

Technology

At 60 now, NASA shoots for revival of moon glory days

US space agency has seen glorious achievements, crushing defeats

TAMPA: Sixty years ago, spurred by competition with the Soviet Union, the United States created NASA, launching a journey that would take Americans to the moon within a decade. Since then, the US space agency has seen glorious achievements and crushing failures in its drive to push the frontiers of space exploration, including a fatal launch pad fire in 1967 that killed three and two deadly shuttle explosions in 1986 and 2003 that took 14 lives.

Now, NASA is struggling to redefine itself in an increasingly crowded field of international space agencies and commercial interests, with its sights set on returning to deep space. These bold goals make for soaring rhetoric, but experts worry the cash just isn't there to meet the timelines of reaching the moon in the next decade and Mars by the 2030s. And NASA's inability to send astronauts to space—a capacity lost in 2011 when the space shuttle program ended, as planned, after 30 years—is a lasting blemish on the agency's stellar image.

While US private industries toil on new crew space-ships, NASA still must pay Russia \$80 million per seat for US astronauts to ride to space on a Soyuz capsule.

How it started

In 1957, the Soviet Union launched the first satellite into space with Sputnik 1, while US attempts were failing miserably. The US government was already working on reaching space, but mainly under the guise of the military.

President Dwight D. Eisenhower appealed to Congress to create a separate, civilian space agency to better focus on space exploration. He signed the National Aeronautics and Space Administration Authorization Act into law on July 29, 1958. NASA opened its doors in October 1958, with about 8,000 employees and a budget of \$100 million.

Space race

The Soviets won another key part of the space race in April 1961 when Yuri Gagarin became the first person to orbit the Earth. A month later, John F. Kennedy unveiled plans to land a man on the moon by decade's end.

"No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish," the US president said. The Apollo program was born. In 1962, astronaut John Glenn

became the first American to orbit the Earth. In 1969, NASA astronaut Neil Armstrong became the first man to walk on the moon. American astronauts of the era were national heroes—military pilots with the combination of brains, guts and grit that became known famously as "The Right Stuff," the title of the classic Tom Wolfe book.

Armstrong's words as he set foot on the lunar surface—"one small step for man, one giant leap for mankind"—were heard by millions around the world. "Apollo was a unilateral demonstration of national power," recalled John Logsdon, professor emeritus at George Washington University's Space Policy Institute. "It was Kennedy deciding to use the space program as an instrument of overt geopolitical competition that turned NASA into an instrument of national policy, with a very significant budget share," he told AFP. A total of five percent of the national budget went to NASA in the Apollo era. Now, NASA gets about \$18 billion a year, less than a half percent of the federal budget, "and it is no longer the same instrument of national policy," Logsdon said.

New era

More glory days followed in the 1980s with the birth of NASA's shuttle program, a bus-sized re-usable spacecraft that ferried astronauts into space, and eventually to the International Space Station, which began operation in 1998. But what is NASA today?

President Donald Trump has championed a return to the moon, calling for a lunar gateway that would allow a continuous stream of spacecraft and people to visit the moon, and serve as a leaping off point for Mars. Trump has also called for the creation of a "Space Force," a sixth branch of the military that would be focused on defending US interests. NASA has long been viewed as a global leader in space innovation, but today the international field is vastly more populated than 60 years ago. "Now you have something like 70 countries that are one way or another involved in space activity," said Logsdon. Rather than competing against international space agencies, "the emphasis has shifted to cooperation" to cut costs and speed innovation, said Teasel Muir-Harmony, curator at the National Air and Space Museum.

How can NASA take advantage of this?

NASA administrator Jim Bridenstine told a recent panel



This 1960 NASA file image shows pilot Neil Armstrong seen next to the X-15 ship after a research flight at the Dryden Flight Research Center in California. — AFP

discussion he is keen to work with other countries that are striving toward space. He mentioned the possibility of boosting cooperation with China, and how he recently traveled to Israel to meet with commercial interests that are at work on a moon lander.

Bridenstine said the reason for his visit was to find out "how are you doing this, what are you doing and is there a way NASA can take advantage of it?"

NASA is backing away from low Earth orbit, looking to hand the space station over to commercial interests after 2024, and spending millions in seed money to help private companies like SpaceX and Boeing build capsules to carry humans to space in the coming years.

In this environment, Bridenstine said figuring out what NASA does, versus what it buys as a service from commercial providers, will be "one of the fundamental chal-

lenges I think I am going to face over my tenure." Bridenstine said Trump's budget requests for NASA have been "very generous." With its eyes on a crew mission to the moon in just five years' time, NASA plans to devote about \$10 billion of its nearly \$20 billion budget for 2019 to lunar exploration. Bridenstine's predecessor at NASA's helm, retired astronaut Charles Bolden, sounded a note of caution against repeating the mistakes of the shuttle era, when the United States ended its human exploration program without another spacecraft ready to take its place.

"We cannot tolerate another gap like that," Bolden said. "It is really critical for NASA to facilitate the success of commercial entities to take over" in low Earth orbit, some 250 miles (400 kilometers) above the planet. "And then for NASA to do what it does so well. Be the leader in lunar orbit." — AFP

Twitter shares plunge in black week for social media

WASHINGTON: Twitter shares took a pounding on Friday after it reported a decline in its user base, extending a stock market bloodbath for what had been a sizzling social media sector. Shares in Twitter tumbled 20.5 percent to close at \$34.12 despite a record profit for the short messaging service, as financial markets focused on the new realities for social media firms moving to curb abusive behavior and boost privacy. The woes for Twitter came a day after Facebook lost an unprecedented \$120 billion in market value following its earnings report that sent investors into a panic over cooling growth for the social network star.

Twitter said it posted a best-ever profit of \$100 million in the second quarter, following a loss of \$116 million a year earlier. Revenue rose 24 percent to \$711 million.

But the San Francisco-based firm said its base of monthly active users fell by one million from the past quarter to 335 million in the period amid a purge of fake and abusive accounts and a crackdown on toxic "bots." Twitter said it also expected user numbers to drop in the current quarter by a figure in the "mid-single-digit millions."

The fall in users is a result of "prioritizing the health of the platform, and, to a lesser extent, GDPR," Twitter said, referring to Europe's General Data Protection Regulations that limit how internet firms can handle user data.

Wall Street 'off guard'

Analyst Daniel Ives at GBH Insights said markets have



SANTA MONICA: In this file photo, a monitor is pictured in a kitchen area at tech company Twitter's office space in Santa Monica, California. — AFP

abruptly begun to consider "a new risk factor that has been introduced"—how security and privacy affects the bottom line. "It got the Street off guard in terms of the magnitude of the effect it had on earnings," Ives said.

Jennifer Grygiel, a Syracuse University professor who specializes in social media, said the market is coming to grips with a tougher picture for the sector as companies seek to curb manipulation and abusive conduct while coping with new regulations on privacy and data protection.

"What you're seeing is a market correction as the industry adjusts for increased operational expenses as governance and ethical business expectations have been raised globally," she said.

"Social media is not going anywhere. What has changed is that the public and regulators are no longer buying into (the) rhetoric and myths that social media is too big to moderate." Chief executive Jack Dorsey said the past quarter's results reflect investments "in the long-term health" of Twitter, noting efforts to weed out abusive and inappropriate behavior. "We'll continue to invest heavily in making Twitter a healthier place

because that's the right thing to do," Dorsey told analysts on a conference call.

New tools to fight abuse

Dorsey noted that Twitter is investing in "new tools to address problem behaviors that distort and distract from the public conversation." In recent weeks, Twitter has stepped up efforts to weed out accounts that promote violence or hate speech, and some reports suggested the move could lower the user base by millions.

Earlier this week, Twitter said it had removed more than 143,000 apps from its service since April in a fresh crackdown on "malicious" activity from automated accounts. Twitter shares had more than doubled over the past year as it showed signs of sustaining profitability after years of losses. But a lingering concern has been the stalled user base, with Twitter struggling to move beyond its core group of celebrities, journalists and politicians.

Both Twitter and Facebook moved to crack down on bots and fake accounts after learning of efforts to manipulate the social platforms during the 2016 US presidential election. Dorsey told analysts that Twitter had a "solid quarter" and suggested that daily usage was a better measure of its future growth. Twitter said daily active users rose 11 percent from a year ago, without giving a specific figure. Analysts say Twitter has been on a more sustainable track a year after it explored a sale of the company, although its user base is far below that of the 2.2 billion of Facebook and the billion-plus for Facebook-owned Instagram.

But some say Twitter's unique position as a real-time network that allows users to follow news and events will eventually pay off. Brian Wieser at Pivotal Research Group said efforts to curb fake accounts "should be viewed positively because these efforts improve Twitter's position with regulators and with advertisers, who see the user base as higher quality when purges occur." RBC Capital Markets analyst Mark Mahaney said in an upbeat note this week that Twitter is "one of the largest and most influential social networks" and provides "meaningful value to users." — AFP

Life on Mars: Japan astronaut dreams after lake discovery

TOKYO: Japanese astronaut Norishige Kanai came back to earth last month but is still dreaming of space, especially after the discovery of an underground lake brought mankind one step closer to unraveling the mystery of life on Mars.

"I was so excited about the news," the 41-year-old doctor told AFP in an interview on Friday, calling it "a major discovery that inspires dreams". International astronomers announced on Wednesday they had detected the largest body of liquid water ever found on the Red Planet, a breakthrough that may hold clues to whether life has ever formed on Mars—or even exists today. Kanai, who spent 168 days on the International Space Station, is firmly convinced that we're not alone in the universe and there is life out there.

"I believe there is," he said. "In the vast universe, anything could be possible." "I have high hopes that finding extraterrestrial life forms could open a new page in learning." The soft-spoken spaceman, nicknamed "Nemo" for his background as a diving medical officer in Japan's Maritime Self-Defense Force, blasted into space for the first time in December.



Norishige Kanai

Growing pains

Following in the footsteps of other media-savvy astronauts, Kanai tweeted about his stay at the space station in Japanese. But his social media foray came with some growing pains: he was forced to apologize and issue a correction after mistakenly claiming he had grown by nine centimeters just weeks after he arrived.

When a colleague suggested the growth was unlikely, despite the fact that astronauts' spines do extend in the zero-gravity environment of space, Norishige had himself re-measured. It turned out a mix-up over centimeters and inches was to blame, and he said Friday that he had in fact grown by just two to three centimeters during his stay. He has been shrinking since he arrived back on Earth on June 3, but is still one centimeter taller, he said.

"It's interesting to see how long it will take to get back to my original height," Kanai, whose Twitter profile depicts him in cartoon form with a broad grin, concedes he wasn't always the likeliest candidate to join Japan's space agency JAXA, though he is now the agency's youngest astronaut.

He was a "reserved, cautious" boy, rather than adventurous. "I was a granny's boy," he said. "When she was sewing, we did it together. I had a rather 'girly' childhood." But one of the skills he picked up as a child turned out to have a surprising application during the strict JAXA screening process. In the final selection stage, 10 candidates spend a week in a capsule performing various tasks including folding paper cranes, which the agency says tests patience and steadiness under stress. Luckily Kanai was a dab hand at origami from his childhood.

"I don't know if it gave me an advantage... but I knew how to do it. I'm dexterous and like to do repetitive small tasks. That task was easy for me," he said. Even as he spoke, he deftly folded a piece of origami paper into a crane, without so much as leaning on a table for support. He so enjoyed making small cranes that he folded more than 100 of them in the test capsule. — AFP

Fires spark biodiversity criticism of Sweden's forest industry

STOCKHOLM: The ferocity of wildfires in Sweden has sparked criticism against the powerful forest industry, which is being accused of having rolled out a "red carpet" for blazes and sacrificing the nation's biodiversity for the sake of profit.

Forests, sacred in ancient Norse mythology, still cover 70 percent of Sweden's territory. They play an important part in its modern economy by supplying the raw material to make Sweden the world's third largest exporter of paper, cellulose and wood products while employing 100,000 people.

The central province of Ljusdal is one of the worst hit areas by the fires. It is 95 percent covered by forests and as in many northern regions, the forestry industry is vital for the local economy. The possessors of the "green gold" are of high status and powerful: Sweden's King Carl XVI Gustaf himself is a prosperous forest owner.

Controversy spread as fast as the wildfires when industry operators were criticized for their role in the crisis. "Flat landscapes stretching long distances with closely situated pine forests are a red carpet for blazing storms and massive fires,"

writer Sven Olov Karlsson noted in a local newspaper column.

"Maybe it wasn't so wise to get rid of leaf trees and create a monoculture of pine which can spread fire at 80 metres per minute."

'Fire spreads no matter what'

Nearly all forests in Sweden are less than a century old. Described as "production forests", they are 83 percent conifers whose tall height deprives other species of sunlight. For Rolf Edstrom, spokesman for Norrskog, a forest owners association with over 12,000 members, "it doesn't matter whether the forest is new or old, the fire spreads no matter what", after weeks of drought and scorching temperatures as high as 35 degrees Celsius (95 Fahrenheit). According to Johan Sjoström, a fire technology expert at the RISE Research Institute of Sweden, said wildfires are "very rare today because we extinguish them".

"We didn't do that before because we didn't have the same resources," he told the Swedish daily Dagens Nyheter. Magnus Kindbom, director of forests at the influential Federation of Swedish Farmers, said "the entire forestry industry is generally working on increasing the amount of leaf forests." But environmental protection associations are sceptical and argue for the protection of woodlands.

They claim the share of protected forest areas is as low as four percent while the industry says it's as high as 25 percent.

'We are fighting money'

Non-governmental organizations warn that there are considerable challenges to ensuring biodiversity for plants and animals amid the fight against global warming.



STOCKHOLM: Firefighters in helicopters use a local lake to fill water tanks in order to tackle a forest as fire burns in Korskrogen near Ljusdal, Sweden. — AFP

One in 10 species in the country's forests is on the red list of the Swedish Species Information Centre. Rolf Edstrom said that the forest industry is aware of this and on the path to a "cultural revolution".

"Protected and ancient forests, bird populations, all the indicators are going in the right direction," he said. But Lina Burnelius, who is responsible for forest issues at Greenpeace's Sweden branch, disputes this claim and said the forest landscape is segmented.

"In order for species to survive, they have to live together with other species, and if we only have trees of the same kind and age, nothing can exist around it," she said. Neither can the reindeer in Lapland

where Sami herders are fighting against the contorta pine.

An invasive species, the fast-growing pine trees are smothering vegetation on the reindeer's grazing grounds, including lichen, the animal's main source of food. "The old forests that are still standing is partly thanks to us, but it is increasingly difficult," said Margret Fjellstrom, owner of hundreds of reindeer in Dikanas, a mountainous village located 800 kilometers (500 miles) north of the capital Stockholm. "We are fighting against money," she said.

But for Magnus Kindbom of the Federation of Swedish Farmers, "the forest owners have the right to manage their property as they wish". — AFP