User-centered Mobile Technology Intelligence System

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Abstract. Technology Intelligence is an activity that enables companies to identify strategies for their survival and future growth in the market. We introduce a new version of the technology intelligence system, *InSciTe adaptive* (2012). The system has major approaches of catching users' intention, giving intuitive insight to users, supporting mobile environment in the technology intelligence field. Finally, this paper presents some improved services and a new service in comparison with the last version of the system, *InSciTe advanced* (2011).

Keywords: Business intelligence, Technology intelligence, Mobile BI, Technology opportunity discovery, User adaptiveness

1 Introduction

Recently some core techniques such as semantic web, text mining, and data mining have been developed constantly and the techniques have come to be applied to the technology intelligence and business intelligence for companies by analyzing business opportunities like emerging technologies in the near future [1, 2, 3].

Technology Intelligence (TI) is an activity that enables companies to identify their technical opportunities and threats that could affect the future growth and survival of their business [4], whereas *Business Intelligence (BI)* can be defined as the ability for an organization to take all its capabilities and convert them into knowledge. BI mainly aims to support better business decision-making and can be called a decision support system [5].

With regard to the trends, *Korea Institute of Science and Technology Information (KISTI)* has been developing an advanced analytic service called *InSciTe* based on the text mining and semantic web technologies. *InSciTe adaptive* is a latest version of InSciTe services and a sequel to *InSciTe advanced* (2011) [6].

This paper introduces basic concepts and main services of *InSciTe adaptive* (2012) comparing with the previous system, *InSciTe advanced* (2011). The new system focuses on identification of user intention, mobile environment, and making insights

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for competitive strategies and provides several advanced services with more precise predicting and analyzing abilities such as *Technology Trends, Convergence Technology, Agents Levels, Agents Partners*, and so on.

2 Mobile Business Intelligence

Recently conventional BI has been rapidly shifted to the mobile area Mobile Business Intelligence (Mobile BI) has some advantages of helping users to make decision faster and also increases customer satisfaction faster than the past BI environment (see Fig. 1) [7].

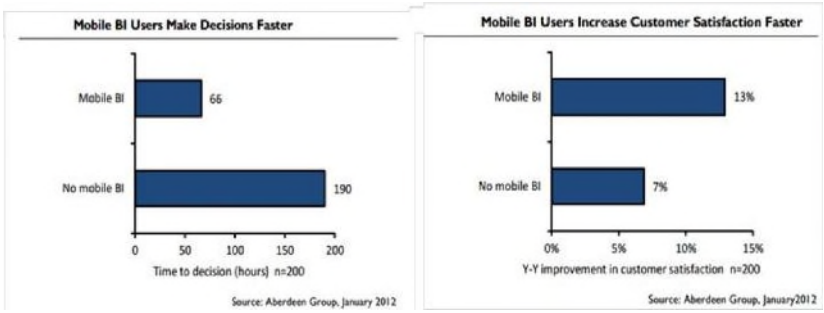

Fig. 1. Mobile BI accelerate the Decision-Making Process (Aberdeen Group, 2012)

MicroStrategy, Inc. is a business intelligence software vendor and one of the most famous and promising company in the BI related fields according to *Gartner*'s reports. The new entry into the mobile market was in 2010 with *MicroStrategy Mobile* [8]. Another major vendor is *QlikTech, Inc.* and it is the provider of *QlikView*, which also has mobile version, *QlikView Mobile* (see Fig. 2) [9].

Fig. 2. MicroStrategy Mobile (left) and QlikView Mobile (right)

3 Design Concepts

There are three main concepts on which we are focusing when designing *InSciTe adaptive* (2012). In other words, we are focusing on following three keywords; Adaptive, Insight, and Mobility.

 User-adaptive Technology

Conventional information systems including decision-making support system or analytics system have fixed service flow and support only static services. Whereas the proposed system, *InSciTe adaptive*, employs user-adaptive service flow and can dynamically change service flow reflecting user intention obtained from users' behavior patterns as well (see Fig. 3). According to user's specific tendency, a different service start point can be set up [10].

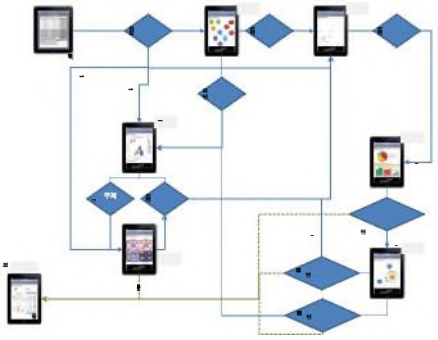

Fig. 3. User-adaptive Service Flow

 Insight-making System

A decision support system can only support business or organizational decision-making activities implicitly, not give any conclusions or insights from data analysis explicitly. We have been developing a real time insight-making system as a next generation of TI system (see Fig. 4).

 Mobility Support

Because mobile BI can bring competitive advantage as shown in Fig. 1, the broad adoption of mobile BI appears to be inevitable trend [7]. Under the circumstances like this, our new analytics system also adopt native mobile environment.

Fig. 4. Insight service and mobile environment

4 Analytic Services

This section introduces three improved services (Technology Trends, Agents Levels, Agents Partners) and one new service (Convergence Technology) in *InSciTe adaptive* (2012), and also explains some improvement points and features briefly.

Technology Trends

Technology Trends service draws development levels of technologies on the technological development graph, which is similar to *Gartner's Hype Cycle* [3]. For the service of InSciTe 2012 version, at first we are developing and improving some internal functions appropriate for mobile devices like *iPad* and *Galaxy Tab*. To analyze the time series information from source documents more precisely, a function for time calculation has been improved by considering discontinuous problem of time series information between the last and first month of years (i.e., December, 2011 and January, 2012) and overlapping half of each year with half of the next year (see Fig. 5). As a result of tuning the core module, the system can predict technological development stage and forecast technological development speed by year more accurately.

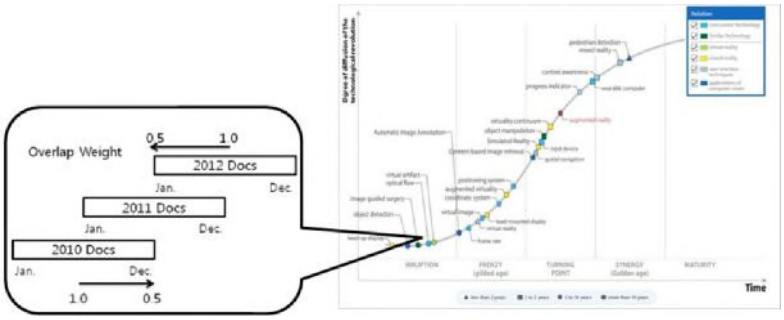

Fig. 5. Service for technological trends and predictions with improved algorithm

Agents Levels

Agents Levels service aims to express current technology level from the viewpoint of country or company (called 'Agents' in this service). As shown in Fig. 6., Agent Levels service provides multi-dimensional views such as academic and industrial viewpoints at the same time.

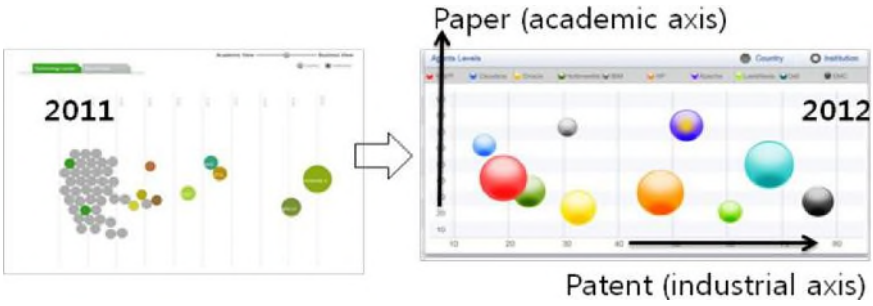

Fig. 6. Agent Levels service

Agents Partners

Agents Partners service is a new version of 'Competitors and Collaborations service' of *InSciTe advanced* (2011) [11]. Its goal is to find competition and collaboration relations among agents who conduct similar research and development. While the previous service focused on the co-occurrence information from document database, Agents Partners service only uses semantic information based on triple repository. We expect more accurate analysis results from this service (see Fig. 7).

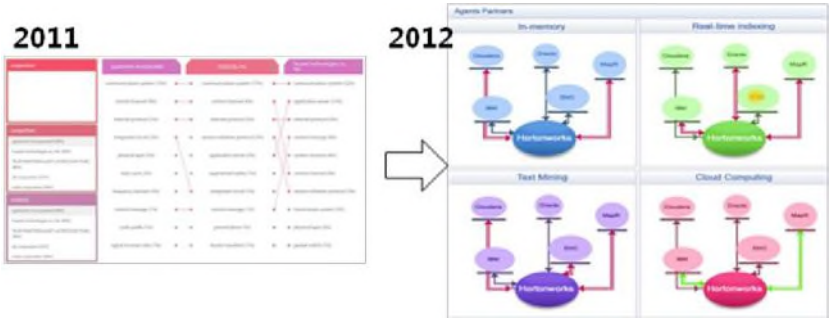

Fig. 7. Agents Partners service

Convergence Technology

Convergence Technology service is one of new services and can be defined as finding any possibilities of combination of more than two core technologies and creation of a synergy effect through the convergence activities. For example, automobile industry combined with 'augmented reality' technology can create new values and increase the company's market share more than ever before. This service analyzes very large amount of data and helps companies find some novel technological item for their future growth (see Fig. 8).

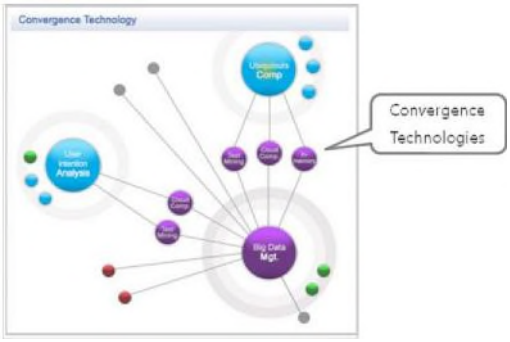

Fig. 8. Convergence Technology service

5 Conclusions

In this paper, we have proposed a next generation of TI system considering mobile environment. This new system catches user's intention in real time and provides intuitive insight from very large amount of unstructured data.

This system has been developed through ongoing project but we introduce main approaches of the system and explain some improved services and new one briefly. In the near future, we expect that a new version of InSicTe service called InSciTe adaptive will contribute to conventional technology intelligence or business intelligence area with novel notions such as real time insights and user adaptiveness.

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