



# IT COMPETITION 2020

Trusted and Low-Powered  
IoT Solutions for the  
Construction Industry



# HILTI IT COMPETITION 2020

The annual IT competition is organized to set up a platform for the young talents with the opportunity to tackle some daunting challenges faced by the construction industry. Undergraduate and postgraduate students from all parts of the globe are encouraged to participate to not only display their innovative ideas but also pave a way to kick-start their careers.

## THE COMPETITION

Hilti offers premium products and services for professionals on construction sites around the globe. To stay ahead, we extend our service portfolio and bring digital innovation to the construction sites. We define new approaches for an intelligent customer interaction as well as intelligent service offerings to create sustainable value for our customers. For this purpose, we are constantly elaborating the potential of innovative technologies and enabling the design of services around our products.

In the application of IoT technology in our product ecosystem, we see golden opportunities to enter a new era for customer value creation. The variety of affordances of IoT technologies provides us with unprecedented opportunities to achieve increased process efficiency. For instance, in our current offerings, e.g., ON!Track and Hilti Connect app, we mainly focus on the three affordances: “asset tracking”, “tool identification” and “tool control”.

However, there are several technological challenges involved in the process of building a secure integrated IoT solution.

You are given the opportunity to define new approaches to overcome these challenges and pave way for intelligent and efficient interaction for HILTI customers around the globe.

## THE TOPIC

The Hilti IT Competition 2020 focuses on Trusted and Low-Powered IoT Solutions for the Construction Industry. You may target your solutions in the following topics:

- Security and Data Authenticity in IoT Solutions
- Connectivity between IoT Devices
- Compatibility and Longevity of IoT Solutions
- Information Privacy in IoT Solutions

### Topic 1: Security and Data Authenticity in IoT Solutions

For secure IoT, all connected devices and services must have trusted identities. Authenticating and protecting the identities of all connected devices is extremely important to ensure safe transfer of data. Poorly secured IoT devices and services can serve as potential entry points for cyber-attack and expose user data to theft by leaving data streams inadequately protected

**Your task:** Design and develop effective solutions to ensure the users of IoT and the Internet itself are not exposed to potential harm. The solution must be robust with regards to security: Superior to average internet or LAN connections possessing data authenticity to prevent IoT hack attacks.

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## Topic 2: Connectivity between IoT Devices

Connecting many devices is one of the biggest challenges of the future of IoT, and it will defy the very structure of current communication models and the underlying technologies. At present, we rely on the centralized, server/client paradigm to authenticate, authorize and connect different nodes in a network.

**Your task:** Design and develop disruptive solutions or concepts (distributed systems, edge computing, peer-to-peer communication models) that include innovative technologies ensuring efficient connection among various IoT devices, enabling constant user experience regardless of the location and internet availability.

## Topic 3: Compatibility and Longevity of IoT Solutions

The lack of standardized protocols and diversities in firmware and operating systems among IoT devices results in compatibility issues. Some of these technologies will eventually become obsolete in the next few years.

**Your task:** Design and develop innovative solutions or concepts that shall address the fact that IoT appliances will remain in service for longer and ensure that they function even if their manufacturer goes out of service.

## Topic 4: Information Privacy in IoT Solutions

Privacy risk arises as the objects within the IoT collect and aggregate fragments of data that relate to their service. Users are typically unaware of how much data is actually collected and how the data is used or shared with others.

**Your task:** Design and develop concepts or solutions to address the users' privacy concerns as well as legal and regulatory challenges on a global scale.

## THE CONTEXT

Please also consider one or more of the following scenarios that are often noticed in the construction industry when designing ideas for your IoT solutions or concepts:

- Usage of tools without continuous power supply
- Limited computing power and memory on edge devices
- Multiple users of the same device
- Limited mobile connectivity on the construction site
- Variety of personas from construction site to back office with varying educational background that requires an attractive, hassle-free IoT solution offering across all levels

## SOLUTION DELIVERABLES

These are included but not limited to:

- Prototypical implementation to evaluate an IoT solution in its application context
- Novel business models and business value creation enabled by people, data, and things
- Key technology affordances and capabilities that influence use patterns and shape individual, organizational, market, and societal behaviors
- Whitepaper of concepts, languages, and architectures

## CONDITION

- You need to make the necessary assumptions
- You may use any open-source communication protocol (E.g. HTTP, MQTT etc.), mobile application or cloud-based solution

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- You are not restricted to any kinds of hardware, programming language, database or platforms. You may choose any tools that are suitable for your solution

- You are required to define the scope of your topic (the idea, the front end, the back end, any special algorithm etc.) and the output of your idea

- You are encouraged to demonstrate your solutions with case studies

- Your solution can be in the form of a framework and/or supplemented with slides

For more information on Hilti processes, products and services, kindly visit Hilti Online (<https://www.hilti.group>)

## / SAVE THE DATES

**Registration Period:** 9th September 2019 – 29th November 2019

**Submission Period:** 18th November 2019 – 20th December 2019

**Semi-Final:** 20th January 2020– 14th February 2020

**Finale:** 30th March 2020 – 2nd April 2020

## / OBJECTIVES

The objective of this competition is to provide students the platform and opportunity to showcase what you can do. By joining this competition, you may build your skills, experience and career.

### Build your skills

You will be able to build your skills within the area of IoT. Besides this, you will also have an opportunity to build your presentation and communication skills by showcasing your project to industry experts. You will receive constructive feedback from these experts on how to better improve yourself and take your work further.

### Build your experience

Compete against like-minded individuals from all over the world. You will have the chance to meet leading technologists, subject matter experts and build network with those present in this event. This is an opportunity to put yourself, your educators and your university on the world map.

### Build your career

All finalists will receive a fast-track application to a paid internship with Hilti. The internship will provide finalists with the chance to develop their ideas and bring it to life at Hilti. This will also allow us the opportunity to identify talented individuals such as yourselves to be a potential hire at Hilti.

## / REGISTRATIONS

Participants may register between 9th September 2019 – 29th November 2019. This can be done through online registration found in the following link: [hilti.work/itcomp1]. Early registrations are important as it expresses your interest in participating in this competition. Take note to keep yourselves well informed about competition updates. Participants are to ensure that the registration form is complete with all relevant information, failure to do so will result in your registration being rejected.

### ELIGIBILITY:

Participants must be undergoing one of the following educations:

- Bachelor's Degree
- Master's
- PhD

Team Size: 1-5 person(s)

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## / TO GET YOU STARTED

It is highly recommended that participants consider the following areas to create value of technological affordances IoT solutions:

- **Business Model:** Participants must identify the stakeholders, required resources, key activities and channel of distribution for their solution
- **Customer Perspective:** Participants should identify their target users. Clearly define whom the product service system is developed for and what value propositions will be offered to that specific user group.

## / TERMS AND CONDITIONS

- Detailed technical knowledge of the construction industry is not a pre-requisite to participate in this competition.
- Plagiarism is strictly prohibited.
- Project entry must be the original work of the participants.
- Entries must be made in accordance with the competition instructions.
- Entries received after the specified closing date will not be accepted.
- Participants must take up the responsibility to inform the Hilti IT Competition 2020 committee of any changes to their contact details. Failure to do so may result in the participant not receiving any updates regarding the competition.
- Participants are to agree that their entries can appear on public display. The organizers of the Hilti IT Competition 2020 may use the entry on any form of media such as the internet, radio, television and in print to promote the competition.

By participating in the Hilti IT Competition 2020, participants are deemed to agree to be bound to the above terms.

## / SUBMISSION

Submissions will close on 20th December 2019. Participants should submit their:

- Prototype (if applicable)
- Presentation Document: This document should explain the purpose of your idea and how to supports Hilti and our customers. Use an illustrative and attractive way to present typical application situations, a proposal for the design and the benefits your idea will bring to Hilti.
- Short Video: The short film should not exceed 5minutes. It should be interesting and include sufficient details to explain your ideas. You may use visual aids to demonstrate your work.

## / JUDGING CRITERIA

Upon the deadline for submissions (20th December 2019), all competition submissions will be reviewed by Hilti's internal subject matter expert judges. The judges will score them based on the following criteria: innovation, originality, design, mutual benefit, quality, technical feasibility, sustainability and overall presentation.

### Innovation and originality

Judges look for innovation and inventiveness. Build an idea that finds a new way to address a problem, a fresh application to provide value or a novel way for a secure and low energy consumption IoT solution for the construction industry. Your submission may be an innovative technology, or an existing technology which is used in a new way. How you market the product may also be innovative.

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## Design and mutual benefit

Core to High Quality Engagement is the design and idea of mutual benefit. We would expect there to be benefits to all those involved – increasing Hilti employee productivity and enhancing customer service and experience.

## Quality and sustainability

Judges are interested to know about if and how you measure product quality and the plan for a sustainable solution. This includes the usability of the product and the success criteria of the project.

## Presentation

Make it clear what you are doing and why. Ensure that your message is clearly communicated to the audience and the judges.

## SEMI-FINAL

The semi-final of this competition will be held from the 20th January 2020 until 14th February 2020. The semi-finalists will be notified through email. Semi-final session will be through video conferencing where the exact slot for each group will also be communicated through emails. Details on selection schedule and video conferencing details will be shared directly with the semi-finalists.

## FINAL COMPETITION AND WORKSHOP

The finale will be held from 30th March 2020 - to 2nd April 2020 at Hilti Asia IT Services Sdn. Bhd. The selected finalists will be invited to an on-site workshop followed by their final presentations at:

### Hilti Asia IT Services Sdn. Bhd.

Level 5,  
Brunsfield Oasis Tower 3,  
No. 2, Jalan PJU 1A/7A Oasis Square,  
Oasis Damansara,  
47301 Petaling Jaya,  
Selangor,  
Malaysia.

The workshop is an avenue for finalists to further develop their ideas and learn more about Hilti business whilst networking with a group of highly motivated and creative individuals. The judges for the finale will consist of an international panel of experts. The judges' decisions are final. No appeals will be entertained.

Winners will be announced during the awards ceremony which will be held at the end of the competition. A full list of prize winners will be published on the Hilti IT Competition 2020 website and other means of publications selected by the organizers.

Do take note that finalists' airfare, travel and accommodation for the workshop, presentation and awards ceremony will be sponsored by the organizer. Participation at this event is mandatory for prize eligibility.

## PRIZES

### Sponsored Trip

All members of the winning team will travel to one of our strategic locations: Kuala Lumpur, Malaysia, Plano / Tulsa, USA or Buchs, Switzerland.

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## A Piece of Hilti

All members of the two Runners up teams will walk away with a Hilti power toolbox.

## All finalists: Internship

All finalists will have access to a fast-track application process to a paid internship at Hilti. The internship provides finalists with the opportunity to develop their ideas and bring it to life at Hilti.

Register your team at our competition website:

Website link: [hilti.work/itcomp1](https://hilti.work/itcomp1)

Or scan the QR code:



For more information, please email us at:

Email: [Hilti-IT-Competition@hilti.com](mailto:Hilti-IT-Competition@hilti.com)