



The Technological Evolution of Hydraulic Dredging

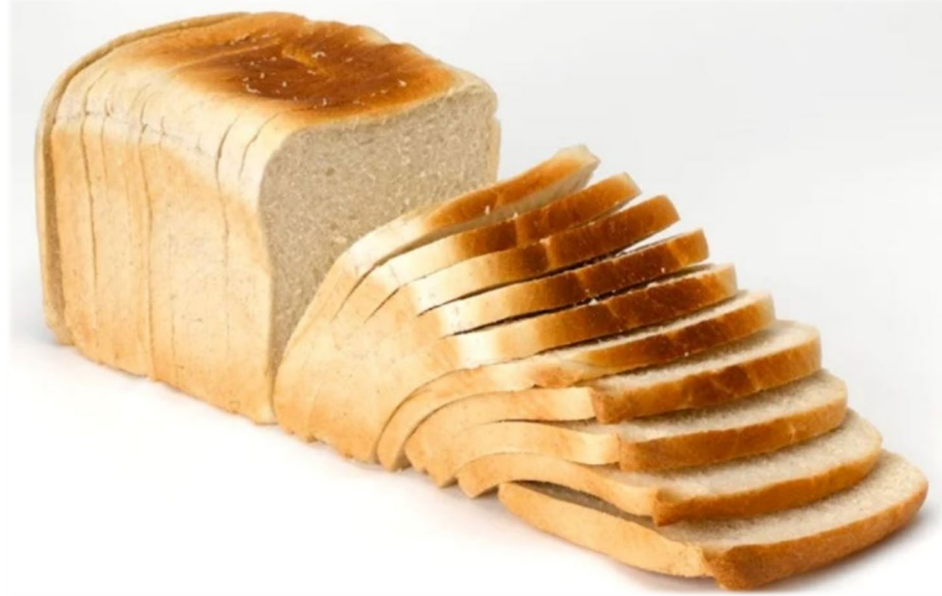


DREDGING SUMMIT & EXPO '22

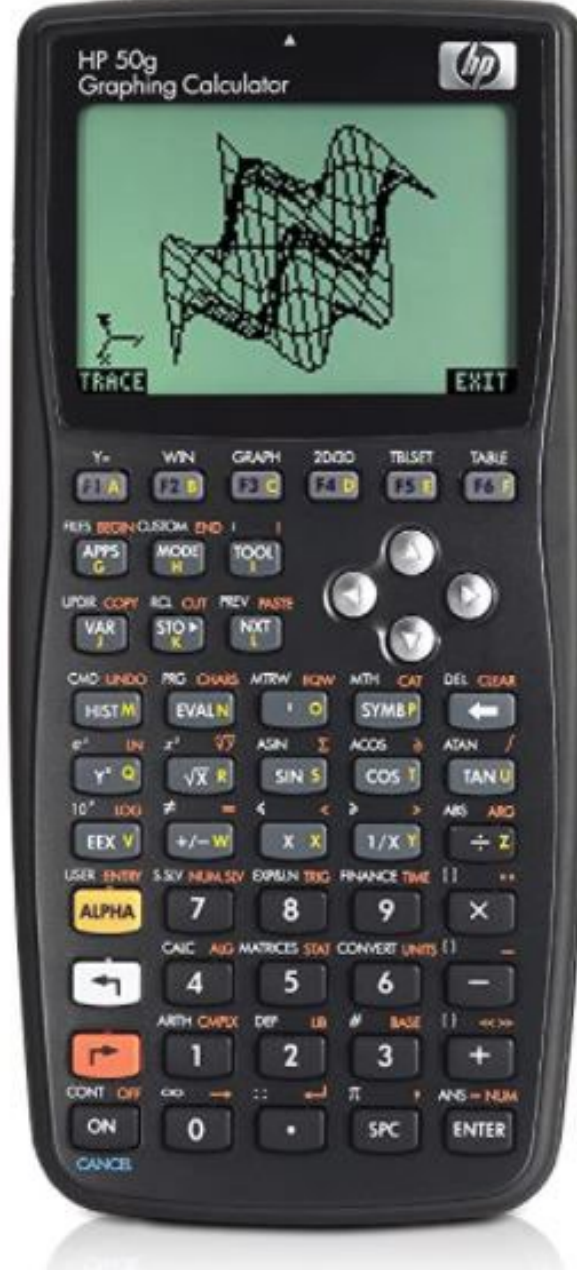
Building the Future of Dredging

*Presented by DSC Dredge, LLC
Bob Wetta, President & CEO*

Discovery vs. Technology



Discovery vs. Technology





Why Technology?

A better way to solve problems

To find a more efficient and/or accurate way of doing something

Long-term reduction of costs

Can be adopted to increase safety

Can be adopted for environmental benefits

Can produce new technologies or new discoveries

Dredging Technology



History of the Dredge



Reconstruction of the mud-drag by Leonardo da Vinci

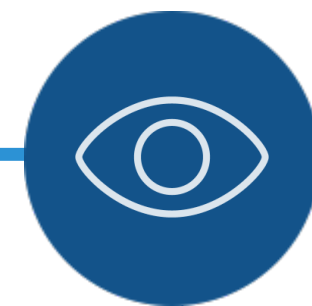
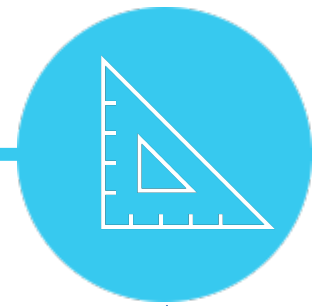
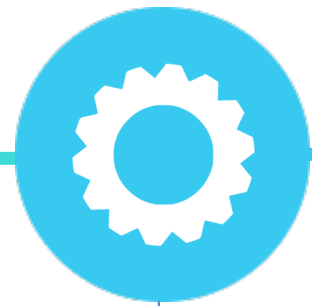
Where We've Been... Where We're Heading

World Events, Inventions & Dredge Technology

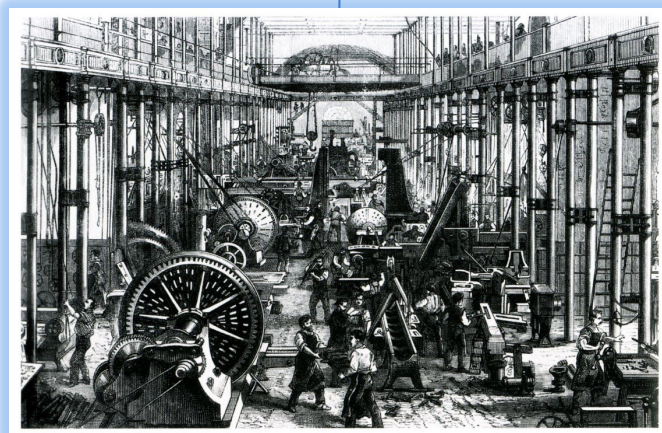


Pre - 1890

1890

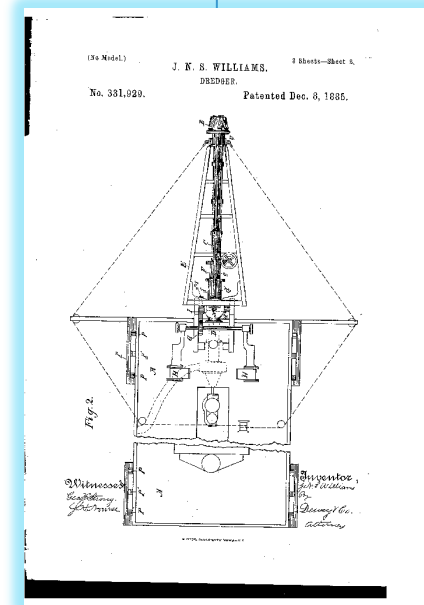


Electric Lamp



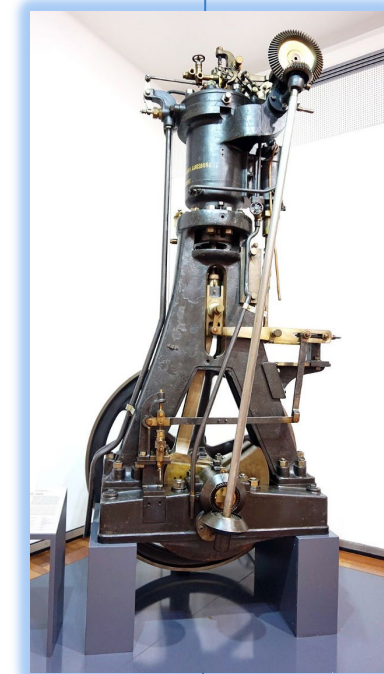
End of 2nd Industrial Revolution

Mechanical Dredge Controls



Swinging Ladder Dredge

Radio



Diesel Engine

Where We've Been... Where We're Heading

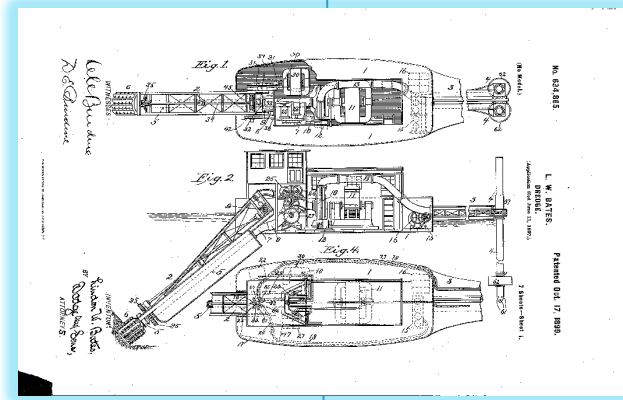
World Events, Inventions & Dredge Technology



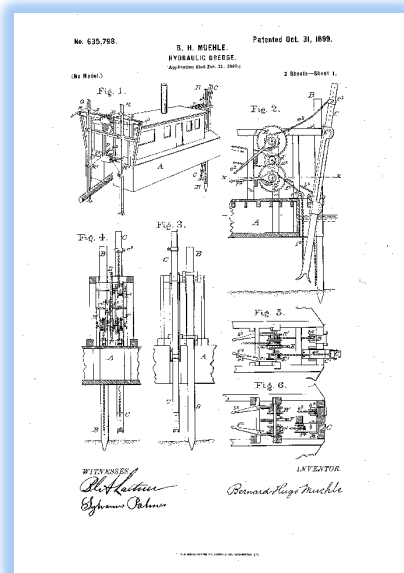
1890



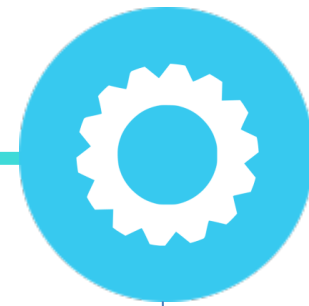
Moving/
Tilting
Spuds



Electric
Powered
Dredge



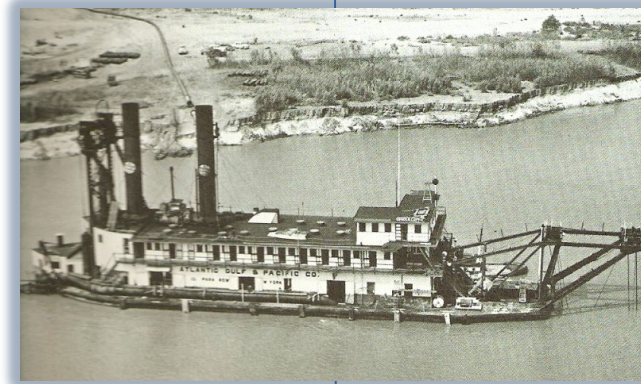
1900



Sonar-like
Device



CSD
Development



1910



World
War I



Commercial
Air
Flight



Where We've Been... Where We're Heading

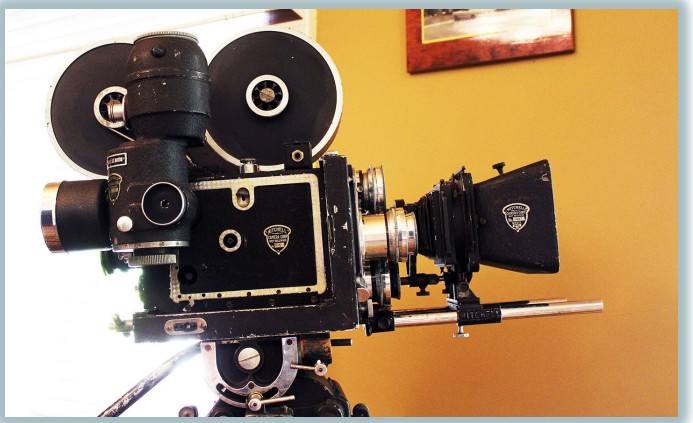
World Events, Inventions & Dredge Technology



1910



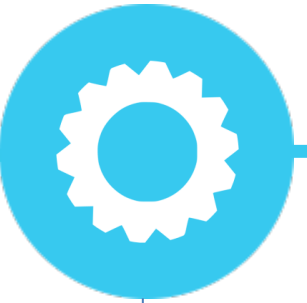
Talking Motion Picture



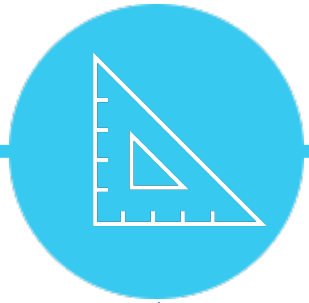
Industrial Pneumatic Controls



1920



Television

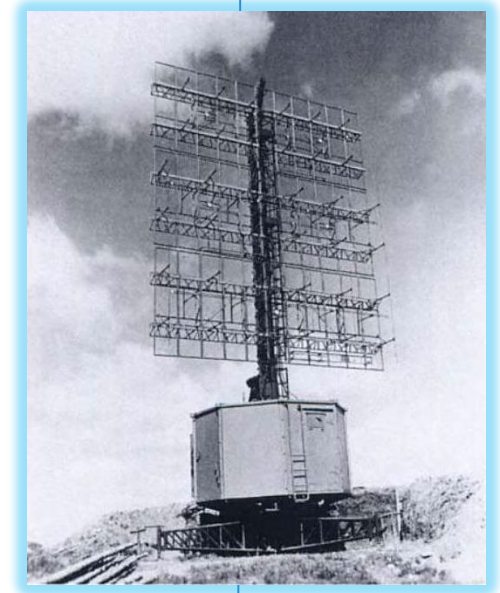
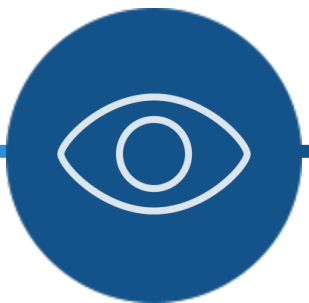


Color Movies

1930



World War II



Radar



Where We've Been... Where We're Heading

World Events, Inventions & Dredge Technology



1930



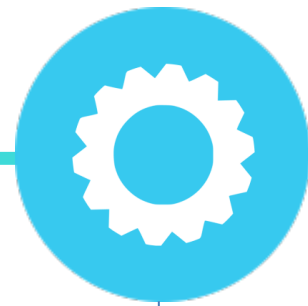
Hydrographic
Surveys



Diesel
Powered
Dredge



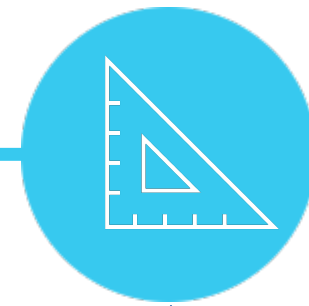
1940



Speed of
Sound
Exceeded



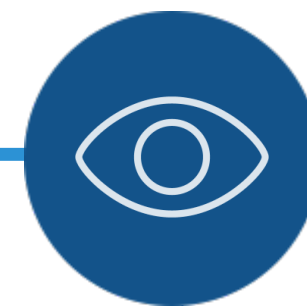
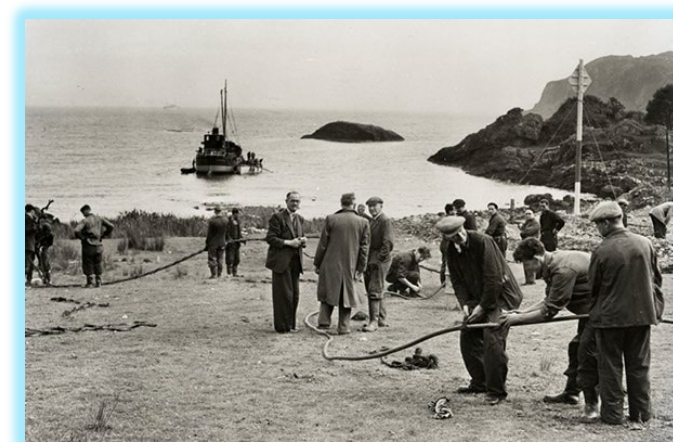
1950



Commercial
Jet Air
Flight



Transatlantic
Phone
System



Hydraulic
Dredge
Controls



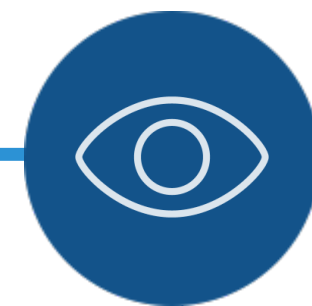
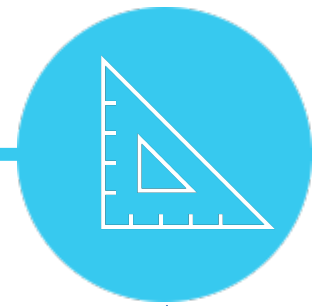
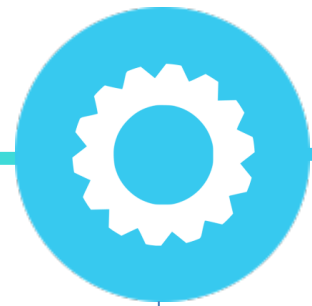
Where We've Been... Where We're Heading

World Events, Inventions & Dredge Technology



1960

1970



Vietnam War



Industrial DC Drive

World Dredging Association/
WODCON



US Environmental Protection Agency

Personal Computer



Internet

Where We've Been... Where We're Heading

World Events, Inventions & Dredge Technology



1970



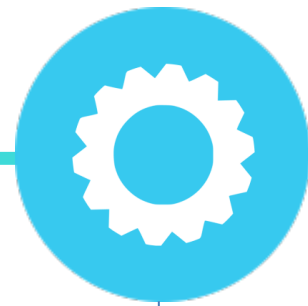
Production
Instrumentation



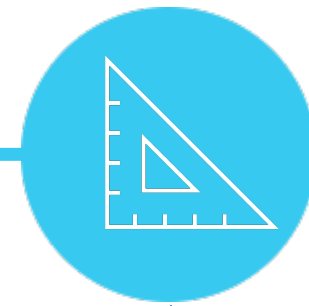
1980



Civilian
GPS
System



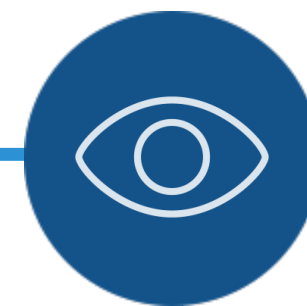
Commercial
Cell
Phone



World
Wide
Web



Multibeam
Sonar



Ultra-Portable
Dredges

Where We've Been... Where We're Heading

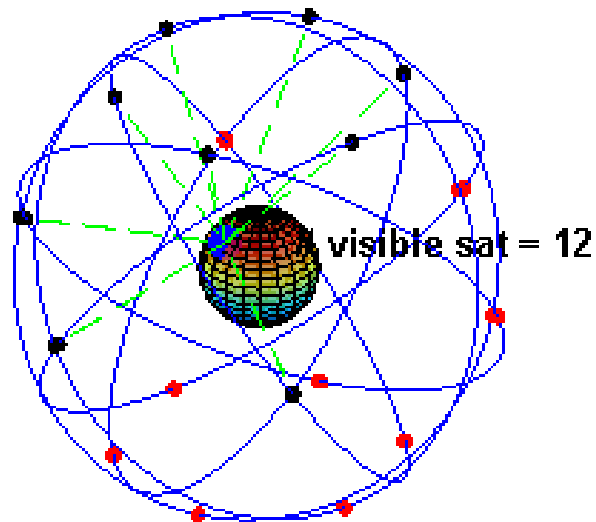
World Events, Inventions & Dredge Technology



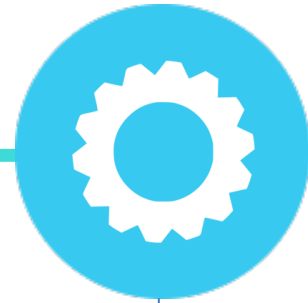
1990



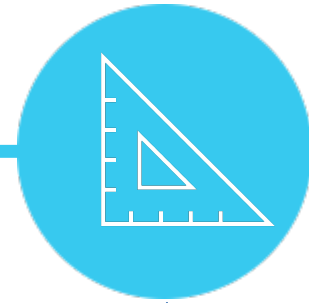
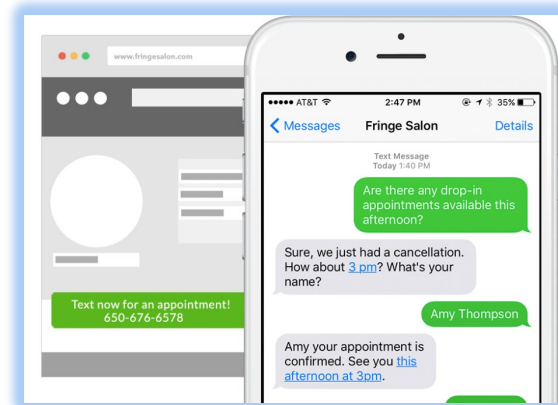
RTK
For
GNSS



Bluetooth



Text
Message

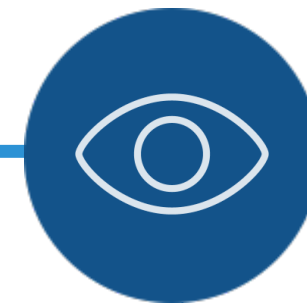


Submerged
Pump
SLD

2000



DVR



Industrial
AC
Drive

Where We've Been... Where We're Heading

World Events, Inventions & Dredge Technology



2000

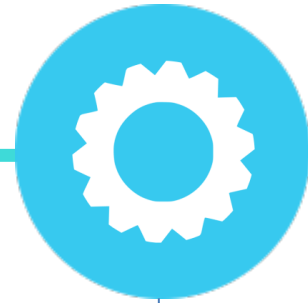


iPhone

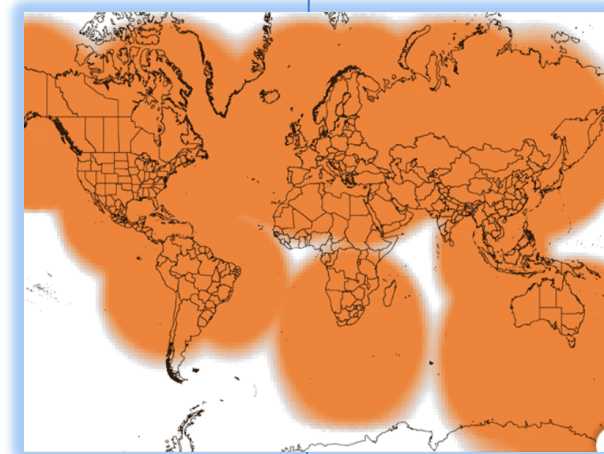
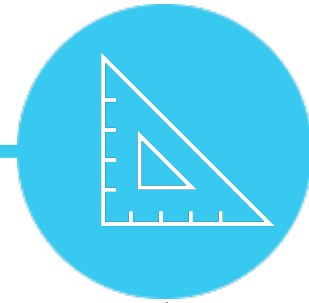


PLC/PC
Controlled
Dredge

2010



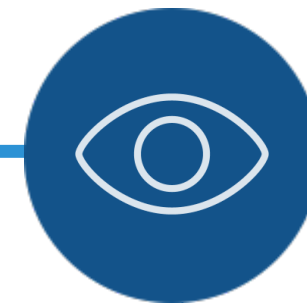
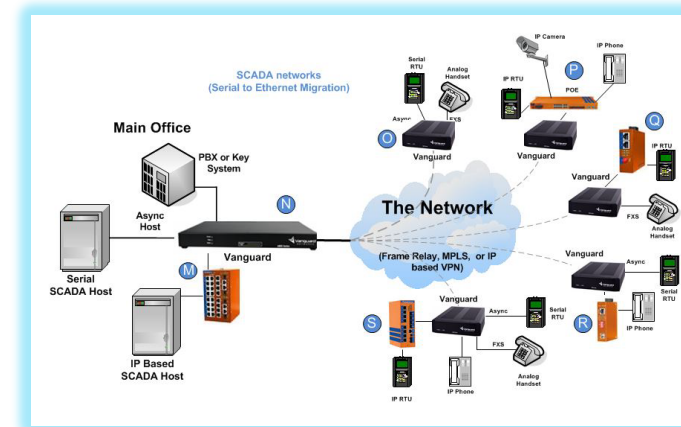
Industrial
Artificial
Intelligence



Global
Cellular
Connectivity



Dredge
SCADA
Networks



Simplified
Dredge
Control
System

Where We've Been... Where We're Heading

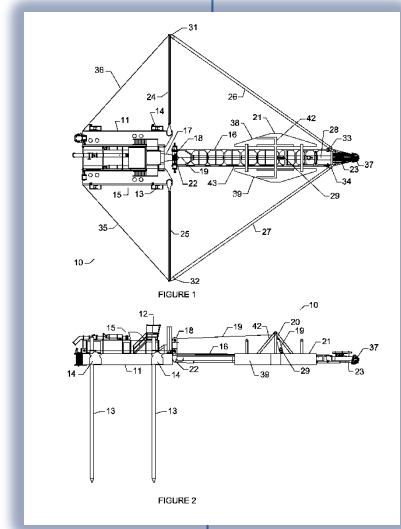
World Events, Inventions & Dredge Technology



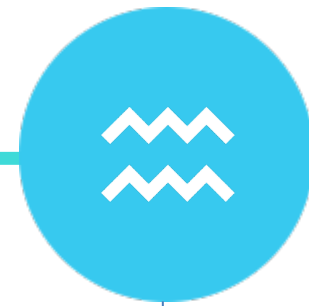
2010



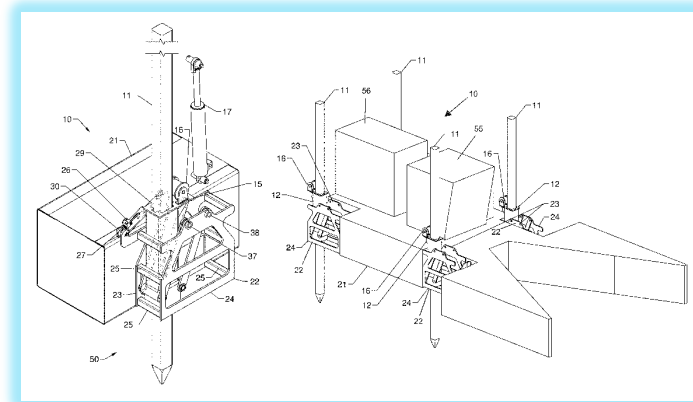
Complex
Dredge
Control
Systems



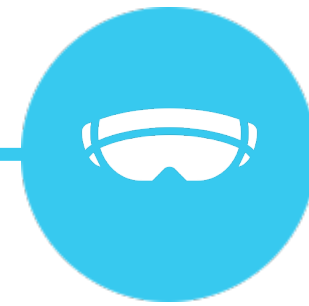
Wide
Format
SLD
(SHARKUDA®)



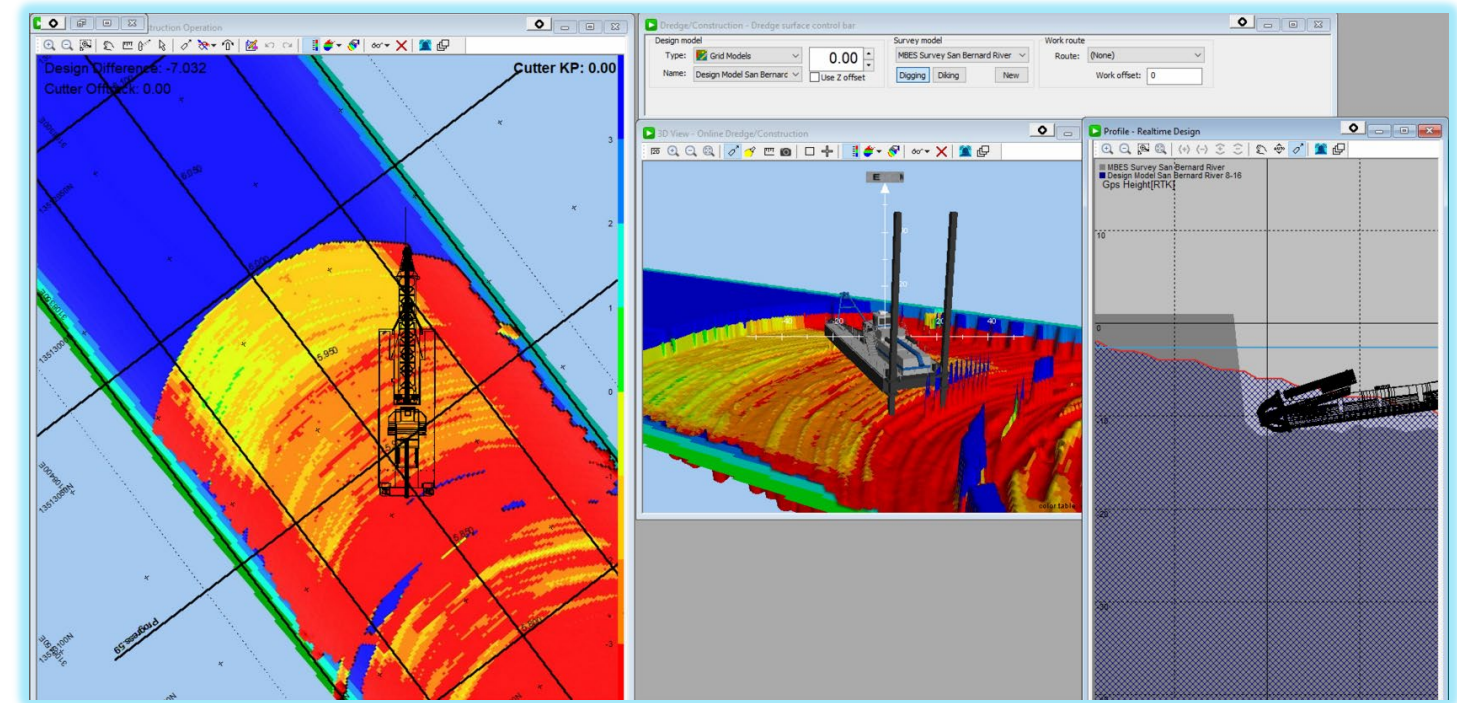
Spud
Glider



2020



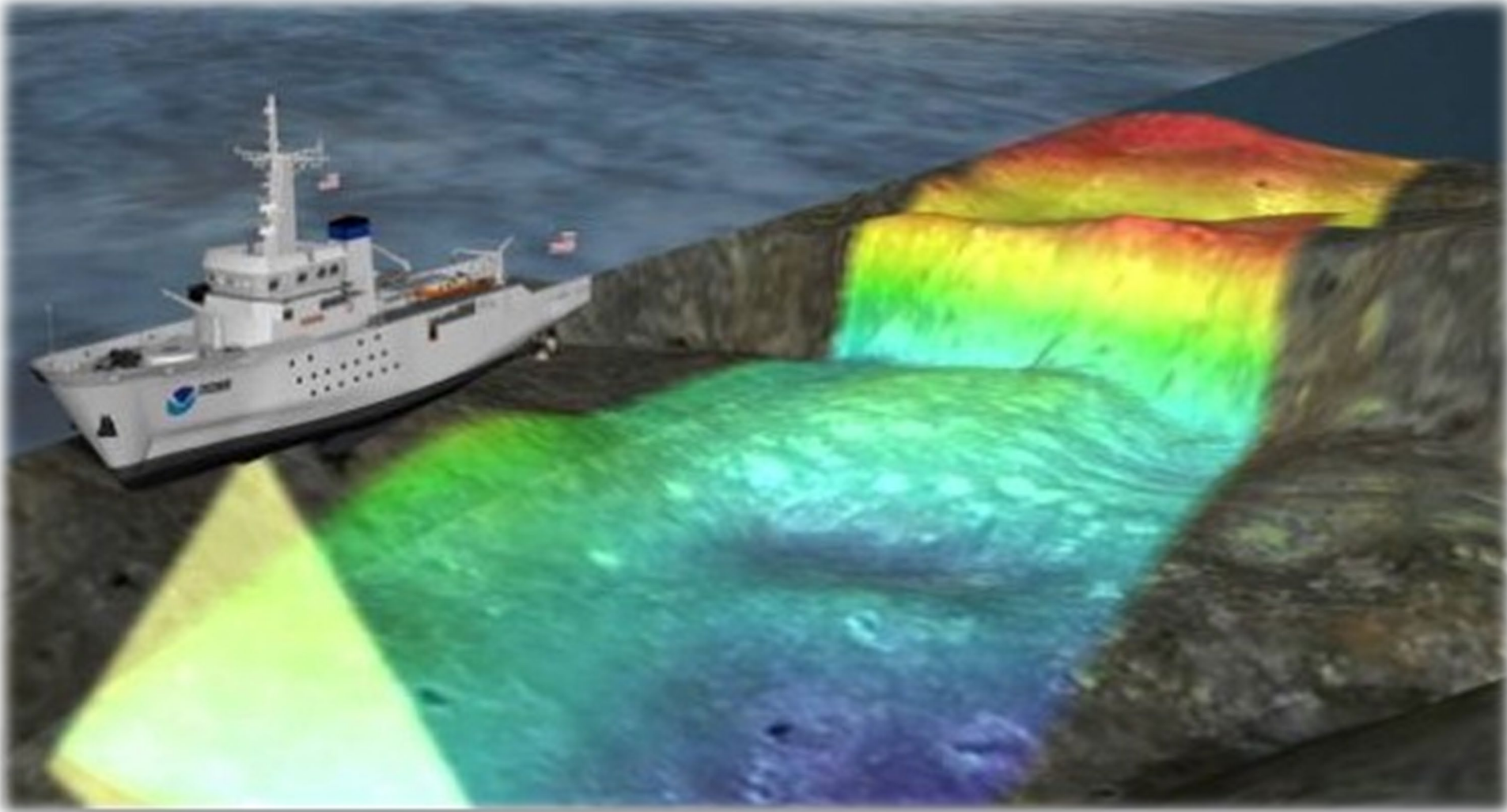
Innovative, user-friendly bottom
visualization systems



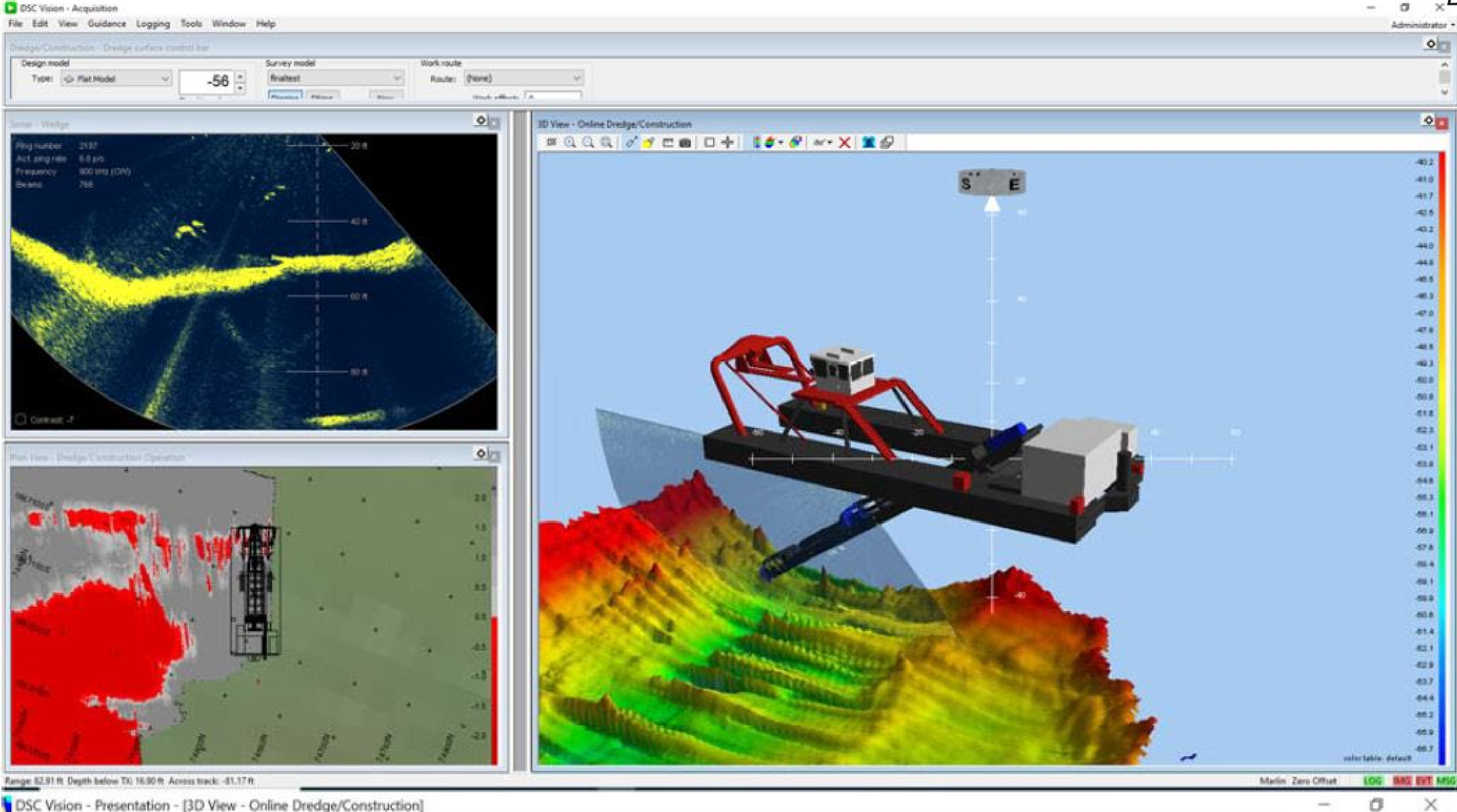
Merging Technologies



Merging Technologies to Find New Technologies



Merging Technologies to Find New Technologies



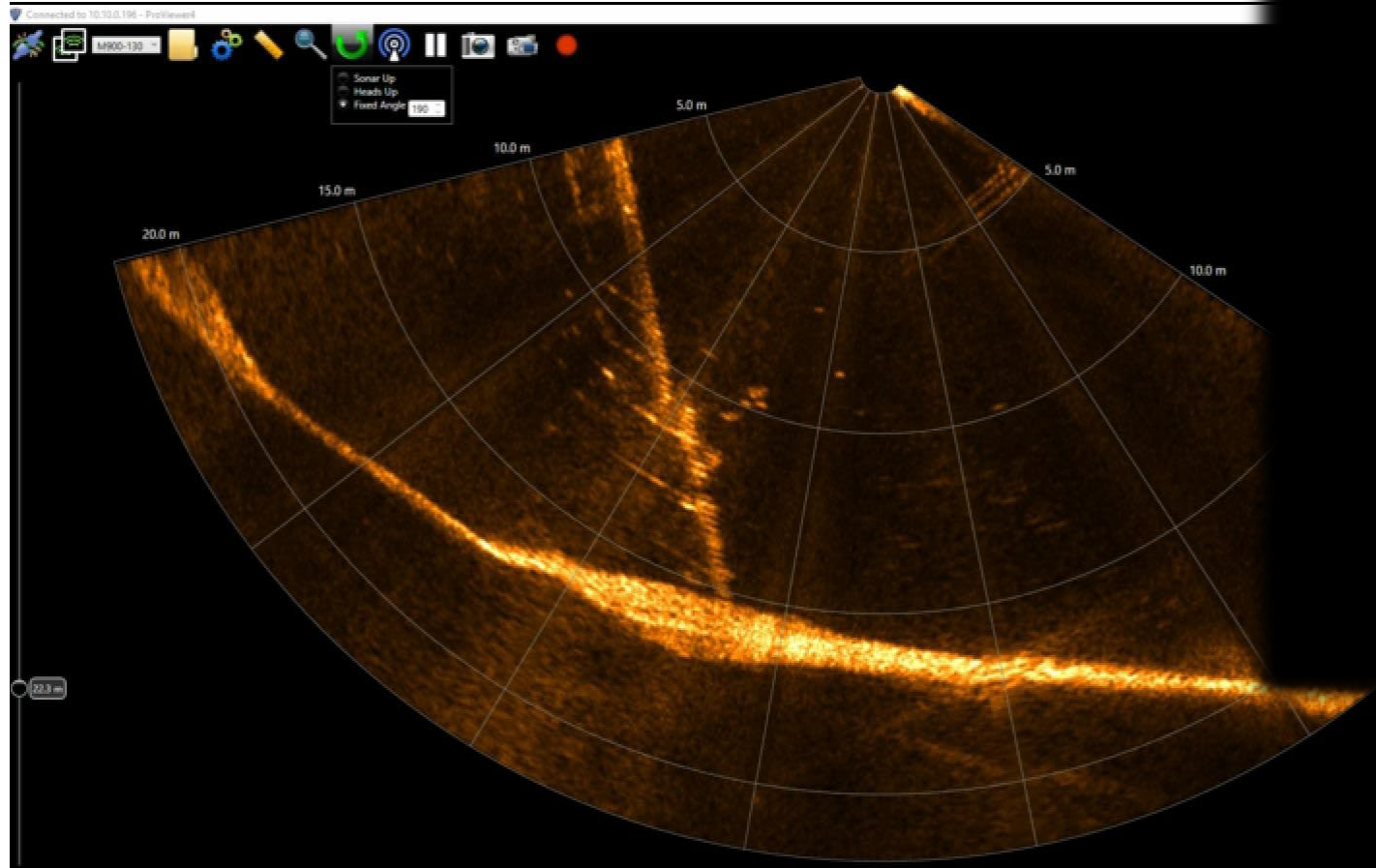
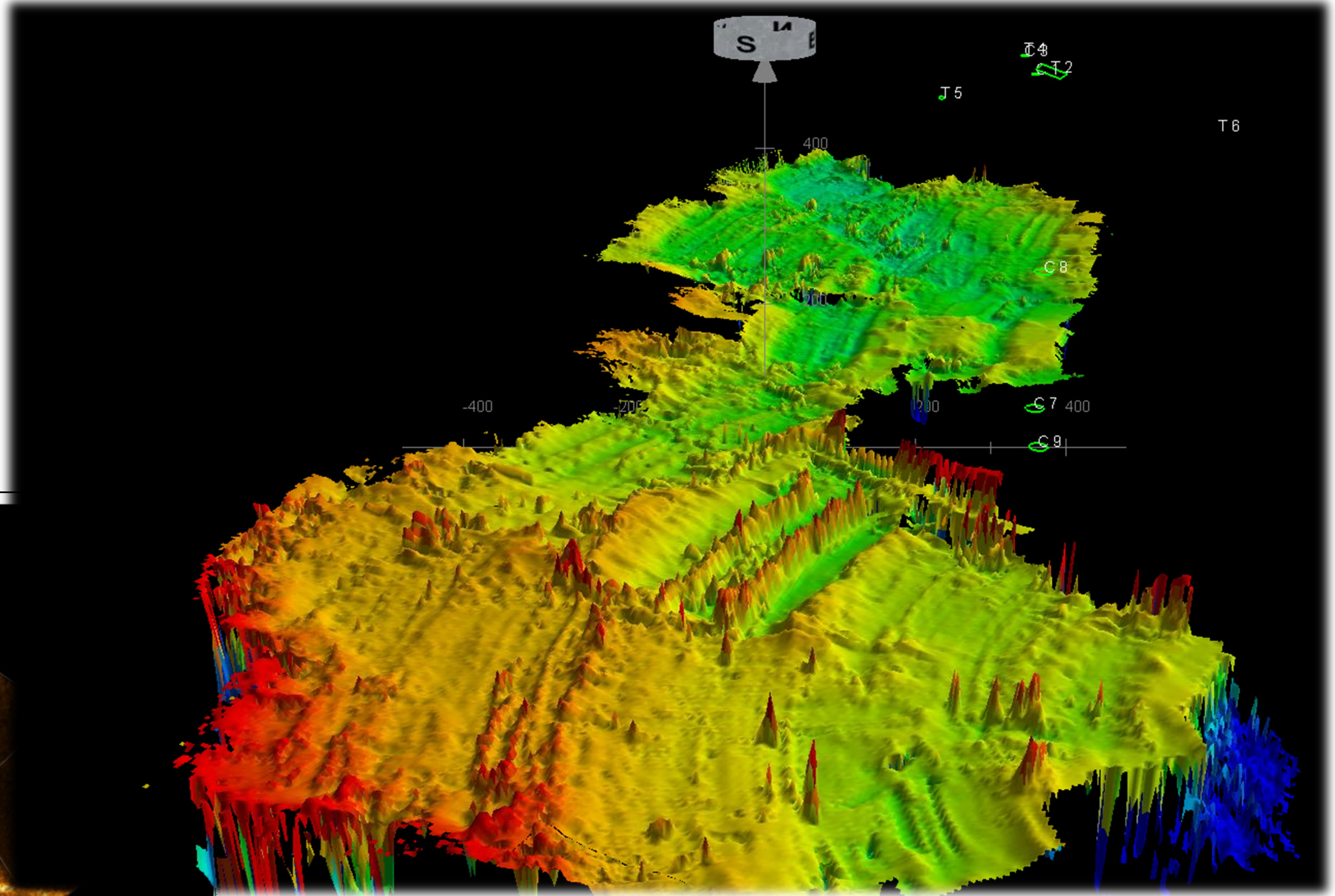
Merging Technologies to Find New Technologies



Multi-beam Sonar
[accurate visibility underwater]

GPS Positioning
[accurate location]

Remote Connectivity
[monitoring, data storage]

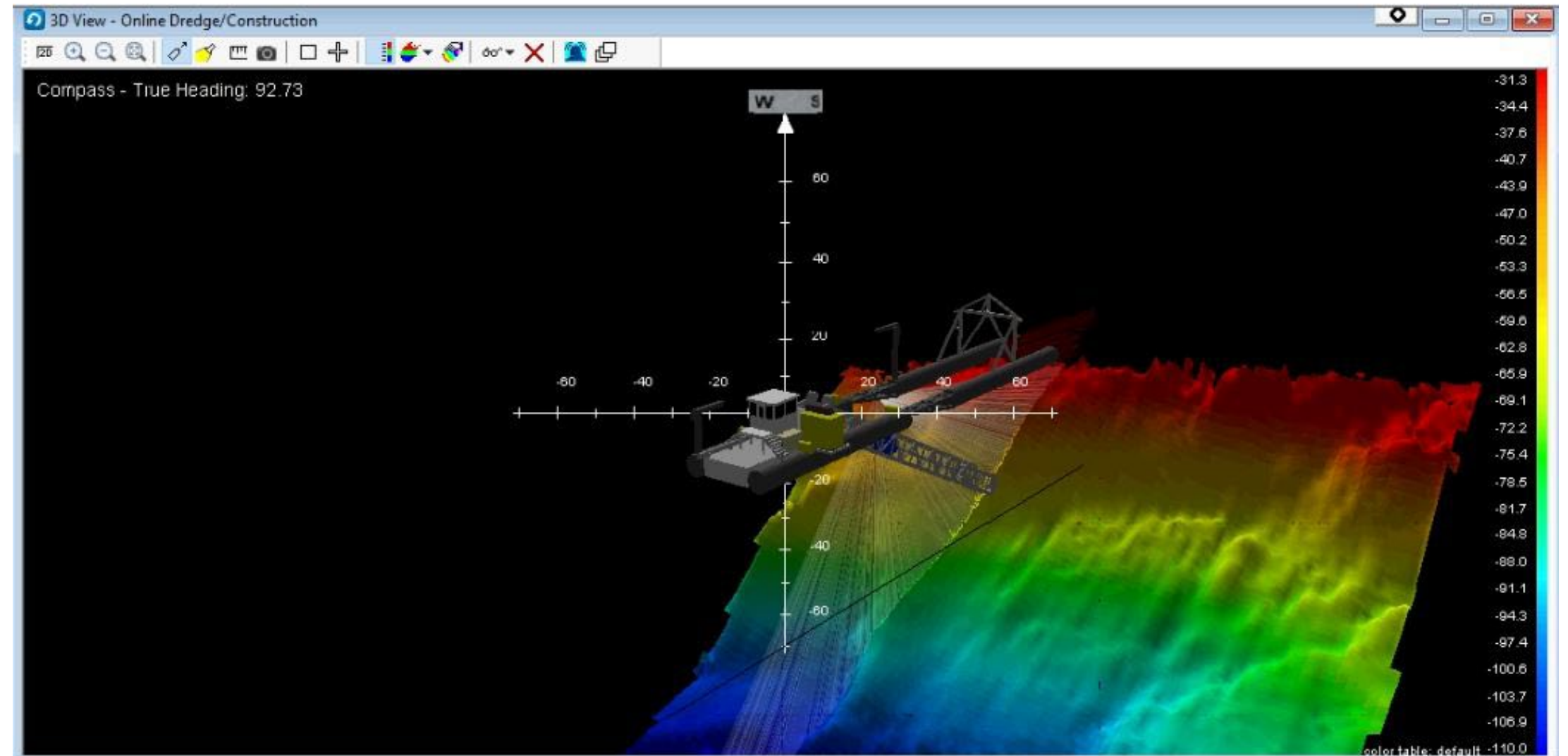


The Possibilities



- Serves for pre/post survey
- Accuracy [minimizes over dredging, remobilization to missed areas] \$\$\$
- Efficiency, time reduction, a happy client \$\$\$
- Lessens traffic on the water [safety]
- Lower traffic = lower emissions [environmental]
- R&D to show proof to all stakeholders

Will we adapt or continue to lag behind???



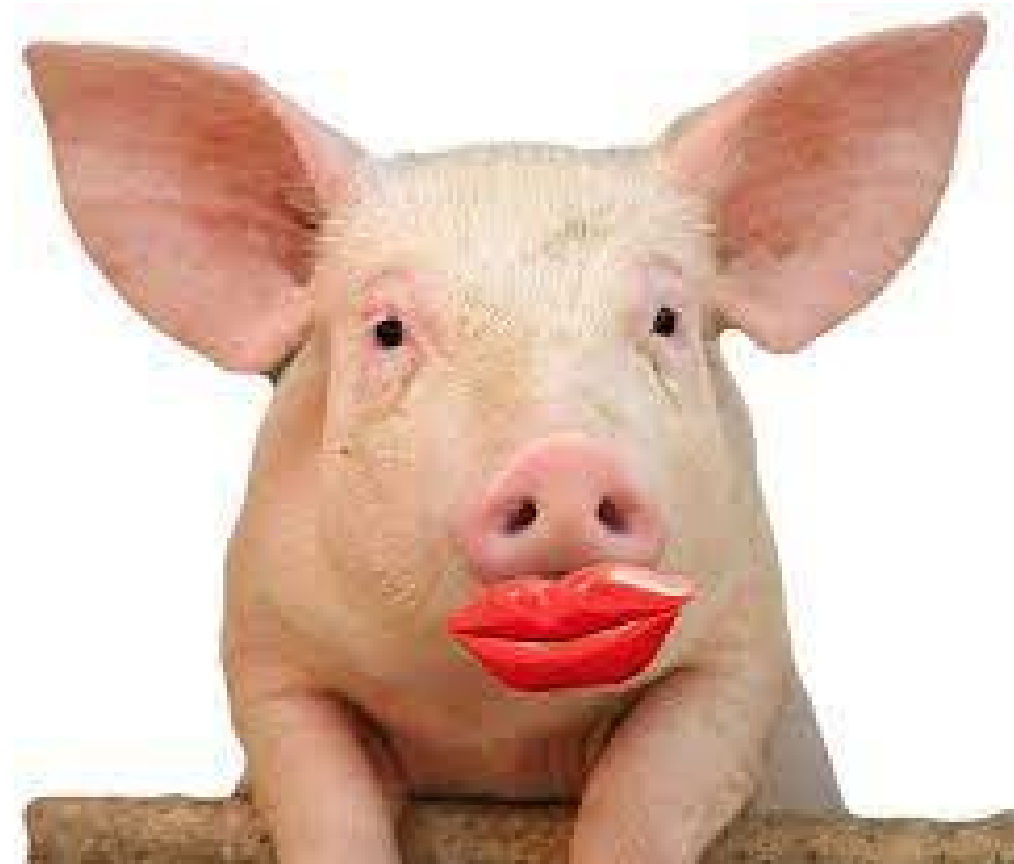


To our industry for new investment in equipment and technology

Let's keep investing to avoid.....



Making something old
and inefficient look new
isn't sustainable, or pretty





Thank You!

Questions?



DREDGING SUMMIT & EXPO '22

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Bob Wetta, President & CEO*