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National Maritime Intelligence-Integration Office Completes the Maritime Data Challenge Competition

From the National Maritime Intelligence-Integration Office

Washington, DC – On September 8, 2017, the National Maritime Intelligence-Integration Office (NMIO) completed the Maritime Data Challenge, a worldwide crowdsourcing algorithm development competition that sought to develop a method that will enable authorities to more effectively identify and respond to illegal, unregulated, and unreported (IUU) fishing activity around the world.

Rear Admiral Robert D. Sharp, USN, who serves as NMIO Director and as the Commander of the Office of Naval Intelligence, announced the results of the Maritime Data Challenge as part of a 2-day National Maritime Interagency Advisory Group meeting on civil-military opportunities to combat and enforce against IUU Fishing held September 28-29 in Washington, D.C.

The Data Challenge was managed by Topcoder, and co-sponsored by the U.S. Departments of Defense and Homeland Security. NMIO partnered with the National Aeronautics and Space Administration (NASA) and the Harvard University Crowd Innovation Lab to manage the competition.

Those who engage in IUU fishing derive economic benefit by circumventing conservation and sustainable fishing harvest limits, thereby inflicting serious environmental harm. By applying innovative analytic techniques to existing data sources, the competition sought to develop a process to more effectively identify and react to the global IUU fishing threat. The goal is to make the process available to all authorities worldwide.

The competition, run in two phases over two years, attracted 119 total contestants from 33 countries.

The first phase of the competition, Marathon Match I, was designed to identify which vessels in ten pre-selected areas were engaged in fishing. Marathon Match I attracted 77 competitors.

The second, more complex phase, Marathon Match II, involved 56 active competitors and sought to determine the type of activities the vessels were engaged in. Fourteen of the competitors participated in both phases of the competition, reflecting the broad range of mathematics experts seeking to solve this challenge.

The Marathon Match I winner, who participated under the user name "Psyho," was from Poland. Psyho won a \$5,000 prize for the winning submission. The Marathon Match II winner, Wladimir

Leite, is a computer forensics specialist from Brazil. Leite engages in mathematics competitions as a hobby; he won \$10,000 for his winning entry.

The innovative use of crowdsourcing to help solve challenging problems facing the U.S. government is promoted by the General Services Administration's Challenge.gov effort. This effort helps government agencies structure their crowdsourcing competitions to more efficiently identify and resolve problems facing government agencies for a fraction of the cost required by more formal government procurement procedures.

For Marathon Match I, the sponsors used satellite-collected vessel position information pulled from Automatic Identification System (AIS) messages and provided by ORBCOMM. For Marathon Match II, the sponsors added exactEarth AIS data provided by the Harris Corporation in addition to the data provided by ORBCOMM.

Another partner in the competition, DigitalGlobe, compiled and provided oceanographic and bathymetric data from original sources (National Oceanic and Atmospheric Administration, NASA, and Naval Research Lab) to support Marathon Match II.

NMIO was created to advance governmental collaboration and unity of effort as outlined in the *9/11 Commission Report* and the Intelligence Reform and Terrorism Prevention Act of 2004 and the National Strategy for Maritime Security. NMIO facilitates information sharing and collaboration across the Global Maritime Community of Interest, which consists of U.S. Federal, state, local, tribal, and territorial governments; maritime industry; academia; and foreign partners. Learn more about NMIO online at <http://nmio.ise.gov/index.htm>.

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