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Open innovation and global networks

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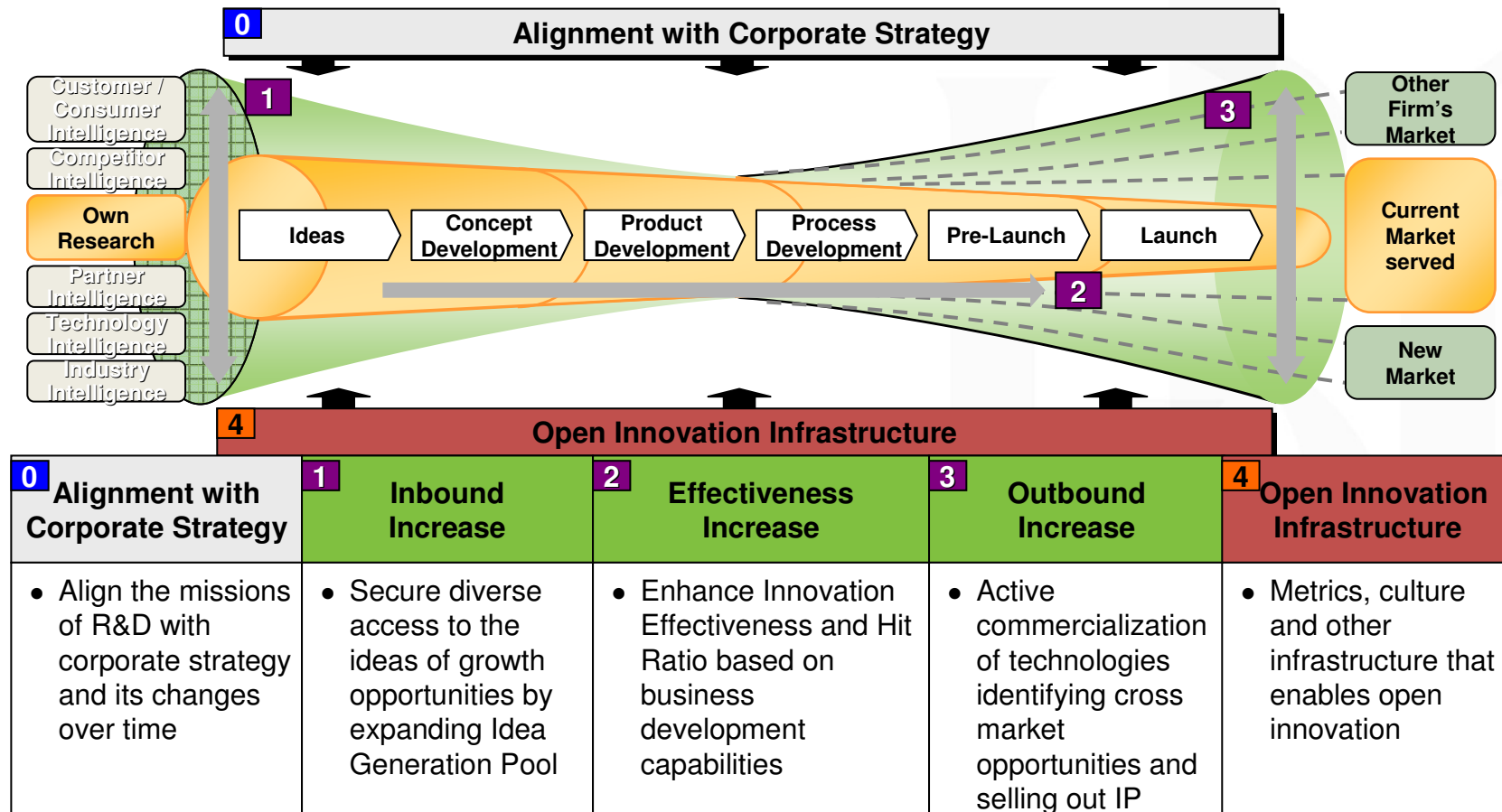
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Open innovation is a fashionable explanation of the innovation process. Open innovation stresses collaboration of innovators in different phases of the innovation process with external parties the systematic use of external sources for innovation and the exploitation of innovations outside companies core innovation activities.

BUT

- ▶ **Open innovation refers to the process of generating innovation**
- ▶ **The innovations process becomes more open in many aspects**
- ▶ **Globalization of R&D and markets strongly influence the innovation process then**

Increasing complexity of innovation process – implications for STI policy



Outside-in Open Innovation

customers

- Most relevant source of ideas with increasing importance, often focus on lead users
- Customers become also more involved in financing of innovation
- However, it is not always possible to define emerging needs

Universities and research institutions

- Companies focus on fewer high quality relations to universities or individual professors
- Know how via PhD programs and new hires is important source

Start-ups, Consultants / Engineering Firms

- Usually not of major importance and only opportunistic screening of opportunities
- Global players rarely have a full overview but expect start-ups to approach them

Suppliers

- Importance increases with specialized capabilities in materials and development



Inside-out Open Innovation Spin Out

- Only for few companies relevant and usually the exception even there
- Few companies use spin out to market non-core inhouse technology

Out-Licensing Partner

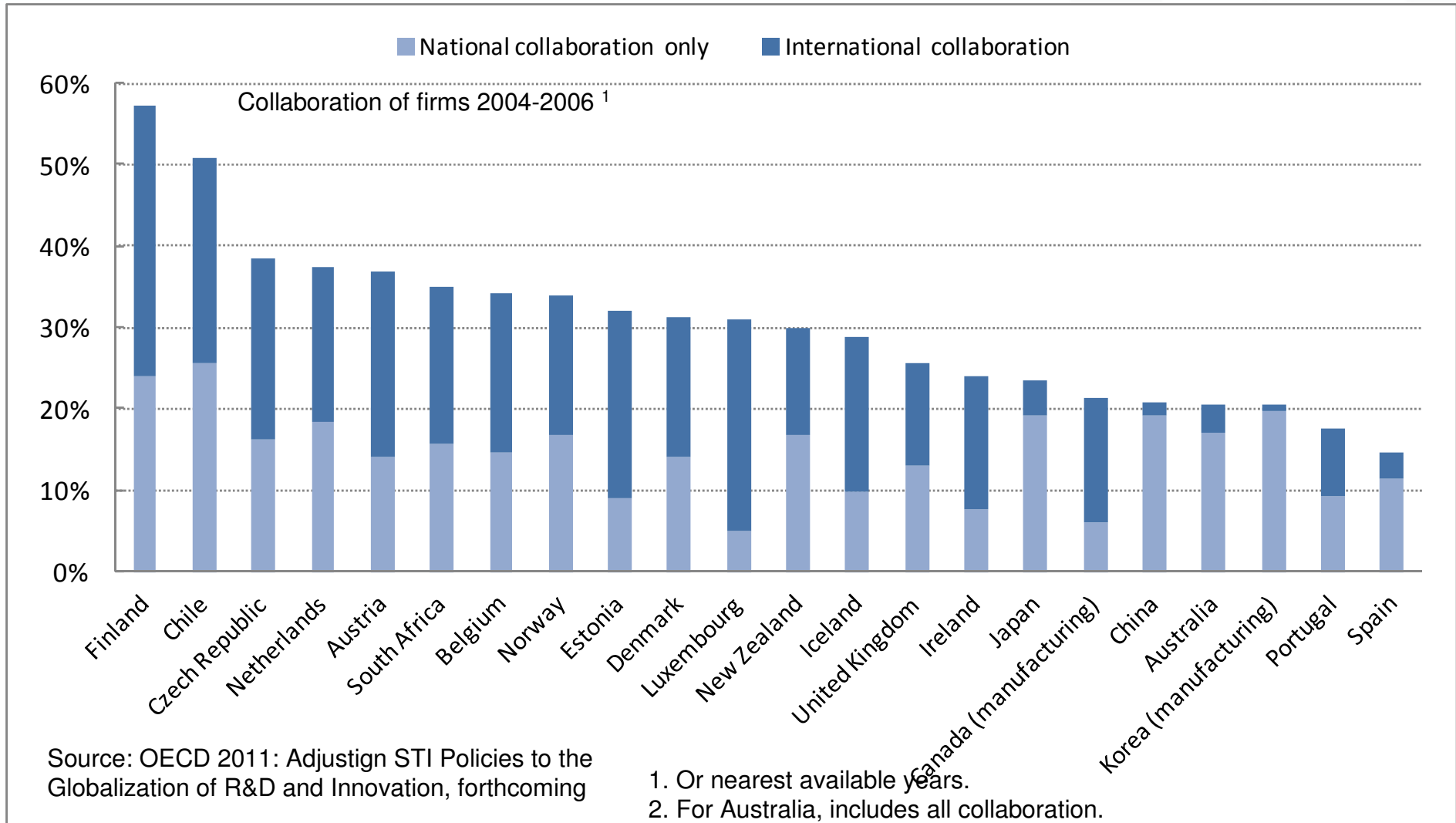
- Mostly opportunistic activities by global companies due to potential applications internally
- Out-licensing equally done with small and big companies

Competitors (Co-opetition)

- Co-opetition is used in pre-competitive research, to create a new market, to share cost and risk or to set industry standards
- Standard requirement in many European research programs

Treat Open Innovation as a global topic!





Major developments of companies' R&D activities

- Core product development is and will be pursued at the headquarter;
- A number of applied research as well as development centers are distributed globally;
- A significant number of R&D centers are started as public/private-partnerships globally;
- share of R&D expenditure for collaborative research rose to approx. 10-20% of total spending.
- The number of research partners is steadily rising hence the complexity of interface management is becoming even more significant.
- Global markets are considered markets for human resources (domestic research facilities).
- Companies source R&D from multiple locations around the world but maintain strong links with homebase
- Global companies are attracted to locations with strong research base
- Strong geographical research spillovers between public research and industrial research
- Cooperation culture, shared norms and trust between actors are important; rooted in social and political institutions of regions and nations
- MNCs maintain closer research and collaboration ties with international partners than domestic firms embedded in local economy
- Often access to human resources is an issue
- MNCs often establish local presence to gain access to local tacit knowledge base

Major developments of companies' innovation activities

- Leading companies cannot afford NOT to be the preferred partner in the industry
- These companies have to look outside their own industry to find “best practice”
- Transparency on leading experts and ease of communication have increased the competition of global companies to get access to these skills
- Open Innovation is in most cases increasingly relevant, not as a breakthrough paradigm shift but a consequent continuation of partnership programs
- Single innovation units are often no longer able to all elements of the technology system, thus current scientific development is based on distributed control inside a company or with partners outside
- The most common process to capture external ideas is the use of individual's networks
- All companies have extensive relations with leading academics worldwide
- Often focused on few selected universities
- University hires and special PhD programs are considered important sources for innovation
- Most companies have increased collaboration with customers
- Competitor relations are built for joint early stage development or “open standard” setting or to increase efficiency
- Start-ups more often approach the global companies than vice versa
- Most companies have not established incubators

Major developments of companies' innovation activities – ctd.

- Two opposing trends exist on intellectual properties, sometimes within the same company
- Strict protection of all IP around core technologies – “Freedom of Action” is key
- “Open Standards” – allow others to use IP in order to build the market
- One of the success factors of the last years is the creation of growth platforms or focus technology programs
- Open innovation is split in support of these company-wide platforms and de-central business unit needs
- Open innovation often requires new skills
- Scouting and screening of opportunities outside of “comfort zone”
- Interface management for internal and external collaboration
- Project management and other business skills from each researcher
- Few companies have started to build dedicated positions to “Open Innovation”, e.g., with Business Development & Relations, others are building on existing functions for external relationships
- “Port of Entry” with multiple connections to the outside world is crucial for success in Open Innovation
- Companies invest in new innovation centers for different reasons (example Siemens Corporate Technology)
- Current people excellence
- Future expected people excellence (various, but could also include India)
- Biggest markets (e.g. China)

Limitations and challenges	Examples and quotes
Core competencies are fully covered internally	“We have consolidated our platforms in which we have most knowledge, thus we need less externals”
Company culture does not accept external superiority	“We must be top in our core competences”
Interface problems, between units, geographies etc.	“It is easier to go next door...”
Lack of internal resources to optimally support external activities	“We need to provide an internal development team for each open innovation activity”
Internal competition between innovation units	“India and China are no longer behind, we need to prove our existence every day”
Measurement of benefits	“The advantage of collaboration is often only visible in the long term”
How to motivate all employees to make open innovation everybody’s job	“It is not enough to have it formulated in our company statements”
Externals – especially customers – do not or can not share their needs and ideas	“We need to help our customers in defining the needs”

Factors influencing Choice of R&D Locations

Implications for STI policy

Most important



- Proximity to production and sales
- High availability of researchers
- Access to specialized R&D knowledge
- Access to markets
- Proximity to technology poles / incubators



- Important to support investments in production facilities and guarantee best educational system, availability of know how and other technology players (clusters), and provide infrastructure for fast global reach

Least important



- . . .
- Low labour cost of researchers
- Proximity to suppliers
- Low degree of regulation
- Access to public support funds



- NOT important to fight high labour cost, provide extraordinary public funding or reduce regulations

- Education strategy
 - Build education portfolio with focus on competence fields
 - Avoid duplication of research fields at universities
 - Define performance indicators
 - Build Elite Universities (not requested by all interviewees)
 - International exchange programs and technology networks
- More basic engineering and science talents
 - Create incentives for technology studies and careers
 - Start technology programs already in primary schools
 - Securing education more important than Nobel Prizes
- Emphasis on core science and not on fashion fields
 - Request for other academic programs
 - Programs to develop “mavericks”, e.g., in design
- Financial engineering
 - Public-private-partnership
 - Balance IPR ownership between business and academics
 - Enable sabbaticals for academics in the industry
- Marketing and reputation
 - Better market know how and university excellence
 - Attract international students to fill gaps without too much loss of knowledge to emerging countries afterwards
- Funding
 - Incentivize “Private Sponsorships” for university chairs
 - Public investment in “Technology Leadership Programs”

STI policy recommendations - Adjust strategy, marketing and funding of innovation policy to Open Innovation needs

Strategy

- | Do NOT interfere in company's Open Innovation activities!
- | Active enabler of global activities
- | Continue to build on strengths and reputation, e.g., build and support clusters on private banking, life science etc.
- | Support broader regional initiatives

Marketing

- Help regions to become globally known for leadership around cluster-topic
- Provide frame conditions to attract international high potentials
 - Speed of immigration and communication with public authorities
 - International schools
 - Programs for working mothers
- Attract international investors and start-ups (potential to grow and important for other companies)
 - Keep restrictions to a minimum
 - Promote technology leadership and technology advantages
 - Clarity on policy to facilitate investment decisions

Funding

- Simplify funding programs
- Tax incentives or direct funding of R&D programs and investments, e.g., like the 75% public funding of public-private-partnerships in the UK or 50% public funding for investments in Singapore
- possibility to use funding program also for piloting phase



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Thank you for your attention!

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