Erasmus+ European Projects:

Opportunities, Interdisciplinary Ventures, and Digital Accessibility Research

Vera Pospelova, Universidad de Alcalá

Universidad de Alcalá

Vera Pospelova

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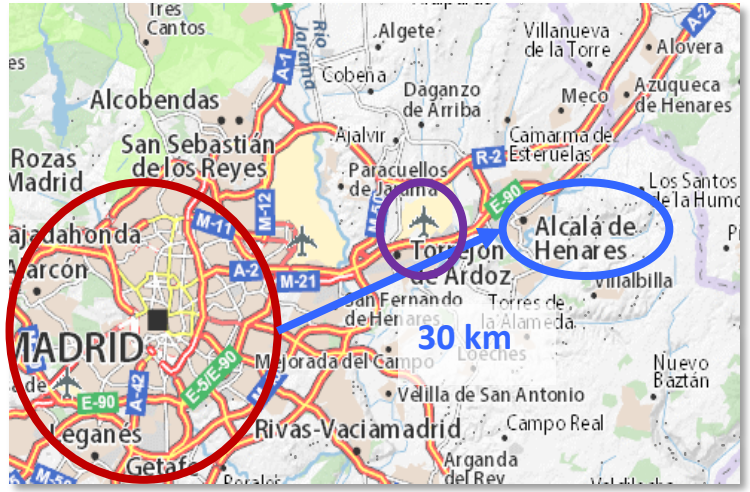
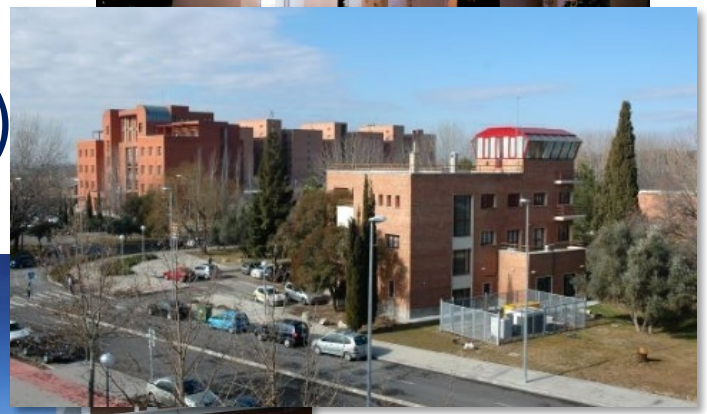
- Degree in Computer Engineering, Master in IT Project Management, other specialization Master (Motorsport), currently pendent to defend my PhD thesis in IT Professionalism (skills gap between market demand and supply).
- Adjunct Lecturer in Computer Science department in UAH.
- Researcher and project manager for Erasmus+ EU Projects
- Main research lines: soft-skills, and digital accessibility.
- Near to 10 years of working experience in private companies and as researcher and project manager:
  - Airbus Defence & Space (networking), GMV (information security)
  - Race cars data engineer
  - Universidad de Alcalá (project manager, lecturer)
    - Expert appointed by CEPIS (Council of European Professional Informatic Societies) for EU4Digital project for Ernst & Young Baltic
    - Digital Accessibility expert contracted by European Commission
    - Digital Accessibility expert contracted by Spanish Public Ministries (Government organizations)

Universidad de Alcalá

- Alcalá de Henares, World Heritage City UNESCO
- Founded in 1509 by Cardinal Cisneros
  - www.uah.es , https://www.uah.es/en/
- Public University:
  - Students: ≈ 30000
    - Postgraduate and other: 9500; international: 5100
  - Teachers: 1700 (Full-time: 950), centres/schools: 18, Degrees: 42; Post/vocational: +100
- Three campuses: two regions (unique in Spain): Madrid and Guadalajara (Castilla-La Mancha: 25km. from Alcalá)
  - Historical centre of Alcalá
  - External campus in Alcala
  - Guadalajara
  - Other premises: Sigüenza





Universidad de Alcalá

Dept. of Computer Science

- Website:
  - www.cc.uah.es
  - Many research groups
- Location:
  - *Edificio Politécnico: campus exterior* (Polytechnic building, external campus)
- Teaching under Polytechnic School:
  - Mainly engineering, but also traversal teaching in other degrees:
    - Including Comunicación Audiovisual (audiovisual communication)
    - Basic digital skills for many degrees (from Business Adm. to Nursery or Tourism)
  - Master programs in Informatics
  - Ph.D. program

Erasmus+ Projects and the research lines emerged from them

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Erasmus+ European Projects

+ Many other opportunities

- What are European Projects?
  - Projects which calls for proposals are published in European Commission website (EACEA), and other specific opportunities at country-level which are managed by National Agencies (NA).
  - Each NA receives specific amount of budged every year to fund European Projects calls for proposals.
  - These call seeks to achieve some topics, known as Key Actions and Priorities in the EU: the proposal is made by the applicant seeking to achieve a specific key action and priority with any proposal the applicant consider.
  - **The projects results are publicly shared in the E+ platform.**

SOME:

- SME companies mainly focus on EU Projects
- Foundations mainly focus on EU Projects
- Universities mainly focus on EU Projects
- Local schools/HE mainly focus on EU Projects

AS THEIR MAIN ACTIVITY

A European Green Deal

Striving to be the first climate-neutral continent by 2050

An economy that works for people

Working for social fairness and prosperity

A Europe fit for the digital age

Empowering people with a new generation of technologies

Europe in the world

Europe to strive for more by strengthening our unique brand of responsible global leadership

A new push for democracy

Nurturing, protecting and strengthening democracy

Key points: European priorities settle every 5 years.

Check out the priorities goal from 2019 to 2024.

EU Projects opportunities

European Project GreenCo

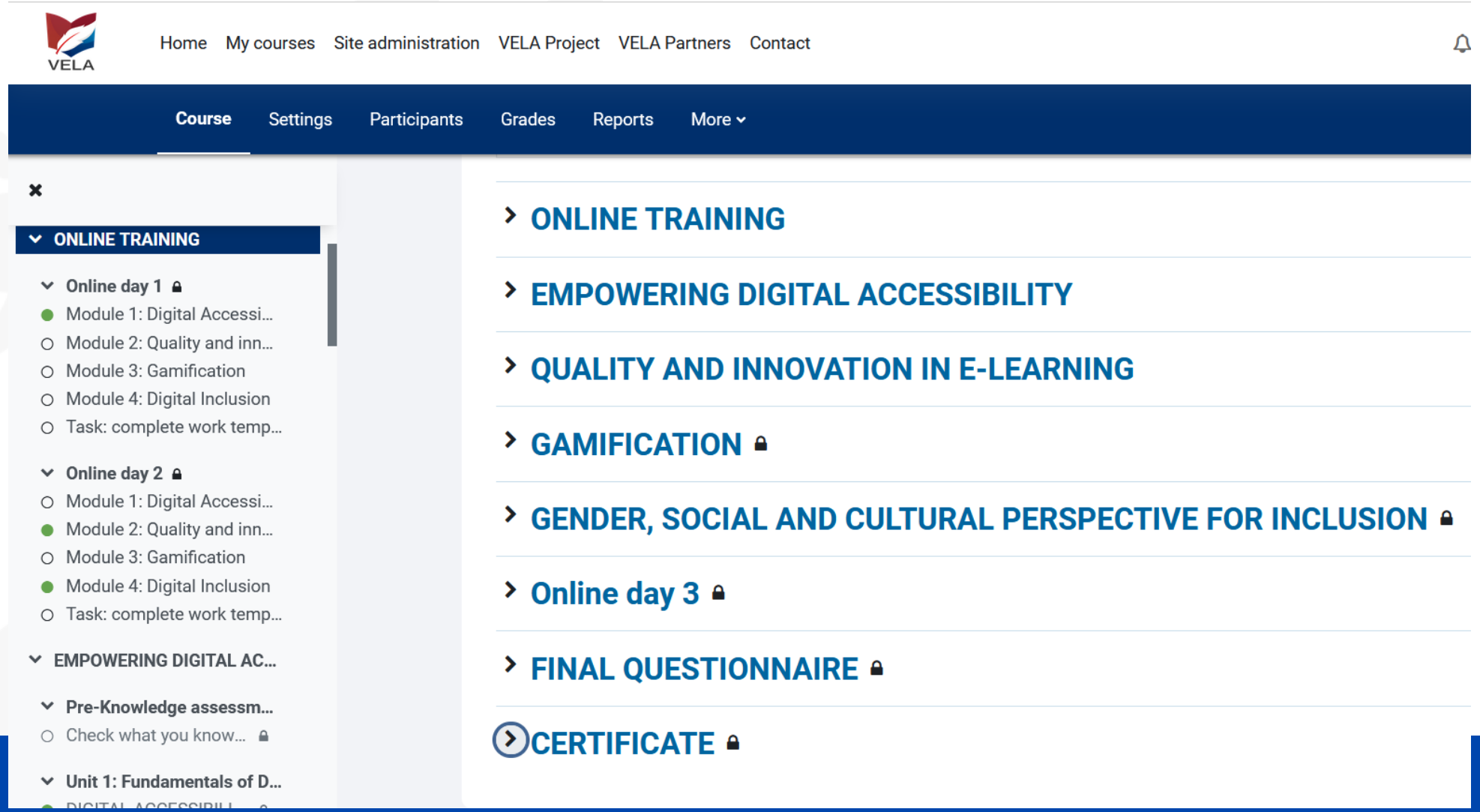
- GreenCo (GREEN Computing App and Mooc for awareness-raising on digital pollution)
  - Feb 2022 – Nov 2024, 280.700 € (Spanish National Agency)
  - Website of the project, E+ project results platform
- **Objectives:**
  - Raise awareness (mainly to 15-29 y/o) of the environmental impact of excessive data consumption and propose simple and accessible measures to reduce it.
  - Gamified self-assessment experience to measure yourself and to teach you about environmental impact.
- **Main outputs:**
  - E-Book as an information compilation on green computing: digital pollution, efficient energy consumption, e-waste recycling, legislation.
  - Green Gamified Application development.

European Project VELA

- VELA (VET Empowerment through innovative and inclusive Learning Approaches)
  - Feb 2022 – Jan 2024, 252.435 € (Italian National Agency)
  - Website of the project, E+ project results platform
- **Objectives:**
  - Create awareness for VETs (Vocational Education Training), to support innovation and inclusion of vulnerable groups.
  - Supporting VET providers with relevant teaching and learning approaches.
- **Main outputs:**
  - Learning platform with the following topics:
    - Digital accessibility
    - Digital inclusion
    - Gamification
    - Quality and innovation in e-learning

Example of generated result – check out our Moodle platform

https://portal.vela-project.eu/login/signup.php → Organization name: UAH



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European Project DICE

- DICE (Digital Community Engagement Accelerator for student learning and socio-economic impact)
  - Nov 2022 – Oct 2025, 400.000 € (Slovakian National Agency)
  - Website of the project, E+ project results platform
- **Objectives:**
  - Contribute to the digital Community Engagement: how can the university educators adapt their learning contents to be also helpful to help others and not just oriented to the industry?
- **Main outputs:**
  - Create a learning web-based platform based on “Value maps” (what student learn – what social impact can be obtained)

European Project BEYOU

- BEYOU (Boosting sustainability and social change through Youth led-community development)
  - Dec 2022 – Nov 2024, 217.038 € (EACEA)
  - Website of the project
- **Objectives:**
  - Generate youth led-community development process that strengthen mechanisms of active participation and social responsibility of young people in marginalized community contexts. How can the young people contribute? Which skills are important for that?
  - Current leaders can learn and teach based on their experience to create engagement.
- **Main outputs:**
  - Capacity building of community leaders: travel to learn how to engage others.
  - Capacity building of youth workers: travel to learn together.
  - Community development and social responsibility projects proposal.

European Project JOULE

- JOULE (Data Journalism Courses for Higher Education)
  - Dec 2021 – Nov 2023, 316.884€ (EACEA)
  - Website of the project
- **Objectives:**
  - JOULE aims to design and develop curriculum in data journalism
- **Main outputs:**
  - Skills inventory for data journalism: literature review and experts' interviews
  - Creation of data journalism course based on the identified skills
  - Learning platform

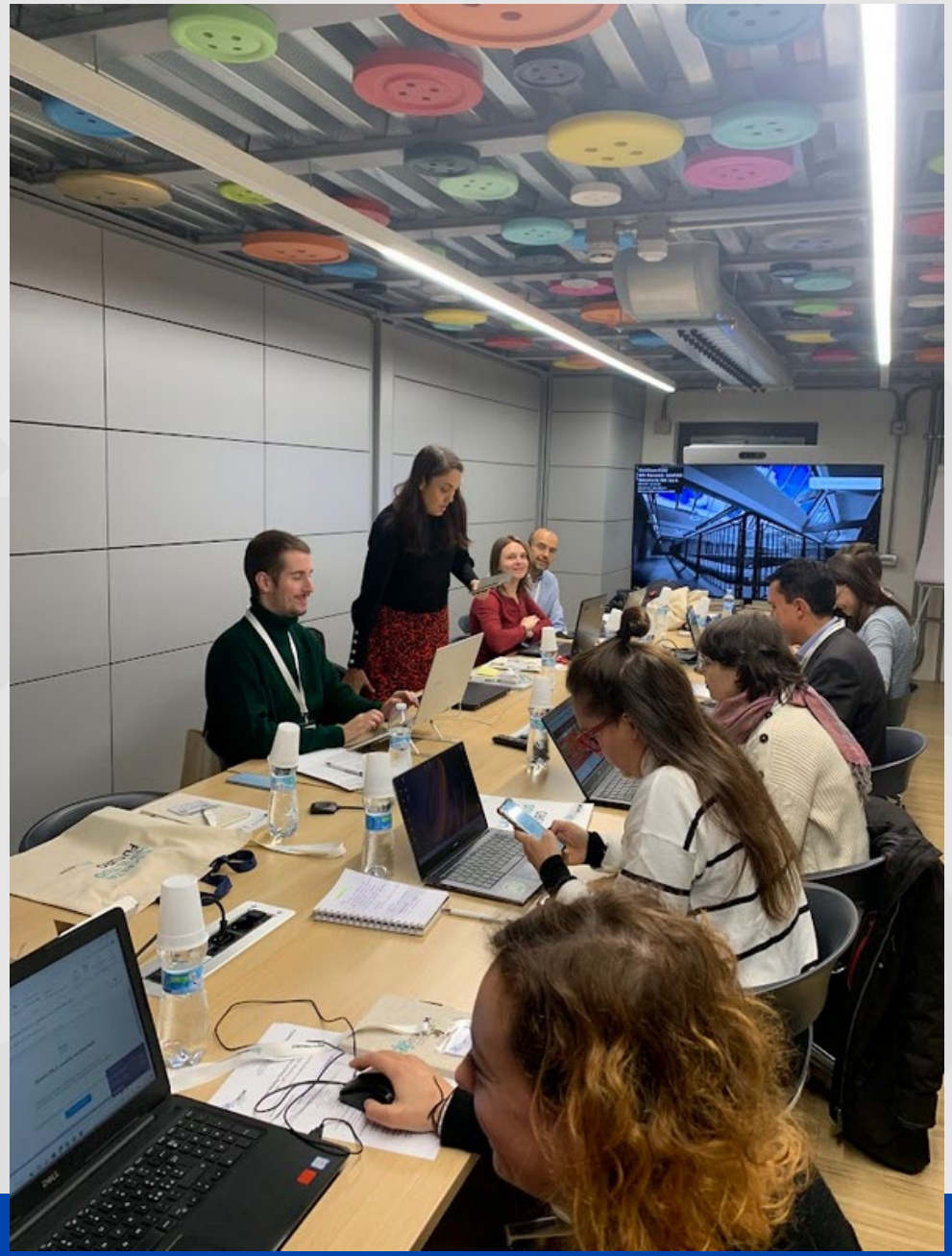
European Project SMACITE

SMA CITE
Enhancing skills for smart city tech

- SMACITE (Proposal title Boosting the technical and non-technical skills and competences of smart cities technicians and engineers)
  - Jul 2022 – Jan 2025, ~1.5 M€ (EACEA)
  - Website of the project
- **Objectives:**
  - To fill the skills gap of technicians and engineers designing, developing, and operating Smart Cities infrastructures and services.
  - To unify the appropriate learning outcomes of Smart Cities technicians and engineers and thus improve their mobility throughout EU countries.
- **Main outputs:**
  - Smart Cities competences map and curriculum.
  - Learning resources for the upskilling/reskilling of Smart Cities technicians and engineers.
  - Learning platform

European Project NUTRIWELLB

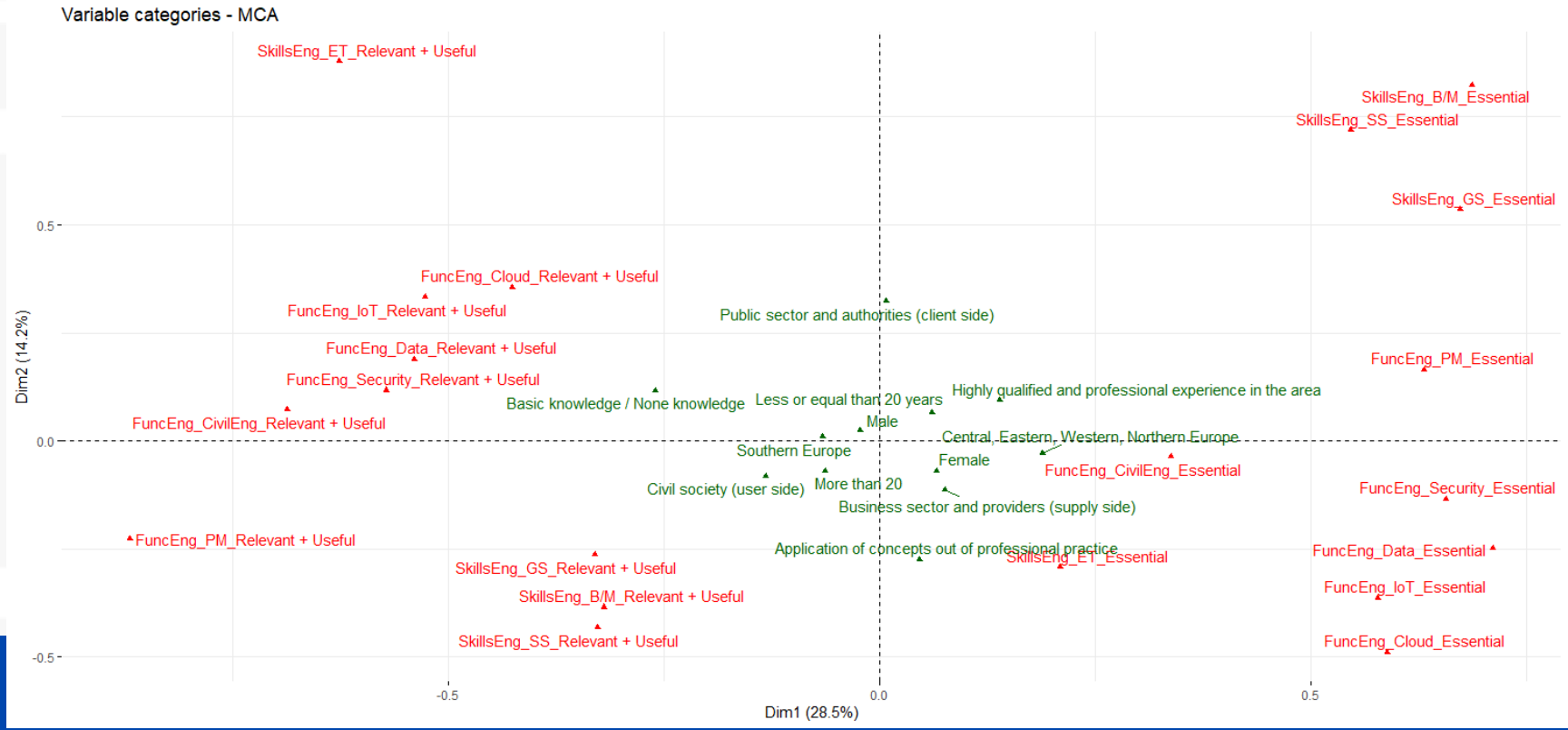
- NUTRIWELLB (Nutrition; wellness; gender equality; and Fact-checking)
  - Mar 2023 – Apr 2024, ~300.000 € (EACEA)
  - Website of the project
- **Objectives:**
  - Action-oriented approaches to wellness, nutritional health and gender equity will address as a European priority to disprove fake news to contribute to the digital literacy of young people and teachers.
- **Main outputs:**
  - Improve training and the development of an interactive platform with educational resources that allow to contrast information



Results from the projects: good opportunities

Academic publications: SMACITE example

- We analyzed data from the survey and applied MCA (Multiple Correspondence Analysis) algorithms to predict the best profile for SMACITE Engineer or Technician by dimensions variables analysis and how they are related between them.
- We also published another paper explaining the previous stage which further conducted to this analysis: https://www.mdpi.com/1424-8220/23/1/529



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IT Professionalism

Main research line

- Many frameworks in Europe for skills recommendation for different job profiles.
  - Most important: ESCO (European Skills, Competences, and Occupations), also e-CF (e-Competence Framework).
  - In United States: ONET.
  - Other frameworks for education (EU level): DigComp 2.2
- Apply machine learning techniques to classify currently many existing certifications and Massive Open Online courses (MOOC) to DigComp 2.2 framework.
- Apply machine learning techniques to classify the 14.000 skills in ESCO framework to soft-skills (teamwork, adaptability, negotiation, etc) or hard-skills (programming, constructing, cleaning, etc).

Do they match?

Personal opportunities: Digital Accessibility

Main research line

WAMDIA
Digitally accessible Europe

WAMDIA
ERASMUS+ KA-2 PROJECT

- WAMDIA (We All Make Digital Information Accessible) European Project: website, published results, Oct 2017 – Sep 2019 (211.343,00 €)
  - Universidad de Alcalá was the coordinator of this project.
  - As the EU Directive 2016/2102 was approved by EU in 2016, this project was good opportunity to teach public organizations how to develop digitally accessible material.
- The most important results came after developing this project:
  - I was directly contracted as Expert/Consultant by European Union to make accessible some publicly published documents.
  - The Spanish public organizations are interested to work with us: we gained very potential client (Spanish Ministry of Finance) to develop works related to digital accessibility every year.

Our website

Digital Accessibility for Everyone

Universidad de Alcalá

During my research stay at UAA*:

*** I have seen some bear as well (not in UAA campus ☺)… yet**

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The research I have been focused on at UAA:

- Digital accessibility in PDF files (PDF Standard ISO 32000-2):
  - Explore the possibility to apply machine learning techniques to PDF file to make it accessible.
  - Dataset creation of accessibility problems and the solution
- To keep working with UAA research team:
  - Explore the possibilities of the created dataset
  - Software development
  - Apply machine learning techniques to digital accessibility and to my other research lines (IT Professionalism).

Proper digital accessibility helps to screen readers read the information to visually impaired users

Problem understanding

This·document·does·not·use·page·break:¶

¶

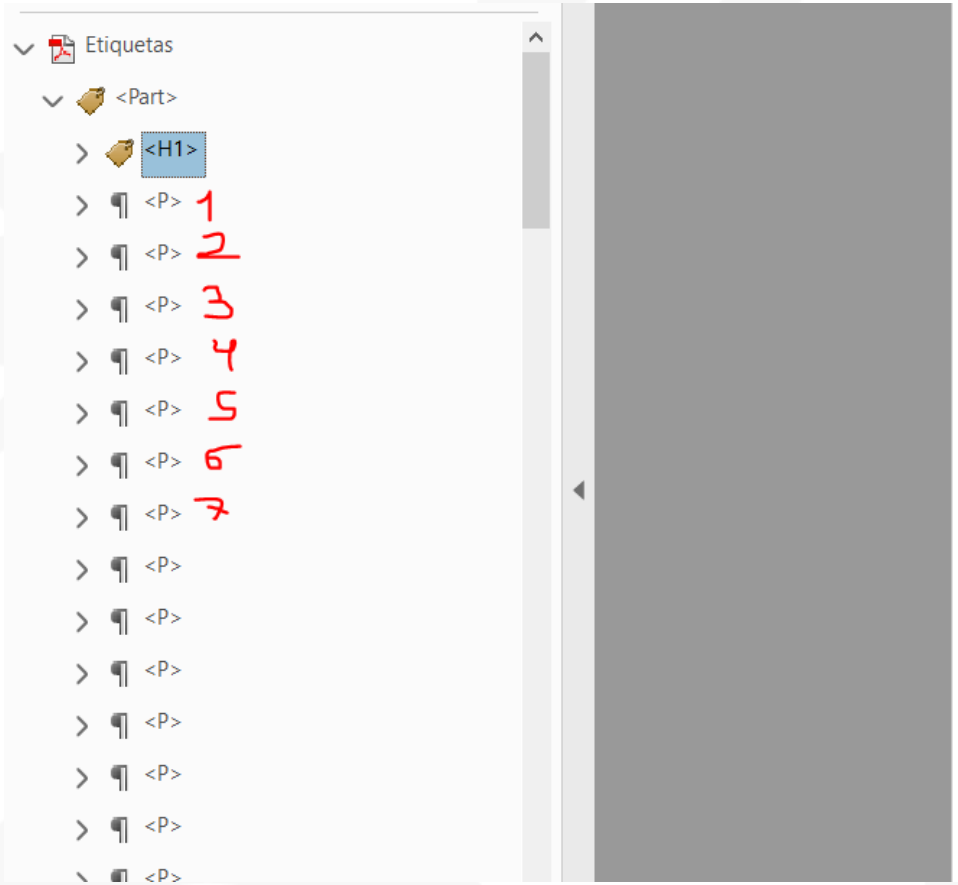
¶

¶

End¶

How will the screen reader read this to the user?

Accessibility key in PDF: tags



Expediente 8/20.

Materia: Contratos menores.

ANTECEDENTES

El Presidente de la Agrupación de Profesionales Taurinos Luchadores (en adelante, la Agrupación) ha dirigido consulta a esta Junta Consultiva de Contratación Pública del Estado en los siguientes términos:

"Desde la entrada en vigor de la Ley 9/2017, de 8 de noviembre, los contratos menores cuya cuantía se reduce a 15.000 euros, respecto de la establecida en el TRLCSP que se fijaba en 18.000 euros, en este supuesto los órganos de contratación cuando se trata de contratar servicios de organización de festejos taurinos vienen, salvo excepciones, procediendo a la práctica en los supuestos que el contratista percibe por la prestación del servicio un importe inferior o igual a 15.000 euros, resultando suficiente con la

Tags: addressing the problems

DE HACIENDA

Expediente 8/20.

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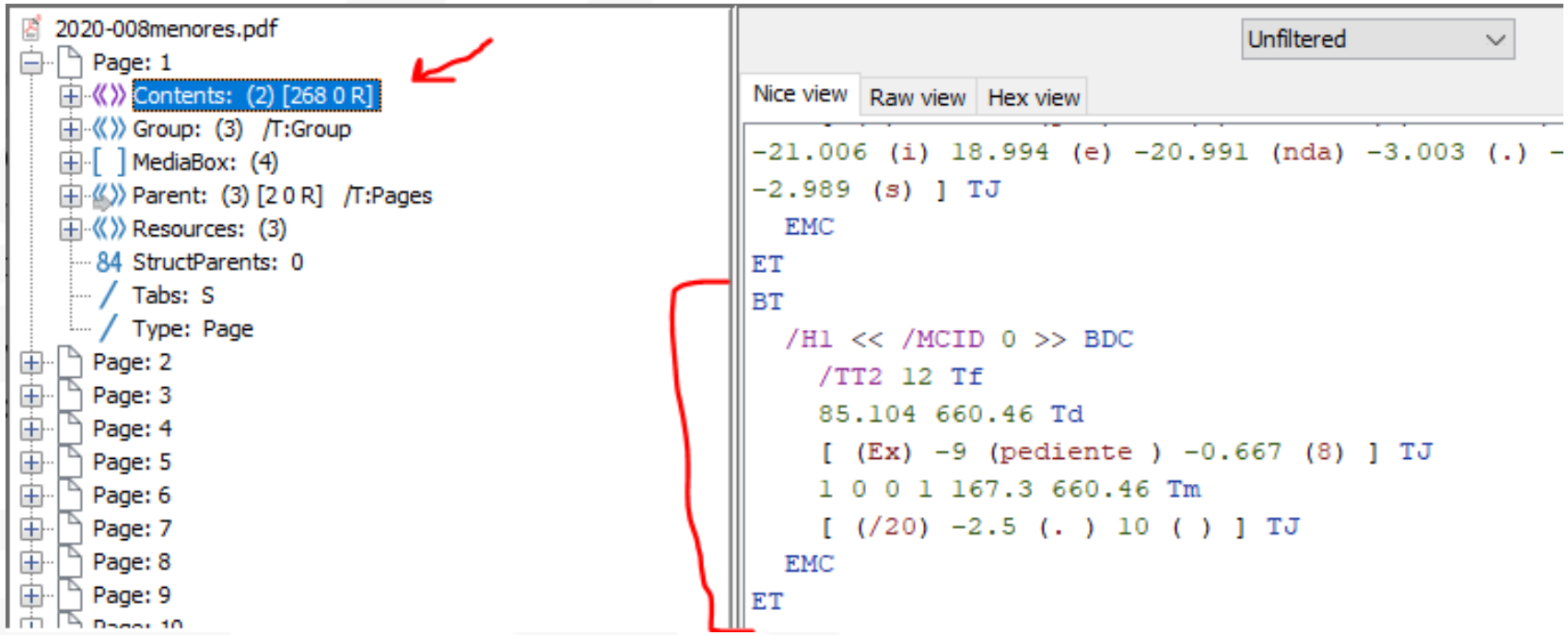
PDF: Internal structure (1)

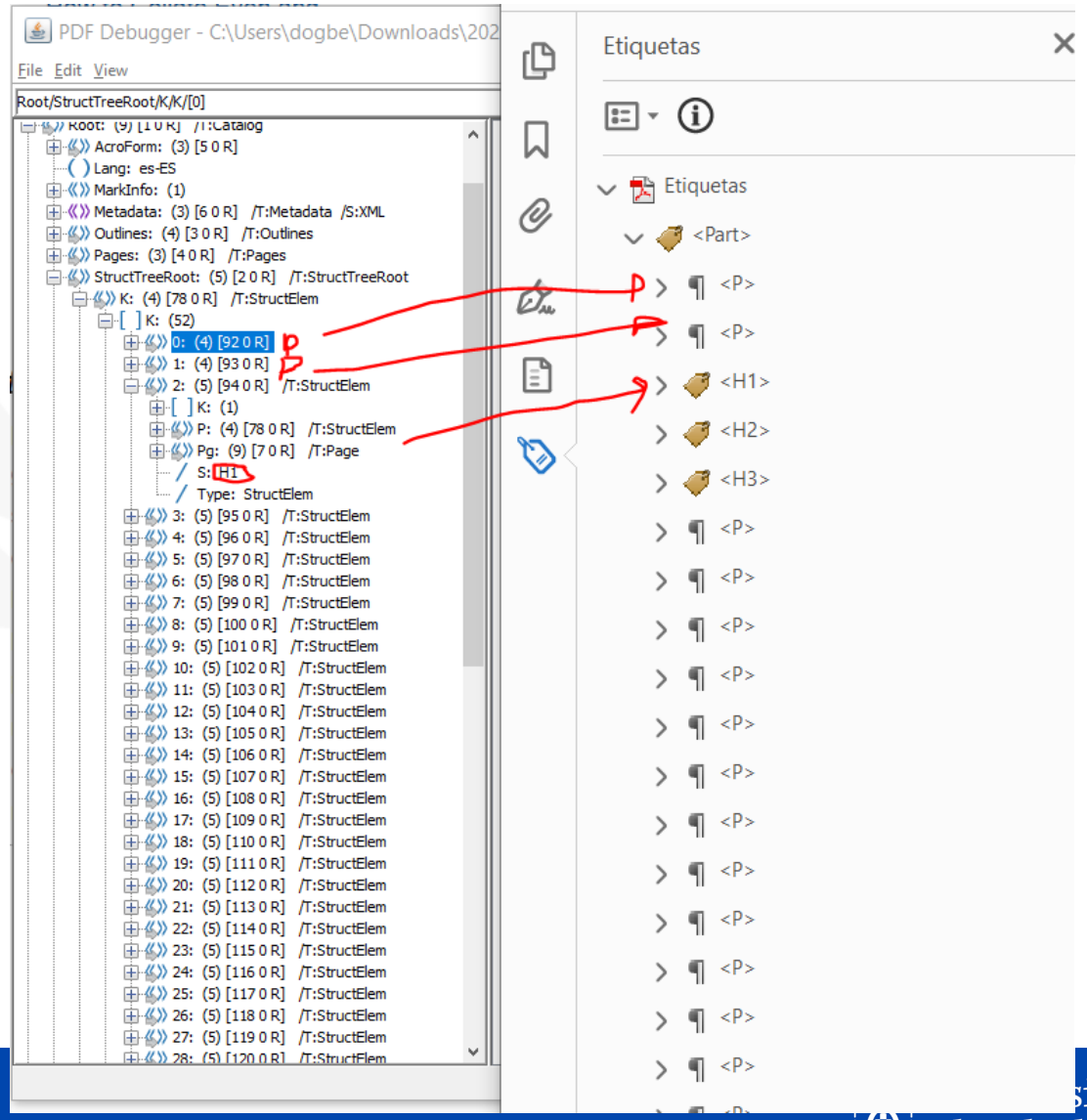


PDFBox Debugger

- When I want to print the text “Expediente 8/20.” The PDF internally creates a bunch set of instructions to print this text.

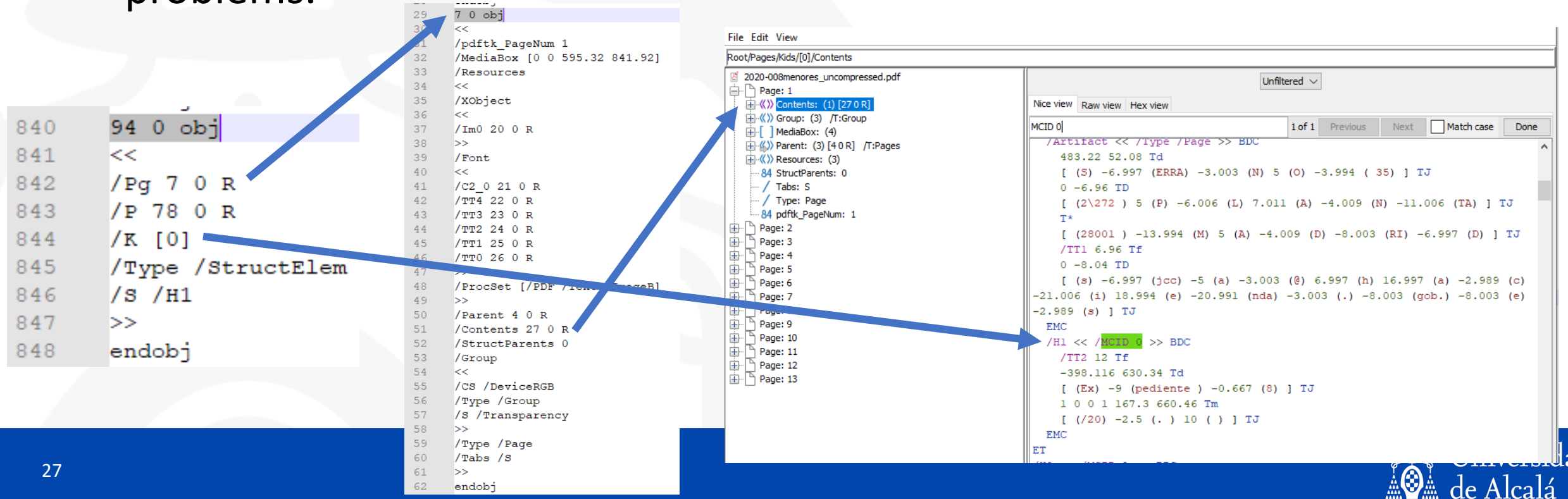
PDF: Internal structure (2) – general idea

- Structure tree (/StructTreeRoot) keeps information related to the tag structure and other elements which allows to navigate through the tree.
- To modify the proper tags structure inside the PDF file, the /StructTreeRoot needs to be modified at low level.



PDF: Internal structure (3) - approach

- The /StructTreeRoot has references to different objects.
- I can apply machine learning techniques to identify the proper tag needed, based on the created dataset of original problems-solved problems.



Thank you

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