Risk Management System Design
by Information Technology Architecture

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동국대학교
DONGGUK UNIVERSITY

Lee Sung-Su

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First, security is elevated as an independent and unique business that is a service for the citizens.

Second, investment in the disaster prevention sector is considered not as a cost, but as an investment.

Third, a system of integrated and coordinated management of disasters and accidents, as well as of security management in which citizens participate, is to be established.

Fourth, a specialized process of accident management and reoccurrence prevention measures is established as the principle and basic direction of management.

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1) the lack of networking and standardization between systems due to each agency's independent promotion of IT business for disaster response,

2) the lack of a pre-disaster preparation system for disaster response and the under-usage of IT,

3) the lack of prompt and accurate response to situations due to control office's weak function, etc.,

4) limited information sharing due to each agency's closed management of information and communication network, and

5) the inability to communicate with problematic communication areas arising in a disaster, and the general lack of emergency disaster communication.

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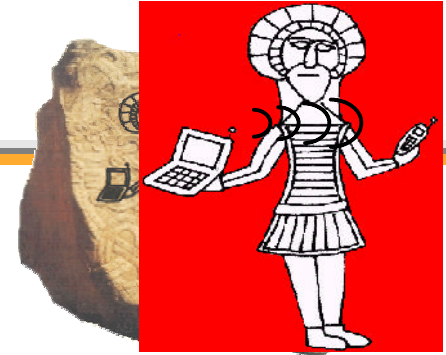
In conclusion, the management system and information system for disaster prevention to be newly improved and established should be designed based on ITA/EA base structure in which the trend of new technology is reflected, and have a BCP(Business Continuity Planning) environment.

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2. Change in IT Environment
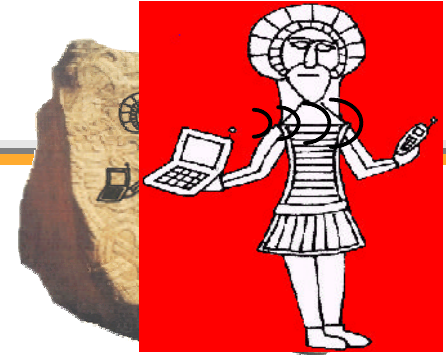
. Ubiquitous technology

. Internet- based open architecture technologies
  such as Web Services

. Ubiquitous IT allows establishment of various systems, which
  can be accessed any time, recognize situations, and always
  intelligently and autonomously act and serve as a substitute
  for humans

. introducing Enterprise Architecture in information system

. Enterprise architecture allows efficient information
  management and supports decision making to consistently
  drive an information system.

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Emergency Management(1)

. In general, emergency management refers to an organization's ability to handle present operational environment swiftly and efficiently in order to reduce threats to human health and safety, prevent public and commercial property loss, and minimize effects on normal activities of organizations.

. As a model for this emergency management, there are step-by-step response activities, which are composed of Preparedness, Response, Recovery, and Mitigation.

. This step-by-step response can minimize damages through a feedback process

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Emergency Management(2)

. Preparedness, Response, Recovery, and Mitigation

- in the preparedness stage, measures to respond to disasters
  are to be analyzed and designed in advance through R&D
  (Research and Development) and the future possibility of
  disaster occurrence should be predicted.
  - In the response stage, a system of common response with
    on- site activities should be established when disaster occurs
    for swift and accurate information transmission
- In the recovery stage, emergency situations occurring after
  disaster are controlled.
- In the mitigation stage, disasters are reclassified by type, and
  appropriate prevention measures are prepared to prevent
 reoccurrence of disasters.

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Enterprise Architecture

.Business architecture defines functions between necessary businesses
 and other related businesses.

. The aims of data architecture design are to provide a framework for
  sharing and managing the data used in the information system, as well
  as to offer access and functions so that data requirements are
  supported by the system.

. In the design of application architecture, related connections between
  businesses and units are confirmed and verified, and an applicable
  system is designed after the necessary application system is
  distinguished.

. Design of technology architecture is a process in which a series of
  services and interfaces that are commonly applied to computing,
  platform, and communication infrastructure is defined by
 distinguishing the information service necessary for task activities.

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Ubiquitous Computing

. The world of Ubiquitous [technology] aims to make 5 "Anys" (Anytime, Anywhere, Any network, Any device, Any service) possible for 5Cs, including Computing, Communication, Connectivity, Contents, and Calm. Through this, electronic space and physical space are united in one, and all inanimate objects [i.e. mechanical objects] and humans can exchange communication in real time.

. With this introduction of Ubiquitous computing concept, therefore, it will be possible to establish an on- site response system to disasters with dynamic information exchange and establishment of a comprehensive disaster management plan.

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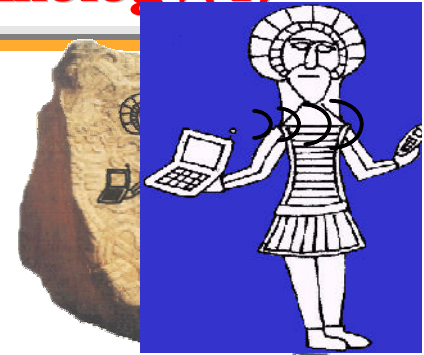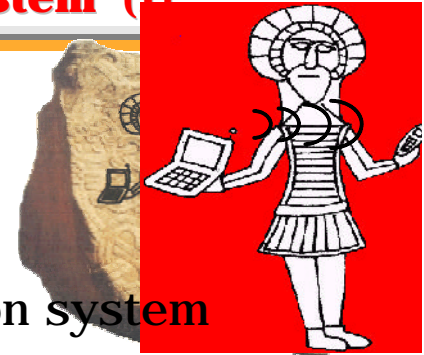
. Presently, the main problems of the disaster prevention system can be classified into the problems that are caused by non-systematic promotion of the information system, such as lack of standardization and network between information systems, limited information sharing due to each agency's closed operation of information communication network, [problem of] problematic disaster communication areas, and absence of emergency disaster communication, as well as the problems that are due to under-usage of IT, including new technology.

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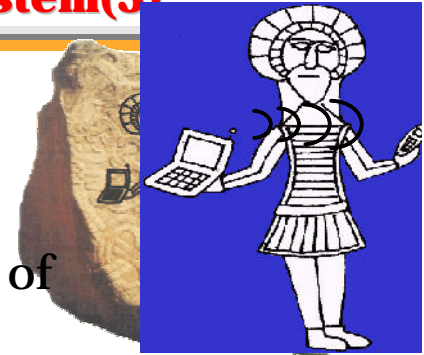## Plan for Establishing Enterprise Architecture (1)

. The main elements of IT architecture are Enterprise
   Architecture, Technology Reference Model, and Standard
   Profiling. For efficient realization, efforts are being made to
   establish IT management systems and various reference
   models related to business, performance, data, and service
   component, in addition to the existing concept of IT
   architecture.

   - BA (Business Architecture): It indicates the business area
     and business process of fire service disaster prevention and
     defines information and information flow that accomplishes
     the business function.
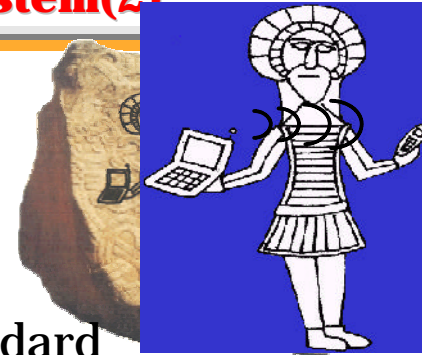
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## Plan for Establishing Enterprise Architecture (2)

- DA (Data Architecture): It indicates data for support of
  business function and the relations among them, and
  provides integrated frame of information for the entire
  dimension of fire service disaster prevention business.

- AA (Application Architecture): It defines application for
  support of business function and data management, and
  provides connections between individual applications.
  Application for fire service disaster prevention is composed
  of a disaster planning business system, a disaster reduction
  business system, a disaster prevention business system, a
  disaster response business system, a disaster recovery
  business system, etc.

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Plan for Establishing Enterprise Architecture(3)

- TA (Technical Architecture): It explains hardware, system software, and structural elements of network necessary to support application.

- TRM (Technical Reference Model): It controls various structural IT elements efficiently in the process of acquirement/development and interoperability and allows interoperability, implantability, and prevention of repetitive investment by defining a conceptual framework for a commonly- used information system and common IT terms.

- SP (Standard Profile): It is a part in which standards of all Its existing in TRM, actual methods of establishment, and dimensions are organized and allows network/data exchange service.
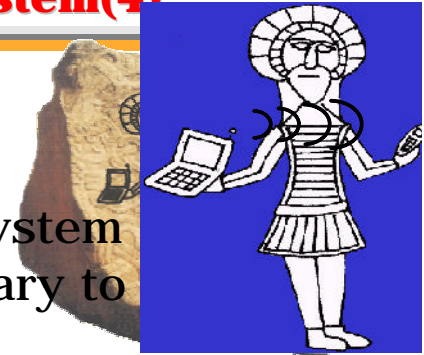
Plan for Applying Ubiquitous Technology

- a technology that promotes the enhancement of disaster
  management based on IT, as well as information sharing
  system through networking of each information system, is
  the Ubiquitous computing technology. In the Ubiquitous
  environment, dynamic information sharing and establishment
  of comprehensive disaster management plan are possible by
  collecting real- time disaster information in the [disaster]
  field using mobile communication devices (PDAs, cell and
  satellite phones, notebooks), as well as by allowing
  communication with related units of self- government
  agencies and people, using radio. In addition, it is possible
  to respond more promptly and accurately as well as to
  forecast damages and make decisions by utilizing
  information collected in real time

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5. Conclusion
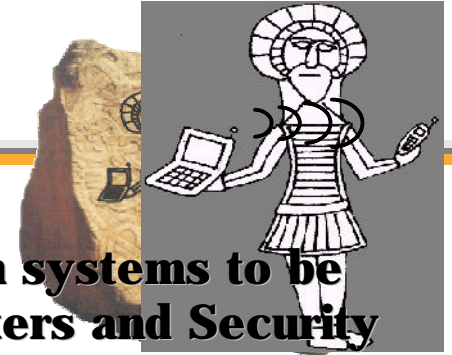
Organizations, business systems, and information systems to be newly improved under the "Basic Laws on Disasters and Security Management" should be designed and operated in a future- oriented manner by closely analyzing and evaluating (using such methods as BRM and BPM) entire existing businesses and organizations based on the basis of Enterprise Architecture. It is concluded that a systematic response to track and manage it is also necessary.

Development of IT such as Ubiquitous, GIS, and GPS provides new opportunities of development in state disaster management. At this time, the state disaster system needs to be systematically pushed forward with the application of new technology as well as application of systematic information methodology such as Enterprise Architecture.

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THE END

Have a nice day

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