

# PRESS RELEASE

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## Fast as a puck, hard as ice hockey: Real-time tracking for live analyses

**Nuremberg/Munich – Germany: On a typical pass in ice hockey, the puck hurtles across the ice at high speeds. Retrospective analyses provide more clarity. For the first time, the American Ice Hockey League NHL can now display various match analyses in real time. A 20-strong research team from the Fraunhofer Institute for Integrated Circuits IIS makes every movement in the game measurable – up to 2,000 times a second. Thomas von der Grün, Norbert Franke from Fraunhofer IIS and Thomas Pellkofer from jogmo world corp. will be receiving the Joseph von Fraunhofer Prize for their work. It will be the seventh time in a row that Fraunhofer IIS will receive this prize.**

How does the defense formation react to the line of offense? How fast does the puck travel over the ice? Analyses and game evaluations are essential in competitive sports. So far, however, these evaluations could only be done after the puck has been in play. At the "2019 Honda NHL All-Star Weekend" ice hockey matches in San José, USA, from January 24 to 27, 2019, fans and experts experienced a new dimension of data analysis for the first time. The data of players and puck were analyzed and processed in real time – an absolute novelty. In the course of 2020, the system will be installed nationwide in all 32 stadiums of the professional ice hockey league "National Hockey League NHL".

The necessary technology for this was developed by a team of about 20 researchers from the Fraunhofer Institute for Integrated Circuits IIS in Nuremberg, Germany. It is marketed by jogmo world corp. A New York spin-off in which Fraunhofer IIS holds 25 percent of the shares. On behalf of the team, Thomas von der Grün and Norbert Franke from Fraunhofer IIS and Thomas Pellkofer from jogmo world corp. will be receiving the Joseph von Fraunhofer Prize.

### **Puck position: tracked 2,000 times per second**

"We have placed a transmitter in the puck that sends a signal to a total of 16 receivers distributed throughout the stadium," explains von der Grün, head of department at Fraunhofer IIS. The special feature lies not only in the real-time analysis and the large number of traceable players, but mainly in the high tracking rate. With the new feature, the position of the puck can be measured 2,000 times per second. At a puck

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speed of 140 kilometers per hour, this means: every two centimeters. The system determines the player's position 200 times per second.

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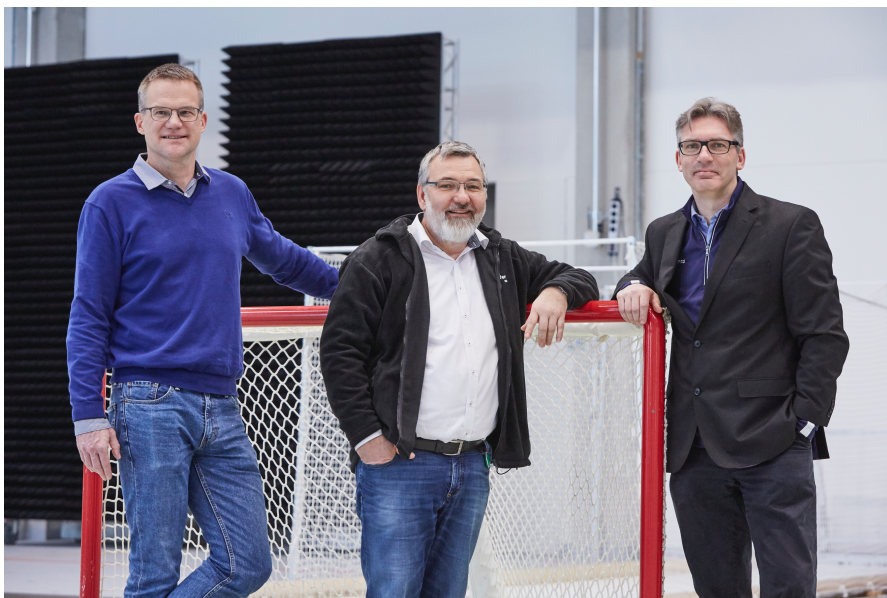
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**Numerous benefits for spectators, players, coaches, teams and leagues**

But what can be done with this data? "There are three analysis levels," explains Franke, group leader at Fraunhofer IIS. "First of all, there is classic tracking, questions like: How fast did the puck move? However, our system goes far beyond that. We can also include a second level – our analysis." How long does it take for a player to take the puck and score? In the future, according to the scientists' plan, the system will also cover the third level – the tactical analysis of game moves.

For fans, this means that there will be an additional element of suspense added to the game. For professionals, the new technology offers a lot of potential. The real-time tracking of the players performance will enable a special perception training. For example, the goalie can optimize his positioning during training. However, the system's use is by no means limited to sports. "By going for the fastest team sport – and thus also and indoor sport – we have chosen the most difficult application," says Pellkofer. "We are, therefore, also able to handle other challenging tracking tasks."



**The winners of the Joseph von Fraunhofer Prize from the Fraunhofer Institute for Integrated Circuits IIS (f.I.): Norbert Franke, Thomas von der Grün and Thomas Pellkofer from jogmo world corp. © Fraunhofer/Piotr Banczerowski**

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**The tracking system measures the position of the puck 2000 times per second. © Fraunhofer/Piotr Banczerowski**

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The Fraunhofer-Gesellschaft is the leading organization for applied research in Europe. Its research activities are conducted by 72 institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of more than 26,600, who work with an annual research budget totaling more than 2.6 billion euros.

The **Fraunhofer Institute for Integrated Circuits IIS** is one of the world's leading application-oriented research institutions for microelectronic and IT system solutions and services. It is the largest of all Fraunhofer Institutes. Research at Fraunhofer IIS revolves around two guiding topics: In the area of **"Audio and Media Technologies"**, the institute has been shaping the digitalization of media for more than 30 years now. Fraunhofer IIS was instrumental in the development of mp3 and AAC and played a significant role in the digitalization of the cinema. Current developments are opening up whole new sound worlds and are being used in virtual reality, automotive sound systems, mobile telephony, streaming and broadcasting.

In the context of **"cognitive sensor technologies"**, the institute researches technologies for sensor technology, data transmission technology, data analysis methods and the exploitation of data as part of data-driven services and their accompanying business models. This adds a cognitive component to the function of the conventional "smart" sensor.

Nearly 1050 employees conduct contract research for industry, the service sector and public authorities. Founded in 1985 in Erlangen, Fraunhofer IIS now has 15 locations in 11 cities: Erlangen (headquarters), Nuremberg, Fürth, Dresden, as well as in Bamberg, Weischenfeld, Coburg, Würzburg, Ilmenau, Deggendorf and Passau. Its budget of 165 million euros is mainly financed by projects, with 26 percent subsidized by federal and state funds.

Detailed information at: [www.iis.fraunhofer.de/en](http://www.iis.fraunhofer.de/en)

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