Introduction To TDP Data Systems (TDP)

TDP--Silicon Valley Based—Operating Globally

Working With Industry Since 2016
Academia Since 2018
Federal Government 2021
Economic Developers 2022

TDP's Approach To AI-Enhanced Decision-Making

- Define the data types required to address the query at hand

- Identify the sources for the data types at the granular, entity level, rather than at the aggregate level

- Ingest, clean, normalize, join and restructure the various data types based on keywords associated with the query

- Use AI and Machine Learning to algorithmically evaluate, score, rank, and generate scorecards and other visualizations for the various data types—to allow for targeted human follow up

- Use Human Intelligence to further evaluate the highest-ranked scorecards and to combine the various data types at the granular level in new and novel ways

Outcomes From TDP's Approach

- Combines computer and human intelligence to offset the respective biases of both

- De-risks and compresses decision-making by 80% or more with greater optionality

- Can be applied to
  - Innovating key technical areas
  - Enhanced material development
  - Performance validation
  - Serving as a decision-making tool
  - Lab-to-Market ecosystems from both the supply/push & demand/pull sides

TDP's Two-Part Commerical Offering

- TDP's Cloud-Based Technology Product provides access to
    - Over 400 data bases/sets and growing
    - AI & Machine Learning tools
    - Computer-generated insights from turning data into actionable information
- TDP's Managed Services include
    - Human refinement of computer-generated insights
    - Advisory services including strategy development and execution
    - Market outreach and business development

Map Keyword Clusters And Expand Keywords Being Used
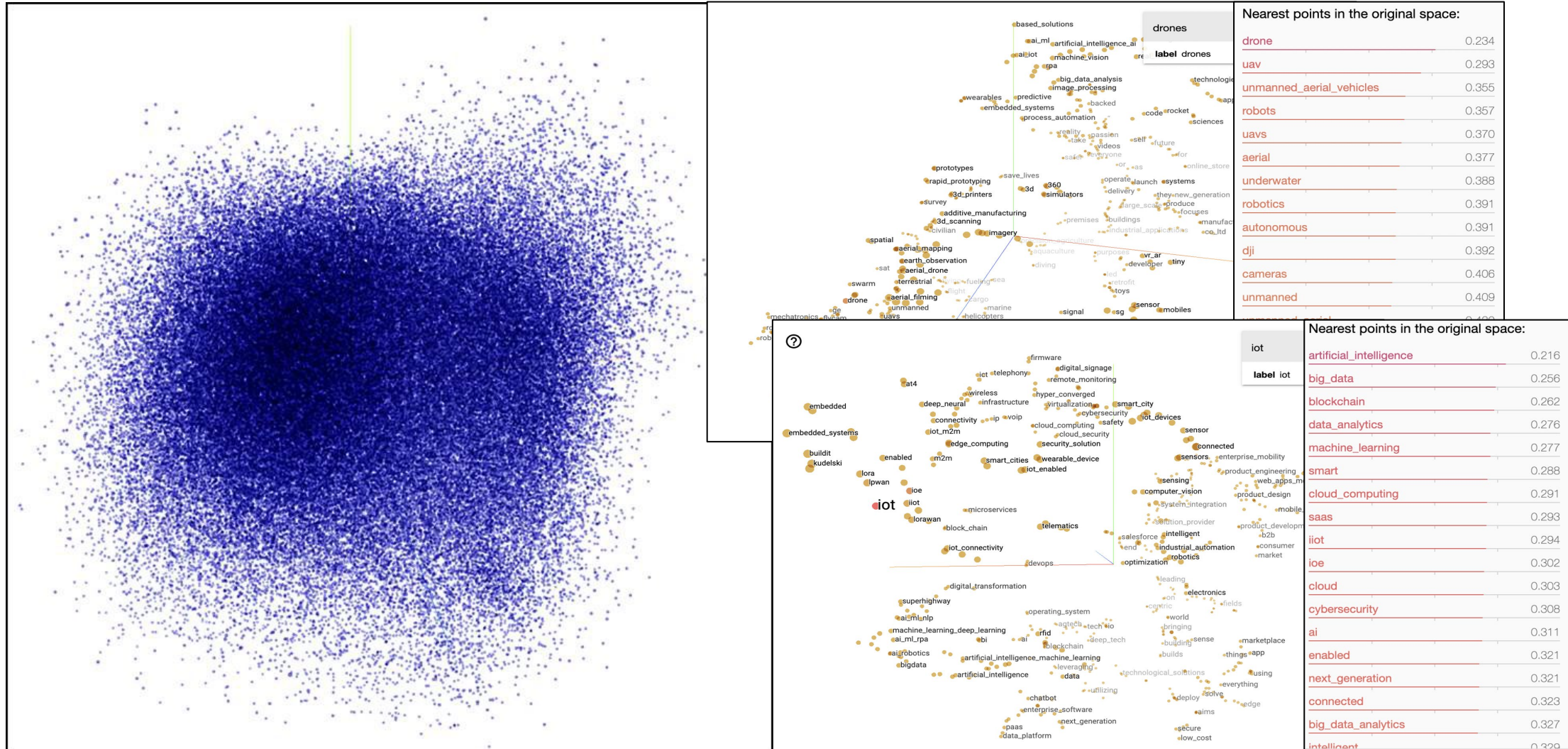
In Platform, Mix & Match Datasets and Algorithms

Scorecard

R7 Speech Sciences

R7 Speech Sciences is an AI company focused on understanding spoken conversations.

http://r7.ai

Scores

Execution	Survivability	Data complete	Data validity	Funding
6.4	3.8	5.5	6.7	Unknown

Summary

We believe in a voice-first future, and R7 was born out of our frustration with the existing voice products and their inability to capture nuances in conversations. By pushing the state-of-the-art in machine learning and speech science, harnessing massive datasets, and a strong team, we are building the next generation of voice products that go beyond just words.

Key data

Artificial Intelligence, Machine Learning, Speech Recognition	

Product status	Unknown
Buzz score	
Company size	-
Data age	< 3 Years
Founding date	
Last raise	
Cohort funding	$18,689,044

Close

Configure scorecard

Select active scores:

- ☐ **Impact (RFP)** for RFP
- ☐ **Impact (RFP)** for PATENT
- ☐ **Impact (RFP)** for RESEARCH
- ☐ **Commercialization (Resear**
- ☐ **Externalities Score** for PROD
- ☐ **Founder Score** for PRODUCT
- ☐ **People Score** for PRODUCT
- ☐ **Difficulty of Development f**
- ☐ **Novelty (Research)** for RESE
- ☐ **Novelty (Research)** for PATE
- ☐ **Value Proposition Risk** for P
- ☐ **Technology Versatility Scor**
- ☐ **Acquisition** for PRODUCT
- ☐ **Licensing** for RESEARCH, PA
- ☐ **Patent Assertion** for PATENT

Select search sources   ✖

- ☑ **AfDB Top 100[†] (private)**
- ☐ **Africa Development Bank (public)**
- ☐ **Allianza (private)**
- ☐ **Asian Development Bank - Contractors (private)**
- ☐ **Blood/Fibrin Data Set (private)**
- ☐ **CB2021Sept[†] (public)**
- ☐ **Circular Economy/Sustainable Food (private)**
- ☐ **Clinical Trials - 1 (public)**
- ☐ **clinical trials - 2 (public)**
- ☐ **clinical trials - 3[†] (public)**
- ☐ **clinical trials - 4 (public)**
- ☐ **clinical trials - 5 (public)**
- ☐ **Crown Bio Demo[†] (private)**
- ☐ **Cybersecurity - Cloudcover (public)**
- ☐ **demo (private)**
- ☐ **Deutsche Post Patents (public)**
- ☐ **DOE Patents - 1 (private)**
- ☐ **DOE Patents - 2 (private)**
- ☐ **Energy Performance Policy[†] (private)**
- ☐ **EU - RFP's/Calls (public)**
- ☐ **European Development Bank - Projects/Tenders (public)**
- ☐ **Federal Agencies (private)**
- ☐ **Federal Contracts - 1 (private)**
- ☐ **Federal Labs (public)**

Close

Ability To Create Intergenerational Wealth

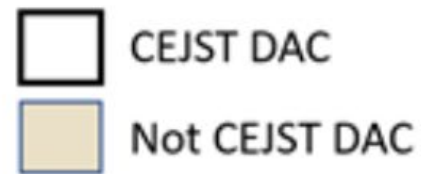| Rank	City/MSA	Educational Opportunity	Economic Opportunity	Child Access to Nutrition	Intergenerational Wealth
1	Nashville	7.7	8.4	9.5	8.9
2	Portland	8.4	9	9.1	8.8
3	Ann Arbor	8.1	8.5	8.2	8.3
4	Houston	7.9	8.5	8.6	8.3
5	Dallas	7.8	8.6	8.1	8.2
6	Columbus	7.7	8.1	7.9	7.9
7	Salt Lake City	6.8	7.5	7.7	7.3
8	Seattle	7.8	6.8	6.9	7.2
9	Minneapolis	7.5	7.1	6.7	7.1
10	Las Vegas	6.7	7.9	6.2	7.0
11	St. Louis	7.4	6.6	7	7.0
12	Washington, D.C.	6.7	7.5	6.5	6.9
13	Columbus	7.4	6.8	6.5	6.9
14	Orlando	7	6.9	6.5	6.8
15	Raleigh	7	6.4	6.9	6.8
16	Boston	6.3	7.1	6.5	6.6
17	Philadelphia	6.9	6.4	6.4	6.6
18	Phoenix	6.3	6.5	6.9	6.6
19	Pittsburgh	6.3	7.2	6.2	6.6
20	Tallahassee	6.9	6.1	6.6	6.5

TDP

Generate Holistic Solutions
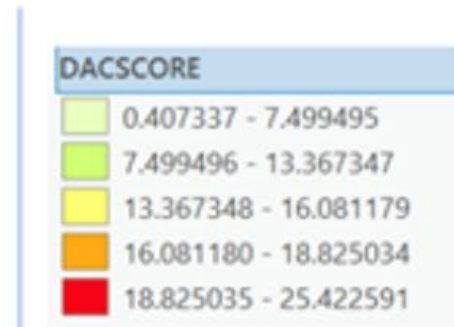## TDP Ecosystem Maps

**Because at the Frontier of
Science, Emerging Technologies
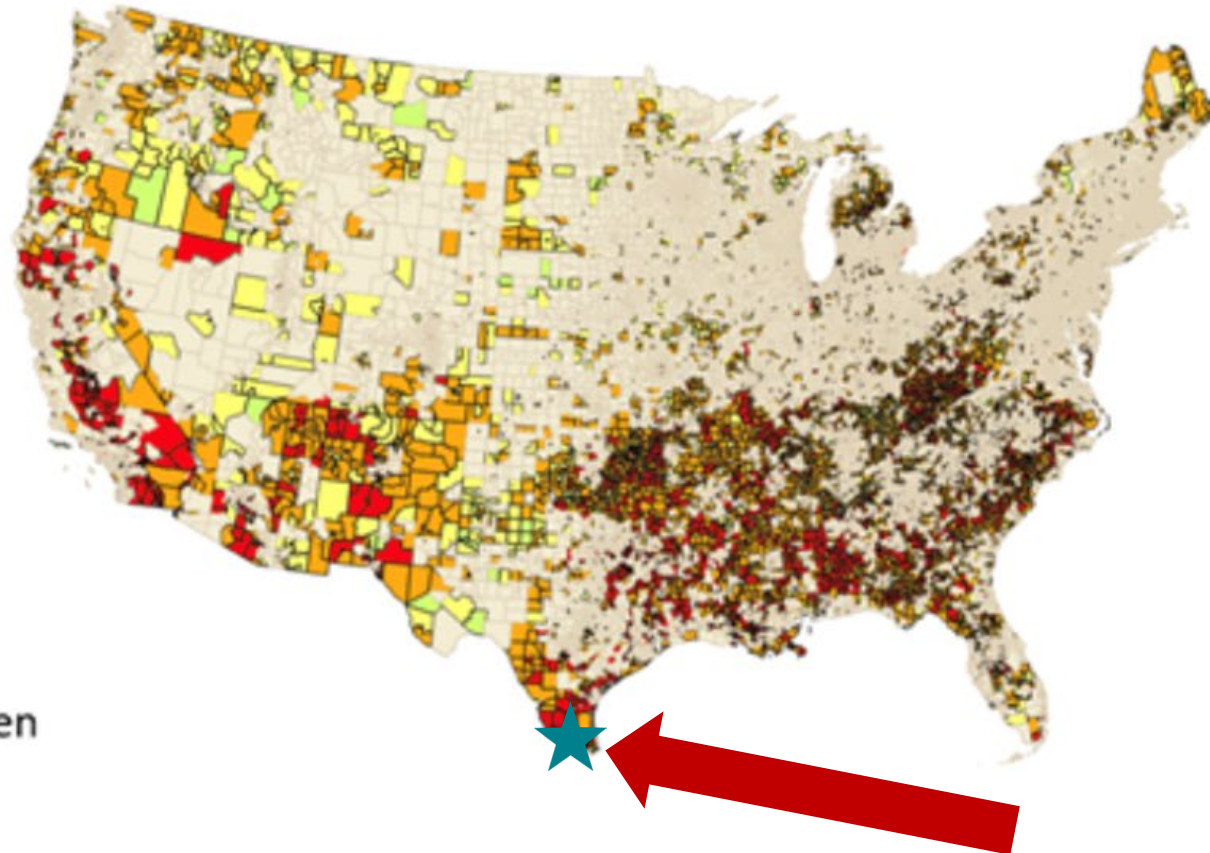& Startups, There Tends To Be
Only Partial Solutions**

Justice 40--Energy Example/McAllen, TX

CEJST DAC

Not CEJST DAC

DOE DAC Score

DACSCORE	93rd
0.407337 - 7.499495	
7.499496 - 13.367347	
13.367348 - 16.081179	
16.081180 - 18.825034	
18.825035 - 25.422591	

Higher Cumulative Burden

Energy cost
Average annual energy costs divided by household income
98th above 90th percentile

PM2.5 in the air
Level of inhalable particles, 2.5 micrometers or smaller
91st above 90th percentile

AND

Low income
People in households where income is less than or equal to twice the federal poverty level, not including students enrolled in higher ed
93rd above 65th percentile

Microgrid Market worth 39.10 billion USD by 2023 with a growing CAGR of 11.97%

GRIDHOUND
Grid software management

REVAYU Energy
Rooftop wind and solar hybrid energy capture

TDP

Potential Ecosystem Partners

NASA
Novel Controller Selectively Charges Individual Cells in a Battery Pack

DUK OSI
Battery health management

BioSolar
Developing LIBs with 10x storage capacity using Si anodes

Pacific Northwest NATIONAL LABORATORY
Researchers at PNNL have developed two novel approaches to redox flow batteries that overcome these barriers and offer superior performance and cost advantages unlike any existing system

NISSIN ELECTRIC
Power conditioners and converters

Sandia National Laboratories
Microgrid design toolkit - decision support software toolkit that aids designers in creating optimal microgrids

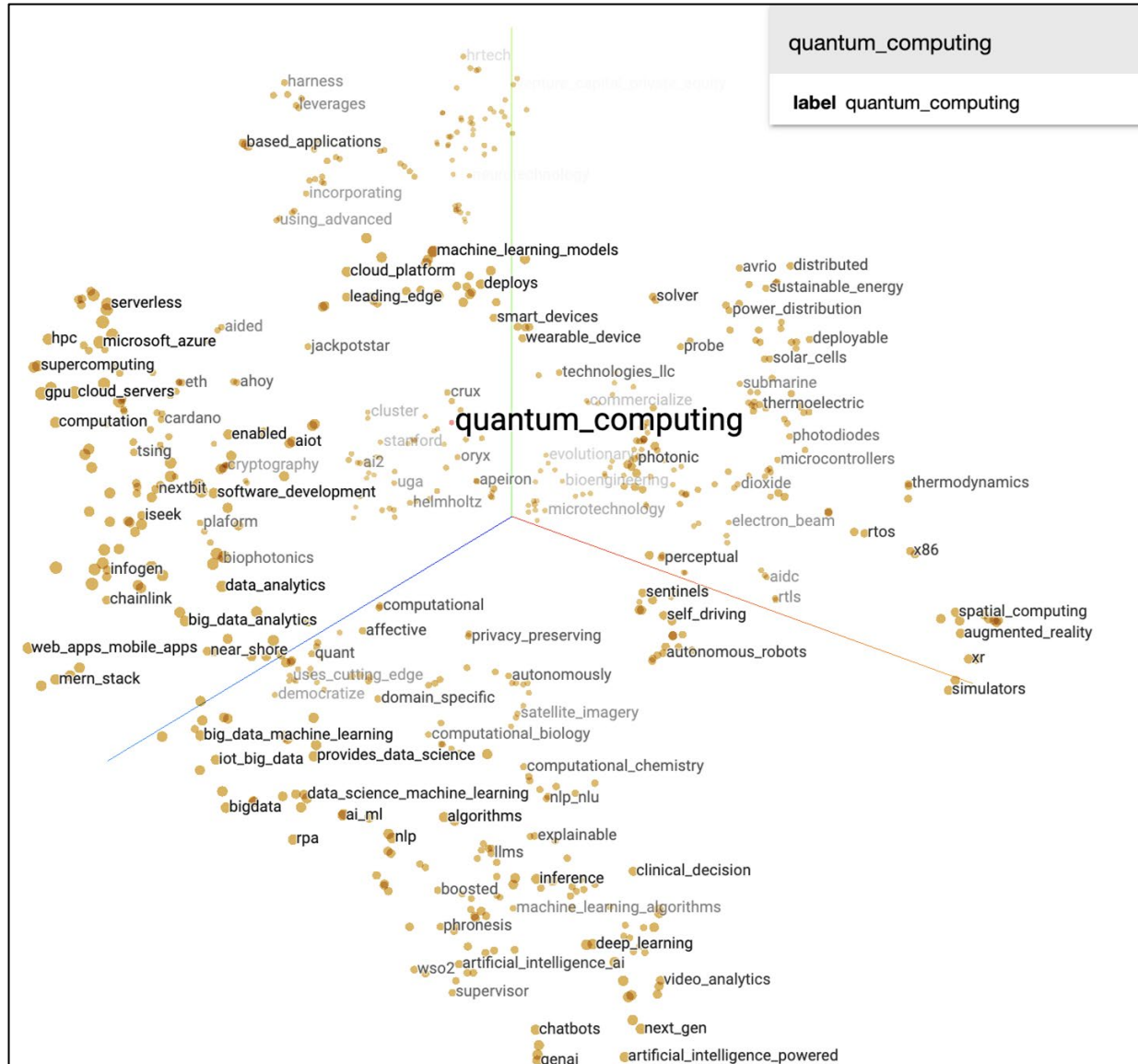# Quantum Computing & AI to Increase Transmission Efficiency and Electrochemical Storage

For Desalination Plants

Framing of Ecosystem Map

	Problem	Solution
Pain Point	Desalination plants require significant pulls of energy, limiting economical viability	AI & QC derived energy storage aand efficient products to make desalination more cost effective
Root Cause	Energy price fluctuation and energy loss over transmission and distribution	Advanced battery tech to support energy use during expensive timeframes & superconducting materials to enable more efficient distribution to plant
Market Size	Water Desalination Market Size was valued at USD 15.33 billion in 2021. The Water Desalination market is projected to grow from USD 16.84 billion in 2022 to USD 33.38 billion by 2030	

ML Keyword Analysis: Startups

Technology Overlaps: Startups

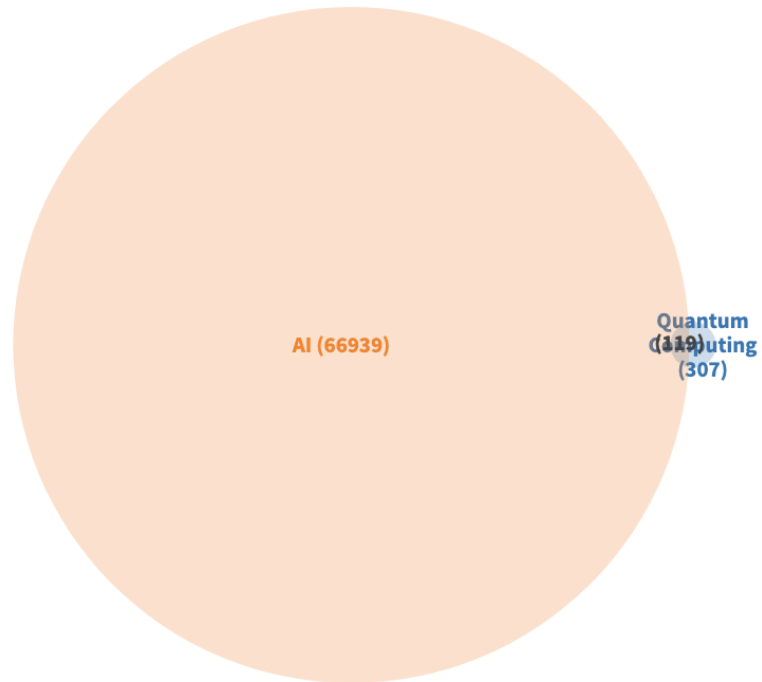**Count of search results for each category**

(A) Quantum Computing: 307

(B) AI: 66939
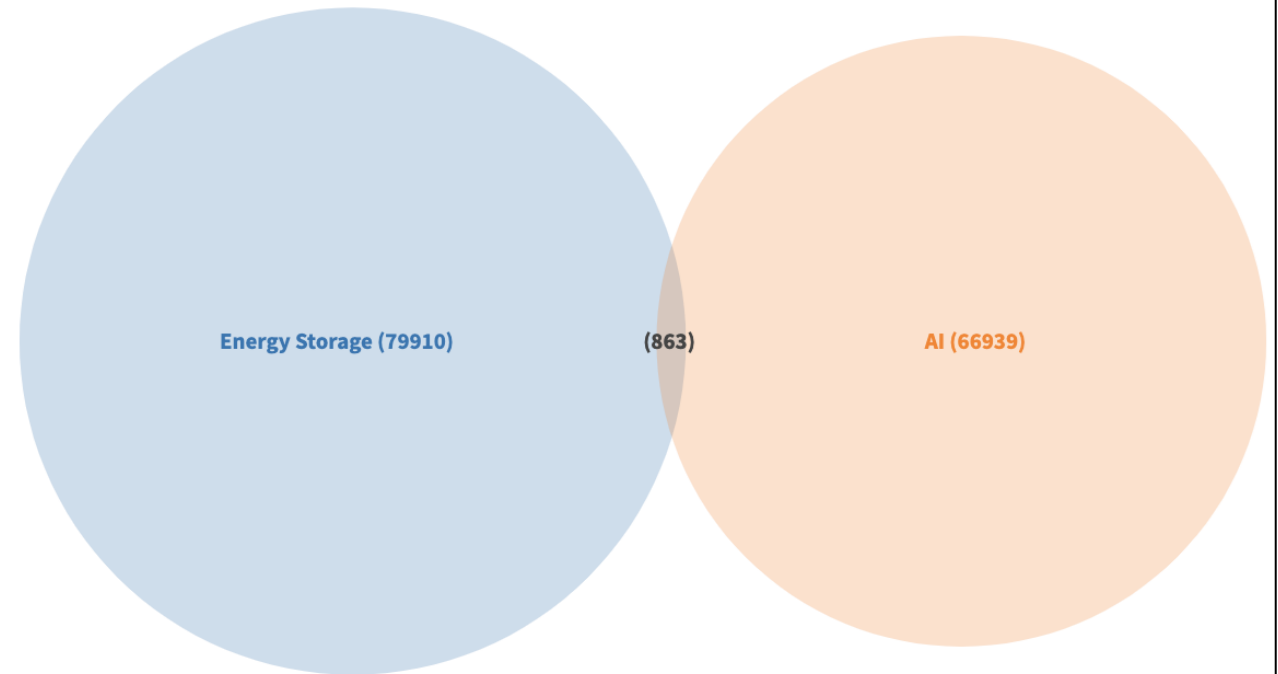
(AB) **Intersection Quantum Computing and AI: 119**

AI (66939)

Quantum Computing (119)
(307)

Count of search results for each category

(A) Energy Storage: 79910

(B) AI: 66939

(AB) **Intersection Energy Storage and AI: 863**

Energy Storage (79910)   (863)   AI (66939)

Potential Participant Benchmarking

	BioZen Batteries		PHINERGY		rigetti		PHASESHIFT TECHNOLOGIES	
	Score	**Cohort Average**	**Score**	**Cohort Average**	**Score**	**Cohort Average**	**Score**	**Cohort Average**
Cohort Size	9,322		52		307		116	
Age	5	12	14	36	11	8	5	7
Funding	Yes, amount unknown	$16.2M	$64.9M	$42.8M	$298.5	$8.9M	$575k	$4.4M
Survivability	6.4	6.2	7.1	4.8	7.8	5.5	6.4	5.1
Execution	7.1	7.0	7.8	7.5	8.2	6.8	6.3	6.6
Overview	BioZen Batteries offers organic redox-active electrolytes designed specifically for redox flow batteries. BioZen Batteries represent the next phase of electrification, where the rapid development of long-duration energy storage is imperative.		Phinergy develops systems for generation, backup and storage of energy, based on the company's groundbreaking, proprietary metal-air technology.		Rigetti Computing is a full-stack quantum computing company. It designs and manufactures quantum-integrated circuits. It packages and deploys those chips in a low-temperature environment, and they build control systems to perform quantum logic operations on them.		Based on Artificial Intelligence and Quantum Chemistry simulations, PhaseShift accelerates the discovery of new materials by a factor of 10x and with up to 75% in cost savings. However, the most significant benefit of all is the ability to develop battery materials.	

*Large & medium corporations typically update their data in startup databases less frequently than startups, therefore, survivability scores typically are lower due to a time decay on time since last data update

Potential Participant Benchmarking

	KoBold Metals		MP Materials		SuperPower Inc. / Furukawa Electric Group		Nexans	
	Score	**Cohort Average**	**Score**	**Cohort Average**	**Score**	**Cohort Average**	**Score**	**Cohort Average**
Cohort Size	292		185		14		71	
Age	6	10	10	26	24	22	30	23
Funding	$408M	$1.2M	$909M	$6.3M	$6.2M	$12.5M	$350M	$10.6M
Survivability	8.5	5.0	7.9	5.1	3.7	5.0	4.7	5.1
Execution	6.9	6.8	6.8	7.2	6.8	7.0	7.4	7.2
Overview	KoBold Metals invests in battery materials projects across the globe by combining basic ore-deposit science, big data, and scientific computing with patient private capital. The company's software uses datasets with conventional geochemical, geophysical, and geological data in statistical association models to identify prospects to ensure a cobalt supply.		Only rare earth mining and processing site of scale in the Western Hemisphere and currently produces approximately 15% of global rare earth content. Separated rare earth elements are critical inputs for the magnets that enable the mobility of electric vehicles, drones, defense systems, wind turbines, robotics and many other high-growth, advanced technologies		SuperPower Inc. uses core capabilities in materials, cryogenics and magnetics to enable the development of electric power components through its state-of-the-art second generation high temperature superconducting (2G HTS) technology.		Nexans provides copper and fiber-optic cables and cabling systems to the Energy Infrastructure, Industry, Building and Local Area Network (LAN) markets. It operates under three segments: Energy, Telecom and Electrical Wires and has six main product lines: indoor cabling, which includes rugged industrial, fire-performance and standard domesticables.	

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Material Focused Energy Solutions

BioZen Batteries

PHINERGY

Redox flow batteries   **Metal-Air batteries**

MP MATERIALS

Only integrated rare earth mining and processing site in North America coupled with sustainable practices
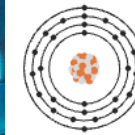**Raw Material Extraction**

SuperPower Inc.

FURUKAWA ELECTRIC GROUP

UNIVERSITY OF CAMBRIDGE

Nexans
ELECTRIFY THE FUTURE

High Temperature Superconducting Power Lines

KoBold Metals

AI enable mineral exploration and ethical extraction

rigetti

PHASESHIFT TECHNOLOGIES

Quantum Computing Hardware & Software

AI & Quantum Computational Chemistry

Design via AI & Quantum