

IEEE REGION 10 • HUMANITARIAN TECHNOLOGY **ACTIVITIES (HTA)**

IEEE Makers DIY Project Competition

Official Competition Guidelines & Framework

➤ **Introduction**

The IEEE Region 10 Humanitarian Technology Activities (HTA) committee is dedicated to promoting technology-driven solutions that address pressing, real-world societal challenges. By fostering sustainable technical ecosystems, IEEE HTA empowers engineers, innovators, and practitioners to address local communal needs aligned with the United Nations Sustainable Development Goals (UN SDGs).

The IEEE Makers DIY Project Competition is structured as an action-oriented platform designed to challenge students, Young Professionals (YPs), and grassroots innovators to design, prototype, and implement low-cost, community-driven technical solutions. This competition focuses heavily on the "Do-It Yourself" (DIY) ethos, promoting open-source software, accessible hardware, practical prototyping, and scalable deployment methodologies.

➤ **Primary Core Objectives**

- **Encourage Practical, Impact-Oriented Innovation:** Shift academic and theoretical knowledge into realworld engineering solutions that provide direct, measurable utility to underserved populations.
 - **Promote Humanitarian Technology Awareness:** Cultivate a grassroots understanding of how accessible hardware and smart engineering can serve vulnerable populations.
 - **Support Interdisciplinary Collaboration:** Encourage teams to integrate multi-disciplinary skills— spanning electrical engineering, computer science, biotechnology, mechanical design, and social sciences —to address multidimensional problems.
 - **Identify Scalable and Sustainable Community Solutions:** Provide the necessary structural framework and industry mentorship required to turn raw prototypes into viable products.
- Strengthen IEEE HTA Volunteer Engagement:** Activate local IEEE student branches, standard sections, and SIGHT (Special Interest Group on Humanitarian Technology) groups to serve as localized deployment networks.

➤ **Target Audience & Eligibility Criteria**

The competition welcomes an inclusive cohort of technologists eager to make a social impact. To ensure fair evaluation and structured mentorship, applicants must satisfy the following criteria:

- IEEE Student Members of Region 10: Active undergraduate and postgraduate students enrolled in recognized institutional branches within Region 10.
- Young Professionals (YP) of Region 10: IEEE Graduate or Professional members within 15 years of their first professional degree completion.
- SIGHT Groups & Volunteers of Region 10: Active members or affinity groups working under the IEEE SIGHT umbrella.
- Interdisciplinary Teams: Formulating cross-disciplinary teams is highly encouraged to guarantee robust problem comprehension. Recommended team size is 2 to 5 members per project.

➤ Proposed Technical Theme Areas

All project submissions must align explicitly with at least one of the six high-priority humanitarian focus domains listed below:

Theme Area	Scope & Illustrative Technical Interventions
1. Disaster Preparedness & Resilience	Early warning systems, mesh-networked emergency communication, low-cost seismic/flood monitoring sensors, autonomous mapping/rescue aid devices.
2. Affordable Healthcare Devices	Wearable physiological sensors, low-power diagnostic kits, point-of-care screening devices, assistive technologies for rehabilitation, non-invasive health parameter tracking.
3. Clean Energy & Sustainability	Smart micro-grids, solar/wind harvesting for rural communities, low-cost power management circuits, energy storage efficiency mechanisms.
4. Water, Sanitation & Hygiene (WASH)	Real-time water quality analysis, automated filtration monitoring, smart sanitary infrastructure trackers, greywater treatment control pipelines.
5. Assistive Technologies	Sensory substitution gear, localized smart mobility aids, voice-controlled assistive applications, prosthetic control micro-systems.
6. Smart Agriculture Solutions	Sensory substitution gear, localized smart mobility aids, voice-controlled assistive applications, prosthetic control micro-systems.

➤ Competition Structure & Operational Phases

The competition format has been streamlined to directly facilitate rapid prototyping and real-time development. It operates via two key structural milestones:

- **Track A: Prototype (Hardware Track):** Focuses on teams with a working physical model needing live demonstration, real-world feasibility evaluation, and initial testing parameters.
- **Track B: Design Proposal (Concept Track):** Focuses on innovative humanitarian ideas without physical models built yet, emphasizing technical schematics, diagrams, and structural feasibility blueprints.

***Strategic Target Outputs:** The overarching goal is to attract 25 to 50 initial project submissions and ongoing builds, establishing a highly competitive development funnel that down-selects to 8 to 10 highly operational working systems, from which 2 to 3 fully scalable solutions will be elevated for institutionalized global IEEE HTA pilot deployment.*

➤ Evaluation & Judging Matrix

- Submissions are evaluated through a robust framework that balances engineering ingenuity with localized community utility:
- **Humanitarian Impact & Relevance (25%):** Clear alignment with local community pain points and UN SDGs; measurable improvements over existing standard practices.
- **Technical Innovation & DIY Feasibility (25%):** Creative, low-cost engineering strategies, proper opensource/accessible hardware implementation, and resource-efficient software coding.
- **Scalability & Sustainability Plan (20%):** Viability of localized replication, operational cost limits, adaptability to severe environmental constraints, and strategic alignment with local NGOs or SIGHT bodies.
- **Prototype Maturity & Functionality (20%):** Actual performance of the physical system during testing, component integration stability, and user safety paradigms.
- **Presentation & Documentation Clarity (10%):** Completeness of structural schematic diagrams, code repositories, clear presentation articulation, and logical defense during Q&A sessions.

➤ Indicative Timeline (Month-on-Month Schedule)

The revised timeline integrates system conceptualization and build mechanics to fast-track innovation within an intensive 3-Month timeline:

Month 1	Months 2 - 3	End of Month 3
Announcement & Submission	Phase 1: Concept & Active	Phase 2: Final Showcase &

Launch	Prototype Development	Judging
Portal open for applications. Wide dissemination across IEEE Region 10 Sections.	Simultaneous proposal evaluation, technical mentorship matching, active hardware fabrication, code compilation, and internal unit testing.	Live project jury demonstrations, evaluation, and award distribution.

➤ Live project jury demonstrations evaluation, and award distribution.

IEEE Region 10 HTA provides alternative structural mechanisms to lower barriers for passionate makers without utilizing milestone micro-grant distribution

- Technical & Mentorship Access: Direct advisory lines to IEEE senior technical members, industry engineers, and humanitarian field experts during the active build period.
- Global Recognition: Official certificates of merit, competitive trophies, and cash prize structures for high performing teams.
- Downstream Funding Gateways: High-impact systems are explicitly fast-tracked for subsequent corporate nomination and global standard project funding tracks under IEEE EPICS or global HTA initiatives.

➤ Sustainability & Future Pathways

The competition is fundamentally designed to outlast a typical hackathon timeline. Emerging teams must codevelop long-term sustainability plans:

- NGO Integration: Connecting high-performing teams with active local Non-Governmental Organizations (NGOs) to execute structured, real-world alpha and beta field trials
- Open Source Documentation: Teams are encouraged to publish hardware schematics and code bases on public version-control channels (e.g., GitHub), creating a globally accessible repository of open humanitarian tools
- Scale-up Mentorship: Continued advisory tracks dedicated to transitioning raw DIY builds into microenterprise models or licensed social impact ventures.