IBM Boards the Mayflower Autonomous Ship Project

- IBM Systems, AI, cloud and edge technologies at the helm in one of world's first autonomous transatlantic voyages

- Mission to expand humankind's knowledge of the ocean and remove barriers to marine research

- Voyage will help scientists understand the accumulation of ocean plastics - a major societal concern

LONDON, Oct. 16, 2019 /[PRNewswire](#)/ -- **IBM THINK --** IBM (NYSE: [IBM](#)) announced today that it has joined a global consortium of partners, led by marine research organization [ProMare](#), that are building an unmanned, fully-autonomous ship that will cross the Atlantic on the fourth centenary of the original Mayflower voyage in September 2020.

Experience the interactive Multichannel News Release here:
https://www.multivu.com/players/English/8247554-ibm-promare-mayflower-autonomous-ship-project/

The Mayflower Autonomous Ship (MAS) will use IBM's Power servers, AI, cloud and edge computing technologies to navigate autonomously and avoid ocean hazards as it makes its way from Plymouth, England to Plymouth, Massachusetts. If successful, it will be one of the first self-navigating, full-sized vessels to cross the Atlantic Ocean and will open the door on a new era of autonomous research ships.

"Putting a research ship to sea can cost tens of thousands of dollars or pounds a day and is limited by how much time people can spend onboard – a prohibitive factor for many of today's marine scientific missions," said Brett Phaneuf, a Founding Board Member of ProMare and Co-Director of the Mayflower Autonomous Ship project (together with fellow Board Member Fredrik Soreide). "With this project, we are pioneering a cost-effective and flexible platform for gathering data that will help safeguard the health of the ocean and the industries it supports."

Andy Stanford-Clark, Chief Technology Officer, IBM UK & Ireland, added: "IBM helped put man on the moon and is excited by the challenge of using advanced technologies to cross and research our deepest oceans. By providing the brains for the Mayflower Autonomous Ship, we are pushing the boundaries of science and autonomous technologies to address critical environmental issues."

The vessel will carry three research pods containing an array of sensors and scientific instrumentation that scientists will use to advance understanding in a number of vital areas such as maritime cybersecurity, marine mammal monitoring, sea level mapping and ocean plastics. The work will be coordinated by the [University of Plymouth](), UK, who are at the forefront of marine and maritime research, with support from IBM and ProMare.

Ocean Plastics – A Major Concern

According to a study conducted by One Poll on behalf of IBM in the UK, more Brits are concerned about plastics in the ocean than any other form of plastic pollution, and 80% are worried about microplastics ending up in the food we eat. The University of Plymouth – a [global authority in microplastics]() - will lead research to advance understanding in this critical area, analyzing water samples from MAS as it sails across the Atlantic to understand more about the origin, distribution and potential impact of microplastics in the ocean.

According to Professor Richard Thompson, OBE, Director of the Marine Institute, University of Plymouth "microplastics present a substantial challenge to our oceans. Over 700 species come into contact with marine litter which is found from the poles to the equator, and estimates are that the quantity of plastic in the oceans will triple in the decade to 2025. The Mayflower Autonomous Ship gives us the opportunity to rethink how to collect data and further our understanding of this global issue."

Also coming on board is the UK's University of Birmingham which will be responsible for the use of virtual, augmented and mixed reality technologies in the MAS mission. Birmingham's Human Interface Technologies (HIT) Team is leading the development of a Mixed Reality Telepresence Science Station which will allow school children and members of the public around the world to experience the transatlantic mission.

AI and Other Advanced Technologies at the Helm

By pairing IBM PowerAI Vision technology with IBM Power Systems accelerated servers (the same technology used by the world's most powerful supercomputers), IBM is helping ProMare to build deep learning models capable of recognizing navigation hazards which come into view in MAS's on-board video cameras. Trained on real data and images from the Plymouth Sound in the UK, MAS will be capable of recognizing hazards such as buoys, debris and other ships and will have constant situational awareness thanks to RADAR, AIS (Automated Identification Systems) and LIDAR – the same technology used in autonomous cars.

When a hazard is detected, MAS will use IBM's Operational Decision Manager software to help decide

autonomously whether to change course or, in case of emergencies, speed out of the way drawing additional power from its on-board back-up generator. Fusing data from nautical maps, sensors and weather forecasts, MAS will be able to determine the optimal path and speed it should take across the Atlantic.

During the voyage, edge devices will collect and analyze ship data and store it locally. When connectivity is available, it will be uploaded to edge nodes located onshore. ProMare and IBM experts will update the deep learning models and push them out to the ship as required. The edge nodes are connected to IBM Cloud, where data is stored in IBM Cloud Object Storage.

The hull of the Mayflower Autonomous Ship is currently being constructed and outfitted in Gdansk, Poland by Aluship Technology, before being transported to Plymouth, UK later this year.

About ProMare

Established in 2001, ProMare is a non-profit corporation and public charity that promotes marine research and exploration throughout the world. Its team of experienced archaeologists and engineers execute a variety of research projects independently and in concert with academic, corporate, public, and governmental organizations and agencies that are designed to advance man's knowledge of history and science, and the natural world.

For more information about ProMare, visit: http://www.promare.org

About the University of Plymouth

The University of Plymouth is ranked as one of the UK's top 10 modern universities in the UK (*Times Higher Education* Young University Rankings 2019) whose origins go back over 150 years to the School of Navigation which was formed in 1862. The University covers a broad range of disciplines through its research and teaching and is a global leader in marine and maritime research, including marine litter research and was the first university to identify the widespread occurrence of microplastics – a term first used by the University in 2004 and which is now in common use.

For more information about the University of Plymouth, visit:
https://www.plymouth.ac.uk/research/institutes/marine-institute

About the University of Birmingham's Human Interface Technologies Team

The Human Interface Technologies (HIT) Team, based within the Extreme Robotics Laboratory at the University of Birmingham, has been pioneering the development and uptake of Virtual, Augmented and Mixed Reality, together with telerobotic technologies in the UK since 2003, building on over 32 years of

experience in those domains. The Team's award-winning research is helping to avoid the "technology push" failures evident in the 1980s, '90s and early 2000s by developing and evaluating demonstrators in defense, healthcare, heritage and advanced robotics that emphasize the importance of exploiting human factors knowledge during the design of innovative human-system interfaces.

For more information about the University of Birmingham's HIT team, visit: www.birmingham.ac.uk/hit-team.

See more on the Mayflower Autonomous Ship Project.
https://newsroom.ibm.com/then-and-now

About IBM

For more information about IBM, visit: www.ibm.com

Contacts:

Jonathan Batty

IBM Europe

jjbatty@ibm.com

+44 7741 113871

Carrie Bendzsa

IBM North America

carrie.bendzsa@ca.ibm.com

+1 613-796-3880

SOURCE IBM

Additional assets available online: Photos (6)
 Video (1)

https://newsroom.ibm.com/2019-10-16-IBM-Boards-the-Mayflower-Autonomous-Ship-Project