20th UITIC
INTERNATIONAL TECHNICAL FOOTWEAR CONGRESS

Porto 2018
16th–18th MAY

FROM FASHION TO FACTORY
A New Technological Age

Knowledge Platform for Transferring Research and Innovation in Footwear Manufacturing

Aura MIHAI - Gheorghe Asachi Technical University of Iasi - Romania

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Partners

- TUIASI-Gheorghe Asachi Technical University of Iasi
- CEC-European Confederation of the Footwear Industry
- INCDTP - Institutul National de Cercetare-Dezvoltare pentruTextile si Pielarie
- TUC-The Research Committee of the Technical University Crete
- Virtual Campus Lda
- CTCP - Centro Tecnologico de Calcado de Portugal
- INESCOP-Instituto Tecnológico del Calzado y Conexas
- TTF-University of Zagreb/ Faculty of Textile Technology
- CTD-Creative Thinking Development

Why Knowledge4Foot ?

- Business operating staff (engineers, technicians) are not sufficiently trained and do not have the skills needed to be directly and effectively integrated into Research, Development and Innovation (RDI) teams

- Students/graduates are not familiar with the latest research, trends and opportunities to grow a business in the field. Lack of knowledge, skills and competencies related to research, development and technology transfer .

- The internship / placement activities carried out by students are very limited and they are oriented towards professional training for the acquisition of skills related to traditional processes and technologies

AIM

Excellence in tertiary level of training and education for design, product development, engineering and management by connecting the three areas of the **knowledge triangle:**

- **Education**
- **Research**
- **Business**

Mapping the knowledge triangle for transferring research and innovation in footwear manufacturing

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This study provides a detailed overview of the labor market requirements in the footwear industry for highly qualified staff with an optimal combination of transversal and professional competencies to stimulate **the transfer of the latest innovative added value products and processes into the footwear manufacturing.**

Links:

http://www.knowledge4foot.eu/site/assets/files/1042/k4f_integrated_report_final.pdf

http://online.fliphtml5.com/yqaa/scey/#p=1

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Mapping the knowledge triangle for transferring research and innovation in footwear manufacturing

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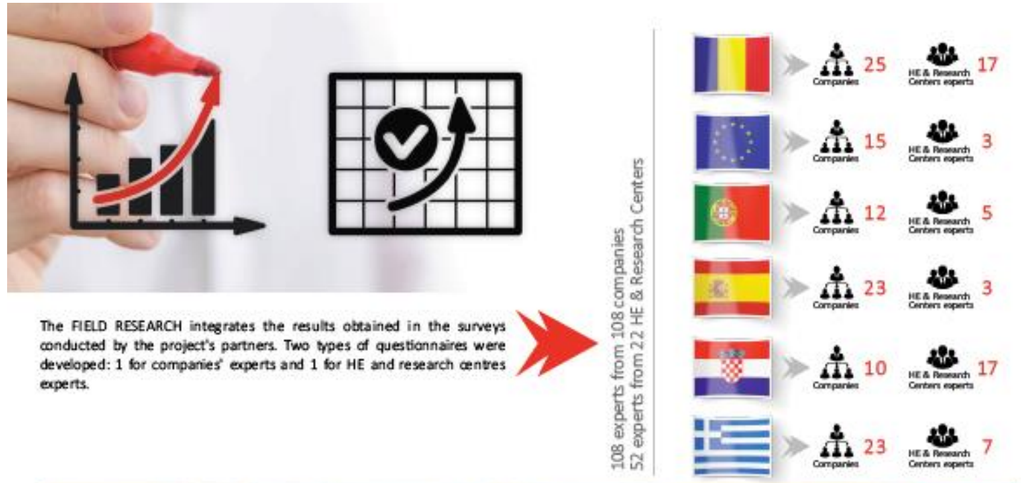
- The partners analyzed how **project-based training** is reflected in the study and training programs addressing qualification levels 5, 6 and 7 (European Qualifications Framework).
- **Gaps and mismatches** have been identified in terms of skills and competencies related to the training needs identified in the labor market.
- Results of research conducted by partners in **Romania, Greece, Portugal, Spain and Croatia:**
  - ✓Analysis of the footwear sector,
  - ✓Analysis of existing study and training programs,
  - ✓The inventory of research, development and innovation (RDI) needs in the footwear sector,
  - ✓Identifying relevant research development projects as well as good practice and initiatives demonstrating the link between universities, technology centers and industry firms.



➢**Study on installed capacity to perform research, development and innovation in footwear manufacturing .** Two types of questionnaires were applied, to which 108 experts from the footwear firms, respectively 52 teachers and researchers from 22 universities and research centers, responded.

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Training program and e-learning content for transferring research and innovation

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- Training courses are focused on the development of skills and competences in research, innovation and technology transfer, applied in the field of footwear manufacturing.
- For a training program totaling 125 hours / 9 ECTS credits, the partners develop the content for three courses, each consisting of 4 modules (12 in total)
- 3 e-books in 6 languages

Figure 5. KI ecobe modular concept. Source: https://www.kickstarter.com/projects/1121278858/ki-ecobe-customizable-self-assembled-footwear?token=7ca10499

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Training program and e-learning content for transferring research and innovation

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MODULE 1

Developing project proposals for research and innovation in footwear enterprises

- **Unit 1: R&D in European projects**
  - Horizon 2020
  - SME Instrument
  - INNOSUP
  - Eurostars
- **Unit 2: Preparation of a proposal for H2020**
  - Internal Analysis in the Company
  - Partnership
  - IPR, Communication and Exploitation
- **Unit 3: Budget and financial management**
- **Unit 4: Submission of a H2020 proposal**
- **Assessment/Virtual Internship- Writing a Project Proposal for H2020- SME Instrument**

Training program and e-learning content for transferring research and innovation

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MODULE 2

knowledge 4 foot

Creativity and Innovation for Footwear Industry

Unit 1: Footwear design-driven innovation

- Design tools, methods and practices
- Approaches to the consumer-oriented footwear product design

Unit 2: Product-related innovation

- Innovative materials and components for footwear
- Engaging engineering tools for innovative footwear

Unit 3: Design-driven additive manufacturing

- What is additive manufacturing?
- Application of additive manufacturing in footwear design
- 3D modelling and 3D printing

Unit 4: Footwear product development. Study cases

- Study case 1- Prototyping footwear insole based on foot measurements
- Study case 2- Developing a footwear collection based on visual stimuli

Test Quiz

Assignment - Draft idea for a CASE Study of an Innovative Footwear

Training program and e-learning content for transferring research and innovation

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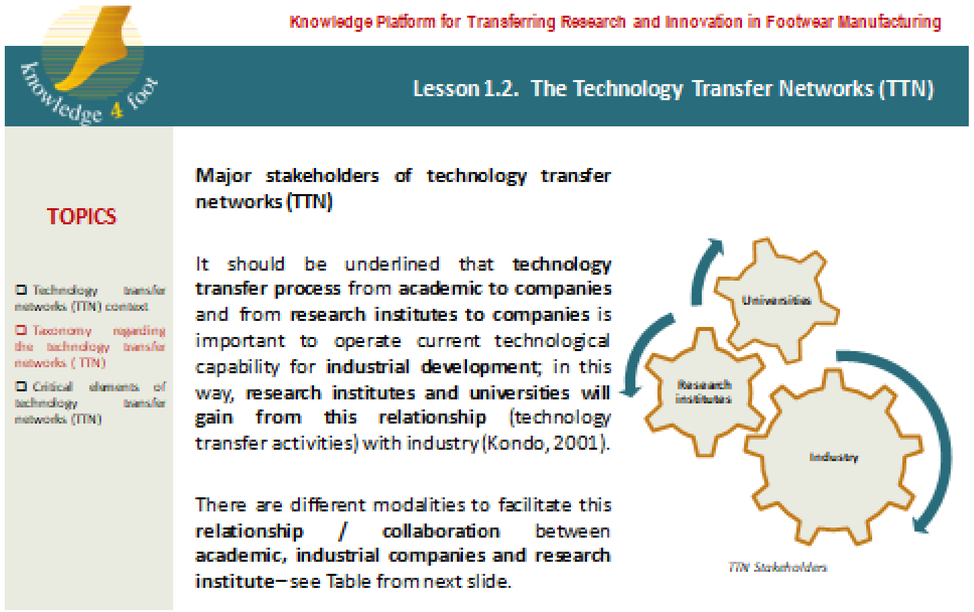
MODULE 3



- **Unit 1: Introduction to Technology Transfer**
  - What is Technology Transfer
  - The Technology Transfer Networks
- **Unit 2: Process Innovation and Emerging Technologies**
  - New equipment with high contents of technology
  - New ICT systems interacting with manufacturing and managements
  - Technology Assessment - Value Proposition
  - Integrating Technology
- **Unit 3: Intellectual Property Rights**
  - Types of IPR
  - IPR Strategy
- **Unit 4- Workshop: Entrepreneurship and Business Planning. How to elaborate a business plan?**
- **Test Quiz**

Multimedia handbook for project based training and virtual placement of HE students and trainees from SMEs

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- The content of the multimedia manual is addressed to both students and tutors

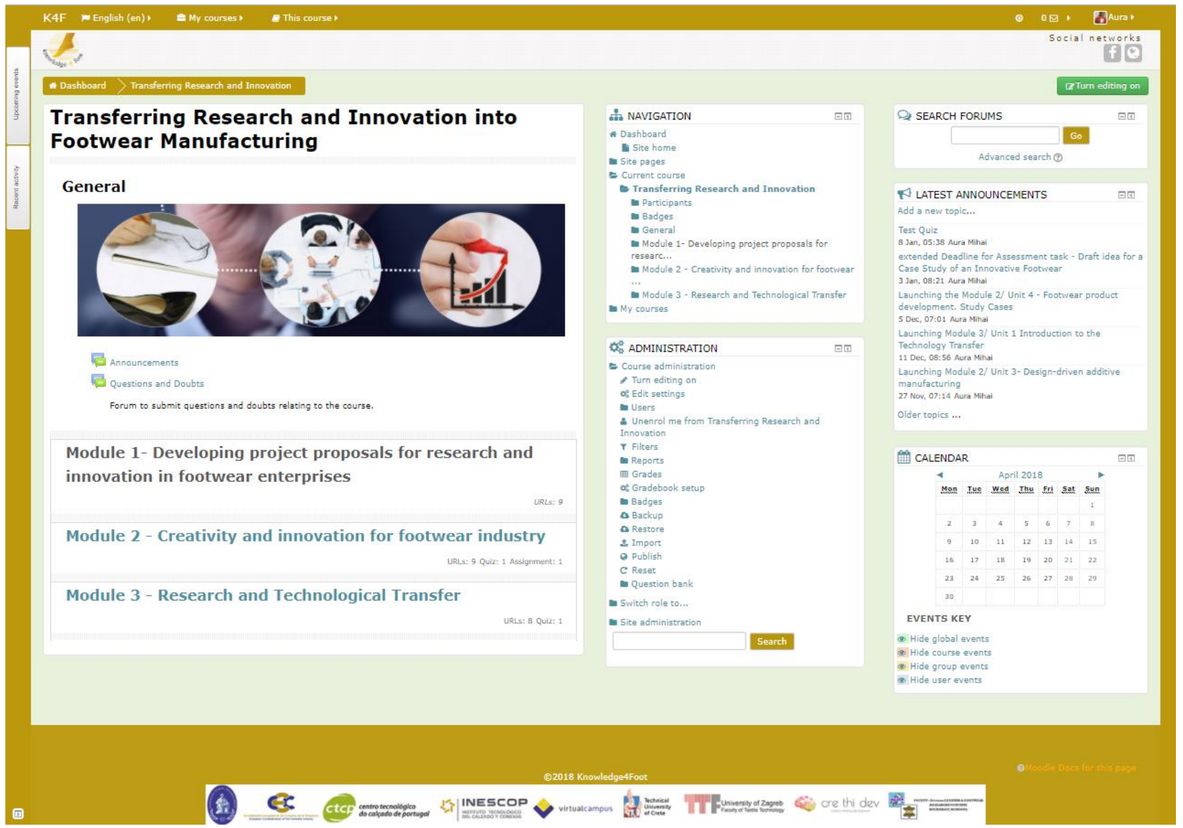
Knowledge4Foot Platform Guide for Students

Content

Knowledge4Foot Platform

SECTIONS

- **ONLINE TRAINING**
  - **Module 1- Developing project proposals for research and innovation in footwear enterprises**
  - **Module 2 - Creativity and innovation for footwear industry**
  - **Module 3 - Research and Technological Transfer**
- **GUIDELINES FOR PROJECT BASED TRAINING THROUGH VIRTUAL PLACEMENT OF STUDENTS**
  - Student's handbook
  - Supervisor's handbook
- **INTENSIVE SUMMER TRAINING COURSE ON ENTREPRENEURIAL THINKING IN FOOTWEAR AND LEATHER SECTOR – Book of lectures**
- **VIRTUAL BROKERAGE**
- **R&I PROJECTS FOR FOOTWEAR MANUFACTURING** is a project management tool that allows for: •collecting needs as requirements, • describing solution with specifications, • and controlling development task within a milestone schedule • for providing deliverables • that will be reviewed and validated



Students' PROJECT IDEAS and VIRTUAL BROKERAGE

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- **10 multinational teams with 60 students from RO, HR, GR working in a virtual environment offered by K4F Platform**
- **25 companies from Romania, Greece, Spain, Portugal and Croatia participating in one Brokerage Session**
- **14 Project IDEAS/topics:**

❑**Opportunities of 3D printing in footwear** (such as: design optimisation; design by local and small brands; re-design and personalisation)

❑**From eco-friendly to eco-intelligent footwear** (such as: eco-design and environmental technologies as a competitive advantage; How to minimise waste or emissions in footwear manufacturing, Biodegradable shoes , recycling, up-cycling and re-using)

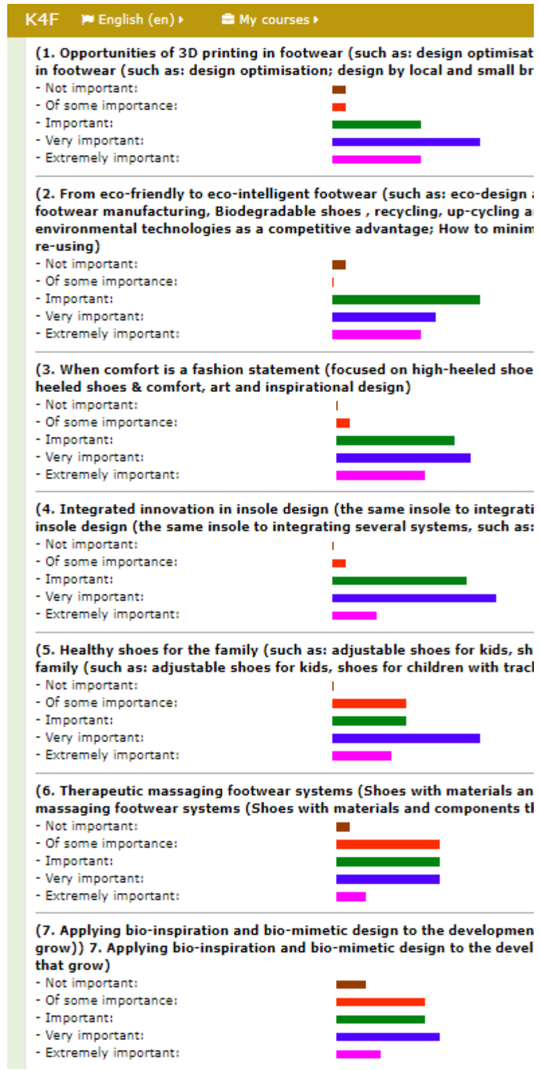
❑**When comfort is a fashion statement** (focused on high-heeled shoes & comfort, art and inspirational design)

❑**Integrated innovation in insole design** (the same insole to integrating several systems, such as: heating, shock absorbing, pain relief etc.)

❑ **Healthy shoes for the family** (such as: adjustable shoes for kids, shoes for children with tracking system, footwear for pregnant women)

❑ **Therapeutic massaging footwear systems** (Shoes with materials and components that massage feet during movement for therapeutic purposes)

❑ **Applying bio-inspiration and bio-mimetic design to the development of the footwear concept** (such as: chameleon shoes; smart shoes that change colour; shoes that grow)



Students' PROJECT IDEAS and VIRTUAL BROKERAGE

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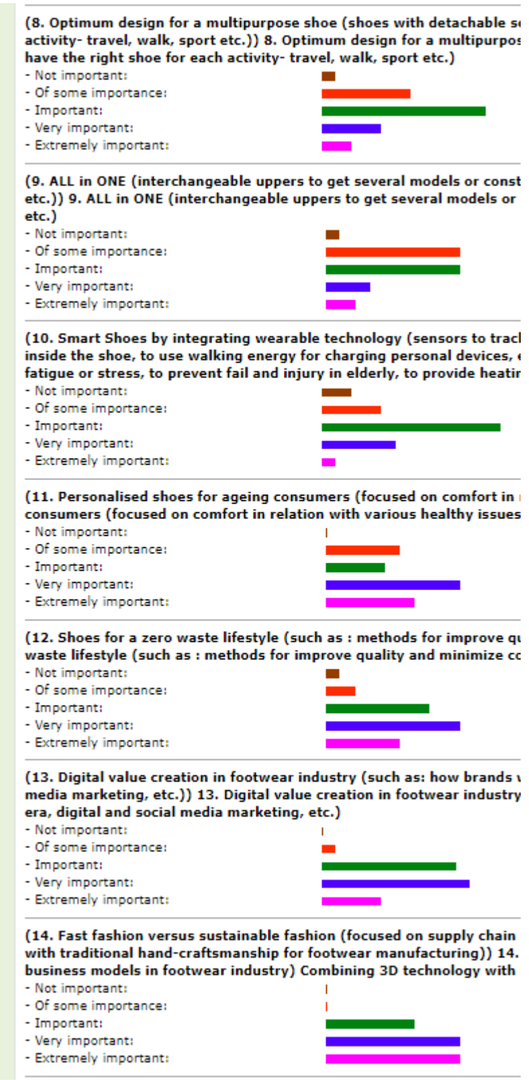
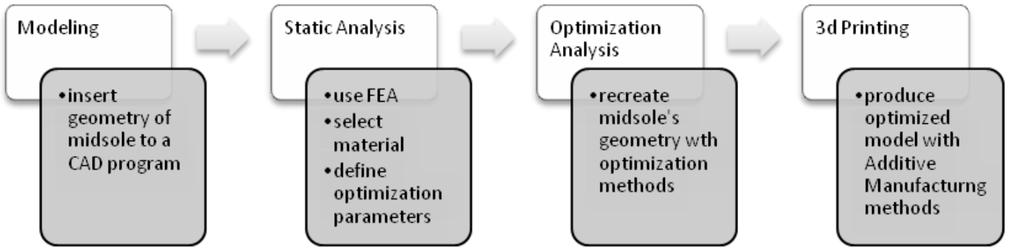
- **Optimum design for a multipurpose shoe** (shoes with detachable soles, heels or platforms; uppers and bottoms can be interchanged to have the right shoe for each activity- travel, walk, sport etc.)
- **ALL in ONE** (interchangeable uppers to get several models or construction types, the same shoe to be adapted for various activities, on different walking surfaces, etc.)
- **Smart Shoes by integrating wearable technology** (sensors to track users activity, to detect fatigue or stress, to prevent fail and injury in elderly, to provide heating inside the shoe, to use walking energy for charging personal devices, etc.)
- **Personalised shoes for ageing people** (focused on comfort in relation with various healthy issues of the ageing people)
- **Shoes for a zero waste lifestyle** (methods for improve quality and minimize costs in footwear industry, zero waste footwear design)
- **Digital value creation in footwear industry** (how brands will look like in 2050?, fashion and digitalization, footwear company in digital era, digital and social media marketing, etc.)
- **Fast fashion versus sustainable fashion** (focused on supply chain management, sustainability and business models in footwear industry)

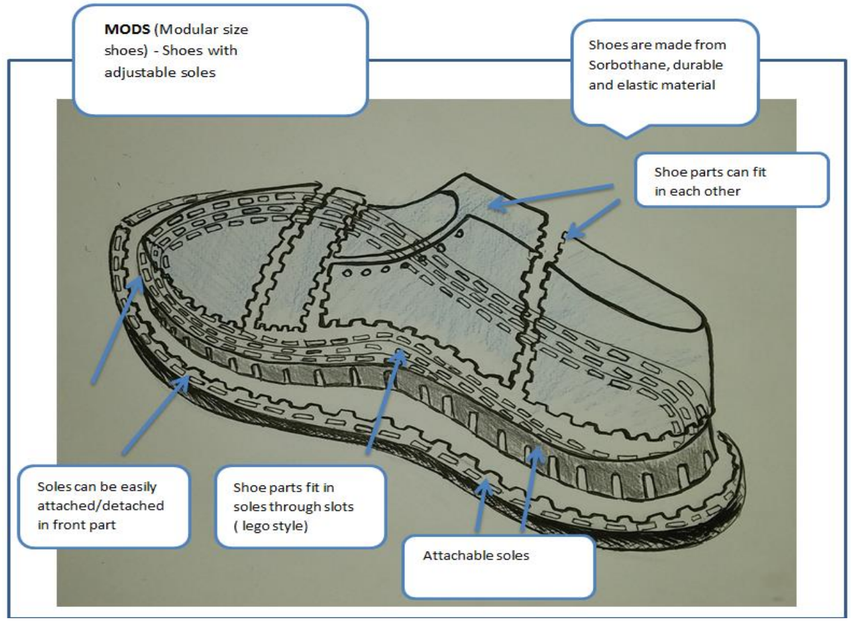


- **10 multinational teams with 60 students from RO, HR, GR working in a virtual environment offered by K4F Platform**



❑ 5 Awarded projects ideas

- Redesigning the high-heels for 3D printing: midsoles and materials
- Applying bio-inspiration and bio-mimetic design to the development of the footwear concept
- Modular shoes with adjustable size
- ALL-IN-ONE
- Multifunctional insole to prolong the active and healthy life of the elderly



- **DEMO- How to use the [Knowledge 4 Foot Platform]**
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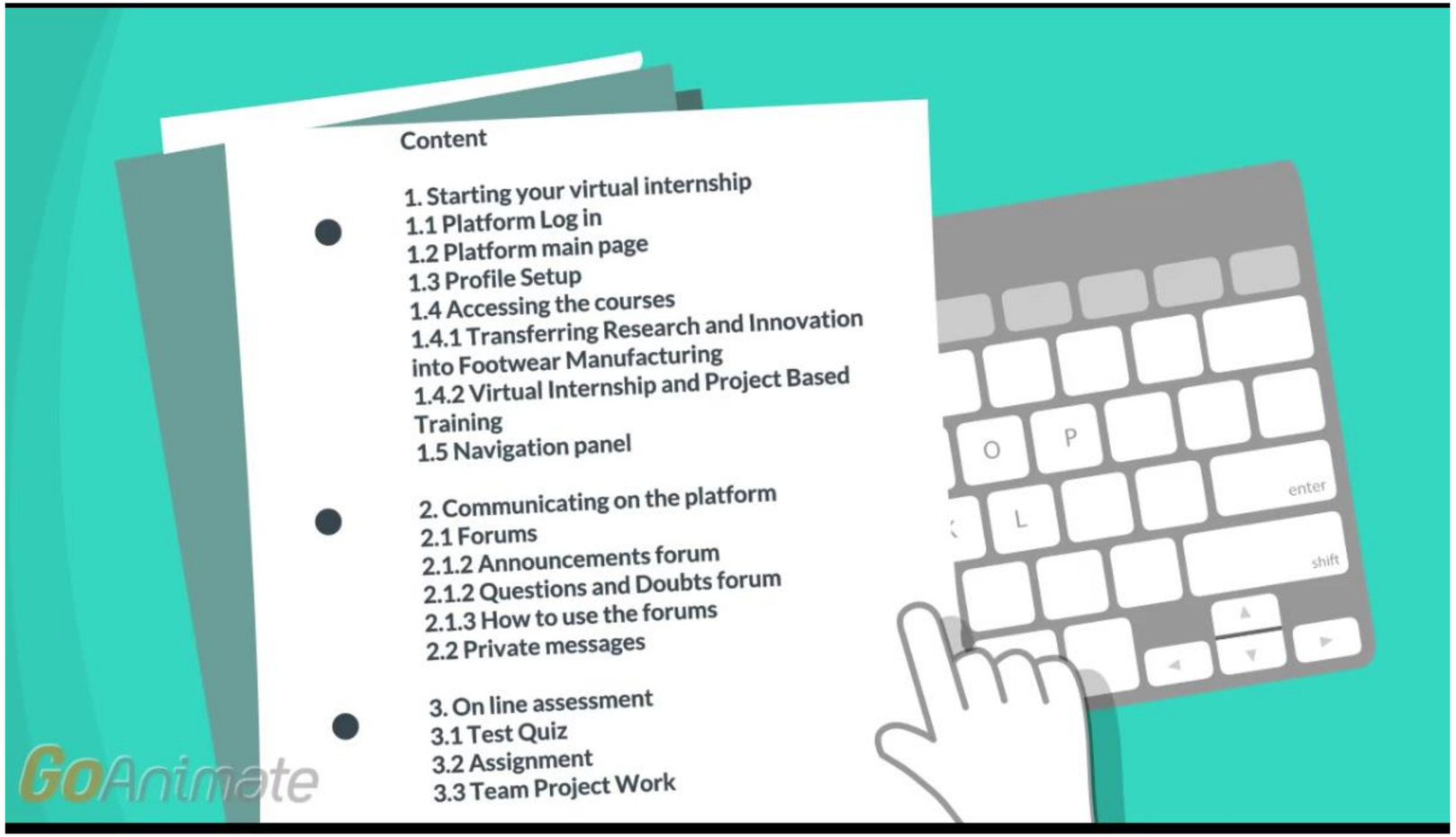

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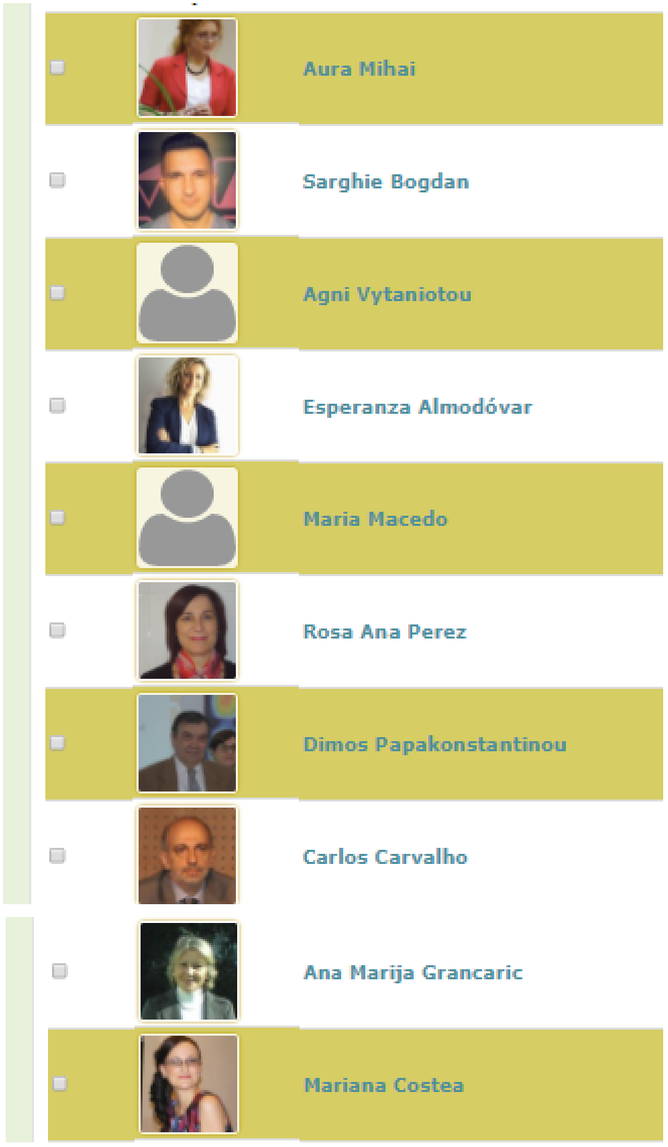
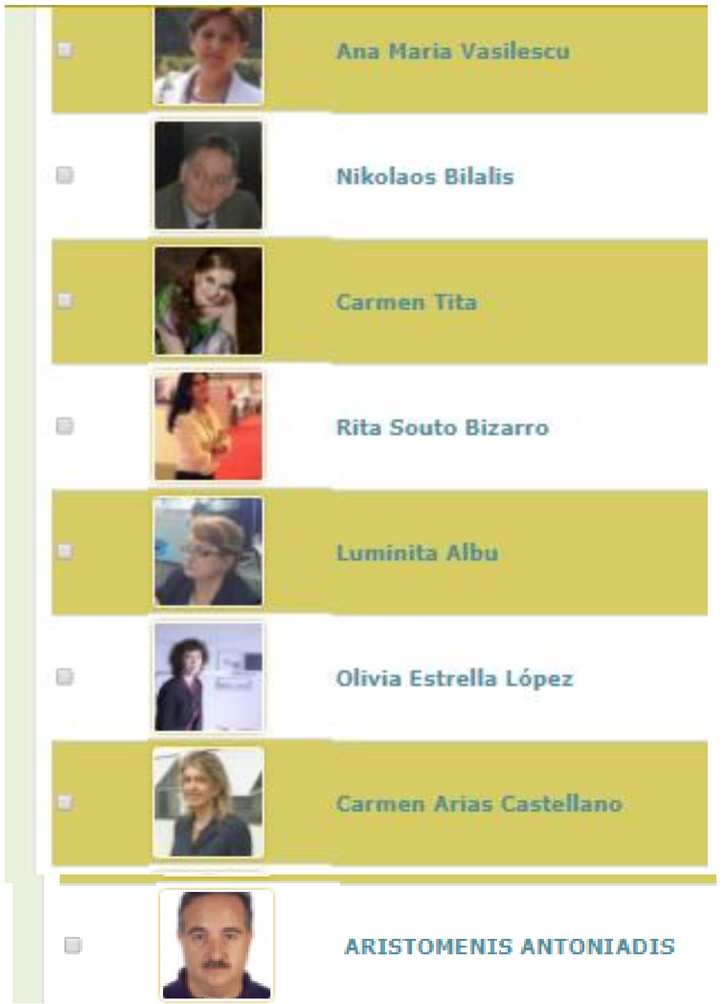
Knowledge 4 Foot TEAM





www.knowledge4foot.eu

https://www.facebook.com/K4Fproject/

WE bridge the world of Education, Bussines and Research !

Knowledge Platform for Transferring Research and Innovation in Footwear Manufacturing

Agreement No. 2015-1-RO01-KA203-015198 , Period: 2015-2018

Fostering the excellence in tertiary level of training and education for design, product development, engineering and management by connecting the three areas of the knowledge triangle: Education, Research and Business.

We bridge the world of Education, Research and Business!

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www.knowledge4foot.eu

➢Facebook
https://www.facebook.com/K4Fproject/

ctcp Portuguese Footwear Technological Centre | APICCAPS Portuguese Footwear, Components and Leather Goods Manufacturers' Association | UITIC INTERNATIONAL UNION OF SHOE INDUSTRY TECHNICIANS