

Discovery Park District Distinguished Lecture

121 Burton-Morgan Hall, Purdue University

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Are the benefits of digitalization, such as Industry 4.0, AI, and robotics, truly contributing to the realization of a sustainable society?

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In modern society, mechanization and automation have dramatically increased labor productivity and drastically changed the labor structure. In the future digital society, how should humans and machines, including AI and robots, interact?

Experts in Japan and Germany have been confronting this issue since 2017. As a result, in 2019, they published a discussion paper at the German Academy of Science and Technology (acatech), pointing out that excessive assistance from machines could lead to a loss of innate human insight and creativity. They asserted that for a sustainable society to be realized, it is essential for humans and machines to share experiences and knowledge, help each other, and continuously improve the productivity of human society.

However, since the COVID-19 pandemic, human society has undergone dramatic changes not only in lifestyles but also in values. Far from enjoying the benefits of digitalization, we are facing complex crises such as the intensification of regional conflicts and the worsening of natural disasters such as climate change. Considering these circumstances, international experts gathered once again to discuss what policies should be adopted to build a sustainable society, particularly in the area of collaboration with machines, including AI and robotics. This presentation will introduce the content of the discussions held by experts from Japan, the United States, and Europe on this issue, as well as the challenges ahead.



Youichi Nonaka, Ph.D., is Corporate Chief Researcher in Hitachi's Research and Development Group. He joined Hitachi in 1992, focusing on industrial robotics, digital engineering, and production control, and was a visiting researcher at MIT in 2001. He has held his current role since 2023. In 2019, at acatech, he advanced a Japan–Germany expert dialogue on humans and machines and published a discussion paper. He also supported Japan–U.S.–Europe collaborations on industrial sustainability with RRI, CESMII, and Plattform Industrie 4.0. He has been a professor at Kyoto University since 2018 and vice chair of the CIRP Corporate Members Advisory Group since 2025.