

Hi-tech vs privacy

Research

With the threat of terrorism prompting the increased use of technology to keep track of people, and talk of the reintroduction of a national ID card, **KATINA MICHAEL, senior lecturer at the University of Wollongong**, researches these options with a view to their social impact.

I research emerging technologies targeted at mass market applications, and the social implications of these technologies on citizens and business.

In 1996 I began researching smart cards and then in the following year expanded my interests to the wider automatic identification industry: bar code, magnetic-stripe card, biometrics, radio-frequency identification (RFID).

In 2004, I further extended my research agenda to include location technologies such as global positioning systems (GPS), wireless local area networks, UHF, cellular triangulation, chip implants and geographic information systems (GIS).

My work explores the dynamics between technology and service providers, customers, end-users (eg citizens) and government agencies in the process of technological innovation.

I am particularly interested in the technological trajectory of the identification and location-based services (LBS) industry and use a historical method to analyse changes that have occurred over time.

My predictive studies are based on the current state of development and verifiable cutting-edge research.

My unit of analysis is multi-layered - the technology at the first instance, then the application context, and finally the given product or process innovation.

Together with research students, I have developed the 3Cs and 3Ts classification of location-based applications - Control, Care, Convenience and Tagging, Tracking, Tracing.

This approach lends itself well to usability contexts, used to analyse applications that are focused on identifying or locating objects, animals or people at varying levels of location accuracy - from precision to proximity.

More recently I have become interested in how emerging technologies impact social ethics and legislation.

My work is aimed at influencing Australian government policy, and for that reason has broader applicability than just in the information technology sector alone.

Currently, the rekindling of the Australia Card debate, the controversial use of RFID and Biometrics for ePassports, and the newly defined laws in telecommunications interception and anti-terrorism are important issues as they affect not only suspected terrorists and intercountry travellers but all citizens of Australia.

Consider the 24x7 tracking of suspected terrorists or the obligatory adoption of card schemes mandated by the Government and enforced by law.

The latter example appeals directly to the national security debate, in which I have been an active participant since completing my PhD.

However, given the area of study, my research has as much applicability to national security as it does to the emergency management sector, as there are



University of Wollongong senior lecturer Katina Michael researches the use of tracking technologies and their human impact. Picture: ORLANDO CHIODO

common approaches to aiding communication and collaboration using electronic and mobile business applications in either context.

Perhaps my single-most passionate research area is looking at the development of the human-computer metaphor.

I have been studying the implantation of chips into humans for a variety of applications, including for

medical purposes.

This topic brings together research from diverse fields including medical, robotics, automatic identification, ubiquitous computing, technology trends, culture and ethics.

Katina Michael is a senior lecturer in the School of Information Technology and Computer Science at the University of Wollongong.

Q&A

Will it save the world? No. The best most of us can hope for is that our research plays at least a small part in the wider context of a larger research project which is considered useful to society at large.

Years spent trying: My first minor research project began in July 1996 and was titled *Social Implications of Smart Cards: an Australian Case Study*. So I guess that means I have been researching in the field for about 10 years.

Are you getting anywhere? Yes. Research however is a life-long endeavour.

Best part of your research? Without a doubt it is mentoring younger scholars, collaborating with colleagues, ongoing education and helping break new ground.

Have you had a true "Eureka! I've found it!" experience?

Yes - founding the concepts of "electrophorus" and "homoelectricus" with Dr M G Michael while collaborating on a paper. I have also had a great number of "you beaut" moments, particularly while supervising my research students.

Has it made you rich? Not in dollar terms, but rich in experience and perspective.

What did you want to be when you were a kid? I never quite knew what I wanted to be when I was growing up, although I liked studying English, writing poetry and being a part of theatrical productions all through primary and high school. I never set out to be an academic until after I left my previous workplace. It happened quite unexpectedly.

Has your career followed a straight line? I do not think I've had the normal academic career path, although I did a Bachelor's degree followed by a PhD in close succession. When I finished my undergraduate studies, I had discounted further research as an option, until my husband encouraged me to work and study at the same time. It was tough but well worth it. I used my annual leave to hack away at my thesis. One of the toughest things I faced was maintaining focus on the same research question after long periods away from the university campus but I was passionate about my PhD topic and in the end that is what got me through the very late nights and long haul.

Advice for young researchers: Persistence, hard work, integrity and passion for learning and sharing.

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