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Guidelines for driving vocational workforce into target industries for economic development in Thailand

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Abstract

The objective of this study was to suggest guidelines for driving vocational workforce into target industries for economic development in Thailand. Data were collected from interviews with executives of vocational institutions and related government agencies to create a diagram. The study found that the labor force in the EEC area was insufficient to meet the needs of the target industries. It must consider from the readiness of family institutions, educational institutions, enterprises, and related agencies to determine the direction of joint operations. However, consideration must be given to the dynamics of technology that affect the formulation of courses, training, and the creation of new jobs to accommodate foreign advanced technologies. Therefore, preparation is required in all dimensions. In particular, the vocational workforce plays an important role in the target industries in enhancing competitiveness for the country's sustainable economic development.

Introduction

The economic development of Thailand depends on building the country's competitiveness. Especially at present, the Eastern Economic Corridor (EEC) has been designated as a strategic development area, contributing to driving a new economic movement. Along with many countries in Asia, it is believed that the EEC will be able to expand regional supply chains (Phuangketkeow, 2020). In addition, the EEC also has targeted industries which can generate diversified investment opportunities and have the necessary infrastructure for all industries (Aggarwal, 2022). This is considered an important foundation for the country's long-term development.

The attractiveness of the targeted industries is not only to enhance the country's economy to the expectations of being a developed country, but also to strengthen all sectors at the local and regional levels simultaneously. Currently, there are 12 target industries, namely, next-generation automotive, intelligent electronics, high-value and medical tourism, advanced agriculture and biotechnology, food for the future, automation and robotics, aviation and logistics, biofuel and biochemical, digital economy, medical and comprehensive healthcare, national defense, and education and human resource management. All these industries cover the demand for skilled workers at all country levels. For labor productivity promotion is the most essential element, especially

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pushing into target industries, boosting economic growth by more than 5 percent, and accounting for 48 percent of total investment (Board of Investment [BOI], 2017; International Labour Organization [ILO], 2014). This means that the promotion of targeted industries under the government's support must consider in depth the mechanism and linkage of vocational institutions with enterprises in producing and developing the workforce to meet the needs of the target industry.

Eventually, although the overall direction of student production can be predicted to drive them to work in the targeted industries, it is important that the industry dynamics result from changes in technology. In addition, concerning the imbalance of demand and supply of labor in production by vocational institutions, including gaps in agencies in all relevant sectors, there is still a lack of linkage both in policy and practice. For this reason, this research aims to suggest guidelines for driving vocational workers into target industries for the economic development of Thailand by using the diagram to explain the interconnection of agencies and their practicality.

Literature Review

In this study, the researchers formulated the study framework using the following concepts*, Guidelines for driving/Collaboration*: From a review of the problems in the context of Thailand, it was found that the vocational workforce is currently in shortage both in quantity and quality, which needs to be addressed urgently. Theoretically, it could be said that "the success of driving vocational workforce into target industries comes from the cooperation of relevant agencies". This requires government support in terms of policies, specific statutes, Cross-Agency Priority (CAP), and operational networks (Fountain, 2013). The resulting coordination was governed by Thailand's highly centralized bureaucracy and politically-based interest groups (Stiftung, 2022). This is a major obstacle to achieving goals. In addition, the direction of labor force driving that leads to sustainable economic development must be considered.

Vocational workforce: The importance of vocational education is to prepare sufficiently skilled workforce to meet the needs of the industry as the government is promoting and supporting the target industry. Alternatively, the rapid change in technology has resulted in the vocational workforce being offset by other types of the labor force due to the production of young vocational workers who do not keep up with the demands of the market. Of course, in doing so, vocational workers have been emphasized for greater preparation for entering the workforce (Fuller, 2015; Hanushek et al., 2017; Jacobs & Hawley, 2009) Over the years, Thailand has improved access to education for young people to reduce disparities, but it was found that there are still problems with a gap between skills and labor requirements (International Labour Organization [ILO], 2019). This includes a shortage of professional skilled workers that meet the industry's needs (Chalapati & Chalapati, 2020). This challenge influenced the mechanisms for creating effective training courses to improve the quality of education (Japan International Cooperation Agency [JICA], 2018). However, pushing vocational workers into the industry as expected by the government is a mission of all sectors involved.

Target industries: The target industries include the Eastern Economic Corridor (EEC) of Thailand in 3 provinces: Chonburi, Rayong, and Chachoengsao. Currently, there are a total of 12 industries, which are divided into 3 categories: (1) First S-Curve: next-generation automotive, intelligent electronics, high-value and medical tourism, advanced agriculture and biotechnology, food for the future; (2) New S-Curve: automation and robotics, aviation and logistics, biofuel and biochemical, digital economy, medical and comprehensive healthcare; and (3) additional industries: national defense, education and human resource management. Infrastructure that facilitates and diversifies the manufacturing sector attracts the right human resources (Hiratsuda, 2018). The goal of the target industries is to restructure the economy that focuses on creating added value from technology and innovation (National Economics and Social Development Council [NESDC], 2022). It is considered a model area for preparation to increase the country's competitiveness. It also encourages the people's sector, civil society, and government agencies involved to be aware of the common development of the country.

Economic development: The challenges in Thailand's economic development to escape from the middle-income trap are the most important indicators. Basically, government intervention is needed to coerce the expansion of the industrial labor market. For Thailand, where the target industries are clearly defined, it is necessary to expand the options of operators to continuously accelerate industrial growth while promoting economic activities that focus on creating added value (Asian Development Bank [ADB], 2015; Espinosa et al., 2021). Therefore, policy mechanisms from the government should be employed to promote investment and attract foreign investors while creating

opportunities for producing vocational workers and reducing risks from external situations at the same time (Organization for Economic Cooperation and Development [OECD], 2021). This approach is considered a link between the goals of vocational labor production, entry into targeted industries, and sustainable economic development of Thailand.

Methodology

The first step in the gap analysis began with a survey on issues in the Eastern Economic Corridor (EEC), a pilot site for human resource development based on the country's socio-economic structure. It was discovered that the vocational workforce was one of the mechanisms driving the target industries. Therefore, a literature review was conducted and an in-depth study of the critical periods of vocational education management from 1957 to 2021. It pointed out the problems of production and development of the vocational workforce, which can also be linked to the analysis of the model of vocational workforce driving to increase the country's competitiveness under the 20-year national strategy.

The next step was to design a research methodology based on qualitative research, beginning with interviews with executives of 18 vocational workforce development and production coordinating centers throughout Thailand gathering the information and problems to design questions for interviewing executives of relevant agencies, namely, the Office of the Vocational Education Commission (OVEC), Eastern Economic Corridor Office of Thailand (EECO), Board of Investment (BOI), Office of the Higher Education Commission (OHEC), Office of Industrial Economics (OIE), and Thai Chamber of Commerce (TCC). The received information reflected the direction of solving current problems.

After that, the researchers analyzed data for linking based on policy thinking under the integrated model. The researchers have also synthesized five models for defining the study scope: The rational model was based on the implementation of policies that require clarification of goals and detailed planning, the management model focused on organizational structure and efficient budgeting, the organizational development model focused on involvement and coordination, the bureaucratic model placed emphasis on monitoring and operational control, and the political model placed emphasis on actors that interact with each other (Khan & Khundaker, 2016) All of these models reflected the associations for the synthesis within the scope of the studies as follows Figure 1.

However, a diagram was created for explaining how to drive the vocational workforce into target industries. The researchers used the connecting the dots method, considering the dots method, considering the problems found and the interrelated roles and responsibilities of each relevant department in the context of Thailand's economic development.

Results and Discussion

The study findings from key informants reflected the relationship between policy, educational institutions, and relevant personnel or stakeholders. This is the key to defining the way to drive the vocational workforce. When considering the context of problematic Thai society, the fertility rate has continued to decline over the past several decades (Knodel et al., 1988). This problem still affects the lives of people today.

For this reason, the researcher would like to begin by explaining the dimension of family institutions in driving vocational workers into the target industries as a whole. The diagram below is based on a synthesis of data obtained from interviews with all researchers (Pearnpitak, 2021). Of course, it can be utilized in 3 important aspects: (1) policy: the applied agencies, including OVEC, EECO, and BOI, are aware of the situation, problems, and obstacles of vocational workforce production and development, including improving and planning policies in line with the country's economic development direction; (2) public: vocational education institutions can be used to identify gaps in the production planning and development of vocational workforce in order to make it an important agenda for educational institutions; and (3) community and area: foreign entrepreneurs and investors are encouraged to apply for investment support under specified criteria and measure.

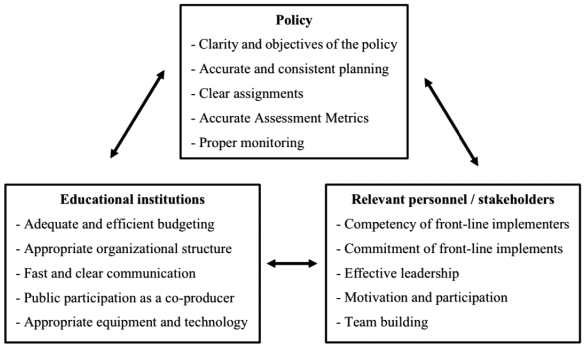

Figure 1 The Scope of the Synthesis of Guidelines for Driving Vocational Workforce

The researchers' data synthesis reflected the direction of the vocational workforce to enter the target industries, as shown in Figure 2 and Table 1. The current critical situation in Thailand is the change in population structure and the impact on the future labor supply. Subsequently, specific policies were formulated to promote increased fertility, along with a survey of workers to assess the situation together with an analysis of trends in an aging society (United Nations Population Fund Country Office in Thailand [UNFPA], 2011). The results of research studies and guidelines can be described in order as follows:

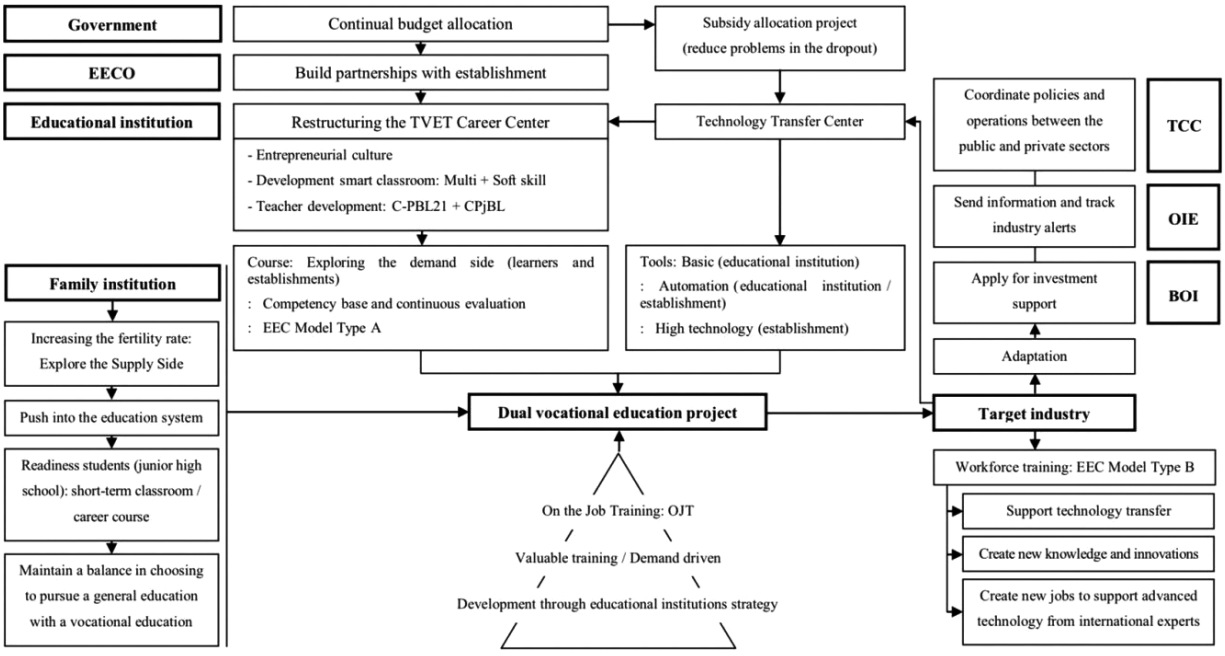

Figure 2 Guidelines for Driving Vocational Workforce into Target Industries for Economic Development of Thailand

Table 1 Explanation of the Abbreviations in the Figure.

Abbreviation	Name of Relevant Agency and Description
EECO	Eastern Economic Corridor Office of Thailand; is a government agency responsible for promoting investment, enhancing innovation, and developing advanced technology in Thailand to be a model organization in driving the EEC area to develop the economy and create cooperation between the government, private sector, and people. This can be done by studying the suitability and feasibility of the development under the Eastern Special Development Zone Act B.E. 2561 (2018).
TCC	Thai Chamber of Commerce; is the country's main trade and service institute with a focus on building a strong network of public-private partnerships to strengthen competitiveness according to global standards.
OIE	Office of Industrial Economics; is a leading organization for the development of the country's industry towards sustainability, which is responsible for integrating, advancing policies, and strategic plans to deliver reliable and up-to-date information to the industry.
BOI	The Board of Investment; is a government agency tasked with promoting valuable investment in Thailand, with a focus on enhancing competitiveness to overcome the middle-income trap and achieve sustainable growth.

Source: Eastern Economic Corridor Office of Thailand [EECO] (2019), Thai Chamber of Commerce [TCC] (2020), Office of Industrial Economics [OIE] (2016), and Board of Investment [BOI] (2016).

Family Institutions

The most important thing for a child is the family institution, and this is a fact that cannot be avoided. The current response to the COVID-19 epidemic clearly reflects the dangers it poses to children. In particular, poor families had no equal access to educational opportunities (United Nations International Children's Emergency Fund [UNICEF], 2022). This disparity was based on the problem of declining fertility and affecting future labor force. There was also a problem of recruiting labor for the elderly (Paweenawat & Liao, 2021). This is a phenomenon that occurred in Thai society as well. The aim of driving vocational workers into the target industries should definitely consider chronic problems in the past. It was evident that government policy-making needs to be clear and precise. However, the achievement of the formulation of vocational workforce (2012–2026) did not meet expectations. In particular, the quantity that is limited upstream is the family institution.

The solution should start with a supply-side survey, comparing it with future labor demand trends. Emphasis should be placed on pushing children into the education system, especially the poorest children in society with a lack of the right to education (Reddy & Sinha, 2010). Equality should be achieved through the education system so that children are accepted by society under adequate policies, laws, and resource allocation (Lundy et al., 2017). This is in line with the perspective of key informants in coordinating centers who are close to parents with limited economic status. After receiving an education, the next process is to prepare students for their potential before entering the workforce. However, it is necessary to examine "skill gaps" in order to properly design and develop curricula, (Casillas et al., 2019) based on technological dynamics and educational innovations.

In the case of policymakers, the relationship among national, industry, school, and family expectations should be considered. Moreover, the educational institutions must design curricula that are connected to work in the 21st century and create classrooms for short-term courses or career courses which apply the Middle Years Program (MYP) with the following main concepts:

1. Holistic Learning allows students to consider problems from a variety of perspectives to combine their knowledge, experience, and critical thinking to solve real problems.
2. Intercultural Awareness helps students to develop attitudes, knowledge, and skills in conjunction with culture to foster patience, respect, and empathy at work.
3. Communication provides students with the ability to use language to convey their thoughts, attitudes, and feelings clearly, (Scots College, 2022).

However, the proportion of students enrolled in vocational education and training (VET) at the end of 2020 in Thailand was 20.16 percent, less than the OECD average of 42 percent (National Statistical Office [NSO], 2020; Organization for Economic Cooperation and Development [OECD], 2020). Therefore, increasing the proportion along with examining student interest was considered a future workforce plan to encourage employment in the target industries

Government; EECO; Educational Institutions

The government is an important mechanism for driving vocational workers. Figure 2 shows that the government's duty is to continually allocate budgets to increase educational opportunities. Although this could not reduce the increased inequality, it reduced the oversupply in educational institutions. Another reason is that student dropouts remained a major problem in Thai society and was consistent with the context of developing countries due to student insecurity and parental financial problems (Jasmina, 2017; Sangkawasee et al., 2021). The government needs to set up a subsidy allocation program to reduce the problem of dropouts. It should increase the capacity of management in term of the amount of money and reduce the default rate by more than 50 percent (Salam, 2018). This leads to obligations regarding budget allocation to vocational institutions across the country.

In the EEC area, the government agency responsible for both economic development and cooperation between educational institutions and enterprises is EECO with an important role in coordinating and facilitating educational institutions (Arranz et al., 2022). It is necessary to explore the needs of learners and the establishment in order to design a joint course. It is important that the course is based on the knowledge that has already been accomplished in order to study the facts for future work (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2021a).

Under the context of Thailand's vocational institutions, 18 coordination centers, which are responsible for surveying the needs of establishments in the neighborhood, have been established across the country. However, the problem was that these coordination centers were not in the structure of a vocational institution. Thus, they need to be incorporated into the organizational structure to facilitate budget allocation, communication, and evaluation from both inside and outside educational institutions (Kovats, 2018).

In addition, an entrepreneurial corporate culture is needed to create outstanding leadership and creativity among students (Khan & Ahmed, 2019; Tenhunen & Niittymaki, 2012). In the EEC area, more and more prototype vocational institutions were required to expand teaching and learning environments with the 21st-century smart classroom, which would enhance the diverse skills of students in line with rapidly changing technology (Johny, 2019). However, teacher development is an important task for the success of vocational workforce mobility. It must focus on the principles of Critical Thinking and Project Based Learning (C-PBL21), which connects to systematic critical thinking processes with project-based learning in accordance with the skills needed in the 21st century, which is 3R8C as follows:

1. 3R: Reading, Writing, and Arithmetic are basic skills that every teacher should have.

2. 8C: Critical thinking and problem solving, Creativity and innovation, Cross-cultural understanding, Collaboration, teamwork and leadership, Communication, information and media literacy, Computing and ICT literacy, Career and learning skills, and Compassion are necessary to create a body of knowledge by oneself or constructivism continuously, (Sukhothai Vocational College, 2016).

When teachers have the skills necessary for teaching, the next process is training from learning based on Collaborative Problem Based Learning (CPjBL). Such focuses on student learning activities that occur during a project, application, analysis, and creative assessment (Jalinus et al., 2018). All of these activities are meant to enhance students' skills when entering the target industries.

Based on the results of the labor demand survey, which is an EECO mechanism to be used in conjunction with the Competency-Based Curriculum (CBC), systematic integrated learning provided interdisciplinary assessments that can be linked to familiar and new situations (Marcotte & Gruppen, 2022). In addition, by narrowing the skill gap, the EEC Model Type A curriculum can be used together to push the bilateral system of vocational education to obtain empirical results by recruiting students to internships and guaranteeing a contract upon graduation and receiving a salary that is higher than the standard of new graduates.

According to Figure 2, the restructuring of the coordination center was based on the technology transfer center in educational institutions, which is a practical area for enhancing learning efficiency (Artyukhov et al., 2021). Moreover, it needs help from the target industries. Educational institutions had limited budgets, allocated training tools, and cutting-edge technology. The basic tools should be available in educational institutions or may be donated by the establishment for students to use for practice. The modeling tool is considered an intermediate technology and should be present in both educational institutions and establishments. However, advanced technology should be available only in the workplace and practice by taking students to learn from the actual place of practice.

Dual Vocational Education Project

Under the context of the work that occurred during the COVID-19 epidemic, there was a changing direction of work, especially in industries that are based on modern technology. Vocational students are a vital force in every target industry and should be prepared for the world of work. This starts with the subtleties, such as cultivating religious values, self-confidence, self-acceptance, and positive thinking (Trisnawati, 2017) to create a positive attitude towards training under the dual system of vocational education and training.

This training program supports the transformation of students in vocational institutions to the success of their work. This is a guarantee of skilled workers suitable for the needs of the industry (Furstenau et al., 2014). However, it must be considered together that it is the project development through the educational institution strategy. In Figure 2, it is at the bottom of the triangle; therefore, it is important. The United Nations Educational, Scientific and Cultural Organization [UNESCO] (2021b) has formulated a strategy for Reform TVET (2022–2029) in order of priority as follows:

1. Skills for individuals to learn, work, and live.
2. Comprehensive and flexible social skills.
3. Economic skills leading to sustainable development.

It can be said that the strategy that emerges must come with adaptation to the changing world of work. By focusing on mobilizing cooperation from government agencies, the private sector, and civil society with stakeholders should work together. In addition, the training must focus on Demand-Driven, which means that vocational workers must have skills that are more relevant to the labor market and are highly flexible to connect with a wide range of industries, including their target industries (Myers et al., 2021).

Although the EEC area targeted industries with the Demand-Driven focus, it also focuses on "On the Job Training (OJT)." Due to the specificity of the target industry, vocational students need serious practice. In addition, OJT can also build partnerships with vocational

institutions in terms of credentials, tax revenue, and limited recruitment. This situation created incentives and profits for the industry (Hussain et al., 2021). Therefore, the dual vocational education project is an important guideline for producing and developing vocational workforce to be strong and meet the needs of the target industries as much as possible.

Target Industries; BOI; OIE; TCC

Driving vocational education workers into the target industries is the duty of all relevant departments. Economic development did not only focus on vocational workers, but also importantly to develop a workforce that is in the target industries as well. The working principle of EECO is based on the concept of EEC Model Type B, which is a short training course of 18–50 hours without degree. This is a parallel operation with Type A, but it differs because it trains and develops industry workers to support new technologies and guarantee employment.

For Type B, it is an important process because it creates a course specific to the real practice. By bringing the experience of workers to share their learning during the training, they can understand a variety of problems and different environments that are in line with the current government-driven approach (Berg & Dichaba, 2013), resulting in the creation of new knowledge and innovations since these are often hidden in the day-to-day work patterns of highly skilled workers (Riordan, 2013). However, the goal of the training would lead to the creation of new jobs to support advanced foreign technology.

With globalization, target industries need to adapt to survive. The reason is that the target industries are located in the EEC area and there is a specific law for investment promotion. The BOI must drive investment by entrepreneurs under 3 conditions: (1) type of business according to the specified account; (2) juristic persons can apply for promotion according to the requirements; and (3) minimum investment requires a Thai national holding more than 51 percent. In addition, the benefits of the industry must be divided into 2 bases: (1) product-based; and (2) technology-based, which are divided according to the benefits of the technology level for 0–8 years of corporate income tax exemption in order to increase incentives for more foreign investors.

Moreover, it is important to keep track of economic conditions and OIE is responsible for delivering information and tracking or alerting target industries. The problem is that operators did not send information to OIE, so there was no complete information available for assessing the situation. In addition, the TCC must be responsible for coordinating policies and implementing actions between the public and private sectors for cooperation and continuity in implementing investment promotion policies.

However, inter-agency operations need to be prioritized. Such must focus on equal benefits to both the public sector, the private sector, and civil society in each dimension. In addition, the work of personnel must focus on interdisciplinary work in order to reduce the gap of problems that arise during the operation (Harvie, 2020). In this regard, the development of the country's economy under the drive of vocational workforce into the targeted industries requires joint planning and preparation between departments in order to achieve the set goals.

Conclusion and Recommendation

The challenges resulting from the dynamics of the 21st-century world reflect the need for a specialized skilled workforce for modern industry. Under the context of Thailand, the Eastern Economic Corridor (EEC) has been defined, with the infrastructure that is ready for promoting the target industries. However, the local workforce was insufficient to support the emerging industries, so it is important to prepare workers from outside the surrounding area to work in the target industries.

Driving the vocational workforce should start by increasing the fertility rate in order to restructure the workforce in the future as well as pushing students to enter the education system, especially poor families, in order to reduce inequality and increase educational opportunities. At the same time, educational institutions must have vocational curriculum classrooms to prepare and maintain a balance of vocational learners. It is the duty of the government to continually allocate budgets to reduce dropouts and encourage EECO to cooperate between the industry and vocational institutions. Vocational education institutions need to restructure their organizational structures and culture by enhancing the curriculum, teacher development, and practice tools. However, training courses must be developed through an institutional strategy with a focus on valuable training that prepares students for the world of work.

For this reason, the mobilization of the vocational workforce into the target industries to develop the country's economy can be successful. It requires cooperation between the target industries, the BOI, OIE, and TCC, with EECO as the main units to coordinate and

direct the implementation which aims to increase the country's competitiveness in the context of the transition of knowledge to innovation with the foundation of vocational workers.

Conflict of Interest

The authors declare that there is no conflict of interest.

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