



ICT Research

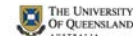
Maximising the benefits

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Australian Government
Department of Broadband, Communications
and the Digital Economy
Australian Research Council

NICTA Funding and Supporting Members and Partners



Outline



- **Target outcomes**
- **Engagement approach**
- **IP Strategy**

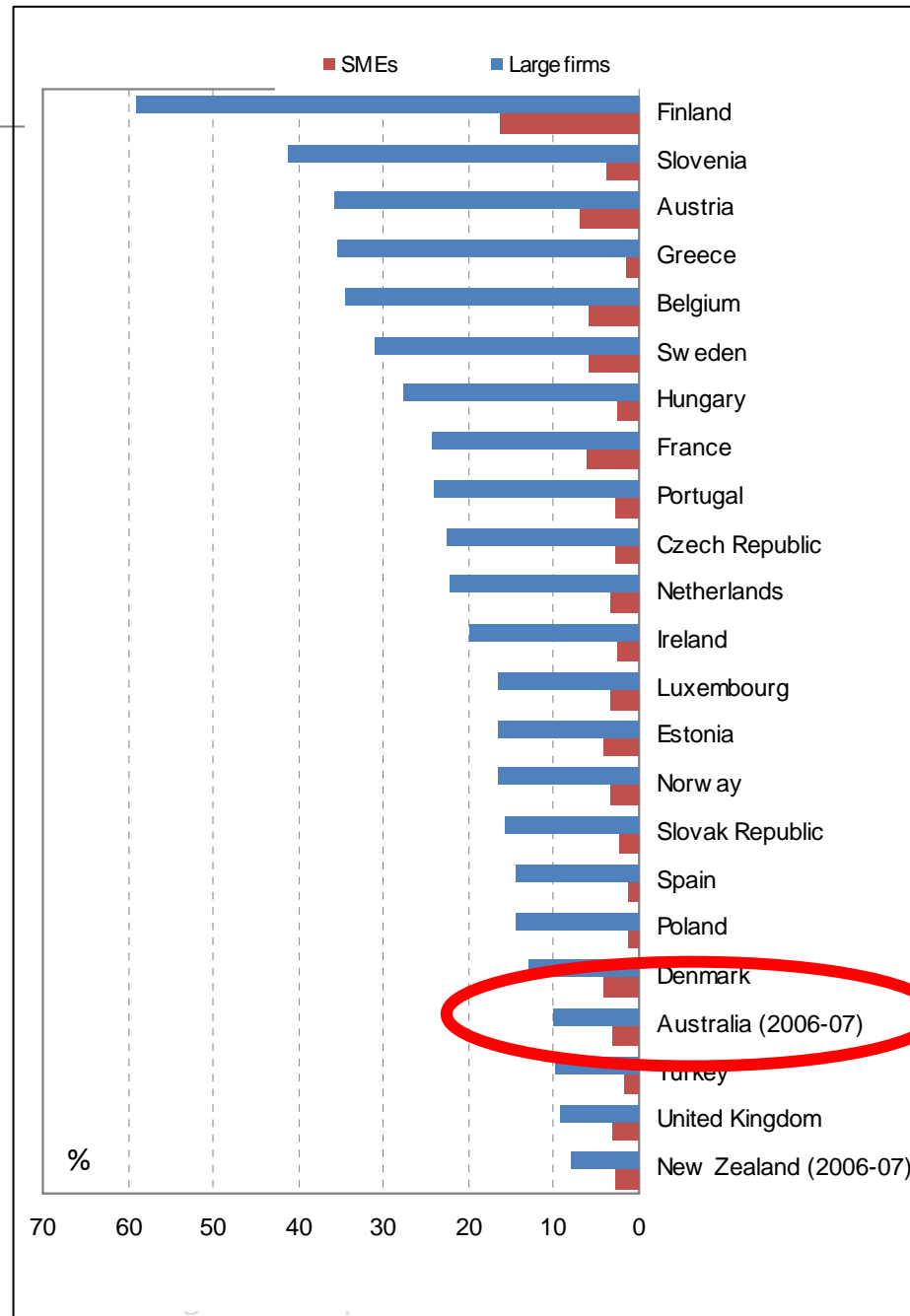


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Target Outcomes

Collaboration

Firms collaborating on innovation with higher education institutions by size, 2004-06



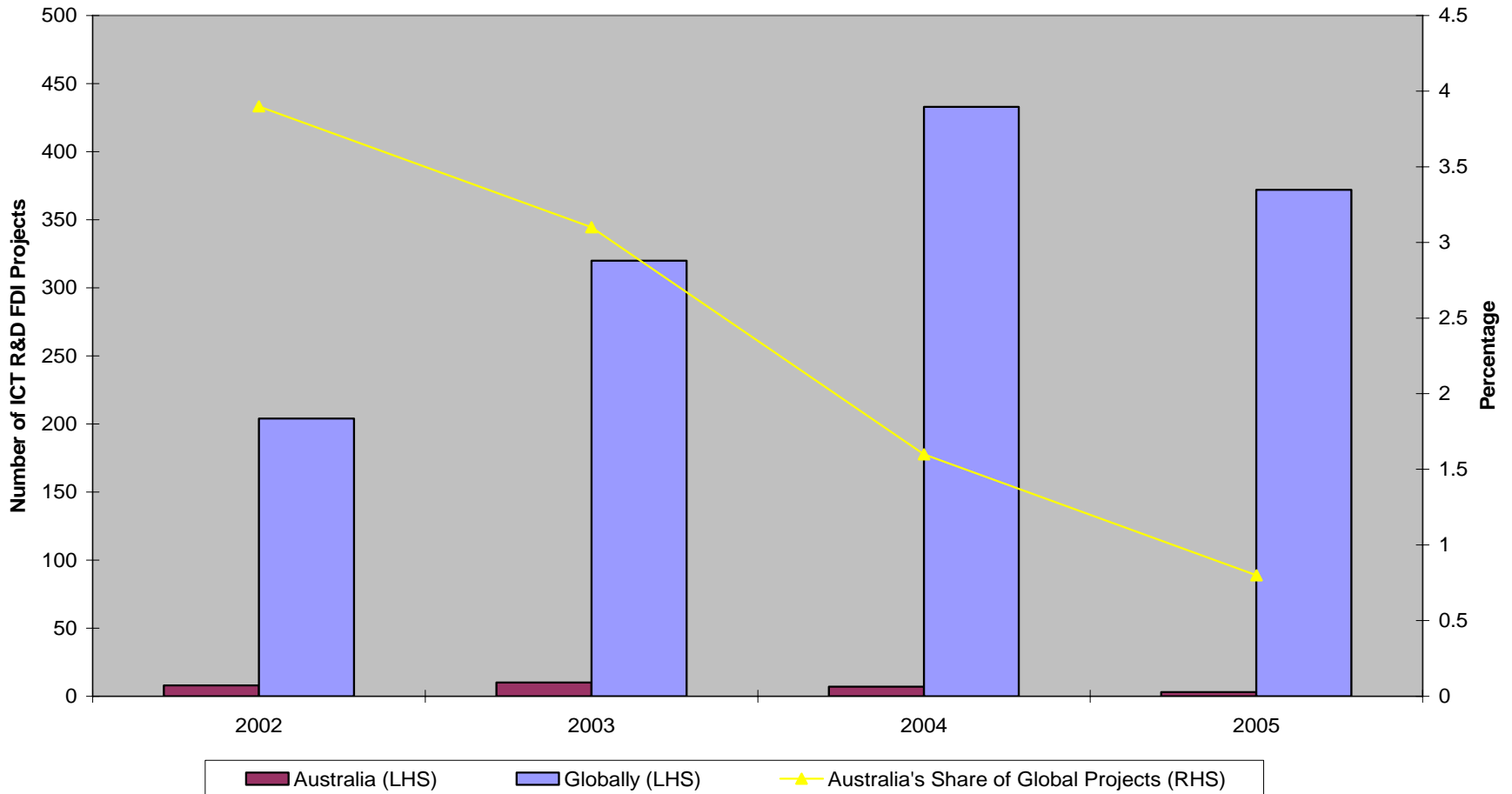
- ***Total research commercialisation in Australia (2007)**
 - Contract Research and Consultancies \$1,233m
 - LOA (Licensing and other activity) \$221m gross, \$214m net (includes Monash IVF assignment \$101m, Gardasil \$45m)
 - Total value of all equity holdings \$196m
 - Capital raised for start-ups etc \$199m
- **Lead times for licencing, equity cashed in, etc can be long**
 - eg CSIRO Wireless LAN, ~15-20 years)
- **Key message**
 - R&D Services is the most significant source of Research Commercialisation revenue

*Source: National Survey of Research Commercialisation 2005-2007, published by DIISR in July 2009

ICT R&D FDI Trends



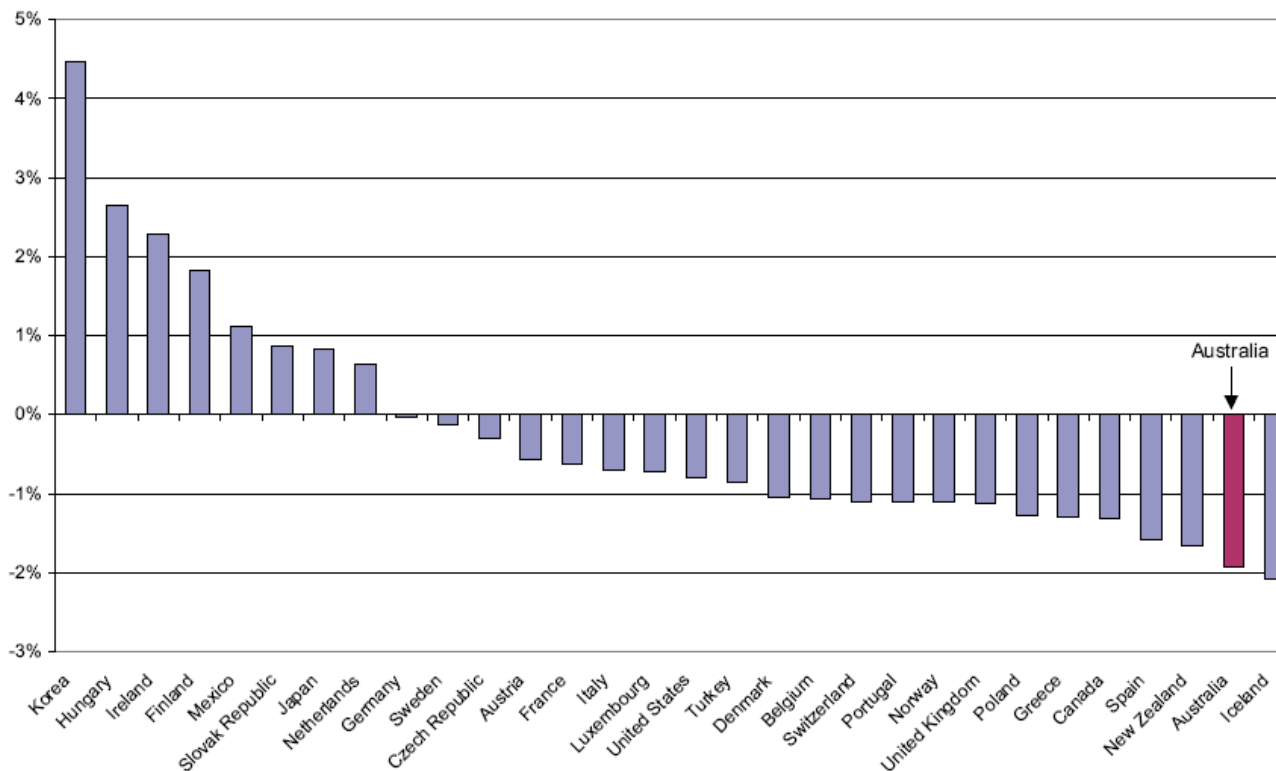
Australia's Share of ICT R&D FDI Projects



Source: OCO Consulting, LOCOMonitor database, accessed May 2006

The Cost of Australia's ICT Trade Deficit

Figure 7.3 ICT Equipment Surplus/Deficit as a Percentage of GDP, 2007 (per cent)



Source: OECD, CSES Analysis.



Engagement approach

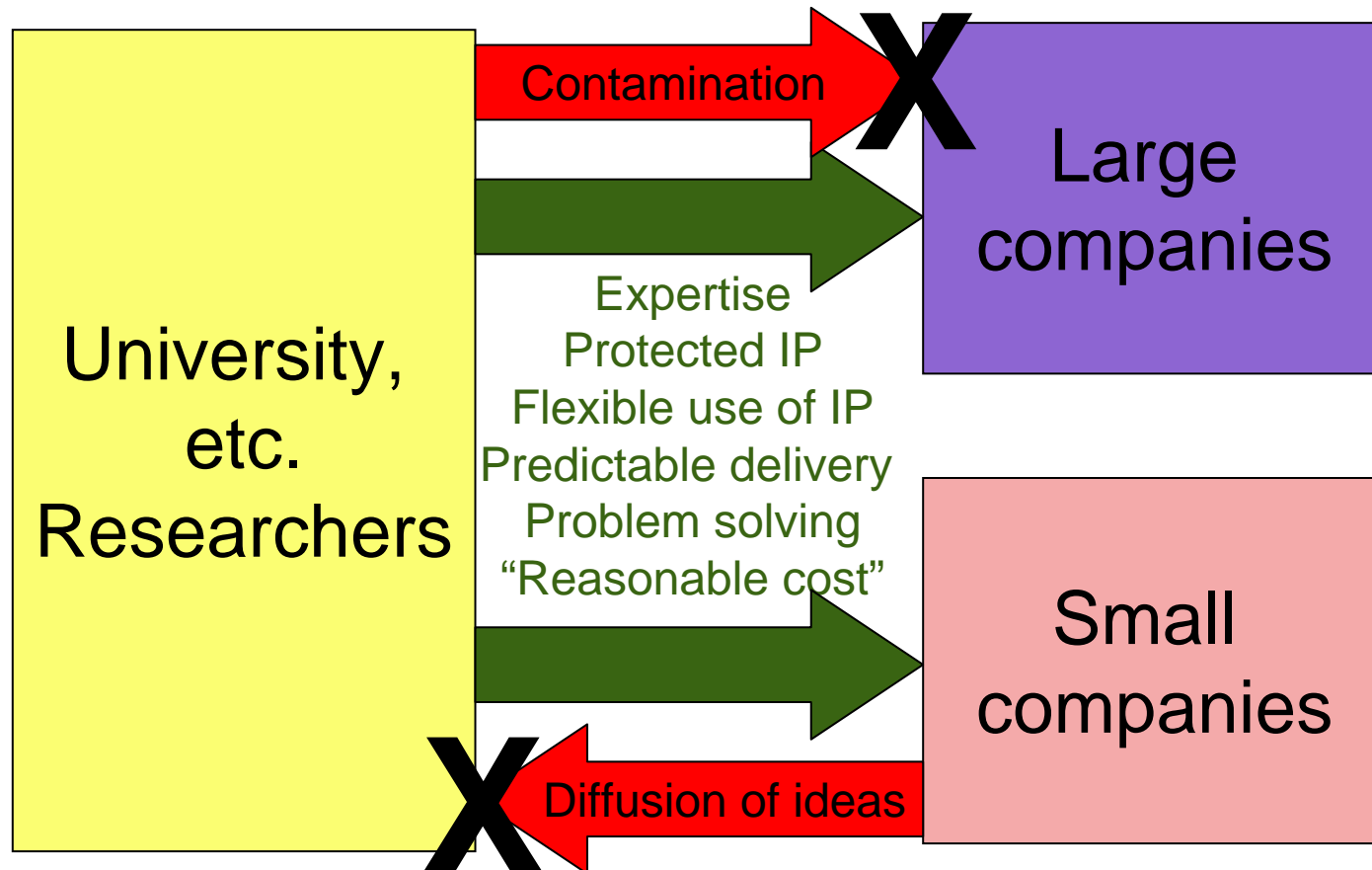


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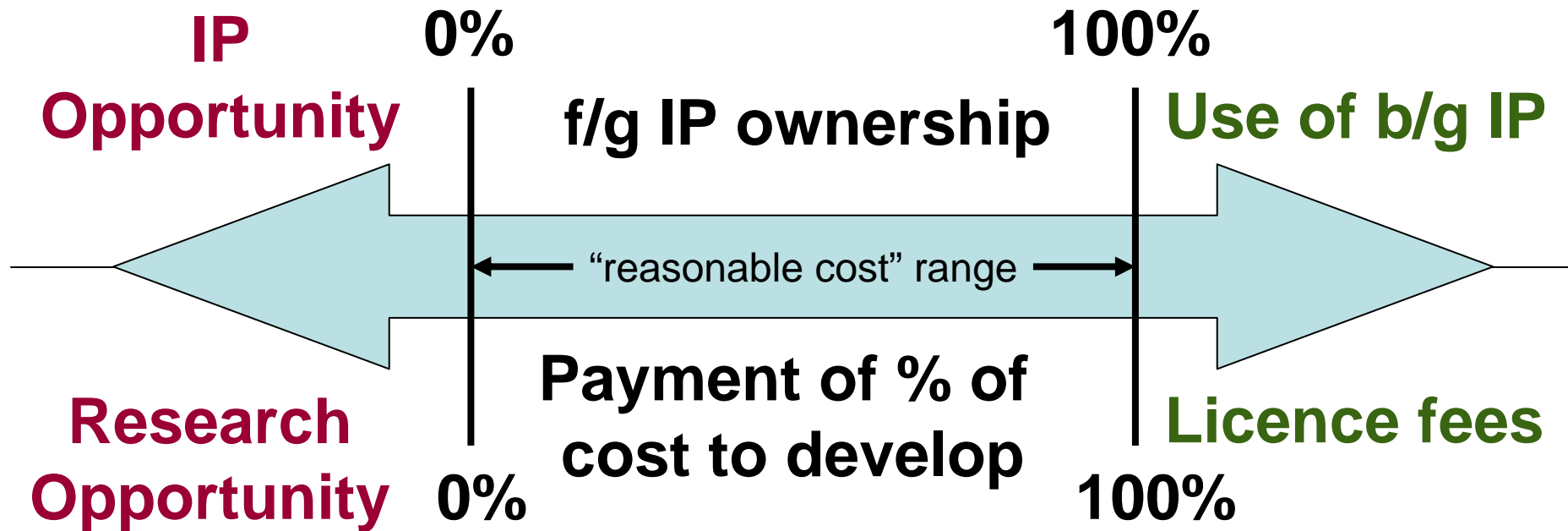


Barriers to engagement



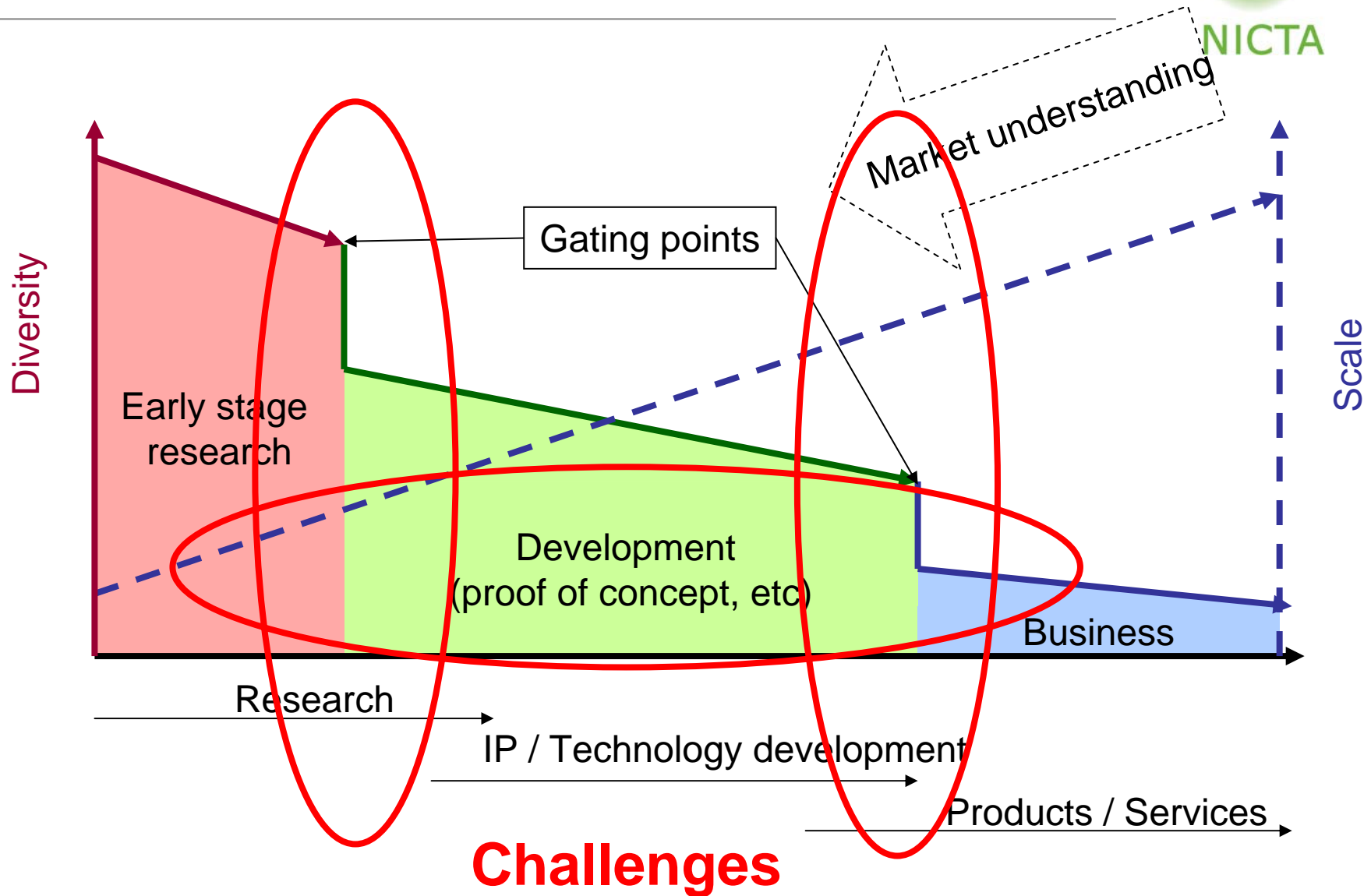
“Reasonable cost” and IP

- What is “reasonable cost”?

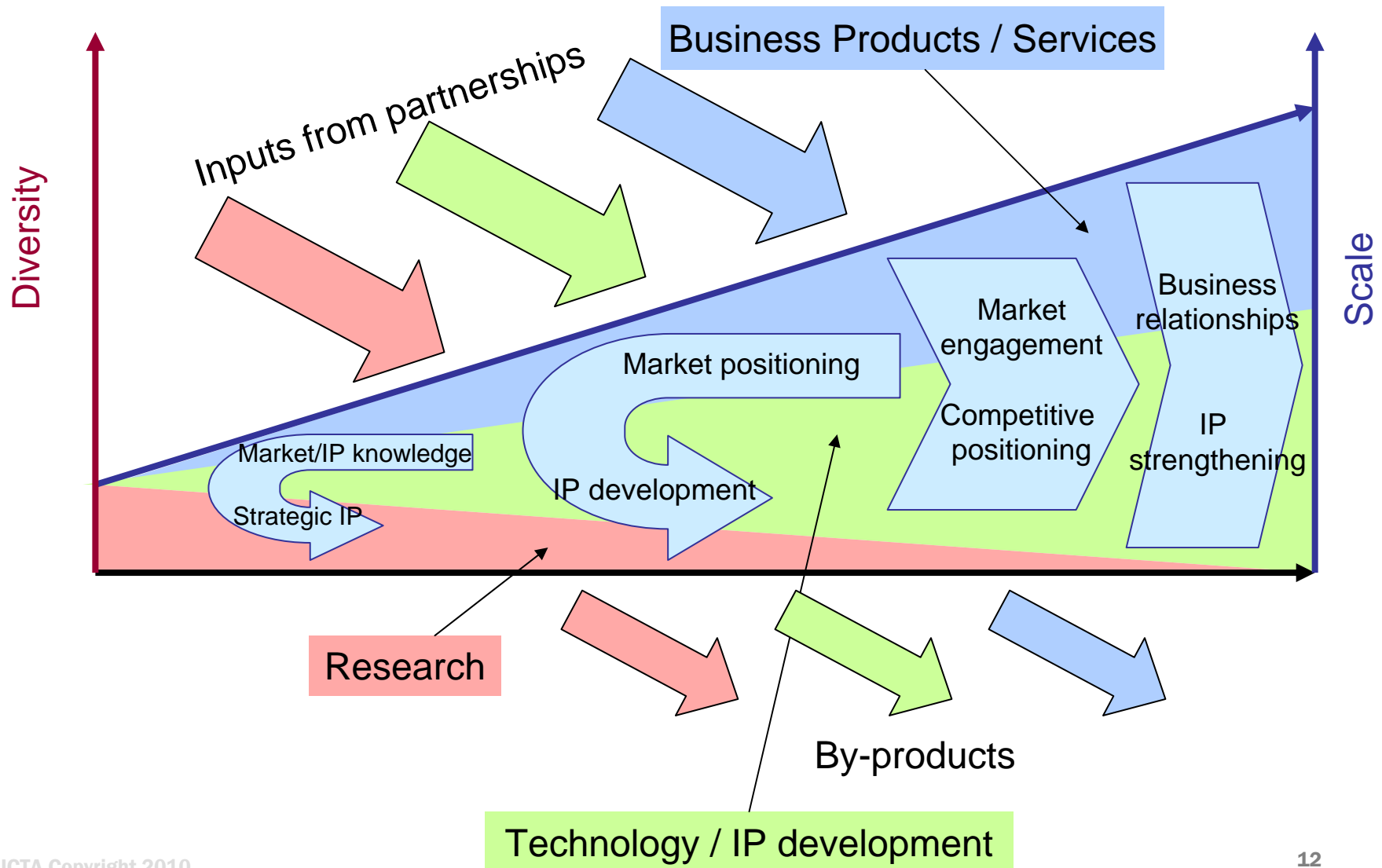


Need to understand the current and likely value-chain

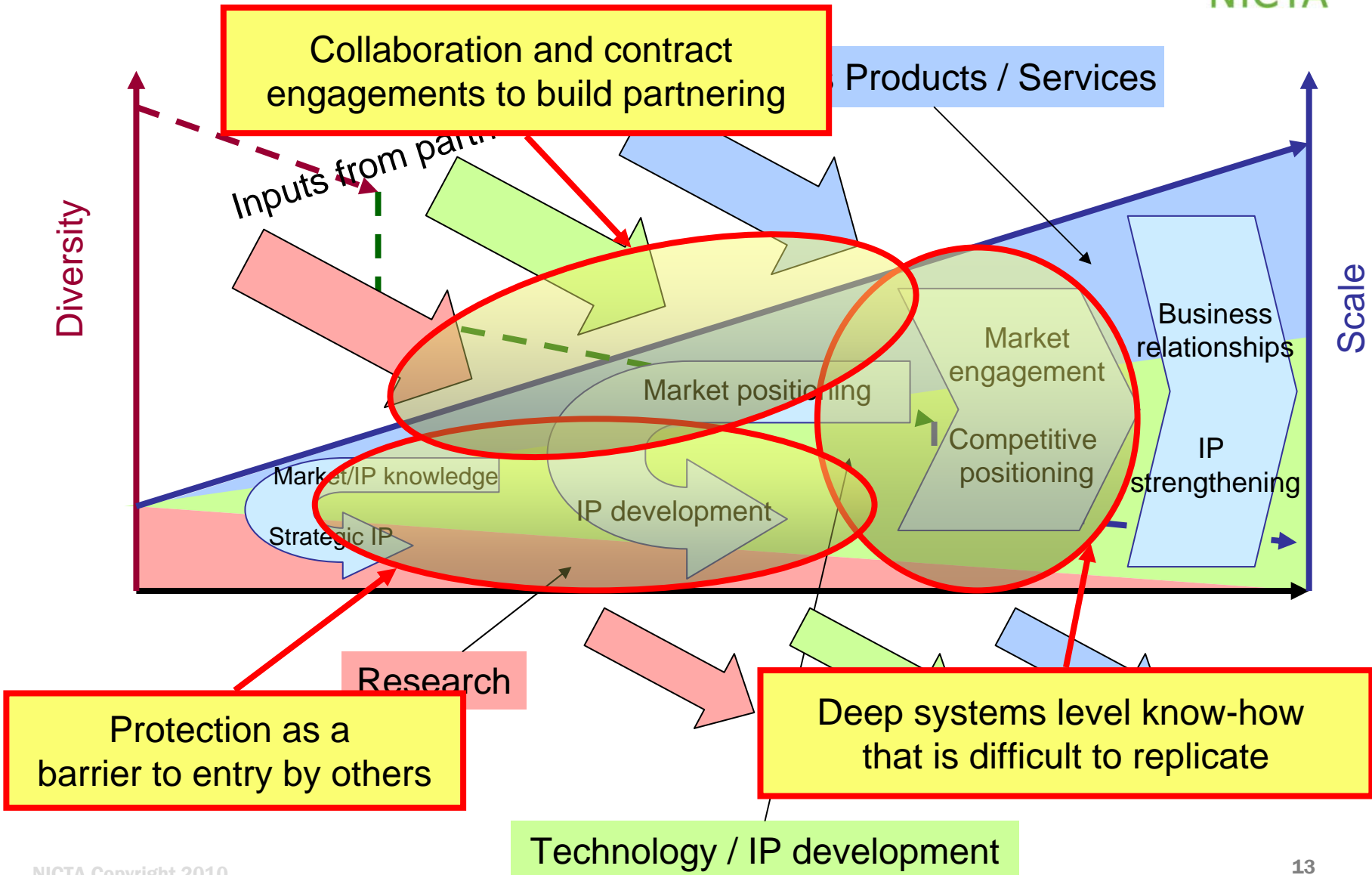
Traditional Innovation “Funnel”



Target Innovation Model



Building competitive advantage





IP Strategy

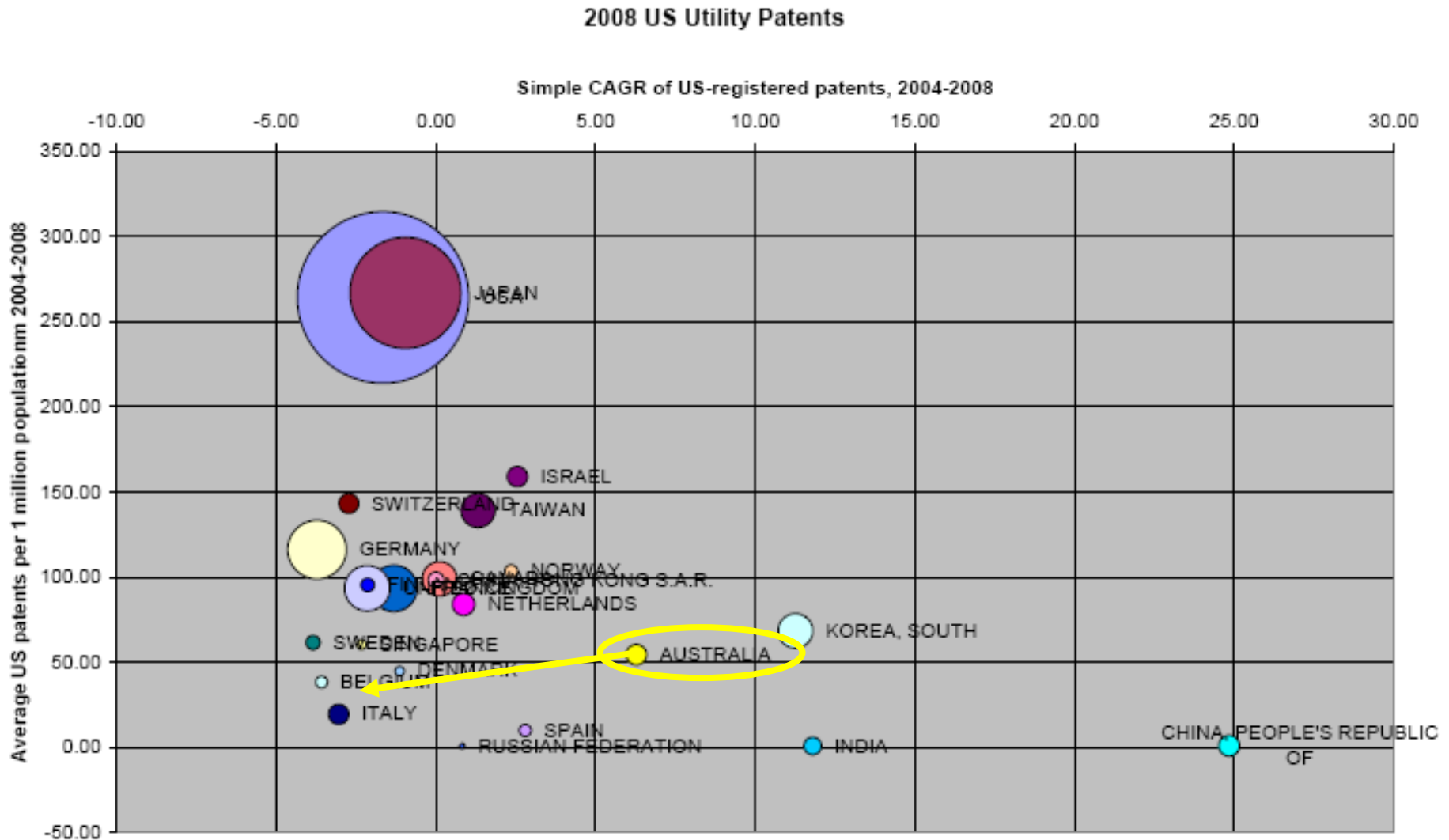


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Australian patenting in US



US patents by Australians (by org'n)



First-Named Assignee	2005	2006	2007	2008	2009	Total
SILVERBROOK RESEARCH PTY. LTD	247	510	533	608	474	2372
~INDIVIDUALLY OWNED PATENT	129	157	132	94	113	625
CANON KABUSHIKI KAISHA (CiSRA)	27	39	40	21	24	151
CSIRO	23	30	13	10	19	95
RESMED LIMITED, AN AUSTRALIAN COMPANY	21	27	17	10	19	94
AVAYA TECHNOLOGY CORP.	3	11	7	15	16	52
COCHLEAR LIMITED	1	5	10	12	16	44
TECHNOLOGICAL RESOURCES PTY, LTD	1	1	1	3	15	21
COMPUTER ASSOCIATES THINK, INC.	0	1	2	3	10	16
CISCO TECHNOLOGY, INC.	7	7	6	14	9	43
QUALCOMM, INC.	4	1	6	14	9	34
UNIVERSITY OF QUEENSLAND	6	11	8	8	8	41

2005 US Patents – Top 10 US Universities



390	University of California
136	Massachusetts Institute of Technology
101	California Institute of Technology
90	Stanford University **
90	University of Texas **
77	University of Wisconsin
71	Johns Hopkins University **
71	University of Michigan **
64	University of Florida
57	Columbia University

20 US Universities had 30 or more US patents granted in 2005

2009 US patents - Top 10 Organisations

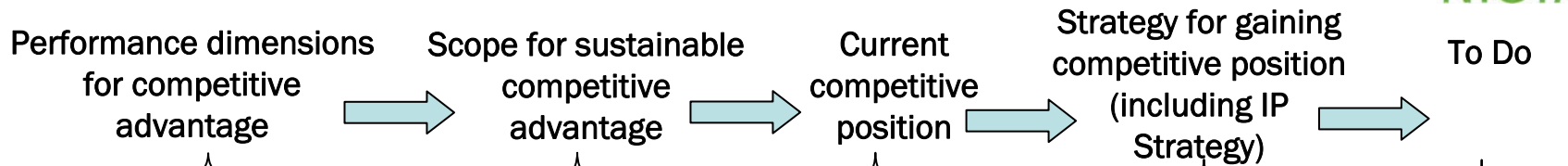


	2009
INTERNATIONAL BUSINESS MACHINES CORPORATION	4887
SAMSUNG ELECTRONICS CO., LTD.	3592
MICROSOFT CORPORATION	2901
CANON KABUSHIKI KAISHA	2200
Panasonic Corporation	1759
TOSHIBA CORPORATION	1669
SONY CORPORATION	1656
INTEL CORPORATION	1534
SEIKO EPSON CORPORATION	1328
HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P.	1269

And note that software can be patented
....

A high proportion of these are ICT companies....

Systematic approach to IP strategy



Performance dimensions for sustainable competitive advantage				Scope for sustainable competitive advantage				Current competitive position			Strategy for gaining competitive position (including IP Strategy)				To Do	
Business need (eg type of customer pain, needed functionalities, etc)	Performance dimensions by dimension of value in solution	Description of PB	Why is PB important (eg how does it relate to customer pain)	Does linear and market conditions affect the relative importance of this PB?	How hard is it to improve along this performance dimension?	Does PB provide opportunity for competitive advantage?	Importance level for competitive advantage (1-5)	Current status of competitors (qualitative if possible)	Our current status (qualitative if possible)	Our current competitive position (1-weak; 5-strong)	What research and/or development should we do to gain a competitive advantage?	What is the IP approach for this R&D?	What is the rationale for this IP approach?	What operational tasks should we do to gain a competitive advantage?	R&D Tasks/Activities/Strategies	Operational Tasks/Activities
Enhanced cost of generating sign specific data	Classification accuracy	Likely needed for classification accuracy	Classification accuracy is very important for the ability to process and detect in a timely manner	Generally high linear, but will reduce over time	well understood problem, easily	Yes, Classification accuracy requires a	2	All of the top processing manufacturers have it	It is generally like NICTA except 75% duplicate in	It is weak	Develop tools for faster generation of classification	Key details of techniques used in tools	Classification accuracy does not really matter, it is	Identify a method of transferring skills to tool	T: Develop tools for faster classification	T: Find people with skills who can be
	Rule preparation	Likely needed for advanced data preparation														
	Output shrinking	Likely needed for subject to processor														
	Processing speed	Video frame data processing speed														
Increased number of rule types which can be detected	Sign types	Number of sign types which are detected														
	Parallel sign types	Number of sign types which are detected in parallel (without increasing number of rules)														
High accuracy of sign classification data	Detection accuracy	Percentage of sign types which are detected.														
	False positives	Percentage of detections which are not signs or are not of target sign type.														

But it takes domain knowledge, IP, and R&D experience to develop this kind of strategy...

- **Need for standard approach to IP**
 - Contracts for research services and licencing
 - Management of portfolios
- **Standard may be too hard to achieve**
 - “Opt-in” default ??
 - “Opt-out” option for special cases
- **Support for**
 - Sector domain knowledge in technologies and IP strategy
 - Management of IP portfolios
 - Reasonable returns to inventors, owners, etc

- **Grow the ICT R&D sector**
 - Target greater R&D Services activity
- **Engage earlier**
 - Build partnerships, know the value chain
- **Take a strategic approach to IP**
 - Know how industry uses IP

Thank you

For further information on
NICTA...

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