Joint statement on *in silico* medicine research in Europe

The undersigned, in their capacity as representatives of the VPH Institute, and of the Discipulus, INBIOMEDvision, PHS Foresight, CaSyM, and Avicenna support actions funded by the European Commission in the domain of *in silico* medicine, as well as the IMI-eTRIKS Consortium agreed to release the following joint statement:

The use of information technology in healthcare is progressively expanding from its initial role of managing administrative information into that of support for the provision of care, whether related to prevention, diagnosis, prognosis, or treatment. The importance of *in silico* medicine technologies in delivering better quality, more patient-centric, and more cost-effective healthcare is growing exponentially; *in silico* medicine represents best chance to overcome the grand challenge that the provision of universal care to an ageing population is posing to the European Union. The concrete realisation of attractive innovations such as Systems Medicine or Personalised Medicine requires the development of *in silico* medicine technologies, while ensuring the necessary levels of protection and confidentiality for sensitive data, and taking systems approaches and knowledge management strategies into account. In parallel, cross-/multi-disciplinary training programs for the next generation of medical doctors and scientists need to be implemented.

We recommend the European Commission to ensure that the forthcoming Horizon 2020 framework program extensively supports integrative fundamental, technological, and translational research in this strategic area, a support that should be articulated around the following principles:

a) Integrative means across scales, across organ systems, and across disciplines

b) There is no preferential scale, preferential clinical target, preferential approach

c) H2020 should support *in silico* medicine research across the whole value chain and within the boundaries of privacy and personal data protection:
   i. Generation of information (sequencing, imaging, sensing, etc.)
   ii. Management of information (bioinformatics, health informatics, etc.)
   iii. Processing of information (turnaround time, data mining, image processing, etc.)
   iv. Explorative modelling (Bayesian modelling, machine learning, etc.)
   v. Mechanistic modelling (systems biology, VPH, physiological modelling)
   vi. Complete clinical systems (decision support systems, computer aided medicine)
   vii. Validation and assessment (pre-clinical and clinical)

d) H2020 should support *in silico* medicine at all maturity levels:
   i. Initial – Fundamental methodological research, visionary research
   ii. Repeatable – Pre-clinical exemplification and validation (*in vitro*, *in vivo*, *ex vivo*)
   iii. Defined – Pre-clinical and early clinical validation of complete pathways
   iv. Managed – Clinical accuracy, mono-centric efficacy studies
   v. Optimizing – Multi-centric efficacy studies, cost-benefit studies

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In faith,

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