UNIVERSITY OF CAMBRIDGE
enterprise

CEST+I
Chile-European Union STI Initiative

camnexus

SMEs Landscape in UK: The Cambridge Phenomenon

Science and Technology oriented to SMEs development

8 May 2015

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Director Camnexus Ltd

CONICYT
Ministerio de Educación
Gobierno de Chile

camnexus

SMEs in the European Landscape

- What is an SME?
  - Small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361.
  - The main factors determining whether a company is an SME are:
    - Number of employees
    - Turnover or balance sheet total

SMEs in the European Landscape

	SMEs		
	Micro	Small	Medium
Quantity of employees	<10	10< x <50	50 < x <250
Turnover	≤ € 2m	≤ € 10m	≤ € 50m
Balance sheet Total	≤ € 2m	≤ € 10m	≤ € 43m

EU recommendation 2003/361
http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/index_en.htm

SMEs in the European Landscape

- Small Business Act (SBA) adopted in 2008
- Reflects the importance and centrality of SMEs to the European economy
- At 2013 across de EU28:
  - 99/100 businesses are SMEs in the nonfinancial sector
  - 2 in every 3 employees
  - 58 cents in every euro of value added

SMEs in the European Landscape

	SMEs				
	Micro (1-9 employees)	Small (10-49 people employed)	Medium (50-249 employees)	Large (250 < employees)	Total
Number of people employed	38,428,189	26,938,777	22,027,425	42,360,134	129,754,525
Number of enterprises	18,505,812	1,388,759	219,956	42,245	20,156,772
Percentage of people employed [%]	29.6	20.8	17.0	32.6	100.0
Percentage of enterprises [%]	91.8	6.9	1.1	0.2	100.0

SMEs and the environment in the European Union, 2014.
http://ec.europa.eu/enterprise/policies/sme/business-environment/files/main_report_en.pdf 19 Dec 2014

SMEs in the UK

- In 2013, there were 4.9 million businesses in the UK, over 99% of which were SMEs.
- SMEs employed 14,424,000 people in the UK in 2013.
- The European Commission's SME Performance Review estimates the Gross Value Added of SMEs as €473 billion or 49.8% of the UK economy.

SMEs in the UK

		Number of enterprises			Employees	Turnover
	Size	2013 (000s)	2014 (000s)	% of change	2014 (000s)	2014 (£ billion)
SMEs	Micro	4,671	5,010	7%	8,276	655
	Small	186	195	5%	3,807	515
	Medium	30	31	3%	3,075	477
	Total SMEs	**4,887**	**5,236**	**7%**	**15,158**	**1,647**
Large	Large	6	7	17%	10,070	1,874
TOTAL	**Total (all businesses)**	**4,893**	**5,243**	**7%**	**25,228**	**3,521**
	SMEs as % of total	99.9%	99.9%	-	60.1%	46.8%
	Micro as % of total	95.5%	95.6%	-	32.8%	18.6%

Source: BIS, Business Population Estimates 2014
Notes: Numbers rounded to the nearest 1000; Data relates to the start of each year

UK Governmental policies and scheme

- GREAT Ambition in December 2013: a series of measures designed to make it easier for small businesses to expand. Specific measures included:
  - Access faster **broadband connectivity**: broadband vouchers, worth up £3,000, to 22 cities across the UK
  - Transparent **contract terms** between small businesses and **energy** companies.
  - New scheme designed to make in simpler for small firms to **win public** sector contracts, estimated to be worth £230 billion a year.
  - Commitment tackle the late payment of small firms supplying the public, ensuring **small businesses** who supply the public sector in a supply chain will be paid **at the same time** as large contractors.

UK Governmental policies and scheme

- Based on reports on entrepreneurship and start-ups (2012 and 2013):
  - Small Business Charter and an award scheme to incentivise business schools to work alongside small business (advisory capacity and places students with small businesses).
  - A £30 million Growth Vouchers programme to find “innovative approaches to help SMEs overcome behavioral barriers to increasing growth.”
  - An increase in funding available for start-up loans to young people.
  - The introduction of a pilot scheme for SME Growth Loans as part of the Enterprise
  - Finance Guarantee Scheme.
  - £100 million of new funding to SMEs from the Business Finance Partnership.
  - Easiness in procurement.

UK Governmental policies and scheme

- Minimise regulatory burdens
- Help SMEs access finance with banks agreeing to increase finance available to SMEs by 15% in 2011;
- Reduce fixed costs for SMEs
- Easy access to public sector procurement
- Encourage exporting SMEs
- **Encourage innovation by improving products and services available to support SMEs on issues relating to intellectual property and increase the rate of SME Research and Development tax relief to 200 per cent in 2011 and 225 per cent in 2012, subject to state aid approval**
- Set up new Enterprise Zones
- help SMEs access apprenticeships

Cambridge

Population

- Region: 5.7 million people
- City + 40 km radius
- City: 125,000* + 30,000 students

Silicon Fen – low lying arable region with a high-tech cluster centred on Cambridge

Key Industries – Pharma & Biotech; IT (chip design and software); electronics & plastonics; and ink-jet printing

Quilicura ~ 125,000 people*

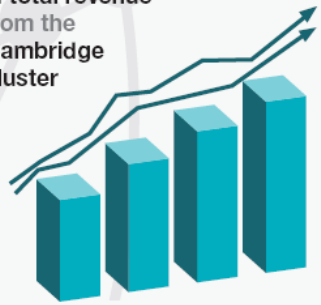
Cerro Navia ~ 150,000 people*

Cambridge & innovation in numbers

1,500+
technology-based firms in the **Cambridge cluster**

57,000
people are currently employed by the **Cambridge cluster**

£13bn+
in **total revenue** from the **Cambridge cluster**



14*x $1bn

companies have come from the **Cambridge cluster**

* Abcam, ARM, Autonomy, AVEVA, blinkx, CAT, Chiroscience, CSR, Domino, Ionica, Marshall, Solexa, Virata, Xaar

300+
IT & telecoms companies in the **Cambridge cluster**

150+
life science companies in the **Cambridge cluster**

150+
physical science and engineering companies in the **Cambridge cluster**

2*x $10bn

companies have come from the **Cambridge cluster**

* ARM & Autonomy

Innovation and the University's mission

University of Cambridge

- University established in 1209. 90 Nobel Prizes
- Students: 18,243 (11,948 u/g, 6,295 p/g) (2011/12)
- 20% from overseas representing 100 countries
- Over 100 departments, faculties and schools
- Annual income £1.5 bn

World Class Ranking

QS World University Rankings 2014 (2013)

1. MIT (1)
2. Cambridge (3)
3. Imperial (5)
4. Harvard (2)
5. Oxford (6)
6. UCL (4)
7. Stanford (7)
8. Caltech (8)

Cambridge & innovation in numbers

£1.25bn

follow-on funding raised by **University of Cambridge spin-outs** in the Cambridge Enterprise portfolio

97.4%

...the 5-year survival rate of **Cambridge Enterprise Investments** (compared to 44.6% nationally)

1in5

recent **Cambridge leavers** work or study in the Cambridge region

300+

high-tech ventures in the past 20 years of which **University of Cambridge** people & technology have been involved

200+

firms founded by **Cambridge University Computer Lab alumni**

£250m+

Current revenue of **Cambridge cluster** firms founded by **Cambridge University Computer Lab alumni**

91%

Cambridge recent leavers are in **employment** or **full-time study,** no matter the degree. A **further 5%** are travelling or not looking for work

Large Private Research Centres in Cambridge

AstraZeneca

QUALCOMM®

PHILIPS

Pfizer Cambridge

Microsoft® Research

TOSHIBA
Leading Innovation

gsk
GlaxoSmithKline

Cambridge University
Rolls-Royce UTC

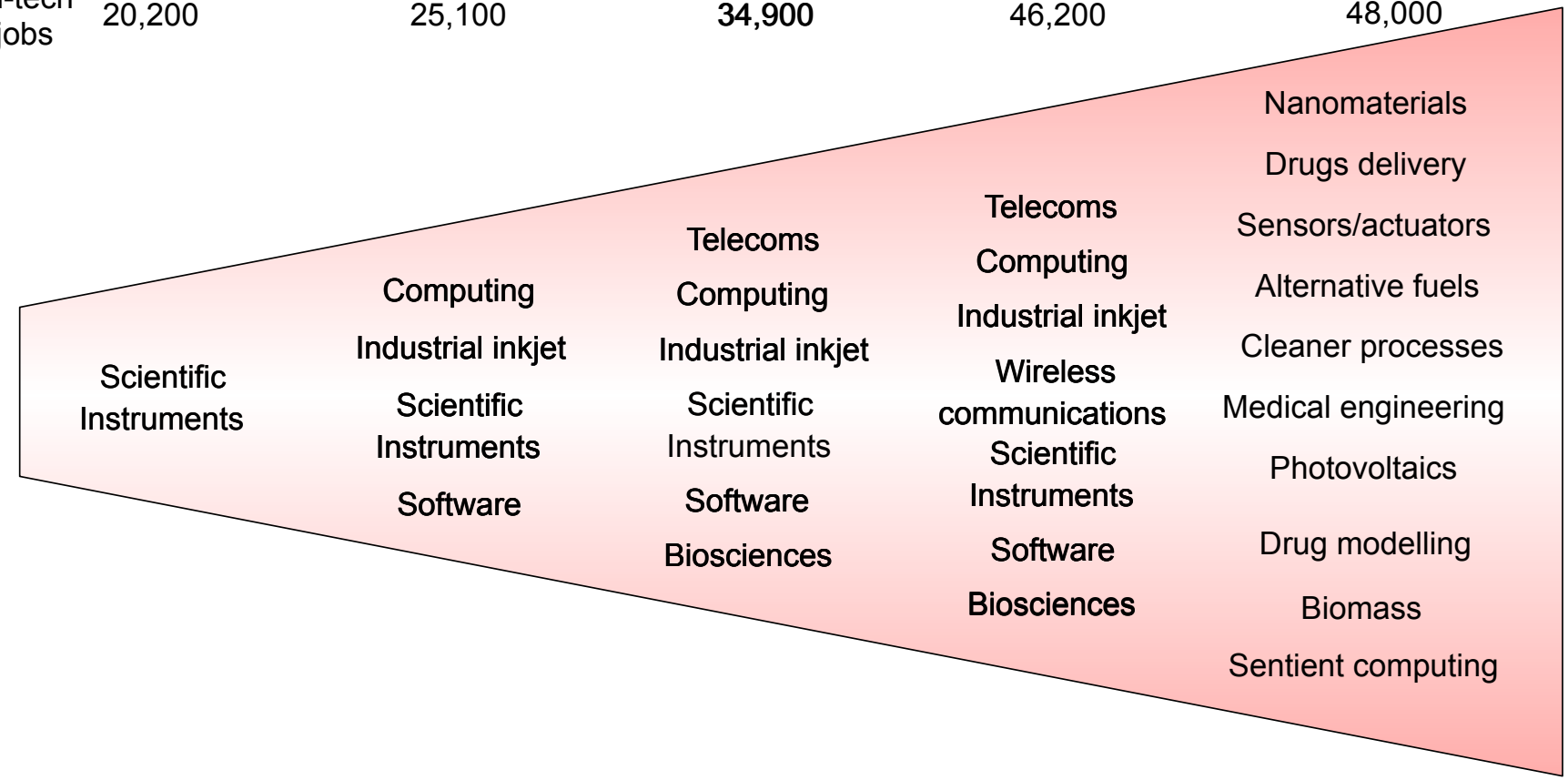
SONY
COMPUTER ENTERTAINMENT ®

The Cambridge model

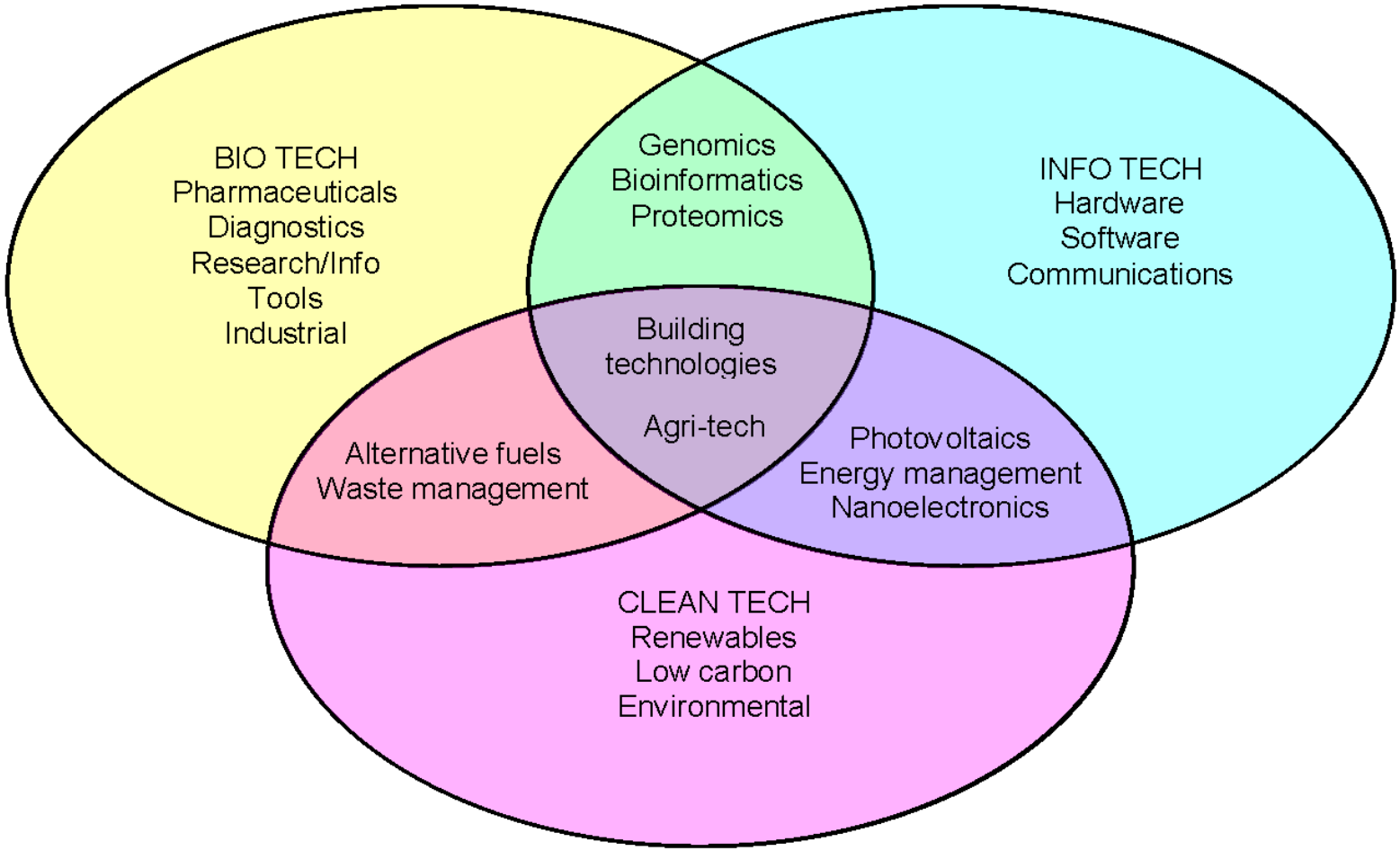
- Recruit the best academics in the world
- Give them the freedom to do what they choose
- **Subject to sponsorship**, IP is registered initially by the University unless requested by the academics: Students own their IP

Emergence of Hi-Tech Cluster in Greater Cambridge

	1971	1981	1991	2001	2009
Hi-tech jobs	20,200	25,100	**34,900**	46,200	48,000



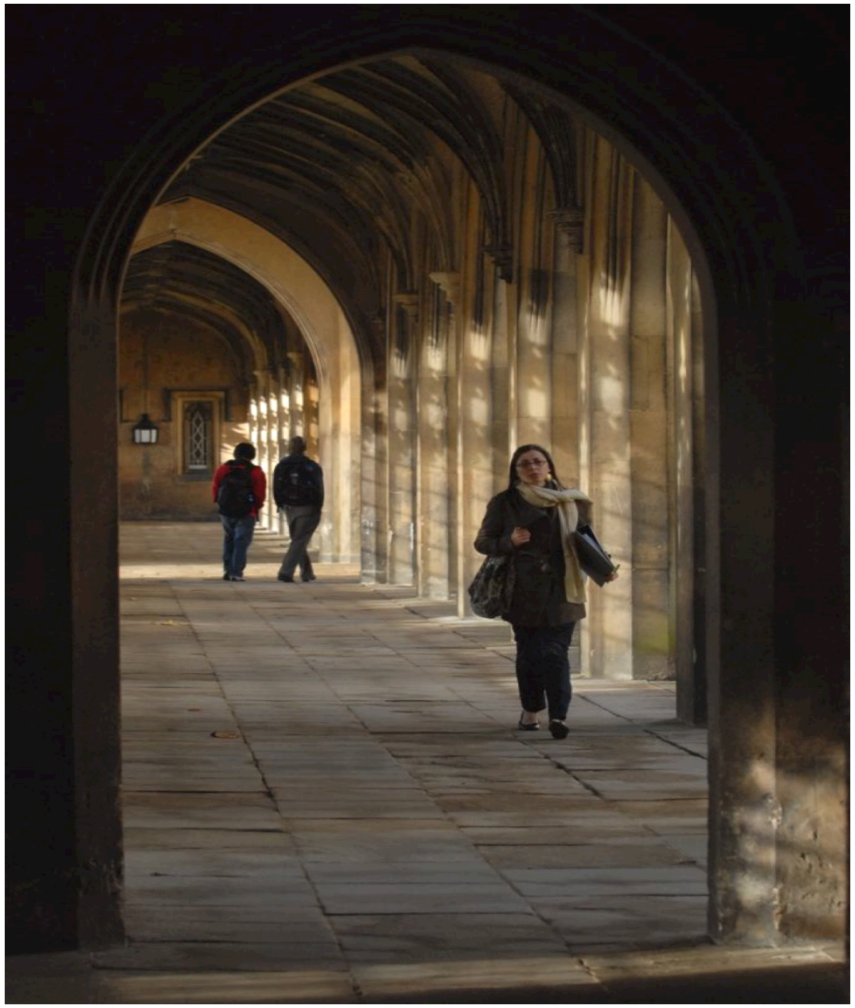
Three Converging Revolutions



It Wasn't Always Easy: Challenge

to persuade faculty that commercialisation

- is not in conflict with the scholarly pursuit of knowledge; and
- will not will impinge on academic freedom



It Wasn't Always Easy: History

In 1950 **William Holford** and **H. Myles Wright** submitted the **Cambridge Planning Proposal** to the city council, demanding a "*resolute effort to slow down migration into the Cambridge district, and to reduce the high rate of growth*"

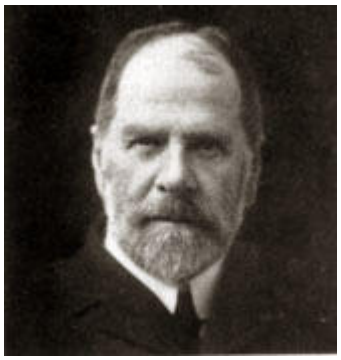
During that time, it was extremely difficult to obtain an Industrial Development Certificate to permit manufacturing involving more than five employees. Several companies that tried to locate in Cambridge, they gave up and went somewhere else, typically the North of England.

'The University of Cambridge was noted as a primary, and on-going, example of a university whose successful cultural change was challenged by "800 years of history" and "**active hostility to setting up technology transfer activities**".'

MIT-Skoltech 2014

What made the difference? … Visionaries

- One of the first spin-off companies was **Cambridge Scientific Instrument Company** in 1881 by **Horace Darwin**, youngest son of Charles Darwin



" Among the early sales was a machine to help researchers [...] to study frogs' hearts. Frogs were extra, at two pence each"

-The Cambridge Phenomenon

- In 1960 Tim Eiloart, Rodney Dale, and David Southward founded **Cambridge Consultants** to "*put the brains of Cambridge University at the disposal of the problems of British industry and to provide solutions to real world problems*".

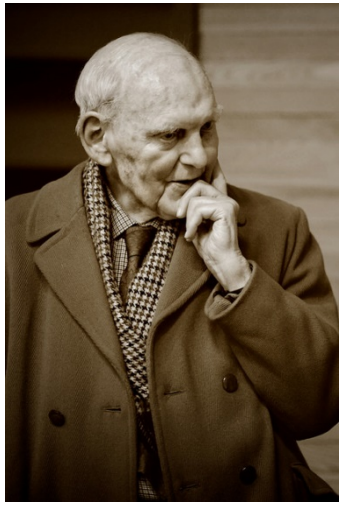
- Jeanette Walker,
"Cambridge: Europe's leading location for biotechnology"

What made the difference? … Visionaries (cont)

- In 1967 the **Mott Report** (**Sir Nevill Mott**), a sub committee of the Senate of Cambridge University, considered planning aspects of the relationship between science based industry and the university. The Mott Report recommended relaxation of current planning restrictions and the setting up of a science park. This led to the set up of **Cambridge Science Park**, the first science park in the UK (**Sir John Bradfield**). The report has guided planning since the 1970s.

Sir Nevill Francis Mott
Nobel Prize in Physics
Leader of the Mott Committee

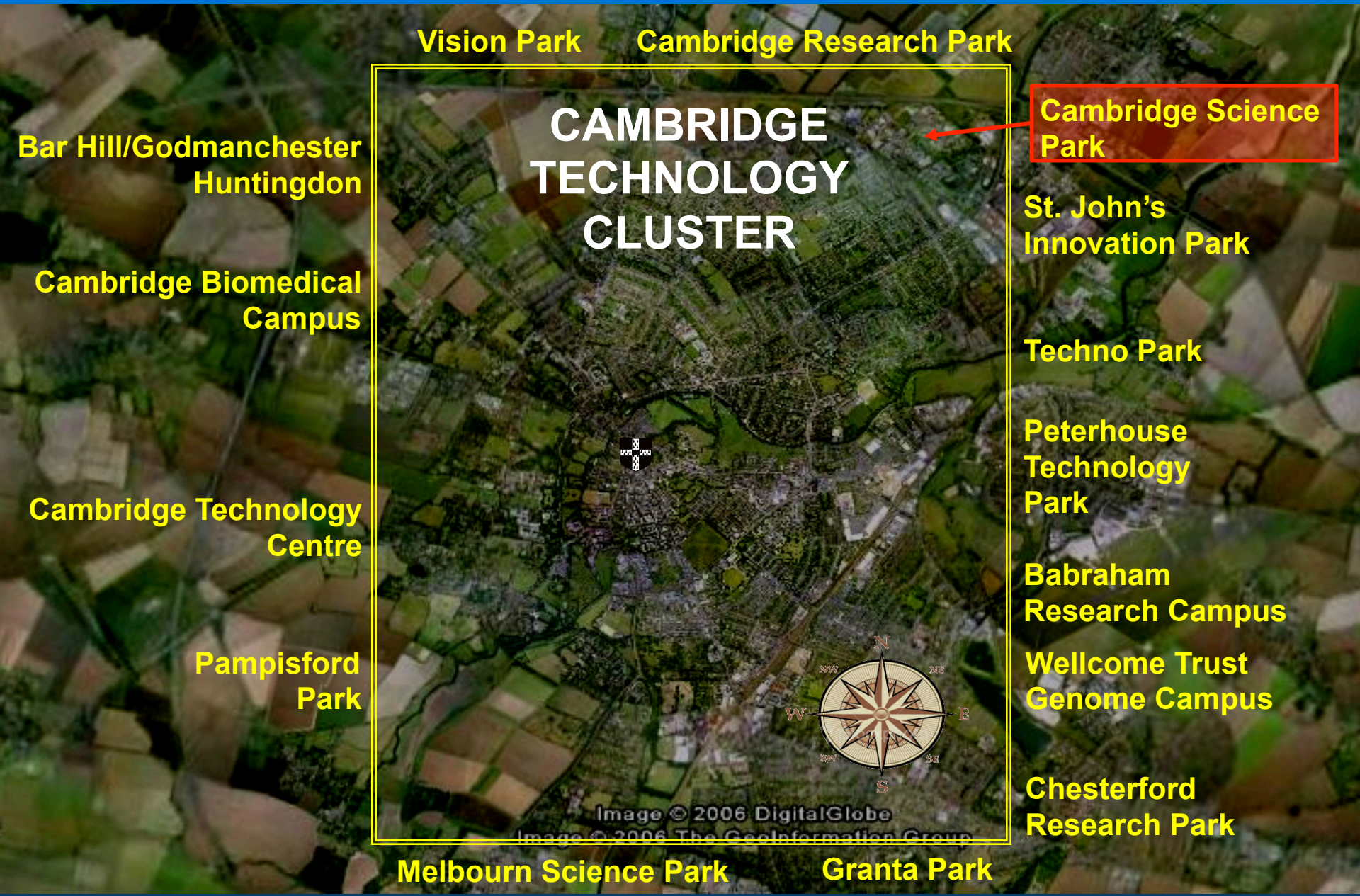
Sir John Bradfield
Creator of the Cambridge
Science Park,



Cambridge Phenomenon Milestones

- 1961: Cambridge Consultants
- 1970s: Cambridge Science Park, first computer entrepreneurs and some broad-minded bank managers
- 1980s: more technical consultancies, St John's Innovation Centre
- 1990s: more science parks, networks, press
- 2000s: University of Cambridge involvement in IP commercialisation and entrepreneurship

Cambridge Science Parks



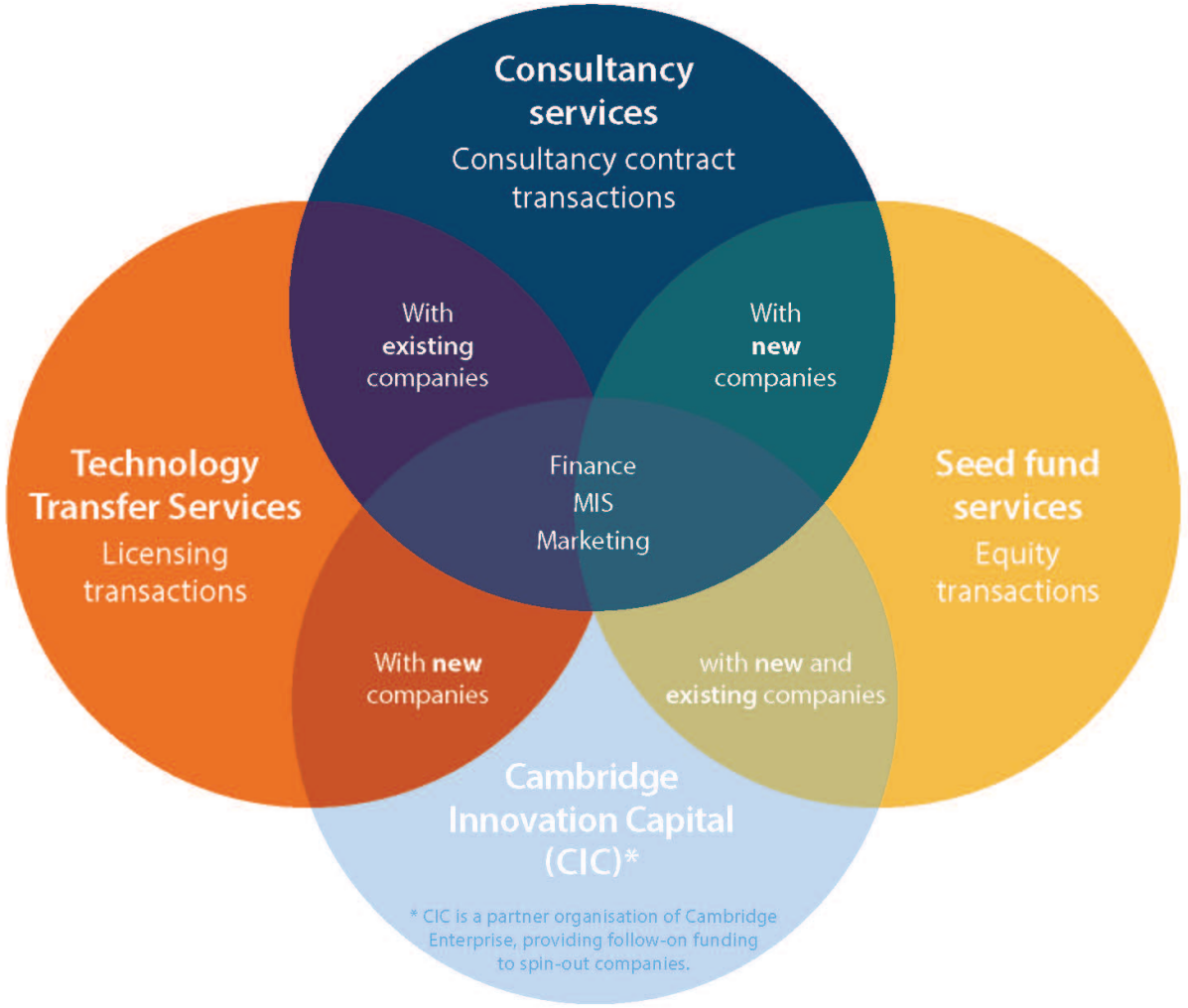
What is Cambridge Enterprise Limited?

"Cambridge Enterprise exists to help University of Cambridge inventors, innovators and entrepreneurs make their ideas and concepts more commercially successful for the benefit of society, the UK economy, the inventors and the University"

Cambridge Enterprise was formed expressly to :

- aid the transfer of knowledge from the University via commercialisation
- support all of CE's academic partners, not just those from STEM;
- aid staff and students in making their ideas more commercially successful;
- produce a financial return for inventors, departments and the University; and
- ensure that society and the economy benefit from commercialisation

Cambridge Enterprise



Cambridge Enterprise Services for University include:

1. Consultancy Services:

Services supporting University of Cambridge staff and research groups to provide expert advice or facilities to external organisations worldwide.

2. Technology Licencing:

Services include invention evaluation; patent strategy, filing and maintenance; proof of concept funding; intellectual property out-licensing.

Research tools: Direct sale of software, antibodies, proteins, DNA/RNA and model organisms.

3. Seed Funds Venture Services & Cambridge Innovation Capital:

Services include expertise (business planning, mentoring, & marketing), access to capital and introduction to local and national investor networks.

4. Business Engagement:

Industry Engagement Forum and Innovation Fellows

5. Faculty Engagement:

Enterprise champions Program – hub and spoke model developing communication with departments and faculty.

Cambridge Enterprise - The Expertise

- Cambridge Enterprise gathers the collective expertise and experience which contributes to this successful cluster.
- Provide advice, training, support and contact networks to governments and educational institutions who want to build knowledge-based economies.
- Extensive experience with the commercialisation of research results through a variety of mechanisms.
- International experience supporting developing their own commercialisation and business interaction policies, facilities, systems, processes, ecosystems and trained staff in a way that is tailored to their circumstances, needs and interests.

Technology Transfer Services

In co-operation with the academic:

- Identification/evaluation of commercially valuable research
- Patent strategy, drafting and filing with qualified agents and counsel
- IP case and portfolio management
- Identification and engagement with commercial partners
- Negotiation of commercial deals
- Management of the post-deal relationship
- Support proof of concept work and translational research

Meaning:

- Cambridge Enterprise currently holds equity in 68 companies on the University's behalf.
- The portfolio companies have raised over **£800m** in further investment and grant funding. They now employ over **1,700** people and generate an annual turnover of **£170m**."

Cambridge Enterprise 2013 Report.

Why are we here?

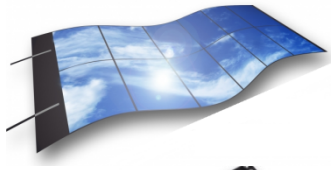
Camnexus: Platform that fosters collaborations between the technology cluster of Cambridge (UK) and Latin America

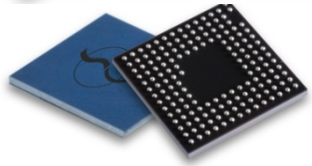
The Platform: Three Pillars

RESEARCH

CAPABILITY BUILDING

TECHNOLOGY





The Platform: Stakeholders

The Platform is directly supported by several organisations, including:

- International Strategy Office of the University of Cambridge.
- Cambridge Enterprise through the International Outreach Programme.
- Departments of Engineering, Chemical Engineering, Land Economy and Judge Business School.
- King's College, Cambridge
- Cambridge Cleantech.
- Chilean Embassy in London.

YOUR PARTNER IN RESEARCH

Your Partner in Research
Newton Fund Chile: Cambridge Winners

International Networking between Research Centres

Project Title	PI in Chile	Chile Inst.	PI in Cambridge
High-Speed Analysis of Cross-Talk between Neurotransmitter-Gated Channels	Nelson Barrera	PUC	John Michael Edwardson
A platform of foundational tools and a registry for Plant Synthetic Biology	Rodrigo Gutierrez	PUC	James Haseloff

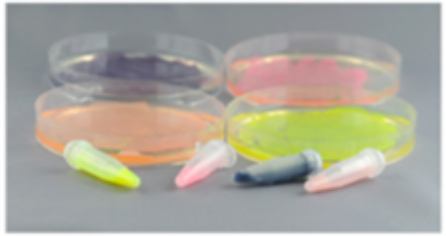
International Research Projects

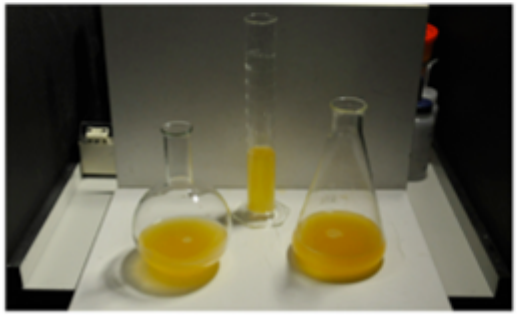
Project Title	PI in Chile	Chile Inst.	PI in Cambridge
Near-Field Cosmology in the Era of Large Surveys	Márcio Catelan	PUC	Vasily Belokurov

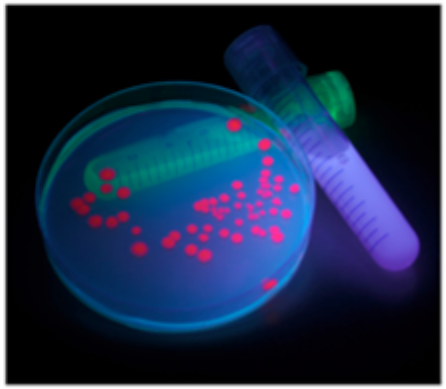
Your Partner in Research:
Haseloff Lab - PUC: Synthetic Biology

Jim Haseloff

Fernan Federici





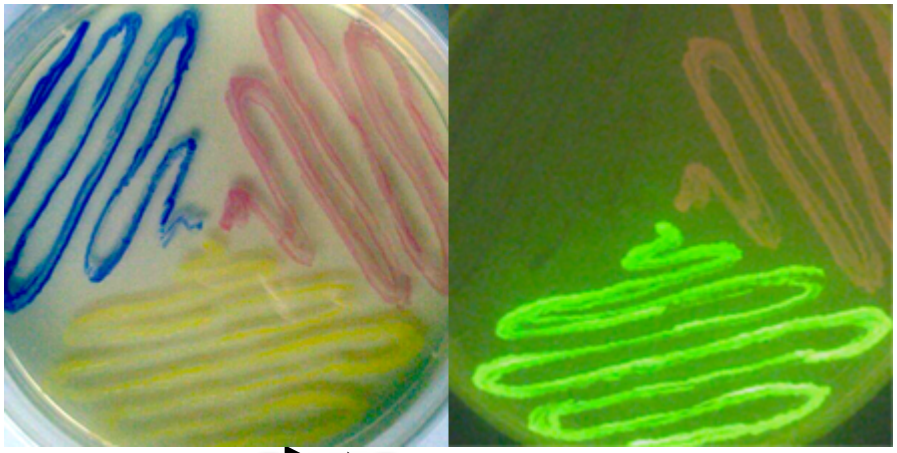


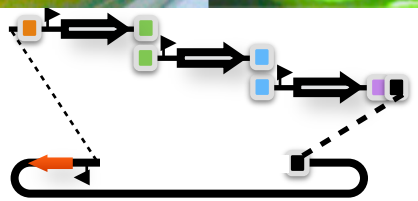
Engineering principles for constructing biological circuits.

Newton Fund 2014: A platform of foundational tools and a registry for Plant Synthetic Biology

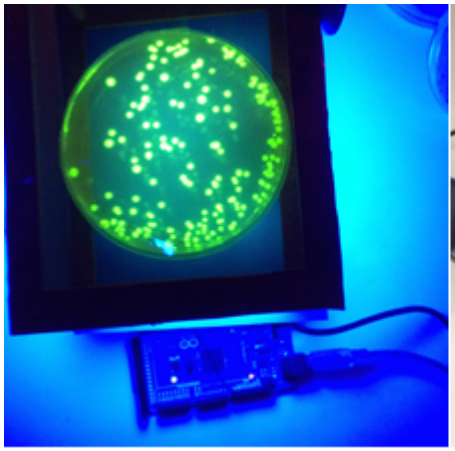
Your Partner in Research:
Haseloff Lab - PUC: Synthetic Biology

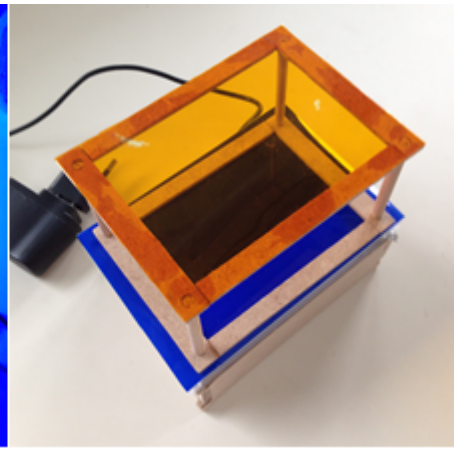
Genetic kits for DNA fragment antigen-binding



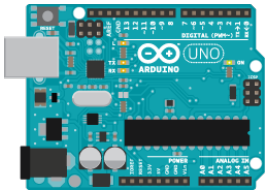


Do It Yourself equipment





ARDUINO



PUC iGEM Team (2011, 2012)
PUC SynBio Workshop (2011,2012,2013)
Synthetic Biology Course BIO399E UACh Valdivia SynBio Workshops (2011,2012)

Your Partner in Research: Newton Fund
4CMR – UNISUL – PUCSP: Food + Energy + Water

Jean-Francois Mercure
Baltazar Guerra
Pablo Salas

Thiago Matsushita

Jorge Viñuales

Analysis of the linkages between energy, food and water consumption for Brazil, in the context of climate change mitigation strategies.

Your Partner in Research:
Chemical Engineering & Biotech: Biopreservation

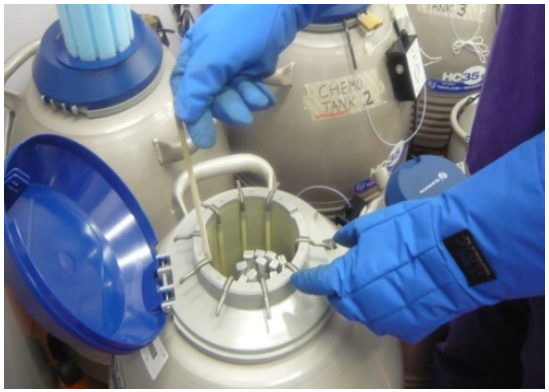
Nigel Slater

Jessica Ocampos

Raul Sánchez

Development and optimisation of methods for mammalian cell preservation

- Non toxic: DMSO free, sugar based
- Easy to transport: cells in dry state
- Low cost: No need of expensive temperature controlling equipments



Chile Projects
Fund 2012 - 2013
University of Cambridge
Antofagasta Minerals

UNIVERSITY OF CAMBRIDGE enterprise

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YOUR PARTNER IN CAPABILITY BUILDING

Your Partner in Capability Building Programmes

- Assessment of current ecosystem
- Advice and consultancy in outlining strategies and policies for creation and development of most suitable ecosystem
- Training programmes for
  - Policy makers, governments.
  - Entrepreneurs, people from industry and investors
  - Staff of the TTOs
  - Researchers and academic staff
- Networking events with investors , expert mentors and champion entrepreneurs

Our Services: Capability Building Programs

Brazil Projects: two projects funded by British Government

- **Global Partnership Project** (November, 2011 – March, 2014)
  - promoting innovation and new business creation in Brazil by Inova Unicamp acting as an exemplar for commercializing research
  - exploring research collaboration opportunities between the two universities.
- **Intellectual Property Commercialization Project** (October, 2011 – March, 2014)
  - investigate barriers to intellectual property commercialization in Brazil
  - develop programs to stimulate commercialisation and innovation

CAMNEXUS: SUPPORTING SMES (PYMES)
BUSINESS SUPPORT
TECH TRANSFER & INNOVATION

Programmes with SMEs (Pymes): Go To Market Corfo

OBJETIVOS

- Apoyar la comercialización de tecnologías, provenientes de proyectos de I+D
- Generar capacidades en emprendimiento y comercialización de resultados de I+D
- Vincular a los desarrolladores de proyectos de I+D con brokers tecnológicos internacionales
- Generar un ecosistema nacional de investigadores y emprendedores

UNIVERSITY OF CAMBRIDGE enterprise

PROGRAMAS ORIENTADOS A INVESTIGADORES Y EMPRENDEDORES EN ÁREAS TECNOLÓGICAS

CORFO Go To Market

Proximo Concurso Newton Fund – Conicyt: Plazo 1° Junio 2015

Proximo Concurso Newton Fund - Conicyt

OBJETIVOS

- Reunir a PyMEs, Centro Regionales de Desarrollo Científico y Tecnológico y a Instituciones Extranjeras, en particular del **Reino Unido**.
- Fortalecer la acción de puente de los Centros Regionales en su rol de poner a disposición de las PyMEs de la región el conocimiento científico y tecnológico.
- Vincular las entidades a través de un proyecto participativo y colaborativo de I+D para el desarrollo económico y social de la región.
- Vincular con entidades extranjeras.

http://www.conicyt.cl/regional/2015/02/26/i-concurso-de-fortalecimiento-de-centros-regionales-para-el-desarrollo-territorial-mediante-proyectos-de-id-colaborativa-con-pymes-2015/

Proximo Concurso Newton Fund - Conicyt

- Modalidad 1:
  - Centro Regionales que se encuentren ejecutando su etapa de Creación (Monto máximo $130.000.000).
- Modalidad 2:
  - Centros Regionales que se encuentren ejecutando su etapa de Continuidad (Monto máximo $130.000.000).
  - Centros Regionales que se han adjudicado un proyecto de Fortalecimiento a la Continuidad o de Apoyo a la Continuidad:
    - Monto máximo: $154.000.000
    - Financiamiento adicional para tesistas $24.000.000

The LatAm Platform Founders

JESSICA OCAMPOS
Chem. Eng.

Biotecnology, Life Sciences, Engineering, Social Enterprises

JOSÉ VALLEJO
Eng. – Econ.

Engineering, Sustainaible Building, Cleantech, Microfinance

PABLOS SALAS
Eng. Econ.

Economy, Climate Change Mitigation, Energy, Renewable Energies, Cleantech

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Gracias

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