Technological Innovation in Public Sector

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OUTLINE

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Research Problem

- Successful innovation requires developing a **strategic management** approach. And in the word of Howells (2005), an innovation model is essential to manage innovation process in the organization.

- There is no a strategic approach to innovation in the public sector and no comprehensive technological innovation model has emerged.

- Innovation process is not identified in the public sector. Inputs, outputs, and stakeholders are not determined.

Purpose

- The purpose of the study is to derive **a new technological innovation model** identifying technological **innovation process** in the public sector and stake holders of the process.

- This model will help **effective management** of technological innovation and eliminate adhoc practices.

Introduction

- Organizations innovate to defend their competitive position as well as to seek **competitive advantage** (OECD, 2005).
- Countries reap the benefits of **economic growth** through innovation (OECD, 2005).
- "Not to innovate is to die" (Freeman, 1982)

Literature

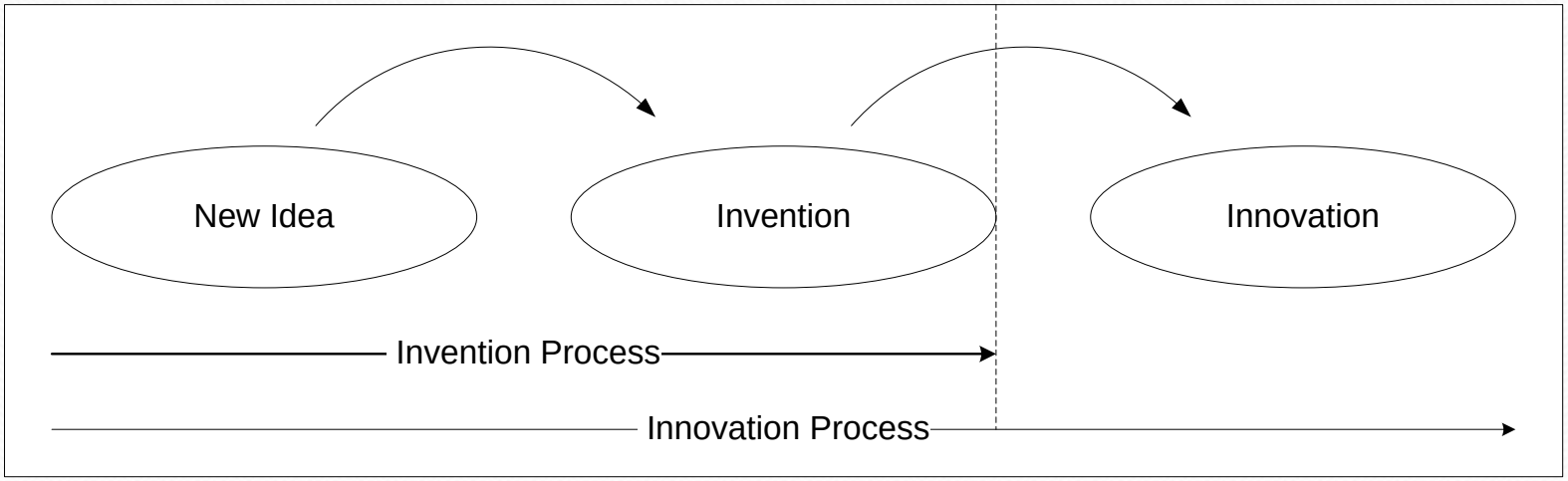
- **Innovation** is the implementation of a **new** or significantly **improved** product, service, process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations (OECD, 2005).

Innovation

- **Innovation is the process** of making **change, difference** and **novelty** in the products, services and business manner to create economic and social benefit (OECD, 1997).

Invention vs. Innovation

- Invention is a process in which new idea is converted into a tangible product.
- Innovation is the management of all the activities from new discovery to eventual product, process or service.



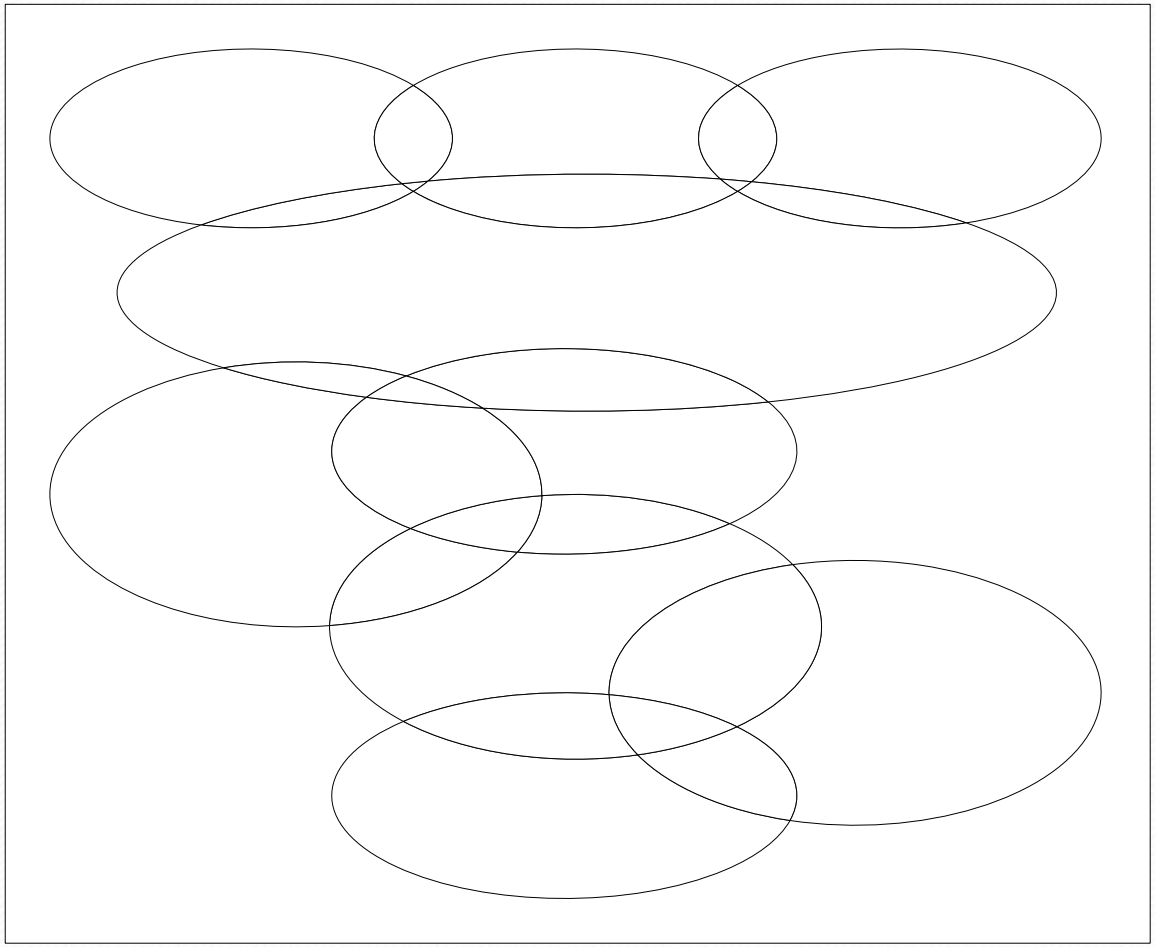
Source: Trott, 2002

Types of Innovation

Type of innovation	Example
Product innovation	The development of a new or improved product
Process innovation	The development of a new manufacturing process
Service innovation	The development of a new services
Organizational innovation	A new venture division, a new internal communication system
Management innovation	TQM systems, CRM systems, BPR
Production innovation	Just in time (JIT) manufacturing system, new production planning software
Marketing innovation	New financing arrangements, new sales approach

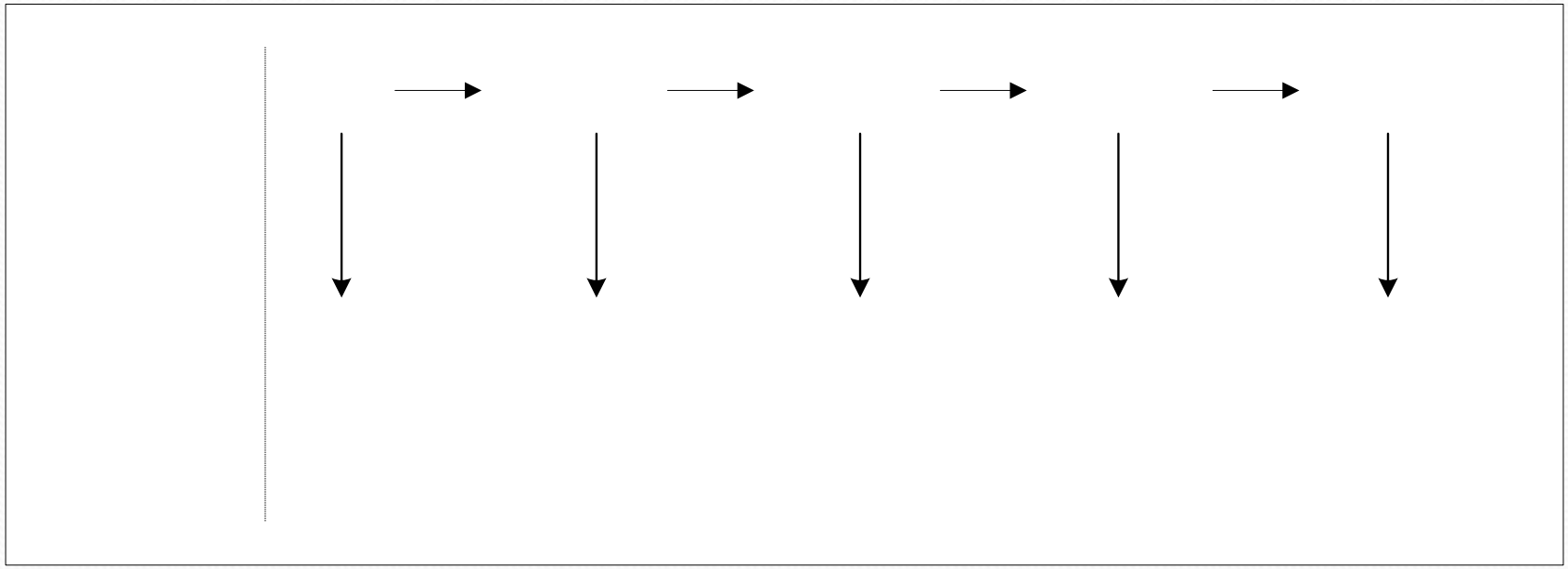
Source: Trott, 2002

Innovation Ecosystem



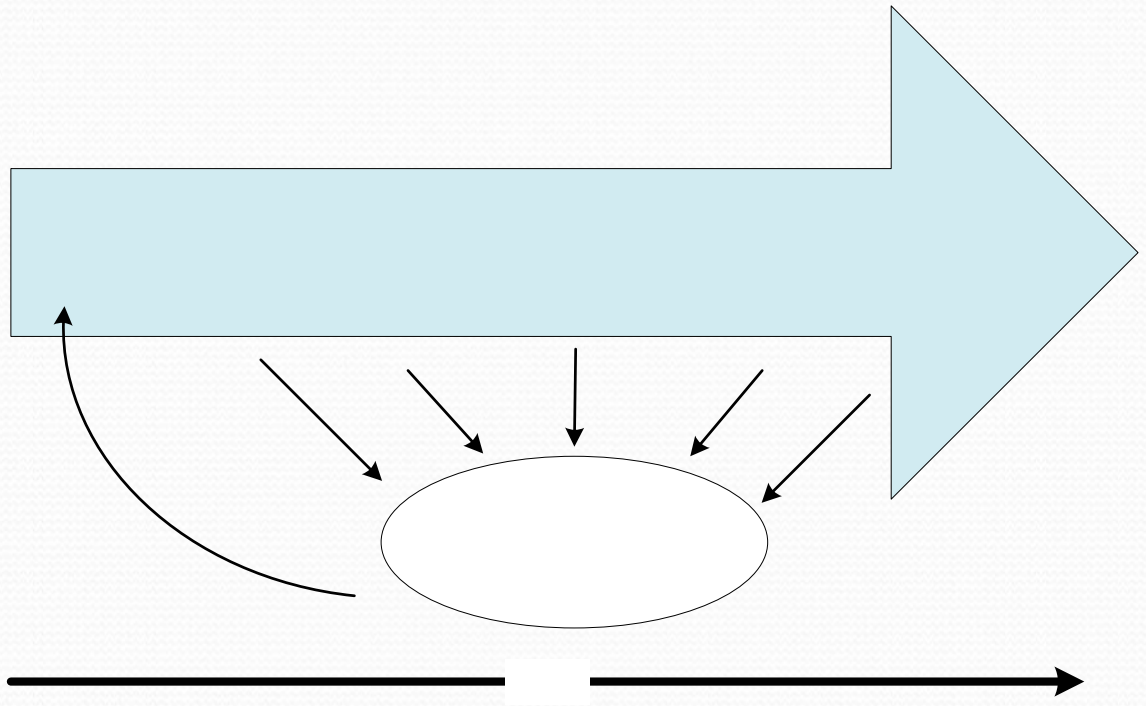
Source: Betz, 1998.

Diffusion of Innovation



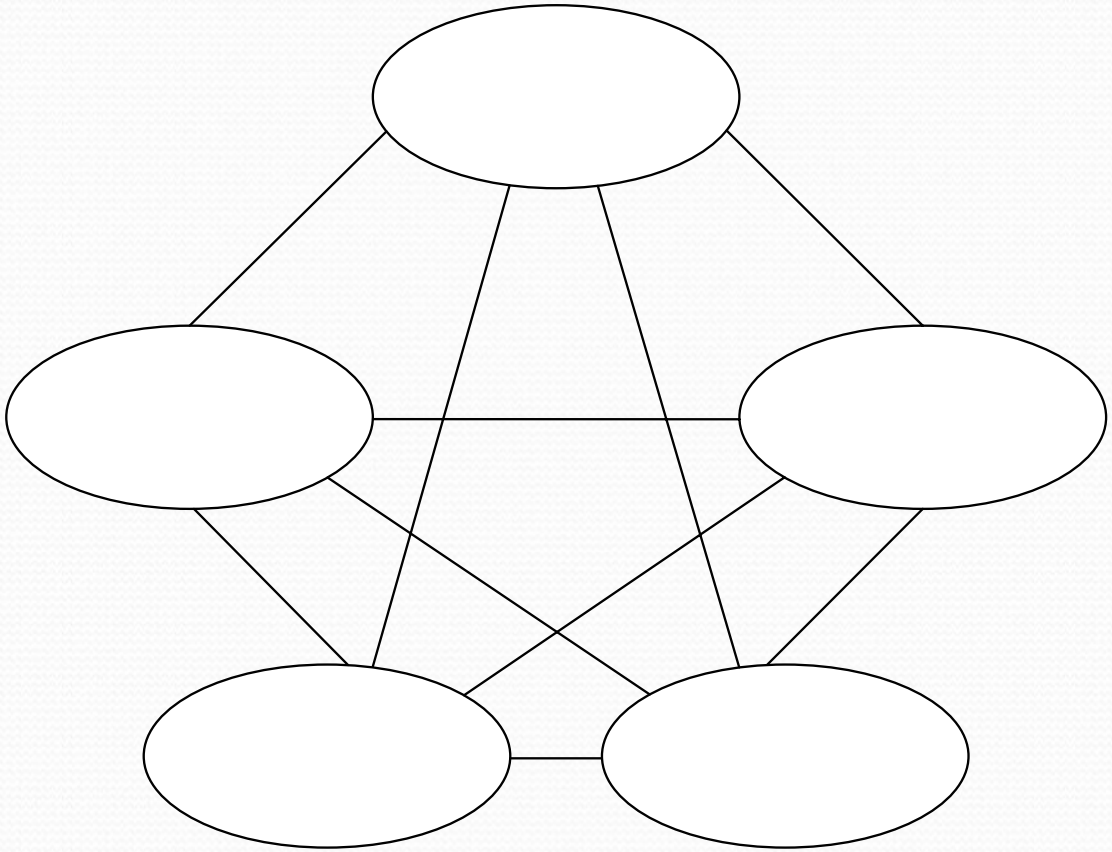
Source: David Berlo, 1960

Innovation Process



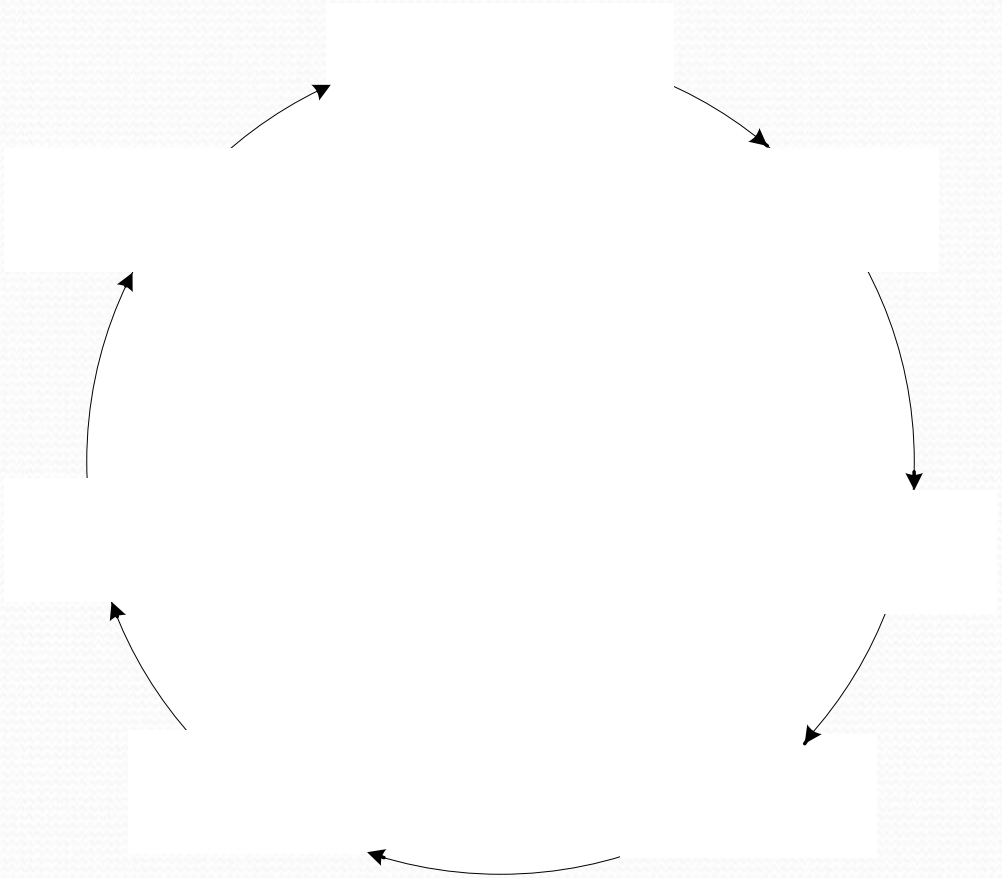
Source: Tidd et al, 2001

Sources of Innovation



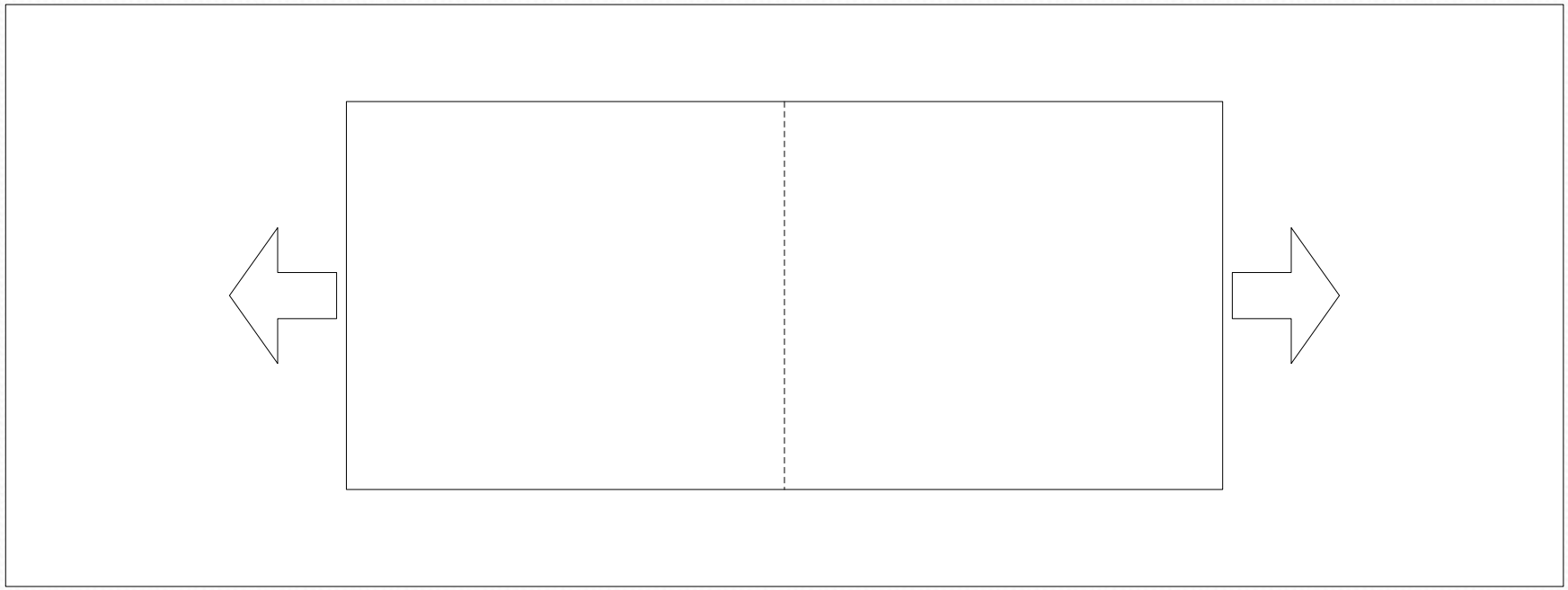
Source: Schilling, 2005

Propagating Innovation



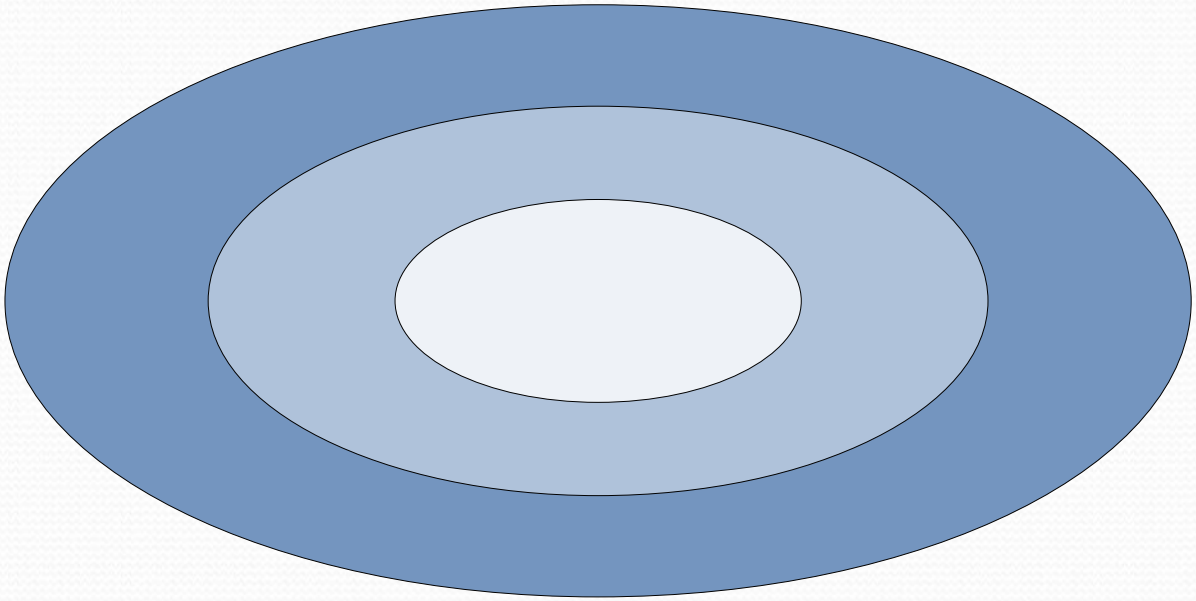
Source: Maital and Seshadri, 2007

Innovation Dilemma



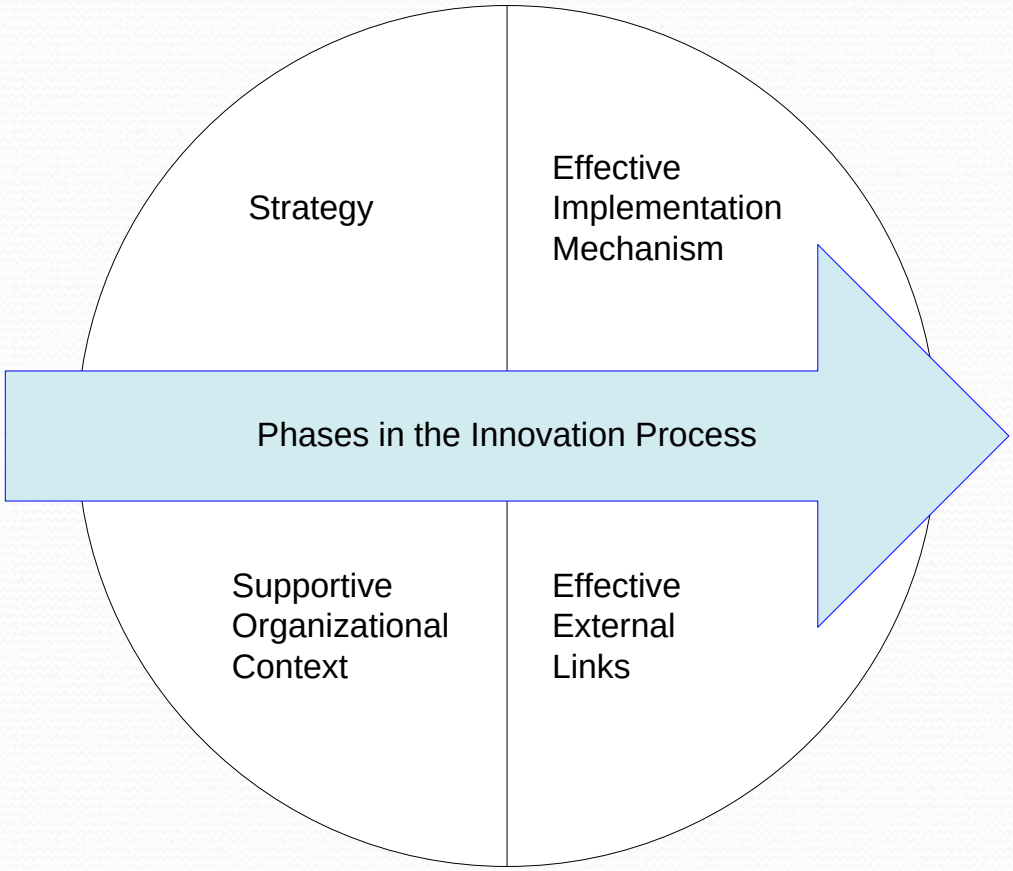
Source: Trott, 2002

Importance of Innovation



Source: Maital and Seshadri, 2007

Innovation Management



Source: Tidd et al, 2001

Methodology

- A **qualitative approach** was used to undertake the research because it would provide to understand processes of technological innovation, and stakeholders of the process.

- This study used **case study** as a research strategy and data gathered through case studies are qualitative. In this study **interviews, documentation, and observations** are used as data collection methods. The interviews performed during the study were semi structured or open interviews.

Research Process

The research process consisted of seven steps:

- Literature review
- Setting the research question
- Case and interviewee selection
- Data collection
- Data analysis
- Derivation of the model
- Justification of the model

Profile of the Organizations

- Total **twenty** organizations are participated in the study:
  - Seventeen public organizations (All ministries, KOSGEB, SPO)
  - Two private organizations (METU-Technopolis, Technopolis Turkey)
  - One NGO (TTGV)

Technological Innovation Projects

Organization	E-Transformation Projects
Metu-Technopolis, Ankara Chamber of Industry, SMIDO	Innovation Relay Center Anatolia, Business Support Network Anatolia
Ministry of National Education	ILSIS, E-School
Ministry of Public Works and Settlement	Remote Sensing and Geographical Information Systems Project, Land Registry and Cadastre Information System, Disaster Information System
Ministry of Finance	Finance SGB.Net Project, Strategic Management Project
State Planning Organization	E-Transformation Turkey Project
Ministry of Transport	Land Automation Project, National Transport Portal
Ministry of Energy and Natural Resources	ENEBIS, Ministry of Energy Portal
Ministry of Agriculture and Rural Affairs	Farmer Registry System
The Ministry of Industry and Commerce	Electronic Commerce Project, SME Information Collection Project
Small and Medium Industry Development Organization (SMIDO)	KOBI-NET Project, KOSGEB MIS
Ministry of Health	Sağlık-NET Project, TELETIP
Ministry of Culture and Tourism	Turkey Tourism Portal, Turkey Culture Portal
Ministry of Justice	Better Access to Justice, National Judiciary Informatics System
Ministry of Labour and Social Security	Worker Entry and Exit Declaration Project, Work Inspection Project, Zone Automation Project

Results of the Analysis

- Technological Innovation Process
- Stakeholders
- Sources of Innovation
- Barriers
- Driving Forces

Technological Innovation Process

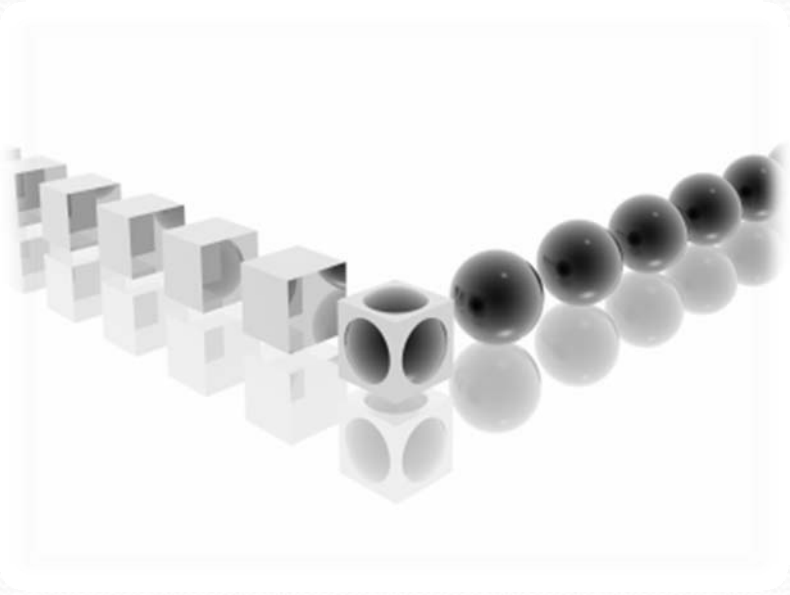
Innovation Process	%
1. Idea generation	100
2. Project study	100
3. Project approval	100
4. Project implementation	100
5. New services	100
6. Innovation	100

Stakeholders

Stakeholders	%
Public Sector	92.8
Private Sector	92.8
University	57.1
NGOs	28.5

Sources of Innovation

Sources of Innovation	%
Personnel	78.5
Legislation	64.2
Other Firms	14.2
Citizens	14.2



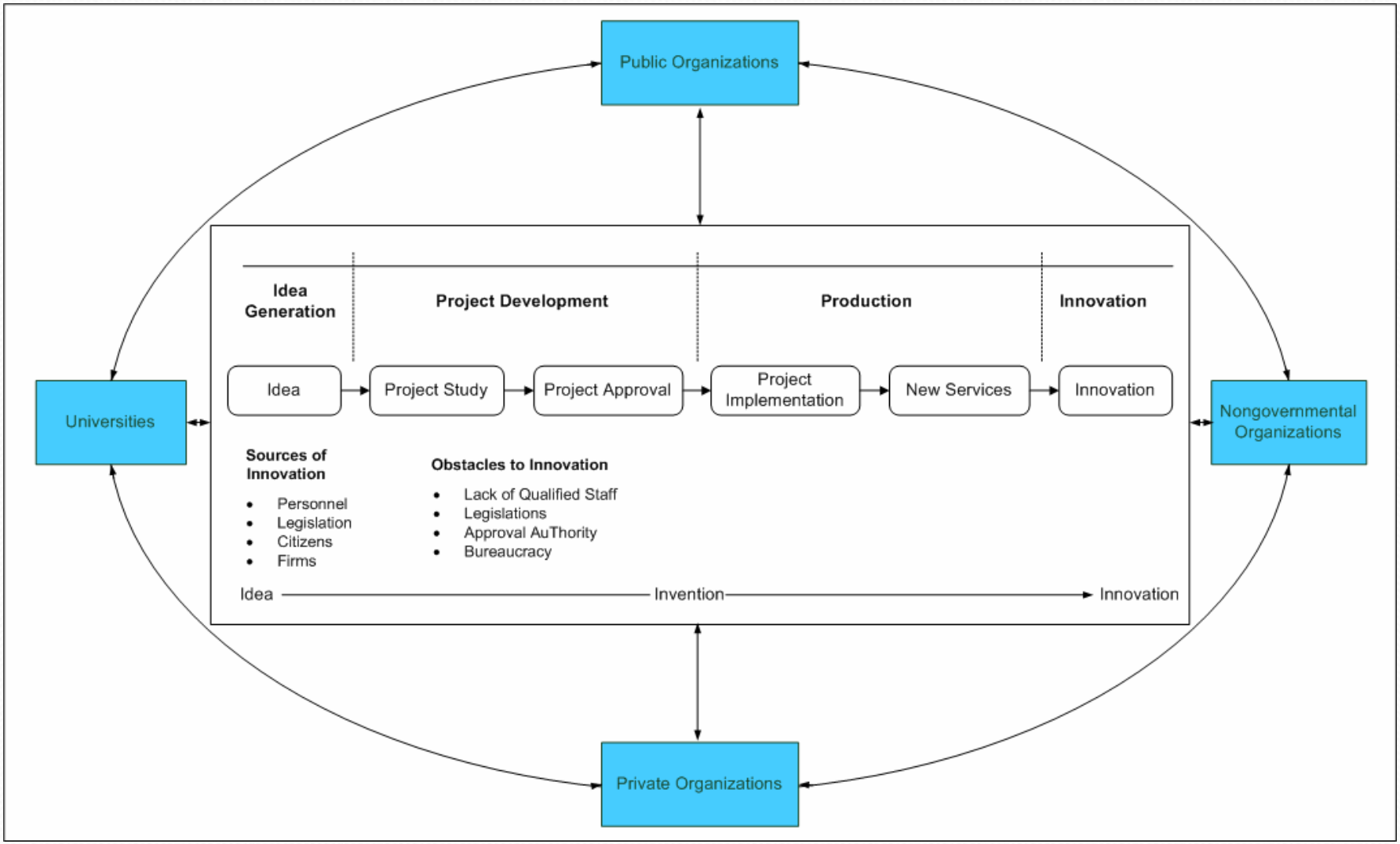
Obstacles to Innovation

Obstacles to Innovation	**%**
Bureaucracy	100
Approval authority	92.8
Legislation	92.8
Lack of qualified staff	71.4
Work environment	35.7
Financial constraints	35.7
Management hierarchy	21.4
Low wages policy	14.2
Government program	7.14

Driving forces

- **Policies** favorable to innovation
- **Public demand**, difficulties and delays on the services
- **Cost savings**
- Turkish information society strategy studies realized by SPO
- Establishment of the **Strategy Development Units**
- **Performance based budget** studies
- Improvement in **standardization** in the public services
- Increasing **collaboration** between private sector, universities, public sector and nongovernmental organizations

NEW TECHNOLOGICAL INNOVATION MODEL FOR PUBLIC SECTOR



References

- Berlo, D. (1960). *The Process of Communication-An Introduction to Theory and Practice*. USA: Rinehard Press.
- Betz, F. (1998). *Managing Technological Innovation: Competitive Advantage from Change.* New York: John Wiley & Sons.
- Freeman, C. (1982). *The Economics of Industrial Innovation*. London: Frances Printer.
- Howells, J. (2005). *The Management of Innovation and Technology: The Shaping of Technology and Institutions of the Market Economy.* London: Sage Publications.
- Maital, S., Seshadri, D. V. R. (2007). *Innovation Management: Strategies, Concepts and Tools for Growth and Profit*, London: Sage Publications.
- OECD, EUROSTAT. (1997). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 2rd Edition. Paris: OECD Publishing.
- OECD, EUROSTAT. (2005). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd Edition. Paris: OECD Publishing.
- Schilling, M. A. (2005). *Strategic Management of Technological Innovation*. New York: McGraw-Hill Publishers.
- Tidd, J., Bessant, J., Pavitt, K. (2001). *Managing Innovation: Integrating Technological, Market And Organizational Change*. New York: John Wiley.
- Trott, P. (2002). *Innovation Management and New Product Development*. London: Prentice Hall.

THANK YOU
Any Questions?