Report to INDUSTRY

Interview with the CEO

**By David Barbagallo,
Chief Executive Officer**

Q. What does DSTC do?

A. DSTC conducts research and attempts to transfer the skills and experience into the Australian IT&T industry to give Australian organisations competitive advantage in a global economy.

Q. What is DSTC's competitive advantage in the marketplace?

A. In the Australian marketplace our compelling story is that we are unique. This is one of the largest concentrations of vendor independent high level expertise in IT&T research and development in Australia. Our focus on commercialising our IP requires that we are aware of market activities and trends. Our shareholders are valuable contributors to the process through market insights, problem definition and access to the latest technologies.

In the international marketplace our aim is to be recognised as technical leaders in the enterprise distributed systems space. We have excellent relationships with the big players in IT and in the Standards community. Our advantage is our relatively low cost structure and our high level of expertise and involvement with Australia's premium research institutions.

Q. How can organisations benefit from DSTC?

A. By tapping into the pooled resources you minimise your research risk and increase your access to resources. If you invest in one researcher in your own organisation you're relying on only their expertise only to solve your problems or create new products. By investing in a researcher in a centre of 70 researchers, you have access to all of the research and development expertise there.

W3C launches Australian Office at DSTC, opened by Bob Hopgood, Head of W3C Offices, and the Hon. Jim Elder, Queensland Deputy Premier and Minister for State Development, David Barbagallo, Chief Executive Office of DSTC. (See page 2 for more details).

Q. Where is DSTC going in the next 5 years?

A. We have a series of ongoing challenges ahead of us, and you need to understand the phases of work. We started with getting the conceptual base up, then we went through a growth phase to get momentum. That was followed by significant development to achieve stability. We now need to enter the next phase.

There are 8 years of research from which we hope to get a sustainable return. This is where our participants can be of invaluable assistance and at the same time benefit from the interaction. We've got research outcomes that the market place is ready for, and we aspire to have our participants realise the potential with us.

Then there are the new research projects, which have been going through the growth phase and which need to start getting serious about the development cycle. This is where we've been concentrating with our participant interaction, because we want to involve participants more over the whole lifetime of our work. By getting them in from the start we have the best chance to have early results.

Contents

DSTC Research Programme

DSTC's Research Programme incorporates over 20 projects spread across 6 sites around Australia. These projects tackle the key technologies required by those organisations who aim to exploit the information economy in a business environment. The research projects outlined here fall into one or more of five key areas of DSTC's research framework:

- Knowledge and Digital Resource Management
- Organisational systems and security
- Workflow and collaboration
- Enterprise modelling
- Component software and system engineering

For further information:
DSTC Research Programme
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Elemental

Enterprise language and methodologies for describing and supporting e-enterprises

The aim of this project is the development of

a) enterprise modelling concepts and their relationships (enterprise meta-model or enterprise ontology) and

b) methodologies, for the specification of architectures for the electronically-enabled enterprise (e-enterprise), and support for building systems based on the above concepts, in terms of appropriate software methodologies and visual modelling tools.

An architecture for e-enterprise will need to support a description of business environments within which distributed object and component technology are used for achieving enterprises' business goals. Such an architecture should address both intra and inter-organizational (ie B2B) issues related to the specification of business processes, business entities, business policies and contracts governing interactions between enterprises. Hence, this project will consider business in its entirety, reflecting recent organizational trends of electronic business linkages: an enterprise is not only a single organization but also a value chain of autonomous organizations or organizational units within a larger organization. These organizational entities need to interact in spite of different policies, business processes and goals, and this project in the long-term aims at addressing these inter-organizational (ie B2B) requirements.

For further information:
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Pegamento

Architecture and tools for reification of enterprise process and entity models

The goal of this project is to take high-level concrete descriptions of business applications and generate as much code to implement these applications as is possible.

The Pegamento project aims to provide a closer semantic link between process and state viewpoints of systems. This will be achieved by extending our process work in the workflow space to allow enactment of processes and steps in processes through collaborations of objects in Object-Oriented and Component-Based Middleware, such as CORBA, DCOM and J2EE.

The short-to-medium term goal is to work with the Elemental project to produce Enterprise extensions to UML for Process, Event, Entity and Relationship modelling. We will map models developed in this extended UML to implementations in disparate middleware environments.

The long-term goal is to provide abstractions that allow legacy system components to be shown at the enterprise modelling level. This will allow existing systems to be extended using the same high-level design abstractions and tools that may be used in "green field" developments.

For further information:
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Titanium

Transformation and interoperable access to enterprise information using metadata

Metadata enhances the sharing of data within a community through the semi-structured description of the community's information. With the increasing development of industry and community-based metadata standards, there comes an increasing need to provide an infrastructure which can support the efficient use of these standard data sets for querying over and exchanging data between heterogeneous information sources. As such, the main objective of this project is to design and develop an information infrastructure which can use data standards to support seamless, standardized querying and data exchange over a variety of information sources.

For further information:
Dr Linda Bird – bird@dstc.edu.au

m3

Enterprise architecture for mobile computation

m3 focuses on adaptive concepts that allow the execution of enterprise behaviour specification despite the rapid fluctuation of capabilities constrained and affected by mobile environments.

The goal of this project is to define a methodology for the challenges that arise in pervasive and ubiquitous computing, unifying permanently online and partially online scenarios in an enterprise.

This goal is being achieved by:

- A mobility sensitive service platform that implements tools and services for mobile computing.

- An extension to enterprise computing paradigms which can be identified and wrapped up as a Mobile Enterprise Architecture Description (MEAD) that describes models and concepts necessary to handle mobile environment and its implications for enterprise activities.

m3 is actively collaborating with with SAP, RSA, Telstra, Sun, OTI and Voxson to build a mobile portal that uses WAP, CC/PP and Handspring.

For further information:
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W3C Office

W3C WORLD WIDE WEB *consortium*

On the 8th June, DSTC became the host for the World Wide Web Consortium (W3C)'s Australian Office. The new Office was opened by Bob Hopgood, Head of W3C Offices, and the Hon. Jim Elder, Queensland Deputy Premier and Minister for State Development.

W3C Offices assist with promotion efforts, help broaden W3C's geographical base, and encourage international participation in W3C activities. This new Office will be an important contact point for existing and potential Australian members of the Australian region. W3C Members are interested in leading the Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability.

For further information:
w3c-dstc@dstc.edu.au

Maenad

Multimedia access for enterprises across networks and domains

Resource Discovery of single-medium atomic digital objects has advanced in the past 5 years due to the development of metadata standards such as Dublin Core which provides semantic interoperability for textual documents and MPEG-7 which will provide the same for audio, video and audiovisual documents.

However the future will lead to many more compound multimedia documents on the web which combine text, image, audio and video in rich complex structured documents in which temporal, spatial, structural and semantic relationships exist between the components. The problems of indexing, archiving, managing, searching, browsing and retrieving these kinds of structured dynamic documents are infinitely more complex than the resource discovery of simple atomic textual documents.

The objectives of this project are to develop tools such as metadata generators, mapping schemas, metadata repositories, query languages and search interfaces which enable efficient and cost-effective indexing, storage, rights management, search, retrieval and filtering of multimedia resources over the internet, based on emerging international standards.

For further information:
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CLIKS

Collaborative knowledge sharing

This project will identify knowledge sharing activities in distributed enterprises and provide software modules to support work processes in these activities. The modules will include agents to enable corporate knowledge resources to be used effectively across the Internet or Intranets while at the same time creating a resource that can contribute to other DSTC projects.

The current work is concentrated in two areas, improving the LiveNet software used in project and integrating knowledge sharing activities into business processes. LiveNet is computer software that can be simply and quickly configured to provide a customized interface to support knowledge intensive relationships focused on specialized goals. The workspaces configured by LiveNet bring together people and information needed to effectively use the organization's knowledge base to commercial advantage. LiveNet is suited to businesses that must manage an increasing number of specialized customer relationships or multi-unit teams while containing costs. These tasks can include more than one participant from different organizations to oversee special orders, provision of educational or other professional services, developing bid responses to proposals, or jointly designing products.

Productivity can be improved because participants can now get knowledge for one specialized task in one space rather than having to search for it through a number of systems. LiveNet is now in an advanced prototype state. It is based in teaching environments with large groups and is beginning to be applied in industry.

For further information:
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Ambience

Instrumenting the enterprise for the collection, integration and display of ambient information

In knowledge intensive enterprises, such as command and control centres, or in casual access scenarios such as doctors on rounds, workers must stop to focus on their desktop PC or handheld PDA in order to access the information infrastructure. "Ambient computing" will allow workers to focus on their work, rather than focusing on working their technology. The Ambience project aims to develop and implement ambient computing — distributed devices that blend naturally into the normal interactions and physical space of human work practice as they gather, integrate and display information that assists work.

For further information:
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Dr Peter Sutton – p.Sutton@csee.uq.edu.au

Internet Marketplaces

The IMP Project aims to develop, prove and transfer to industry and government methodology and technology enabling assembly and use of Information Infrastructures in Internet environments. It is specifically aimed at enterprises for whom autonomy of business units, diversity in the installed technology and changing requirements are important considerations. The initial scope is Spatial Data Infrastructures as a theme of high potential benefit with initiatives in progress at Commonwealth, State and regional levels. This scope will subsequently be expanded to other domains and to large corporations where Information Infrastructures are an attractive alternative to current strategies.

The strategic objectives are to accelerate the adoption of Information Infrastructure strategies in Australian government and industry and to establish companies in the Australian Computer Software and Services sectors as international leaders in the technology.

The planned outcomes are improved service delivery by governments, improved competitiveness for SME providers of electronic services, and improved competitiveness for companies in the Australian IT industry.

For further information
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Active Sheets

Active spreadsheets using an enterprise wide computational grid

The goal of this project is to research a component framework and build a corresponding tool set which allows a researcher to exploit existing computational models effectively by utilizing distributed computers. The project builds on earlier DSTC work in the Nimrod project, but expands the functionality in three important ways.

It utilizes an open toolkit for accessing computational resources, called Globus. This makes the Nimrod functionality more ubiquitous, and provides advanced models of security, heterogeneous access and resource discovery.

It allows a user to specify time and cost constraints on their experiment, dramatically improving the applicability of Nimrod to a globally, (or enterprise wide) shared resources.

It provides a spread sheet interface to the underlying computational model, which introduces many traditional information management techniques which have previously only been available for simple scenario based modelling work.

For further information:
Dr Paul Roe – p.roe@qut.edu.au
Professor David Abramson – davida@dgs.monash.edu.au.

CIAO

Components inside and outside: a component model with tool and language support

The goal of the CIAO project is to define a component model to enable the development of next generation web based enterprise systems. The component model will be supported by novel tools and a new programming language. As such CIAO is part of the Component Systems Engineering research theme of the DSTC. At present the primary focus of the project is on the research and design of a new component programming language called Flash.

The objectives of this project are to simplify the construction, deployment and evolution of component software systems, in particular enterprise ones. An important aspect of this is component reuse.

We aim to:

- Research an effective model for based component software, which incorporates notions of components, interfaces (incoming and outgoing), configuration, component versions and extensibility.
- Build tools which support the model and hence facilitate the construction, deployment and evolution of component software systems.
- Design and implement a programming language, which directly supports the model, and hence facilitates the construction, deployment and evolution of component software systems. The tools should be usable with existing programming languages but in this case will not be able to enforce all model invariants.

For further information:
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UML Profile for EDOC

DSTC is currently involved in the Object Management Group® (OMG) standard for extending Unified Modelling Language (UML™) to better represent Enterprise Distributed Object Computing (EDOC) concepts. This includes support for the specification of business processes, business events, business entities and business rules. In this standard we are working together with IBM's MQ Series group and Unisys, InLine Software and Rational development teams. It is anticipated that this extended UML standard will be completed by mid-next year.

This work also serves as a foundation to influence emerging B2B forums, in particular ebXML.org and BizTalk.org communities. The EDOC model is being extended to reflect needs of business processes spanning organizational boundaries - allowing organisations to interact with business processes of other organisations. We are also developing an architecture to support establishment and management of electronic contracts, including their electronic representation, but also negotiation, validation, tracking, monitoring and enforcement. The first prototype demonstrating a subset of this functionality and using Microsoft's BizTalk technology will be available in the third quarter of this year.

For further information:
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Centre for Online Health

The Centre for Online Health is a research, teaching, education and service provider within the University of Queensland's Faculty of Health Sciences. Its vision is to pursue improvements in health care through the use of information technology.

The Centre has four areas of activity; a focus on research in the area of online health; teaching about online health; commercialisation of research outcomes; and delivery of services in online health.

It has already commenced an internationally leading-edge project in the delivery of homecare for people with chronic cardiac and respiratory diseases, and is about to develop a suite of teaching programs in online health using its clinical and computing expertise in distributed health education systems. The education programs will be focussed on delivering high quality health information to patients and professionals in the field within Australia, and overseas.

For further information:
WWW: http://www.coh.uq.edu.au
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Australasian Document Computing Symposium (ADCS00)

The Fifth Australasian Document Computing Symposium (ADCS00) will be held at the luxurious Novotel, Twin Waters Resort, directly on the beach at Mudjimba, Sunshine Coast on the 1st of December 2000. This year's Symposium is sponsored by DSTC.

ADCS '00 is an opportunity for researchers and practitioners in document management and information retrieval to meet and present their work. The symposium aims to cover all aspects of Document Computing - issues ranging from the fundamentals of document architectures and standards for markup, through storage, management, retrieval, authentication and workflow, to active and virtual documents.

The Call for Papers is now available online and due before 18 August 2000:

http://www.dstc.edu.au/Tech_Transfer/Events/ADCS00/
Email: Dr. Peter Bruza, bruza@dstc.edu.au

Evolve Conference: Pervasive Business
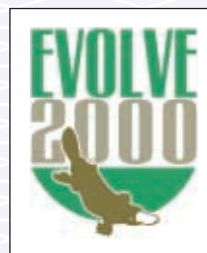
To stay afresh with trends, the Evolve Conference will expand its direction to encompass the new technologies involved in pervasive business. Next year's conference will be 6th to 9th May and the Call for Papers is now available online.

Pervasive Business is concerned with the dynamics of the online systems that allow interactions to seamlessly occur within and between organisations. Many organisations are currently harnessing these electronic systems to enhance the channels in their value chains.

Pervasive Business currently includes many business communication tools, processes and structures such as vertical and horizontal portals, B2B, B2C, and C2C processes, virtual enterprises and workgroups, m(obile)-commerce and e-learning. Pervasive Business involves many complex issues such as modelling the architectures for effective B2B processes, security of transactions, effective business rules and laws and working within the limitations of devices such as mobile computing.

http://www.dstc.edu.au/Tech_Transfer/Events/Evolve01/
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26 September 2000	XML – A Technical Introduction	Brisbane	$440
27 September 2000	Internet Programming 2	Brisbane	$440
28-29 September 2000	Java – Advanced Topics	Brisbane	$880

(Price above includes GST).

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