

# *Developing a European approach to the Initial Training of Motorcyclists*



TREN-SUB-2003-S07.30333

a presentation on the  
Final Technical Implementation Report  
to the Road Safety Unit of the Directorate-General  
for Energy and Transport of the European Commission

17th July, 2007

Bob Tomlins, IRT Project Co-ordinator

The Initial  Rider Training Project

## *Initial rider training - a shared concern*



The representative organisations of the motorcycling community: FEMA the European road riding motorcyclists' federation, FIM the World motorcycle sport federation and ACEM, the European motorcycle manufacturers' association, agree that initial rider training in Europe does not meet riders' needs

They believe that improved pre-licence training will reduce the number of riders killed and injured

The Initial  Rider Training Project

# *Initial rider training - the problems?*



widely variable and not always available

often prohibitively expensive

often unstructured and with poor instructors

**over emphasis on machine control skills**

**little hazard awareness and avoidance focus**

**rider attitude and behaviour rarely addressed**

The Initial  Rider Training Project

## *Doing something about it*



A proposal for a project to develop a European approach to initial rider training gains the support of the European Commission

Vägverket, the Swedish road traffic authority and IVV, the international instructors' organisation, agree to support the project and participate in its work

The Initial  Rider Training Project

# *The IRT Supervisory Board and working groups*



- 2 senior and very experienced commercial rider instructors
- 2 senior national police rider and driver training instructors
- a senior and very experienced voluntary rider instructor
- the head of a national rider, driver licensing and testing authority
- 2 leading traffic psychologists
- 2 leading e-learning, digital media academics
- the deputy-head of a national training and testing authority
- 2 senior executive experts from motorcycle manufacturers
- 2 senior executive experts from international riders' organisations

The Initial  Rider Training Project

# *The IRT project has*



## **Created a model European initial rider training programme**

which includes a modular approach to initial rider training, the essential elements and aspects for initial rider training, a method and approach to support initial rider training, and a comprehensive manual for use in a range of situations

## **Evaluated the potential of e-Coaching for initial rider training**

and also reviewed recent rider and driver training research and surveyed national training and testing arrangements

The Initial  Rider Training Project

# A modular structure

## The early “progressive training” matrix

<b>AM</b>	1a, 2a, 3, 4a, 4b, 6a, 7, 8	1a, 2, 3a, 3d, 4, 5	1a, 2, 4a, 4b
<b>A1</b>	1a, 2a, 3, 4a, 4b, 5, 6a, 6b, 7, 8	1b, 2, 3b, 3c, 4, 5, 6a, 6b	1b, 2, 3a, 3b, 4a, 4b, 5, 6
<b>A1/B</b>	3, 4a, 4b, 5, 6a	1b, 2, 3b, 3c, 4, 5, 6a, 6b	1b, 3a, 3b, 4b
<b>A2</b>	1a, 1b, 2a, 2b, 3, 4a, 4b, 5, 6a, 6b, 7, 8	1b, 1c, 2, 3b, 3c, 3d, 4, 5, 6a, 6b	1b, 2, 3a, 3b, 4a, 4b, 5, 6, 7, 8, 9
<b>A</b>	1a, 1b, 2a, 2b, 3, 4a, 4b, 5, 6a, 6b, 7, 8	1b, 1c, 2, 3b, 3c, 3d, 4, 5, 6a, 6b	1b, 2, 3a, 3b, 4a, 4b, 5, 6, 7, 8, 9

- Theoretical**
- 1 Road regulations
    - a: general rules and regulations
    - b: motorway rules and regulations
  - 2 Signs and markings
    - a: general signs and markings
    - b: motorway signs and markings
  - 3 Machine dynamics
  - 4 Hazard awareness
    - a: other road users
    - b: environment and infrastructure
  - 5 Helmets and appropriate clothing
  - 6 Social responsibilities
    - a: noise
    - b: first aid and accidents
  - 7 Impairment
  - 8 Attitude and behaviour

- Machine control**
- 1 Machine familiarity
    - a: automatic controls
    - b: manual controls
    - c: advanced braking systems
  - 2 First movements
  - 3 Gears, brakes and direction
    - a: automatic gears
    - b: manual gears
    - c: separate braking systems
    - d: advanced braking systems
  - 4 Steering and counter-steering
  - 5 Low speed manoeuvring
  - 6 Hazard management
    - a: swerving
    - b: emergency braking

- Traffic interface**
- 1 Positioning
    - a: slower than traffic
    - b: at traffic speed
  - 2 Distance
  - 3 Curves and bends
    - a: right hand
    - b: left hand
  - 4 Anticipation
    - a: other road users
    - b: environment and infrastructure
  - 5 Junctions
  - 6 Overtaking
  - 7 Motorways
  - 8 Group riding
  - 9 Journey planning

1a, 1b, 2a, 2b, 3, 4a, 4b, 5, 7, 8	4, 5, 6a, 6b	1a, 1b, 2, 3a, 3b, 4a, 4b, 5, 6, 7, 8, 9
<b>e-Coaching</b> <i>Virtual no-risk exposure to hazards and consequences of attitude and behaviour</i>		



# *A modular structure*

## The Initial Rider Training Project

### **Theoretical**

- 1 Road regulations
- 2 Signs and markings
- 3 Machine dynamics
- 4 Hazard awareness
- 5 Helmets and appropriate clothing
- 6 Social responsibilities
- 7 Impairment
- 8 Attitude and behaviour



### **Machine control**

- 1 Machine familiarity
- 2 First movements
- 3 Gears, brakes and direction
- 4 Steering and counter-steering
- 5 Low speed manoeuvring
- 6 Hazard management

### **Traffic interface**

- 1 Positioning in traffic
- 2 Distance and speed
- 3 Curves and bends
- 4 Junctions
- 5 Overtaking
- 6 Motorways
- 7 Anticipation
- 8 Riding together
- 9 Journey planning

**e-Coaching** *Virtual no-risk exposure to hazards and consequences of attitude and behaviour*

**The revised matrix for the IRT model European programme**

# The Theoretical element

preparing a rider for on-going training by introducing a range of considerations to be developed through the IRT programme



## **Rules and regulations, signs and markings**

Explains the road rules and regulations, road signs and markings in the context of the reasons for them

Introduces the future rider to their value and the help they can give and the logic of their requirements

## **Hazard awareness**

Explains that hazards arising from the behaviour and needs of other road users, the road infrastructure, the weather and environment, will be met when riding on the road

Explains that an awareness of potential hazards is essential to managing and avoiding them

## **Social responsibilities**

Explains the need to ride responsibly with particular emphasis being given to speed and the impact of noise

Covers the importance of knowing the basic rules of first aid in a road traffic accident

## **The machine, its dynamics and needs**

Introduces the dynamics and mechanics of a machine and its controls

Explains the importance of the essential safety checks and regular maintenance

## **Helmets and protective equipment**

Covers the need for and the benefits of wearing helmets and protective equipment

Introduces the choices that are available and the importance of best affordable quality, correct fit and condition

## **Impairment**

Explains the negative effects of alcohol and drugs, some medicines and tiredness on a rider's performance and perception

## **Attitude and behaviour**

Emphasises to the future rider that the key to riding safety lies in his or her attitude and behaviour and that they have the primary responsibility for road safety

# An aspect of the Theoretical element

## Social responsibilities

### Theoretical element aspect 6

*This aspect introduces the future rider to the need to show due consideration and care for others*

#### First aid and accidents

The prospective rider should understand that a basic knowledge of first aid knowledge can literally be life saving and that he or she should have, or obtain, this knowledge before learning to ride.

In the event of coming upon an injured motorcyclist the future rider should never attempt to remove the injured rider's helmet, unless properly trained to do so, or move the injured person unless they are in a life-threatening situation. The emergency services should be informed as early possible.

#### Upsetting the neighbours

The future rider should appreciate that excessive noise from motorcycles and scooters is widely recognised as being one of the most annoying sources of noise.

Whilst many riders like the noise their machine makes they should always ensure that they ride in a manner that limits its social impact and in no circumstances should they modify their silencer to make more noise or fit an illegal system.

Angry neighbours will support anti-motorcycling legislation.

#### Consideration for other road users

Before beginning the experience of learning to ride a motorcycle or scooter, a prospective rider should understand that in today's traffic, no one can ride on, drive on, or cross the road, in isolation.

A rider should always behave in a responsible way, taking into account the needs and likely behaviour of other road users and should appreciate that his or her actions will consequently affect their safety and, of course, his or her own safety.

Pedestrians will require particular care on the part of the future rider. Someone wanting to cross a road may not see a motorcycle or scooter or be able to accurately judge its approaching speed or intention. This particularly applies to the elderly and to children, who can have other, to them more important things on their mind, such as getting home in time for their favourite television programme or retrieving a ball.

Cyclists also require care and the future rider should understand that whilst they share the road and also have two wheels, their difference in speed and consequent handling characteristics are considerable.

The characteristics of vehicles with four or more wheels will also need to be appreciated by a prospective rider. Large commercial vehicles often have limited vision and a rider should avoid getting into a position where they cannot be easily seen by the driver. Car drivers, with the advantages of anti-lock braking systems and traction control, may not appreciate that a wet road will have a greater limiting effect on the handling characteristic of a motorcycle.



#### When it goes wrong

The future rider should understand that not only they will suffer the consequences of a road traffic accident. Whether it is their fault or the fault of another road user. For a mother or husband, learning that a son or wife has been involved in an accident can be a devastating experience.

A motorcycle or scooter does not have the benefits of airbags and seatbelts. This the future rider should appreciate with the consequent need to ride in a manner that will avoid the consequences of when it goes wrong.

# *The Machine control element*

*A detailed programme covering the required machine controls skills in the context of their relevance to safely riding on the road*



## ***The Instructors' Working Group***

**Five highly qualified and experienced rider instructors**

**Two police instructors:**

Roger Renoy, head of the Belgian Police Academy  
Brane Legan, head of the Slovenian Police Academy

**Two commercial instructors:**

Peter Smirz, Managing Director of leading Austrian rider training school  
Ian Lee, General Manager of leading British rider training school

**One voluntary instructor:**

Marc O'Loideoin, the Senior Training Officer of the Irish Star Rider training scheme

## ***Aspect overviews and Instructor's notes***

The objective of developing an initial rider training programme that can be applied in different circumstances has resulted in a completely new approach

Each of the aspects of the IRT Machine control element have been described in single page Aspect overviews summarising all that the rider and instructor should understand and apply

Each of the Aspect overviews are supported by Instructor's notes which will form a check list for experienced or qualified instructors and a detailed brief for less experienced or informal instructors

## ***The range of machine control skills***

- 1 Machine familiarity**
- 2 First movements**
- 3 Gears, brakes and direction**
- 4 Steering and counter steering**
- 5 Low speed manoeuvring**
- 6 Hazard management**

# A Machine control aspect overview . . .

## Steering and counter steering

### Machine control element aspect 4

#### Instructor's requirements

Review the Instructor's notes  
Assess the extent of rider's pre-knowledge  
Plan the layout of the exercises  
Explain and demonstrate steering and counter steering and their influence on direction changing  
Explain the particular importance of visual focus to machine control when changing direction  
Emphasise the importance of hazard awareness and rider attitude in the context of the exercises  
Continue to assess the rider's attitude

#### Hazards, attitude and behaviour

It is important that the rider appreciates that the machine control skills addressed in this Aspect are essential for being able to safely and competently ride a motorcycle on public roads  
The rider should begin to understand the dynamics of a motorcycle in the context of how direction can be changed at different speeds

#### Rider's pre-knowledge

The rider should understand and be competent in the use of the throttle, clutch, gears and brakes and able to move off, accelerate, decelerate, turn and stop safely and smoothly.

The rider should understand the importance of where to look and applying correct visual focus, both in the context of machine control and awareness of other road users.



#### The exercises

Riding in a slalom at speeds from 15 to 50 kilometres an hour  
Riding in a circle at 15 to 40 kilometres an hour  
Riding in a figure of eight at speeds from 15 to 35 kilometres an hour  
Turning through 180 degrees

#### Evaluation

The rider should be able smoothly ride in a slalom, a circle, a figure of eight and a U, at slower speeds, requiring a mixture of steering and leaning to affect change of direction and at higher speeds where direction change is achieved by leaning and counter steering.

The rider should be able to directly induce counter steering through pressure on the handlebar and/or footrests, confidently and competently.

The rider's visual focus should be supporting the control of the machine and enabling the early development of potentially hazardous situations to be seen when later riding on public roads.

# ... and Instructors' notes

## Steering and counter steering

### Machine control element aspect 4

### Instructor's notes.1

#### Preparation and planning

Each of the exercises in aspect 4 require setting out on the training ground, using cones and tapes. Whilst the diagrams on the fourth page of these instructor's notes define the ideal arrangements, complying with them will not always be possible due to space limitations. The instructor should therefore plan and adapt the exercises accordingly. If, for example the diameters of the circle or figure of eight need to be reduced then the higher speed should be correspondingly reduced.

Where more than one rider is receiving tuition it is important that the instructor(s) ensures that adequate separation is maintained.

#### Explaining and demonstrating

The instructor should explain to the rider the dynamics of a motorcycle and the changes that occur when it increases in speed. Particular attention should be given

to the gyroscopic effect of the wheels at moderate and higher speeds and where and how pressure should be applied to achieve a desired change in direction.

In demonstrating the exercises the instructor should show the control transition from steering, where the handlebars are turned in the direction of the turn, through leaning, where the rider shift bodyweight in the direction of the turn, to counter steering, where the rider puts pressure on the handlebar and/ or footrest opposite to the direction of the turn. The instructor should remember that full counter steering can be achieved at moderate speed and the temptation to show the effect at higher speeds should be avoided as it can be intimidating at this stage of the training.

The importance of where the rider should be looking in these exercises should be stressed by the instructor and be clearly evident when demonstrating.

It is important that the techniques of speed control in the exercises of aspect 4 should be explained and demonstrated. The rider should understand that brakes should only be used while the machine is upright and then when in a turn speed should be adjusted with the throttle and engine braking

It is particularly important that the instructor continues to assess the rider's approach and where the rider's progress or attitude and behaviour gives cause for concern the exercise should be stopped and instructor should address the cause of the problem.



#### The Exercises

##### Riding in a slalom

The instructor having demonstrated how the rider should ride the slalom, should ensure that the rider appreciates that the skills addressed are essential for safe machine control in traffic.

Having checked behind, engaged drive, moved off, accelerated in the defined lane to approximately 15 kph, the rider should go between the first and second cones, changing direction on exiting to enable the machine to be directed between the second and third cones, and so on.

The changes in direction should be made with steering and leaning and with any necessary slight variation in speed being controlled by the throttle. The visual focus of the rider should be smoothly and progressively moving from the exit of the cones that are about to be entered, to the entrance to the subsequent pair of cones on exiting the former cones. On exiting between the penultimate and final cones the rider should bring the machine to a smooth stop.

The exercise should be repeated and as the rider gains confidence and competence, on

continued

# The Traffic interface element

applying machine control skills to riding safely in traffic



## **Positioning in traffic**

Covers where the rider should be on the road when in traffic, at the same speed and when on a slower machine

## **Distance**

Putting into practice the speed/braking distance relationships with regard to other road users, the environment and the road surface condition

## **Curves and bends**

Covering the riding rules for negotiating left and right hand curves with emphasis on positioning, visual focus and speed

## **Junctions**

Negotiating various junctions and roundabouts, applying positioning, visual focus and speed adjustment practices

Experiencing priority rules and identifying other traffic and their likely actions

## **Riding together**

Riding with a pillion passenger and riding in a group are dealt with in this aspect

## **Journey planning**

Considerations that should be made prior to a journey are addressed

## **Overtaking**

Covers a range of overtaking manoeuvres, with emphasis on positioning, visual focus and possible developments arising from the behaviour of others

## **Motorways**

Covering the particular rules of motorways with emphasis on joining and leaving, positioning and changing lanes

## **Anticipation**

Understanding the needs of other road users, including pedestrians and cyclists, and anticipating likely behaviour  
Appreciating the effect of environment and infrastructure on machine behaviour and anticipating accordingly

# Introducing the Traffic interface element

## Before venturing on the road



### **The rider must**

- Meet all the legal requirements
- Be suitably dressed and have appropriate protective equipment
- Be able to competently control the machine
- Understand the rules of the road particularly with regard to the traffic and road layout situations to be encountered
- Accept and comply with the wishes of the instructor when riding together on public roads
- Understand and have practised the arrangements for communicating with the instructor
- Appreciate the likely hazards to be encountered in riding the aspect
- Appreciate the likely behaviour of other road users and the need to anticipate it
- Recognise that it is his or her attitude and behaviour that will largely determine his or her safety

### **The instructor should**

- Pre-plan the exercise
- Identify a route where the rider will experience the traffic situations covered in the particular aspect
- Verify that the rider and his or her machine meet all the legal requirements and are suitably attired
- Be confident that the rider has the necessary machine control skills
- Develop the riding patterns for the aspect and the methods for communicating with the rider
- Brief the rider thoroughly on the riding patterns and communicating arrangements
- Explain to the rider the particular hazards that could be encountered in the course of riding the aspect
- Explain the likely behaviour of other road users and give examples of how it can be anticipated
- Assess the attitude and likely behaviour of the rider and adjust approach accordingly

# An aspect of the Traffic interface element

## Curves and bends

### Traffic interface element aspect 3

*This aspect consider how a rider should approach and ride through a curve or bend*

*In the context of this aspect the distinction between a curve and a bend is that a curve would not require a speed reduction of more than 20% and a bend being tighter, requires a greater reduction in speed.*

### Guidance and advice.1

#### Preparation and planning

In planning for this aspect the instructor should initially identify a rural or suburban route with a number of separate curves and moderate bends, having a good surface, constant or slight variations in their radii, and with few other features and light traffic.

As the rider's ability and confidence develops, the route can be extended to include curves and bends in sequence, so called S-bends, and curves and bends with significant variation in their radii. The incidence of other road features and the volume of traffic should remain light.

The instructor must recognise that significant demands will be placed on the

rider. Accordingly the rider's ability to manage the demands should be constantly evaluated by the instructor and where necessary the experience should be broken down into more easily manageable units.

The chosen routes should provide the opportunity for the instructor and the rider to stop for advice and evaluation in safety.

#### Legal and safety requirements

the rider and the machine must comply with all legal requirements and the instructor should ensure that the rider has checked the machine and that his or her helmet and clothing are appropriate.

#### Preparing and briefing the rider

The instructor must explain that concept of the limit point, which was introduced and applied in aspect 3, is also essential to the safe negotiation of curves and bends.

The rider must however also understand that the correct position to be in on the road and when approaching and passing through a bend, are also essential. The limit point being extended though the correct position widening or lengthening the rider's field of vision.

The importance of the rider's focus constantly moving with the limit point cannot be over emphasised.



Fixating, that is when the rider's attention is drawn to and held by a feature, for example a tree part way around a bend, is a major cause of motorcycle accidents. The rider should never forget the golden rule: *always look where you want to go!*

The instructor should also ensure that the rider understands the limitations on the use of the throttle, clutch and brakes, which are crucial to safely negotiating a curve or bend.

#### The Experience

##### Control of the machine

With the instructor having explained and demonstrated the correct practice, the rider should take the lead. Approaching the curve or bend, focussing on the limit point and noting any irregularities in the road surface such as inspection covers, the rider should check behind and slow down so as to enter at a moderate and safe speed. The required braking and gear selection have been undertaken before reaching the bend, the limit point should appear to remain constant from the rider.

On entering light throttle input should be used to maintain the speed and the balance of the machine, through to the point where the exit can be seen.

continued

# *The potential of e-Coaching*

*to bring a virtual, no-risk exposure to risks and hazards to initial rider training at no or low cost*



## ***Simulation versus games-based***

Having considered the pros and cons the IRT Supervisory Board concluded that a games-based approach, downloadable from the Internet, having increasing levels of complexity, a mentor advising and analysing, and effective abuse controls, could make a major contribution

## ***Working with Tampere***

Our investigations found the Hypermedia Unit at Tampere University of Technology be the most experienced relevant European academic institution in the e-Learning field. This view was substantiated by the evaluation undertaken by Supervisory Board member Dr. Pekka Ranta

## ***The IRT Supervisory Board believe***

**That an IRT e-Coaching programme could make a major contribution to initial rider training, particularly in the important areas of hazard awareness and avoidance and rider attitude and behaviour**

**That an IRT e-Coaching programme has considerable potential to make significant improvements to the availability, content and the quality of many of the initial rider training arrangements that currently exist within the European Union**

# *Four deliverables*

*To consider and deliver conclusions and recommendations on*



- 1: The essential elements of a model European initial rider training programme.
- 2: How a model European initial rider training programme could be utilised in different social and economic circumstances.
- 3: The potential of e-Coaching (e-Learning) to support initial rider training and how virtual training approaches could be developed.
- 4: The development of the essential elements into a comprehensive, cohesive and cost-effective European initial rider training initiative

# *The recommendations*



Deliverable 1, recommendation 1:

**That the European Commission should use the IRT model European initial rider training programme as a basis for assessing the quality of existing national rider pre- licence training arrangements and influencing the development of effective arrangements where they are found to be lacking or non-existent.**

The Initial  Rider Training Project

# *The recommendations*



Deliverable 1, recommendation 2:

**That the practice of an instructor teaching a rider or riders from a car is a particularly bad one and accordingly recommends to D-G Tren that they should do all they can to discourage this practice and should certainly seek to eliminate it within any proposals they make to improve instructor competence within an envisaged fourth European driving licence directive.**

# *The recommendations*



## Deliverable 2:

**That the differing social and economic initial rider training arrangements and circumstances should be more clearly acknowledged within the rider training policies and strategies of the European Commission and that D-G Tren should accept the IRT model training programme as a basis for improving pre-licence rider training within the member States of the European Union.**

# *The recommendations*



Deliverable 3, recommendation 1:

**that the development an e-Coaching programme should be supported by any and all means available, such as an appropriately structured and funded project, to the European Commission.**

Deliverable 3, recommendation 2:

**The IRT e-coaching approach should be the basis for the European Commission to act upon recommendation 1 above.**

## *The recommendations*



Deliverable 3, recommendation3:

**That the continued involvement of the Hypermedia Unit at the Tampere University of Technology is very important in pursuing successfully the objectives of the Deliverable 3 recommendations 1 and 2**

The Initial  Rider Training Project

# *The recommendations*



## Deliverable 4:

**The Directorate-General for Energy and Transport of the European Commission, in consultation with FEMA, FIM, ACEM and IVV, initiate and support an IRT dissemination project, the objectives of which would be to:**

- technically review the IRT model European programme**
- facilitate its translation into an agreed number of official languages**
- develop instructor/user support material**
- establish a permanent IRT programme website; and**
- produce videos for the Theoretical and Machine control elements**

The Initial  Rider Training Project

*Thank you Dr. Tostmann,  
Mr. Valmain and colleagues*

*Please drive and  
ride safely*



The Initial  Rider Training Project