



The Monthly Newsletter of the InnovateFPGA Design Contest

We invite you to develop solutions that will have a real-world impact based on Intel's Edge-centric FPGAs.

Enter the Design Contest today!

Team projects will focus on the sustainability theme and deliver benefits to environmental issues such as water conservation, optimizing energy usage, limiting waste, and making intelligent use of the planet's resources.

If this seems interesting to you, and maybe you've got a great idea, go to www.lnnovateFPGA.com now to enter the competition.





AHEAD OF WHAT'S POSSIBLE™





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Need Help Choosing a Contest Project?

Check out Community Projects That Need Your ideas!

Combining our sustaininability efforts, we are excited to start working with the GEF Small Grants Programme (SGP) at the United Nations Development Program (UNDP) (https://sgp.undp.org/). This collaboration has defined projects from around the world that would benefit from a solution based on this years InnovateFPGA design contest platform.

Your technical innovation could be selected by the SGP team and deployed to address a need in one of the following three areas:

- Sustainable Agriculture
- Marine Conservation
- Biodiversity

Now teams have a choice; define your own sustainability project, or pick an SGP project. To find out more, read the <u>SGP Project Descriptions</u>

A thorough understanding of the contest platform will help teams decide on the type of project/solution to work on. At the heart of the FPGA Cloud Connectivity Kit is the DE10-nano board that features an Edge-Centric Intel® Cyclone® V SoC FPGA. Additional functionality can be added by using the RFS board or additional daughtercards supplied by Analog Devices Inc.

Five Years Out







Read the article and watch the video (page 2) to see an example of how the ADI <u>CN0549</u> daughtercards combined with the DE10-nano FPGA-based board are used to create a Condition-based Monitoring solution.

As a reminder, each qualified team chosen will receive, at no-cost, an FPGA Cloud Connectivity Development Kit, and up to three ADI daughtercards, and Microsoft design tools to help them demonstrate their creativity and ingenuity. Additional hardware and/or software can be used to develop the project but the additional costs will have to be picked up by the individual team.

- Register your team & submit your project ideas by Oct. 1, 2021. Selected teams will then be sent the free FPGA development kit, and can request up to three ADI daughtercards, & a credit for Microsoft tools.
- Cash & prizes will be awarded to the regional and grand final contest winners.
- Teams that successfully target SGP projects may be selected for deployment.
- Qualifying teams will have their travel, meals, & lodging expenses paid to attend the Grand Final event (June 23, 2022) held in San Jose, CA. California.

SGP

Digital technology could play a key role in scaling up local solutions led by civil society and local communities to address the climate crisis and biodiversity loss in developing countries. This collaboration between the **GEF Small Grants** Programme (SGP), Intel and Microsoft is an excellent opportunity to design and apply innovative and scalable digital solutions to real world problems, and help local communities to improve and expand their initiatives, ranging from climate smart agriculture to wildlife management.

Yoko Watanabe, Global
 Manager, GEF Small Grants
 Programme

Watch this ADI video to see how a large variety of ADI daughtercards can be plugged into the FPGA Cloud Connectivity Kit.

https://www.youtube.co m/watch?v=ft-SWOKmxNs



Extended Equipment Life & Efficiency via ADI's Condition-based Monitoring Solution

Understanding when an asset is operating outside its optimal performance parameters can be done by monitoring parameters such as vibration. Vibration can help predict changes in the operating efficiency, and could signal the need for required maintenance or shutdown to avoid potentially expensive equipment failure. By tracking the vibration analysis data over time, you can predict quantitactively when a fault or failure is likely to occur, along with the source of the fault. Knowing the condition of a certain asset will help not only increase efficiency and productivity but extend the asset's lifetime through pre-emptive replacement and remove the need for "truck rolls" where a technician manually inspects the health of assets.

ADI's Condition-based Monitoring (CbM) platforms are helping to accelerate more productive, sustainable, smart manufacturing, that can extend equipment life, therefore minimizing impact on resources needed to build, and dispose or recycle those expensive assets.

The ADI CbM reference design utilizes the ADI CN0540 (24-Bit Data Acquisition System for IEPE Sensor) and CN0532 (IEPE Compatible Wideband MEMS

Vibration Sensor) and the DE10-Nano board (based on an Edge-Centric Intel® Cyclone® V SoC FPGA). This solution provides wide bandwidth vibration sensor data with robust, high-fidelity data acquisition which can connect to Microsoft Azure services to enable real-time processing and machine learning algorithm development for predictive maintenance services.

The flexibility of this platform allows engineers to accelerate their condition-based monitoring developments and get their products to market faster. The result is a versatile, robust, and reliable solution which companies can leverage to extend equipment life and increase productivity, manufacturing throughput and reduce unplanned asset downtime. In addition, by extending asset lifetimes we reduce the consumption of raw material and energy to build replacement assets, delivering higher levels of environmentally sustainable smart manufacturing.

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ADI's Condition-based Monitoring Solution (continued from page 2)

Building a more sustainable future is a core value at ADI and we're committed to providing more resources than ever to accomplish this goal — from water conservation and energy efficiency to limiting greenhouse gas emissions and waste generation and prevention. As a worldwide technology leader, we have a duty to support future generations of the best and the brightest engineering minds

to tackle the challenges of environmental sustainability.

The InnovateFPGA design contest is a great way to demonstrate ADI commitment to sustainability, offering engineering teams the chance to work with some of the world's most innovative organizations.



Terasic is dedicated in providing engineers of the future the opportunities to share their visions and innovations and demonstrate their FPGA development skills on an international stage.

Continued from the success we had with previous InnovateAsia design contests, where we see many innovative inventions, there should be no doubt that we will see more brilliant works from 2021 InnovateFPGA Design Contest.

- Sean Peng, CEO of Terasic.



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Professional Support

Contest organizer Terasic will answer questions and provide technical support for contestants / developers. Stay tuned for more 'how to' details in upcoming newsletters. Go to URL to submit questions:

https://www.innovatefpga.com/portal/support.html



Key Dates

Contest Launch: July 1, 2021

The Design Contest launches on July 1. Register as a developer. Each entry will receive a confirmation email and a unique team ID upon registration.

Proposal Submission: Aug. 1 - Sept. 30, 2021

Registered developers can start to submit project proposal during this period. Final proposals need to be received by September 30.

Proposal Selection: October 15, 2021

The InnovateFPGA Judging Committee and community will select regional teams based on the submitted design proposals. These teams will be notified and each receive an Intel FPGA Cloud Connectivity Kit, and will be eligible to receive up to three ADI daughter cards to begin developing the proposed project, turning them into real designs. Shipment of the hardware is expected to start on October 16.

Develop Designs Oct. 16, 2021 - Feb. 7, 2022

Selected teams will develop the projects using provided resources and upload completed design paper and project video before the deadline.

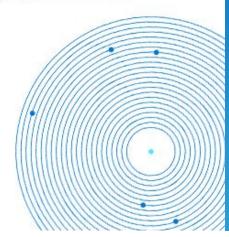
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Connect, monitor, and control billions of IoT assets with Azure IoT





"ADI and Intel
share a vision
for how world
changing
technology can
enrich the lives of
every person on the
planet. There is enormous
potential for our technologies
to improve the way people live
and to reduce our impact on
the planet, and we're proud to
support the engineers of the
future as they pursue this
work in InnovateFPGA"

Anelise Sacks Senior VP, Chief Customer Officer Analog Devices







Data Sensor

Battery Management

