

Six Steps to Turn Foresight into Roadmapping

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FORESIGHT TO ROADMAP

6 Steps to Capturing **Bigger Opportunities**





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CARLISLE®

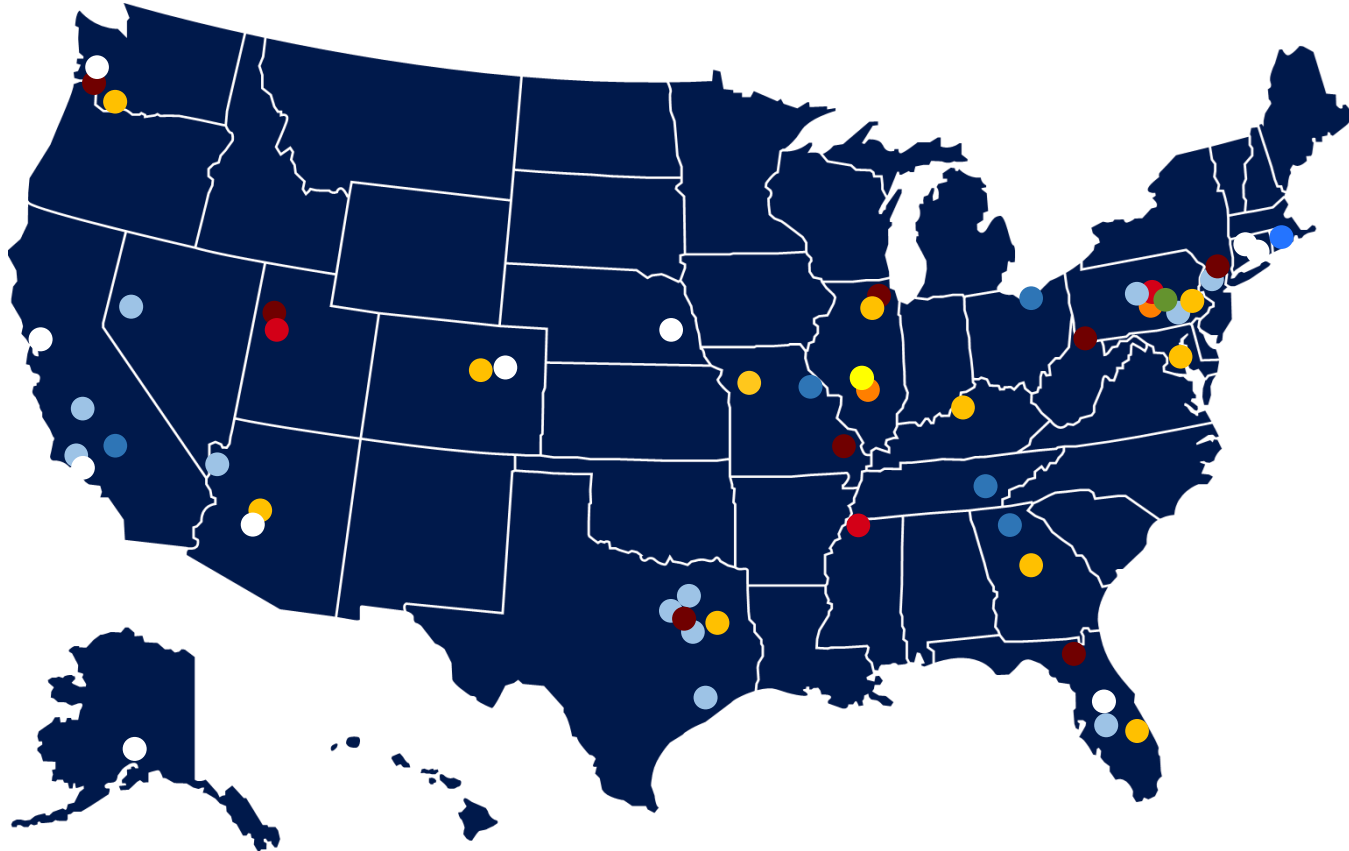
THE BUILDING ENVELOPE LEADER

Leading manufacturer and supplier of premium single-ply roofing products and accessories for the commercial building industry, including TPO & EPDM Membranes, Polyiso insulation, and engineered metal roofing and panel systems.

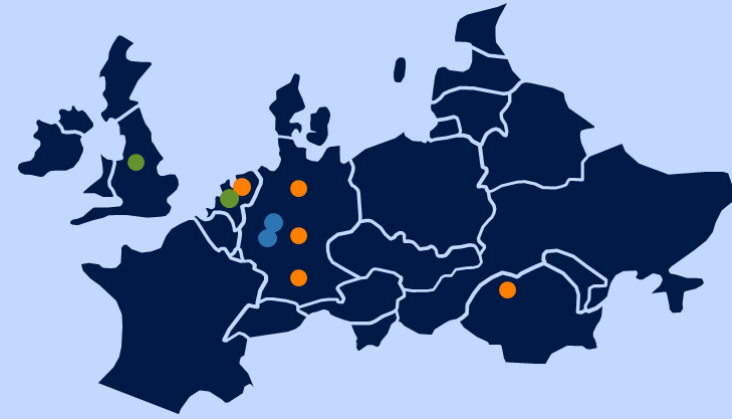
Carlisle Global Production Footprint

Facilities by Type

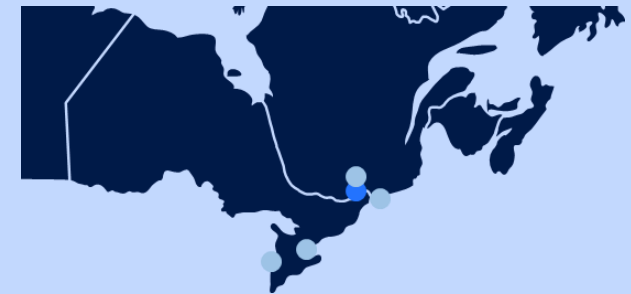
- EPDM (7)
 - TPO (3)
 - PVC (1)
 - Polyiso (8)
 - Sealant & Adhesive (3)
 - Metal (11)
-
- EPS Insulation (10)
 - HVAC Products (2)
 - Polyurethane Systems (7)
 - Weather Proofing Technologies (16)



EUROPE



CANADA



Carlisle Construction Materials



Leading manufacturer and supplier of premium single-ply roofing products and accessories for the commercial building industry, including TPO & EPDM Membranes, Polyiso insulation, and engineered metal roofing and panel systems.



Innovation-Driven Growth and Price Premium Propelled by Energy-Efficient and Labor-Saving Solutions



Energy
Efficiency



Labor
Savings



Integrated
Solutions

Situations for Carlisle

Why an urgency for Carlisle to explore Next-Gen Roofing Solutions

- Last major disruption was TPO 30 yrs ago
- Profits are at risk of eroding without transformational innovation
- Labor has hit a tipping point in impact on customers' businesses
- Sustainability is a key to CSL and customers - urgency with uncertainty
- Material innovation remains essential while exploring new opportunities

- What is the **future** of the commercial roof?
- What is Carlisle's **vision** for its role in that future?
- Where is there true **opportunity**?
- What is **beyond material** innovation?
- How do we get to **roadmaps**...and move from Saying to Doing?

Big Questions

for Carlisle Commercial
Roofing

About NewEdge

NewEdge industry experience



NewEdge is the
growth and innovation
strategy firm that
anchors growth in
opportunity



Think
Opportunity!





FASTCOMPANY

You can kill an **IDEA...**
but you can't kill an
OPPORTUNITY!

Opportunity =



needs of the
market

+



value
propositions

+



the right
conditions



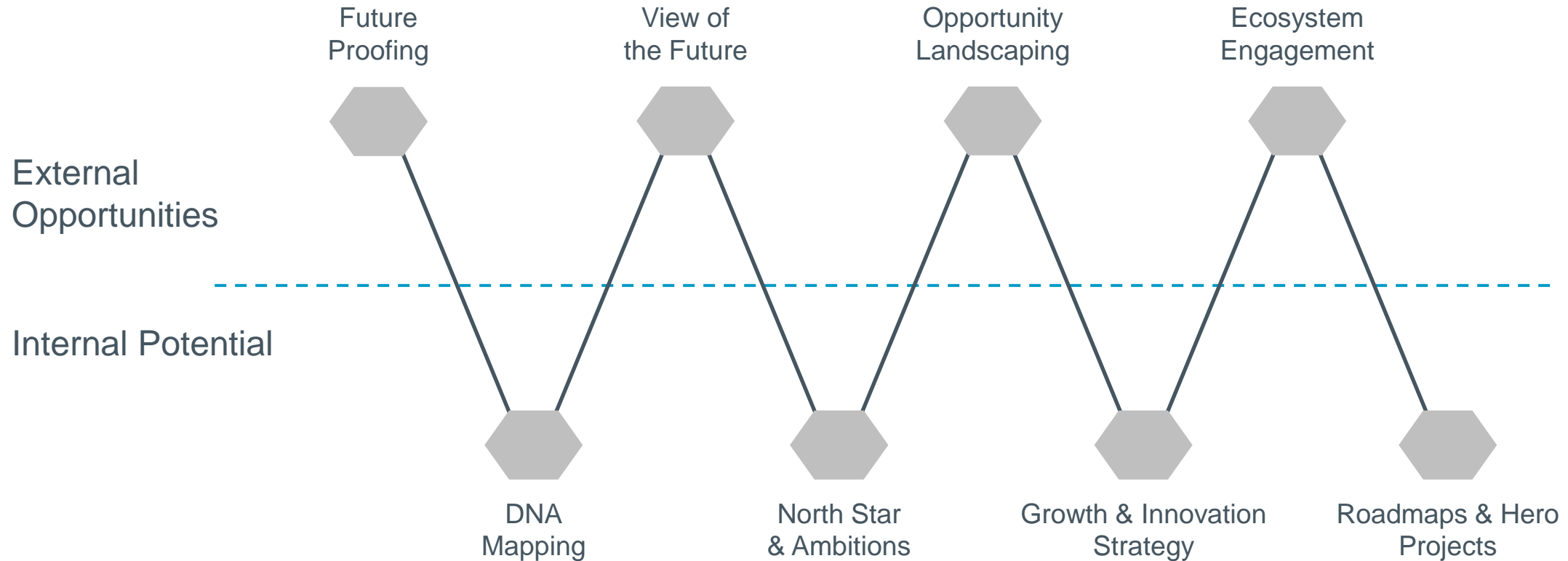
Today's topic...

How should companies move from foresight to roadmap?

What are the steps to help capturing bigger opportunities?

Opportunity-Driven Growth Process

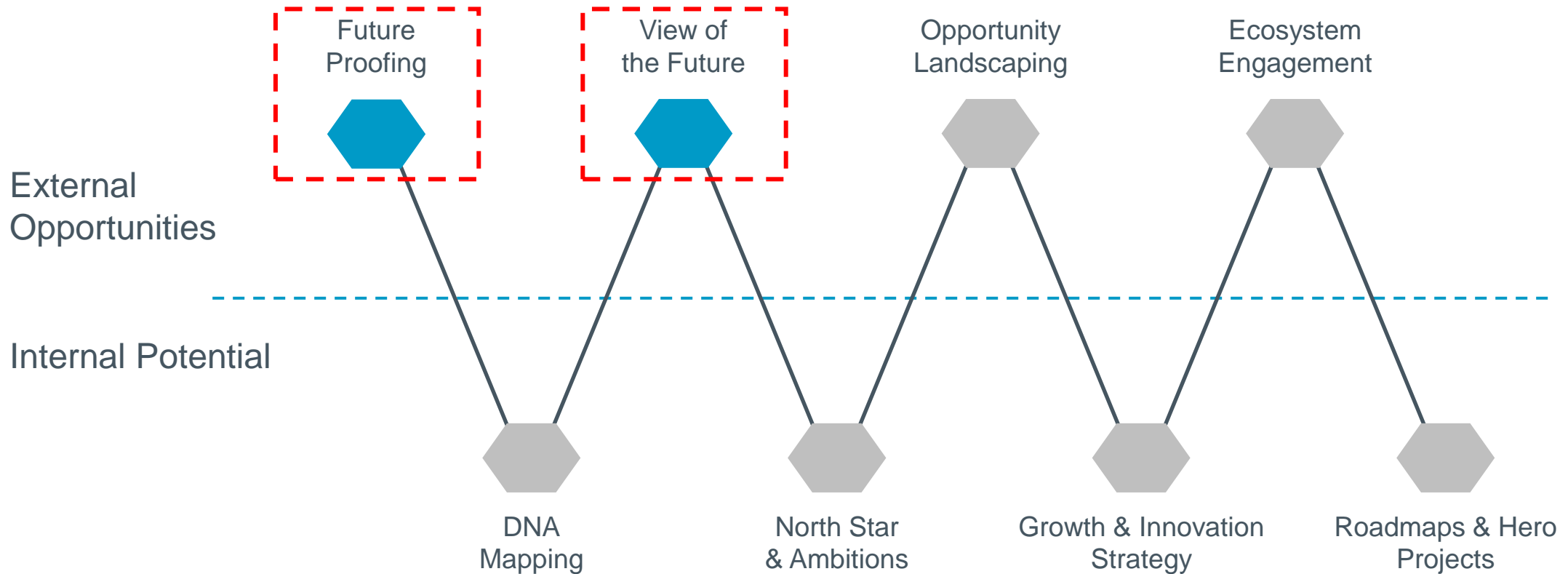
External Perspective



Internal Perspective

Step #1 – Looking at the Future

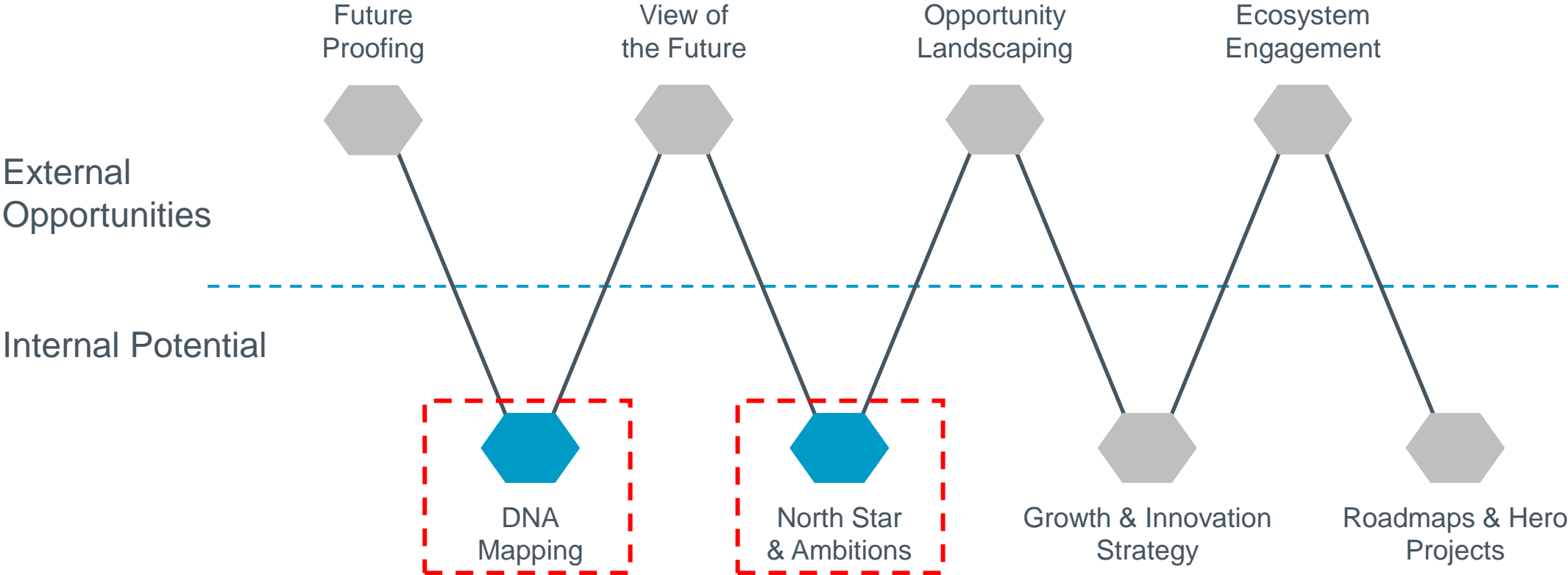
External Perspective



Internal Perspective

Step #2 – Understanding Company's DNA

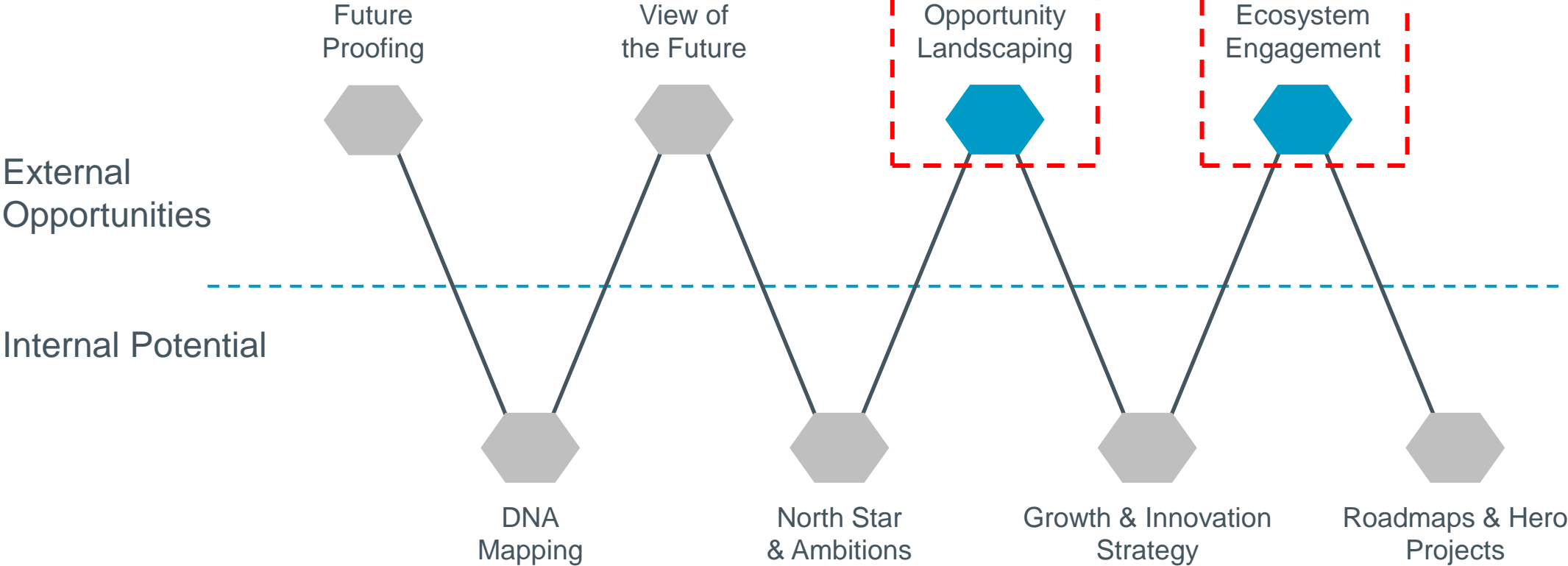
External Perspective



Internal Perspective

Step #3 – Clarity through Voice of the Ecosystem

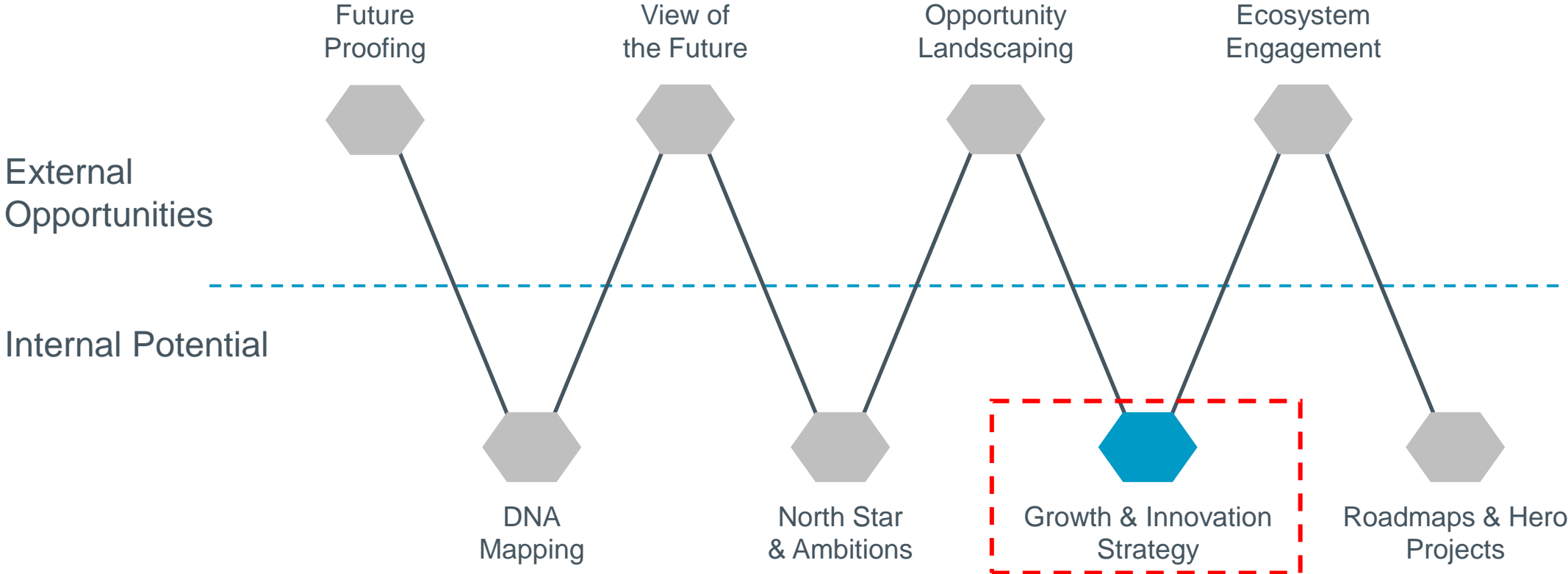
External Perspective



Internal Perspective

Step #4 – Forming the Opportunity Strategy

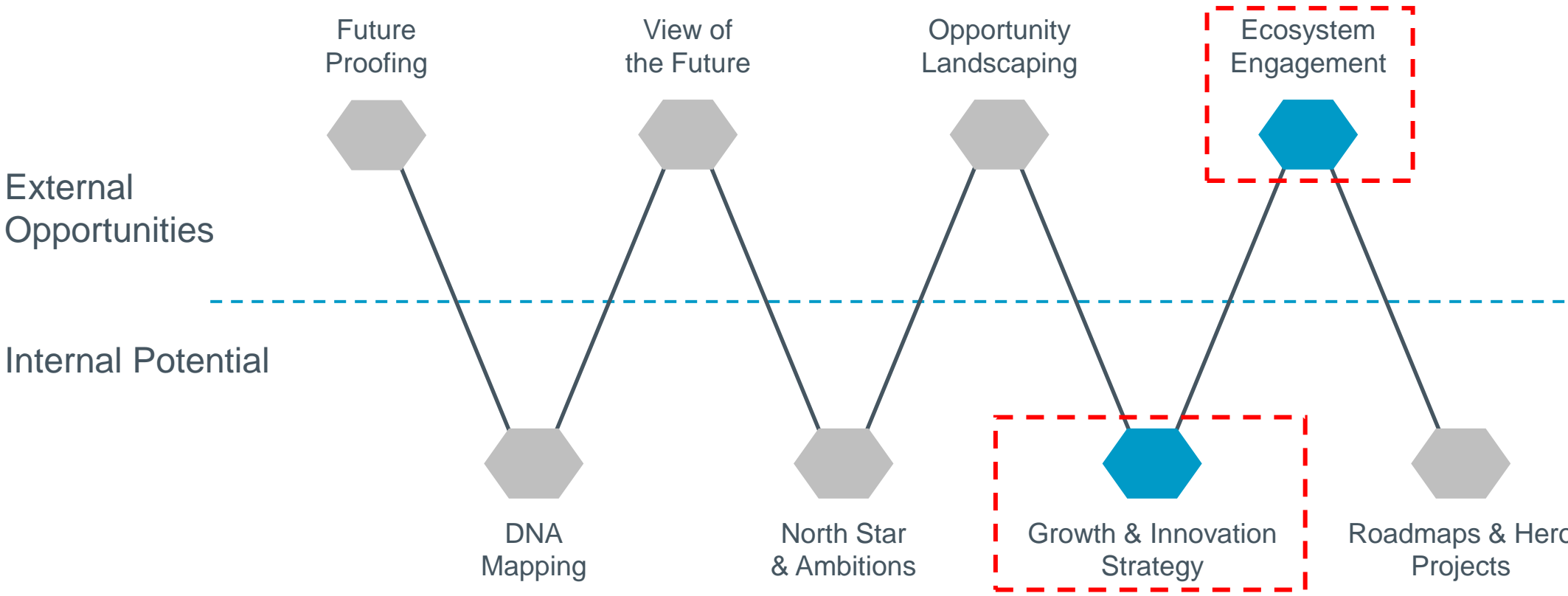
External Perspective



Internal Perspective

Step #5 – Vetting with the Ecosystem

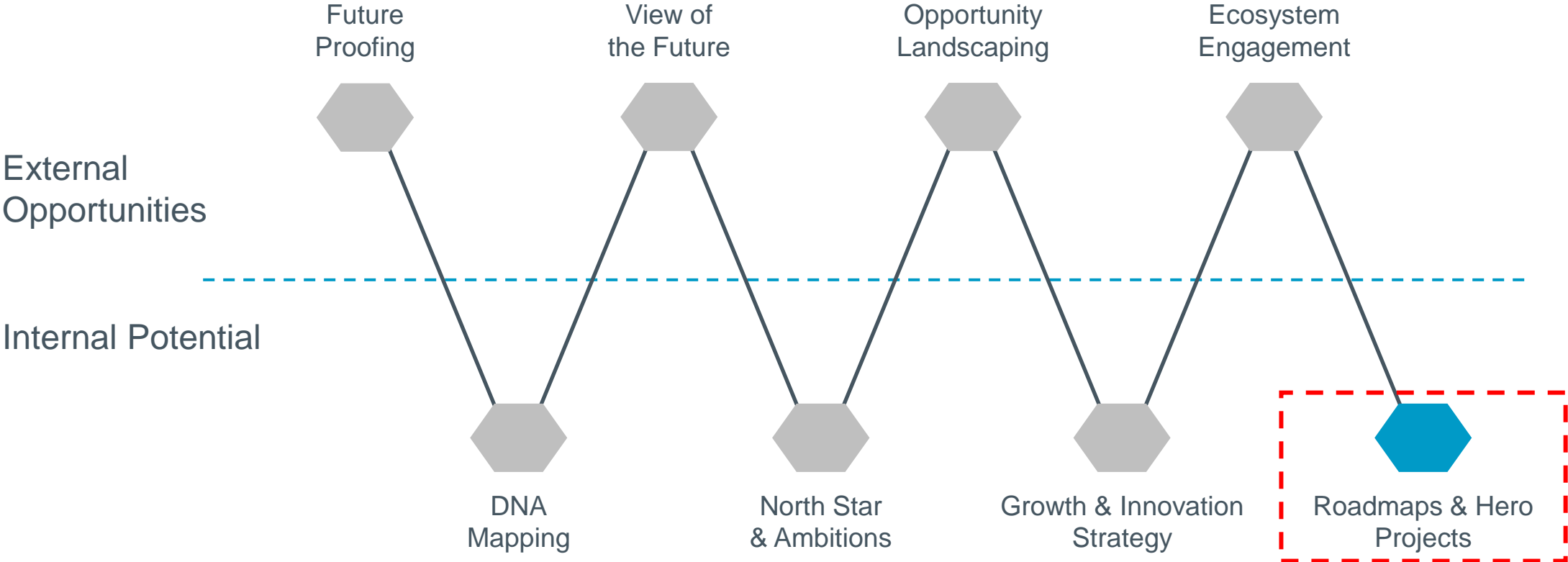
External Perspective



Internal Perspective

Step #6 – Portfolio Mapping: Present and Future

External Perspective



Internal Perspective

Step #1 Looking at the Future

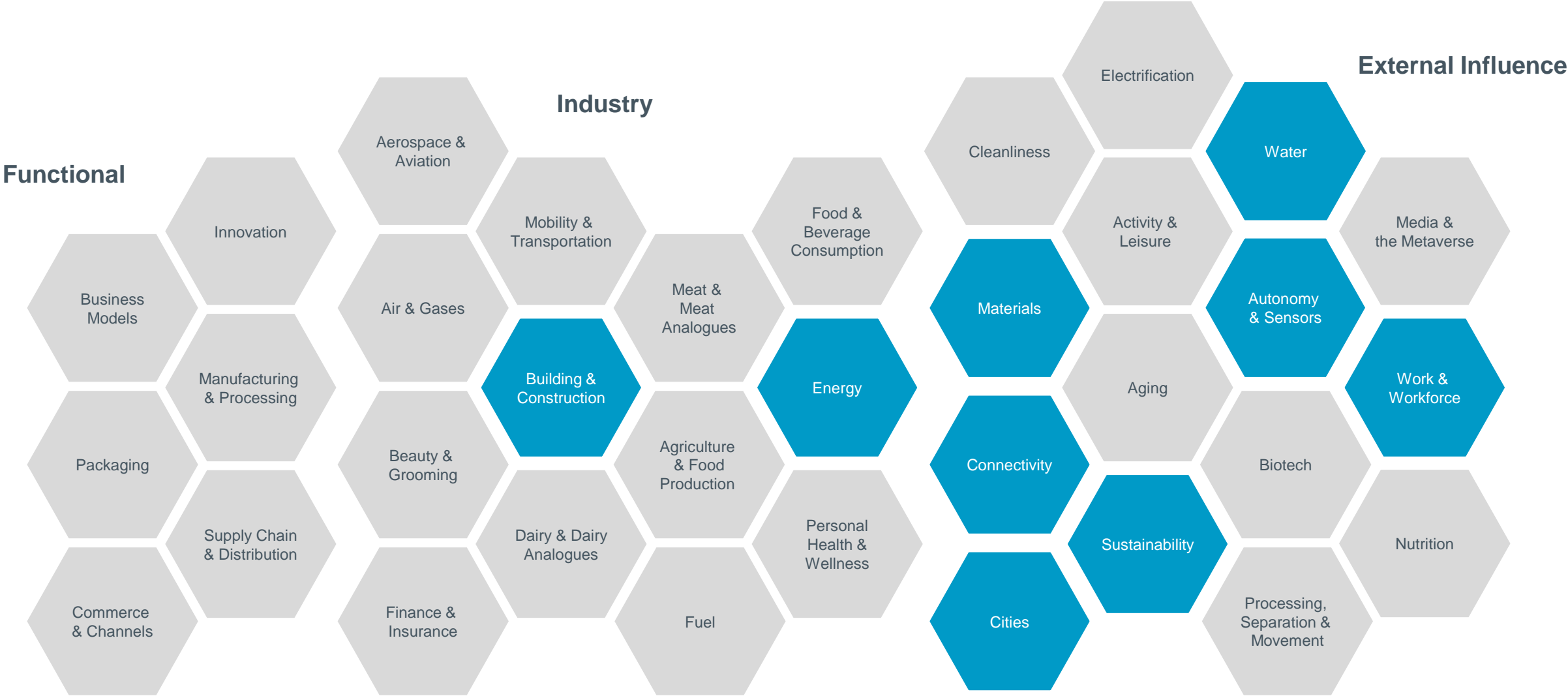


A System View of The Future



Future Proofing Landscape™

A System View of The Future



Top 10 Themes



Material Breakthrough



The B2B/B2C Blur



Flexible Building Assembly (On- and Off-site)



Modernized Training & Operations



Rethinking Ownership & Business Models



Regional & Functional Segmentation



Evolving Energy Landscape



Multifunctional Building Surfaces



Hands-free Job Site



Self-contained Building System

Future Proofing Playbook™

The pace of change is faster than ever... but it will never be this slow again!

Growth and disruption are coming from new places. Thriving in this environment requires we develop an external view not only of our industry, but also of adjacent industries and forces. We have crystallized our view of the future into 10 top "big picture" themes with the intent of clarifying what the most impactful forces are that surround us. This helps inform our choices on where to pursue growth opportunities and how to equip our organization to win. We need to ask ourselves how these trends impact our core, and what internal and external opportunities they present for our future.

It is better to have 10,000 people thinking about 10 trends than 10 people thinking about 10,000 trends



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Future Proofing Playbook™

We started...

The excitement for thinking deeply about who we are, our strengths and our capabilities. These led to ideas areas that would impact us. We looked at the Future of Sustainability, Building & Construction, Work & Workforce, Cities, Energy, Systems, Automation & Robotics, Water, Materials, and Connectivity. We explored roughly 100 trends and the most impactful are highlighted in this and the next slide. We are confident that these, along with our industry knowledge, will be the focus of our organization for making choices on where and how to grow. Each theme is explained and accompanied by three concrete examples of how the trend is being executed against, with other adjacent to where we play today, the examples are meant to drive us to new opportunities and start us to potential disruption.

- Material Breakthrough
- Flexible Building Assembly (On & Off-Site)
- Rethinking Ownership & Business Models
- Enabling Energy Landscape
- Hands-Free Job Sites
- The B2B / B2C Shift
- Modernized Training and Operations
- Regional and Functional Segmentation
- Multi-Functional Building Surfaces
- Self-Contained Building System

THEME	DESCRIPTION	SUPPORTING TRENDS
Material Breakthrough	The need for labor savings, longevity, resilience and the movement towards zero-waste design leads to innovations in new materials and allows the use of product functionality. New materials, using life-based processes and other sustainable innovations emerge to reduce the carbon footprint, while designs are optimized into emerging business and new products. Self-healing, self-cleaning and smart materials are developed to disrupt building materials and lower maintenance needs. Lightweighting materials for building components and reducing use increases design flexibility, durability, and reduces transportation costs, while lightweighting performs better in energy efficient and more durable.	<p>SmartGrid: Global construction waste is projected to reach 2.8B tons by 2025. However, this number has been reduced due to material developments using the path for reusing and recycling waste.</p> <p>How can Carlisle... ...enable materials that reduce labor costs and increase maintenance requirements? ...enable a long-term, smart building construction and zero-waste material?</p>
Flexible Building Assembly (On and Off-site)	In addition to labor shortages and supply chain disruptions, the construction sector struggles with labor saving designs, automation methods and techniques. Emerging solutions by many suppliers, the partnership approach (shared) in the construction process, drive greater quality control and maintain productivity. From full-stack modular construction lines to manufacturing building components (modular components), companies are competing head-to-head with innovative office solutions to reduce the construction industry. Advances in 3D printing enable mass customization, architectural flexibility and reduced waste while ensuring efficient and accurate production both on-site and in the factory.	<p>Building Blocks: When contract delays occur, many suppliers, the partnership approach (shared) in the construction process, drive greater quality control and maintain productivity. From full-stack modular construction lines to manufacturing building components (modular components), companies are competing head-to-head with innovative office solutions to reduce the construction industry. Advances in 3D printing enable mass customization, architectural flexibility and reduced waste while ensuring efficient and accurate production both on-site and in the factory.</p> <p>Smart Homes: 3D printing technology has increased, with construction aimed at 2025. New construction offers new business models that are aimed to integrate emerging technologies.</p> <p>How can Carlisle... ...provide pre-assembly or modular building materials to reduce labor and increase flexibility? ...allow 3D printed to build building products on-site?</p>
Rethinking Ownership & Business Models	Advances from software to tools are enabled by new business models, forcing many companies to examine their legacy revenue models. The PC as a service (PaaS) business model has disrupted traditional markets, shifting the traditional ownership model to a pay-as-you-go service. After transforming the software industry with cloud computing, SaaS branches into other industries such as energy and heavy equipment, where capital investments are often cost prohibitive. Companies expand beyond their core with Agile operating models, which create revenue and drive change playing in energy, while connecting, sensors and drive, create new revenue streams with remote monitoring, delivery and automated services.	<p>Google Power: The US government granted Google Energy the right of a utility company to sell energy, capacity and services, positioning them to create and control a complete smart system of power in commercial buildings and homes.</p> <p>Green Six: Models are changing. Ownership may be shifted, Third Party Owners or homeowners, with Purchase Power Agreements, both greatly compressing and flip directly from installers. Learning, liability, lifecycle and investment are all shifting.</p> <p>How can Carlisle... ...rethink the traditional model of asset ownership and explore roofing as a service? ...enable new revenue streams through just-in-time maintenance centers models?</p>
Enabling approach to building construction		<p>Autonomous Housing: In Japan, 10% of the newly 94 new homes and apartments built in 2017 were made by robots. Sellen House can produce 10,000 detached houses per year. Its Shikoku factory alone produces 35 houses per day.</p> <p>How can Carlisle... ...enable pre-assembly or modular building materials to reduce labor and increase flexibility? ...allow 3D printed to build building products on-site?</p>

Aligned View of the Future

Foresight: A System View of The Future

Outcome

- **Broad team involvement** in the evaluation of 370+ trends
- Organizational **alignment and shared language** around impactful trends

Learnings

- **Change** creates opportunities
- Diverse perspectives around the story of the future creates **organizational clarity**
- Innovation leaders can tell a clear story to **inspire confidence**
- When you can't interview your future customers, leverage **Future Proofing**

Pitfalls

- Lack of **follow up** with those who provided input
- Not leveraging the outcome to **build action plans**
- Leaving out **key stakeholders**

Step #2

Understanding Company's DNA



Identifying DNA and Growth Ambition

- **Essence** of the company beyond products and markets
- Alignment on **who we are today** and what our **future vision** looks like
- **Prioritize** opportunities and elevate **growth in new areas**





Carlisle can evolve its DNA

to drive the future of the roof

6 other DNAs and corresponding Ambitions representing the Business, Function and Materials...

DNA to Ambition: A Direction to Take

Outcome


- Organization **alignment** on what the future business looks like
- Clear language around **who we are** and who we aspire to be
- Connection to Future Proofing by identifying **trends** that will take us to **ambitions**

Learnings

- Clear ambition **strengthens business strategy**
- Ambition can be leveraged for **organizational culture** - mission, vision, purpose
- Powerful opportunity to say what we **aren't going to be**
- Helpful to have a neutral party forcing **executive level dialogue**

Pitfalls

- Not connecting ambition outcomes to business strategy
- Leaving **key stakeholders out** of planning workshops



Step #3 Clarity through Voice of the Ecosystem

Various Ecosystems beyond Customers



Participants



Influencers



Observers

Engage the
Ecosystem
in Different
Ways



Lawrence Berkeley National Laboratory



Milliken



Voice of Ecosystem: Insight for Transformation

Outcome

- Insight **beyond VOC**
- Diverse perspectives from people that see **beyond the customer**
- Identify H1 to H3 opportunities
- Stretch **business model innovation**
- **Timing and Attractiveness** of opportunities

Learnings

- Identified three elements of opportunity **Needs + Value Prop + Conditions**
- Needs far outstretch what **incremental innovation** can deliver
- Conditions ripe for **transformation**
- Connections opened doors for **collaboration**
- Translates **trends into opportunities**

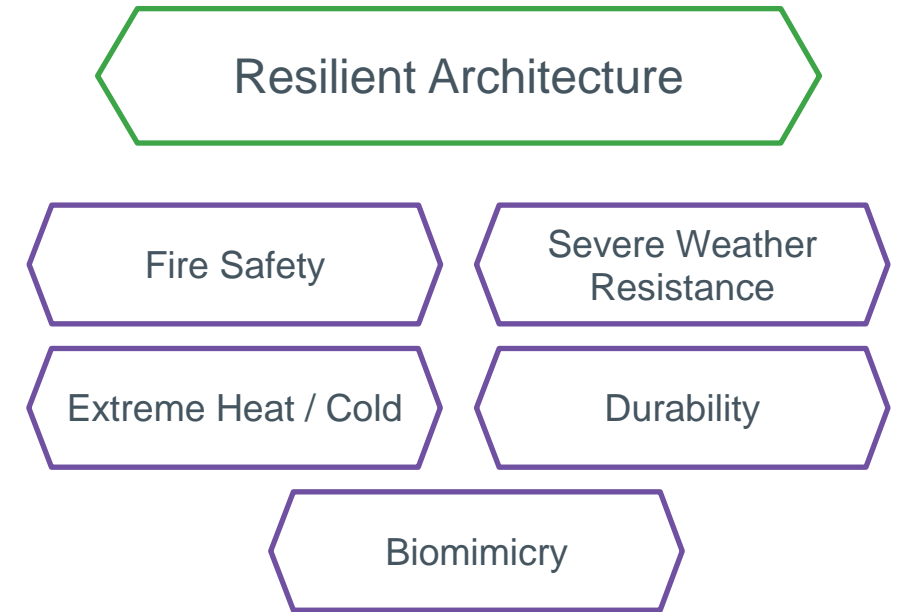
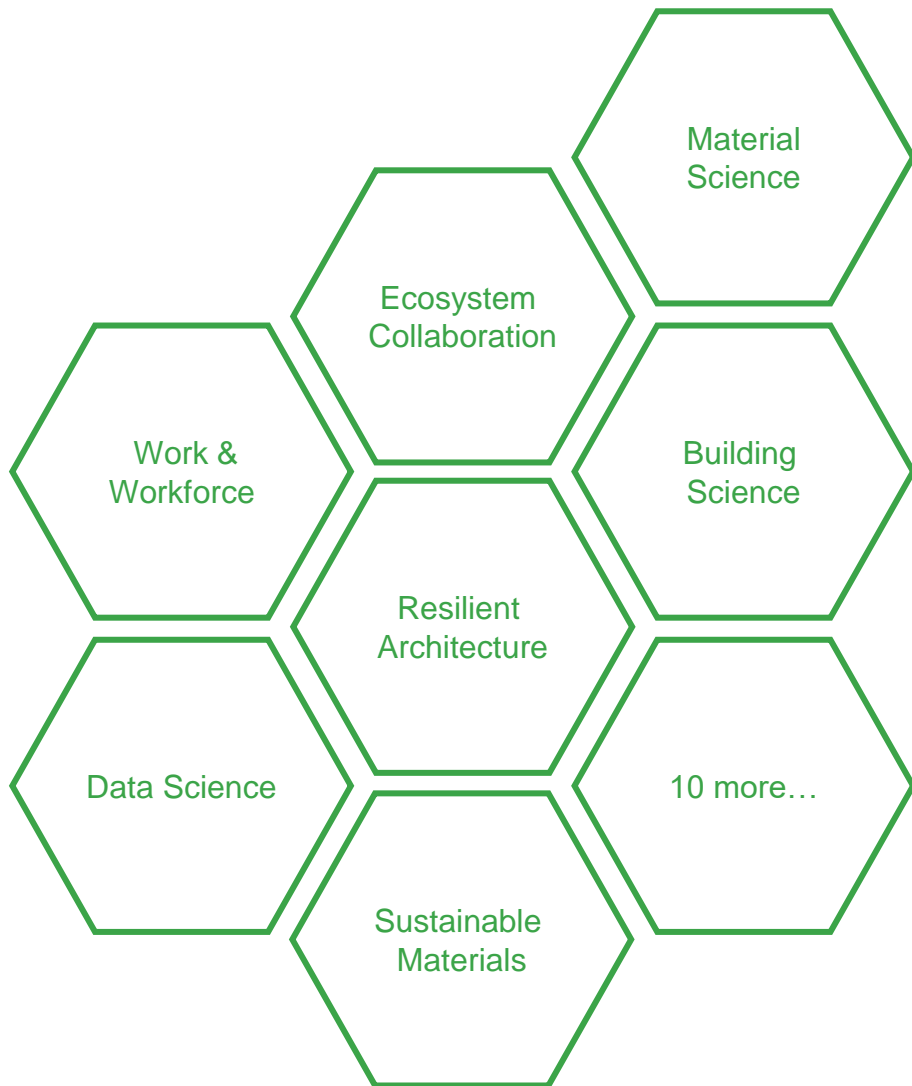
Pitfalls

- Access to **expertise more challenging**
- Organizations **do not curate** their ecosystems
- Connections needs to be **maintained**



Step #4 Forming the Opportunity Strategy

Leveraging Insights to Build out Opportunities



Landing on 6 Big Opportunities

Translate Opportunities into Spaces & Platforms



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	Opportunity Spaces & Value Propositions	Market & Organizational Needs	Trends & Conditions
Managing & Leveraging Temperature Managing internal and external building temperatures and energy use is a key challenge for the building.	<ul style="list-style-type: none"> Smart/Cloud Based: Improving the intuitive efficiency of the products through cloud-based, device-to-device connectivity for use in applications, smart buildings. Smart-based: Smart-based: Enabling the building as a smart device for the environment. AI-based: AI-based: Enabling the building as a smart device for the environment, requires sophisticated security. 	<ul style="list-style-type: none"> Current building materials lack the ability to both regulate and control heat depending on temperature, season and climate. Smart-based: It is possible to use, and a large amount of data is required to meet the needs of the building. Building systems do not actively monitor heat / cool the building, but rather react. 	<ul style="list-style-type: none"> Building heating and cooling systems are often the highest cost and most energy-intensive components. There is a need for more on-demand management in building codes and standards focusing more on energy efficiency and smart buildings. Building codes, standards and regulations are being updated to require smart buildings to enhance efficiency in smart buildings. Climate change is leading to more frequent extreme weather events.
Resilient Architecture Building systems that are resilient to natural disasters, climate change and other external forces is a key challenge for the building.	<ul style="list-style-type: none"> Smart Weather Resilience: Superior resistance to natural or severe weather events. Proactive Damage Mitigation (Smart-sensing): Detection and mitigation of environmental damage. Water & Fire Proof: Detection or mitigation of the environmental damage of water and fire. Disaster-Resilient: Proactive detection and response to improve the building's ability to withstand natural disasters. 	<ul style="list-style-type: none"> Regional segments with heavy rain, hot, high winds and other natural disasters. Climate change is leading to more frequent extreme weather events. Building materials and systems are being updated to enhance resilience in smart buildings. Building codes, standards and regulations are being updated to require smart buildings to enhance efficiency in smart buildings. 	<ul style="list-style-type: none"> Climate change is creating an absolute high for disaster prevention and mitigation. The industry of building resilience is transitioning from reactive to proactive. Building codes, standards and regulations are being updated to require smart buildings to enhance efficiency in smart buildings. Climate change is leading to more frequent extreme weather events.
Sustainable Systems & Circularity Sustainable materials and systems that reduce the building's carbon footprint and are resilient / recover is a key challenge for the building.	<ul style="list-style-type: none"> Environmentally Forward Materials: The use of low-carbon materials that are safe to be recycled or reused. Green Building: Green building: Proactive and reactive to reduce the building's carbon footprint. Smart Green: Smart green: Proactive and reactive to reduce the building's carbon footprint. Resilient Green: Resilient green: Proactive and reactive to reduce the building's carbon footprint. 	<ul style="list-style-type: none"> Buildings are becoming more sustainable and green. Building materials and systems are being updated to enhance sustainability in smart buildings. Building codes, standards and regulations are being updated to require smart buildings to enhance efficiency in smart buildings. 	<ul style="list-style-type: none"> Government is mandating and pushing companies toward a net-positive carbon footprint (carbon that is not just offset but carbon negative). Buildings are becoming more sustainable and green. Building codes, standards and regulations are being updated to require smart buildings to enhance efficiency in smart buildings.
Enabling & Augmenting the Work Leveraging digital, design, training and emerging tech to enhance labor efficiency and productivity is a key challenge for the building.	<ul style="list-style-type: none"> Smart Buildings: Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart Work: Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart Training: Smart training: Proactive and reactive to enhance labor efficiency and productivity. 	<ul style="list-style-type: none"> High dependence on human labor and high labor costs across the construction industry. Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart training: Proactive and reactive to enhance labor efficiency and productivity. 	<ul style="list-style-type: none"> Automation is becoming more prevalent and is being used to enhance labor efficiency and productivity. Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart training: Proactive and reactive to enhance labor efficiency and productivity.
Digitally Enabled Products & Services Enabling digital products and services that enhance labor efficiency and productivity is a key challenge for the building.	<ul style="list-style-type: none"> Smart Buildings: Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart Work: Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart Training: Smart training: Proactive and reactive to enhance labor efficiency and productivity. 	<ul style="list-style-type: none"> The process of transforming a roof is a heavily controlled and often complex process. Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart training: Proactive and reactive to enhance labor efficiency and productivity. 	<ul style="list-style-type: none"> Automation is becoming more prevalent and is being used to enhance labor efficiency and productivity. Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart training: Proactive and reactive to enhance labor efficiency and productivity.
THE Carlisle Experience How we support our customers to improve their experience and lead the roofing industry.	<ul style="list-style-type: none"> Digital Design Tools: Tools, design, using to self-design and lead the roofing industry. Next-Gen Materials: Next-gen materials: Proactive and reactive to enhance labor efficiency and productivity. Smart Buildings: Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart Work: Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart Training: Smart training: Proactive and reactive to enhance labor efficiency and productivity. 	<ul style="list-style-type: none"> Building materials and systems are being updated to enhance sustainability in smart buildings. Building codes, standards and regulations are being updated to require smart buildings to enhance efficiency in smart buildings. Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart training: Proactive and reactive to enhance labor efficiency and productivity. 	<ul style="list-style-type: none"> Automation is becoming more prevalent and is being used to enhance labor efficiency and productivity. Smart buildings: Proactive and reactive to enhance labor efficiency and productivity. Smart work: Proactive and reactive to enhance labor efficiency and productivity. Smart training: Proactive and reactive to enhance labor efficiency and productivity.

Opportunity Landscaping: The Power of Focus

Outcome


- Leadership alignment on the “**top few**” opportunity territories, including new
- Consensus on potential **value and fit** of opportunity territories
- **Connection** of opportunity territories to company DNA and ambition
- Identification of **key enablers**

Learnings

- Workshop setting allows for maximum **shared understanding & ownership**
- Results lay the groundwork for **future business decisions**
- **Saying NO** to an opportunity is as important as saying yes

Pitfalls

- Not regularly **reinforcing the outcomes** with leadership
- Not **communicating the result** widely in the organization
- Not asking for specific **commitment from senior leaders**
- Leaving key stakeholders out of planning workshops



Step #5

Vetting with the Ecosystem

Vet the Opportunities across Ecosystems

Architects

Building Efficiency
Engineers

Distributors

Roofing Licensing

Manufacturers

Solar Energy
Companies

Regulators

Contractors

Engage the
Ecosystem
in Different
Ways

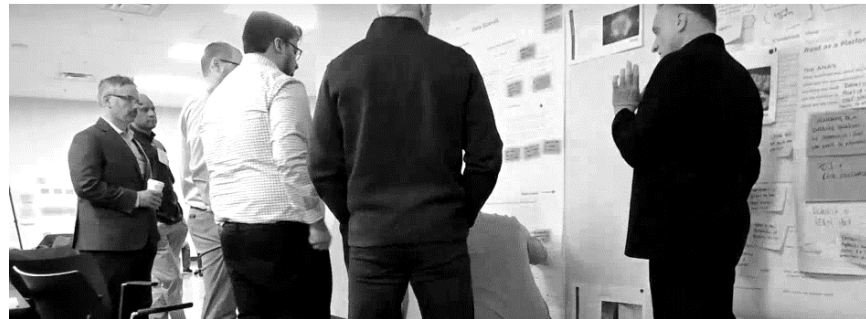


Immersion &
co-creation

Continuous
learning



Testing
& sizing



Insight
gathering

Voice of Ecosystem: Insight for Transformation

Outcome

- Strong **network of ecosystem** stakeholders with lasting value
- Specific, direct **feedback** to calibrate innovation strategy and generate concepts
- **Executive level exposure** to industry peers and influencers

Learnings

- There is **no substitute for face-to-face** insight collection
- The **ecosystem view** of our company is different than our internal view
- Identification of, or **validation of opportunities** that would normally be overlooked
- **Organizational bias** is real

Pitfalls

- Concern for **IP** can derail effort
- Not leveraging the ecosystem **beyond the initial research**
- Leaving key stakeholders out of planning workshops
- **Do more than one session – go to Ecosystem Co-creation**

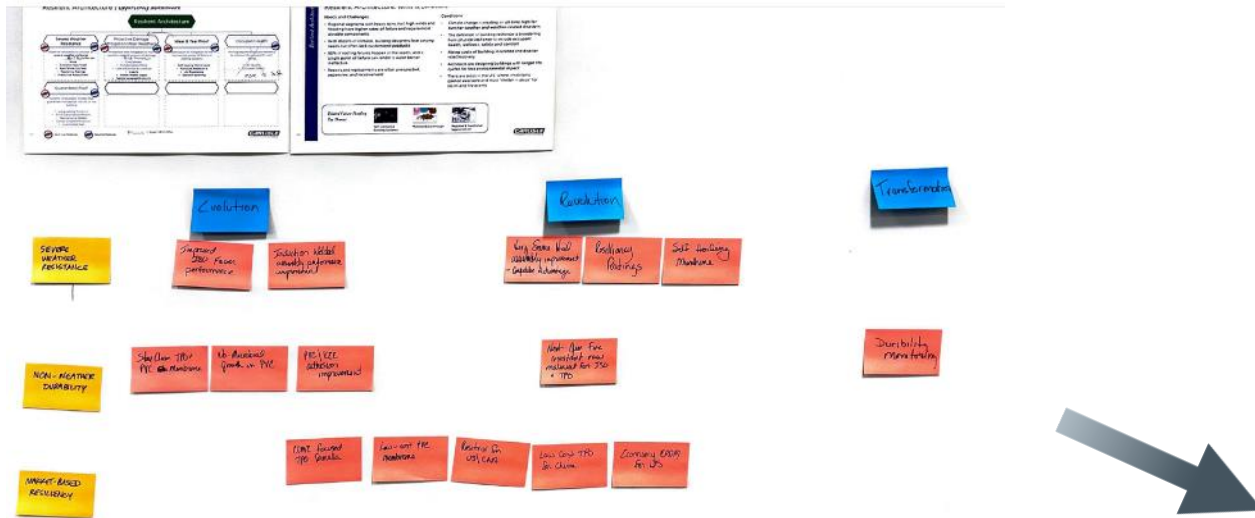


Step #6 Portfolio Mapping: Present and Future

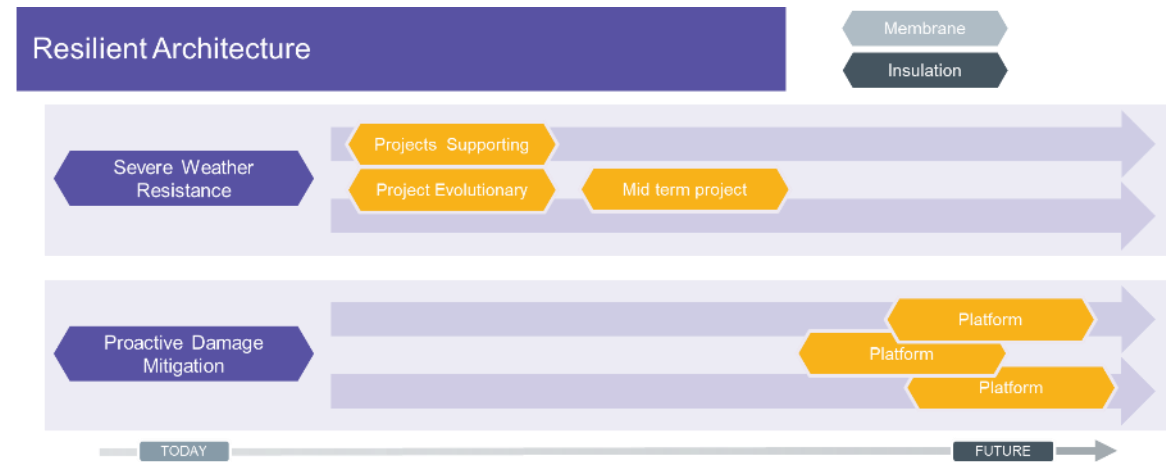
Common *Challenges* of Creating Roadmaps

- Technology / Product / Project Roadmaps exist (or don't) across the organization but are **not aligned**
- Organizations often **lack uniting framework** to sequence opportunities rather than projects
- Roadmaps **around spaces build a pipeline** from Horizon 1 to Horizon 3

Portfolio Mapping against Opportunities



With the opportunity strategy in place, teams road mapped spaces and sequenced projects within them... leading to clarity on H1, H2, & H3



Portfolio Mapping: Innovation Action Plan

Outcome

- **Alignment** of active projects & concepts VS landscape
- Identification of **gaps in landscape** where explore activity is needed
- **Visibility of portfolio value** across innovation horizons

Learnings

- **Integration of opportunity landscape** with concept ideation, ranking, and validation ensures focus
- Including larger team in roadmap creation helps with **buy in**
- Roadmaps must be **living documents**
- Roadmaps must **exist at different levels** of resolution

Pitfalls

- Allowing old or adjacent roadmaps to **persist**
- Not **establishing research plans** for unexplored territories and spaces
- Not working to **unify innovation language**
- **Mapping solutions** rather than opportunities



Recap: 6 Steps from Forecast to Roadmap

1. Look into the Future to see bigger places
2. Map to company DNA to make choices
3. Create opportunities with Voice of the Ecosystem
4. Form the Opportunity Strategy & Hierarchy
5. Vet with the Ecosystem
6. Build & RoadMap Portfolio: Horizon 1, 2, & 3

Questions?

Thank you!

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