



Università  
Ca'Foscari  
Venezia

**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:**

Project total costs	Overall funding assigned to UNIVE
€ 3.781.200	€ 101.200

**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.

Planned Start date	Planned End date
1 <sup>st</sup> September 2021	31 <sup>th</sup> August 2025

**PARTNERSHIP:**

1 Aberystwyth University	United Kingdom	Coordinator
2 Università Ca' Foscari Venezia	Italy	Partner

<b>3</b>	<b>University Of Keele</b>	<b>United Kingdom</b>	<b>Partner</b>
<b>4</b>	<b>The University Of Manchester</b>	<b>United Kingdom</b>	<b>Partner</b>
<b>5</b>	<b>Ecole Superieure De Physique Et Dechimie Industrielles De La Ville Deparis</b>	<b>France</b>	<b>Partner</b>
<b>6</b>	<b>Università Degli Studi Di Modena E Reggio Emilia</b>	<b>Italy</b>	<b>Partner</b>
<b>7</b>	<b>Universitaet Augsburg</b>	<b>Germany</b>	<b>Partner</b>
<b>8</b>	<b>Ivane Javakhishvili Tbilisi State University</b>	<b>Georgia</b>	<b>Partner</b>
<b>9</b>	<b>Rockfield Software Limited</b>	<b>United Kingdom</b>	<b>Partner</b>
<b>10</b>	<b>Multiwave Technologies Ag</b>	<b>Switzerland</b>	<b>Partner</b>
<b>11</b>	<b>Belarusian State University</b>	<b>Belarus</b>	<b>Partner</b>
<b>12</b>	<b>Peking University</b>	<b>China</b>	<b>Partner</b>
<b>13</b>	<b>South Ural State University National Research University</b>	<b>Russia</b>	<b>Partner</b>
<b>14</b>	<b>Republican Scientific And Practical Center Of Traumatology And Orthopedics</b>	<b>Belarus</b>	<b>Partner</b>
<b>15</b>	<b>Yanka Kupala State University Of Grodno</b>	<b>Belarus</b>	<b>Partner</b>
<b>16</b>	<b>Belarusian Medical Academy Of Postgraduate Education</b>	<b>Belarus</b>	<b>Partner</b>

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