



Peter Rochford

Mercury, the Roman god of travel and trade, weighs ITS costs and benefits.

New directions for IBEC

David Crawford records a turning point in the history of ITS evaluation as IBEC, with a membership of 300 experts in 40 countries, measures up to a new structure.

Less than four years after being formally set up, the International Benefits, Evaluation and Costs (IBEC) Working Group currently claims a membership of 300 experts in some 40 countries throughout the world – and is still growing. The group aims to encourage the expert and consistent assessment of ITS developments and applications at global level.

IBEC now has a new structure following the ending of a period of joint funding by the US Department of Transport (USDOT) and the UK Department for Transport (DfT). On this basis, the UK-based Transport Research Laboratory (TRL) had provided the secretariat for the Group, following its formal launch as the 2002 ITS World Congress in Chicago, US.

This role is now the responsibility of a management committee, chaired by Jane Lappin, Head of the Economic and Industry Analysis Division of the US Department for Transportation (USDOT)'s Volpe National Transportation Systems Center. Lappin, who expresses warm gratitude for the previous 'extremely generous support, which got us up and running', is supported by colleagues from transport

organisations in the US, Canada, France, Germany, the Netherlands and the UK (see Table 1).

Funding and administrative support, for general and specific activities, is now coming from a mixture of sources, including the EC Directorate-General for Transport and Energy (DG TREN) and North American organisations such as the American Association of State Highway and Transportation Officials (AASHTO); from the employers, on both sides of the Atlantic, of members of the management committee; and – in one case – through the STREETWISE Euro-Regional Project (ERP). 'We have', says Lappin, 'now adopted a more entrepreneurial approach, and one of the benefits of this is that individual members are much more actively engaged in the work of IBEC.'

Among the first tests of the new structure will be the success of the ambitious programme of events and sessions that IBEC has organised at the 2006 ITS World Congress in London from 8-12 October (see page 24). Among these is firm evidence of a growing collaboration between IBEC and the World Bank, as a source of funding for development, on the issues that economies in transition and develop-

ing countries face in implementing ITS.

This springs from initiatives first unveiled at the 2005 ITS World Congress in San Francisco, when Christopher R Bennett, Senior Transportation Specialist, East Asia and Pacific with the Bank's Transport Unit, issued clear guidelines. The World Bank, he said, prefers the initial introduction of fairly basic levels of ITS, which can be expanded later if successful.

While its projects seldom involve formal evaluation of ITS deployments, a major concern is the ability of local public agencies to continue supporting them after World Bank funding ends. Accurate information is needed over the whole life of a project, including implementation, and operating and adoption costs, he stresses.

A year on, says Lappin, 'we already have very advanced plans for working with China. We expect the techniques that develop as a result to be applicable to other countries.'

Within Europe, a major opportunity lies within the European Commission's projected 2007-13 EASYWAY multi-annual indicative programme (MIP) of multi-national ERPs for boosting ITS deployment on the Trans-European Road Network (TERN). (See *ITS Solutions*, July 2006). This is designed to follow on from the current TEMPO ERP programme, and evaluation of project results will have top priority – reflecting the widely-acknowledged importance of achieving the concrete targets set out in the EASYWAY proposal. These include:

- Reduction of congestion by up to 25%;
- Improvement of safety by up to 25%; and
- Reduction of CO₂ emissions by 10%, with the emphasis on urban areas.

Evaluation in action

In the US, the US Department of Transportation (USDOT) is currently redesigning and reorganising its web-based resource of evaluation information on ITS benefits and costs, from projects beyond as well as within the US, covering 16 application areas (see table 2). Recent entries include the deployment by the California Department of Transportation (Caltrans) of an automated workzone information system (AWIS) during the 18-day rehabilitation of a heavily-travelled 4.5km section of interstate highway 15 (I-15).

Caltrans indicated the need for a 20% reduction in peak-period traffic using crossover lanes to enable 24/7 working. If AWIS could deliver this, the resulting maximum 50 minute delays would be acceptable, given that the traditional approach of nighttime closures could take 10 months to complete.

The AWIS alerted drivers to traffic conditions before they entered the work zone and offered alternative routes via roadside dynamic message signs (DMS). A central computer collected speed data from roadside detectors to estimate travel times.

Results showed that the AWIS produced travel-time estimates within a 10% error range compared to actual travel times measured by probe vehicles. It reduced traffic demand satisfactorily by diverting drivers to detour routes and achieved maximum average peak delays of 45 minutes, as compared with the estimated 90 minutes without AWIS.

In a cross-border exercise, DOTs in three US states and Canada collaborated to develop the FORETELL weather information website, principally for the benefit of highway maintenance operators. Over 30% of those that used it changed weather-related decisions, in the light of information on eg wind speed/direction, precipitation, atmospheric temperature, road surface temperature and condition, and dewpoint. Over 50% planned to continue using the service, and 20% were prepared to pay for it.

Other representative findings abstracted from the collated data are that:

- Automated enforcement of traffic signals has reduced levels of red-light violations by between 20 % and 75%;
- Advanced signal control systems can reduce peak-period travel

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times by between 5% and 11% and fuel consumption by between 2% and 13%; and

- Installation of freeway access ramp meters has reduced accidents by between 15% and 50%; while experimentally switching them off has reduced freeway volumes by 9% and peak-period throughput by 14%.

Ongoing evaluation activity in the US runs at both federal and state level. The former typically involves large-scale field tests, the latter is essentially pragmatic and focuses on the operational level, eg using before/after and without/with scenarios.

Europe

One of the most systematic current examples of ITS evaluation in action has emerged within the TEMPO ERP programme. The STREETWISE ERP has taken the initiative in setting up an Evaluation Expert Group (EEG), which includes representatives from all the seven current ERPs, with a brief to:

- Demonstrate the benefits of individual ITS applications on the Trans-European Road Network (TERN) and highlight the extent of their success;
- Disseminate, promote and compare results;
- Demonstrate the importance of information exchange between projects; and
- Demonstrate the benefits of the ERPs overall.

The EEG set itself two main tasks: to establish and monitor a work plan for ERP evaluation; and produce guidance on the documentation of ERP outcomes. Its work has already



Randy Iwasaki, Chief Deputy Director of the California Department of Transport (Caltrans), spelt out ITS benefits as a keynote speaker during the IBEC programme at the 2005 ITS World Congress in San Francisco.

proved of critical value in establishing the case for the continuation of TEMPO under the EASYWAY banner, which enjoyed substantive EC encouragement at the 2006 ERPs Conference in Barcelona (see ITS Solutions, July 2006).

The Group's aim is to record up to 100 results in a standard format, as a means of:

- Presenting ITS achievements in a consistent manner;
- Making relevant reports and contact details available to all partners; and
- Helping to support similar work.

Its template for consistent

IBEC - the organisation

IBEC is a co-operative international working group which co-ordinates activity in, exchanges information on, and disseminates techniques relevant to, the evaluation of comparative ITS benefits and costs. It is chartered to achieve five global objectives:

- Provide support on cost-benefits and cost-effectiveness analysis to government agencies, planners, producers, and ITS implementers and researchers;
- Promote the development of consistent and more reliable methodologies for the evaluation and deployment of ITS products and services;
- Provide information to transportation professionals, decision-makers and the travelling public on the measured costs and benefits of ITS deployment;
- Share information on non-technical and institutional issues and lessons learned resulting from ITS project evaluations; and
- Promote the importance and relevance of professional evaluation and the added value of international cooperation through IBEC.

Membership is free of charge and open to individuals and organisations with an interest in ITS benefits, evaluation and costs. The intention is to ensure that all countries with an interest in ITS are adequately represented.

IBEC emerged as one of the outcomes of the EC/USDOT/Transport Canada co-funded ATLANTIC (A Thematic Long-term Approach to Networking for the Telematics and ITS Community) project, set up to encourage the systematic exchange of ITS information and experience between Europe and North America. It followed on from the success of a series of benefits and costs workshops supported by USDOT, ATLANTIC and the US Transportation Research Board (TRB) at ITS World Congresses and other events from 2000 onwards.

reporting provides for a full listing of all assets involved, the methods used and assumptions made, for the benefit of all relevant policy makers and stakeholders. It is overcoming the language problems inherent in a multilingual community by reporting in English and using similar measurements to make comparisons simple.

Some 45 subprojects are currently in the process of reporting evaluation results, using TEMPO guidelines, for inclusion on the TEMPO website (<http://tempo.austriatech.org>).

The EEG is also creating a 'Handbook of Best Practice in Evaluation', which will include

appraisal of available options, evaluation of chosen solution, management of the overall evaluation process and prioritisation of decisions to be taken. It intends to present more information and concrete results at its workshop in Brussels on 6-7 November 2006. Individual European evaluation initiatives span a number of countries. Denmark is developing a methodology for encouraging road authorities to carry out cost-benefit analysis of ITS investments, based on previous guidelines and frameworks for evaluating the socio-economic impacts of conventional transport projects.

IBEC at the 2006 ITS World Congress:

IBEC is organising a special pre-Congress workshop on Sunday October 8, before the 1700hrs official opening; and a whole day of four special sessions on Tuesday 10 October. Speakers represent Australia, Canada, Chile, Germany, Hungary, New Zealand, the UK and US.

The day-long Sunday workshop on October 8 takes the form of an international 'tour' of ITS benefits, evaluations and costs, focusing on current experience of, and future plans for:

- Urban mobility in large cities;
- Automated enforcement systems (with the emphasis on recent successes and lessons learned);
- Intelligent parking systems (with the emphasis on managing demand and improving utilisation); and

- Understanding ITS benefits and costs. (Potential participants can register via the IBEC website).

The special sessions on Tuesday 10 October are:
0900hrs-1030hrs. SS22: ITS Case Studies from Economies in Transition and Developing Countries.

1100hrs-1230hrs. SS28: The 'Big Shift': Is ITS the tool or the origin of shifting? And where do we shift with ITS?

1400hrs-1530hrs. SS34: The Economic, Security, and Efficiency Benefits of Emerging Freight and Parking Trucks Technologies.

1600hrs-1730hrs. SS40: Update on the Impacts of Road Pricing: Beyond the Technology.



IBEC shakers and movers: from left, Steve Morello (France), Sally Cotter (former secretariat, TRL, UK), Jane Lappin (US), Steve Tarry (UK).

Development of the methodology has highlighted a number of gaps in knowledge of ITS effectiveness, as well as uncertainty over the specific data needed for detailed socio-economic evaluations. Proposed remedial actions include:

- Systematic monitoring and collection of international

- experience;
- Collection of more reliable data on incidents, and ITS impacts on them;
- Collection of better data on operating and maintenance costs;
- Studies on how different road users value information; and
- Gaining better knowledge of

how road users perceive ITS services and adapt their behaviour in response.

The Czech Republic's 'Efficiency in ITS application' process, within the CONNECT ERP, is developing and testing a comprehensive evaluation methodology based on the concept of the 'market package', as defined by USDOT in the US National ITS Architecture. Market packages, of which the US National ITS Architecture defines 63, represent assemblies that interact to deliver a specific transport service. Each package represents the smallest ITS application element that is capable of separate evaluation, and has cost and benefit indicators assigned to it.

The process aims to evaluate all types of cost (eg time, operating, environmental, congestion etc) and to provide benefit indicators for all stakeholder groups. Specially-developed software will generate operating, environmental and time cost savings.

Four ERPs – CENTRICO,

CORVETTE, VIKING and SERTI – have initiated a network management initiative within the European Long Distance Corridor (LDC) programme. It involves the implementation and evaluation of three pilot corridors incorporating alternative routes and demonstrating traffic management measures, and is designed to produce both quantitative and qualitative results.

Results of an initial monitoring of serious incidents on the German A3 highway, and rerouting using VMS and radio bulletins, show that the main benefit (84% of the total) arises from reduced driving times. Rerouting can have a positive effect if:

- The alternative does not take much longer than the normal route or;
- The incident causes a considerable extension of driving time.

www.ibec-its.org
www.its.dot.gov
<http://tempo.austriatech.org>

Table 1: IBEC management committee

Chair	Jane Lappin	Volpe, US	Lappin@volpe.dot.gov
Vice Chair	Steve Morello	Egis Projects, France	s.morello@egisprojects.com
Secretariat	Steve Tarry	Faber Maunsell, UK	steve.tarry@fabermaunsell.com
Communications and Membership Chair	William Johnson	TRENDS, Canada	johnswf@attglobal.net
Events Coordinator	Patty Del Pozo	ITS America	Patricia_del_Pozo@itsa.org
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Librarian	Amy Polk	Cairo Corporation, US	APolk@CAIROCORP.com
2006 ITS World Congress Panel Chair	Henk Taale	AVV Transport Research Centre Netherlands	h.taale@avv.rws.minvenw.nl

Table 2: USDOT website coverage of ITS cost and benefits

Sector	Application area
Intelligent infrastructure	<ul style="list-style-type: none"> Arterial management systems Freeway management systems Transit management systems Incident management systems Emergency management systems Electronic payment management systems Traveller information Information management Crash prevention and safety Roadway operations and maintenance Road weather management Commercial vehicle operations Intermodal freight
Intelligent vehicles	<ul style="list-style-type: none"> Collision avoidance systems Driver assistance systems Collision notification systems