Case Study of
A Product Service Guide Development

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Discussion Outline

- Introduction
- Current Service Guide Development Situation in Taiwan PC Industry
- SGML, XML and HTML
- The SGML Pilot Project
  - Document Analysis & DTD Production
  - System Configuration
- XML for Document Publishing on the Web
- Conclusion
CALS 的意 義：

CALS/資訊運籌管理，係指資訊整合與交換；藉由作業程序的改造及資訊技術與標準的運用，建立全球共通商業系統，以無紙化作業環境，將業務上所必要的資訊加以電子化、標準化，並運用資料庫與網路系統，使得所有資訊得以達到交換與共用為目標之策略。

CALS最主要的精神在於：

*Data Create Once, Use Many Times.*
CALS 之應用，技術，標準及資訊產品關係

CALS Application

Solution 作業

Standard 標準

Product 產品
MOEA of Taiwan initiated a CALS pilot program and intended to develop CALS environment to maintain Taiwan competitive edge in today’s market place.

PC industry was chosen be as a pilot industry to implement CALS applications on their Product Data Management and service Guide production to enhance their logistics support capability.

In comply with CALS standard, an SGML-Based Document Management system was developed on PC Service Guide Production.
Current Situation

- DC
  - MRS
  - Model no. definition
  - EES
  - Schematics

- EE
  - Schematics
  - major chips data sheets
  - Jumper settings
  - Block diagrams

- ME
  - Disassembly procedure presentation
  - Exploded diagram

- SW
  - POST check point list
  - BIOS error message list
  - Spare parts list

External User
Lotus
Storage File
.others
<br>.
.doc
.ppt
.xls

WORD

Lease line
SGML, XML and HTML

- SGML Environment
- SGML/XML Families
- SGML, XML vs. HTML
產品分類：
(1) 資料管理工具
(2) SGML Converter
(3) SGML Editor
(4) SGML Parser
(5) DTD Editor
(6) SGML Publisher
(7) SGML Web Browser
SGML/XML Families

🔹 SGML Family
  SGML
  HyTime
  DSSSL

🔹 XML Family
  XML (Extensible Markup Language)
  XLL (Extensible Linking Language)
  XSL (Extensible Stylesheet Language)
SGML, XML vs. HTML

- SGML is the Standard Generalized Markup Language
- XML is the subset of SGML and is designed to make it easy to use SGML on the Web
- HTML is the HyperText Markup Language, a specific application of SGML used in the World Wide Web
- HTML is not flexible enough to define tags
- XML has strong hypertext linking capability
Objective:
By establishing the SGML-Based document management environment within enterprises to reduce the development time and to solve version control and data consistency problems.

Approach:
- Document Analysis
- Produce DTD
- Define System H/W & S/W requirement
- Output Specification for chosen system
- Develop this SGML-Based technical document management system
Document Analysis:

1. Find all possible elements and their attributes
2. Find the document structure
3. Find the relationship between the elements and the document structure
Document Analysis Example: (Product Service Guide)

1. Find all possible elements and their attributes

- model name
- document name
- recycle mark
- part number
- document number
- copyright
- disclaimer
- trademarks list
- document description
- table of contents
- figure list
- table list
- division
- paragraph
- lists
- dialog box
- PC screen
- PC button
- notes macro
- caution macro
- warning macro …
2. Find the document structure

- Document
  - frontmatter
    - 1-level parts
      - 2-level parts
  - Body
    - 1-level division
      - 2-level division
        - 3-level division
          - 4-level division
            - 5-level division
    - appendices
      - divisions
  - backmatter
    - attachments
- text
3. Find the relationship between the elements and the document structure

- **Document**
  - **Frontmatter**
    - **Copyright**
    - **Disclaimer**
    - **Document description**
    - **Table of contents**
    - **Figure list**
    - **Table list**
  - **Body**
    - **Chapter**
    - **Section**
    - **Subsection**
    - **Sub-subsection**
  - **Backmatter**
    - **Appendices**
    - **Attachments**

- **Attributes**
  - Model name, document name
  - Recycle mark, part no., document no.

- **Notes**
  - Macro, warning, caution
  - Important macro
  - Tip macro
  - Figure, table, reference, footnote
✿ DTD Production:

1. Select from Modular/Book(contiguous) DTD
2. Define all elements with the attributes
3. Build the DTD structure
Document Analysis and DTD Production (cont.)

**DTD Production Result : (Product Service Guide)**

```xml
<!ENTITY % Float "Figure | Table | FootNote" >
<!ENTITY % Title "PgTitle | DpTitle | ChTitle | ScTitle | AxTitle ” >
<!ENTITY % Elm "Artwork | Button | DirButton | DgBox” >
<!ENTITY % Copy “Para | Info | %EIm;” >
<!ENTITY % List “Ls | TopLs | DefLs ” >
<!ENTITY % Text “%Copy; | %List; ” >
<!ENTITY % Emph “Roman | CourierNew | Italics | Bold | BoldItalics | Underline ” >
<!ENTITY % Ref “TiRef | FigRef | TbRef | FnRef | ItRef ” >

<!ELEMENT ACERDoc - O (Front?, Body, Back?) + (%Float; |%Ref; | IxEntry)>  
<!ELEMENT Front - O (Prolog, TbCnt, (FigList? & TbList?))>  
<!ELEMENT Body - O (Chapter)+>  
<!ELEMENT Back - O (Appendix*, (Others? & Index?)))>  
<!ELEMENT Prolog - O (Copyright?, Disclaimer?, Trademark?, DocDesc?)>  
<!ELEMENT (Copyright | Disclaimer | Trademark) - O (PgTitle?, (%Text;)*>)  

<!ATTRLIST (Chapter | Appendix)>  
    Id ID #IMPLIED >  
<!ATTRLIST (ChDesc | ApxDesc)>  
    NewPage (yes | no) yes >  
```
SGML-Based Document Management Structure

Client Application (SGML Document Editing System)

- SGML Editor
- SGML Parser
- Converter
- SGML Publisher

API

- PDM Engine
  - Version Control
  - AP Setup
  - Viewer
  - Vault Mgt.
  - DB Interface

DBMS Driver

DTD Design Document Instance

Document Analysis

Document Creation

Document Management

Platform

Meta Data (Oracle) Document (File)

Windows NT

Hardware

LAN, Intranet, Internet

Platform

Windows NT

Hardware

LAN, Intranet, Internet
Why XML?

1. Public information (such as change notices) need to be broadcast to the whole enterprise or even to the retail dealer, in this case, the data/document should be delivered in some manner which can meet those receivers’ needs (e.g., for different style output).

2. To improve the data/document reusability can reduce the business management cost.

3. Web publishing is the trend and it can meet our needs.
XML Strength

1. Address problems of SGML
2. For publishing documents on the Web
3. Simple
4. Easy to implement
1. To decide the granularity of the DTD elements not only depends on the result of the document analysis, the component itself to be managed is another important concern.

2. It takes great effort to customize a data management repository without SGML features to deal with SGML format data.

3. The enterprise administration belief is the driven force to transfer the document management from conventional method to SGML/XML approach.
结论

- XML 是实际上与 SGML 兼容的 — XML 文档可以被任何 SGML 编辑或查看工具读取。
- SGML 可能永远不会获得互联网上的广泛接受。
- 对于高端、高度结构化的出版应用程序，SGML 继续适合要求。