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An Introduction to

The National Digital Archives Project, ROC

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Outline

- ❖ Background: *An ever changing world*
- ❖ Some thoughts concerning the creation of a Digital Virtue World of Culture
- ❖ An introduction to *the National Digital Archives Project of ROC*
- ❖ Concluding Remarks



Background:

We are living in an ever changing world.

❖ *Major Driving sources:*

❖ *Micro-electronics*

❖ *Bio-Technology*

❖ *New Materials*

❖ *New Machines*

❖ *Communication*

❖ *Computer/Computing*

.....

❖ *Post-Modernism ?*

❖ *Else?*



IT is transforming our Society

- ❖ Transforming the way we
 - *communicate*
 - *deal with information*
 - *learn*
- ❖ Transforming the nature of
 - *commerce*
 - *work*
- ❖ Transforming the practice of health care
- ❖ Transforming how we
 - *design and build things*
 - *conduct research*
 - *deal with environment*
- ❖ Transforming government

National coordination Office for Computing,
Information, and Communications, USA, August 1998



The Transforming

❖ How fast *IT* changes?

- *Hardware life cycle*: every 18~24 months
- *Software life cycle*: every 24~36 months .
- *Internet*: 1 calendar year > 7 Net-years

But the data/information we are using should last for more than hundreds of years.

❖ How long will the transformation last?



Progress of Communication Technology

- ❖ The 1st Period
230-1830
(*1600 years*)
 - ▲ The invention of Paper 105
 - ▲ Woodblock Printing 650
 - ▲ Movable type Printing 1045
 - ▲ Pencils 1630

- ❖ The 2nd Period
1830~1990
(*160 years*)
 - ▲ Eraser, Carbon paper 1830
 - ▲ Telephone 1870
 - ▲ Broadcasting 1910
 - ▲ Color TV 1950
 - ▲ ESS, Satellite, Optical Fiber 1970

- ❖ The 3rd Period
1990-2006?
(*16 years?*)
 - ▲ PC, Fiber communication 1990
 - ▲ ATM, PCS, CD, WWW, Multi-media...
 - ▲ ???...

❖ *Karl Hsu, Lucent Technology Inc., 1998*

Some Concerns & Thoughts

- ❖ How does information technology interact with our culture and society?
- ❖ What are the cultural and social impacts of Information Technology?
 - *Can our culture survive the information age?*
 - *Will our traditions become endangered while Internet becomes more popular?*

If so, what shall we do?



An Informatics Theory for Humanities

Outline

- ❖ Knowledge, Communication and Civilization
- ❖ Communication, Media and Information
- ❖ A Review of Media vs. Social Change
- ❖ Digital Media
- ❖ A General Definition of Information
- ❖ The Nature of Information and the Properties of Information Technology (*IT*)
- ❖ The Role of *IT* in Academics
- ❖ *IT* and Social Change



Media and Social Change

From documented development of human civilization, media's influence on the representation and dissemination of knowledge has proven to be very great.

Whenever a new form of media was introduced, it invariably led to changes in the dissemination of information knowledge, modified human relations and society, initiated organizational and social change, and developed new forms of civilization.



- ❖ *In the information age, ideas, methods, tools, audience, range, situation, and effect of communication have all changed, along with the environment in which people and the society depend on.*
- ❖ *The same multi-facet changes also happened in the field of knowledge processing.*



Two Major Functions of IT

❖ Communication

- ▶ Person to person
- ▶ Person to Machine
 - ▶ *Query and Access*
 - ▶ *Working & Learning*
- ▶ Mass Comm.
 - ▶ *Information*
 - ▶ *Dissemination*
 - ▶ *Education*
- ▶ Machine to Machine
 - ▶ *Internet*
 - ▶ *Satellite & Wireless*
 - ▶ *LAN*

❖ Knowledge Processing

- ▶ Storage
- ▶ Accumulation & Growth
- ▶ Representation
- ▶ Transformation
- ▶ Referencing & Relations set-up
- ▶ Applications
- ▶ Searching for new knowledge



Communication and knowledge processing are two indispensable driving sources of civilization.

Information technology is both communication technology and knowledge processing technology.



The Role of IT in Supporting Various Disciplines

- ❖ IT is not confined as a very powerful tool...
- ❖ For each discipline it
 - *provides new ways of looking at problems*
 - *offers new ways of interpreting problems*
 - *offers new methods of solving problems*
 - *provides new models and new theories to understanding problems*

IT has broadened and deepened the domain of every academic discipline.



The Role of IT in Academies

❖ In terms of form of *IT*

- Provide Simulation and Virtual Systems
 - *IT is creating a new virtual domain for studying and learning for every discipline, in parallel with the traditional physical domain .*
- Make available digital materials and tools.

❖ In terms of content by *IT*

- *IT* will provide new ways to interpret various meanings of the components in a system. It helps us understand and utilize complex systems better.
- *IT* will serve as a kind of new “energy” for learning, R/D and applications due to the content it carries.

*As a consequence, IT will
introduce a new civilization.*

*The NDAP is expected to meet
the challenge.*



Background of NDAP ₁

❖ Infrastructure:

- Favorable Government Policy
- Sound Tele-communication Policy and Capacity.
- About 1/3 of the total population of Taiwan, 6.8M, are Internet users.
- All primary schools have had ADSL access since the summer of 2000.
- ...

❖ Coordination is needed for various digitization projects in Taiwan.

- e-Government, e-commerce...
- Distance Learning
- Remote medical care
- ...



Background of NDAP ₂

- Technical merits of Taiwan
 - Prosperous Information Industry
 - Excellent capability in Chinese Language Processing and Chinese Document Processing
 - Good technical man-power support for multi-media systems and networking applications.
- Cultural Traits
 - Very rich collections in many fields
 - Chinese culture viewed as a world treasure
 - *Historically, many Asian cultures had been influenced by Chinese culture. We are willing to help them digitize their historical documents and cultural collections.*
 - **An “APEC Digital Archives Consortium” proposal have been submitted to APEC since 1999.**



Background of NDAP ³

➤ Cultural Traits *(continue)*

➤ Good capability in Sinology Studies

- CHGIS, ECAI, Rubbing...many on-going international projects
- Other international academic activities

➤ Unique language features

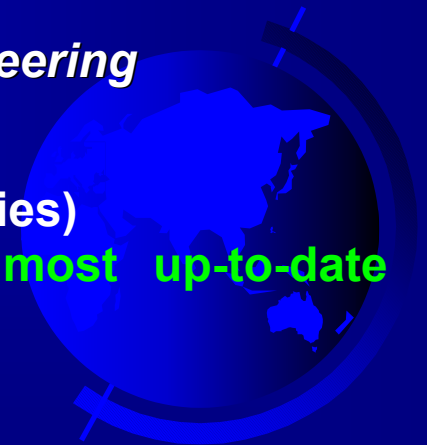
We have actively participated drafting Asian Language standards in :

- Open Language Archives Community
- ISLE, *Internal Standards for Language Engineering*

❖ Nature Resources

Catalog of Life (Indexing Taiwanese known species)

- ❖ **Approximately 200,000 species of the most up-to-date checklist including citations.**

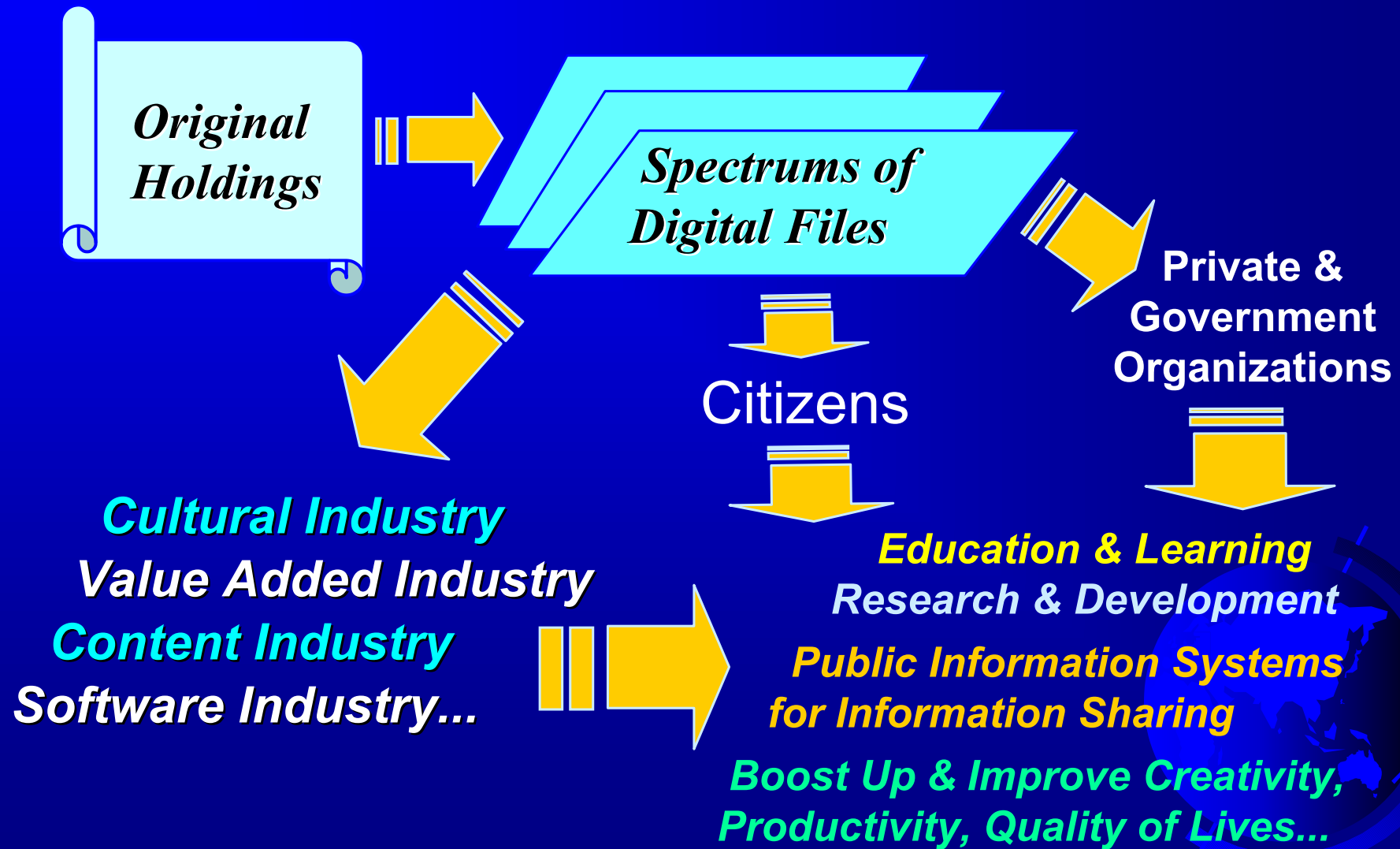


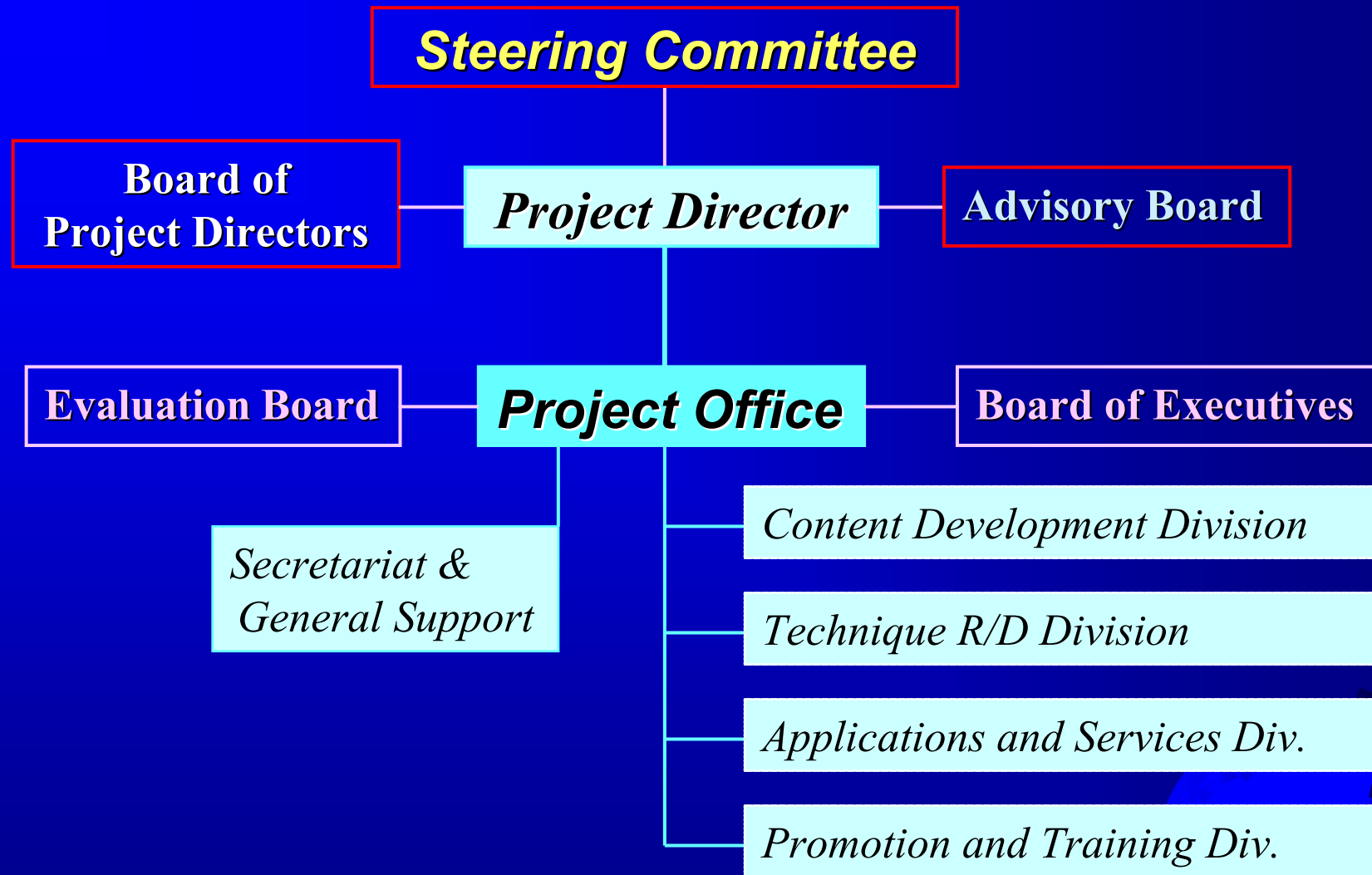
Goals of *NDAP*

- ❖ *Preserving national cultural collections*
- ❖ *Popularizing fine cultural holdings*
- ❖ *Strengthening cultural heritage and guiding cultural development*
- ❖ *Popularizing knowledge / Information sharing*
- ❖ *Enhancing education and learning*
- ❖ *Bootstrapping cultural and value-added industries*
- ❖ *Improving literacy, creativity and quality of life*
- ❖ *Promoting International Cooperation and resource sharing*



A Scenario of Applying Digital Archives





Organizational Chart of **NDAP**

Outlines of NDAP ¹

- ❖ **NDAP** is a National Project authorized by the NSC and conducted by Academia Sinica.
 - It is the fifth National Project of ROC, Taiwan.
 - The project office is located in the Institute of Information Science, Academia Sinica.
 - The Director of **NDAP** is Professor Kou-Shu Yang, Member of Academia Sinica.
- ❖ The first phase of **NDAP** will be a 5-year plan, from 2002 to 2006.



Outlines of NDAP ²

❖ Content Holders Participated in the NDAP up to present:

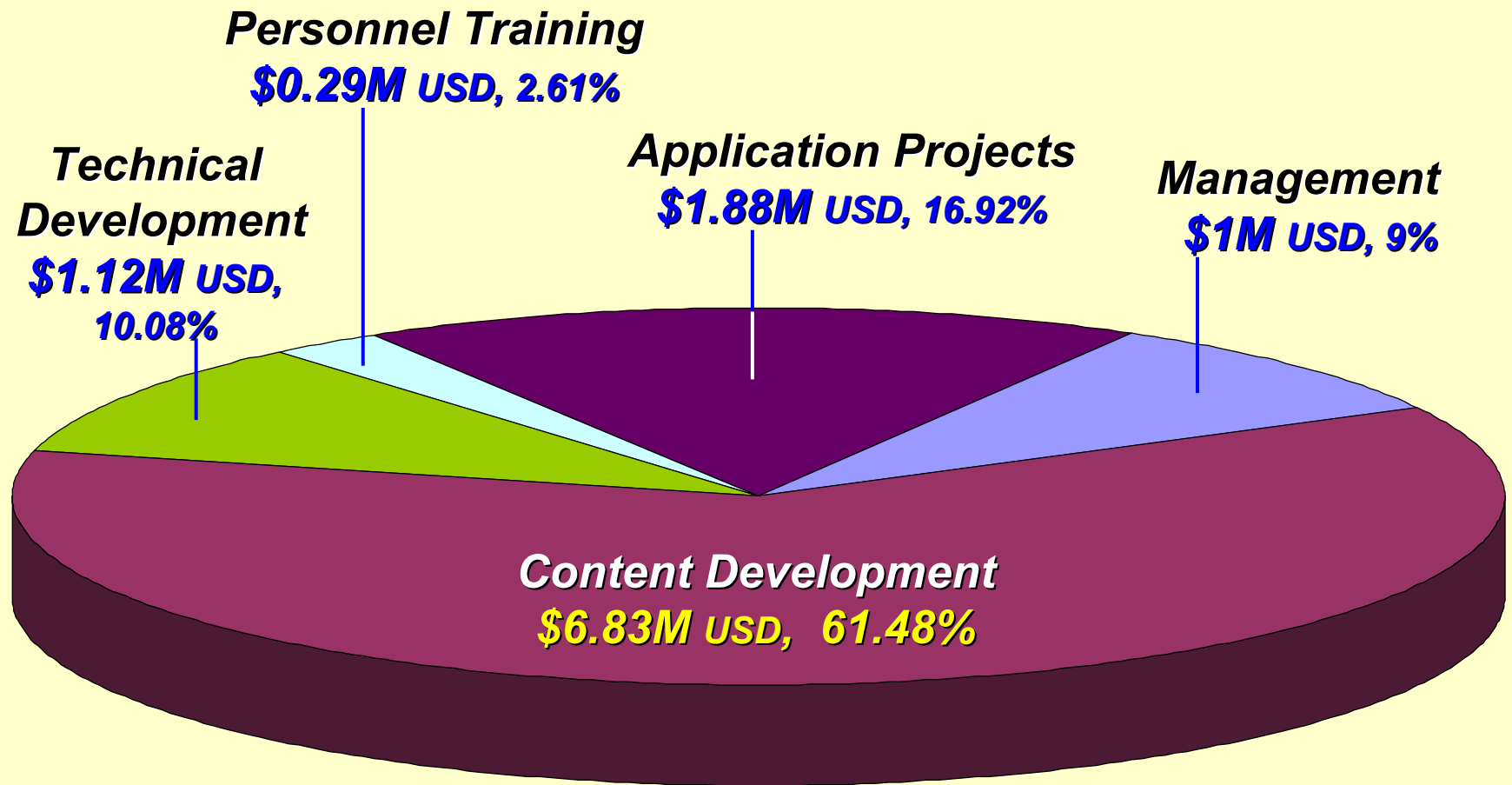
- ▲ *National Palace Museum*
- ▲ *National Library*
- ▲ *Historica Sinica* (國史館)
- ▲ *National History Museum*
- ▲ *National Museum of Natural Sciences*
- ▲ *Committee of Taiwan Provincial Archives*
- ▲ *Council of Cultural Affairs*
- ▲ *National Taiwan University*
- ▲ *Academia Sinica*



Budget Planned

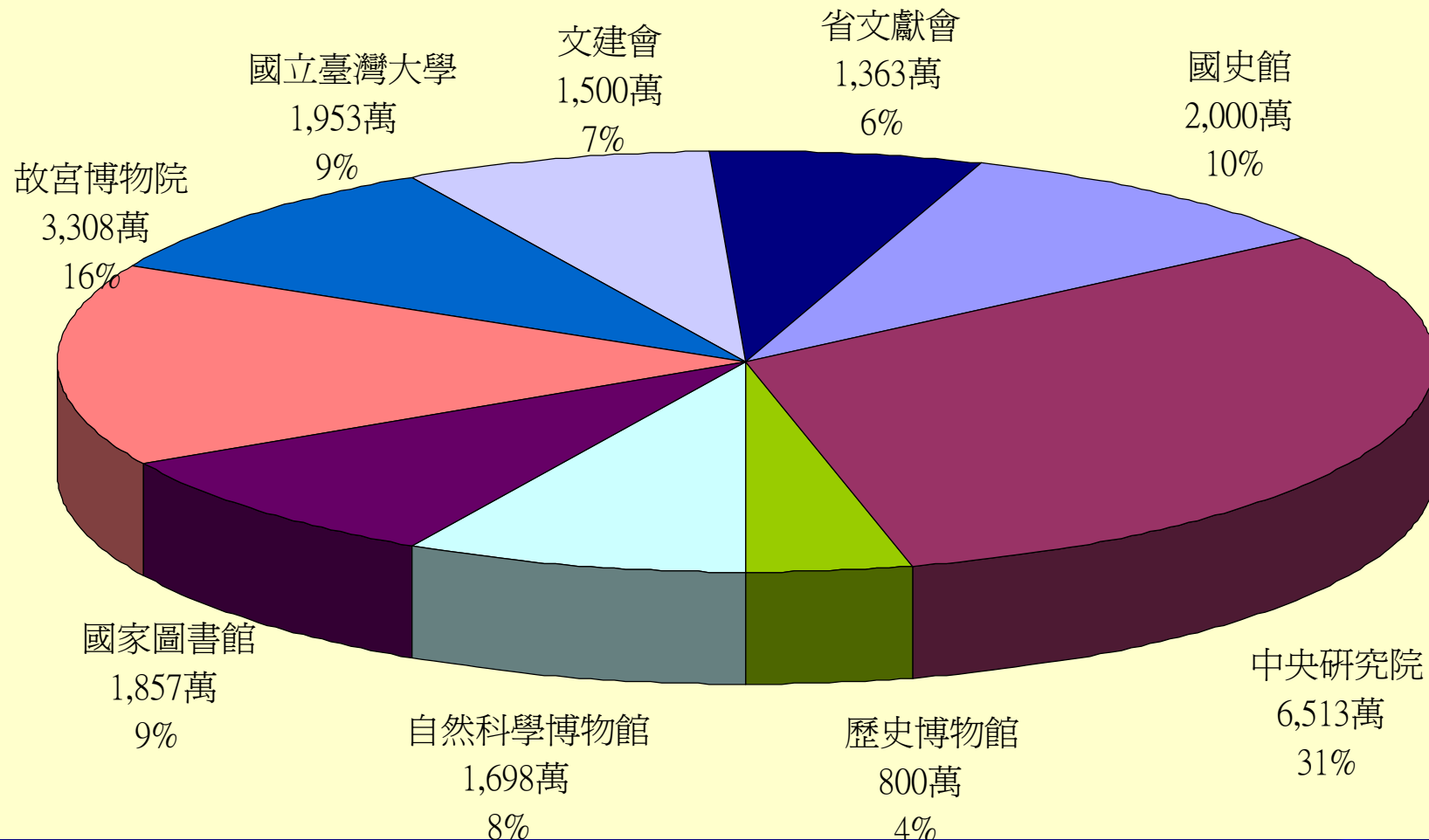
- ❖ Total Budget in 2002:
11.11million *USD*
(*\$383M NTD*)
- ❖ Estimated annual growth rate in
2002~2006: 10%~20%





Budget Plan of 2002: 11.11M USD (total)

Budget for Content Holders in 2002

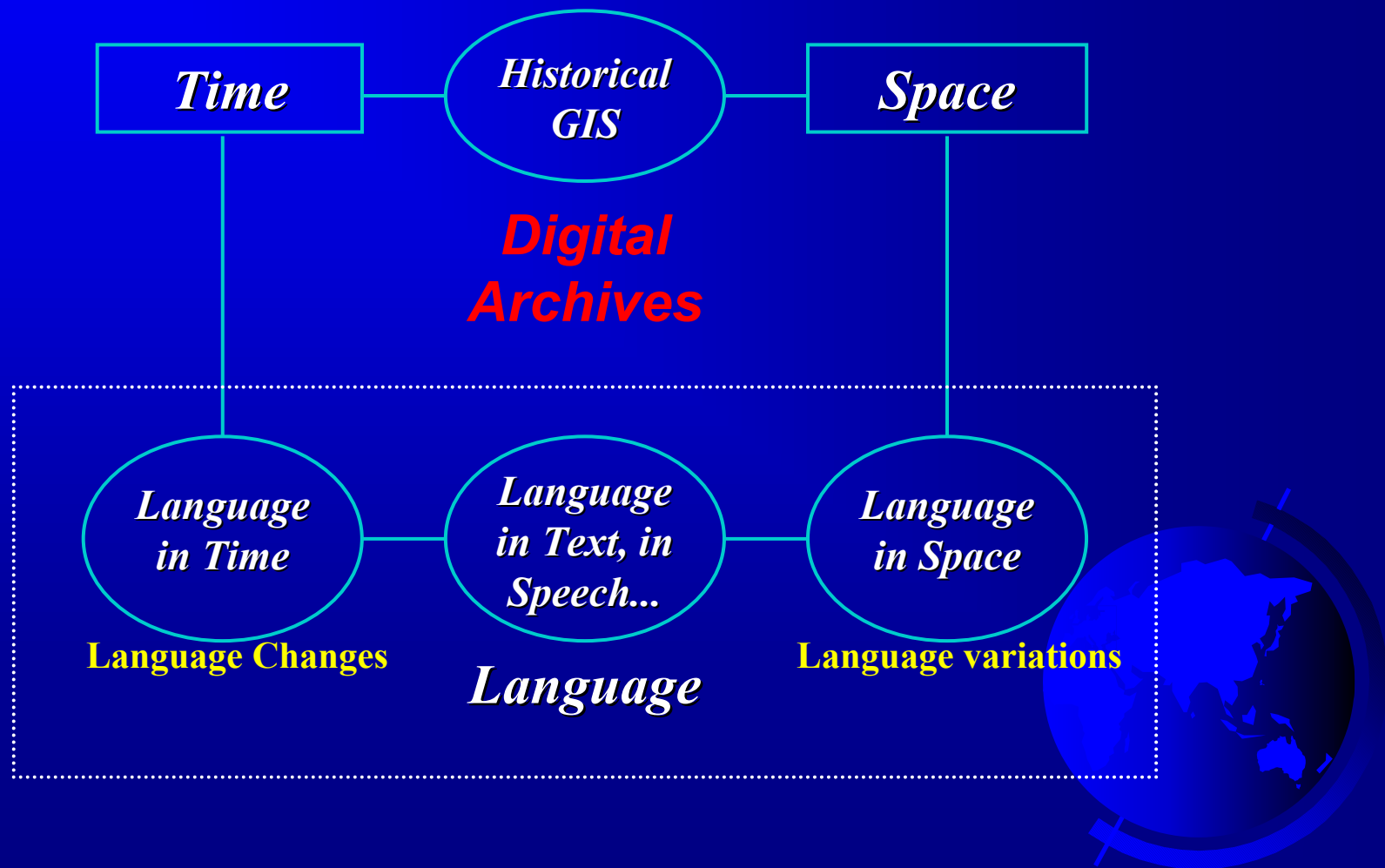


Important Issues

- ❖ Intellectual property rights
- ❖ Time, Space and Language Coordination
- ❖ Multi-lingual issues
- ❖ Public information systems
- ❖ Technical Specifications and Standards
- ❖ Meta-language and Documentation
 - *Metadata*
 - *Content Markup*
 - *References and Linking*
- ❖ Cooperation and collaboration



Space, Time and Language Coordinates for Digital Archives



Language Coordination

- ❖ Linguistic Ontology
 - ▲ Word Net
 - Synset
 - ▲ Corpus
 - ▲ Thesaurus
 - ▲ Dictionaries
 - ▲ Cross References and Links
- ❖ Linguistic Markup and Standards
- ❖ Multi-lingual Mapping at concept & word level



Linguistic Markups

- ❖ Phonetic Markup
- ❖ Syntactic Markup
- ❖ Semantics Markup
- ❖ Pragmatics Markup

An Example:

- ❖ Phonetic Markup
 - ▶ phoneme
 - ▶ tone
 - ▶ intonation
 - ▶ breath group
 - ▶ ...



Taiwan Digital Archives ¹

❖ Sources

- By donation
- By *NDAP*

❖ Contents by *NDAP: TDA*

- Language Archives and Language Coordinate
- Time and Space Coordinates

- Historical GIS

- ❖ *Taiwan*
- ❖ *China*

One million air photos
will be integrated into
the system by 2006

- Historical Time Mapping Tables

*(All of the following contents are expected to be linked to the
Language, Time and Space coordinates)*



Taiwan Digital Archives 2

- ❖ Collections of indigenous cultures in Taiwan
- ❖ Contemporary Historical Archives
 - ▲ 1860~1926 **Archive of foreign affairs**
 - ▲ 1895~1945 **(Japanese ruling period)**
 - ▲ 1945~1947 **Administration Archive of Taiwan**
 - ▲ 1950~1970 **Archive of Economical Cooperation and Development**
 - ▲ 蔣介石 **Archive**
 - ▲ **Archives of the Resources Planning Committee**
 - ▲ **Early time Government Archives**
 - ▲ 淡新**Archive (Full Text and Image DB)**
 - ▲ 岸裡大社 **Archive**
 - ▲ 伊能嘉矩 **script Archive (Image DB)**



Taiwan Digital Archives 3

- ❖ Fishes and Shell Fishes in and around Taiwan
- ❖ Plants of Taiwan
- ❖ Insects of Taiwan
- ❖ Minerals in Taiwan
- ❖ Animals and Birds in Taiwan
- ❖ Archaeological Collections
- ❖ Fossil collections

To be completed
by 2006



Taiwan Digital Archives 4

- ❖ Rubbings
 - ▲ Bronze
 - ▲ Stone
 - From China
 - From Taiwan, since 1860
 - ▲ Bamboo and wood
- ❖ Jade, porcelain and bronze collections
 - ▲ Mainly Chin and Han Periods at present
- ❖ Ancient Calligraphy collections
- ❖ Ancient Painting collections



Taiwan Digital Archives 5

- ❖ Historical Archives
 - ▲ *The Ching Dynasty Archives*
- ❖ Image database of Rare Books
- ❖ An Archive of Drawings in Ancient Books
- ❖ Selected Gazetteer Documents
- ❖ Early Periodicals and Newspapers published in Taiwan



Concluding Remark

- ❖ The Internet speeds up the coming of a new civilization.
- ❖ The trend of shifting major media from paper to digital is unavoidable. Cultural issues are thus the utmost priority that we must face and solve with collective wisdom.
- ❖ NDAP provides a good start to address cultural issues in this fast and ever-changing world.



Concluding Remark

- ❖ International cooperation and collaboration are most welcome. We are willing to share our work with you. Please contact us at:

hsieh@sinica.edu.tw

or, visit our web-site at:

www.nado.sinica.edu.tw



The End

Thank you very much !

