

A user-centred exploration of Virtual Reality for collaborative maritime design

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 ocean industries
concept lab

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· OpenBridge

· OpenAR

· OpenRemote

· OpenZero



Aylward, Dahlm an, Lundh, 2021



Nordby, Børresen,
Gernez, 2016



a



b

Frydenberg,
Nordby, 2022



Fauske, 2020

Open VR

How may VR support the work of
designers of maritime workplaces?

Research gap

Experimental use of VR in a wide variety of maritime applications

Limited applications to early/conceptual design

VR applications commonly not evaluated by designers

Research questions

What are the needs of designers when using VR in their maritime design activities?

What requirements do those needs apply for VR experiences to support collaborative maritime design activities?

Method

VR Demonstrator



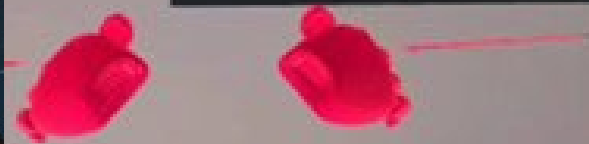
(Remote) interview (in context)



Analysis



Time	<input type="button" value="Night"/>	<input type="button" value="Day"/>	<input type="button" value="Dusk"/>
Weather	<input type="button" value="Rain"/>	<input type="button" value="Clear"/>	<input type="button" value="Fog"/>
Chair Color	<input type="button" value="Black"/>	<input type="button" value="Red"/>	
Floor Color	<input type="button" value="Brown"/>	<input type="button" value="Gray"/>	
Front Monitors	<input type="button" value="5"/>	<input type="button" value="4"/>	
Sight Lines	<input type="button" value="On"/>	<input type="button" value="Off"/>	
Floor Plan	<input type="button" value="On"/>	<input type="button" value="Off"/>	



Interview Topics

- Design activities
- Human representations
- Lighting, Resolution, Texturing
- Challenges of adopting VR



Design activities

- Presenting a design
- Evaluating a design
- Modifying a design



Human representations

- Gives a sense of scale
- Avatars instead of “realistic humans”
- Custom avatar postures – see Schumacher and Modra, 2023.



Visual requirements

- Dynamic lighting
- Good enough resolution
- Realistic textures



Challenges

- Familiarity with hand-controllers
- Isolation from rest of the world
- Cost of content creation



Discussion

- Unpublished research?
- Limited sample
- 2020 > 2023



Conclusion

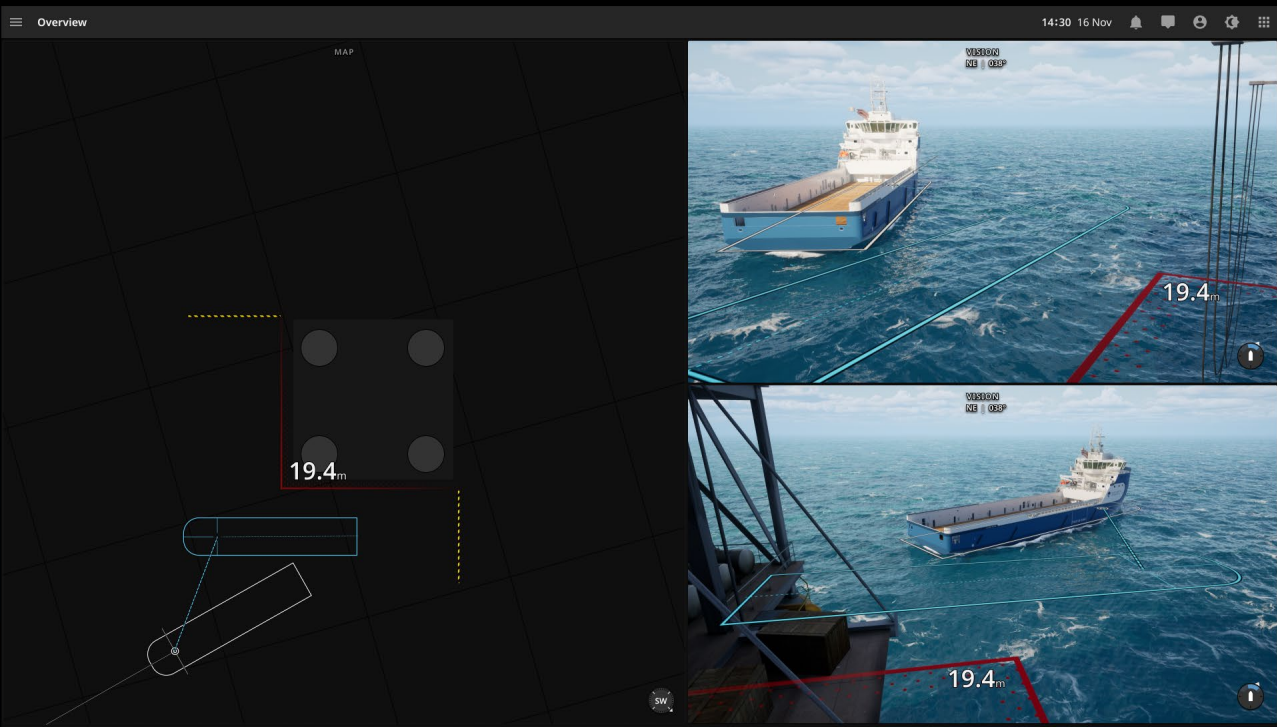
- Limited set of user needs
- Simple requirements

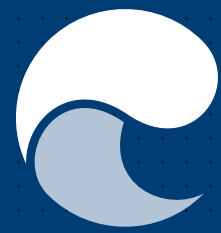
- Integration with commonly used tools and design activities?

→ Gernez, Nordby, Archer Dreyer, Burås, Fauske, 2023. How virtual reality is used in industrial maritime design processes: Two case studies.









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