

See, feel, hear and control your environment, virtually

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It's not about how much information you have but what you can do with it that matters. This is the case for the deluge of data and information that abounds in today's fast paced, information technology-dependent environment. A*STAR scientists have developed technologies that capture and analyse huge amounts of data to create systems that enhance urban living. These include technologies that track crowd behaviour, smart energy management systems, as well as advanced modeling techniques that simulate city microclimates or predict disease outbreaks.

A*STAR Science and Engineering Research Council's (SERC) 'Sense and Sense-abilities' programme will focus on pervasive sensing to address challenges that city planners face in developing urban environments. A demo has been set up at the World Cities Summit (WCS) 2012 Expo to showcase the program's capabilities. The demo gathers visual, sound and floor pressure data, which is then translated into 'smart' crowd maps that decipher popular travel paths or identify areas with less traffic. Such technologies can be used for targeted marketing or enhancing product placements in malls and retail shops, or deployed in traffic management systems to identify potential congestion hotspots.

As the power demands of cities grow, the deployment of smart grids and smart devices that regulate energy usage in the mass consumer electricity market becomes essential in helping cities manage their energy requirements. The A*STAR smart energy showcase demonstrates how 'Smart Plugs' can be used to remotely monitor and control home

appliances over the internet, highlighting the significant role energy consumers and end-users play in achieving energy efficiency targets in the future.

The urban environment can also be modeled to allow city planners to see what future cities could look like. For example, data on wind flow patterns in dense areas like city centres can provide city planners with a better view on how to manage microclimates and reduce ‘hot spots’.

Weather and genomic data, coupled with information on past outbreaks can also be used in combating diseases by predicting possible outbreaks and allowing effective intervention strategies to be implemented earlier.

Cities need to find novel ways of manufacturing products sustainably and to reduce the reliance on non-renewable resources. It is then essential for individuals as well as companies to understand their carbon footprint in order to reduce the impact they have on the environment. A*STAR’s sustainable manufacturing research promotes processes that efficiently recycle used materials, reduces a manufacturer’s carbon footprint and looks into technologies that can be employed for sustainable urban living.

“As we urbanize, science and technology will play an important role in optimizing the use of resources and improving lives,” said Dr. Raj Thampuran, Executive Director of A*STAR SERC. “A*STAR’s highly engaging and exciting technology showcases provides an insight of how future cities may function in an even more intelligent and sustainable [environment](#).”

The data-centric research projects and sustainable manufacturing technologies from A*STAR research institutes such as the Institute for Infocomm Research (I2R), Institute of High Performance Computing (IHPC), Singapore Institute of Manufacturing Technology (SIMTech) and Genome Institute of Singapore (GIS), are being showcased at the

Whole-of-Government Pavilion that is part of the WCS 2012 Expo.

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