



Los Angeles-based Hyperloop One recently held a competition in Washington, DC, to find the first few candidates — out of a slate of 11 that had been whittled down from an initial field of 2600 — for a high-speed Hyperloop transit system in the United States. Pacific Northwest Hyperloop was one of the candidates proposing a solution that could change America's transportation infrastructure. If successful, that could mean a boon to Washington state's aerospace supply chain.



Diversification of Washington's Aerospace Supply Chain May be an Added Benefit of Hyperloop Transportation Technology

Travel from Seattle to Portland in just fifteen minutes?

Pacific Hyperloop is working to make it a reality. The Seattle-based group is a semi-finalist in the Hyperloop One Global Challenge, a competition that sought applicants from around the globe to make the case for Hyperloop in their region. Pacific Hyperloop is in the early planning and development stage for a Seattle-to-Portland route and is supported by Janicki Industries and the Seattle Department of Transportation. The Pacific Northwest's aerospace industry carries a key competitive edge relative to all globally proposed routes. Pacific Hyperloop is leveraging the PNW aerospace industry's unique position to secure a first-to-market advantage in the \$180 billion Hyperloop POD global market.

The Technology

Hyperloop is a transformative transportation technology reaching speeds up to 760 mph; nearly the speed of sound. It combines existing magnetic propulsion technology and pneumatic tubes to eliminate friction and air resistance, turning hours of travel time into minutes. Los Angeles based Hyperloop One is developing the infrastructure and vehicle technology. In 2016, it successfully completed a public demonstration of the magnetic propulsion reaching a top speed of 116 mph in 1.1 seconds. As of April 2017, Hyperloop One has completed build-up of the test facility "Devloop" in Nevada. This test facility will demonstrate the combined system of magnetic propulsion inside a low-air pressure tube track.

Hyperloop for the PNW Region

Pacific Hyperloop is conducting a preliminary feasibility study of the route from Seattle to Portland, then continuing to Vancouver, BC, and eventually connecting to a continental Hyperloop network. The company is pushing for the Pacific Northwest to be the first

region in the United States to implement Hyperloop. The PNW region is competitive by offering two key advantages over other US regional proposals: the region has demonstrated forecast-beating population growth and recession-proof GDP growth, and; the safety record and manufacturing capability of the aerospace supplier base exceeds those of other areas. Hyperloop passenger and cargo vehicles will be travelling at mach 0.95 speeds. Aerospace manufacturing has the proven expertise to instill confidence in passenger safety in the new industry. Pacific Hyperloop has energized the community and is bringing together all the public and private stakeholders to position the PNW region competitively.

"The PNW region is competitive... (because) the safety record and manufacturing capability of the aerospace supplier base exceeds those of other areas."

A Minimum \$180 Billion Market Opportunity

Manufacturing synergies are inevitable for Hyperloop and the aerospace industry, says Pacific Hyperloop Founder, Ahmed Elayouty, "Safety is key to Hyperloop's success. Manufacturing of Hyperloop passenger vehicles, or pods, will require aerospace-grade tolerances and quality control to replicate such a safety record. Moreover, Hyperloop pods are essentially wingless airplane fuselage. Passengers will be sitting inside a pressurized cabin travelling in a low-air environment and we see significant overlap with the aerospace industry."

The PNW aerospace sector is best positioned to secure the first-mover advantage. Value of Hyperloop PODs for Seattle to Portland route is estimated at \$4 billion to

\$6 billion. As Hyperloop routes are constructed globally, over the next 20 years, a conservative estimate of \$180 billion will be spent on Hyperloop PODs.

Janicki Industries recognizes this unique generational opportunity and is partnering with Hyperloop One and Pacific Hyperloop to advance the PNW region competitively as the first region to connect via Hyperloop.

Closing the case for the economic gain, job creation and community benefits requires collaboration with all innovators in the aerospace sector. Pacific Hyperloop is engaged with interested parties to form a joint venture in accelerating regional Hyperloop implementation. The PNW region must secure the first-mover advantage to continue the global leadership as the net exporter of transportation technology. ▲

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Manufacturing Innovations

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It is an exciting time in the industry but also disruptive to skilled labor, supply chains, design and engineering groups, and procurement. Our educational institutions need to be at the forefront of producing the technical talent for the new manufacturing environment, leading the research projects that will produce the knowledge base for future manufacturing innovation and certification, and retraining those individuals who will be displaced. ▲

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Drones

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Why Washington? Sure, there is plenty of competition from outside the US, especially from Chinese companies, one of whom, DJI, has a 70 percent market share in the “prosumer” UAS market space where commercial operators use a consumer UAS in their business. Additionally, “custom drone” designs or major parts thereof, can be rapidly produced with 3D printers and piece parts are readily available from global and US sources, often leading companies to assemble or manufacture UAS components in house.

However, the sheer growth of this market merits the attention of Washington companies manufacturing everything from connectors to composites, contracting imaging services, autonomous software, sensors, avionics, payloads, launch and recovery hardware and that meet the all-important data analysis and management needs the industry generates.

To no one’s surprise, Boeing subsidiary, Insitu, is focusing more on commercial UAS market opportunities. Amazon’s well known UAS delivery efforts and Microsoft’s own work and investments in airspace software activities reflect great interest in the UAS realm as well. And there are a whole host of smaller, innovative companies that conceive, develop, test, manufacture or otherwise provide products and services for the UAS market today. Concurrently, our major universities, community colleges and even K-12 schools are engaged in UAS or robotics education efforts, including those for the ground and maritime environments.

As Russell Wilson of the Seattle Seahawks would say, “Why not us?” The seeds of innovation are right here in Washington, in our companies, clusters, trade associations and our educational institutions. Now is the time to take advantage of those seeds to help the state become a preeminent leader in the UAS segment of the aerospace industry. ▲