



Organisation for Economic Co-operation and Development

AGENDA

For Official Use

English - Or. English

OECD Workshop on Digital Technologies in the Ocean Economy: Exploring the Future

Organised in collaboration with the Flemish Blue Cluster and Flanders Marine Institute

Brussels, 20-21 November 2019

The objective of this OECD foresight workshop is to explore the likely development of digital technologies in the ocean economy over the next decade or so, and the potential scope for their application across a range of operational uses. The workshop is jointly organised by the OECD STI Ocean Economy Group, the Flemish Blue Cluster and the Flanders Marine Institute. The workshop is kindly financially supported by the Department of Economy, Science and Innovation of the Flemish Government (EWI).

Organised in connection with the 2019 Global Sustainable Technology and Innovation Conference (G-STIC), the workshop's first two sessions on 20th November will assemble around 50 invited experts from industry, ministries, and research centres (speakers and participants). The third session will take place on the morning of 21st November and form an integral part of the G-STIC Ocean Day, in a plenary setting, with more participants.

Contact: Chrystyna Harpluk, Project Co-ordinator, STI Ocean Economy Group, OECD Directorate for Science, Technology and Innovation (STI) (Chrystyna.Harpluk@oecd.org).

OECD Workshop on Digital Technologies in the Ocean Economy: Exploring the Future

*Organised in collaboration with the Flemish Blue Cluster
and Flanders Marine Institute*

The crucial role of science, technology and innovation in determining the future sustainability of the ocean has been a keystone of OECD's work in recent years.

The OECD reports on "*The Ocean Economy in 2030*" (2016) and "*Rethinking Innovation for a Sustainable Ocean Economy*" (2019) highlighted the need both to address the many environmental challenges our ocean and seas face, and to continue to develop ocean-related industries, albeit in sustainable fashion. Innovations in areas such as advanced materials, sub-sea engineering, acoustics and imagery, bio- and nanotechnology, and computerisation and communications, will all have their part to play.

Specifically in digital technology, innovations have been gaining ground quickly in almost all sectors of the wider economy. Artificial Intelligence (AI), cloud computing, automation, robotics, 3-D printing, the Internet of Things (IoT), high-performance sensors, all have been spreading rapidly as they have been increasingly adopted by and integrated into a multitude of applications old and new. However, in many areas of the ocean economy their uptake has been markedly slower. Where they have been deployed, they have aroused considerable interest. Examples that come to mind are additive manufacturing of spare parts in shipping, automated fish processing, autonomous offshore rigs, digital twinning in shipbuilding, AI in large-scale aquaculture and in offshore renewables, as well as new sensor and imaging technologies in ocean research. There are signs therefore that the pace of digital innovation in the ocean is about to accelerate. Taking a long-term view, the widening use of such technologies holds out the potential to reshape the structure, performance, efficiency and location of many ocean activities, create new ones, and – importantly - contribute to improved ocean sustainability.

The objective of this OECD foresight workshop is to explore the likely development of digital technologies in the ocean economy over the next decade or so, and the potential scope for their application across a range of operational uses.

Organised in connection with the 2019 Global Sustainable Technology and Innovation Conference (G-STIC), the workshop's first two sessions on 20th November will assemble around 50 invited experts from industry, ministries, and research centres (speakers and participants). The third session will take place on the morning of 21st November and form an integral part of the G-STIC Ocean Day, in a plenary setting, with more participants.

20 November 2019, Day 1

9.30

Welcome, Opening Remarks, and Introduction to the Workshop

Johan Hanssens, Secretary General, Flemish Department of Economy, Science & Innovation

Caroline Ven, CEO Blauwe Cluster

Jan Mees, Director Vlaams Instituut voor de Zee (VLIZ), the Flanders Marine Institute

Claire Jolly, Head of Unit, STI Ocean Economy Group, OECD Directorate for Science, Technology and Innovation (STI)

10.00**Session 1: Digital technologies for ocean-related data collection, analysis and transmission – what is in the pipeline?**

The aim of this first session is to review what progress might be expected in the next 10 years or so in the collection, analysis and transmission of ocean data through improvements in intelligent sensor systems, subsea imagery (optical, laser, acoustics), and subsea communications. Invited speakers will present their assessment of future developments in their respective field of expertise, before the floor is opened for general discussion.

Moderator: Barrie Stevens, Senior Advisor, OECD

Eric Delory, PLOCAN, Spain: *Innovative ocean sensor technologies*

Matt Mowlem, NOC, UK: *Future developments in marine micro-sensors and their potential fields of application*

Fiona Regan, Dublin City University, Ireland: *Progress in optical sensor and lab-on-chip technology: the next decade*

Peer Fietzek, Kongsberg Maritime, Germany: *Active acoustic and dissolved gas sensors for enhanced aquatic and ecosystem understanding*

Adrian Boyle, CathX Ocean, Ireland: *Intelligent imaging and measurement systems – the way ahead*

12.00: Lunch Break

13.15

Session 1 –continued

Moderator: Barrie Stevens, Senior Advisor, OECD

Chiara Petrioli, W-Sense, Italy: *Future developments in wireless subsea communications*

Laurent Delaunay, Ifremer, France: *Mapping the future development of integrated coastal observation for Europe*

14.00

Session 2: Technological innovation in platforms carrying instruments for ocean data collection and analysis: what's on the horizon?

The aim of this second session is to explore likely developments over the coming years in a range of different infrastructure or platforms designed to deliver ocean-related data, be it for example on the characteristics and condition of marine ecosystems or the performance and immediate environment of offshore assets. Invited speakers will lead off with presentations on three areas: fixed platforms such as subsea cables and observatories; simulation platforms such as those employed in digital twinning; and mobile platforms, such as AUVs, ROVs, surface gliders, drones, and vessels of opportunity.

Moderator: Claire Jolly, OECD

Fixed platforms:

Hiroshi Ota, ITU, Switzerland: *Integrating sensors into future undersea telecom cables*

Thomas van Hoestenbergh, Fluves, Belgium: *Outlook for fibre optic sensing cables and wireless sensor platforms*

Alan Berry, Irish Marine Institute, Ireland: *The SmartBay subsea cabled observatory*

Jacopo Aguzzi, Instituto de Ciencias del Mar, Spain: *The Development of New High-Tech Flexible Networks for the Monitoring of Deep-Sea Ecosystems*

15.30: Coffee Break

Simulation platforms:

Øyvind Smogeli, DNV GL, Norway: *Digital twinning in the ocean economy: prospects and challenges*

Mobile platforms:

Asgeir Sorensen, NTNU AMOS, Norway: *Next generation autonomous marine operations*

Wieter Boone, Marine Robotics Centre, Flanders Marine Institute (VLIZ): *Forward-look at technological innovation in platforms*

Daniel Alcaraz, PLOCAN, Spain: *Prospects for glider technology*

Roberto Cimino, National Italian Cluster on Blue Growth (CTN-BIG): *Offshore platform reuse-multiuse*

17.30

Wrap-up of Day 1

18.00 Networking event

21st November, Day 2

9.00

Welcome, brief summary of proceedings from Day 1 and preview of the morning's proceedings

Dr. Marijn Rabaut, International Marine Policy Manager MSP expert, Blue Cluster - De Blauwe Cluster VZW

Claire Jolly, Head of Unit, STI Ocean Economy Group, OECD Directorate for Science, Technology and Innovation (STI)

9.30

Session 3: Linking future progress in digital ocean technologies to operational activities in the marine and maritime economy

Session 3 is a joint plenary session with OECD, the Flemish Blue Cluster and the Flanders Marine Institute. Its purpose is to examine the scope created by advances in digital ocean technologies for market-ready integrated technological solutions for improving the sustainability of ocean resources and their use. Keynote speakers will elaborate on how these solutions can help deliver on relevant SDGs. To this end, the Flemish Blue Cluster has pre-selected five areas for investigation: clean shipping; improvement of coastal defence through ecosystem restoration; desalination; smart seas; and maritime spatial planning (MSP). Invited speakers in each of the five areas will present their findings and recommendations. Panel and audience members will offer their views and opinions during the subsequent panel discussion.

Moderators: Blue Cluster

Coastal protection, nature based solutions – Todd Bridges, USACE Engineering with Nature initiative

Clean shipping, alternative fuels – Manasés Tello Ruiz, Ghent University

Desalination, challenges within an ocean context – Svetlozar Velizarov, NOVA University Lisbon

Marine Spatial Planning – Ivana Lukic, s.Pro sustainable-projects GmbH

Smart seas - data platforms and data collection in a maritime context – Eric Delory, PLOCAN

10.30-10.50 – coffee break

10.50-12.00 – Panel discussion with interaction from the public (poll – Slido style) – Patrick Meire (University of Antwerp), Marjolein Vanoppen (Ghent University), Ivana Lukic (s.Pro sustainable-projects GmbH), Dario Bazargan (SEA Europe), and Claire Jolly (OECD)

12.00 – 12.30 Blue technologies to combat climate change in the Ocean Decade – keynote Julian Barbrière, Regional Coordination Section at the Intergovernmental Oceanographic Commission of UNESCO

12.30: End of Session 3 and end of the workshop