



Gecko

Design for IGA-type
discretization workflows

D2.2 Public Technical courses

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Executive summary

This report is aimed at providing an overview of the organisation and outcomes of the public technical courses carried out within the GECKO project, in which the network brings together its Doctoral Candidates (DCs) working on the design and development of Isogeometric Analysis (IGA)-type discretization workflows, with the end goal of advancing Computer-Aided Design (CAD) and Computer-Aided Engineering (CAE) integration.

This deliverable covers two distinct public events within the project period. The “1st Public Technical Course” was held in conjunction with the International Conference on Noise and Vibration Engineering (ISMA) in 2024 in Leuven, Belgium. The “2nd Public Technical Course” is planned for 2026 at the Technical University of Munich, Germany, and will be held in conjunction with the “4th GECKO Technical Workshop” (E8) and the “Transferable Skills course” (T3).

Both courses address frontier topics in the field of Isogeometric Analysis and its applications. The report includes the detailed agendas of each course, and a description of the topics covered.

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Introduction

To fulfill the GECKO project's commitment to technical excellence, two public courses were scheduled across the project lifecycle. This report documents their execution and impact. It opens with the objectives of these courses (Section 1), provides a deep dive into the specific curriculum of each session (Sections 2 and 3), and concludes with their overall effectiveness (Section 4). Detailed records are provided in the Annexes (Section 5)

1. Public Technical Courses in GECKO

1.1 Objectives

The Public Technical Courses are a cornerstone of the GECKO training framework, designed to balance specialized training with global outreach.

- DCs engage with high-level content delivered by world-class experts, ensuring they remain at the forefront of their fields.
- By incorporating these courses into established international research events, GECKO ensures maximum visibility among academic and industrial stakeholders.

1.2 Target Audience and Curriculum

The courses are designed for the wide range of participants from PhD students to industry engineers, with the focus on the transition of Isogeometric Analysis from the theoretical to the industrial level. The main thematic areas include integration with CAD, aerospace, automotive, as well as the evolving research from the GECKO Doctoral Network.

2. First Public Technical Course

2.1 Overview

The first Public Technical Course was held on Wednesday, 11 September 2024, in Leuven, Belgium. The event was strategically integrated into the International Conference on Noise and Vibration Engineering (ISMA 2024).

Hosting the course within the framework of an international conference such as ISMA provided a valuable opportunity to reach a large and diverse audience of researchers and practitioners in the fields of structural dynamics, computational mechanics, and noise and vibration engineering.

The detailed agenda, including specific speakers and presentation titles, is provided in Annex A.

2.2 Programme Structure

The event was structured in two main parts: a GECKO Mini Symposium held in the morning as part of the official ISMA conference programme, and a dedicated GECKO Public Technical Course session in the afternoon.

	Focus Area	Intended Outcome
Morning Session	GECKO Mini-Symposium	Dissemination of research on IGA, BEM systems, and explicit dynamics to the broader ISMA audience
Afternoon (Part I)	Foundations & DC Perspectives	Introduction to GECKO and Kratos-Multiphysics; doctoral candidates (DCs) presented reflections on CAD-integration
Afternoon (Part II)	Industrial Applications of IGA	Demonstration of IGA's productive application in industry (LS-DYNA, BMW, IDIADA)
Closing Session	Networking & Social Event	Internal collaboration and professional networking between GECKO members and invited speakers during a Leuven city tour

Table 1: Program for the 1st GECKO Public Technical Course (ISMA, September 2024)

3. Second Public Technical Course

3.1 Overview

The second Public Technical Course is scheduled for 28 - 29th of April 2026 at the Technical University of Munich (TUM), Germany.

To leverage the final stages of GECKO, this course will be held in conjunction with the 4th GECKO Technical Workshop and Transferable Course. This integrated approach creates a high-value synergy between internal consortium training and external dissemination, allowing Doctoral Candidates (DCs) to present their maturing research to a wider German and international audience.

The detailed agenda, including the names of specific speakers and presentation titles, will be provided in Annex B.

Venue: TUM Building, Room N0160, Ground Floor, Arcisstraße 21, Munich

3.2 Programme Structure

3.2.1 Day 1 (Transferable Course)

The "Transferable course: Research after academia" (T3) is a specialized training session designed for researchers within the GECKO project—a European Union-funded initiative under the Horizon Europe framework.

This specific course focuses on bridging the gap between academic exploration and industrial application. It emphasizes the processes of Technology Transfer and Valorization, teaching participants how to transform theoretical research into marketable assets. Through case studies and a hands-on approach, the session provides tools for market-entry planning and for presenting technological opportunities to stakeholders outside academia.

Focus Area		Intended Outcome
First Session	From Research to Market: Introduction to Technology Transfer, Valorization processes, and case studies.	Participants will gain a fundamental understanding of how to identify research results with commercial potential and the processes required to extract value from them.
Second Session	Planning Market Entry: Hands-on approach and tools to develop a plan and present technological opportunities	Participants will acquire practical tools to draft a structured plan for introducing a new technology into a competitive market.

Table 2: Preliminary Program for the GECKO Transferable Course (TUM, Tuesday, 28 April 2026)

Note: As this event is forthcoming, the specific schedule is subject to minor logistical adjustments. A finalized agenda will be included in the project's final summary.

3.2.2 Day 2 (Technical Course & Workshop)

The second day of the GECKO event, held on Wednesday, 29 April 2026, is divided into a morning technical course and an afternoon workshop focused on Doctoral Candidate (DC) progress

The morning sessions are dedicated to keynote lectures on the cutting edge of Isogeometric Analysis (IGA), while the afternoon focuses on the technical evolution of the GECKO doctoral projects.

Focus Area		Intended Outcome
Morning Session	State-of-the-Art in IGA	Exposure to recent advancements in Isogeometric Analysis and CAD-integration through external speakers
Afternoon (Part I)	Technical Progress (DC1–5)	Formal presentation and peer-review of doctoral research milestones for the first half of the cohort
Afternoon (Part II)	Technical Progress (DC6–10)	
Closing Session	Synergy & Synthesis	Facilitated discussion to identify cross-project collaborations and finalize workshop conclusions

Table 3: Preliminary Program for the 2nd GECKO Public Technical Course (TUM, April 29th, 2026)

4. Conclusions

This report has documented the organisation and content of the two Public Technical Courses carried out within the GECKO project. These events represent a concrete realisation of the project's commitment to public engagement, as outlined in the Grant Agreement.

The 1st Public Technical Course at ISMA 2024 (Leuven) established a successful blueprint for dissemination by integrating doctoral research into a prestigious international forum. It effectively bridged the gap between academic theory and industrial application.

The 2nd Public Technical Course at TUM (Munich) is designed to build on this momentum. By combining technical workshops with career oriented transferable courses, the project ensures that DCs graduate with both scientific excellence and professional versatility.

As a final assessment, Public Technical Courses seem to prove that they are more than just educational sessions; they are vital dissemination vehicles. The dual-track approach has ensured that the GECKO project contributes meaningfully to the scientific community while preparing a new generation of researchers for leadership roles in both academia and industry.

5. Annexes

5.1 Annex A

5.1.1 Detailed Agenda

1st GECKO public technical course in ISMA 2024 (Wednesday, 11th September 2024)

GECKO mini symposium (<i>part of the ISMA conference</i>) (<i>Chaired by: Roland Wüchner, Rubén Zorrilla, Dionysios Panagiotopoulos</i>):	
10:35 – 12:15	- Model order reduction of isogeometric BEM systems via KRYLOV subspace recycling (Philip Le – KU Leuven) - The shifted boundary method in isogeometric analysis (Nicolo Antonelli – CIMNE) - Non-conforming IBRA-FEM coupling approaches for transient problems (Juan Camarotti – TUBS) - Immersed IGA and mass lumping for explicit dynamics (Angelos Pagonas – UNIPV)
12:15 – 13:30	Lunch break
GECKO public technical course	
13:30 – 14:45	Introduction to GECKO project and Isogeometric Analysis (<i>Chaired by: Dionysios Panagiotopoulos</i>): - GECKO Introduction (5 min) - CAD-integration by Isogeometric Analysis: Challenges and potentials (Roland Wüchner – TUBS, 15 min) - Introduction to Kratos-Multiphysics (Rubén Zorrilla – CIMNE, 10 min) - IGA Application in Kratos-Multiphysics (Ricky Aristio – 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 (5 min)
14:45 – 15:15	Coffee break
15:15 – 17:30	Technical Presentations (Industrial applications of IGA) (<i>Chaired by: Roland Wüchner, Rubén Zorrilla</i>): - Bringing IGA in LS-DYNA into Productive Applications (Lukas Leidinger – DYNAmore) - The Automotive Industry challenges and potential benefits of IGA applications (Lluís Martorell – IDIADA) - Cross-Talk in trimmed Isogeometric shells (Zeyu Lian – BMW Group Research and Technology) - Isogeometric sheet metal forming simulations based on locally refineable spline spaces (Christoph Hollweck – OTH Regensburg) - Discussion & feedback round (15 min)
17:30 –	Social events (<i>internal GECKO members & the invited speakers</i>): - City tour & dinner

5.1.2 List of participants

5.2 Annex B

5.2.1 Detailed Draft Agenda

AGENDA T3 - Transferable course: Research after academia

Date: 28/04/2026 Tuesday

Venue: N0160, Ground Floor, N1 TUM Building

Address: [Theresienstr. 90, 80333 München](#)

Time	Topic	Presenter/Facilitator
14:00 – 14:15	Opening Remark	Roland Wüchner (TUM)
14:15 – 15:30	From research to market: Introduction to Technology Transfer and Valorization processes. Case studies, examples and learnings	Javier Marcipar (CIMNE-CERCA)
15:30 – 15:45	Break	
15:45 – 17:00	Planning market entry: Tools to develop a plan and present a technological opportunity. Hands-on Approach	Javier Marcipar (CIMNE-CERCA)
17:00 – 18:00	Discussion Round	Suneth Warnakulasuriya (TUM)

AGENDA 2nd GECKO Public Technical Course & 4th GECKO Technical Workshop

Date: 29/04/2026 Wednesday

Venue: N0160, Ground Floor, N1 TUM Building

Address: [Theresienstr. 90, 80333 München](#)

Time	Topic	Presenter/Facilitator
9:45 – 10:00	Welcome & GECKO Introduction	Suneth Warnakulasuriya (TUM)
10:00 – 10:40	Recent Advancements in IGA #1 (T.B.D)	External Speakers (T.B.D)
10:40 – 11:20	Recent Advancements in IGA #2 (T.B.D)	Christoph Hollweck (OTH Regensburg)
11:20 – 12:00	CAD-Integration for Lightweight Structural Design and Analysis	Dr. Ann-Kathrin Goldbach (TUM)
12:00 – 13:00	Break	
13:00 – 15:00	DCs technical progress presentations (20'-30' each)	DC1-DC5
15.00 – 15.15	Break	
15:15 – 17:15	DCs technical progress presentations (20'-30' each)	DC6-DC10
17:15 – 18:00	Open Discussion & Closing Remarks	Suneth Warnakulasuriya (TUM)