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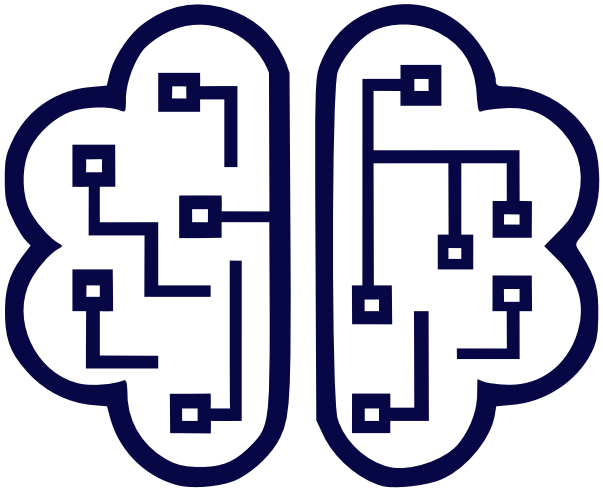

TEAM Project

Technologically Enabled Advancements in Dental Medicine

WP4 – Project Management and Dissemination

D4.3 Report on Scientific Events and Results

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I. Introduction

This report summarizes the scientific results and dissemination activities carried out within the TEAM Project – Technologically Enabled Advancements in Dental Medicine. The activities aimed to increase the scientific visibility of the project, disseminate research findings, strengthen international collaborations, and support the professional development of researchers through participation in scientific events and publication of research results.

II. Scientific Results

The research activities conducted within the project resulted in significant scientific outputs in the fields of artificial intelligence, dentomaxillofacial imaging, virtual surgical planning, digital dentistry, robotic-assisted surgery, and additive manufacturing. The project generated:

- 8 publications in ISI Q1 journals;
- 5 scientific publications in ISI (Q2-Q4) or BDI journals;
- 1 patent application;
- 1 accepted national research project (OSTEOREGEN);
- 1 submitted Horizon Europe proposal (TWIN-MAX);
- 1 submitted national research proposal (RESPIROS).

The published studies addressed topics including automated detection of dental pathologies on panoramic radiographs, AI-assisted diagnosis of temporomandibular disorders, robotic implant surgery, orbital segmentation, low-dose CT enhancement, digital dentistry workflows, and additive manufacturing applications.

III. Participation in Scientific Events

Project members actively disseminated research results through participation in national and international scientific events. During the reporting period, the project supported participation in 23 scientific meetings, congresses, and conferences.

Research results were presented at major international events, including the European Congress of Radiology (ECR), the European Orthodontic Society Congress (EOS), the Digital Dentistry Society Global Congress (DDS), the International Association of Dentomaxillofacial Radiology Congress (IADMFR), and other national and international scientific meetings.

1. European Congress of Radiology, Viena 2024 – Mihaela Hedeșiu, Artificial intelligence for diagnosis of dental pathology on panoramic images (C-14505)

2. 99th Congress of European Orthodontics Society, 9-13 Iunie 2024 – Oana Almășan, Leveraging Artificial Intelligence for Precise Evaluation of Temporomandibular Joint Disc Displacement in MRI: a pilot study

3. International Conference on Electromagnetic Fields, Signals and BioMedical Engineering 6-8 Iunie 2024, Cluj-Napoca – Daria Pîslă, Innovative 3D reconstruction in oral and sinus surgery using advanced printing technologies

4. 27th Congress of the European Association for Cranio Maxillo Facial Surgery - 17 – 20 SEPTEMBER 2024, Rome, Italy: The value of multiparametric magnetic resonance imaging in the preoperative diagnosis of parotid gland tumors. Sebastian George Stoia, Rares Mocan, Tiberiu Tamas, Mihaela Baciut, Grigore Baciut, Simion Bran, Manuela Lenghel, Gabriel Armencea, Cristian Dinu, TEAM Research Project Group

5. 27th Congress of the European Association for Cranio Maxillo Facial Surgery - 17 – 20 SEPTEMBER 2024, Rome, Italy: Intraorbital soft tissue atrophy after posttraumatic bone reconstruction: a risk factor for enophthalmos. Tiberiu Tamas, Mihaela Baciut, Grigore Baciut, Sebastian Stoia, Simion Bran, Rares Mocan, Cristian Dinu, TEAM Research Project Group

6. 27th Congress of the European Association for Cranio Maxillo Facial Surgery - 17 – 20 SEPTEMBER 2024, Rome, Italy: Mandibular growth after pediatric mandibular reconstruction with the vascularized free fibula flap. Cristian Mihail Dinu, Sebastian Stoia, Tiberiu Tamas, Rares Mocan, Mihaela Baciut, Simion Bran, Sergiu Vacaras, Ileana Mitre, Grigore Baciut, TEAM Research Project Group

7. Congresul Transilvania, Cluj-Napoca, Octombrie 2024. Artificial Intelligence in the Assessment of Temporomandibular Joint Disc Displacement. Oana Almășan, Mihaela Hedeșiu, Sorana Mureșanu, Petra Hedeșiu, Andrei Cotor, Mihaela Baciuț, Raluca Roman, TEAM Project Group

8. Congresul Transilvania, Cluj-Napoca, Octombrie 2024. Fully automated CT-based segmentation of the bony orbit. Sorana Eftimie, Michel Beyer, Robert Ileșan, Mihaela Hedeșiu

9. European Congress of Radiology, Vienna, 26 Februarie-2 Martie 2025. AI pre-trained model for jaw bone tumor detection and classification. Hedesiu M., Olariu E., Eftimie S., Roman R., Ban A., Dinu C., Jacobs R, on behalf of Team Project Group.

10. 25th Congress of IADMFR, Londra, 24-25 iunie 2025. Automated Detection of Carotid Artery Encasement using an AI-driven approach. Petra Hedeșiu, Ioana Hedeșiu, Kutsev Bengisu Ozyoruk, Cristian Barrera, Liviu Iacob, Renata Zahu, Sorana Eftimie, Mihaela Hedeșiu

11. 25th Congress of IADMFR, Londra, 24-25 iunie 2025. Assessment of the posterior superior alveolar artery position using Cone Beam Computer Tomography. Raluca Roman, Horia Pantea, Alina Ban, Sorana Eftimie, Sara Roman, Oana Almasan, Mihaela Hedesiu, TEAM project group

12. 25th Congress of IADMFR, Londra, 24-25 iunie 2025. Deep Learning-Powered Diagnosis of Jawbone Tumors from Panoramic Radiographs. Olariu E., Eftimie S., Dinu C., Mocan R., Stoia S., Manea A., Roman R., Ban A., Hedesiu M., TEAM project group, Jacobs R.

13. 25th Congress of IADMFR, Londra, 24-25 iunie 2025. Comparative Performance of Two Deep-Learning Models for Dental Condition Detection on Panoramic Radiographs. Eftimie S., Ileni T., Iacob L., Hedeșiu M., Dioșan L.

14. Digital Dentistry Society Global Congress, 16-18 Obtombrie 2025, Veneția. Lecture/Keynote speech - Personalized Parotid Surgery in the 21st Century: from 3D imaging to Augmented Reality - Cristian Dinu

15. Digital Dentistry Society Global Congress, 16-18 Obtombrie 2025, Veneția. A Multiparametric MRI Protocol for Parotid Gland Tumors Diagnosis. Sebastian Stoia, Rareș Mocan, Mihaela Băciuț, Tiberiu Tamaș, Simion Bran, Gabriel Armencea, Avram Manea, Manuela Lenghel, Cristian Dinu, TEAM Research Project Group – câștigător Clinical Imaging Advance Award

16. Digital Dentistry Society Global Congress, 16-18 Obtombrie 2025, Veneția. Unmasking Necrotizing Sialometaplasia of the Parotid. Mocan Rares, Sebastian Stoia, Tiberiu Tamas, Simion Bran, Gabriel Armencea, Manuela Lenghel, Manea Avram, Mihaela Baciut, Cristian Dinu, TEAM Research Project Group

17. Digital Dentistry Society Global Congress, 16-18 Obtombrie 2025, Veneția. Deep Learning for Detection of Jaw Lesions on CBCT: A Preliminary Study Using a Convolutional Neural Network. Sorana Eftimie, Eliza Olariu, Rareș Mocan, Sebastian Stoia, Avram Manea, Tiberiu Tamaș, Alina Ban, Critian Dinu, Mihaela Hedeșiu, on behalf of Team Project Group

18. Digital Dentistry Society Global Congress, 16-18 Obtombrie 2025, Veneția. Panoramic Radiographs and Deep Learning for Jawbone Tumors. Olariu Eliza, Eftimie Sorana, Dinu Cristian, Roman Raluca, Jacobs Reinhilde, Hedesiu Mihaela, TEAM Project Group

19. Digital Dentistry Society Global Congress, 16-18 Obtombrie 2025, Veneția. CBCT- Based Analysis and AI Segmentation of Midline Lingual Foramina for Implant Dental Planning. Ban Alina, Eftimie Sorana, Iacob Liviu, Hedeșiu Mihaela, Dinu Cristian, Roman Raluca, Team Project Group

20. Digital Dentistry Society Global Congress, 16-18 Obtombrie 2025, Veneția. Dentihub –A dentistry dataset platform with automatic lesion detection. Liviu-Mihai Iacob, Sorana Eftimie, Mihaela Hedesiu, TEAM Project Group

În perioada ianuarie-martie 2026

21. European Congress of Radiology, 4-8 martie 2026, Vienna. YOLO Model for Bone Level and Teeth Segmentation and Classification in Panoramic Radiographs, E. M. Olariu, S. Eftimie, R. S. Gracea, M. Hedesiu, O. E. Burlacu Vatamanu, E. A. Dawood, P. G. TEAM, R. Jacobs

22. European Congress of Radiology, 4-8 martie 2026, Vienna. Deep Learning Model for the Anterior Ethmoidal Artery Segmentation in CBCT Authors: F. Iacob, E. M. Olariu, P. Hedesiu, S. Eftimie, R. A. Roman, P. G. TEAM, M. Hedesiu

23. European Congress of Radiology, 4-8 martie 2026, Vienna. DentiHub Platform Showcase

24. Progrese si Execelenta in otolaringologie 2026- 26-28 martie, Cluj-Napoca. Aplicatii ale AI in imagistica maxilo-faciala – Mihaela Hedesiu, TEAM project group

25. Progrese si Execelenta in otolaringologie 2026- 26-28 martie, Cluj-Napoca. Durerea facială. O abordare multidisciplinară. Mihaela Hedeșiu

26. European Congress of DentoMaxilloFacial Radiology, 25–27 iunie 2026, Iași, Romania. DENTIHUB: An AI-Integrated Platform for Dental Education and Research. Authors: Sorana Eftimie, Liviu Iacob, Eliza Olariu, Razvan Pop, Laura Dioșan, Raluca Roman, Alina Ban, Reinhilde Jacobs, Mihaela Hedeșiu

27. European Congress of DentoMaxilloFacial Radiology, 25–27 iunie 2026, Iași, Romania. Segmentation and Classification of the Anterior Ethmoid Artery. Mihaela Hedeșiu, Filip Iacob, Sorana Eftimie, Matei Coldea, Petra Hedeșiu, Reinhilde Jacobs, Veronica Trombițaș

28. European Congress of DentoMaxilloFacial Radiology, 25–27 iunie 2026, Iași, Romania. Personalized Parotid Surgery in the 21st Century: from 3D imaging to Augmented Reality – Mocan Rareș, Cristian Dinu

29. Ultrasonography in salivary glands and cervical adenopathy ultrasound with small hand-held machines in daily practice. Trainer - Rose Ngu, Raluca Roman, Bogdan Dobrovat, Corina Ursulescu, Irina Jari, Lenghel Manuela, Antigoni Delatoni

The project also organized scientific workshops, hands-on training activities, and round-table discussions focused on CBCT imaging, artificial intelligence, digital dentistry, virtual surgical planning, and advanced imaging technologies. The following courses, workshops, and scientific events were organized within the project:

- TEAM Project Kickoff and Pitch Meeting, 25 March 2024, Cluj-Napoca, Romania.
- Head and Neck Imaging Course, 14–18 April 2024, Cluj-Napoca, Romania.
- National Congress of Oral and Maxillofacial Surgery, 12–15 June 2024, Cluj-Napoca, Romania. Within the congress, the following training activities were organized:
    - *Osteosynthesis Systems in Maxillofacial Surgery*;
    - *Radiological Interpretation in CBCT*;
    - *Oral Implantology Workshop – Dentis OneQ*.
- CBCT Imaging Course and Workshop – "The New Standard in Dental Imaging: From 2D to 3D". Three courses and workshops covering general concepts and CBCT image interpretation were organized in the following university centers: Cluj-Napoca, Brașov, and Oradea.
- CBCT Imaging Course, organized in collaboration with CMDR Bistrița, 21 September 2024, Bistrița, Romania.
- Workshop on Anatomical Structure Segmentation Using 3D Slicer, 19 July 2024, Bucharest, Romania.
- Round Table – Innovative Procedures in the Management of Patients with Temporomandibular Disorders, organized by Prof. Smaranda Buduru, Assoc. Prof. Oana Almășan, and Assist. Prof. Manuela Tăut, 2 December 2024, Cluj-Napoca, Romania.
- Round Table – Advances in Osteocartilaginous Regeneration, organized by Prof. Mihaela Băciuț, Prof. Ondine Lucaciu, and Assoc. Prof. Horea Benea, 4 December 2024, Cluj-Napoca, Romania.
- Hands-on Workshop – Materialise Mimics, organized by Dr. Alexandru Burde, 21–22 March 2025, Cluj-Napoca, Romania.
- Round Table – Innovation and Personalization in Dentistry: From AI-Assisted Imaging to Telemedicine, organized by Prof. Cristian Dinu, Prof. Mihaela Hedeșiu, and Prof. Mihaela Băciuț during the *Iuliu Hațieganu University Days*, 9 October 2025, Cluj-Napoca, Romania.

IV. Research Mobility and Networking

The project supported international research mobility and networking activities, facilitating collaboration with leading European research institutions. These activities contributed to knowledge transfer, joint scientific publications, and the establishment of new research partnerships.

A six-month research mobility at KU Leuven, Belgium, enabled collaborative research activities, participation in specialized training courses and scientific events, and contributed to the publication of joint scientific papers. The project also supported participation in the European Academy of Dentomaxillofacial Radiology (EADMFR) Training Meeting held in Porto, Portugal (3–5 February 2025).

V. Intellectual Property and Innovation

An important innovation outcome of the project was the submission of a patent application entitled:

Intelligent robot with 3D navigation system for oral surgery (Patent Pending A2024 00581/30.09.2024, State Office for Inventions and Trademarks, Romania).

The patent resulted from research activities focused on robotic-assisted implant surgery and dynamic navigation systems.

Conclusions

The TEAM Project successfully generated high-quality scientific outputs and ensured their dissemination through publications, conference presentations, workshops, mobility activities, and innovation actions. These activities strengthened the scientific visibility of the project and contributed to the development of national and international research collaborations in digital dentistry and artificial intelligence.