

Remote control history

- In the early 2000s, research began on remote control of 8 of the largest mobile bridges of the St. Lawrence Seaway.
- The existing Traffic Control Center, already monitoring and managing maritime traffic remotely, has become our new Operations Control Center.
- The St. Lawrence Seaway perfected its remote safety emergency stop and communication systems (mobile radio, traffic management system, Automatic Identification System (AIS) and camera management system).
- Ten (10) years later the St. Lawrence Seaway embarked on a project to expand remote operation of the remaining movable bridges and locks.
- The St. Lawrence Seaway now has twenty years (20) of remote control experience, the resulting Operations Control Centers (one in the Niagara Region and one in the Maisonneuve Region) are state-of-the-art facilities where all vessel movements and structure operations are executed.

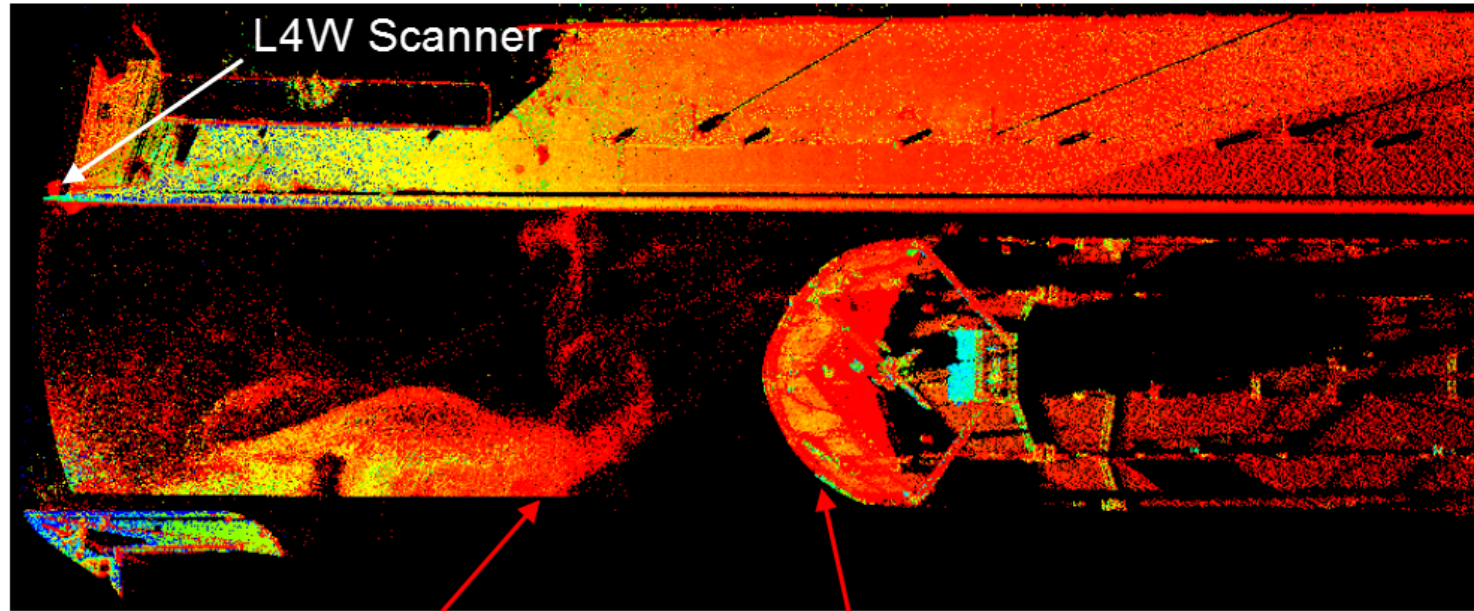


Providing Mooring Position Information in Locks

- Optimize and automate the spotting of a vessel's entry into the lock and stopping at it's final mooring position.
- Different vessel's require different stopping locations based on dimension and interaction with our robotic mooring system.
- Vessel Self-Spotting System (VSS)
 - Vessel AIS position used to trigger vessel data download
 - Specify proper mooring position in the lock.
 - The LiDAR scanner actively scans for the bow of the vessel and displays to lock operator and vessel captain/pilot.



Providing Mooring Position Information in Locks



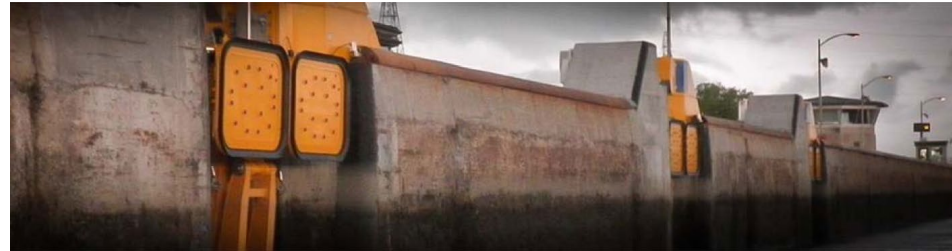
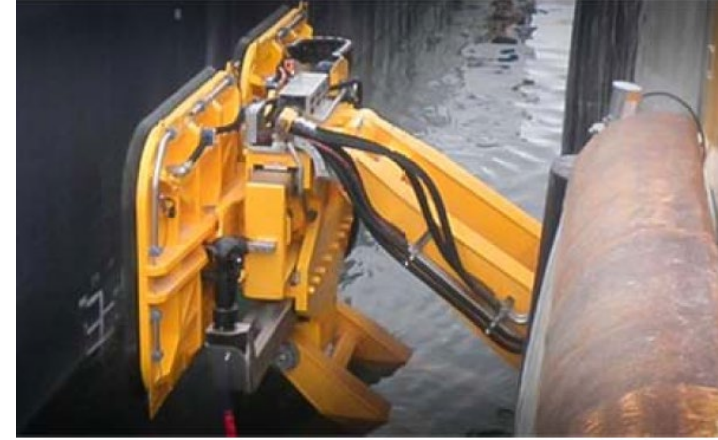
Waterfall mist
between scanner
and entering vessel

Scanned vessel image: high
density of points for tracking
front of entering upbound

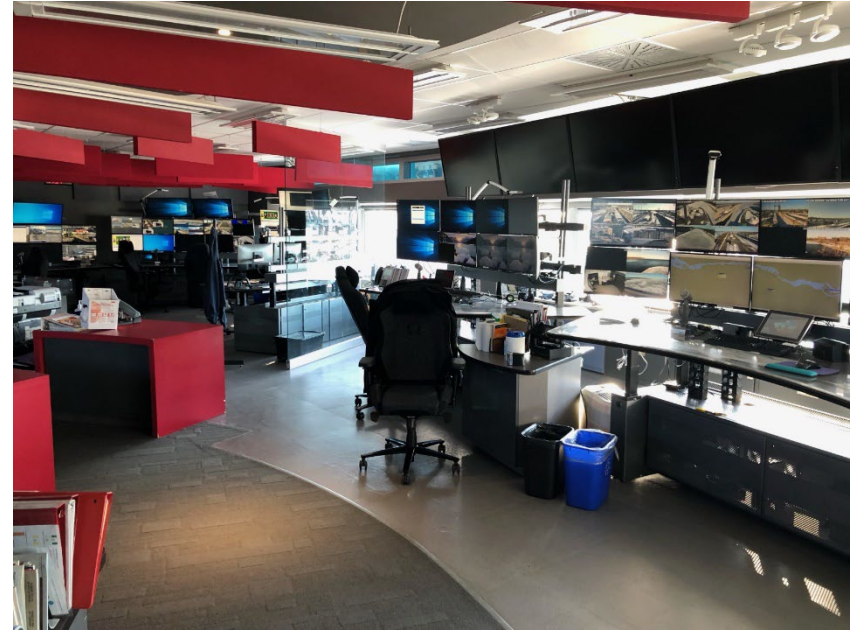
Providing Vessel Specific Mooring Information

Integration of AIS and the mooring system allows for better coordination of vessel approach and mooring with the lock's robotic mooring system (HFM)

- Operator is alerted that vessel is approaching the lock and HFM units are not armed
- HFM pad heights automatically position based on set target points for the specified vessel and draft information.
- To protect HFM units they will not activate if vessel is moving at a speed greater than 0.15 knots.



Operation Control Centers



Questions

