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Measurement system of the new Eötvös experiment

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In 2017 a small group of researchers from Wigner Research Centre for Physics of the Hungarian Academy of Sciences, Department of Geodesy and Surveying of Budapest University of Technology and Economics (BME), Society for the Unity of Science and Technology (SUST), involving the Department of Control Engineering and Information Technology of BME and other organizations, departments and experts decided to repeat the famous Eötvös-Pekár-Fekete (EPF) experiment with the original method of Eötvös, but using up-to-date instrumentation and data acquisitions techniques. The task to automate and enhance a measurement with an almost 90 years old, original Eötvös-Pekár torsion balance is really challenging. It includes not only the automatic change of orientation of the balance and automatically evaluating the human-readable scale to be able to execute long, automatic measurement programs, but precise manufacturing and measuring impactors of different materials, as well as several other measurements of the environment, like temperature, local and environment seismic noise, gravity gradient, and tilt changes due to tidal forces and rainfall, etc. All these information is to be collected, processed, correlated and evaluated in a common IT solution. Our poster outlines the task and the challenges.

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