

## ***The Development of Railway Trainers and Training through International Collaborative Working: A UIC Pilot Study***

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### **Abstract**

A study sponsored by the European Centre for the Development of Vocational Training (Cedefop) was presented at the first UIC World Congress on Railway Training in Madrid (2011). This study reviewed methods for training vocational trainers, and provided a comparison between these methods and their day-to-day working realities. The study, which included a vision for the future of Vocational Education and Training (VET), stimulated the UIC Expertise Development Platform (EDP) to start a research project for the rail training sector.

The first results of the UIC research (literature review and benchmark/survey) were presented at the second UIC World Congress on Railway Training in St. Pölten (2013). The scope of the project was restricted to Train Driver Trainers (classroom and practical route / road handling), Signalling Engineering trainers and control / despatch trainers. The training leadership was also analysed.

The UIC benchmarking study recommendations tackled three distinct themes:

- The diversity of a common competence profile for the trainer role,
- The diversity of trainer development post-appointment,
- The common issues facing railway training organisations, where shared experience and approaches may be of value.

Specific recommendations were made to develop separate UIC EDP template competence profiles for Trainers and Developers.

An international exchange programme for trainers was started to identify 'good practice'. The programme includes visits to training operations in other countries, and the trainers work on four main objectives, under the UIC vision to 'Unite, Inspire and Connect':

- Knowledge-sharing on training methodologies, trainer development and new training technologies,
- Developing a European behavioural competence framework for trainers,
- Developing ERTMS training,
- Collaboration between international VET institutions.

The first results of the international trainers programme were presented at the third UIC World Congress on Railway Training in Lisbon (2015). Four pilot trainer development workshops have been held to date. Feedback from attendees has been very positive. More importantly, best practice sharing was beginning to provide real financial benefits, with savings through collaborative working. The business case is thus highly compelling. A few weeks after the Lisbon congress, we received a grant worth € 180,000 from Erasmus<sup>+</sup>, the EU programme for education, training, youth and sport.

It is however evident that strong, supportive, visionary leadership is a critical pre-requisite for the success of such programmes. The project will also need to address issues such as group sustainability, socialisation of new organisations and individual members, and also the quality of facilitation, where English-language competence is a key enabler for a successful outcome.

We will present the results of this long-term project at the fourth UIC World Congress on Railway Training in Potsdam/Berlin (2017). The trainers themselves will present the outcomes of the project; the training consultants/project leaders will present a vision of the project and a plan for disseminating the results.

## 1 Introduction

### 1.1 CEDEFOP Study

A study sponsored by the European Centre for the Development of Vocational Training (CEDEFOP) identified a range of specific emerging challenges for the Vocational Education Training (VET) sector in general (i.e. not railway-specific). Reference [1]. These include the increase in administrative tasks and responsibilities, the individualisation of learning, supporting learner autonomy, the significance of networking and the expansion of responsibilities relating to quality assurance. It particularly noted the increased administrative burden taking time away from training development and innovation, and also the growing importance of networking outside organisations. Of concern to CEDEFOP was the low activity in international co-operation. One of the CEDEFOP recommendations is the 'need to devote efforts to internationalise VET institutions and other training organisations'.

### 1.2 The UIC Trainer Development Programme

The International Union of Railways (UIC) has also been championing international training and research projects through their Expertise Development Platform (EDP). This includes international development programmes such as SIAFI, which provides structured development on international railway business, training on high-speed systems, and training sessions on ERTMS and the UIC network for talented youth.

In addition, the UIC EDP organises the World Congress of Rail Training (WCRT). This Congress is attended by over 170 of the world's leading railway training and development executives, and will promote sharing of best practice, highlight research findings and identify emerging training technologies.

The UIC EDP has an active research stream and one of the programmes centres on the development of railway trainers, prompted by the CEDEFOP study. After the second WCRT in St Pölten in 2013, the UIC agreed to support the creation of a pilot study for an international exchange of Signalling Engineering trainers. Signalling Engineering trainers were chosen for the pilot as it was a) felt important to focus only on one group for the pilot study, so as not to dilute focus, and b) as there was sufficient energy and support from executive leadership in the Signalling Engineering training community, to 'make the pilot happen'. The UIC envisaged that if the pilot study was successful, the approach could be rolled-out to other railway training disciplines.

## 2 Activities to date

Five executive leaders have supported and authorised Signalling Engineering trainers from their training organisations to start the pilot. The pilot group accompanies 11 trainers from Belgium (2x Infrabel), Germany (2x Deutsche Bahn), United Kingdom (2x Network Rail), Norway (3x Norsk Jernbaneskole) and the Netherlands (2x Railcenter), and two facilitators/coordinators from the Netherlands (Railcenter). Collective workshops at each training centre are key activities of this pilot project.

### 2.1 Workshop 1: Amersfoort

The first pilot railway trainer workshop was held in November 2014 for Signalling Engineering trainers at Railcenter<sup>1</sup> in Amersfoort in the Netherlands. It was attended by ten Signalling Engineering trainers representing five countries (Belgium, Germany, Norway, the Netherlands and the United Kingdom). The workshop was designed and facilitated by consultants from Railcenter and Rail Training International (UK).

<sup>1</sup> At that time called Railinfra Opleidingen; from September 1, 2016 called Railcenter.

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Fig. 1: Fault-Finding Simulation Room (Amersfoort)

The agenda contains six main steps:

1. Acquaintance (group-building),
2. Information from the host organisation, such as structure and vision for learning.
3. Exploring the training methodologies by showing the 'why', 'what' and 'how' of two specific signalling engineering training interventions. The host organisation also delivers two sample signalling engineering training sessions. Delegates compare the technology and methodology of training and identify good practices, cooperating on new approaches in technology (workforce and in learning).
4. Exploring the development of the trainers, starting from the requested competences to the related development possibilities for new and experienced trainers. Delegates compare the development approaches in the different organisations/countries.
5. Sharing the results of the meeting and making appointments for achieving the goals of the project.
6. Start communicating via Trainweb, a web-based e-environment for discussions, Q & A, sharing documents and working on our goals.

The emphasis in the design of the workshop is on learning by doing, exchanges of expertise and sharing good practices (=action learning). Workshops are conducted entirely in English and this places a requirement for the combination of technical competence in the railway discipline (signalling engineering) with language competence, which could be a barrier to potential participants.

## 2.2 Workshop 2: York (UK)

The second workshop for Signalling Engineering trainers was held in March 2015, hosted by Network Rail in their York Training Centre. It was attended by exactly the same ten trainers who had attended the Amersfoort pilot. It is felt that this level of continuity, especially in the early stages of such a project, is very beneficial. This second pilot workshop was designed and facilitated by the same consultants from Railcenter (NL) and Rail Training International (UK).

The structure followed a similar format to the first workshop, but with specific emphasis placed on the 'high-priority' sharing opportunities highlighted in that workshop.



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Fig.2: Visit to YORK ROC

In particular, the group started working on the design of an ERTMS training course and decided to develop a basic generic training course which could be used or adapted for all countries. This gives the group the opportunity to work on a collective best practice for training design and use the most modern training technologies.

## 2.3 Workshop 3: Oslo (N)

The third workshop was held in November 2015, hosted by Norsk Jernbaneskøle in their training centre in Oslo. The knowledge gained from previous workshops is that in the design of the workshop, cooperation between facilitators and the host country is essential. Together with executive leaders from Norway and their trainers, information was prepared well and was interesting for all participants.

With the same setup of the programme, progress was made in the development of the ERTMS training and development plans of the trainers. The trainer qualification in Norway is at a high level, and special emphasis and effort is put into the development of didactical competences.

The visit to the control centre of Oslo railway station was fascinating, and the methodology of neighbour learning (engineer and rail infrastructure mechanic) was explorative. Learning by doing and in the workplace is combined with both computer simulation (e.g. ERTMS, axle counting, train driver) and simulations with wooden trains (BRIO) to understand cause and effect in railway engineering.



Fig. 3: Simulation at Norsk Jernbaneskøle

## 2.4 Workshop 4: Wuppertal (D)

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The fourth workshop for Signalling Engineering trainers was held in March 2016, hosted by Deutsche Bahn Training (DB) at Wuppertal in Germany. To prepare this workshop the facilitators from Railcenter in the Netherlands arranged a face-to-face meeting with the Signalling Engineering trainers of DB Training, Learning & Consulting and a manager of international business. The workshop was planned and prepared in detail together, with the delegation of work for every partner.

Ten trainers attended the workshop with again the agreed programme items: training place visit with emphasis on learning methodology, designing an ERTMS training programme, defining a competence profile, and initial and continuous development of trainers. Progress was made on all subjects, especially on the development of trainers. DB Training, Learning & Consulting has a well-defined programme for their trainers with a basic Train the Trainer programme, pedagogical improvement and next-education programmes. The level of education varies from basic trainer to master in a modular setup. The training methodology at DB Training is hands-on with the ambition of ending up at the level of Social Workplace Learning (self-directed learning at the workplace with colleagues and social media information at hand). Wuppertal training centre is part of this ambition, where explanation and competences are trained as closely as possible to the workplace activities.

## 2.5 Workshop 5: Brussels (B)

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Planned 17 + 18 November 2016 at Infrabel in Belgium.

## 2.6 Workshop 6: Amersfoort (NL)

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Final session planned in March 2017 at Railcenter in the Netherlands.

## 2.7 Multiplier Event: Brussels (B)

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Planned in November 2017: We will share our intellectual outputs, disseminating the results of our project with European UIC members.

## 3 Results

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The early results of the pilot group are extremely encouraging and so far exceed the expectations of the EDP working group.

To date, benefits include:

- Financial benefits: Erasmus+ grant of € 180,000 for compensation of project management, travelling costs and for creating intellectual outputs.
- Commercial benefits: through a collaborative partnership of training delivery one of the organisations realised a 50% reduction in training facilities costs.
- Technical benefits: in one country information about unreliable axle counters caused by water ingress led to an adjustment in a supplier contract in another country.
- Didactical benefits: a format for session plans which supports a clear idea of the structure of the course for both teacher and student. The structure will be copied and introduced in other countries.
- Managers of the delegates report that the trainers bring back concrete improvement actions; some of them have already been implemented, for example starting all training sessions with a focus on 'Life-Saving Rules'.
- Mechanical equipment in Wuppertal inspired all delegates to show the working of systems (some equipment was initially named as being 'museum parts').
- Delegates are very motivated to work on the progress of the objectives.
- Good leadership enhances the motivation and development of the trainers.
- Bilateral cooperation between Railcenter (NL) and Infrabel (B). Both companies realise new training facilities and share their goals, experiences, and specifications. Infrabel (B) visited Railcenter for a 'learning

session' in September 2016, and there are plans for a subsequent visit by Railcenter to the Infrabel Academy.

- Bilateral cooperation between Norsk Jernbaneskøle and Network Rail: a visit to the new Network Rail training centre in Scotland in September 2016.

## 4 Discussion

### 4.1 *The Perceived Value*

It can be the case that although there is an attraction in travelling to training centres in different countries by those privileged to have the opportunity, the benefit of such activities can be regarded sceptically by some within the owning organisations. The challenge is to demonstrate measureable financial or quality-of-product benefits from the investment in time and travel, and to disseminate these benefits within owning organisations.

It is encouraging that significant financial, didactical and technical benefits are already being delivered. These have resulted from creating an environment of positive collaboration between international railway trainers who face very similar problems and issues.

Certainly, cultural differences influence local training solutions and an 'own way of working'. However, being far away from your 'homebase' and seeing the methods used by international peers provides the opportunity to reflect on your approach and vision for training. Participants have also reported that speaking and thinking in a different language forces increased reflection.

The first results of this pilot group and the chosen approach of collaboration between international railway trainers encouraged two new groups, under the banner of UIC, into starting an exchange programme (ERTMS + Simulation).

Overall, the research has found that participants and their managers have reported an increase in motivation as a result of the workshops, to drive home improvement opportunities in their own organisations.

### 4.2 *Member Organisations, Facilitators, Trainers & Leaders*

Experience so far suggests that it is very important that every participating country provides two trainers because the language can be an obstacle for some. Moreover, the major benefit is that for reflection during the meeting, it is helpful to sit and share ideas with a colleague who speaks the same language and has the same operating reference.

There will be a need to alternate the members of the group over time, which needs to be done in a planned, phased way, so as not to disrupt the working progress of the group. It should also be recognised that withdrawal from the group could affect an individual's motivation.

The maximum recommended size of the group is 12 if forming a new group. However, there is a challenge in inviting new organisations or individuals into an existing, established group.

An approach could be to invite new organisations or new participants as 'guests'; introduce the new member and ask them to prepare the meeting by reading the discussions on Trainweb and contacting the facilitator via a teleconference. During the meeting they are the guests and extra time needs to be provided for self-introductions and reflection on every step in the agenda.

There is a similar dilemma with the quality and role of the facilitators. It is recommended that two facilitators are used at all times. It is evident that creating engaging, interactive and innovative international workshops for trainers takes considerable skill. The language requirement also narrows the potential field of competent facilitators further. As with the participating trainers, the need to rotate facilitators and the challenges this presents are recognised.

It has been evident in this pilot programme that the vision, visible support and commitment of the most senior training executive in participating organisations is a key enabler to success. Without this, the release of valuable training resources and commitment to implementing identified improvement opportunities, will not be realised.

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## 4.3 Training Technology

There is a challenge in how to create motivating learning material for younger learners vs. the risk of 'chasing technology' for technology's sake and losing older learners. This will become part of the project moving forward. More important is the use of new technology in and outside the classroom. Clients are increasingly demanding the use of more modern training techniques such as video, e-learning, augmented reality, 3D simulation gaming etc. They want to save time and transfer more learning to the learners' home, or provide learning material during work. The implications for safety, for example, need to be considered.

## 5 Conclusion

The results from the UIC pilot study to date are very encouraging, and provide early, quantifiable evidence that an international exchange programme for railway trainers can have a business case, with the potential of saving considerably more money than it costs. The Erasmus+ grant allowed the group to continue for 30 months. This includes a structured approach to a phased change of the membership of the group (training organisations, facilitators and trainers), to maintain the group momentum, whilst expanding the benefits beyond a small privileged group of trainers.

It is also evident from the study that an international exchange programme contributes to the development of the individual trainers, but also to their owning organisations, as they bring back 'best practice' and have the motivation to help with the implementation of improvement opportunities.

However, it is important that the correct support mechanisms are in place for a successful international exchange programme. Of critical importance in this respect is the proactive 'championing' of the exchange programme by the executive leadership in participating organisations.

Of equal importance is the availability of good-quality facilitation of the working groups. It is important that facilitators have a good level of understanding of the specialist railway training domain, coupled with a level of English competence sufficient to facilitate the group.

The workshop format can also be rolled-out to groups of trainers from different railway disciplines (for example, train driving or customer service) in order to accelerate the benefits of internationalisation.

## References

- [1] Volmari, K., Helakorpi, S & Frimodt, R. (2009) *Competence Framework for VET Professionals: Handbook for Practitioners*, European Centre for the Development of Vocational Training, Finnish National Board of Education and editors.