

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?



(/news/university-leaders-divided-over-fourth-industrial-revolution)

University leaders divided over fourth industrial revolution (/news/university-leaders-divided-over-fourth-industrial-revolution)

[READ MORE \(/NEWS/UNIVERSITY-LEADERS-DIVIDED-OVER-FOURTH-INDUSTRIAL-REVOLUTION\)](#)

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.

◆ Read more about: [Innovation & Impact Summit \(/policy/innovation-impact-summit\)](#) [Industry \(/policy/industry\)](#)

Related articles




[\(/news/university-leaders-divided-over-fourth-industrial-revolution\)](/news/university-leaders-divided-over-fourth-industrial-revolution)

University leaders divided over fourth industrial revolution [\(/news/university-leaders-divided-over-fourth-industrial-revolution\)](/news/university-leaders-divided-over-fourth-industrial-revolution) 
March 15, 2017




[\(/news/davos-universities-are-only-place-where-you-can-take-long-term-view\)](/news/davos-universities-are-only-place-where-you-can-take-long-term-view)

THE in Davos: ‘universities are the only place where you can take a long-term view’ [\(/news/davos-universities-are-only-place-where-you-can-take-long-term-view\)](/news/davos-universities-are-only-place-where-you-can-take-long-term-view) 
January 20, 2017



[\(/blog/pitfalls-working-industry-and-how-avoid-them\)](/blog/pitfalls-working-industry-and-how-avoid-them)

The pitfalls of working with industry (and how to avoid them) [\(/blog/pitfalls-working-industry-and-how-avoid-them\)](/blog/pitfalls-working-industry-and-how-avoid-them) 
May 26, 2017

Related universities



École Polytechnique [\(/world-university-rankings/ecole-polytechnique\)](/world-university-rankings/ecole-polytechnique)
[Explore \(/world-university-rankings/ecole-polytechnique\)](/world-university-rankings/ecole-polytechnique)

[\(/world-university-rankings/ecole-polytechnique\)](/world-university-rankings/ecole-polytechnique)

▶ Video [\(/world-university-rankings/ecole-polytechnique?popupvideo=true\)](/world-university-rankings/ecole-polytechnique?popupvideo=true)

Have your say

Comment *

Please make sure that your comment does not contravene our terms and conditions [\(/terms-and-conditions/\)](/terms-and-conditions/).
Update your username to use in public-facing parts of the site, such as commenting on articles here [\(/user/\)](/user/).

Submit comment

Sponsored

Study With Us

Be part of industry transformation and further your studies and passion for research with USQ.

Promoted by University of Southern Queensland

Sponsored

The final frontier: understanding the brain

Deciphering the language of the brain has long occupied the minds of scientists.

Promoted by Hong Kong Baptist University

Featured Jobs

Forrest Post Doctoral Research Fellow ([//www.timeshighereducation.com/unijobs/listing/56290/?trackid=10](http://www.timeshighereducation.com/unijobs/listing/56290/?trackid=10))
UNIVERSITY OF WESTERN AUSTRALIA



Research Fellow in Statistical Epidemiology ([//www.timeshighereducation.com/unijobs/listing/56009/?trackid=10](http://www.timeshighereducation.com/unijobs/listing/56009/?trackid=10))
LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE (LSHTM)



PhD Scholarships in Health and Medical Research
([//www.timeshighereducation.com/unijobs/listing/56251/?trackid=10](http://www.timeshighereducation.com/unijobs/listing/56251/?trackid=10))
UNIVERSITY OF TASMANIA



Phone Advisor ([//www.timeshighereducation.com/unijobs/listing/56253/?trackid=10](http://www.timeshighereducation.com/unijobs/listing/56253/?trackid=10))
GSM LONDON



Administrator in Postal Services & Travel Plan
([//www.timeshighereducation.com/unijobs/listing/56257/?trackid=10](http://www.timeshighereducation.com/unijobs/listing/56257/?trackid=10))
UNIVERSITY OF CHICHESTER



[See all jobs \(\[//www.timeshighereducation.com/unijobs/listings/\]\(http://www.timeshighereducation.com/unijobs/listings/\)\)](http://www.timeshighereducation.com/unijobs/listings/)

Most Viewed



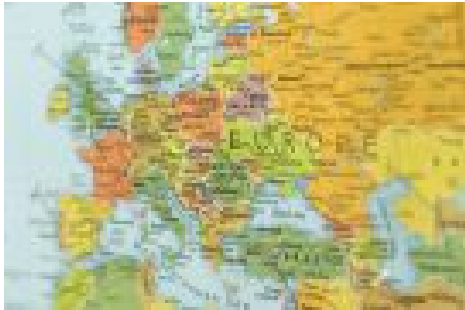
([/student/best-universities/top-universities-best-student-staff-ratio-2017](http://student/best-universities/top-universities-best-student-staff-ratio-2017))

Top universities with the best student-to-staff ratio 2017 ([/student/best-universities/top-universities-best-student-staff-ratio-2017](http://student/best-universities/top-universities-best-student-staff-ratio-2017))
May 31, 2017



([/student/best-universities/best-universities-uk](http://student/best-universities/best-universities-uk))

Best universities in the UK ([/student/best-universities/best-universities-uk](http://student/best-universities/best-universities-uk))
September 21, 2016



(/student/best-universities/best-universities-europe)

Best universities in Europe (/student/best-universities/best-universities-europe)
September 21, 2016



(/news/world-university-rankings-2016-2017-results-announced)

World University Rankings 2016-2017: results announced (/news/world-university-rankings-2016-2017-results-announced)
September 21, 2016



(/student/best-universities/best-universities-canada)

Best universities in Canada (/student/best-universities/best-universities-canada)
September 21, 2016

Looking for the next step in your career?

Job title, keywords or company name

Location

Search Jobs

Most Commented