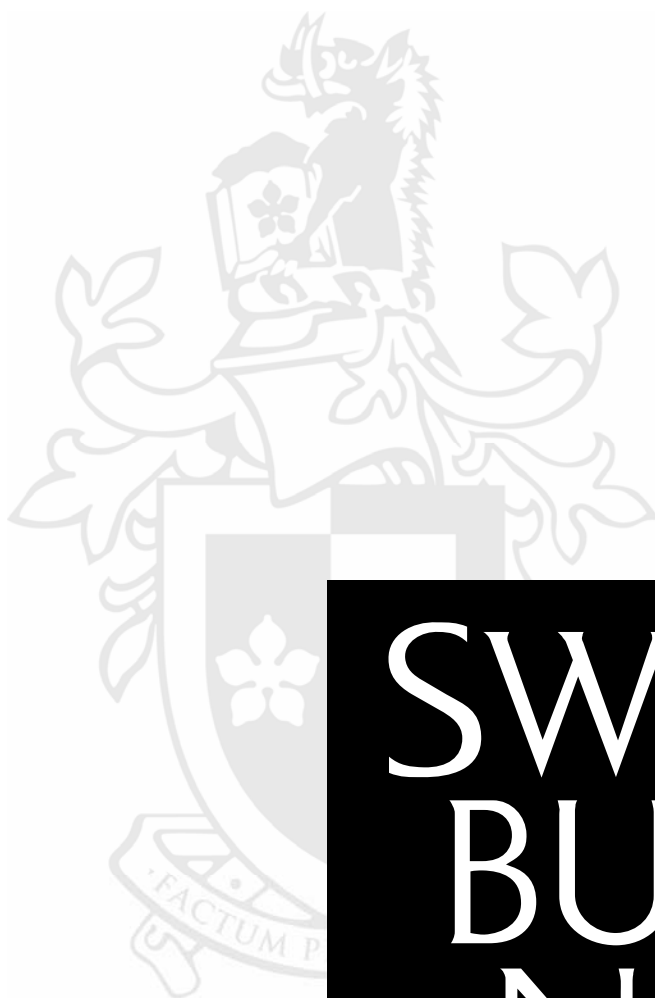


## General Information

December 2006



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SWINBURNE UNIVERSITY  
OF TECHNOLOGY

## Background

The Information Technology Innovation Group (ITIG) is located within the Faculty of Information and Communication Technologies, Swinburne University of Technology, Victoria, Australia. The group emerged in the mid-1990's to meet the needs of the growth research and consulting areas of information technology. The Information Technology Innovation Group provides a "centre of excellence" in the application of evolving and novel technologies to real problems.

The group has broad expertise in the design and development of computer software in the areas of interactive systems; multimedia and internet applications; and mobile computing, with a strong emphasis on usability. A wide range of professional services are provided by the group, including product development and system evaluation.

The Information Technology Innovation Group acts as a focus of significant expertise within Swinburne, industry and the community in general. Those with relevant interests are invited to collaborate with staff of the group to pursue joint strategic commercial or research goals. As such, the Information Technology Innovation Group is well placed to contribute directly to the enhancement of productivity in both the public and private sectors.

## Staff

The Information Technology Innovation Group consists of several members from both academic and technical fields. A brief description of the group's core members follows:

### Director

#### **Kon Mouzakis**

BSc(Ed) GradDipAppSc(CompSc) MAppSc(IT)

Kon Mouzakis is the director of ITIG and one of the original founders. Kon has managed the team since 1994, including when it was formally known as the Advanced Technologies Group – ATG. With an intensive interest in mobile computing, including currently completing a PhD in the area, Kon is always interested in new mobile technologies.

### Members

#### **Pauline Byrt**

PhD MSc MA BSc(Hons) GradDipComp DipEd

Pauline joined ITIG as senior research assistant in 2006. She has qualifications in GIS, biochemistry, immunology, computer science and education. With a varied academic background and extensive experience in research, Pauline is assisting the group and collaborating with the Director on special projects.

#### **Patrick FitzGerald**

BSc BAppSc(CSSE)

As a senior developer, Patrick has been with ITIG since 1999 including one year of Industry Based Learning. Patrick is the lead Delphi programmer of the team and has a remarkable list of projects which he has been involved with.

Patrick's current projects include CrashStats, LVTMS and the TRR Project. Other work has included development with database applications, web design, visualisation applications, and Windows CE handheld devices.

#### **Winston Fletcher**

BSE(Hons)

In 2001, Winston joined ITIG as an aspiring software engineer. Winston has been involved in many projects during this time including the TRR Project, CrashStats, ITME, WDA and TARAS. The TARAS project allowed Winston to travel and live in the Philippines for 1 year, where he developed and implemented a road safety application for the Philippines government.

Winston has developed many applications using Java, Delphi, C# and VB .NET; including many for VicRoads, such as image cropping applications. Winston's many computer interests include image processing, 3D modeling and code optimization.

**Pamela Scicluna**  
BAppSc(CSSE)

Pamela joined ITIG as a software engineer in 2004 after completing her Industry Based Learning year at DSTO in Canberra. Pamela's technical skills include programming for Windows CE devices, database and web applications, and utilising Microsoft .NET technologies.

Pamela's current projects include the TRR Project, where she also has the role of project co-ordinator; the Vehicle Identity Validation Certificate Application developed for VicRoads; and the Protocol for Intuition Application developed for the Australian Graduate School of Entrepreneurship at Swinburne University.

## Projects

The Information Technology Innovation Group has been commissioned to complete work by a number of organisations. Brief descriptions of project's ITIG have been involved with follow:

### **Trauma Reception & Resuscitation (TRR) : Bayside Health** 2005 - current

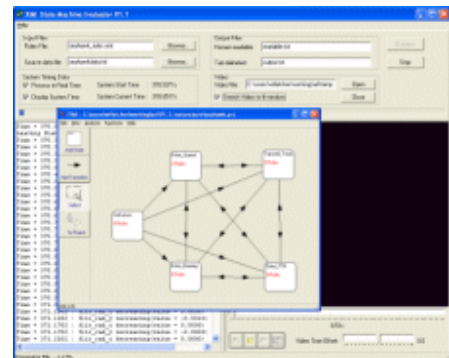
The TRR project focuses on the first 30 minutes of trauma reception and resuscitation. This project will establish uniform algorithms for trauma resuscitation. Compliance will be guided by real-time computer generated prompts linked to real-time data collection. Video audit will verify compliance and error rates. The TRR project will, among other things, test the hypothesis that the introduction of real-time, computer-prompted algorithms will result in a measurable reduction in management errors associated with reception and resuscitation of major trauma patients.

### **Integrated Task Modelling Environment (ITME) : DSTO (Melbourne)** 2001 - current

ITME was developed for DSTO Aeronautical and Maritime Laboratories in Melbourne.

The system is used to model states and rules in systems and performs automated behavioural analysis of tests conducted in simulations.

ITME has allowed DSTO to analyse test results, which had previously taken many hours using video analysis, in a fraction of the time and also provides more accurate results.



### **Soldier Combat System (SCS) : DSTO (Adelaide)** 2004 - current

The SCS was developed for DSTO, Adelaide, and has been in development for a number of years. This system utilizes technologies such as GPS, digital compasses, weapon mounted camera displays and JPEG 2000 imagery for mapping. The system was written using C# and VB .NET. Some of the features of the system include low level RS232 serial comm.; MSMQ technology; radio data comm.; and a custom GIS and JPEG 2000 mapping interface.

### Licenced Vehicle Tester Management System (LVTMS) : VicRoads 1999 - current

LVTMS is a system designed to assist VicRoads in the management of Licenced Vehicle Testers in Victoria. LVTs are responsible for determining whether a vehicle is roadworthy, and reporting this information to VicRoads. VicRoads controls who is eligible to perform roadworthy checks, and performs routine inspections at LVT sites. As of August 2005, there are over 2500 LVTs across the state, and more than 2800 sites where vehicles can be inspected.

LVTMS allows the storing of detailed information on testers (staff, address, roadworthy certificate books), information regarding routine inspections and the current status of a tester (current, suspended, expired or cancelled). The system can generate multiple reports pertaining to this information.

LVTMS is used by over 10 users in the roadworthy department. It is made up of a client / server architecture in which there is a central database residing at VicRoads. The system was designed so that each user has access to all information regardless of whether they have a network connection. Thus, each client has their own local copy of the database. When a network connection is available, users can synchronise their data with that of the master using algorithms designed by ITIG. This ensures any data entered locally is replicated to each other user.

LVTMS was written using Delphi 5.0 and uses Microsoft Access as the DBMS. QuickReports is used to generate reports. Client server communication is through TCP/IP.

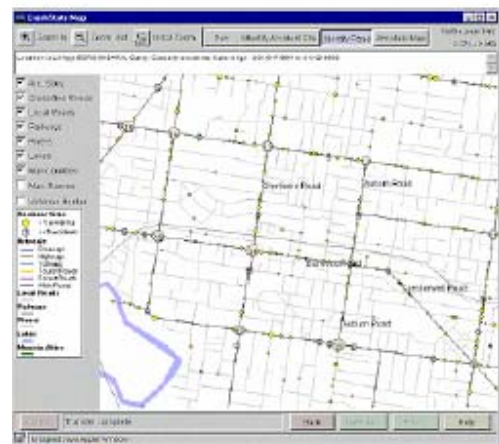
### CrashStats : VicRoads 1995 - 2005

CrashStats is a multi tiered accident analysis and statistics application that was developed for VicRoads.

It allows users to generate queries in a step by step manner on different types of accidents that have occurred on Victorian roads since 1997 and generates PDF reports in summary, detailed and map format.

Some of the features of CrashStats include accident black spot analysis; custom GIS interface for site selection; “on the fly” PDF generation; and the ability to export all data in raw format for use in other applications.

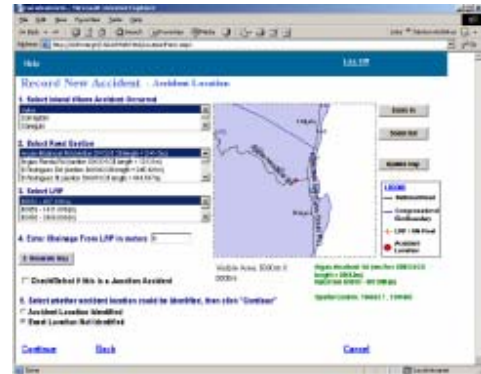
Currently there are more than 300,000 accidents stored in the CrashStats database and it has been used for many years by thousands of users including VicRoads staff, local councils and school children.



### Traffic Accident Recording and Analysis System (TARAS) : VicRoads 2003 - 2004

The Traffic Accident Recording and Analysis System (TARAS) was developed for the Philippines Government's Department of Public Works and Highways (DPWH) in 1993-1994. The system is a complete accident recording system and includes data entry; reporting & analysis; and system administration modules. It is a multi-tiered system storing all data in a relational database and provides access to users through a web interface. A number of technologies were used in the development of TARAS including .NET, Java, GIS and COM.

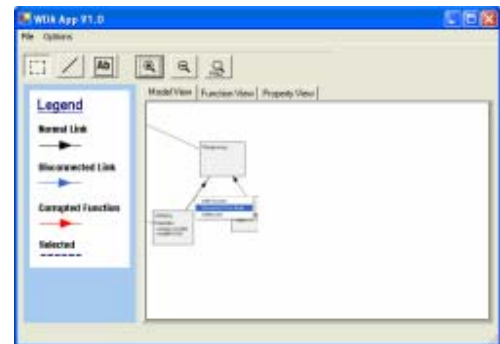
TARAS is currently being used in all regions of the Philippines by DPWH staff via the DPWH intranet and has been used to record data for more than 10,000 accidents.



### Work Domain Analysis (WDA) : DSTO (Melbourne) 2004

The WDA system was developed for DSTO, Melbourne, to conduct work domain analysis.

Some of the features of the system include graphical representation of system entities and a full GUI system domain editor; built in math support; mathematical function builder; and printing of all diagrams.



## Expertise

The Information Technology Innovation Group is at the cutting edge of development and are always using new technologies. ITIG have current and up to date expertise and knowledge in the following areas:

### Programming Languages

- C
- C#
- C++
- Delphi
- Java
- Visual Basic .NET

### Technologies/Frameworks/APIs

- .NET Framework including message queues
- Active Server Pages .NET (ASP.NET)
- Direct X (Direct 3D, Direct Show)
- Enterprise Java (J2EE)
- Geographical Information Systems (GIS)
- Java Server Pages (JSP)
- Oracle, MySQL, SYBASE, SQL Server, Access and other DBMS
- Servlets
- SQL
- Windows CE
- Windows Programming (Win 32 API)

### Hardware

- Apple Newton
- Custom built machines (Soldier Combat System)
- Eye motion tracker
- Laptops
- Multilevel displays
- Networking
  - Wireless (802.11x)
  - Radio (Military specification)
- Pocket PCs (IPAQ and earlier models)
- Standard Desktop PCs with Windows XP standard operating environment
- Tablet PC

## Research Interests

The Information Technology Innovation Group is actively involved in research. Current areas of interest include:

### Human Performance Under Duress

#### Imaging

- JPEG 2000

#### Mobile Technologies

- Pen Pointing Devices
- Fitts' Law
- Head Mounted Displays
- Tablet PCs

#### Other Technologies

- Geographical Information Systems (GIS)
- .NET Framework
- Windows Programming

### Network Centric Warfare

#### Networking

- Radio
- Wireless

## Contact Information

### Group Email Account

[itig@ict.swin.edu.au](mailto:itig@ict.swin.edu.au)

### Mailing Address

Information Technology Innovation Group (ITIG)  
Faculty of Information & Communication Technologies

PO Box 218 Hawthorn  
Victoria 3122 Australia

Or for couriers:

Science Annex Room SA121  
Mail H39  
John St Hawthorn  
Victoria 3122 Australia

### Website

<http://www.swinburne.edu.au/ict/research/itig>

### Contacts

#### **Kon Mouzakis**

T +61 3 9214 8585  
F +61 3 9214 8736  
E [kmouzakis@swin.edu.au](mailto:kmouzakis@swin.edu.au)

#### **Pauline Byrt**

T +61 3 9214 5504  
E [pbyrt@ict.swin.edu.au](mailto:pbyrt@ict.swin.edu.au)

#### **Patrick FitzGerald**

T +61 3 9214 8061  
E [pfitzgerald@ict.swin.edu.au](mailto:pfitzgerald@ict.swin.edu.au)

#### **Winston Fletcher**

T +61 3 9214 5707  
E [wfletcher@ict.swin.edu.au](mailto:wfletcher@ict.swin.edu.au)

#### **Pamela Scicluna**

T +61 3 9214 5708  
E [pscicluna@ict.swin.edu.au](mailto:pscicluna@ict.swin.edu.au)