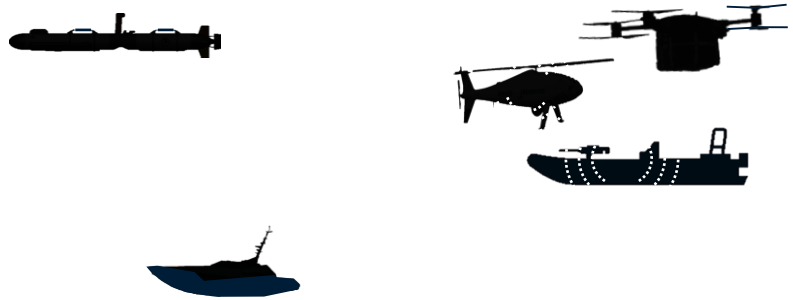
NORTH ATLANTIC TREATY ORGANIZATION
ORGANISATION DU TRAITÉ DE L'ATLANTIQUE NORD

Digital Ocean

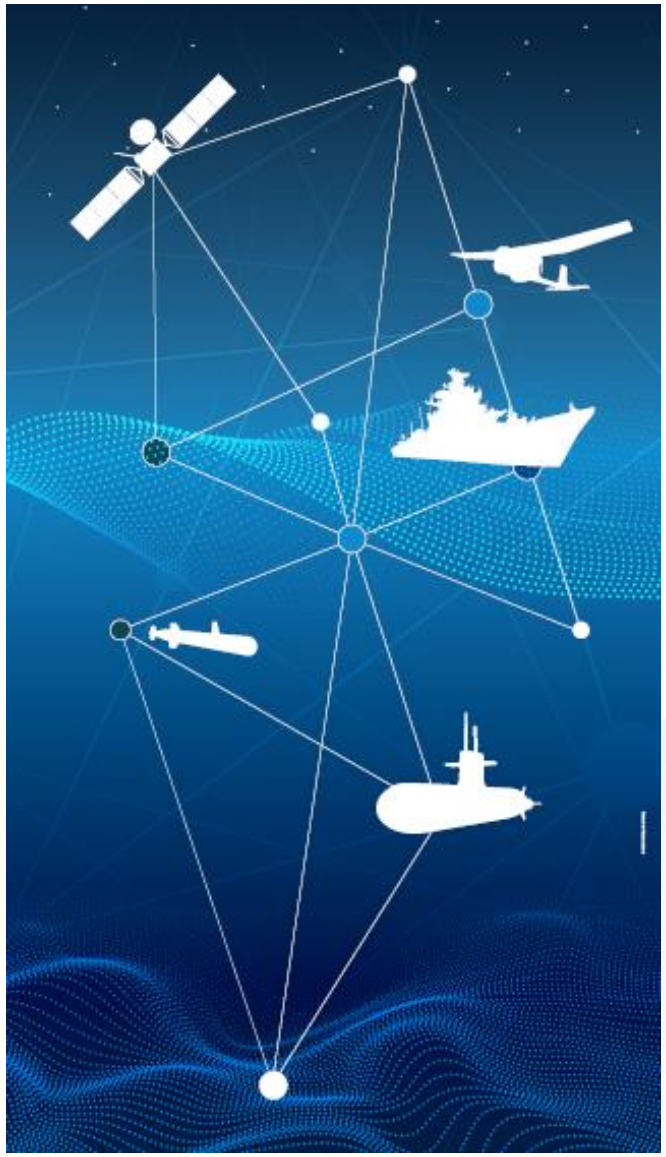
Sean Trevethan – NATO HQ

VERSION 22 May 2024



> **Maritime security is key to our peace and prosperity. We will strengthen our posture and situational awareness to deter and defend against all threats in the maritime domain, uphold freedom of navigation, secure maritime trade routes and protect our main lines of communications.**
>
> 2022 Strategic Concept, para 23

ORIGINS



- **DIGITAL OCEAN VISION STATEMENT**

Enhance **Maritime Situational Awareness** from Seabed to Space through the ability to orchestrate persistent, agile and adaptive capabilities that concentrate **sensing** below, on and above the sea, then **exploit data** at the speed of relevance to increase the cognitive capacity of operators and decision makers across all domains and throughout the NATO Command Structure.

Maritime Unmanned Systems Innovation Advisory Board discuss NATO innovation in the maritime domain

09 Nov. 2021 - 10 Nov. 2021 | Last updated: 13 Nov. 2021 08:35

English | French | Russian | Ukrainian

The NATO Maritime Unmanned Systems (MUS) Innovation Advisory Board met on the 9-10 November 2021 for the first time at NATO Headquarters. It provides advice to NATO HQ on the development and use of Maritime Unmanned Systems and all new technologies in the maritime domain.

November 2021

NATO Defence Ministers launch initiative to enhance maritime surveillance capabilities

12 Oct. 2023 - | Last updated: 12 Oct. 2023 18:13

English | French | Russian | Ukrainian

On 12 October 2023 NATO Defence Ministers and the Swedish Defence Minister endorsed the Digital Ocean Vision, a pioneering initiative to enhance NATO's maritime situational awareness from seabed to space. The Digital Ocean initiative will transform Allied maritime domain awareness by enhancing coordination between national and Allied capabilities employed for maritime surveillance. This includes a broad range of assets from satellites to autonomous systems below, on, and above the sea.

October 2023

DIGITAL OCEAN

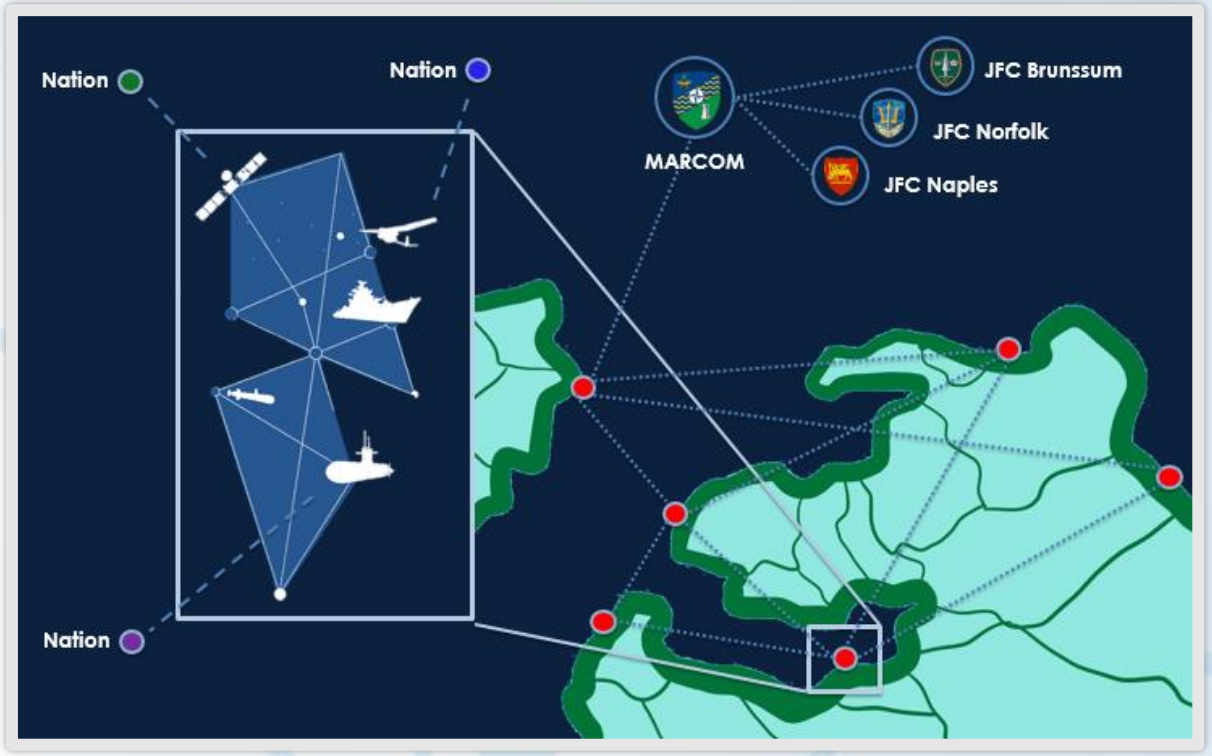
VISION STATEMENT

Enhance NATO's Maritime Situational Awareness from Seabed to Space **by 2030** through the **exploitation of emerging disruptive technologies**.

VALUE PROPOSITION

Increase interoperability at a lower cost & more effectively through the:

- **Seamless integration** of assets from multiple nations in a same operational picture;
- **Exploitation of technology** data fusion, autonomy, AI
- **Freeing conventional capabilities** for high end tasks;



KEY MILESTONES

OCTOBER 23
Digital Ocean Vision *endorsed by Defence Ministers*

APRIL 24
Digital Ocean Industry Symposium
with 100+ Industry Representatives

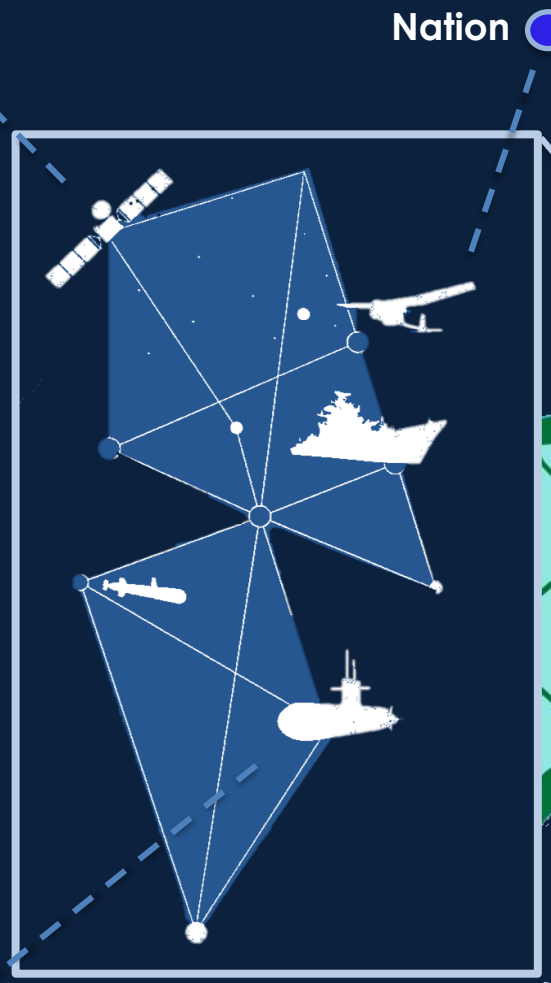
SUMMER 24
Digital Ocean Roadmap *delivering the Vision*

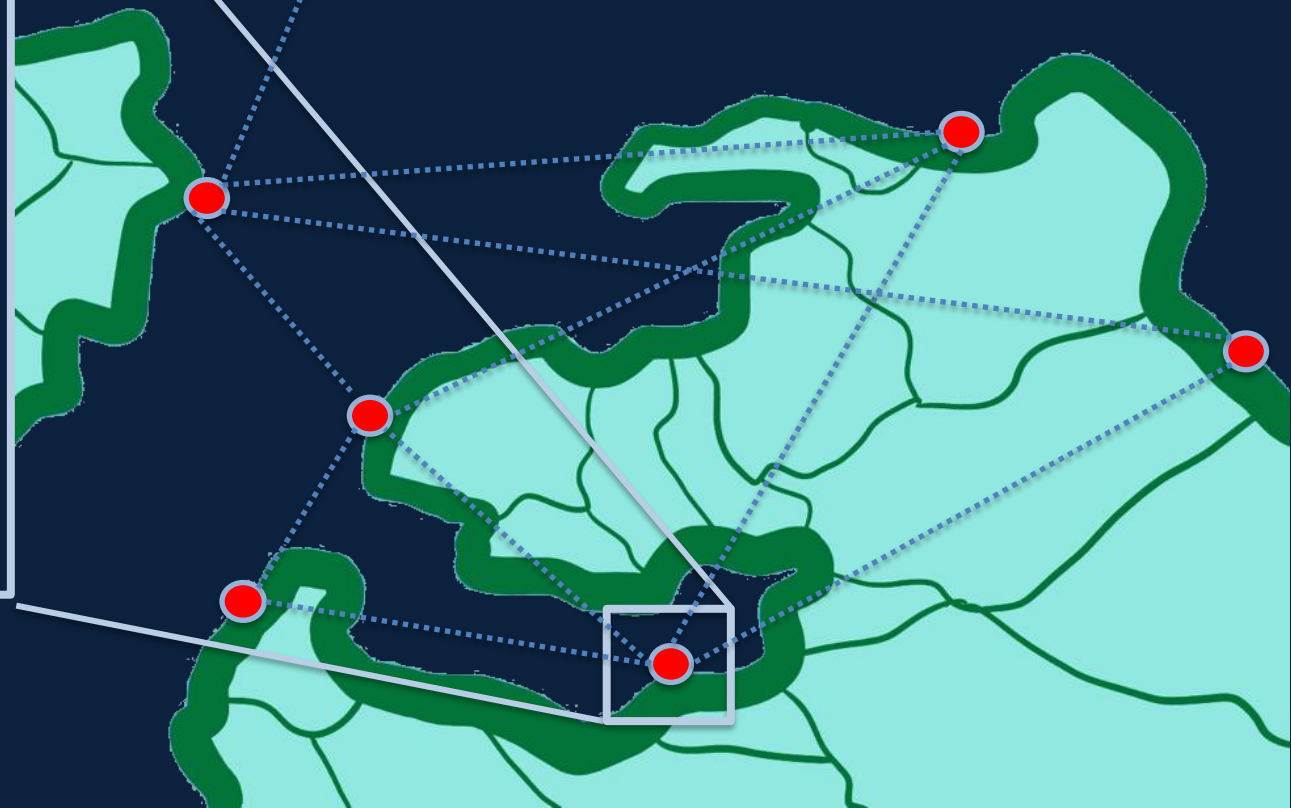
FALL 24
Digital Ocean Capability Delivery Strategy
principles of delivery & mechanisms to be employed

REALISING THE DIGITAL OCEAN

*Enhancing Maritime Situational Awareness through the exploitation of **technology***

- **Digital Operations Centers** hosted by Nation
  - Data Fusion / Big Data
- **I2I - National Systems deployed together**
  - Autonomy
  - AI
  - Data/Sensor Fusion





ROADMAP OVERVIEW

LINES OF EFFORT – PHASE 1

Understand, Inform and Connect

1. C2 Interoperability for Multi-Domain UxS
2. Reference Environments for Testing
3. **Digital Ocean OPEX Strategy**

4. **Reference Architecture - Underwater**
5. White Paper on AI/ML Applications
6. Food for Thought Paper on Space

7. **Capability Delivery Strategy**
8. **Design Reference Missions**
9. Industry Engagement Strategy

KEY OBJECTIVES

I2I — Interoperability to Interchangeability

EDE — Effective Data Exploitation

CAD — Capability Acceleration and Delivery

VISION

REPMUS 24 | **REPMUS/DYMS 25** | **REPMUS 26** | **REPMUS/DYMS 27**

DIGITAL OCEAN

Considerations

ENABLERs
- Integration of Bearers
- Secure Comms Network
- Sharing of Data and payload information
- Cyber and Physical Security
- ATPs/AJPs/AJEPs/STANAGs

Innovation Ecosystem
- Coherence of Strategy
- Division of Effort / Multiplication of Resources
- Utilize existing agreements and frameworks (such as HVPs)
- Risk Reduction / Cost Avoidance

INTEGRATION OF UXS INTO LEGACY PLATFORMS
- Network Integration
- C2 System Integration
- Ship Integration
- Aircraft Integration
- Land Force Integration
- BLOS Comms
- Link Integration
- Security Gateway

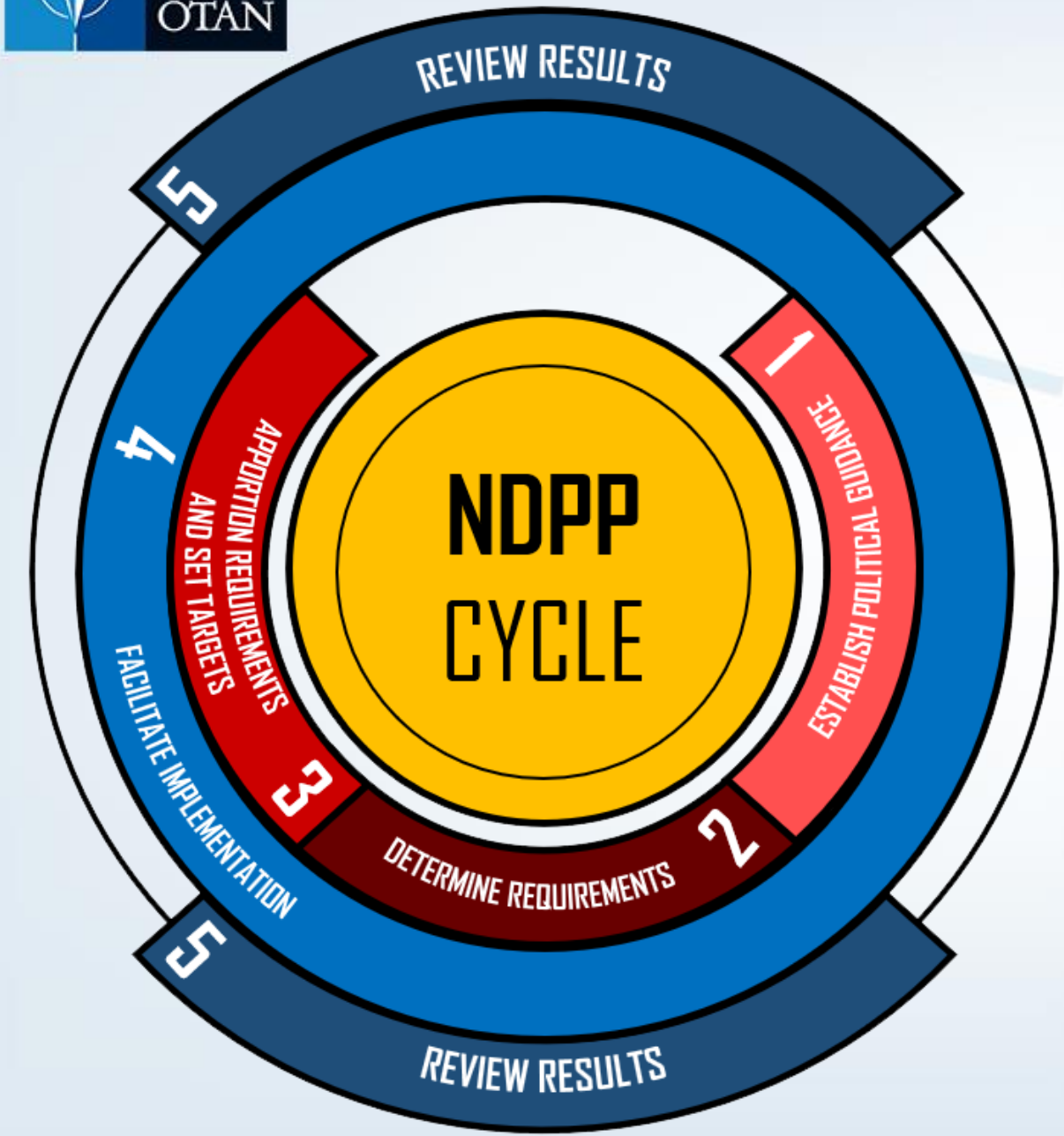
EDGE PROCESSING
- Autonomy Levels
- Multi-Effect
- Collaborative Assets
- Multi Domain Integrated Swarm

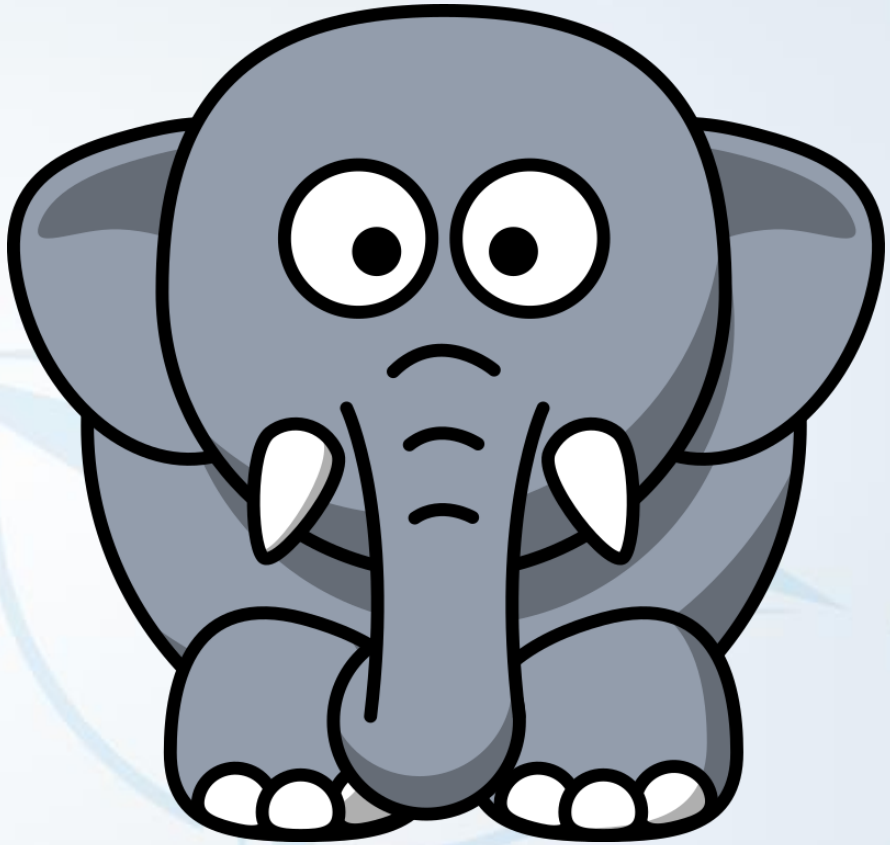
UXS DEVELOPMENT
- GCS
- Mission Planner
- C2 Nodes
- Payloads
- Interfaces

INTEGRATION OF UXS X-DOMAIN
- Tactical Picture
- OARIS Interface (ISR)
- Systems Track Interface
- Data Cores
- Functional Behaviors

OPERATIONAL EXPERIMENTATION
- De-risk development through incorporating user feedback
- Innovate/Accelerate/Deploy

RESOURCING





NATO FUNDING

RESOURCING & APPROACH

BRUSSELS 2021

Increase resourcing including NATO Common Funding considering:

- Affordability
- Accountability
- Sustainability

MADRID 2022

Increased NATO Common Funding in real terms until 2030:

- NSIP ceiling for EUR 1,3 million in 2024
- MB ceiling for EUR 2,2 million for 2024
- CB ceiling for EUR 418 million for 2024

- Broadening Eligibility

VILNIUS 2023

Enhance:

- Financial transparency
- Accountability
- Management Performance
- Long-term efficiencies

WAY FORWARD

ROADMAP

- D&G Received from CNAD 18 Apr 24
- NNAG to agree Roadmap by 14 May 24
- Standards Gap Analysis
  - STANREC 4777 (NATO Intelligence Interoperability Architecture) a leading example along with FMN.
- CNAD to approve Roadmap by 30 Jun 24

CDS

- NNAG to agree CDS by 18 Sep 24
- CDS to be a delivered paper for CNAD Autumn Plenary

OTHER

- Digital Ocean Vignettes developed for REPMUS 24
- Engagement with Bi-SCs at working level to identify NATO 2030 NSIP opportunities
- Coherence with JISR, AFSC, NATO 2030 NSIP mandatory.

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