Gecko

Design for IGA-type discretization workflows

D2.6 Initial and final public engagement & training report

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Executive summary

The Initial and Final Public Engagement & Training Report outlines the comprehensive training methodology and public engagement strategies implemented in GECKO. This project is centred around bridging the gap between Computer-Aided Design (CAD) and Computer-Aided Engineering (CAE) for design and analysis, setting a new quality standard in European technological advancements. The training methodology is structured into three distinct training packages aimed at developing a multifaceted skill set among participants: Scientific Skills (TP1), Transferable Skills (TP2), and Applied Training (TP3). Each package is designed to foster academic excellence, equip participants with essential beyond-academic knowledge, and enhance the application of these skills through hands-on experiences, respectively.

To ensure that the project's advancements benefit the public domain, a series of dissemination and public engagement activities have been organised. These activities aim to maximise visibility and impact by leveraging widely used media platforms and participating in relevant events. The target audience for these initiatives includes undergraduate students, active professionals, and non-active professionals, with the goal of fostering a broader understanding and appreciation of the technological advancements being developed. Through strategic collaboration with project participants and stakeholders, we are committed to promoting public engagement and ensuring that our innovations contribute positively to society.

The report details our efforts to provide top-tier training and to engage the public in our project's progress and outcomes. By addressing both the educational and practical aspects of skill development and ensuring broad dissemination and engagement, we aim to create a lasting impact on the European technological landscape and prepare future pioneers for the challenges ahead.

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Introduction

The Initial and Final Public Engagement & Training Report highlights the initiatives undertaken within the GECKO project to engage the public and train doctoral candidates. Central to GECKO's mission is its ambition to advance European technological standards by bridging the gap between Computer-Aided Design (CAD) and Computer-Aided Engineering (CAE). This report details three focused training packages: Scientific Skills (TP1), Transferable Skills (TP2), and Applied Training (TP3). These programs are designed not only to enhance academic excellence but also to equip participants with practical skills essential for real-world applications.

1. PUBLIC ENGAGEMENT

1.1 Website and Social Networks

The GECKO project website plays a pivotal role in engaging the public and stakeholders alike. Structured for clear communication and dissemination, it serves as a central hub for sharing project progress and outcomes with the general public, prospective Doctoral Candidates (DCs), and experts in the field.

Emphasising transparency and accessibility, the website features comprehensive sections that showcase the project's scope, objectives, and research breakthroughs. It includes dedicated areas for training materials, upcoming events, conferences, publications, and DCs' project experiences. This platform not only facilitates internal consortium communication but also aims to attract talented candidates and foster collaboration with stakeholders.

Regular updates ensure that the website remains current with project activities, news updates, and communication channels, enhancing interaction among project partners, DCs, and the wider public. The public-facing nature of the website ensures it is accessible to anyone with internet access, promoting openness and knowledge sharing.

Additionally, GECKO maintains active profiles on LinkedIn and Twitter, leveraging these social networks to expand its outreach, engage with the community, and amplify the impact of its research initiatives. Two relevant examples of public engagement campaigns on social networks initiated within the project included promoting the GECKO Open Vacancies for recruiting excellent Doctoral Candidates (DCs) and showcasing the profiles of the successfully recruited DCs.

Moving forward, the website will continue to evolve, incorporating new sections like Public Documents, PhD pitches, GECKO Newsletters and a blog-style platform for DCs to regularly communicate their progress and findings. This dynamic approach allows GECKO to engage with the wider public and disseminate impactful research outcomes.

1.2 Online DCs welcoming event

On November 10th, the GECKO project hosted an online meeting focused on introducing the GECKO Doctoral Candidates to the public. Supervisors and all project staff warmly welcomed the Doctoral Candidates, who presented their scientific backgrounds, individual research projects, and personal interests. The session began with a comprehensive project overview by the Scientific Coordinator, Riccardo Rossi from CIMNE, followed by presentations from the Doctoral Candidates and introductions from supervisors, scientific staff, and project managers involved in the initiative. The meeting concluded with a review of the project's current status and a discussion on future steps.

The video recording of the event, along with the Doctoral Candidates' presentations, has been made available on the GECKO website.

More details about this event can be consulted in this link.

1.3 PhD Pitches

The DCs will showcase their research objectives, motivations, and end goals through concise elevator pitches. These presentations are pivotal as teaser content, intended to stimulate increased public engagement on both the GECKO website and social media platforms.

Presentations are scheduled to be recorded once the DCs have completed their first year in the project, ensuring they have substantive research outcomes to showcase..

The primary target audiences for these presentations include public societies, the engineering community, students, and policy makers. This approach aims to broaden awareness and foster dialogue around the innovative research conducted within the GECKO project, thus enhancing its impact and relevance across diverse stakeholder groups.

A dedicated page has been created on the GECKO website to showcase them.

1.3.1 Nicolò Antonelli pitch

The first PhD Pitch of the project is now available in the GECKO website, featuring DC1 - Nicolò Antonelli, who completed his first year in the project in June 2024.

Nicolò Antonelli presented his research centred on "CFD Techniques for IBRA-Type Discretizations". In his PhD pitch, Nicolò presents his motivations, research objectives, and the anticipated impact of his work on enhancing the efficiency and accuracy of CFD simulations.

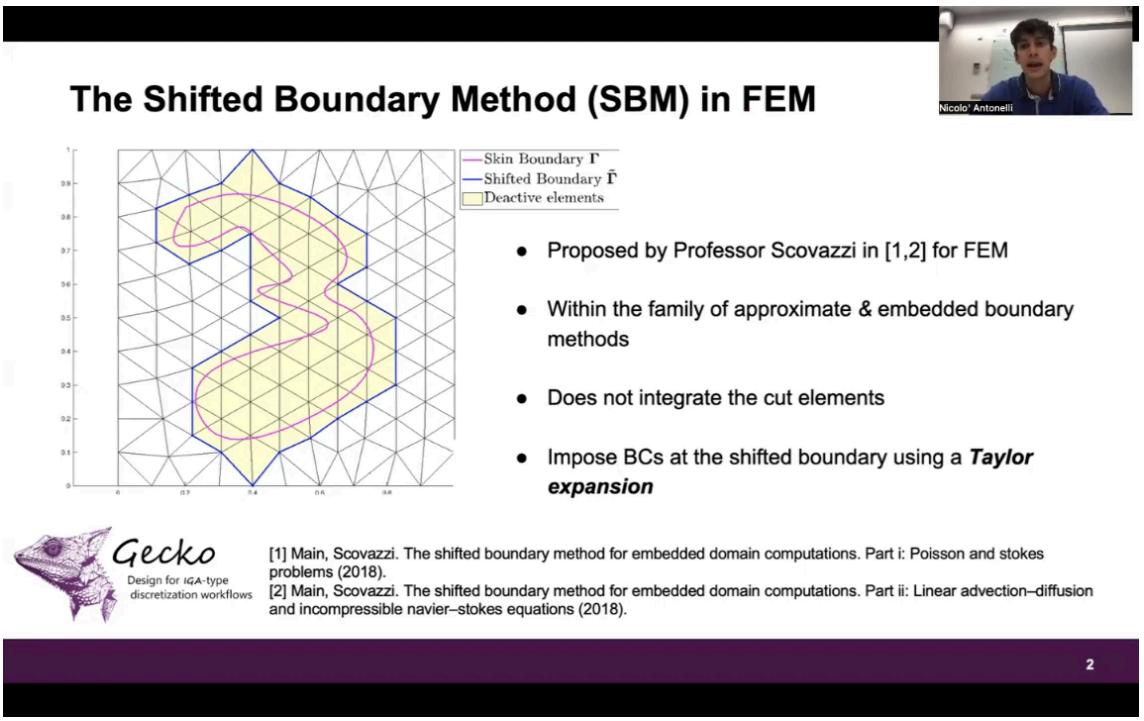

Figure 1. DC1- Nicolò Antonelli PhD pitch.

The pitch is available on the GECKO website.

1.4 GECKO Newsletter

Throughout the GECKO project, we will publish three newsletters highlighting our latest developments, advancements, publications, and technical reports specifically curated for industry stakeholders. These newsletters will be disseminated through the GECKO website and amplified via various social media channels.

Our primary objective is to effectively communicate the most significant results and achievements of the GECKO project. Designed to engage a diverse audience, including the scientific community, public society, and companies involved in innovation, these newsletters prioritise transparency and accessibility. This approach aims to bolster awareness and foster engagement with GECKO's pioneering contributions across these key stakeholder groups.

The first GECKO newsletter is about to be launched (expected to mid-July 2024). It will include detailed updates on project milestones, research outcomes, and notable publications.

A dedicated page has been created on the GECKO website to showcase the GECKO Newsletters.

1.4.1 GECKO first Newsletter

In mid-July 2024, the first edition of the GECKO newsletter will be launched, offering a comprehensive glimpse into the project's ambitious goals and significant achievements. Opening with an introduction, the newsletter will set the stage by outlining the overarching objectives and expected impacts as originally proposed. It will provide a clear narrative on how GECKO aims to bridge the gap between CAD and computational models, enhancing efficiency and accuracy in industrial workflows.

Central to the newsletter will be the profiles of recruited researchers and their supervisors. These biographies will showcase the diverse expertise driving innovation within GECKO, highlighting their pivotal roles in advancing computational modelling and analysis.

The newsletter will delve into the latest research progress achieved within the project, offering insights into the methodologies developed and their implications for industry.

A significant focus will be placed on recent meetings, events, and training sessions hosted by GECKO. These gatherings will serve as platforms for knowledge exchange and collaboration among stakeholders. The newsletter will include summaries, agendas, and visual highlights from these events, showcasing the dynamic interactions and shared learnings that drive GECKO's progress forward.

Highlighting GECKO's commitment to dissemination, the newsletter will feature various outreach activities undertaken by the project. It will include snapshots from the first PhD pitches, insights from the organisation of the first public technical workshops, and the first GECKO mini-symposium at the ISMA 2024 conference. These activities will underscore GECKO's efforts to engage with diverse audiences and foster dialogue around its innovative contributions.

2. TRAINING REPORT

2.1 Training Package 1: Scientific Skills

2.1.1 Local close training-through-research

The hosting institutions of the DCs will support the training of them in high-level research in the specific field of his/her individual research plan. This training will cover practical knowledge in developing specific software related to the research work and in-depth theoretical courses. These activities will be organised and disseminated by the doctoral schools in which the DCs will be enrolled. Detailed information is provided in the table below.

Table 1: Doctoral Candidates Participation in Local Scientific skills courses.

Doctoral Candidate	Local Scientific skills courses
DC2	Statistics and data science for PhD research. Module 2: Bayesian Modelling (2nd edition) (June 4, 6, 11, 13 and 20) - Escola de Doctorat, UPC.
DC4	Introduction to Fluid-Structure Interaction Problems using a Multiphysics Software (January 8-12, 2024) - Technische Universität Braunschweig & Technische Universität München. Kratos Multiphysics Workshop (February 12-16, 2024) - Technische Universität Braunschweig.
DC5	Kratos Multiphysics Workshop, 12-16 February 2024. TUBS, Braunschweig, Germany.
DC6	Shape and topology optimization using adjoint methods (January 22-26, 2024) - Dr. Lars Radtke. Isogeometric Analysis: A practical introduction with applications (February 19-21 and 26-28, 2024) - Dr. Guillermo Lorenzo Gómez, Dr. Michele Torre. Nonlinear Computational Solid and Structural Mechanics, 6-10 May 2024. University of Pavia.
DC7	Shape and topology optimization using adjoint methods (January 22-26, 2024) - Dr. Lars Radtke. Isogeometric Analysis: A practical introduction with applications (February 19-21 and 26-28, 2024) - Dr. Guillermo Lorenzo Gómez, Dr. Michele Torre. Nonlinear Computational Solid and Structural Mechanics, 6-10 May 2024. University of Pavia.
DC10	- ANSA API training, Apr.17-18, 2024, Beta-CAE

	-Advance Programming with Python course, Apr.22-25,2024, Beta-CAE

2.1.2 Mandatory network training courses

Interdisciplinary network-wide courses have been organised to train Doctoral Candidates (DCs) in general transversal topics related to the GECKO project and to facilitate knowledge exchange on isogeometric approaches. These sessions have been arranged in a specific order for scientific and logistical convenience:
S1: Programming Recommendations and Principles for Modern Software Development & S3: IGA Fundamentals, co-organized by CIMNE-CERCA and TUBS, were hosted at CIMNE-CERCA in Barcelona from January 30th to February 2nd, 2024.

S2: Isogeometric Methods Employing Spline Representations and Adaptive Methods, co-organized by UNIPV and UNIFI, took place at UNIFI in Florence from March 21st to 22nd, 2024.

The pairing of S1 and S3 ensured a coherent progression of topics, allowing DCs to first establish foundational principles in software development relevant to modern practices, followed by a comprehensive exploration of Isogeometric Analysis (IGA) fundamentals. This structured approach aims to optimise learning outcomes and facilitate a deeper understanding of complex methodologies within the GECKO project framework.

Further details can be found next.

2.1.2.1 S1: Programming recommendations and principles for modern software development & S3: IGA fundamentals

From January 30th to February 2nd, CIMNE-CERCA hosted an intensive four-day scientific training course as part of the Scientific Training of the GECKO project, focusing on Isogeometric Analysis (IGA) theory and its practical applications. The course featured a distinguished lineup of instructors, including Riccardo Rossi (CIMNE-CERCA), Carlos Roig (CIMNE-CERCA), Rubén Zorrilla (CIMNE-CERCA), Roland Wüchner (TUBS), Ricky Aristio (TUBS), Manuel Messmer (TUM), and Nicolo Antonelli, a Doctoral Candidate at CIMNE-CERCA, who supported specific sessions.

Day 2 focused on practical sessions involving IGA exercises and programming basics, including an introduction to Kratos for Standard Finite Element Method (FEM) and integrated IGA design workflows. Attendees gained valuable experience working with NURBS fundamentals and IGA elements, laying the groundwork for more advanced topics.

Day 3 delved deeper into Kratos basics and IGA integration, covering essential data structures and algorithms. Doctoral Candidates gained insights into the general structure of Kratos, with practical exercises involving Kratos examples for standard FEM and exploring IGA within the Kratos framework.

On Day 4, the course concluded with advanced topics in Kratos, focusing on parallel programming, Kratos objects for IGA, and an integrated IGA design workflow. Hands-on exercises using Rhino for pre- and post-processing provided participants with a comprehensive understanding of advanced IGA concepts and practical skills essential for leveraging this cutting-edge technology in their research and projects. Nicolo Antonelli's support enriched the sessions, particularly in guiding participants through integrated IGA design workflows.

The video recordings of the open sessions are available on the project website, while recordings of the private sessions are accessible in the shared project folder for team members. This comprehensive training provided participants with both theoretical knowledge and practical implementation skills using state-of-the-art tools and methodologies in Isogeometric Analysis (IGA). The agenda and list of participants for these training sessions can be found in the Annex 4.1.

Figure 2. Illustration of a session from the S1 & S3 Scientific Training.

2.1.2.2 S2: Isogeometric methods employing spline representations and adaptive methods

On March 21st and 22nd, UNIFI hosted the S2 Scientific Course of the GECKO project titled "Isogeometric Methods Employing Spline Representations and Adaptive Methods". Co-organized by UNIPV and UNIFI, the course provided participants with an immersive exploration of advanced computational analysis.

Attendees engaged in sessions covering numerical analysis, hierarchical splines, adaptive methods, multipatch constructions, LR-splines, and advanced applications. Led by experts such as Giancarlo Sangalli and Alessandro Reali from UNIPV, and Carlotta Giannelli, Hugo Vehrelst, Cesare Bracco, and Francesco Patrizi from UNIFI, this interdisciplinary course facilitated significant knowledge exchange. It equipped participants with the tools and insights needed to advance the frontiers of scientific inquiry in computational analysis. The agenda and list of participants for these training sessions can be found in Annex 4.2.

Figure 3. Illustration of a session from the S2 Scientific Training.

2.1.3 Scheduled courses encouragement

Several courses have been scheduled and organised covering several topics of interest for the DCs. The table below lists the courses in which the Doctoral Candidates (DCs) have participated.

Table 2: Doctoral Candidates Participation in Scientific courses.

Doctoral Candidate	Scientific courses
DC1	CIMNE winter school, 22-26/01/2024, CIMNE, Barcelona, Spain. Xavier Martinez, Sergio Zlotnik, Jordi Pons-Prats. Lake Como Summer School on Isogeometric Analysis: Theory, Applications, and New Trends, 8-12 July 2024. Carlotta Giannelli, Monica Montardini, Giancarlo Sangalli.
DC2	CIMNE winter school, 22-26/01/2024, CIMNE, Barcelona, Spain. Xavier Martinez, Sergio Zlotnik, Jordi Pons-Prats. Lake Como Summer School on Isogeometric Analysis: Theory, Applications, and New Trends, 8-12 July 2024. Carlotta Giannelli, Monica Montardini, Giancarlo Sangalli.
DC3	CIMNE winter school, 22-26/01/2024, CIMNE, Barcelona, Spain. Xavier Martinez, Sergio Zlotnik, Jordi Pons-Prats.

	Lake Como Summer School on Isogeometric Analysis: Theory, Applications, and New Trends, 8-12 July 2024. Carlotta Giannelli, Monica Montardini, Giancarlo Sangalli.
DC5	Nonlinear Computational Solid and Structural Mechanics, 6-10 May 2024. University of Pavia. Pavia, Italy Isogeometric Analysis: Theory, Applications, and New Trends, 8-12 July 2024. Lake como school of Advanced Studies, Como, Italy
DC6	Lake Como Summer School on Isogeometric Analysis: Theory, Applications, and New Trends, 8-12 July 2024. Carlotta Giannelli, Monica Montardini, Giancarlo Sangalli.
DC7	Lake Como Summer School on Isogeometric Analysis: Theory, Applications, and New Trends, 8-12 July 2024. Carlotta Giannelli, Monica Montardini, Giancarlo Sangalli.

2.1.4 Digital training option

The Scientific training sessions, including S1 (Programming Recommendations and Principles for Modern Software Development), S2 (Isogeometric Methods Employing Spline Representations and Adaptive Methods), and S3 (IGA Fundamentals), provided an interactive learning environment for Doctoral Candidates (DCs) in the GECKO project. These sessions were organised in a hybrid format, requiring DCs to be physically present while accommodating remote participation for other team members. The recordings of open sessions (S1, S2, and S3) are accessible on the project's website for public viewing, while private sessions are stored in the shared project folder exclusively accessible to team members. This setup ensured flexibility in attendance and facilitated comprehensive engagement with the material, promoting collaborative learning and advancing knowledge within the GECKO consortium.

2.2 Training Package 2: Transferable Skills

The transferable skills training program encompasses both local and network-wide components. This training package features courses spanning diverse fields such as management, grant writing, academic writing, entrepreneurship, spin-off creation, innovation management, networking, leadership, and more.

The GECKO Transversal Skills Training session focused on Entrepreneurship, Technology Transfer, and Valorization was organised alongside S1 (Programming Recommendations and Principles for Modern Software Development) and S3 (IGA Fundamentals). Hosted by CIMNE-CERCA, this training took place during January 29th in Barcelona at CIMNE-CERCA premises. This integrated approach allowed Doctoral Candidates (DCs) to immerse themselves in both technical and entrepreneurial training, enhancing their skills across diverse fields crucial to the GECKO project's objectives.

2.2.1 Local close training-through-research

The involved universities have provided several training courses in their respective doctoral schools on a local level. Detailed information is provided in the table below.

Table 3: Doctoral Candidates Participation in Transversal skills courses.

Doctoral Candidate	Transversal skills courses
DC4	German A2 Language Course, 10 April - 11 July 2024. TUBS, Braunschweig, Germany.
DC5	- German A1 Language Course, 10 April-11 July 2024. TUBS, Braunschweig, Germany.

2.2.2 Network-wide training courses

Network-wide training courses on Transversal Skills were conducted with a special focus on topics related to IPR management, entrepreneurship, and innovation management.

2.2.2.1 T1: Course on entrepreneurial skills

On January 29th, 2024, CIMNE-CERCA hosted an intensive training course as part of the GECKO project, specifically tailored for Doctoral Candidates which aimed to enhance their transferable skills, focusing on technology transfer and intellectual property management. This equipped participants with essential knowledge and tools crucial for navigating interfaces between academia and industry.

The training took place at CIMNE-CERCA premises and was co-organised by CIMNE-CERCA and KU LEUVEN. Expert trainers Javier Marcipar, Jordi Jiménez, and Jazmín Ríos from CIMNE-CERCA's TechTransfer Unit, alongside Malcolm Bain from the consultancy Across Legal, led the sessions. This provided Doctoral Candidates with a unique opportunity to broaden their expertise beyond academic research. Through interactive sessions, participants gained practical insights and hands-on experience in critical areas essential for their professional growth.

The training emphasised practical application alongside theoretical knowledge. It enabled participants to develop tangible skills relevant to their future careers. From mastering the fundamentals of technology transfer to honing effective pitch techniques, participants emerged from the course with enhanced confidence and expertise. These skills are poised to make significant contributions in both academic and commercial domains.

The video recording of the training course is available on the website for viewing to interested parties, further extending the impact of this comprehensive learning experience. The agenda and list of participants for these training sessions can be found in Annex 4.3.

2.3 Training Package 3: Applied Skills

The GECKO project will generate numerous opportunities for the DCs to effectively use and apply their developed skills, and further expand them through relevant experiences.

2.3.1 Secondment training

A strong collaboration between the involved participants is key and ensures an appropriate interaction between the academic and industrial beneficiaries. Each DC will spend part of their training program in at least 2 different partner sites, being one industrial and an academic participant. In this way, the DCs will be involved in both the academic state-of-the-art and in the industrial workflows. The table below provides the expected plan for the secondment training of the DCs.

Table 4: Doctoral Candidates Secondments.Network-wide technical workshops.

Doctoral Candidate	Secondments
DC1	BETA_CAE, March 2025, 3-4 months AUTH, July 2025, 3-4 months
DC2	BETA_CAE, March 2025, 4 months TUBS, July 2025, 4 months
DC3	IDIADA, March 2025, 4 months UNIPV, July 2025, 3-4 months
DC4	CIMNE, September 2024, 3 months AIRBUS, April 2025, 6 months DYNAMORE, October 2025, 3 months
DC5	CIMNE, September 2024, 3 months BETA_CAE,, May 2025, 3 months DYNAMORE, August 2025, 6 months
DC6	UNIFI, September 2024, 2 months BETA_CAE, December 2024, 1 month UNIFI, September 2025, 2 months BETA_CAE, November 2025, 2 months IDIADA, May 2026, 1 month
DC7	UNIFI, September 2024, 2 months DYNAMORE, December 2024, 1 month UNIFI, September 2025, 2 months, DYNAMORE, November 2025, 2 months CIMNE, May 2026, 1 month
DC8	BETA_CAE, March 2025, 4 months UNIPV, August 2026, 4 months
DC9	TUBS, September 2024, 4 months, IDIADA, April 2026, 4 months

DC10	TUBS, May 2024, 3 months PLUS 1 month remotely on-line due to residence permit restrictions imposed by REGULATION (EU) No 265/2010 IDIADA, July 2025, 3 months PLUS 1 month remotely on-line due to residence permit restrictions imposed by REGULATION (EU) No 265/2010

A set of technical workshops will be organised in which all the Doctoral Candidates (DCs) will present their advances and results, followed by discussions and brainstorming sessions. Several external experts will be invited to these workshops to foster a stimulating environment, both socially and academically. These workshops provide a valuable opportunity for the DCs to enhance their social and networking skills, public presentation abilities, and organisational skills necessary for hosting such events.

The first and second technical workshops have already been successfully organised, setting a precedent for future sessions. Each workshop featured presentations by DCs on their ongoing research projects, followed by interactive discussions facilitated by invited experts. These sessions not only allowed the DCs to receive constructive feedback on their work but also encouraged cross-disciplinary collaboration and knowledge exchange among peers and external specialists. Moving forward, these workshops will continue to play a pivotal role in fostering a dynamic and supportive research environment within the GECKO project.

2.3.1.1 First GECKO Technical Workshop

On January 9th, the GECKO project celebrated its inaugural technical workshop, where GECKO Doctoral Candidates presented their scientific advancements in research projects aimed at bridging the gap between CAD and computational models (CAE) through industry collaboration. Despite being at the early stages of their research, the candidates outlined their immediate, mid-term, and long-term plans, along with expected achievements from their individual projects. The agenda of this event can be found in Annex 4.4.

More information about the event in this link.

2.3.1.2 Second GECKO Technical Workshops

During the 2nd GECKO Technical Workshop, Doctoral Candidates provided detailed updates on their progress since the previous session, while Senior Researchers from the GECKO project delivered insightful presentations on advanced GECKO-related topics. This interactive format facilitated extensive knowledge exchange and collaboration among participants, greatly enhancing the project's momentum moving forward. The agenda of this event can be found in Annex 4.5.

More information about the event in this link.

2.3.2 International Conferences

In order to widen the DCs scientific network outside the GECKO consortium and train their presentation skills, they will attend and actively participate in several international conferences. Several dedicated sessions will be organised in certain conferences. The first GECKO mini symposium is being organised as part of the ISMA conference for 11st September 2024 alongside the GECKO public technical course (detailed information provided in 2.3.3.1).

The table below lists the international conferences in which the DCs have participated.

Table 5: Doctoral Candidates Participation in International Conferences

Doctoral Candidate	International Conferences
DC1	ECCOMAS 2024 (03-07 June 2024), Lisbon, Portugal. Mini symposium "The Shifted Boundary Method in Isogeometric Analysis". XXVIII CEDYA 2024 (24-28 June 2024), Bilbao, Spain. Mini symposium "Advances in the combination of the Shifted Boundary and the Immersogeometric Analysis".
DC10	G+Smo Developer Days, Mar.4-6, 2024. Aristotle University of Thessaloniki, Greece

2.3.2.1 GECKO mini symposium at ISMA 2024 Conference

On the 11th of September 2024, GECKO will participate in the bi-annual conference ISMA/USD with a dedicated mini-symposium. Four contributions were submitted and accepted to the conference and the draft agenda of the mini-symposium is included below. The final agenda will be published on the website of the conference https://www.isma-isaac.be/isma2024/. The contributions will be nominally included in the conference proceedings and indexed.

The detailed draft agenda can be found in Annex 4.6.

2.3.3 Dissemination and public engagement

The GECKO beneficiaries will organise several public disseminations and engagement events where the DCs and other interested participants will present their achievements in an outreach easy-to-follow manner. This will include public industrial workshops, technical courses, etc. Since the DCs will participate in the organisation of these events, they will have a great opportunity for networking but also to develop their transferable skills.

2.3.3.1 First GECKO Public Technical Course

The first GECKO public technical course is scheduled to take place together with the ISMA mini-symposium. This structure was decided to attract a public audience from the conference. The detailed draft agenda can be found in Annex 4.7.

3. CONCLUSIONS

During this first phase of the project, GECKO has successfully equipped the Doctoral Candidates with the skills and expertise necessary to navigate the complex landscape of modern computational analysis. The structured training programs, including network-wide courses and technical workshops, have empowered the DCs to advance their research endeavours and contribute meaningfully to the field of isogeometric analysis. Through these initiatives, GECKO has not only enhanced their technical proficiency in CAD-CAE integration but also nurtured their abilities in communication, collaboration, and leadership. Furthermore, GECKO has actively engaged the public through targeted dissemination activities, including its website and social media channels, organising public technical workshops, distributing newsletters, showcasing PhD pitches, and more. These efforts have significantly increased awareness of GECKO's innovative contributions, fostering dialogue and partnerships that enhance its impact across academic, industrial, and public sectors.

4. ANNEXES

4.1. Agenda and list of participants of GECKO S1 & S3 Scientific Courses

4.1.1 Agenda

AGENDA S1/S3 IGA THEORY & FUNDAMENTALS - DAY 1

Date: 30/01/2024

Time	Topic	Presenter/Facilitator
09:00 – 10:30	IGA Fundamentals	Roland Wüchner (TUBS)
10:30 – 11:00	Coffee break	
11:00 – 12:30	NURBS based analysis of structures	Roland Wüchner (TUBS)
12:30 – 14:00	Launch	
14:00 – 15:30	Trimming and Multi-patch treatment	Manuel Messmer (TUM)
15:30 – 16:00	Coffee break	
16:00 – 17:30	IBRA concept	Ricky Aristio (TUBS)

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AGENDA S1/S3 IGA Hands on and programming basics - DAY 2

Date: 31/01/2024

Venue: CIMNE (Gran Capità s/n, Campus North UPC Build C1, floor 2, **room OCZ**)

Time	Topic	Presenter/Facilitator
09:00 – 10:30	Hands on for NURBS fundamentals	Ricky Aristio (TUBS)
10:30 – 11:00	Coffee break	
11:00 – 12:30	Hands on for IGA elements (1D structural element)	Ricky Aristio (TUBS)
12:30 – 14:00	Launch	
14:00 – 15:30	Introduction to Kratos for Standard FEM	Riccardo Rossi (CIMNE-CERCA)
15:30 – 16:00	Coffee break	
16:00 – 17:30	Data Structures and essential algorithms	Riccardo Rossi (CIMNE-CERCA)

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AGENDA S1/S3 Kratos Basics & IGA - DAY 3

Date: 01/02/2024

Venue: CIMNE (Gran Capità s/n, Campus North UPC Build C1, floor 2, **room OCZ**)

Time	Topic	Presenter/Facilitator
09:00 – 10:30	IGA in Kratos	Ricky Aristio (CIMNE-CERCA)
10:30 – 11:00	Coffee break	
11:00 – 12:30	Integrated IGA Design Workflow (hands on)	Manuel Messmer (TUM)
12:30 – 14:00	Launch	
14:00 – 15:30	Kratos General Structure	Carlos Roig (CIMNE-CERCA)
15:30 – 16:00	Coffee break	
16:00 – 17:30	Hands on Kratos Example (standard FEM)	Ruben Zorrilla (CIMNE-CERCA)

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Design for IGA-type discretization workflows

AGENDA S1/S3 Kratos Advanced Topics & Training - DAY 4

Date: 02/02/2024

Venue: CIMNE (Gran Capità s/n, Campus North UPC Build C1, floor 2, **room OCZ**)

Time	Topic	Presenter/Facilitator
09:00 – 10:30	Parallel Programming	Riccardo Rossi (CIMNE-CERCA)
10:30 – 11:00	Coffee break	
11:00 – 12:30	Kratos Objects for IGA	Ricky Aristio (CIMNE-CERCA)
12:30 – 14:00	Launch	
14:00 – 15:30	Hands on	Joint Tutoring
15:30 – 16:00	Coffee break	
16:00 – 17:30	Hands on	Joint Tutoring

4.1.2 List of participants

Gecko
Design for IGA-type discretization workflows

SIGNATURES

Date: 30/01/2024

Venue: CIMNE (Gran Capità s/n, Campus North UPC Build C1, floor 2, room OCZ)

Entity	Full name	Signature
TUBS	Morad Alkhaldi	
UNIPV	Lucas Venta Viñuela	
KU LEUVEN	PHILIP LE	
CIMNE	ANDREA GORGI	
CIMNE	NICOLO' ANTONELLI	
TUBS	Juan I. Camarotti	
UNIPV	Angelo Pagnacco	
CIMNE	Polytimi Zisimopoulou	
TUBS	Richy Arista	
TUBS	Roland Wüchner	
TUM	Manuel Meßmer	
CIMNE	Riccardo Rossi	

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CIMNE	Alejandro Cornejo	Online

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SIGNATURES

Date: 31/01/2024

Venue: CIMNE (Gran Capità s/n, Campus North UPC Build C1, floor 2, room OCZ)

Entity	Full name	Signature
CIMNE	Carlos A. Roig	
CIMNE	Riccardo Rossi	
UNIPV	Lucas Ventura Inunza	
CIMNE	NICOLÒ ANTONELLI	
KU LEUVEN	PHILIP LE	
CIMNE	Polytimi Zisiopoulou	
TUBS	Juan Ignacio Camarotti	
TUBS	Richis Aristio	
UNIPV	Angelo Pagani	
CIMNE	ANDREA GORGI	
TUBS	Marwan Al Kheleifat	
TUM	Manuel Mehmer	

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TUBS	R. U. Roland Wüchner	
CIMNE	Rubén Zorrilla	
CIMNE	Alejandro Cornejo	On line

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SIGNATURES

Date: 01/02/2024

Venue: CIMNE (Gran Capità s/n, Campus North UPC Build C1, floor 2, room OCZ)

Entity	Full name	Signature
TUBS	Maram Alkhlaifat	
UMPV	Lucas Venta Viñuela	
CIMNE	NICOLO' ANTONELLI	
UNIPV	Angelos Pagonas	
KU LEUVEN	PHILIP LE	
TUBS	Juan I. Camarotti	
CIMNE	Polytimi Zisimopoulou	
CIMNE	ANDREA GORGI	
CIMNE	Carlos A. Dias	
CIMNE	Riccardo Rossi	
TUBS	Richy Arisho	
TUBS	Roland Wüchner	
CITINE	Rubén Zorrilla	

4.2. Agenda and list of participants of GECKO S2 Scientific Course

4.2.1 Agenda

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon Europe under Grant Agreement No. 101073106

AGENDA S2 Isogeometric methods employing spline representations and adaptive methods DAY 1

Date: 21/03/2024

Venue: University of Florence (Aula "Tricerri", Department of Mathematics and Computer Science "Ulisse Dini" of the University of Florence, Viale Morgagni 67/A, 50134 Florence (map)

Time	Topic	Presenter/Facilitator
09:00 – 10:30	Numerical Analysis of isogeometric methods I	Giancarlo Sangalli (UNIPV)
10:30 – 11:00	Coffee break	
11:00 – 12:30	Introduction to (hierarchical) splines	Carlotta Giannelli (UNIFI)
12:30 – 14:30	Lunch break	
14:30 – 16:00	Numerical Analysis of isogeometric methods II	Giancarlo Sangalli (UNIPV)
16:00 – 16:30	Coffee break	
16:30 – 17:15	LR-splines	Francesco Patrizi (UNIFI)

Gecko
Design for IGA-type discretization workflows

AGENDA S2 Isogeometric methods employing spline representations and adaptive methods DAY 2

Date: 22/03/2024

Venue: University of Florence (Aula "Tricerri", Department of Mathematics and Computer Science "Ulisse Dini" of the University of Florence, Viale Morgagni 67/A, 50134 Florence (map)

Time	Topic	Presenter/Facilitator
09:00 – 09:45	Adaptive isogeometric methods	Carlotta Giannelli (UNIFI)
09:45 – 10:30	Multipatch constructions	Cesare Bracco (UNIFI)
10:30 – 11:00	Coffee break	
11:00 – 12:30	Advanced isogeometric applications I	Alessandro Reali (UNIPV)
12:30 – 14:30	Lunch break	
14:30 – 15:15	Introduction to GeoPDEs	Cesare Bracco (UNIFI)
15:15 – 16:00	Introduction to G+SMO	Hugo Vehrelst (UNIFI)
16:00 – 16:30	Coffee break	
16:30 – 17:15	Advanced isogeometric applications II	Alessandro Reali (UNIPV)

4.2.2 List of participants

Gecko
Design for IGA-type discretization workflows

LIST OF PARTICIPANTS

Date: 21-22/03/2024

Venue: University of Florence (Aula "Tricerri", Department of Mathematics and Computer Science "Ulisse Dini" of the University of Florence, Viale Morgagni 67/A, 50134 Florence

Entity	Full name
KU Leuven	Dionysios Panagiotopoulos
CIMNE	Nicolò Antonelli
TUBS	Juan Ignacio Camarotti
KU Leuven	Philip Le
TUBS	Ricky Aristio
UNIPV	Lucas Venta Viñuela
UNIPV	Angelos Pagonas
TUBS	Maram Alkhlaifat
AUTH	WEI LI
UNIPV	Alessandro Reali
UNIPV	Giancarlo Sangalli
UNIFI	Carlotta Giannelli
CIMNE	Polytimi Zisimopoulou
CIMNE	Andrea Gorgi
TUBS	Roland Wüchner

4.3. Agenda and list of participants of GECKO GECKO Transversal Skills Training: Entrepreneurship, technology transfer & valorization

4.3.1 Agenda

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon Europe under Grant Agreement No. 101073106

AGENDA T1 ENTREPRENEURSHIP, TECHNOLOGY TRANSFER & VALORIZATION

Date: 29/01/2024

Venue: CIMNE (Gran Capità s/n, Campus North UPC Build C1, floor 2, **room OCZ**)

Time	Topic	Presenter/Facilitator
09:00 – 10:30	Introduction to Technology Transfer	Javier Marcipar (CIMNE-CERCA)
10:30 – 11:00	Coffee break	
11:00 – 12:30	Intellectual Property Management for software open source & AI in research	Malcolm Bain (Across Legal)
12:30 – 14:00	Launch	
14:00 – 15:30	Technology Valorization & Business Plan - A hands-on approach	Javier Marcipar & Jazmín Ríos (CIMNE-CERCA)
15:30 – 16:00	Coffee break	
16:00 – 17:30	Elevator Pitch Workshop: How to "sell" your ideas	Javier Marcipar & Jazmín Ríos (CIMNE-CERCA)

4.3.2 List of participants

Gecko
Design for IGA-type discretization workflows

SIGNATURES

Date: 29/01/2024

Venue: CIMNE (Gran Capità s/n, Campus North UPC Build C1, floor 2, room OCZ)

Entity	Full name	Signature
CIMNE	Javier Mazcipar	
CIMNE	Jazmin Rios	
CIMNE	Sergi Jiménez	
CIMNE	ANDREA GORGI	
KU LEUVEN	PHILIP LE	
CIMNE	NICOLÒ ANTONELLI	
UNIPV	Angelos Pagonas	
TUBS	Mavami Alkhalifah	
UNIPV	Lucas Venta Viñuela	
TUBS	Juan Ignacio Comenotti	
CIMNE	Polytimi Zisimopoulou	
ACROSS LEGAL	MONTSERRAT RODRIGUEZ OSUNA	
ACROSS LEGAL	MALCOLM BAIN	

Gecko
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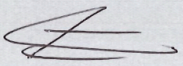
CIMNE	ALEX BERRA	
CIMNE	ALBERTO TEMA	

4.4. Agenda of GECKO First Technical Workshop

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon Europe under Grant Agreement No. 101073106

AGENDA 1st GECKO Technical Workshop

Date: 09/01/2024

Venue: online

Time	Topic	Presenter/Facilitator
14:00 – 14:10	Session Introduction	Alejandro Cornejo (CIMNE-CERCA)
14:10 – 17:10	DCs technical progress presentations (15'-20' each)	DC1-DC10
17:10 – 18:00	Open Discussion	ALL

4.5. Agenda of GECKO Second Technical Workshop

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon Europe under Grant Agreement No. 101073106

AGENDA 2nd GECKO Technical Workshop

Date: 20/03/2024

Venue: University of Florence (Aula "Tricerri", Department of Mathematics and Computer Science "Ulisse Dini" of the University of Florence, Viale Morgagni 67/A, 50134 Florence (map))

Time	Topic	Presenter/Facilitator
14:30 – 16:00	DCs' update with respect to previous workshop (10x5-7 minutes plus discussion)	All DCs
16:00 – 16:30	Coffee break	
16:30 – 18:30	Presentation of one senior researcher per Unit on advanced Gecko-related topics (5x20 minutes plus discussion)	CIMNE, TUBS, UNIPV, KUL & AUTH

4.6. Detailed Draft Agenda GECKO mini symposium at ISMA 2024 Conference

Agenda:

	GECKO mini symposium *(part of the ISMA conference)* ***(Chaired by: Roland Wüchner, Riccardo Rossi, Dionysios Panagiotopoulos*)**:
10:00 – 12:00	- Model order reduction of isogeometric BEM systems via KRYLOV subspace recycling (Philip Le – KU Leuven) - Non-conforming IBRA-FEM coupling approaches for transient problems (Juan Camarotti – TUBS) - The shifted boundary method in isogeometric analysis (Nicolo Antonelli – CIMNE) - Immersed IGA and mass lumping for explicit dynamics (Angelos Pagonas – UNIPV)

4.7. Detailed Draft Agenda First GECKO Public Technical Course

	GECKO public technical course
13:00 – 14:00	**Introduction to GECKO project and Isogeometric Analysis (*Chaired by: Dionysios Panagiotopoulos*):** - GECKO Introduction (Riccardo Rossi – CIMNE, 10 min) - CAD-integration by Isogeometric Analysis: Challenges and potentials (Roland Wüchner – TUBS, 10 min) - Presentation of Doctoral Candidates 1-10: Topic-wise reflection of challenges and potentials of CAD-integration through Isogeometric Analysis (30 min) - Discussion & feedback round (10 min)
14:00 – 15:30	**Technical Presentations (Part 1: IGA Workflow) (*Chaired by: Roland Wüchner, Riccardo Rossi*):** - Introduction to Kratos-Multiphysics (*Senior scientist* – CIMNE) - ANSA pre- processor for IGA* (Ioannis Chalkidis – BETA CAE) *(to be confirmed)*
15:30 – 16:00	Coffee break
16:00 – 17:30	**Technical Presentations (Part 2: Industrial applications of IGA) (*Chaired by: Roland Wüchner, Riccardo Rossi*):** - IGA in crash simulations* (Lukas Leidinger – DYNAMORE) *(confirmed)* - Towards IGA application on crashworthiness CAE analysis in the automotive industry* (Lluis Martorell – IDIADA) *(confirmed)*