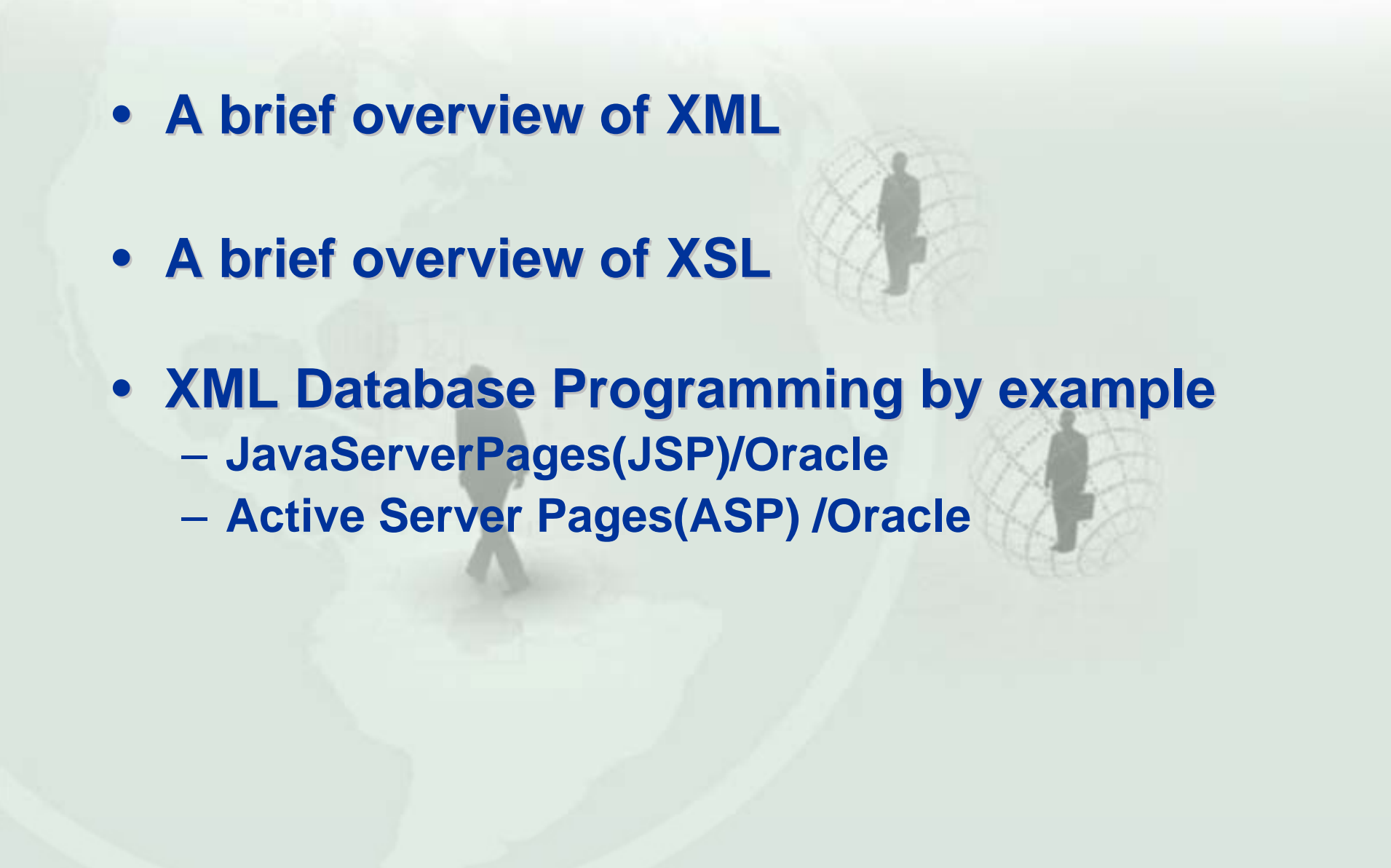


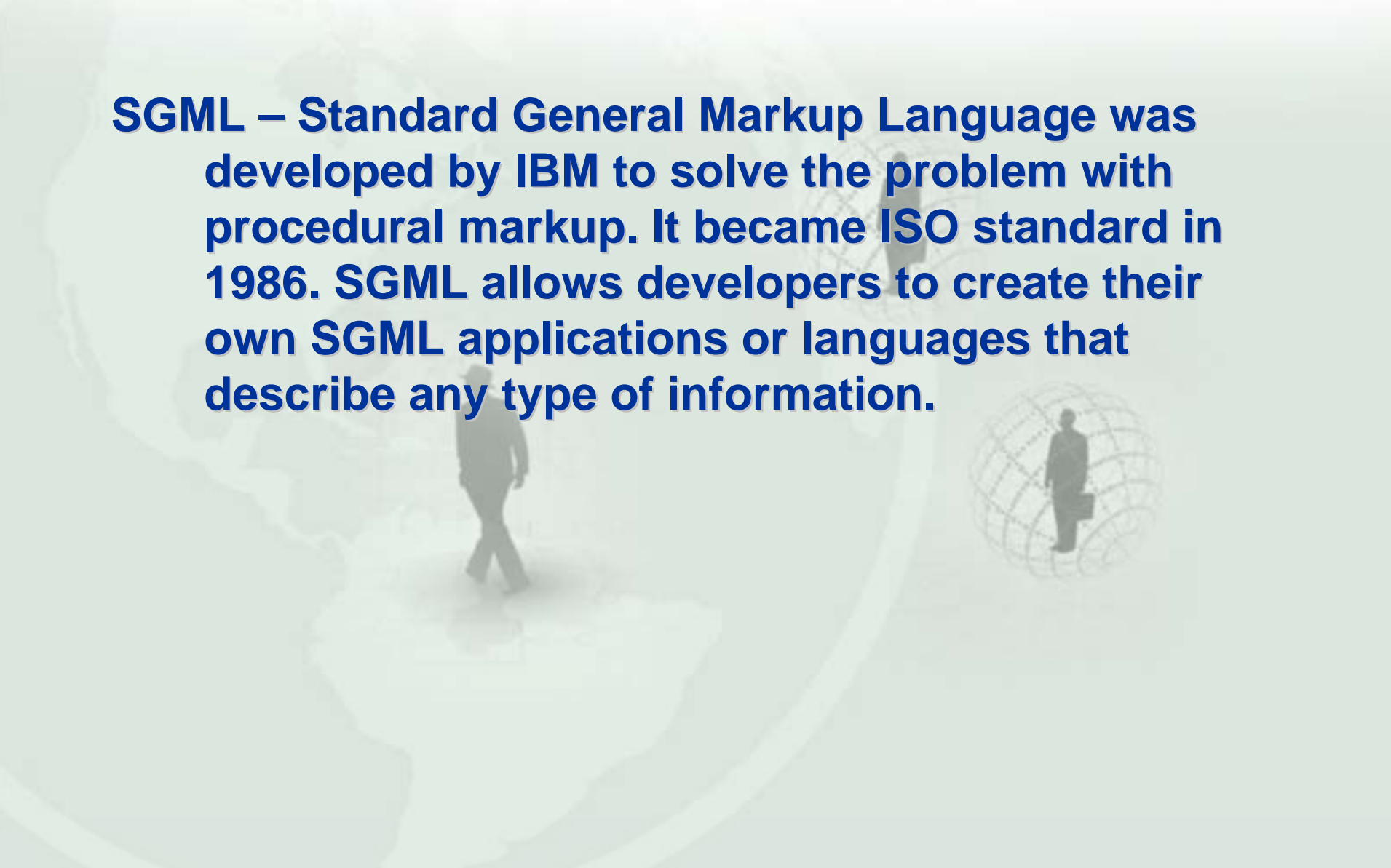


**XML**  
**Database**  
**Programming**


### OBJECTIVES

- **A brief overview of XML**
  - **A brief overview of XSL**
  - **XML Database Programming by example**
    - **JavaServerPages(JSP)/Oracle**
    - **Active Server Pages(ASP) /Oracle**
- 

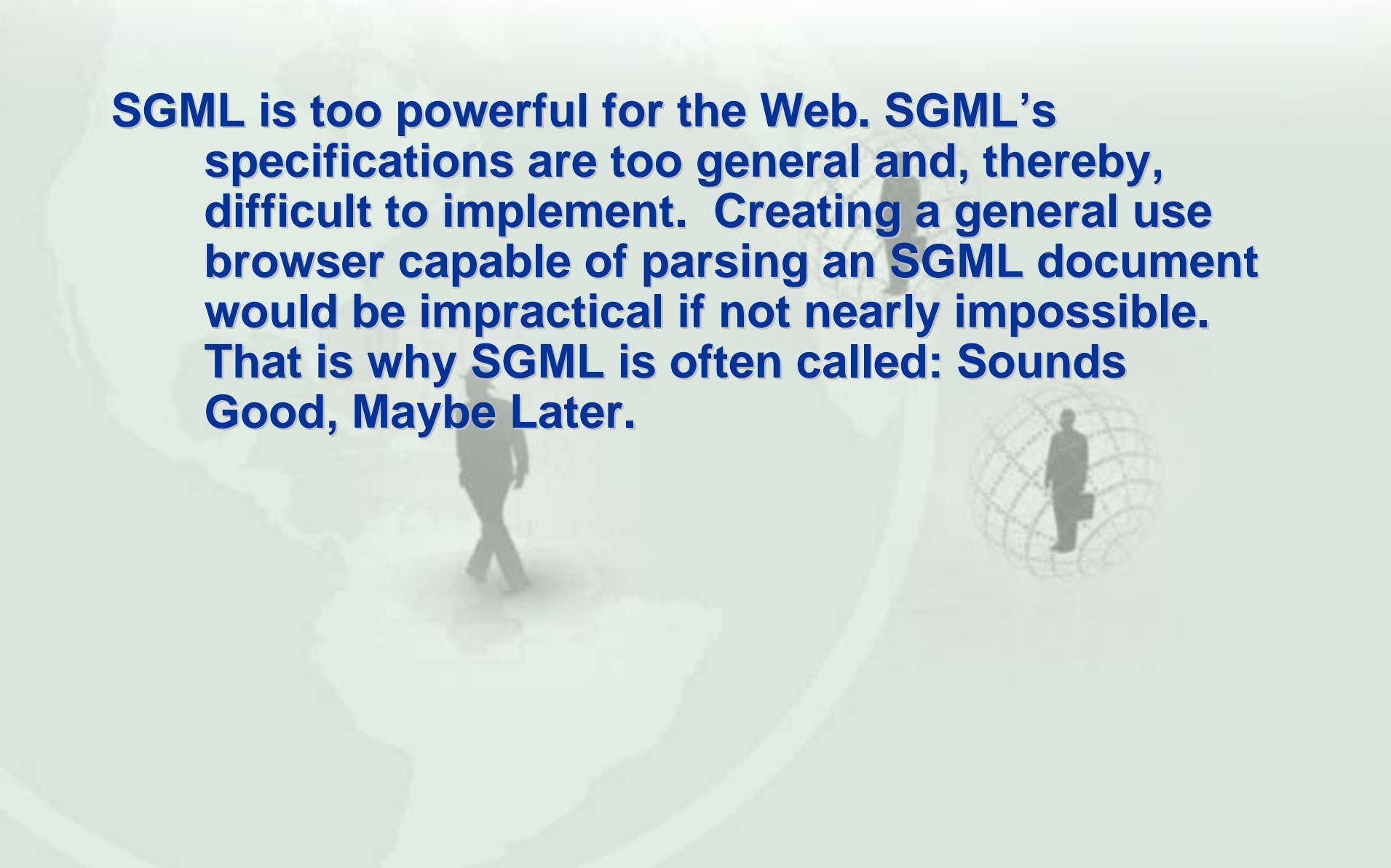
**SGML – Standard General Markup Language was developed by IBM to solve the problem with procedural markup. It became ISO standard in 1986. SGML allows developers to create their own SGML applications or languages that describe any type of information.**



**SGML is platform independent, relies on generalized markups, is a meta-language that does not rely on predefined set of markup instructions, and it separates appearance from content. By keeping content and appearances separate, information marked up in an SGML language is reusable.**



**SGML is too powerful for the Web. SGML's specifications are too general and, thereby, difficult to implement. Creating a general use browser capable of parsing an SGML document would be impractical if not nearly impossible. That is why SGML is often called: Sounds Good, Maybe Later.**



**Hypertext Markup Language (HTML) has revolutionized the way in which companies and consumers share information. The current version of HTML, HTML 4.0, is a markup language based on the principals of SGML. HTML is easy to learn, develop, deploy, and is machine independent. There are browsers on every operating system that can interpret HTML code that is either rendered from Web servers or loaded from local machine.**

## **What is the problem with HTML?**

- 1. Limited set of tags.**
- 2. Browsers are too forgiving towards errors in HTML files.**
- 3. Software vendors who have developed HTML interpreters (browsers) have added their own proprietary markups and unique features.**
- 4. HTML does not accompany corporate data with meta-data that help explain its features and interdependencies.**

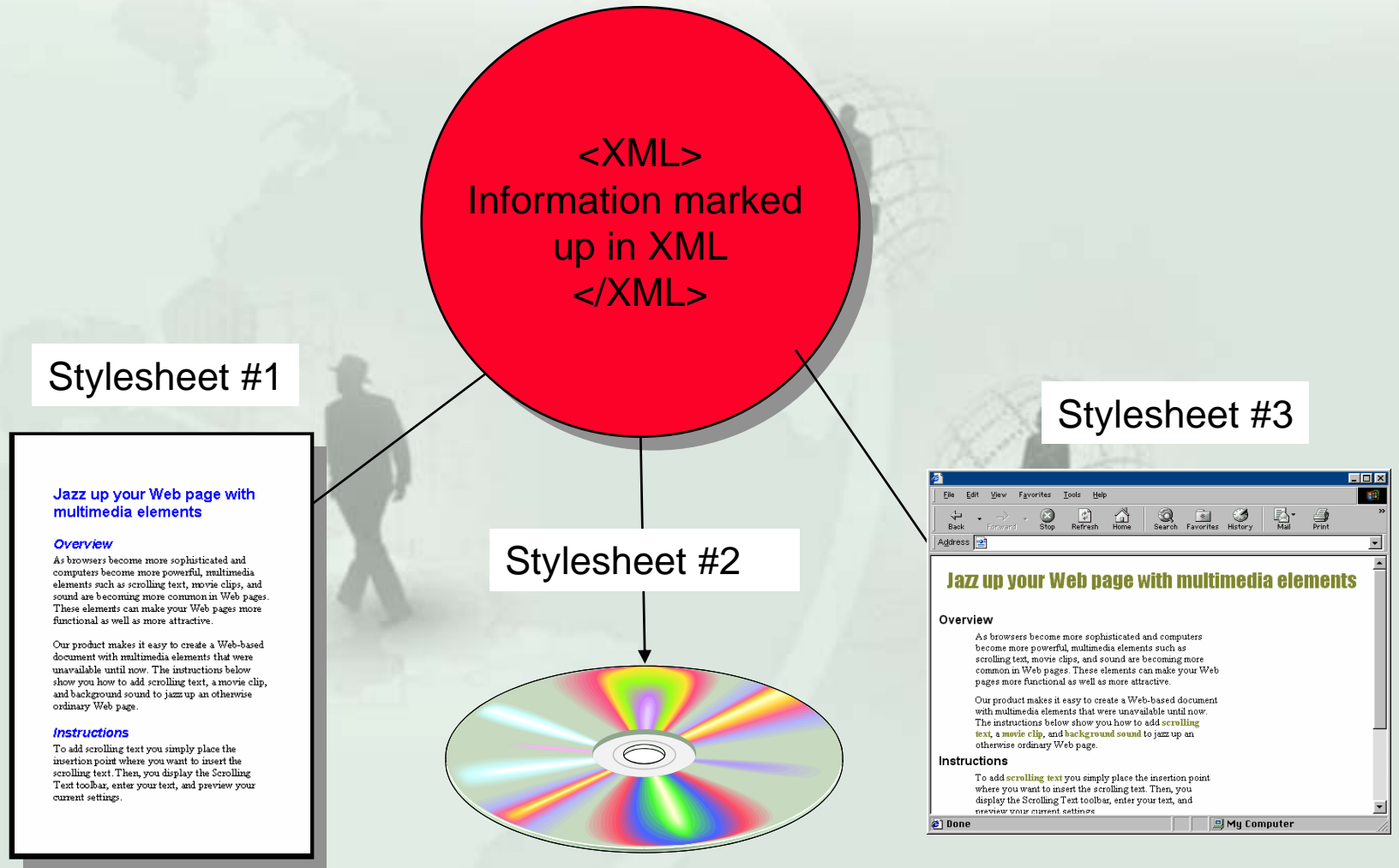
**Extensible Markup Language (XML) inherits the power and flexibility of SGML and the ease of development and use of HTML.**

**XML has acquired the most important feature of SGML; that is its extensibility. Unlike HTML, XML is not limited to certain number of tags.**

**Extensible Stylesheet Language (XSL) is a set of recommendations for defining XML document transformation and presentation. It is the transformation part that sets XSL apart from Cascading Stylesheets (CSS). Using the transformation part, developers can manipulate an XML document to create new documents. And the presentation part addresses traditional formatting of data.**

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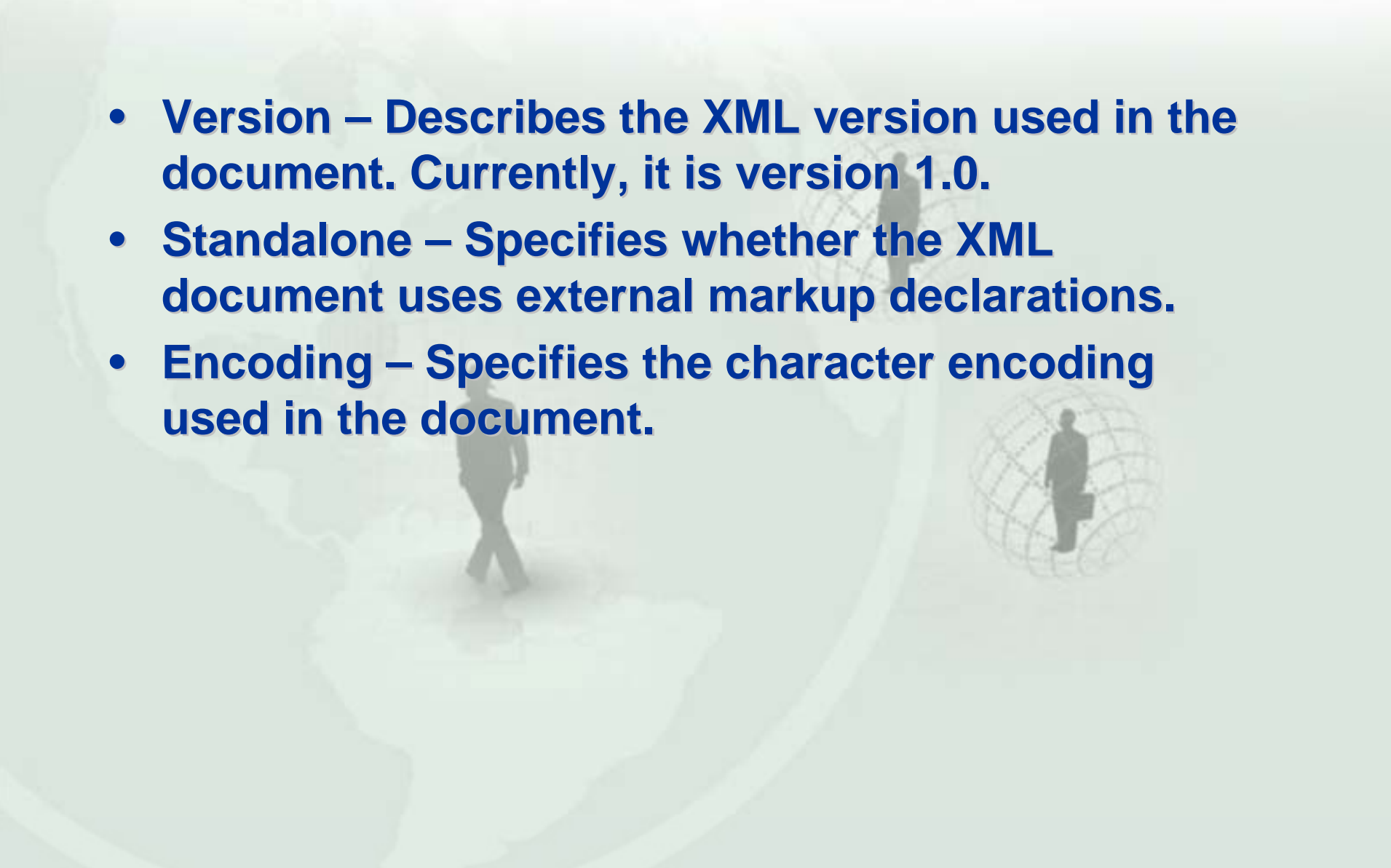
## XML & XSL

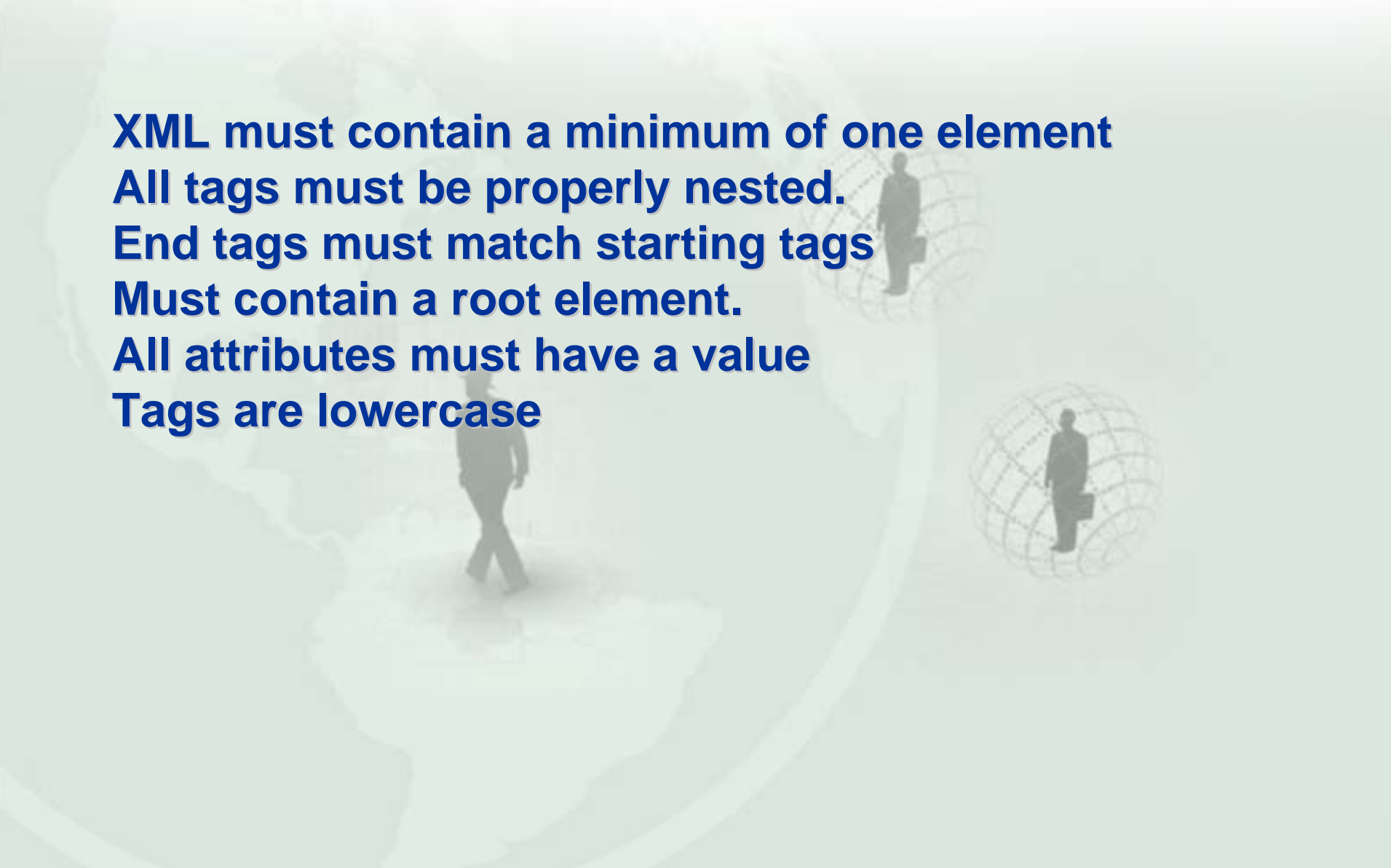


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## XML Example

```
<?xml version="1.0" standalone="no"?>
<REALESTATE.LISTINGS>
  <TITLE>Test of Real Estate data using XML and XSL</TITLE>
  <LISTING ZONED="Residential">
    <PRICE>99,000</PRICE>
    <STYLE>Victorian</STYLE>
    <STREET>113 Granger Road</STREET>
    <BEDROOMS>3</BEDROOMS>
  </LISTING>
  <LISTING ZONED="Residential">
    <PRICE>129,900</PRICE>
    <STYLE>Contemporary</STYLE>
    <STREET>635 Darlington Road</STREET>
    <BEDROOMS>4</BEDROOMS>
  </LISTING>
  <LISTING ZONED="Commercial">
    <PRICE>55,000</PRICE>
    <STYLE>Storefront</STYLE>
  </LISTING>
</REALESTATE.LISTINGS>
```

- **Version** – Describes the XML version used in the document. Currently, it is version 1.0.
  - **Standalone** – Specifies whether the XML document uses external markup declarations.
  - **Encoding** – Specifies the character encoding used in the document.
- 

- XML must contain a minimum of one element**
  - All tags must be properly nested.**
  - End tags must match starting tags**
  - Must contain a root element.**
  - All attributes must have a value**
  - Tags are lowercase**
- 

**Data Type Definition (DTD) contains a set of rules that define how an XML document can be used. If XML is a novel, then DTD is the novel's rules of grammar.**

**Similar to JavaScript, CSS, and Image Maps, DTD can be located inside the XML document (internal) or outside the XML document (external).**

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

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## XML & DTD

```
<?xml version="1.0" standalone="yes"?>
<!DOCTYPE email [
  <!ELEMENT email ( message+ ) >
  <!ELEMENT message ( to, from, cc, body+ ) >
  <!ELEMENT to ( #PCDATA ) >
  <!ELEMENT from ( #PCDATA ) >
  <!ELEMENT cc ( #PCDATA ) >
  <!ELEMENT body ( #PCDATA ) >
  <!ATTLIST message priority NMTOKEN #IMPLIED >
]
>
<email>
  <message priority="urgent">
    <to>Bert</to>
    <from>Ernie</from>
    <cc></cc>
    <body>Please buy some bubble bath on your way home</body>
    <body>Thanks</body>
  </message>
  <message>
    <to>Ernie</to>
    <from>Bert</from>
    <cc>Grover</cc>
    <body>I've sent Grover to pick it up</body>
  </message>
</email>
```

- , - Separates elements**
- ! - Separates element choices**
- () - Represents nested groups**
- + - The element is required and repeatable**
- ? - The element is optional**
- \* - The element is optional and repeatable**
- #PCDATA - Parsed Character Data or character data enclosed between the tags that is parsed by the parser**



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### DTD Rules Quiz

So, what does the following mean, in English?

**<!ELEMENT message (to, from, cc?, body+)>**





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### Products DTD

```
<!ELEMENT ProductId (#PCDATA) >  
<!ELEMENT Description (#PCDATA) >  
<!ELEMENT Bin (#PCDATA) >  
<!ELEMENT CarblInfo (#PCDATA) >  
<!ELEMENT UnitSize (#PCDATA) >  
<!ELEMENT UnitCost (#PCDATA) >  
<!ELEMENT ListPrice (#PCDATA) >  
<!ELEMENT QOH (#PCDATA) >  
<!ELEMENT ReOrder (#PCDATA) >  
<!ELEMENT Image (#PCDATA) >  
<!ELEMENT Quantity (#PCDATA) >  
<!ELEMENT Total (#PCDATA) >  
<!ELEMENT Product (ProductId, Description, Bin, CarblInfo, UnitSize,  
UnitCost, ListPrice, QOH, Reorder, Image) >  
<!ELEMENT Item (ProductId, Description, Bin, CarblInfo, UnitSize, UnitCost,  
ListPrice, Quantity, Total) >  
<!ELEMENT ProductList (Product*)>
```



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## Products XML

```
<?xml version="1.0" encoding="ISO-8859-1" standalone="no" ?>
<?xml-stylesheet type="text/xsl" href="http://www.LowCarbsDeli/ProductList.xsl" ?>
<!--DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.LowCarbsDeli/ProductList.dtd"-->
<ProductList>
  <Product>
    <ProductId>21</ProductId>
    <Description>Whole Wheat Low Carb/Low Fat Tortillas</Description>
    <Bin>B45</Bin>
    <CarbInfo>Only 3 grams of active carbs per original 6-inch soft taco sized
tortilla!</CarbInfo>
    <UnitSize>10 tortillas</UnitSize>
    <UnitCost>1.0000</UnitCost>
    <ListPrice>4.0000</ListPrice>
    <QOH>998</QOH>
    <ReOrder>200</ReOrder>
    <Image>images/LaTortillaTortillas.jpg</Image>
  </Product>
</ProductList>
```

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## Products XSL

```
<?xml version="1.0"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl">
  <xsl:template match="/">
    <html><head>
      <title>Low-Carbs Deli Product Selection</title>
      <link rel="stylesheet" type="text/css" href="http://www.LowCarbsDeli.com/LowCarbsDeli.css" />
    </head><body><p>
      <br />
      <form method="get" action="http://www.LowCarbsDeli.com/ViewCart.asp">
        <input type="button" name="Home" value="Home"
          onclick="window.location.href='http://www.LowCarbsDeli.com/index.html';"></input>
        <input type="button" name="NewSearch" value="New Search"
          onclick="window.location.href='http://www.LowCarbsDeli.com/productlookup.html';"></input>
        <input type="submit" name="ViewCart" value="View Shopping Cart" />
      </form>
      <p>The following are the products that matched your search criteria. <br />Enter the quantity for the item
        you wish to order and click on "Add to Cart" button.</p>
      <table align="center" border="0" width="620" cellpadding="3" cellspacing="3">
        <xsl:apply-templates select="//Product"/>
      </table><div align='center'>
        <br />
        <font face="Arial, Helvetica" color="#666666" size="-1">Copyright (c) 2004 Low-Carbs Deli, Inc. All Rights
          Reserved.</font>
      </div></p></body></html>
    </xsl:template>
```

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## LowCarbsDeli.com Example

The screenshot shows a Microsoft Internet Explorer browser window displaying the website <http://www.lowcarbsdeli.com/>. The browser's address bar and menu bar are visible at the top. The website content is displayed on a grid background.

**Welcome to Low-Carbs Deli...**

*Welcome to Low-Carbs Deli's Web site.*

**If you're a corporate user...      To begin shopping...**  
Click on "Login" button to login.      Click on "Product Lookup" button to select.

Online shopping cannot be any easier.  
As you locate each item you need,  
click on the "Add to Cart" button to compile your order.  
Then proceed to the checkout to place your order.  
If you can't find the item you're looking for,  
please ask one of our sales people.

**STOP Don't let the FDA decide what is low carb and what isn't... without hearing your voice!**

Copyright © 2004 Jalal Raissi. All Rights Reserved.

The website features a vertical sidebar on the left with the following buttons: Login, Product Lookup, Order Status, Feedback, Contact, Search, Events, Downloads, and About Us. At the bottom of the browser window, the status bar shows "Internet".

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## Product Lookup

Low-Carbs Deli Product Lookup - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites

Address <http://www.lowcarbsdeli.com/productlookup.html> Go Links

● ● ● | **Product Lookup**

*Looking for that certain item?*

Enjoy the convenience of Low-Carbs Deli' Search Engine.  
Simply enter the Product ID or Description for which  
you are searching, then click on the Submit button.

**Product ID:**

**Description:**

**Tips and Tricks**

If you are looking for an item, type it in Description field.  
If you enter an Product ID and the item cannot be found, the item has been  
discontinued and we have none left. However, we may have found a replacement  
and it may be listed under a new number, so please enter an item's description  
to see what is currently available.

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Done Internet

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## Product Selection

Low-Carbs Deli Product Selection - Microsoft Internet Explorer

File Edit View Favorites Tools Help



Back Forward Stop Refresh Home Search Favorites Mail Print Write Speech Friends

Address <http://www.lowcarbsdeli.com/ProductLookup.asp?source=main&ProductId=&Description=All> Go Links

### Product Selection

[Home](#) [New Search](#) [View Shopping Cart](#)

The following are the products that matched your search criteria.  
Enter the quantity for the item you wish to order and click on "Add to Cart" button.

	<p>ID: 20 Description: <b>Keto Pizza Dough</b> Carb Info: <b>Delicious Low Carb Pizza at Your Fingertips! just 4 g carbs/slice!</b> Unit Size: <b>1 Box</b> Price: 6</p>	<p>Quantity <input type="text" value="1"/> <a href="#">Add to Cart</a></p>
	<p>ID: 21 Description: <b>Whole Wheat Low Carb/Low Fat Tortillas</b> Carb Info: <b>Only 3 grams of active carbs per original 6-inch soft taco sized tortilla!</b> Unit Size: <b>10 tortillas</b></p>	<p>Quantity <input type="text" value="1"/> <a href="#">Add to Cart</a></p>

Done Internet

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## Shopping Cart

Low-Carbs Deli Shopping Cart - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address <http://www.lowcarbsdeli.com/ViewCart.asp?ViewCart=View+Shopping+Cart> Go Links

### Shopping Cart

[Home](#) [Product Selection](#)

<u>Product ID</u>	<u>Description</u>	<u>Qty</u>	<u>Price</u>	<u>Total</u>	<u>Action</u>
20	Keto Pizza Dough	1	\$ 6	\$ 6.00	<a href="#">Remove</a>
21	Whole Wheat Low Carb/Low Fat Tortillas	1	\$ 4	\$ 4.00	<a href="#">Remove</a>
S/H:			\$ 1.00		
Total:				<b>11.00</b>	<a href="#">Empty Cart</a>

If you wish to remove an item, click on "Remove" button next to the line item.  
If you wish to empty the shopping cart, click on "Empty Cart" button.

[Checkout](#)

Done Internet

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## Check Out

Checkout - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Clock Mail Print Pencil Speech People

Address http://www.lowcarbsdeli.com/Checkout.asp? Go Links

### Checkout

Home New Credit Card NewCustomer

Name:

Address:

City:

Credit Card:

Number:  Expires:

Phone:  Fax:

Email:

Place Order New Search Clear Form

<u>Product ID</u>	<u>Description</u>	<u>Qty</u>	<u>Price</u>	<u>Total</u>
20	Keto Pizza Dough	1	\$ 6	\$ 6.00
21	Whole Wheat Low Carb/Low Fat Tortillas	1	\$ 4	\$ 4.00
				<b>S/H: \$ 1.00</b>
				<b>Total: 11.00</b>

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Done Internet

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## Thank You

Low-Carbs Deli Thank You - Microsoft Internet Explorer


File Edit View Favorites Tools Help

Back Search Favorites

Address <http://www.lowcarbsdeli.com/CreateOrder.asp?firstName=John+&lastName=Doe&address1=1010+Main&address2=> Go Links

● ● ● | **Thank you . . .**

Home New Search



[Your Purchase Is Complete...](#)

Product ID	Description	Qty	Price	Total
20	Keto Pizza Dough	1	\$ 6	\$ 6.00
21	Whole Wheat Low Carb/Low Fat Tortillas	1	\$ 4	\$ 4.00
Order Id: <b>75</b>			S/H: \$ 1.00	
Customer Id: <b>38</b>			<b>Total: \$ 11.00</b>	

Please click on the button below to print a hard-copy of this order for your records.  
Thank you again for making your purchase at LowCarb Foods.  
Come back soon!

Print This Information For Your Records

---

Copyright (c) 2004 Low-Carbs Deli, Inc. All Rights Reserved.

Done Internet