

## Technology development

- Innovation through systematic and interdisciplinary approach

Dr. Torstein Hærberg  
Executive President,  
SINTEF Materials and Chemistry

## Content

- SINTEF in brief – our role in society
- SINTEF's strategy on oil spill response technology development
- Some perspectives on innovation



***SINTEF's vision***  
***Technology for a better society***

+ 2200 employees  
1600 in Trondheim  
500 in Oslo

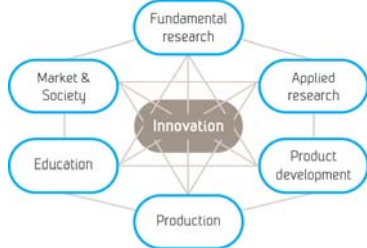
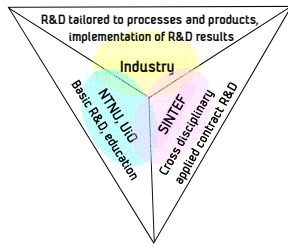
Employees from 67 countries all over the world


 **SINTEF** Technology for a better society 3

## SINTEF

*- Technology for a better society*

- **Our goal**  
SINTEF aims to become the most acknowledged Research and Technology Organisation in Europe.
- **Our Focus areas**  
Customers, Science, People
- **Our role**  
We create value through **research and innovation**, and offer concrete solutions for sustainable development

 **SINTEF** Technology for a better society 4

## SINTEF in the World

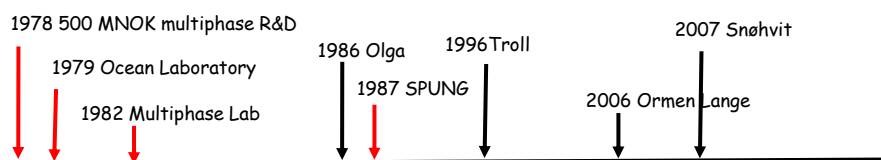


Red dots: Countries where invoices from SINTEF were sent in 2009

## The oil and gas adventure:

We chose to invest in knowledge.

- Energy production (3000 TWh/year).
- Value creation 7000 BNOK



## Content

- SINTEF in brief – our role in society
- [SINTEF's strategy on oil spill response technology development](#)
- Some perspectives on innovation

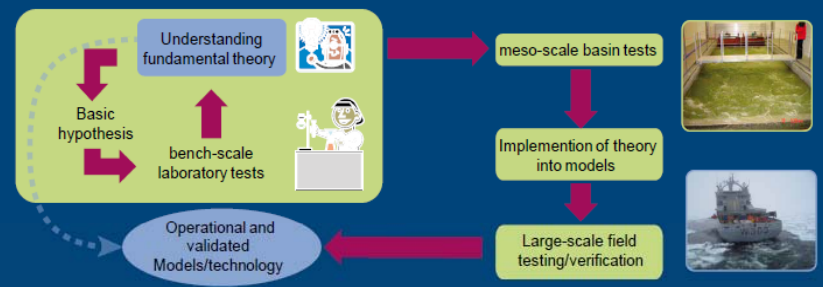
## SINTEF's strategy on oil spill response technology development

- Applying the scientific method...

# Oil Spill Response

From basic theory to applied technology

SINTEF marine Environmental Technology Approach

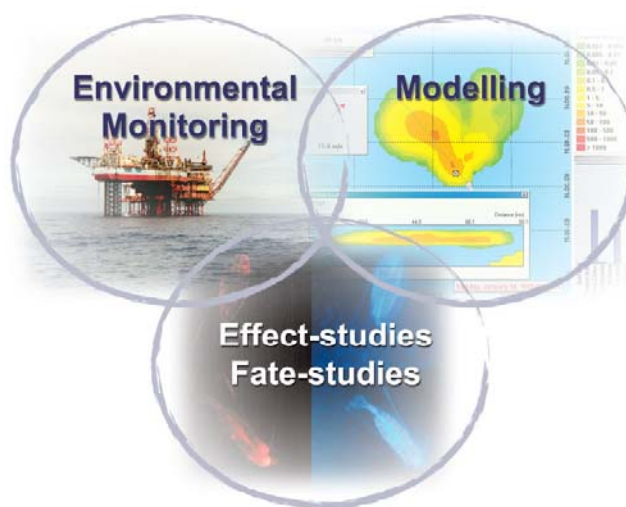


© Research Director Tore Aunaas



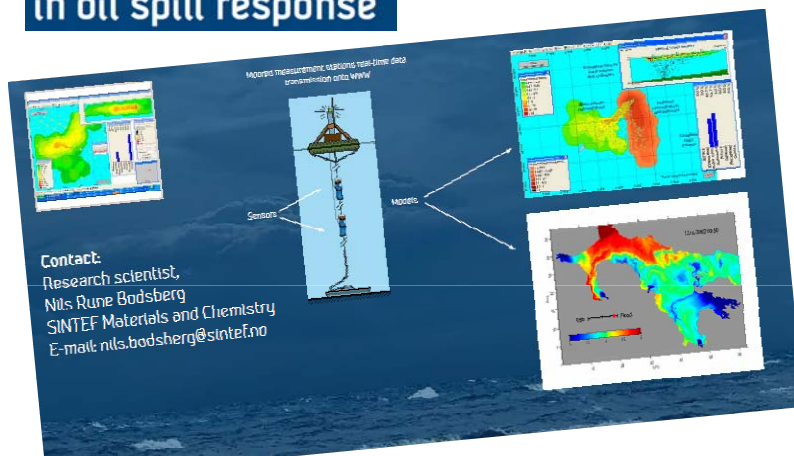
Please visit the Poster Session this afternoon!

## Interaction between modelling, monitoring and effect-studies



A portfolio of ideas, tools and technologies...

## Sensors and models in oil spill response



A portfolio of ideas, tools and technologies...

## Subsea application of dispersants

- After cutting the riser, the dispersant was injected into the oil-gas plume (see fig 2).

**Objective**  
Establish a JIP to assess the effectiveness of deep water application of chemical dispersants, primarily by using the injection techniques, conditions and oil type of the Deep Water Horizon (DWH) incident.

- JIP: Phase 1: 2011 - 2012: Laboratory / Basin experiments:
  - Meso-scale test tank / tower in SINTEF Oil Spill Basin Laboratories (6 m high, 3 m diam. 40 m<sup>3</sup> sea water)
  - Instrumentation for monitoring: oil droplet size distribution, concentrations (LISST 100X, Particle

A portfolio of ideas, tools and technologies...

## Surveillance of the Arctic Ocean

SINTEF believes that the development of an integrated surveillance system will contribute to:

A safe and sustainable exploitation of the resources in the Arctic Ocean.



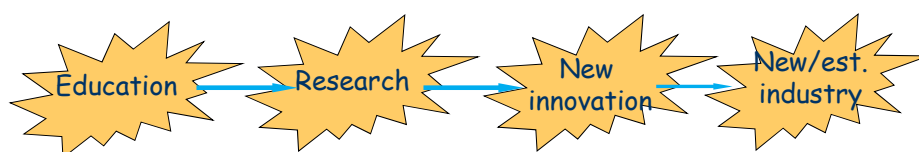
A portfolio of ideas, tools and technologies...

- This was just some snapshots from the [Poster Session this afternoon](#)  
– **Don't miss it!**
- *Resources are limited – creativity is unlimited!*

## Content

- SINTEF in brief – our role in society
- SINTEF's strategy on oil spill response technology development
- [Some perspectives on innovation](#)

## Value creation and the innovation chain

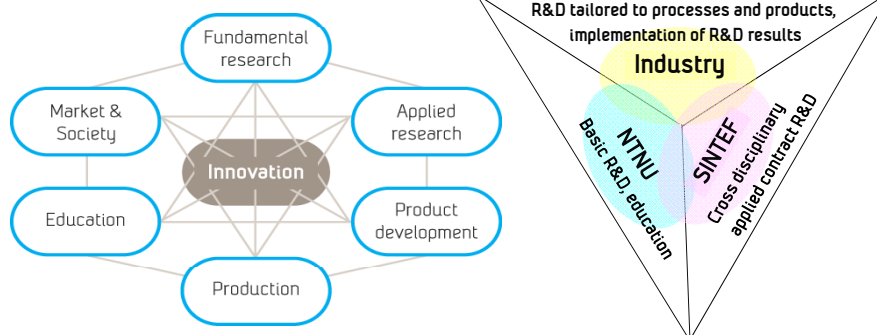


**The chain is as strong as the weakest link**

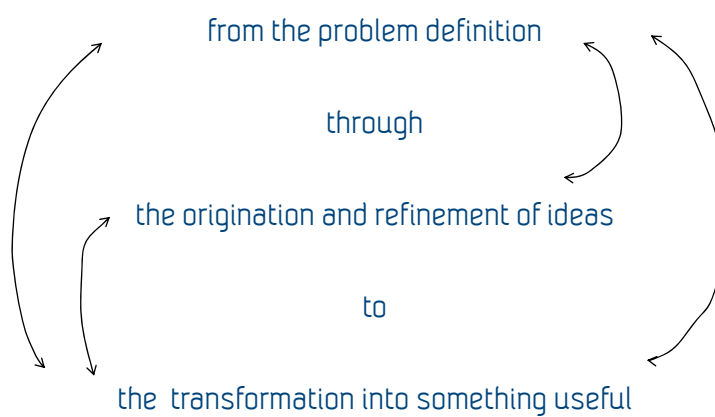
However, innovation processes are hardly ever linear...



## Innovation and interaction



## The innovation process



## Difference between traditional innovation and open innovation

Open innovation needs a different mindset and company culture than traditional or closed innovation.



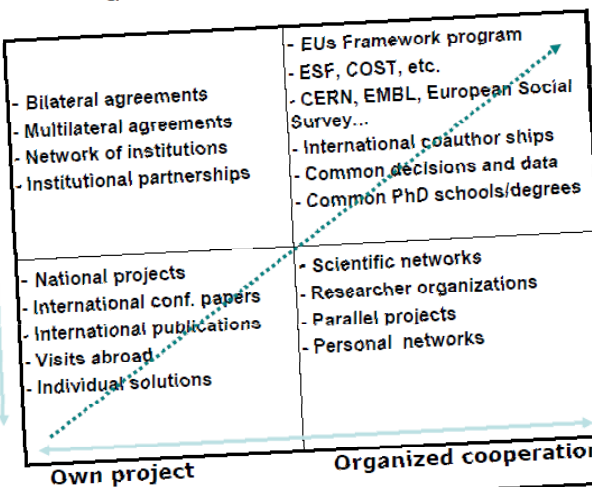
Closed innovation Principles	Open innovation Principles
The smart people in our field work for us.	Not all the smart people work for us. We need to work with smart people inside and outside our company.
To profit from research and development (R&D), we must discover it, develop it and ship it ourselves.	External R&D can create significant value; internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to market first.	We don't have to originate the research to profit from it.
The company that gets an innovation to market first will win.	Building a better business model is better than getting to market first.
If we create the most and the best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.
We should control our innovation process, so that our competitors don't profit from our ideas.	We should profit from others' use of our innovation process, and we should buy others' intellectual property (IP) whenever it advances our own business model.



Technology for a better society

## The arenas for international cooperation are changing

Institution  
 Collaboration  
 Coordination  
 Person



Technology for a better society

## Increasing integration and interaction - WHY?

- The great societal challenges demands high ambitions, determined action, strong interaction between institutions and different types of institutions.
  - ✓ More, not less interaction between people, institutions, nations.
- ✓ E.g EU's Strategic Energy Technology Plan:

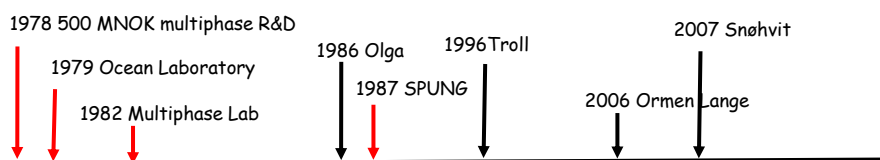


- 20/20/20 in 2020:
  - ✓ 20 % renewables,
  - ✓ 20 % energy efficiency,
  - ✓ 20 % reduced GHG
- 80 % reduced GHG emissions in 2050!

## The oil and gas adventure:

We chose to invest in knowledge.

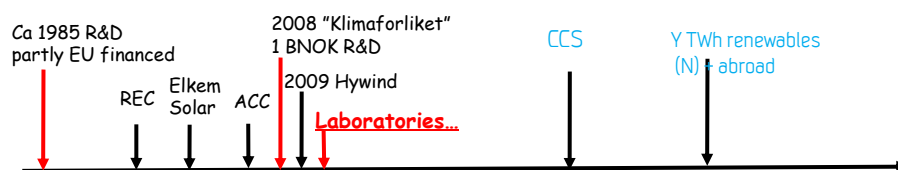
- Energy production (3000 TWh/year).
- Value creation 7000 BNOK



## Sustainable energy: The new industrial adventure

*"In no area will innovation be more important than in the development of new technologies to produce, use, and save energy."*

from President Obama's address to the National Academy of Sciences' Annual Meeting, April 27, 2009



## What about Oil Spill Response Technology?

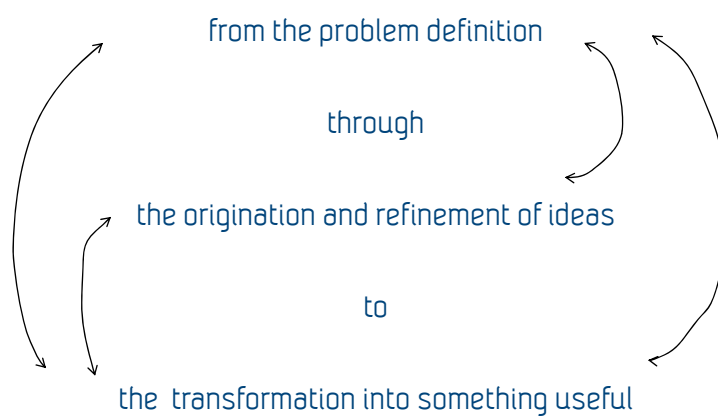




*Accidents will happen* – Elvis Costello (1979)

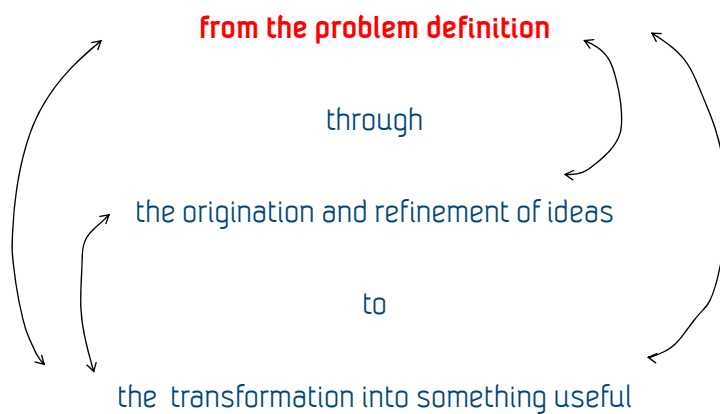
two years after Bravo

## The innovation process



## The innovation process

*"Big accidents will not happen in the future"*



Accidents will happen  
- are we prepared?



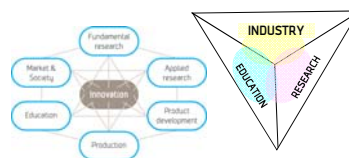
## Accidents will happen – are we prepared?



A normal working day on the continental shelf of Norway

## Concluding remarks

- ✓ Accidents will happen - are we prepared?
- ✓ The great societal challenges demands high ambitions, determined action, strong interaction between institutions and different types of institutions.
  - ✓ *More, not less interaction between people, institutions, nations.*
- ✓ What is the natural role to take for Public Authorities in order to boost innovation?
- ✓ *If Necessity is the Mother of Innovation, then what is stopping us?*
  - ✓ *A "SET Plan" for oil spill response!?*



Thank you for the attention

