# Africa Storytelling Challenge—Notable Submissions: In Daniel Nyabadza's Words

*Committed to championing scientific innovations and advancements, Nyabadza is affecting change in his community and throughout Africa—and this year's judges of the Africa Storytelling Challenge lauded these impressive efforts. Recognized as a runner-up in this year's contest, Nyabadza shares his essay submission below.*

We are currently working on a handheld device for visually impaired people across Africa that are to curb exclusivity and discount of individuals with blindness on the accord of unawareness of their environment. The device utilizes voice navigation and artificial intelligence/ image recognition to individuals living with a disability even at grassroots across Africa.

The device is meant to empower individuals with regards to mobility and independence, enabling them also an extra sense of safety and awareness of their personal and shared space. The device was inspired by the need for inclusivity as a true issue on university campuses, and as such as an inventor I think the issues of no one should be left behind according to a United Nations SDG for agenda 2030 is a true issue that technology make close gaps to enable that goal to be realized and advance humanity as a collective.

Inspiration is drawn from Africans such as the late Rolex Laureate Brother Muhammad Bah Abba an African inventor solving grassroots problems using scientific insight and creative inspiration to address real-life challenges, a fellow at the Next Einstein forum Arthur Zhang who is in the telemedicine space.

I believe it is important to tell Africa stories because it allows people to dream, believe in their own power to change their own destiny through action and be empowered to want to seek knowledge beyond the mundane and challenge the status quo of humanity as a whole. This moves humanity towards creativity, scientific discovery and strategic approaches to improved quality of life of individuals and the collective. As such the smart cane for people living with the disability is inspired by the need for inclusivity and oneness.

The Pathfinder Smartcane is a handheld smart assistive device for people living with the visual disability that leverages real-time internet of things communications protocols and cloud infrastructure for delivering advanced and up to date artificial intelligence data streams when needed by the user and at critical times without warrant using machine learning to enhance security in private and shared spaces.

The Smartcane, unlike the primitive cane technology, is not an off the shelf technology but an evolutionary assistive device that profiles its user improves its value offering by leveraging underlying machine learning algorithms to deliver insight that can be utilized by the user subjective to their individual patterns. With a database and data sets that are updated daily around the world in real-time the device will improve lifestyle and participation of the user in individual or group activity.

The biggest challenge facing people living with a visual disability is navigating their private or shared environment safely and conveniently. The Smartcane will address this challenge by enabling people living with disability greater navigational freedom with the emphasis on safety. Essentially the way the Smartcane works is the user, similar to powering they their cell phone, would slide a clearly market braille switch and wear an earpiece that comes with the device. Upon completion of the process in a 15-second window, the device will be using the internet of things protocols in the background automatically connect to the cane. The earpiece serves as a speech services communication interface between the user and the device for full-interaction, also the earpiece is a bone conduction earpiece to eliminate the interruption between the user and the natural environment during usage also emphasizing the safety of the user.

A prompt on connection for the user to choose a mode will be given and the user can select one of three options, either a navigational mode to move from point to point using the device's built-in capabilities, secondly guidance mode where the device can be prompted by the user to provide contextual awareness of their environment by pinpointing elements, objects of interest/concern to the user for example if the user wants to know whether they are alone in a room the device would count and retain insightful information on request and lastly the plug and play on-demand and on request services.

There are a variety of assistive technologies in the market for the visually impaired these include a device from the University of KwaZulu Natal (UKZN) a cane that utilizes ultrasonic systems for haptic feedback to the user with distinct vibrational patterns to indicate certain objects without identifying or classifying them which is a limitations of this particular device that makes the Pathfinder smart cane's ability to recognize objects, their state and inform the user a more superior device. Another technology in the market has a steep price point and also as a competitive point has no evolutionary capabilities of the smart cane such as; the evolutionary basis of its machine learning algorithms is a key differentiator.

*The content and views presented here are those of the individual Challenge participant.*

**About the Africa Storytelling Challenge**

The inaugural Champions of Science—Africa Storytelling Challenge took place between May and August 2018. Open to all scientists doing innovative work in Africa, the contest drew more than 100 submissions. An independent selection committee of scientists, policymakers and science journalists reviewed the applications and selected the winners. Each winner will be awarded $5,000 and will have the opportunity

to share their stories at the 2019 American Association for the Advancement of Science (AAAS) annual meeting in Washington, D.C.