

2002
OSISOFT USERS CONFERENCE



**EXPANDING
THE POWER OF PI**

MONTEREY CALIFORNIA



OSIsoft™

ICE Developer

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Overview

- Simple points of customization
- Create a new web part
- Introduce the ICE Toolkit
- Create an advanced web part to handle data
- Build a custom business object

Users customize pages for themselves

The screenshot shows the MyView web application interface. The browser window title is "MyView - Microsoft Internet Explorer". The address bar shows the URL: `hboard/dashboard.asp?DashboardID=http://icebox/DAVCatalog/ICE/Private/pidemo8/Welcome/MyView/`. The page header includes the OSiSoft logo and "MyView" text, along with navigation links: "LogOut | Publish | Adhoc Trend | Content | Layout | Settings".

The main content area is divided into three panels:

- Tag Search:** A search interface with "Search Criteria" (PI Server: localhost, Name Mask: line*) and "Search Results (0)".
- Snapshot:** A table displaying process data with columns for Descriptor, Current State, Value, and Date/Time.
- Temperatures:** A line graph showing temperature trends over time, with a legend for "Temperature 505.33" and "TempMiver 618.51".

Descriptor	Current State	Value	Date/Time
Linerate (normal and step)		19.934	10-Mar-2002 22:01:49
Linerate (normal and step)		21.590	10-Mar-2002 22:01:49
Temperature (uniform and step)		500.004	10-Mar-2002 22:01:49
Random fat content (normal dist)		534.710	10-Mar-2002 22:01:49
Temperature (normal and step)		606.430	10-Mar-2002 22:01:49

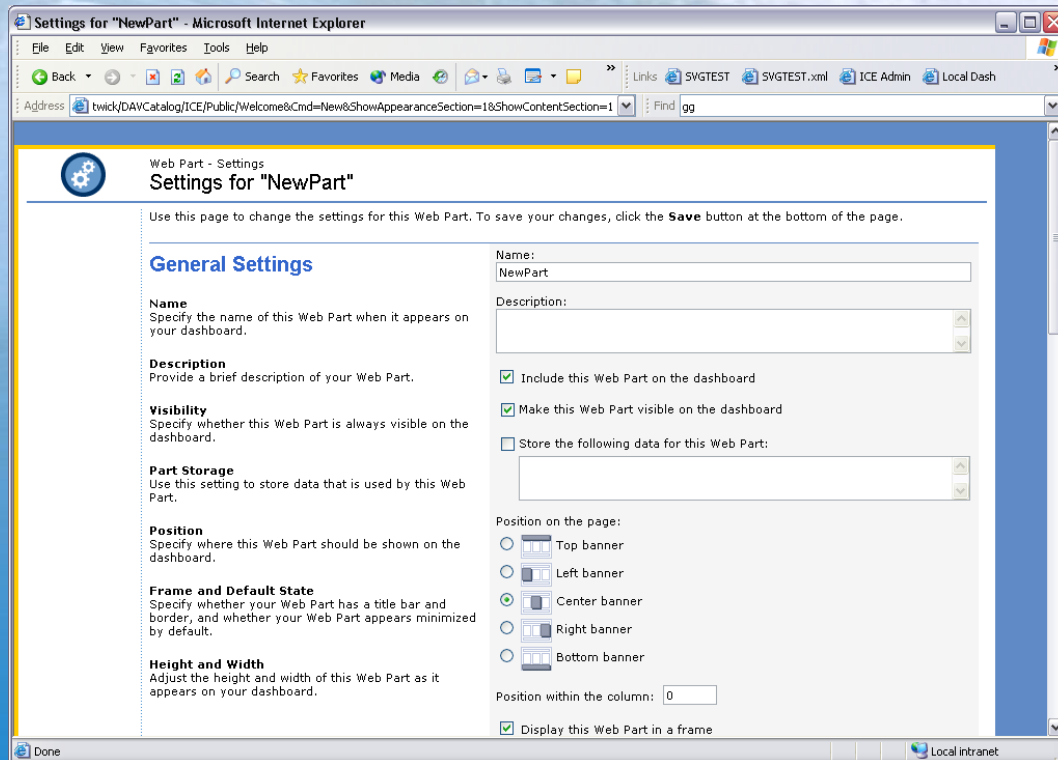
Colors through cascading style sheets

The image displays two overlapping browser windows from Microsoft Internet Explorer. The top window, titled "JavaTrend Home", shows a search interface with a "Tag Search" section and a "Trend" area. The bottom window, titled "MyView", displays a "Snapshot" table and a "Temperatures" line graph. A color palette with 48 color swatches is overlaid at the bottom of the image.

Descriptor	Current State	Value	Date/Time
Linerate (normal and step)		100.0	13.103 10-Mar-2002 22:15:49
Linerate (normal and step)		100.0	14.633 10-Mar-2002 22:15:49
Random hat content (normal dist)		496.277	10-Mar-2002 22:15:49
Temperature (normal and step)		509.607	10-Mar-2002 22:15:49
Temperature (Uniform and step)		618.227	10-Mar-2002 22:15:49

The "Temperatures" graph shows two data series: "Temperature 629.53" (blue line) and "Temperature 607.52" (green line). The y-axis ranges from 480 to 600, and the x-axis shows time from 10:37:40 PM to 10:15:54 PM on 10-Mar-02.

Create a simple web part



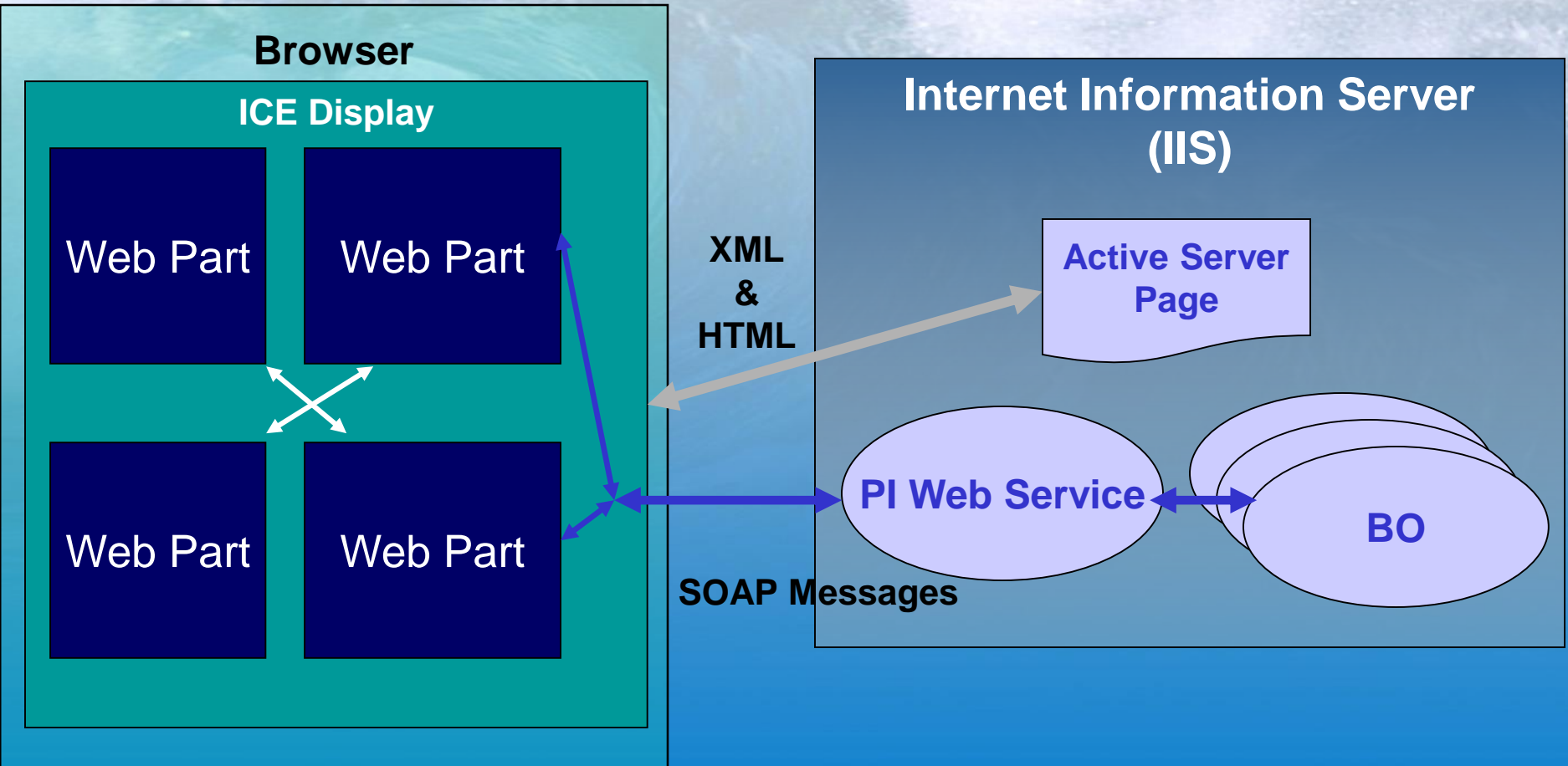
The ICE Toolkit

- A separate setup kit for developers
- Developers User Guide and reference
- Sample ASP pages for all ICE part types
- VB Wizard for ICE business object
- Sample code for ICE business object

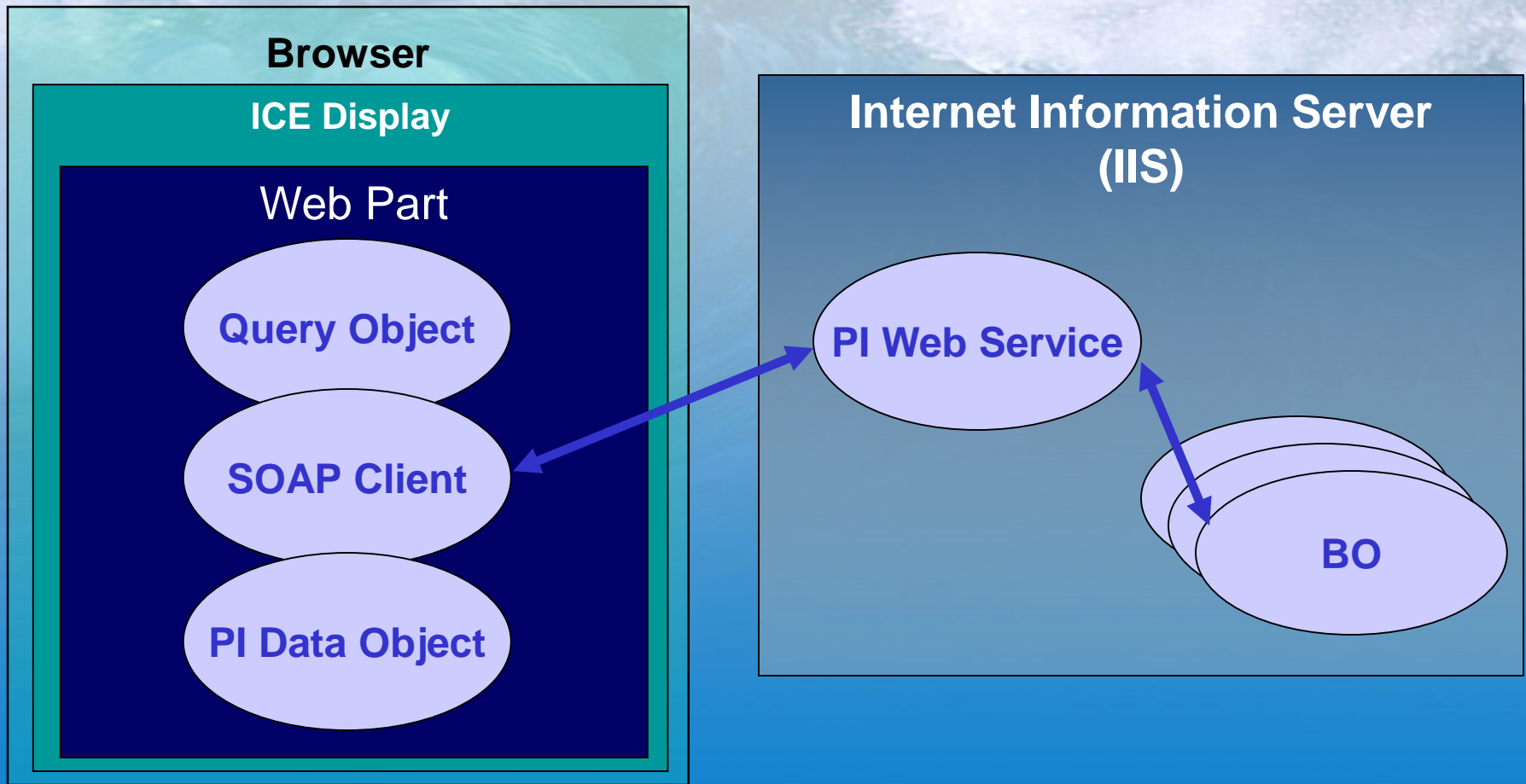
Developers guide

- Theory of ICE operation
- Methods for ICE development
- Discussion of the web part templates
- Style sheet reference
- API reference
- Object reference
- How to build a business object

Architecture

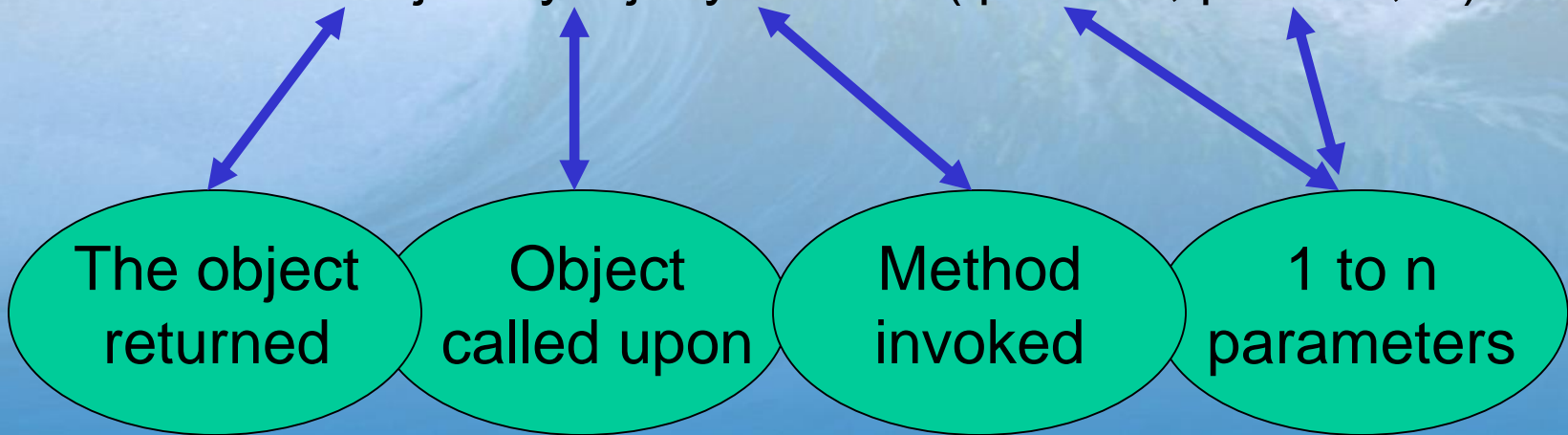


PI WebServices Detail



What is a method call

Set rntobj = myobj.myfunction (param1, param1,...)



Local function call

Object: **BOEvents.cBOEvents**

Parameter1: **localhost**

Parameter2: **SINUSOID**

Parameter3: ***-1m**

Parameter4: *****

ICE function call in XML

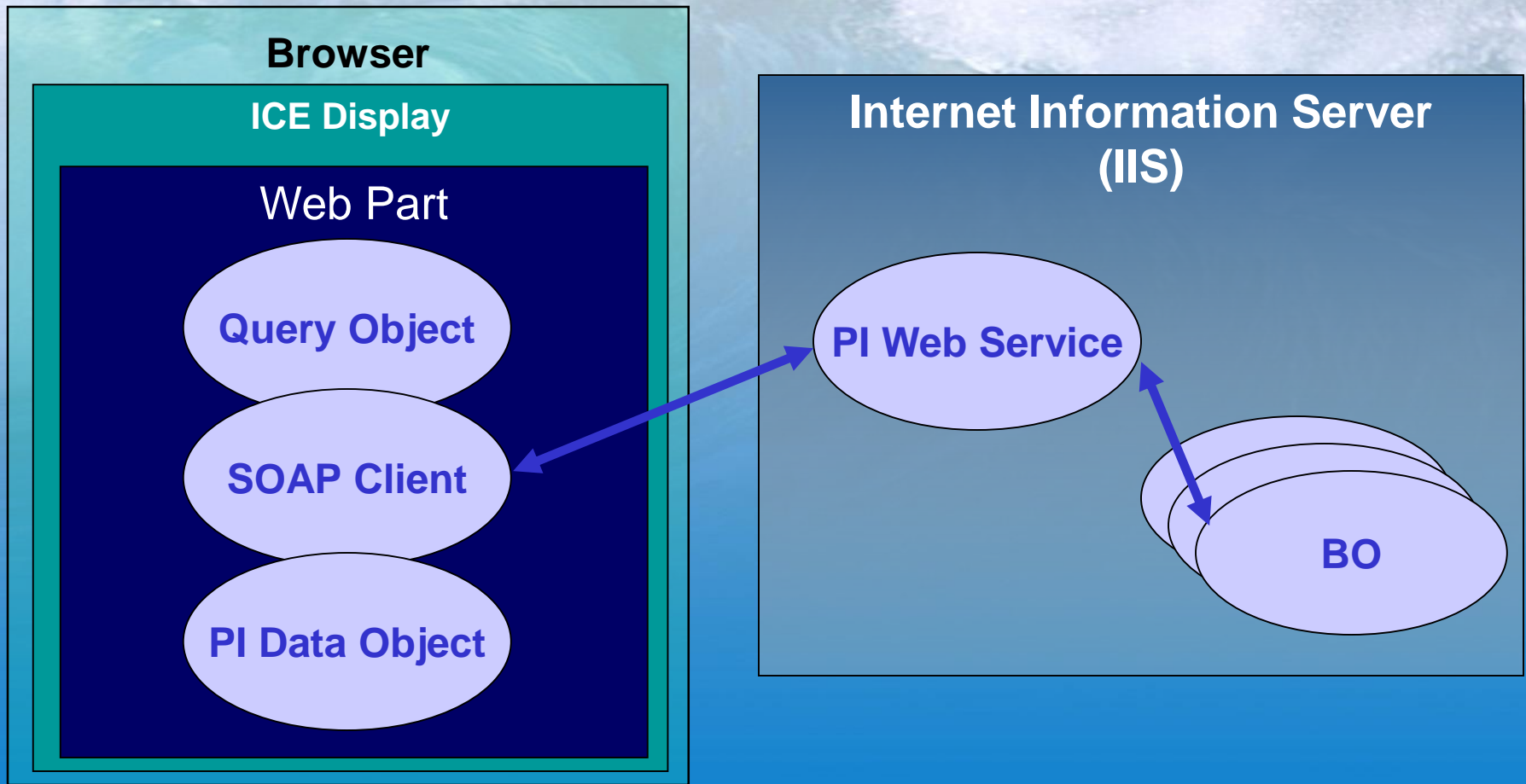
```
<QuerySpec Name="GetPITagData">  
- <Properties>  
  <Property Descriptor="30">BOEvents.cBOEvents</Property>  
  <Property Descriptor="13">localhost</Property>  
  <Property Descriptor="14">SINUSOID</Property>  
  <Property Descriptor="1">*-1m</Property>  
  <Property Descriptor="2">*</Property>  
</Properties>  
</QuerySpec>
```

ICE function call javascript

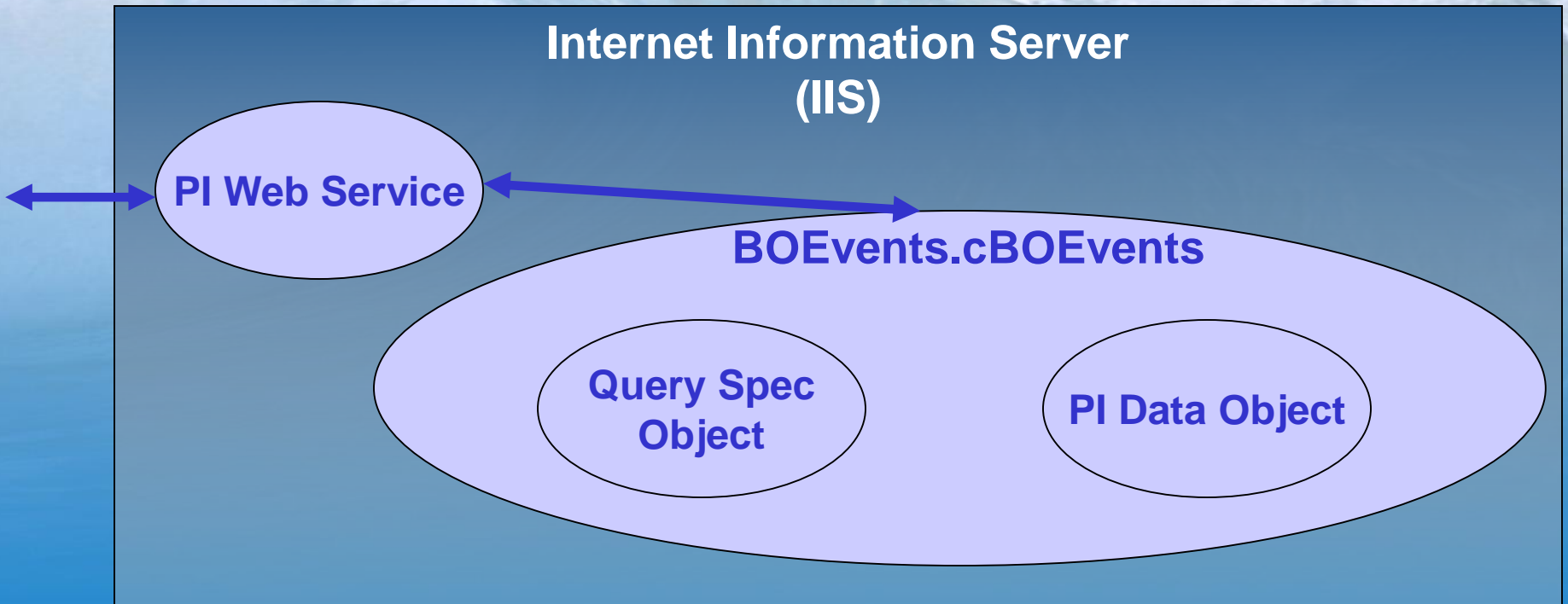
```
<APPLET id="apWSQ" code="PIWSQuery" . . . ./>  
apWSQ = AddQS ( "GetPITagData")
```

```
apWSQ.AddQAProperty ( "BOEvents.cBOEvents" )  
apWSQ.AddQAProperty ( "localhost " )  
apWSQ.AddQAProperty ( "SINUSOID " )  
apWSQ.AddQAProperty ( "*-1m " )  
apWSQ.AddQAProperty ( "*" " )
```

PI WebServices Detail



Business Objects



Business object design in Visual Basic

Implements IPIWEBBO

```
Public Function IPIWEBBO_QueryData( _  
    oQS As QuerySpec, _  
    ByVal mode As pbwQueryDataModeEnum)_  
    As PIDataObject  
    .....  
    Dim oPIDO As PIDataObject  
    .....  
    Set IPIWEBBO_QueryData = oPIDO  
End Funtion
```

Call my business object in javascript

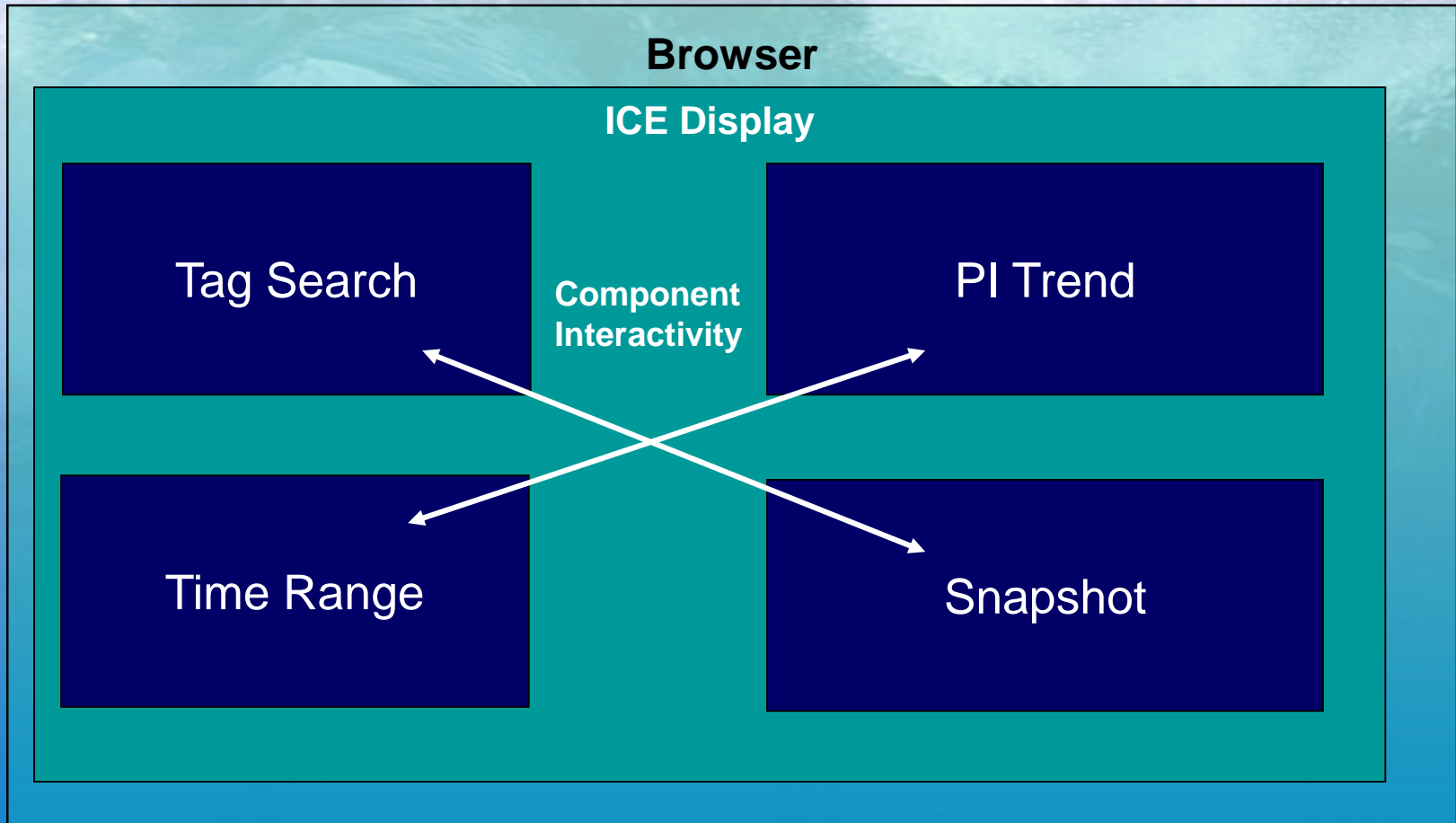
```
var strQuery=apWSQ.GetXMLDocument();
var result=apPISOAP.invoke("PIWSQuery2", strQuery);
if (result == 0)
{
    var strData=apPISOAP.getDataDoc("PIWSQuery2");
}
apPIDatObj.SetXMLDocument(strData);

// Get Event data using the PI Data Object API.
```


Demo Custom Data



Client Side Events



Work with client events in javascript

- **Register to receive an event**

....

```
DDSC.RegisterForEvent( "onTimeChange", onTime);
```

or

```
DDSC.RegisterForEvent( "onNewQuerySpec", onNewQuerySpec);
```

- **Broadcast an event to all parts registered**

....

```
DDSC.RaiseEvent( "onNewQuerySpec", querySpecs);
```

or

```
DDSC.RaiseEvent( "onTimeChange", strNewTimes);
```


Data Cofiguration Demo



PB Custom data from .NET

- Exercises the COM Interopt features of .NET
 - IPIWEBBO
 - PIQueryObject, PIDataObject
 - Building a COM server Business Object
- Excellent class integration with XML data
- More true object oriented languages,
C# and VB.NET
- Developer productivity can be higher
- See .NET Experiences, talk by Chris Manhard

Calling PI Web Services from .NET

- .NET is notably geared for Web Services
 - XML integration with classes
 - Web Services Browser / References
- Very simple to call a referenced web service

Quick Demo



Resources

- ICE Toolkit
 - Developers Guide and Reference
 - Template ASP web parts
 - Business object sample
 - ICE Source (It's mostly ASP files in text)
- Digital Dashboard Resource Kit
- BetaICE@osisoft.com mailbox

Call to Action

- Install the ICE Toolkit
- Use the Admin and Devo Guides
- Brand ICE with your company logo and colors
- Build some custom parts
- Design ICE Business objects for custom data integration.

