

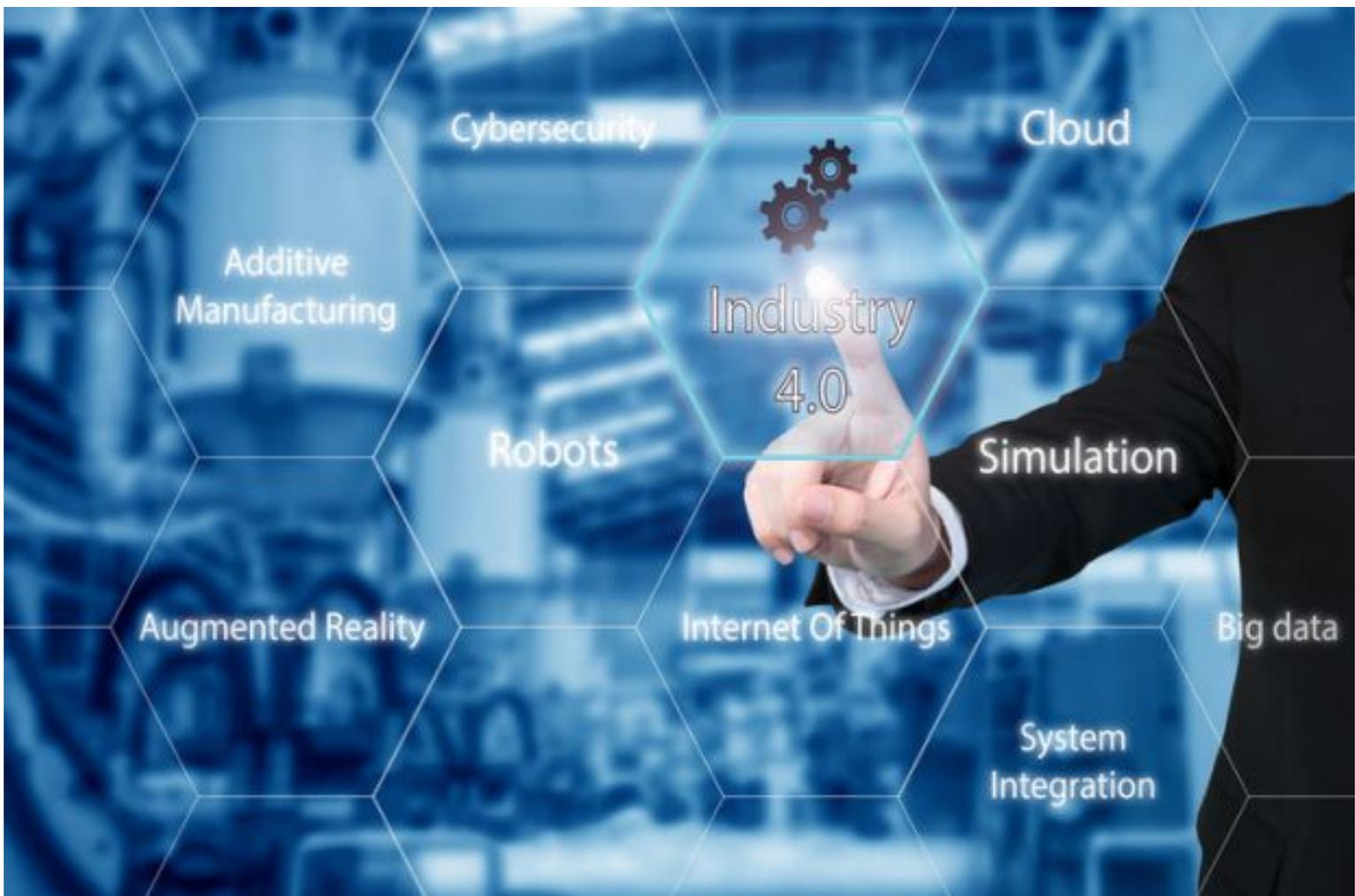
Jacques Biot: 'We must prepare our students for the fourth industrial revolution'

Ahead of the *THE* Innovation and Impact Summit, École Polytechnique president Jacques Biot urges universities to prepare for 'Industry 4.0'

May 27, 2017



By [Jacques Biot \(/author/jacques-biot\)](#)



Source: iStock

The *THE* Innovation and Impact Summit takes place in Hong Kong from 31 May 2017
(<http://www.theworldsummitseries.com/events/innovation-impact-summit-2017/event-summary-c7e1a3470135424e923467f3eee8cf7e.aspx>)

Never has mankind faced so many challenges. Challenges such as maintaining global economic growth at times of huge public and private debt; ensuring sustainable development at times of global warming; guaranteeing citizen safety against terrorists and rogue states; diagnosing and curing new infections and age-related disabilities and diseases.

Innovation, disruptive technologies and, more specifically, the industrial internet will be decisive weapons with which to face these challenges – but how should the world’s science and technology universities evolve to foster the emergence of this new era?



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The mission of universities today is to generate and disseminate cutting-edge knowledge for the benefit of students, of industry and of society. While fundamental research should still be carefully protected as the source of major human progress, we will more and more request that our scientists consider potential societal applications of their work.

Industry’s operations are profoundly transformed by technological opportunities, with change affecting all functions from product manufacturing and service delivery to the development and marketing of new products. Common enablers and drivers of change are the progress of data sciences, the miniaturisation of sensors, the generation of intelligent materials and the availability of communication infrastructures. The majority of these innovations borrow from several disciplinary fields and, quite often, they trigger societal resistance because of their impact on the organisation of communities.

In this setting, our research strategy today should evolve to enhance, more than ever, cross-disciplinary work. Mathematics and computer science tend to fertilise every other area, as research becomes increasingly complex, and involves more sophisticated equipment generating ever increasing data sets. No challenge faced by our civilisations in the fields of energy, environment, safety or health can be solved by a single technique.

Research in the humanities and the social sciences also becomes a priority as populations question the relevance of new technologies, which frequently raise ethical or societal issues, requiring delicately balanced regulations.

Hence, the organisation of research in our universities should provide opportunities to complement traditional department-based structures with multidisciplinary institutes focused on well-identified societal challenges. Corporations practicing “open innovation” should also be welcome on campuses in order to facilitate translational research and technology transfer.

As for the education of our students, we must recognise that the emergence of Generation Z brings to us different candidates. At the end of their learning process, industry will request from graduates that they be savvy at solving complex issues involving several sciences, and respectful of general interest. This involves from us a specific effort to develop new pedagogical tools and channels aimed at fostering multidisciplinary approaches.

Finally, while we prepare our students to serve “Industry 4.0”, or the fourth industrial revolution, we should also apply the same methods to our management, and plan for “University 4.0” – institutions where every student’s individuality shall be respected; where their wishes and performance shall be carefully monitored via digital means in order to adapt learning programmes to their needs; and where our faculty’s tasks shall be greatly facilitated and enriched by processes and technologies providing transparency, efficiency and satisfaction in education.

Jacques Biot is president of École Polytechnique (<https://www.timeshighereducation.com/world-university-rankings/ecole-polytechnique>). He will be speaking at the *THE* Innovation and Impact Summit (<http://www.theworldsummitseries.com/events/innovation-impact-summit-2017/event-summary-c7e1a3470135424e923467f3eee8cf7e.aspx>) in Hong Kong next week.

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