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政策・技術・パートナーシップのアプローチによる日本の日本の研究
Background and Objectives

The transportation field has been the target of the application of telecommunication technologies under the project name of Intelligent Transport System (ITS) since mid 1990s in Japan. ITS projects in Japan have been already initiated by different ministries in the 80s before it has been taken over by the Prime Minister's Office in 1995. From this point of time, while going through a number of policy phases, ITS has been defined as an info-telecom system and as such became part of a national telecommunications policy aiming at different proclaimed societal, economic, technological and transport official goals.

Through this number of policy phases, at least two identified official documents are key to understand the approach taken by the dissertation:

1. The 1996 “Comprehensive Plan for ITS in Japan” which specifically defines ITS as a “comprehensive info-communications system dealing with transportation” which can “display a clear example of an advanced info-communications society project”, and

2. The 2006 “New IT Reform Strategy” aiming at the realization of the Ubiquitous Society through an IT-based problem-solving approach.

While the first document considers ITS as telecom infrastructure building, the second document emphasizes IT (taken in its broader term) -including ITS- as a problem-solving tool.

Therefore, the dissertation structure took a similar approach: while the first part of the dissertation focuses on success factors for ITS projects deployment, the second part emphasizes on ITS as problem solving tool (applied approach to identified and selected ITS goals).

The research objectives are two-fold and considered in successive order:

1. Part I of the dissertation: identification, study and elucidation of the needed success factors and requirements, termed as approach, for ITS deployment.

2. Part II of the dissertation: application of the success factors (the approach) for ITS deployment applied to three identified goals of ITS in Japan.

The dissertation aims to accomplish the two-fold objectives in successive order: the first part of the dissertation focuses on ITS success factors, i.e. policy-technology-partnership termed as approach, while the second part emphasizes ITS as a problem solving tool to achieve identified and selected goals by applying the proposed approach in the first part.

Outline of the Dissertation and Chapter Summaries

In its first part (chapters II, III and IV), the dissertation, after analyzing the different policy phases, identifies two success factors, namely technology and partnership (partnership). The dissertation in its second part (chapters V, VI and VII) looks into the selected identified official policy goals, considered as problems to be solved, and applies the success factors (approach) to reach these three goals: realizing a safer Ubiquitous Society, globalizing ITS and creating new ITS industry.
Chapter I, entitled "Introduction", provides the background, objectives, purposes, structures and chapters summary. Some basic definitions, concepts and tools used in the dissertation are added.

Chapter II, entitled “Policy”, studies the policy phases through the evolution of technological innovation which were first undertaken by several ministries in Japan. The policy emphasis was transport, focusing mainly on road traffic issues such as congestion and pre-crash safety R&D. Later, when the Prime Minister's Office took over the policy leadership, the emphasis shifted to the integration of ITS into a national telecom policy. Key concepts are the concepts of "Developmental State” and “Entrepreneurial State”. In a Developmental State, the state takes the leadership in catching up the technological frontier; while in an Entrepreneurial State, the state takes the leadership role in pushing the technological frontier further to e.g. create a new industry.

Chapter III, entitled "Technology", investigates ITS as a disruptive set of technologies with an emphasis on the safety technologies developed in the ITS project in Japan. Two key concepts are the difference between sustaining and disruptive technologies, as well as the difference between disruptive technologies from below and disruptive technologies from above. Some examples are safety-based ITS projects such as vehicle-based Advanced Safety Vehicle (ASV) and infrastructure-based Assist Highway System (AHS).

Chapter IV, entitled "Partnerships", reviews the institutional aspects of ITS, i.e. the various concepts and models of partnership, including Public-Private Partnership (PPP) and Public-Public partnership. While the dissertation considers PPP as the main tool for ITS to solve problems in related-transportation issues, Public-Public partnership has been less successful due to public sectionalism. Some comparisons with USA, followed by proposals to decrease public sectionalism, are put forward. Within the proposed approach, partnerships play a key role in ITS as a tool to solve problems. In each chapter of the second part of the dissertation, partnering has been identified as main engine for a safer society (PPP for post-crash safety measures for the Ubiquitous Society), globalizing ITS (Japanese PPP-to Foreign Public sector with public-private financing) and creating a new ITS industry (infrastructure and PPP).

Chapter V, entitled "Ubiquitous Society", analyzes the safety goals required for the realization of Ubiquitous Society in Japan. From the New IT Reform Strategy and the 8th safety program, specific statements are related to post-crash systems. Although these post-crash concerns and policy goals, without formally naming them, are identified by official documents, no post-crash safety measures are currently under study as extensively and intensively as in other safety areas such as pre-crash safety measures in Japan. Post-crash technologies were given no implementation priority in
Japan, as they were possibly not-PPP driven as pre-crash have been. Additionally, recent injuries data confirms the need to implement both pre-crash and post-crash measures in order to achieve the goals of a safe society and decrease injuries under the targeted number. In order to achieve this target, pre-crash preventive safety measures are not sufficient, but post-crash safety policy’s deployment is needed.

Chapter VI, entitled "Globalization", identifies potential opportunities for Japanese ITS solutions to contribute to solve Asian road transportations issues such as (1) the financial needs for new roads infrastructures and (2) the human and financial cost of unsafe roads. The construction of new transport infrastructure represents a technological, financial and institutional investment. Japan can contribute to efficient and safe roads (ESRs) in Asia through following tools: Japanese PPP-to-Asian Public sector partnership (PPP2P), PPP financing (PPF), technical cooperation (mainly expertise) and policy support. The dissertation argues that these concepts would both improve the Asian road infrastructure (and its economic development) and would support the globalization of the new Japanese ITS industry.

Chapter VII, entitled "New Industry", looks into the role of PPP in the creation of the ITS/Telematics industry. Two study cases on ITS-based VICS (Vehicle Information and Communication System) in Japan and Telematics-based OnStar in USA illustrate the partnership models in action, the former within and the latter without a PPP approach. Key concepts are industry structure difference between ITS and Telematics, Business Models and one prioritized region/income segment matrix global approach.

Chapter VIII, entitled "Conclusion", summarizes the key findings of the dissertation as well as looking into the main outcomes of the dissertation. The approach, in particular, its partnership component, has been found as the key requirement for technology-oriented projects in general and for ITS projects in particular.

This dissertation analyzed and elucidated ITS in Japan, as a high technology project undertaken through the policy-technology-partnership approach. The dissertation provides the reference material for future comparative study of high technology projects and future study of ITS projects. As such, applied approach to the three ITS goals might be considered as reference for other official ITS goals e.g. energy and environment.