

# Økonomiske implikasjoner av digitalisering i havbruk

Tekna lunsjmøte «Big data og digitalisering i havbruksbransjen»  
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# Economic implications

- Volume will increase
  - *Lower environmental impact = increased sustainable capacity*
- Prices will drop
  - *Higher volumes = lower prices*
  - *More spread in prices vs reference price, branding*
- Cost will drop
  - *New service providers will gain*
  - *Existing service producers may gain or lose*
- Value creation will increase
  - *Farmers will grab some of the value increase*
  - *Consumers will also grab a large part as entry barriers and prices drop*

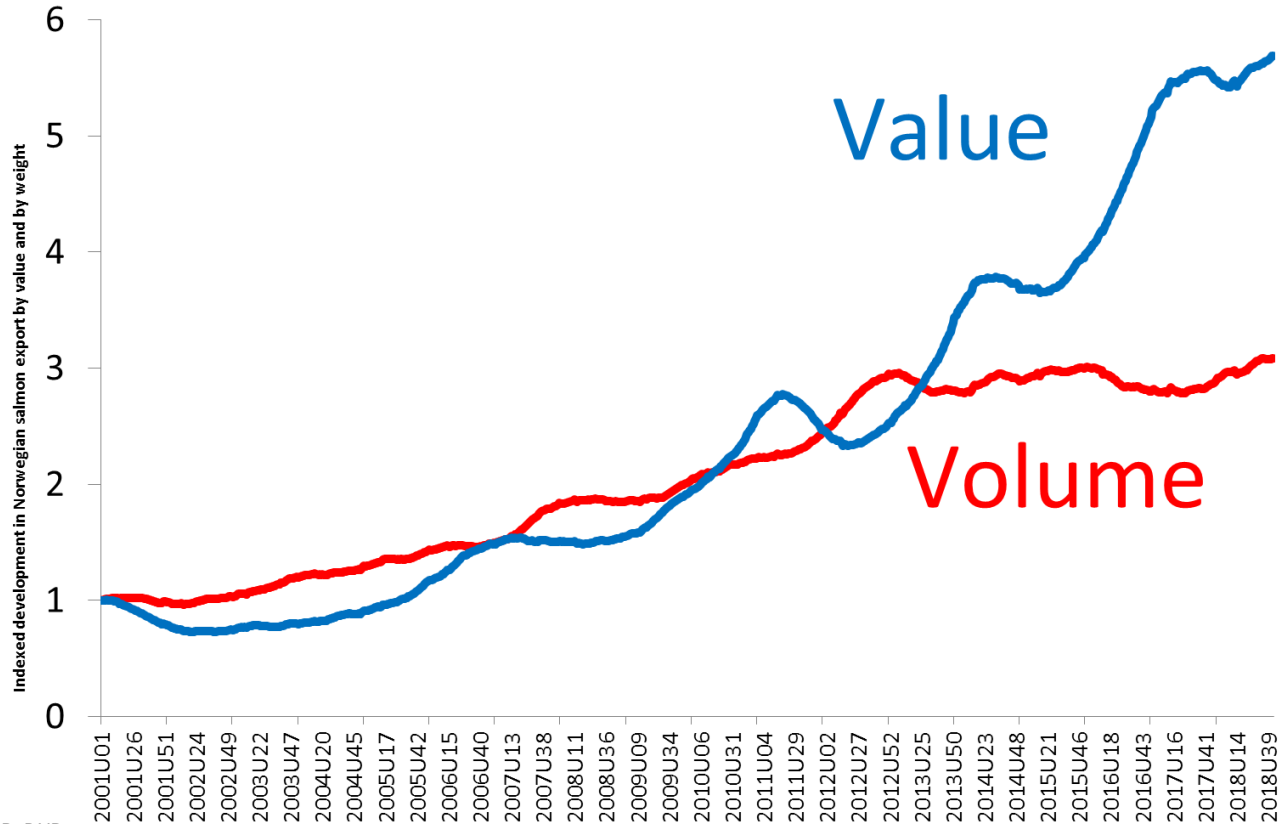
Gross economic impact of disruptive technology  
next 10 years, \$ trillion



Source: McKinsey  
\$30 trillion = 1/3 of global GDP in  
10 years

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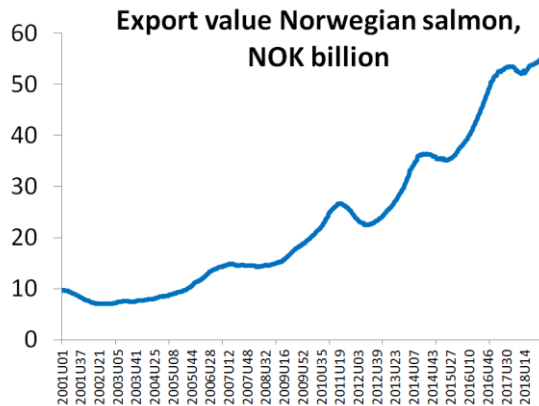
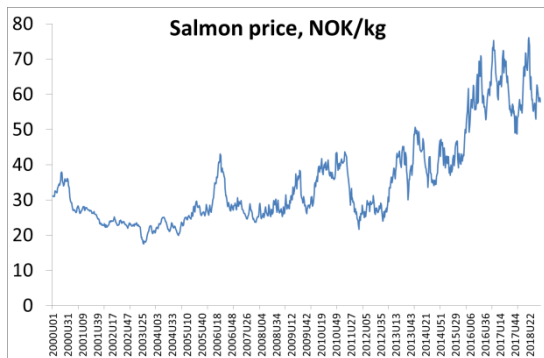
# Problem #1: no volume growth since 2012



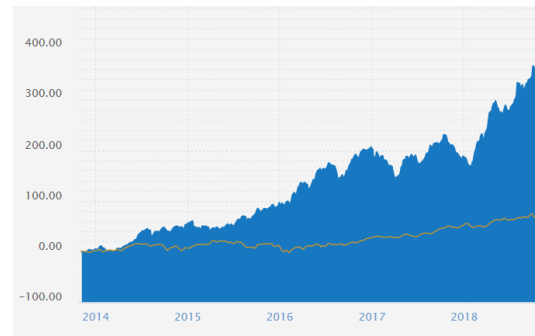
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Sources: SSB, DNB

# What was the problem again..?

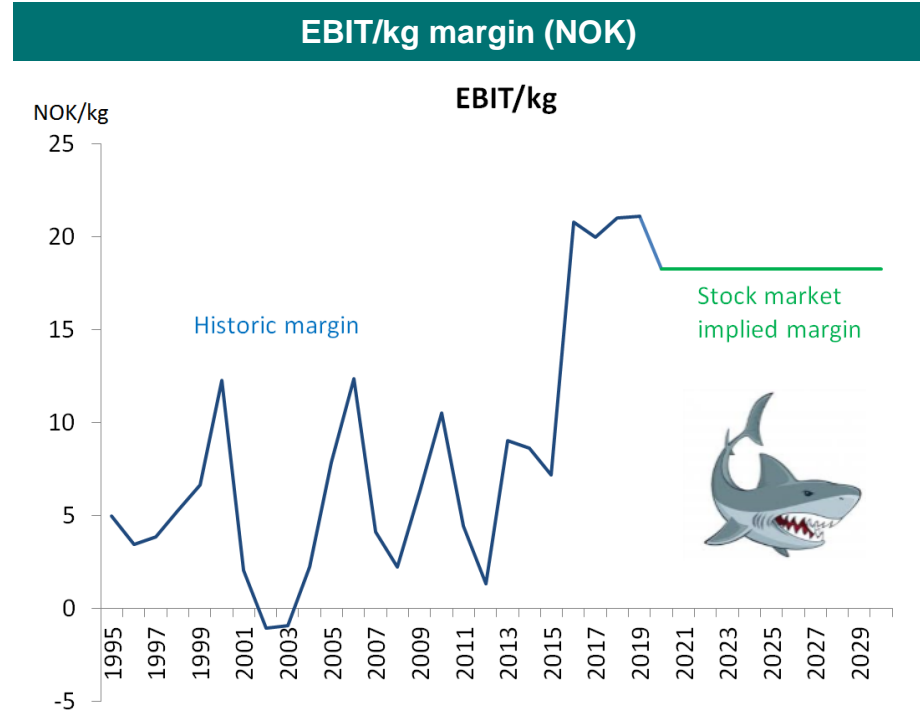


**Seafood index +400% in 5 years**

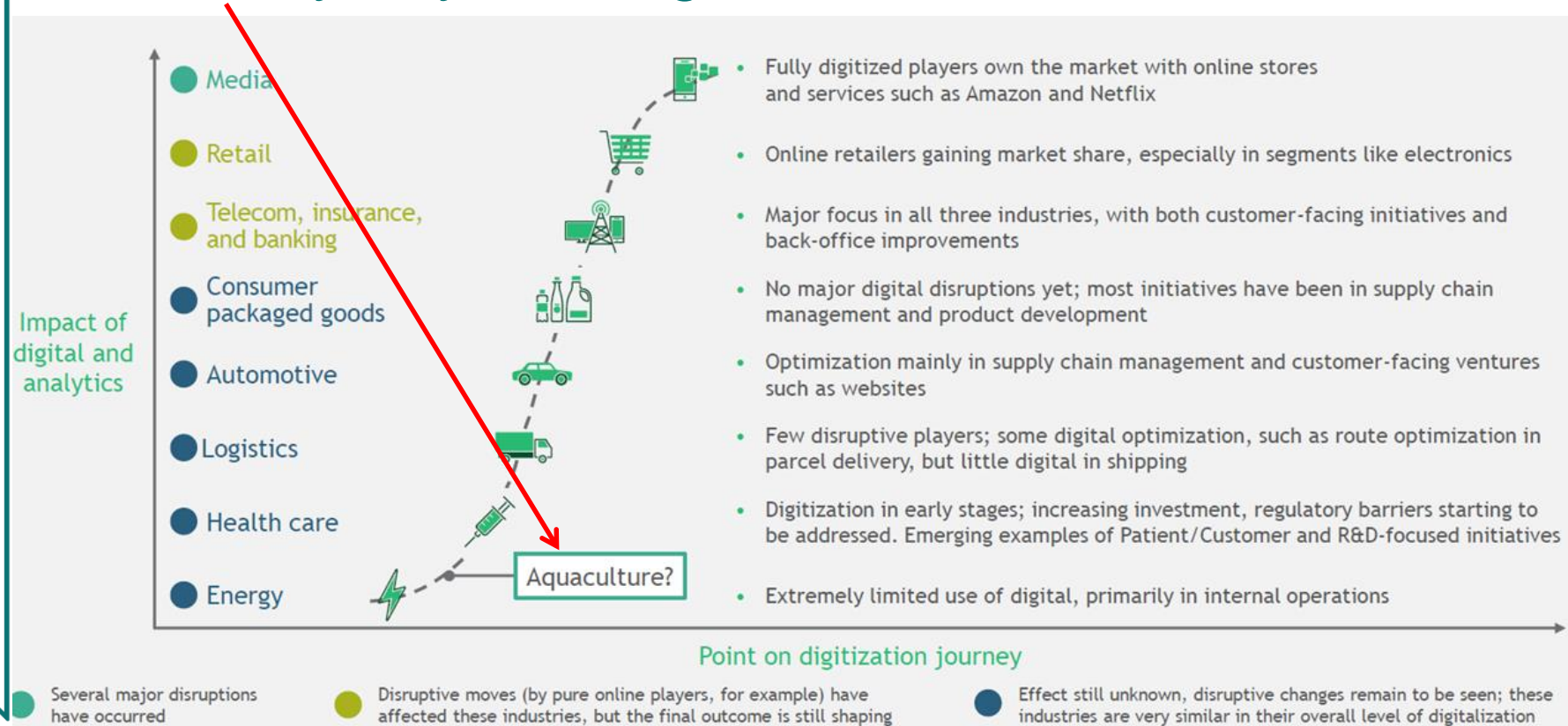


Sources: SSB, DNB, OSE

# You can squeeze a lemon only for so long

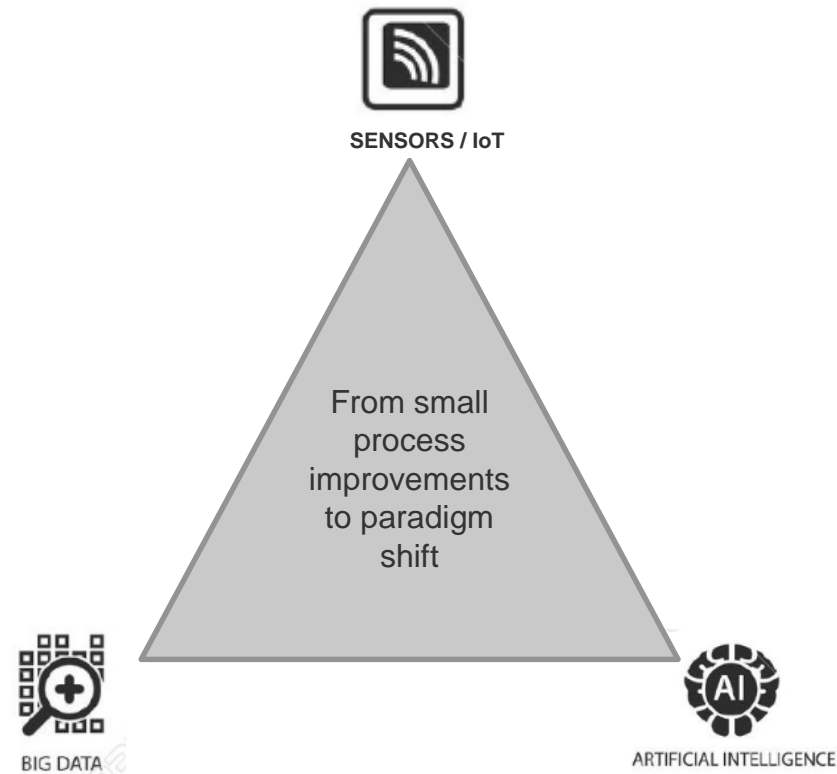


# Still early days for digital seafood



# Trends in digitalization in salmon farming

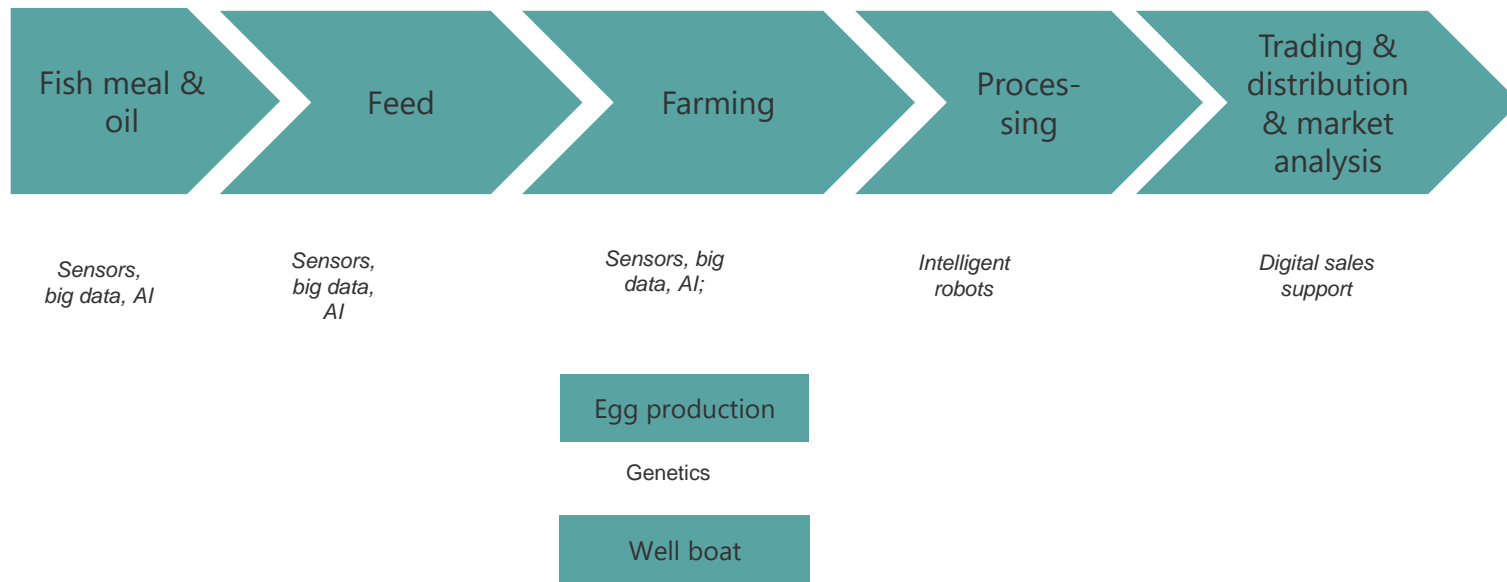
1. Increased instrumentation & data collection
  - *Doing things right: saving cost*
2. Increased biological & environmental focus
  - *Doing the right things: changing the game*



# Salmon farming value chain – new technologies

Block chain – food safety, sustainable sourcing, reduced paper load

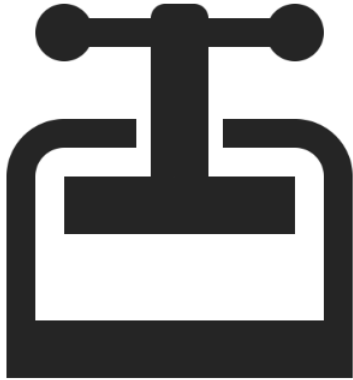
Data collection – better coordination and optimization along value chain, better capacity utilization





# Feed – could swing both ways

Margins squeezed by raw material sellers and salmon farming buyers as both close feed producers' knowledge advantage



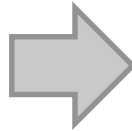
“Feed as a service” – feed producers provide feed and run the feed operations and get paid based on biological performance



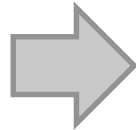
# What happens within the farming segment?

*Today small and big farmers are equally profitable, will digitalization change that?*

- Common or individual infrastructure



- Common or individual access to data?



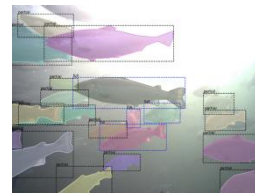
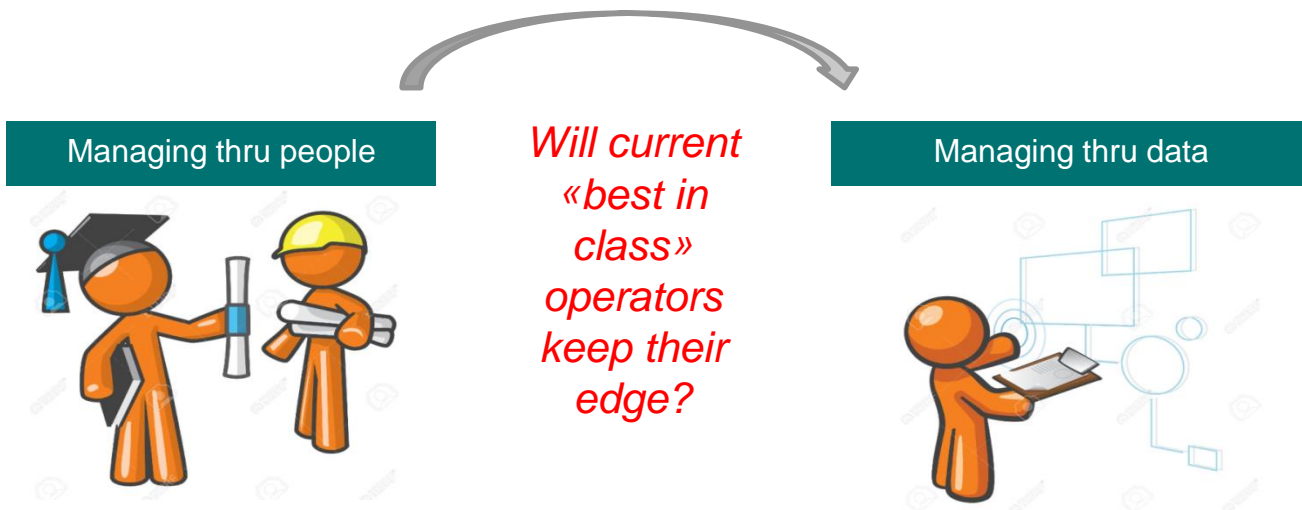
The world's most valuable resource is no longer oil, but data

*The data economy demands a new approach to antitrust rules*



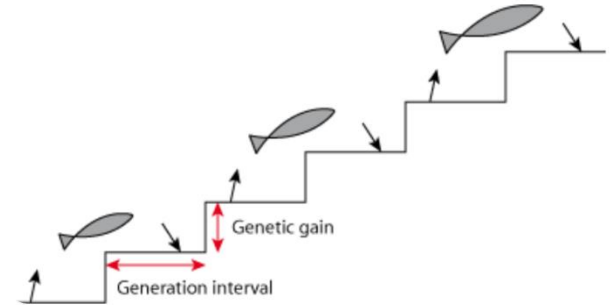
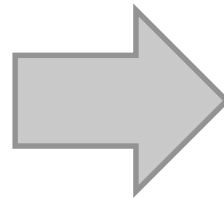
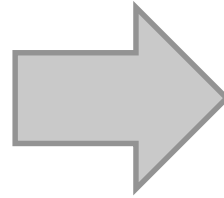
# Moving from managing through people to managing through data

## *Organizational and cultural implications*



# Big data and AI can short circuit the learning curve entry barrier

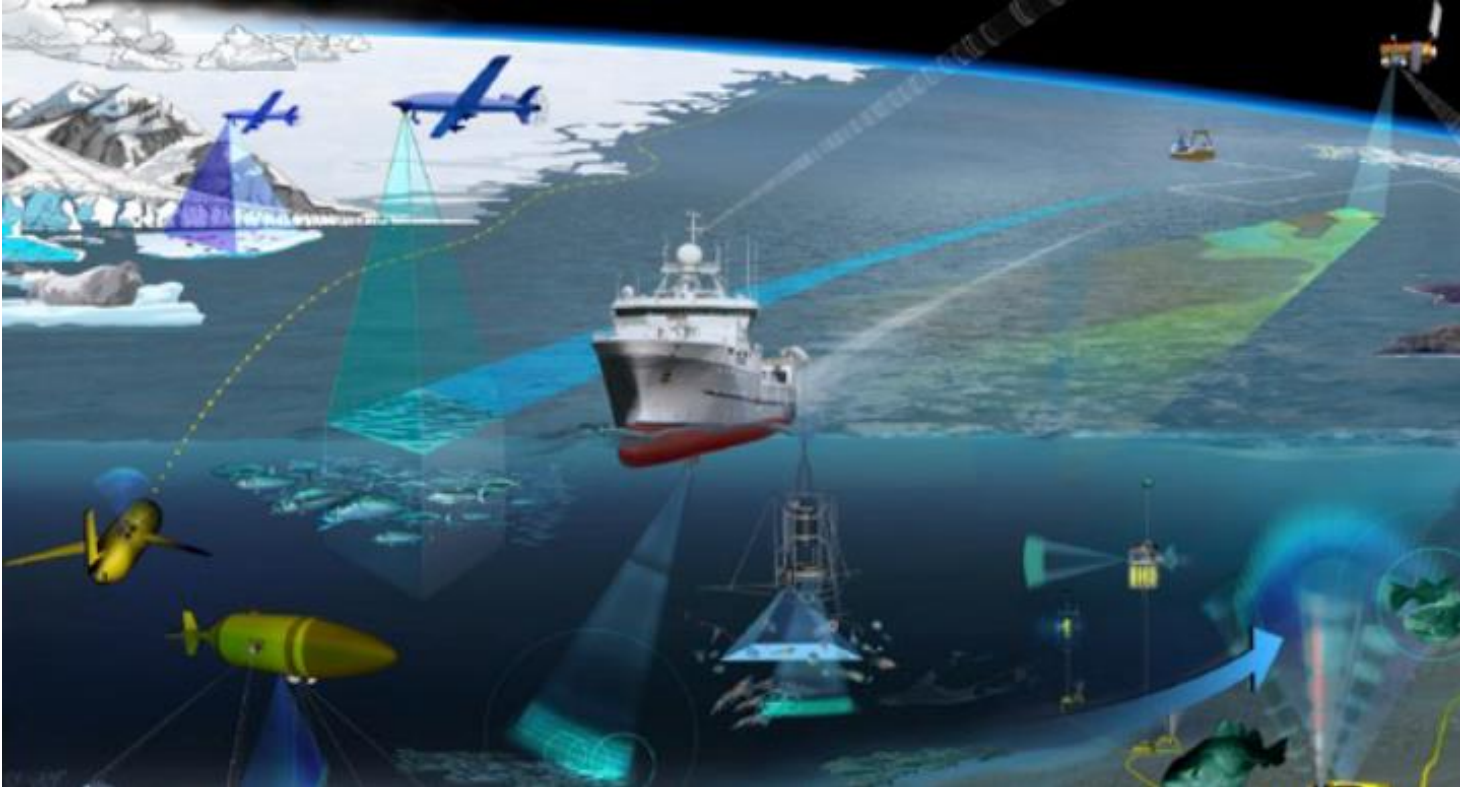
- A salmon generation is 4 years, **it takes many generations and years accumulate know how** and make improvements
- Big data & AI **may devalue value of accumulated vs new knowledge** and lower the entry barrier for land based farming



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# Sensors, big data & artificial intelligence

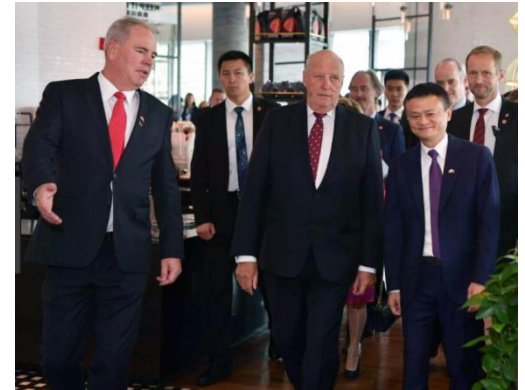
*Potential for regulatory innovation also – regulation of each individual site instead of 13 national zones?*



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# Online distribution and sales

*New channels in new markets*



# Summary; digitalization will lead to:

- Lower cost
  - Process improvements, biological improvements
- Higher volumes
  - Better understanding of the fish, the environment and the interaction between the two will increase sustainable capacity
- Development of technology which can also be used for other types of aquaculture

*And remember: new technology + new regulations + new business models can create major disruptions*



# Thank you for your attention

