



# *IT application in construction field in Vietnam*



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# IT application in Construction field in Vietnam

- ◆ *IT application in the Construction field was accompanied with the appearance of computers in 1970th.*
- ◆ *Civil engineers firstly used different types of computer such as MINSK 22, MINSK 32, ODRA, IBM 360 to solve problems including structural analysis, cost estimates and some mathematical problems.*
- ◆ *By 1985, the applications of informatics in Construction were developed in designing and structural analysis at big cities.*
- ◆ *Since 1993, on implementing the resolutions requested by the Government of Vietnam on the development of IT in the 90 years, the application of IT in construction field has widely expanded and achieved some exciting results .*
- ◆ *These resolutions, policies and measures on the acceleration of IT application and development of Government of Vietnam have been putting active effects on the development of IT in construction.*

# The current situation of IT application

## ◆ At the administrative offices of Ministry of Construction (MOC)

- Computers have been used since November 1990 to apply informatics in some activities of MOC such as staticstics, management of documents ... etc. and training IT knowledge to users
- Over 200 computers.
- Some databases serving government management.
- The information management network for the construction field (XDNET01) connecting between the Office Building of the Ministry of Construction to Government office, 61 construction depatment in provinces of Vietnam and over 40 belonging units (companies, research institutes, universities...).



# The current situation of IT application (Cont.)

## ◆ At the *research institutes* :

- There are about 450 computers, 8 servers and 6 local area networks (LAN), and other devices as plotters, digitizers, scanners, etc.
- The main activities are using computers in research as structural analysis, mechanical construction and construction materials.

## ◆ At the *design and consulting organizations* :

- All of designing stage is fully computerized.
- Software used for architectural design is AutoCAD, ALLPLAN, and ARCHICAD.
- The software used for structural analysis is both Vietnamese and foreign such as KPW, FBT, BTCT, STAAD III, SAP 90, SAP 2000, STRAN6.... etc.
- Other applications can be listed as GIS with software as MAPINFO, ARCINFO, INTERGRAPH, GEOCONCEPT, MAPPRO, DOLGIS.

# The current situation of IT application (Cont.)

## ◆ *At the construction companies:*

- Each construction company has 80-100 PCs, Some construction companies has LAN in head office.
- The main IT applications is the management of materials, human resources, finance, cost estimation, and construction projects management.

## ◆ *Manufacturers of building materials:*

- Each Company has 50-70 PCs with the local area networks.
- The current IT applications are management of production operation, management of distribution, sales statistics, management of finance, materials, human resources and salary payment.

## ◆ *The public services sector (water supply and urban management companies):*

- There is some IT applications applied for fields such as finance management, customer management and management of water supply and storm sewer systems.

# The current situation of IT application (Cont.)

## ◆ The *construction machine companies*:

- There are hundreds of automatization systems used software in ROM and PLC system.

## ◆ In the *education and training sector* :

- Have had informatics training courses and IT practice laboratories with 20-25 LAN-enabled PCs.
- The informatics training programs in these universities and schools focus on basic informatics, operating systems, using AutoCAD and 3D-VIZ Studio in designing; and using Vietnamese or foreign software in structural analysis.
- The universities are also in progress of establishing their Faculty of IT in Construction.





# The current situation of IT application (Cont.)

- ◆ ***Provincial construction departments*** in 61 provinces of Vietnam:
  - Have applied IT in management and construction quality inspection. There are at least 5-10 PCs at each department used for management of finance, construction materials production, human resources, registering of construction companies ... etc.
  - Divisions of construction quality inspection at these departments use various Vietnamese or foreign software to evaluate design activities.
- ◆ **Almost every organizations belonging the Ministry of Construction connects to the Internet.**
- ◆ **Many companies have their websites on the Internet (E.g. VINACONEX, WASE, VIGLACERA, etc.).**
- ◆ **E-commerce is experimentally starting in Construction field.**



# The current situation of IT application (Cont.)

## ◆ *IT human resources in construction field:*

- Vietnamese IT users are more and more qualified with their professional skills.
- MOC has the strong IT work force including the Construction Informatics Corporation with more than 100 IT professionals.
- Other research institutes, universities which have numerous numbers of qualified staffs with IT skills and knowledge.

## ◆ **The Construction Informatics Association of Vietnam**

- An association of IT professionals working in Construction and related sectors.
- Makes great contributions to the development of IT in sector by providing valuable advices and instructions.



# Assessments and Comments

## ◆ Infrastructure of IT in Construction field:

- In the 1995-2000 period, the organizations belonging MOC has paid much more attention to the investment and development infrastructure of IT with the total number of 8 thousand computers.
- The information network (XDNET01) is has become Intranet network of MOC that transmits information, data between the Office Building of the Ministry of Construction to Government office, 61 provincial construction departments of Vietnam and over 40 belonging units.

## ◆ The Ministry of Construction has also established a database for science and technology at the Center of Information on Science and Technology.

## Assessments and Comments (Cont.)

- ◆ IT has become an effective tool for the *design consultancy in construction*.
- ◆ Design consulting companies is computerizing with IT applications in the architectural design, technical design and structural analysis.
- ◆ Many companies pay attention to purchasing software products with official license.
- ◆ *Informatics technology has not yet applied successfully in the assessment of construction projects management, surveying and planning design.*





## Assessments and Comments (Cont.)

- ◆ The IT knowledge of users of MOC is in normal level as compared to other country in the world, the users need a train of new IT professional skills.
- ◆ *IT experts* of MOC have well trained, experienced and well qualified to develop of IT applications and make IT services.
- ◆ *IT training activities* :
  - The education and training organizations belonging MOC have programs for training IT to the students.
  - Some informatics software for learning have been developed in the training course as structural analysis, cost estimation ... etc.
  - IT training in the universities and schools is short of teachers and unified teaching materials.



# Assessments and Comments (Cont.)

## ◆ *Disadvantages :*

- The investment and development applications of IT in Construction do not have a unified orientation and is short of funds for the implementation.
- The effectiveness in using computers is low.
- Many of software are used without licenses.
- Vietnam still does not have IT standards for Construction field.
- The network (XDNET01) of MOC is poor of information for Government managements and low in speed of transmission.

◆ **The utilization of Internet, e-commerce and searching for information on science and technology are not effective due to expensive Internet costs, low speed of the transmission and foreign languages**





# Strategies, policies and a master plan for IT development of the Government of Vietnam

## ◆ The Resolution No.49 of Government in 1993 on the "Development of IT in Vietnam in the 90 years"

- Set up computer systems and telecommunications facilities connected through networks with powerful software tools, information systems and databases that are capable of supporting the State administration and significant activities in the economy. A number of national information systems should be connected to the international information networks.
- Widely develop IT applications so as to contribute to increasing capacity, quality and effectiveness in production, trading, and gradually modernize the important production lines, services and national defense and security. IT applications must be used extensively in basic study activities, in the survey of environmental and natural resources, in science research and other activities.
- Establish the foundation for the IT industry, create valuable IT products and services, give high priority to the software development and take advantage of technology transfer opportunities to produce modern informatics equipment and facilities.



# Strategies, policies and a master plan for IT development of the Government of Vietnam

## ◆ Directive No.58 issued by the Central Executive Committee of the Communist Party of Vietnam (Date October 17, 2000), on the acceleration of IT application and development in the era of industrialization and modernization

- IT application shall be increased in every sector. It must become one of the most important factors of socio-economic development and must ensure national defense and security.
- The national information network shall be developed in nation wide scale with high bandwidth, speed and good quality at a low price so that it will help increase the number of Internet users reaching the normal rate in comparison with other countries in the world.
- IT industry shall become a spearhead economic sector with a growth rate higher than any other sector of the economy. The share of IT in GDP shall grow higher from time to time.



# Strategies, policies and a master plan for IT development of the Government of Vietnam

## ◆ Resolution No.07 dated June 5, 2000, issued by the Government of Vietnam, on the establishment and development of the Software Industry in the period of 2000-2005

- Raising the software industry into a key economic sector with a high growth rate and significant contribution to the modernization and sustainable development of different socio-economic sectors, for the improvement of State management and protection of national security.
- Bringing into full play the human resources of Vietnam, especially the young generation, preparing high-quality human resources for the coming decades.
- Reaching production value of about US\$500 million by the year 2005.

# Strategies, policies and a master plan for IT development of the Government of Vietnam

## ◆ The Master plan for IT development in Vietnam

- Upgrade the IT infrastructure especially is infrastructure of telecommunication, information and Internet; create a favorable legal environment for the development of IT.
- Diversify patterns and processes of IT training and publicization. By 2005, Vietnam will have about 25,000 highly qualified IT specialists and professional programmers with a good command of English.
- Widely apply IT in the State management and socio-economic sectors. By 2005, the IT level and effectiveness of using IT reaching the normal rate as compared to other nations in the region ASEAN.
- Expand IT into a power of the economy; create value products and services and Reaching production value of about US\$500 million by the year 2005 (the export value shall reach US\$200 million).



# Strategy for IT development in the Construction field

## ◆ The scientific and technological strategy for the Construction field in Vietnam until 2010 :

- Provide well-qualified programming staffs for the construction sector, and ensure to make a sufficient supply of software products for Construction.
- By the year 2005, the construction information networks has effects in both technical sector and State management.
- Update information of the databases of MOC.
- The informatics systems to quickly transmit information on new policies, regulations, technologies, etc. to different organizations of the construction field.
- Utilize advanced informatics applications and automatization in architectural, planning and design activities .

# Master plan for IT development in the Construction field

## ◆ The Master plan for the development of IT in the construction field till 2005 :

- Extensively apply IT in all domains of the construction field (e.g. State management, research, training, designing - consulting, business management, building material production, building technologies, etc.).
- Establish the WANs of MOC connecting between the Ministry's Office Building, belonging organization in 61 provinces of Vietnam and participate in E-commerce activities .
- Take part in the "E-Government" system of the Government of Vietnam.
- Build up and integrate databases serving management, operation, research, business and investment, etc.



# Master plan for IT development in the Construction field (Cont.)

- Develop software on international and Vietnamese standard for serving the design and construct of complicated works such as multi-story buildings, large-scale bridges, airports, harbors, sports complexes, etc. to apply in Vietnam or export.
- Export the software and IT services to other countries in the ASEAN region.
- Provide training and publicization of IT to every individual user in the construction field.

# IT projects determined in the master plan

- 1. Project on IT training and human resources development in the construction field.**
- 2. Project on the informatization of State administration management of MOC in the period of 2001-2005.**
- 3. Project on Internet and E-commerce application in construction.**
- 4. Project on software development for the construction field.**
- 5. Project on application of GIS for urban planning management.**



## IT projects determined in the master plan (Cont.)

- 6. Project on application of GIS for management of property (house) in city.**
- 7. Project on automatization of construction designing and consultancy.**
- 8. Project on IT development for public (i.e. granting building permit, registration of Architects; registration of enterprises, etc.).**
- 9. Project on IT standards in Construction.**



# Looking for international cooperation.

- ◆ Consulting and transferring of technologies on the establishment of an infrastructure for the WANs of MOC for management Construction field.
- ◆ A research and implementation of a CALS/EC system for Ministry of Construction of Vietnam.
- ◆ Cooperation in development of software products and digital works (digitalizing MAP) in Vietnam.
- ◆ Technical support on applying of GIS in the urban planning management.
- ◆ A research and implementation of IT standards in Construction and in converting CAD drawing data.





## Looking for international cooperation. (Cont.)

- ◆ Cooperation in providing IT and IT application education programs (Building IT training centers for Construction field).
- ◆ Providing IT labor forces to other countries (Out-sourcing).
- ◆ Distributors or resellers of software products in the Construction field in Vietnam and the ASEAN region.
- ◆ And other cooperation activities according to demands of each side.