



# Consumer-Led Approach to Innovation:

## Electric Vehicles



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# What to Expect

01 | The innovation dilemma

02 | The Lux Innovation Helix

03 | Putting the Helix into practice: EVs

04 | Client action items

“ ”

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If I had asked people what they wanted, they would have said faster horses.

Henry Ford

“ ”

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If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 minutes determining the proper question to ask.

Albert Einstein

# The innovation dilemma

**Technologies** race ahead, but *people* can't fit them in their lives.



**Consumers** signal needs, but *solutions* arrive too late, or never.



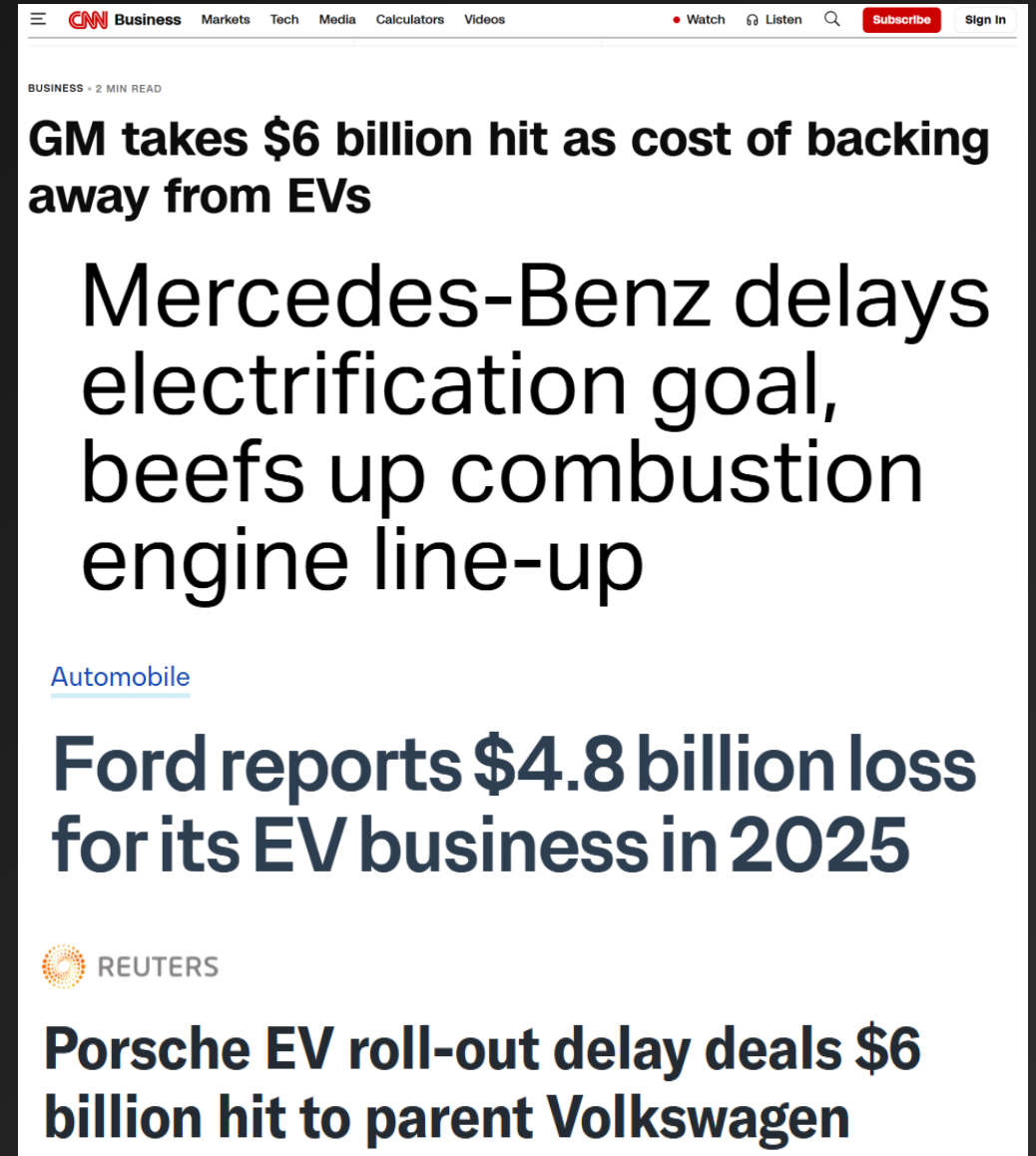
Fragmented strategies

Mistimed launches


Missed opportunities

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Breakthroughs exist. **But without people, they fail.**

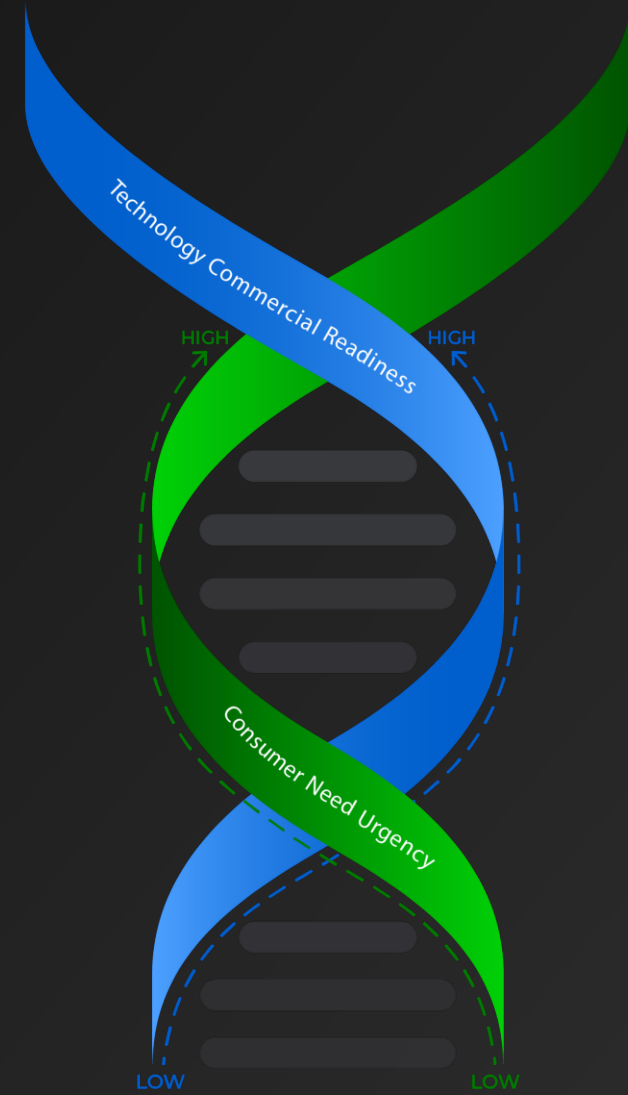


The screenshot shows the CNN Business website with the following content:

- Navigation bar: CNN Business, Markets, Tech, Media, Calculators, Videos, Watch, Listen, Search, Subscribe, Sign In
- Section: BUSINESS • 2 MIN READ
- Headline 1: **GM takes \$6 billion hit as cost of backing away from EVs**
- Text 1: Mercedes-Benz delays electrification goal, beefs up combustion engine line-up
- Section: [Automobile](#)
- Headline 2: **Ford reports \$4.8 billion loss for its EV business in 2025**
- Source:  REUTERS
- Headline 3: **Porsche EV roll-out delay deals \$6 billion hit to parent Volkswagen**

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# The Lux Innovation Helix



# The value of the Helix

Bridging human demand and technology readiness to make innovation inevitable not accidental.



## Executives

Cut through the noise to reveal where growth will land.



## R&D & Technology

Align pipelines with urgent consumer needs.



## Consumer Insights

Turn human signals into influence over what gets built.

# Structured, 3-step process

**1**

## **Decode the consumer strand**

Identify unmet needs through the jobs-to-be-done lens.

Prioritize those needs based on urgency.



**2**

## **Decode the technology strand**

Pinpoint which technologies are most capable of solving those needs today, and tomorrow.

Prioritize those technologies based on readiness.



**3**

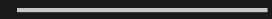
## **Create the bonds**

Quantify the alignment of each need with each technology.

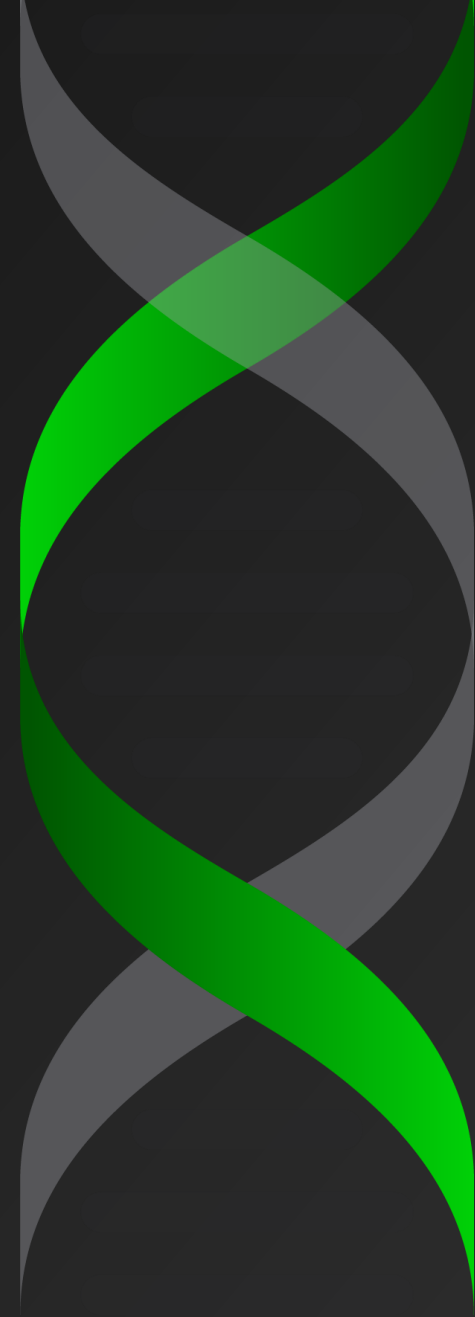
Identify the bonds with the highest alignment score and map the clusters.



Step 1



# Decode the consumer strand



# Step 1. Decode the consumer strand

## Jobs-to-Be-Done Framework

Focuses on the task people want to accomplish.

Reveals needs and frustrations — why current solutions fall short and what people actually expect.

Drawn from 50,000–150,000-plus consumer reviews, decoded by anthropologists using predictive anthropology.

## Why?

To give companies a clear, evidence-based roadmap to build more relevant, competitive, and valuable offerings.

“ ”

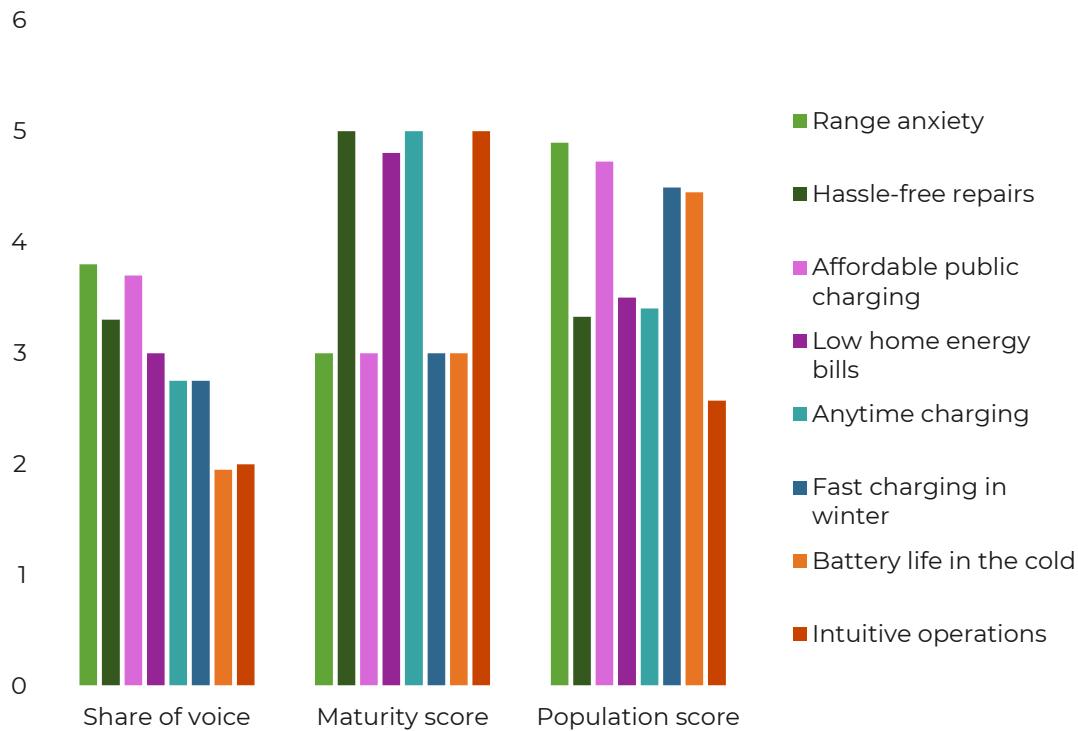
A short vacation to the coast felt nearly impossible because fast chargers are rare off interstates, hotels often have the wrong type, and running out in a rural area could mean a huge towing fee.

“ ”

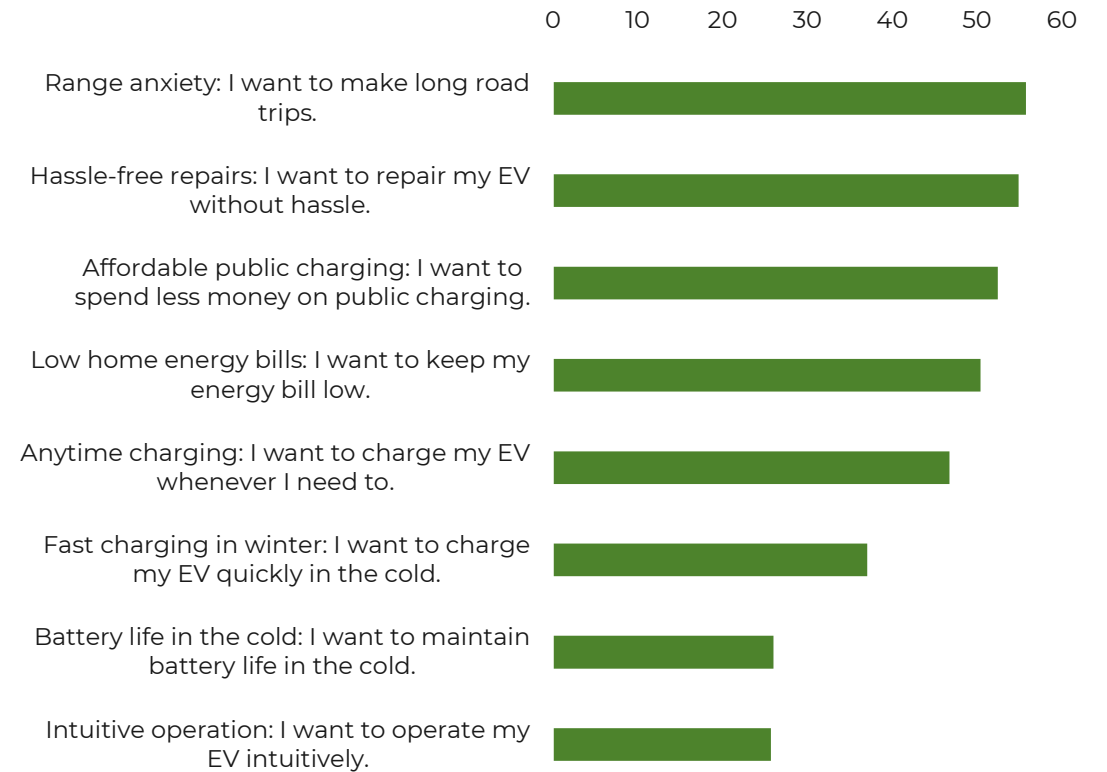
Great for my daily commute, stressful for everything else. I love my EV, but hot or cold weather drains the battery fast, charging infrastructure is frustrating since every station needs a different app, many do not work, and long trips are a nightmare.

# Prioritize consumer needs by urgency

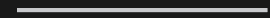
Breaking Down the Formula of Needs by Urgency



Consumer Needs, Prioritized by Urgency



Step 2



# Decode the technology strand



# Step 2: Decode the technology strand

## Lux Innovation Radar

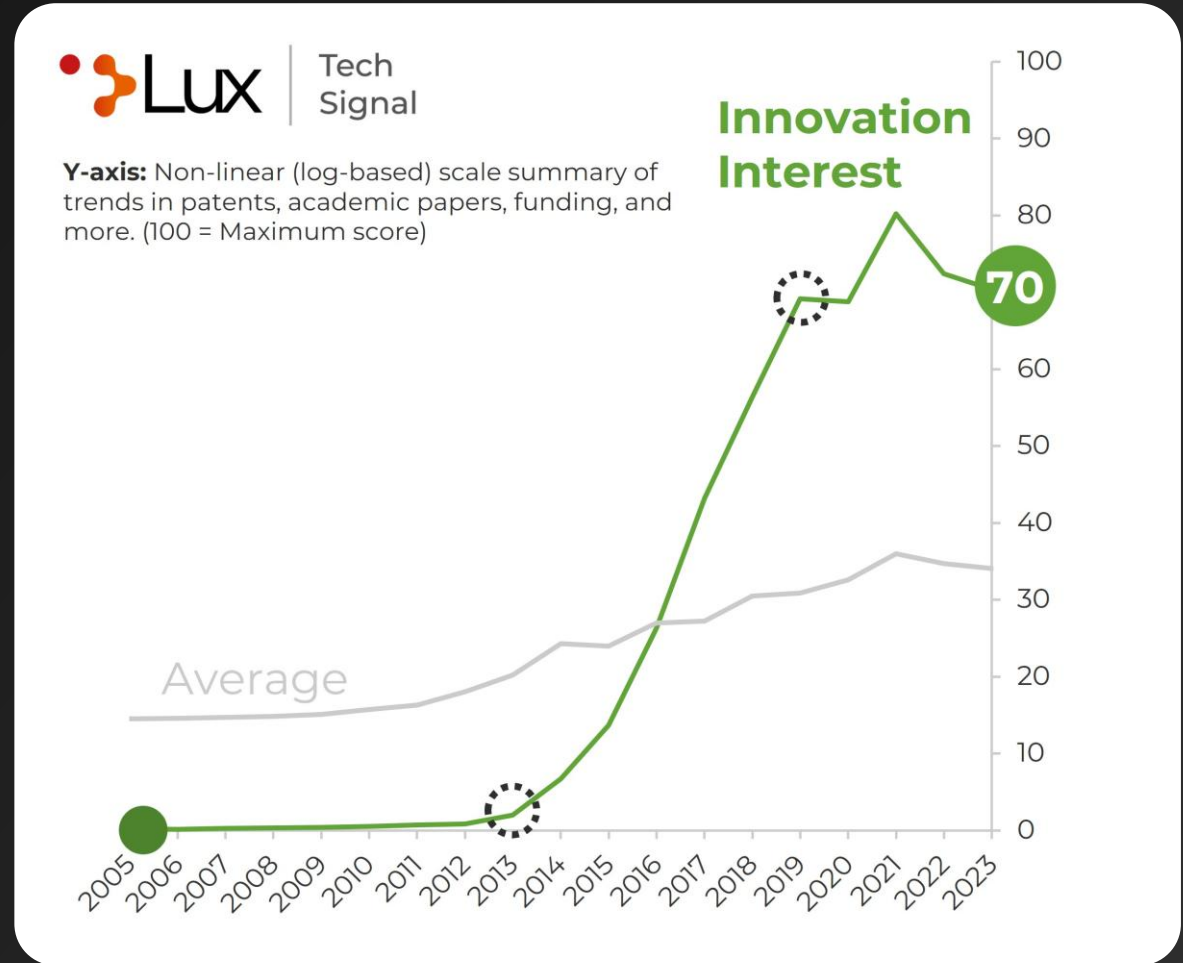
The technologies that will change the world, according to Lux Research's analysts and data scientists.

[Download List as PDF](#) [Download List as CSV](#)

### The Lux Innovation Radar

Filter by Service  Filter by Priority  Filter by Urgency

Rank	Title	Innovation Prowess	Market Momentum	Urgency
1	<b>Direct Air Capture</b> <span>♥</span> Separation and capture of CO <sub>2</sub> from ambient air.	4	5	Assess
+9	RECENT RESEARCH: Lux Innovation Radar update: Industries doubling down on core enablers			
2	<b>CO<sub>2</sub> Electrolysis</b> <span>♥</span> Electrochemical reduction of CO <sub>2</sub> into chemicals and fuels.	4	4	Monitor
+7	RECENT RESEARCH: Scaling CO <sub>2</sub> Utilization: Building Resilience in the Carbon Economy			
3	<b>Synthetic Biology</b> <span>♥</span> Technologies to create new biological organisms, enzymes, and synthetic systems with valuable capabilities for various applications.	4	4	Assess
+2	RECENT RESEARCH: India establishes biofoundry initiative to accelerate biomanufacturing			
4	<b>E-fuels</b> Conversion of CO <sub>2</sub> into both liquid and gaseous hydrocarbon fuels such as jet fuel and methane.	4	4	Assess
+18	RECENT RESEARCH: The long read: Why the EU's SAF mandate will fail			



# Prioritize by tech readiness

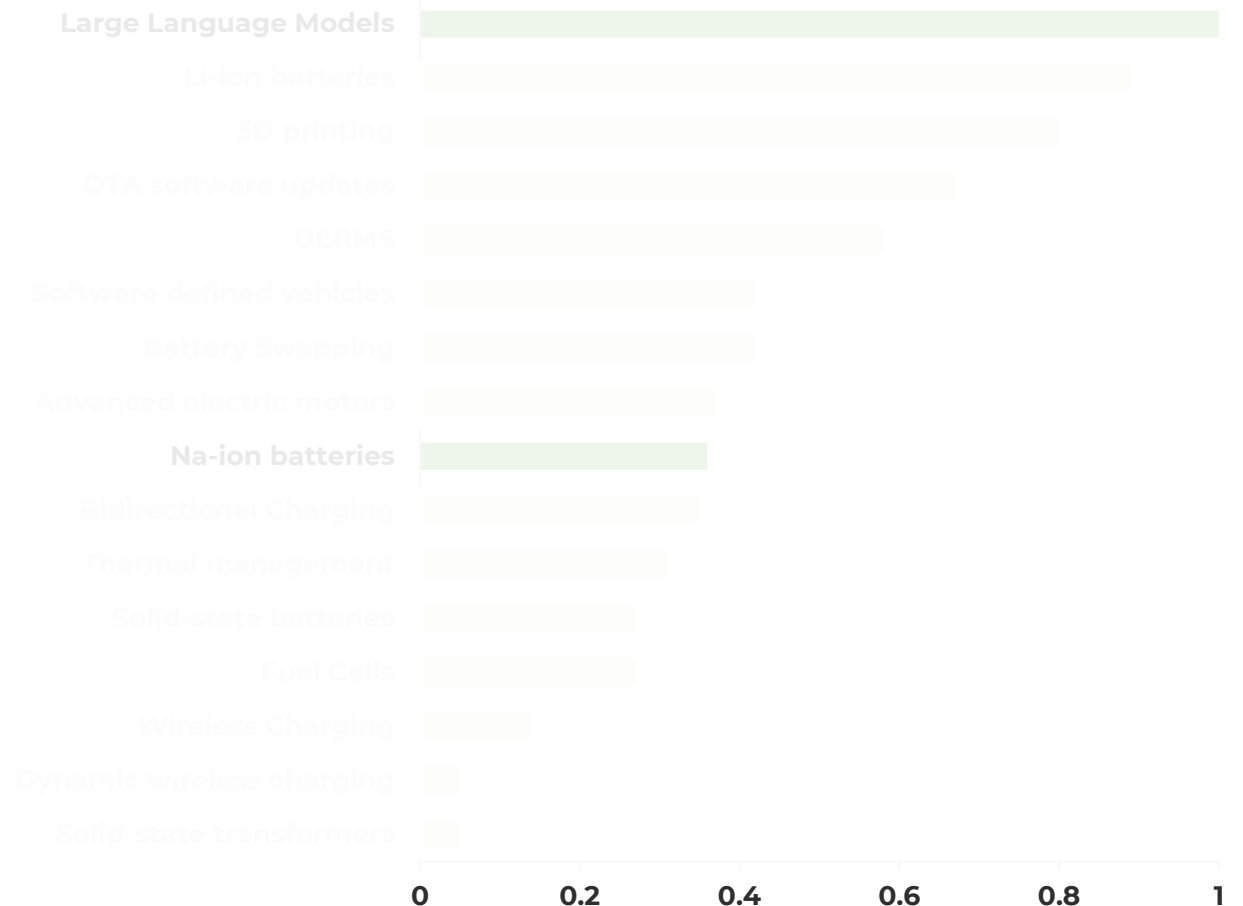
Each technology is further assessed for readiness based on:

**Stage of development:** Classified as concept, lab, development, introduction, or scale

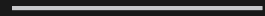
**Developer landscape:** The number and maturity of active players, with more mature companies scoring higher

**Time to scale:** If not yet scaled, the estimated time to reach that stage, determined by Lux analysts

### Technologies, Prioritized by Readiness for Product Integration Today



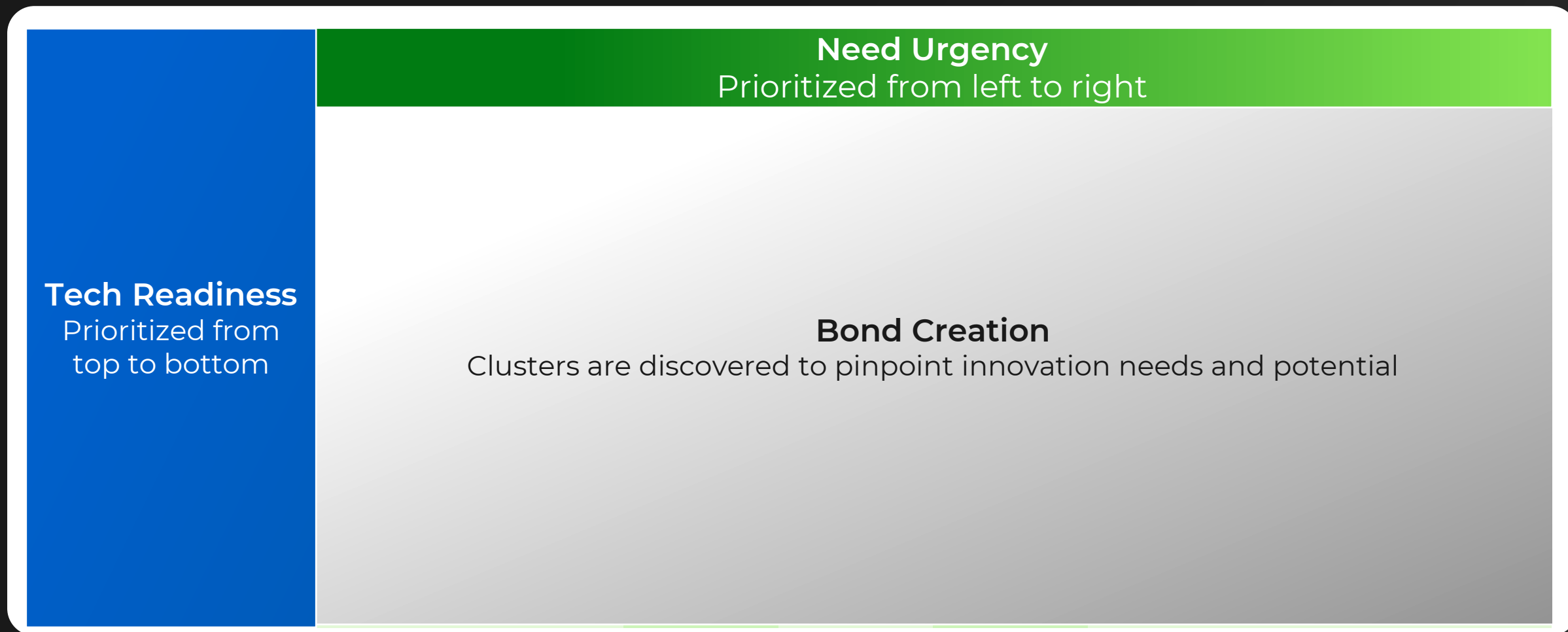
Step 3



# Create the bonds



# Step 3. Create the bonds



Note: 5 denotes the strongest alignment and, hence, bond.

# You're here to know where **YOUR innovation** will land — and when



## Executives

**Dilemma:** Strategic paralysis

**The Lux Innovation Helix:**  
Cuts through noise to reveal where growth will land



## R&D & Technology

**Dilemma:** Staying relevant

**The Lux Innovation Helix:**  
Aligns pipelines with urgent consumer needs



## Consumer Insights

**Dilemma:** Too far from innovation

**The Lux Innovation Helix:**  
Translates human signals into bonds that shape what gets built

# Insights: From passenger to pilot

	Reducing Range Anxiety	Hassle-Free Repairs	Cheaper Public Charging	Low Home Energy Bills	Anytime Charging	Fast Charging in Winter	Battery Life in the Cold	Intuitive Operation
Large language models	3	2	1	2	3	1	1	5
Li-ion batteries	3	3	2	1	1	3	1	1
3D printing	1	2	1	1	1	1	1	1
OTA software updates	3	4	1	1	1	1	1	3
DERMS	1	1	1	1	1	1	1	1
Battery swapping	5	4	1	1	1	1	5	4
Software defined vehicles	1	3	1	1	1	1	1	3
Advanced electric motors	2	1	1	1	1	1	3	1
Na-ion batteries	1	2	1	1	1	1	1	1
Bidirectional charging	1	1	1	1	1	1	1	1
Thermal management	1	1	1	1	1	1	3	2
Solid-state batteries	3	2	1	1	1	1	2	1
Fuel cells	4	1	1	1	3	1	4	1
Wireless charging	1	1	1	1	1	1	1	3
Dynamic wireless charging	5	1	1	2	3	2	3	3
Solid-state transformers	1	1	2	1	2	1	1	1



Turn human insight into action by linking needs with technologies.

# R&D: From tech first to opportunity led


	Reducing Range Anxiety	Hassle-Free Repairs	Cheaper Public Charging	Low Home Energy Bills	Anytime Charging	Fast Charging in Winter	Battery Life in the Cold	Intuitive Operation
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OTA software updates	3	4	1	1	1	3	1	3
DERMS	1	1	1	4	1	1	1	1
Battery swapping	5	4	2	4	3	5	5	4
Software defined vehicles	1	3	1	1	1	1	1	3
Advanced electric motors	2	1	1	2	1	2	3	1
Na-ion batteries	1	2				1	1	1
Bidirectional charging	1	1				1	1	1
Thermal management	1	1				4	3	2
Solid-state batteries	3	2				1	2	1
Fuel cells	4	1				1	4	1
Wireless charging	1	1				1	1	3
Dynamic wireless charging	5	1				2	3	3
Solid-state transformers	1	1				1	1	1




Identify urgent consumer needs that your technology can address.

# Executives: From noise to clarity

	Reducing Range Anxiety	Hassle-Free Repairs	Cheaper Public Charging	Low Home Energy Bills	Anytime Charging	Fast Charging in Winter	Battery Life in the Cold	Intuitive Operation
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Li-ion batteries	3	3					1	1
3D printing	1	2					1	1
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DERMS	1	1					1	1
Battery swapping	5	4					5	4
Software defined vehicles	1	3					1	3
Advanced electric motors	2	1					3	1
Na-ion batteries	1	2	2	1	1	1	1	1
Bidirectional charging	1	1	3	4	2	1	1	1
Thermal management	1	1	1	1	1	4	3	2
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Solid-state transformers	1	1	2	1	2	1	1	1



Uncover clusters of opportunities.

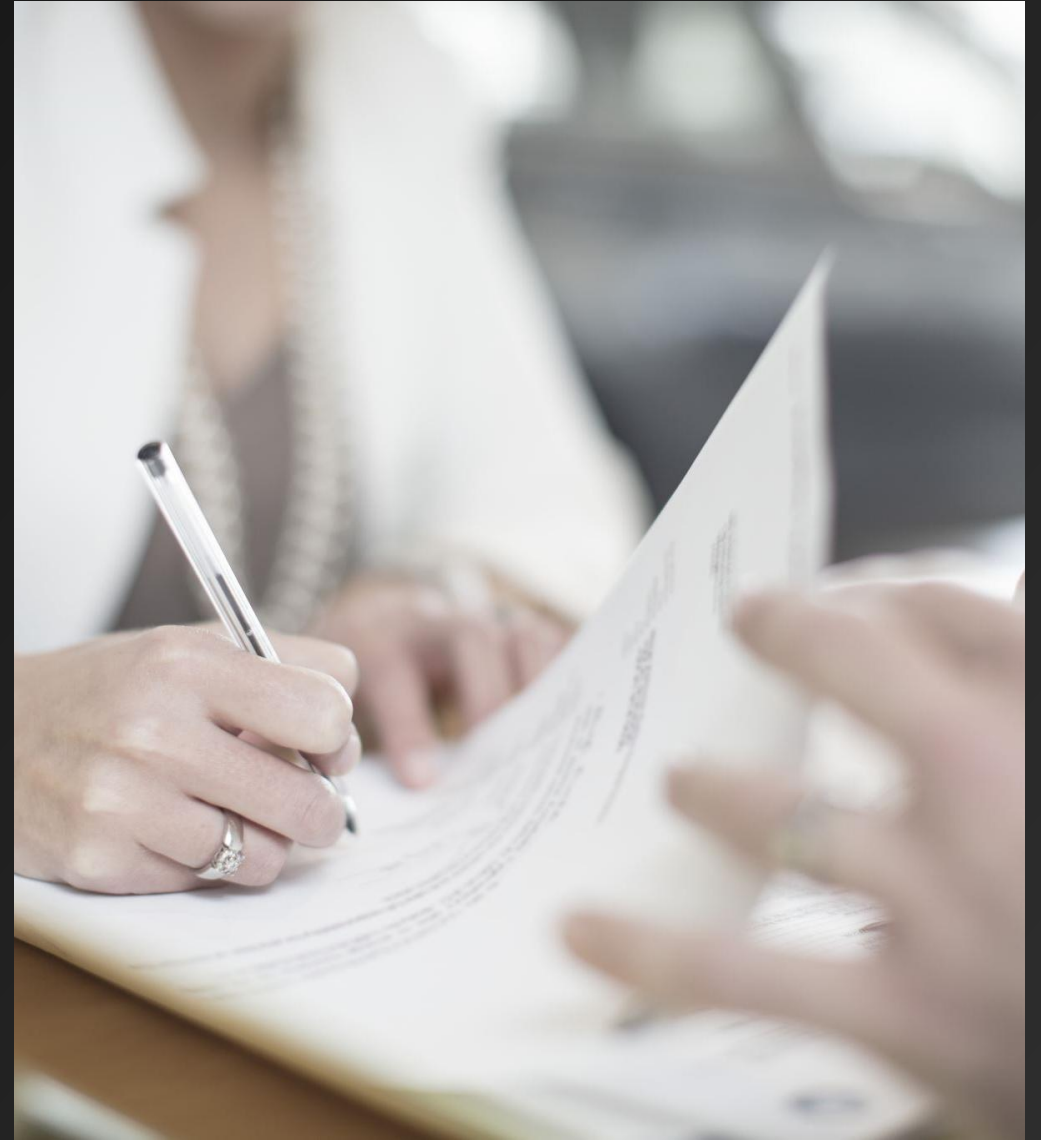


“ ”

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The customer has spoken.

Ford CEO – Jim Farley





# The customer has spoken.

Ford CEO – Jim Farley



USD 19.5 billion  
write-down



Canceling  
F-150 EV



Slash excess  
battery capacity



Shift to ESS



Hybrid F-150



Universal EV  
platform

# Executives: From noise to clarity

	Reducing Range Anxiety	Hassle-Free Repairs	Cheaper Public Charging	Low Home Energy Bills	Anytime Charging	Fast Charging in Winter	Battery Life in the Cold	Intuitive Operation
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Battery swapping	5	4	2	4	3	5	5	4
Software-defined vehicles	1	3	1	1	1	1	1	3
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Dynamic wireless charging	5	1	1	2	3	2	3	3
Solid-state transformers	1	1	2	1	2	1	1	1

# How to use the Lux Innovation Helix



## New Product Creation

### Purpose:

Solve unmet consumer needs with ready-now tech

### Example:

Smart charging controls



## Product Enhancement

### Purpose:

Target consumer needs with highest urgency

### Example:

Enhancing battery life in cold weather



## Repositioning Capabilities

### Purpose:

Align underused R&D assets with emerging needs

### Example:

Cell diagnostic algorithms → used-EV-battery certification and warranty analytics



## Discovering Adjacencies

### Purpose:

Apply proven tech from one sector to another

### Example:

Industrial analytics for battery health and uptime



## Portfolio Prioritization

### Purpose:

Focus resources where adoption likelihood is highest

### Example:

Prioritize software infrastructure that reduces ownership friction



## Foresight

### Purpose:

Anticipate market disruptions and shifts before anyone else

### Example:

Time your innovation & new product launches



**Technology-centric roadmaps are over.**

**The future of innovation starts with  
human insight.**

# Key Takeaways

1

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## Target balance by combining the available resources with the future technologies

Success in the EV market will depend on strategies that deliver in the present while building advantage for the future.

2

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## Expect evolution, not disruption, in EVs over the next 5 years

The next phase of the market will be defined by steady gains in batteries, cost, and design rather than a single breakthrough that changes everything.

3

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## EV adoption will be shaped more by economics than by the vehicle itself

Fuel vs. electricity prices, financing conditions, and total cost of ownership will drive the rationality of EVs for consumers.

# Lux Client Action Items

## 1 Engage with the Lux Innovation Helix.

Uncover where human needs and technological capabilities reinforce each other — the intersections where innovation has both market pull and technical feasibility.

## 2 Set clear priorities.

Decide where to act immediately, where to invest for long-term growth, and where to adjust direction — turning scattered possibilities into focused, evidence-based action.

## 3 Align teams around a common framework.

Unite executives, R&D, and consumer insights under one shared language — a genetic code for growth that ensures every decision draws from the same foundation.

## 4 Measure, learn, and evolve.

Use Helix cycles to track outcomes, validate assumptions, and feed new insights back into the model — making your innovation strategy not just aligned but also adaptive and resilient.



# Thank you

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# About Lux

Lux Research fuels innovators to not only imagine what's possible in the future but also operationalize innovation success in the near term. We deliver research and advisory services to inspire, illuminate, and ignite innovative thinking that reshapes and grows businesses. Using quality data derived from primary research, fact-based analysis, and opinions that challenge traditional thinking, our experts focus on finding truly disruptive innovations that are also realistic and make good business sense.

The “Lux Take” is trusted by innovation leaders around the world, many of whom seek our advice directly before placing a bet on a startup or partner — our clients rely on Lux insights to make decisions that generate fantastic business outcomes. We pride ourselves on taking a rigorous, scientific approach to avoid the hype and generate unique perspectives and insights that innovation leaders can't live without.

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