

## **Category: International scientific projects**

**Title:** (PROviding Computing solutions for ExaScale challengeS (PROCESS))

**Title (SK):** Poskytovanie výpočtových riešení pre výzvy v oblasti ExaScale

**Researchers from II SAS:** Viet Tran, Ján Astaloš, Miroslav Dobrucký, Martin Bobák, L. Hluchý.

**Project type and number:** Horizon 2020 – 777533

**Funding:** 85 040 EUR

**Project coordinator:** LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN

**Local coordinator:** Ladislav Hluchý

**Duration:** 1.11.2017 – 30.10.2020

**Partners:** total 6 - Germany: 1, Spain: 1, Switzerland: 1, Netherlands: 2, Poland: 1

### **Annotation:**

The PROCESS project finished on October 30, 2020. II SAS coordinated a work package focused on architecture design for scalable computing (WP4). The institute coordinated deliverable D4.5 [5]. The development of a module for orchestrating of cloud services based on Cloudify, and a module for access to the GPUs in the cloud was finalized [4]. A reference architecture for scalable applications in cloud and HPC systems has been evaluated and finalized [1, 2, 3]. The final review with three foreign experts selected by the European Commission took place on 3rd December 2020. The project review was successful. All technical reports in which II SAS participated were accepted by the EC.

### The main scientific outputs:

[1] Martin Bobák, Ladislav Hluchý, Ondrej Habala, Viet Tran, Reginald Cushing, Onno Valkering, Adam Belloum, Mara Graziani, Henning Müller, Souley Madougou, Jason Maassen. Reference Exascale Architecture (Extended Version). In *Computing and Informatics*, 2020, vol. 39, no 4, p. 644-677

[2] Reginald Cushing, Onno Valkering, Adam Belloum, Souley Madougou, Jason Maassen, Martin Bobák, Ondrej Habala, Viet Tran, Jan Meizner, Piotr Nowakowski, Mara Graziani, Henning Müller. PROCESS Data Infrastructure and Data Services. In *Computing and Informatics*, 2020, vol. 39, no 4, p. 724-756

[3] Mara Graziani, Ivan Eggel, François Deligand, Martin Bobák, Vincent Andrearczyk, Henning Müller. Breast Histopathology with High-Performance Computing and Deep Learning. In *Computing and Informatics*, 2020, vol. 39, no 4, p. 780-807

[4] Jan Meizner, Piotr Nowakowski, Jan Kapala, Patryk Wojtowicz, Marian Bubak, Viet Tran, Martin Bobák, Maximilian Hüb. Towards Exascale Computing Architecture and Its Prototype: Services and Infrastructure. In *Computing and Informatics*, 2020, vol. 39, no 4, p. 860-880

### Deliverables coordinated by II SAS:

[5] Hluchý, L., Bobák, M., Tran, V., Madougou, S., Maassen, J., Graziani, M., Müller, H., Somoskői, B. Schmidt, J., Cushing, R., Meizner, J., Nowakowski, P. D4.5: Validation of the second prototype and final PROCESS