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**DYNAMIC POSITIONING CONFERENCE**  
**October 15-16, 2013**

**DESIGN AND CONTROL SESSION II**

**Enhancing the DP Operator Experience**

**Melody Ivory and Richard I. Stephens**

***GE Power Conversion***

# Enhancing the DP operator experience

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imagination at work

# Motivation

Increasing complexity of systems & operations

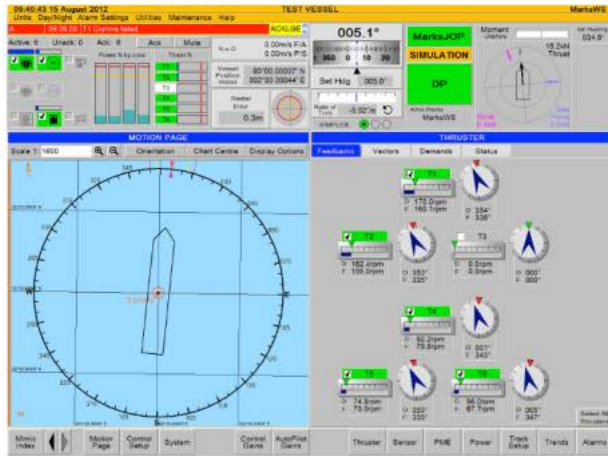
Legacy of “engineering-focused” HMI

Need to focus on controlling the ship

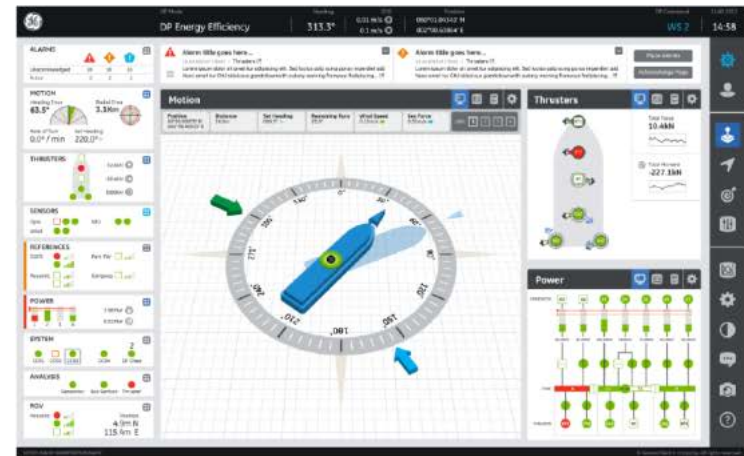
Simplify

Modernise

# BEFORE



# AFTER



ecomagination<sup>SM</sup>

# User experience (UX)

# Guiding user experience principles

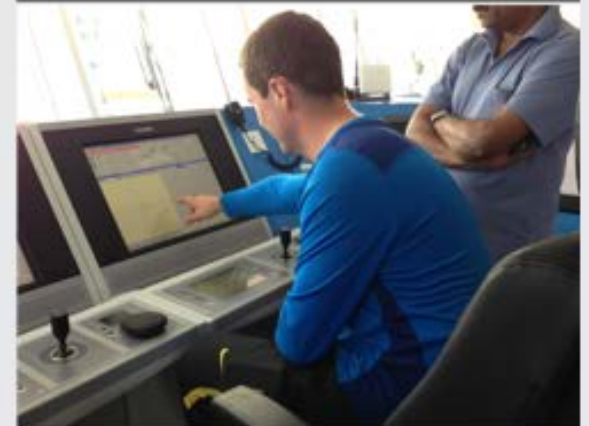
Intuitive



Innovative

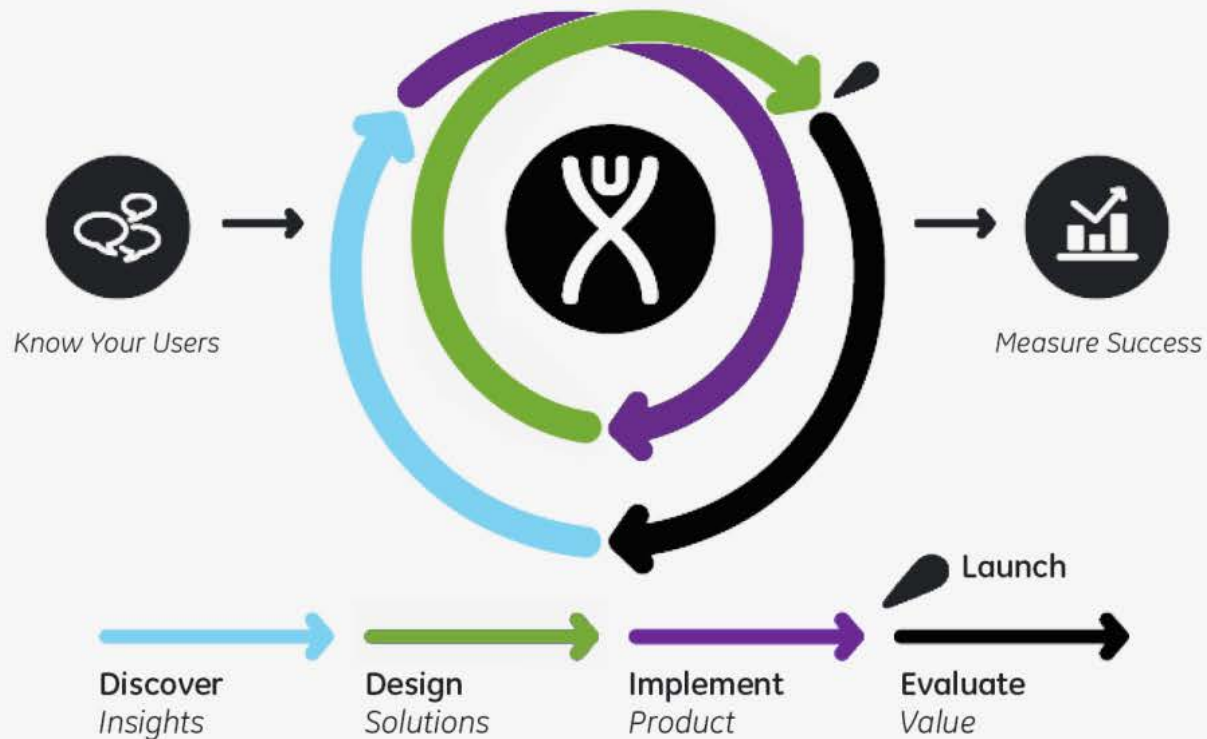


Mariner-Focused



Yesterday's lessons + today's mariners + tomorrow's technology

# UX process



# Excerpt from example persona



Bruce  
Supply Ship DP Operator

*"I only use the DP when I have to & don't want it to slow me down."*

## Needs

Switch into Captain mode if needed

View clear and reliable information in real-time

Be informed when things fail (alarms and warnings)

Access things quickly in the DP

Conform to regulations

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Mariner, second mate

---

Employed by a large ship owner/operator in Australia

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Works 8 weeks on and off & two 6-hour shifts daily

---

50% boredom, 49% DP activity, 1% sheer panic

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Focused more on the immediate mission not the future

---

Interacts with DP often changing the mimics in 1-hour bursts

---

Works solo on the DP, but has a DP backup

---



# Redesign

# Research-based console and HMI





DP Mode

Heading

SOG

Position

DP Command

11.02.2013

DP Energy Efficiency

313.3°

0.01 m/s  
0.1 m/s

060°01.04343' N  
002°00.63864' E

WS 2

14:58

ALARMS

Unacknowledged	10	10	10
Active	0	0	0

**Alarm title goes here...**  
 19 Jul 2013 at 7:30:43 / Thrusters  
 Lorem ipsum dolor sit amet tur adipiscing elit. Sed luctus adipiscing purus imperdiet add Nunc amet tur GHJ sidivocus goestotownwith outany warning fromyour fadpiscing...

**Alarm title goes here...**  
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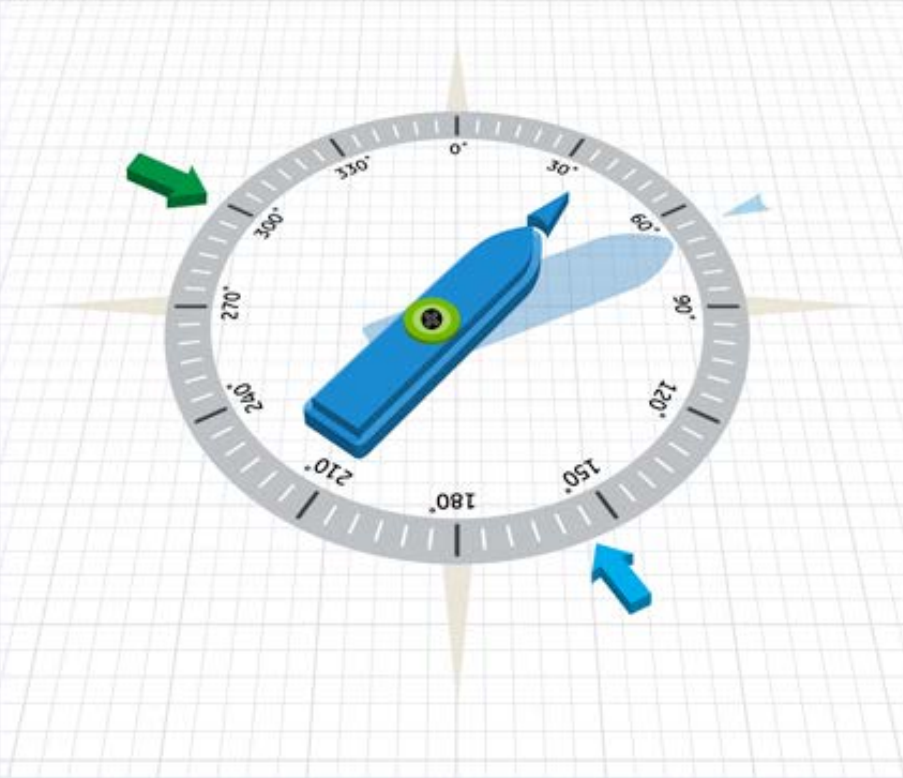
Mute Alarms  
Acknowledge Page

MOTION



Motion

Position 60°00.00039' N 001°59.92813' E	Distance 56.0m	ETA 20:50min	Remaining Turn 25.6°	Wind Speed 0.13m/s	Sea Force 0.32m/s
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THRUSTERS



Thrusters



SENSORS



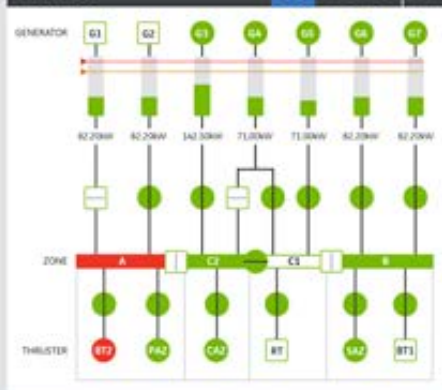
REFERENCES



POWER



Power



SYSTEM



ANALYSIS



ROV

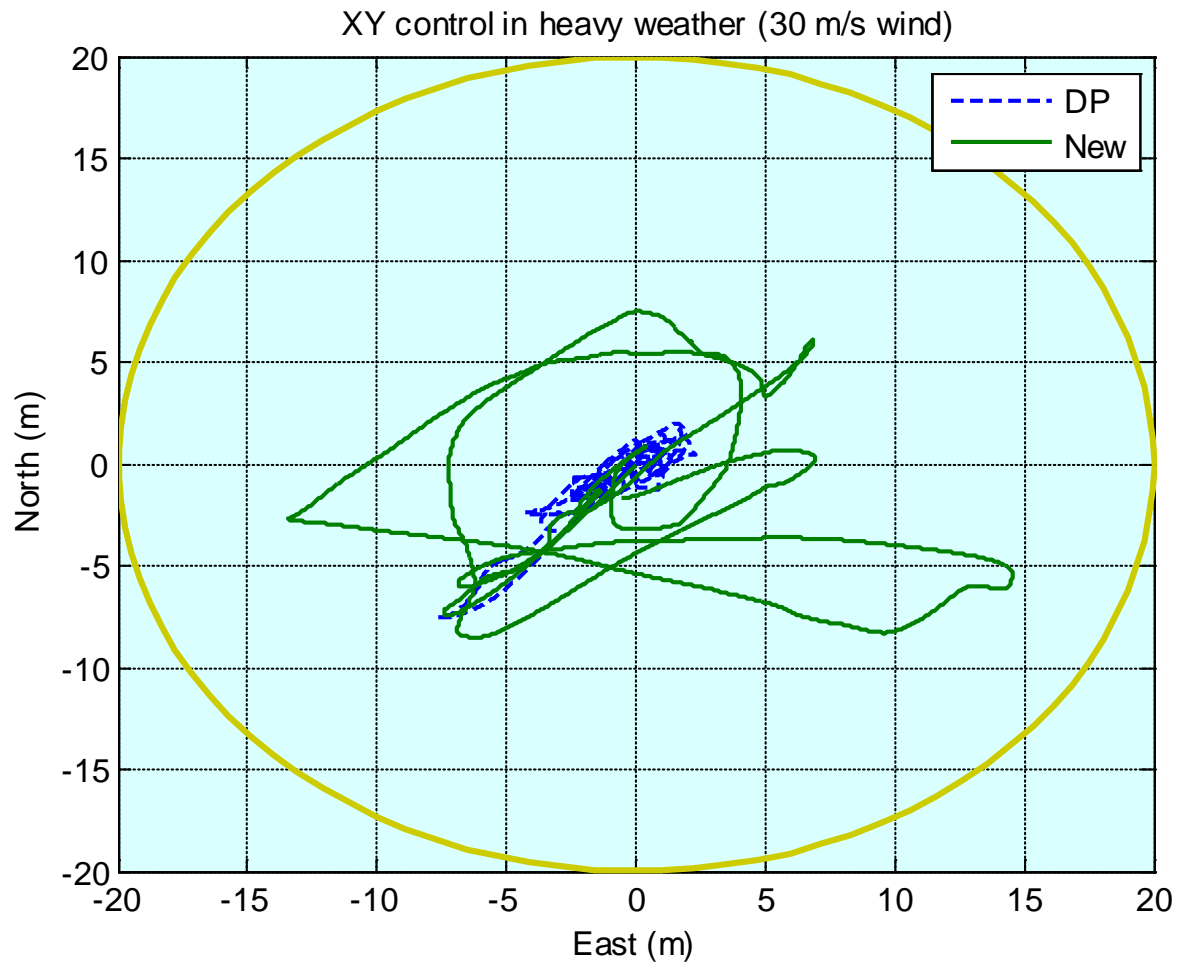


VESSEL NAME: WORKSTATION NAME

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# Control redesign: Energy Efficient DP

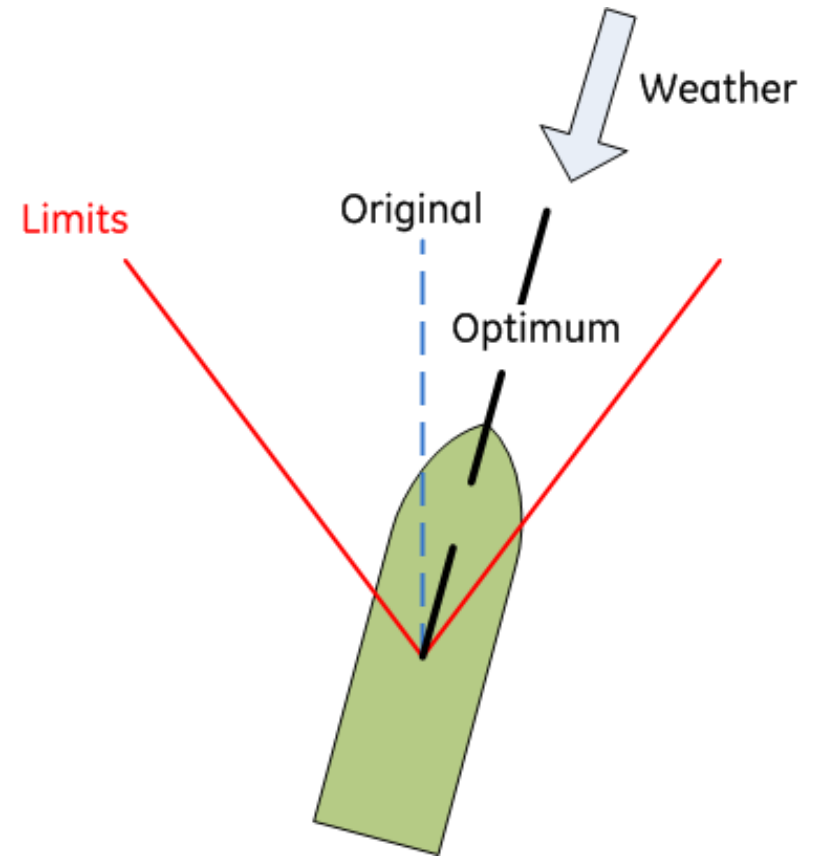
# XYcontrol



# Optimum heading

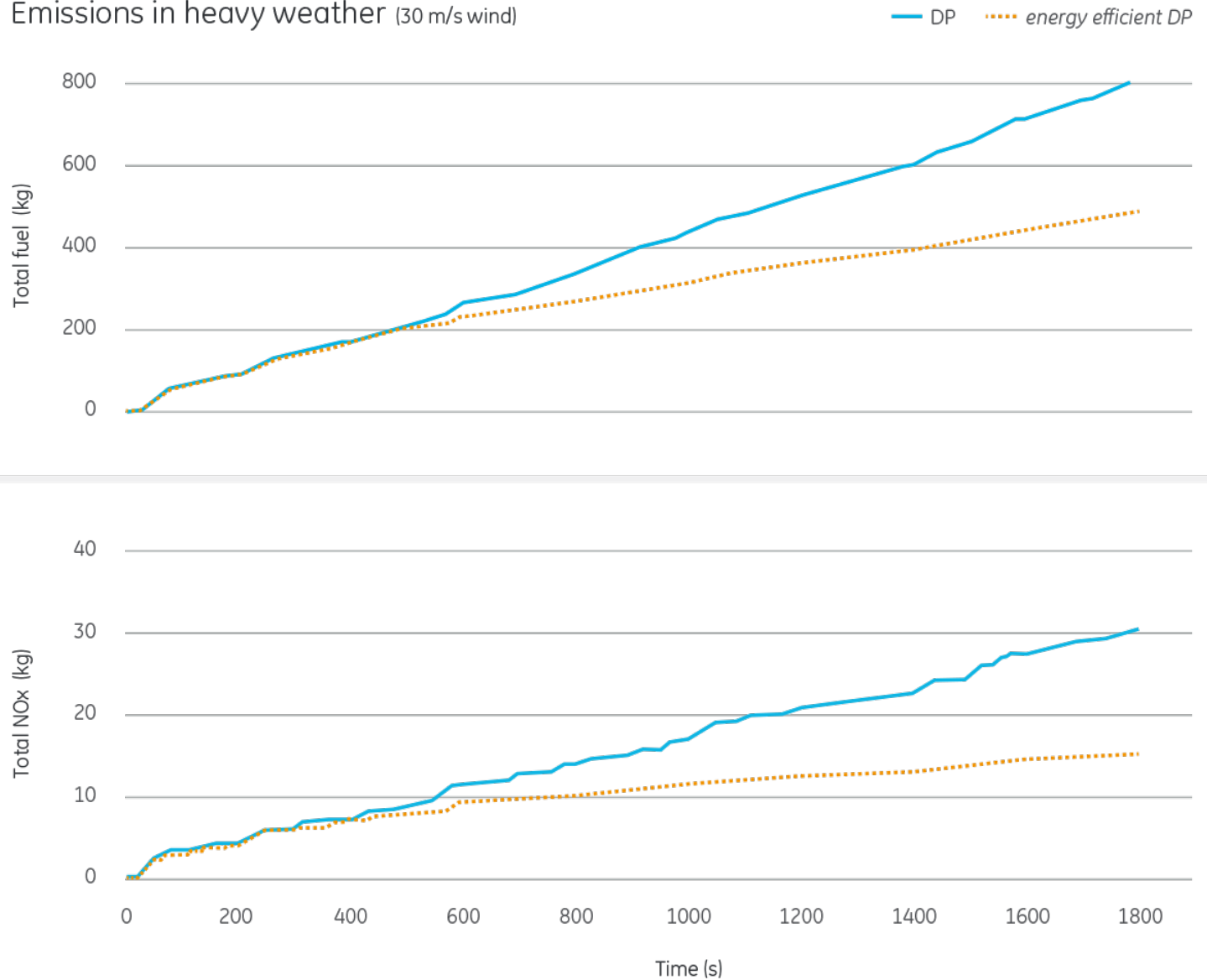
Minimise weather forces

Limited variation from original set heading



# Example estimated savings

Emissions in heavy weather (30 m/s wind)



# Feedback



# Example research feedback

“I like it. It’s not intimidating to me. That’s important to me as an operator.”

“Minimalist approach is good.”

“Very user friendly, ergonomic and comfortable.”

“Looks fairly simple, more so than competitors’ systems.”

“User interface works well. It’s clean and you can see info.”

“It’s an improvement on what you had. I look forward to seeing it on a ship.”

# Conclusions

40 years experience of DP + collaboration with UX experts

Mariner-focused console and HMI

Enhances situational awareness

Improves operator comfort, safety & efficiency

Energy efficiency

Validation with users = ongoing improvement



imagination at work