

CABA Research Program AI and Predictive Maintenance in Intelligent Buildings

Intelligent Buildings Council (IBC) Landmark Research 2021

PROSPECTUS

1. BACKGROUND

The Continental Automated Buildings Association (CABA) is an industry association dedicated to the advancement of connected home and intelligent building technologies. CABA is an international association, with over 380 major private and public technology organizations committed to research and development within the intelligent building and connected home sectors. Association members are involved in the design, manufacture, installation and retailing of products for home and building automation. CABA is a leader in initiating and developing cross-industry collaborative research, under the CABA Research Program.

CABA has two (2) Councils, the Connected Home Council (CHC) focusing on residential homes and the Intelligent Buildings Council (IBC) focusing on commercial buildings. Each Council produces one (1) collaborative “Landmark Research” project per year, which is fully funded by CABA members. These projects are approximately US\$130,000 in scope. Each Landmark Research project is directed by a Steering Committee made up of the project funders. The Steering Committee provides feedback and input throughout the course of the research to help define the scope, direction, and methodology. CABA and the project Steering Committee commission a research firm vendor to conduct the research, while CABA provides project management and leadership.

The intelligent building market is a fast-evolving industry segment that is being influenced by several emerging industry trends and pressing “hot button” issues. CABA members were surveyed to get input on potential topics for the next IBC Landmark Research project for 2021, the top three (3) topics from this survey were reviewed by the CABA Board of Directors. “AI and Predictive Maintenance in Intelligent Buildings” was selected as the IBC Landmark Research topic for 2021.

2. PURPOSE OF THE RESEARCH

The purpose of this research is to examine various aspects of predictive maintenance and artificial intelligence in the intelligent building industry. The

research will also develop recommendations for stakeholders on how they can best position themselves in this evolving intelligent building landscape.

3. RESEARCH VENDOR QUALIFICATIONS

Overarching criteria will be determined by the Steering Committee, Council Executive Committee and CABA, via competitive bid criteria and process. At a minimum, the research firm vendor will have a history of working and conducting research relating to intelligent buildings.

4. STRATEGIC VALUE OF THE STUDY

The outcomes of this collaborative research project should provide the Steering Committee members a clearer understanding of the connected home landscape and the opportunities and solutions available to drive revenues. This study will assist organizations to make sound business decisions using reliable third-party qualitative and quantitative data.

5. PROJECT SCOPE

This research will utilize both industry expert interviews and consumer surveys to examine all the major aspects of predictive maintenance and artificial intelligence in intelligent buildings. Some of the topics that will be covered include implementation, return on investment (ROI), continuous fault detection, integration, real-time monitoring, cybersecurity and privacy, data management, use cases, a business case analysis for predictive maintenance and artificial intelligence, and specific opportunities and recommendations for all key industry players.

This new research will address the many challenges and opportunities that exist around artificial intelligence. It will utilize both qualitative (in-depth interviews) and quantitative (consumer or industry questionnaires) methods to provide actionable data relevant to the state of the market, key industry players business opportunities, technical barriers and opportunities, future market direction, issues, use cases, and industry recommendations.

Topics that are expected to be covered in this research include:

- ROI of predictive maintenance
- Reducing safety concerns of emergency repairs
- Use case analysis
- Warranty claim cost reduction with predictive maintenance
- What are the pain points from a maintenance perspective?
- The role of sensors
- The technological advances in predictive maintenance and continuous fault detection
- Predictive maintenance implementation strategies
- Market analysis and forecast

- Data management and analytics
- Cybersecurity and privacy

Disclaimer: The above list of topics is meant to serve as a general outline for this research project. The final research may not address all the topics outlined above, and additional topics may be added. The scope of the final research will be narrowed down or expanded further in the RFP submission process, and later by the Steering Committee. The research scope and prospectus are designed to be only a general outline, this allows for more freedom and creativity in the RFP submissions.

6. STUDY APPROACH and RESEARCH METHODOLOGY

This Landmark Research will leverage several different methodologies to maximize the value of and validate the deliverables.

Review and Analyze Existing Applicable Industry Research:

The research will leverage relevant industry research and thought leaders to create a base from which the Steering Committee and research firm vendor can begin to develop concept hypotheses for testing.

Methodologies to be considered for opportunity identification and vetting:

Qualitative Research (in-depth interviews) and Quantitative Research (consumer or industry questionnaires) will be used.

7. PROJECT DELIVERABLES

In achieving project deliverables for the Research Project, the vendor will provide the following specific items to CABA, the Steering Committee and other project funders:

- 7.1 “Introductory Webinar” (1 hour) prior to the first Steering Committee meeting to inform potential funders of the research. This webinar will be recorded and the contact information of all that registered will be provided to CABA.
- 7.2 “Kick-off Webinar” (1 hour) to the Steering Committee to outline the research purpose, scope, objectives, approach, and timelines. This webinar will be hosted and recorded by the vendor. Contact information of webinar attendees will be recorded by vendor and shared with CABA. The Final Project Deliverables are to be completed in an eighteen (18) week period, from the date of the Kick-off Webinar.
- 7.3 Regular Steering Committee (1 hour) meetings, when deemed necessary (approximately every 3 - 4 weeks), with CABA, the Project Manager and the Steering Committee to develop the project, provide reporting of progress, review findings, update milestones, and to address project needs and secure appropriate approvals of the study funders. The vendor will provide the Project

- Manager with meeting agendas, meeting minutes, meeting attendance and presentation materials, where/when applicable. The vendor will organize the logistics of the meetings for the Steering Committee and CABA.
- 7.4 The vendor will respond to requests by individual Steering Committee members for additional information via conference or webinar calls. Any new CABA contacts that join Steering Committee meetings or any of the webinars will be provided to CABA (name, email, etc.).
 - 7.5 Delivery of six (6) documents, provided by the vendor. The vendor must paginate all final documents in the format and style provided by CABA.
 - (1) Full report (Microsoft Word format)
 - (2) Executive summary (Microsoft Word format)
 - (3) Full report presentation (Microsoft PowerPoint format)
 - (4) Executive summary presentation (Microsoft PowerPoint format)
 - (5) Raw Data (Microsoft Excel format)
 - (6) Four (4) or more infographics of key data from the research
 - 7.6 “Final Webinar” (2 hours), provided by the vendor, will be presented to all the funders (unlimited attendance) after the final documents have been delivered. This webinar will be hosted and recorded by the vendor. Contact information of webinar attendees will be recorded by vendor and shared with CABA. Vendor must use the PowerPoint template provided by CABA.
 - 7.7 “Organization Webinars” (1 hour) for each organization on the Steering Committee, with unlimited attendance per organization. These webinars will be presented after the final documents have been delivered to the funders. Steering Committee members have one (1) month to arrange for these presentations with the vendor. These webinars will be hosted and recorded by the vendor. Contact information of webinar attendees will be recorded by vendor and shared with CABA.
 - 7.8 “Industry Webinar” (1 hour) will be provided just prior to the embargo period ending. The embargo period ends four (4) months after the Final Webinar. This webinar will be recorded and all contact info (name, email, etc.) of those registered will be shared with CABA.
 - 7.9 “Think Thank Webinar” (1 - 2 hour) will be provided to the Steering Committee contacts. This Think Tank will not be reviewing the findings of the research but rather be discussing what the findings mean to the industry and what actions CABA and the industry should be taking. Each of the Steering Committee Organizations below can have up to three (3) individuals attend this meeting.
 - 7.10 An optional event presentation(s) (locations to be determined) on the Research Project will take place following the embargo period. This presentation(s) will take place at one or more industry events, an invite will be provided by CABA. All costs associated with the presentation(s) shall be the responsibility of the vendor. This deliverable is optional for the vendor.

8. PROPOSED TIMELINE

Timeline details will be finalized during the initial planning session by a selected research firm vendor, CABA and the Steering Committee. This timeline is tentatively based on the scope of the project as defined in this document. Depending on the breadth of agreed specification, estimated project duration is 18-22 weeks, from prospectus development to final report delivery. Steering Committee members will be asked to provide valued input to project development. The selected research firm vendor, in conjunction with CABA, will prepare detailed timelines, project milestones, responsibilities, and action/delivery dates as agreed by the Steering Committee. Bi-weekly webinars with the Steering Committee will serve to keep funders abreast of progress, developments, and key findings. The following outline may be adjusted, pending confirmation of tasks and timing:

IBC Landmark Research 2021: AI and Predictive Maintenance in Intelligent Buildings DRAFT/ESTIMATED	
Activity	Anticipated Date
Research set-up and kick-off meeting	TBD
Secondary research	TBD
Primary research	TBD
Analysis and reviews	TBD
Draft report delivery	TBD
Final report delivery	TBD
Final Webinar (2 hours). A group webinar for all the funding organizations.	TBD
Organizational Webinars (1 hour each). One webinar for each organization on the Steering Committee.	TBD
Think Tank Webinar (1 - 2 hour). A group webinar for all the Steering Committee funders. Occurs after the organizational webinars.	TBD
Industry Webinar (1 hour). To all CABA contacts to present the high-level executive summary findings only. This occurs after the four (4) month embargo period.	TBD
Industry Workshop	TBD

9. PARTICIPATION OPPORTUNITIES

Titanium Funder (\$1K):

- Name and logo will be placed on the front page of the research report, slide deck, banners, media releases, and marketing material.
- Following the four (4) month embargo period the full research can be purchased at a \$1K discount.
- Executive summary report (not the full research).

Bronze Funder (\$5K):

- All benefits of the Titanium Funder.
- Full research report, executive summary, presentations, and raw data.
- Opportunity to participate in the final webinar with all the funders which will highlight the findings of the research in detail.
- Ability to ask the questions to the research analysts.

Silver Funder (\$10K) – Most Common Level:

- All benefits of the Bronze Funder.
- Will be on the Steering Committee and allowed to: define the research scope and methodology, provide feedback and input regarding the direction of the study, and participate in Steering Committee webinars.
- Will have a special one (1) hour webinar specifically for your organization. Anyone from your organization can attend and receive a detailed overview of the research findings that relate to your organization.
- Invitation for one (1) representative to the special “Think Tank” webinar.

Gold Funder (\$15K):

- All benefits of the Silver Funder.
- Will receive a case study within the research to highlight the work your organization has been doing in the area. Case studies are typically supplied by the funder, but in some instances research firms have developed case studies on the funder’s behalf.
- The case study will be included with the executive summary, which will be distributed to all CABA member contacts.

Note: All funds are in US dollars.

10. PREVIOUS CABA RESEARCH

CABA has undertaken several Landmark and Multi-Client Boutique research projects. To better understand the intelligent building research that CABA has completed, please review the following executive summaries in the CABA Members Library, <http://www.caba.org/member-research-library>:

CABA Intelligent Buildings and COVID-19 (2021)

CABA Intelligent Building Energy Management Systems (2020)

CABA Monetization of Intelligent Buildings (2018)

CABA Intelligent Buildings Design Implementation (2018)

CABA Intelligent Buildings and the Impact of IoT (2017)

CABA Improving Organizational Productivity with Building Automation Systems (2017)

CABA Connected Multi-Dwelling Units and the Internet of Things (2017)

CABA Intelligent Buildings and Cybersecurity (2016)

CABA Zero Net Energy Building Controls (2015)

CABA Intelligent Buildings Market Sizing North America (2015)

CABA Intelligent Buildings and Big Data (2015)

If you do not have access to the CABA Members Library, please contact CABA to receive your passcodes.

11. CONTACT INFORMATION:

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