Reaching autonomous control in vessel operation (Conditional Automation Level 3)
DANAOS and Research

✓ Fleet of 71 container ships
✓ Ranking among the top in the Greek shipping business.
✓ Strong invest in research and innovation
✓ Best-of-breed maritime software
✓ Participation in a number of EU projects (40+), funded under different EU research programs, with a strong motivation to apply innovation and creative thinking across all aspects of maritime operation.
✓ Member of FRANZ EDELMAN academy and winner of the homonymous award in 2012 (the highest worldwide distinction in applied operation Research).

Websites:
- https://danaosrc.com/
- https://www.danaosshipping.gr/
- https://www.danaos.gr/

Running Projects

From 1972 | Global Network | Big in Numbers 71 ships

71 ships Running Projects
### Autonomy Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Automation&lt;br&gt;Zero autonomy; the driver performs all driving tasks.</td>
</tr>
<tr>
<td>1</td>
<td>Driver Assistance&lt;br&gt;Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design</td>
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<tr>
<td>2</td>
<td>Partial Automation&lt;br&gt;Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.</td>
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<tr>
<td>3</td>
<td>Conditional Automation&lt;br&gt;Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.</td>
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<tr>
<td>4</td>
<td>High Automation&lt;br&gt;The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.</td>
</tr>
<tr>
<td>5</td>
<td>Full Automation&lt;br&gt;The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.</td>
</tr>
</tbody>
</table>
Forward the Autonomy
Cognitive DT Framework
Vessel “Self-Control”: Voyage Optimization “at the edge”
Network Autonomy
Cloud e-Navigation

 ✓ Data Sharing Models
 ✓ Move Global traffic control to Shore
 ✓ Enhance global navigational awareness and safety
 ✓ Just-in-Time Arrival
Robotic container-handling system for feeder vessel

The MOSES robotic container-handling system designed as fully self-supporting system will be capable of safely loading and unloading containers on and from the quay side by side and will be fitted on the MOSES innovative feeder vessel.

MOSES AutoDock

The MOSES AutoDock will constitute a mega-system consisting of autonomous tugboats that operate as a fully autonomous swarm and collaborate with automated docking infrastructure in order to automate the process of maneuvering, docking and mooring a large containership in a DSS port.

This project has received funding from the European Union’s horizon 2020 research and innovation programme under grant agreement No. 861678.
✓ Regulation, liability, claims

✓ Standardization in data sharing and communication protocols

✓ Interoperability and integration between autonomous and non-autonomous components

✓ Human Machine Interface

✓ Technology Maturity

✓ Cybersecurity

✓ Enforcement of new skills and competences in shipping