



# Next Generation e-Maritime Service Provision Models

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# Next Generation e-Maritime Services

- ✓ improve and/or transform any form of transaction between involved maritime stakeholders ;
  - by developing and enacting virtual organizational arrangements, dedicated inter-organizational systems, and (inter) national institutional arrangements
- ✓ empowering maritime stakeholders to (re)define and co-develop NG e-maritime environments;
  - in a manner that reflects stakeholders' interests, perceptions and aspirations regarding next generation adaptive, intelligent, self-managed e-maritime services

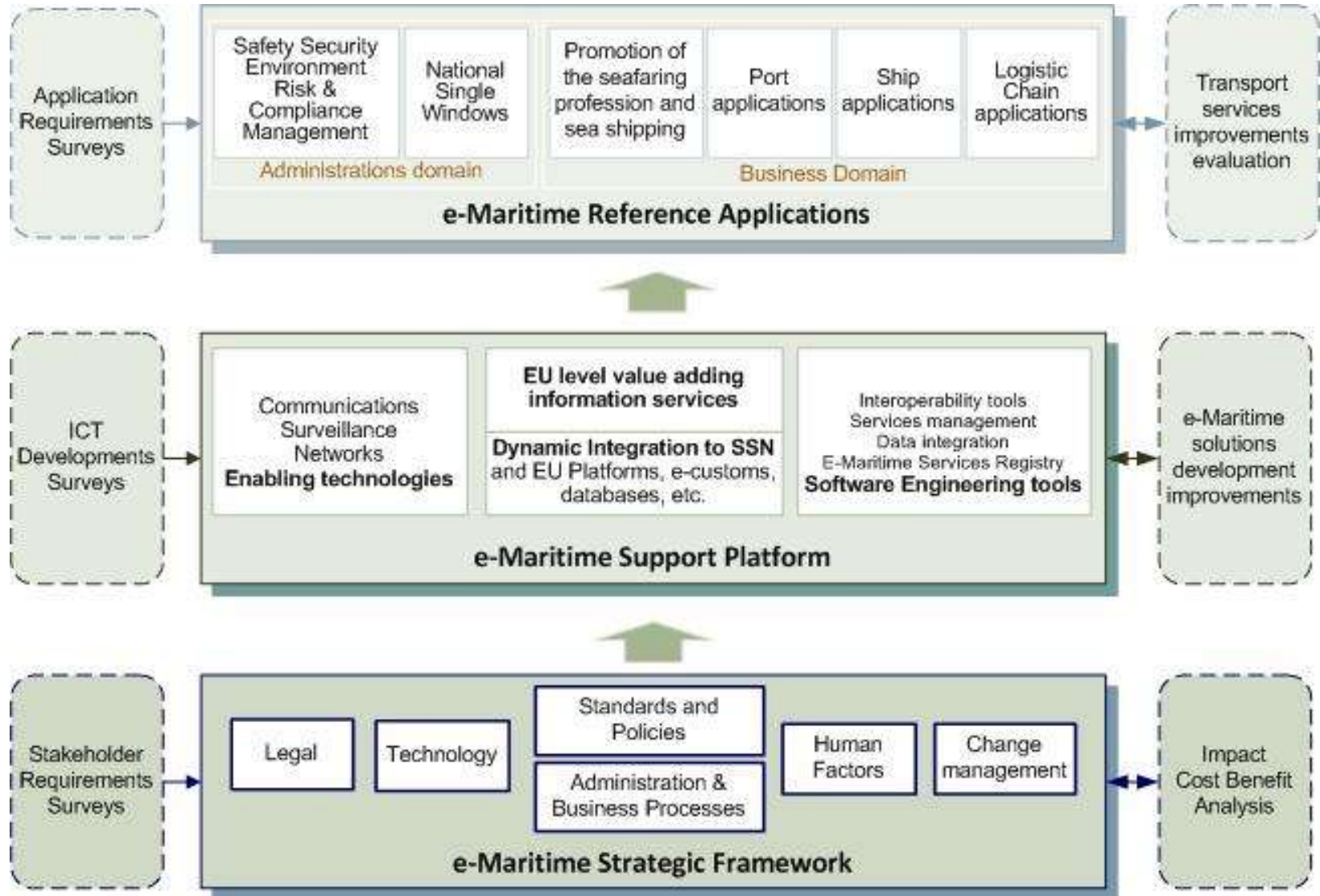


## Next Generation e-Maritime Services

- ❑ intersection of management, law, engineering, information technology, operations research disciplines
- ❑ encompassing all aspects that relate to e-maritime services: planning, design, and enactment, operation, evaluation



# e-Maritime Initiative





# Next Generation e-Maritime Services

## Units of analysis

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Organization

Individual

Group

Intra-organizational context

Inter-organizational context

Industry

Product and service

E-marketplace

Technology

Abstract concept

Information technology component

Information system

Society

Project

Professional

Other/miscellaneous

**Methodological Approach**



# Next Generation e-Maritime Services

## Research methods

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Conceptual research

Field studies

Case study

Field study

Secondary data analysis

Survey

Interview

Instrument development

Experiments

Field experiment

Controlled survey experiment

Laboratory experiment

Mathematical modeling

Computer simulation

Mathematical modeling

Technology stages

Technology stage 1 (Construction)

Technology stage 2 (Evaluation)

## Methodological Approach



# e-Maritime Foresight

- ❑ **Next-generation business models** and service scenarios
- ❑ Next-generation networks (e-navigation) and e-process management
  
- ❑ **Stakeholders' incentives** for participating in a e-maritime systems
  - **Policy incentives:** foreseen legislative or regulatory requirements; strategic orientation; maritime organizational cultures; key business relationships
  - **Technical incentives:** emerging vessel, cargo and infrastructures technologies, software architectures, standards, and sourcing criteria
  - **Operational incentives:** expected process performance improvement; economic, financial motivation;



# e-Maritime Business Models

## *Emerging ITS and Aml inspired e-maritime systems*

- all transport actors, whether persons or goods related, can be location-aware and transport mode situation-aware and communicate with each other.
- Ubiquitous, seamless and context-aware services across transport networks and terminals, as well optimised mobility and freight service provision





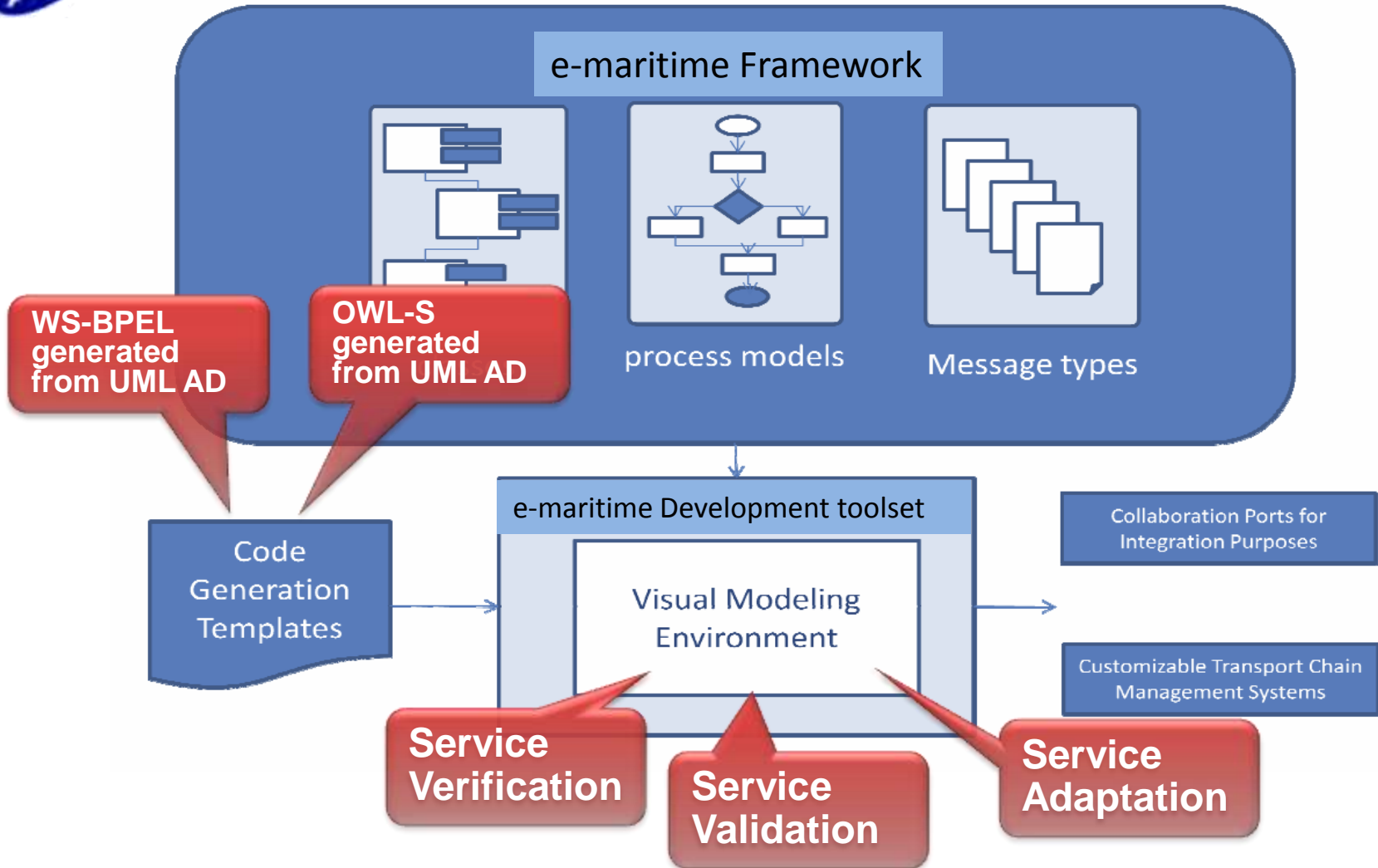
# e-Maritime Enabling Technologies

- E-Navigation, Internet of Things
- Intelligent multi agent systems, self-managed, adaptive architectures
- HCI: Haptic Interfaces
- SOA advances: co-modal and maritime process transformation
  - ✓ dynamic provision of e-Maritime services with increased levels of reliability, flexibility and service lifecycle automation
  - ✓ use of the SOA paradigm for managing a complete range of maritime transport services



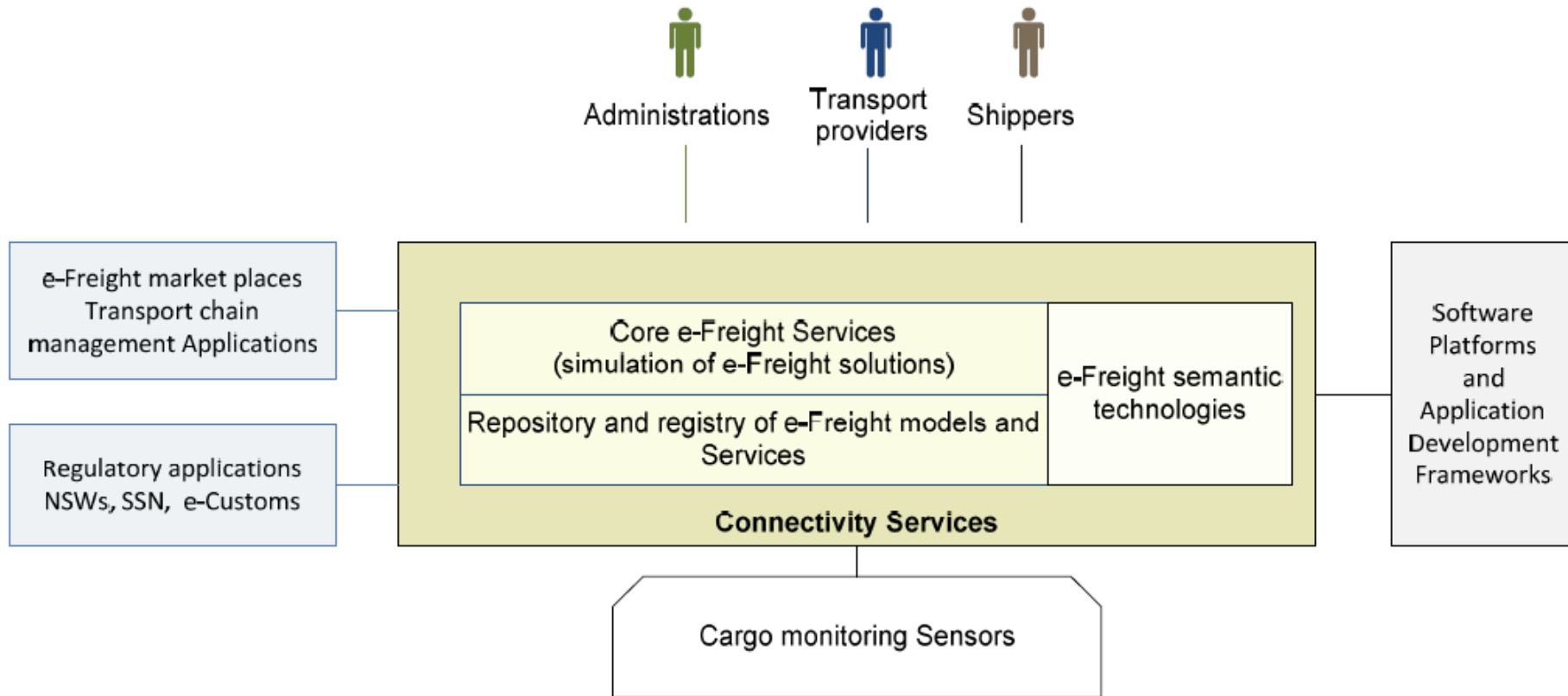


# SOA e-maritime service provision





# The e-Freight Project: “European e-Freight capabilities for co-modal transport”





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# SOA based e-maritime service provision

**Service Level Agreement** : formal (e-services) agreement between transport service providers and their customers/service users

✓ entails clauses including non-functional and QoS requirements and penalties if QoS requirements are not satisfied

The SLA concept, as considered, refers to properties of system components at different levels of granularity (e.g. infrastructure, process, application)

✓ Specification, enforcement and management of SOA e-maritime services:

- modeling, provisioning and managing service related tasks,
- service discovery, composition, negotiation and monitoring



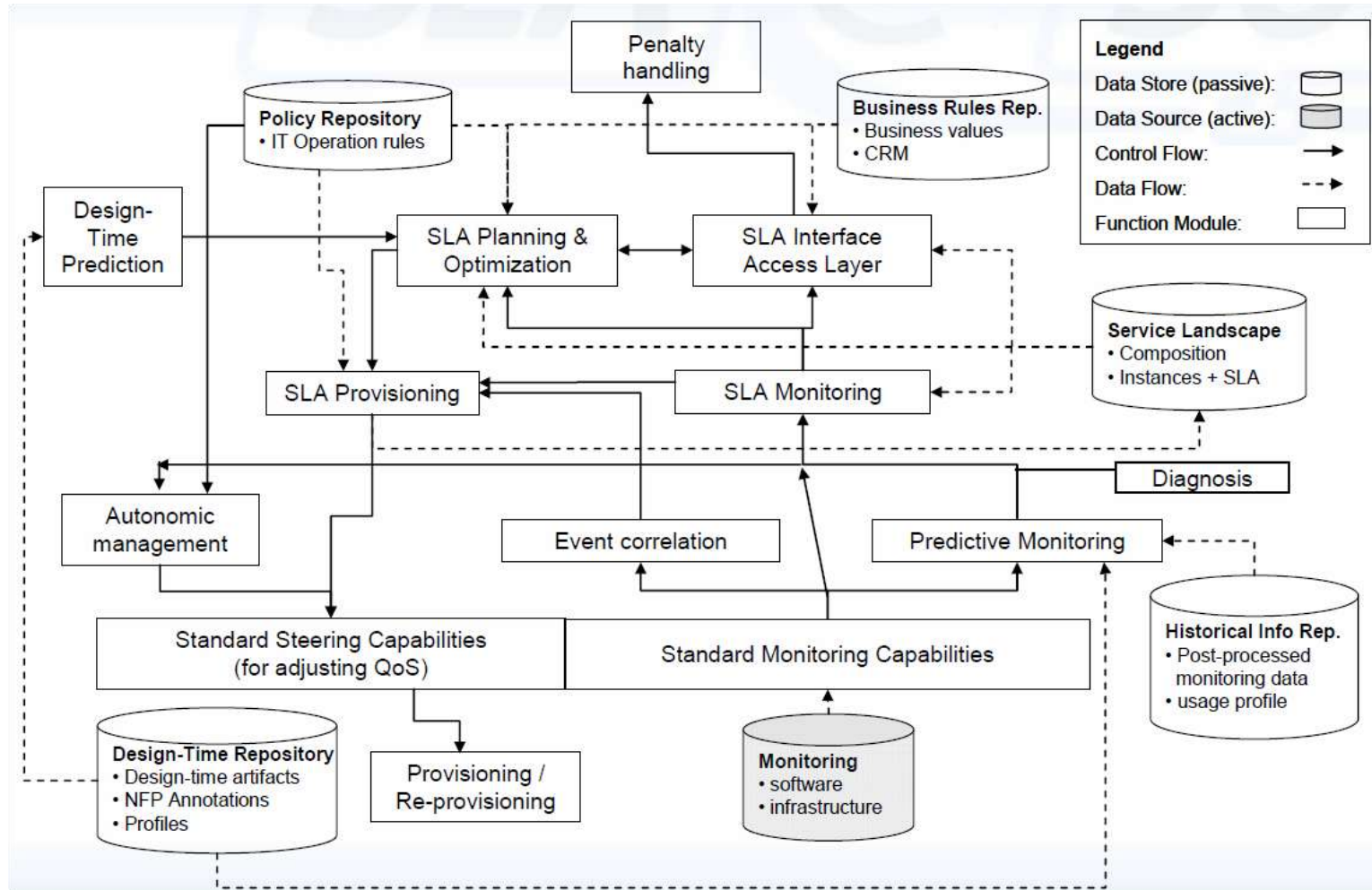
# SOA based e-maritime service provision

Utilizing **Service Level Agreements** at different levels:

- **policy and administrative agreements:** governance and business relationships attributes between interested parties
  - ✓ rules for establishing a common surveillance system
  - ✓ monitoring and tracking systems used for maritime safety and security,
  - ✓ control of external borders
  
- **technological agreements:** the definition of the information (standardized and formalized) to be exchanged



# SOA based e-maritime service provision



**A SLA approach towards robust SOA e-maritime systems**





**Thank you!**

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