ASIAN INNOVATION AWARDS

Necessity Meets Creativity

Award Finalists Include Some Who Made Old Things New Again

By Jeremy Wagstaff

FORGET, FOR A moment, the idea that an innovation has to be something new, either in terms of the problem it solves or when it was invented.

Just ask **Mohammad Saidullah**, an Indian honey seller in his 60s, who has been peddling his amphibious bicycle around the flood-prone plains of Bihar—and once or twice across the Ganges—for the past 30 years.

It's not much to look at—a sky-blue tangle of spokes, paddles and wooden floats—but it has finally gotten some recognition. Discovered by an Indian organization called the Honey Bee network, which collects data on such initiatives via a web of students, nongovernment groups and volunteers, his contraption earned Mr. Saidullah a life-time achievement award in January from India's National Innovation Foundation. And now he's one of 12 finalists for this year's Asian Innovation Awards, presented by The Asian Wall Street Journal in association with Global Entrepolis@Singapore. The awards honor people and companies who improve quality of life or business productivity.

Frustrated by three weeks of flooding in 1975 that swamped his village, Mr. Saidullah was determined to make his bicycle float. He attached fan blades to its rear wheel, and fashioned some floats out of wood that he attached to the spokes and saddle. After a few failures, the bike stayed afloat and that is how Mr. Saidullah has been using it since, putting on demonstrations for visiting dignitaries and researchers in a local pond, his distinctive white hair and beard blowing in the breeze, a generation or two of children looking on.

Mr. Saidullah remains ready for commercial production, believing the bicycle—named after his wife Noor—has potential beyond merely overcoming floods and traversing the local pond: as an alternative to crossing rivers on overcrowded boats, for monitoring plankton, towing barges, relief work or as a paddle cycle for fun parks.

Mr. Saidullah's story illustrates the vital confluence of necessity, doggedness and a creativity that makes innovation possible. But it also highlights the reality that without adequate funding and sponsorship many innovations remain obscure and used only by their inventors and a few lucky neighbors.

Indeed, for Anil K. Gupta, a professor in entrepreneurship at Ahmedabad's Indian Institute of Management and one of the judges for the Asian Innovation Awards, such cobbled-together creations reflect the true spirit of inventiveness that match a need with a solution. "Grassroots innovations seem to carry a message of sagacity, fortitude and ultimately the spirit of overcoming constraints ingeniously without any outsiders' help," he says.

Mr. Saidullah isn't alone. The Honey Bee project has discovered more than 50,000 innovations in the Indian backwoods, some of which have also made it to the AIA's final 12. And, like the amphibious bicycle, the inventions seem to be tackling problems that aren't, by any stretch of the imagination, new.

Consider the pulley, for example. As old as the Greek mathematician Archimedes, who is reputed to have used them to shift an entire warship laden with men, pulleys are still used widely, not least to draw water from wells across India. As the water table drops because of erratic rainfall, submersible pumps and borings, this job has become harder—and more dangerous—for the women and children who do it. That's because the greater the height a full bucket has to be lifted, the greater the chance the bucket may slip once it's reached the top, either losing rope and bucket as the rope slides back through the pulley, or burning the hands of anyone who tries to snatch the flailing rope.

This prompted a local nongovernment group, the Society for Research and Initiatives in Sustainable Technologies and Institutions, to gather artisans and inventors to come up with a redesign of the old pulley. Gujarat native **Amrutbhai Agrawat** came up with two, both of which involved a catch that would allow those pulling water from the well to rest once the bucket is at the top. In its most simple incarnation the catch is nothing more than a rubber toggle that slides like a wedge into the rope, preventing it from slipping back into the well should the puller stop pulling.

Then there's **Yusuf Khan**, school-dropout, ex-farmer and one-time secondhand-car dealer in Kuwait, who tired of hearing farmers in his secondhand-tractor shop in Rajasthan grumbling about trying to find labor during groundnut harvesting season, so he set about building a machine to do it. It took him a year, three prototypes and 50,000 rupees ($1,140). His groundnut digger fits on to a tractor and, via an array of crankshafts, flywheel, linkages and rotating vanes, digs, scoops and drops groundnut and soil into a vibrating storage unit. The vibrations shake the soil loose from the nut, which then falls through a sieve in the base of the storage unit leaving just the groundnut—a modification Mr. Khan claims other groundnut diggers don't offer. It can cover a hectare a day, which would require 100 workers working for about 80 rupees a day.

Not all such homemade inventions from the Indian subcontinent address rural problems. Take the seemingly simple walking stick. For those who have trouble walking, it's a crutch. For those who can't see properly, or at all, it's more a sensory device. Which is why **Sanket Chitagopkar** and **Prashanth Harshangi,** two Indian teenagers from Karnataka, came up with an electronic walking stick for the visually impaired after witnessing a blind man fall into a puddle.

The stick is a simple PVC pipe, but has five different sensory circuits attached—three using infrared sensing techniques to gauge the presence of obstacles. These infrared signals bounce off obstacles and trigger a sound in the user's earpiece, on the right or left side of the user depending on where the obstacle is. A noise will sound in both ears if the obstacle is directly ahead. The sensors not only look out for hard obstacles: A moisture sensor looks out for stagnant water or moist earth (a hazard in the monsoon season), while another detects manholes and other pitfalls (an all-year hazard). One last feature: an alarm that sounds should someone try to steal the stick.

Indeed, health is a favorite target for innovation. But there are many illnesses that have a poor prognosis, despite the best efforts of doctors and scientists. Take cancer: Primary liver cancer is one of the most common cancers in Asia, and yet many patients have few options for treatment, and are generally expected to live less than a year. This is because, says **Dr. Pierce K.H. Chow**, a senior consultant at **Singapore General Hospital**, by the time the patient's problem has come to a doctor's attention, the tumors are quite advanced, meaning that as much as 90% of them can't be operated upon.

Current ways of addressing such inoperable tumors include techniques such as radio-frequency ablation. This entails probing the liver with a metal needle and heating the tumor—akin to microwaving the tumor, but "tumor kill" stops at the end of the ablation session. Liver cancer also potentially responds very well to radiation therapy, but in practice this has serious limitations because, says Dr. Chow, "shining radioactive rays on to the tumor affects surrounding healthy tissues as well because the liver is deep-seated—it's limited by the potential collateral damage to surrounding organs."

A solution has been developed by **pSivida** Ltd., a Perth, Australia, company: improving the "killing agent" and improving the way it gets to its target. The agent is a radioactive isotope on a silicon carrier and the delivery mechanism is a syringe and special needle that delivers the agent right into the tumor. Not only does this minimize the danger of damaging healthy tissue, but the biodegradable agent itself continues working for days after the patient has left the hospital, unlike previous methods.

"The patients are comfortable, but the tumor keeps shrinking," says Dr. Chow, who is organizing clinical trials for the pSivida treatment. "Every time the cancer cell tries to duplicate itself, it dies because we've damaged the nucleus." The whole procedure takes only around 20 minutes, under local anesthesia and with imaging guidance. In the clinical trial completed recently, Dr. Chow says, two out of eight patients had complete remission.

Another medical innovation from Singapore: the prosthetic limb. Right now the process of making an artificial limb is little changed from 1959, when the prosthetic socket currently used was introduced. The process is slow, labor-intensive and requires a high degree of training—meaning many amputees have to wait weeks for their limbs, and may find they don't always fit that well.

This led **James Goh**, a professor at the **National University of Singapore**, to try to come up with a better socket using not just a different production method but a different material—replacing lamination with braided carbon fiber.

Medical innovation needn't be about coming up with a new wheel or surgical process. Sometimes change can involve different ways of heading off a problem before it becomes one.

Dr. Paul S.F. Yip, director of the **Hong Kong Jockey Club Centre for Suicide Research and Prevention** at the University of Hong Kong, came up with the idea of a Web site when he and colleagues were interviewing more than 150 families of suicide victims in the territory.

Seeing how little information both those vulnerable to feelings of suicide as well as their families had, Mr. Yip and his fellow researchers saw a Web site as the best way to reach both groups, providing information, and, most importantly, a sense of not being alone. The innovation rests in the beautiful graphics, original music and interactive flow of the Little Prince Is Depressed site (www.depression.edu.hk), which the Centre believes to be the first of its kind in the world. "We thought hard about the most effective way to reach out, and in the end we felt the best way was to build a Web site," Dr. Yip says. Why a Web site? "It's very hard to get young people to read anything these days," he says.

The Internet is a great way to reach a generation that is too busy or too distracted to read. But as a medium it brings its own set of problems. One simple one that threatens all forms of online communication: How do you send sensitive documents to customers so they know it's from you?

Just like the offline world, business relies on trust, and that trust quickly breaks down when customers are no longer sure whether the people they're dealing with are legitimate or not. Malaysian Edwin Tay reckons his company, **NetInfinium** Corp., has the answer: email software that creates a digital certificate the customer can use to check whether what they're receiving is kosher or not.

The DirectSecure software works like this: A user first downloads some simple software that installs some digital keys on her computer. She also selects an image file of her own—a picture of her dog, say—that the bank will use in every subsequent email to her. The key ensures the email is encrypted, which should foil any bad guy who manages to intercept the email. The picture ensures that any fraudulent email that purports to be from the bank will clearly be a fake because it won't have the picture in it.

But Mr. Tay, NetInfinium's CEO, says this isn't just about authenticating communications between banks and customers. It opens a way for banks and other companies to deliver statements, receipts, PINs and other sensitive documents to customers. For customers this could save time having to visit the company Web site to find and download these documents. For the company, of course, the savings on traditional mailing could be huge. "This way," Mr. Tay says, "they can do away with their existing postal paper statements delivery and save tons of dollars."

That's ultimately what most innovation is about. Here's another Malaysian company that believes it can save people a lot of money: **CyberLogic Engineering** Sdn. Bhd. Malaysian electrical engineer **Ong Chin Ooi**, 27, was sitting around with his father, sweating in their single-story house complaining about the heat, until, nine years ago, they decided to do something about it. The result: the Pio8T Natural Airing Technology Ventilator, a device that sits atop a curved, ridged or tiled roof and, without any power source or natural wind, will reduce temperature inside the building of as much as six degrees centigrade.

Such ventilators aren't new. But they depend either on power, to move the air, or the presence of wind to do the same task. As anyone who lives in the tropics knows, the latter is rarely around when you need it, so somehow Mr. Ong had to create his own air movement. He managed to do this by creating within the ventilator a pocket of cool air, so that warm air is drawn toward it—following the principle that hot air moves toward colder air. Once there, following the principle that hot air rises, the hot air flows out through the ventilator vents. This creates a vacuum in the ventilator, and so attracts cooler air through the vent holes (as cooler air enters the building through windows and doors).

Making more efficient use of what already exists—in CyberLogic's case, air—is one key component of innovation. U.S. telecom-gear giant **Motorola** Inc. found itself grappling with a somewhat similar problem in its own field: cellphones. While Asians have led the charge on text messaging, or Short Message Service, character-based cultures like China have lost out.

"In the late 1990s, cellphones were already quite successful in China, but then Chinese people could only use English" for entering names or sending SMS, recalls Beijing-based Lee Simmons, who worked in China at that time for Motorola and is now its North Asia director for product operations. "They had to use English because there was no way on the keypad to replicate" Chinese characters.

Mr. Simmons and his team took up the challenge—which wasn't so much to come up with a way to enter Chinese characters but to do it without requiring lots of processing power, and to make it as intuitive as possible. Their solution: a touch-sensitive membrane laid over the existing keypad that allows users to draw Chinese characters with a finger or thumb.

If inputting data is getting easier, so is viewing data. But you've probably noticed that the colors you see in real life aren't quite the same color when you see them on the screen. In fact, existing technology using fluorescent backlighting can recreate only three-quarters of true color tones, according to **Agilent Technologies** Inc.

An Agilent team in Penang reckons that it has solved this problem by using a special light-emitting diode, or LED—a semiconductor device that emits visible light when an electric current passes through it—to give images more color brilliance when compared with previous liquid-crystal-display TVs. The problem with LEDs, however, is that they degrade at different rates, and their color varies from batch to batch. Agilent reckons it has overcome this problem by developing a controller that monitors the color and brightness of the LEDs and adjusts the light output so the right color shines through.

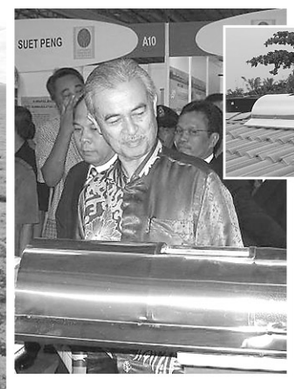
Computers would seem to be far removed from the idea that innovation need not be tackling new problems to itself be new. But while cellphone data input and color-screen fidelity are both modern problems, modern technology can also tackle age-old issues we, perhaps surprisingly, are still grappling with.

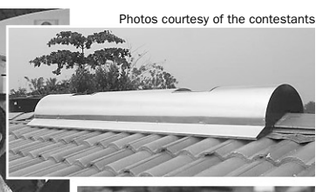
Explorers, for example, have been charting rivers for centuries but measuring their length remains an inexact science. Check any encyclopedia and you'll find varying lengths of the world's greatest rivers: The Amazon is anywhere between 6,275 and 7,025 kilometers, while the Nile is between 5,500 and 6,700 kilometers.

Part of the problem is agreeing on the true source, but part of it also is down to poor maps. Professor **Liu Shaochuang**, at the Institute of Remote Sensing Applications in the Chinese Academy of Sciences, hopes to come up with an exact measurement using a combination of satellite remote-sensing technology—in short, high-resolution satellite imagery—and old-fashioned legwork—trekking to locate the actual source of the eight rivers in question.

Neither is as simple as it sounds, and both require processing available images to gauge the correct channels of each river and to determine their most likely source. Prof. Liu hopes not only to settle the dispute over which is the world's longest river, but also that "human beings' knowledge about the earth will be enriched greatly." Who can ask for more from innovation?

Photos courtesy of the contestants





Clockwise, from left: **Prof. Liu Shaochuang's** *survey of the Yangtze River provided a more accurate length for China's longest river. Malaysia Prime Minister Abdullah Badawi admires* **Ong Chin Ooi's** *natural ventilation system.* **Amrutbhai Agrawat's** *modified pulley with a locking mechanism that prevents rope slippage.*

Asian Innovation Awards Finalists

These 12 finalists were chosen based on the following criteria: creativity or degree of innovation, quality of execution, and potential impact on the quality of life or on productivity

FINALIST	COUNTRY	INNOVATION
Agilent Technologies	Singapore	Color management system for backlighting LCD flat-panel TVs
Amrutbhai Agrawat	India	Modified pulley for wells; locking mechanism stops rope from slipping into wells
Sanket Chitagopkar and **Prashanth Harshangi**	India	Electronic walking stick for blind people
Prof. James Goh, National University of Singapore	Singapore	Prosthetic socket system for people who have lost limbs below the knee
Yusuf Khan	India	Machine that digs for groundnuts and separates them from the soil
Professor Liu Shaochuang, Chinese Academy of Sciences	China	Use of satellite remote sensing to determine length of world's main rivers
Motorola Asia Pacific	Hong Kong	Method for sending SMS messages using finger to draw characters on pad
NetInfinium	Malaysia	Method for paying bills via encrypted email without having to visit a Web site
Ong Chin Ooi, CyberLogic Engineering	Malaysia	Natural airing ventilator that requires no wind and consumes no power
pSivida Ltd. and **Dr. Pierce C.K. Chow,** of Singapore General Hospital	Australia Singapore	Product for treatment of tumors, particularly live cancer tumors
Mohammad Saidullah	India	Amphibious bicycle that has floats which allow it to run on water
Dr. Paul S.F. Yip, Hong Kong Jockey Club Centre for Suicide Research	Hong Kong	"Little Prince Is Depressed" Web site to help children suffering from depression

Contenders Stress Different Ways of Thinking

Entries Vary From Software For Narrowing Preferences To an Imaginative Auto

By Jeremy Wagstaff

You would think that computers make decisions easier. All that information available. All those tools to sift through that information. All those programs to organize the information and to pluck from it the most important points. But that hasn't happened.

Say you are choosing a hotel. Sure, you can arrange a list of hotels according to their star ratings, their newness, their price or their popularity, but can you arrange them using a combination of criteria? And how about your own preferences—room size, whether the rooms have Jacuzzis, how close it is to a Starbucks?

Computers haven't really helped us make these kind of choices, but that is something **Point Wizard** Ltd. of Wellington, New Zealand, hopes to change with a program called Point*Wizard. "The really innovative thing about Point*Wizard is that it gets you to make the simplest of decisions," says **Franz Ombler**, Point Wizard co-director.

Point Wizard is one of six finalists for the Global Entrepolis@ Singapore Award, presented by The Asian Wall Street Journal in association with the Economic Development Board of Singapore. Entries for this award are judged on the basis of innovation, technology and commercial potential.

Point*Wizard uses a mathematical approach called "pairwise trade-offs." Simply put it is a process of ranking your preferences and then whittling down the choices by pitting two choices against each other in a series of run-off contests based on the rankings of your preferences. Mr. Ombler explains: "It generates a points system, which can then be applied to alternatives as they arise: hotels in the city you land in, choosing a new car, patients that apply for fertility treatment."

This idea isn't new, but the fact that Point Wizard has been able to harness it into simple point-and-click software is. "The idea of pairwise trade-offs for this sort of task was considered back in the '70s but was abandoned because it was considered too hard," Mr. Ombler says. "Instead the academics opted for harder questions. On a scale of 1 to 9 tell me how much you prefer Heineken to Guinness? Instead, we ask the simpler and more accurately answered question: Which do you prefer? Heineken or Guinness?" Point Wizard's patented approach is called Potentially All Pairwise RanKings of Alternatives, or Paprika for short.

Of course, the software isn't just about choosing hotels or beer. Mr. Ombler says the software is being used to prioritize patients for treatment by New Zealand's Ministry of Health. "The exciting bit for nonmathematicians, e.g., doctors, is that now there's a decision-analysis tool that asks the simplest of questions [and so the easiest for them to answer, especially in a group], and produces the most accurate prioritization decisions."

Singapore company **System Access** Ltd., another GES finalist, also uses software to simplify things. In its case, that is financial systems. Banks long have been, as the company describes, "a patchwork of in-house-built departmental systems and niche software packages stitched together and layered upon each other." System Access's solution: Symbols, a software overlay that allows customers to cherry pick their products from rival vendors, but weaves them all into a "highly cohesive and seamless experience."

Symbols is a kind of umbrella for all the kinds of software a bank uses, making a complex system more manageable and easier to use. At the other end of the spectrum, a finalist from Malaysia, **ViTrox Technologies** Sdn. Bhd., is like a microscope, improving the way companies check for defects in computer chips. Its product, in the company's words, "has the power of sight. This computer system enables the automated visual inspection of manufactured products for quality and process control."

Not all the GES finalists are for backroom experts. **REVA Electric Car** Co. in India, for example, makes the environmentally friendly electriCity car that now is being sold not only in India but also in such places as the U.K. In Britain, customers receive government support in the form of a subsidy, no road tax, no congestion charge in the capital and free parking.

The car's commercial success caught the eye of fellow Indian Anil K. Gupta, one of the judges, who says the car "has a futuristic tinge, has created global demand and has influenced polices in the direction in which world markets need to be molded in view of an energy crisis looming in the horizon."

This approach of leveraging innovation for the ordinary consumer lies behind another finalist, **Hong Kong Broadband Network** Ltd. Not just another Internet provider, the HKBN uses a technology called Metro Ethernet to pump super fast—100 megabits a second—Internet connections into half a million Hong Kong homes. If your senses have been a little dulled by claims of super fast Internet connections, compare that speed to the average ADSL connection, which allows for six mps. What might you do with all that bandwidth? Think Internet-based television, downloading whole CDs-worth of music in a few seconds or sending large chunks of video to friends across town (or the world).

Finally, if you feel you don't get enough advertising on your television set at home, China's **Focus Media Holding** Ltd., another GES finalist, has the solution: outdoor media. It promises a network of flat-panel television displays in building lobbies, supermarket aisles and other consumer-rich locales, running specially devised DVDs chock full of commercials "to bring audiovisual advertising to various locations to target people where they work, shop, travel and entertain."

Global Entrepolis@Singapore Finalists

These six finalists were chosen based on their ideas' business performance and commercial viability

FINALIST	COUNTRY	INNOVATION
Focus Media Holding	China	Outdoor audiovisual advertising network in China
Hong Kong Broadband Network	Hong Kong	High-speed residential broadband service in Hong Kong
Point Wizard	New Zealand	Software system for diagnosing or ranking medical patients for treatment
REVA Electric Car	India	REVA energy-efficient electriCity car
System Access	Singapore	Financial-services software for managing and delivering banking services
ViTrox Technologies	Malaysia	Method to check for defects in computer chips

Honoring Inventors Who Improve Our Lives

The Asian Innovation Awards showcase some of the region's most resourceful people and companies.

The Asian Wall Street Journal is presenting the awards in association with Global Entrepolis@Singapore, an international networking event that will be held in Singapore from Sept. 26 to Sept. 29. The awards honor individuals or companies that improve quality of life. This year, The Asian Wall Street Journal received 130 entries from 14 countries and territories in the Asian-Pacific region.

Today, we're featuring the 12 finalists for the Asian Innovation Awards and the six finalists for a separate award. The Global Entrepolis@Singapore Award honors an emerging company for an invention that best applies technology to a strong business model and has the potential to become a global market leader. The Asian Wall Street Journal presents the GES Award in association with Singapore's Economic Development Board.

Next Wednesday we'll profile the winners.

The judges for the awards this year are:

■Tony Buss, chief executive officer of MerLion Pharmaceuticals Pte. Ltd., Singapore.

■Steven J. DeKrey, associate dean of the Hong Kong University of Science and Technology Business School.

■Anil K. Gupta, Kasturbhai Lalbhai Chair professor of entrepreneurship at the Indian Institute of Management, Ahmedabad.

■Tan Sri Lim Kok Wing, founder of the Limkokwing University College of Creative Technology and president of its professional arm, the Malaysia Design Innovation Centre.