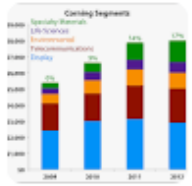
How to Identify High-Value Growth Opportunities in Emerging Markets

Tiffany Hua
Analyst

CTPost

Should Corning Be Scared of Sapphire?



In the years since, Gorilla Glass has grown to become one of Corning's most important...

Mar 26, 2013

Digital Trends

Sapphire is unscratchable, unbreakable, and the next big thing in touchscreens

Earlier this month, a study showed that 23 percent of iPhone users have screens that are currently broken, and the average person has put up with their...

Apr 24, 2023

CNBC

https://www.cnbc.com › 2013/11/08 › apple-and-gt-ad...

Apple and GT Advanced Technologies in sapphire glass deal

Nov 8, 2013 — Apple slips on a ring of blue glass. Published Fri, Nov 8 **2013**6:22 PM ... The hottest gem on the **market** these days may be the iridescent blue ... Read more

Forbes

https://www.forbes.com › Innovation › Consumer Tech

iPhone 6 Sapphire Display: Everything You Need To Know

Jul 25, 2014 — The iPhone 6 will be the most radical redesign in iPhone history. Central to that will be the move to **larger 4.7-inch and 5.5-inch displays**. Read more

GT ADVANCED TECHNOLOGIES


iPhone 6
9:41
Tuesday, September 9
9:41
Tuesday, September 9
iPhone 6 Plus

CNET

https://www.cnet.com › Tech › Mobile › Phones

Why the iPhone 6 isn't rocking a sapphire crystal display

Sep 9, 2014 — CNET takes a look at the pros and cons of the **superhard material**, and why practical constraints kept it from appearing in Apple's latest ...

WSJ WSJ

Apple Sapphire Partner GT Advanced Files for Bankruptcy Protection

the company running that factory—GT Advanced Technologies Inc.—filed for bankruptcy protection. The bankruptcy filing comes less than a month...

Oct 6, 2014

How do we separate market hype from a credible opportunity?

What to Expect

01 | **Technology and market assessment methodology**

02 | Methodology in action

03 | Preparing for future markets and key takeaways

3 Questions to gauge the market opportunity

Strategic Need: Is this solution presenting enough value created to justify investment?

Market Momentum: Is the market moving in a direction that supports adoption?

Commercial Risk: Can companies realistically compete, integrate, and scale?

3 Questions to gauge the market opportunity

Strategic Need: Is this solution presenting enough value created to justify investment?

- **Application criticality** — Importance to viability, safety, or compliance
- **Differentiation potential** — Ability to create spec-relevant advantage

3 Questions to gauge the market opportunity

Strategic Need: Is this solution presenting enough value created to justify investment?

- **Application criticality** — Importance to viability, safety, or compliance
- **Differentiation potential** — Ability to create spec-relevant advantage

Market Momentum: Is the market moving in a direction that supports adoption?

- **Innovation activity** — R&D, patenting, startup, and industry activity
- **Market growth** — Market size and adoption trajectory
- **Regulation and standards** — Regulatory pressure shaping adoption

3 Questions to gauge the market opportunity

Strategic Need: Is this solution presenting enough value created to justify investment?

- **Application criticality** — Importance to viability, safety, or compliance
- **Differentiation potential** — Ability to create spec-relevant advantage

Market Momentum: Is the market moving in a direction that supports adoption?

- **Innovation activity** — R&D, patenting, startup, and industry activity
- **Market growth** — Market size and adoption trajectory
- **Regulation and standards** — Regulatory pressure shaping adoption

Commercial Risk: Can companies realistically compete, integrate, and scale?

- **Competitive landscape** — Maturity, concentration, and distribution of players
- **Integration barriers** — Infrastructure, qualification, and scale-up hurdles

Evaluation Criteria		Score of 1	Score of 2	Score of 3
Strategic Need	Application criticality	Not essential	Performance improvement	Core solution
	Differentiation potential	Little	Moderate	Ample
Market Momentum	Innovation activity	Low	Steady	Growth
	Demand growth	Weak	Moderate	Rapid
	Regulation and standards	Minimal	Some	Strong
Commercial Risk	Competitive landscape	Crowded	Diverse landscape	Available whitespaces
	Integration barriers	Significant	Moderate	Little to no

What to Expect

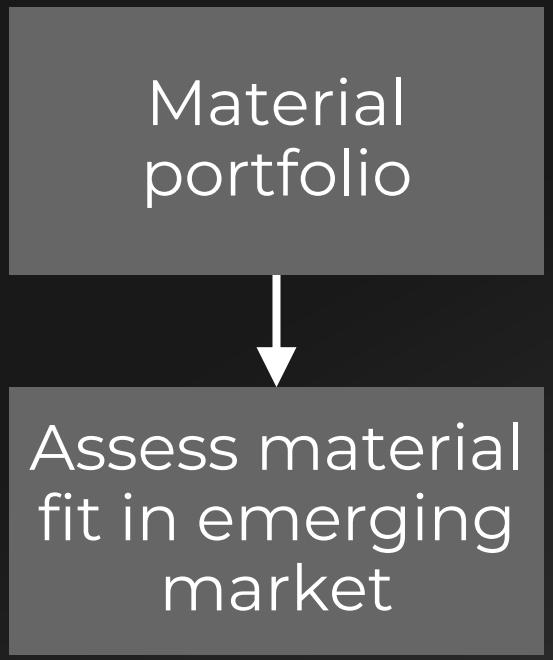
01 | Technology and market assessment methodology

02 | **Methodology in action**

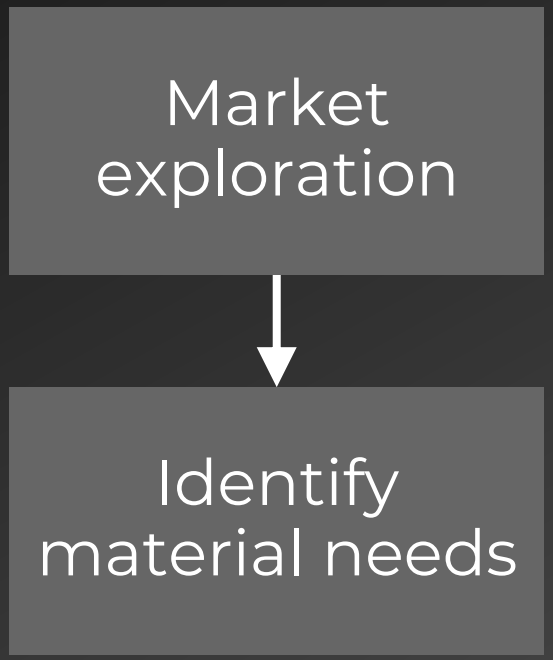
03 | Preparing for future markets and key takeaways

The methodology works from both sides of the technology-market workflow

Materials-first approach



Market-first approach



The methodology works from both sides of the technology-market workflow

Materials-first approach

Material portfolio

↓

Assess material fit in emerging market

Market-first approach

Market exploration

↓

Identify material needs

Finding advanced coating opportunities in EVs

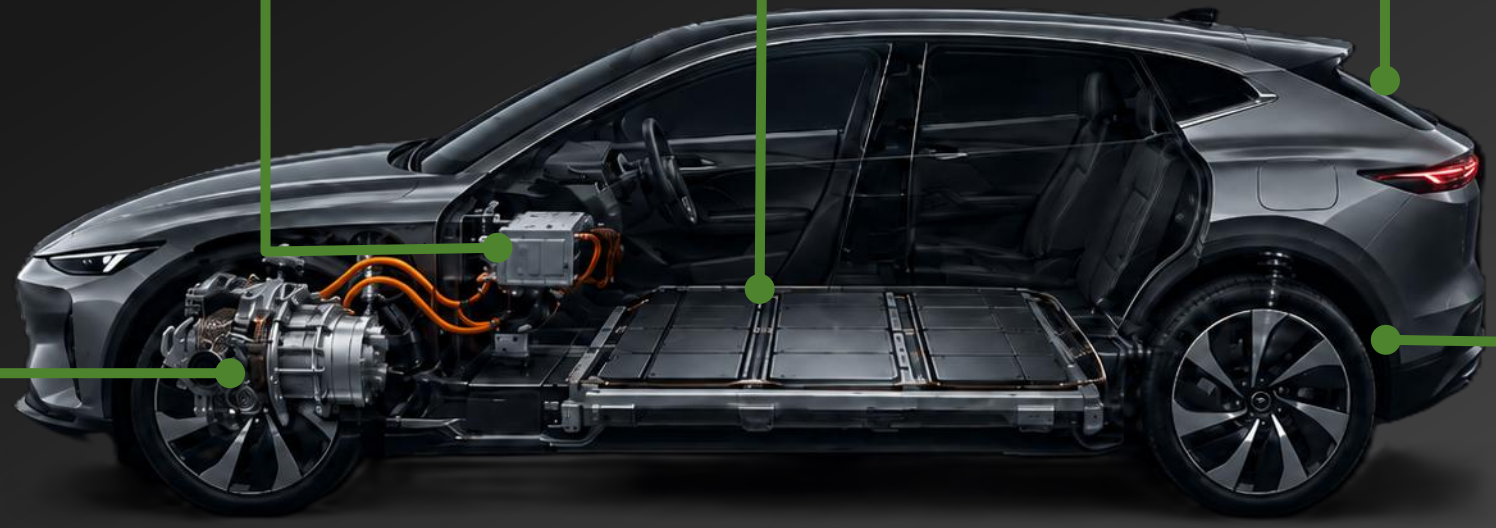
1. Motor and mechanical efficiency via low-friction coatings

2. Electrical protection via dielectric and conductive coatings

3. Thermal management and fire safety via thermal coatings

4. Sensor and camera functionality via optical and photonic coatings

5. Noise, vibration, and harshness via sound-deadening coatings



Finding advanced coating opportunities in EVs

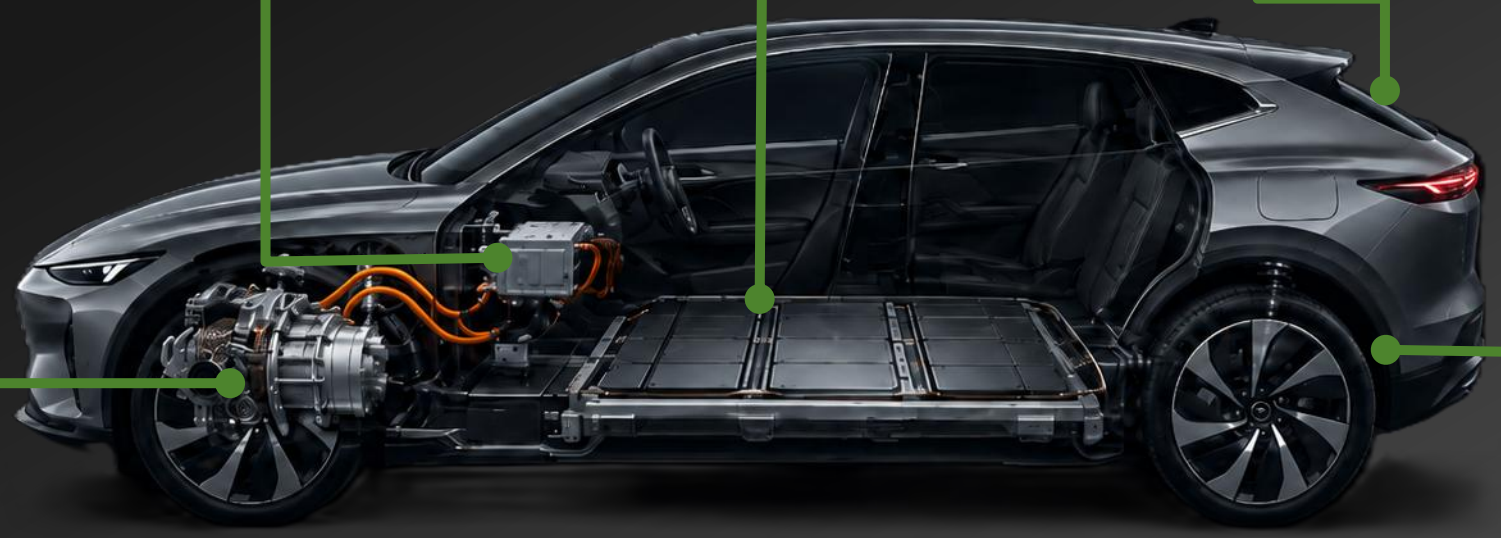
1. Motor and mechanical efficiency via low-friction coatings

2. Electrical protection via dielectric and conductive coatings

3. Thermal management and fire safety via thermal coatings

4. Sensor and camera functionality via optical and photonic coatings

5. Noise, vibration, and harshness via sound-deadening coatings



Finding advanced coating opportunities in EVs

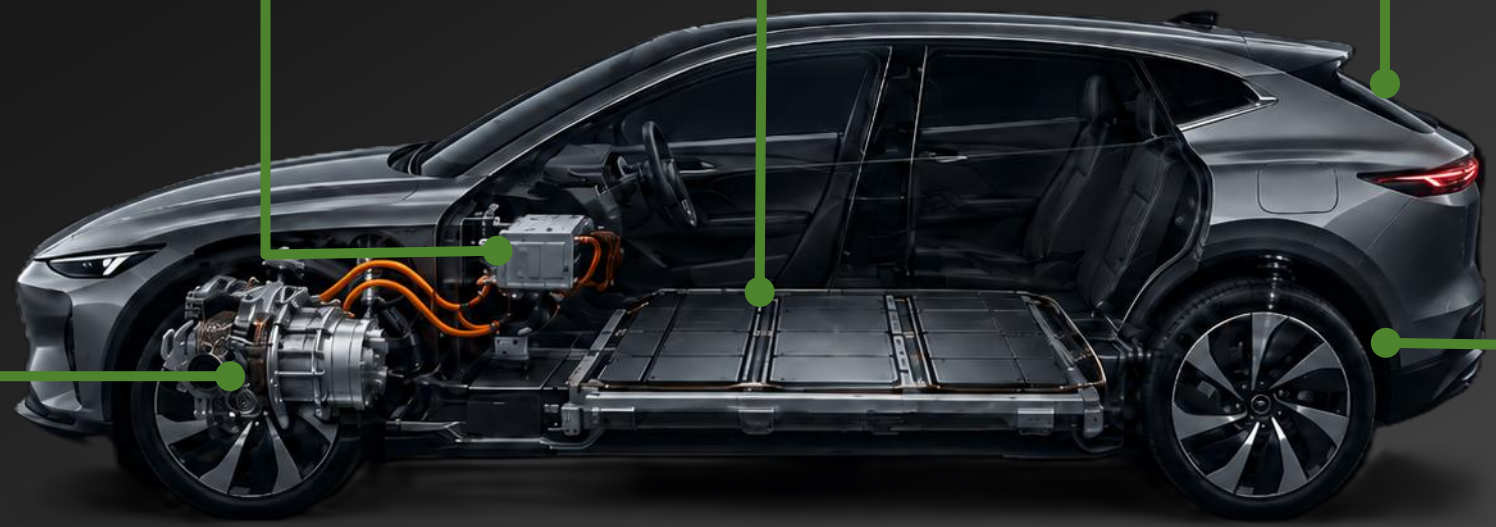
1. Motor and mechanical efficiency via low-friction coatings

2. Electrical protection via dielectric and conductive coatings

3. Thermal management and fire safety via thermal coatings

4. Sensor and camera functionality via optical and photonic coatings

5. Noise, vibration, and harshness via sound-deadening coatings



Suppression of NVH via sound-deadening coatings

Strategic Need: Coatings can provide damping and acoustic shielding, but alternative materials exist.

Market Momentum: Incremental performance improvement and steady innovation; <USD 1 billion market size

Commercial Risk: Crowded market with large players; low barrier to entry as NVH coatings are well established

Evaluation criteria		
Strategic Need	Application criticality	Not essential
	Differentiation potential	Moderate differentiation
Market Momentum	Innovation activity	Steady innovation
	Market growth	Weak growth
	Regulation and standards	Minimal influence
Commercial Risk	Competitive landscape	Concentrated
	Integration barriers	Few to no barriers

Suppression of NVH via sound-deadening coatings

Strategic Need: Coatings can provide damping and acoustic shielding, but alternative

Strategic Need	Application criticality	Not essential
	Differentiation	Moderate

There are very few opportunities for new entrants in NVH sound-deadening coatings. Companies that already have relevant portfolios can differentiate through formulation, lightweighting, or integration with vibration-acoustic simulation systems.

Commercial Risk: Crowded market with large players; low barrier to entry as NVH coatings are well established

Eval		standards — Minimal influence
Commercial Risk	Competitive landscape	Concentrated
	Integration barriers	Few to no barriers

Finding advanced coating opportunities in EVs

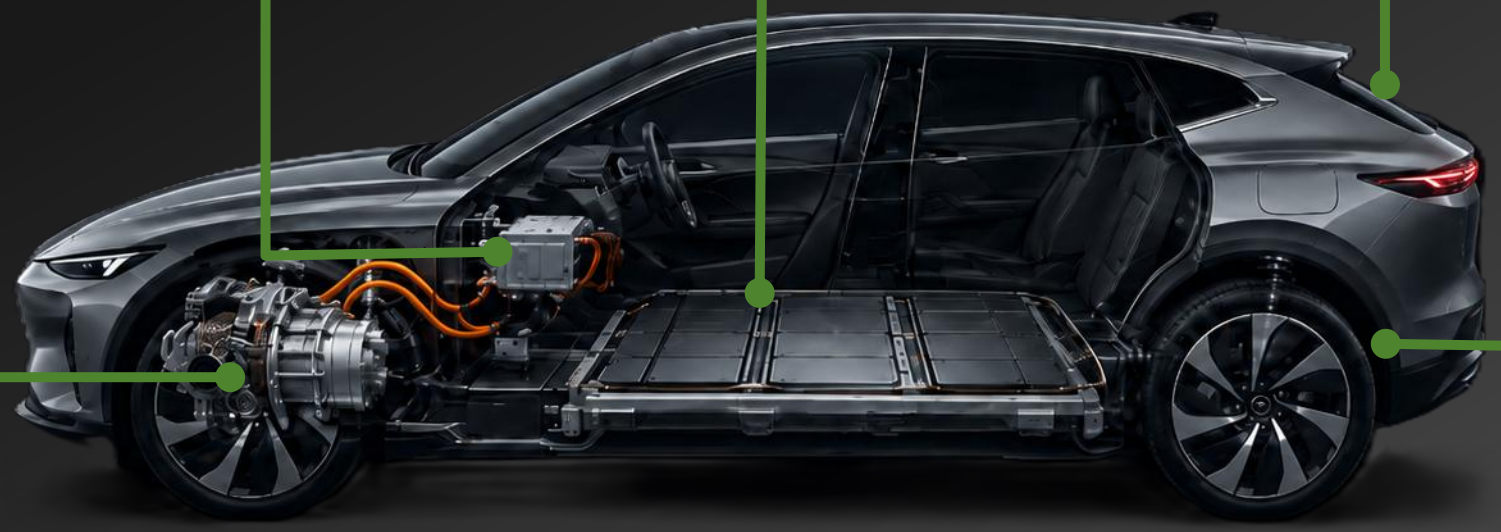
1. Motor and mechanical efficiency via low-friction coatings

2. Electrical protection via dielectric and conductive coatings

3. Thermal management and fire safety via thermal coatings

4. Sensor and camera functionality via optical and photonic coatings

5. Noise, vibration, and harshness via sound-deadening coatings



Thermal management and fire safety via passive fire protection coatings

Strategic Need: Thermal runaway and fires remain safety risks; can be addressed via materials, coatings, and vehicle design

Market Momentum: Tightening regulations like UN GTR 20 and China's GB 38031 (effective July 1, 2026) impact how OEMs select and integrate thermal coatings and materials

Commercial risk: Integration into OEM supply chains is difficult due to qualification and testing needs

Evaluation criteria		
Strategic Need	Application criticality	Core solution
	Differentiation potential	Ample differentiation
Market Momentum	Innovation activity	Innovation growth
	Market growth	Rapid growth
	Regulation and standards	Strong regulatory influence
Commercial Risk	Competitive landscape	Diverse landscape
	Integration barriers	Significant barriers

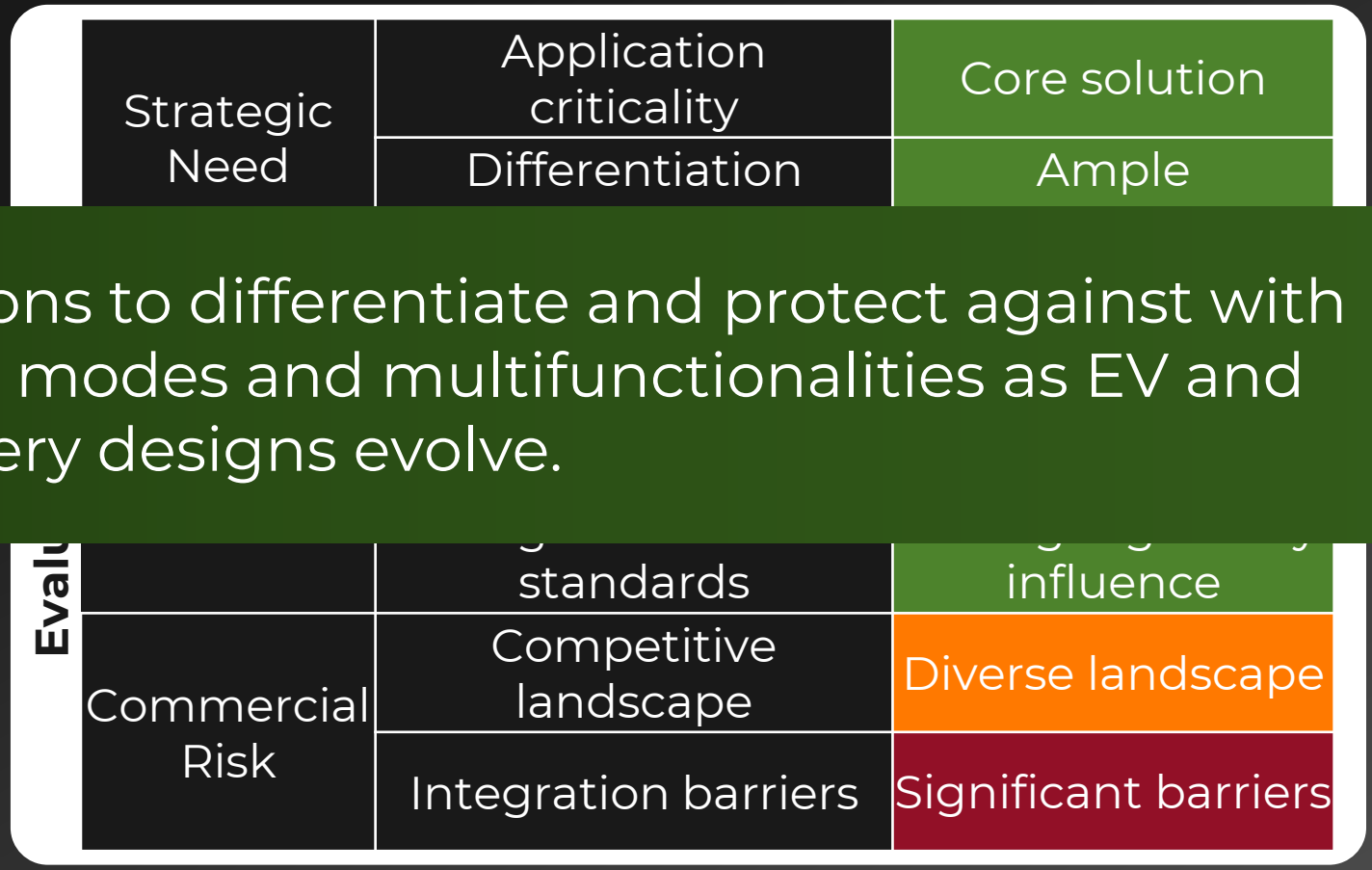
Thermal management and fire safety via passive fire protection coatings

Strategic Need: Thermal runaway and fires remain safety risks; can be addressed via materials, coatings, and vehicle design

Strong opportunity for solutions to differentiate and protect against with various thermal propagation modes and multifunctionalities as EV and battery designs evolve.

materials

Commercial risk: Integration into OEM supply chains is difficult due to qualification and testing needs



Differentiation via multiple functions and lightweighting

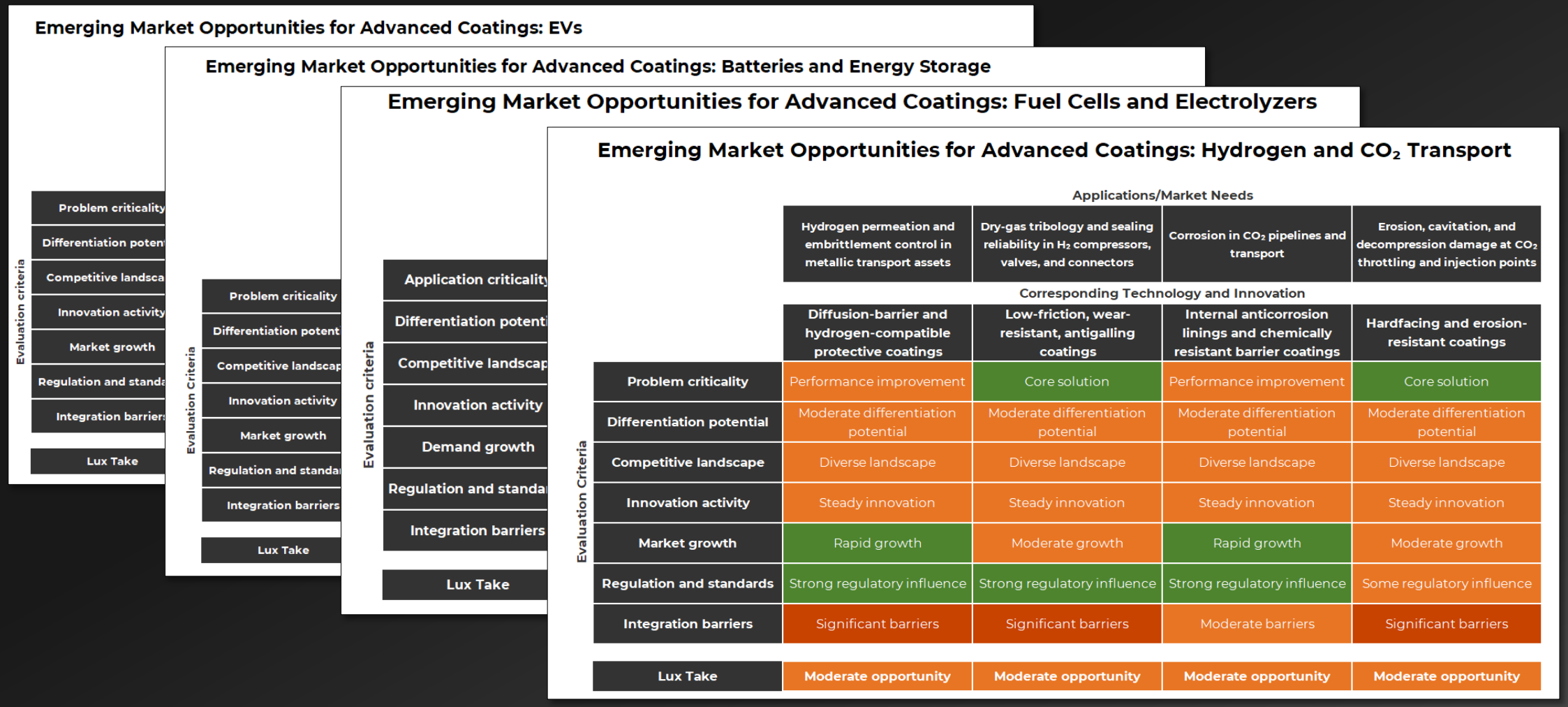
Zircotec announces ElectroHold ceramic coating for battery enclosures

- History in plasma-sprayed ceramic coatings for nuclear; transitioned to coatings for energy and electrification
- Enables the switch from heavy steel battery enclosures to aluminum, composites, and plastics
- Provides multifunctionality with integrated dielectric, flameproofing and thermal properties into a single system

LUX TAKE

Coatings like this can drive differentiation and act as design enablers in EV systems, but the integration of its solution and competing with the market will be the most difficult step for Zircotec.

zircotec®



The methodology works from both sides of the technology-market workflow

Materials-first approach

Material portfolio

↓

Assess material fit in emerging market

Market-first approach

Market exploration

↓

Identify material needs

Evaluating robotics for material opportunities

1. Environmental robustness via corrosion-resistant coatings

2. Dexterity and versatility via functional composites

3. Energy efficiency via novel reinforcement materials

4. Autonomy, and dexterity via electro-magnetic and force/field sensors

5. Thermal management and reliability via thermal interface materials

Evaluating robotics for material opportunities

1. Environmental robustness via corrosion-resistant coatings

2. Dexterity and versatility via functional composites

3. Energy efficiency via novel reinforcement materials

4. Autonomy, and dexterity via electro-magnetic and force/field sensors

5. Thermal management and reliability via thermal interface materials

Evaluating robotics for material opportunities

1. Environmental robustness via corrosion-resistant coatings

2. Dexterity and versatility via functional composites

3. Energy efficiency via novel reinforcement materials

4. Autonomy, and dexterity via electro-magnetic and force/field sensors

5. Thermal management and reliability via thermal interface materials

Corrosion-resistant coatings for environmental robustness of robotics

Strategic Need: Harsh environments increase demand for wear- and corrosion-resistant coatings.

Market Momentum: Steady innovation and growth; standards dependent on environment (cleanroom, outdoor, underwater)

Commercial risk: Easy to implement but crowded market from existing set of players from adjacent markets

Evaluation criteria			
	Strategic Need	Application criticality	Performance improvement
		Differentiation potential	Moderate differentiation
	Market Momentum	Innovation activity	Steady innovation
		Market growth	Moderate growth
		Regulation and standards	Some regulatory influence
	Commercial Risk	Competitive landscape	Crowded
		Integration barriers	Little to no barriers

Corrosion-resistant coatings for environmental robustness of robotics

Strategic Need: Harsh environments increase demand for wear- and corrosion-resistant

Established supplier relationships and long qualification cycles **limit room for new entrants**. Opportunities for wear- and corrosion-resistant coatings in robotics are moderate and concentrated in harsh-environment and high-reliability applications.

outdoor, underwater)

Commercial risk: Easy to implement but crowded market from existing set of players from adjacent markets

Strategic Need	Application criticality	Performance improvement
	Differentiation	Moderate
Eval		standards / influence
Commercial Risk	Competitive landscape	Crowded
	Integration barriers	Little to no barriers

Evaluating robotics for material opportunities

1. Environmental robustness via corrosion-resistant coatings

2. End-effector dexterity and versatility via functional composites

3. Energy efficiency via novel reinforcement materials

4. Autonomy, and dexterity via electro-magnetic and force/field sensors

5. Thermal management and reliability via thermal interface materials

Advanced sensors for robotic autonomy, dexterity, and safety

Strategic Need: Improvements to force, tactile, electromagnetic, and perception that boost contact awareness, manipulation, and safe operation around people

Market Momentum: Increasing demand due to collaborative robots and humanoid systems; >USD 1 billion market size

Commercial risk: Competitive market increasingly commoditized; integrated sensing systems that improve responsiveness, reliability, and safety stand out

Evaluation criteria		
Strategic Need	Application criticality	Core solution
	Differentiation potential	Ample differentiation
Market Momentum	Innovation activity	Innovation growth
	Market growth	Rapid growth
	Regulation and standards	Some regulatory influence
Commercial Risk	Competitive landscape	Diverse landscape
	Integration barriers	Moderate barriers

Advanced sensors for robotic autonomy, dexterity, and safety

Strategic Need: Improvements to force, tactile, electromagnetic, and perception that boost contact awareness, manipulation, and safe

Strong but selective opportunity in robotics. Most attractive opportunities will come from sensor innovations that deliver measurable system-level improvements in reliability, responsiveness, or safety rather than incremental gains at the component level.

Commercial risk: Competitive market is increasingly commoditized, but integrated sensing systems that improve responsiveness, reliability, and safety can stand out.

Strategic Need	Application criticality	Core solution	
	Differentiation	Ample	
Eval		standards	influence
Commercial Risk	Competitive landscape	Diverse landscape	
	Integration barriers	Moderate barriers	

Sensors enabling inspections in hazardous

ANYmal incorporates thermal, gas, and acoustic sensors for robotic inspection

- Scheduled and ad-hoc inspections across the site
- Collects visual data and sensor measurements to assess facility conditions and monitor ambient CO_2 concentration levels in the surrounding environment

LUX TAKE

Robotics coupled with fixed sensors and cameras provide value as mobile inspection platforms in hazardous and operationally constrained environments, particularly across energy, chemicals, and industrial infrastructure.

ANYbotics

Northern Lights

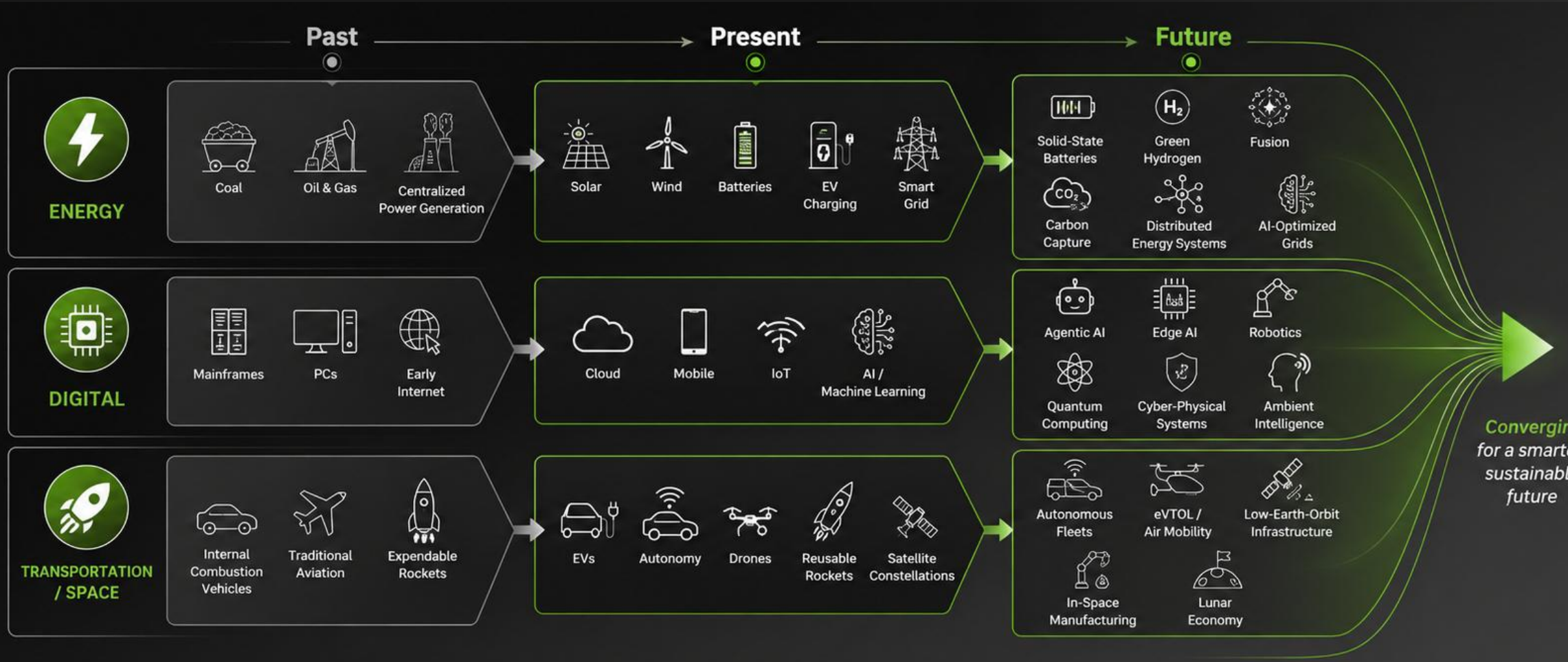
What to Expect

01 | Technology and market assessment methodology

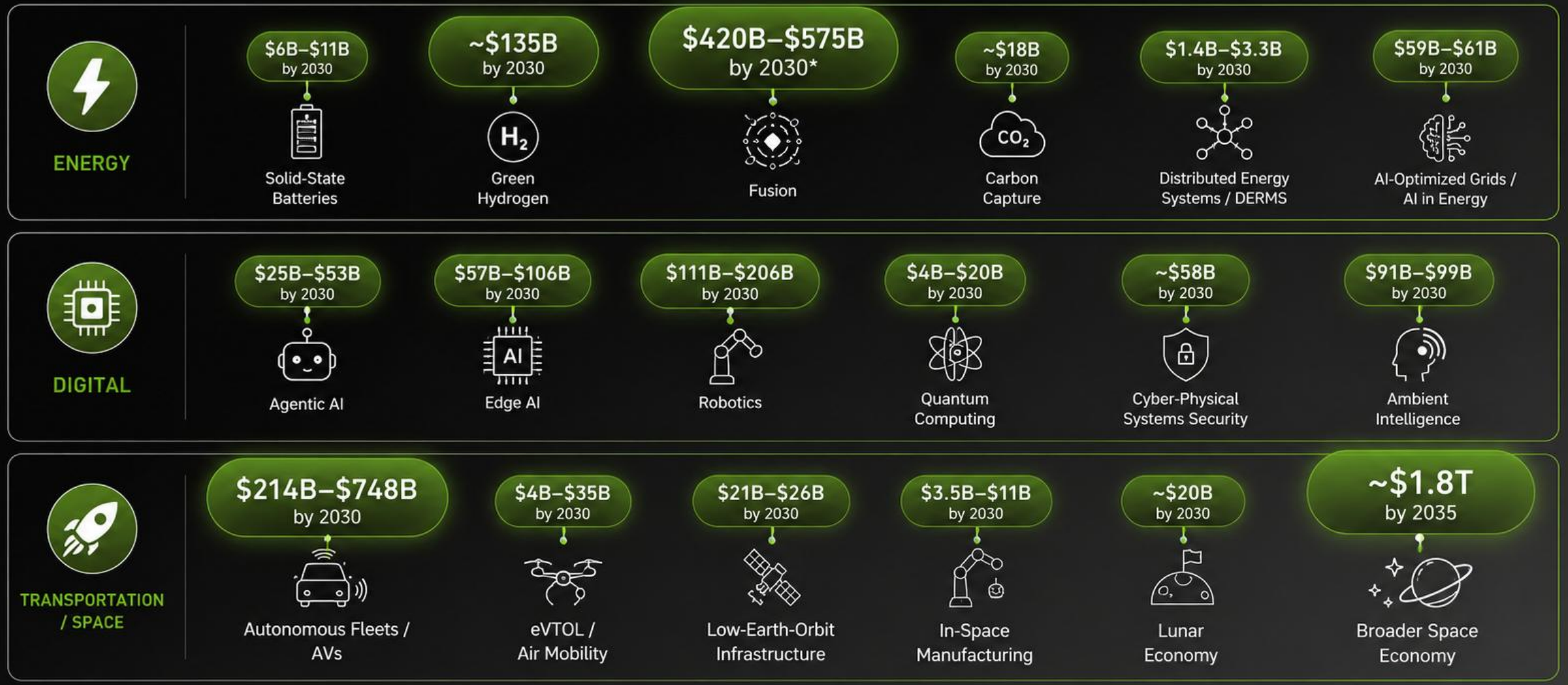
02 | Methodology in action

03 | **Preparing for future markets and key takeaway**

Preparing your portfolios for the future



Opportunities as we step into the future



Opportunities as we step into the future

Large markets **do not** automatically create meaningful opportunities

Smartphone protection via sapphire glass

Strategic Need: Improvements to hardness and scratch resistance; impact and toughness are lacking

Market Momentum: <1 billion market size with steady growth; steady innovation to improve properties and growth process

Commercial risk: Crowded market with large players; difficulties in production and integration in smartphone value chain

Evaluation criteria		
Strategic Need	Application criticality	Performance improvement
	Differentiation potential	Moderate differentiation potential
Market Momentum	Innovation activity	Steady innovation
	Demand growth	Moderate growth
	Regulation and standards	Minimal regulatory influence
Commercial Risk	Competitive landscape	Diverse landscape
	Integration barriers	Significant barriers

Smartphone protection via sapphire glass

Strategic Need: Improvements to hardness and scratch resistance; impact and toughness are lacking

Market Momentum: <i market size with steady steady innovation to im properties and growth

Commercial risk: Crowded market with large players; difficulties in production and integration in smartphone value chain

Strategic Need	Application criticality	Performance improvement
	Differentiation	Moderate differentiation potential
	n activity	Steady innovation
	d growth	Moderate growth
	tion and standards	Minimal regulatory influence
Commercial Risk	Competitive landscape	Diverse landscape
	Integration barriers	Significant barriers

Market opportunity lies at the crux

Deciding when to move

Even when an opportunity looks attractive across these dimensions, timing still matters.

- **Too early** can tie up resources before the ecosystem is ready
- **Too late** can led to increasing competition against entrenched players

Checklist

- ✓ Monitor weak signals among innovations and markets
- ✓ Avoid chasing hype where qualification cycles, cost targets, or ecosystem readiness remain immature
- ✓ Reassess markets continuously as timing, regulation, and adoption curves shift

Key Takeaways

1

Attractive markets are not always actionable markets.

Growth and hype create interest, but they do not guarantee a credible path to adoption.

2

The best opportunities sit at the intersection of need, momentum, and manageable risk.

More than technical fit, strong opportunities show clear market pull, supportive adoption signals, and a realistic path through competition, integration, qualification, and scale-up.

3

Long-term winners redeploy core capabilities as markets evolve.

Winners are not tied to one end-market; they continuously redeploy core capabilities into the next wave of applications as needs shift.

Lux Client Action Items

1 **Read our research on emerging market opportunities for advanced coatings.**

This research evaluates how attractive opportunities for advanced coatings are in EVs, batteries and energy storage, PEM fuel cells/electrolyzers, and hydrogen and CO_2 transport.

2 **Review our research on Building a Signal-Aware Innovation Organization.**

Understand how to intercept and address technology-agnostic risks in our report focused on identifying technology-driven opportunities.

3 **Check out our two-part webinar series on Strategizing for 2026 and Beyond.**

Building upon weak signals, this two-part series spotlights action items and prioritization areas when building innovation strategies.

4 **Reach out to us to understand ways to apply this methodology to your organization.**

We can help you use this flexible methodology to evaluate opportunities and expand your existing materials portfolio or search for new directions for your organization.

Thank you

READ
http://www.luxresearchinc.com/blog/

VISIT
www.luxresearchinc.com

EMAIL
questions@luxresearchinc.com

CONNECT
LuxResearch

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.

VISIT

www.luxresearchinc.com

FOLLOW

@LuxResearch

CONNECT

LuxResearch

READ

http://www.luxresearchinc.com/blog/

EMAIL

questions@luxresearchinc.com