

Innovation Trends, WIPO and Innovation Ecosystems

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- I. Innovation Trends
- II. Innovation Ecosystems
- III. WIPO Projects
- IV. Knowledge Economy

I. Innovation Trends

I. Innovation Trends

Factors on the Rise

- R&D Expenditures
- International Reach
- Focus on IP Ownership
- First and Subsequent Filings
- Complex Technologies
- Publicly Funded Research
- IP Markets and Licensing
- Collaboration and Networking
- R&D Alliances
- Patent Pools

I. Innovation Trends

R&D Expenditures

- Global R&D expenditures almost doubled in real terms from 1993 to 2009
- High-income countries: 70% of world total
- Low- & middle-income countries
 - Global share up 13% (1993-2009)

I. Innovation Trends

Increasingly International

- Greater mobility of students, highly skilled workers and scientists
- Greater international co-authorship of technical articles
- More patents with multinational co-inventors
- Greater multinational placement of R&D facilities
- Rising share of middle-income countries in global economy
 - Reorienting innovation

I. Innovation Trends

Focus on IP Ownership

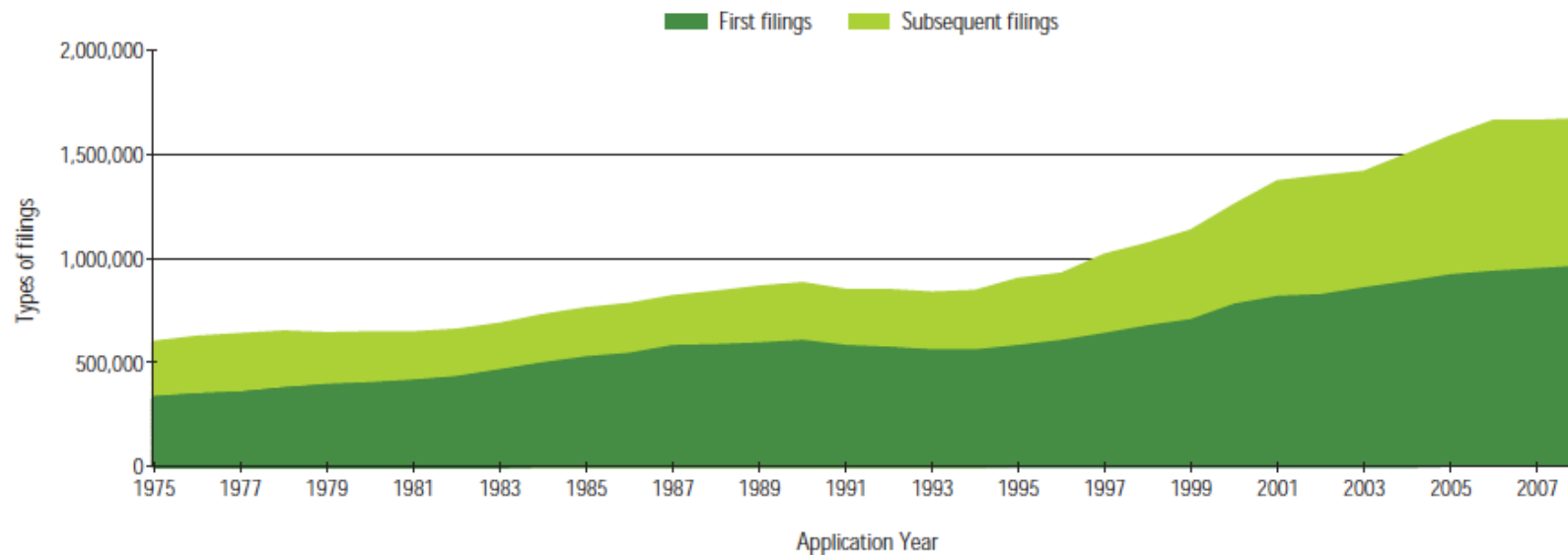
- Affects innovation strategies
 - Institutional
 - National
 - International
- Increases worldwide demand for patents

I. Innovation Trends

Growth in First and Subsequent Filings

- 50% of filing growth in past 15 years due to subsequent filings
- Reflects greater economic integration

Figure 4 Filings worldwide by type of filing



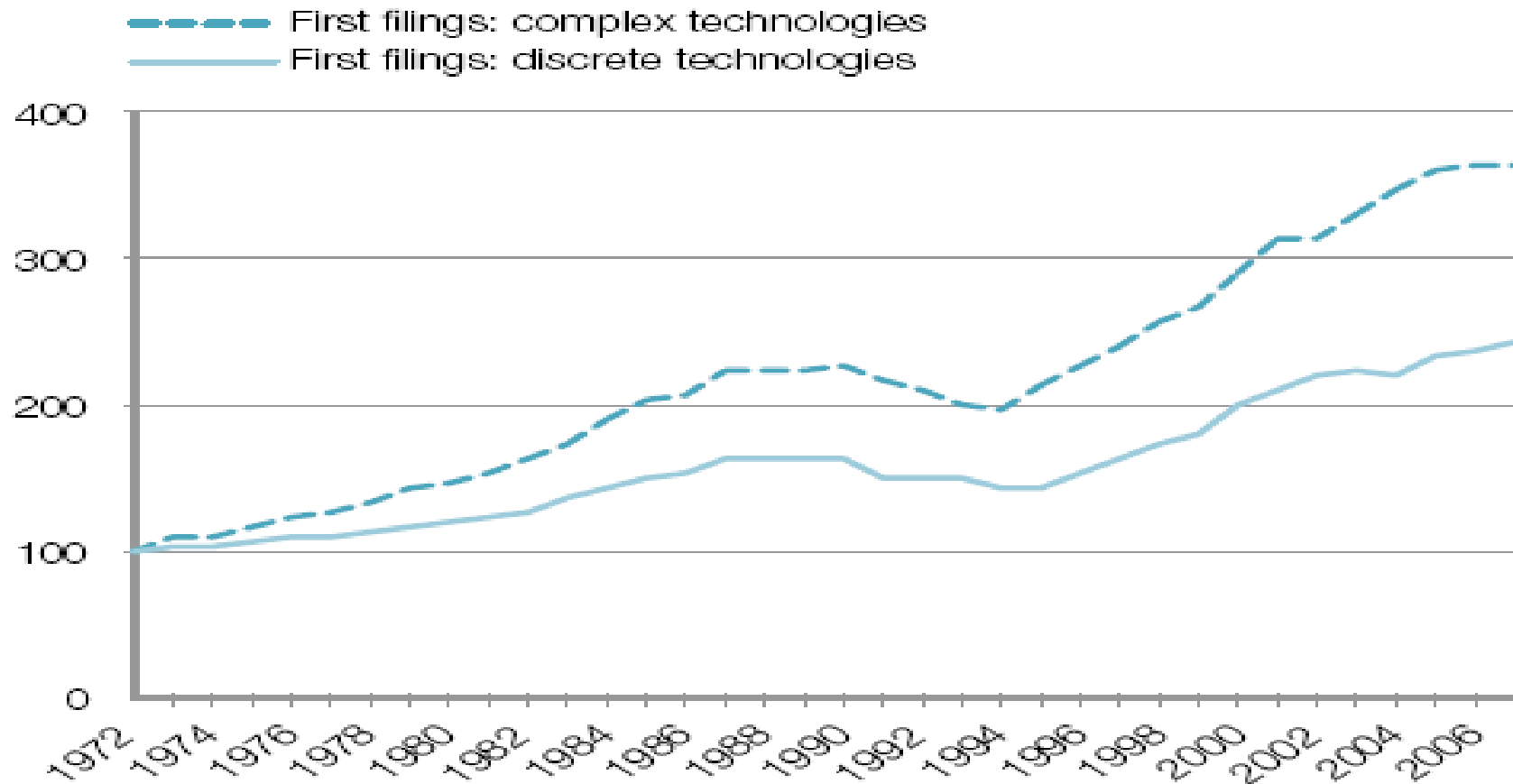
Source: WIPO Statistics Database, October 2011

I. Innovation Trends

Growth in Complex Technologies

Patent filings for complex versus discrete technologies, 1972=100, 1972-2007

First filings

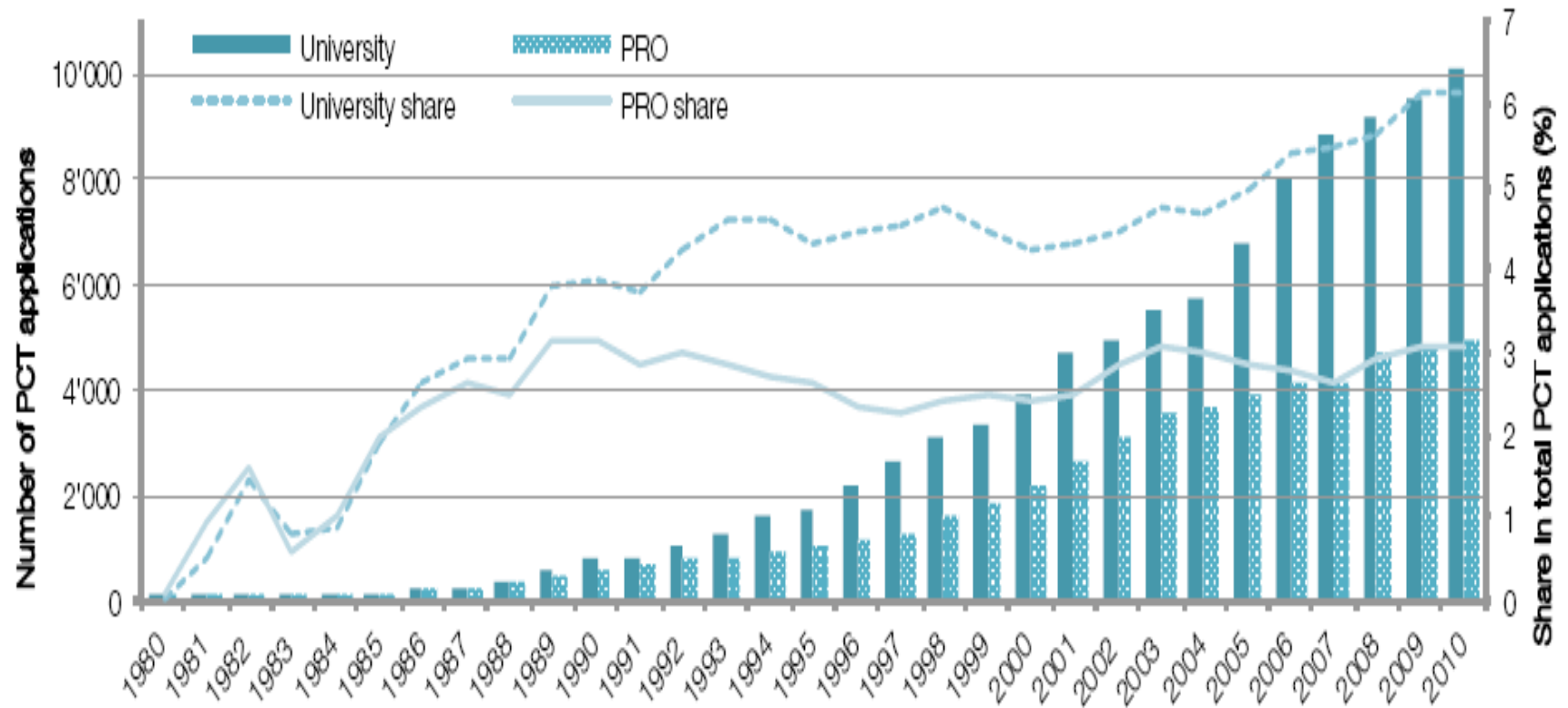


Source: WIPO, *World Intellectual Property Report – The Changing Face of Innovation*

I. Innovation Trends

Growth in Publicly Funded Research

World PRO and university PCT applications, absolute numbers (left) and as a percentage of total PCT applications (right), 1980-2010



Source: WIPO, *World Intellectual Property Report – The Changing Face of Innovation*

I. Innovation Trends

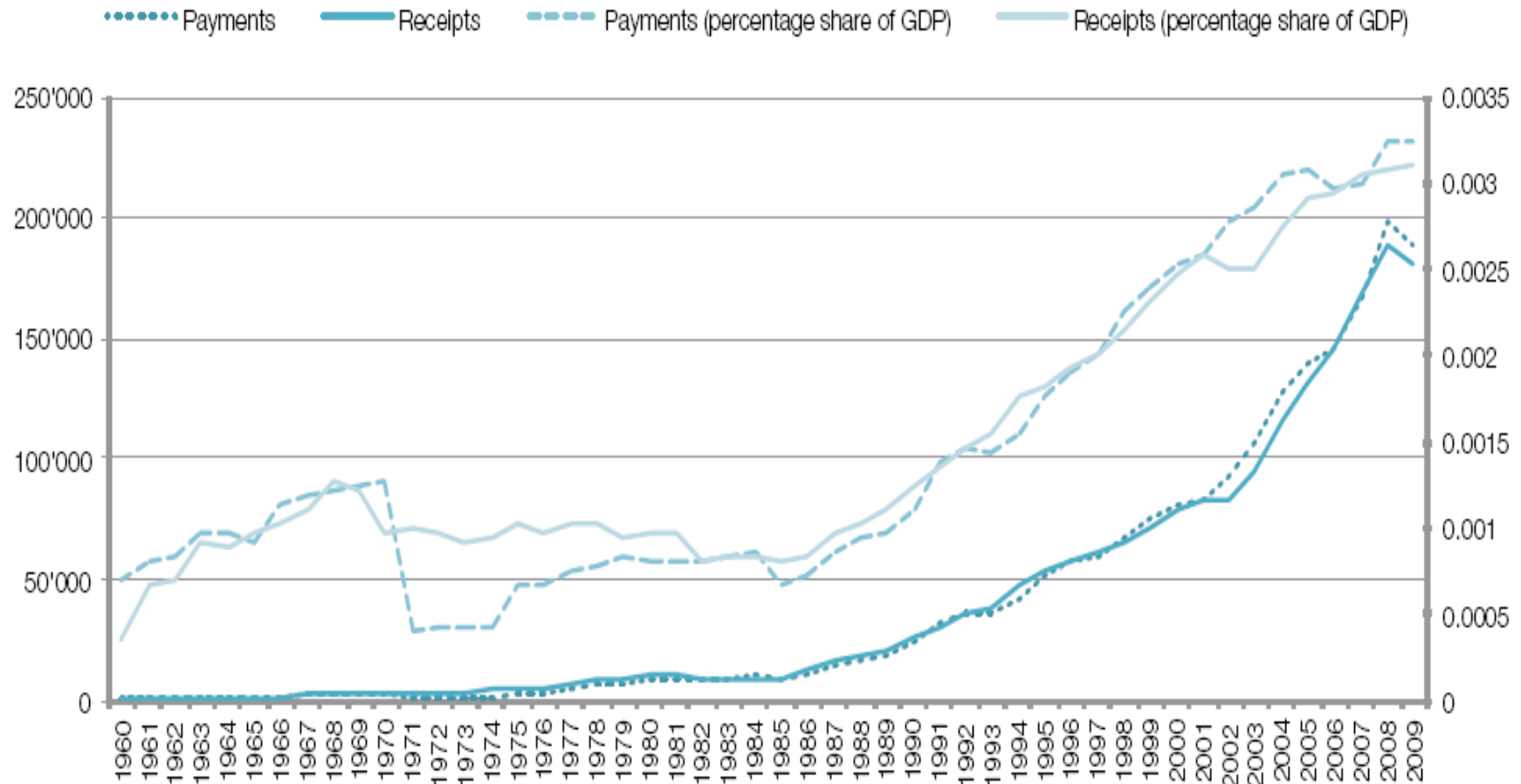
Growth in IP Markets

- Knowledge markets based on IP rights
 - On the rise, though still nascent in many countries
 - IP as marketable asset
 - Patents as investments
 - Auctions

I. Innovation Trends

IP licensing outpacing growth in global GDP

RLF payments and receipts, in USD millions (left) and as a percentage share of GDP (right), 1960-2009



Source: WIPO, *World Intellectual Property Report – The Changing Face of Innovation*

I. Innovation Trends

More Collaborative and Open

■ Indicators

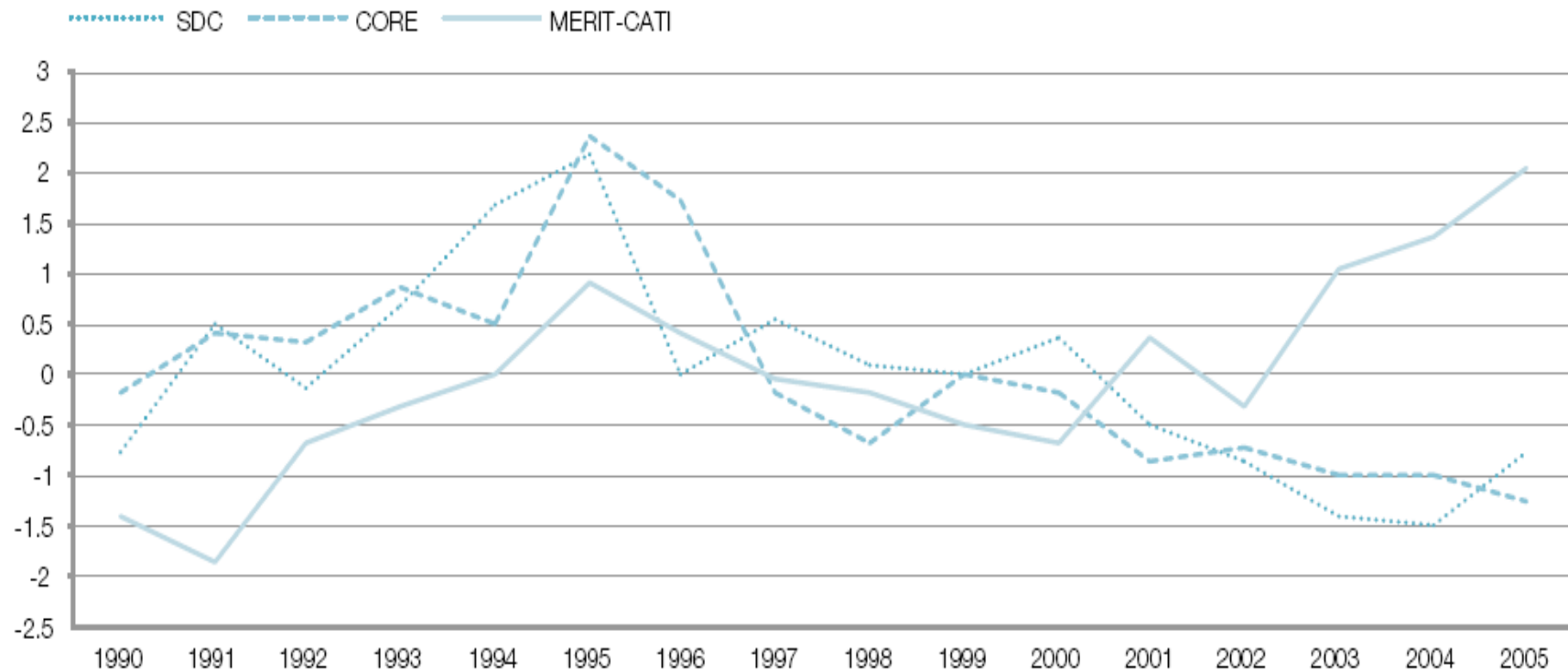
- R&D alliances
- International co-patenting
- Patent pools

I. Innovation Trends

R&D Alliances

Number of R&D alliances (standardized), 1990-2005

(a) Comparison of the MERIT/CATI, CORE and SDC R&D alliance databases

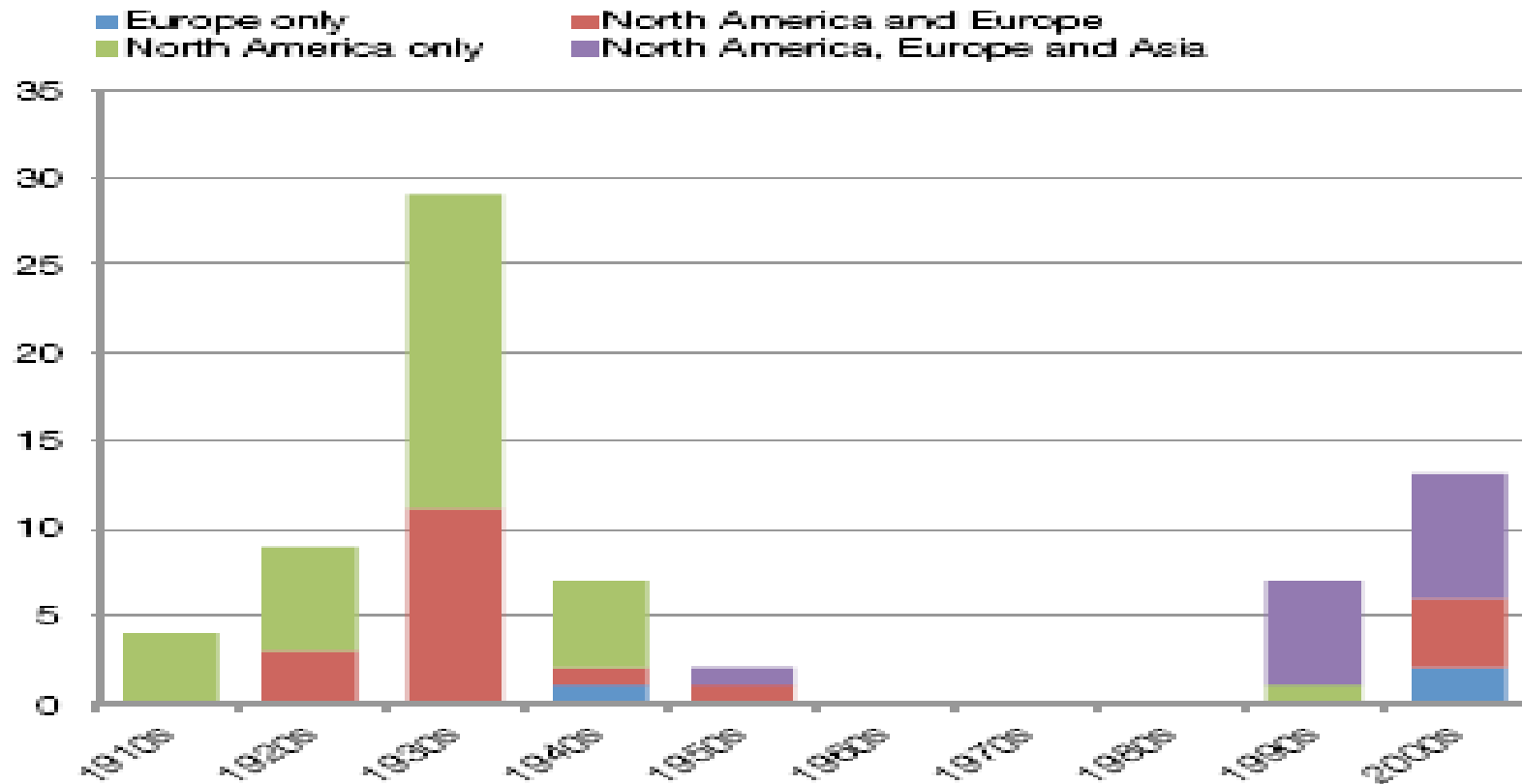


Source: WIPO, *World Intellectual Property Report – The Changing Face of Innovation*

I. Innovation Trends

Patent Pools

Number of patent pools by country/ region



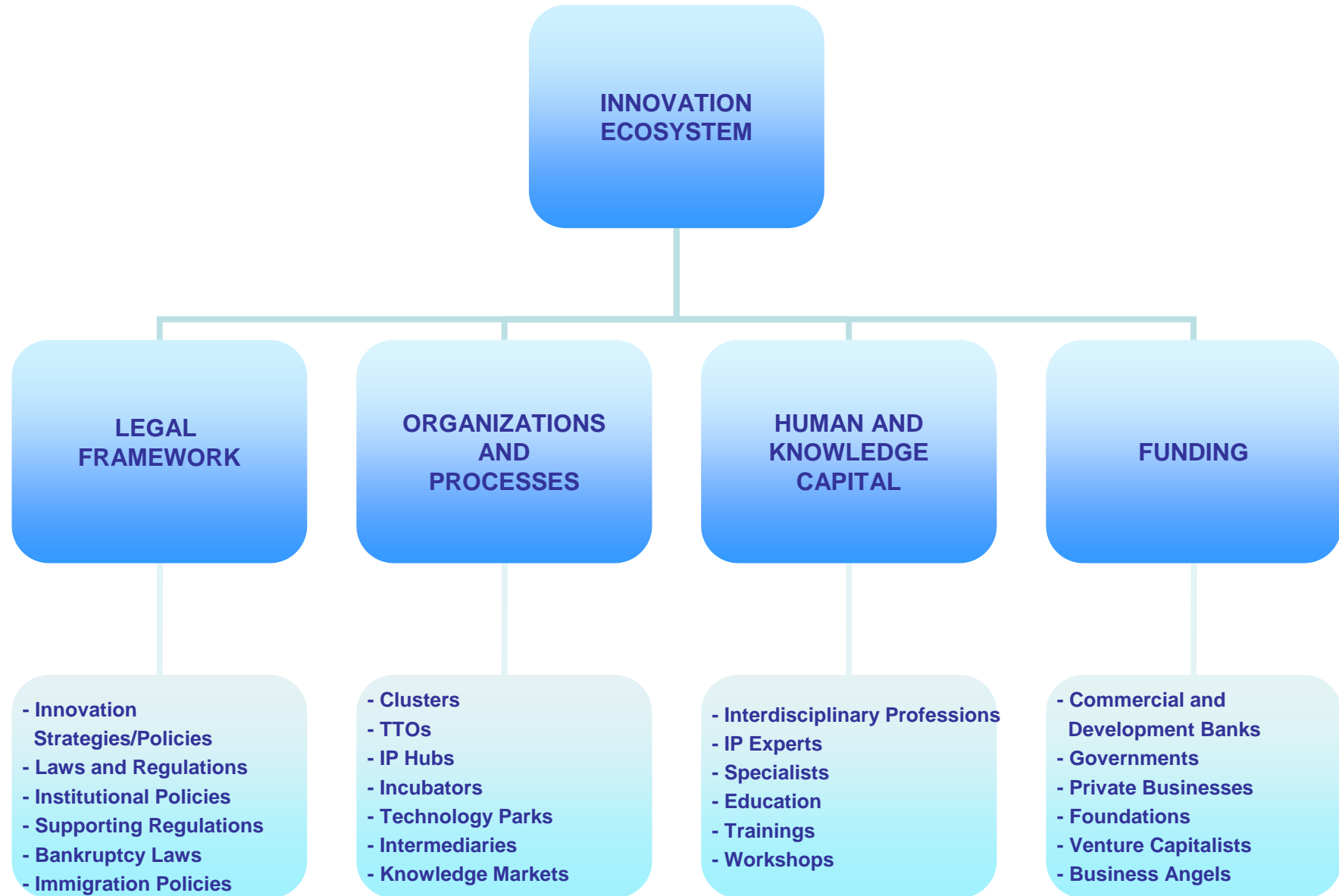
Note: Based on information for 75 documented pools. See the Data Annex for further details.

Source: Updated from Lerner *et al.* (2007).

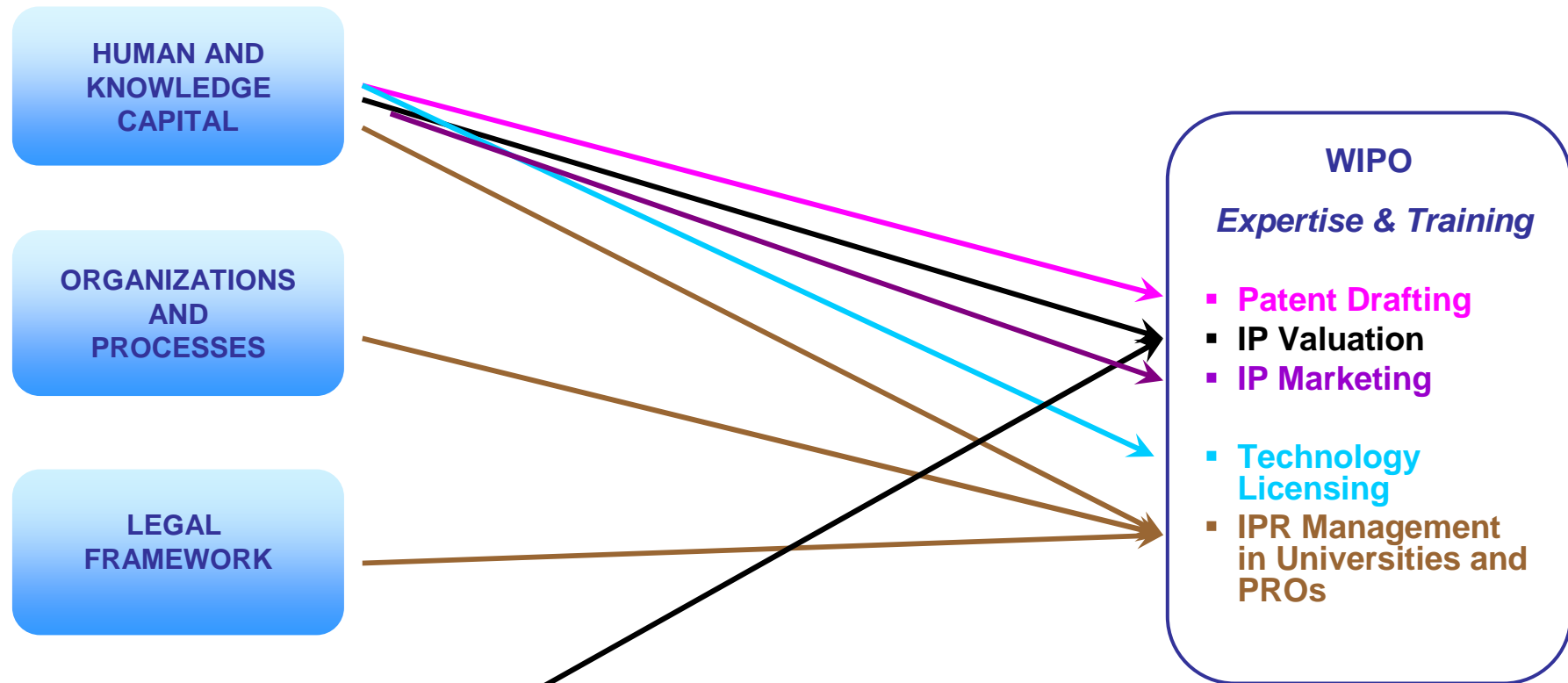
II. Innovation Ecosystems

II. Innovation Ecosystems

- Interconnected public and private structural elements
 - Policies
 - Organizations
 - Funds
 - People
 - Networked relationships
- Role
 - Provide framework and support structure for systematic *creation, diffusion* and *use* of new, *economically viable knowledge* for economic, social and cultural development of societies

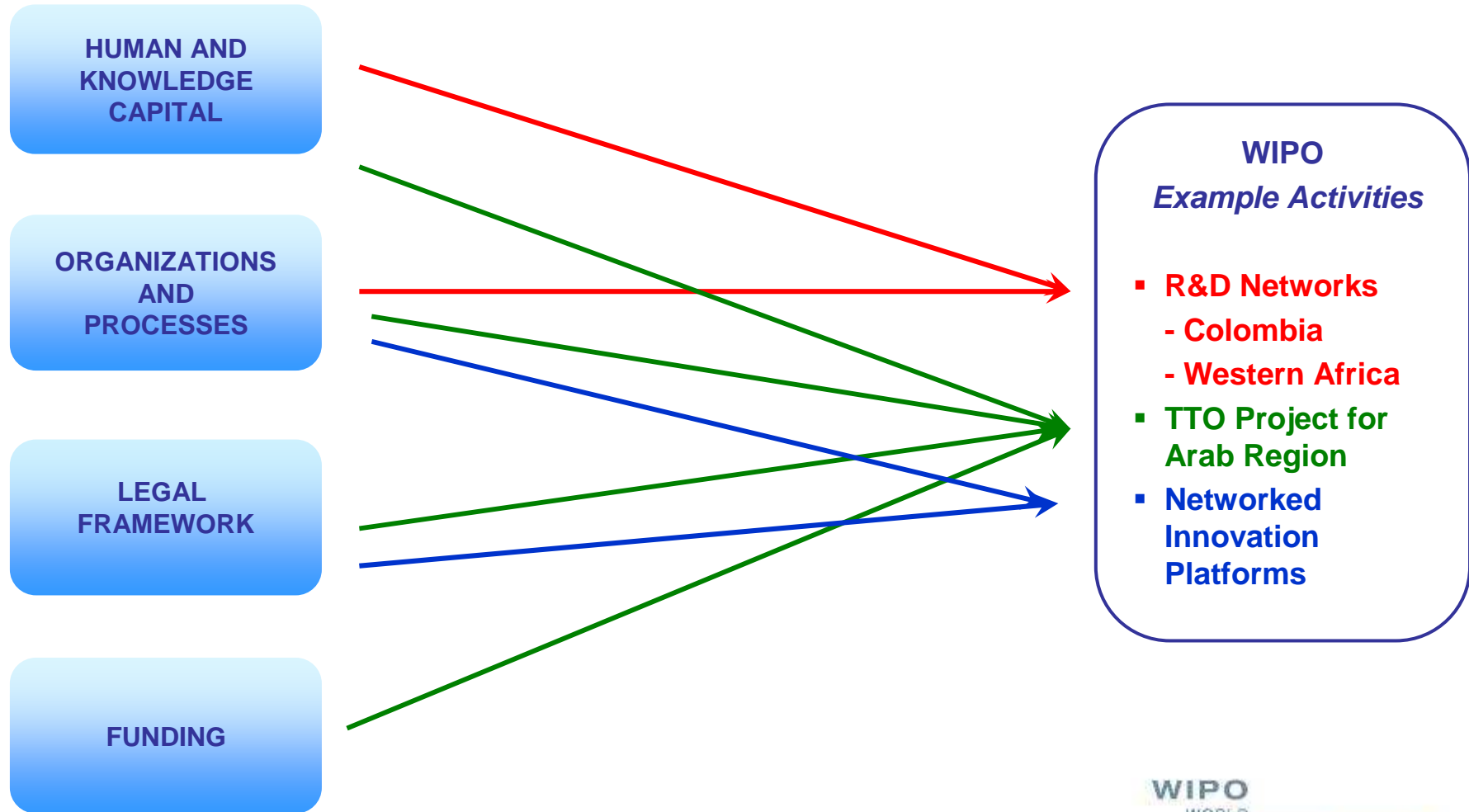


Mapping Ecosystems to Expertise

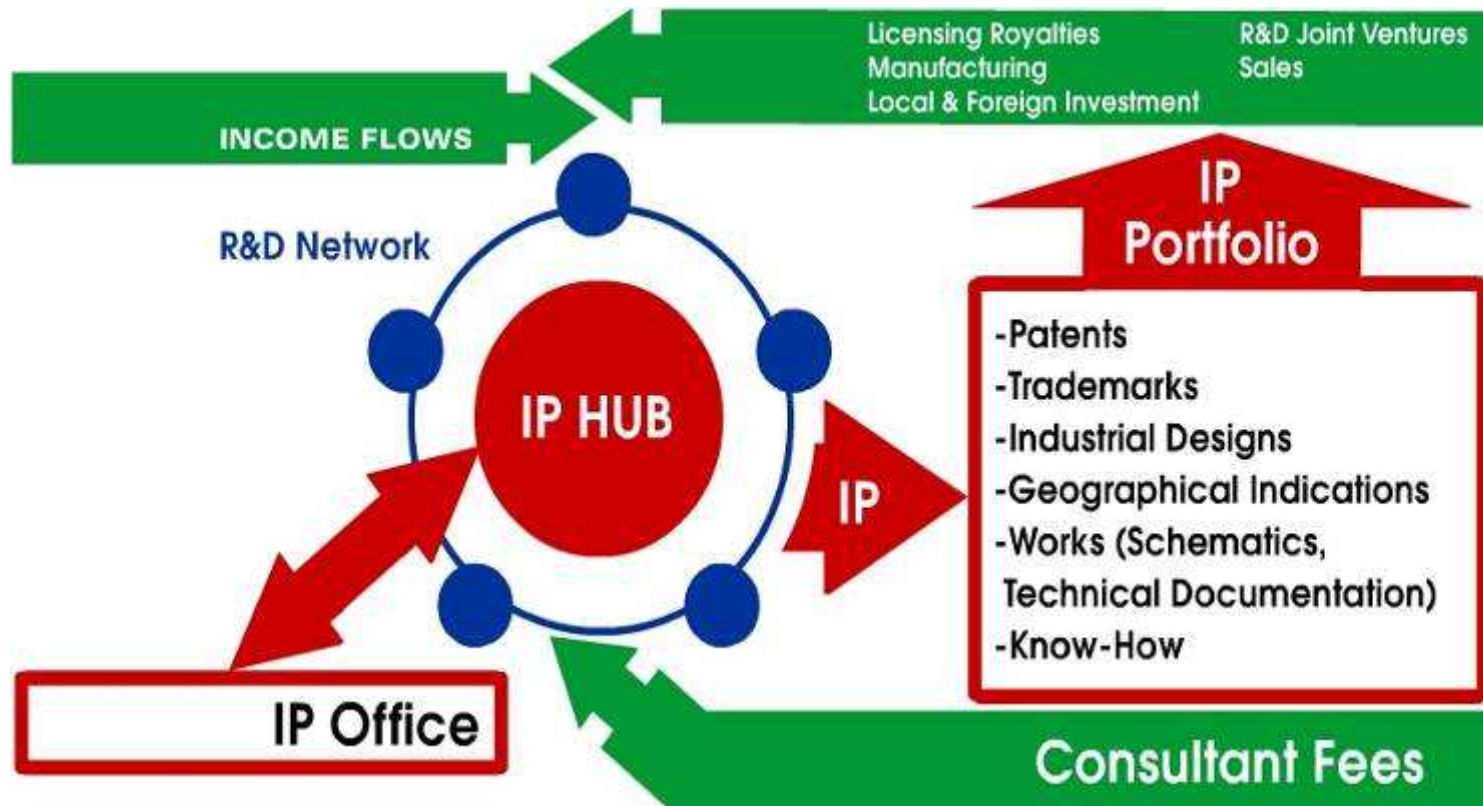


III. WIPO Projects

Exemplary WIPO Projects



R&D Networks and IP Hubs (TTOs)



R&D Networks and IP Hubs (TTOs)

Example Projects

- Implemented in health R&D sector of 7 countries
 - Colombia
 - 6 Western African Countries
 - Cameroon
 - Central African Republic
 - Chad
 - Equatorial Guinea
 - Gabon
 - Republic of Congo
- Target problem for current work
 - Neglected diseases with large human and economic effects
 - Malaria vaccine

R&D Networks and IP Hubs (TTOs)

Characteristics and Benefits

- Replicable model
- Economies of scale
- Efficient use of existing scientific, financial and management resources
- Facilitates interdisciplinary approach
- Collaborative innovation
- Greater IP protection, development and commercialization
- Improved return on investment

R&D Networks and IP Hubs (TTOs)

Important Elements

- Political commitment is essential
- Roles and responsibilities of all participating parties must be well defined
 - Particularly for follow-up activities
 - Funding
 - Support for new infrastructure after seminal project is complete
- Coordination
- Long-term vision
 - Plan ahead for replication

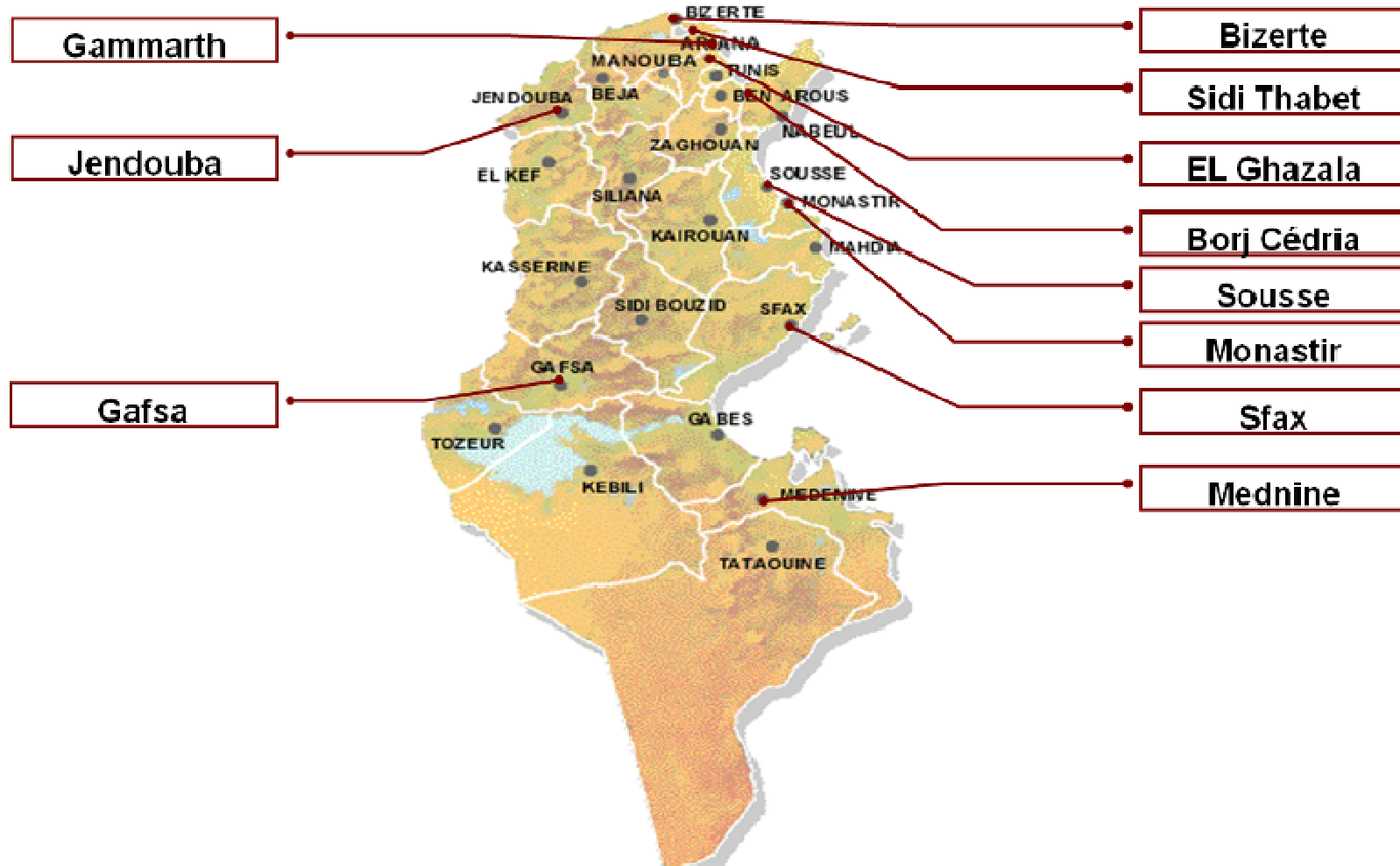
TTOs in Arab Region

Creating Solutions for Local Problems

- Assist certain Arab countries in creating an innovation infrastructure to support university-industry collaboration
 - Algeria, Egypt, Jordan, Morocco, Tunisia
- Flexible framework
 - Adjustable to needs of individual countries
 - Leveraging results of existing activities, reforms and investments
 - Each country has different model
 - Each country “owns” its operation
- Second phase under way (Tunisia)
 - Establishing goals on national basis

TTOs in Arab Region

Tunisian Technology Parks



TTOs in Arab Region

Elements

Creation of Micro-ecosystem among beneficiaries

■ **Legal Framework**

- Framework Project Agreement (in progress)
- Government, WIPO and African Development Bank
 - Commitment
 - Responsibilities
 - Long Term Vision
- Institutional Policies
- Regional Network Agreement (in progress)

■ **Organizations and Processes**

- Innovation Infrastructure – IP Hub
- Technology management processes

■ **Human and Knowledge Capital**

- Professional capacity building, inter-sectorial training, education

■ **Funding**

- Sponsorship of Project in all countries
- Long-term funding of newly established infrastructure
- Funding for regional Innovation network

WIPO Capacity Building

- Training (including training of trainers)
 - Networked innovation
 - Patent drafting
 - IP protection and management
 - Valuation
 - Licensing & Commercialization
 - SMEs

WIPO Ongoing Projects

TISCs: *Technology and Innovation Support Centers*

- <http://www.wipo.int/patentscope/en/programs/tisc/>
- In 65 countries (often in IP offices)
- Access to online patent and non-patent (scientific and technical) resources
- Access to industrial property-related publications
- Assistance in searching and retrieving technology information
- Training in searching databases
- On-demand searches (novelty, state-of-the-art, infringement)
- Technology and competitor monitoring

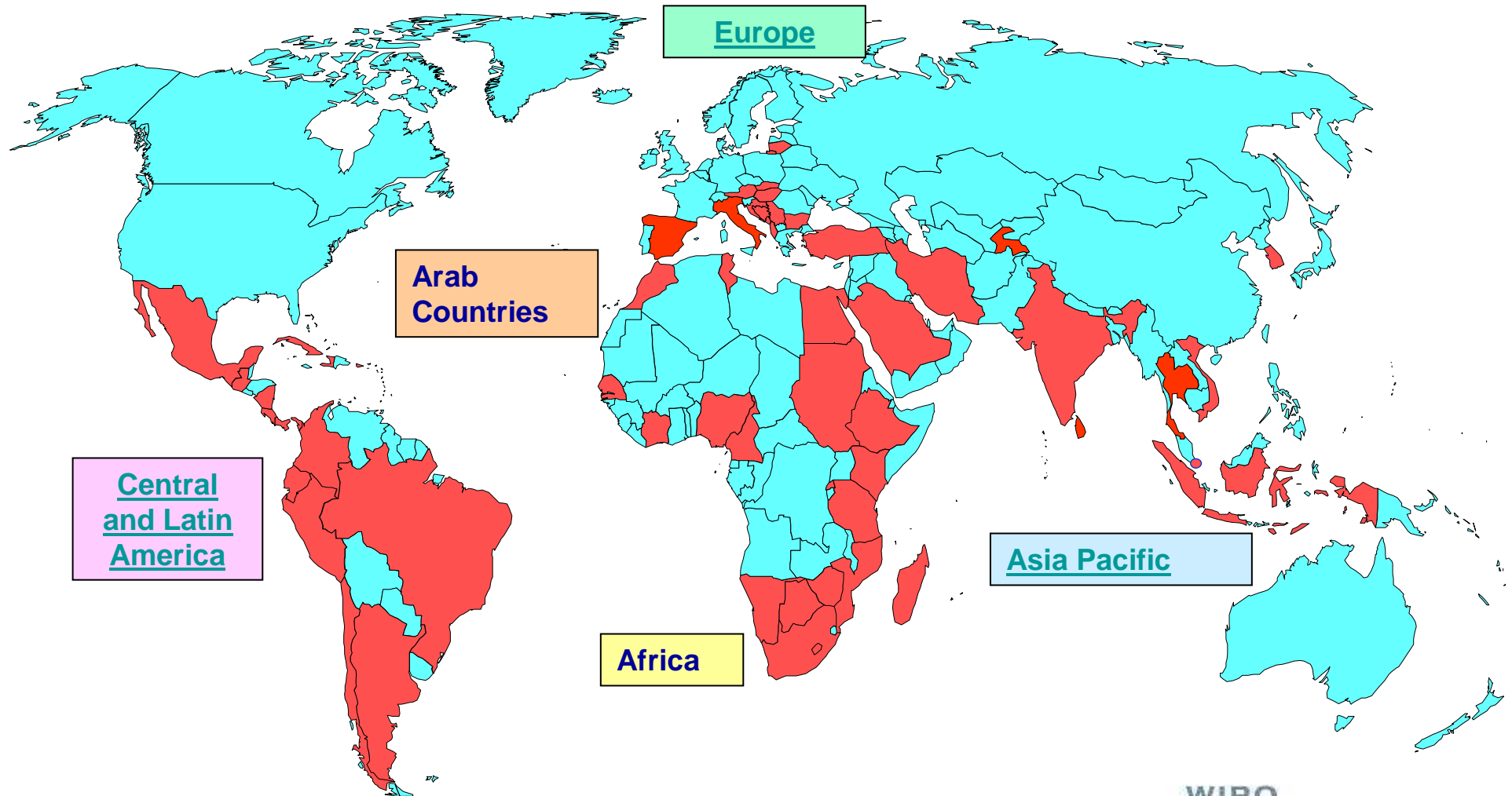
WIPO Resources

- PATENTSCOPE: www.wipo.int/pctdb/en/
- ASPI: Access to Specialized Patent Information
 - <http://www.wipo.int/aspi/en/>
 - Public-private partnership between WIPO and leading patent info providers
 - For IP offices, academic institutions and research organizations in developing countries
 - Free or low-cost
- ARDI: Access to Research for Development & Innovation
 - <http://www.wipo.int/ardi/en/>
 - Increase availability of ST info in developing countries

WIPO Publications for IP Management

- Patent Drafting
- IP Asset Development and Management
- Intellectual Property Audit
- Successful Technology Licensing
- Trademarks
- Industrial Designs
- Patents for SMEs
- Copyrights for SMEs
- Technology Transfer, Intellectual Property and Effective University-Industry Partnerships
- See <http://www.wipo.int/ip-outreach/en/publications/index.html>

*Countries where WIPO has implemented
capacity-building programs*



IV. Knowledge Economy

IV. Knowledge Economy

- What is a Knowledge Economy (KE)?
 - “A knowledge economy is one where organizations and people acquire, create, disseminate, and use knowledge more effectively for greater economic and social development.” (*World Bank, 2011*)
- Application of knowledge is recognized as key source of growth in the global economy
- This is the innovation ecosystem at work
- So: build innovation ecosystems to drive economic growth

IV. Knowledge Economy *Framework*

- *An economic and institutional regime* that provides incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship.
- *An educated and skilled population* that can create, share, and use knowledge well.
- *An efficient innovation system* of firms, research centers, universities, think tanks, consultants, and other organizations that can tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology.
- *Information and Communication Technologies (ICT)* that can facilitate the effective communication, dissemination, and processing of information.

Source: World Bank, Knowledge for Development (K4D), 2011 (<http://go.worldbank.org/94MMDLIVF0>)

IV. Knowledge Economy

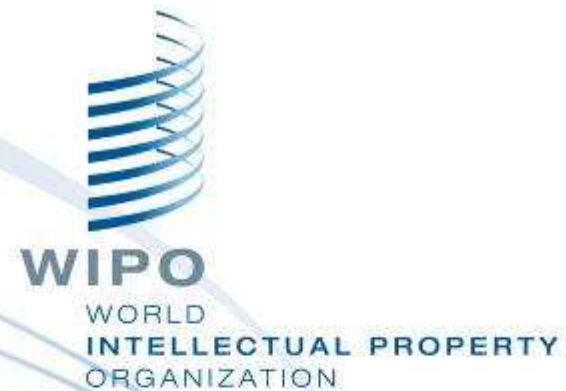
- “Innovation is more important now than ever before — for promoting diversified economies based on commercialization of R&D and innovation, and expanding the skills of its workers. There is a renewed sense of urgency emerging ... in defining a new growth path ... fueled by innovation — in a world that will be both more competitive and more constrained.”

Philippe Le Hou  rou, World Bank, Vice President for Europe and Central Asia Region

IV. Knowledge Economy

- To minimize the knowledge divide, build a KE
- This means build national innovation ecosystems
- Increase development from *conception* to *commercialization*

Thank you



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