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Application modernization without complexity

Native to jazzy User Interface for the System i

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Native to jazzy User Interface for the System i Part II

Going to XML for User Interface

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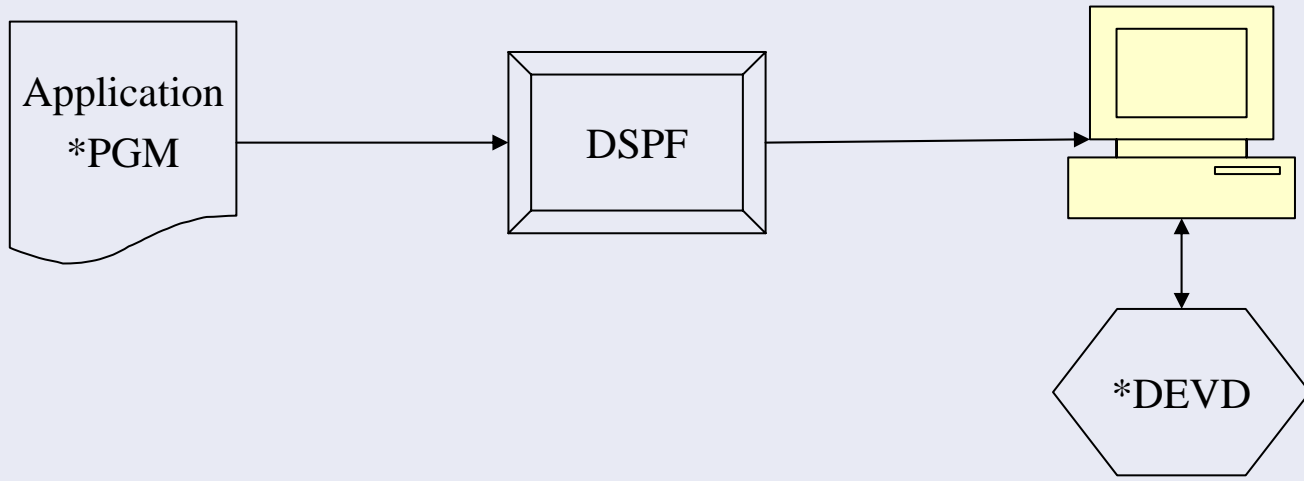
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Native User Interface Language

Display Files



Display Files



Data flows between the program and the display station through the display file.

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Native User Interface Language

Data Description Specification



Data Description Specification

- To create a DSPF you compile a DDS source
- There are three levels of description :
 - Field Level
 - Record Level
 - File Level
- The source can be written by hand or defined with WYSIWYG applications such as SDA or CODE/400

Data Description Specification

```

|...+....1....+....2....+....3....+....:833.+....5....+....6....+....7...
A          R RECORD
A          CUST          5  0  3 20 'Customer Number:'
A          NAME          20   3 27 'Customer Name:'
A          ADDR          20   4 27 'Address:'
A          CITY          20   5 44
A          STATE         2    5 66
A          ZIP           5  0  5 70
    
```

The DDS language is not a free format language, it uses columns :

17-17 : Type of name

39-41 : Line location

19-28 : Field name

42-44 : Position location

30-34 : Length

45-80 : function

36-37 : Decimal position

Data Description Specification

CUST	NAME	ADDR	CITY	STATE	ZIP	
1	5 8	25 28	45 48	65 68	67 68	72

- A buffer is used to transfer the data between the program and the display file.
- The field order in the buffer must copy the field order in the DDS source.
- The buffer can be externally-described or program-described.

Data Description Specification

- **Function keys**
 - Function keyword
- **Alternative keys**
 - Function keyword
- **Indicators**
 - In the record format or in a special area (need a keyword)
 - Two types of indicators :
 - Option indicators
 - Response indicators
 - Can be defined in every level (field, record, file)

Data Description Specification

- **Constant field**
 - Text in the DDS source
 - Text in a message file description (MSGCON keyword)
- **Specific keywords to increase user productivity :**
 - Control cursor movement
 - Protecting and controlling data fields
- **Emphasizing Fields**
 - Underlining,...
 - Adding colors, ...
 - Editing output fields

Data Description Specification

Subfiles

When multiple records that are alike must be displayed

- **Two record formats :**
 - Subfile record format (defines the field in one row of the subfile)
 - Subfile control record format (heading information, controls subfile functions such as size, inialization and clearing)

Data Description Specification

Windows

A window is information that overlays part of the display.

- **Specific keywords : WINDOW, WDWBORDER, WDWTITLE, RMVWDW, ...**
- **More than one record : definition, reference, ...**

Data Description Specification

Graphical look for Display

Need Display Station with enhanced capabilities
or 5250 Workstation gateway
(incompatibilities exist)

- Menu, HTML, Mouse, Cursor, Push Buttons, Continued entry-field, Grid Line Structures, ...

```
File Edit View Options Help
-----
|.....1.....+.....2.....+.....3.....+.....4.....+.....5.....+.....6.....+.....7....
  A          R MENUBAR          MNUBAR
  A          MNUFLD          2Y 0B 1 2
  A          MNUBARHC(1 PULLFILE +
  A          '>File          ')
```

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Introducing XML

History



History

SGML

- Standard Generalized Markup Language, 1986
- DTD (Document Type Definition) → structure of the documents
- Document instance → Text and SGML elements
- Document synthese → Application information

HTML

- HyperText Markup Language, subset of SGML

XML

- eXtensible Markup Language, subset of SGML
- DTD or Schema are not mandatory → structure of the document
- Data / Data representation instructions (style sheet)

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Introducing XML

Structure



Structure

Example

```
<!--Prologue-->
<?xml version="1.0" encoding="ISO-8859-1"?>
<!--Root element -->
<library>
  <!-- First children -->
  <book lang="fr">
    <title>Les Misérables</title>
    <author>Victor Hugo</author>
  </book>
  ...
</library>
```

Structure

- **Prologue :**

- **XML declaration = XML version, encoding, standalone (need to control the document with a DTD)**

```
<?xml version="1.0" encoding="ISO-8859-1"?>
```

- **Treatment instruction = name of the instruction document (in XSL)**

```
<?xml-stylesheet type="text/xsl" href="library.xsl"?>
```

- **Document type (example with DTD)**

```
<!DOCTYPE library SYSTEM "library.dtd">
```

Structure

- **Comments**
 - Same syntax as HTML
 - Start with <!-- end with -->
- **Tree of elements**
 - One root only, encapsulates all over elements
 - ➔ DOCUMENT ELEMENT
 - Elements are named with tags `<book>...</book>`
 - One or more attributes per element (name + value)
`<book lang="fr"> ... </book>`
 - Empty elements : `<book />`
- **Entity**
 - Example : `&` for the character “&”

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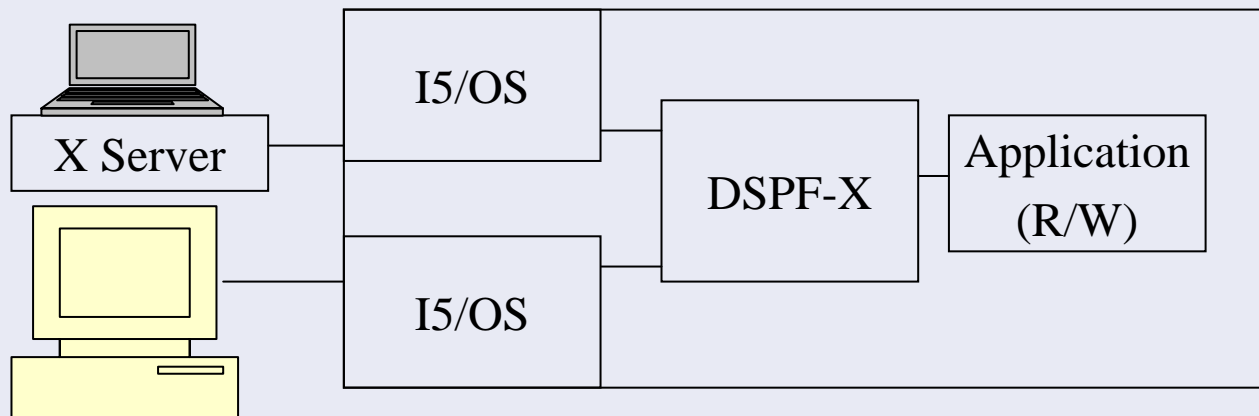
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From DDS to XML

New Target



New Target



- **Needs :**

- Extend the DSPF connectivity possibilities
- Keep the old 5250 mode running
- No 5250-only or X-only DSPF → multiple access DSPF
- Use of READ/WRITE instructions only ??

From DDS to XML

DDS Limits

DDS Limits

- **Not a free format language**
- **Not an open standard language**
- **Specialized editing tool**
- **Stored in PF-SRC : versionning is heavier, ...**

- **Not extensible : use comment to add instructions (SDA, webfacing, ...)**
- **Character Display only (what about pixel ?)**
- **Need to describe every action (no macro)**

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From DDS to XML

META Language



META Language

META DATA :

Data used to describe another data

- Languages based on XML are already used to describe data.
- XMI for example is used to describe Object (Object Programming).
- Need to create an XML schema

META Language

XML Display File Source

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<DSPF:File xmlns:DSPF="http://schemas.ibm.com/iSeries/DSPFml"
           xmlns:d="http://schemas.ibm.com/iSeries/DataTypeml"
           xmlns:p="http://schemas.ibm.com/iSeries/Displayml"
           name="CUSTOMER">
  <DSPF:Record name="RECORD">
    <DSPF:Field name="CUST" d:size="5,0" d:type="packed">
      <p:CHRDisplay p:Line="3" p:Column="20"/>
    </DSPF:Field>
    ...
  </DSPF:Record>
</DSPF:File>
```