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# Policy implications for third-tier countries considering ACTD programs: South Korea as a case study☆,☆☆

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ABSTRACT

As a certain society's military strength depends on its technological capabilities, decision makers that do not retain the capacity to produce a full spectrum of defense systems to meet the country's requirement (herein Third Tier Countries, or TTCs), need to administer different acquisition policies than countries that furnish a complete range of arms. South Korea, with its limited defense industrial base, has implemented Advanced Concept Technology Demonstration (ACTD) programs since 2007. Provided that other TTCs are considering the ACTD process, analogous cases should be instructive. Thus, this paper is a comparative analysis of Korean ACTDs *vis-a-vis* those of the United States to draw distinctive ACTD policy implications for TTCs. For a review of 32 programs, four perspectives are suggested: imminent threats, technological capabilities, budgetary constraints, and transition plans. Examined from these dimensions, prioritization and reification of imminent threats should be a beginning point. If there are some identified threats that can be countered by ACTDs, then boundaries in technological capabilities and budgetary constraints ought to be taken into account. Finally, an effective technology transition plan for ACTDs in accordance with other non-military-led defense R&D projects would help in determining the success of the open acquisition process.

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## 1. Introduction

> "This is money, and experience argues that a ten-year acquisition cycle is clearly more expensive than a five-year cycle." Packard Commission, 1986 [1]

The Advanced Concept Technology Demonstrations (ACTD) program was initiated in 1994 in the United States. Amid the repercussions of dwindling budgets for the U.S. Department of Defense (DOD) after the Cold War, the government had to devise a better solution to address both current and projected deficiencies concerning present and emerging threats [2]. Unlike the Formal Acquisition Process (FAP), the ACTDs' objective is simply to prove military utilities. Therefore, a myriad of rules and regulations designed to control acquisition processes do not apply so as to deploy rapidly for the sake of warfighters [3]. Military Utility Assessment (MUA) is a benchmark to discern the defense system's feasibility within three or four years. Once the demonstration is approved by users, it can be connected to the Major Defense Acquisition Process (MDAP) for full-scale development, whereas militarily untested technologies are accumulated for prospect applications [4]. Given that the essence of the program is "rapid deployment", shrewd decision-making is the bottom line, which authorizes user involvement at a very early phase. User experiences are a prerequisite for program success, from

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**Table 1**
Comparison of the FAP and ACTD program.

| Item | ACTD | FAP |
|---|---|---|
| Operation Requirements Documentation (ORD) | One-page Statement from USD (A&T) | Yes |
| Formal use of integrated product teams (IPTs) | No | Yes |
| Management Control Document | Limited | Extensive |
| Formal Program Reviews | Limited/infrequent | Extensive/regularly scheduled |
| Supportability issues addressed | No | Yes |
| Maintenance concept type | Contractor-furnished throughout ACTD | Combination of government/contractor |
| Testing concept/Test and Evaluation Master Plan (TEMP) | No | Yes |
| Acquisition Program Documentation | Minimum | Maximum |
| Life-cycle cost/Affordability/CAIV | No | Yes |
| Procurement strategy for life cycle | No | Yes |
| Producibility considered | No | Yes |
| Formal risk-management program | No | Yes |
| User involvement | Yes-through actual operation | Yes-through user representative |
| User assessments | Military utility determined by operational command | Only accomplished through separate operational testing |
| Time frame | Accelerated (2–4 years) | Drawn-out (6–10 years) |

*Source: Michael R. Thirtle, Robert V. Johnson, and John L. Birkler. "The Predator ACTD; A Case Study for Transition Planning to the Formal Acquisition Process" No. RAND/MR-899-0SD. RAND CORP SANTA MONICA CA, 1997.

creation of the Concept of Operations (CONOPs) to the reification of the Required Operational Capabilities (ROCs) to the outcomes and judgments, and even further plans and strategies [5].

Since 1994, U.S. research institutes have performed varied case analyses as well as policy studies to streamline the ACTD process. Representatively, RAND articulated the purpose of those studies, supported by the U.S. Congress, were to answer the questions such as *"(1) What were the overarching lessons learned from the ACTD and (2) Which lessons can be generalized and applied to other ACTD programs."* [6] Regretfully, there are many obstacles even after South Korea adopted, followed, and implemented the established process. Furthermore, compared to an abundant literature on ACTD programs and their policy implications for major western countries (which are improbable as well as impractical due to budgetary constraints and technological capabilities), there have been few studies on ACTD policies for Third-Tier Countries. Considering that these countries do not possess established defense industrial bases or sizable budgets, it is hypothesized that policies should not be similar. If there are any TTCs that ponder whether to generate ACTDs, this study, could map out proper processes.

## 2. Third-tier countries of military industries

Chiou-Guey Jan has discussed distinctive policies for developing defense technologies in newly industrialized countries, completing a case study on Taiwan in 2003 [7]. This approach had originally been a far-reaching issue in the arena of international organization as studied by Stephanie G. Newman in 1984 [8], as it not only contributed to understanding the current technological capabilities of one nation, but also helped draw policies for future development. Among others, Ian Anthony's [9] research has been popularly accepted, as seen in a case study by Po-Young Chu, Chiou-Guey Jan, and Pei-Leen Liu in 2006 [10]. Based on earlier literature, they argue that certain countries should administer distinctive defense policies, referring to the notion that TTCs are the countries that have "significant arms industries", albeit not a full spectrum of military technologies.

Whereas First and Second Tier Countries both have every means to develop the full spectrum of military technology, the latter choose not to manufacture them, and they instead focus on political or economic grounds. The U.S. and Russia are examples of the former, while the U.K. and France are the latter. In contrast, Fourth-Tier Countries do not stock any defense industries or technologies. There might be different opinions as to which countries furnish what and how many defense industrial bases, as seen in the discrepancies between those of earlier studies and later ones. However, this will not be a matter of discussion in this paper because the paper's goal is to suggest policy implications for those who are interested in starting ACTDs, notwithstanding confined technological capabilities, budgets, and so forth. Aside from the U.S., "the originator of the ACTD process", countries that have the equivalent open defense acquisition processes all belong to the Commonwealth of Nations that share analogous institutions and systems; cases including the U.K.'s Technology Demonstration Program (TDP), Canada's (TDP), and Australia's; Capability Technology Demonstration (CTD) [11] do not have many studies that have been successfully carried out. As divergent defense acquisition policies are needed for TTCs, distinctive approaches for ACTD policies should occur. Countries such as Argentina, Brazil, Chile, Israel, India, Indonesia, South Africa, the Philippines, Taiwan, and Turkey seem to be those TTCs. When analyzing ACTD cases in South Korea, mainly by comparing them to those of the U.S., this paper has applied such perspectives as type of threat, level of advancement in national defense science and technology, size of budget, and the strategy of technological spillover. These perspectives lead to further developed intrinsic ACTD policy implications for TTCs.

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