



# Robotics Technology for Inspection of Ships

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Naples Shipping Week  
Port&ShippingTech  
Shipping Technotrend

# What is ROBINS?

- EU co-funded collaborative R&D project (Horizon 2020) 

- Partners from Shipping, Robotics and IT/CAD-CAE industry 

- Aims at using robots and visual software tools for inspection of ships 

# ...Do we really need it?



...Probably, yes!

# What kind of robots?

**Aerial Drones**  
for visual inspection



UTB  
Universitat de les Illes Balears

**Crawlers**  
for TM and other close-up inspections

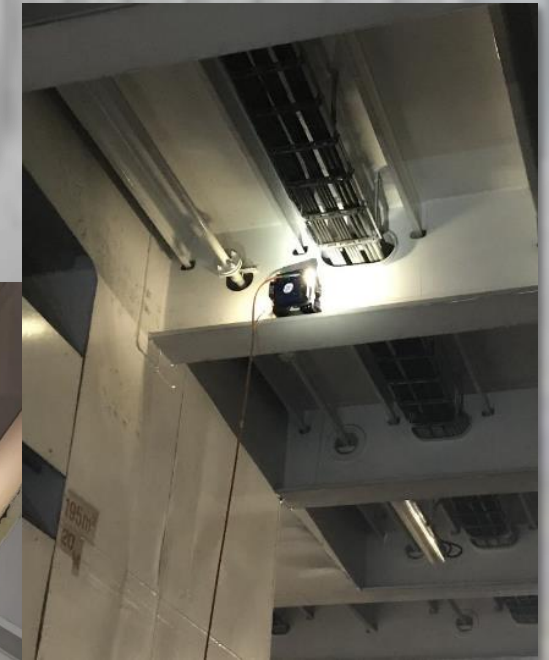
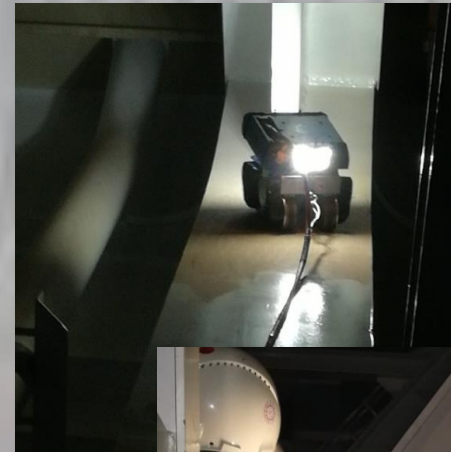


FLYABILITY  
SAFE DRONES FOR INACCESSIBLE PLACES

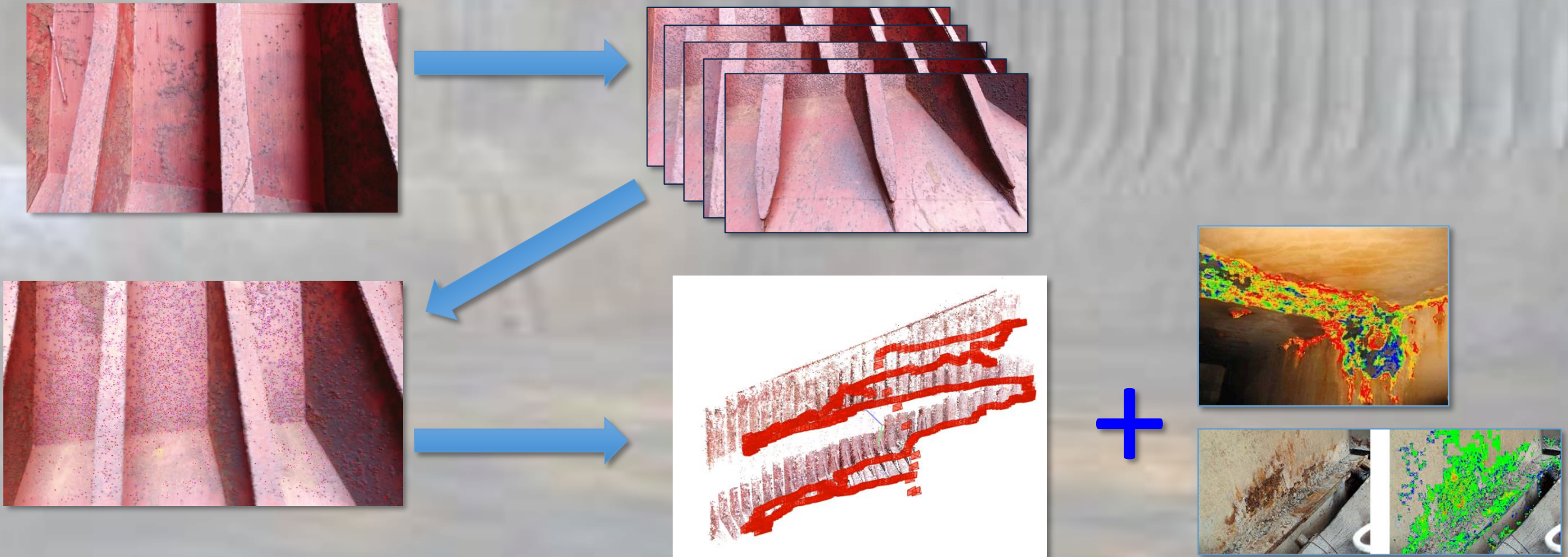


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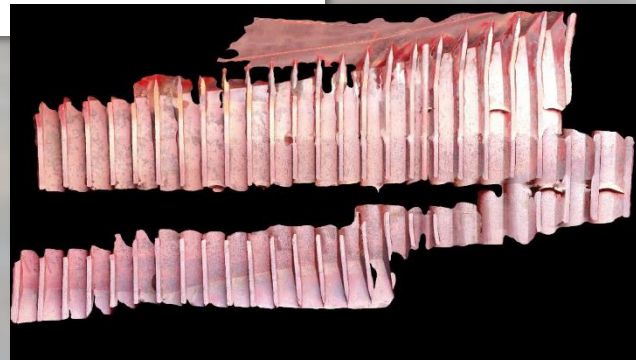
# What can robots do?



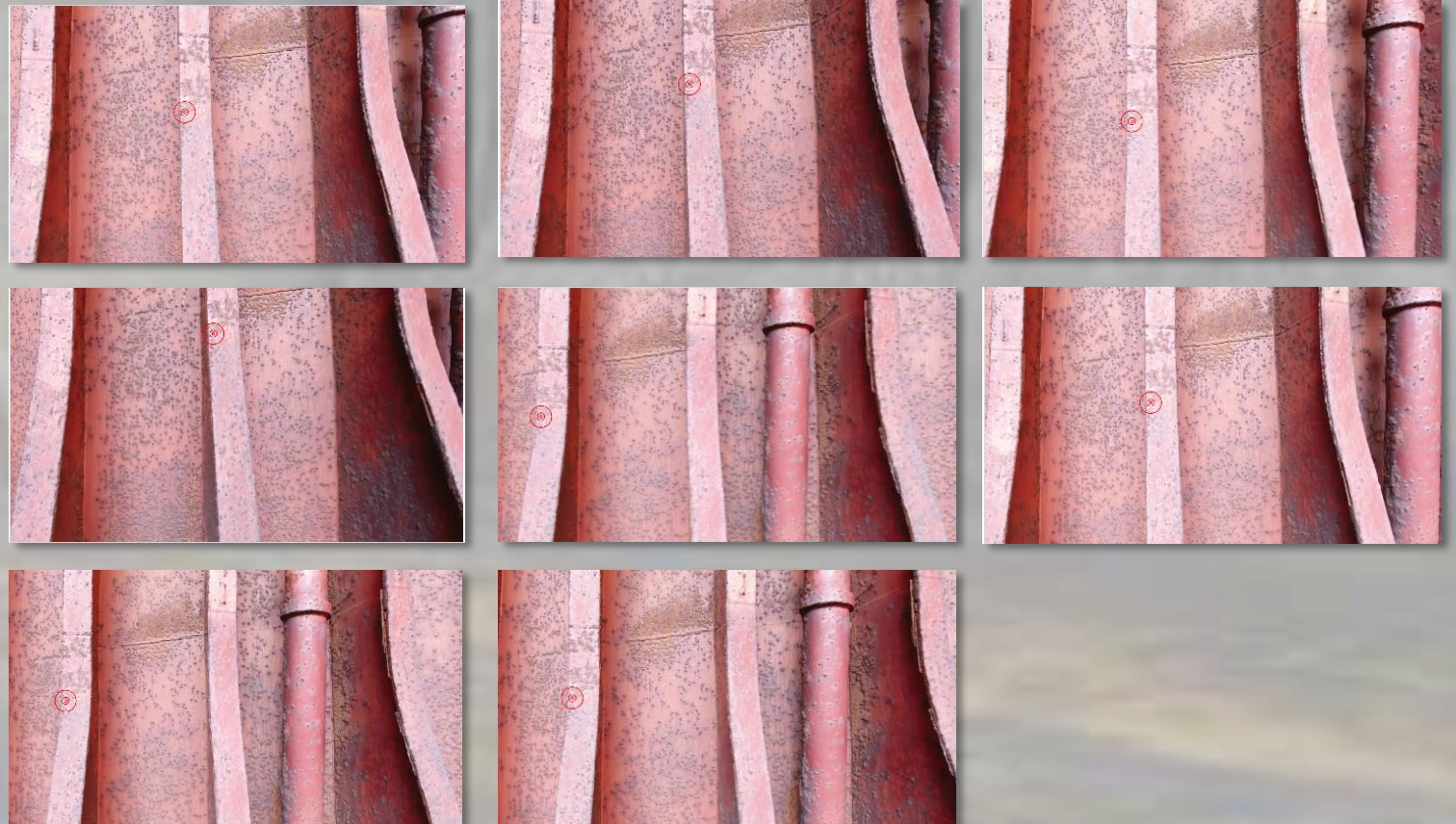
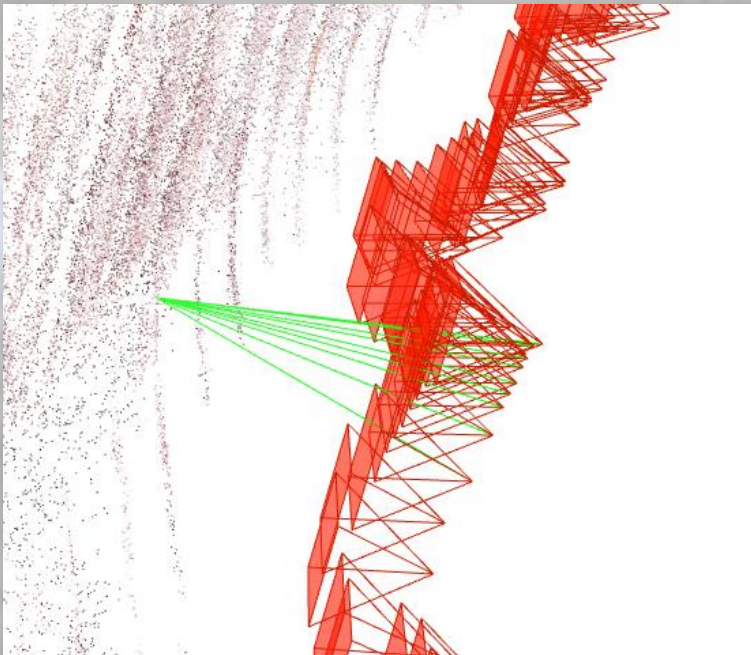
# What about the software tools?



# Some very early experiments (1)

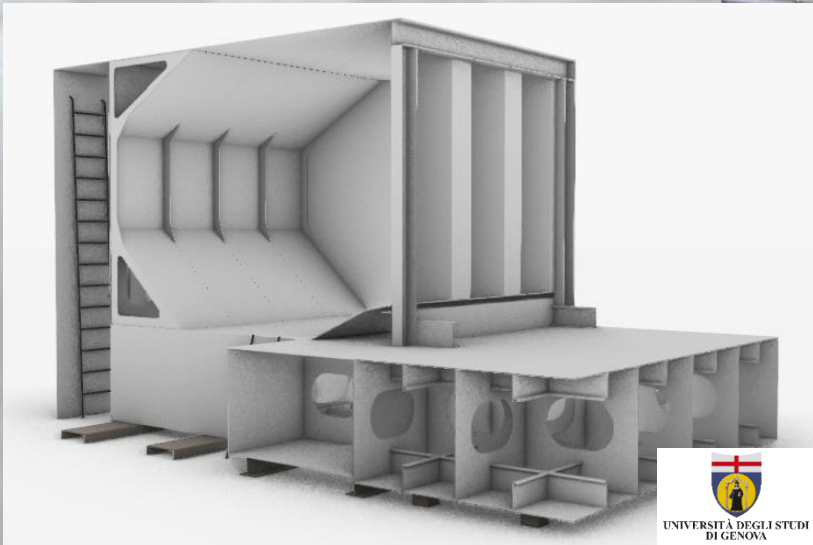


# Some very early experiments (2)


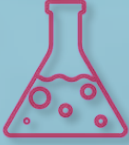
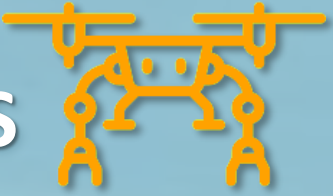



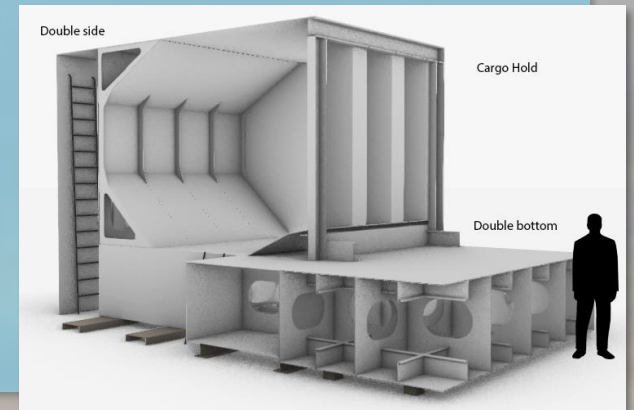
# What is the Testing Facility?

- A **test bed** expected to provide an **easy and economical** way for **assessing and developing RAS platforms**



# What is the TF useful for?

- Define **reference specifications** of testing protocols 
- Allow to test RAS in a **controlled environment** and to obtain **reproducible results** 
- **Streamline the development** of RAS 
- Basis for **standardized certification** 



# ...But are we allowed to use these techniques?

## • Rec. No. 42

- Used to facilitate the required external and internal examinations,
- Including close-up surveys and gauging.
- Results normally obtained for/by the Surveyor.
- The results [...] are to be acceptable to the attending Surveyor.
- Inspections should be carried out in the presence of the Surveyor.

No.42  
**No.42 Guidelines for Use of Remote Inspection Techniques for surveys**  
 (1996)  
 (Rev.1 May 2004)  
 (Rev.2 June 2016)

## • UR Z7 rev.26

- (1.2.3) Remote Inspection Techniques as an alternative to Close-up Survey.
- (1.2.15) [...] without the need for direct physical access of the surveyor / Inspector.

**Z7 Hull Classification Surveys**

(Rev.26 XXX 2017)

## • UR Z17 rev.13

- Service suppliers for remote Inspection techniques

Z17 Procedural Requirements for Service Suppliers

(Rev.13 Jan 2018)

# Benefits?

- **Improved safety**

- Working at height
- Inaccessible spaces
- Health threats
- Emergency situations

- **Economic benefit for:**

- Robot and ICT industry
- Asset owners and operators
- Service suppliers
- Class societies





**Thank you for your attention!**

**...Questions?**