Knowledge Exchange and University-Industry Collaborations

in Cambridge, globally, and taking a look from an automotive perspective
The mission of the University of Cambridge is to **contribute to society** through the pursuit of education, learning, and research at the highest international levels of excellence.

"The University of Cambridge is open for business. Our research is world-leading across all disciplines, which we build upon to take focussed, interdisciplinary and system-level approaches to tackle new challenges, often together with industry. Activities range from pump-priming and discovery research collaborations, through entrepreneurship and innovative spin-outs, to strategic long-term industrial partnerships."

Professor Andy Neely, Pro-Vice Chancellor for Enterprise and Business Relations
Cambridge gave the world:

Discovery of electron, neutron and photon, determination of DNA structure, Newton’s laws and Maxwell’s equations, evolution (Darwin), the first programmable computer and the Raspberry Pi, inhalers, Concorde droop nose, pacemakers, heart and liver transplants, Clearblue pregnancy test, Maris Piper potato, ARM chip, smart meters, gene sequencers, Bluetooth (CSR), Cambridge Consultants, the Cambridge satchel, F1 inerter, organic LEDs, antibody drugs, the Monty Python crew, Venn diagrams, in-vitro fertilisation, antimatter, first ever flushing toilet, jet engines …

... and we do not stop at that.
There are many tested models for collaboration with industry.

- Consultancy and access to experts
- Engagement Forums
- PhD studentships; Secondments
- Strategic partnerships
- framework agreements
- shared access equipment
- Research contracts
- spin-outs and IP licensing
- pump-priming initiatives
- Joint projects, Impact Acceleration grants
- Embedded laboratories, University Technology Centres
- Industrial residence or hotdesk in the Maxwell Centre
- University Technology Centres
- Consultancy and access to experts
Automotive innovation has to integrate across traditional sector boundaries.
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Meaningful partnerships & knowledge transfer?
Globally unique environment – capable of true multidisciplinarity

Cutting-edge research and world-leading experts across all areas

= University of Cambridge strategic research themes = existing hubs or centres (>100 academics each)

= UK national institutes where University of Cambridge is a key partner
Maxwell Centre model

A gateway to the University

Multi £M investment in collaborations

Carrying out world-leading research

Two way flow of ideas and researchers

Core focus on Physical Sciences and Technology

Multidisciplinary, diverse and interconnected

Discovery science meets research objectives relevant to industrial needs

Increasing the direct industrial involvement in research

Acceleration of research impacts

Sharing offices, laboratories, & meeting space

Access to facilitation and knowledge brokers

Space for both strategy and serendipity

www.maxwell.cam.ac.uk
The Maxwell Centre – industrial residency benefits

• R&D office established at the Maxwell Centre, led by Magna’s Director, Corporate Engineering and R&D

• Front seat view and a gateway to the University, earliest possible preview of what’s on the horizon

• Constant interaction with company employees: facilitation, collaborations, scheduled meetings, as well as serendipitous chats by the coffee machine

• Engagement with University research, the broader Cambridge Cluster, and entrepreneurs:

“Magna’s engagement with the Maxwell Centre is a further step in developing relationships with the Cambridge Ecosystem. Access to talented people, startups and early stage companies as well as academic experts at the forefront of their field, all add to the key benefits Magna sees in partnering with leading technology in the UK.”

Ian Simmons, Vice President, Business Development, Corporate Engineering and R&D, Magna

www.maxwell.cam.ac.uk
The Maxwell Centre – academic benefits

“Through the Maxwell Centre I closely collaborate with industry, promoting the development of directly exportable technologies from my research. I develop valuable transferable skills, ranging from academic and research to commercial and technology transfer. The recognition I get from our industrial partners is undoubtedly rewarding; it’s inspiring to see our research being applied to genuinely overcome real-world bottlenecks.”

Dr Louisa Michael, Postdoctoral researcher at the Laboratory for Scientific Computing

- Source of interesting problems and research questions to work on
- Pathway to delivering research impact through industrial partnerships
- Better dissemination of academic work to its prospective beneficiaries
- Direct exposure to industrial needs and ways of working – building mutual understanding and trust
- Leveraging new funding streams – direct sponsorship, and/or governmental support e.g. through innovateUK
- Opposite of an “ivory tower”, detached academia
- Stimulating entrepreneurial thinking and aspirations amongst researchers
- And more....
Concluding thoughts

• World is changing around us, and it becomes more difficult to anticipate impact of cross-sector innovation.

• The essence of what a car has been for decades is now rapidly evolving (electrification, autonomy, car transport as a service, etc...) – there is a lot of open problems looking for system-level solutions, and new knowledge generation is often required: that’s where universities can help!

• Automotive companies may need to reach out quite far away from the core expertise and comfort zone of the sector to remain competitive.

• University-industry partnerships are worthwhile, especially if collaboration stems from common aims and builds on complimentary strengths.

• Working together is not always straightforward, and requires commitment from all sides. Consider knowledge exchange rather than one-directional tech transfer.

• Open mind and serendipity help – we all need to be prepared to kiss a few frogs before we find our prince.
Last, but not least...

Dear World,
Our ideas have shaped the world. Now we must shape its future.

Yours, Cambridge.

Visit us at NAIAS AutoMobili-D this week!