

Brazilian Hydrographic Society Conference

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June 2026



# THE S-100 STANDARD

THE ENABLER OF A NEW E-NAVIGATION ERA



**Rear Admiral Luigi Sinapi**  
Secretary-General Elect, IHO





# BRAZIL AND THE OCEAN: A MARITIME NATION



**BLUE  
AMAZON**



**8,500 km  
COASTLINE**

STRATEGIC ASSET,  
NATIONAL HERITAGE



**SOVEREIGNTY**

PRESERVING OUR  
WATERS, SECURING  
OUR FUTURE



**OFFSHORE  
ENERGY**

SUSTAINABLE ENERGY  
FOR THE FUTURE



**GLOBAL  
TRADE**

CONNECTING BRAZIL  
TO THE WORLD



**MARINE  
BIODIVERSITY**

PROTECTING LIFE,  
PRESERVING OUR FUTURE







# A CROWDED AND PRODUCTIVE OCEAN

## The Ocean Economy: A Major Engine of Growth

The ocean is not only a route—it is a **platform for global activity**. Around **90% of global trade** by volume moves by sea, making maritime information infrastructure critical to the world economy.



Multiple activities now share the same finite marine space.

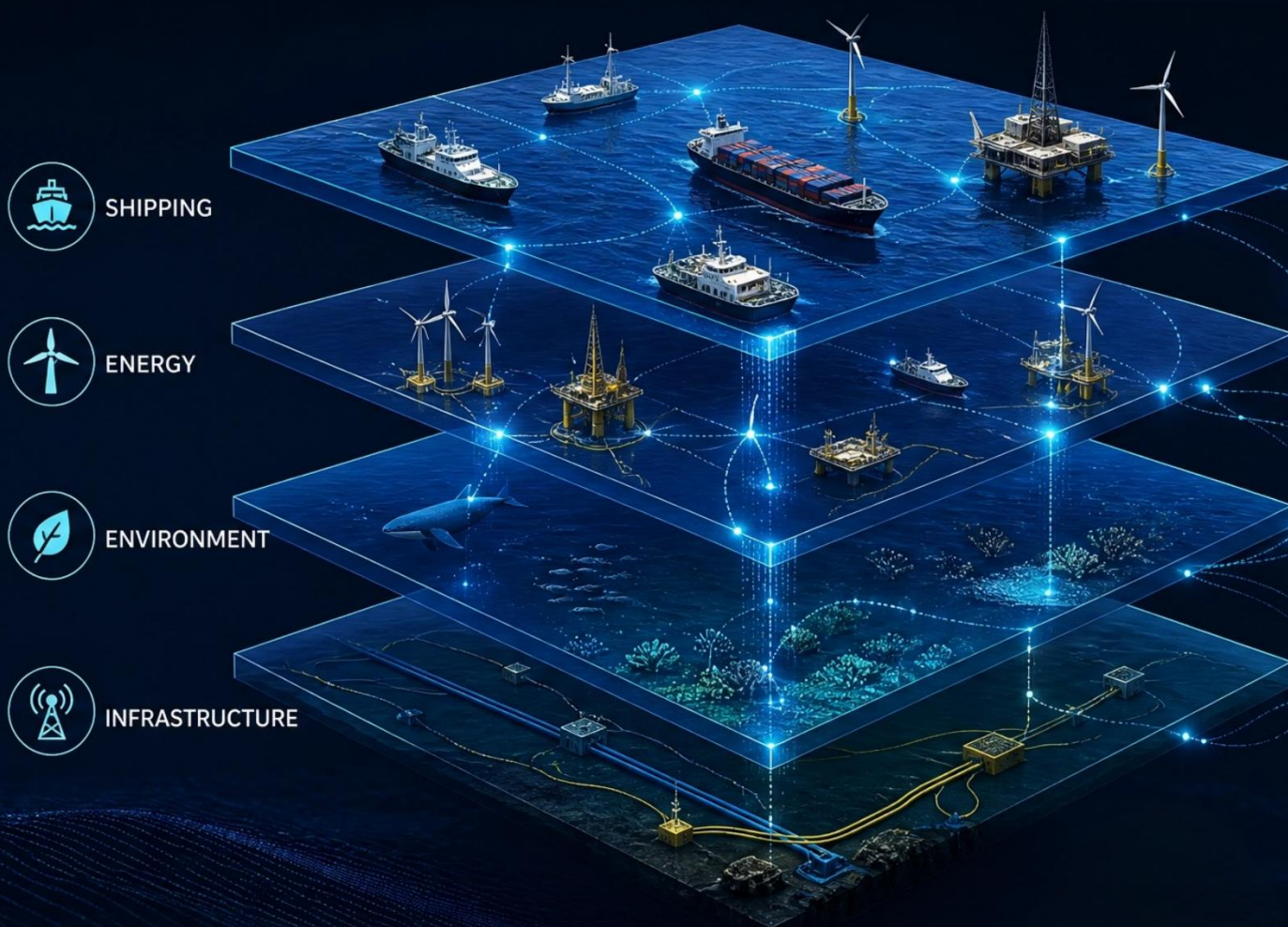


Oceans are busier and more economically important than ever before.



Growing complexity requires better, faster and more integrated information.

# THE NEW MARITIME REALITY



1



The sea is now a **shared operational** space for many sectors

2



Maritime **governance** is becoming more complex and more **data-dependent**

3



**Digital interoperability** is essential to manage competing uses and risks





# WHY E-NAVIGATION MATTERS



Right information  
to the right user  
at the right time

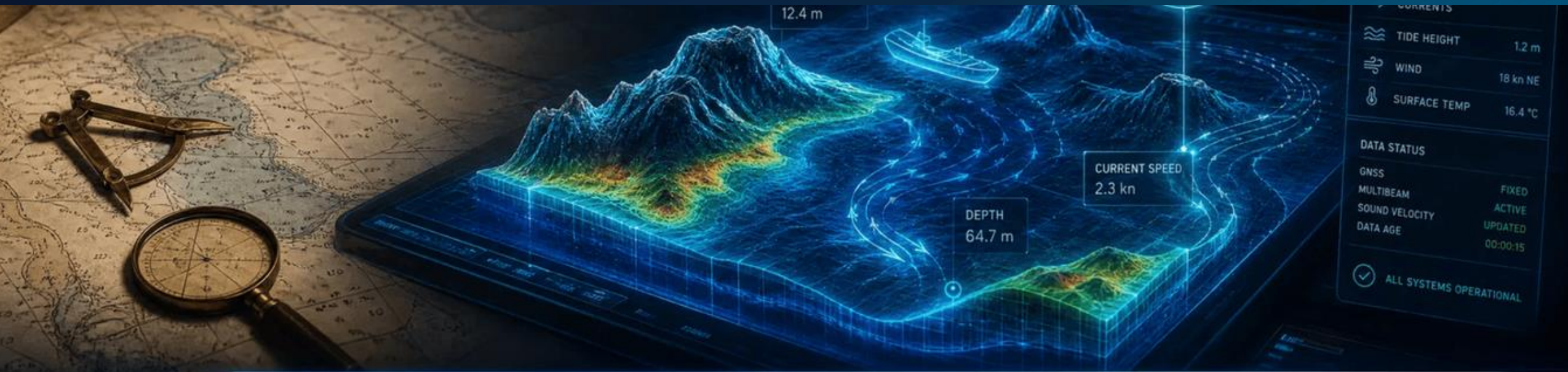
Integration  
matters as much  
as collection

S-100:  
The Essential Enabler





# FROM CHARTS TO DIGITAL MARINE REALITY



BUILT ON  
A LEGACY.  
DRIVEN BY  
INNOVATION.



SAFER  
NAVIGATION



STRONGER  
ECONOMIES



HEALTHIER  
OCEANS



GLOBAL  
COLLABORATION

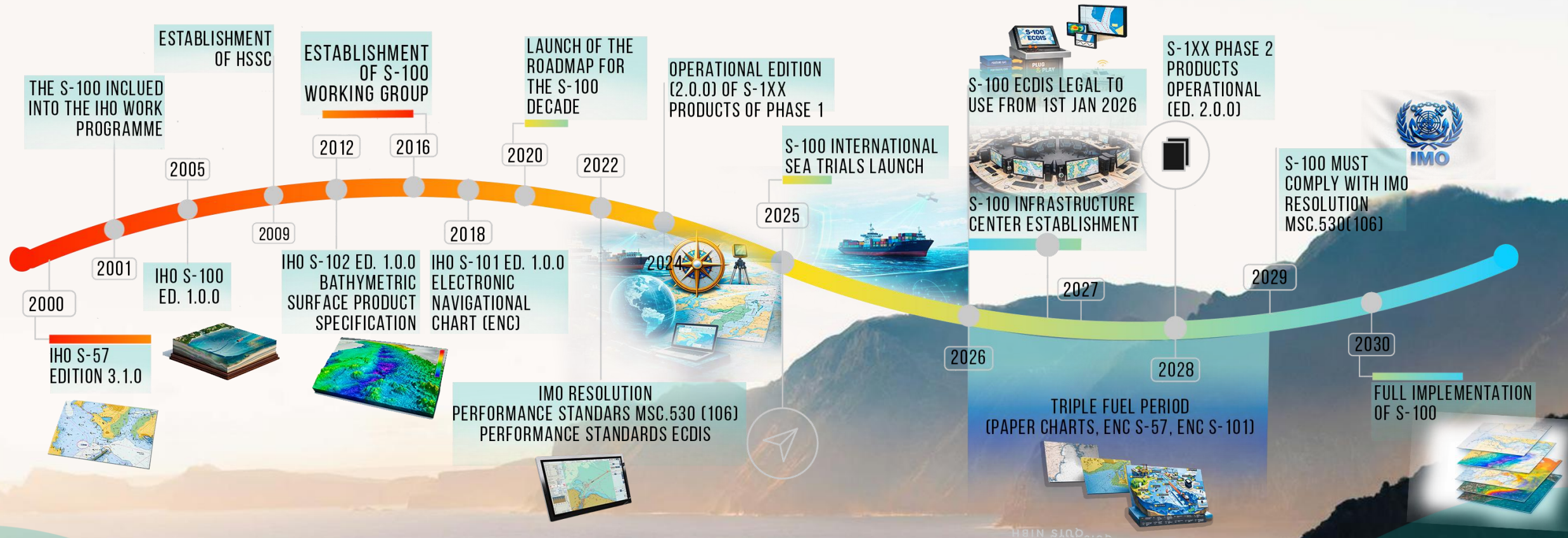


SMARTER  
DECISIONS

HYDROGRAPHY IS MORE THAN MAPPING THE SEAFLOOR.  
IT'S SHAPING THE FUTURE.



# THREE DECADES OF S-100 SUCCESS







# WHAT IS S-100?



## NAVIGATIONAL CHARTS

S-101, S-102

Digital nautical charts for safe and efficient navigation.



## BATHYMETRY

S-102

High-resolution seafloor data for accurate depth representation.



## WATER LEVELS

S-104

Real-time and predicted water level information for enhanced awareness.



## MARINE ENVIRONMENT

S-111, S-122

Environmental data layers for comprehensive situational awareness.



## S-100: THE DIGITAL LANGUAGE OF THE SEA

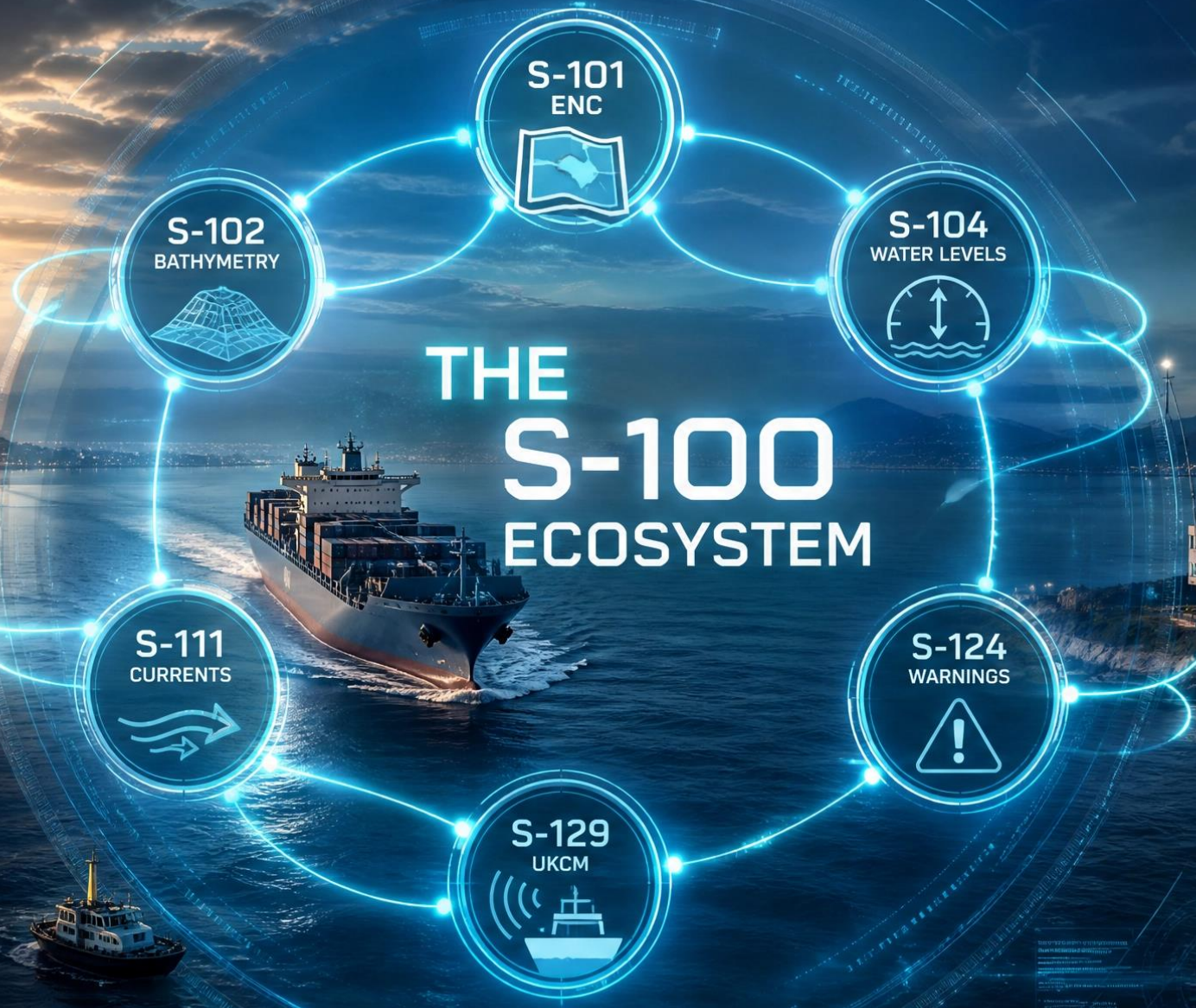
Enabling a smarter, safer, and more connected maritime world.



## INTEROPERABILITY ACROSS SERVICES

One data model. Many applications. Endless potential.





## POWER IN THE ECOSYSTEM

Integrated data.  
Stronger decisions.



## AUTHORITATIVE SERVICES WORKING TOGETHER

Trusted. Reliable. Essential.



## A RICHER OPERATIONAL PICTURE

Complete awareness.  
Safer operations.  
Better outcomes.



# TOWARDS A FOUR-DIMENSIONAL MARINE SPACE



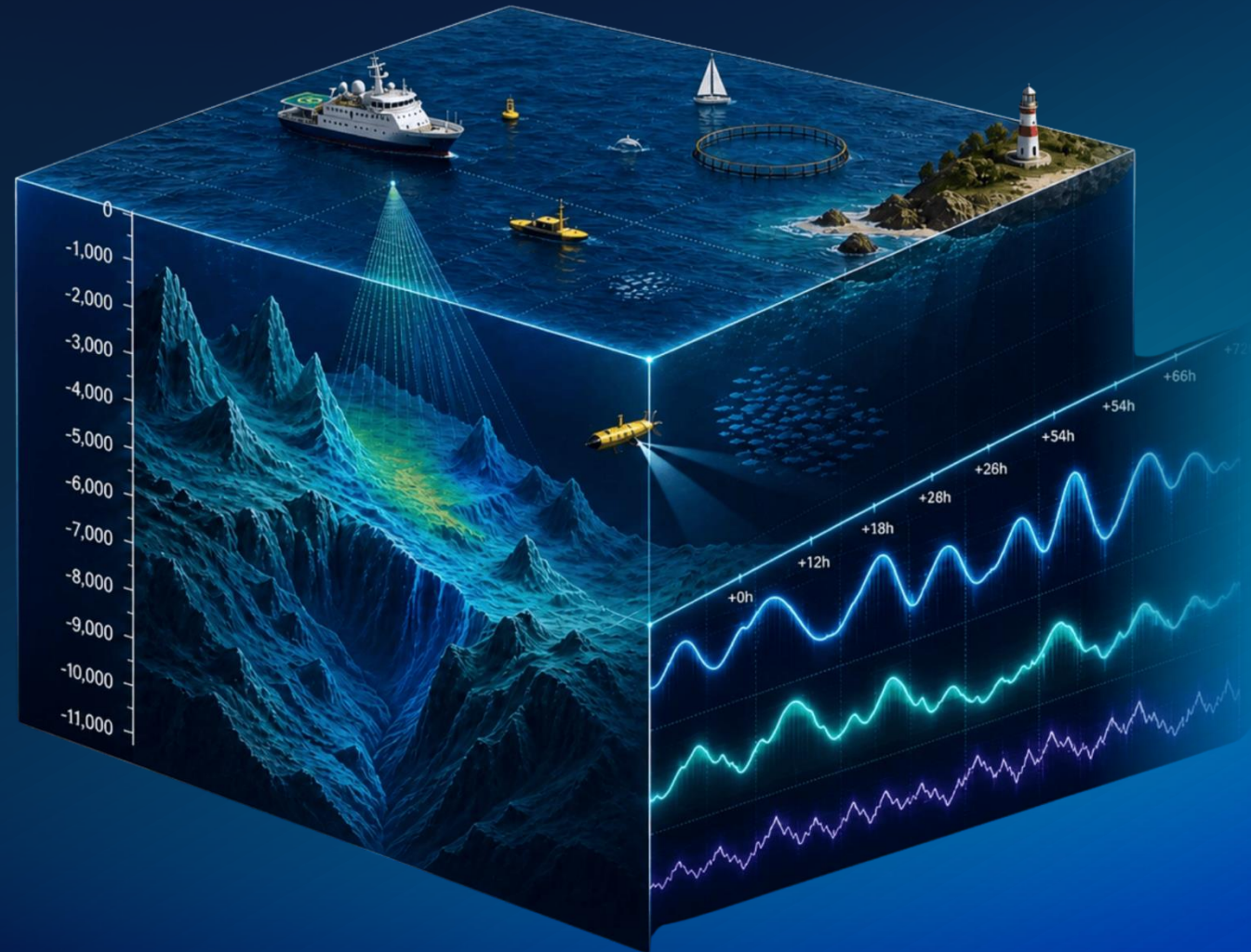
Beyond 2D: depth, time,  
change



Dynamic representation of  
reality



From reaction to  
anticipation







# THE NEW S-100 ECDIS



Decision-Support Platform



Integrated Operational Environment



Richer Situational Awareness





Automation begins with **trusted information**



Supporting **human and machine decisions**



Enhancing **safety and efficiency**

# AUTOMATION AT SEA

SMART PORT  
CONNECTED





# CYBERSECURITY AND TRUST

 Secure and  
Trusted Infrastructure

 Cybersecurity  
is a Safety Issue

 Trust is Fundamental to  
Digital Transformation





# STRATEGIC INFRASTRUCTURE



**PORTS**  
SMART PORTS  
GLOBAL TRADE GATEWAYS



**ENERGY**  
OFFSHORE ENERGY  
SUSTAINABLE FUTURE



**SECURITY**  
MARITIME DOMAIN AWARENESS  
NATIONAL SECURITY



**ENVIRONMENT**  
OCEAN HEALTH MONITORING  
SUSTAINABLE OCEANS



**TRANSPORT**  
GLOBAL SHIPPING LANES  
CONNECTED WORLD

## S-100

THE UNIVERSAL LANGUAGE OF THE OCEAN  
INTEGRATED – INTEROPERABLE – INTELLIGENT



**BATHYMETRY**  
SEAFLOOR MAPPING



**NAVIGATION**  
SAFETY & EFFICIENCY



**INFRASTRUCTURE**  
SUBSEA AWARENESS



**MARINE BIODIVERSITY**  
HABITAT PROTECTION



**OCEANOGRAPHY**  
ENVIRONMENTAL DATA



**WEATHER**  
OCEAN FORECASTING

**DATA IS THE FOUNDATION. PROSPERITY IS BUILT ON IT.**

THE INVISIBLE INFRASTRUCTURE BEHIND NATIONAL SECURITY, ECONOMIC GROWTH AND SUSTAINABLE OCEANS









# THE DIGITAL TWIN OCEAN VISION



The future ocean will be monitored and simulated dynamically



Prediction depends on interoperable data



S-100 provides the foundation for Digital Twin capability





# THE OCEAN ECONOMY OPPORTUNITY

ENERGY

+15%

ENERGY OUTPUT

CONNECTIVITY

+41%

DIGITAL INFRASTRUCTURE

FOOD

+23%

SUSTAINABLE CATCH

S-100

UNLOCKING BROADER  
ECONOMIC BENEFITS



INNOVATION

+31%

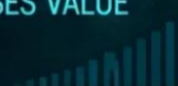
TECHNOLOGY INVESTMENT



OCEAN ECONOMY:  
A MAJOR ENGINE OF GROWTH



INFORMATION INCREASES VALUE  
BY REDUCING RISK



S-100 UNLOCKS BROADER  
ECONOMIC BENEFITS







Hydrography  
supports Sustainability  
as well as Safety



Marine Information  
enables Resilience  
and Stewardship



S-100 contributes  
to better  
Environmental Outcomes



# S-100 AND SUSTAINABLE DEVELOPMENT





# INTERNATIONAL COOPERATION: THE ESSENTIAL INGREDIENT







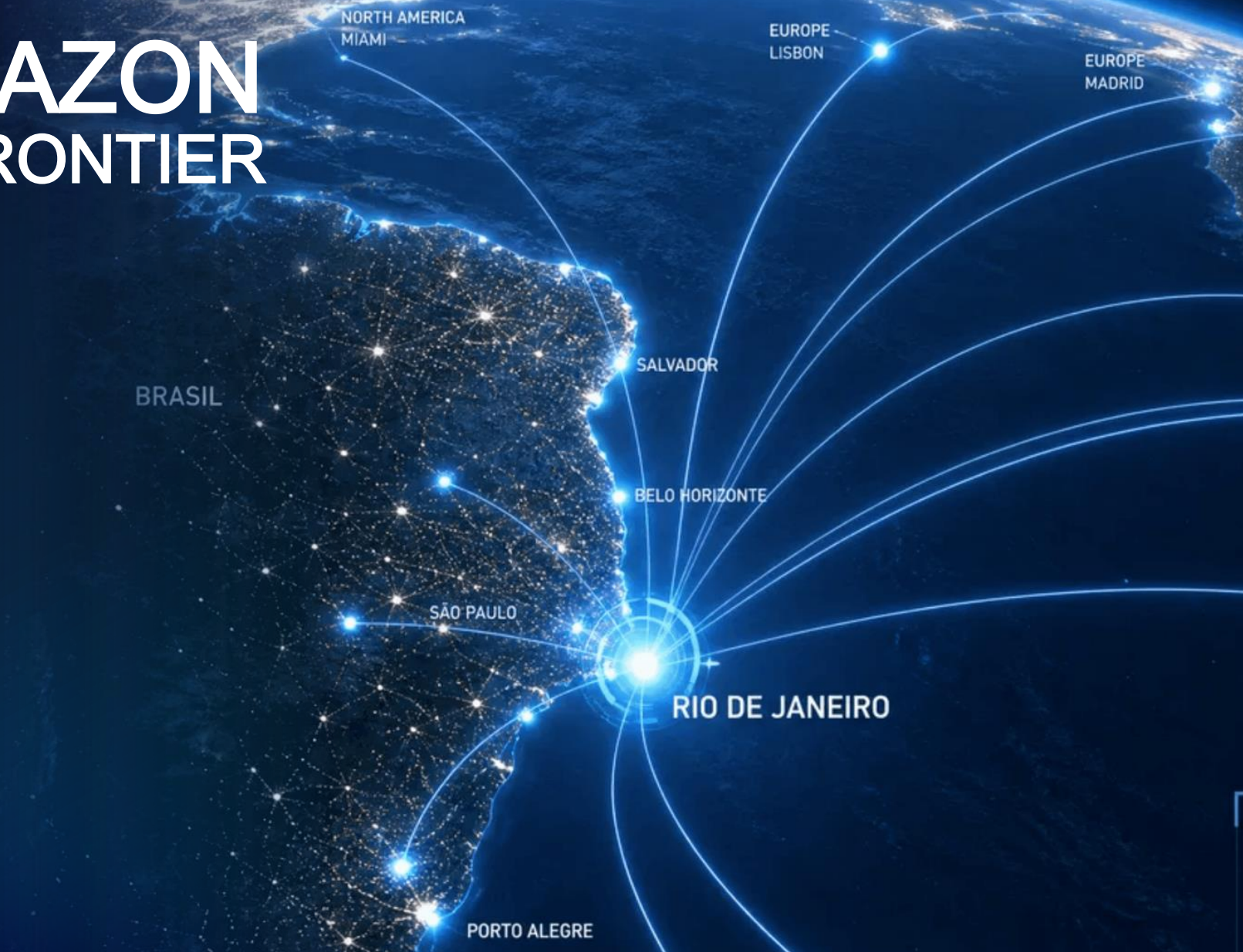
# THE BLUE AMAZON

## BRAZIL'S DIGITAL FRONTIER

S-100 can become a force multiplier for national maritime strategy

The Blue Amazon is a digital frontier

Brazil's opportunity depends on how well it can manage marine information







Brazilian Hydrographic Society Conference

# INTEGRATED INFORMATION REDUCES OPERATIONAL RISK

DYNAMIC SERVICES IMPROVE  
SITUATIONAL AWARENESS

International Hydrographic Organization



EXCLUSION ZONE  
50m



STRUCTURE  
CLEARANCE  
78m

112m

68m

CURRENT: 2.4 kts →

DEPTH: 1850m

● S-100 DATA FEED ACTIVE

# THE OFFSHORE ENERGY & OPERATIONS: A SAFER REVOLUTION THROUGH S-100

SAFETY AND EFFICIENCY  
REINFORCE ONE ANOTHER







# SMART PORTS FOR A COMPETITIVE BRAZIL





# REDUCING COSTS AND EMISSIONS







# MARINE SPATIAL PLANNING AND ENVIRONMENTAL PROTECTION

Marine data supports  
public policy

Regulation translated  
into operations

Evidence-based  
Governance







# BRAZIL AS A REGIONAL AND GLOBAL LEADER

— IN HYDROGRAPHY AND MARITIME STRATEGY —



**Brazil** can help shape  
the wider **S-100** transition.



INTERNATIONAL  
COOPERATION



GLOBAL  
STANDARDS



SAFE NAVIGATION  
SUSTAINABLE OCEANS





# INNOVATE - UNITE - ADVANCE

Innovation must serve  
practical maritime outcomes

Cooperation remains  
indispensable

Capacity development ensures  
that no nation is left behind







# CONCLUSIONS: BUILDING THE MARITIME FUTURE TOGETHER



S-100 is becoming digital maritime infrastructure.



The transition is already underway.



Brazil has the assets and the credibility to benefit from and help lead this era.

## The future starts now.



# THE BLUE AMAZON

BRAZIL'S DIGITAL FRONTIER



IHO

International  
Hydrographic  
Organization

The Blue Amazon is a digital frontier

✉ info@iho.int



www.iho.int

## THANK YOU VERY MUCH FOR YOUR ATTENTION!

S-100 is a force multiplier  
for national maritime strategy



Safety



Efficiency



Sustainability



Global Standards