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Literature Review

Tropical Disease Prevention and Control: Is It Now Knowledge Management Era?

Adithya Sudiarno, Arief Rahman, Sri Gunani Partiwi
Industrial Engineering Department - Industrial Technology Faculty
Sepuluh Nopember Institute of Technology - Surabaya - Indonesia
E-mail: adithya.sudiarno@gmail.com, adithya_sudiarno@ie.its.ac.id

ABSTRACT

Indonesia is the part of developing Asian countries, until now still not declared free from various types of tropical diseases. Whereas, several years ago Indonesia has declared free from various kinds of tropical diseases, but in fact, tropical diseases up to now still cannot be eliminated. Moreover the prevalence rates of tropical diseases tended to increase from year to year. One of the reasons Indonesia is a tropical climate, but in fact we are not able to control the climate. In this condition, what we can do is to raise public awareness so the spread of the disease can be controlled. It was time for an early awareness efforts conducted in a participatory manner by all stakeholders. In this case, stakeholders can be health practitioners, researchers, policy makers (official), and even the citizens. Participatory awareness can be enhanced if we have an integrated system that can accommodate all knowledge about tropical disease. The knowledge consists of characteristic about disease, potential risk, how to cure, how to isolate disease in community, and absolutely important is how to prevent of illness, etc. This paper aims to propose an integrated system called Tropical Disease Knowledge Management System (TDKMS) for enhancing the participatory awareness.

Key words: *knowledge management system, tropical disease management*

EXISTING PHENOMENON IN INDONESIA

Infectious disease is a disease that transmitted through various media and a very high risk for humans, especially because of the rapid growth of human. Example of infectious disease can be found in Indonesia are leprosy, malaria, dengue fever, avian flu, swine flu, etc. Because often appear in tropical area, these diseases commonly called as tropical diseases. These diseases was a big problem in almost developing country, because prevalence rate and mortality rate is high relative in short term (widiyono, 2005). In wide scale, tropical diseases can become endemic diseases, permanent disability, even death. Based on Long Term National Development of Indonesia Government (called RPJPK 2005–2025), tropical diseases is main priority to be eradicated (Bappenas, 2005).

Indonesia is the part of developing Asian countries, until now still not declared free from various types of tropical diseases. Whereas, several years ago Indonesia has declared free from various kinds of tropical diseases, but in fact, tropical diseases up to now still cannot be eliminated. Moreover the prevalence rates of tropical diseases tended to increase from year to year. Moreover the prevalence rates of tropical diseases tended to increase from year to year (Riyadi, 2006). Based on this phenomenon, Indonesia's health sector is currently in a situation transition of epidemiological, which must bear the burden of excess, commonly referred to as the triple burden (Widiyono, 2005).

The main cause of rapid spread of tropical diseases is the humid air that comes with the rainy season in tropical countries. Humid air resulted disease-carrying agents, such as viruses, bacteria, fungi, and parasites grow more rapid. It is closely related to the Indonesia's tropical climate, and actually we are not able to control the climate. Other factors that contribute to the rapid spread of tropical disease are poor physical environment, economy and social factor, culture, the high human mobility between countries, biological change of disease-carrying agents, etc. Accumulation of factors above causes the emergence of new variants dangerous diseases. Several systematic programs have been done by the government in order to eradicate tropical disease, such as "Gerakan Berantas Kembali Malaria" (Gebrak Malaria), "Gerakan Pemberantasan Sarang

Nyamuk" (PSN), etc. In reality, application of the programs is not satisfy yet, because there is a gap between program and phenomenon happened. This gap proven by prevalence rate which is tend to increase from year to year (Kompas, 2008). So, what should we do now? The keyword to solve this phenomenon is how to integrate knowledge about the nature of the agent, host, and environment. The integrated knowledge would be a base for designing prevention and control program, and also for early awareness efforts. With integrated knowledge, program proposed will be more realistic because it made from the real phenomenon that captured by integrated system.

KNOWLEDGE MANAGEMENT SYSTEM (KMS)

The knowledge means professional's intellect such as know-what, know-how, know-why, self-motivated creativity, best practices, concepts, values, beliefs and method of working that can be shared and communicated among the professional. The knowledge can be in form of explicit knowledge or tacit knowledge. Explicit knowledge means the knowledge is in a structured form and stored in knowledge bases (databases). The knowledge also can be in form of tacit, which means the knowledge is in a subjective (non-structured) form, so that needs to be structured before used. Examples for tacit knowledge are ideas, individual insights, values, and judgments of individuals (Bose, 2003). The goal of knowledge management is to convert tacit knowledge become explicit knowledge. Below is illustration about explicit and tacit knowledge.

Until here, may be you will have question: "what is the differentiation between the commonly used terms information and knowledge?" The primary difference is in the degree of understanding of their underlying organizational data. Information represents data endowed with meaning. Meanwhile, knowledge represents information with experience, insight, and expertise (Kebede, 2010). With this differentiation, we can say if the accumulation of data into a meaningful context called as information, and knowledge is the next degree of higher understanding toward information.

KMS deals with the strategies and processes for identifying, capturing, structuring, sharing and applying professional's knowledge in order to extract competitive advantage and create sources of sustainable growth for future (Bose, 2003). KMS also deals with a class of information systems applied to manage professional's (individual or organizational) knowledge. A lot of knowledge management initiatives rely on IT (Information Technology) as a critical success factor and enabler. Nowadays, progress in IT has enhanced knowledge management capabilities that were not possible before (Hsia, Lin, Wu, and Tsai, 2006). In the future, with the IT progress, knowledge management capabilities become more sophisticated and complex. Hence, KMS is IT-based systems built to simplify and enhance the processes of knowledge acquisition, sharing, and utilization within the organization.

IDEA FOR TROPICAL DISEASE PREVENTION AND CONTROL

Based on existing phenomenon explained above, it was time for an early awareness efforts conducted in a participatory manner by all stakeholders. Stakeholders can be health practitioners, researchers, policy makers (official), and even the citizens. Participatory awareness can be enhanced if we have an integrated system that can accommodate all knowledge about tropical disease from all stakeholders to be shared. The knowledge here means stakeholders intellect and wisdom, such as know-what, know-how, know-why, self-motivated creativity, best practices, concepts, values, beliefs and method of working that can be shared and communicated (Bose, 2003). In this context, the knowledge for disease prevention and control can consist of characteristic about disease, potential risk, how to cure, how to isolate disease in community, and absolutely important is how to prevent of illness, etc.

The idea for tropical disease prevention and control explained here also inspired from Bose (2003) statement: well-managed information that is properly cataloged and structured, available and accessible by the right stakeholders and processes at the right time becomes knowledge. Below

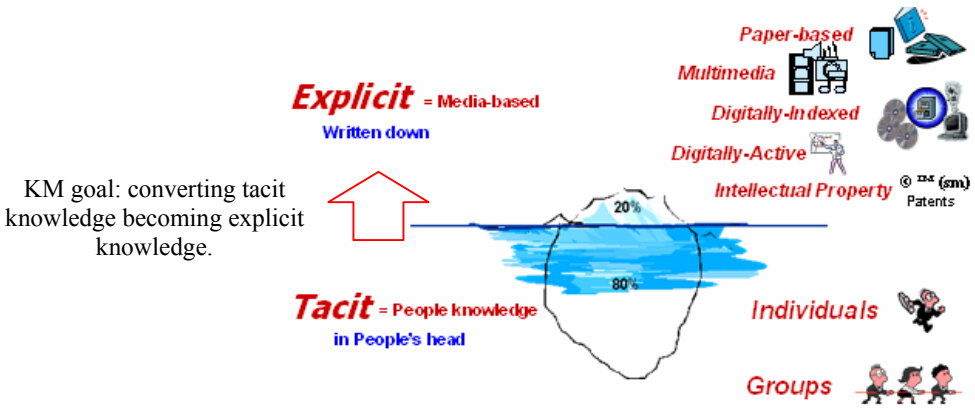

Figure 1. Explicit and Tacit Knowledge (Romy S.W. in Saputri, 2010)

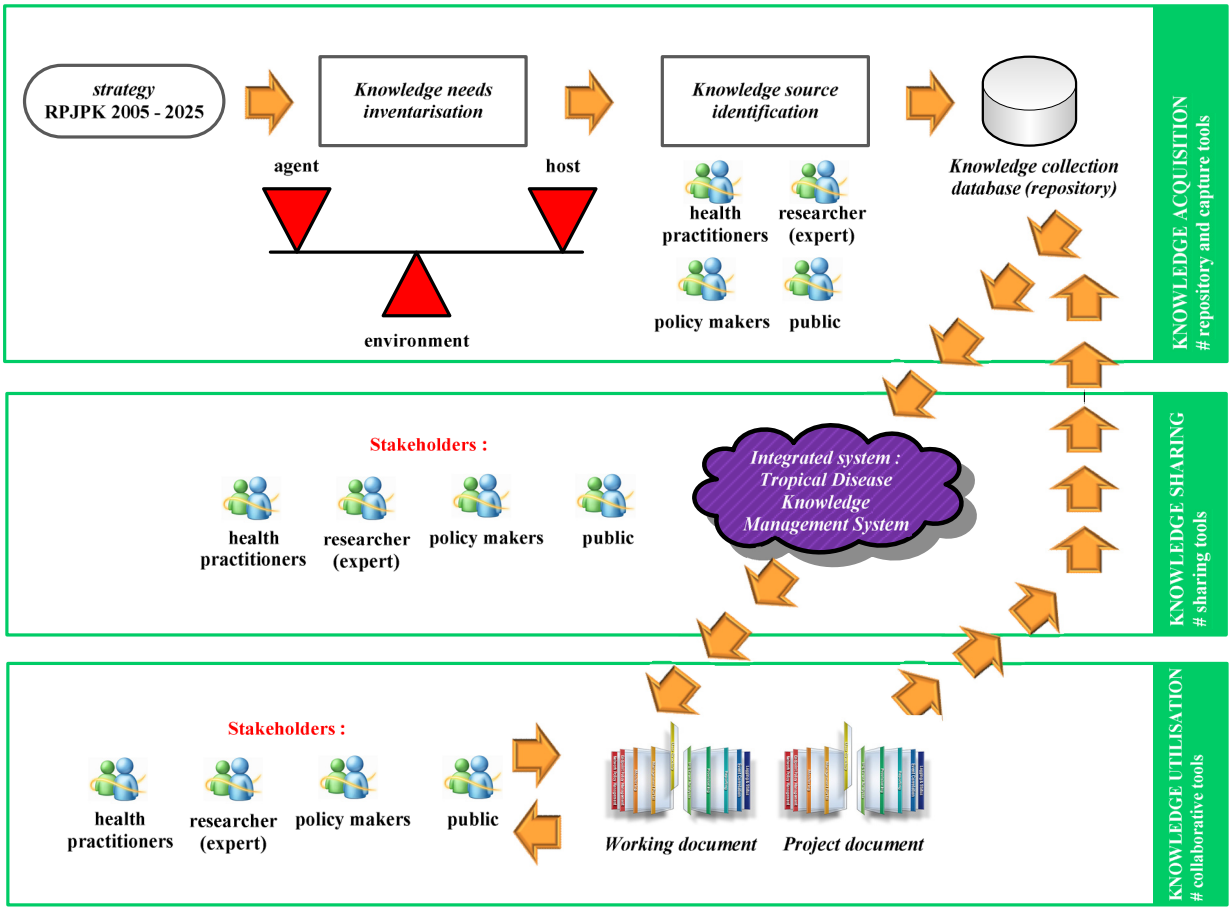

Figure 2. Architecture of Integrated System (Tropical Disease Knowledge Management System/TDKMS)

is illustration (architecture of integrated system) how to assure this idea:

Figure 2 above give a description of how the process of acquiring knowledge, how the knowledge can be shared, and also describe how the knowledge can be used. TDKMS begins from the acquisition of knowledge then store it in the repository (knowledge collection database). Repository built based on world wide web (www) technology. By using this technology user can share the knowledge easily. Hence, knowledge can be utilized by stakeholders anytime and anywhere. While Utilize knowledge, user can formulate new knowledge, with this integrated system user can update knowledge and store it to the repository.

The most important issue in TDKMS is knowledge acquisition, because in this acquisition we face problem how to externalize tacit knowledge become explicit knowledge. Method used for externalizing the knowledge is CBR (Case Based Reasoning). Case Based Reasoning means to retrieve former, already solved problems similar to the current one and to attempt to modify their solutions to fit for the current problem. The underlying idea is the assumption that similar problems have similar solutions (Schmidt, *et al*., 2001). Figure 3 shows the Cased Based Reasoning cycle:

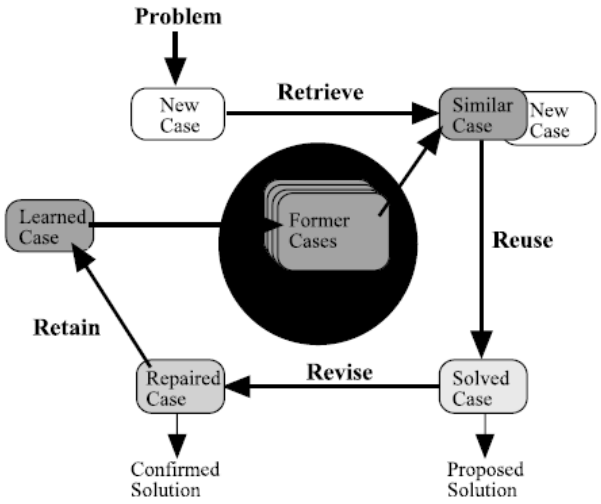

Figure 3. Cased Based Reasoning Cycle developed by Aamodt (1994)

The following figure illustrating appearance of TDKMS based on world wide web:

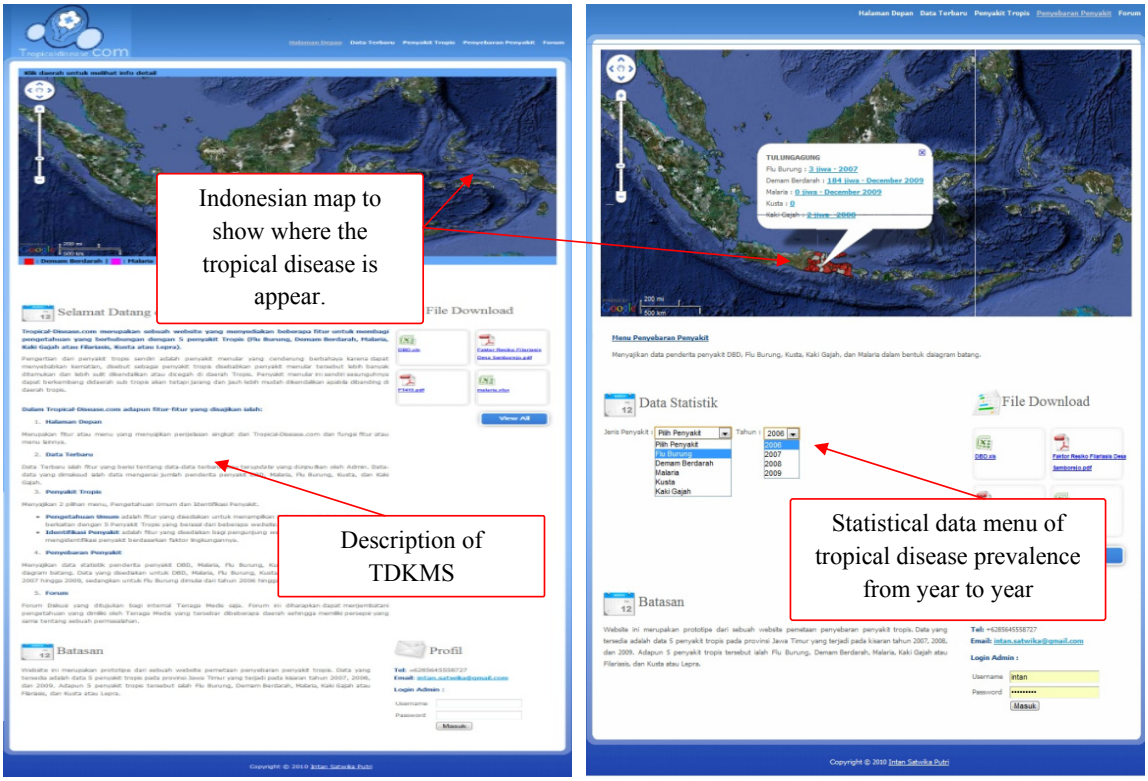

Figure 4. TDKMS Interface version 1.2

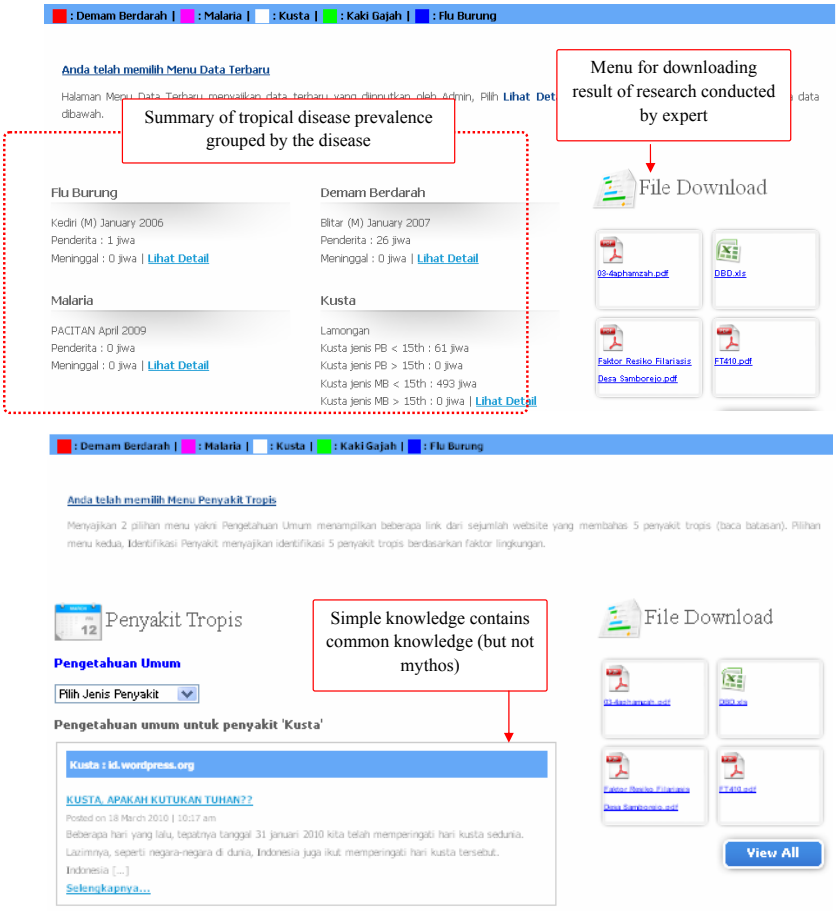

Figure 5. Simple Knowledge captured in TDKMS

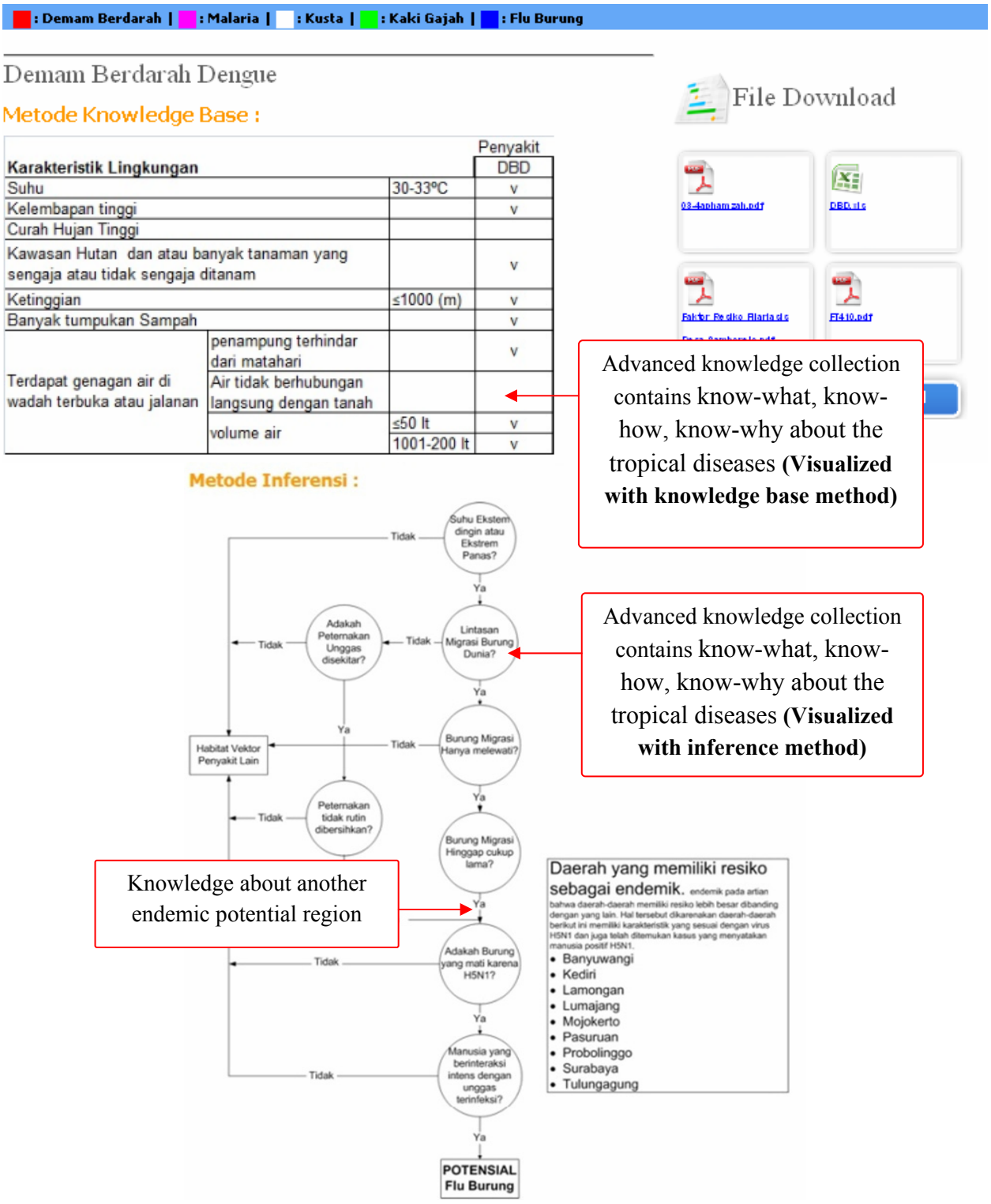

Figure 6. Advanced Knowledge captured in TDKMS

Figure 7. Discussion Forum for Facilitating Knowledge Acquisition and Sharing

CONCLUSION

It was time for an early awareness efforts conducted in a participatory manner by all stakeholders. Participatory awareness can be enhanced if we have an integrated system that can accommodate all knowledge from the stakeholders about tropical disease. From explanation above, stakeholders can be health practitioners, researchers, policy makers (official), and even the citizens. The knowledge to be acquired, share, and utilized means stakeholders intellect and wisdom, such as know-what, know-how, know-why, self-motivated creativity, best practices, concepts, values, beliefs and method for disease prevention and control. With integrated knowledge, program proposed will be more realistic because it made from the real phenomenon that captured by integrated system (TDKMS). So that nowadays is the era for knowledge management.

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