





# INVENT FOR THE PLANET

#IFTP

## THE SUN NEVER SETS ON INNOVATION

### Need/Problem Statements for IFTP 2019

#	Thematic Area	Tagline	Need Statements
1	<b>Safety USAID</b>	Fatal Road Accidents	Seventy-four percent of road traffic accidents in the world take place in low-income countries. In Southeast Asia in particular, the number of accidents has been rapidly increasing due in part to the high rate of young, reckless motorcyclists. How can we alert these drivers of the risks and encourage them to drive safely to prevent road accidents?
2	<b>Humanity USAID</b>	Discriminatory Attitudes Toward Migrants Workers	Public support for the rights of migrant workers tends to be inconsistent. Discriminatory attitudes are common, especially toward migrant workers who do not have proper documentation. Many feel that these migrants have broken the law and cannot expect to have the right to work in another country. Some say that even documented migrants should not expect the same working conditions as citizens performing the same job. These attitudes matter as they translate into actions and behaviors that negatively impact certain individuals and groups in society. Policymakers and politicians may be drawn to introduce policies in accordance with actual or perceived public preferences. How might public attitude be changed to better recognize the social and economic contributions of migrants to society?
3	<b>Medical USAID</b>	Malaria Treatment Compliance	The treatment of Plasmodium vivax (the most common form of malaria in Southeast Asia) requires a 14-day regimen of primaquine, a potentially toxic drug for those with a genetic deficiency. The 14-day course of treatment is often not adhered to, resulting in malaria relapse. Using simple technology and tools, how can we improve treatment compliance and monitor for adverse events?
4	<b>Education USAID</b>	Data for Education	Organizations serving low-income students across the world collect data to help educators and policy makers develop informed decisions on the future impact of their work and programs. There is wide variation, however, in how this data is used and there are important questions of privacy associated with it. How can we use data to gain insights into critical education issues? Design a tool that will help determine which schools do the best job of teaching low-income students in order to justify expansion into other areas. Be sure to address the issue of data privacy in your pitch.
5	<b>Humanity USAID</b>	Improving Quality of Life	In his 2018 end-of-year review, Bill Gates highlighted that for most of our history, humanity has focused on living longer by fighting disease and trying to grow enough food for everyone. As a result, life spans have gone up dramatically. There are still problems to solve, such as malaria or obesity, but in 2019 and beyond, the focus of technology may shift toward improving the quality of life. Using simple tools or technologies, how can we detect and address quality of life issues? Examples could include guiding toward sleeping and eating better, and helping you use your time more efficiently. There are many ways to approach the quality of life -- be creative!

6	<b>Education</b> <b>NAE Grand Challenge</b> 	<b>Advance Personalized Learning</b>	<p>A growing appreciation of individual preferences and aptitudes has led toward more “personalized learning,” in which instruction is tailored to a student’s individual needs. Given the diversity of individual preferences and the complexity of each human brain, developing teaching methods that optimize learning will require engineering solutions of the future. How can technology identify learning styles, design individualized education and deliver it effectively to enable access for all?</p>
7	<b>Humanity</b> <b>NAE Grand Challenge</b> 	<b>Enhance Virtual Reality</b>	<p>Within many specialized fields, from psychiatry to education, virtual reality is becoming a powerful new tool for training practitioners and treating patients, in addition to its growing use in various forms of entertainment. How can virtual reality change the way we learn and interact with each other? Further, the availability of smart phones globally can alter who has access to this technology How does the smart phone access to this virtual reality exchange impact the lives, or how could virtual reality adoption in our learning and interaction environments change lives?</p>
8	<b>Medical</b> <b>NAE Grand Challenge</b> 	<b>Advance Health Informatics</b>	<p>As computers have become broadly available, a systematic approach to health informatics (the acquisition, management and use of information in health) could greatly enhance the quality and efficiency of medical care and the response to widespread public health emergencies. What can be designed to provide the correct information, in the correct format, to the correct person, at the time that is needed?</p>
9	<b>Humanity</b> <b>NAE Grand Challenge</b> 	<b>Provide Access to Clean Water</b>	<p>The world’s water supplies are facing new threats and affordable, advanced technologies could make a difference for millions of people around the world. How can we design a system to provide clean water that is accessible to a large portion of the world’s population? A solution could include making water safe to drink, alternative delivery methods, or new methods of generating/collecting clean water.</p>
10	<b>Humanity</b> <b>Global Grand Challenges Summit</b>	<b>Prevent Loneliness</b>	<p>A large portion of the population spends at least a portion of their lives feeling isolated and lonely. This can happen during a child’s adolescent period and extend into their adult life. Can we design a system, better than current social media that connects people and reduces loneliness?</p>

11	<b>Humanity</b> <b>Global Grand Challenges Summit</b>	Fake News	<p>Just because something is reported on the internet does not make it true. However, many people take information that is distorted or untrue as fact. How can we design a way to stop or eliminate fake news?</p>
12	<b>Medical</b>	Smart Elderly Care	<p>Most of the world's economies, especially in Asia, are aging; as a result, they need new ways to provide agility, productivity and meaning to elders. There is an opportunity for new business models to emerge for smart healthcare, smart assisted living and smart recreation for elders. The question is how to turn the problem into an economic engine, benefiting both individual elders and national economies. What types of products or services could be designed to aid the elderly to live more independently and connected? For reference, see the information in Link1 and Link2.</p>
13	<b>Medical Texas A&amp;M</b>	Equipping Rural Medical Workers	<p>Access to medical services, especially in rural areas, is difficult. It becomes even more challenging if you require a specialist physician. Most qualified clinicians are focused in urban areas and are often not able to cover large areas of rural populations due to distance and cost. For this reason community health workers (CHWs) are becoming increasingly important in rural settings for providing primary healthcare. CHWs speak the same language, share the same ethnicity and are of the same socio-economic status as the patients they serve, allowing them to obtain more accurate or pertinent information. The problem is that CHWs are sometimes not fully trained, are often ill-equipped for appropriate diagnostics, treatment of patients and, they do not have a reliable communication method with physicians. What low-cost tools and/or training can be provided to CHWs to enable them to be more efficient in health delivery and to better utilize the strong clinical expertise in urban centers?</p>
14	<b>Digital Technology and Environment</b>  <b>AIRBUS</b>	Global Internet of Things	<p>We are promised a world where everything is connected everywhere: a network where all human-made things will talk to each other, bringing our society closer to a living organism.</p> <p>However, for now, "things" are mostly connected in homes, factories, urban environments. As soon as you venture into the wild (in the nature, in rural environments, in the sky, at sea...), network connectivity lacks, and "things" come back to their loneliness.</p> <p>Airbus is developing a new electronic chip, that can be embedded in any product, and that would be compatible with terrestrial networks (cellular etc), as well as space networks (via satellite). So our "things" can be connected anywhere, anytime. Find a promising application for this chip.</p>
15	<b>Humanity</b> <b>AIRBUS</b>	Connecting the World	<p>Air traffic doubles every 15 years and more people in more locations need to be globally connected. There are many elements that make up the air travel infrastructure, some of which include: airport terminal, security, ticketing, gate &amp; cabin guidance, baggage monitoring, airport parking, etc.</p> <p>Another consideration is the infrastructure required for new airport locations and the potential impacts to the environment.</p> <p>How would you create an airport of the future to make the travel experience more attractive for passengers and better for the environment?</p>

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**Safety and Environment**  
**AIRBUS**

**Aircraft Structure**

Aircraft all over the world are exposed to severe weather and one of the more damaging is hail impacts on wings. The movable wing parts (slats, flaps, etc.), engine cowls and panels are particularly fragile. Numerous aircraft have been struck by hail and at times have required a significant amount of rework which affects aircraft operations, incurs significant cost, and decreases operational efficiency. With an average of one damaging hailstorm per year, it becomes urgent to find an innovative solution to protect these aircraft, especially since the rate of hailstorms are increasing due to global warming.

Currently, one solution used to protect the wings takes as much as 3hrs, requires too many resources, and has safety risks as it involves humans exposed to the wind & rain. The challenge will be to develop an easier, and quicker means to protect the aircraft wings during a hailstorm. There should be NO permanent obstacle required, and there should be NO impact on activities and movement around the aircraft.

