

Trend study identifies potential for humans and technology to interact in a manufacturing environment

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Fraunhofer IAO has looked into the effects that developments in the field of manufacturing will have on the interface between humans and technology. The study highlights the potential for future-proof human-machine interfaces (HMIs) and discusses the challenges that will have to be overcome in designing tomorrow's HMIs and HMI engineering tools.

Human-machine interfaces (HMIs) are absolutely central to production processes, and as such they have a major influence on the quality and efficiency of industrial manufacturing. HMIs not only make it possible to control and monitor facilities, they also provide valuable information

on those facilities' operational status. Current and future developments in [manufacturing](#) – including the changes referred to as Industry 4.0 – will also affect the role played by the interaction between humans and technology. While the growing connectivity and intelligence of systems promise greater [flexibility](#) in processes, they also have the effect of increasing complexity. This makes it all the more important to involve the future users of an HMI early on in its development.

Fraunhofer IAO has completed a trend study to identify and explore the key areas for action to ensure humans can interact with technology in tomorrow's manufacturing. In particular the study considers all aspects of ergonomic HMI design as well as how to integrate new technologies such as interactive and [recognition technologies](#) or social media. Since HMIs are often produced using special development tools, the study also looks into the functionalities and opportunities such tools can provide.

One point the study makes is that while development work is simplified by certain tools offering standard functionalities such as SCADA (supervisory control and data acquisition), these tools can restrict the range of design possibilities for the HMI. Using the right HMI tool, however, can in itself bring significant benefits in terms of innovation. With manufacturing environments in flux, what is needed is a set of future-proof HMI developer tools along with a detailed analysis of the design possibilities.

The content of the study is drawn primarily from workshops and interviews with relevant experts from the areas of manufacturing operations, IT, and the interaction between humans and technology. In order to make the results of the study as readily applicable in practice as possible, the experts approached came not only from the scientific community but also from industry. The study highlights the changes that the manufacturing sector is about to undergo as well as the challenges this presents for the design of interfaces between humans and

technology.

In addition to offering specific measures and guidelines for how to design powerful HMIs, the study recommends selection criteria for the necessary engineering tools. These can serve as an aid both in designing and developing appealing HMIs and efficient engineering tools and in adopting a suitable future-proof HMI engineering environment.

The print version is priced 59 euros and can be ordered from the [IAO shop](#) end of June.

More information: www.iao.fraunhofer.de/images/istudie_future_hmi.pdf

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