Clear Seas workshop promotes collaboration

By Colin Laughlan

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Well over 100 delegates from government and industry in Canada, United States, and Europe participated in two-day workshop, "Better Decision Making Through Maritime Traffic Monitoring and Modelling," organized by the Clear Seas Centre for Responsible Marine Shipping and hosted at the Terminal City Club in Vancouver April 11 and 12. The workshop covered — in a clam-shell — everything you ever wanted to know, and more, about Maritime Domain Awareness (MDA) systems.

According to Transport Canada, MDA means having true and timely information about everything on, under, related to, adjacent to, or bordering a sea, ocean or other navigable waterway. This includes all related activities, infrastructure, people, cargo, vessels, or other means of transport. For marine security, it means being aware of anything in the marine domain that could threaten Canada's national security.

Rising to the challenge of that definition, the two-day event was packed with 36 presentations and panel sessions ranging from global satellite tracking systems to granular Q&A discussions about information applications even at the grass-roots community level. The take-away was the staggering potential for technological applications for marine hazards — given one essential ingredient: greater collaboration among the multitude of stakeholders across the entire spectrum of marine safety, security, and environmental issues. For Clear Seas, it was the young organization's successful debut as an independent facilitator of a much-needed collaborative process.

"This workshop is to show we can talk, we can help facilitate dialogue, we can help to bring people together; and as an independent organization, we can talk to government, we can talk to industry, we can talk to environmental groups without being seen as someone pushing a certain agenda," Dr. Richard Wiefelspuett, Executive Director of Clear Seas, told *BCSN*.

"We have a lot of stuff, we have a lot of knowledge, so what is keeping us from moving forward? We need more collaboration, that's one of our roles," Wiefelspuett said.

Some of that "stuff" — affectionately so described by Wiefelspuett — was presented by the workshop's co-sponsors MEOPAR and exactEarth, two Canadian organizations with leading-edge tools being adopted by international bodies. MEOPAR is the pan-Canadian network led by Dalhousie University for Marine Environmental Observation, Prediction and Response. Kristine Boerder, a PhD candidate at Dalhousie, described MEOPAR's development of a satellite Automated Information System (AIS) for a vessel tracking tool in fisheries management using exactEarth data. Citing the State of Fisheries and Aquaculture Report for 2014, Boerder said there are about 4.7 million fishing vessels of various sizes worldwide, of which 2.1 million are under power and could potentially carry an AIS transponder. While it was unclear how many vessels actually have AIS, Boerder said that from their exactEarth data, they now see about 650,000 unique vessels, though they have not yet determined the number of fishing vessels or the percentage of fishing vessels with AIS.

Dr. Rossaline Canessa, part of MEOPAR's network at the University of Victoria, described links to other projects such as the Vancouver Fraser Port Authority's "Enhancing Cetacean Habitat and Observation (ECHO)" Program, which aims at better understanding and managing the impact of shipping activities on at-risk whales throughout the southern coast of British Columbia.

Ontario-headquartered, exactEarth has developed the algorithms that turn the enormous quantity of data streaming from Satellite AIS tracking into real-time usable knowledge tailored for both large and small marine vessels. Among its innovations, the company has partnered with the colossus U.S. defence contractor Harris Corporation to develop space technology that allows ship-to-ship communications, creating global coherence from line-of-sight signals. Graham Strickler, Vice President, Products and Services, said exactEarth's six-year-old archive can now produce data analytics on specific vessels and generate "a long list of items regarding the ship's history such as the owner, insurance, cargo, fuel reports and emissions."

Harris Corporation's Advanced Programs Engineer, Donna Kocak, informed the audience that Harris currently has eight exactEarth satellites tracking 53,000 unique vessels daily. She said the eight satellites detect about 5.3 million AIS positions daily. Kocak announced that Harris will be launching 58 more satellites in 2016 and 2017 with real-time AIS capability (unlike the current eight) as part of their Iridium NEXT constellation which has satellite cross links in space. In a combined session, the workshop focused on the various modelling techniques and applications for maritime traffic data using cases for trends in shipping, risks, noise, collision areas, shipping exclusion zones, and traffic management.

West Coast voices

From Alaska to the State of Washington, West Coast organizations presented their regional issues and developments in their respective maritime mandates.

- Alaska Maritime Exchange underscored the importance of wildlife in the state's Maritime Domain Awareness, and is now working with Russia to enhance the SafeSeaNet (a maritime data exchange program).
- Haida First Nation described its response to the Simushir incident in 2014, when the cargo ship was adrift off the B.C. coast, and how it reviewed "what was learned and how to avoid a repeat."
- Ocean Networks Canada, which operates cabled ocean observatories in the Strait of Georgia and off the West Coast of Vancouver Island, explained how it collects data on biological and geological aspects of ocean changes, and how the system can provide earthquake and Tsunami warnings.
- Islands Trust described its work to mitigate risks in oil spill response near the islands in the Salish Sea, a marine ecosystem between the B.C. mainland and the Southern end of Vancouver Island.

- BC Coast Pilots Ltd. and the Pacific Pilotage Authority made presentations on the knowledge base and expertise of marine pilots for navigating vessels safely in B.C.'s coastal waters.
- The Puget Sound Harbor Safety Committee described its work as a volunteer association which monitors activity and serves as an advisory group to several U.S. federal and state agencies.
- Western Canada Marine Response Corporation noted the need for information sharing among various sources of data, and emphasized that data systems must be harmonized while also addressing confidentiality and privacy issues.
- Washington State Department of Ecology described the State government's measures in assessing and managing a broad range of threats to the State's shorelines and waters.

British Columbia's port authorities

B.C.'s three coastal port authorities provided an insight into their respective Maritime Domain Awareness systems.

- Bernie Dumas, Port of Nanaimo President and CEO, described the Port's MDA system, developed with North Vancouver company Xanatos Marine, with its geofence and dedicated AIS system.
- Chris Wellstood, Director of Marine Operations and Harbour Master for Vancouver Fraser Port Authority, described the Port's 24/7 compliance monitoring operations which include drones, cameras, and sensors on buoys, with additional layers of information from the Canadian Coast Guard, Customs, and the RCMP.

- Captain Gary Paulson, Vice President, Operations, and Harbour Master for Prince Rupert Port Authority, described PRPA's maritime traffic monitoring which uses shore-based radar along with data from the Coast Guard and RCMP; co-operation with the Port's terminals, and partnering with First Nations.

European perspective

Marrku Mylly, Executive Director, European Maritime Safety Agency (EMSA) delivered the keynote address to the workshop. EMSA has operated since 2004 on behalf of the European Commission, building and maintaining the maritime tracking systems for all member states of the European Union.

While EMSA's multinational system is more complex than Canada's, Mylly said he thought the two administrations could share information and absorb best practices. "The systems in Canada are advanced," he said.

"Today we have on our screen, at any given time, about 20,000 vessels on European water," Mylly told *BCSN*. " We can extract information on any vessel there and see a lot a data on the vessel — which is more than we've seen here — because we also have sensitive data, which is fed in for inspections, detections of vessels, and that kind of thing."

Mylly also emphasized the EMSA's environmental protection role. "EMSA has built satellite base monitoring of environmental conditions of European waters … to see if there is spillage on European waters. It takes about 30 minutes to analyze and then authorities verify this – this has proved very successful — so the masters of vessels know they will be caught if there is a spill," he said.

Conclusion

At the end of the two days, the totality of the experience was, in a word, outstanding. Some participants described it as "extraordinary." Perhaps Wiefelspuett's simple understatement summed it up best: "It's an amazing amount of information," he said.

However, Wiefelspuett is not convinced that the priority for safer shipping is more technology and information. "We don't need technological development; we have a lot of data acquisition methods; we know how to get that data; we've seen this already as the Port of Nanaimo showed, the Port of Vancouver showed, the Port of Prince Rupert showed — they do this — they have a lot of information out there, but we also see that they are not working together. They could, but they don't," he said.

"Jurisdictions are divided. They're complex so even government departments — Coast Guard versus Transport versus Environment — are not necessarily working together," he said.

"We really want to sit down to talk about what is best for the objective of making shipping safer and prevent any disaster."

But Weifelspuett is optimistic. "I think it is getting better today; we are seeing more collaboration."