

I'm the Operator of my Pocket Computer: Dangers of Context Automation

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These are good times for context awareness. Millions of people roam the planet with mobile devices that are capable of context sensing. Phones, media players, cameras and navigators contain embedded sensors for location, acceleration, radios, sound, or light, among other properties. They encounter numerous systems with embedded computing and networking, and, increasingly, ambient intelligence. The people deal with thousands of web services that aggregate their contextual data, such as presence, location, activities, and media consumption. Together, these various systems create an immense global context awareness platform that promises better services, better user experience, and better information filtering, among other benefits.

To be useful, context awareness has to work in an automatic mode, working as expected without user intervention. Only in rare situations should the users need to actively control the systems, for instance to teach them new context functions or deal with errors. With the global context platform there is very good potential for such automation. But is it good enough? What are the dangers?

Automation in general may work beautifully given the right conditions. When the outside world stays within foreseen limits, the designers of automated systems can anticipate the needed functions. As a result, the users can focus on other things. However, context awareness is a difficult area for automation. Context data is often noisy, ambiguous, just plain messy. What's worse, contextual situations can be very complex since they often deal with the real world, which can be very complex indeed for computers. The resulting mistakes can lead to severe problems.

This talk explores the potentials and risks of context awareness, draws analogies from industrial automation, and suggests some avenues for further work.