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DLR navigation expert on course for Europe

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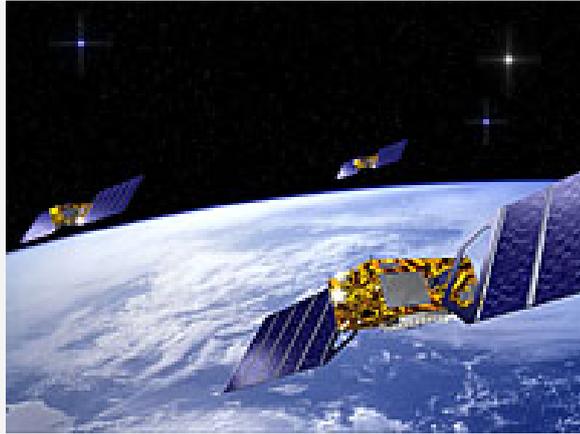
To play or download the two audio recordings of the interview with Christian Arbinger, please use the links in the right-hand column.



Christian Arbinger is the DLR project manager for the Galileo IOV operations segment

These are exciting times for Christian Arbinger: together with his team, he will soon be controlling the first four satellites of the European Galileo navigation system from the Galileo Control Centre at the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) in Oberpfaffenhofen. This project has turned the Munich-native aerospace engineer into a multifaceted European. This is the first part in a series of portraits on the DLR Web Portal.

Christian Arbinger has a down-to-earth personality. While his childhood friends were dreaming of one day flying into space, he had quite different plans. "I was determined to work in astronautics, but I was fascinated by the technical side of it. I wanted to become a satellite controller", he says looking back on his childhood aspirations. Munich-native Christian Arbinger knew how to go about realising his dreams. He studied Aerospace Engineering at the Technische Universität München and he wrote his graduation thesis at the German Aerospace Center in Oberpfaffenhofen. He then indeed went on to control satellites at the German Space Operations Center (GSOC) in Oberpfaffenhofen. His tasks there included preparing the flight dynamics system for the German TerraSAR-X radar satellite.



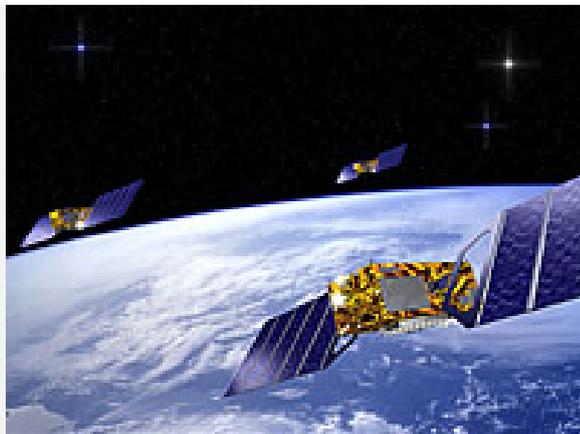
Galileo - a joint European project

"At DLR, I was able to assume a position of responsibility very quickly."

Three years ago, however, Christian Arbinger left the terminals of the control room and joined the European Galileo satellite navigation programme as DLR Project Manager. In his new position, he leads a team of aerospace engineers who, in the near future, will control the first four Galileo satellites. A position at the international level which, according to the 36-year old, only DLR could have offered him: "At DLR, I was able to assume a position of responsibility very quickly."

Through Galileo, Christian Arbinger has become a European, and one with a very clear vision: "The navigation system is at the cutting edge of what is technologically possible. By deciding to set up a civil system together, Europe made the right choice. An individual country could have gone it alone, but European cooperation makes us stronger." Arbinger emphasises this point, but without emotional charge.

At DLR's Oberpfaffenhofen site, Galileo is already starting to take shape. Christian Arbinger and his colleagues recently moved into the new Galileo Control Centre. The festive inauguration of Europe's most modern control centre, from which the 30 navigation satellites will be controlled one day, took place on 8 September 2008.



"Our competence lies in our technical know-how"

"We can immediately tell what will work and what will not."

The aerospace engineer has not forgotten his technical background now that he has been assigned these new tasks. On the contrary, the know-how he acquired at DLR comes in useful in many negotiations in which the future navigation satellite control is at stake: "We can immediately tell if we are able to meet specific demands and what we can do with a particular piece of equipment – this makes us incredibly efficient." This allows the engineer to act with confidence, even when he and his team are facing a much larger delegation of a negotiating partner. "It enables us to consistently conduct negotiations in a clear and transparent way. Our competence lies in our technical know-how."

And it was because of this competence that DLR was entrusted with an important assignment for the European Space Agency ESA. Since May 2006, DLR has been preparing Galileo operations in cooperation with the Italian Telespazio company, in order to be able to control the first four Galileo

satellites from early 2010. In this so-called In-Orbit Validation phase (IOV), the system's navigation performance will be demonstrated for the first time.

As soon as it is fully functional, Galileo will not only provide data free of cost to, for instance, users of car navigation devices. For a fee, users will be able to receive a high-precision, inch-perfect navigation signal for special applications, for instance in aviation. Galileo will thus also become a commercial industrial project, meant to eventually generate income for the industrial partners involved in it.

Galileo, the largest European industrial project



Galileo Control Centre at DLR site Oberpfaffenhofen

With an expected total cost of 3.4 billion euros, the Galileo satellite navigation system is the largest industrial project so far to be jointly undertaken by European countries. From 2013, it will provide terrestrial users with inch-perfect positioning technology. This is made possible with a new, absolutely accurate atomic clock, which enables synchronous signal transmission by the satellites. For regular users, however, Galileo would by itself not bring about any substantial improvements. What is important, according to Arbinger, is the interoperability between Galileo and the American Global Positioning System (GPS); the Russian GLONASS system might also be added to the list. This will provide added value for private users, as it means that for the first time they will even have enough satellites at their disposal in the urban jungle of large cities to enable accurate positioning. "This interoperability will give rise to new applications we have not even thought of yet," Arbinger says with certainty.

Christian Arbinger loves structures and business games. In his mind, he is already working out different ways in which the constellation of 30 satellites could one day be controlled from two – or, if a Spanish Galileo control centre is added as currently planned, three – control centres. He has also thought through the complex bureaucratic structures of the EU and he knows that tendering procedures are complicated and take a lot of time. "For this project, 27 nations need to overcome their differences, for instance with regard to such important issues as security concepts which until now were dealt with exclusively under national authority. We need to clear this hurdle, and this simply takes time." If Galileo had failed due to EU financial constraints, this would have been especially disappointing for the European in Christian Arbinger: "I think that Galileo is a fascinating endeavour and it would be a great pity if the EU would not be able to set up such a project," Arbinger contemplates.

On Earth, the navigation expert actually still uses maps to find his way. What interests him most about this technology is not what happens on the ground. "I find the astronomical aspects of navigation the most interesting. With navigation technology, one can make high-precision orbital computations or achieve satellite formation flying." As soon as the first receivers for the Galileo system are available, however, Arbinger would like to be guided by satellites not just professionally, but also privately.

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