



IPERIONX

Sustainable, Low-Cost Critical Materials for America

Jefferies Aerospace & Defense Group Presentation

March 2022

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Competent Persons Statements

The information in this announcement that relates to Exploration Results and Mineral Resources is extracted from IperionX’s ASX Announcement dated October 6, 2021 (“Original ASX Announcement”) which is available to view at IperionX’s website at www.IperionX.com.

The Company confirms that a) it is not aware of any new information or data that materially affects the information included in the Original ASX Announcement; b) all material assumptions included in the Original ASX Announcement continue to apply and have not materially changed; and c) the form and context in which the relevant Competent Persons’ findings are presented in this report have not been materially changed from the Original ASX Announcement.

PERIONX

Our mission is to be the leading developer of low-carbon, sustainable and low-cost critical materials for the U.S.

Beginning with Titanium.



About IperionX

- Re-shoring critical material supply chains to the U.S. with a focus on **technology, integration and sustainability**

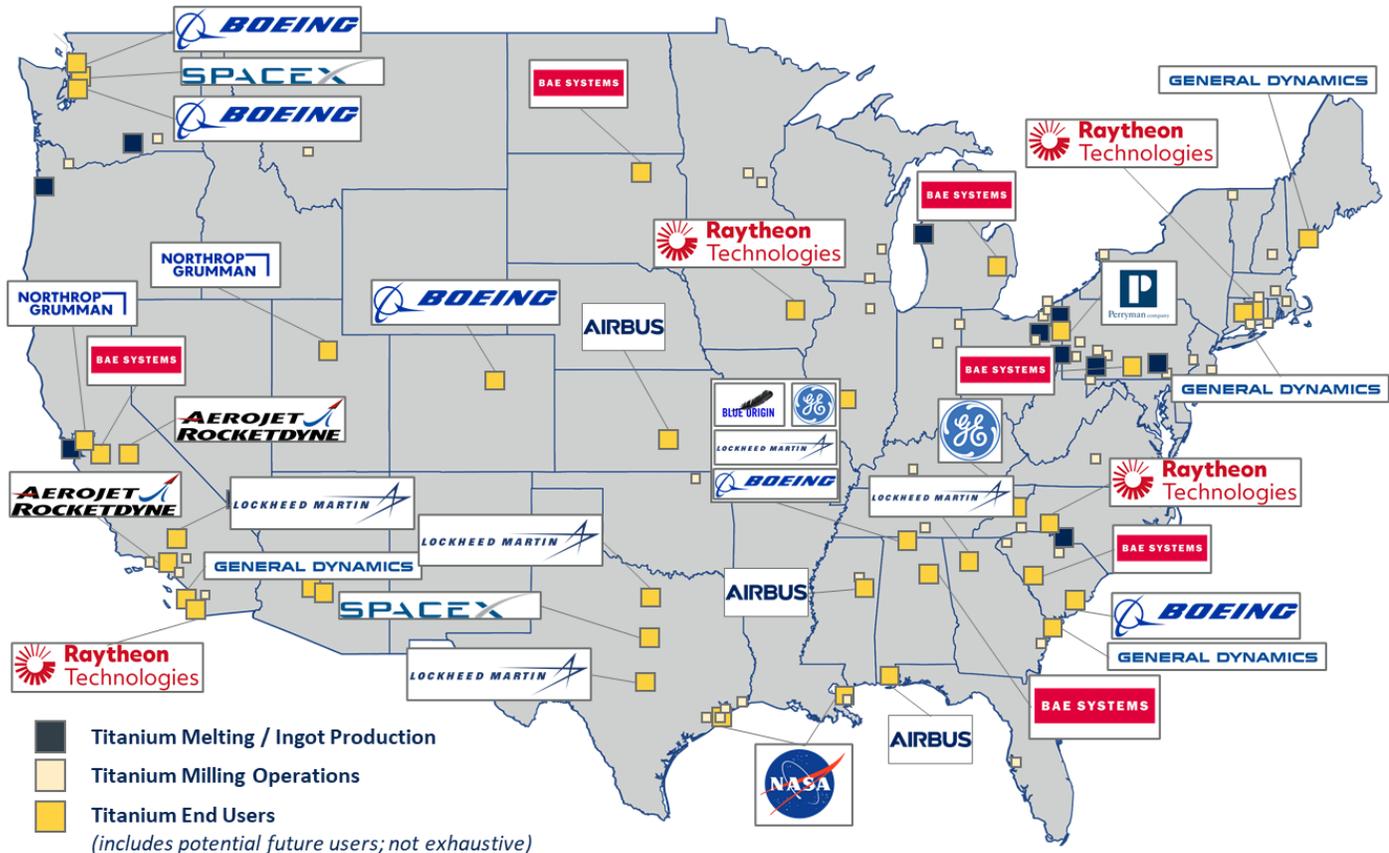
***Technology** Developing proprietary, breakthrough metal processing technologies with an initial focus on titanium*

***Integration** Control over the largest untapped titanium mineral resource, also rich in rare earth elements, in the U.S.*

***Sustainability** Full cycle sustainability is a core tenet of our existence*

- Led by a seasoned management team with **proven company-building experience** in the U.S. material supply chains
- Founded in 2020 and publicly Listed on the ASX (ASX:IPX), and plans to pursue a listing in the U.S. in Q2 2022





The U.S. is one of the largest producers of titanium products for the **aerospace, defense and medical** industries

Defense interest in titanium stems from its excellent properties including **lightweight**, **strength** & **corrosion resistance**

U.S. Airforce



-  Weight to strength higher than aluminum
-  Ultimate strength higher than aluminum
-  No galvanic corrosion with advanced carbon polymers

U.S. Army

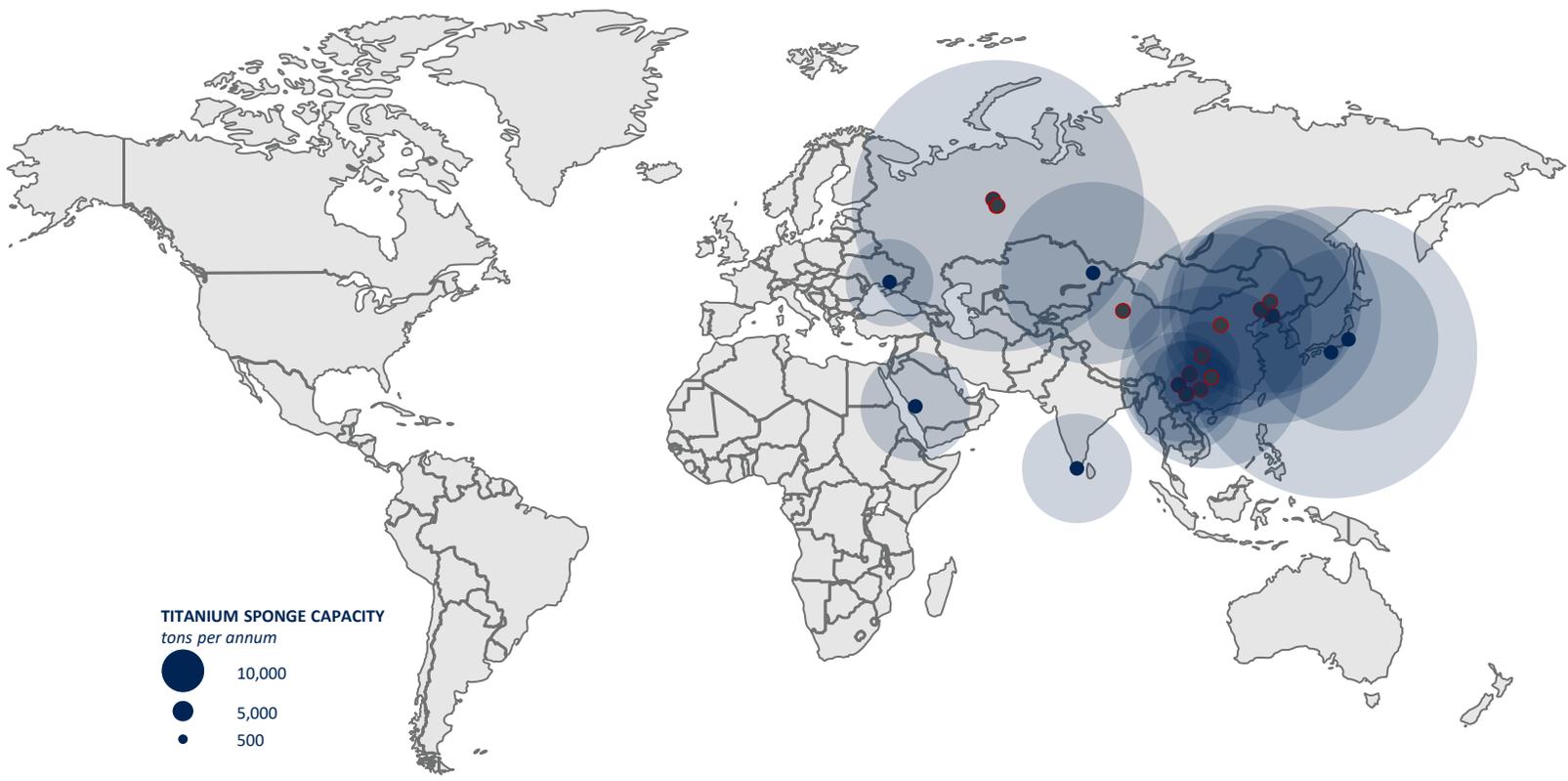


-  Lighter than steel
-  Alloys as strong as steel
-  Corrosion resistance leads to increased service life / reliability

U.S. Navy



-  Lighter than steel
-  Alloys as strong as steel
-  Superior corrosion resistance in seawater over steels



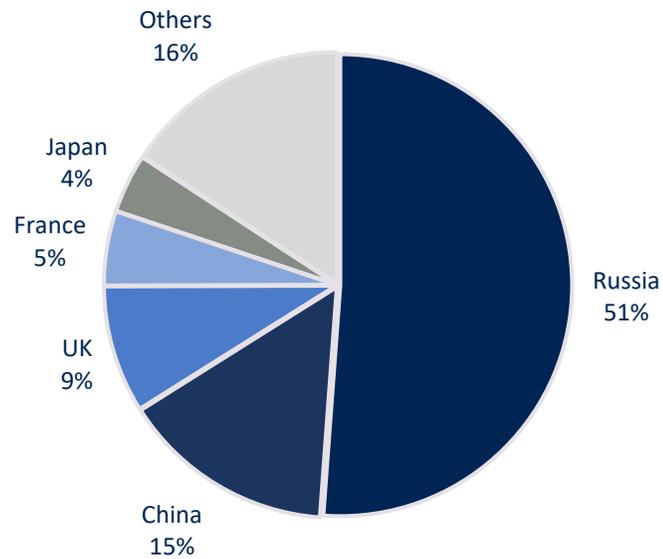
But, the **U.S. is 100% reliant on titanium sponge imports**, with China and Russia controlling more than 70% of global production capacity

Furthermore, global integrated control of the titanium supply chain rests in **Russia and China** providing for economic advantages over western supplies

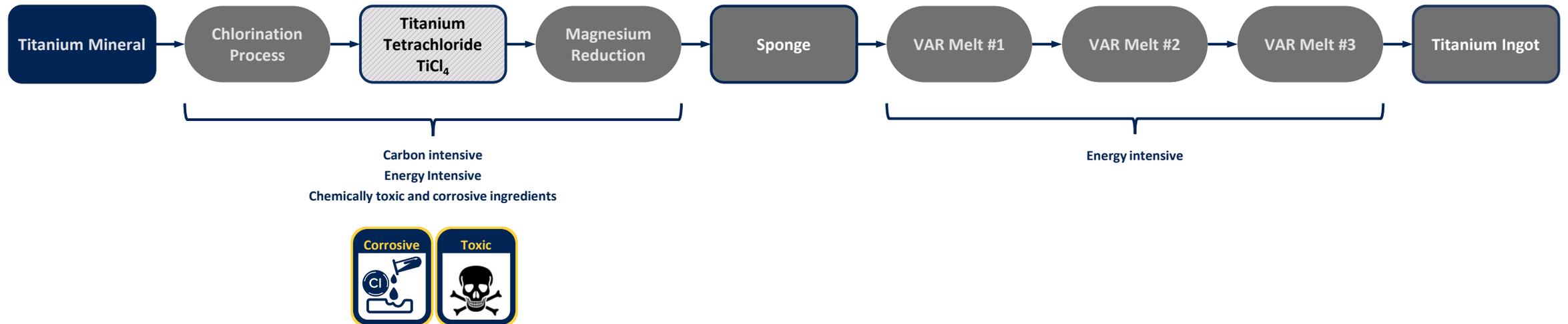


Leading to more competitive imported mill products with the U.S. importing ~11,000t in 2019, 66% of which was from Russia and China

Sources of Milled Titanium Imports, 2019

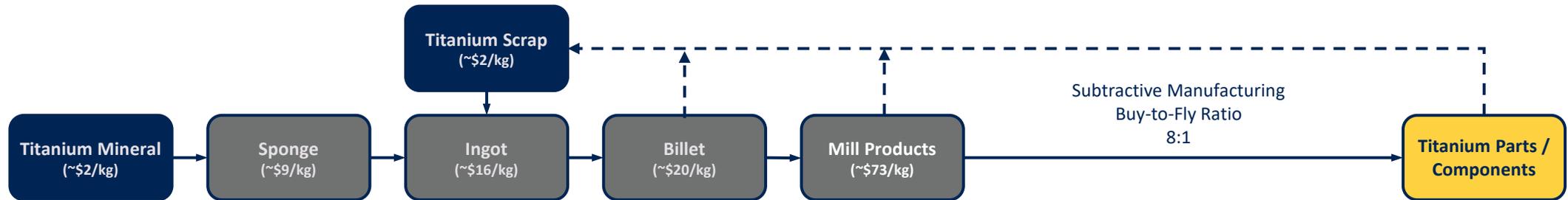


The current titanium manufacturing process, the Kroll Process, is not the solution to re-shore U.S. supply chains because it **utilizes toxic ingredients and is both carbon and energy intensive**

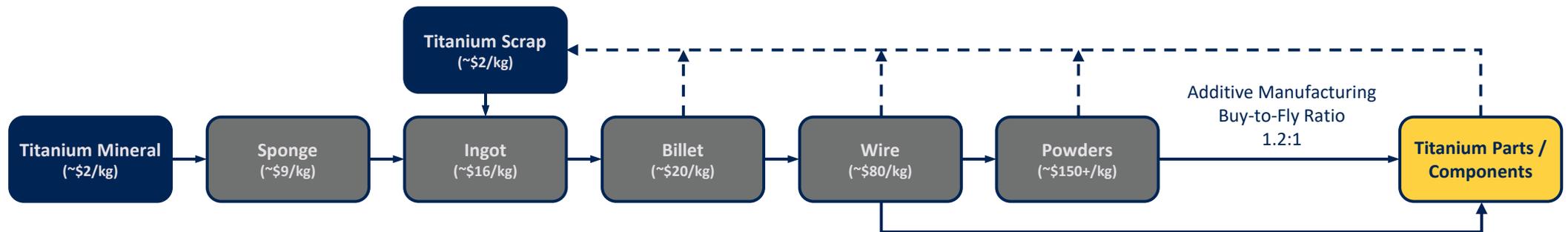


The current titanium supply chain from minerals, using the current Kroll process, or scrap to titanium products is also **very complex and costly**

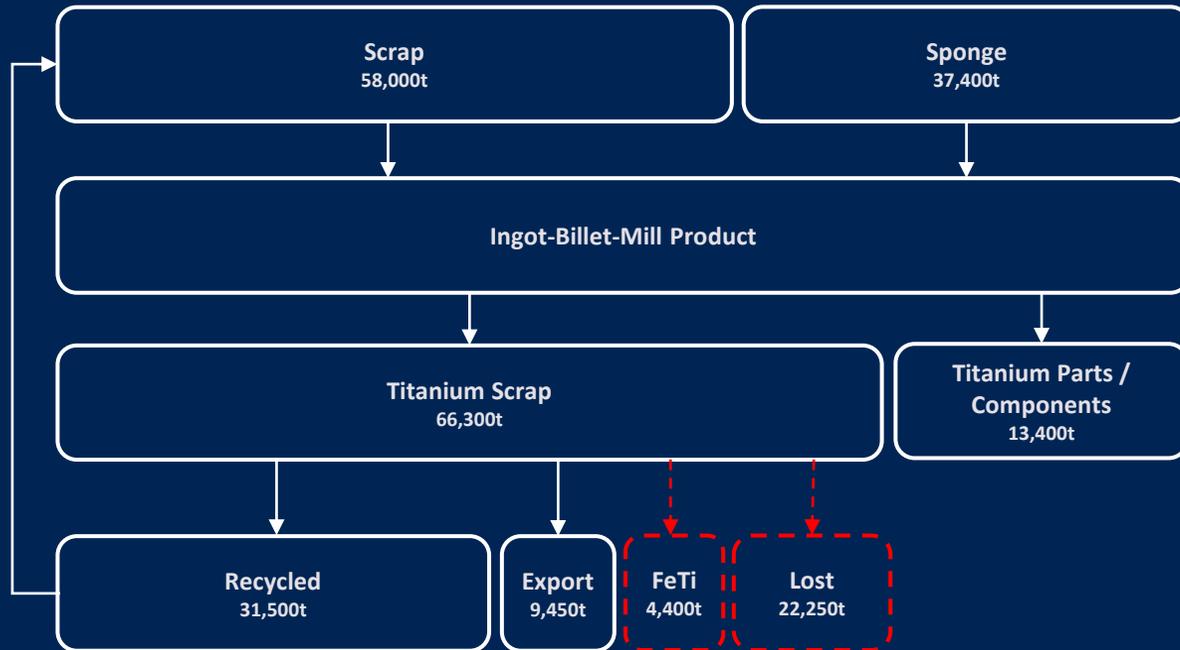
Subtractive Titanium Metal Supply Chain: Very high buy-to-fly ratio and costly feedstock, but lower manufacturing costs



Additive Titanium Metal Supply Chain: Lower buy-to-fly ratio, but higher feedstock and manufacturing costs – Is it really helping?



The titanium supply chain is not 100% recyclable with the current industry process



TITANIUM RECYCLING CHALLENGES

- Titanium scrap has a ~67% recirculation rate in the U.S.
- Titanium scrap readily absorbs oxygen and therefore remelting requires a mix of new Ti sponge (from the Kroll process) and recycled titanium to maintain homogeneity
- ~21kt is not recycled back into the system and a further ~4kt is sold into Ferro-Ti - i.e., not truly circular
- This scrap does not include 10-20% of Titanium sponge production which is sold as “off-grade” into the Ferrotitanium market
- **IperionX’s HAMR technologies provide a pathway to 100% recycled titanium that will create a sustainable closed loop supply chain**

HAMR is the solution that has the potential to overhaul the titanium supply chain

Hydrogen assisted metallothermic reduction / deoxygenation of titanium (“HAMR”)

- Developed by Dr. Fang, professor of Powder Metallurgy at the University of Utah
- Based on his breakthrough where he discovered that hydrogen destabilizes the Ti-O bonds making it thermodynamically possible to reduce Ti-O with Mg
- Over \$10m invested to develop the technology from lab scale to pilot scale - ARPA-E has been a valued partner and listed the technology as one of the Agency’s most successful projects
- Potential solution to re-shore the titanium supply chain with the following:
 - **Lower Cost Refining** of scrap or ores into purified titanium metal
 - **Superior Powder Product** allowing for use directly into additive manufacturing or into the current supply chain via powder metallurgy
 - **Closed Loop Recyclable** allowing for complete recyclability



Closed Loop Recyclable



Energy Efficient



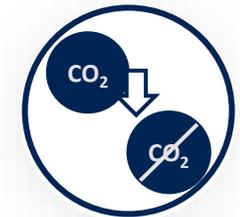
Sustainable



Powder Product



Low Cost



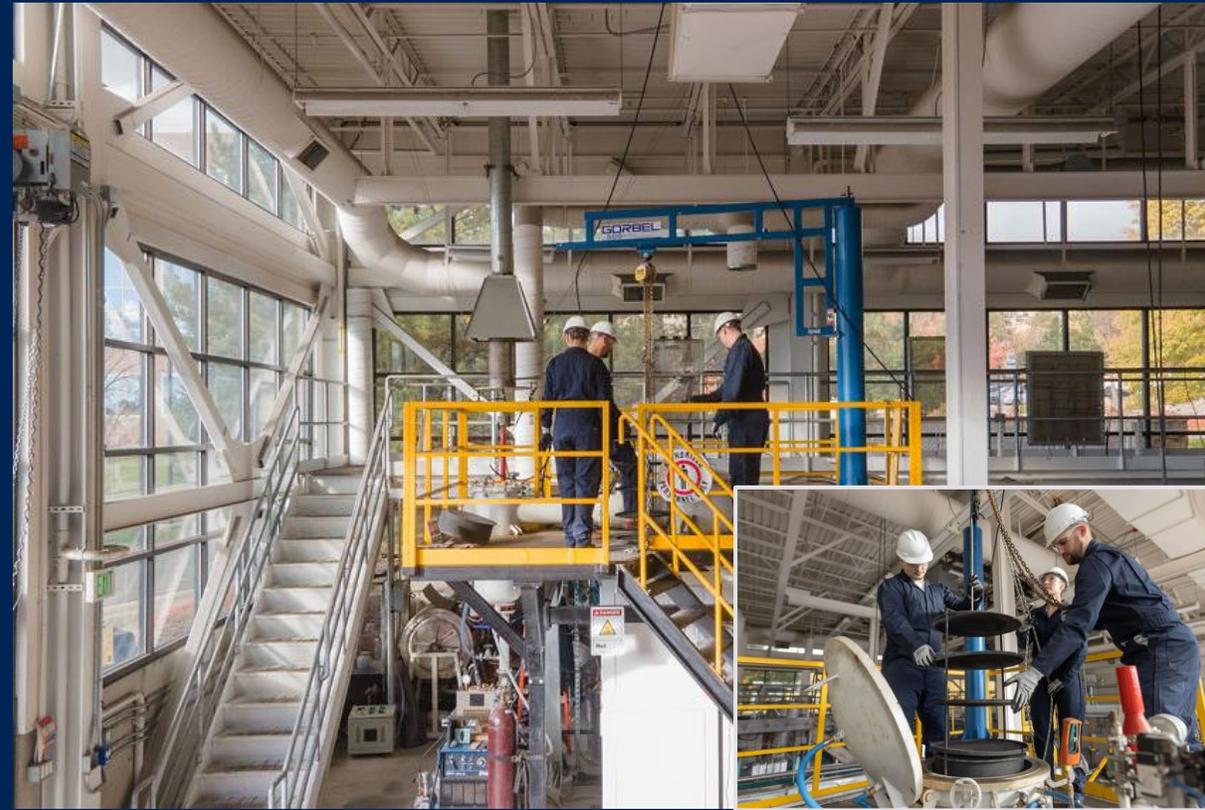
Zero Carbon Potential

HAMR technology has been taken through piloting and **proven as a technology**, now ready for **scale-up and full commercialization**

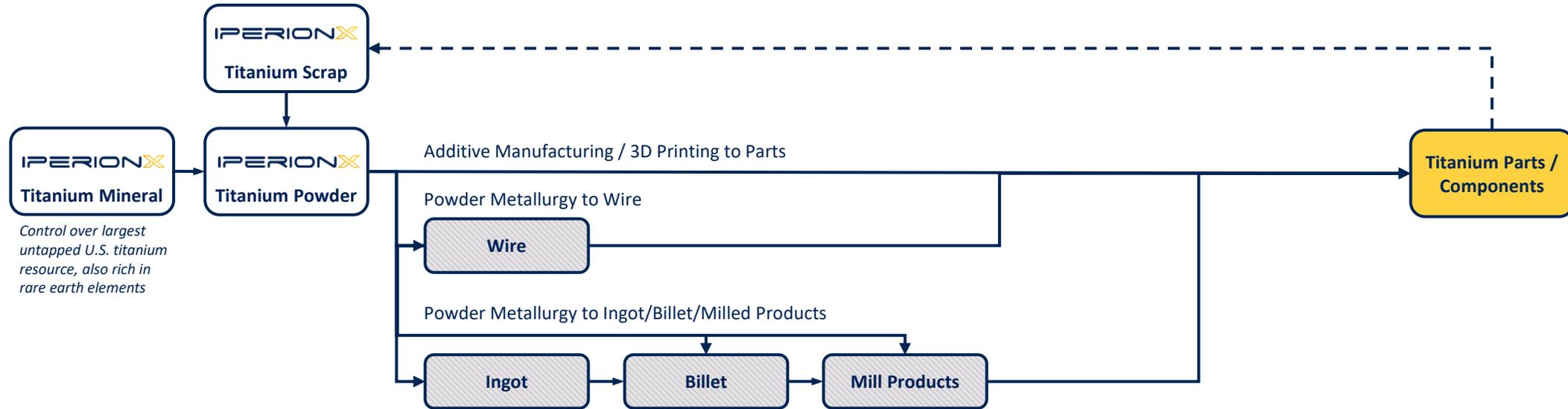
Lab Scale Development



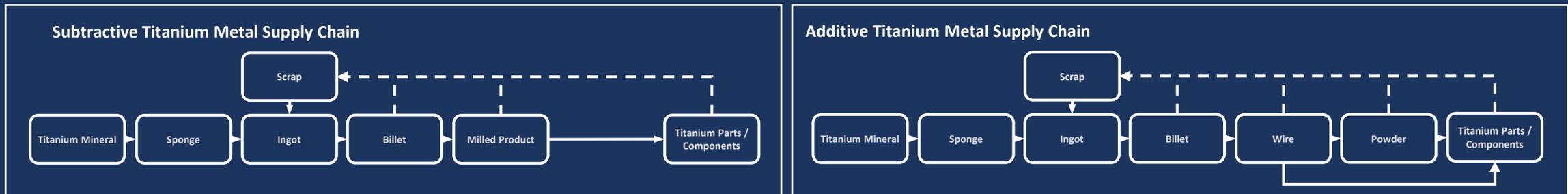
Pilot Scale Plant



IperionX aims to provide for a low cost, integrated, recyclable and sustainable solution to the U.S. titanium supply chain



Vs. the current titanium metal supply chains

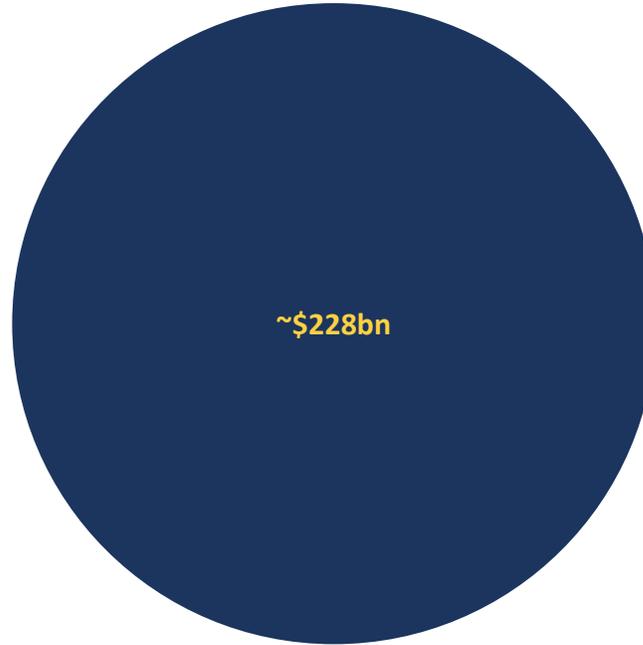


Our vision is to substitute titanium for stainless steel and aluminum in global applications, especially the **automotive & trucking, consumer electronics, and consumer goods markets**

~\$4bn

Titanium Market

2019 global melted product production: 283kt
Global average price for melted product: ~\$15,100/t



Aluminum Market

2021 global aluminum demand: 67Mt
March 2022 LME Spot price for aluminum: ~\$3,400/t



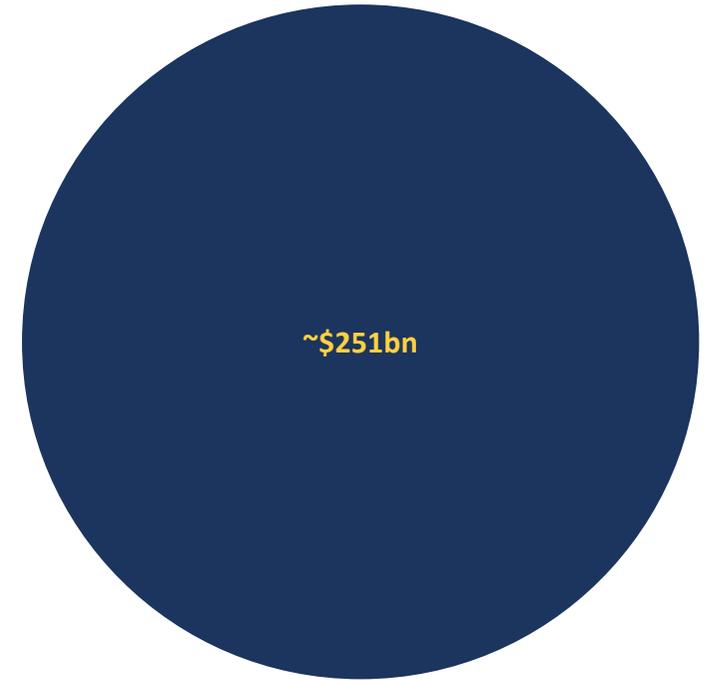
Lower strength-to-weight ratio than titanium



Lower melting point than titanium



Less corrosion resistant than titanium



Stainless Steel Market

2021 global stainless steel melt shop production: 56Mt
March 2022 Spot price for 304 2B stainless steel: ~\$4,450/t



1.8x heavier than titanium, with weaker strength-to-weight ratio



Lower melting point than titanium



Less corrosion resistant than titanium



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