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To:  
STW

Netherlands Organisation for Scientific Research  
(NWO) Innovational Research Incentives Scheme  
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CC:  
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Würzburg, 21.9.2015

To whom it may concern,

I would like to share through this letter my strong support for Dr. Alexandru Iosup's project proposal MagnaData for the VIDJ grants of the Dutch research organization STW. My support is based on personal experience working with him, on his quality as a researcher, and by the quality of the proposal itself. I am interested to take part in the project's User Advisory Board and strengthen my collaboration with Dr. Iosup.

I am currently Professor at the University of Würzburg (Germany), where I hold the Chair of Software Engineering in the Department of Computer Science. In addition to classical topics in software engineering, such as design, modeling and architecture-based analysis of software systems, our research covers areas such as performance engineering, data center virtualization and cloud-based services, systems benchmarking, and autonomic and self-aware computing. My research group has a strong experimental research focus, and has released software tools, such as Limbo and Bungee, that are used in industry and academia. My work and my group's work have received numerous awards, which include the personal grant Emmy Noether Career Award from the German Research Foundation (DFG). I am writing this recommendation also as the Chair of the Research Group of the Standard Performance Evaluation Corporation (SPEC, [www.spec.org](http://www.spec.org)). SPEC is an organization with high international visibility, which connects industry and academia through

high-impact benchmarking tools and its flagship scientific conference, the International Conference on Performance Engineering (ICPE), which the Research Group co-organizes with ACM.

I first met Alexandru in the context of SPEC in 2011. I had been impressed by his research on performance evaluation of distributed systems, in particular of clouds, which has also introduced me to the work of the PDS group of TUD. With the support of other members of the SPEC Research Group, I have asked him to join the emerging SPEC Cloud Working Group (WG). In his position first as WG Vice Chair and later as Chair, Alexandru has shown outstanding leadership and managerial skills, and tremendous diligence and commitment in establishing the processes and coordinating the activities of the WG.

Dr. Iosup's research in the field of distributed computing systems is excellent in both quality and quantity. The numerous awards, the SIGMETRICS publication he has co-authored, and the IEEE TCSC Scale Challenge award he and his team obtained in 2014 are proof he is already at the top of his field. He has reached consistently the top conferences in the field, including HPDC (20% acceptance ratio), SC (20%), IPDPS (20%), CCGRID (25%), and ICPE (25%), and the top journals and magazines, including IEEE TPDS and Internet Computing. His numerous publications attract an impressive number of citations. He has already achieved an h-index of 27 and has 11 articles with at least 100 citations each, which is outstanding for the field. He is definitely one of the top researchers in the world, in his age group (up to 6 years of research after his doctoral graduation.)

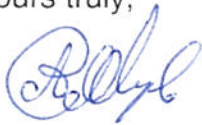
His research in distributed systems includes a combination of fundamental problems (scalability studies, models of workloads, classes of scheduling problems, classes of scheduling approaches) and applied science (in clouds, in data centers, in peer-to-peer systems). His work in cloud computing and big data is well established and promising for the future. For his body of work, I have noticed a strong focus on modern performance analysis, evaluation, and benchmarking, and innovative and comprehensive approaches to resource management and scheduling. I have been impressed with his work on elasticity and on performance variability, which are vital for cloud computing and go beyond traditional performance metrics. In cloud computing and data centers, his work includes the highly cited "Performance analysis of cloud computing services for many-tasks scientific computing" (IEEE TPDS), and novel work in portfolio scheduling that he published in SC in 2013 and explained in a Dagstuhl Seminar on Model-driven Algorithms and Architectures for Self-Aware Computing Systems in January, 2015. At the intersection of cloud computing and big data, he has conducted the first comprehensive study of distributed graph-processing systems, beyond MapReduce. In peer-to-peer systems, his BTWorld study of the global BitTorrent network is the largest of its kind in the world, and an enabler of his systems work rewarded with the Scale Challenge award. I am also familiar with the trace archives he has published, among which the Failure Trace Archive is particularly useful for our work on robustness in the data center.

I find the MagnaData proposal to be of the highest quality. The problem of scheduling for data center operators and their large user groups poses significant scholarly challenges and has significant technological relevance. The proposed research is truly innovative in character, with groundbreaking lines of research such as portfolio scheduling for data services and socially aware scheduling for data center-based data services. The proposed research is also effective in addressing the problem, which means it has potential for excellent impact on the field.

I and my group are interested in the research and knowledge utilization of the MagnaData project. I will take part in MagnaData's User Advisory Board, which will allow me to take part in the transfer of knowledge via my network in Germany and through SPEC, to consult with Dr. Iosup about upcoming trends in software performance engineering, and to give guidance so that the open source software and methods of our Descartes research group are further used in practice in the MagnaData project. I commit my time to meet in the yearly User Advisory Board, and will make sure that at least one of the Ph.D. students working in the Descartes group will contribute in the bi-weekly meetings organized within the SPEC Cloud WG, for example to help Alexandru's team setup the BUNGEE performance benchmarking tool to evaluate scheduling in real-world environments the scheduling techniques developed in MagnaData.

In conclusion, I strongly support Dr. Alexandru Iosup and his MagnaData proposal. His research is well established and impactful, and MagnaData is well positioned to make strong societal and industry impact. I am sure that, would Alexandru make a similar proposal to our main research funding agency, he would get it right now.

Yours truly,



Prof. Dr.-Ing. Samuel Kounev

