



## **CROWLEY SHIPPING**

GLOBAL SHIP MANAGEMENT

### **AUTONOMOUS SHIPPING – THE OPERATOR'S ASK**

**JULY 22-23, 2019**



**CROWLEY®**  
People Who Know®

The Wish List

Safety, Safety, Safety

Standardization

Generational Training Development

Human Machine Interface

Mariner Skillset Development

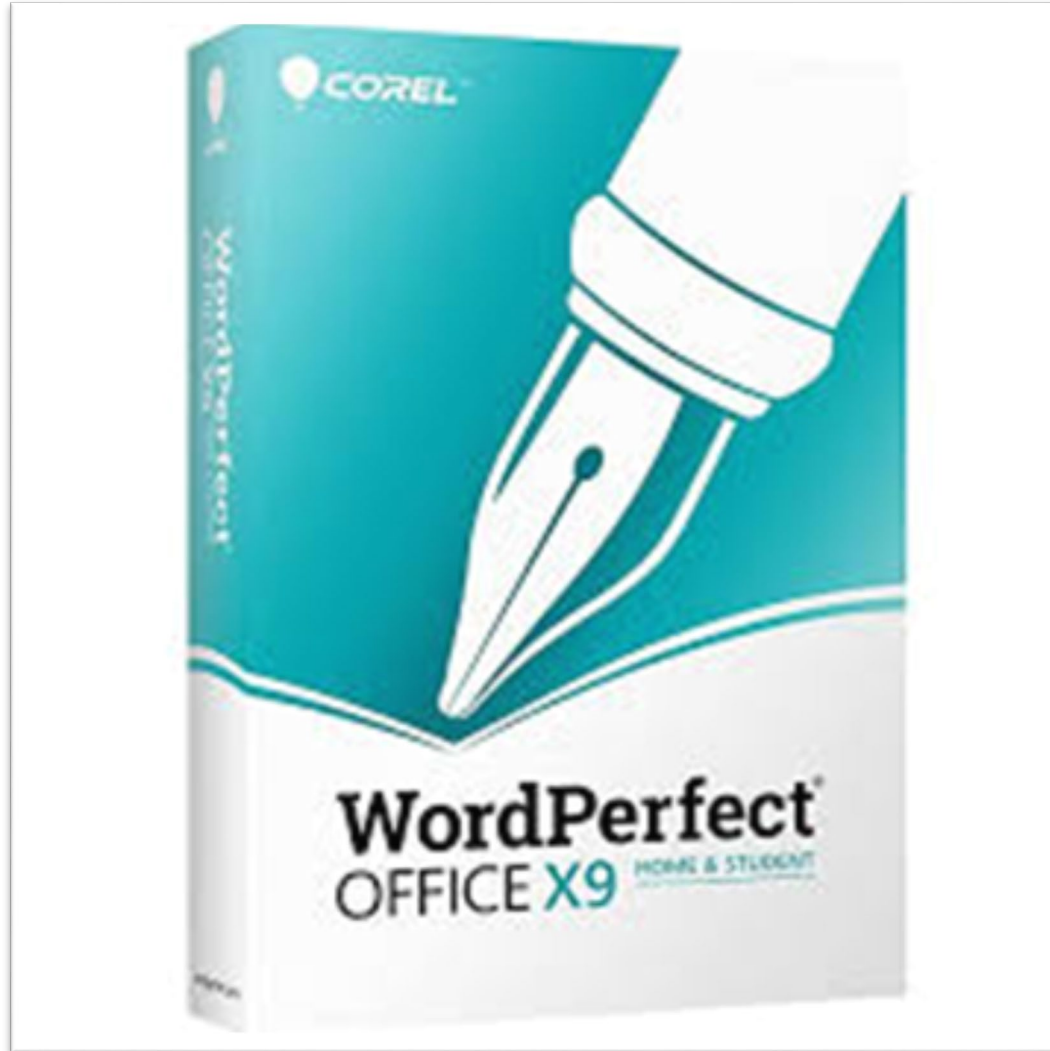
Safety, Safety, Safety



or ...

Is There  
Someone  
on There  
I Can Talk  
Too?





or ...

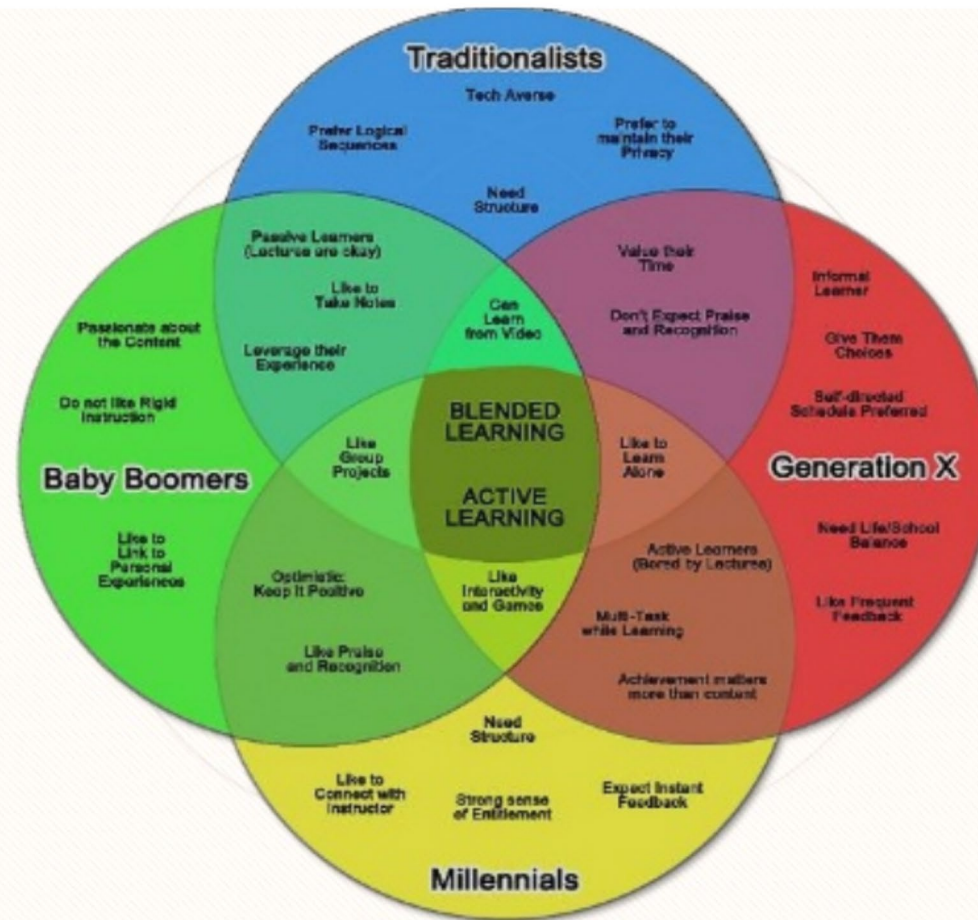
Did You Know  
That  
WordPerfect  
Still Exists  
(Why)?



or ...

Humans  
Do Things  
that  
Machines  
Do NOT  
Expect?

# Generational Training Development



## Learning Preferences

Diagram Source: Corbett, S. (2008). Targeting different generations. In B. Hoffman (Ed.), *Encyclopedia of Educational Technology*

or ...

Did I Just  
Call Some  
of You  
Old?



## Mariner Skillset Development



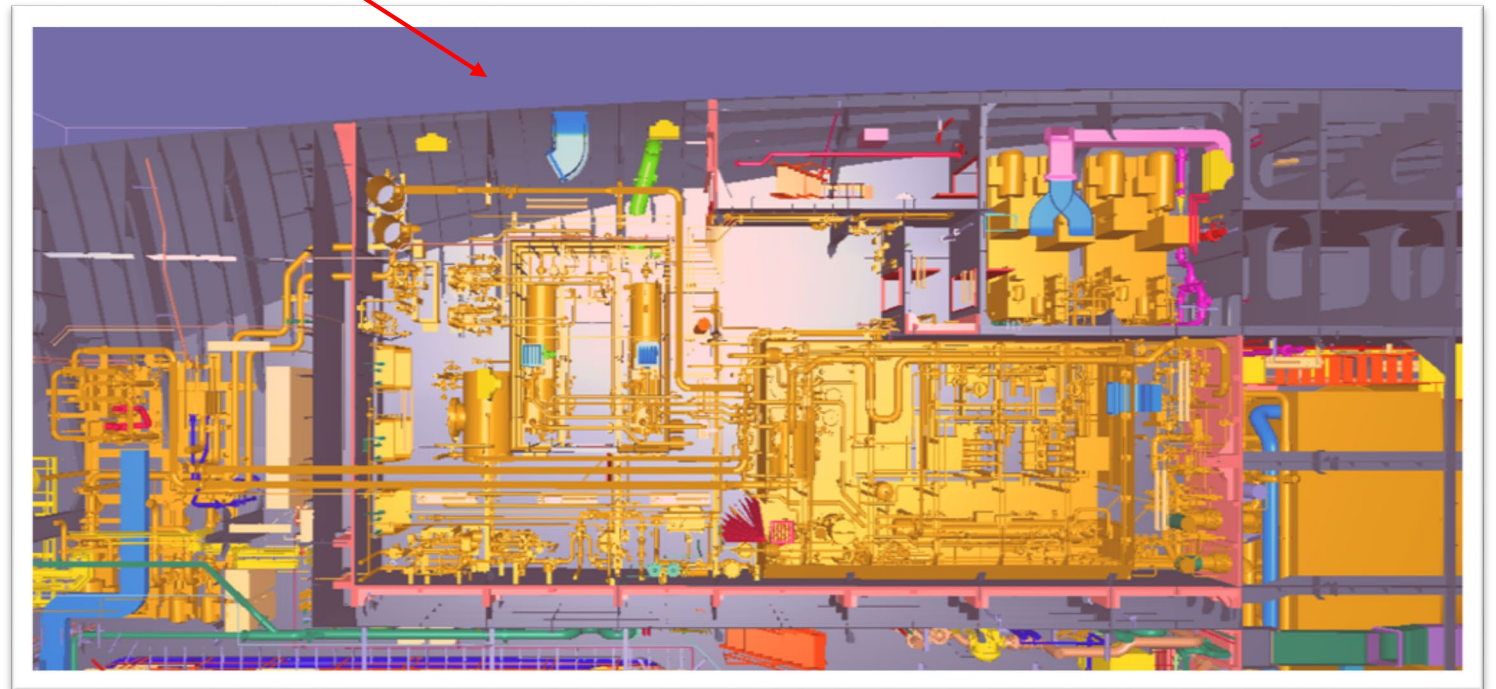
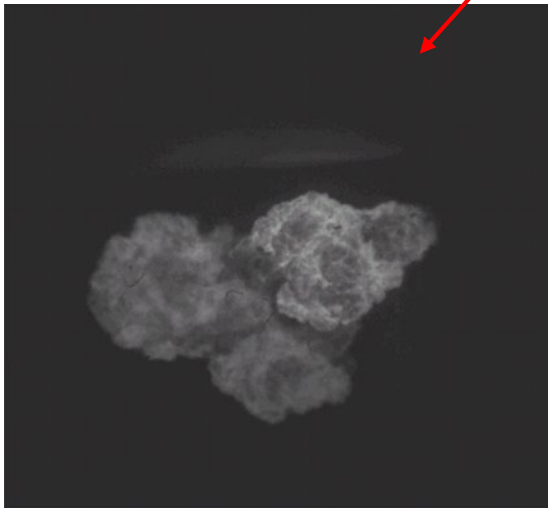
or ...

What  
Happens  
if I Press  
This  
Button?

# LNG (as an example)

- Dual fuel system implementation:

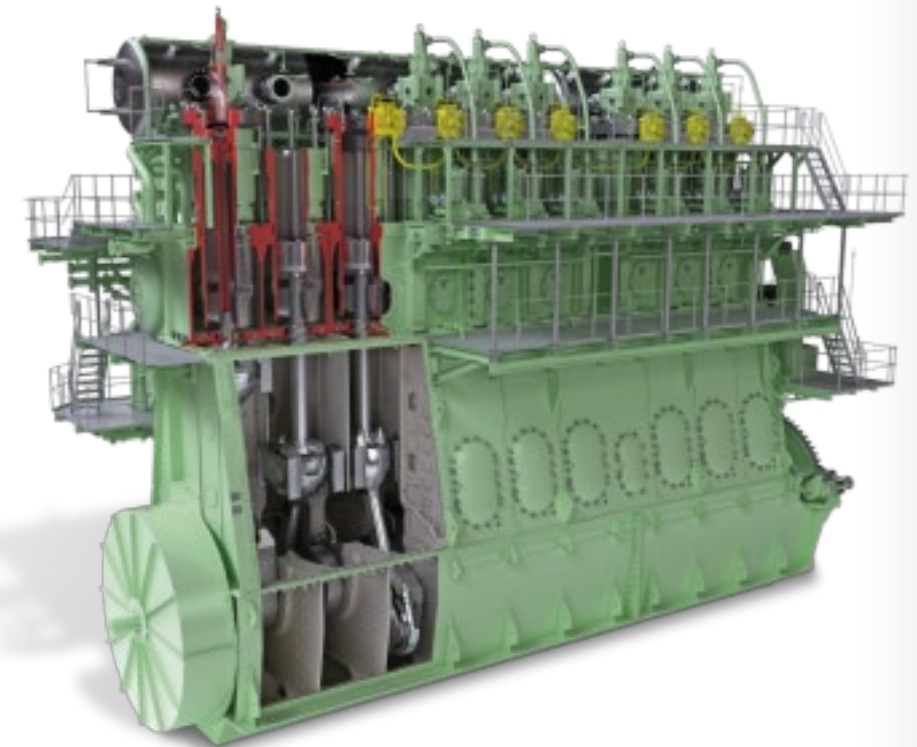
- We wanted one of the most automated LNG fuel delivery systems in the world to put into this...
- Took almost 6 years of design collaboration to make it work and it looks like this...
- Just to simply make this...





# First Step(s) Towards an Autonomous Future – A Millennial's Perspective

- Use of standardized technology once systems are proven reliable
- Make the leap to autonomous technology consistent with your company's strategic goals in mind
- Continuously interface with industry leaders in various segments to keep ideas flowing
- Challenge the status quo and do it for the right reasons: safety, environmental stewardship, reliable operations, better working conditions
- Persistent design and deployment of state of the art vessels
- Autonomous ≠ Unmanned and this is an important distinction
- Secure communications is everyone's responsibility



# LNG Today – Success Begins with Change

- DNV-GL in June 2019 reported the following: 163 LNG-fueled ships in operation
- 155 ships on order
- Order intake for LNG-fueled vessels has remained steady for several years now at around 40 / yr
- 2019 has 40+ new orders in the first five months which indicating that the pace for LNG fuel investments is picking up
- Installed LNG tank volume will more than triple from ~100,000m<sup>3</sup> today to the end of 2020

