VIAMARINE

Upgrade Great Lakes Fleets with New Technology and Business Model

Critical Elements:

Systematic R&D across Passenger Ferries, Research Vessels, Fishing Fleets, Coast Guard Vessels, and Sail Racers

Technology transfer from marine, aerospace, automotive, and environmental ecosystems to maritime applications, integrating Modularity and Regional Service Centers

Partnership development with US and International Shipbuilders and Technology Providers

Funding pathway mapping across federal, tribal, and private capital sources

Pilot project validation in Great Lakes conditions leading to scaled deployment

Unprecedented Momentum:

Active partnerships to include Ford / Newlab autonomous maritime pilots, Fincantieri / University of Michigan naval architecture training, NOAA Great Lakes Restoration Initiative vessel design support, and Sault Tribe Indigenous Knowledge platforms

$3M Mackinac Ferry design grant, $5M tribal vessel construction, Coast Guard Force Design 2028 RAS PEO, and Canadian ICE Pact create convergence of public awareness and funding

Strengthens vital US-Canada bilateral collaboration through shared maritime innovation and economic development at a critical moment for cross-border partnerships

Five underserved fleet sectors gain access to proven technologies, established partnerships, and clear funding pathways previously unavailable

THE OPPORTUNITY

Five Underserved Great Lakes Maritime Markets (US & Canada):

- **Ferries** - 128 ferries with aging diesel fleets facing EPA 2030 compliance; Mackinac Economic Alliance secured $3M EGLE grant for new ferry design demonstrating momentum
- **Research** - 151 vessels lacking modern technology; NOAA Great Lakes Restoration Initiative now supporting vessel design and alternative fuel evaluation
- **Commercial Fishing** - 1,000+ vessels without sustainable designs; Sault Tribe Interwoven platform and Tribal Marine Stewards Network expansion bringing Indigenous Knowledge to vessel development
- **Coast Guard** - Force Design 2028 establishing Robotics and Autonomous Systems PEO for uncrewed systems; ICE Pact enabling US-Canada-Finland collaboration
- **Sail Racing** - Great Lakes sector disconnected from innovation; America's Cup hydrogen propulsion technology creates pathway

- **The Great Lakes Context:**
- Detroit's automotive innovation (Ford/Newlab, Mythos AI autonomous vessels) now actively connecting to maritime needs
- Fincantieri/University of Michigan training next generation of naval architects and marine engineers
- Canadian $3.5B Oceans Protection Plan and ICE Pact create framework for strengthened US-Canada maritime collaboration and mutual economic benefit
- European maritime technology advances provide proven baseline while Great Lakes gains access through new partnerships
- EPA 2030 regulations create urgency while new programs provide solutions and funding pathways across all sectors

COMMERCIAL FERRY FLEET DEVELOPMENT

- **Market Conditions:**
- 128 Great Lakes ferries operate aging diesel propulsion systems
- Mackinac Island corridor serves 1+ million passengers annually
- EPA 2030 emissions regulations require fleet-wide compliance
- Port infrastructure lacks charging and alternative fuel capabilities
- Proven European electric ferry operations demonstrate technical viability

- **R&D Focus:**
- Compare battery-electric, hybrid, and alternative fuel propulsion for Great Lakes freeze-thaw conditions
- Analyze Detroit automotive EV battery technology and European electric ferry experience
- Evaluate infrastructure requirements for Mackinac corridor including charging stations and grid capacity
- Investigate Canadian Green Shipping Corridors funding models and vehicle-to-grid applications

- **Active Partnerships:**
- Mackinac Economic Alliance leveraging $3M EGLE grant for new ferry design
- Detroit automotive leaders for marine battery systems evaluation
- US and Canadian shipyards for design capacity assessment
- Mackinac corridor pilot infrastructure and cost modeling

COMMERCIAL FISHING FLEET DEVELOPMENT

- **Market Conditions:**
- Great Lakes fishing vessels average 30+ years old with diesel propulsion; modern freshwater-optimized designs unavailable
- Dr. Aaron Payment, Sault Tribe Chair and VP of Tribal Relations at Kauffman and Assoc., brings national Indigenous leadership and federal partnership expertise to vessel development framework
- Sault Tribe developing Interwoven Indigenous Knowledge platform focused on marine communities and sustainable technology
- Tribal Marine Stewards Network model provides framework for collaborative stewardship leveraging Federal sovereignty rights
- **R&D Focus:**
- Leverage KAI's tribally focused, community-driven, data-driven approach to building on tribal strengths and resilience
- Investigate modern fishing vessel designs optimized for Great Lakes freshwater and extreme weather
- Evaluate sustainable propulsion economics for commercial fishing duty cycles
- Analyze Canadian fisheries development and funding programs for applicable Great Lakes models
- **Indigenous Partnership Framework:**
- Sault Tribe Interwoven platform: Indigenous knowledge exchange for climate solutions focused on Great Lakes marine communities, new marine economy, and sustainable vessel technology
- Tribal Marine Stewards Network expansion: Creating Great Lakes alliance of Tribal Nations leveraging Federal sovereignty rights for collaborative stewardship using Traditional Knowledge and Tribal Science
- Develop vessel specifications for environmental standards while serving commercial operations and tribal economic development

COAST GUARD GREAT LAKES FLEET DEVELOPMENT

- **Mission Requirements:**
- Coast Guard fleet modernization aligned with Force Design 2028 priorities
- Force Design 2028 establishes Robotics and Autonomous Systems Program Executive Office (RAS PEO) for uncrewed surface and subsurface systems
- Arctic operations and icebreaking capabilities represent growing mission needs
- Dual-mission capability across Great Lakes and Arctic operations required
- ICE Pact trilateral agreement enables US-Canada-Finland collaboration
- **R&D Focus:**
- Examine advanced propulsion systems for extreme weather and dual-mission Great Lakes/Arctic capability
- Investigate Canadian National Shipbuilding Strategy funding models and ICE Pact collaboration opportunities
- Explore Defense Innovation Unit procurement pathways for rapid innovation adoption
- Assess Arctic vessel design expertise from international partners and AI applications for autonomous reconnaissance
- **Next Steps:**
- Engage Coast Guard Force Design leadership and RAS PEO
- Partner with ICE Pact shipbuilders for Arctic capability assessment
- Explore Defense Innovation Unit pathways

GREAT LAKES RESEARCH VESSEL DEVELOPMENT

- **Fleet Opportunity:**
- 151 research vessels operate across universities, NOAA, and state agencies
- Budget-conscious institutions lack funding for fleet modernization
- Diverse research missions require modular, configurable vessel designs
- Global maritime data platforms connect 35,000+ vessels for real-time collaboration
- Autonomous vessel technology extends research capabilities while reducing costs
- **R&D Focus:**
- Investigate modular, configurable designs serving diverse research applications
- Analyze advanced sensor systems enabling collaborative research and maritime data platforms
- Evaluate autonomous surface and subsurface vehicles for unmanned operations in hazardous conditions
- Assess integration models coordinating NOAA, universities, and state agencies
- **Program Support:**
- NOAA Great Lakes Restoration Initiative supports new vessel design, environmental improvement, and alternative fuel evaluation as part of ecosystem restoration efforts
- Federal maritime innovation centers for technology assessment
- University operators for priority identification
- Autonomous navigation systems for Great Lakes research applications

SAIL RACING FLEET DEVELOPMENT

- **Market Conditions:**
- Great Lakes lacks organized high-performance racing circuit despite sailing tradition
- Regional sailors have limited pathway to professional SailGP competition
- Hydrogen propulsion technology validated in America's Cup demonstrates viability
- Great Lakes 52 Series provides existing competitive framework for expansion
- Yacht clubs seek sponsorship opportunities and competitive programming
- **R&D Focus:**
- Explore high-performance sustainable propulsion systems including hydrogen fuel cell technology proven in America's Cup
- Research investigates support vessel technology and race management systems for Great Lakes conditions
- Analyze economics of racing circuit development including yacht club sponsorship models and media rights
- Investigate viable minor league to major league pathway structures connecting Great Lakes to professional SailGP
- Engage America's Cup leadership for circuit development, partner with sailing technology providers for vessel design, create business models for sustainability

RESEARCH & DEVELOPMENT INITIATIVE

- **Research Phase:**
- Evaluate technology options and determine true economics for each application
- Identify and vet partnership opportunities and build capacity
- Map funding pathways across federal, tribal, and private sources
- Define automotive-to-maritime technology transfer opportunities
- Assess regulatory frameworks to identify clearest paths forward
- **Development Phase:**
- Design and construct prototype vessels based on optimal technology choices
- Formalize partnerships with capable builders and technology providers
- Launch pilot projects demonstrating real-world Great Lakes performance
- Validate economic models with actual operational data
- Establish scale pathways based on proven performance
- **Why This Matters:**
- Five fleet sectors face common barriers: limited modern vessel designs, unclear technology economics, disconnected automotive and maritime ecosystems, fragmented funding. International innovation advances while Great Lakes fleets stagnate
- Detroit's automotive expertise remains underutilized despite proximity. ViaMarine provides systematic approach: research what's possible, validate through pilots, create pathways to scale proven solutions across all sectors

TECHNOLOGY CONSIDERATIONS

- **Technology Landscape:**
- Battery-electric systems from automotive industry offer proven EV ecosystem
- Hydrogen fuel cells validated in America's Cup demonstrate high-performance capability
- European electric ferry programs provide 5+ years operational data
- Autonomous navigation systems proven in congested coastal waterways (Mythos AI piloting Great Lakes applications)
- Great Lakes freeze-thaw conditions require specialized cold-weather validation
- **R&D Focus:**
- Determine actual total cost of ownership for battery-electric, hydrogen, and hybrid propulsion across vessel duty cycles
- Evaluate cold-weather reliability in freeze-thaw conditions using European data as baseline
- Assess automotive-to-maritime technology transfer including EV batteries, connectivity systems, and modular platforms
- Examine autonomous navigation for operational efficiency and maritime data platforms enabling real-time monitoring
- Determine infrastructure requirements for charging, hydrogen refueling, and grid capacity
- Identify capable shipyards and establish classification standards for emerging technologies

PARTNERSHIPS & FUNDING

- **Partnership Opportunities:**
- Tribal Consulting and Leadership: Leverage national Indigenous leadership network and federal connections for program development tribal revitalization consulting using community-driven, data-driven solution methodology
- Detroit Automotive Ecosystem: Ford/Newlab piloting Multimodal Logistics Challenge with Mythos AI autonomous vessels mapping waterways and creating port digital twins
- Shipbuilding & Training: Fincantieri / University of Michigan Multidisciplinary Design Program training naval architects; Canadian ICE Pact partners with Arctic capabilities
- Research Infrastructure: University of Michigan Consultation and Federal Maritime Innovation Centers
- Establish working relationships with Detroit automotive ecosystem, shipyards, and federal centers
- Map Canadian programs applicable to US operators; identify ICE Pact opportunities
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- **Funding Pathways:**
- Tribal sovereignty funding mechanisms and Indigenous-led initiatives leveraging KAI's federal partnership expertise
- Canadian $3.5B Oceans Protection Plan and National Shipbuilding Strategy
- Federal programs including NOAA GLRI, Defense Innovation Unit, and Coast Guard RAS PEO
- Private capital from values-aligned marine investors
- Regional economic development support for maritime technology clusters