

## NIOHC 15 – e-Navigation

# E-Navigation – Aviation community lessons learned

**Michael Bergmann** MBA AFNI  
AFRIN

Director Maritime Industry  
President **CIRM**



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# Exxon Valdez



*The safety of oil transportation demands review and overhaul. Not just new technology, but new institutions and new attitudes in old institutions are required.*

**AP** Associated Press

(Alaska Oil Spill Commission – Final Report  
"SPILL - The wreck of Exxon Valdez")

# Exxon Valdez



**If Aviation would be as Shipping:**  
1.5 airliner disasters - every single day, or 550 per year  
Loss of 82,500 human lives per year

(Alaska Oil Spill Commission - Final Report - "SPILL - The wreck of Exxon Valdez")



# Exxon Valdez

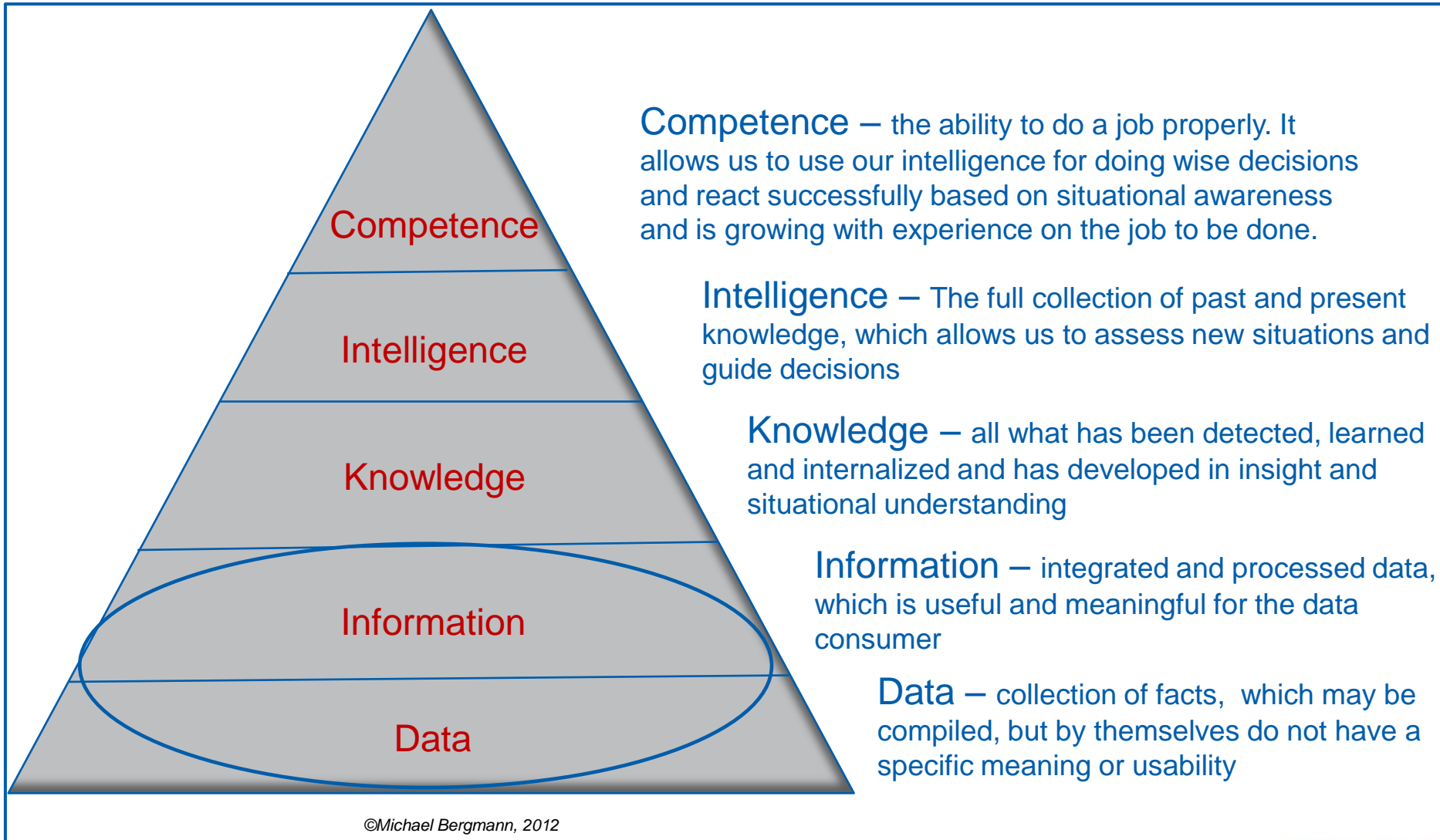


Technological and human systems aren't perfect: Airlines occasionally do crash. But we have built a system that does not tolerate in air traffic anything like the catastrophic failure rate we can expect in the Valdez tanker trade. Because of that system, air travel can be considered safe and reliable.

Risk cannot be eliminated, but it can be reduced - if we accept the costs involved.

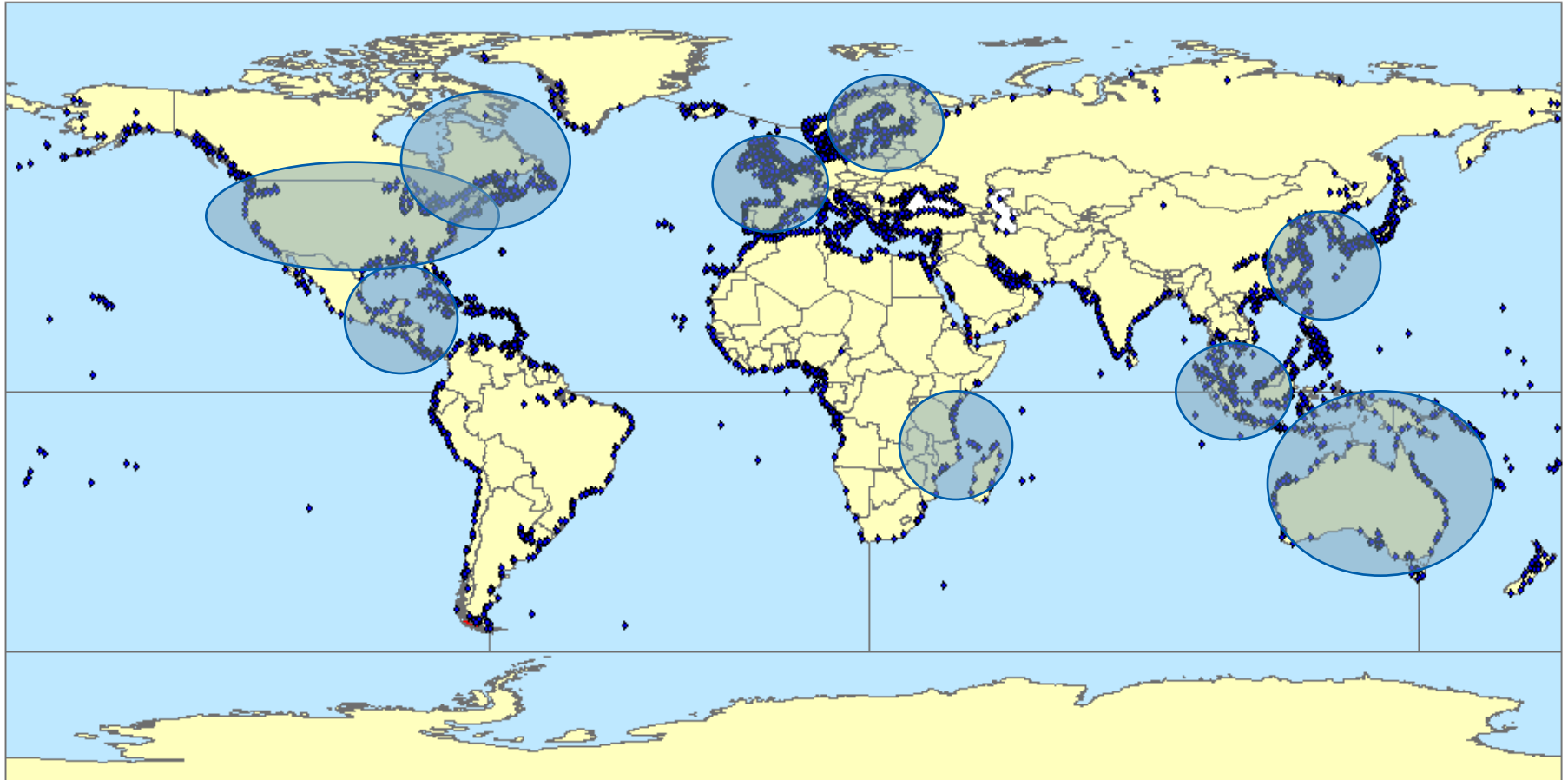
(Alaska Oil Spill Commission - Final Report - "SPILL - The wreck of Exxon Valdez")

# Pyramid of Competency



# Regional “Clusters” in e-Navigation

## GIS visualization of collaboration



Ports around the world

# Key Aspects of e-Navigation



Ship



Data Service Provider

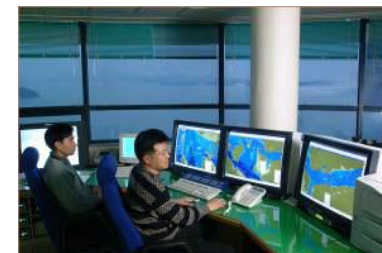


Owner/Operator

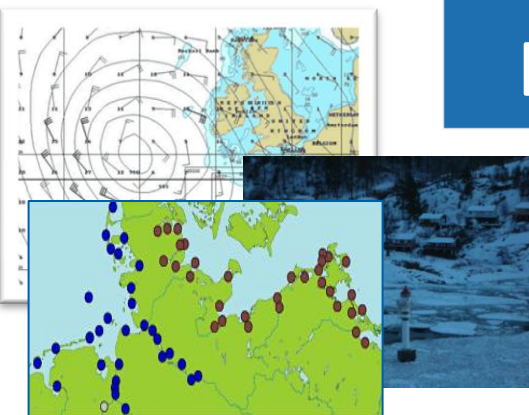


PSC

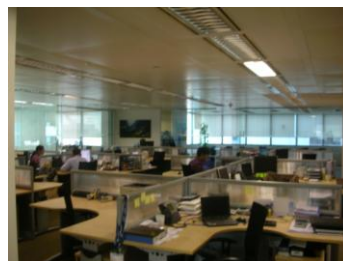
**Close collaboration  
to optimize  
maritime transport**



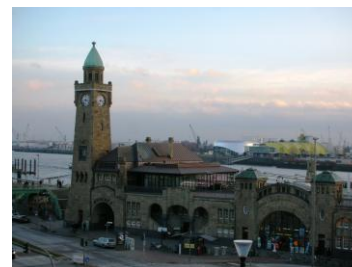
VTS – Coastal State



Tide Stations...



HOs



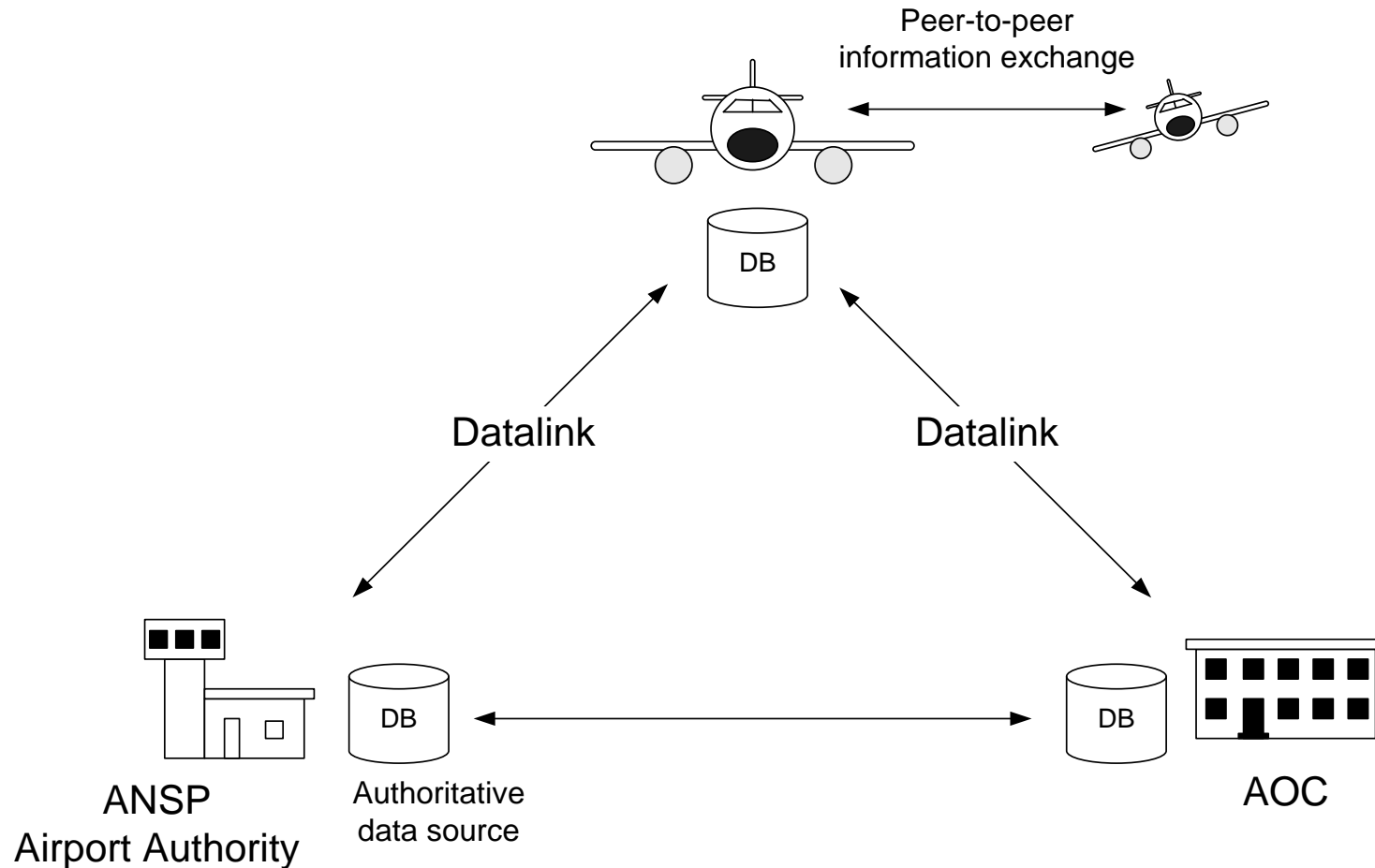
Customs...



Ports

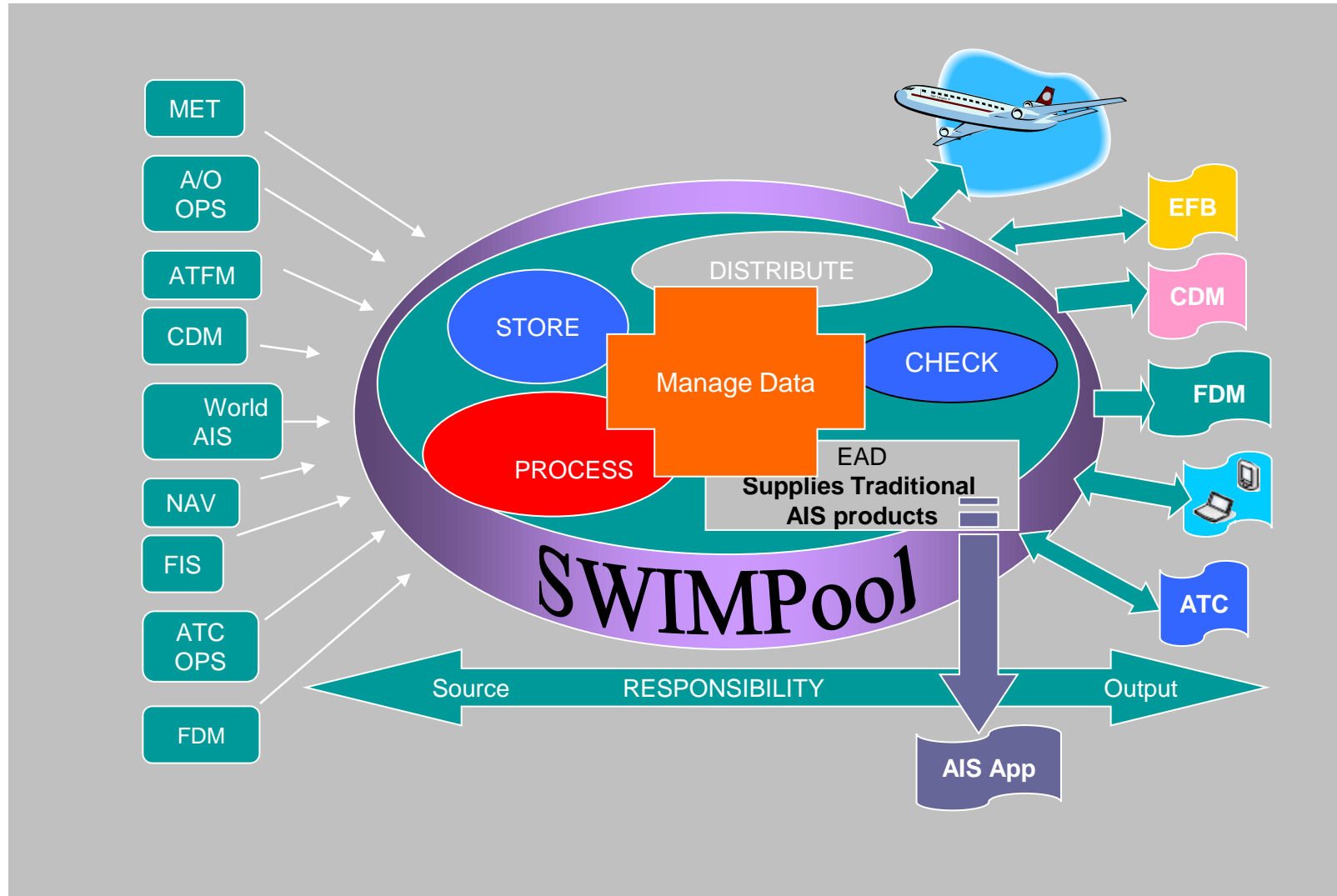


# Shared Situational Awareness is Key



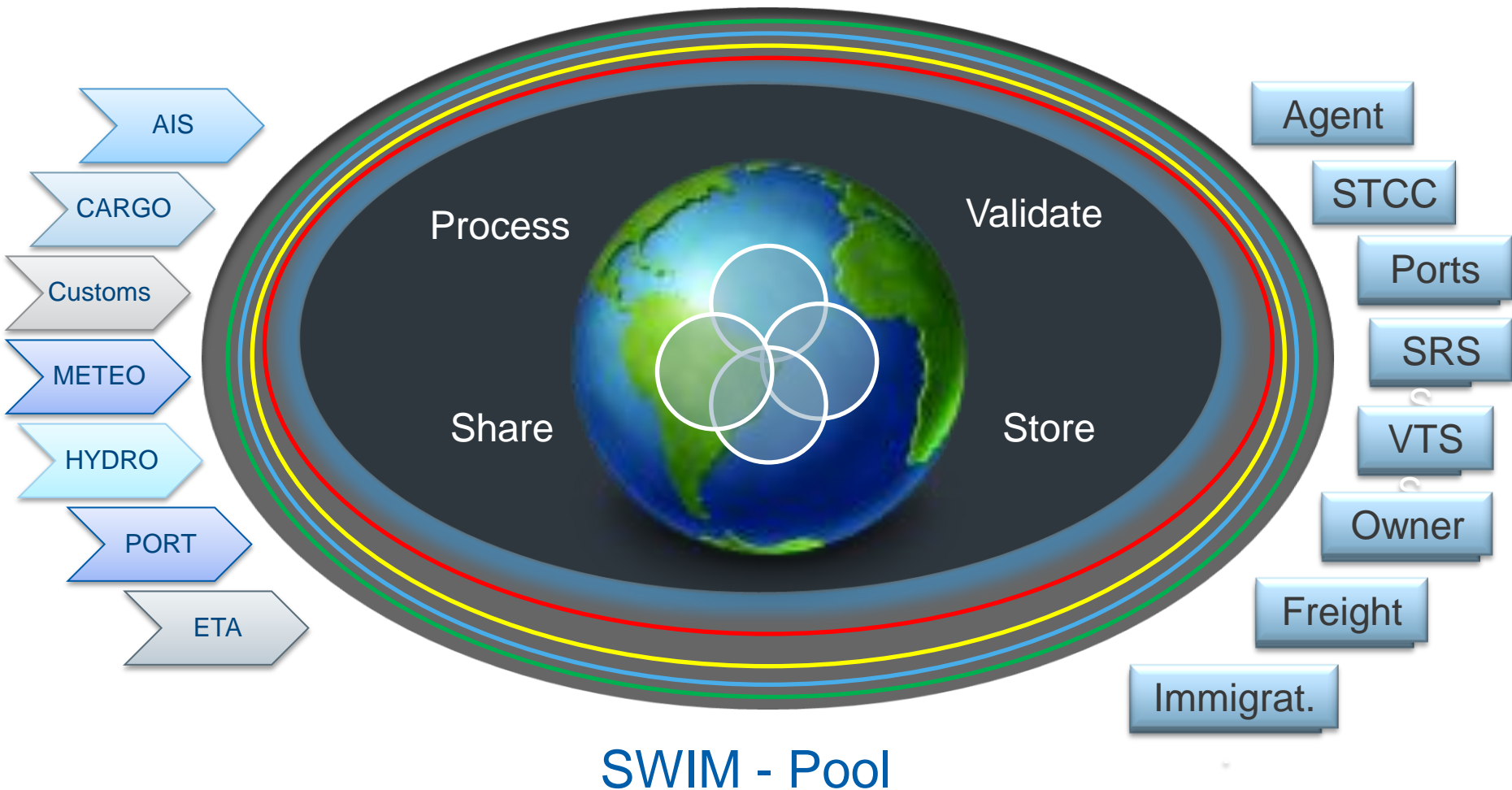


# System Wide Information Management



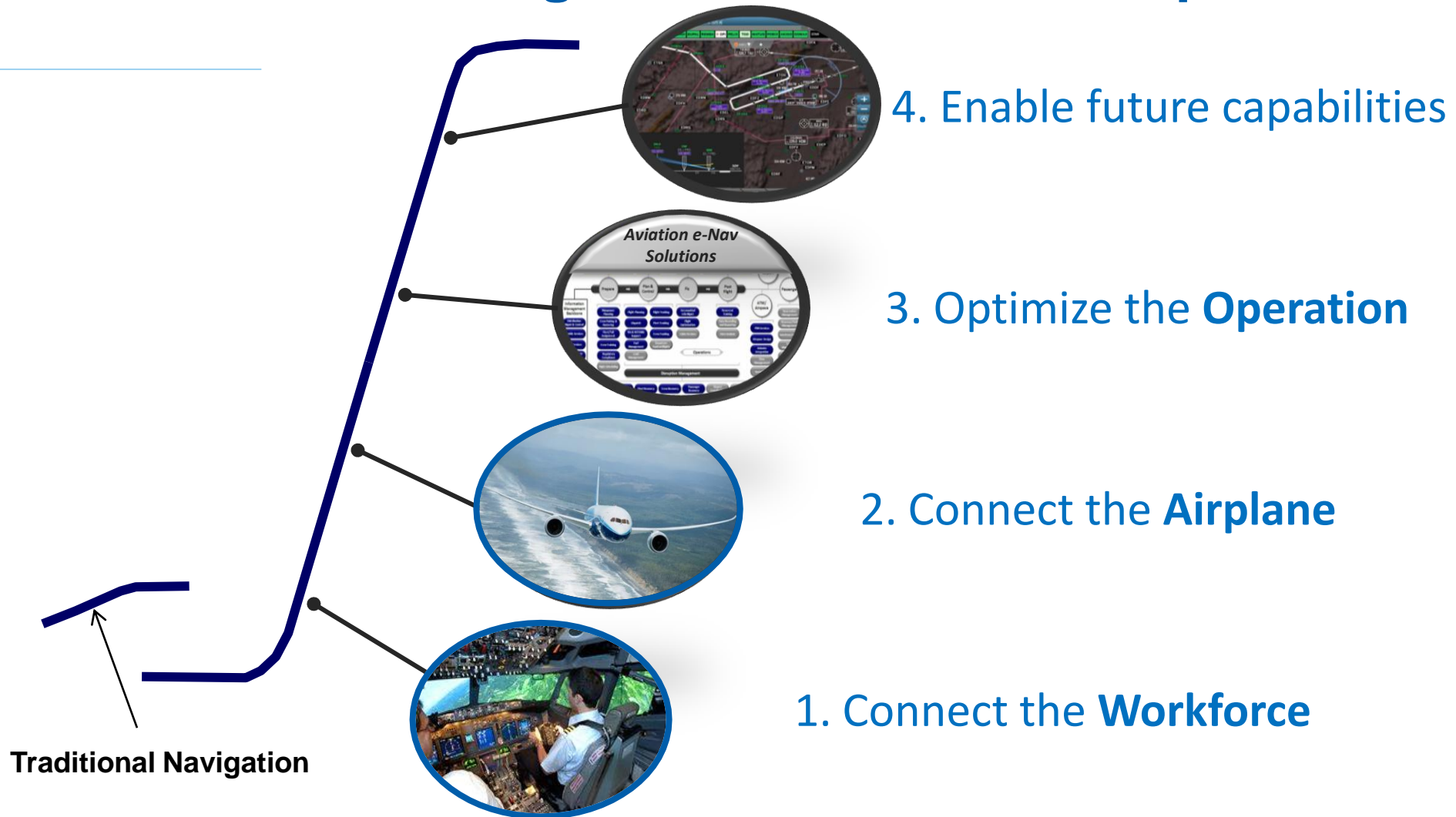
# MonaLisa “SeaSwim”

## FLOW OF INFO



SWIM - Pool

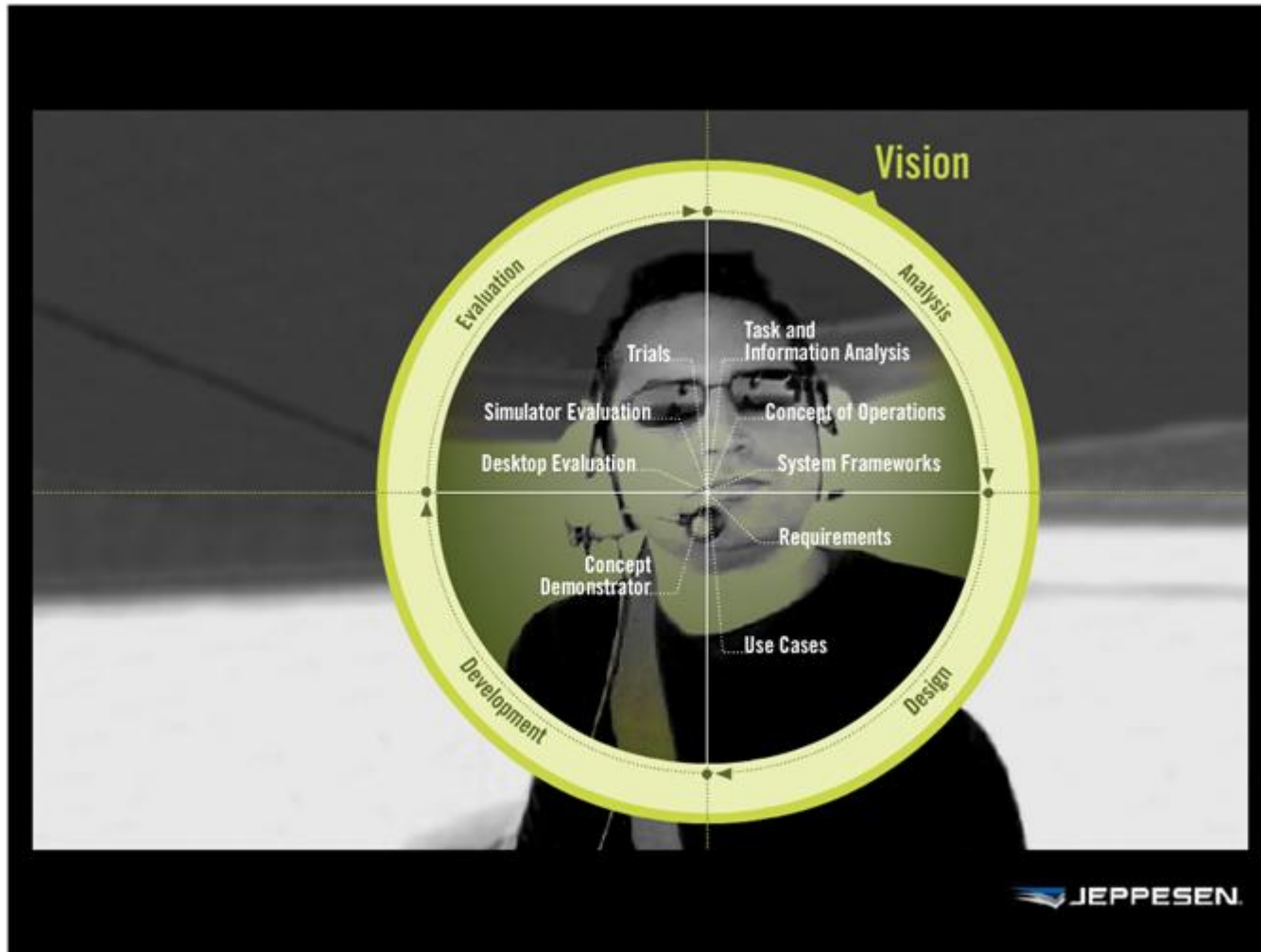
# The Aviation Intelligent Information concept



The 'S' curve with Intelligent Information

# Aviation Human Centric Approach

*Keeping our humans in the center of the iterative process...*



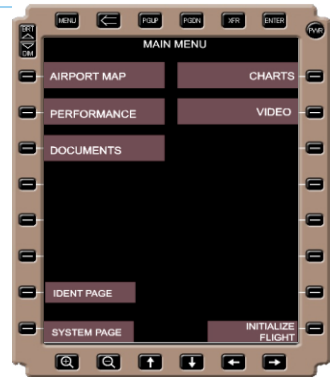


# Marine and Aviation Mobile Solutions: App-Structure rather than “Dedicated Display”



# Aviation Electronic Flight Bag

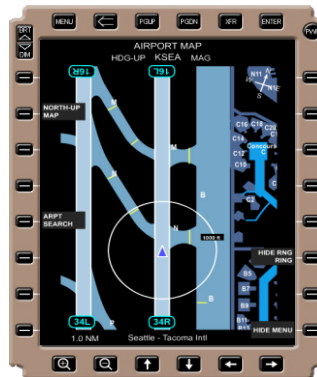
## An “information solution”



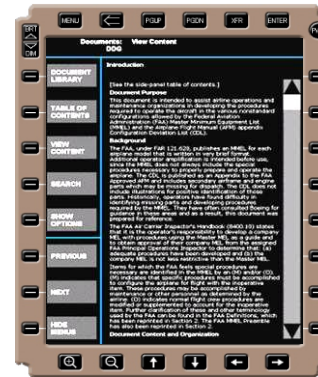
Application Manager



Terminal Charts



Airport Map



Documents



Video Surveillance



Performance



Logbook  
(future application)



Data/Comm Manager  
(future application)



Enroute Moving Map  
(future application)



Weather  
(future application)

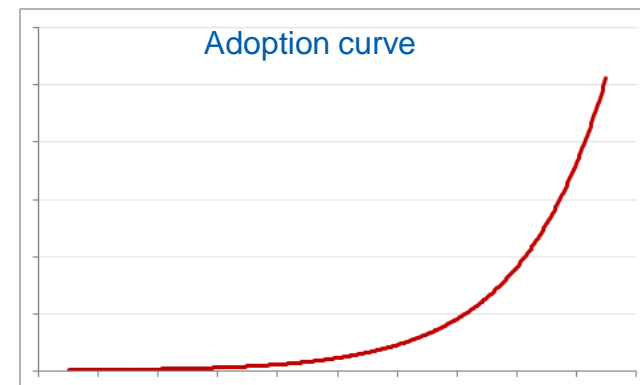


# Aviation Migration to paperless

## Slow start, rapid implementation



- Providing us with needed information
- At the time we need the information
- With the necessary accuracy
- Up to date
- Easy to use
- Cheap to allow for redundancy
- **Devices to be used as designed**
- Apps of high quality (reliability)
- Apps flexible in use
- Easy adapting to new needs
- Human Centered Design
- Adapting to changed human behavior
- Within regulatory framework
- **Maintenance frequently**



- Implementation is slow
- Once critical mass is reached the adaption is exponential
- Prepare for rapid change through market pressure
- Collaboration of all stakeholders is required
- Data quality is paramount (Data Supply Chain Certification)
- System and Software Lifecycle needs to be defined
- Flexible, innovative Solutions will be needed
- Mobile Solutions generated momentum



# THANK YOU !

[michael.bergmann@jeppesen.com](mailto:michael.bergmann@jeppesen.com)