Creating the future of transport
**Transport**

Dictionary definition: (verb) take or carry from one place to another by means of a vehicle; (noun) a system or means of transporting, the action of transporting or the state of being transported.

*Adapted from the Compact Oxford English Dictionary*

TRL definition: the key to achieving prosperity, progress and sustainable growth; the means to unlocking potential, seizing opportunities and delivering a better quality of life, locally and globally.

**Value**

Definition: the assessment of whether or not goods and services acquired or provided have delivered maximum benefit, taking into account quality, cost, resources, fitness for purpose and timeliness. In summary, a measure for economy, efficiency and effectiveness.

*Adapted from Imperial College, London business definitions*

TRL definition: enabling our customers to develop competitive advantage and derive maximum benefit from their business and operations. Delivering effective, evidence based solutions that can drive forward real improvements for transport through expertise, insight and in-depth knowledge that is independent and impartial.

TRL is the UK’s Transport Research Laboratory, recognised world-wide for over 75 years of evidential research and impartial advice. In some aspects our work is very similar to that which was started in 1933. However, the TRL of today is a very different one from that of its forebears.

Yes we still work in the traditional areas of road and vehicle safety, highway engineering and maintenance, but through the decades our knowledge has expanded to encompass so many other facets that shape and form transport decisions: sustainability; attitudes and behaviours; simulation and modelling; carbon reduction; standards and specifications to name but a few.

This is all supported by world class testing and certification facilities which include impact rigs, a structures hall, pavement test facility, car driving and truck driving simulators, pavement monitoring and testing services, air and noise quality monitoring equipment and more.
Transport grows and evolves to keep pace with changing requirements. And just as the world of transport never stands still, at TRL neither do we. Harnessing our unrivalled knowledge, experience and benchmark capabilities in research, testing and evidence-based consultancy, our solutions embrace technology, while combining innovation and imagination with real-world practicality. Moreover, everything we do is firmly rooted in delivering real value through our independence, responsiveness and integrity.

It’s our journey and mission to meet transport’s challenges: ensuring real value for money; delivering better transport system efficiencies; reducing risk and improving environmental performance. On every front, we’re constantly evolving to create the future of transport.

So what’s at the heart of our desire to travel, to make connections?

Fuel for Thought...
Since first established in 1933, TRL has undertaken over 10,000 projects in more than 100 countries around the world, helping to transform and save countless lives.
**Certification**

Confidence, compliance and industry-leading recognition for transportation products and services. Developing guidance, standards and approvals including product testing:

- Market-led Certification
- Regulatory Certification
- Product Testing

**Software**

Internationally recognised traffic and transportation software.
TRL provides national and regional software applications through to local, community and bespoke products and services:

- Software Consultancy
- Software Products
- Software Training

**Facilities**

Our state-of-the-art facilities in our purpose-built headquarters in Wokingham offer clients an exceptional suite of the latest technology fit to meet their needs. Our wide-ranging tools demonstrate the diverse capabilities that TRL has:

- Driving Simulation (DigiSim)
- Impact Testing
- Materials Testing
- Mobile Test Equipment eg air, noise and pavement condition monitoring
- Pavement Testing
- Structural Testing
- Test Track & Road System
- innovMTS ADVANCE
TRL at a glance

**Consultancy**

Evidence based solutions for transportation and transport-related commercial challenges – helping to improve the delivery of value for money, organisational performance and key decision making:

- Automotive
- Energy & Climate Change
- International
- Managing Risk
- Multi-modal Journeys
- Resource & Waste Management
- Rail
- Security
- Sustainability
- Carbon Reduction & Financing

**Research & Development**

Knowledge and innovation for all aspects of Transportation, Safety, Vehicles, Environment, Sustainability and Transport Infrastructure:

- Improving Safety – Collision Investigation; User Safety; Vehicle Safety
- Intelligent Transport – Human Factors; Managed Motorways; Road User Charging
- Journey Time Reliability – Network Performance; Tackling Congestion; Travel Behaviour
- Managing Infrastructure – Asset Management; Reliability & Materials; Sustainable Construction
- Sustainability – Environmental Assessment; Sustainable Cities; Sustainable Transport

**Knowledge Management**

TRL has one of the world's most comprehensive collections of research databases, including an extensive library of transport books, journals and reports, with TRL publishing many reports a year on a wide range of transport-related subjects:

- Construction Information Service
- Current Topics
- International Transport Research Database (ITRD)
- Papers & Articles
- Reports & Publications
- Subscriptions
Transport Hubs

A major transport hub. Node, nexus, nerve centre. A multi-modal centre. Hubs like this are the bedrock of any truly integrated transport network.

This is an age of movement. As demand for transport rises and options increase, expectations are also expanding in terms of convenience, speed and ease of travel. It’s essential that transport hubs – large or small, old or new, however many modes they accommodate – are equal to the task.

Well-conceived, well-equipped hubs can propel transport systems to new levels of efficiency, sustainability and cost-effectiveness. Seamless, streamlined intermodal transfers benefit transport users, boost economies and aid environmental protection. Like hubs themselves, our aims are diverse yet interlinked. To improve accessibility, minimise the stress of travel, cut journey times, encourage use of public transport and deliver value, reliability, safety and security.

Fuel for Thought...

It’s estimated that in the UK the total distance travelled by domestic passengers in 2007 was 817 billion passenger kilometres, with bus and coach journeys reaching 50 billion. (Latest figures available). In 2008, travel by car (including light vans and taxis) reached 679 billion with national rail journeys numbering 51 billion passenger kilometres and 23 million passengers travelling on domestic flights. (Transport Trends: 2008 and 2009)
TRL understands what makes intermodal connections function more efficiently. From hub design and maintenance to improvement and expansion – our approach is rooted in the multi-dimensional application of creative and imaginative skills, bonded to expert appreciation of practical considerations, local needs and specific priorities.

Our research and consultancy expertise embraces sustainable construction and asset management, ranging from runways to roads, rail and tunnels/bridges. It spans traffic management and measures that influence travel behaviour, such as car-sharing software and the provision of in-vehicle technologies. It also embraces the effective development and implementation of current/next-generation ITS.

We provide robust advice aimed at improving passenger safety through our knowledge of injury prevention and biomechanics. Complementing this, we offer agenda-setting expertise in security measures such as perimeter protection. We’re fully aware that the twin issues of security and safety play a crucial role in increasing confidence in (and therefore reliance on) public transport.

Individually and collectively, each component in TRL’s suite of skills helps build successful transport hubs that deliver their potential.

Connecting to our transport hubs are our cities and urban areas...

Application...

In isolation, knowledge, skills and experience can count for very little. TRL knows that the key is in the ability to transform these into tangible, practical, inspirational solutions. It’s our passion – applying benchmark capabilities for the direct benefit of our clients and achieving results whose positive impact is felt by real people, real communities, real lives.
Without transport, there could be no city. This environment is fuelled by motion — vehicles converging on road networks, pedestrians in a hurry, vast numbers of people relying on public transport to pursue livelihoods, leisure and pleasure. But how can movement to, and through, a metropolis be made as quick and comfortable, as safe and sustainable as possible?

Efficient transport systems can help unleash a city's maximum potential and all types of transport need to function effectively if a city is to combine prosperity with quality of life. The task is demanding but well-defined: to ensure that transport options keep pace with, and anticipate, economic developments, social changes and environmental priorities too.

**Fuel for Thought...**

The transport sector accounts for around 25% of global carbon dioxide emissions, linked to climate change. TRL has been working internationally with motor manufacturers and researchers to examine the role of bio-fuels, hybrids and hydrogen. "With billions about to be spent by governments on energy, buildings and transport, it is vital that these public investments do not lock us for many more decades into a costly and unsustainable high-carbon economy." Lord Stern, Chair Grantham Research Institute, Climate Change, 2009
Cities pose complex transport challenges. That's why TRL's expertise embraces so many facets of travelling both to and within a city environment.

Controlled motorways and variable messages can reduce road congestion, delays, disruption and stop-start conditions. So can network management, road user charging and other ITS options. TRL's skills in these areas are complemented by proven research and consultancy capabilities in highway engineering, and design and maintenance of bridges and other structures.

But maximising road efficiency/capacity must dovetail with other requirements too. So we're at the forefront in issues like vehicle and work-related road safety, as well as the rapidly escalating priority of infrastructure security – minimising scope for terrorists and other criminals to successfully target buildings and transport networks.

Of course, cities need to deal with the effects of climate change too. So we're intent on helping the transport sector conserve energy, cut emissions and reduce its carbon footprint, and make public transport, walking and cycling more attractive options. We recognise that sustainable transport solutions are absolutely vital if cities are to provide a stimulating and rewarding environment, now and for generations to come.

So let's see what TRL is doing...

Environment...

A transport solution that doesn't take the environment fully into account is no solution at all. At TRL, this belief is embodied in the techniques we employ, the services and products we supply. An unshakeable, overarching commitment to sustainability – and to tackling a whole range of specific environmental issues – provides the essential context for all our activities.
Safer, better value, sustainable roads

From early work in the 1930s on road materials, methods of construction and skid resistance, TRL rapidly broadened its focus to include other areas of transport infrastructure, road safety, investigations into the capacity of roads and junctions, occupant and pedestrian safety. This embraced the introduction of roundabouts, zebra crossings and traffic light control tools including SCOOT, TRANSYT and MOVA.

More recently, our work studying motorway traffic flow has helped to optimise journey time reliability, has looked at variable speed limit compliance, MIDAS loop and CCTV spacing, as well as new scheme commission support, including signal setting simulation and fine tuning prior to live operation.
Managed Motorways

Satellite and radio communications to road infrastructure and drivers
Driver information systems linked to sensors and in-car devices

Intelligent Transport Systems

In-built fixing system for central reserve barriers and traffic signs

Flexible, durable surface, easy repairs, self-cleaning, instant crack repair

Condition assessment

Skid resistance measurement

Carbon capture planting fed by run-off water
Drainage and reservoirs for storm control and water collection

Winter maintenance and condition improvements

Climate change resilient

Low carbon sub-base and pavement

TRL is working to bring together innovative technologies and concepts. Harvesting knowledge from across Europe to transform the way roads are built, designed, maintained and operated.
Improving the transport environment

Driver Behaviour
- Signal identifiers and their effects
- SPADS signal investigation
- Driver visual strategies

Passenger Safety
- Warning systems
- Modelling and simulation
- Human biomechanics
- Crash dummies
- Interior crashworthiness
- Design/ergonomics

Asset Management
- Value for money
- Data collection and management
- Whole life options
- Cost-benefit analysis
- Environmental impacts
- Integrated solutions

Bridges
- Remote monitoring
- Pedestrian loading
- Risk-based examination
- Waterproofing
- Vehicle strikes
- Revision of Standards, Guidance Notes

Level Crossings
- Safety
- Traffic signs and signals
- Reduce delays
- Incident investigation
- Economics
- Human factors

Crash Investigation
- 3D laser scanning
- Visualisation
- Simulation
All users of our road and rail networks want a transport environment that is safe, efficient and reliable, as well as sustainable and environmentally responsible.

The transport industry faces a number of challenges that include the need to reduce congestion, increase integration, provide options for modal shift and encourage beneficial shifts in travel behaviour, whilst developing and applying intelligent transport technologies to best effect. And all against a background of economic change and the need to deliver solutions that represent true value for money whilst expanding capacity, choice and customer satisfaction.

TRL is helping transport professionals to respond to all these challenges with expertise across a broad range of disciplines, providing solutions that are: fit-for-purpose; generating opportunities to add value and improving the transport experience.

Let's resume our journey...
Urban Areas

By road or rail, we arrive in our towns. Shaped by man over years, decades, centuries — an urban area of striking contrasts.

Transport is fundamental to the successful functioning of urban areas. Accessibility and mobility are critical to a town's capacity to flourish, evolve and meet growing competing demands. But can current transport systems withstand the pressure? How should they be enhanced? What are the implications for the environment?

Transport makes a key contribution to satisfying the expectations of those who work in, visit or live in towns... we understand how transport really can help to catalyse positive urban change. TRL delivers solutions that meet immediate requirements and can accurately predict future changes, ultimately delivering value and benefits for everyone.

Roundabouts

Did you know that the successful demonstration by TRL of the "priority rule" at roundabouts, led to its mandatory introduction in 1966. The rule was introduced to "unlock" roundabouts that had increasingly become blocked with heavy traffic.

Fuel for Thought...

The very first traffic lights were installed outside the Houses of Parliament in December 1868. Today SCOOT, a tool developed by TRL for managing and controlling traffic signals in urban areas and installed in over 170 cities worldwide, is a recognised leader in Urban Traffic Control, typically reducing traffic delay by an average 20%.
TRL recognises that transport networks must strengthen the communities they serve. So we ensure our world-class KNOWLEDGE translates into real-world solutions that promote efficiency, safety and sustainability in urban transport.

TRL Software leads the way in road junction analysis software, while experts manage and advise on traffic information systems that tackle congestion and reduce emissions by cutting journey times. We’ve developed state-of-the-art road maintenance options and investigated energy-saving streetlighting that will benefit the environment while aiding road safety. Elsewhere, breakthroughs in reliable real-time passenger travel information encourage more people to use public transport.

But for maximum impact, such solutions must be based on accurate understanding of the wider picture. That’s why we specialise in analysing transport demand, traffic flows, pedestrian environments and cycle networks. And that’s why we help local authorities develop transport plans that satisfy everyone’s needs, promoting social inclusion and protecting the environment.

From signage to traffic calming; from roadwork safety to ITS; from understanding driver behaviour to benchmarking parking facilities – TRL’s expertise can increase the value that urban communities place on the towns so central to their lives.

Let’s move on to...

Knowledge...

Everything TRL does ultimately derives from our unique depth and breadth of transport-related knowledge and experience. Continually refreshed and reinforced, that knowledge is built on the soundest, most secure foundations. But our experts think beyond the obvious – they recognise how crucial a role innovation and creativity can play in developing perfect, value for money transport solutions.
Our countryside. Timeless. Traditional. Yet all around us, as we travel through it, there are signs of change, increasing diversity and more varied land use.

In the country, transport is a lifeline. It underpins everything. Road and rail, walking and cycling. More people and goods on the move, more demand for transport. But can our infrastructure cope?

Will safety be compromised? Can the countryside deliver in economic and recreational terms, and stay true to its nature?

TRL recognises the huge contribution that safe, efficient, sustainable transport can make to the countryside and acknowledges the increasing pressures rural transport systems must withstand.

Fuel for Thought...

In 2008, there were nearly twice the number of car occupant deaths on non built-up roads as compared to motorway and built-up roads. (Road Casualties Great Britain 2008). TRL is helping to reduce this toll.
That's why our expert **UNDERSTANDING** of individual issues interlocks with a comprehensive appreciation of the "big picture" and how those issues interact.

We know, for instance, the dangers **rural roads** pose. So alongside industry-leading **road safety engineering** expertise, we apply unrivalled **risk assessment and collision investigation** capabilities, pinpoint potential **traffic-calming** and other improvements, and ensure planned infrastructure meets the highest safety standards.

At the same time, traffic needs to flow. Our **computer modelling/software-based** products and services optimise **traffic management**, while intelligent transport system (ITS) capabilities help minimise congestion and pollution. The result? Rural areas that can accommodate growing transport demand – whether peak-time, business-related or seasonal influxes that can otherwise overwhelm infrastructure.

We recognise the fundamental importance of meeting vulnerable road user needs. Making options safer and more viable encourages less reliance on cars. We understand that, in the country, **every transport mode** has a role to play in bringing people together and realising their potential. Underlying everything is TRL’s commitment to **sustainability**, the need to reduce our carbon footprint.

**But what are the challenges ahead?**

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**Understanding...**

At TRL, understanding is about much more than in-depth specialist knowledge and the commitment to push the parameters of what's technically possible. It's about appreciating the requirements and instincts of transport users and society as a whole. Above all, it's a matter of developing a profound understanding of exactly what our clients want – of listening and responding, of close collaboration and partnership.
"Climate change affects us all, but it does not affect us all equally. The poorest and most vulnerable – those who have done the least to contribute to global warming – are bearing the brunt of the impact today."

Ban Ki-moon, Secretary General, United Nations, 2009

Global Challenges

Transport’s fundamental role in human progress is undeniable. But can it find the answers to the distinctive challenges of the 21st century, at global, national, regional and local level? Can it help shape – effectively, affordably, sustainably – the destinies of individuals, communities, countries and continents, now and in decades to come?

Transport has the capacity to deliver economic improvement, social and environmental advances worldwide. TRL recognises transport’s ability to help transform people’s lives – in both developed and developing countries, whatever their short, medium or long-term needs. The requirement is simple, its implications immense. To identify and apply low carbon transport solutions that meet ever-shifting requirements, constraints, interests and priorities across the globe – today and tomorrow.

Fuel for Thought...

Since the mid 1970s, TRL has been looking at road safety in developing and emerging nations. In 1991, we published our landmark publication “Towards Safer Roads in Developing Countries” which gave advice to highway engineers and planners on building roads with safety in mind. In recognition of our overseas work, TRL has been awarded two Prince Michael International Road Safety Awards.
Transport has a critical influence on health, wealth and overall socio-economic development, whether in Europe, Africa, Asia or elsewhere. That's why we deliver genuine VALUE by enhancing safe, reliable, environmentally friendly access to jobs and services, in towns, cities and rural areas around the world.

Working from our network of offices in the UK, Europe, Middle East and Africa, we provide practical solutions to key transport questions. By sharing information and knowledge, we also facilitate the building of local expertise and self-reliance. Moreover, our tried and tested skills in training provision and institutional strengthening create the basis for sustained – and sustainable – growth in all kinds of communities. And in every case, we carefully take local needs and factors fully into account.

TRL's capabilities extend to every aspect of planning, constructing and operating transport networks – from road design to materials selection; from road safety audits to incident management; from industry-leading manuals, software and ITS to unparalleled experience in standards, specifications and certification procedures. Our skills portfolio is rooted in a simple truth which applies worldwide... that transport really is the stem, enabling progress and achievement to flourish.

There's just one more stop on our journey...

Value...

What is value? In our eyes, it is rooted in more than transient, monetary terms. For us, giving and adding value means delivering something of enduring use and legacy, in environmental, social as well as economic terms. It implies ensuring everything we do brings optimum benefits for our customers and the communities they live in, wherever they are in the world.
Welcome to TRL – our final destination. We hope the journey we’ve shared has given you fresh insights into the world of transport... a stimulating world of tough issues, difficult choices but extraordinary opportunities. This is the world TRL is committed to.

As a global leader in independent research and consultancy we are different from other organisations in our field. Why? The answer lies in our...
**Track record**

Our long transport history has given us an unsurpassed breadth of experience, harnessed for the benefit of our clients worldwide. We've built a welcome reputation for delivering best-value solutions that make an immediate and lasting difference, as well as for impartiality, confidentiality and productive partnership-building.

The TRL Academy reinforces our scientific and engineering expertise and our reputation as a leading international transport research institute and centre of excellence. The TRL Academy delivers long-term research programmes and projects that develop major IPR, increasing our intellectual capital, knowledge and understanding.

**Resources**

Our fully integrated, 400-strong team offers exceptional expertise in a wealth of disciplines, including engineering, physics, maths, statistics, computer science, economics, environmental science and psychology. Whatever the challenge, we’ll assemble the right team to tackle it.

Our unique suite of in-house and mobile facilities include structural testing halls, advanced car and truck simulators, traffic-speed road monitoring vehicles, comprehensive impact test facilities, a private test track, plus an Information Centre, open to the world’s transport community.

**Long-term vision**

Track record and resources are essential components in creating knowledge and generating solutions. But these are coupled with a comprehensive understanding of trends, developments and their potential impact on the future as it unfolds. And our programme of development initiatives, such as Certification, ITS, Sustainable Cities and Consultancy, will ensure we respond to the transport challenges that continue to emerge and evolve in the years ahead.

**The journey really is just beginning...**

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