A two-wheeled revolution

From the crack of dawn, technology stirs us with its reliable alarms, and caresses us with the cooling breeze of our ACs as we drift off to sleep, weaving its wonders into our everyday lives. GT pays homage to this silent saviour that simplifies and enhances our existence with a brand-new series, unwrapping A to Z of iconic tech pieces, one letter at a time. Here's presenting the **S** in this series that changed human life as we know and live it.

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The tech: Segway
The inventor: Dean Kamen

How was it invented?

Dean Kamen invented the Segway by building on the technology he developed for the IBOT, a wheelchair-like device introduced in 1999 that could climb stairs and balance on two wheels using gyroscopic stabilizers. Leveraging this innovation, Kamen developed the Segway.

When did we get to know it first?

The two-wheeler Segway was first set in motion on December 3, 2001, by the popular TV show 'Good Morning America' as a human transporter. The first batch of Segway, however, was delivered in 2002 for purchase, labelled congenially as personal transporters.

Why do we use it?

The range of the Segway p-Series, nicknamed 'Ginger', is 10–16 km on a fully charged Nickel Metal Hydride battery, with a recharge time of 4–6 hours, which makes it an ideal choice for a unique and enjoyable way to travel while reducing the need for traditional vehicles and minimising carbon emissions. These Segways are ideal for short-distance commuting, sightseeing, or navigating crowded areas. Additionally, they do not require a driver's license due to their self-guided, easy manoeuvrability. In fact, in several countries, police departments, tour groups, warehouse workers, mall security guards, and even airport maintenance staff actively use Segways.

How has it helped our lives?

The Segway revolutionises personal transportation, offering a steer-free, eco-friendly alternative to cars for short distances, ideal for congested urban areas. It has been adopted by the Stockholm Police and popularised through city tours, making tourist exploration fun and efficient. With zero greenhouse gas emissions, it promotes cleaner air. Segways enhance mobility for people with disabilities, providing greater independence. However, high costs, limited range, and accident risks, especially on uneven terrain, limit their practicality.

Fun fact: Segway Inc had originally planned to sell as many as 100,000 units in the first 13 months after the launch. However, the company only sold around 140,000 vehicles in total.

SCIENCE BEDTIME STORIES

Beyond the icy walls

The Thermal Magic Of Incredible Igloos That Keeps Us Warm

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Once upon a frosty time in the snowy landscapes of Northern Alaska, was a town called the Snow-fields Village. A place where snowflakes did happy dances in the air. Each year, an event called the 'Architect's Challenge', Snowfield's very own Olympics was organised. The event celebrated the ingenuity and creativity of architects from all over the world, testing their talents to make the best houses. This year, they decided to make the challenge extra tricky by asking the architects to make houses that would laugh in the face of the extreme weather and keep everyone warm and snuggly. The competition was tough, yet many people applied for it.

A new kid on the block named Alex, decided to participate in the competition for the very first time. He was as nervous as a snowman in July yet decided to give it a try. On the day of the championship, Alex began working on his house with traditional materials like wood, cement, bricks, etc., but these materials failed him, and nothing seemed to work. Everything turned stone-cold in the freezing temperatures. He needed something better for insulation. He wracked his brain and scratched his head, thinking, "What material can I use to make even a polar bear cozy?" And then it hit him – ice and snow! Eureka!

So, Alex got busy building a house using the plethora of natural resources at his disposal. First, he tried making a house from frozen lake ice. Brrr… it was so cold; even penguins in the Arctic would need extra blankets! But the structure he constructed was so frigid that it was useless, and the snow proved to be too soft for use. Yet, he didn't give up. He thought, "What if I turn all this snow into super cool bricks?" Genius alert! He then decided to compress snow to create snow bricks, which would create the walls. Once the bricks were ready, another challenge was at hand - choosing the shape of the structure.

He started with the regular four-walled house, which proved useless in trapping the heat inside the house. He then tried a dome-shaped structure. And surprisingly, it worked! He then remembered his teacher telling him that a dome shape provides resistance to wind and good insulation due to less surface area of the spherical section. He began carving out a spiral in the snow. He dug out a big spherical hole and then placed the snow blocks on top of each other, sealing each layer by polishing it. When the whole structure was nearly finished, he left a small hole in the ceiling for ventilation. A house needs to breathe, right? And then he dug out the entrance into the snow so that it was lower than the structure itself, like a secret snow tunnel!

Ta-da! Alex stepped back, looking at his creation with a grin. The house was warm and toasty. He called it igloo. Snowfields now had the quirkiest, coziest snow home. And of course, Alex won the competition.

The science of it

The Inuit construct igloo from compressed snow blocks. Snow is sawed into chunks like building blocks, then stacked blocks around a circular terraced hole in the snowy ground. Snow has around 95% air trapped in tiny crystals, as a result, the air can't circulate very well inside the ice crystals, and heat gets trapped in it. Inhabitants act as natural furnaces, while the igloo's walls shield from biting winds.