

research
proposal | ASHB Connected Homes
2024 Research Service

Harbor
Research

ASHB 2024
Research
Proposal

- 1. Introduction to Harbor Research**
2. Proposed Scope of Work, Process, & Budget
3. Appendix

**Harbor
Research**

Overview of Harbor Research & Our Scope of Services

Firm History

Harbor Research was the first firm to focus on Smart Systems, Services and the Internet of Things (IoT) and first to publish groundbreaking research on new business models in the Harvard Business Review in 2004 & 2005.

Clients and Engagements

For over 30 years we have focused on identifying, analyzing and helping clients to develop or adopt emergent technologies. Every relationship we develop is enhanced by the range and depth of these experiences.

Technology Developers & Suppliers

100+ clients 400+ engagements

OEMs and Service Providers

150+ clients 600+ engagements

Offices

Denver, Colorado - USA Berlin, Germany - Europe



Overview of Harbor's Services

Research Services

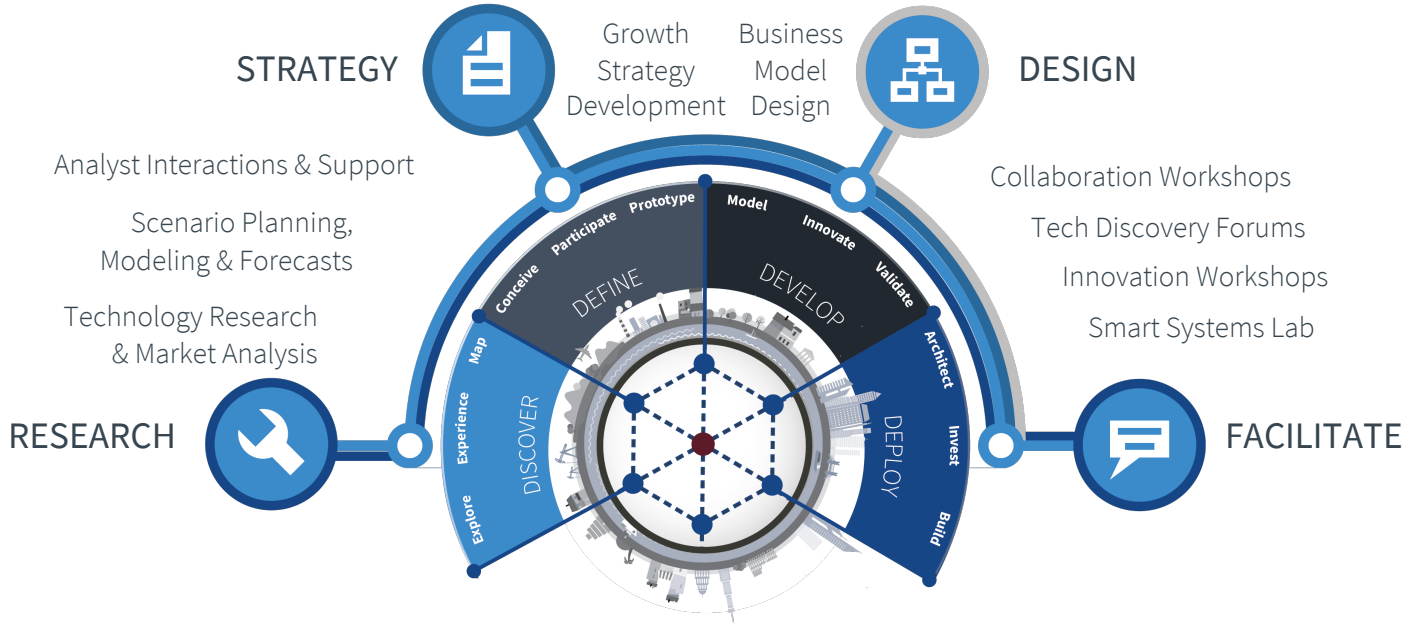
Research, tracking, market intelligence and Harbor's Smart Systems forecast

Strategy Consulting

Business development & growth strategy consulting services

Smart Systems Lab

Venture development, start-up advisory and community networking to implement strategies



We work with clients across corporate functions

- Corporate Strategy & Development
- Business Development
- Market Intelligence
- Strategic Marketing
- New Growth
- Research & Development

Flexible formats & configurations






- Research, Analysis, Modeling & Content
- Services Subscriptions & Retainers
- Bespoke Engagements & Consulting Projects

Harbor is Pleased to Have Served ASHB Several Times in Recent Years

Harbor's long-standing support for the Association for Smarter Homes & Buildings

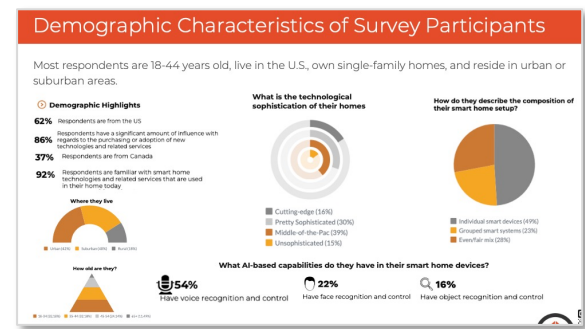
- Harbor has developed a sustaining relationship with ASHB and its constituent members conducting research and analysis into new building, facility and residential technologies
- ASHB Landmark Research Projects include a combination of quantitative surveys and qualitative interviews that inform a comprehensive report on the market opportunity for smart systems-related technologies and related digital services, including:
 - Smart Home Energy Management (2023) analyzed the opportunities and solutions for managing energy usage in the home, including various business models, technologies and benefits available to suppliers and consumers
 - Connected Home Artificial Intelligence (2022) created a foundational framework for understanding the evolution of AI and its relationship with connected home solutions and services, along with related challenges and barriers to adoption including consumer perceptions of privacy and security
 - Smart Home as a Service (2021) explored service-based business models to smart home solutions, and how consumers perceived certain suppliers and solutions in their impact and value

Harbor/ASHB CHC Collaboration Examples

2023	2022	2021	2019	2017
 <p>Smart Home Energy Management</p>	 <p>Connected Home & Artificial Intelligence</p>	 <p>Smart Home as a Service</p>	 <p>Connected Home Roadmap</p>	 <p>Connected Multi-Dwelling Units and the IoT</p>

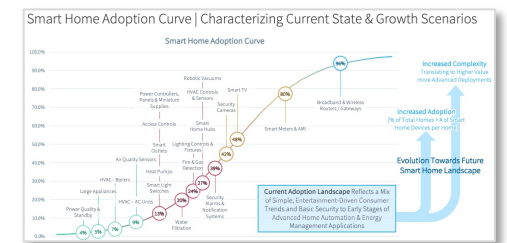
2023 CHC Research Service

Smart Home Tech Trends Survey



Configured Research Projects

Smart Home Market Sizing & Adoption Curve



Sustainability & Consumer Preferences in the Smart Home

Smart Home Buyer Persona Hypotheses for Further Analysis*

Each persona has a different combination of characteristics resulting in different value drivers. Messaging for sustainability products and solutions can be crafted to target each buying persona, even if their values do not include environmental impact.

Buyer Demographics**	Home Managers	Eco-Warriors	Tech-Skeptics
<ul style="list-style-type: none"> • Middle to high income • College educated • Young to middle age 	<ul style="list-style-type: none"> • At least middle income • College educated • Middle to older age 	<ul style="list-style-type: none"> • Middle to high income • College educated • Middle to older age (40+) 	<ul style="list-style-type: none"> • Low to middle income • High school or college education • Middle to older age (40+)
Device Profile <ul style="list-style-type: none"> • Environmental, Convenience & Entertainment • Home Automation systems • Smart thermostats • Smart lighting • Smart security systems • Smart speakers • Smart TVs • Smart doorbells • Smart locks • Smart hubs • Smart cameras • Smart pool pumps • Smart pool covers • Smart pool filters • Smart pool covers 	Safety, Security & Control-focused <ul style="list-style-type: none"> • Home Automation systems • Smart thermostats • Smart lighting • Smart security systems • Smart speakers • Smart TVs • Smart doorbells • Smart locks • Smart hubs • Smart cameras • Smart pool pumps • Smart pool covers • Smart pool filters • Smart pool covers 	Environmental Impact Focused <ul style="list-style-type: none"> • Home Automation systems • Smart thermostats • Smart lighting • Smart security systems • Smart speakers • Smart TVs • Smart doorbells • Smart locks • Smart hubs • Smart cameras • Smart pool pumps • Smart pool covers • Smart pool filters • Smart pool covers 	Cost & Need Focused <ul style="list-style-type: none"> • Home Automation systems • Smart thermostats • Smart lighting • Smart security systems • Smart speakers • Smart TVs • Smart doorbells • Smart locks • Smart hubs • Smart cameras • Smart pool pumps • Smart pool covers • Smart pool filters • Smart pool covers
Values & Objectives <ul style="list-style-type: none"> • Reduce energy and resource usage • Always available, remote monitoring and control of devices and systems • All-encompassing, easy-to-use • Integrated and automated everyday tasks • Quantifiable system monitoring 	<ul style="list-style-type: none"> • Family health, safety and security • Reduce energy and resource usage • Participate in sustainable efforts to reduce environmental impact • Reduce cost of living where possible 	<ul style="list-style-type: none"> • Reduce energy and resource usage • Participate in sustainable efforts to reduce environmental impact • Reduce cost of living where possible 	<ul style="list-style-type: none"> • Reduce cost of living where possible • Only adopting new technology when it fits their budget & complementing with their life • Home products (single and paired device)

Project Team Overview

Each member of the team has led or assisted on multiple connected homes-related engagements, including at least one previous ASHB Landmark Research project.

Glen Allmendinger - President and Founder (40 years experience)

Glen is the founder and president of Harbor Research, a strategy consulting firm with offices in Boulder, Colorado and Berlin, Germany. Since the firm's inception in 1983, Allmendinger has worked closely with a broad spectrum of telecommunications, information systems, security, electronics, and automation and equipment manufacturing companies in North America, Europe, and the Far East. These companies range in scope from small, entrepreneurial start-ups to major multi-national corporations. His project direction and consulting has assisted these firms in the development of corporate and business unit strategies, new product, market and service opportunities, and new core capabilities. Glen has consulted to the National Research Council on technology and competitiveness as well as emerging technologies for social wellbeing. He is a member of IEEE, ASME, and ACM and has worked closely with several industry trade associations including ASHB. He has worked on DARPA-funded research focused on advanced analytics and sensing systems technology and was a key participant in the planning and development of the National Center for Manufacturing Sciences. Allmendinger received his BA from New York University, and completed graduate studies at MIT's Center for Advanced Media Studies.

Harry Pascarella – Vice President (10 years experience)

Harry specializes in Industrial and Commercial IoT with a focus on manufacturing, natural resources, and mission critical B2B markets. Harry works with clients across a variety of industries to validate and dimension their growth strategies and advise on industry segment and application target selections. Recently, Harry conducted several studies in smart buildings including a deep dive into energy management as well as a market study on the larger market that looked at usage behavior. Harry also worked with the largest LED lighting manufacturer in the United States to develop a business case for connected lighting platforms. Harry received his bachelor's degree in Economics with Honors from the University of Colorado – Boulder.

Daniel Intolubbe-Chmil – Research Director (8 years experience)

As Harbor's Research Director, Daniel has led research initiatives shaping critical insight around the evolution of high-performance networks across industrial, commercial and enterprise verticals. Daniel also helps keep a pulse on the market, providing curated content and updates to Harbor's real-time market tracking across all sectors of the economy. Dan has helped lead three previous ASHB Council engagements, and has deep expertise across networking technologies within buildings and homes. Prior to Harbor, Daniel has conducted economic research to complete his Honors thesis regarding Education Policy, entailing policy/market research and econometric analysis. He graduated from CU Boulder with a degree in Economics with Honors and a minor in Humanities.

Pablo Cruz – Senior Associate (3 years experience)

As a senior associate at Harbor Research, Pablo drives client success across various industries. His experience spans industrial manufacturing and process software, R&D processes, life sciences technologies, AI/ML operations, among other emerging technology areas. His experience includes guiding clients through the selection and delivery of emerging technologies, leveraging quantitative and qualitative inputs to create holistic value creation strategies. Prior to joining Harbor, Pablo worked in Deloitte's global trade division, where he helped streamline client responses to complex global trade regulations, optimize their trade practices and develop effective strategies for regulatory compliance. Pablo graduated from The University of Chicago with a BA in public policy with a specialization in statistics, stemming from a keen interest in the intersection of policy analysis, strategic decision-making, and data-driven solutions

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2023 Connected Homes Research Service: Overview of Proposed Approach

Instead of one, long-form landmark research report each year, ASHB would like to pursue a more configured set of research activities that focuses on multiple topics of interest to funders throughout the year. With significant experience in providing such services and supporting ASHB over the years, Harbor can support ASHB and the Board of Directors well in this endeavor.

Connected Homes Research Service: Overview of Components

1 Annual Consumer Smart Home Survey (x1)

- Survey covering key topics/opportunities to gain annual perspective of consumer needs/outlook
- 20-30-page survey highlights report
- Raw data in Excel
- 2-3-page executive summary in Word
- Summary infographic

2 Configured Research Project (x2)

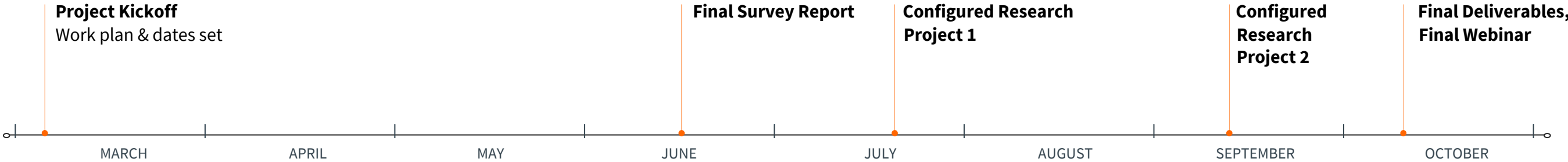
- Based on Q1 discussions and activities, determine 2 configured research projects to complete following the survey
- 100 hours of analyst time per project
- 15-25-page PowerPoint research brief
- One summary infographic per research project (x2 total)

3 Steering Committee Meetings & Other Interactions

- 6-7x Steering Committee Meetings
- 1:1 introduction calls with each Steering Committee organization
- Final webinar (2 hours)
- Organization webinars for each SC organization covering summary of all research following final webinar
- Think Tank for ASHB community

Proposed Research Timeline: March Through October 2024

Harbor will support ASHB and the funders over the course of 8 months in 2024, from March through October. The work steps will be executed in parallel, with regular steering committee meetings to update on progress and interim outputs



Key Interactions



Work Steps



1 Annual Consumer Smart Home Survey

Harbor will develop and conduct an annual survey for connected homes with the goal of staying up to date on consumer perceptions, adoption trends, and needs related to connected homes.

Connected Homes Survey & Report

Target Audience

~500 Consumers in Canada and USA

Proposed Scope

Survey to understand current perceptions and future priorities related to connected homes

Key Topics to Cover (starting point):

- Current state of smart home adoption
- Key trends impacting investment and priorities
- Next 12 months investment priorities
- Preferred suppliers
- Other topics as appropriate, as informed by initial discussions and configured research selections

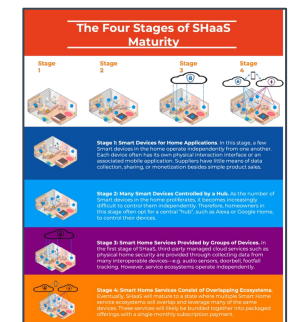
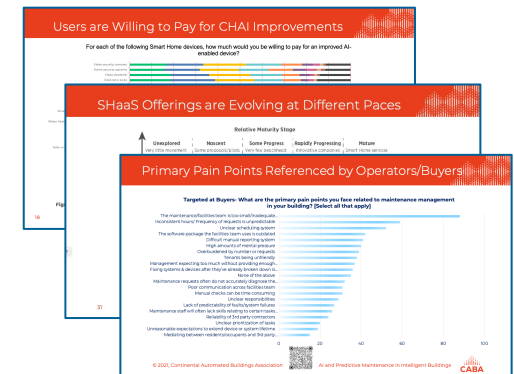
Draft starting point for Annual Survey scope, to be refined via steering committee meetings

Deliverables

- Survey questionnaire
- Raw data and summary charts in Excel and PPT
- 20-30-page survey PPT trends report
- 2-page long-form executive summary (Word doc)
- 1 summary infographic

Benefits & Values

- Stay up-to-date on consumer perceptions, adoption, and needs related to connected homes
- Understand the impact of recent market developments on users
- Leverage graphics and charts from PPT-based trends report in key external presentations
- Identify and/or focus on topic areas for further research in configured research projects **2**



2 Configured Research Project Deliverables & Benefits

Through close collaboration with the Steering Committee, Harbor will analyze key topics of interest, producing a PPT-based report that includes re-usable outputs and key recommendations for steering committee members

Example Research Topics

- Security & Safety: Advancements in smart home security and safety systems systems
- Privacy and Data Sharing: Cybersecurity developments and related privacy and data sharing preferences
- Health and Wellness Integration: Integration of health and wellness monitoring devices, aging in place solutions, and other smart consumer health devices
- Smart Home Wireless Connectivity: Advancements in connectivity (e.g., 5G, WiFi 6, fixed wireless access, etc.) and impact on smart home market
- Smart Kitchen of the Future: how smart appliances and devices are changing how people use kitchens
- AR/VR Integration: Consumer opportunity for augmented and virtual reality systems, and use cases in the smart home

Deliverables (x2 configured research reports)

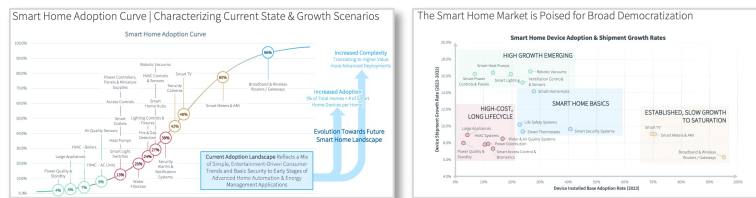
- 15-25-page powerpoint report on the topic agreed to and as scoped with the steering committee, which could include the following types of output:
 - Market dynamics, trends and forces
 - Technology architecture & landscape
 - Customer needs and buying behaviors
 - Ecosystem, value chain & competitive landscape
 - Market sizing and forecast
 - Strategy recommendations
- Summary infographic for each report

Benefits & Values

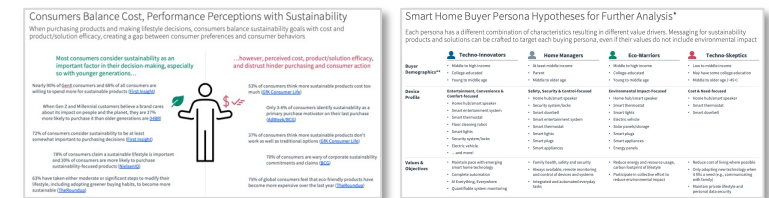
- Receive data and analysis on multiple topics of interest throughout the year
- Focus on the topics and workstreams that matter most, and have the flexibility to decide on each topic before it is analyzed
- Short time to value—receive research and analysis inputs within 8-10 weeks after agreeing to scope
- Leverage PPT-based material in external presentations

Topics Covered in 2023

Market Sizing & Adoption Curve



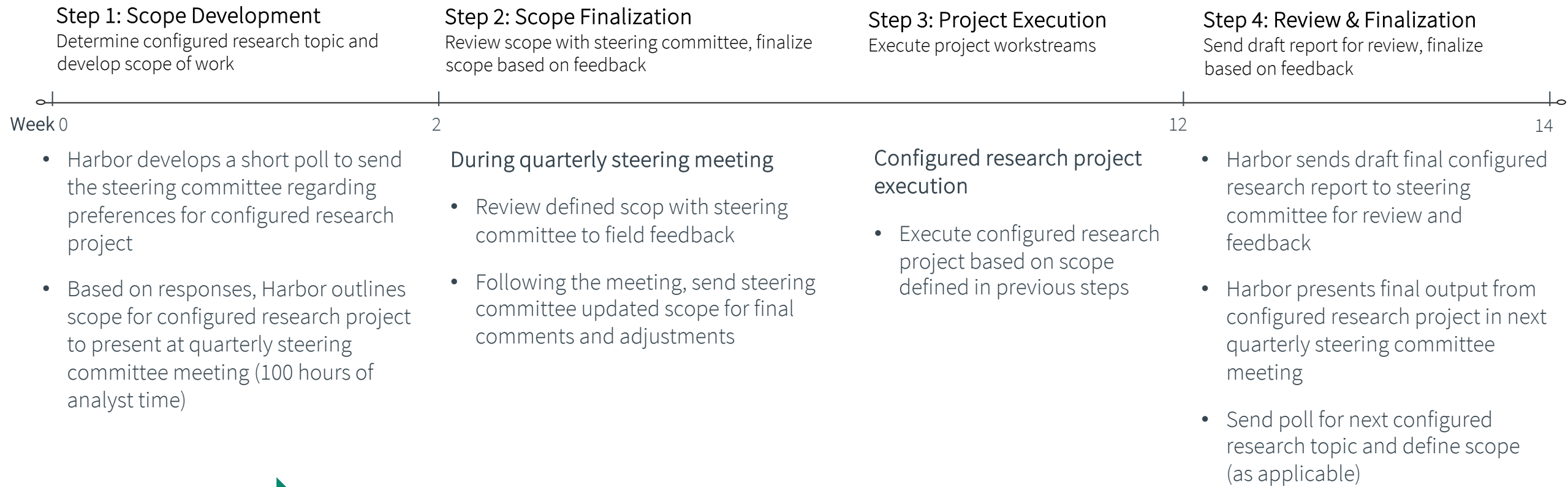
Sustainability & Consumer Preferences



2 Configured Research Projects: Overview of Process

Harbor will conduct 2x configured research projects on topics of interest to the steering committee.

Draft starting point for Configured Research Process/Approach, to be refined via steering committee meetings



Key Deliverables

2x configured research projects, 15-25-page PPT report with 1 summary infographic per report

3 Steering Committee Meetings, Interactions, & Example Collaboration Timeline

With the shortened year, Harbor will hold a total of 6-7 steering committee meetings (1 per month) for Connected Homes, including a kickoff meeting, with the funders of the research engagement. Additional interactions will be provided as well.

Purpose: Maintain alignment on scope of work, review completed deliverables, and discuss upcoming activities.

Agenda (1-1.5 hours depending on the scope of work activities occurring)

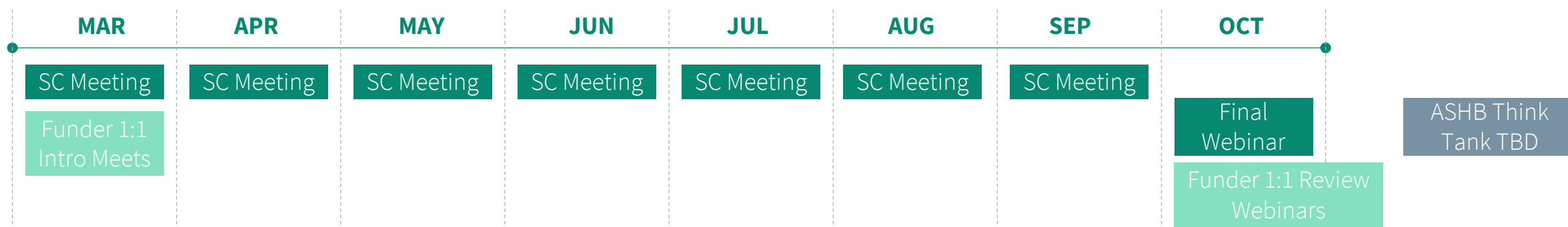
- Introduction, attendance, review of agenda, (5min)
- Review and discuss annual survey (Q1 only, 30min)
- Review current Configured Research Project progress (30min)
- Review poll results and proposed scope for upcoming configured research report (20min)
- Wrap-up, actions & Next steps (5min)

Draft starting point for Steering Committee Meeting agenda and timeline to be refined via steering committee meetings



- **6-7 Steering Committee** meetings, with minutes and recordings
- **1:1 meetings with funders** to understand needs and priorities
- **Final webinar** to review research findings
- **Organization webinars** for each funder to review research findings
- **Think Tank** for ASHB community

Interaction Timeline

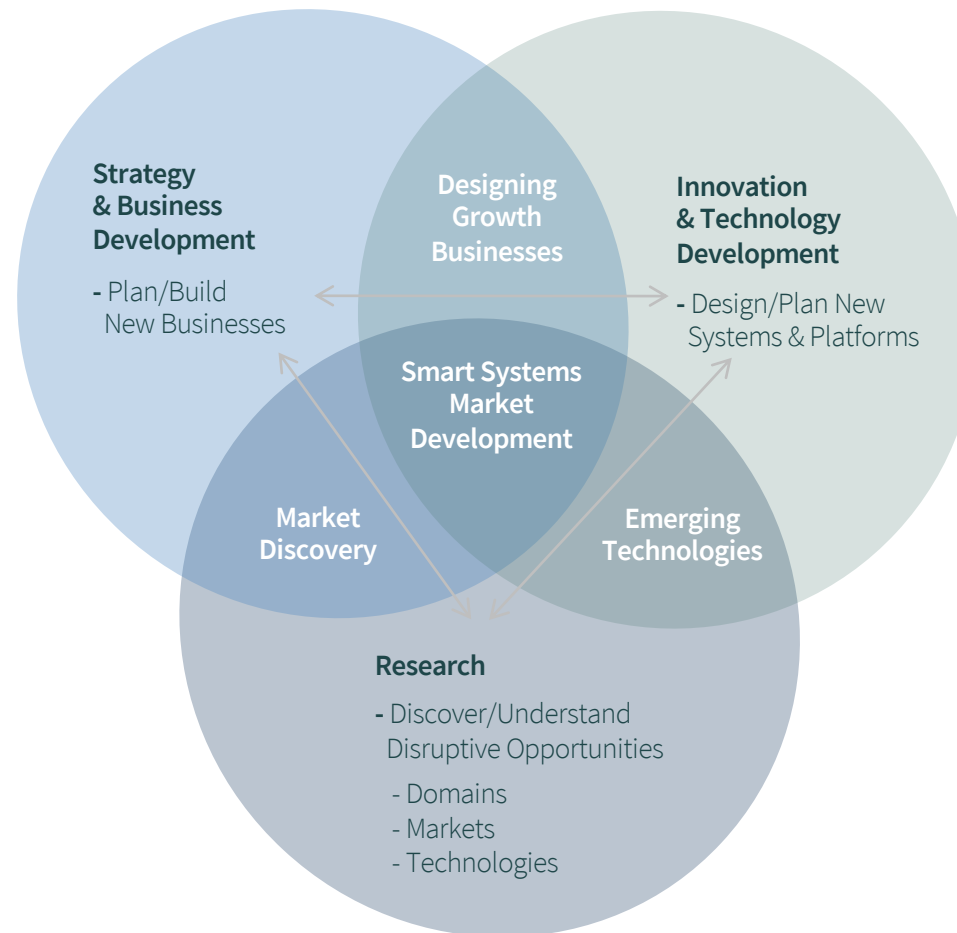


2024 Connected Homes Research Arrangements & Budget

TEAM & EXPERIENCE: Harry Pascarella, Vice President, and Dan Chmil, Research Director, would directly manage these projects. They would be assisted by one of Harbor’s research staff. The entire staff has significant experience analyzing intelligent buildings and connected home opportunities.

TIMELINE: Based on the scope described, the engagement would take the form of an extended, ~8-month contract through October 2024. We will work with the funders through steering committee meetings to set and adjust priorities throughout the year.

NEXT STEPS: Once this statement of work is agreed to by both parties, we will require 2 weeks to organize our project team ahead of a project kickoff and related work activities. The arrangements for this proposal are valid for 60 days, after which we reserve the right to adjust the arrangements or terms based on the availability of resources and other potential conflicts. We look forward to the opportunity to work together.



Who Are We?

Harbor Research is a consulting, research & venture development firm – we bring together a unique combination of knowledge, processes & skills that enable our clients to succeed in a connected economy

What Do We Do?

The firm partners with clients to design, validate and develop new smart systems and services businesses. Our primary focus is on helping clients develop strategy, define new business models, assist with business and market development plans as well as address the organizational challenges driven by new disruptive growth opportunities

What Do We Serve?

Harbor services the community of emerging technology ventures, diversified product and services companies, global IT and network infrastructure players and capital market constituents

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1. Introduction to Harbor Research
2. Proposed Scope of Work, Process, & Budget
- 3. Appendix: Examples of Previous Research Experience**

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Harbor Research Serves Technology Innovators, OEMs & Services Providers

Illustrative Technology Supplier Clients

Computing & Connectivity	
Network Infrastructure & Services	
Software, Apps, Platforms & Infrastructure	



































Ecosystem Participants: Private Equity & Associations

Illustrative OEMs, Service Providers & Vertical-specific Software Clients

<h3>Energy & Resources</h3>	<h3>Industrial & Manufacturing</h3>	<h3>Buildings & Facilities</h3>	<h3>Transportation & Logistics</h3>	<h3>Retail, Healthcare & Consumer</h3>	<h3>Diversified</h3>
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Reference Assignments for the Leaders in HVAC, Buildings, Energy & Facilities

Over the last decade, Harbor has executed assignments for a broad cross section of players in the energy, HVAC and facilities arena — below is a representative range of clients we have worked closely with in recent years

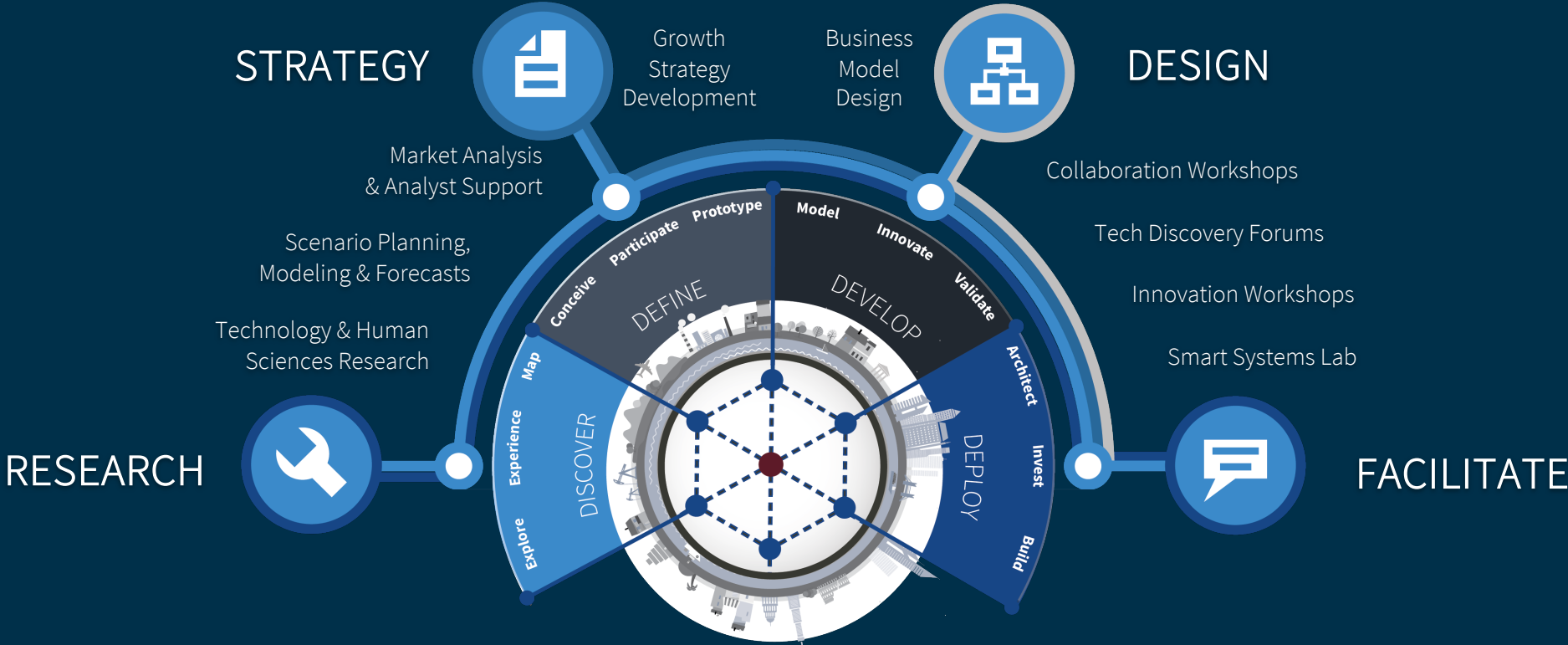
Energy Services	HVAC Manufacturers	Building Controls	Power Equipment	Software & New Tech.
       	   	   	      	          

Additional Connected Homes & Related Experience

- For a multinational provider of cleaning and hygiene products in the hospitality, healthcare, food and beverage, food service, retail, and facility management sectors, we provided a comprehensive analysis of the 'Internet of Clean' sector including key market dynamics, current competitor and peer supplier strategies and maneuvers, as well as competitor solution features & packaging, use cases and services delivery models
- For the largest social media and networking company in the US, we conducted a demographic research study on a consumer-device prototype to understand the use cases, applications and target constituents in support of a Market Requirements Document.
- For the largest manufacturer of electrical products in North America, we conducted user survey research as well as competitor, peer and alliance candidate direct interviews to uncover unmet customer and user needs for new and evolving "connected" energy management and services opportunities.
- For the global leader in network infrastructure equipment, Harbor conducted an analysis of managed services opportunities in connected residential multi-dwelling and commercial properties, including market sizing, competitor analysis, alliance development analysis and go-to-market design.
- For the world's largest semiconductor and processor manufacturer, Harbor conducted an analysis of IoT opportunities within the residential sector. Primary emphasis was placed on opportunities where media and content were dominant values to determine core computing and network bandwidth requirements.
- For a venture-backed startup, conducted an analysis of consumer energy services offerings to help target candidate developer alliances as well as partnership opportunities with utilities and related services providers.
- Worked with CABA to develop an opportunity assessment within Connected MDUs, conducting a survey of 1,500 MDU owners, technology suppliers and service providers in the space, including 60 in-depth interviews to validate research findings. The engagement summarized the top IoT application and use case opportunities among primary buyers of technologies in the space, supported by a 5-year smart systems forecast model.
- For a large silicon player, Harbor defined and developed a software architecture for competitive analysis of IoT platforms. This research examined twenty-five supplier and OEM platform providers in the IT, Telco and OEM markets to validate and segment monetization and pricing models.
- For a leading connected lighting solution provider, Harbor defined new and expanded smart services and IoT solutions as well as building the business case required to support this critical growth initiative. Harbor clearly articulated alternative strategies and solutions available to the company and defined clear steps and a program of actions to fully prosecute the market opportunity.
- For the software branch of a leading industrial and energy OEM, Harbor analyzed of the costs and economics of asset performance management in support of asset health, productivity, optimization, and compliance and integrity. Harbor developed a market model that broke down the costs of data management and analytics tools, and located gaps the company's software may not address currently and can be added to the product roadmap.
- For the largest manufacturer of electrical products in North America, Harbor conducted user survey research as well as competitor, peer and alliance candidate direct interviews to uncover unmet customer and user needs for new and evolving "connected" energy management and services opportunities.
- For the global leader in network infrastructure equipment, Harbor conducted an analysis of managed services opportunities in connected residential multi-dwelling and commercial properties, including market sizing, competitor analysis, alliance development analysis and go-to-market design.
- For a venture-backed startup, conducted an analysis of consumer energy services offerings to help target candidate developer alliances as well as partnership opportunities with utilities and related services providers

CONTACT US FOR IN-DEPTH RESEARCH & CONSULTING

info@harborresearch.com | +1 303.786.9000 | HarborResearch.com



Harbor Research has over thirty years of experience working with clients on growth strategy and new business creation. At the core of Harbor's approach is a deep understanding of the core technologies, markets and business characteristics as well as the management and organizational challenges companies face adopting and developing digital and smart systems technologies. We strive to generate deep insight into how emergent technologies drive value creation and competitive advantage in our clients' businesses and the economy as a whole.