

Reporter's Notebook: Where do we go from here?

At MIT forum, former Lockheed Martin CEO Norman Augustine and other aerospace experts discuss the future of human spaceflight.

Morgan Bettex, MIT News Office

today's news

Fish and chips



Valdivia y Alvarado, a research affiliate in the Department of Mechanical Engineering, works in his lab on a robotic fish he created with Professor Kamal Youcef-Toumi. The robot is designed to more easily maneuver into areas where traditional underwater autonomous vehicles cannot go. Patrick Gillooly

New robots mimic fish's swimming and could explore areas where traditional underwater autonomous vehicles can't currently go.

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Mars may be the ultimate destination for the U.S. human spaceflight program, but getting there anytime soon is unrealistic and not in

the best interest of NASA resources. That was one of the messages Professor Ed Crawley, the Ford Professor of Engineering in the Department of Aeronautics and Astronautics, delivered last Friday at an MIT forum that examined the findings and implications of the Augustine Commission — a 10-member committee that recently conducted [an independent review of planned U.S. human spaceflight activities](#).

Crawley served on the blue-ribbon commission of aerospace experts led by former Lockheed Martin Corp. CEO Norman Augustine. The panel's final report, delivered to Congress in October, recommended that NASA consider flights to asteroids and other near-Earth objects as part of a long-term plan to set foot on Mars.

"We realized Mars is not the first place to go," Crawley told the forum, which was hosted by his department and by the MIT Space, Policy and Society Research Group. "It would cost more money than we have, would take 20 years and not be safe."

The Augustine Commission's review was intended to help President Barack Obama determine the future of the Constellation program he inherited from the previous administration. That program plans to send humans to the moon by 2020.

The committee of professors, astronauts and executives worked this summer to prepare the report, a task that included considering 3,000 options to present to the president. The commission concluded that "the U.S. human spaceflight program appears to be on an unsustainable trajectory. It is perpetuating the perilous practice of pursuing goals that do not match allocated resources."

The report, "Seeking a Human Spaceflight Program Worthy of a Great Nation," said that NASA needs about \$3 billion more per year to explore beyond low-Earth orbit while maintaining the International Space Station and other programs.

'Flexible path'



Photo: NASA

multimedia

Future of Human Spaceflight



'The Augustine Report and its Implications,' a talk at MIT

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While the report includes a number of suggestions, one aspect that has garnered considerable attention is its recommendation for a “flexible path” approach to space exploration. Under this plan, NASA wouldn’t use resources to send humans to the moon and Mars right away. Instead, simpler missions would be accomplished that would allow NASA to gain progressively more experience, such as a lunar fly-by, Mars orbit, or exploration of near-Earth objects like asteroids. The goal would be to go beyond lower-Earth orbit by the early 2020s and start going to a new place every year, in a progression that Crawley called a “cadence of successes.”

“It gives real options to the NASA planning staff,” he explained. “It allows you to gain progressively more experience. Along the way, [you’re] building up the capacity to work in free space.”

Augustine stressed the relevance of the name of the “flexible path” option, noting that the plan doesn’t require a specific goal, but presents a series of events that can be done over time.

The Augustine Commission also recommends that NASA extend the life of the International Space Station until 2020, rather than 2015; consider commercial space flight for sending astronauts into low-Earth orbit and cooperate with other nations, including China and India, on human spaceflight.

“The U.S. role in human spaceflight has eroded,” said Asif Siddiqi, a professor of history at Fordham University, who spoke at the forum about the increasing roles China and India are taking in human spaceflight development. “There’s a new host of players. It’s no longer the old model.”

John Logsdon, professor emeritus of political science and international affairs at George Washington University, agreed, noting that “NASA’s ‘business-as-usual’ model is no longer the model,” and that the Augustine Commission “legitimizes non-NASA human spaceflight.”

President Obama is said to be mulling the future of the program. According to Crawley, he has three major decisions to make soon: the degree to which we embrace the international community, what our ultimate destination is and what the budget will be.

Framing these decisions within a broader context, forum moderator David Mindell, the Frances and David Dibner Professor of the History of Engineering and Manufacturing and director of the Program in Science, Technology, and Society at MIT, asked a rhetorical question that reflects the larger philosophy of the Augustine report: “What does it really mean to go somewhere?”

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