

Applying Himself to the Business of Space

Far from being a threat to science, the new business-minded chief of the European Space Agency insists that applied projects will be its savior

PARIS—Here at the headquarters of the European Space Agency (ESA), Jean-Jacques Dordain seems to move at light speed from office to office. ESA's new director is in high spirits: From his vantage point, things are looking up for the embattled agency. For several months, a cloud of doubt had hung over Galileo, a \$1 billion collaboration between ESA and the European Union to set up a civilian version of the U.S. military's Global Positioning System (*Science*, 25 April, p. 571). Now just a few weeks after moving into the director's office, Dordain is celebrating the signing of the first set of long-awaited Galileo contracts between ESA and its industry partners. "Galileo is right on schedule," beams Dordain, smoothing a tie printed with brightly colored cartoon rockets blasting off. Galileo's first transmission to paying customers is scheduled for 2008.

To Dordain, Galileo and other commercial space activities promise to be ESA's salvation. The agency has been struggling to keep its basic science missions afloat because of the shrinking pockets of its 15 national paymasters. "I don't want to see the funding of any ESA program decrease," says Dordain. To achieve this, he is promoting ESA as a "provider of solutions" for "clients" such as the E.U. Expanding ESA's business side, he says, will free its basic science programs from having to share resources with space applications.

But to many European space scientists, Dordain's lofty idea is going down like a lead balloon. They fear that ESA is swinging away from basic research in favor of moneymaking ventures such as Galileo. "The mood these days is very gloomy," says Len Culhane, director of the Mullard Space Science Laboratory at University College London. A green paper on space policy, the result of 4 months of soul-searching by European scientists, politicians, and the general public, was discussed here at a conference on 17 July. Many of the alternative futures for the 28-year-old agency could put basic science on the chopping block, Culhane and others fear.

Few, though, doubt that ESA must transform to survive. "Science is in a bad state, so something has to be done," says

Risto Pellinen, a Norwegian atmospheric physicist and head of ESA's Science Programme Committee.

For Dordain, this job was his destiny. "Space is my life," he says with passion. "Sputnik was launched when I was 10, and



Dream job. Jean-Jacques Dordain has been obsessed with space since childhood.

then came Apollo. ... I had no choice." He started as a rocket engineer, and his dream was to ride a rocket into orbit. Although the opportunity never materialized, he was among the first group of astronaut candidates selected in France. "But I'm still ready to go," he adds. Dordain has worked his way through the ESA ranks since 1986.

Despite Dordain's bullishness, ESA's scientific missions continue to be plagued by uncertainty. Since 2001, the 15 member states have kept ESA's science budget frozen, resulting in an annual 3% erosion in spending power due to inflation. Not only does this leave no room for planning missions beyond those already on the books up to 2012, but unforeseen costs can doom ongoing projects. Currently on tenterhooks is Rosetta, a probe designed to rendezvous with a comet and land on its surface. Rosetta was due to set off last January before a launcher failure in December 2002 grounded the mission. The cost of storing it, carrying out a

new launch, and lining up a new cometary target has drained \$100 million from ESA's science budget. Despite this setback and rumors that the project might be axed, Dordain says Rosetta is "definitely" scheduled for launch in February 2004.

Other highlights on ESA's roster of scientific missions include Mars Express, which is now on the way to the Red Planet, and Smart-1, a crewless mission to the moon set to launch this month that will test a new ion drive. For the longer term, ESA's Aurora program plans a wide-ranging search across the solar system for signs of life that aims to put a human on Mars around 2030.

In the green paper consultation that ended last month, scientists proposed doubling ESA's \$400 million science budget to safeguard these projects. "This is logical," Dordain says, "because the United States has about the same-sized population and economy as Europe but spends twice as much on basic research in space." This imbalance, he says, "makes no sense, neither to the scientists nor the citizens."

Dordain says that he can increase funding for ESA science missions, but not directly. The problem, he says, is that many member states channel funds for ESA through their science ministries, and "they will never increase how much they spend" because it would mean cutting funding to researchers in their own countries. Because much of ESA's overall \$2.9 billion budget is spent on application projects, Dordain is looking to tap other pots of money in the member states, "money dedicated to transport policy, to defense policy, and to the enlargement of the European Union." Dordain argues that money from the science ministries could then be earmarked for science missions.

The "idea makes great sense," says Pellinen. Others are dubious. "I do not think this can work," says Johan Bleeker, director of the Space Research Organization Netherlands in Utrecht. "It is greatly oversimplified to think that one might create alternative funding sources for space [research] without [losing] existing resources which reside—rightly or wrongly—at research ministries."

Another strategy to ease ESA's financial travails that is under discussion is to merge more closely with the E.U., ultimately becoming something more like its U.S. counterpart, NASA. "But this is a very sensitive issue," says Pellinen, because "ESA wants to keep its independence." Indeed, European space scientists will be watching closely to see whether Dordain can maintain ESA's scientific excellence, says Pellinen, as the agency is prodded into a tighter embrace with industry.

—JOHN BOHANNON

John Bohannon is a freelance writer in Paris.