TT: a concept in evolution

• Traditionally, technology transfer was considered a relation between firms: one possessing knowledge and IP relevant to another firm needing that knowledge

• Later industrial research opens up a new avenue: TT from the firm’s lab to manufacturing (and marketing)

• Late in last century TT is considered from the perspective of universities and public research organizations

• The era of open innovation
Different approaches

• Assignment of technological intellectual property, developed and generated in one place, to another through legal means such as technology licensing or franchising (Business Dictionary).

• Process of converting scientific and technological advances into marketable goods or services (Business Dictionary).

• The term technology transfer can be defined as the process of movement of technology from one entity to another (Souder et al.1990; Ramanathan 1994). The transfer may be said to be successful if the receiving entity, the transferee, can effectively utilize the technology transferred and eventually assimilate it (Ramanathan, 1994).

• The movement may involve physical assets, know-how, and technical knowledge (Bozeman, 2000).
Traditional TT

- The leading role of multinationals
- Technology transfer and direct foreign investment
- The importance of life cycle
- Technology flows depend on the attractiveness of domestic market
- Most of the time technology has been transferred in the mature stage
- Developing countries made efforts to regulate TT and to avoid inadequate practices
What has changed?

• More information is available and technology selection is an important part of the process
• Competitive technological intelligence
• Benchmarking
• New ways of accessing through strategic alliances, mergers and acquisitions
• But there is still a long way to go: firms in developing countries need training (particularly SMEs)
The players

- Nippon Road
- Nippon Kado Koji KK
- World Engineering KK
- Taisei Rotec Corp
- Bridgestone Corp
- Daikure CO LTD
- MoriYoshi Akihiro
- Gamusutaa KK
- EPO KK
- Sankei Kogyo CO
- Fuji Mori Kogyo CO
- Seibu Polymer Kasei KK
- Tokyo Gas CO LTD
- Kao Corp
- Matushita Electric Ind Corp LTD
- Showa Shell Sekiyu
- Shimizu Construction CO LTD
- Nippon Tekushu Tokyo CO LTD
- Kuni Mine Ind CO LTD (UP)
- Seibu Polymer Corp
- Taie Sotetsuko KK
- Tajima KOIING CO
- UBE Industries
- Taijima Kaken KK
- Sakai Jukogyo KK
- Idenitsu Kosen CO
- San Rail KK
- Chizaiko KK
- Takei CO LTD
- Satou Masao
- Masaaki Yui
- Daireo KK
- Minebea KK
- Rieboole KK
- Hoechst AC
- ECO System KK
- Onda Kogyo CO
- Oda Kakeshi
- Hyodo Yoshiro
- Showa Kogyo KK
- Seiko Instruc
- SHO Bond Const
- MR Planning KK
Main technologies
Leaders linked to specific technology

- C06L95/00 Compositions of bituminous materials, e.g. asphalt, tar, pitch.
- Western Emulsions Inc (US)
- Saramco Inc (US)
- Kunitine Inc (JP)
- Tajima Roofing Co
- Blackridge Emulsions Inc (US)
- Shell Oil Co (US)
- Marathon Ashland Petroleum LLC (US)
- Asahi Chemical Corp
- Bridgestone Corp
- Nisshin Kogyo KK
- Aster Inc (US)
- DOW Chemical Co (US)
- Urecoats Technologies Inc (US)
- Reclalm Inc (US)
- Kao Corp
Critical needs

- Training and consultancy for SMEs
- Clear definition of technological goals
- A good selection based on comprehensive analysis of available information
- Negotiation skills
- Contract preparation
- Assimilation of technology
- S&T strengths are basic to increase absorptive capacities
A matter of firms with R&D capabilities
Alignment of strategies
Communication between R&D, Manufacturing, Marketing and Finance Departments
Speed-up the process of innovation
The worries about increasing costs
Models of innovation management are useful tools
A well organized community

Effective global management and organisation of business R&D and innovation
Business model innovation
Working in globally distributed R&D

75 years of experience in supporting industrial R&D
Development of good practices
Research Technology Management
Good opportunities if proper TT management is available

Understanding the difference between research and business and the limitations of academic institutions as suppliers

Understanding the role of IPRs

Valorization, valuation and negotiation

The role of Technology Transfer Offices
Systems view: comprehensive approach

Source: Atencio, 2010)
# The Three Phases of Open Innovation

1. **Exploration**—the parties explore the possibility of working together.
2. **Joint Development**—the collaboration/joint development/research agreement is written and work takes place.
3. **Commercialization**—a product or technology is made ready to take to market and to produce financial benefits.

<table>
<thead>
<tr>
<th>Exploration</th>
<th>Joint (Co-)development</th>
<th>Commercial</th>
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</thead>
<tbody>
<tr>
<td><strong>Contracts</strong></td>
<td><strong>Incubation</strong></td>
<td><strong>Development</strong></td>
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<tr>
<td>Initial Contact</td>
<td>Non-confidential Letter</td>
<td>Develop Relationship</td>
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<tr>
<td>Detailed Discussion</td>
<td>Mutual, One-way or Two-way Confidentiality Agreements</td>
<td>Material Transfer Agreement</td>
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<td>Activity</td>
<td>Exploratory Co-Development</td>
<td>Co-Development</td>
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<tr>
<td>Identification of Interest Areas, Business and Cultural Fit</td>
<td>Initial Testing to Develop Joint Technical Statement of Work</td>
<td>Exploratory Research Agreement</td>
</tr>
<tr>
<td>Deliverable</td>
<td>Agreement on Vision For Success</td>
<td>Joint Technical Plan</td>
</tr>
</tbody>
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*Depending on complexity & technology development stage*
Better practices in open innovation (Mehlman et al. 2010)

**Pre-work, Planning, Business Model and Strategy**
- Define, align and communicate IP, technical and business strategies.
- Clarify each partner’s IP strategy.
- Use value-chain analyses to identify opportunities and to determine IP ownership.
- Select partners at different positions on the value chain to define benefits and mitigate risks.
- Use gap analyses and panels of experts to determine whether needed technology is available.
- Define whether the goal is to discover new knowledge or to commercialize.
- Choose a partner willing to see the process through to the end.
- Layer patent coverage to protect IP at multiple levels.

**Actively Manage Your Intellectual Property**
- Decide which patents to protect, license or abandon.
- Decide whether to own or merely use IP rights.
- Own IP rights if they cover core competencies.
- Own IP rights if transferring or excluding is important.
- Own IP rights if seeking partners for new technology.
- Minimize risk with access to IP without ownership.
Better practices

Structure the Agreement and Negotiate Terms
- Involve business leaders of the respective partners.
- Involve the attorney internally, not with partner.
- Specify terms and conditions.
- Provide for transfer of trade secrets, know-how and IP.
- Decide who pays for filing and maintenance fees.
- Document actions and decisions to avoid misunderstanding.
- Negotiate IP rights and ownership as soon as outcomes can be visualized.
- Link royalty payments to milestones.
- Decide responsibility for product liability and infringement of third parties’ IP.

Develop the Needed Documents
- Have a template for recurring agreement types.
- Have a generic template for routine collaborations, and customize where necessary.
- Use a mergers & acquisitions template if you are the “deep pockets” partner and want more protection.

Education and Training
- Raise the awareness of employees through training
- Train employees who will interface
- Train employees on antitrust issues in case potential joint development
- Train new employees on confidentiality and IPR
- Raise awareness with periodic newsletters.
- Foster an environment of teamwork, relationship-building and information-sharing.
- Make employees aware that IP includes trade secrets, knowhow and “show-how” as well as patentable art.

Attorney-Related Considerations
- Select a transaction-minded attorney.
- Drive the attorney by specifying goals and urgency.
- Negotiate terms business-to-business with legal support.
- Use attorneys when commercial/technical people agree in principle but cannot agree on wording.
Final remarks

• TT among firms will stay as the main flow
• Developing countries need better skills to negotiate
• Domestic S&T is the base for selection and assimilation
• Universities and PROs have to adjust their institutional frameworks to work with industry
• Open innovation is a challenge and an opportunity too
THANK YOU

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