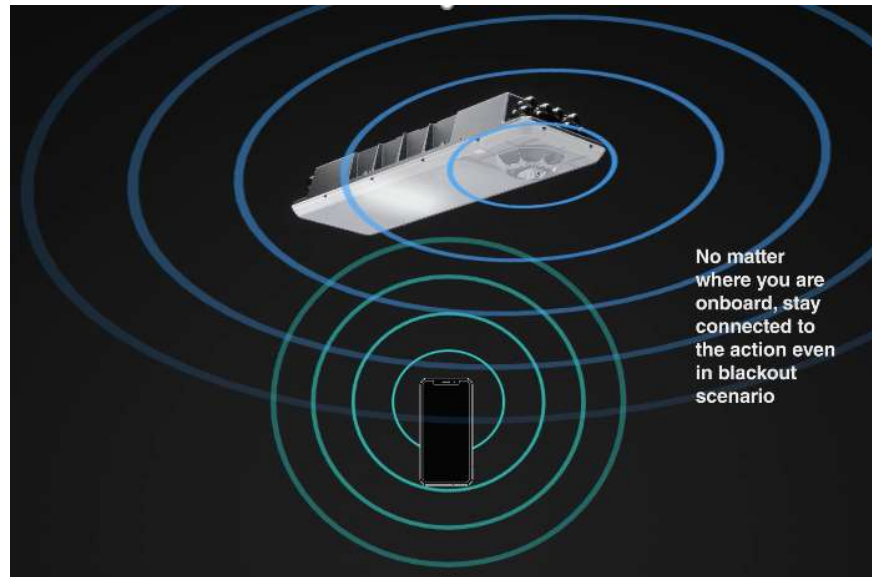
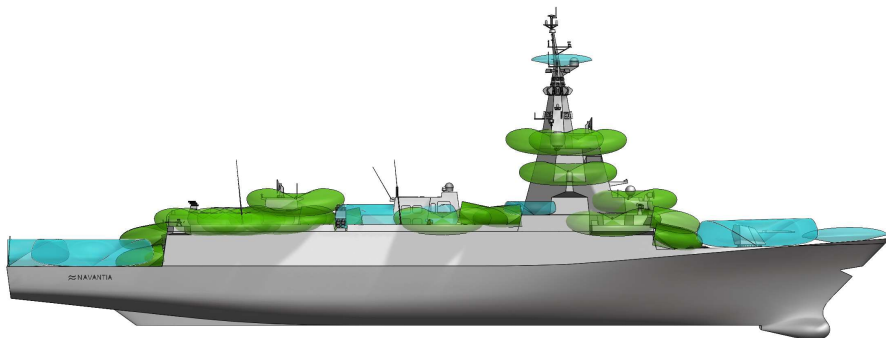
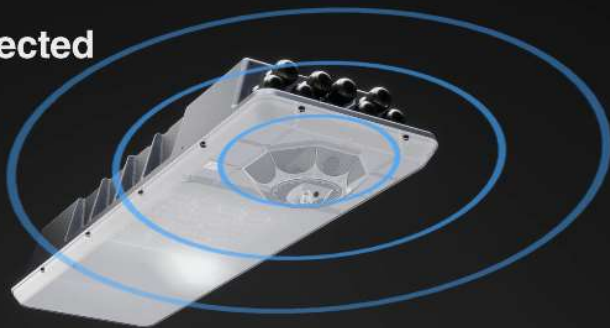
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# ISS \_EXAMPLE OF FUNCTIONALITIES



## CONNECTIVITY

Always connected



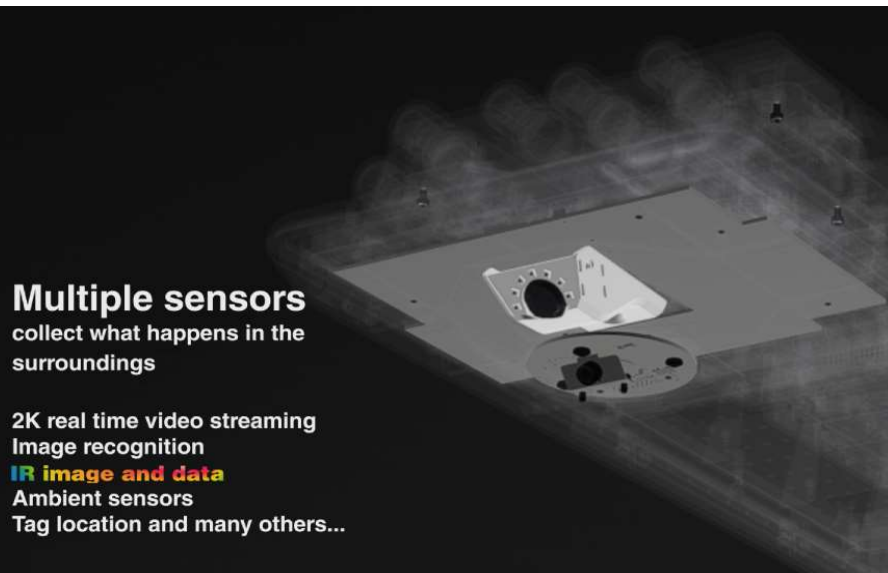
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# ISS \_EXAMPLE OF FUNCTIONALITIES



## CCTV / FACIAL RECOGNITION/SENSORS



### Multiple sensors

collect what happens in the surroundings

2K real time video streaming

Image recognition

IR image and data

Ambient sensors

Tag location and many others...

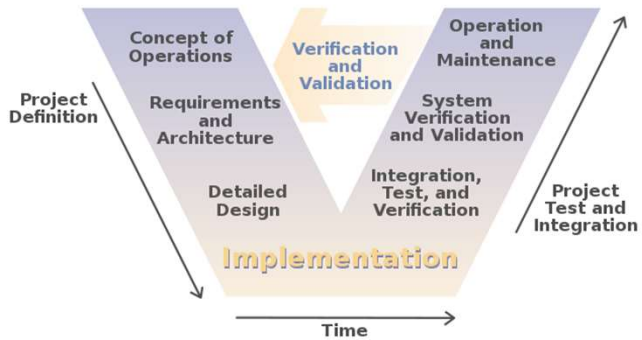


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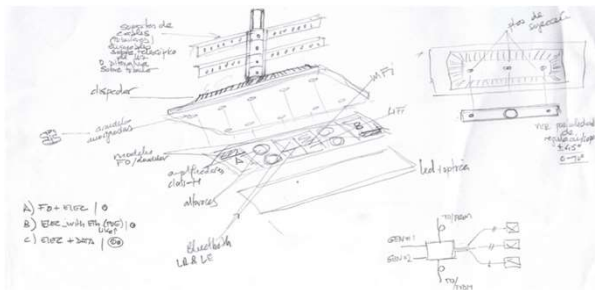
## ISS\_MATURITY PATH



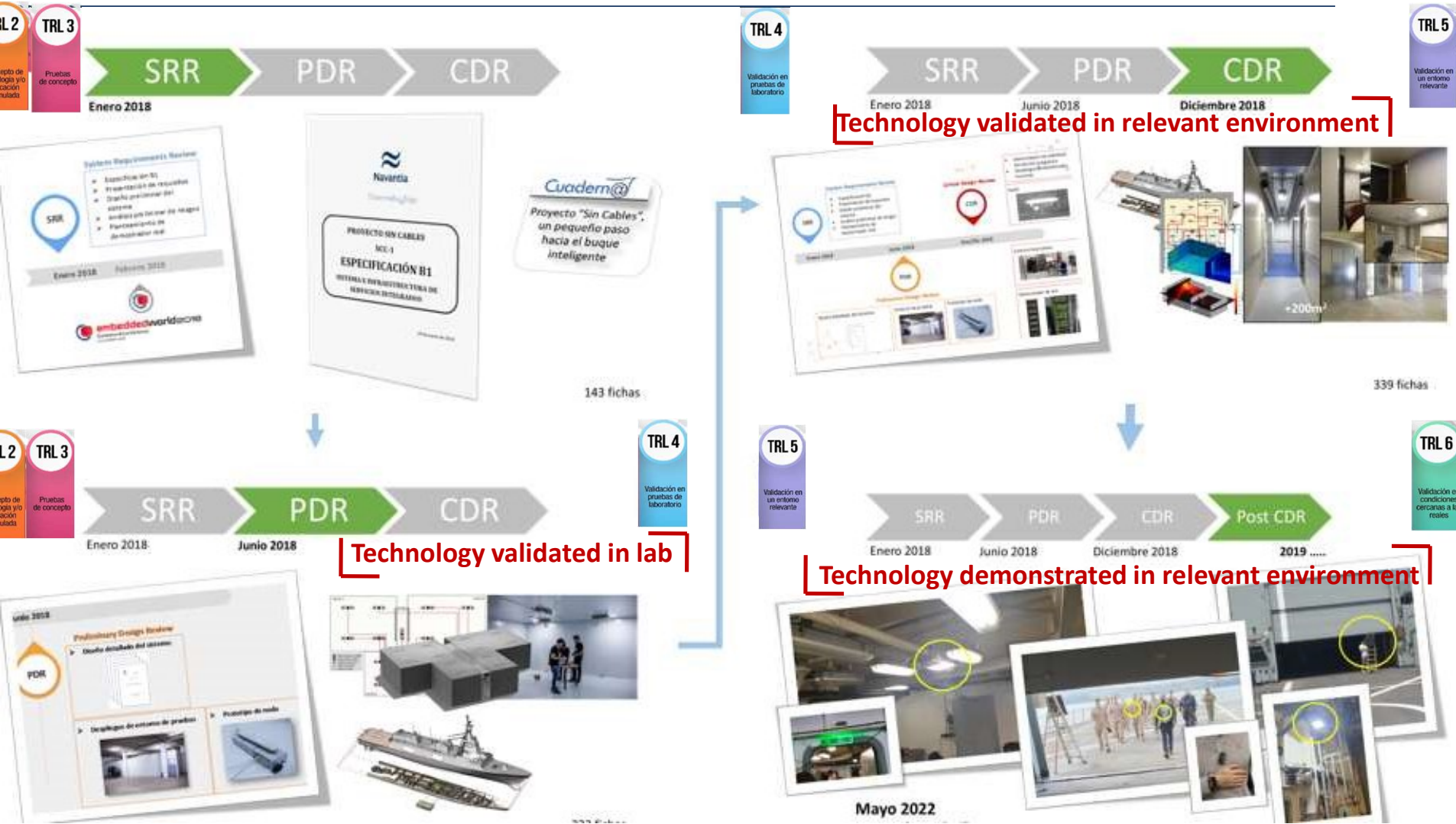
TRL7



## TRL2



# ISS\_MATURITY PATH



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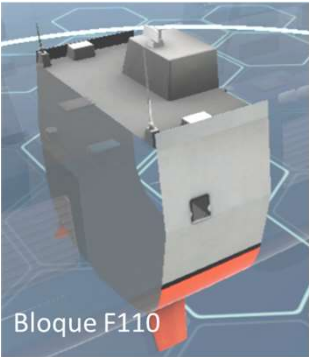
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# ISS\_MATURITY PATH

TRL 7

Demostración en entorno operativo real

System model demonstrated in operational environment



NVG compatibility test

FEB 2024  
F110 LBTS

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# ISS\_RECAPPING

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