



DexROV

DexROV: Dexterous ROV Interventions Supervised from an Onshore Control Center (2 years into the project)

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Jacobs University Bremen (Germany)

Idiap Research Institute (Switzerland)

Graal Tech (Italy)

EJR Quartz (Netherlands)

Objectives

1. Reducing the need for large **offshore** crews
=> ROV crew onshore instead

2. Increasing the capability to carry out complex dexterous interventions
=> tasks that only human divers can do so far
=> but doing so also in deep water!

3. Allowing with smaller ROV platforms to perform tasks usually requiring larger ROVs
=> smaller & cheaper support vessel



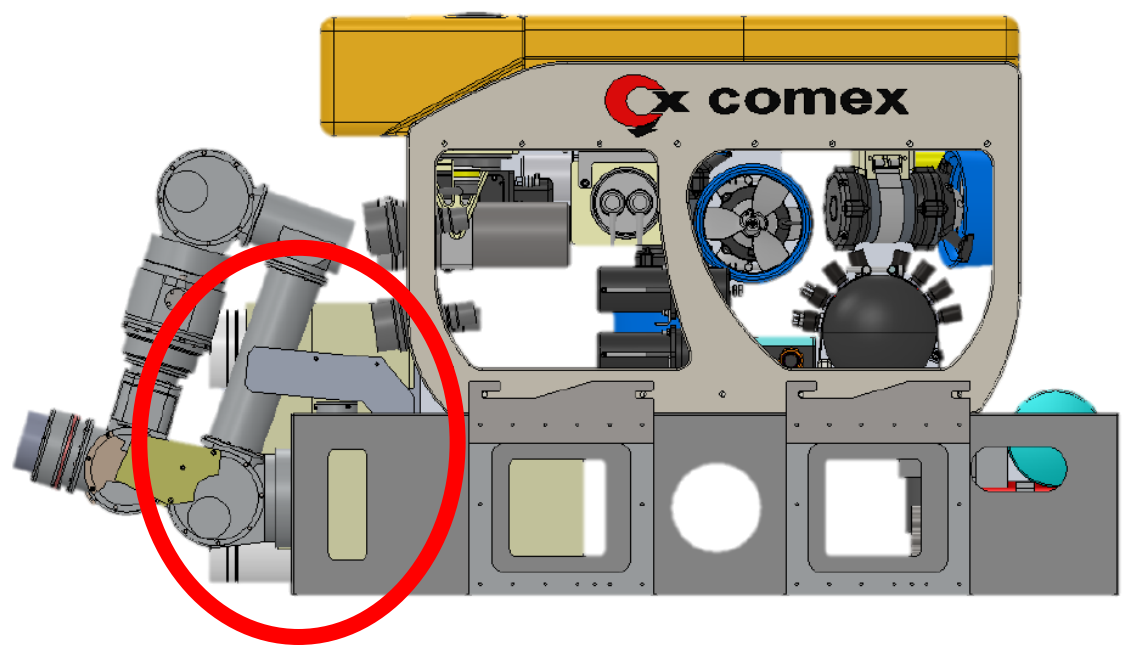
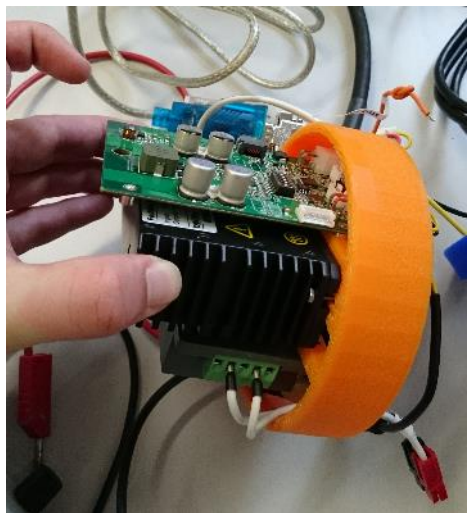
100-200
kEur/day

16
kEur/day



Main R&D topics – status after 2 years

Perception System (Univ. Jacobs Bremen)

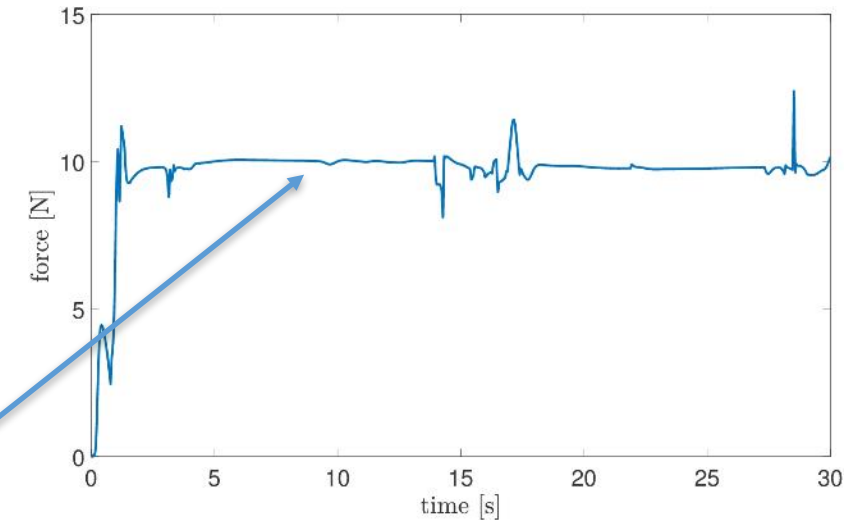


Current perception system prototype (for 2017 trials): vertical stereo bench with 2 cameras (7 kg each)

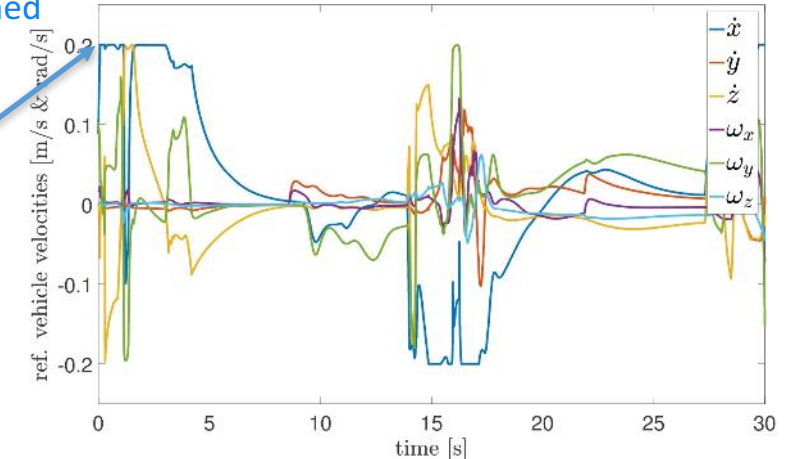
Main R&D topics – status after 2 years

ROV Control (ISME)

- Task priority framework, addressing navigation + manipulation
- Case study: pipeline inspection task
 - Requires the integration of a force regulation task in the hierarchy
 - Exploits the vehicle velocity tracking compensation
- Current simulation parameters
 - Hydrodynamics
 - Multi rate control
 - Gear reductions modelled
 - Arm torques saturation
 - ...



The force regulation is still accomplished



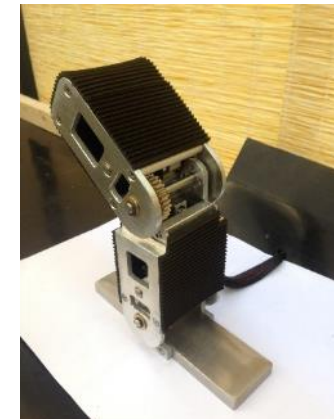
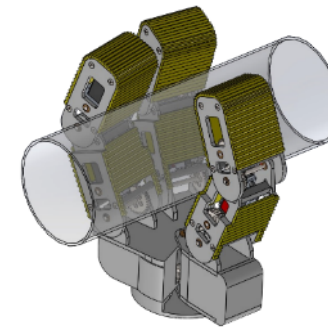
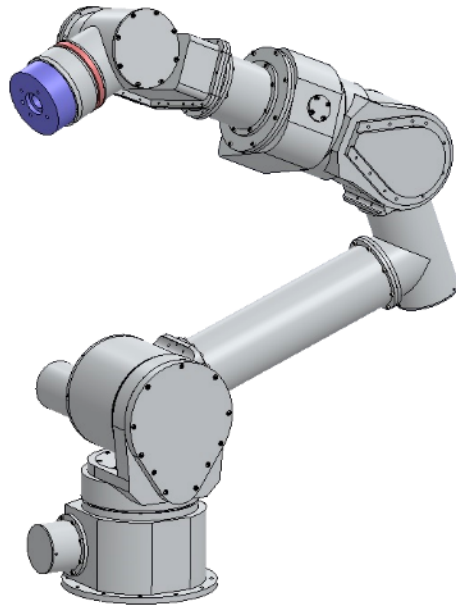
Vehicle velocity request is saturated



Main R&D topics – status after 2 years

Dexterous Manipulator (Graal Tech)

- All internal components available
- First joints assembled and under testing
- To be pressure-checked at 200msw by mid-June
- For 2017 trials, will be equipped with a fake (passive) end-effector

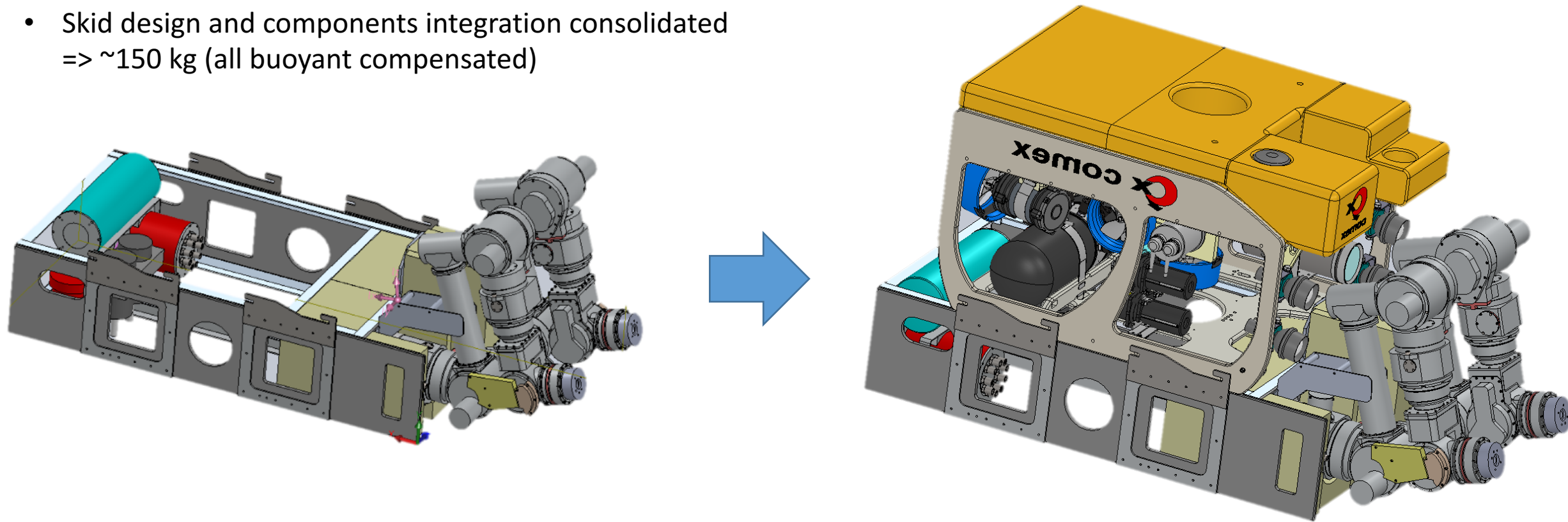


EMRA 2017, Girona, May 15th

Main R&D topics – status after 2 years

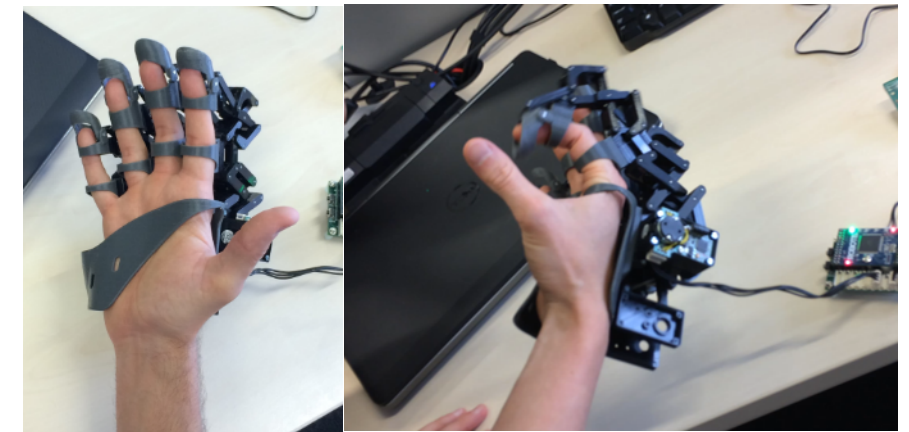
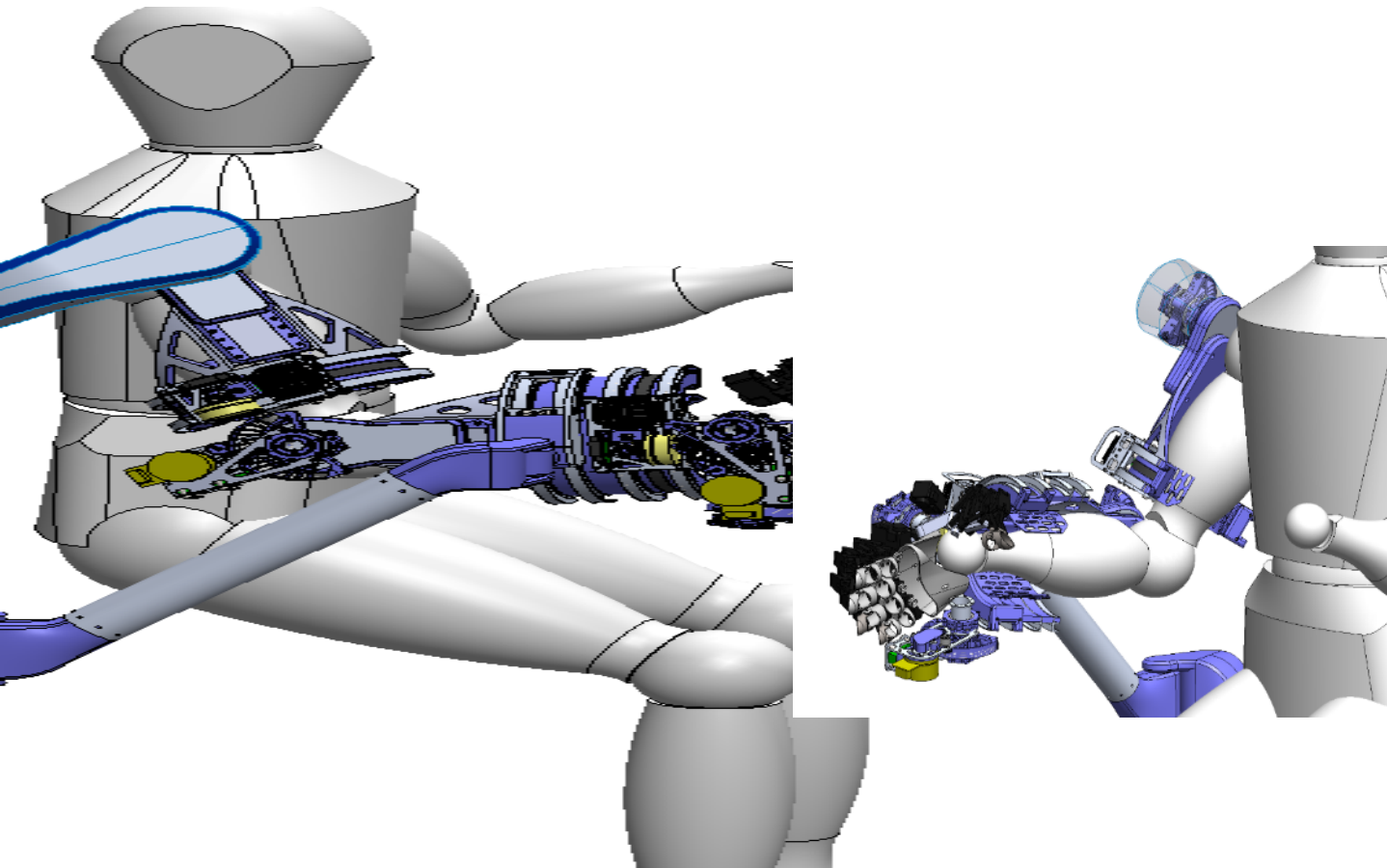
Skid (Graal Tech)

- Skid design and components integration consolidated
=> ~150 kg (all buoyant compensated)



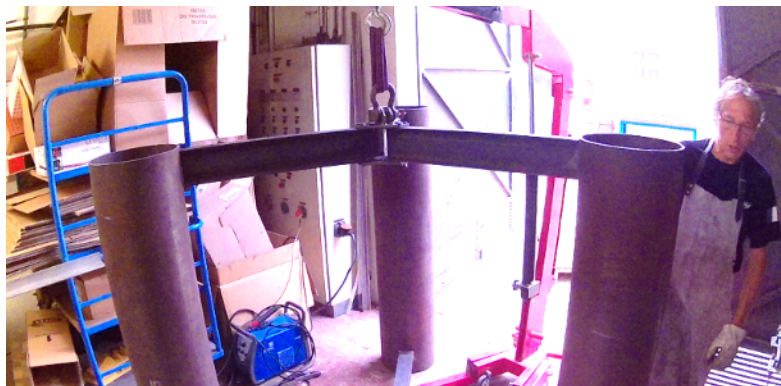
Main R&D topics – status after 2 years

Monitoring and Control Center (SPACEAPPS)

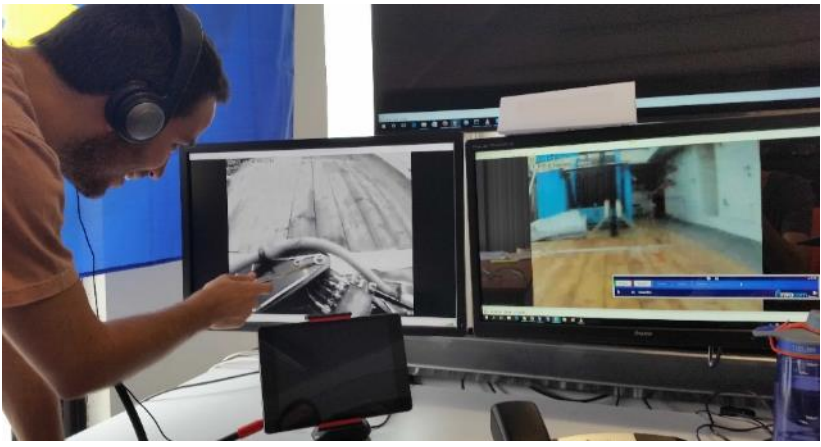


Main R&D topics – status after 2 years

Testbed for trials (COMEX)



June 2016 - 1st campaign (2nd one coming soon => June/July 2017)





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