Western Norway University of Applied Sciences

HUMANE

Human-centred maritime autonomy

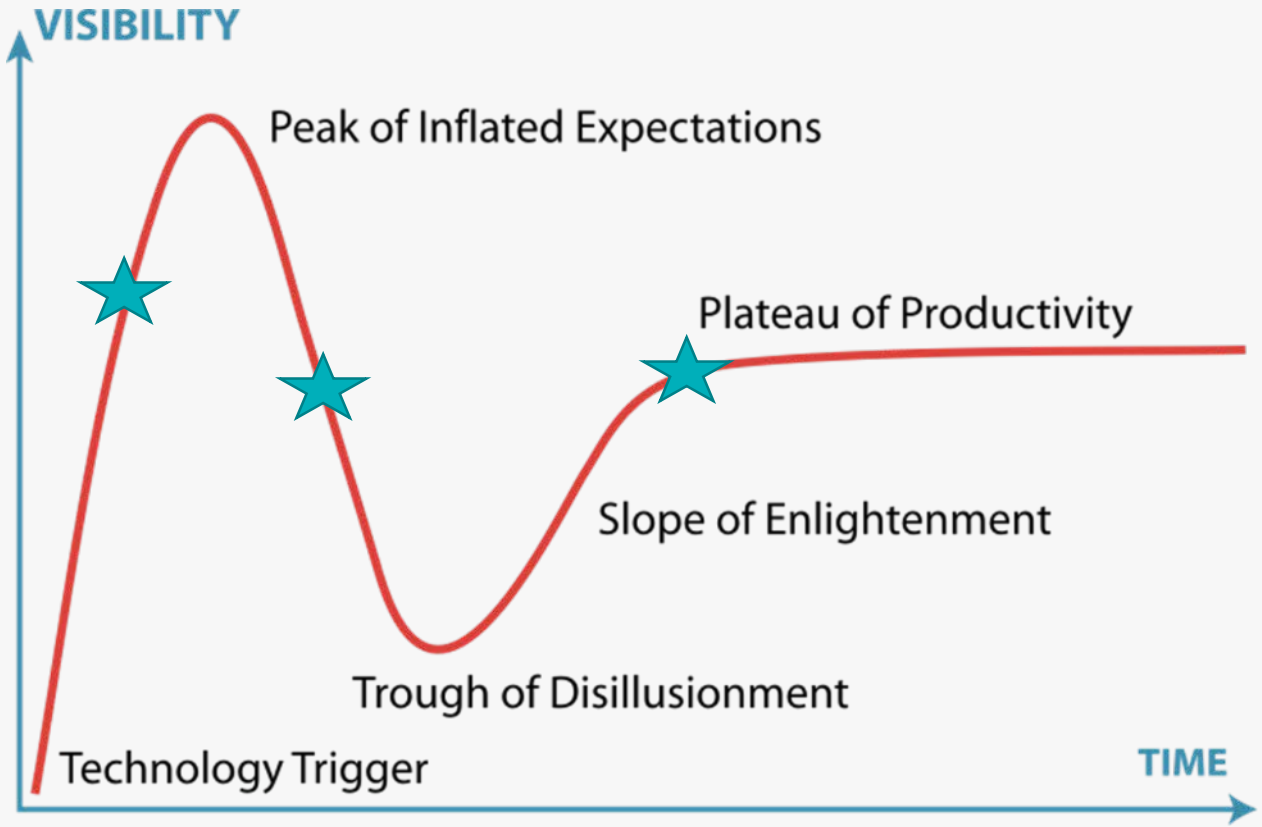
An ethnography of the future

M. Lutzhoft, A. Hynnekleiv, J. V. Earthy, E .S. Petersen

Mhl@hvl.no

HUMANE project - A human-centred perspective on high automation

- **HUMANE**
  - Human
    - Maritime
      - Autonomy
        - Enable



http://smartupsindy.com/3-hyped-companies-avoid-mistakes/

How far away is the future?

- Timelines shift and most are moved forward.
- The replacement rate for commercial ships is 3-4% per year
- Likely less for autonomy, not all owners see a reason to make this change
- For quite some time there will be mixed traffic

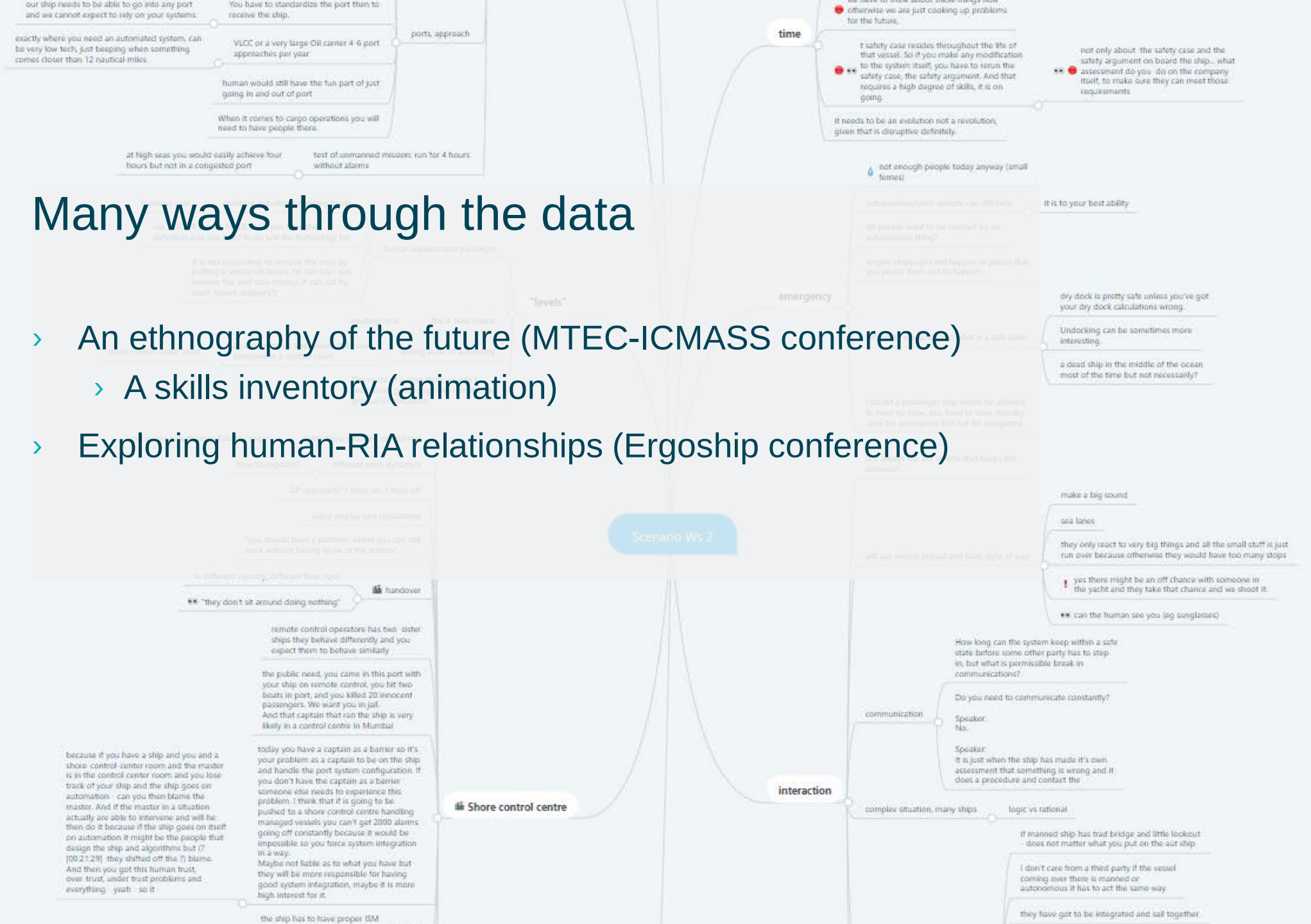
HUMANE project

- **4 HUMANE expert workshops**

CIRM	SINTEF	Inmarsat
Massterly	BW Gas	Wärtsilä
Rolls Royce	Bellona	MTI-NYK
DNV-GL	Lloyds Register	Kystverket
InterManager	ABB	Norcontrol
Kongsberg Maritime	Kongsberg Seatex	Maritime Robotics
F-Secure	RISE Viktoria	EXMAR
Norwegian Maritime Authority	Danish Maritime Authority	Swedish Transport Agency
Western Norway University of Applied Sciences	Norwegian University of Science and Technology	University of Southeast Norway
University of Southampton	Åbo Akademi University	Wilhelmsen Ship Management
BIMCO	Gard	

Many ways through the data

- An ethnography of the future (MTEC-ICMASS conference)
  - A skills inventory (animation)
- Exploring human-RIA relationships (Ergoship conference)

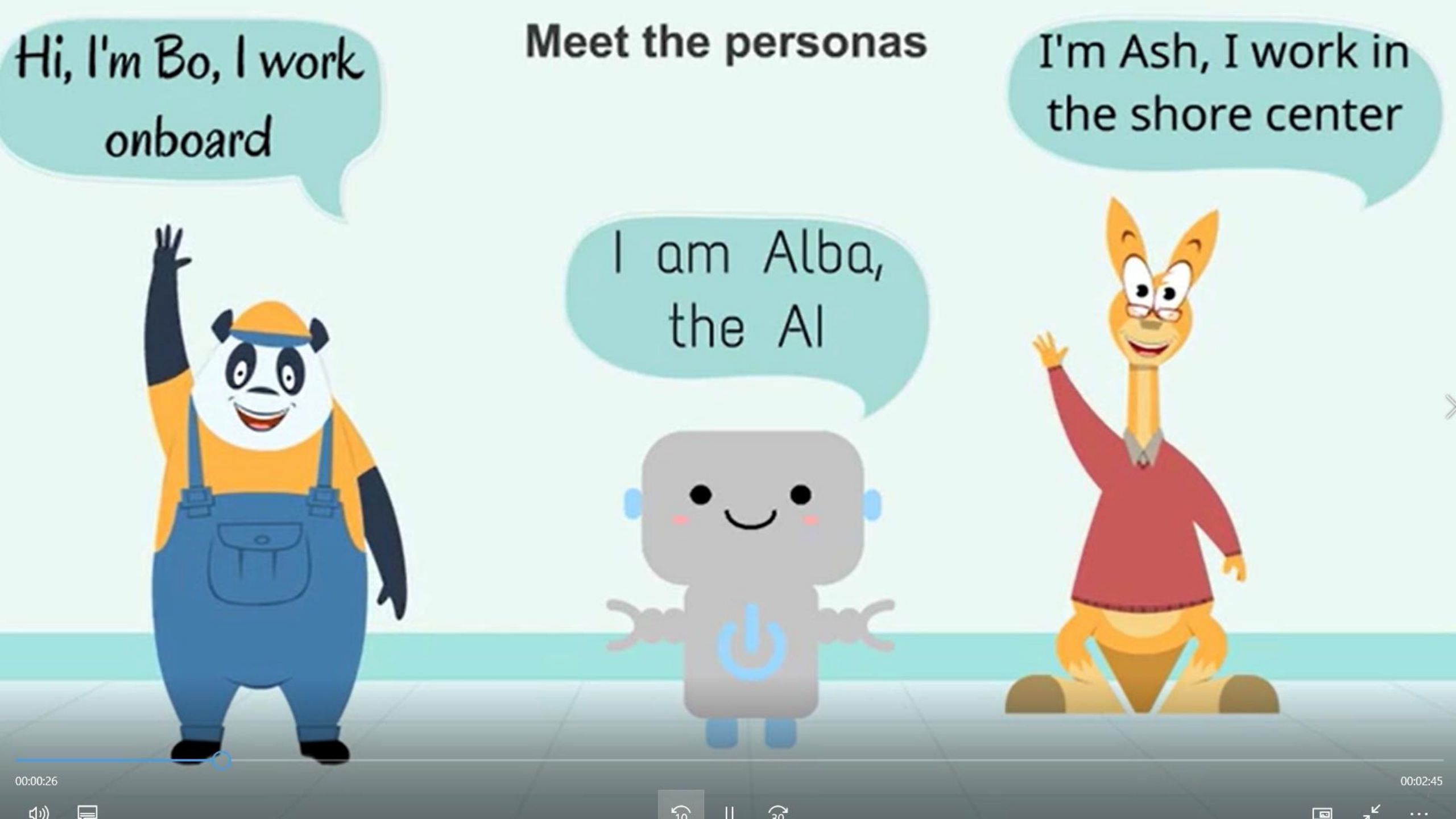


Ethnography of the future? How is that useful?

- A series of scenarios shaping a story
- How do we know it’s true?
  - We don’t. But it’s credible

- Show a version of the future to promote insight
- What we see
- What someone might else see
- Engineers love problem solving
- The story is not PPT-friendly

Meet the personas



Movietime!

- https://youtu.be/VtDXiiZgwlk

... they prefer I don't touch the systems

I don't navigate

I understand all the bridge and other electronics

I have Master's papers, and am a certified mariner

I am IT literate, a software expert and know about cyber security

I am fluent in English

I can handle tools

I retain the classic seamanship

I am well trained and multi-skilled

00:01:09

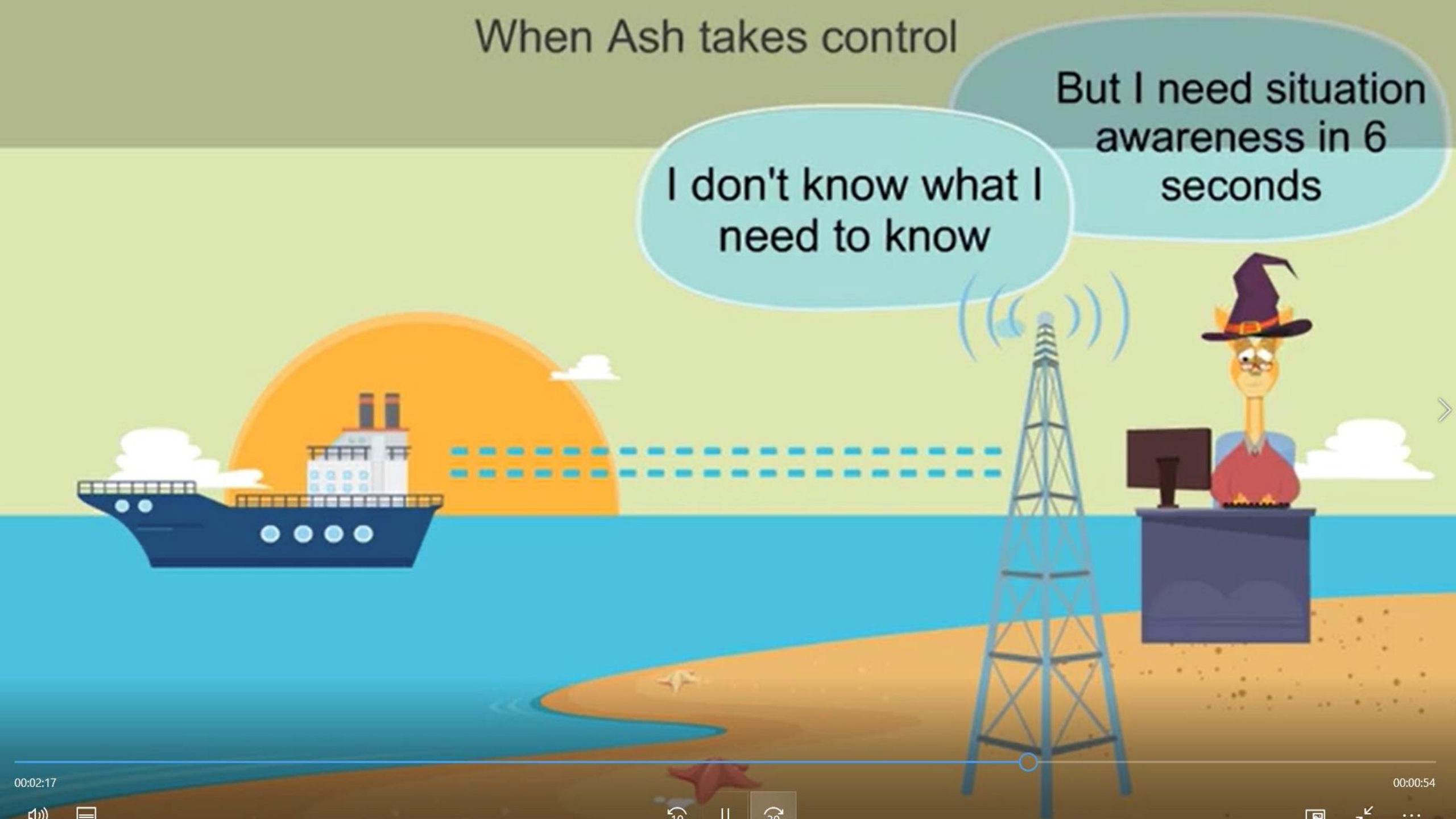
00:02:02

00:01:20
00:01:51

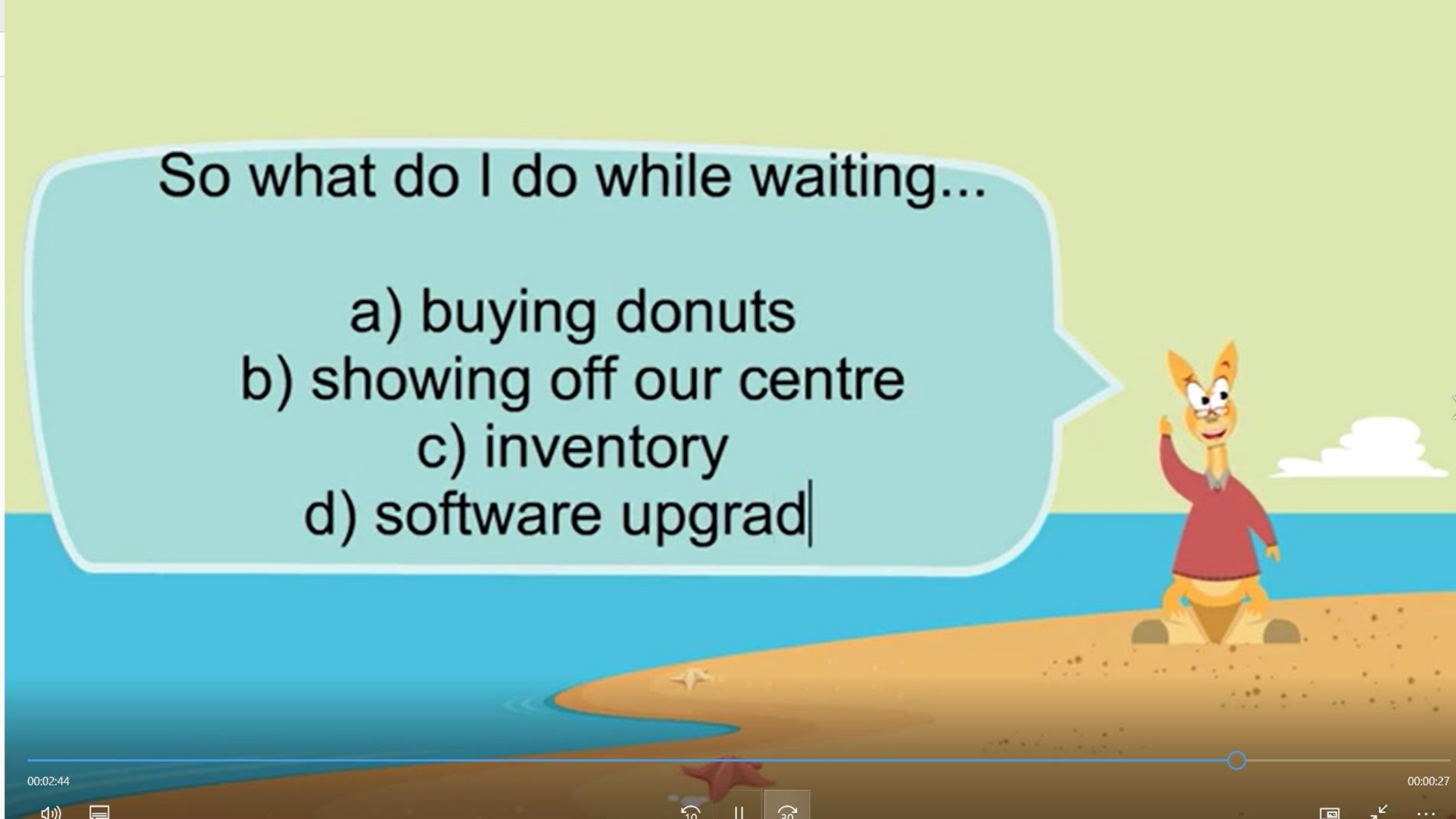
???
"We need a world model, and a controller
This is the typical design
of an autonomous agent.
It's very hard to
design for unlimited context.
In a limited context we can design"
Alba
00:01:37
00:01:34

The computer has to do what the second officer does

"... explain to the guy coming up ...
... this is the situation ...
... this is what I have observed ...
... this is the problem I have ...
... please tell me, I can't handle this myself"


When Ash takes control
But I need situation awareness in 6 seconds
I don't know what I need to know
00:02:17
00:00:54

I am in a ship control centre
I work in a fleet management centre, I only have verbal control
This is a shore control centre
00:02:29
00:00:42


So what do I do while waiting...
a) buying donuts
b) showing off our centre
c) inventory
d) software upgrad
00:02:44
00:00:27

00:02:59
00:00:12

Conclusions

- Future skills and jobs are ambiguous
- Safety and security concerns are real. Addressing them is not trivial or a solved problem
- Resilient integrated solutions are not achieved by building and adding

ISO/DTR 9241-810:2019

Design Approach	Description
Augmentation	The system improves human performance
Replacement	The system replaces human functions and/or entire human jobs
Remoting	Allows the user to act on the physical environment at distance
Teaming	The human and machine work together for a common goal

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https://www.hvl.no/prosjekt/591640/