Smart *, EdgeX Challenge 2022

POSTPONED - please note this event has been postponed indefinitely.

Social media and LF communications will be used to announce the reschedule of this event.

Event Information

EdgeX Foundry welcomes teams and individuals to compete in our **Smart * ("Smart Star")** IoT/edge virtual hackathon event **starting in January 2022**. In this event, teams will compete to create innovative, real world, *smart* applications using EdgeX Foundry. Participants will use their talents and creativity combined with the EdgeX framework, and the rules of the event to develop a solution in any one of the contest specified *smart* use case areas.

This event will be **held "virtually" over five weeks.** Participating teams will be judged on several criteria by an assembly of IoT/edge experts as well as by EdgeX Foundry member companies.

Use Case/Scope

Teams can submit solutions in one of the following categories of smart applications:

- smart building - the use of EdgeX in a solution that improves the safety, security, or efficiency of a building or provides building inhabitants more comfort, quality of life or productivity enhancements.
- smart agriculture - the use of EdgeX in a solution that increases the quantity or quality of crop and animal products, reduce labor costs or improves safety of ag workers or the food supply they deliver.
- smart energy - the use of EdgeX in a solution that improves energy (electric, gas, etc.) efficiency, optimizes energy storage or transportation, reduces environmental impact from energy use, improves energy sustainability, or helps ensure or protect energy grid safety.
- smart manufacturing - the use of EdgeX in a solution that improves manufacturing/factory output, optimizes supply chain flow in the manufacturing process, reduces loss, prevents maintenance or other manufacturing system outages, reduces energy use, or improves worker safety

Contest entries will be, in part, judged on how well the solution exemplifies the ideals of a *smart* system in one of these categories.

In general, *smart* systems "incorporate functions of sensing, actuation, and control in order to describe and analyze a situation, and make decisions based on the available data in a predictive or adaptive manner, thereby performing smart actions. In most cases the "smartness" of the system can be attributed to autonomous operation based on closed loop control, energy efficiency, and networking capabilities." Wikipedia

Schedule

Dates	Phase	Description
Jan 21, 2022	Entry deadline (5pm EST)	All participants/teams must be registered (Register here).
Jan 24-28	Training (optional)	Participants will be allowed to attend 5x2 hour training sessions on EdgeX Foundry presented by the EdgeX community developers. The sessions will be held virtually (via Zoom) and will run 2 hours each day of the training week (times to be determined). Training sessions will include: - Getting and Running EdgeX - EdgeX Core Services and APIs - Device Services and SDKs - Application Services and App Functions SDK - Miscellaneous Topics and Open Q&A This phase of the contest is optional for participants. The training is provided to assist those less familiar with EdgeX. Those that do not need or wish to attend the training may choose not to attend. The training sessions will be recorded and made available to all participants when completed.
Feb 7-11	Design Review (optional)	Participants are allowed to schedule a 2 hour time to present their Smart * project solution to a panel of EdgeX experts and contest judges for any initial reaction, recommendations, and potential guidance. This phase of the contest is optional for all participants. Teams must coordinate a block of time with the challenge organizers. The presentation and review will be made via Zoom.
Feb 25	Entry Solution deadline (5pm EST)	All teams must make their solutions available via file share or GitHub location and provide the link to the contest coordinator before the specified contest end time. No additional uploads or updates to content can be made to the solution after the contest deadline without contest coordinator approval. Teams are allowed to use and make available their own file share or GitHub location or request a repository from EdgeX Foundry (which will be made available in https://github.com/edgexfoundry-holding).
Feb 28-Mar 3	Judging /Evaluation	Teams will present their solution to the judges. Each team will get an equal amount of time with judges and for presentation (specific time will depend on number of teams). Judges also meet and evaluate the projects during this week.
Mar 4	Award Ceremony	Contest concludes with an online Zoom ceremony and award presentation (prizes will be mailed to award winners in the days following the ceremony).

Rules

Participation

- This event is open to everyone.
- There is no cost to compete in the challenge.
- Participants may enter as individuals or as a team. There are no restrictions on the size of a team.
- There are no restrictions on the number of teams or individuals participating from any one organization or company.
- Judges are not allowed to compete in the challenge nor assist any team outside of the challenge review meetings.
- While an understanding of IoT/edge computing and EdgeX Foundry is very beneficial, participants do not have to have prior experience or expertise in these technologies. Participants without knowledge or experience in EdgeX are encouraged to learn about the platform and take the training offered at the start of the contest.
- This challenge is meant to highlight the benefits of using and acceleration of solution creation with EdgeX Foundry. While participating teams may incorporate additional IoT and edge tools, platforms and technology into their solution, the EdgeX community expects the EdgeX platform to be highlighted and reserves the right to disqualify any participating team solution that does not feature EdgeX.
- Participants acknowledge and agree that the solutions produced as part of this challenge will be made public and used to highlight EdgeX Foundry's capabilities and benefits. All materials submitted will be made available for public display and use.
- Participants are allowed to integrate their own or 3rd party software or hardware in their solution so long as they have the legal authority to use these elements and recognize that the use of these elements will be public knowledge.
- Winning participants/teams will be featured in EdgeX marketing and social media material. Participants acknowledge and agree to being mentioned and seen in the resulting EdgeX marketing and media material.
- Participants in the contest acknowledge and agree to abide by the LF Edge code of conduct during the contest. Any participant not abiding by code of conduct will immediately disqualify themselves and their associated team from the contest.
- Teams may conduct research, training, and even do design prior to the event. All coding efforts should be accomplished during the contest period.

Submissions

In order to be judged and considered for the contest prizes, participant solutions must submit the following:

- A video demonstrating how the solution works and describes its use of EdgeX Foundry (Jakarta release*) as part of the solution. Videos should be no longer than 10 minutes long.
- A presentation slide deck or document describing:
    - The **smart** use case(s) and how the solution helps fulfill the requirements of the use case(s)
    - The solution architecture including the hardware and software that make up the solution (diagrams of the architecture are highly recommended)
    - Details of EdgeX's role in the solution (which services are used, what customization and extensions were needed, what devices are connected, what local analytics are performed, what data is exported, etc.)
    - What work remains to productize the solution in order to deploy and use the solution in a real world setting

* The EdgeX community encourages use of the latest release of EdgeX Foundry (the Jakarta release) as it is our most up to date and bug free release (also our first long term support release). If a team wishes to use an older version of EdgeX, they are encouraged to consult the community about their design and the rationale for using the older version.

Optionally, the team may also provide amplifying artifacts to assist others in understanding the solution or following a similar pattern to create another solution for the use case. "Artifacts" may include but is not limited to:

- Code and other components to the working solution (must be contributed under open source license - Apache 2)
- Testimony from end users (or potential end users) of the solution on its merits and use
- Sample data used by or produced from the solution (to include any performance statistics)
- Any additional items that will assist the judges in understanding the solution or perceiving it as satisfying a real world use case requirement

Note: in the event that there deemed insufficient entries to the contest by the EdgeX TSC, teams will be notified as soon as possible and funding from sponsors returned to the organization with no awards given to entries.

Intellectual Property

All video demonstrations, slide decks or other materials presented during the EdgeX Smart * Challenge will be used by the project and the Linux Foundation to market and advertise the project. Do not divulge any company or product secrets or intellectual property in your submission. All material submitted in the challenge will be contributed under Apache 2 license to the project. The EdgeX project and the LF retain rights to use any material provided to the project and the video of the presentations or award ceremony.

All participants agree to and abide by the Linux Foundation Anti Trust Policy as a matter of participation in the EdgeX Smart * Challenge.

Contest

Judging Criteria

Contest submissions will be judged on the following criteria:

Category	Score	Comments
Solution uses the EdgeX Foundry platform	Yes/No	No disqualifies the solution from competition

Incorporation of EdgeX Best demonstration of the strengths and capabilities of EdgeX through many of the following - Demonstration of edge analytics (making decisions at the edge) - Ability to export data to multiple back end cloud or enterprise systems - Utilization of EdgeX's platform independence - Ability to filter data at the edge - Demonstration of multi-device and/or device protocol connectivity - Ability to integrate/incorporate other 3rd party components /solutions - Maximizing the flexibility in EdgeX architecture - Utilization of EdgeX low-code deployment/configuration	35	How well and to what degree does the contest solution incorporate EdgeX and highlight its capabilities?
Solution is a smart * application	Yes/No	No disqualifies the solution from competition
Relevance Best demonstration on how to solve a real world, **smart** * use case that most: - Clearly articulates a **smart** * need - Highlights use case need that is real, imminent and pressing (vs contrived or a solution looking for a problem) - Straightforwardly specifies a technical EdgeX-incorporating solution to satisfy the use case - Presents a solution that does (or could) scale to meet the size of the problem and potential real world deployment - Presents a solution that would be cost effective given the use case - Presents a solution that fits within the resource constraints of the use case environment	25	Does the solution offer a real example of how to solve a meaningful use case in the smart * arena?
Does the solution incorporate restricted IP?	Yes/No	If the solution contains restricted IP, this may disqualify the solution if it cannot be discussed or shown publically
Productization Closest to a viable, fully capable and deployable solution to satisfy the suggested real world use case via: - Fewest needs for additional work in order to field in a production setting - Incorporation of actual hardware (sensors/devices), cloud services, etc. - Integration of actual 3rd party systems (analytics, visualization, GUI, etc). - Consideration for deployment, orchestration, monitoring, configuration changes, updates, etc. - Demonstration of actual use in production like environments - Demonstration of scalability of the solution - Clean documentation	20	How easy is it (or would it be) to productize the contest solution?

Innovation	10	Is the solution novel, unique and thought provoking? Does the solution bring a unique perspective to how EdgeX may be used and even serve as information for the community to consider new or enhanced EdgeX features? How is the solution making the solution "smart"? Can you dream big? Making one smart light pole on the street is the basics. Making multiple smart light poles communicate with each other to gain additional insights is the dream.
Most innovative approach to satisfying an intended smart * use case through: • Unique use of EdgeX components or use of EdgeX components in an unforeseen way • Simplest solution, yet most thorough satisfaction of the use case requirement • Incorporation of new device /sensors to solve a use case • Incorporation of new/unique analytics to make the solution smart • Dream big - creating a solution that goes beyond simply collecting edge data		
Ease of Use	10	How easy would it be for users to accept and use the solution? Would it be a solution understood-by-the-man on the street?
Solution that is the easiest to setup, use, maintain as evaluated through: • No code/low code changes required of the solution elements to include EdgeX • Easiest and/or fastest to configure • Quickest to deploy/orchestrate • Fewest solution parts • Well and cleanly documented • Easy to understand solution • Simplest or easy to operate user interface(s)		
TOTAL Score	**100**	**Possible points per solution**

Evaluation

A panel of three IoT/edge experts and the EdgeX TSC members will judge the contest solutions. Each judge will score the projects using the criteria above - scoring each contest solution between 0-100 points. EdgeX TSC members will also score the projects using the same criteria but the TSC member scores will be averaged to provide a single score which will serve as the fourth judge in the contest. Winners will be determined on the highest total score count from the judges.

Example Scoring

	Team A	Team B	Team C	Team D
Judge 1 scores	65	55	35	45
Judge 2 scores	55	75	25	55
Judge 3 scores	60	65	25	35
TSC member average scores	70	65	20	50
TOTAL	250	260	105	185

In this example, Team B would win the competition, followed by Team A and D for 2nd and 3rd prize.

Awards

1st prize: $5,000 US

2nd prize: $3,000 US

3rd prize: $1,000 US

Goals of the Contest

• Attract new EdgeX contributors and their organization.
• Produce demonstrable EdgeX solutions against real world use cases.
• Highlight new vertical spaces for EdgeX (areas where there haven't been demonstrated solutions by the EdgeX community)

Sponsors

Thank you to our event sponsors: Intel, HP, BSI DDC, & IOTech Systems

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Judges

TBD