
SINTEF
Workshop on test strategies and guidelines for tests of autonomous ships, 12.11.19
INAS
International Network for Autonomous Ships

Welcome to SINTEF

- SINTEF Ocean
- The purpose of the workshop
- The discussions afterwards
- Next steps

Safety first

SINTEF

One of Europe’s largest independent research organisations

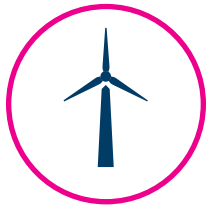
NOK 3.3 billion
Revenues

NOK 410 MILL
International sales

SINTEF

Applied research, technology and innovation

Expertise from ocean space to outer space:



Renewable energy

Ocean space

Industry

Buildings and infrastructure

Materials

Micro-, nano- and biotechnology

Climate and environment

Oil and gas

Health and welfare

Society

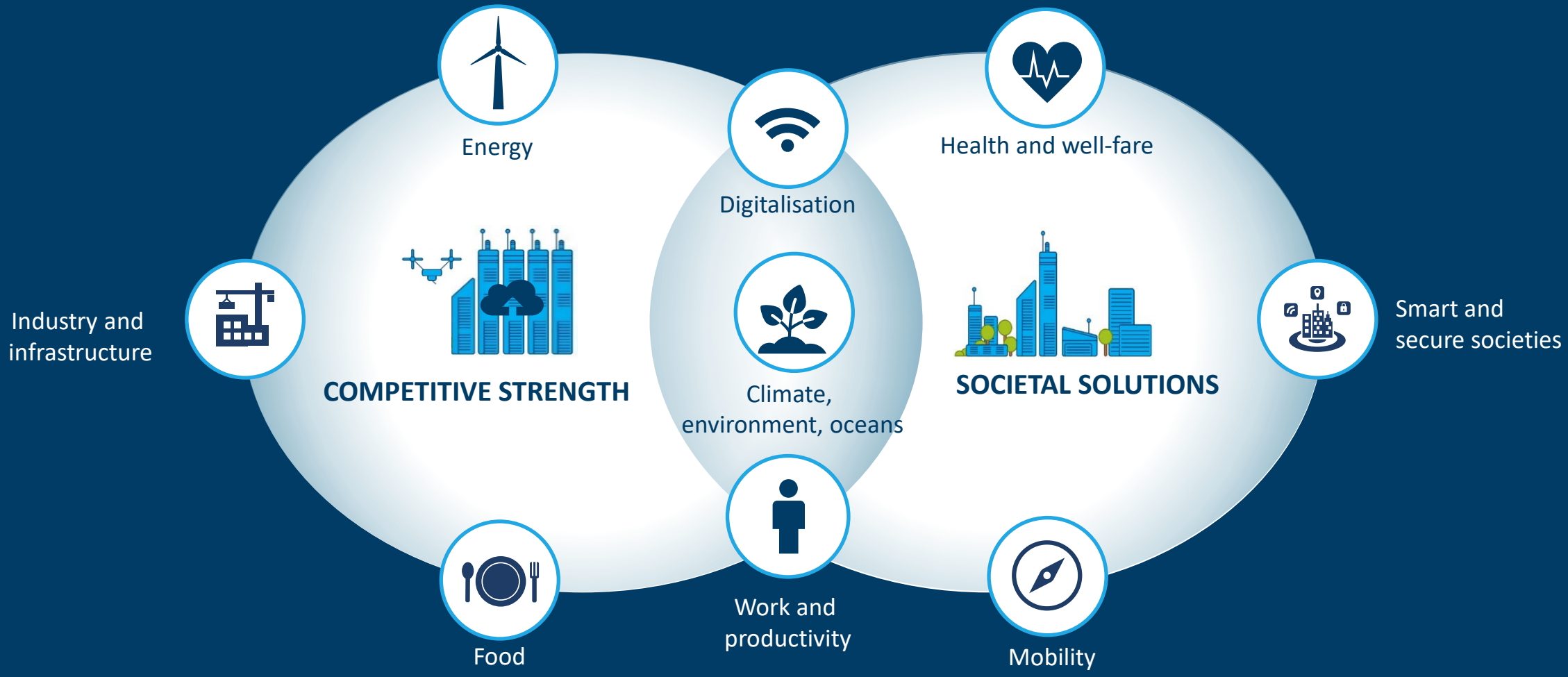
Digitalization

Transport

SINTEF

Vision: Technology for a better society

Expertise from ocean space to outer space



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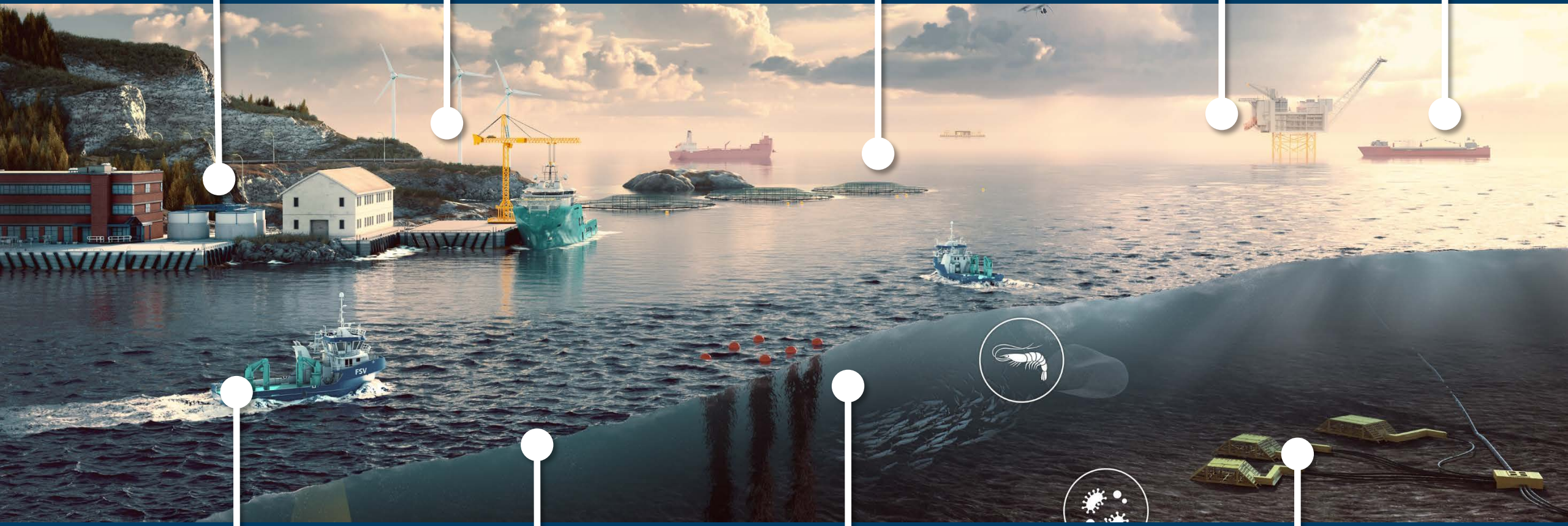
Processing industry

Offshore wind

Aquaculture

Oil and gas

Maritime



Fisheries

Environmental technology

New marine resources

Subsea

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SINTEF Ocean : Integrated Autonomous Transport Systems

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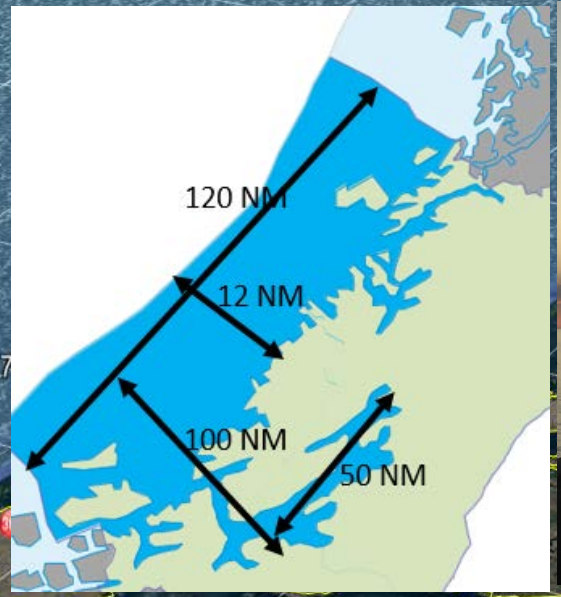

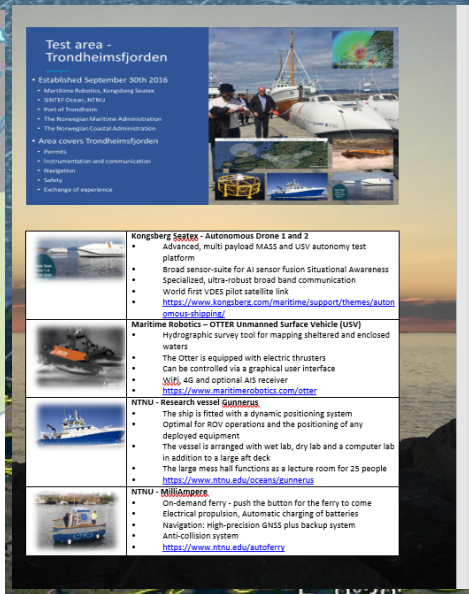

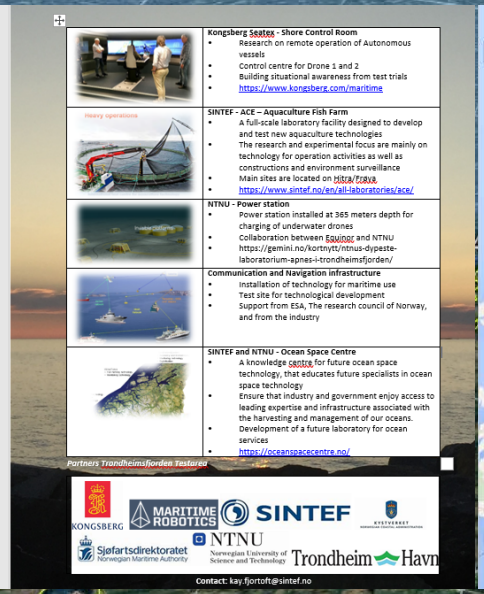

Test area - Trondheimsfjorden

- Established September 30th 2016
  - Industry, university, research
  - Port of Trondheim
  - Norwegian Maritime Administration
  - Norwegian Coastal Administration
- Area covers Trondheimsfjorden
  - Permits
  - Instrumentation and communication
  - Navigation
  - Safety
  - Exchange of experience

The **mission** of Test Area Trondheimsfjorden

1. Foster knowledge building
2. Stimulate technology development
3. Drive innovation
4. Develop rules and regulations
5. Test and verify concepts and solutions

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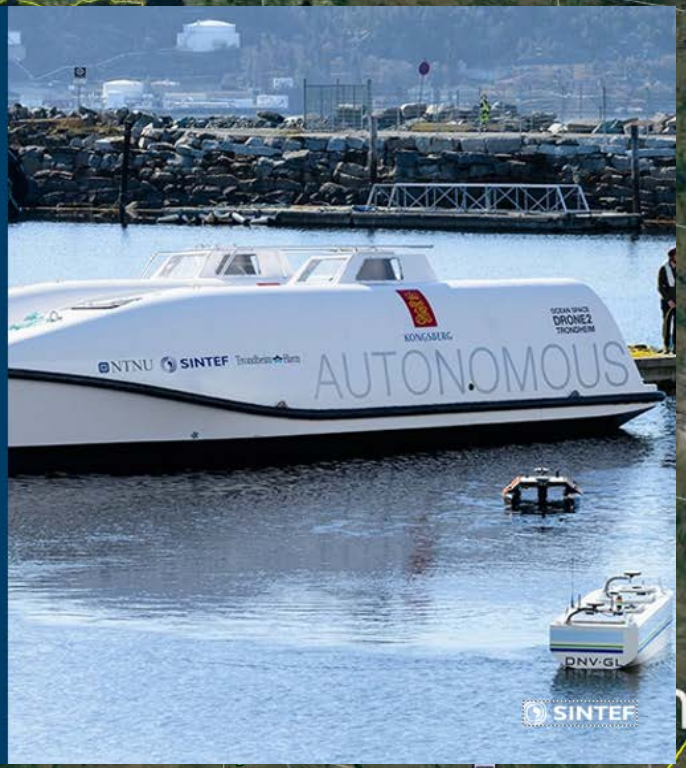


Workshop on test strategies and guidelines for tests of autonomous ships

Trondheim November 12th.

Location: SINTEF Ocean, Otto Nielsensvei 10, Meeting room Havrommet.

Time: 12:30 to 17:30.

In conjunction with ICMASS 2019 we are pleased to invite you to a workshop on tests of autonomous ships and the test strategies applied by the different test areas internationally. IMO MSC 101 approved MSC.1/Circ.1604 on "INTERIM GUIDELINES FOR MASS TRIALS" which is relatively high level, and an obvious question is if more detailed guidelines are needed!

The purpose of the workshop is to exchange information about local or national initiatives and see if there is a need or wish to develop more general "standards" for MASS tests and trials. We invite all receivers of this mail to respond with suggestions for brief presentations on their approaches and to provide some background for the discussions in the workshop. We cannot guarantee you will be invited to present because of time limitation. The main purpose with the event will be to have a workshop. The questions that should be addressed are:

1. Brief overview of scope of any test or trial guidelines.
2. Status and from where it can be downloaded, if it is available.
3. The need or wish for international "standards", for all or some parts of the guidelines.

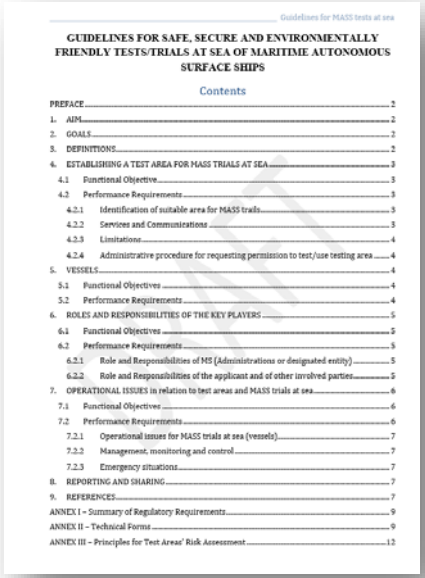
The scope defined by the IMO Circular include different issues:

- Risk management
- Compliance with mandatory instruments
- Manning and qualification of personnel involved in trials
- Human element
- Infrastructure for safe conduct of trials
- Trial awareness (of third parties)
- Communication and data exchange for trial
- Reporting requirements and information sharing
- Scope and objective for trial
- Cyber risk management

Are there elements missing and where are the needs, if any, for more detailed specifications?

If we see a need for more detailed and common specifications, how should that be developed?

- *Published regulations and guidelines*
- *Perspective session*
- *Discussions*



Guidelines for MASS tests at sea

GUIDELINES FOR SAFE, SECURE AND ENVIRONMENTALLY FRIENDLY TESTS/TRIALS AT SEA OF MARITIME AUTONOMOUS SURFACE SHIPS

Contents

Time	Presentation	Presenter
12.30-13.00	Pre-registration to the ICMASS/MTEC	
13.00-13.15	Coffee break	
13.15-13.25	Welcome to SINTEF Ocean	Kay Fjørtoft, SINTEF Ocean
13.25-13.35	INAS and the importance of a test area	Ørnulf Rødseth, NFAS/INAS
13.35-13.50	IMO MSC 101 approved MSC.1/Circ.1604 on "INTERIM GUIDELINES FOR MASS TRIALS"	Svein David Medhaug, The Norwegian Maritime Directorate
13.50-14.05	Guidelines for Autonomous Shipping – NI 641 Revision 01 – OCTOBER 2019	Jerome Faivre, Bureauveritas
14.05-14.20	Approval of situational awareness, decision support for autonomous navigation	Andreas Bradsæter, DNV GL
14.20-14.35	Voluntary Industry Code of Practice from UK	James Fanshawe, UK Marine Alliance
14.35-14.50	EU and the guidelines on safe MASS	Trond Langemyr, The Norwegian Coastal Administration
14.50-15.10	Discussion	
15.10-15.30	Coffee break	
15.30-15.40	Work from IALA	Geir Jegstad, Consultant
15.40-15.50	Perspectives from Flanders	TBD
15.50-16.00	Perspectives from Denmark	Erik I. Tvedt, Danish Maritime Authority
16.00-16.10	Perspectives from Finland	Jukka Merenluoto, Dimecc
16.10-16.20	Perspectives from Norway	Paal Aamaas, University of South Eastern Norway
16.20-16.30	Perspectives from USA	Glenn Wright, GMATEK
16.30-16.40	Perspectives from Hungary	Roberto Gonzalez
16.40-17.00	Discussion	
17.00-17.15	Summary	Svein David, Ørnulf
17.30	End	

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Teknologi for et bedre samfunn