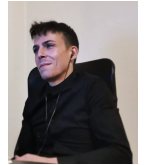


CURRICULUM VITAE

Birth date: March 6, 1992
 Email: filippo.masi@sydney.edu.au
 Website: filippo-masi.github.io
 Profiles: [Scholar](#) - [OrcidID](#) - [Scopus](#) - [RG](#)



1 EMPLOYMENT

01/12/2022 – present **Postdoctoral researcher** under [ARC Discovery Project – Grant agreement ID DP220101164](#), School of Civil Engineering, The University of Sydney, Australia.
 01/01/2021 – 30/06/2023 **Contractual teacher**, École Centrale de Nantes, France.
 01/01/2021 – 30/11/2022 **Postdoctoral researcher** under [ERC-StG CoQuake – Grant agreement ID 757848](#), GeM (UMR 6183), École Centrale de Nantes, France.
 02/11/2020 – 31/12/2020 **Research Engineer**, École Centrale de Nantes (Centrale Innovation), France.
 18/09/2017 – 31/10/2020 **Engineer – CIFRE**, Ingérop Conseil et Ingénierie, Rueil-Malmaison, France.

2 ACADEMIC DEGREES

10/2017 – 12/2020 **PhD**, Mechanics – École Centrale de Nantes (École des Ponts ParisTech, University of Versailles and St-Quentin, and Ingérop), Nantes, France.
 Supervisors: I Stefanou, P Vannucci.
 01/2016 – 07/2017 **Master**, Mechanical Engineering, University of Florence, Italy (solemn commendation).
 Supervisors: P M Mariano, B Facchini.
 10/2013 – 12/2015 **Bachelor**, Mechanical Engineering, University of Florence, Italy.
 Supervisor: P M Mariano.

3 HONOURS AND AWARDS

2022 [Early Career Researcher Award by EUROMECH \(European Mechanics Society\)](#) on the occasion of the 18th European Mechanics of Materials Conference, Oxford, UK.
 2021 [Award for the best PhD thesis](#) bringing technological and conceptual breakthroughs in the industry by Centrale Innovation (Écoles Centrales Group).
 2021 [Award](#) for the best PhD by the Computational Structural Mechanics Association (CSMA).

4 SCIENTIFIC PRODUCTION

Author of **12 articles** in major multi-disciplinary scientific journals and leading peer-reviewed international journals, **two chapters**, **25 communications/posters** in international and national conferences, and **nine invited seminars/workshop**. All contributions, except for [F4], are freely available via open-science platforms (HAL and arXiv). The access to [F4] is restricted as classified “*confidentiel défense*.”

4.1 Refereed journal articles

- [1] **F Masi** and I Einav. “Neural integration for constitutive equations using small data”. In: *Comput Methods Appl Mech Eng* 420 (2024), p. 116698. DOI: [10.1016/j.cma.2023.116698](https://doi.org/10.1016/j.cma.2023.116698).
- [2] **F Masi** and I Stefanou. “[Evolution TANN and the identification of internal variables and evolution equations in solid mechanics](#)”. In: *J Mech Phys Solids* 174 (2023). DOI: [10.1016/j.jmps.2023.105245](https://doi.org/10.1016/j.jmps.2023.105245).
- [3] **F Masi** and I Stefanou. “[Multiscale modeling of inelastic materials with Thermodynamics-based Artificial Neural Networks \(TANN\)](#)”. In: *Comput Methods Appl Mech Eng* 398 (2022), p. 115190. DOI: [10.1016/j.cma.2022.115190](https://doi.org/10.1016/j.cma.2022.115190).
- [4] **F Masi**, I Stefanou, P Vannucci, and V Maffi-Berthier. “[Thermodynamics-based Artificial Neural Networks for constitutive modeling](#)”. In: *J Mech Phys Solids* 147 (2021), p. 104277. DOI: [10.1016/j.jmps.2020.104277](https://doi.org/10.1016/j.jmps.2020.104277).
- [5] **F Masi**, I Stefanou, and V Maffi-Berthier. “[Scaling laws for rigid-body response of masonry structures under blast loads](#)”. In: *J Eng Mech (featured in the Editor’s Choice section)* 147.10 (2021), p. 04021078. DOI: [10.1061/\(ASCE\)EM.1943-7889.0001986](https://doi.org/10.1061/(ASCE)EM.1943-7889.0001986).
- [6] **F Masi**, I Stefanou, P Vannucci, and V Maffi-Berthier. “[Resistance of museum artefacts against blast loading](#)”. In: *J Cul Her* 44 (2020), pp. 163–173. DOI: [10.1016/j.culher.2020.01.015](https://doi.org/10.1016/j.culher.2020.01.015).
- [7] **F Masi**, I Stefanou, V Maffi-Berthier, and P Vannucci. “[A Discrete Element Method based-approach for arched masonry structures under blast loads](#)”. In: *Eng Struct* 216 (2020), p. 110721. DOI: [10.1016/j.engstruct.2020.110721](https://doi.org/10.1016/j.engstruct.2020.110721).

- [8] **F Masi**, I Stefanou, P Vannucci, and V Maffi-Berthier. “[Rocking response of inverted pendulum structures under blast loading](#)”. In: *Int J Mech Sci* 157-158 (2019), pp. 833–848. DOI: [10.1016/j.ijmecsci.2019.05.024](#).
- [9] P Vannucci, **F Masi**, and I Stefanou. “[A nonlinear approach to the wind strength of Gothic Cathedrals: The case of Notre Dame of Paris](#)”. In: *Eng Struct* 183 (2019), pp. 860–873. ISSN: 0141-0296. DOI: [10.1016/j.engstruct.2019.01.030](#).
- [10] **F Masi**, PM Mariano, and P Vannucci. “[Blast actions in aircrafts: An integrated methodology for designing protection devices](#)”. In: *Eng Struct* 175 (2018), pp. 895–911. DOI: [10.1016/j.engstruct.2018.08.082](#).
- [11] **F Masi**, I Stefanou, and P Vannucci. “[A study on the effects of an explosion in the Pantheon of Rome](#)”. In: *Eng Struct* 164 (2018), pp. 259–273. DOI: [10.1016/j.engstruct.2018.02.082](#).
- [12] **F Masi**, I Stefanou, and P Vannucci. “[On the origin of the cracks in the dome of the Pantheon in Rome](#)”. In: *Eng Fail Anal* 92 (2018), pp. 587–596. DOI: [10.1016/j.engfailanal.2018.06.013](#).

4.2 Book chapters

- [A1] **F Masi**. “Introduction to regression methods (in press – [postprint](#))”. In: *Machine Learning in Geomechanics, vol. I*. Ed. by I Stefanou and F Darve. Wiley, ISTE, 2024.
- [A2] **F Masi** and I Stefanou. “Physics-informed and thermodynamics-based artificial neural networks for constitutive modeling (in press – [postprint](#))”. In: *Machine Learning in Geomechanics, vol. II*. Ed. by I Stefanou and F Darve. Wiley, ISTE, 2024.

4.3 Reviewed international conferences

- [B1] A Morsel, **F Masi**, et al. “Reduced-scale testing of masonry structures to explosions”. In: *9th International Conference on Structural Engineering and Concrete Technology: ICSECT 2024, London, United Kingdom, April 14 – 16 (Accepted – [in press](#))*. 2024.
- [B2] **F Masi**, I Stefanou, et al. “[Material modeling via thermodynamics-based artificial neural networks](#)”. In: *Geometric Structures of Statistical Physics, Information Geometry, and Learning*. Ed. by F Barbaresco and F Nielsen. Les Houches, France: Springer International Publishing, 2021, pp. 308–329. DOI: [10.1007/978-3-030-77957-3_16](#).
- [B3] **F Masi**, I Stefanou, et al. “Response of monumental buildings to internal explosions”. In: *7th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*. Ed. by M Papadrakakis and M Fraiadaakis. Crete, Greece (short version of [11]), 2019. DOI: [10.7712/120119.6958.19630](#).
- [B4] **F Masi**, I Stefanou, et al. “Rocking response and overturning of museum artefacts due to blast loading ([invited keynote](#))”. In: *7th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*. Ed. by M Papadrakakis and M Fraiadaakis. Crete, Greece (application of the theory developed in [8]), 2019. DOI: [10.7712/120119.7119.19577](#).

4.4 Other international publications

- [C1] A Morsel, **F Masi**, et al. “Reduced-scale testing of masonry structures to explosions ([poster](#))”. In: *34th Workshop ALERT Geomaterials*. Aussois, France, 2023.
- [C2] A Morsel, **F Masi**, et al. “Design of reduced-scale experiments of masonry structures subjected to blast loads ([poster](#))”. In: *33rd Workshop ALERT Geomaterials*. Aussois, France, 2022.
- [C3] **F Masi** and I Stefanou. “Thermodynamics-based Neural Networks: a general framework for modeling microstructured materials displaying path-dependency ([poster](#))”. In: *32nd Workshop ALERT Geomaterials*. Aussois, France (dissemination of [3]), 2021.
- [C4] F Rabie, **F Masi**, et al. “Thermodynamics-based Artificial Neural Networks for Nonlinear Seismic Analysis of High-rise Buildings ([poster](#))”. In: *32nd Workshop ALERT Geomaterials*. Aussois, France, 2021.
- [C5] **F Masi**, I Stefanou, et al. “A Discrete Element Method approach for the preservation of the architectural heritage against explosions”. In: *12th HSTAM International Congress on Mechanics*. Thessaloniki, Greece, 2019.
- [C6] **F Masi**, I Stefanou, et al. “Michelangelo’s David or Aphrodite of Milos: Who is More Resistant to Blast Loads?” In: *12th HSTAM International Congress on Mechanics*. Thessaloniki, Greece (preliminary, short version of [6]), 2019.

4.5 Reviewed national conferences

- [D1] **F Masi** and I Stefanou. “Réseaux de neurones artificiels basés sur la thermodynamique (TANN) pour la mécanique computationnelle et la modélisation multi-échelle”. In: *25^e Congrès Français de Mécanique*. Nantes, France (short version of [3] submitted as application to AFM’s Paul Germain Prize), 2022.

- [D2] **F Masi**, I Stefanou, et al. “Reduced-scaled experiments of masonry structures under blast loads”. In: *25^e Congrès Français de Mécanique*. Nantes, France (dissemination of [5]), 2022.
- [D3] G Piuonno, **F Masi**, et al. “Multi-scale modelling of natural composites via Thermodynamics-based Artificial Neural Networks”. In: *25^e Congrès Français de Mécanique*. Nantes, France, 2022.

4.6 Conference communications

- [E1] **F Masi**. “Unraveling the behavior of masonry structures under explosions and data-driven approaches for computational mechanics (**invited speaker**)”. In: *15th colloque national en calcul des structures*. Giens, France, 2022.
- [E2] **F Masi** and I Stefanou. “Data- and thermodynamics-driven discovery of state variables and evolution equations”. In: *41st International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering*. Paris, France, 2022.
- [E3] **F Masi** and I Stefanou. “Multiscale modeling of inelastic microstructured materials with TANN”. In: *18th European Mechanics of Materials Conference*. Oxford, UK, 2022.
- [E4] **F Masi** and I Stefanou. “Understanding the behavior of masonry structures subjected to blast loads”. In: *2nd International Conference on Nonlinear Solid Mechanics*. Alghero, Italy, 2022.
- [E5] **F Masi**. “Mechanics and Deep Learning for protecting cultural heritage against explosions (**invited speaker**)”. In: *6th ECCOMAS Young Investigators Conference*. Valencia, Spain, 2021.
- [E6] **F Masi** and I Stefanou. “Thermodynamics-based Artificial Neural Networks (TANN) and constitutive modeling”. In: *Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering & Technology*. San Diego, CA, USA, 2021.
- [E7] **F Masi** and I Stefanou. “Thermodynamics-based Artificial Neural Networks for the constitutive modeling of inelastic materials”. In: *14th World Congress on Computational Mechanics*. Paris, France, 2021.
- [E8] **F Masi**, I Stefanou, P Vannucci, and V Maffi-Berthier. “Micro-modelling of masonry structures under blast loads via a Discrete Element Method approach”. In: *14th World Congress on Computational Mechanics*. Paris, France, 2021.
- [E9] **F Masi**, I Stefanou, P Vannucci, and V Maffi-Berthier. “Masonry vaults under explosive loads”. In: *7th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*. Crete, Greece, 2019.
- [E10] **F Masi**, I Stefanou, P Vannucci, and V Maffi-Berthier. “Étude de la réponse structurale de structures à géométrie complexe aux explosions: le cas du Panthéon de Rome”. In: *2^e Édition des Journées Nationales Maçonnerie*. Marne-la-Vallée, France, 2018.
- [E11] **F Masi**, I Stefanou, P Vannucci, and V Maffi-Berthier. “Simulations of blast effects in monumental structures”. In: *13th World Congress on Computational Mechanics*. New York, NY, USA, 2018.
- [E12] **F Masi**, I Stefanou, P Vannucci, and V Maffi-Berthier. “Une approche non-linéaire pour l’étude de la résistance au vent d’une cathédrale gothique: Notre Dame de Paris”. In: *2^e Édition des Journées Nationales Maçonnerie*. Marne-la-Vallée, France, 2018.

4.7 Research reports

- [F1] **F Masi**. “Fast-dynamic response and failure of masonry structures of non-standard geometry subjected to blast loads”. PhD thesis. École centrale de Nantes, 2020.
- [F2] P Vannucci, I Stefanou, et al. *Structural integrity of Notre Dame Cathedral after the fire of April 15th, 2019*. Tech. rep. Paris: UVSQ-ENPC, 2019.
- [F3] P Vannucci, **F Masi**, et al. *A comparative study on the effects of blast actions on a monumental structure*. Tech. rep. Paris: UVSQ-ENPC, 2017.
- [F4] P Vannucci, I Stefanou, et al. *Cathédrales Durables (classified: Confidentiel Défense)*. Tech. rep. Paris: CNRS, 2017.

4.8 Articles under preparation

- [G1] **F Masi** and I Einav. “Neural constitutive equations meet hydrodynamics”. In: *In preparation for submission at the special issue “Machine Learning in Geomechanics” (under invitation), Int J Numer Anal Methods Geomech* (2024).
- [G2] A Morsel, **F Masi**, et al. “A new setup for blast testing of structures in reduced-scale”. In: *In preparation for submission at Int J Mech Sci* (2024).

4.9 Invitations to workshop and seminars

- Invited lecture, [3SR Laboratory](#), UGA, Grenoble, France, 5 October 2023.
- Invited lecture, “Physics-based neural constitutive equations,” Hybrid Computational Methods in Geotechnics, The University of Melbourne, Australia, 27 April 2023.

- Invited lecture, “A la (re-)découverte des lois de comportement par la Thermodynamique et l’Intelligence Artificielle,” *IA: Approches et intérêt pour l’étude des CMC – Atelier*, Groupement de Recherche (CMC)², ENS Paris-Saclay, 17 March 2023.
- Invited lecture, “Thermodynamics-based Artificial Neural Networks,” *Inria TAU* team, Paris-Saclay, France, 28 February 2023.
- Invited lecture, “Data- and thermodynamics-driven discovery of constitutive equations,” *ISSMGE TC309 Technical Forum of Young Scholars on Data-driven Modelling of Soil Behaviours with Geotechnical Applications*, Hong Kong Polytechnic University, 25 November 2022.
- Invited lecture, “Machine learning meets thermodynamics,” Navier Laboratory, École des Ponts ParisTech, Marne-la-Vallée, France, 14 October 2022.
- Invitation to workshop, “Deep learning, simulation temps réel et réduction de modèles,” *5^e Workshop Computational Structural Mechanics Association (CSMA) Junior*. Giens, France, 14-16 May 2022.
- Invited lecture, “How Machine Learning can help in earthquake control and fault mechanics?,” *Crunch Machine Learning + X Seminars*, Brown University, Division of Applied Mathematics, 12 November 2021.
- Invited lecture, “Can we tame earthquakes?,” *Data-centric engineering*, The University of Sydney, 27 October 2021.

4.10 Software development and other realisations

Software developed along my research activities and self-evaluated according to [Inria guidelines](#).

- **TANN**: “Thermodynamics-based Artificial Neural Networks”
 Family=research, Audience=community, Evolution=lts, Duration=3 (years), Contribution=leader
 url=github.com/filippo-masi/Thermodynamics-Neural-Networks
 A compilation of Python scripts that I coded in implementing Thermodynamics-based Artificial Neural Networks (TANN) for the identification of behaviour equations. The repository collects data sets, pre-processing, and learning algorithms utilising Tensorflow and PyTorch libraries and it is mainly devoted to the validation of the results presented in [4].
- **DLworkshop**: “Workshop on Deep Learning and constitutive modelling”
 Family=vehicle, Audience=community, Evolution=basic, Duration=2 (years), Contribution=leader
 url=github.com/filippo-masi/CSMA-Workshop-in-Deep-Learning
 A comprehensive repository containing all relevant materials, codes, and presentation from the 5th workshop of CSMA Junior association held in Porquerolles Island, France, on 14-15 May 2022. Targeted at young scholars, it provides Python scripts and Jupyter notebooks for differentiating between black-box and physics-based approaches for material modelling and explains the bases to build artificial neural networks for constitutive modelling via tutorials and benchmarks of increasing difficulty.
- **TANN-multiscale**: “Multiscale modeling of inelastic materials with TANN”
 Family=research, Audience=team, Evolution=lts, Duration=1 (year), Contribution=leader
 url=github.com/filippo-masi/TANN-multiscale
 The repository collects Python scripts necessary for the validation of the benchmarks presented in [3] and is composed of two parts. The former is the implementation of a Finite Element code for simulating the response of lattice materials and structures, under several type of prescribed boundary conditions (periodic, Neumann, Dirichlet). The latter is a hands-on for performing Finite Element analyses using TANN as a user-material, relying on the open-source platform FEniCS.
- **Hands-on-ALERT**: “Hands-on regression methods and physics-informed machine learning”
 Family=vehicle, Audience=community, Evolution=basic, Duration<=1, Contribution=leader
 url=github.com/alert-geomaterials/2023-doctoral-school/main/chapters/hands-on/C02; [/C09](#)
 Hands-on examples and exercises from ALERT Geomaterials Doctoral School on “Machine Learning in Geomechanics” (2023), and in particular the two courses I gave on regression methods (linear and nonlinear regression, regularisation techniques and their applications in finding parsimonious governing equations) and physics-informed neural networks [A2, A1].
- **NICE**: “Neural Integration for Constitutive Equations”
 Family=research, Audience=community, Evolution=lts, Duration<=1, Contribution=leader
 url=github.com/filippo-masi/NICE
 This library provides the implementation in PyTorch of the Neural Integration for Constitutive Equations (NICE) approach and the benchmarks necessary for the validation of the corresponding research output

[1]. The algorithms are implemented using PyTorch and torchdiffeq libraries.

5 SUPERVISION AND TEACHING

5.1 Supervision

– PhD students

AHMAD MORSEL (01/2021 – present) – PhD candidate (expected oral examination: 4 April, 2024) at École Centrale de Nantes. PhD in the frame of BLAST ([Blast LoAds on SStructures](#)) – Connect Talent project, funded by Pays de la Loire and Nantes Metropole. Subject: Experimental testing of masonry structures subjected to extreme loads. Amount of supervision: 30% (in collaboration with Ioannis Stefanou and Panagiotis Kotronis). Significance of the work: Through this research, a unique platform for performing reduced-scale experiments of structures under blast loads is being designed. The experiments extend the current state-of-the-art knowledge in the fast-dynamic response of blocky and masonry structures.

– Master students

ENZO LOUWARD (02/2024 – present) – Master intership at The University of Sydney, in collaboration with ENS Paris-Saclay. Subject: Neural constitutive equations for material model discovery from small data. Amount of supervision: 100%. Expected oral examination: June, 2024.

FARAH RABIE (02/2021 – 08/2021) – Master internship at École Centrale de Nantes, in the frame of CoQuake ([Controlling earthQuakes](#)) – European Research Center (ERC) Starting Grant. Subject: Thermodynamics-based Artificial Neural Networks for nonlinear seismic analysis of high-rise buildings. Amount of supervision: 60% (in collaboration with Ioannis Stefanou). Significance of the work: This work concerns the application of Thermodynamics-based Neural Networks to high-rise buildings, with a in-depth study of machine learning models (in particular deep Learning and model order reduction methods). The study proposed an alternative way to otherwise computationally expensive seismic analyses of civil infrastructures.

BARBARA ABOUGAYE (02/2020 – 08/2020). Master internship at École Centrale de Nantes. Subject: Scaling laws for the material response under impact loading. Amount of supervision: 60% (in collaboration with Ioannis Stefanou). Significance of the work: During this internship, literature review and preliminary studies were carried on the derivation of scaling laws for the material behaviour under impact loading.

5.2 Teaching experience

Amount: 181 hours (TD equivalent)

- ALERT GEOMATERIALS DOCTORAL SCHOOL, 2023. Courses: “Introduction to Regression Methods” and “Physics-Informed and Thermodynamics-Based Neural Networks”. Theory lectures coupled with hands-on examples and exercises: [github](#) and [alertgeomaterials.eu](#).
- ÉCOLE CENTRALE DE NANTES, 2020-2023. Courses: Undergraduate “Continuum Mechanics” (problem solutions assistance) and Master’s “Experimental Imaging Analysis for Engineers” (full responsibility, 2020 to 2022). Responsibilities: Preparing and delivering lectures and problem solutions, creating and grading exams.
- ÉCOLE DES PONTS, 2018-2020. Courses: Undergraduate “Computational Mechanics” and “Advanced Computational Mechanics”. Responsibilities: Conducting problem classes, grading midterm exams, and designing team projects for groups of four students.

6 SERVICE

6.1 Responsibilities

- Invited reviewer for: [Comput Mech](#) – [Comput Methods Appl Mech Eng](#) – [Comput Geotech](#) – [Def Technol](#) – [Exp Mech](#) – [Eur J Mech A Solids](#) – [Géotechnique](#) – [Int J Mech Sci](#) – [Int J Numer Anal Methods Geomech](#) – [Int J Numer Methods Eng](#) – [J Mech Phys Solids](#) – [Strain](#).
- Co-organizer of the Minisymposium entitled [Scientific Machine Learning techniques for complex engineering systems](#) on the occasion of the 2023 ECCOMAS Young Investigators Conference (YIC2023), held in Porto, Portugal (19-21 June, 2023).
- Member of the [Direction Board of GeM laboratory](#), École Centrale de Nantes (2022).
- Committee member of [AustraliaN Association for GRANular Media \(ANAGRAM\)](#) (11/2023 – present)

6.2 Dissemination of scientific knowledge

- Coordinator of the “*Explosions, vibrations et patrimoine*” workshop (with Ahmad Morsel, Ioannis Stefanou, Panagiotis Kotronis, Guillaume Racineux, Emmanuel Marché), on the occasion of the 2023 edition of the *Nuit Blanche des Chercheur.es* event hosted by Nantes Université ([short video](#)).
- [Blog on my PhD experience](#) under the form of an interview to outreach young generations about academia, industry, and international exchanges, published by *Docteurs Sciences pour l’Ingénieur*, in July 2022.
- Ambassador of DECLICS Association: *Dialogues Entre Chercheurs et Lycéens pour les Intéresser à la Construction des Savoirs*, 2020-2022.
- Webinar for a wide professional (civil engineering) public: “*Comportement des structures maçonnées à l’explosion*,” Ingérop, 29 October, 2020.

6.3 Transfer of knowledge

- BENEFICIARY: INGÉROP, “STRUCTURES ET CALCULS SCIENTIFIQUES” SERVICE

During my CIFRE PhD thesis, I engaged in knowledge and skills transfer, focusing on blast loading, structural modelling, and simulation, to the team of “Structures et calculs scientifiques” at Ingérop.¹ This transfer was a gradual process over my three-year PhD (2017-2020). I provided consistent updates on my research and its advancements. Additionally, I supported ongoing industrial projects that benefited from my developing expertise. I significantly contributed to advancing knowledge and skills in blast loading modelling, simulation, and data-driven material modelling. I developed codes, validated them through benchmarks, and wrote internal reports to update the team on my research progress. The beneficiary was able to apply this advanced knowledge in various industrial projects, leading to an increase in project involvement over the three-year period. Moreover, the beneficiary leveraged these results to establish new industrial collaborations, participate in new projects, engage with additional academic partners (including an [internship](#)), and disseminate achievements through a published [report](#) and a [webinar](#).

¹Ingérop, 18 Rue des 2 Gares, 92500 Rueil-Malmaison, France – responsible: [François Lacroix](#) (Ingérop’s scientific and technical director), [Victor Maffi-Berthier](#) (previously service’s head), [Mahsa Mozayan Kharazi](#) (current service’s head).