PROJECT ACRONYM AND TITLE: EffectFact – Effective Factorisation techniques for matrix-functions: Developing theory, numerical methods and impactful applications

FUNDING PROGRAMME: HORIZON 2020

CALL: H2020-MSCA-RISE-2020 - Marie Skłodowska-Curie Research and Innovation Staff Exchange

HOST DEPARTMENT: Department of Molecular Sciences and Nanosystems

SCIENTIFIC RESPONSIBLE: Musolino Paolo

FINANCIAL DATA:

<table>
<thead>
<tr>
<th>Project total costs</th>
<th>Overall funding assigned to UNIVE</th>
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<tbody>
<tr>
<td>€ 3,781,200</td>
<td>€ 101,200</td>
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ABSTRACT:
The main goals of the EffectFact proposal are a) to advance pure and applied mathematics in the area of factorisation techniques, Wiener-Hopf and Riemann-Hilbert problems and related numerical techniques to solve time dependent boundary value problems in complex discrete and continuous domains; b) to utilize the developed techniques to solve challenging problems from: i) biomechanics (DNA replication), ii) medicine (surgical resection and dentistry), iii) metamaterials (acoustic and gyro-elastic), iv) AI (machine learning), v) environmental and civil engineering (with a focus on earthquake and coastal defences) and, in doing so, c) to establish a new, sustainable, EU-centred network of researchers from different sectors and disciplines, united by their dedication to furthering the projects techniques and results, while transferring this knowledge, best practice and creating new training opportunities for EU researchers. The EffectFact Consortium consists of 16 Partners: 7 Universities from the EU (UK, France, Germany, Italy), 1 University from the AC (Georgia); 2 highly innovative software developing SMEs adopting completely different R&D strategies (UK, Switzerland); 4 Academic Partners from the Third Countries (Belarus, China, Russia) and 1 research medical center from outside the EU (Belarus). All EffectFact goals align with the RISE Objectives, establishing a unique consortium to fill gaps in several scientific disciplines, impacting H2020 priorities and Horizon Europe missions. These problems could not be solved independently, requiring continuous feedback from analytic, applied and computational researchers from numerous disciplines. This diverse collaborative Network will forge interdisciplinary links within the EU, strengthen the access of EU academics and SME’s to international research, lead to tangible and impactful results, while building a strong base of robust, independent researchers capable of furthering the aims of EffectFact long into the future.

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<tr>
<th>Planned Start date</th>
<th>Planned End date</th>
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<tr>
<td>1st September 2021</td>
<td>31st August 2025</td>
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PARTNERSHIP:

1. Aberystwyth University - United Kingdom - Coordinator
2. Università Ca' Foscari Venezia - Italy - Partner
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<th></th>
<th>University Name</th>
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<td>University Of Keele</td>
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<td>8</td>
<td>Ivane Javakhishvili Tbilisi State University</td>
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<td>9</td>
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<td>16</td>
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