



Activity Report 2022

The International Research & Innovation Centre for Digital Intelligent Systems IRIXYS relies on the close cooperation between the University of Passau (Germany), the University INSA Lyon (France), the University of Milan (Italy) and since 2019, the University of Pau et des Pays de l'Adour (UPPA) in France. IRIXYS activities are based on three pillars.

Firstly, IRIXYS supports academic exchanges, including the implementation of double master's degrees and Cotutelle doctorates, the organisation of workshops for young researchers and the organisation of academic summer schools.

Secondly, IRIXYS makes sure to forge a strong partnership with industry (ATOS, Siemens, etc.) and institutional actors.

Thirdly, IRIXYS relies on top joint research, currently being carried out in the fields of big data analytics, artificial intelligence and IT security. In 2022, the IRIXYS scientific team led a profound reflexion on the future orientation and development of the common research program, based on scientific analysis but also on regional, national and European initiatives and strategies. Within the main topics, some lines of work have been strengthened or have emerged. The consortium defined three axes of transversal works: Environmental impact, green IT; Ethics, trust and protection of private life; Numerical sovereignty and open science.

The purpose of this document is to report on all activities undertaken in 2022 by and in cooperation with IRIXYS and to assess to which extent this ambition has been fulfilled. In 2022, the global sanitary crises and the on-going European crises due to the war in Ukraine has left us in a state of uncertainty and restraint, nonetheless, the activities of the University of Passau could slowly resume to normal again. The planned activities were creatively and successfully organised in hybrid format or in presence.

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1. Academic and Scientific Collaboration

1.1. Consolidation of our academic collaboration

➤ IRIXYS PhD Track

The “IRIXYS PhD Track” between the University of Passau and INSA Lyon and supported by the French-German University (UFA/DFH) was conceived to stimulate a bi-national academic postgraduate path: from the start of a Master to potentially achieving a PhD. In 2022, many students have undertaken a double Master and two graduates are about to begin doctoral studies (cotutelle and associate doctorate).

In 2022 eight students from INSA Lyon could come to Passau for the first time to pursue their studies in March 2022. Three of the newcomers completed their Masters in Passau in October 2022, while the five others decided to stay one more semester to fully maximise their experience in Germany. In September 2022 three students of the University of Passau started a PhD Track and begun their studies at INSA Lyon.

In line with the national and regional regulations, the University of Passau decided to hold the Winter Semester and Summer Semester of 2022 in presence. Though challenging regarding the strict hygiene concept, the presence classes positively impacted the integration of the new PhD Track comers in Passau. In the frame of the course dedicated to the double-Master students "working as an IT manager in France, Germany/Bavaria", the social bound was maintained and the group spirit was strengthened through several group activities (welcome evening, experience of the local food, meeting with the future double-Master students, participation to the IRIXYS Young Scientists' Spring Workshop in Passau and participation to the FIT Europe project).

Furthermore, the current funding period of the PhD Track is soon ending and the PhD Track team answered the UFA/DFH call to prolongate the funding for another four years cycle. This funding call gave the team the opportunity to reflect on the last period and set new scientific objectives (see IRIXYS Website, [Research section](#)), not only for the French-German axis, but also for the entire IRIXYS cooperation.



➤ *Cotutelle de thèse*

In 2022, the Chair of Distributed Information Systems of the University of Passau counted four students in cotutelle de thèse (PhD in supervision) with INSA Lyon: Alaa Alhamzeh and Paul Lachat (entering the last phase of their PhD); Ashish Ashutosh and Felix Bölz (in the beginning phase of their PhD).

Though no students officially begun a cotutelle de thèse this year, three students should officially undertake (two cotutelle and one associate PhD) their doctoral studies in 2023.

➤ *Double-Master University of Passau and ENSIIE Paris/Evry*

In March 2022, the University of Passau welcomed two students from ENSIIE in the frame of the double-Master agreement, supported by the UFA/DFH. They are staying in Passau for 3 to 4 semesters. The students from ENSIIE also participated to the intercultural course "working as an IT manager in France, Germany/Bavaria", they were together with the other double-Master students and could benefit from the above-mentioned activities (see section 1.1 PhD-Track). And one student from the University of Passau started to study at ENSIIE in September 2022.

1.2. Consolidation of our scientific collaboration

The IRIXYS members (former MDPS collaboration) have been organising since 2008 biannual workshops hosted and organised in turn by the three main partners: The University of Passau, INSA Lyon and the University of Milan. During the Young Scientists' workshops, each doctoral student presents the progress of his/her thesis and the results obtained since the last workshop. All the participants (between 30 and 40 people, researchers and PhD students, from the IRIXYS centre teams, international experts, industrial partners) can thus follow, on a regular basis, the progress of all the IRIXYS PhD students, analyse the results, suggest new investigation and cooperation.

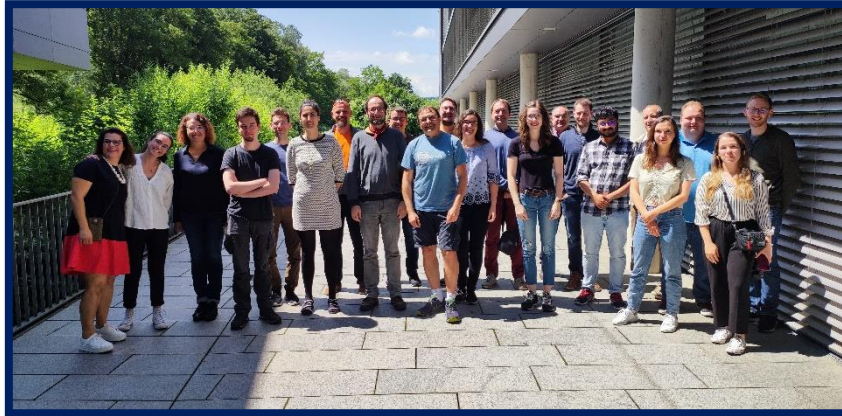
These research workshops, by their regularity and size, catalyse a strong dynamic among the PhD students and reinforce their motivation to advance rapidly and regularly in their research in order to be able to present interesting results during their presentations. They thus form a series of milestones for the students, the researchers and professors to structure the progress of their research.

Normally, the IRIXYS workshops are organised face-to-face, which is an integral part of the Franco-German-Italian intercultural experience, it allows everyone to dedicate their full attention to the different activities, workshops and meetings and of course it creates a strong group cohesion. However, as soon as the global sanitary crisis started, the team had to rethink the format of the biannual workshops. From June 2020 to June 2021, three workshops and two summer schools were organised

online. The group work, although different, was made possible by the use of digital tools, such as video conferencing platforms, Fireside chat and online white boards. At the end of 2021, the national authorities decreed a gradual "return to normality", which made it possible (in compliance with health measures) to organise on site and in presence workshops again, with a wide variety of programmes and guests.

➤ *IRIXYS Young Scientists' Spring Workshop in Passau*

30th of May to 3rd of June 2022



The IRIXYS Young Scientists' Workshop hosted by the University of Passau, took place in presence, in an hybrid format. Some 35 students and professors from INSA Lyon, University of Passau, University of Milan and University of Pau participated. This workshop had a strong industrial and economic dimension, since the IRIXYS members participated to the *Industry meets Academia* day, organised with Atos and regional economic players (See 2.3). For this occasion, the double-Master students (INSA Lyon and ENSIIE Paris-Evry) were invited and could, on the one hand, discuss with the current IRIXYS PhDs students and, on the other hand, benefit from the networking opportunities with academics and industrials. In addition, in the frame of the workshop, a fireside chat with Alexandra Knupe (Head of Group Corporate Social Responsibility, Atos) and Roland Wossidlo (CEO Germany, Atos) was organised, during which the participants discussed Green IT and the contribution of Atos toward a more sustainable IT.

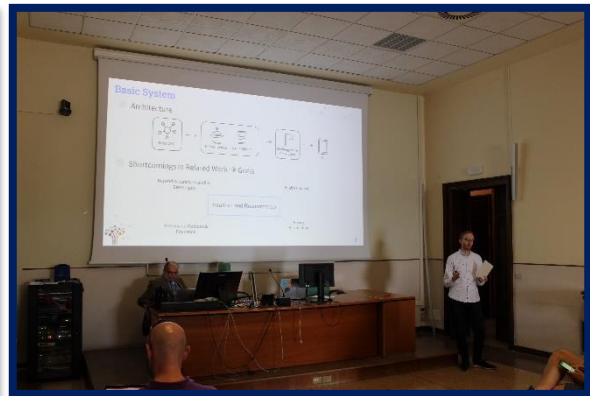


➤ *IRIXYS Young Scientists' Fall Workshop (Gargnano, Italy)*

3rd of October to 7th of October 2022

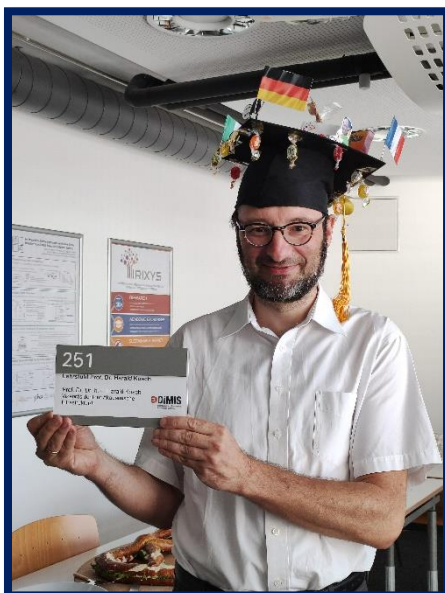


The IRIXYS Young Scientists' Workshop, partly financed by the UFA/DFH and hosted by the University of Milano took place in Gargnano in (full) presence. Some 35 students and professors from INSA Lyon, University of Passau, University of Milan and University of Pau participated. This workshop focused on Data Science Privacy in IoT-Systems and introduced the IRIXYS members to the hot topic project the University of Passau is currently working on, the Open Web Search and European Digital Governance. This fruitful workshop led to new projects and exchange within the partners.



➤ *Other scientific results and awards*

Computer scientist and Vice President for Academic Infrastructure and IT, Prof. Dr Harald Kosch, was awarded the Honoris Causa of the INSA Lyon in June 2022.



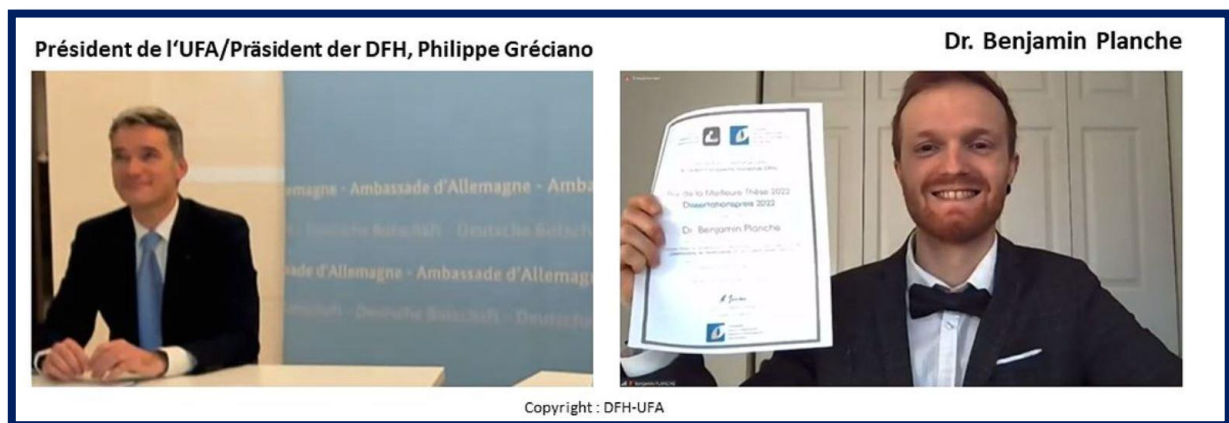
With this honorary degree, INSA Lyon acknowledges Prof. Dr. Harald Kosch's great contribution to the French engineering school and thanks him for his great commitment both in research and teaching as well as in the field of German-French and especially European cooperation. Thanks to the close cooperation of almost 30 years between Prof. Dr. Harald Kosch and Director of the Faculty of Computer Science at INSA Lyon, Prof. Dr. Lionel Brunie, co-founders of IRIXYS, the two universities are the driving force behind numerous innovative European science projects. Prof. Dr. Harald Kosch not only dedicated himself to scientific progress in his field. In the meantime, deep friendships have developed

between the members of both universities, which have led to a lasting, well-founded cooperation that goes beyond the field of research. President Prof. Dr. Ulrich Bartosch warmly congratulated Prof. Dr. Harald Kosch on his work and emphasised the importance of Franco-German relations, which are at the heart of European history: "It fills me with joy and pride that with Harald Kosch, the University of Passau has an active bridge builder and outstanding scholar in Franco-German cooperation in its ranks." During the festive ceremony with numerous guests of honour from both countries, Prof. Kosch gave a short lecture on one of his most important research topics "Relational Query Optimisation".

For his outstanding doctoral thesis on CAD-based visual recognition, computer scientist **Dr Benjamin Planche (former IRIXYS PhD student and graduate of the PhD-Track)** has been awarded the 2022 Dissertation Prize of the German-French University (UFA/DFH).

The award ceremony took place at the end of January 2022 during a formal virtual ceremony with the Ambassador of Germany in France, Dr Hans-Dieter Lucas, and the President of the UFA/DFH, Prof. Dr Philippe Gréciano. With its four dissertation awards, the UFA/DFH recognises remarkable achievements by young researchers with a Franco-German doctoral career. Dr. Benjamin Planche received the DFH's dissertation prize of 4,500 euros, while three other doctoral candidates were awarded the "Prix européen", the "Prix international" and the "Prix des affaires", each worth 2,000 euros.

In 2021 he was awarded the Dissertation Prize of the University of Passau and the Dissertation Prize Sparda-Bank Ostbayern eG for his dissertation: "Bridging the Realism Gap for CAD-Based Visual Recognition".



The member of IRIXYS participated in several scientific publications, here a sample of the list for 2022:

- Genoveva Vargas-Solar, Chirine Ghedira-Guegan & Nadia Bennani
Intelligent integration of heterogeneous data for answering analytics queries in multi-cloud environments
6th International workshop on Data Analytics solutions for Real-Life Applications (DARLI-AP), May 29th 2022, Edimburgh (United Kingdom). HAL : hal-03680832. .
- Amina Salem, Bisma Khalfoun, Sonia Mokhtar & Afra Mashhad
Quantifying fairness of federated learning LPPM models
MobiSys '22: The 20th Annual International Conference on Mobile Systems, Applications and Services, June 27th 2022, Portland (France), pp. 569-570. doi : 10.1145/3498361.3538788. HAL : hal-03703623.
- Becher, S., Gerl, A
ConTra Preference Language: Privacy Preference Unification via Privacy Interfaces
Sensors 2022, 22, 5428. <https://doi.org/10.3390/s22145428>

- Omar Hasan, Lionel Brunie & Elisa Bertino
Privacy-Preserving Reputation Systems Based on Blockchain and Other Cryptographic Building Blocks: A Survey
ACM Computing Surveys, vol. 55, n°2, pp. 1-37. doi : 10.1145/3490236. HAL : hal-03551833.
- Alhamzeh, A., Bouhaouel, M., Egyed-Zsigmond, E., Mitrović, J., Brunie, L., Kosch, H.
Query Expansion, Argument Mining and Document Scoring for an Efficient Question Answering System
In: , *et al.* Experimental IR Meets Multilinguality, Multimodality, and Interaction. CLEF 2022. Lecture Notes in Computer Science, vol 13390. Springer, Cham. [\[PDF\]](#)
- Alhamzeh A., Lacin MK., Egyed-Zsigmond E.
Passau21 at the NTCIR-16 FinNum-3 Task: Prediction Of Numerical Claims in the Earnings Calls with Transfer Learning
NTCIR 16 Conference: Proceedings of the 16th NTCIR Conference on Evaluation of Information Access Technologies, June 14-17, 2022 Tokyo Japan [\[PDF\]](#)
- Alhamzeh A., Egyed-Zsigmond E., El Mekki D., El Khayari A., Mitrović J., Brunie L., Kosch H.
Empirical Study of the Model Generalization for Argument Mining in Cross-Domain and Cross-Topic Settings
In: Hameurlain, A., Tjoa, A.M. (eds) Transactions on Large-Scale Data- and Knowledge-Centered Systems LII. Lecture Notes in Computer Science(), vol 13470. Springer, Berlin, Heidelberg [\[PDF\]](#)
- Alhamzeh A., Fonck R., Versmée R., Egyed-Zsigmond E., Kosch H., Brunie L.
It's Time to Reason: Annotating Argumentation Structures in Financial Earnings Calls: The FinArg Dataset
In Proceedings of the Fourth Workshop on Financial Technology and Natural Language Processing in conjunction with IJCAI 2022 pp. [\[PDF\]](#)
- Schiegg S., Gerl A.
Trade-off between Privacy, Quality and Risk: Anonymization Strategy Evaluation for Data Warehouses
IEEE 46th Annual Computers, Software, and Applications Conference (COMPSAC), 2022, pp. 1555-1560, doi: 10.1109/COMPSAC54236.2022.00247.
- Gerl A., Von Der Hezden M.
Entwicklungsstand der CIO-Funktion und hochschulübergreifenden IT-Governance im Kontext der Digitalen Transformation an Hochschulen in Bayern
HDM. DOI:10.1365/s40702-022-00872-x
- Gerl A., Von Der Hezden M. Groß R., Klapper F., Knaden A., G. Meister V., Rehm S.
Gemeinsame Digitalisierung durch die Entwicklung von IT-Governance-Strukturen auf Landesebene
In Wirtschaftsinformatik & Management. DOI: 10.1365/s35764-022-00393-8
- Lachat P., Bennani N., Rehn-Sonigo V., Brunie L., Kosch H.
Detecting Inference Attacks Involving Raw Sensor
Data: A Case Study. Sensors, 2022, 22 (21), pp.8140. {10.3390/s22218140}. {hal-03831019}

- Lachat P., Bennani N., Rehn-Sonigo V., Brunie L., Kosch H.
Detecting inference attacks involving sensor data in a multi-database context: Issues & challenges
Internet Technology Letters, 2022, <10.1002/itl2.387>. <hal-03623026v2>
- Rafik S., Lachat P., Bennani N., Rehn-Sonigo V.
Towards a Distributed Inference Detection System in a Multi-Database Context
14th IEEE International Workshop on Security Aspects in Processes and Services Engineering (SAPSE 2022), Torino, Italy.
pp.1550-1554, <10.1109/COMPSAC54236.2022.00246>. <hal-03784599>
- Becher, S., Bölz, F., Gerl, A.
Closing the Gap Between Privacy Policies and Privacy Preferences with Privacy Interfaces
In: Katsikas, S., Furnell, S. (eds) Trust, Privacy and Security in Digital Business. TrustBus 2022. Lecture Notes in Computer Science, vol 13582. Springer, Cham. [\[PDF\]](#)
- Fekih Hassen W., Mezghani J.
CNN based approach for Indoor Positioning Services using RSSI Fingerprinting Technique
2022 International Wireless Communications and Mobile Computing (IWCMC). IEE, 2022. DOI:10.1109/IWCMC55113.2022.982487 [\[LINK\]](#)

2. Industry and Policy Collaborations

2.1 UFA/DFH German-French University:



The German-French University (UFA/DFH) organises every year a German-French Forum in Strasbourg in which higher education institutions present their study programs in general as well as French-German and trilingual courses; public institutions inform visitors about their activities and funding opportunities; and companies have the chance to introduce their personal work policy and business activity as well as to recruit

international orientated and high qualified interns and young professionals.

On November 12th and 13th, the German-French Forum could be organised on site in Strasbourg. It was a cheerful and fruitful event and IRIXYS could be represented alongside the university of Passau. Our French-German Volunteer presented our PhD-track and could explain the younger generation the intercultural gain of such a binational program.

On Mai 25th BayFrance – The Bavarian-French University Cooperation Centre – organised a one-day workshop with the UFA/DFH Vice-president, Prof. Dr. Eva-Martha Eckkrammer and regional actors dedicated to Bavarian-French cooperation. During this occasion, the University of Passau could present its Bavarian-French cooperation under IRIXYS (scientific cooperation, education and networking with interregional industries). A dialogue was then initiated between the participants and Prof. Dr. Eva-Martha Eckkrammer, to define what are the current challenges we are facing on a practical level and how could the DFH/UFA address them together with us on a long-term period. In this sense, the future of our Bavarian-French cooperation was discussed – for instance, how to ensure that the knowledge and know-how we have built over the years get passed on. We concluded that internal formation, transparent communication and international network are acting as a “well of knowledge” and are key components we should work on.

2.2 French Diplomacy and European Collaboration

➤ *Visit of the French General Consul:*



The University of Passau welcomed – for the first time in Passau - the French General Consul in Munich, Madame Corinne Pereira, and a French/Bavarian Delegation on March 9th. After a general presentation of the university and little tour of the campus, the French and European cooperations and projects of the university were presented. Along with other faculties and institute, the chair of Computer

Science, Distributed Information Systems introduced IRIXYS to the guests, and three Cotutelle students could illustrate perfectly our cooperation by giving a testimony of their experience as well as a short overview of their research. The rich program of the day also included the kick-off of the AI-Cup Challenge by Madame Pereira and Prof. Kosch, in live retransmission.



The impulse talk in the evening, led by Madame Corinne Pereira, Prof. Daniel Göler, Prof. Meinhard Schröder, Prof. Dirk Totzek and Axelle Cheney, gathered a lot of interested students and faculty members. Between January and June 2022, France held the presidency of the EU Council and led all developments at EU level, within this period. The topic of the impulse talk was thus “Europa :

Eine französische Vision”. Together with the panel, the consul discussed about European vision on the on-going war in Ukraine, and the issue of defence and governance, the energy crisis and the digital and green transition. The public (in presence and online) could react and exchange with the speakers. The evening was full of thought-provoking and enriching discussion.

➤ *AI-Cup: Bavarian-French Artificial Intelligence Challenge*



The Bavarian-French Artificial Intelligence Challenge is a start-up initiative to support the future generation of AI entrepreneurs and establish innovative AI start-ups in Europe. The project started in October 2021 and targeted students or doctoral candidates from the academic field across Germany and France. The project had its strongest development in 2022, from the opening, the scientific

and economic challenges to the closing ceremony, during which the winners were awarded and begun the founding stage of their own start-ups. The Passau Team of IRIXYS actively participated in the organisation and communication of the closing ceremony.



➤ *Other collaborations*

On May 9th the University of Passau organised its own **European Day of Youth**, during which the PhD-track students actively participated. The rich program targeted students and included workshops and debates on topics such as “What is Europe for the students”, “What is a European University for us” and the current challenges of the geopolitical situation in Europe.

Every September, and during 10 months, the IRIXYS team welcomes a **French Volunteer from the “Deutsch-Französisches Jugendwerk”** (DFJW/OFAJ). This programme has been going on since more than 10 years and Passau welcomed 5 generations of young French volunteers, giving them an overview of the French and European cooperation within the chair of prof. Kosch with hands-on activities. In 2022 the tasks attributed to the volunteers mainly focused on communication (intern and extern), web redaction and event planning support.

➤ *FIT Europe and continuation*



Between 2019 and 2022 IRIXYS was involved in the Erasmus + project FIT Europe:
<https://fit-europe.eu>

The digitalization of society offers an unlimited field for innovation, and, with the support of information and communication technologies (ICT), we are transitioning towards a rapidly evolving context of novel, unexpected technological, societal, and industrial challenges. One of these is the employability of IT graduates, a challenge in the context of a rapidly evolving environment featuring novel technologies. The European leading partners comprised four leading Universities and four corporate partners from France, Germany, Italy and Romania.

FIT Europe successfully aimed to create a platform which enables the industrial and academic participants to develop methods and practices, analyse social and/or economic impacts of emerging technologies and to produce new knowledge on how IT can contribute to boundary-breaking innovations enabling ambitious development and growth in intelligent socio-technical futures, all of which combine to realise the goal of educating “Future IT leaders for a Multicultural, Digital Europe”.

The project organized four seminars with international students (three in 2021 and one in 2022). The general structure of the one-week seminars were as follow: On the one hand, preeminent experts from all Europe (Scientists from academia and technological experts from companies) were invited to talk about their findings and exchange with the students. On the other hand, the students, divided in international teams, were given use-cases challenges by a socio-economic partner to work on during the week. At the end of the seminars, a jury of experts was gathered, and a ceremony was organized to award the team that presented the most promising project work (to learn more about the three seminars that took place in 2021, see IRIXYS Activity Report 2021).



The fourth and last seminar took place in **Bucharest** from March 21st to 25th on Integrating Assistive Robots in a Multicultural and Multigenerational Society. 43 participants (including 28 students) attended the seminar organised by the University Politehnica of Bucharest. Students, researchers and industrial experts discussed



about the challenges faced by the integration of robots in a human, multigenerational and multicultural environment (navigation, interaction, person/object recognition and detections, integration), the different perspective on what the role of robots should be, how robots should behave, the different levels of acceptance towards robots and the different levels of

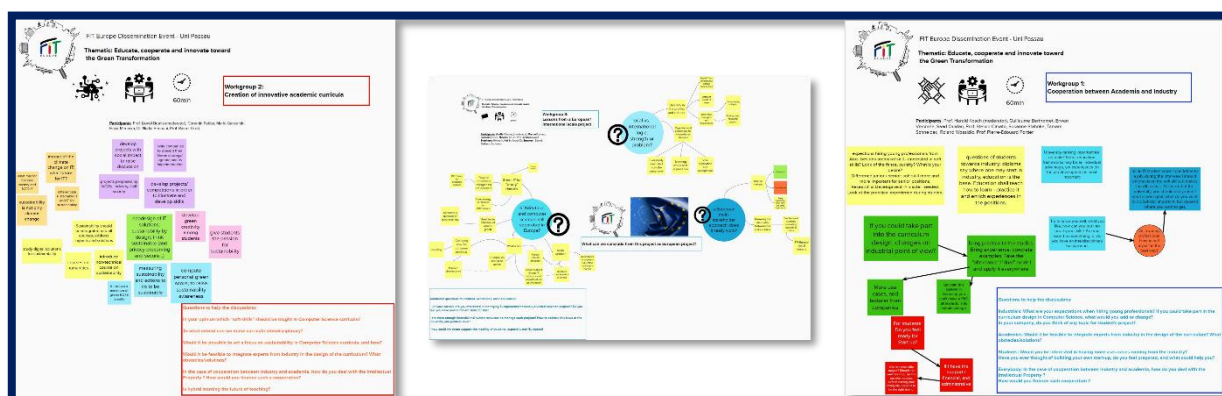
understanding of how a robot works. In addition, discussions took place about what it can be expected from a robot, about the security, privacy and ethical issues, intelligent automation as well as about recycling and recovering of materials used in robotics and electronics in general. At the beginning of the seminar, several

controversial topics were proposed as challenges for the students. Students organized themselves in 5 teams and each team picked a controversial topic to work on during the seminar. On the last day, each team presented its work and conclusions. This opportunity allowed the students to work in international teams, to develop intercultural skills, and to develop their own points of view regarding current controversial subjects.



On May 31st the University of Passau organised a local dissemination event and invited academic, industrial and political actors from all over Bavaria, as well as students who participated in the project, to present them and reflect all together on the results of FIT Europe. The focus of the event was also set on sustainability. On this issue, Stephanie Helmeth from the University of Applied Sciences of

Munich, delivered an insightful talk about « Sustainable Digitalization or Digitalization for Sustainability », that initiated fruitful discussions. Moreover, the participants were also asked to actively participate and help complete the results of the project. For this, they were divided into three Workshop groups focusing on three key topics in FIT Europe: The cooperation between Academia and Industry; The creation of innovative academic; and The lessons from a European/international scale project. Followed thought-provoking discussions which enriched the final report of the project evaluated by the European Commission.



Two weeks later, on June 15th and 16th, all the partners met one last time in Lyon for the final Transnational Meeting of the Consortium and for the main Dissemination event of the project, INSA Lyon being the project coordinator.

In order to gather and disseminate the outputs and outcomes of the seminars, a multimedia library was put together: <https://library.fit-europe.eu/> . Furthermore, all the project's results and recommendations can be found on the project's White Paper available here: <https://www.fit-europe.eu/outputs.html>



Despite the end of the project, the consortium is convinced that this is not the end of their cooperation and is already working on new ideas and projects to continue delivering innovative curricula to students answering their needs and the needs of the future. The consortium applied for the EU project "Alliance for Innovation" in September 2022 and hopes for a positive response in the course of 2023. This project aims to train not only students but also SME professionals to apprehend and master the digital transformation and would thus be a continuation of FIT Europe.

2.3 Implications in Industry

➤ *Industry meets Academia 2022*



In the frame of the IRIXYS Sommer Workshop in Passau, The University of Passau and Atos organised the networking two-day-event Industry meets Academia at the University. The main focus this year was set on Green IT. On Monday 30th May the IRIXYS members and special guests from Atos Alexandra Knupe (Head of Group Corporate Social Responsibility, Atos) and Roland Wossidlo (CEO, Atos Germany) were invited to an informal fireside chat, during which the participants discussed the future of IT (in particular

services and infrastructures), the challenges and opportunities towards a greener IT and which kind of actions are currently being undertaken or should be undertaken in the private and public sector. The discussion continued during a networking dinner.

On Tuesday 31th morning a small fair with IT industry players, French institutional actors (French Attaché, BayFrance), academics from the region (from München, Deggendorf, Landshut, Nürnberg) and the IRIXYS members (including Alumni) was organised. The industry players (Enmacc, INN.KUBATOR, Regiothek, One Data, Siemens, Atos) could pitch their initiative on Green IT and discuss with the participants. The double-master students also attended the fair and had the opportunity to exchange with the industry actors, make contacts with them and also discuss with the current and former IRIXYS PhD-trackers.



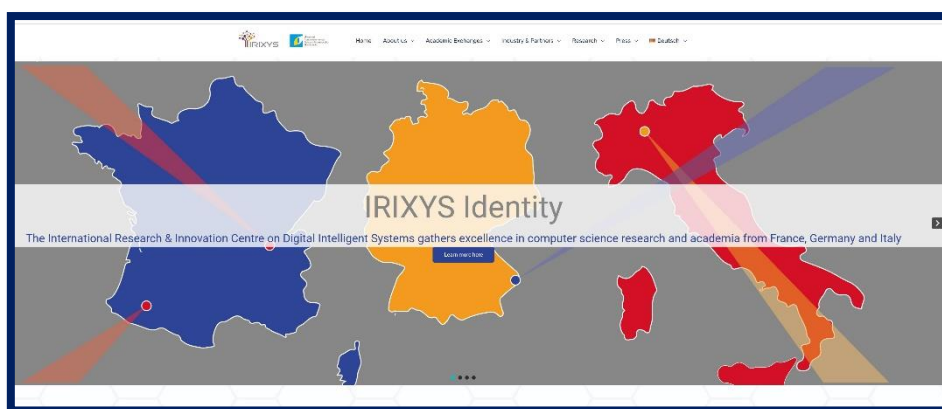
➤ *Visit to Atos Business Technology & Innovation Center (BTIC) in Munich*

On December 16th a cohort of Passau master students led by the chair of prof. Kosch was invited for a private visit of the Atos BTIC in Munich. Sandeep Bhan and Jochen Gemke from Atos and Manuel Lehner (PhD students Uni Passau/Atos) gave insightful talks on the hot topic of Digital Twins and the project Energy +, followed by interesting Q&A with the students. This was a great opportunity for the Passau students to enrich their network, since a large majority of them are reaching the end of their studies and look for connexions in the Bavarian industry sector.



3. Communication

3.1 IRIXYS Website



In 2022 we have carried out a thorough update of the website, both in terms of structure and content. We made our activities (education, workshops) and

achievements (publications, awards) more visible and set the new IRIXYS agenda and objectives.

<https://irixys.uni-passau.de>

3.2 Other communication channels

The IRIXYS twitter account is very useful and active to spread and share short news and give snapshots of ongoing events.

<https://twitter.com/irixys>

IRIXYS is also present on the social network LinkedIn and started communication activities in 2022. We plan to develop our presence on LinkedIn in the year 2023 in order to promote scientific events and networking.

<https://www.linkedin.com/in/irixys-research-center-889654199/>

3.3 Picture credits

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