

THE “THINKING TO DRIVE” CONCEPT AND KNOWLEDGE MANAGEMENT IN TRAFFIC SAFETY EDUCATION (AN INITIAL PAPER)

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1. Abstract

In the road safety world nowadays characterized by the growing importance of both vulnerable road users and the ageing society, the availability of knowledge that can be used to identify and analyze danger situations becomes more and more crucial. Once basic safety issues have been successfully confronted, and stubborn issues gain more visibility and attention, it becomes evident to everybody how important knowledge management is.

Knowledge is the base of the human evolution since its very beginning. Sharing knowledge is vital in order to facilitate efficient road safety world. And Knowledge Management (KM) tools give the road safety community, as it has been shown by the world-leading general purpose consultancy firms, the opportunity of learning of each other from a holistic point of you. KM allows the road safety research and practitioners community to exchange experiences (workshop outcomes, results of calibration studies, formulation of international guidelines, clearing house for reports and so on) while keeping the ability of handling the existing knowledge.

The tool of knowledge management applied to road safety helps the road safety professional to handle the complexity of existing knowledge while covering the entire range of the core processes of knowledge management (generate, distribute, store and apply).

The hypothesis of the authors of this article is that if international cooperation takes advantage of the basics of knowledge management this can help prevent accidents by reinforcing the available resources and the general access to information and knowledge.

The article would present the basics of knowledge management and propose how to generally apply them to innovation in the field of road safety education and training. In particular the article would explore the need of a new educational model of “Thinking to Drive”, an area where sharing experiences and knowledge becomes particularly important. The role of ICTCT itself in the promotion of road safety knowledge management would also be discussed from an outsider perspective.

2. Motivation: a carnage that hits particularly the young drivers

Up to 1.3 million people die every year and between 20 and 50 million people get injured because of road accidents (WHO, 2009). Injuries caused by traffic accidents are still a serious public health problem and a relevant cause of mortality, injuries and disabilities over the world. Besides, those injuries threaten to impede some achievements of the economical and human development, since, according to WHO report, the annual world cost of injuries caused by traffic accidents represents between 1% and 3% of the gross national product.

Data recorded by the European Transport Safety Council (ETSC) also confirm the higher than average accident rate of youngsters (ETSC, 2008). The ETSC also insists on the fact that the most risky circumstances of young drivers –in particular male drivers- are associated with speeding, drink driving, non-wearing of seat belts and drug driving. Two other high risk situations are night driving and driving with peer-age passengers who can distract the driver.

In 2007, a total of 3.823 people died in Spain as a consequence of traffic crashes (DGT, 2008). 690 were youngsters aged between 15 and 24 that represent:

- 11% of the Spanish population
- 10% of the drivers censed
- 18% of the fatal traffic victims
- 25% serious injured casualties

Today's Spanish situation makes us wondering whether there is any further way to both reduce the high accident rate of youngsters and, at the same time, improve the daily mobility of novice drivers. Our answer is: ***YES, we think that there is ample room for improvement within the remit of today's Spanish education system.***

3. The current driver education system in Spain

The driver education system in Spain, as in many other countries, can be understood as a sum of the following intervention stages: traffic education received before arriving to the driving school, education at the driving school, the act of taking the driving test and, finally, education after the driving school.

With respect to the traffic education received **before arriving to the driving school** it is still clearly insufficient. As a curiosity, the first version of the general traffic code passed in 1934 already imposed to the teachers the obligation of teaching pupils how to behave properly in the traffic. But teaching in schools has been provided by teachers on a motivational or voluntary basis until very recently. Nowadays, a new class subject "**Education for Citizenship**" is timidly including some traffic safety basic concepts. In other cases, police officers offer talks to pupils at school; again, this type of activities is not part of a programmed curriculum.

We therefore conclude that a big group of students arrive to the driving school with null (or very limited) road safety education. As it is frequently stated, students arrive to the driving schools without any road safety education and teacher must start taking out bad habits....

It is **at the driving school** when the youngsters are exposed to their first real contact with the road safety world. Most likely, driving theory instruction won't be able to correct the above mentioned bad habits. Not even theory classes are compulsory, and the theory test is relatively easy. The fact is that one can take the theory exam without having attended a driving school or a road training course. This self-preparing option is chosen by 70.000 candidates in Spain (10% of the candidates who take the general theory test). As it is

obvious, little is known about the safety foundations and risk perception skills of those that take the exam without attending a driving school.

In this sense driving schools sometimes offer full driving courses with a duration of a weekend or 10 days: generally what they teach is just how to pass the exam! The students sit in the computer of the driving school (average number of computers per driving school is 5) where they practice (or memorize) the answers to the exam questions. Meanwhile, the teacher sits and answers the doubts that may arise.... It is important to explain that driving schools do not charge for the theory classes: they charge students only for practical lessons. Classes are mainly done in the driving school and there are no minimum or thematic sessions...



Figure 1. Advertisement of a driver education method in Spain with the slogan "Your driving license in 10 days" (left) and a second one that reads "the theoretical exam in one single weekend" (right)

In our opinion **the driving test** becomes crucial at defining the education to be acquired. The test consists on a theoretical and a practical part. But, what does the theoretical part really consist of? It consists of completing a questionnaire with 30 multiple choice questions; each question has just one correct answer (current exam method since 2007, when the questions were made easier and the exam shorter). There are a total of approximately 600 questions, or 20 tests without almost any updates. This allows students to have the chance to learn them by hard. That is the reason why some driving schools advertise weekend courses for the theoretical exam, as the one in the example above.... In these cases there are little chances to absorb or interiorize road safety contents, as a continuous learning process could offer... This continuous education process will be presented later as the backbone of the "Thinking to Drive" concept.

We conclude that today's test system is causing students to feel that theory is not that important.... On the other hand, the practical test takes just 25 minutes, while in Germany it takes 45!

Education can be defined as "the act or process of educating or being educated / the knowledge or skill obtained or developed by a learning process / a program of instruction of a specified kind or level." Etymologically wise, educate comes directly derived from the Latin word *educare*, which was constructed by combining the two following words: *ex* and *ducere*. The literal translation of educate is therefore to draw out of, lead out of, etc. Romans considered educating to be synonymous of **drawing knowledge out of somebody or leading them out of regular thinking**. The Romans developed the noun, education from the verb *educare*. We like the concept of **leading them out of regular thinking**, because is key in our proposal of "Thinking to Drive".

Finally, what can we say about the **driver education after the driving school**? The driving instruction normally ends after the practical and theoretical training. Only if drivers

commit traffic offences that entail a deduction of penalty points, they may be required to regain points by attending a road safety awareness course.

Otherwise, there isn't any other continuous training for drivers to learn new concepts in spite of the constant changes in the norm (the current General Drivers Regulation was approved in 1997, and since then there have been several modifications in its articles and appendixes; and a complete modification is planned for next December) and the addition of new road signs or infrastructure designs. Public informative campaigns in the media, and brochures sent to the driver's home address are the means to keep them updated on the novelties.

So far, our main fundamental questions are the following:

- **Are we "drawing knowledge" or leading novice drivers out of regular thinking?**
- **Is there room for improvement in today's Spanish driving test system?**
- **The possibility for the applicant to take the exam without having attended any formal lessons (free education): is that an interesting or positive message to give?**
- **So I can pass the theoretical exam without attending any classes, but if I lose all points of my license, classes are then compulsory: does that make sense???**
- **What about continuous classes for updating norms, technological advances...??**

From our point of view it is clear that we are facing a new paradigm, a new system towards which we all must aim: "Thinking to Drive".

4. A new paradigm "Thinking to Drive"

Reached this point of the article, we all should be ready to agree that driving is not a mere knowledge of the road signs or mastering vehicle controls. In fact, the driver must go through a profound learning process in order to acquire the capabilities and, particularly, to understand why it is absolutely necessary to behave one way or the other. For instance, it is important to know that the speed limit inside the city is 50 km/hour, but much more important is the reason why the limit is set at that figure: the fact that a pedestrian has very few possibilities to survive if hit by a car at higher speed (Ashton & Mackay, 1979).

In the first place a driver has to know the reasons of the rules but, besides, he should go through a process that makes him/her develop his/her skills as a good driver so that he/she can enter the traffic system and become truly involved or immersed in it.

Nowadays in Spain the driver education system doesn't try to teach learners to think and internalize but just to memorize concepts. Fortunately, this **thinking ability** is a key ingredient of road safety that is being developed in other countries like Germany, where driver candidates must undertake 28 compulsory theory classes (45 min each) and are not allowed to practice/memorize the theory test.

The learning chain in Spain is still a great challenge for us.

The proposed new traffic education "Thinking to Drive" concept should be based on three main pillars:

- a) The first pillar is the ability of the new driver to understand, analyze traffic situations and make decisions that minimize the changes of the occurrence of any possible risky situation.

- b) The second pillar is the focus on the person, in particular the vulnerable road user.
- c) The third pillar supports the provision of generic tools for a sustainable mobility, not only from a car or motorcycle driver perspective.

In addition to these three pillars, the "Thinking to Drive" concept includes the following core ingredients: emotional intelligence, motivational aspects, drivers experience and a systemic approach.

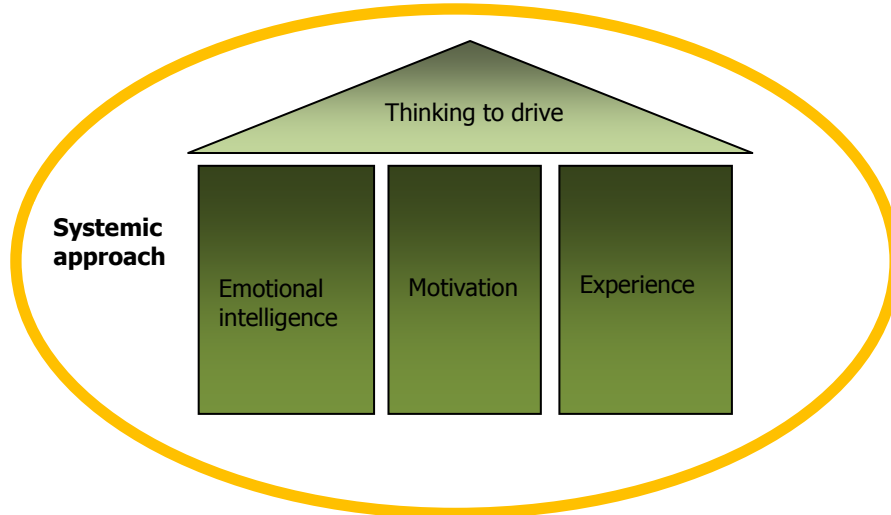


Figure 2. Core ingredients of the proposal for a new "Thinking to Drive" concept

As it has been mentioned above, the "Thinking to Drive" concept must place the person, and in particular the vulnerable road user, as the core of the road mobility system, as the following picture shows (Monclús, 2009). When placing the person in the centre, the following dimensions of mobility and traffic safety are implicitly considered: ethical (right of safety, safety first, "safety for all"...), economic (cost of accidents and value of prevention), and social dimensions (risk inequality, for instance):

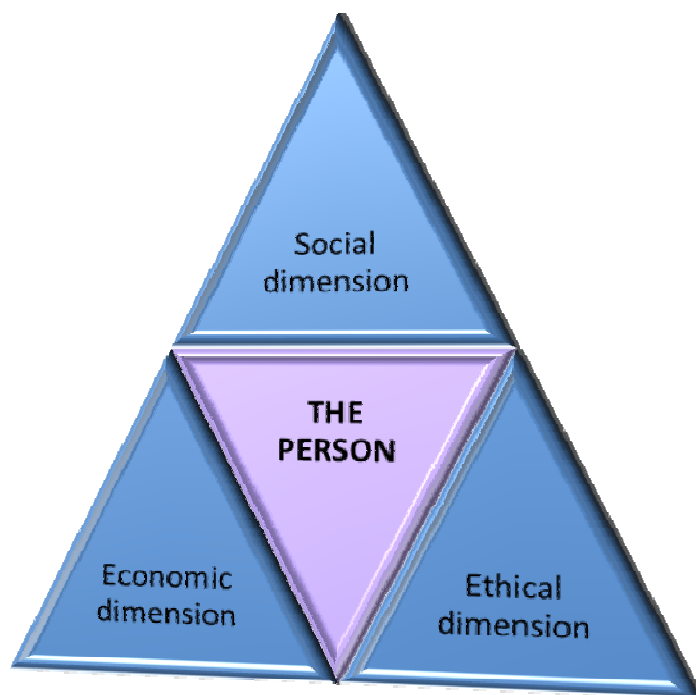


Figure 3. The "Thinking to Drive" approach places the person in the centre of the road mobility system

Innovation aspects of the "Thinking to Drive" concept can also embrace the educational method: moving from individual reading of a manual to, for instance, a combination of factual information on road safety matters and certain doses of emotional impact.

The following table summarizes the main characteristics of the "Thinking to Drive" concept:

Pillars	<ol style="list-style-type: none"> 1. Ability to understand 2. Focus on the person 3. Tools for a safe and sustainable mobility
Ingredients	<ol style="list-style-type: none"> a) Emotional intelligence b) Motivational aspects c) Drivers experience d) Systemic approach
Dimensions	<ol style="list-style-type: none"> i. Social ii. Economic iii. Ethical
Educational tools	<ul style="list-style-type: none"> - Factual information - Emotional impact

Table 1. Summary of the key characteristics of the "Thinking to Drive" approach

The system of driver education and training in the Nordic countries is currently based on the well-known GDE model or "Goals for Driver Education" model (Hatakka et al., 1999). This system stems from the basis that driving instruction should aim to guarantee that drivers acquire the necessary skills and knowledge to drive in a safe and efficient way: combining safety and efficiency is known to have synergic effects and, in fact, the recently published European Commission's action plan on sustainable urban mobility recommends including eco-driving in the driver educational curriculum (European Commission, 2009).

As it can be easily noted, the "Thinking to Drive" concept is closely linked to the GDE model. GDE matrix defines different levels of behavior in drivers: personal characteristics (general level), ambitions and competencies; trip-related context and considerations (strategic level), mastery of traffic situations (tactical level); and basic vehicle control (operational level). The two lower levels of the matrix have been included for years in formal driver instruction, as it is the case in Spain. However the upper two the levels are more recent, or even unexplored. They refer to knowledge or skills that a driver must master and which are related to driving under normal and complex conditions, perception of risk factors and the actual driver's ability to be aware of his/her own condition, his/her weaknesses and strengths.

Under the new plans for driver education, based on the matrix GDE, which are already being implemented in countries like Finland, Sweden or Norway, the main challenge for trainers is to help drivers gain the knowledge and develop abilities related to the upper levels of the GDE model. This most probably represents the next challenge for other countries like Spain.

Traditional education, as that currently offered in Spain, is based mainly on the operation and control of the vehicle, the handling of various traffic situations and basic safety contents, that is to say, it is largely based on the lower levels of the GDE model. The next generation driver learning process must reach higher levels in the GDE model (without forgetting the lower ones) and must definitely move away from the method that concentrates on memorizing answers to a fix set of questions. The old system must be replaced by the new concept "Thinking to Drive".

When analyzing the current driver education situation in Spain, it seems important and vital to move upward within the matrix (as shown in the table below) because we think that, from the driver's systemic approach in everyday driving, the following elements are important:

emotional intelligence, motivation and experience. We also believe that it is education what serves as a basis for decision making and, above all, that it is necessary to be aware not only of risk perception skills but of the driver's emotional state at the time of driving.

<i>(Upper levels control lower levels)</i>	<i>Knowledge and skills to master</i>	<i>Awareness of risk increasing factors</i>	<i>Self evaluation</i>
4. Goals for life and skills for living			Spain tomorrow
3. Goals and context of driving			
2. Mastery of traffic situations	Spain nowadays		
1. Vehicle manoeuvring and control			

Table 2. The table shows which is the current position of Spain in the matrix GDE

As it was pointed out in the previous section of this article, novice drivers in Spain receive very limited road safety education prior to arriving to the driving school, so they do not poses a sound safety culture when starting to be trained as drivers. In fact, many future drivers have actually internalized certain negative behaviors and attitudes which he/she needs to get rid of. For instance, the driver school teacher will have to change the risk perception of his/her students and even reshape the opinion the pupils have on themselves. This will also be one of the aims of the "Thinking to Drive" concept.

Gnothi Seauton or "know yourself", that is carved in stone in Apollo's Temple in Delphy (Greece). Around 2000 years ago Greeks were aware of the importance of the self evaluation! In our "Thinking to Drive" proposal we consider that education **leading them out of regular thinking** is vital. In this sense the "Observer, Action and Results system model", or OSAR model, suggests that if we want to change the results when changing the actions is simply not enough, the only way is to change ourselves (the observers) or, in other words, to have a transforming learning (Echeverría, 1994). Learning is a process, novice drivers need to comprehend a holistic vision and experience. As we proposed above in Figure 2, the core ingredients of the new "Thinking to Drive" concept are: systemic approach, emotional intelligence, motivational aspects and experience. We speak not only to drive but moreover to "Thinking to Drive".

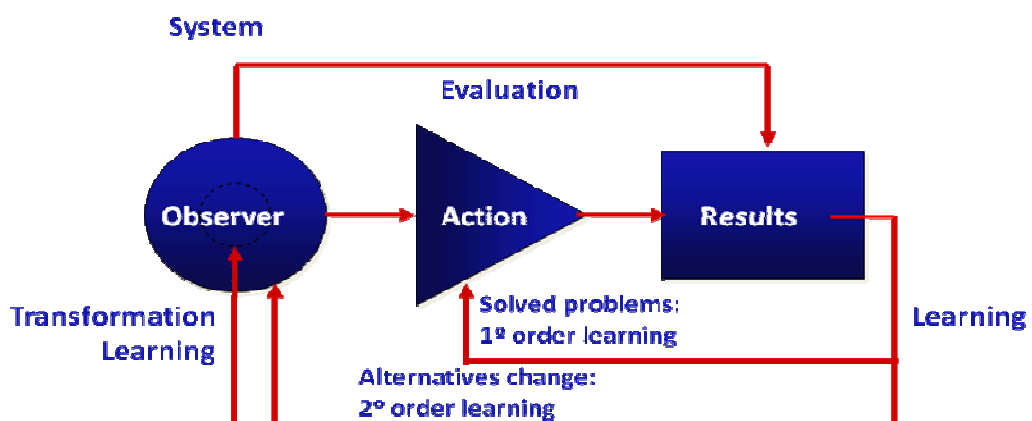


Figure 4. Observer, Action and Results system model (OSAR model)

The "Thinking to Drive" concept can also be related to the "4 H's of traffic safety" model proposed by Gunnarson in 1996 (Gunnarson, 1996): *H*umanism ("we all make mistakes", forgiving system...), *H*omogeneity (traffic environment, behaviour and road classification), *H*olism (traffic safety, transport, land use planners, society...) and *H*armony (including that between the authorities and the citizens).

In general terms, "Thinking to Drive" is an attitude towards life. Today in Spain, the educational curriculum is determined by the test system and the eagerness of students and their parents for obtaining the license as fast and cheap as possible. Meanwhile, the car industry, the legislators and the road constructors introduce innovations on a daily basis and:

- ***Are we benefitting from the experience-knowledge accrued during the last century in relation to the human factor?***
- ***Technology advances reach almost at the same time different points of the world but, does this also happen in connection with driver education?***
- ***Are we paving the way of the novice drivers towards "Thinking to Drive"?***

And again, reached this point, the second unsolved question in this paper is how to migrate from the current unsatisfactory driver education system to the proposed "Thinking to Drive" concept. What rapidly becomes clear is the width and depth of this change, probably affecting even the foundations of the system that has been used during the last 20 years in many countries: teaching materials, teaching methods, training and qualifications of driver educators, re-definition of the roles and closer links among the various educational phases, time to obtain the final license, cost of the license... Such a profound change will surely need to have access to a vast amount of fresh (updated) knowledge and experiences from many parts of the world (Europe, Australia, United States, Japan, Latin America and many other countries and regions). In order to pull together all the necessary knowledge and experience, powerful resources and tools will be required, and this is the reason why this article will turn in the next sections the focus to the science (or the art) of knowledge management.

5. Knowledge management basics

What is *knowledge management* is the purpose of an editorial article discussing previously proposed definitions of this concept (Jennex, 2005):

- I. The ability of disseminating knowledge quickly
- II. A document management system
- III. The process of handling unstructured knowledge
- IV. The combination of technical and organizational initiatives to manage structure and unstructured knowledge to help the organization improve its effectiveness through improved retention and reuse of knowledge
- V. The practice of selectively applying knowledge from previous experiences of decision making to current and future decision making activities with the explicit purpose of improving the organization's effectiveness.

It is clear that the third definition in the previous list of definitions is directly applicable to driver education. On the other side, the last definition of knowledge management is obviously applicable to the task of driving: applying knowledge from previous experiences... to "real-time" decision making traffic activities. Other authors define knowledge management as a "part of corporate culture, which supports the active exchange of information, knowledge and experiences between employees and departments" and as "the sum of

procedures that determine the generation, distribution and application of knowledge to achieve organizational goals" (Mertins et al., 2003).

A rather practical definition of knowledge management is that provided by the NASA in the United States (NASA, 2002): "knowledge management is getting the right information to the right people at the right time, and helping people create knowledge and share and act upon information in ways that will measurably improve the performance of NASA and its partners".

The Nordic expert Karl-Erik Sveiby explains that there are two main tracks of activities related to knowledge management (Sveiby, 2001):

- a) The *Information Technologies* track, based on the management of objects of information, the construction of information management systems and tools. Knowledge management practitioners in this track come from the information theory domain.
- b) The *People* track, which considers knowledge as a process made of a continuously changing complex set of dynamic skills, know-how... Knowledge management practitioners in this track come from the philosophy, psychology or sociology domains.

Sveiby defines knowledge management, more poetically, as "the art of creating value from intangible assets". The purpose for knowledge management concerns how the organization best can nurture, leverage and motivate people to improve and share their "capacity to act" (Sveiby, 2005). Quite interestingly, this author insists on the circumstance that the "people-track" is still in its infancy when it comes to knowledge management applications. He insists that this track is the most promising because the issues are about how to maximize the ability of a group of people to creating new knowledge and how to build environments conducive to sharing of knowledge.

Sveiby poses questions such as how to maximize the knowledge created by people or how to create innovation enhancing environments. According to Sveiby, anyone can buy new knowledge management software, but very few have the ability to create sustainable creative organizations. Investment along the people-track involves investing in people, recruitment, the office environment, etc. He proposes that "the bandwidth of the human infrastructure is the trust between people and between management and employees. The human infrastructure requires investment, just as the information technologies infrastructure does. Human infrastructure investment means money spent on people meeting each other in person, spending time on proper dialogue, creating environments without fear, etc."

Based on the previous definitions, knowledge management can be divided into several steps: generation, capture, classification, storage, retrieval, dissemination and use or reuse of knowledge. A further step can be added to the previous list: evaluation of the use of knowledge.

In the traffic safety field, as in many other areas, knowledge can be found in various sources, often scattered or difficult to access simultaneously and efficiently:

- Books
- Conferences
- Scientific or technical journals
- Magazines
- Newsletters
- Research projects, reports and doctoral thesis
- Websites
- Experts...

Experienced scientists and researchers are used to navigating along all this variety of sources. The challenge is mainly for the new or part-time researcher (an expert in a road

victim's association, for example) or for the road safety practitioner. Some clear example of traffic safety practitioners are: a driver education teacher, a road designer or maintenance technician, a vehicle engineer, a city traffic engineer, a road police officer, a trauma or emergency doctor... By the way, out of this list, only the latter one, the medicine professional, is required to undergo continuous education courses (police officer also take refreshment courses, many times as part of voluntary programmes for internal promotion purposes). Therefore, one of the main questions that can be posed so far is how to keep all these road safety professionals updated and continuously informed on road safety developments, best practice and lessons learned, and new solutions and safety measures.

An example of Knowledge Management: the case of the ICTCT community

From its website (www.ictct.org), it can be learned that ICTCT is an association developed out of an international working group of safety experts with the aim to identify and analyse dangerous situations in road traffic on the basis of criteria other than past accidents, analogous to the methods of air and industrial safety. The goal of ICTCT is the international cooperation in the identification and analysis of potentially dangerous situations in road traffic, and their causes, on the basis of relevant safety data derived from observations and surveys. The aim of ICTCT is to achieve a deeper understanding of problems in the area, to harmonize future research activities, and to provide for means for an optimal utilization of research results from different countries. The slogan of ICTCT is "we don't need accidents in order to prevent accidents!" since "danger indicators" can be used instead of accident information.

Many of the activities listed in ICTCT's website can be seen as "knowledge management":

- Information and coordination service for the international exchange of information
- Production and distribution of a regularly-published research journal ("Newsletter")
- Encouragement of international cooperation by the organization of conferences and other events
- Development of research structure for the planning, realization and implementation of projects
- Organisation and administration of an archive and a library ("Clearing house")
- Establishment of advisory centres for the identification, analysis, and solution of safety problems in line with the present state-of-the art
- Advice on the development of facilities for the training of safety experts in the identification of risk indicators in traffic
- Publishing of material (e.g. handbooks, brochures, guidelines...)
- Public relations work

But, most importantly, ICTCT is above all a group of experts and practitioners that accrue a unique amount of knowledge and experience. This is in fact the type of knowledge and experience that can solve the question of ***how to migrate to the "Thinking to Drive" system for driver education***. In addition to this, ICTCT has also two key features: its members are used to collaborating among themselves and to exchanging that knowledge and experience and, secondly, most of its activities, as just listed above, are in fact purely knowledge management in themselves.

6. Application of knowledge management to the improvement of driver education: a proposal

The knowledge is out there! We think that KM can be very helpful to work on a best practice way. KM is a tool that possibilities KM experience and innovation of lessons learnt like "glue" for our proposal to thinking to drive in Spain.

The purpose of this paper is to encourage the International Co-operation on Theories and Concepts in Traffic Safety (ICTCT) community to debate, elaborate and accept this challenge and to use its knowledge management tools to make this transformation come true. If knowledge management, as highlighted by Sveiby, is mainly about persons, their knowledge and experience, then ICTCT is the right cradle for this. Pending questions are:

- How can recently generated knowledge be summarized?
- What are the lessons learned, success stories and mistakes to be avoided?
- What skills and information should be taught and when (from kindergarten to life-long continuous education)?
- How can it then be applied at the lowest cost for the society?...

In order to start solving these questions, we propose ICTCT different initiatives:

- a) A thematic conference or workshop on the subject
- b) A periodic newsletter on this matter
- c) An online forum within www.ictct.org
- d) ...

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Annex: Other examples of Knowledge Management in practice

Example No 1: Knowledge management at NASA

NASA understands Knowledge management as the process to identify and capture the Agency's information, bringing together disparate resources, building the framework and providing the "glue" to enable integrated access, and delivering that information and capability to employees, missions, and partners (NASA, 2002).

For NASA, the management of knowledge means delivering the systems and services that help employers and partners get the information required to make better decisions. In practical terms, knowledge management is seen at NASA as a tool to facilitate knowledge creation and sharing. In the medium to long term, this tool should encourage knowledge sharing within the organization, preserve the organizational memory and allow employees to learn both individually and from each other.

NASA recognizes the importance of knowledge management both internally and when it comes to the increasing links with external organizations. The cornerstones of NASA's knowledge management system are people, processes and technology. The keys of success for this cultural/organizational change are:

- Recognize and reward people for sharing knowledge
- Encourage and support communities of practice
- Strike a balance between long-term corporate needs (capturing knowledge) with short-term local needs (completing a task quickly)

Examples of the tools used by NASA to manage knowledge are the following:

- a. Document management systems
- b. An experimental online agency-wide portal that offers easy access to NASA's online resources through a personalized home page that collects the links, headlines and business applications that most relevant to the user
- c. A "Lessons Learners Information System" for use when making critical decisions
- d. A pilot directory of experts
- e. Education and training programmes
- f. Collaborative tools
- g. Mentoring programmes
- h. Online communities

Example No 2: Knowledge management at PwC

The consultancy and services corporation PriceWaterhouseCoopers (PwC) is another example of efficient utilization of knowledge management. PwC defines knowledge management as "the practice of leveraging intangible assets to generate business value (PwC, 1999). The question this entity tries to solve with this tool is: how can one organization turn data and individual insight into knowledge, and capture and leverage it to its best advantage?

The key principles for successful knowledge leverage, according to PwC are the following:

- Be knowledge focused (focus only on the knowledge you need)
- Make knowledge visible
- Seek knowledge outside the walls
- Value and exemplify knowledge
- Measure knowledge

The approach undertaken by PwC to help organizations embrace knowledge managements practices are:

1. To create a knowledge strategy that describes how knowledge must be leveraged for competitive advantage. The strategy looks at ways that sharing knowledge across boundaries, both internally and externally, can affect performance.
2. Based on the knowledge strategy, organizations then investigate the knowledge that resides within and outside the organization and identify key gaps. Several techniques can be available for this phase, including process knowledge modeling, IT and content audits, and organizational readiness diagnostics.
3. In the next step, organizations typically deploy knowledge management pilots to develop knowledge management applications, processes and the requisite change management in a controlled environment.
4. Finally, firms typically extend pilots out into the organization to become part of operations and then measure the impact against goals.

Example No 3: the Global Transport Knowledge Partnership (gTKP)

The Global Transport Knowledge Partnership (gTKP) can be presented as an example of a practical application of knowledge management. gTKP's mission is to support sustainable and efficient transport in developing and transition countries by providing free access to the best available information and expertise, as well as free technical advice. This initiative is based on a website (www.gtkp.com) and gathers global organizations, local policy-makers, experts and interested users working to make effective use of international transport knowledge. gTKP offers free access to sector experts and best practice knowledge in seven themes in road transport: Environment and Climate Change; Finance and Economics; Governance; Road Safety; Rural Transport; Social Development; Trade & Transport; and Urban Mobility.

Through its work, gTKPs aims to arm practitioners with knowledge and build partnerships. All the services of this initiative are free. gTKP publishes a monthly newsletter (in English and Spanish) that facilities access to its sector experts and its collection of knowledge.

The website "www.gtkp.com" brings closer to the practitioner various types of information elements on each of the core themes such as:

- Key documents
- Training and events
- News
- Case studies
- Discussion groups
- Links

One of the sections of this online resource receives the name of "Knowledge Centre". In this section, the internet user can search gTKP's database of relevant documentation and knowledge products. If the user has a query on any of the core themes, he or she can contact the relevant theme champions by email.