

Dr Jun Yan helped develop a new processing system that offers a novel approach to decentralised workflow management by integrating the available technologies. Picture: DAVE TEASE

Streamlining work

Research

Efficient business processes lie at the heart of a successful enterprise, helping to avert management mismatches that can disrupt a system's performance, says **Dr Jun Yan**.

AT the heart of any organisation is a set of business processes which organisations use to co-ordinate and arrange activities, information and knowledge for a product or service. Efficient management of these processes has become paramount to the agility and success of the organisation as a whole. Over the decades, process management technologies have evolved from manual routing of folders and documents into general purpose workflow management which enables business process automation, using information and communication technologies. Workflow management provides the capability to model and document business processes, automate process execution, track and log events, integrate various enterprise resources and incorporate external tools and applications. Consequently, as observed many times, workflow management brings an enterprise exciting benefits such as streamlining formerly inefficient procedures, reducing costs and flow time and increasing the quality of service and productivity. These benefits undoubtedly can place an enterprise in a position with

competitive advantages. Research and development in the workflow management area has been recognised as one of the most important areas in IT research communities and industry and offers significant national benefits. I started researching this area in 2001 when I was a PhD student at Swinburne University of Technology in Melbourne. My research motivations were to explore the reasons why some attempts at using workflow management in support of business processes failed and how it could be improved in an open environment such as the internet. Working closely with my supervisor, Professor Yun Yang, I found that conventional workflow management approaches based on the popular client-server model unfortunately mismatch with the workflow's dispersed nature. This mismatch results in unavoidable problems such as poor system performance, vulnerability to failures, limited scalability, user restrictions and unsatisfactory system openness, which have become major obstacles for side deployment of workflow management in the real world. To address these problems, I integrated the workflow technology and the peer-to-peer computing technology and proposed a novel approach which offers decentralised workflow management. The new research approach is named Swinburne Decentralised Workflow (SwinDeW). The key idea of SwinDeW is to minimise the use of a centralised server in the workflow management by

appropriately distributing essential data and control capabilities to participating peers so they become autonomous and self-managing. By exchanging semantic messages directly among peers, various workflow functions can be achieved. The initial results, as demonstrated in a proof-of-concept prototype, are promising. Performance bottlenecks are eliminated, while increased resilience to failure, enhanced scalability, improved user support and system openness are likely. As more enterprises move towards the emerging Service-Oriented Computing (SOC) paradigm, I have put my efforts on workflow management in the web services environment. As a natural extension of my PhD research, I am now working with Prof Yun Yang and Prof Ryszard Kowalczyk, both from Swinburne, on a large, inter-institutional project. The project, titled Agent-based Co-ordination and Negotiation Technologies for Decentralised Service Workflow Management, has attracted around \$250,000 from Australian Research Council's Discovery Projects. The expected outcomes will assist many organisations to effectively develop and deliver more efficient, reliable, flexible and adaptive business applications, using web services as fundamental elements.

- Jun Yan

Dr Jun Yan is a lecturer at the University of Wollongong's School of Information Technology and Computer Science.

Q&A

Will it save the world? No, but it will significantly improve the productivity and competitiveness of workplace enterprises. **Are you getting anywhere?** Yes. Research problems have been analysed comprehensively, new approaches have been proposed, developed, published and recognised. **Have you had a true "Eureka! I've found it!"**

experience? No. No breakthrough happened overnight. The mystery of the research is unveiled gradually. **What did you want to be when you were a kid?** A postman. **Advice for young researchers:** Good research combines theories and practices. **Website for further information:** <http://www.uow.edu.au/~jyan/>

Time running out



Opinion

Dr Kevin Mills, South Coast environmental consultant and chair of the South Coast Region NPWS Advisory Committee

NEVER a day passes without a reminder of the dangers of global warming, the disastrous floods and gales from ever more frequent storms, landslides caused by the destruction of forests, drought and the fires which follow, rising seas which threaten our Pacific Island neighbours, the loss of species due to the destruction of habitat. The list could go on.

Some of us simply close our minds in doubt about the facts or because we feel helpless in the face of disasters we can scarcely understand. Like an ostrich, we bury our heads in the sand and hope the problem will disappear.

Living in the Southern Highlands we have in David Tranter a scientist who believes that the first step to dealing with these problems is to understand them and this is surely the purpose of his book *Nature and Society* which has just been published. It is written from an Australian perspective, bringing the situation close to home and giving it greater meaning. The chapter on the tragic loss of the Wingecarribee Swamp is an example of how social irresponsibility combined with the forces of nature can result in environmental damage which has consequences not only for those who live now but for all generations.

From a global viewpoint it is insignificant, just one more example of the destruction of the balance of nature by man. Yet it is an example on our doorstep of the irreversible upsetting of the delicate balance of nature which on an international scale has become a threat to the lives of millions on our planet.

As an optimist, I believe man will be there; still talking, long into the unimaginable future and new species will arrive just as others disappear as has always been the case. What is at stake is whether what we think of as civilisation will continue and if it

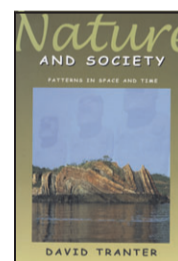
does, will it be reduced to struggling communities on a barren Earth? Civilisations have fallen and others have taken place as history makes clear. What is new in human life span is the degradation and loss of the resources on which we all depend.

In this book, of the many things made clear, is the delicate balance of nature that exists in a social sense of interaction of which we humans are a part.

David Tranter offers no ready answer because there is none. While we have time, and time is fast running out, first must come a universal acceptance that the problems exist, and then solutions must be found. This will require fresh thinking and social discipline of a kind which is largely absent. A few tentative steps have been made but have been woefully insufficient. This book is a major step in creating the awareness without which we shall fail and the price of failure will be beyond our imagination.



Nature and Society
Dr David Tranter,
Seaview Press, \$25



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