



# Navigating Technology Trends Influencing Maritime

Michael Abdul, Wireless Maritime Services (WMS)

WHAT DOES THIS SAY? ANY GUESSES?

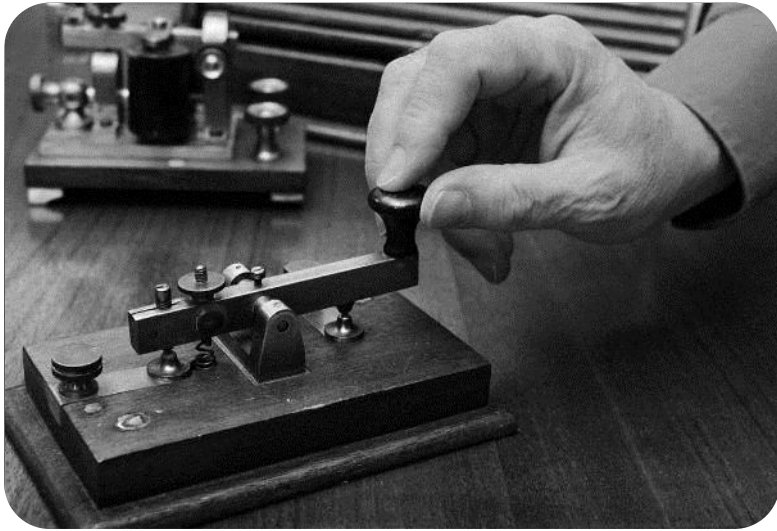


WHAT DOES THIS SAY? ANY GUESSES?

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H E L L O

# ELECTRIC TELEGRAPH: 1837 – 21 BITS PER SECOND



Animation mimics real transmission and manual transcription speed at one word every two seconds

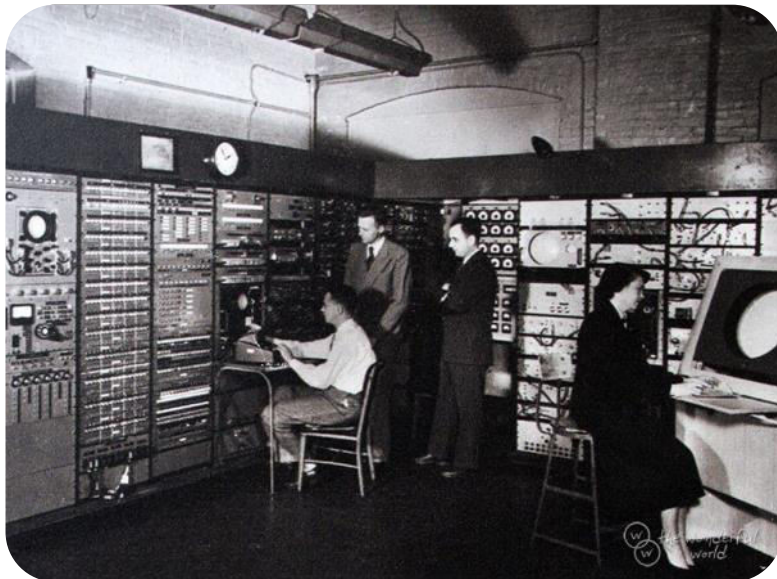
# Trend #1: High Speed Networks Spur Innovation

# ARPANET: 1969 – 50,000 BITS (50 KILOBITS) PER SECOND



Telegraph (1837) – 21 BITS per Second

$\frac{1}{2}$  word  
every second

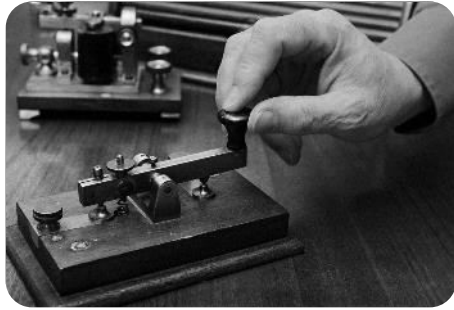


ARPANET (1969) – 50,000 BITS per Second

3,500 words  
every second

Relative speed animation not to scale. For illustration purposes only.

# FIBER INTERNET: 2023 – 1 GIGABIT PER SECOND



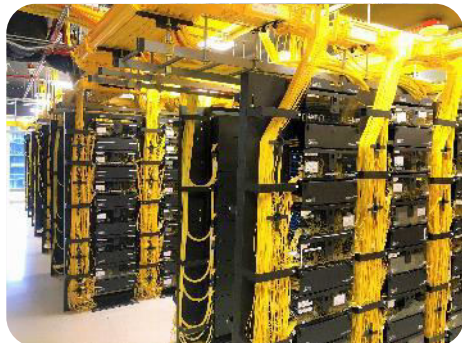
● —————  
Telegraph (1837) – 21 BITS per Second

1/2 word  
every second



● —————  
ARPANET (1969) – 50,000 BITS (50 KB) per Second

3,500 words  
every second

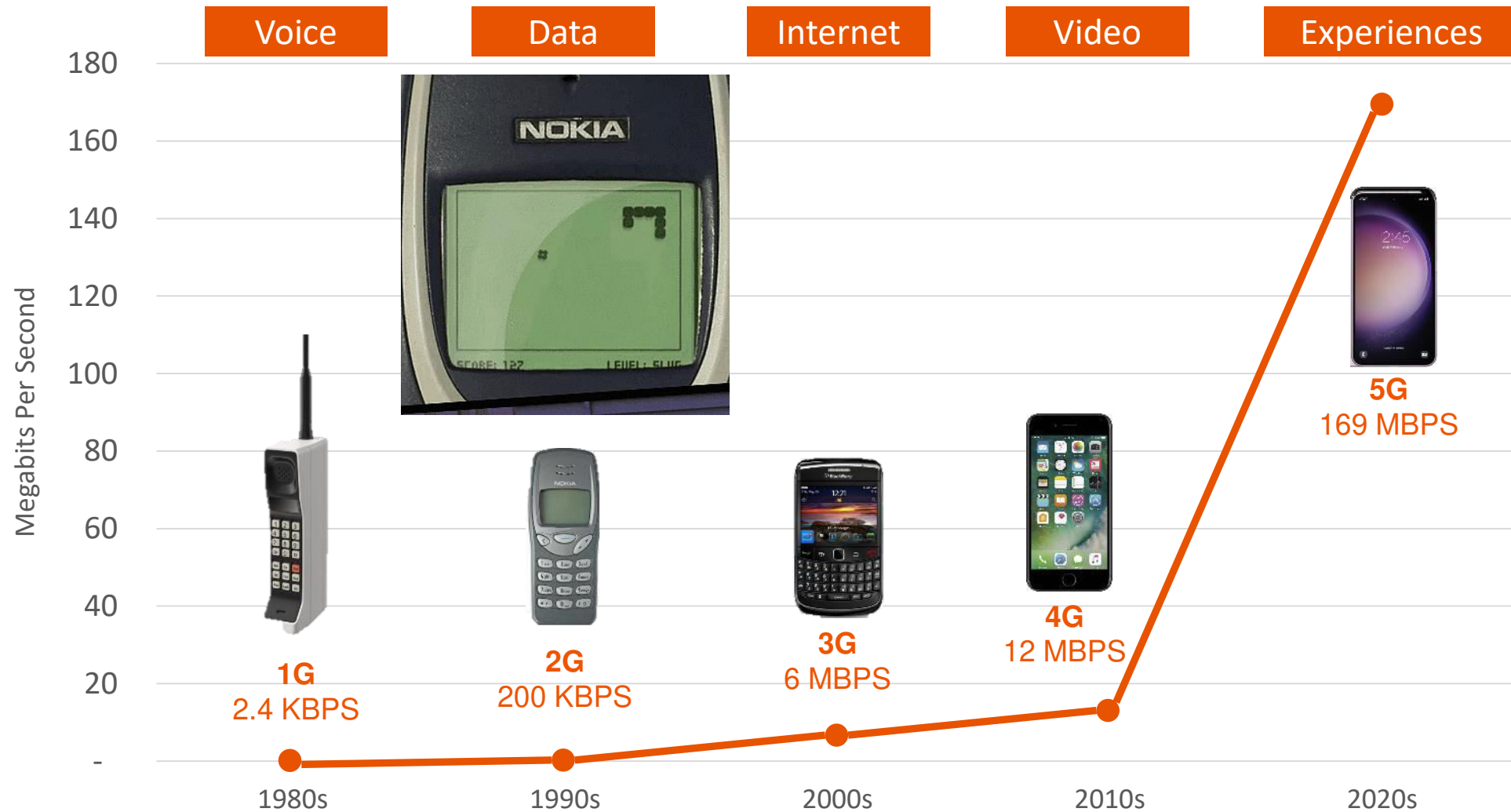


● —————  
Fiber Internet (2023) – 1GB (1,000,000 KB) per Second

5,000,000 words  
every second

Relative speed animation not to scale. For illustration purposes only.

# CELLULAR DOWNLOAD DATA SPEEDS: FROM 1G TO 5G



Commercial speeds observed in Canada. Source: CENGN

Information Classification - 62,500 words



# Trend #2: LEO Satellites Disrupt Space

# COMMUNICATION SATELLITE ORBITS AND LATENCY

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**Geostationary Earth Orbit (GEO)**  
35,405 Kilometers  
500 – 800 millisecond delay

Relative latency animation not to scale. For illustration purposes only.

# STARLINK LEO MARITIME VERSUS GEO VSAT (220/25 MBPS)

## Traditional VSAT



**CAPEX:** \$150-250K USD  
**MRC:** \$150-200K USD (CIR)  
**Weight:** 1,133 kg / 2,498 lbs  
**Size:** 4.3x3.9 m (14.1x12.8 ft)



**CAPEX:** \$2.5K USD  
**MRC:** \$5K USD (5TB Maritime), \$40-50K USD (Cruise-unlimited)  
**Weight:** 5.9Kg / 13 lbs  
**Size:** 51x57cm (20x22 in) **No crane needed!**

- Available now
- Global coverage (ISL)
- High speed
- Low-cost
- Low latency
- Small, low-cost terminals

# STARLINK IMPLEMENTATIONS IN CRUISE MARKET

## SpaceX's Starlink Satellite Internet Is Coming to Cruise Ships

Royal Caribbean says it will begin installing Starlink terminals across its entire fleet immediately



**Sarah Kuta**

Daily Correspondent

September 6, 2022



Source: Smithsonianmag.com

# STARLINK IMPLEMENTATIONS IN SHIPPING MARKET



## Seafaring in the digital age: Hapag-Lloyd to Enhance Connectivity at Sea with Starlink Satellite Internet

- Hapag-Lloyd starts this year rollout of Starlink to its fleet
- Remarkable improvement of communication for seafarers
- Enhancing efficiency and safety of the fleet

Source: Hapag-Lloyd

# Trend #3: Generative AI is Democratizing Automation

# GENERATIVE AI: WHAT IS IT?

- Generative artificial intelligence creates new content based by learning patterns and structure of their input training data and then generate new data that has similar characteristics
- Recent breakthroughs in the field have the potential to drastically change the way we approach content creation



## Greywing's new SeaGPT solves email overwhelm for maritime crew managers

Catherine Shu

@catherineshu / 10:00 PM EDT • April 24, 2023



Comment

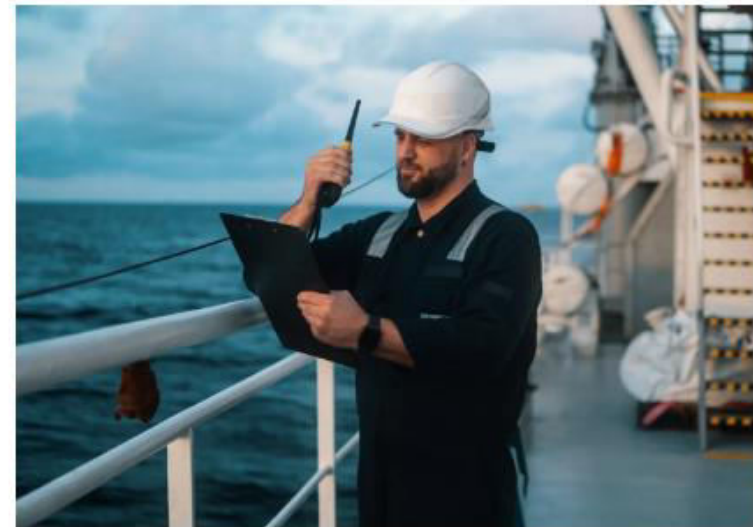


Image Credits: Greywing

Source: TechCrunch



# GENERATIVE AI: WHAT CEOS ARE SAYING

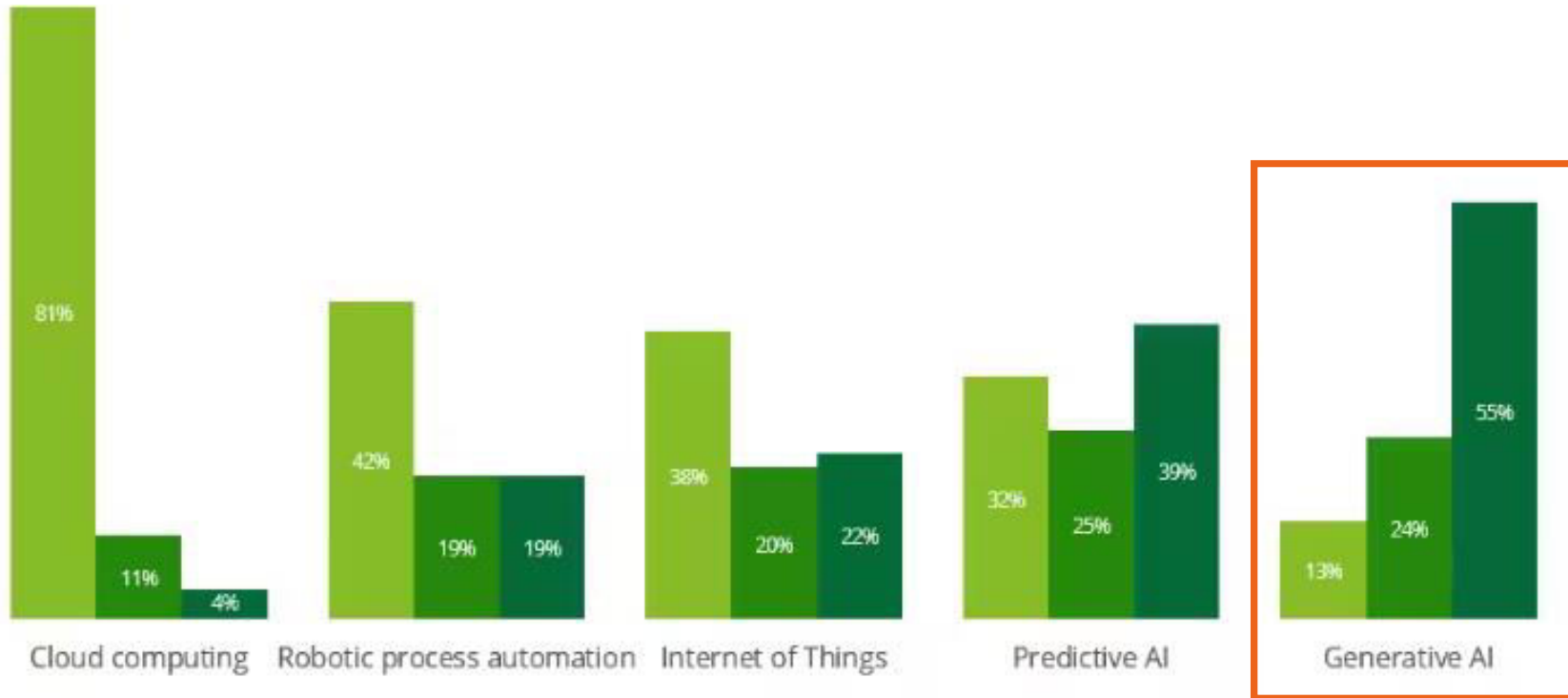


Please indicate your organization's current level of adoption for each of the following technologies:

■ At scale production/Pervasive adoption

■ Limited production use

■ Evaluating/Experimenting



79% believe Generative AI will increase efficiencies and half (52%) believe it will increase growth opportunities.

Source: Deloitte

Information Classification: General

# GENERATIVE AI: WHAT MAY BE COMING

**yahoo!**finance

## 90% of online content could be 'generated by AI by 2025,' expert says



**Alexandra Garfinkle** · Senior Reporter

January 13, 2023 · 3 min read



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Source: Yahoo! Finance

# GENERATIVE AI: MARITIME COMMUNICATION IMPACTS

- AI systems rely on large datasets for training and continuous learning
- As AI models and datasets expand, the need for high-speed network data transfer will rise
- Limited network systems can hinder AI-driven efficiency gains



# THE NET IMPACT FOR MARITIME CONTAINER SHIPPING

1. Generative AI (and predictive AI) requires data to work
2. A high-speed maritime vessel network that handles large data loads is an enabler for efficiency and growth
3. New high-speed LEO satellites are driving costs down

