

Maritime Autonomous System Information

**to raise awareness,
to seek engagement
to foster collaborative work**

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GROWING CONCERN ABOUT MARITIME AUTONOMOUS SYSTEMS

- **EDA initiative with SARUMS (Safety and Regulations for European Unmanned Maritime Systems) working group that provided a motto form conclusions in 2013:**
 - **Maritime autonomous system as safe as manned**
- **EU Shipping unmanned vessel project MUNIN affirmed at its final event in June 2015 ‘we are at the dawn of the age of maritime autonomy ‘**
 - Technical feasibility of Maritime autonomous systems but prototypes need further development and would not be totally unmanned
 - Safety gains can pave the way
- **UK IMarEST proposed to IMO safety committee an ‘any other business ‘ information paper in April 2015, exploring the inclusion of the operation of MAS within IMO regulatory framework**
 - It is deemed necessary to seek clarification of IMO regulatory framework to be applied to MAS and to identify equivalence of MAS to vessels in terms of classification, registration, insurance and operations

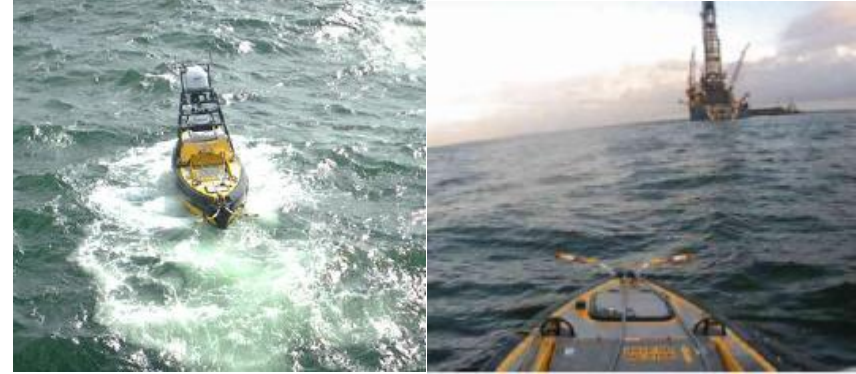
WHY ~~SHOULD~~ **SHALL** WE DEVELOP AUTONOMOUS SYSTEMS?

- **Less seafarer trend, in all maritime sectors**
- **Increase of maritime offshore activities, with many low added value tasks, that could easily be automated**
 - Scientific campaigns
 - Environmental survey
 - Pollution monitoring
 - Maritime operation monitoring
- **Requirement to optimize maritime activities operating costs (OPEX) and opportunity to capitalize on recent technological developments**
 - Internet of things with KNX standards
 - Airbus One web initiative

COHABITATION OF MARITIME AUTONOMOUS SYSTEM WITH MANNED SHIPS IS BECOMING REALITY

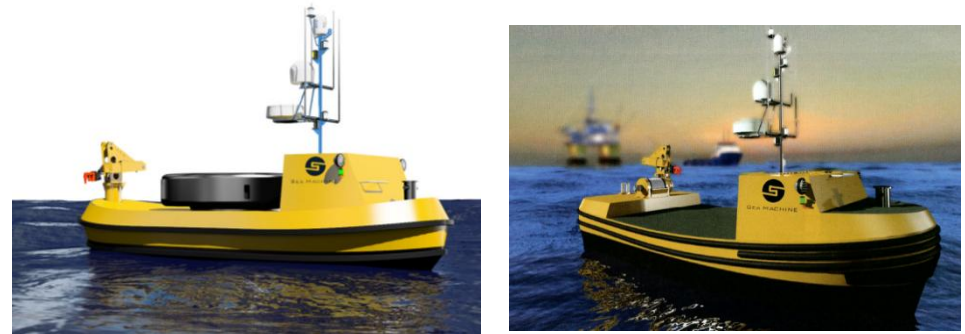
- **TECHNIPS & ASV**

- O&G pipeline installation monitoring



- **KONSBURG & SEA MACHINE**

- Offshore workboat



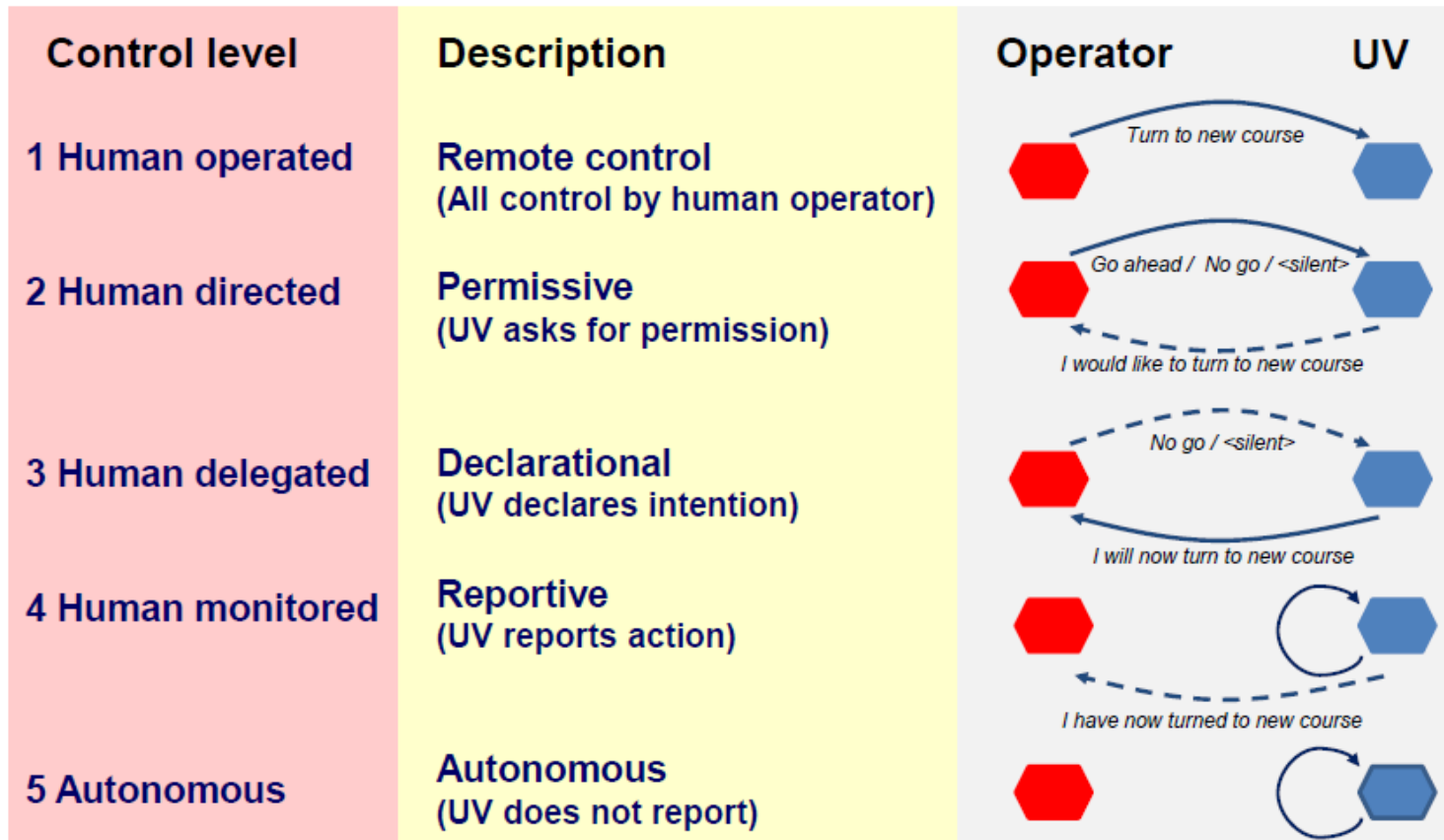
- **IFREMER & ENSTA**

- Environmental survey



TERMINOLOGY CLARIFICATION

- Ship, vessel, vehicle,
- Master, controller , commander
- Unmanned / autonomous / remote operated system



MAN IN THE LOOP

- **Maritime world is conservative and cooperative**
 - Educate versus automatize
- **Responding flexibility to changing circumstances**
 - Locally or remotely / 'Seen on TV' syndrome
- **Flag or not flag?**
 - Surveyed system
 - Qualified "commander"
 - Implemented regulations
 - Limited liability

A FRENCH MARITIME CLUSTER INITIATIVE BECOMING LAW

- The aim of this initiative is to create a preliminary legal status to a MAS demonstrator and to facilitate insurance matters
- **Maritime autonomous system as Ship ‘accessory’**
 - Floating vehicle commanded from a ‘mother ship’, showing a French flag
 - Nobody embarked on board the floating vehicle
 - Floating vehicle to show distinctive marks related to the ‘mother ship’
 - ‘mother ship’ able to tow or embark the MAS
- **Limitation of responsibility for MAS operations derived from Mother ship own liability**
 - Damage caused by the floating vehicle is deemed in relation with the ship
- **A law to be adopted within days**

- EMSA point of view
- EMSA recommendations

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