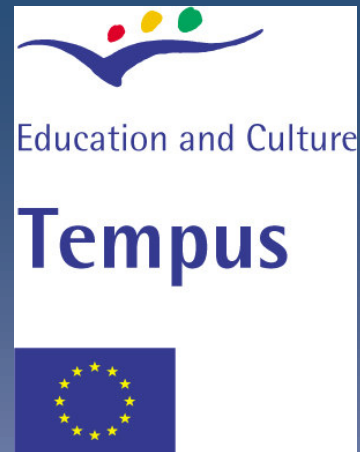


**RESULTS
THE PROJECT**



Monday, the 8th of
MARCH 2004
Main Room of the Faculty
of Transport, Traffic and Communications
Sarajevo

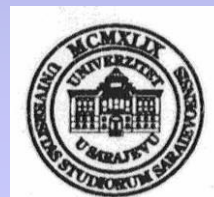
“ADVENTURES” PROJECT, 2001-2004

(ADVANCED TRANSPORTS FOR UNIVERSITY EDUCATION IN SARAJEVO)

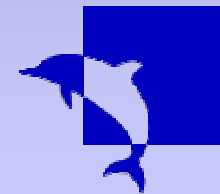
European Commission, CD_JEP-15045-2000



Politecnico di Torino
Department DITIC -Transport
Italy



University of Sarajevo
Faculty of Transport, Traffic and Communications
Bosnia-Herzegovina



University of Southampton
Transportation Research Group
United Kingdom

Tempus Programme - Education

“ADVENTURES” Project

(ADVANCED TRANSPORTS FOR UNIVERSITY EDUCATION IN SARAJEVO)

European Commission, contract N° CD_JEP-15045-2000

Joint European Project

15.03.2001-14.03.2004

Involved Faculties:

POLITECNICO DI TORINO - Dept. DITIC, Transport engineering (I), *as contractor*

UNIVERSITY OF SARAJEVO - Faculty of Transport, Traffic and Communications (BIH)

UNIVERSITY OF SOUTHAMPTON - Transportation Research Group (UK), *partner*

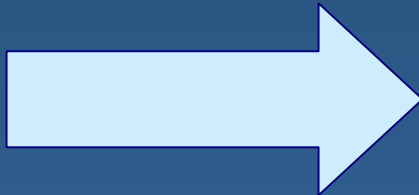
Main contents

- Which were the goals and specific aims (2000)
- Which are the results (March 2004)
- What future we might envisage (2004-2007)

The main goals of the project

1. **Up-grading of courses** and development of new curricula at University of Sarajevo
2. Provision of **teaching material**, specifically prepared for the project, concerning advanced courses on Transport and Traffic engineering
3. Transfer main and advanced knowledge concerning educational laboratory activities so to allow the creation of a new **laboratory** and **library** at Sarajevo, relating to main transport requirements of Bosnia-Herzegovina

The subjects we deal with



Dip. I.T.I.C. - Transport Engineering - 2002

What is transport engineering?

1. Transportation Techniques and Economics
2. Management and Operation of Transportation Systems
3. Theory and Techniques of Traffic circulation
4. Project and design of Transportation Systems
5. Transport Planning
6. Telematics for Transports and Intelligent Transport Systems
7. Environmental aspects of Transport systems
8. Freight Transport and Logistics
9. Public Transit and Automatic People Movers

all relating to transport and mobility by road, rail, sea, inland waterways, cableway and multimodal systems

THE EDUCATIONAL LABORATORY

(at TEMPUS Laboratory, 2nd floor of the Faculty)


1. One server
2. Six computers in LAN
3. One A0 plotter
4. One video-projector for PC
5. Five cabinets, containing books, software packages, handbooks, Cd-Roms, various publications, technical standards

July
2002



THE LIBRARY

(at TEMPUS Laboratory, 2nd floor of the Faculty)

1. More than **200 volumes** have been purchased (2001-2002) for the library, concerning:
 -  road, rail, maritime, air transport, traffic modelling, planning, mathematics, intelligent transport systems,...
2. Nearly **50 CD-Roms** mainly relating to ITS, Proceedings of transport and traffic international conferences, are now available.

THE LIBRARY

(at TEMPUS Laboratory, 2nd floor of the Faculty)

CD-Roms

1. European Commission, European ITS Architecture (KAREN), Issue 1.0, August 2000
2. US Department of Transportation (USA), The National ITS Architecture, Version 2.0., 1998
3. US Department of Transportation (USA), The National IIS Architecture, Version 3, 2000
4. National Research Council (USA), Transportation Research Board, Transportation Research Records, 1996
5. WCTR (World Conference on Transport Research), Proceeding of the 9th World Conference, Seoul (South Korea), 2001
6. ITS Congress Association, Proceedings of the 7th World Congress on Intelligent Transport System , "From vision to reality", 2000
7. National Research Council (USA), Highway Capacity Manual, special report 209 CD, 3rd edition, 1997
8. UTMS (Universal Traffic Management Society of Japan), UTMS World 2000, 2000
9. Ergo (Exact Road Geometry Output), Retroreflection for Traffic Signs, 2001
10. ESA, Galileo, the European initiative, version 1.1, 2000
11. US Department of Transportation (USA), Federal Highway Administration, ITS Greatest hits, FHWA-OP-99-028, 2000
12. ITS Australia, Proceedings of the 8th World Congress on Intelligent Transport Systems, Sydney, Australia, 30 Sept.-4 October 2001-10-09



THE LIBRARY

(at TEMPUS Laboratory, 2nd floor of the Faculty)

UIC (*Union Internationale des Chemins de Fer*, International Union of Railways) **Code:** all leaflets/recommendations concerning rolling stock (chapter V) and relevant subject of railway transport (nearly 80 volumes)



THE LIBRARY

(at TEMPUS Laboratory, 2nd floor of the Faculty)

European and Italian technical standards for rope transport installations and systems

Prescriptions de sécurité des installations de transport à câbles destinées aux personnes

1. Terminologie (DE)pr ENV 1907 / August 1998
2. Dispositions générales - Exigences pour toutes les installations ..pr EN 12929-1 / Mai 2000
- Prescr. compl. pour le téléphériques
bicâbles à va et vient sans frein de
chariotpr EN 12929-2 / April 2000
3. Calculspr EN 12930 / Mai 2000
4. Câbles - Coefficients de sécurité (EN)pr EN 12927-2 / Mai 1999
- Attaches d'extrémité (EN)pr EN 12927-4 / Januar 2000
- Paramètres d'écart (EN)pr EN 12927-6 / November 1995
- Contrôle, réparation et entretien (EN) ..pr EN 12927-7 / April 1998
- Contrôles non-déstructifs (EN)pr EN 12927-8 / Januar 1998
5. Dispositif de mise en tensionpr EN 1908 / Mai 2000
6. Dispositifs mécaniquespr EN 13223 / April 1998
7. Véhicules - Attaches, cabines, sièges, archets et
sellettespr EN 13796-1 / Dezember 1999
- Essais de fatiguepr EN 13796-3 / April 2000
8. Dispositifs électriquespr EN 13243 / April 1998
9. Ouvrages de génie civilpr EN 13107 / Dezember 1997
10. Essais, maintenance et vérifications (DE)pr EN 1709 / November 1994
11. Récupération et évacuationpr EN 1909 / Mai 2000
12. Exploitationpr EN 12397 / Mai 2000
13. Assurance de la qualitépr EN 12408 / Mai 2000

LABORATORY: software packages

1. Software package (**Matlab**) and related manuals (network licence and single licences)
2. Software package (**CAD**), Architectural desktop 3.3, Edu
3. CD-Rom copies on transportation engineering: *urban public transport* (6 copies), *Highway capacity Manual* (plus copy); *Intelligent Transport Systems, ITS Standards Outreach, Education and Training Resource* (plus 2 copies).

LABORATORY: test and training instruments

1. Laboratory instruments with sw: **phonometer** investigator TM and related software, manual and kit
2. **Traffic counting** instrument consisting of a **Doppler radar** system "Viacount" for measuring vehicle movements, speed, distances,... (samples carried out in Sarajevo, March 2003)
3. **Traditional traffic counting devices**

Practical use in Sarajevo



LABORATORY: software packages

4. Specific software packages for transport and traffic:

- Arcview (GIS)
- Trips
- Systat (statistical analysis)
- Autocad ADT
- QRS II
- HCS HiCAP
- Contram
- Elevate (elevators)
- Elevate express (elevators)
- AIMSUN II (macroscopic supply models)

Practical use in
Sarajevo,
March 2004

The cableway design sw package specifically created during the Tempus project

The software package, named C.D.P. ("Cableway Design Package", or S.I.F.- *Software Impianti a Funne* in Italian), supports the **design and** verification of any kind of **calculation** related to cableway transport systems, either equipped with detachable or with fixed grips, with continuous or pulse movement: **ski-lifts, chairlifts, gondola ropeways, passenger ropeways** and freight or **material ropeways** (telpherages).



The cableway design sw package specifically created during the Tempus project

Cableway Design Package (C.D.P.)
Software Impianti a Funne (S.I.F.)
Versione 1.0/Issue 1.0



ADVENTURES PROJECT, 2001-2004
"ADVANCED TRANSPORT FOR UNIVERSITY EDUCATION IN SARAJEVO"
European Commission, CD-JEP-15045-2000
Involved academic institution for the development of this software



POLITECNICO DI TORINO
Dipartimento di Idraulica, Trasporti ed Infrastrutture Civili
(Department of Hydraulics, Transport and Civil Infrastructures)

Cableway Design Package (C.D.P.)
Software Impianti a Funne (S.I.F.)
Versione 1.0/Issue 1.0

Publishing and software package references:

Politecnico di Torino
Dept. I.T.I.C. - Transport Engineering
corso Duca degli Abruzzi, 24
10129 Torino - I
<http://www.polito.it/index.en.html>

Eng. Vittoriano Vitali
<http://www.winsif.com>

ADVENTURES PROJECT, 2001-2004
"ADVANCED TRANSPORT FOR UNIVERSITY EDUCATION IN SARAJEVO"
European Commission, CD-JEP-15045-2000
Involved academic institution for the development of this software:

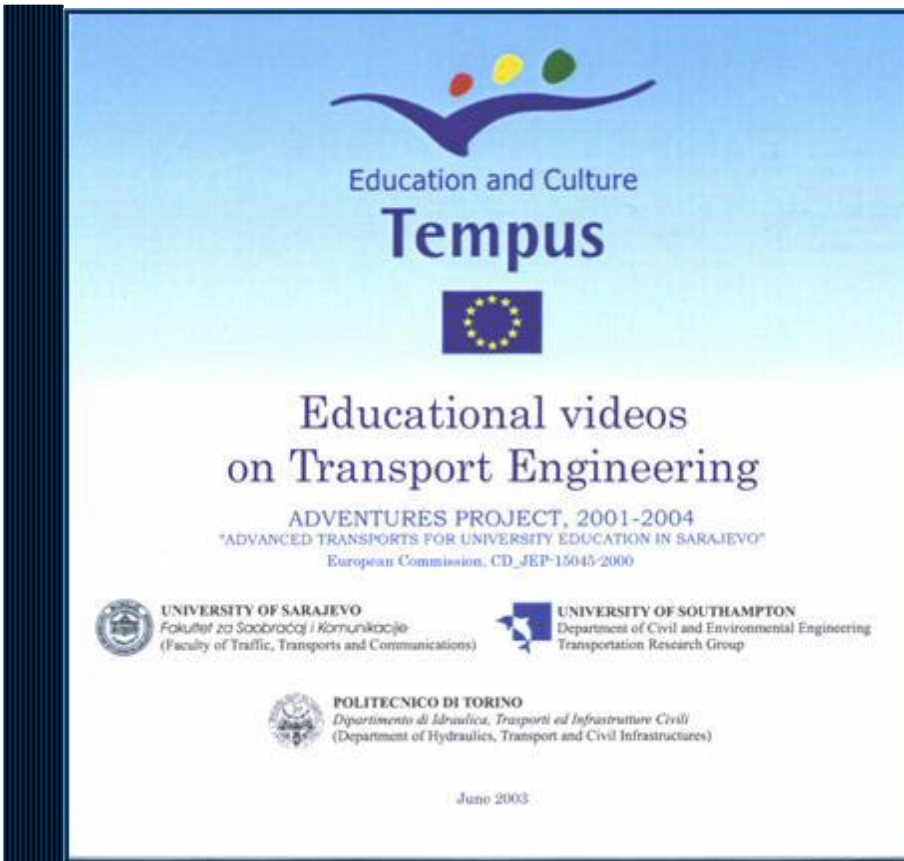


POLITECNICO DI TORINO

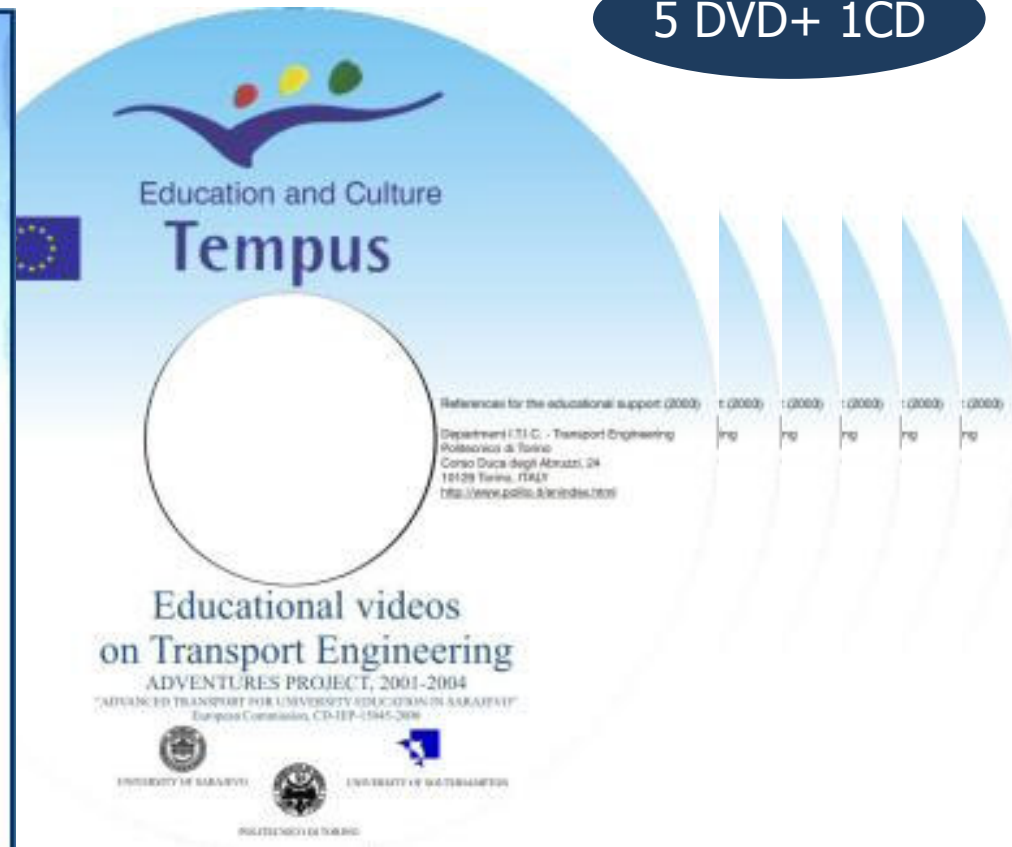
Educational technical videos

1. Educational videos on Transport Engineering
2. 20 technical videos (5 DVD and 1 CD Rom), in multiple copies, concerning:
 - Transport by cable, railways and non conventional systems
 - Freight transport and external logistics
 - Traffic
3. Nearly 525' of videos, as overall.

Educational technical videos



5 DVD+ 1CD



2001-2004

17

Educational technical videos: titles

- 1 The construction of steel wire ropes for cable transport systems
- 2 An aerial ropeway: production of steel wire ropes and installation
- 3 Detachable grip chairlifts (express chairlifts)
- 4 The construction of a railway line
- 5 How does a steam locomotive work
- 6 English, Welsh, Scottish Railways and rolling stock
- 7 High speed rail transport: a survey
- 8 The VAL system for urban public transport
- 9 A non conventional public transport system (APM), deriving from a cableway
- 10 A system for urban transport deriving from cableways

Educational technical videos

- 11 An automatic people mover system: PRT 2000
- 12 Shunting station at a railway terminal: the marshalling yard
- 13 The main logistic centres (i.e. freight villages) in Italy
- 14 Accompanied combined transport: rolling-road wagons (I-D crossing, via CH)
- 15 An automated system for handling and sorting freight at a railway station
- 16 The transport of trains by ships
- 17 Description of a European maritime port
- 18 Maritime transport: safer shipping and cleaner oceans
- 19 Reverse logistics: a process to recycle used components of motor-vehicles
- 20 Traffic monitoring by using a radar system

CABLEWAYS

An educational CD-Rom to support the design and operation of rope transport systems

- The CD-Rom contains 535 pictures, concerning all main categories of cableways and their components.
- The single pictures have not been quoted in order to avoid any advertisement from our Academic Institution or the Academic Partners participating in the project, neither from the European Commission, being not the publicity scope of this CD-Rom.

An educational CD-Rom to support the design and operation of rope transport systems

- *Printing and publishing references (2003):* Politecnico di Torino, Department DITIC (I), *author:* Bruno Dalla Chiara, Dr Eng - Politecnico di Torino, Dept. ITIC, Italy
- *Acknowledgments:* many of the pictures of components and systems contained in the CD-Rom have been included thanks to the valuable contribution of the following companies, involved in design, construction or operation of cableways:
 - POMA Italia, Leinì (Torino, I)
 - MEB Impianti, Fiorano al Serio (Bergamo, I)
 - LEITNER, Vipiteno (Bolzano, I)
 - DOPPELMAYR, Lana (Bolzano, I)
 - MONTEROSA SKI, Gressoney (Aosta, I)

An educational CD-Rom to support the design and operation of rope transport systems

Using the option "advanced search" you can select, either in English or in Italian language, the installation type, i.e. "classification"; then if you select "search", with your mouse, you can get, for instance, all the images of components and installations belonging to a specified category.

Each picture is related to an English/Italian language description (named "caption")

An educational CD-Rom to support the design and operation of rope transport systems


The CD contains the following installation typologies and specific subjects:

1. *Ski lifts* - Sciovie;
2. *Snow belt conveyers* - Nastri trasportatori da neve;
3. *Fixed grip chairlifts* - Seggiovie ad ammorsamento fisso;
4. *Detachable grip chairlifts* - Seggiovie ad ammorsamento automatico;
5. *Gondola ropeways* - Cabinovie;
6. *Passenger ropeways* - Funivie;
7. *Inclined planes* - Piani inclinati;
8. *Sloping elevators* - Ascensori inclinati;
9. *Cable Railways* - Funicolari;
10. *Telpherages / freight ropeways* - Teleferiche;
11. *Rope systems for amusement parks* - Impianti per giochi;
12. *Rescue interventions* - Soccorso in linea;
13. *Non destructive tests* - Controlli non distruttivi;
14. *Civil engineering works* - Montaggio di impianti.

An educational CD-Rom to support the design and operation of rope transport systems


October 2003


Education and Culture
Tempus





Cableways - An educational CD to support the design and operation of rope transport systems

ADVENTURES PROJECT, 2001-2004
"ADVANCED TRANSPORTS FOR UNIVERSITY EDUCATION IN SARAJEVO"
European Commission, CD_JEP-15045-2000



 **UNIVERSITY OF SARAJEVO**
Fakultet za Saobraćaj i Komunikacije
(Faculty of Traffic, Transports and Communications)

 **UNIVERSITY OF SOUTHAMPTON**
Department of Civil and Environmental Engineering
Transportation Research Group

 **POLITECNICO DI TORINO**
Dipartimento di Idraulica, Trasporti ed Infrastrutture Civili
(Department of Hydraulics, Transport and Civil Infrastructures)



Education and Culture
Tempus



Cableways - An educational CD to support the design and operation of rope transport systems

ADVENTURES PROJECT, 2001-2004
"ADVANCED TRANSPORT FOR UNIVERSITY EDUCATION IN SARAJEVO"
European Commission, CD_JEP-15045-2000

References for the educational support (2003)

Department I.T.I.C. - Transport Engineering
Politecnico di Torino
Corso duca degli Abruzzi, 24
10129 Torino, ITALY
<http://www.polito.it/index.en.html>
bruno_dallachiaia@polito.it
(Dr. Bruno Della Chiara)

 **UNIVERSITY OF SARAJEVO**

 **POLITECNICO DI TORINO**

 **UNIVERSITY OF SOUTHAMPTON**

An educational CD-Rom to support the design and operation of rope transport systems

Catalog: "CABLEWAYS" (total: 535 - displayed: 68 - selected: 0)

Education and Culture

Tempus

Cableways - An educational CD to support the design and operation of rope transport systems

Advanced search

Classification:

AND OR

Caption:










EXCEPT:

(Classification=Gondola ropeways...)

In: the catalog the selection

Sorted by: (no sorting)

Search

 <p>E0051</p>	 <p>E0052</p>	 <p>E0053</p>	 <p>E0054</p>	 <p>E0055</p>
 <p>E0056</p>	 <p>E0057</p>	 <p>E0058</p>	 <p>E0059</p>	 <p>E0060</p>

Navigation icons: Home, Back, Forward, Stop, Refresh, Print, Copy, Paste, Delete, Undo, Redo, Zoom In, Zoom Out, Full Screen, Exit.

The extended educational stages (main ones)

- 1 assistant (“docent”) for 2-weeks, following the Master in “Transport and Sustainable Mobility” at Politecnico di Torino (I);
- 8 professors and docents at University of Southampton (UK) for 9 days;
- 2 assistants (selected students from their final year) for 2 weeks to follow part of a course at Politecnico di Torino (I) and prepare the design and calculation of a rope transport installation by using the new software

They have joined two different groups of Italian students, who have prepared the essay in English during the course of “Progettazione di sistemi di Trasporto” (i.e. *Technical design and calculation of transport systems*) on a **detachable grip installation** and a **traditional chairlift**; results: 2 essays with calculation and 2 CD-Roms with papers and designs.

The lessons in Sarajevo (main ones)

- Lessons on rope systems, calculation examples, introduction to the use of the cableway design package, lesson on railways and tilting trains (October 2003)
 - Lesson on the use of radar system (March 2003)
 - Lesson on the use of the macroscopic supply models (March 2004)
- ⊞ Explanation (in Torino) on the use of the phonometer

THE TEXTBOOKS PREPARED

1. **Mathematics** for transport and traffic (BIH)
2. Innovation in **urban** public transport (UK)
3. Instruments for monitoring road **traffic** flows (I/UK)
4. Transport **planning**: travel behaviour responses and transport modelling (UK)
5. **Rope** transport systems (I)
6. Transport and the **environment** (I)
7. Freight **intermodal** transport (I)
8. **Railway** transport systems (I)

Glossary on rope transport systems

- **“Terminologia sui Sistemi di Trasporto a Fune”**
- **Glossary for Rope Transport Systems**
- ***Terminologija za Žičane Sisteme***

More than 500 specific termes translated into three languages

Glossary on rope transport systems (extract)

Italiano	UK-English	Bosnian
Cabinovia	Gondola ropeway / cabin ropeway	Žičara s kabinama
Funicolare	Funicular railway, Cable railway	Žičana željeznica
Funivia	Ropeway; Passenger ropeway; Aerial tramway/ropeway	Žičara za prevoz putnika
Nastro trasportatore da neve	Snow belt conveyer	Traka za prenos snijega
Piano inclinato	Inclined plane	Kosa ravan
Sciovia	Ski-tow; Ski lift; Surface lift	Ski lift
Seggiovia	Chairlift	Žičara sa sjedalima
Seggiovia ad ammorsamento automatico	Detachable grip (express) chairlift	Žičara sa sjedalima sa automatskim hvatanjem
Seggiovia ad ammorsamento fisso	Fixed grip chairlift	Žičara sa sjedalima sa fiksnim hvatanjem
Teleferica	Telpherage; Freight ropeway	Žičara za prevoz materijala
...

Various meetings





Various meetings



The technical visits

Visits at the **laboratories** of University of Southampton and Politecnico di Torino have taken place in different times, relating to:

- Floating car data and traffic monitoring
- Rope inspection and non destructive testing
- Noise control
- Mechatronics
- Applied physics
- Graphical representation
- Mechanics applied to transport

The technical visits

Many **technical visits** in Italy and in United Kingdom (Southampton); also some technical visits in Sarajevo, at the beginning of the project, to acquaint about the situation;

samples of visits in Italy and United Kingdom:

1. **Traffic control** centers
2. **Tunnels** and related control systems
3. **Freight villages** and **terminals**
4. **Train construction** factories; rolling stock **maintenance** firms
5. **Ports** and **container terminals**
6. **Rope** installations; rope **transport systems** and factories
7. **Rolling road** systems

The technical visits

The main group of visits has taken place in January (15 days), in terminals, infrastructures, a tunnel, installations, firms settled in north of Italy.

- † *10 professors and assistants* from University of Sarajevo involved;
- † *1 professor and 1 or 2* (according to the days) *technicians* from Politecnico di Torino, accompanying;
- † *1 administrative person* from University of Sarajevo;
- † *20 selected students*

34 people,
2 drivers (bus)

The technical visits



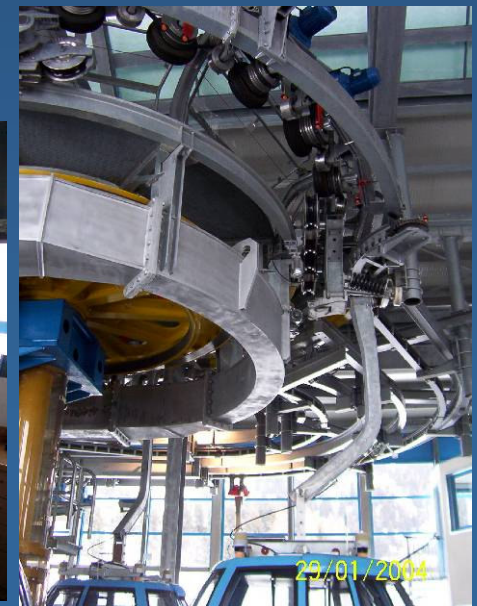
The technical visits



The technical visits



Extended visits,
January 2004
(34 people)



The technical congresses

1. Congress on the **tramways, metro systems and innovative transport systems** for urban transport, at “Unione Industriale di Torino”, organised by Politecnico together with CIFI (*Collegio Ingegneri Ferroviari Italiani, i.e. engineers involved in railways transport consortium*) on the **3rd of May 2003** (1 full day), more than 115 attendants
2. Congress on **Innovation in rope transport systems**, at Politecnico, again together with CIFI, on the **23rd of October 2003** (1 full day), more than 120 attendants

The final seminar

At University of Sarajevo, on the 8th of March 2004

- A. Presentation of the results
- B. Analysis of the three years
- C. Future

Academic staff mainly involved during the three years

Coordination of activities and preparation of educational material:

SOKOLIJA Kemo, prof. dr., *coordinator*, main subjects: maths for transport and traffic (BIH)

ČEKIĆ Šefkija, prof. dr., *Dean of Faculty of Transport, Traffic and Communications* (BIH)

CROTTI Adelmo, prof., *contractor*, main subjects: rope transport systems (I)

DALLA CHIARA Bruno, dr. eng., *contact person and responsible for activities*, main subjects: intermodal tr., rail tr., rope tr. s. (I)

HOUNSELL Nick, prof., *contact person for TRG (Southampton)*, main subjects: urban transport, environment, traffic, planning

Academic staff involved in the project (alphabetical order, those underlined involved in textbook preparation):

AHMIC Ahmed, eng., applied computer sciences (BIH)

ČAUSEVIĆ Samir, doc. dr., main subjects: traffic (BIH)

CHATTERJEE Kiron, dr., main subjects: planning and modelling (UK)

CHERRETT Tom, dr. eng., main subjects: intermodal transport (UK)

DACIĆ Suada, doc. dr., main subjects: dynamics of road vehicles, noise Measurement Device (BIH)

DEFLORIO Francesco Paolo, dr. eng., main subjects: planning and modelling (I)

DELJANIN Abidin, mr., main subjects: transport technics (BIH)

GAČANIN Ešref, prof. dr., main subjects: intermodal transport, railway transport (BIH)

GREGORY Bob, dr., main subjects: urban transport (UK)

JUSUFRANIĆ Ibrahim, prof. dr., main subjects: urban transport, planning (BIH)

Academic staff mainly involved during the three years

Academic staff involved in the project (continues):

KISO Fadila, doc. dr., main subjects: intermodal transport (BIH)

KOVACEVIĆ Mustafa, eng., main subjects: railway transport (BIH)

LINDOV Osman, dr. *contact person at University of Sarajevo*, main subjects: traffic, environment (BIH)

MASCIA Margherita, eng., main subjects: urban transport (I)

MAURO Vito, prof. dr., *supervision*, main subjects: planning (I)

McDONALD Michael, *director of the Transportation Research Group* (UK)

MEHANOVIĆ Mustafa, main subjects: urban transport and planning (BIH)

MUSSONE Lorenzo, dr. eng., main subjects: Traffic (I)

PRLIC Stipe, mr., main subjects: telecommunication in transport systems (BIH)

PRONELLO Cristina, prof. dr., main subjects: environment, planning (I)

RASCIĆ Mirsad, main subjects: ropeway transport systems, vertical transport (BIH)

SALIHović Sabira, doc. dr., main subjects: freight transport and handling, graphic communications (BIH)

ŠAMIĆ Hasnija, Doc. Dr., main subjects: physics and applied physics, (BIH)

SCHOON John, prof., main subjects: railways transport (UK)

SMAJIĆ Nadija, *Administration* (BIH)

VALLANA Maurizio, Eng., main subjects: laboratory, traffic monitoring, elevators (I)

Selected students for assisting teaching staff:

BAIRIĆ Elma, Miss, selected student for ropeway transport systems (BIH)

KAHRIMAN Sedin, mr., selected student for ropeway transport systems (BIH)

Plus 20 selected
students

Future

«ADVANCED TRANSPORTS FOR UNIVERSITIES OF SARAJEVO AND ZAGREB»

(ADVENTURES-Z)

Submitted on the
15th of December 2003

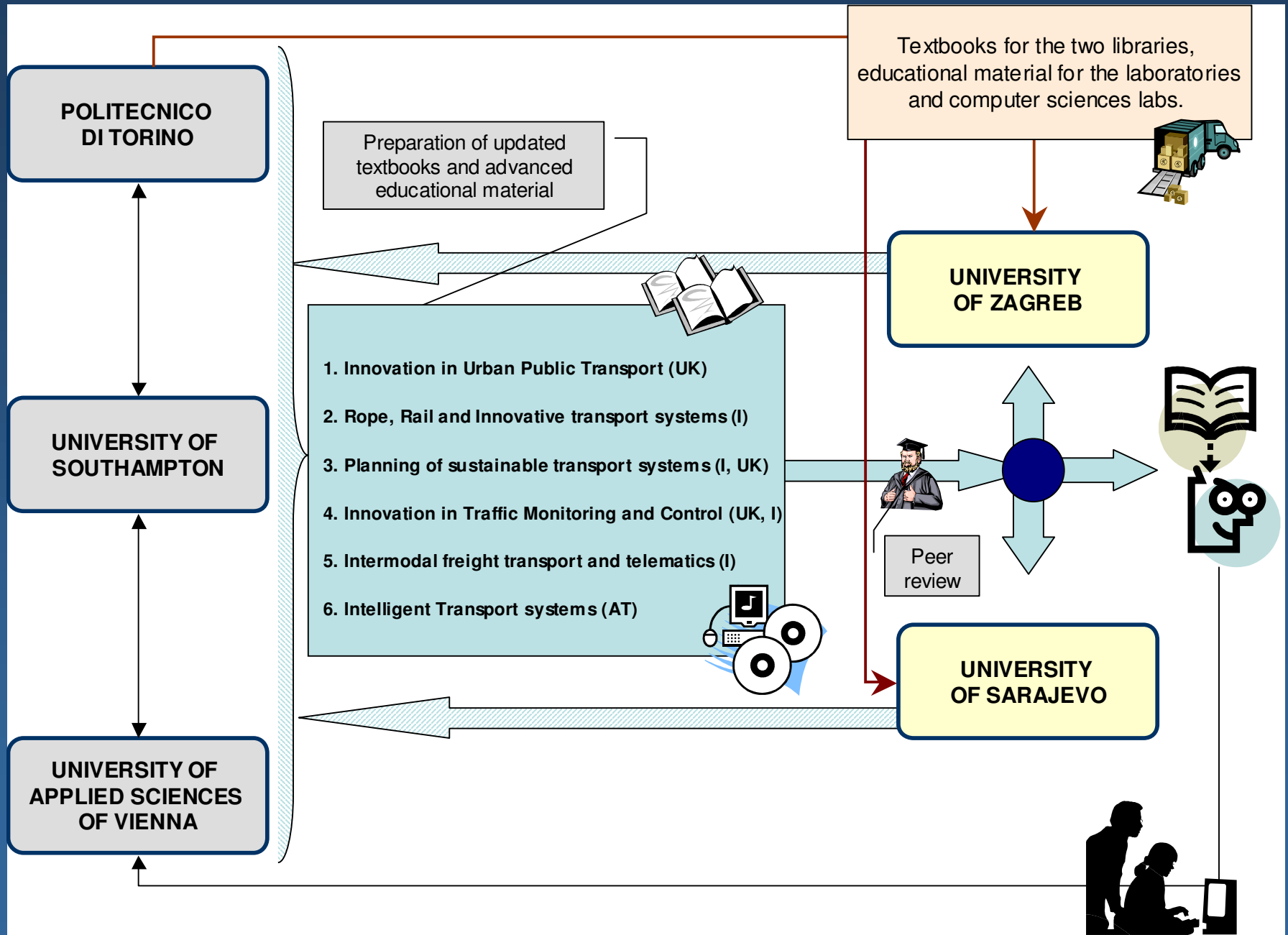
- Politecnico di Torino – Department DITIC – Transport engineering, Torino, Italia (I), *as contractor*
- University of Sarajevo - Faculty of Transport, Traffic and Communications, Sarajevo, Bosnia-Herzegovina (BIH)
- University of Southampton - Civil and Environmental Engineering, Transportation Research Group, Southampton, United Kingdom (UK)
- University of Applied Sciences of Vienna - *Fachhochschule Technikum Wien*, Vienna, Austria (AT)
- University of Zagreb - Faculty of Transport and Traffic Engineering, Zagreb, Croatia (HRV)



If approved: Sept/Oct 2004-2007

Future

ADVENTURES-Z

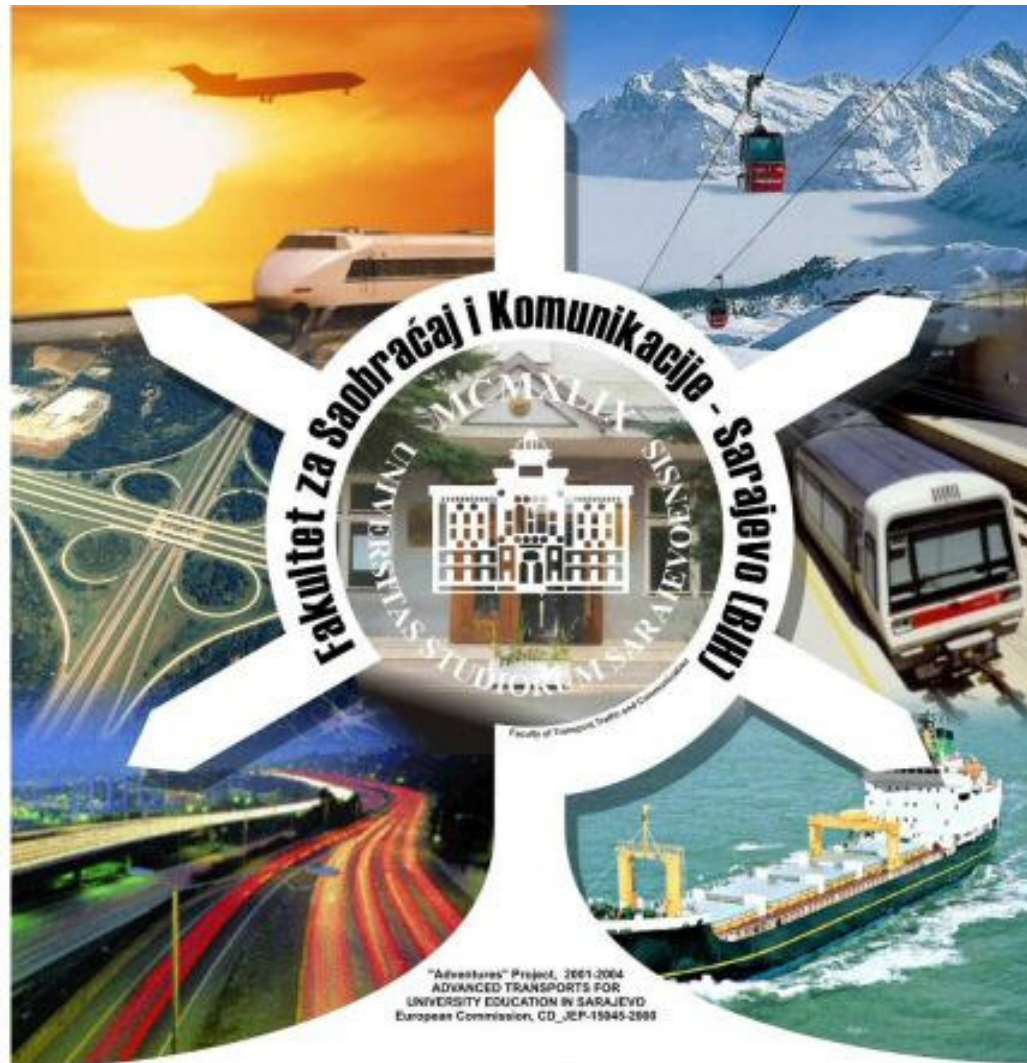


Future

ADVENTURES-Z



Use of ECTS, in order to facilitate exchanges among the Eastern and Western European Faculties (Bologna declaration)



Education and Culture

Tempus

POLITECNICO DI TORINO (I)
Dipartimento di Idraulica, Trasporti ed Infrastrutture Civili
(Department of Hydraulics, Transport and Civil Infrastructures)

UNIVERSITY OF SOUTHAMPTON (UK)
Department of Civil and Environmental Engineering
Transportation Research Group