

Technology Scouting Report

Overview

# ENERGY SOLUTIONS

Powerful, Sustainable Innovation





### Market Landscape Indicator

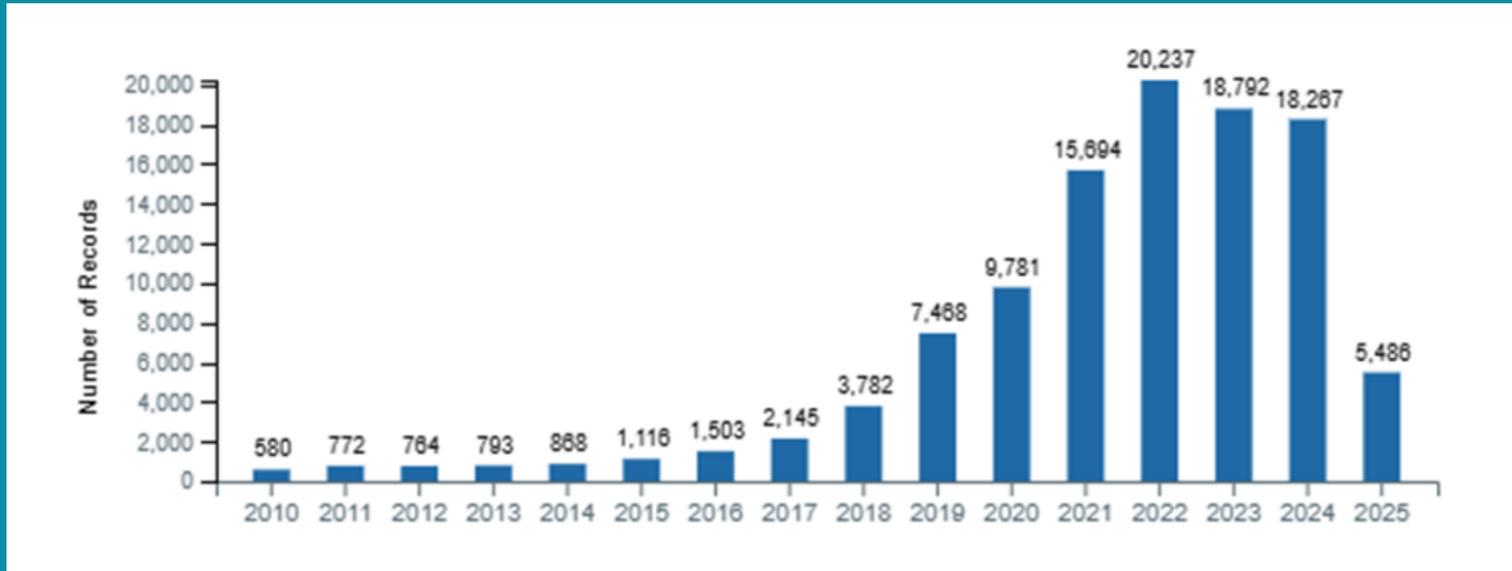
Energy Technology analytics display a significant increase in commercialization.



# ENERGY SOLUTIONS

## Topic Evolution by Year

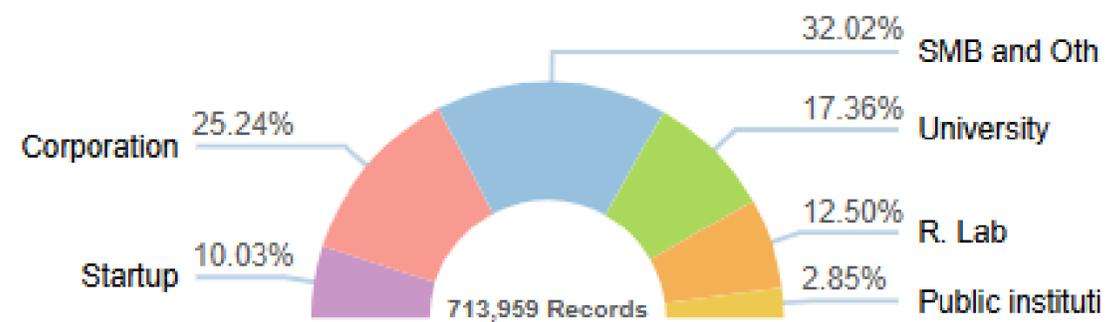
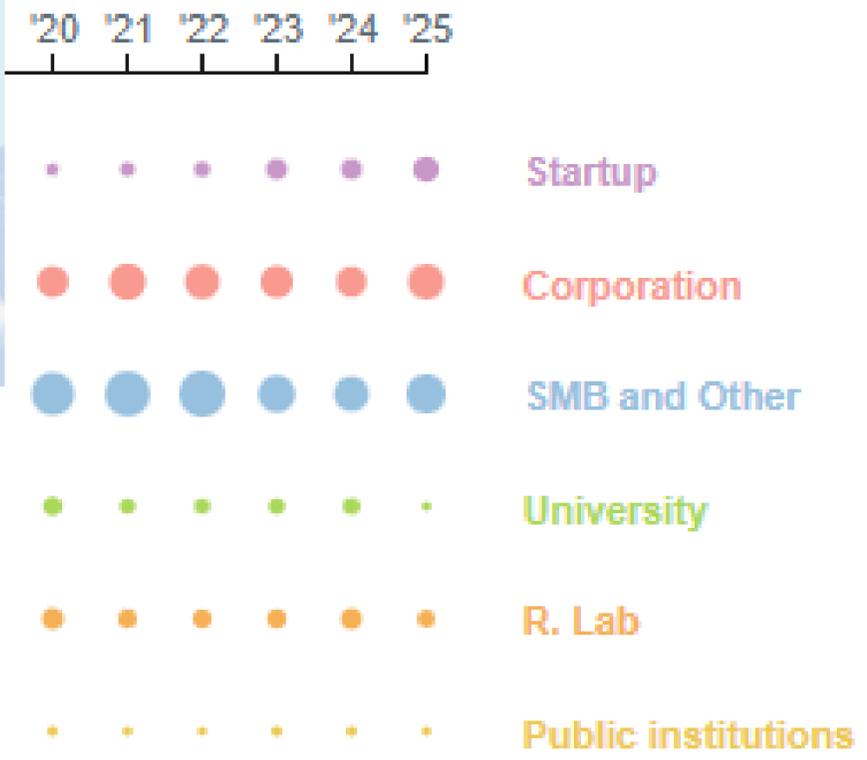
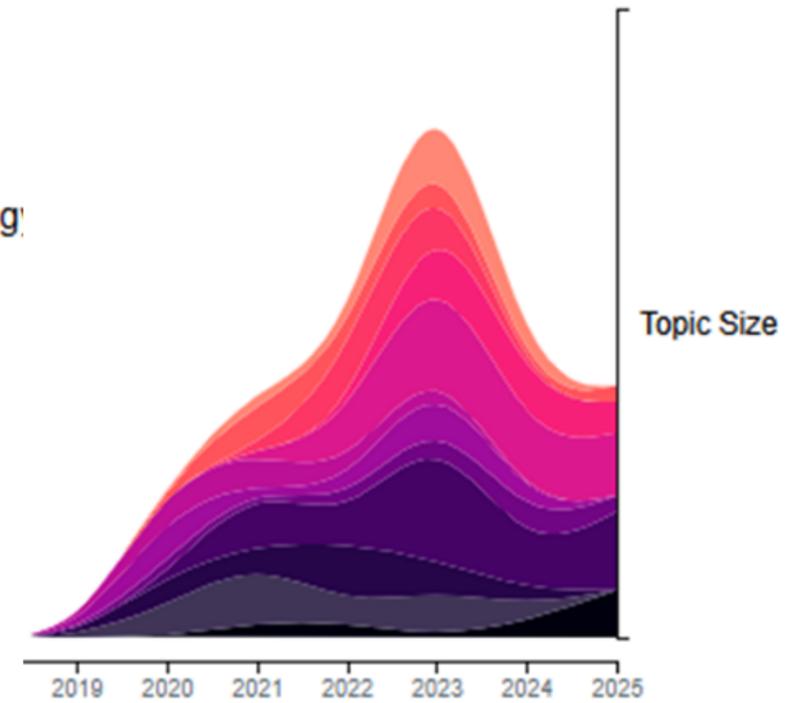
Utilizing Ezassi's proprietary AI-powered 3DScout software, we research more than 350 million data sources, capturing information from global grants, patents, trademarks, scientific journal publications, news, web monitoring, and conferences.



This technology data shows the evolution of a topic over time to forecast the market and drive decisions.

# TOPIC TRENDS & RESEARCH SOURCES

- Fossil Fuel
- Sustainable Development
- Energy Efficiency
- Clean Energy Technology
- Renewable Energy Technology
- Million
- Research
- Investment
- Renewable Energy
- Power
- Solar
- Wind





# Energy Sector Innovation & Key Trends

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## Renewable Energy Technologies

### Solar Power Advancements

- Advanced solar cell technology, including silicon, perovskite, and tandem solar cells, offering higher efficiency rates and lower production costs
- Dual-use applications like building-integrated photovoltaics, agrivoltaics, and floatovoltaics

### Wind Energy Innovations

- Offshore wind projects with floating turbine foundations for deep waters
- Hybrid wind-solar configurations optimizing land use and stabilizing power generation

## Nuclear Energy Resurgence

### Small Modular Reactors (SMRs)

- Compact, safer nuclear reactors gaining popularity for powering data centers and industrial applications
- SMR initiatives are safer and more flexible and are in various stages of global development

### Advanced Nuclear Technologies

- Increased investment in fusion and other advanced nuclear solutions by tech companies

## Energy Storage Solutions

### Long-Duration Energy Storage (LDES)

- Advancements in battery technologies for grid-scale storage

### Alternative Battery Chemistries

- Sodium-ion and solid-state batteries promising extended lifespans, safer operations, and potentially lower costs

# Energy Technology Key Trends

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## Clean Fuel Technologies

### Green Hydrogen

- Continued development and potential growth, pending policy developments and tax credit guidance
- Exploration of naturally occurring hydrogen sources

### Carbon Capture and Storage

- Direct Air Capture (DAC) plants expected to create 2.7 GW in demand by 2030

## Digital and AI Technologies

### Artificial Intelligence in Energy Management

- AI-driven analytics for optimizing drilling, predicting equipment failures, and improving decision-making
- AI-powered virtual power plants integrating smart home devices and distributed energy resources

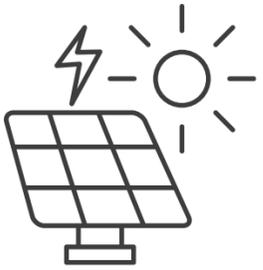
### Smart Grids and Meters

- AI-incorporated smart meters to increase grid stability and integrate customer solar and storage systems

## Automation and Robotics

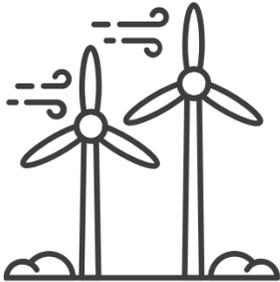
- Increased use of drones, autonomous vehicles, and robotic systems in hazardous environments
- AI-powered robots assisting in large-scale solar installations

# RENEWABLE ENERGY TECHNOLOGY SCOUTING



## SOLAR ENERGY:

High-efficiency solar panels and photovoltaic systems for residential, commercial, and industrial use.



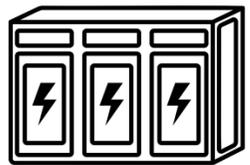
## WIND ENERGY:

Advanced turbines and wind farms designed for optimal energy capture and minimal environmental impact.



## HYDROELECTRIC & GEOTHERMAL POWER:

Innovative systems to generate clean energy.



## BATTERY STORAGE:

Energy storage solutions ensuring reliable and efficient power distribution.

# 3DScout Databases

The Largest Aggregation of Science & Technology Data

## Publications: 227,888,225 \*\*

- CORE
- SpringerOpen
- PlosONE
- Science Direct (Coming Soon)
- IEEE (Coming Soon)
- PubMed (Coming Soon)

## Patents: 72,924,682\*\*

- WIPO
- USPTO
- EPO
- EAPO
- ARIPO
- +85 countries

## Trademarks: 8,957,179

- USPTO
- Justia
- EUIPO (Coming Soon)

## Grants: 1,124,873

- NSF
- SBIR
- Cordis
- UKRI
- Grants.gov

## News: 26,850,789

- Globe Newswire
- Science Daily
- TechCrunch
- Defense World
- CNET

## Conferences: 3,804,910

- CORE
- Business Wire
- IEEE Xplore
- Springer
- OSTI
- Web of Conference

## Clinical trials: 843,859

- Mayo
- ANZCTR
- Clinicaltrials.gov
- Clinicaltrial.eu

## Tech transfer: 78,495

- University of Florida
- Stanford University
- Harvard University
- University of Pennsylvania
- MIT
- 50 Plus Institutions

## People (SMEs): 1,940,932

- Crunchbase
- Patents
- Trademarks
- Journals

## Organizations: 3,657,152

- Crunchbase

## Organizations 3,397,290

- GRID
- CORE
- Patents
- Trademarks

351 Million Records



Total Records: 351,468,386

Updated: 12-12-2024

\*\* Total record count, without filtering records before 2011

# 3DScout - Organizations

## Research and add Companies to a Project

Name ▲	Company Homepage Url	Company Category list	Company Description	Company City	Company Total Funding USD
 ACWA Power	<a href="https://www.acwapower.com">https://www.acwapower.com</a>	Electrical Distribution,Energy,Renewable E...	ACWA Power is a developer, investor, co-o...	Riyadh	7,296,024,015
 Air Company	<a href="https://aircompany.com">https://aircompany.com</a>	Carbon Capture,Chemical,GreenTech,Man...	Air Company is a carbon utilization compa...	New York	108,126,280
 Ara Partners	<a href="https://www.arapartners.com">https://www.arapartners.com</a>	Energy,Finance,Financial Services,Impact I...	Ara Partners is a private equity and infrastr...	Houston	335,000,000
 Avaada	<a href="https://avaada.com">https://avaada.com</a>	Clean Energy,Energy,Renewable Energy,Sol...	Avaada is a renewable energy company th...	New Delhi	3,701,154,028
 Bright Night	<a href="https://brightnightpower.com">https://brightnightpower.com</a>	Energy,Energy Efficiency,Power Grid,Renew...	BrightNight provides renewable power sol...	Rosemary Beach	1,575,000,000
 David Energy	<a href="https://www.davidenergy.com">https://www.davidenergy.com</a>	Energy,Energy Efficiency,Energy Managem...	David Energy is an energy company that le...	Brooklyn	100,453,728
 Enovix	<a href="https://enovix.com">https://enovix.com</a>	Energy,Energy Storage,Renewable Energy	Enovix is a advanced silicon-anode lithium...	Fremont	616,250,005
 Form Energy	<a href="https://www.formenergy.com">https://www.formenergy.com</a>	Battery,Energy,Energy Storage,Power Grid,...	Form Energy develops and commercialize...	Somerville	1,567,765,461
 GridServe	<a href="http://www.gridserve.com">http://www.gridserve.com</a>	Electric Vehicle,Renewable Energy,Solar	GridServe provides world class, turnkey pr...	Iver	921,666,674
 Heliogen	<a href="https://heliogen.com/">https://heliogen.com/</a>	Energy,Industrial,Renewable Energy,Solar	Heliogen is a renewable energy technology...	Pasadena	332,550,000
 HIF Global	<a href="https://www.hifglobal.com">https://www.hifglobal.com</a>	Energy,Energy Management,Fuel	HIF Global is an eFuel company engaged i...	Santiago	480,000,000
 IREN	<a href="https://irisenergy.co/">https://irisenergy.co/</a>	Bitcoin,Cryptocurrency,Data Center,Data St...	IREN is a Bitcoin mining company that buil...	Sydney	999,400,000
 Masdar	<a href="https://masdar.ae/">https://masdar.ae/</a>	Clean Energy,Renewable Energy,Solar,Wind...	Masdar is a renewable energy manufactur...	Abu Dhabi	2,305,400,000
 Monolith	<a href="https://monolith-corp.com">https://monolith-corp.com</a>	Chemical,Energy,Manufacturing	Monolith specializes in sustainable manuf...	Lincoln	364,297,594
 NatureWorks	<a href="http://www.natureworkslc.com">http://www.natureworkslc.com</a>	Chemical,GreenTech,Natural Resources	NatureWorks LLC is a company dedicated ...	Minnetonka	500,000,000
 Newcleo	<a href="https://www.newcleo.com">https://www.newcleo.com</a>	Clean Energy,Energy,Energy Management,...	Newcleo is a clean energy company focus...	Paris	677,132,243
 Northvolt	<a href="http://www.northvolt.com">http://www.northvolt.com</a>	Battery,Clean Energy,CleanTech,Energy,Ma...	Northvolt develops sustainable lithium-ion ...	Stockholm	13,819,908,679
 OnPath Energy	<a href="https://www.onpathenergy.com">https://www.onpathenergy.com</a>	Energy,Renewable Energy	OnPath Energy specializes in developing a...	Houghton Le Spring	157,552,682
 Onyx Renewable Partners	<a href="https://www.onyxrenewables.com/">https://www.onyxrenewables.com/</a>	Clean Energy,CleanTech,Energy,Energy Sto...	Onyx Renewable Partners L.P. ("Onyx?") is a...	New York	179,000,000
 QUIXOTIC	<a href="https://www.quixotic.energy">https://www.quixotic.energy</a>	Clean Energy,Energy,Renewable Energy,Sa...	QUIXOTIC is a one-of-its-kind, billing & invo...	Madrid	2,270,796

# 3DScout - Patents

## Export Results of a Patent Search

Discovery Emerging Tech **Patents** People & Organizations Search Engine Saved Searches [NEW | UPDATE SEARCH](#) [SAVE ALL TABS SEARCHES](#) [Create Project](#) [Upload Patents to Projects](#)

[Summary](#) [Analytics](#) [Export Results](#)

SEARCH TERMS  
renewable energy

SEARCH PATENT NUMBER

SEARCH INVENTOR

SEARCH ASSIGNEE

SEARCH CLAIMS

[SEARCH](#)

[Advanced Query](#)

REGION FILTER  
All Regions

DATE FILTERS  
DATE FILTER TYPE  
Publication Date

Publication	Title	Current Assignee
<input type="checkbox"/> <a href="#">US12165223B2</a>	Renewable energy community objects with price-time priority queues for transformed renewable energy	CIRCLESX LLC
<input type="checkbox"/> <a href="#">WO2020190983A1</a>	RENEWABLE ENERGY COMMUNITY OBJECTS WITH PRICE-TIME PRIORITY QUEUES FOR TRANSFORMED RENEWABLE ENERGY	SIMPSON TECHNOLOGIES LLC
<input type="checkbox"/> <a href="#">US20190333166A1</a>	RENEWABLE ENERGY COMMUNITY OBJECTS WITH PRICE-TIME PRIORITY QUEUES FOR TRANSFORMED RENEWABLE ENERGY	CIRCLESX LLC
<input type="checkbox"/> <a href="#">US20240356368A1</a>	RENEWABLE ENERGY METERING AND MONITORING DEVICE, SYSTEM AND METHOD OF OPERATION	CARBON LIMIT
<input type="checkbox"/> <a href="#">WO2024224291A1</a>	RENEWABLE ENERGY METERING AND MONITORING DEVICE, SYSTEM AND METHOD OF OPERATION	CARBON LIMIT

Microsoft Word window: renewable energy - Protected... • Saved to this PC

File Home Insert Page Layout Formulas Data Review View Automate Help

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. [Enable Editing](#)

Publication Number	Title	Current Assignee	Inventor(s)	Priority Date	Abstract
1	community objects with price-time priority queues for transformed renewable energy units	CIRCLESX LLC	Simpson, Erik M		Implementations of various methods and systems to transform renewable energy waypoints or a destination waypoint or a series sequence of waypoints have associated price-time priority queues for transformed renewable energy disclosed invention relates to combining the concepts of objected or queues, renewable energy, navigation systems and social networking asset class or renewable energy linked to transmission as an open network
2	ENERGY COMMUNITY OBJECTS WITH PRICE-TIME PRIORITY QUEUES FOR TRANSFORMED RENEWABLE ENERGY	SIMPSON TECHNOLOGIES LLC	SIMPSON, Eric M.		Implementations of various methods and systems to transform renewable energy waypoints or a destination waypoint or a series sequence of waypoints have associated price - time priority queues for transformed renewable energy disclosed invention relates to combining the concepts of objected or queues, renewable energy, navigation systems and social networking asset class or renewable energy linked to transmission as an open network
3	RENEWABLE ENERGY COMMUNITY OBJECTS WITH PRICE-TIME PRIORITY QUEUES FOR TRANSFORMED RENEWABLE ENERGY	CIRCLESX LLC	Simpson, Erik M		Implementations of various methods and systems to transform renewable energy waypoints or a destination waypoint or a series sequence of waypoints have associated price-time priority queues for transformed renewable energy disclosed invention relates to combining the concepts of objected or queues, renewable energy, navigation systems and social networking asset class or renewable energy linked to transmission as an open network
4	ENERGY COMMUNITY OBJECTS WITH PRICE-TIME PRIORITY QUEUES FOR TRANSFORMED RENEWABLE ENERGY	CIRCLESX LLC	Simpson, Erik M		Implementations of various methods and systems to transform renewable energy waypoints or a destination waypoint or a series sequence of waypoints have associated price-time priority queues for transformed renewable energy disclosed invention relates to combining the concepts of objected or queues, renewable energy, navigation systems and social networking asset class or renewable energy linked to transmission as an open network

renewable energy

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# Ezassi Research Services Offer **Organization Vetting**



### Landscape of Strategic Areas of Interest

- Leading and emerging technologies
- Maturity and scale of identified technologies
- Key player ecosystem
- Competitive solutions
- Existing collaborations

### Profile, Assess, and Prioritize

- Build profiles of companies with leading technologies
- Triangulate initial research through ecosystem SME interactions
- Prioritize companies based on agreed upon criteria

### Vet Prioritized Companies

- Ezassi contacts the prioritized companies to confirm:
- Maturity and current scale of technology
  - Willingness to collaborate under client terms

### Facilitation of Engagement

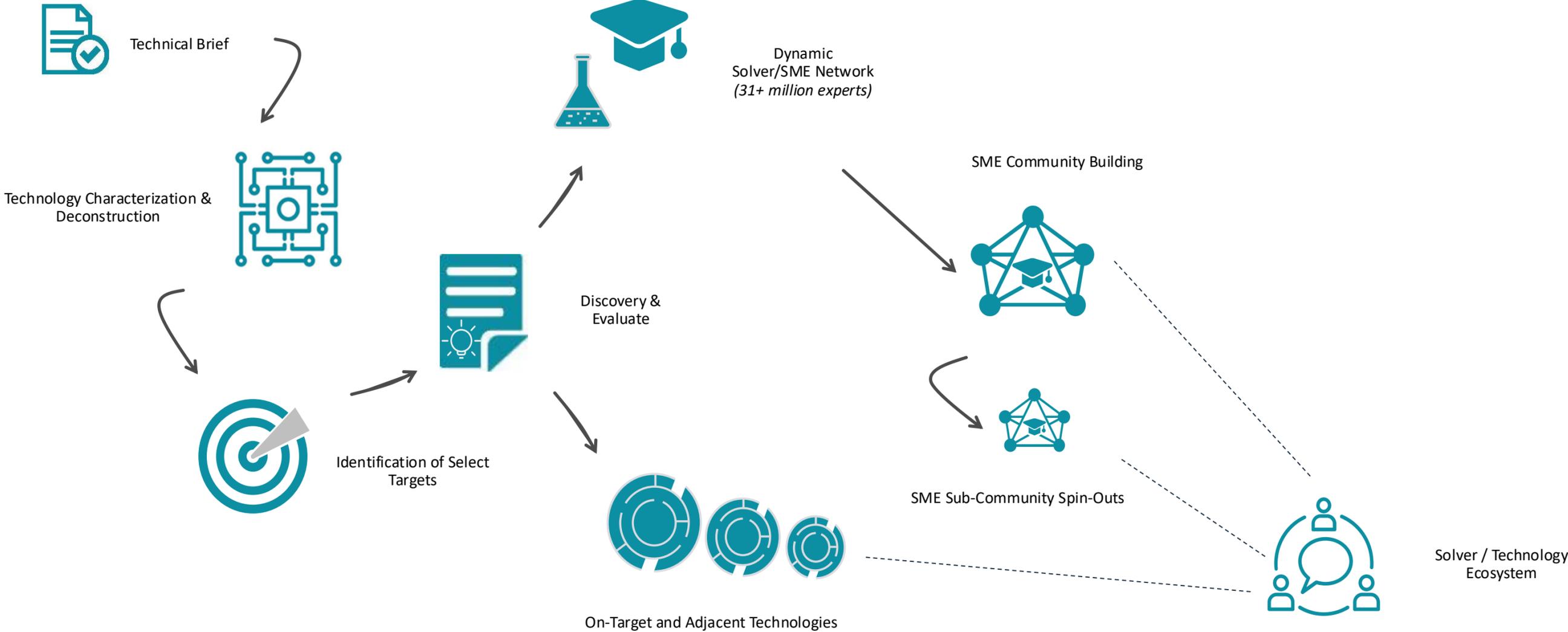
- As desired:
- Facilitate execution of NDA between client selected companies
  - Make formal introductions between client and selected companies
  - Schedule and facilitate initial conversations between client and selected companies



# Example Organization **Research** Methodology

## Green Hydrogen: Siemens Energy

Innovator in green hydrogen production Proton Exchange Membrane (PEM) electrolysis



# Technology Scouting

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**Fuel Innovation and Discovery.**

Scouting turns Big Data into *Actionable Intelligence*.



We pride ourselves on the ability to operate in the rapidly moving global arena and have perfected the art of Innovation Management.

