

PI Notifications: Powerful and Extensible

Presented By:

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Talk Outline

- PI Notifications Overview
- New features in PI Notifications 2010
- Notification delivery channel

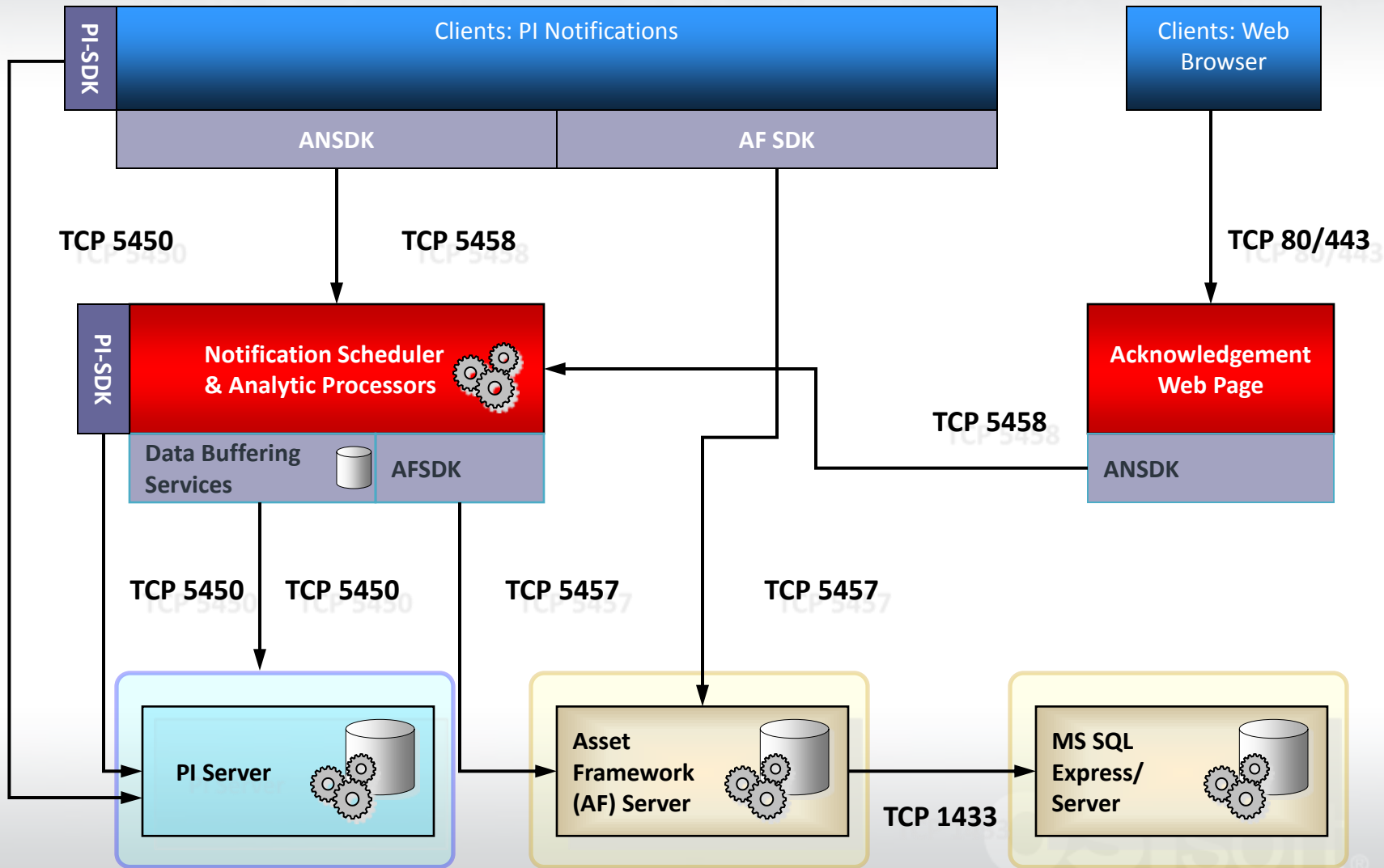


PI Notifications

- Let one or more people or systems know an event has occurred
- Customizable content
- Escalation groups

PI Notifications

Components and connections

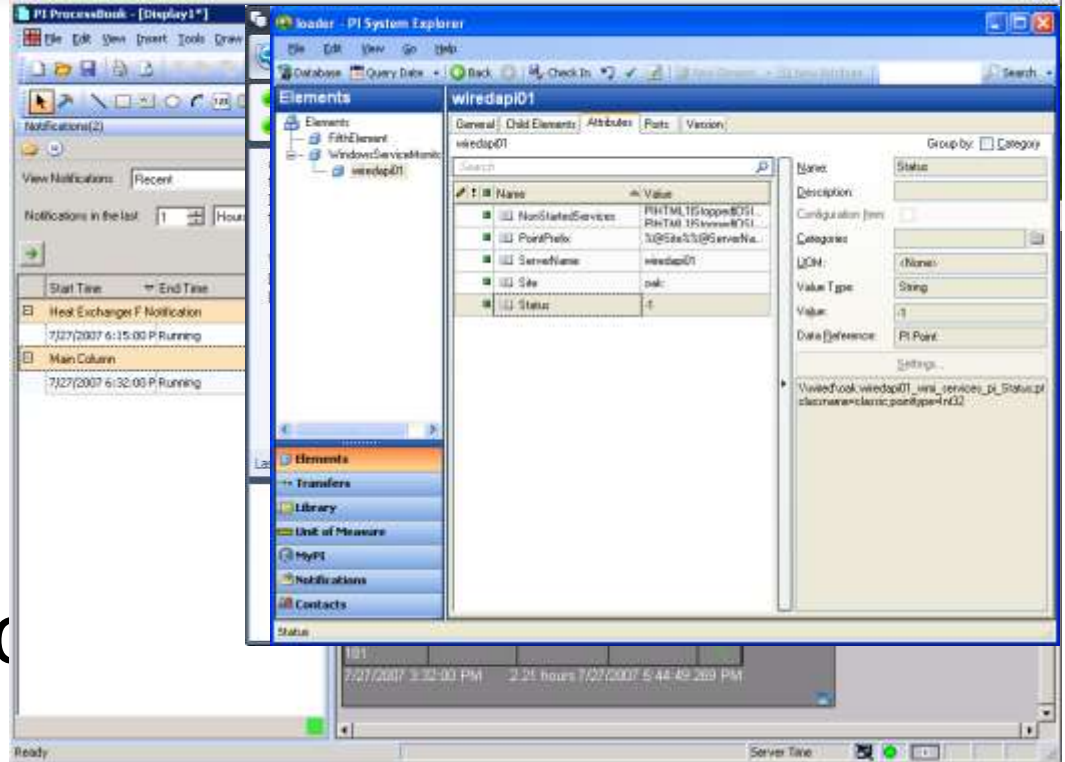


PI Notifications Scheduler

- Spawns processes to run notifications
- Allow different schedulers for AF databases
- Scheduler failover support

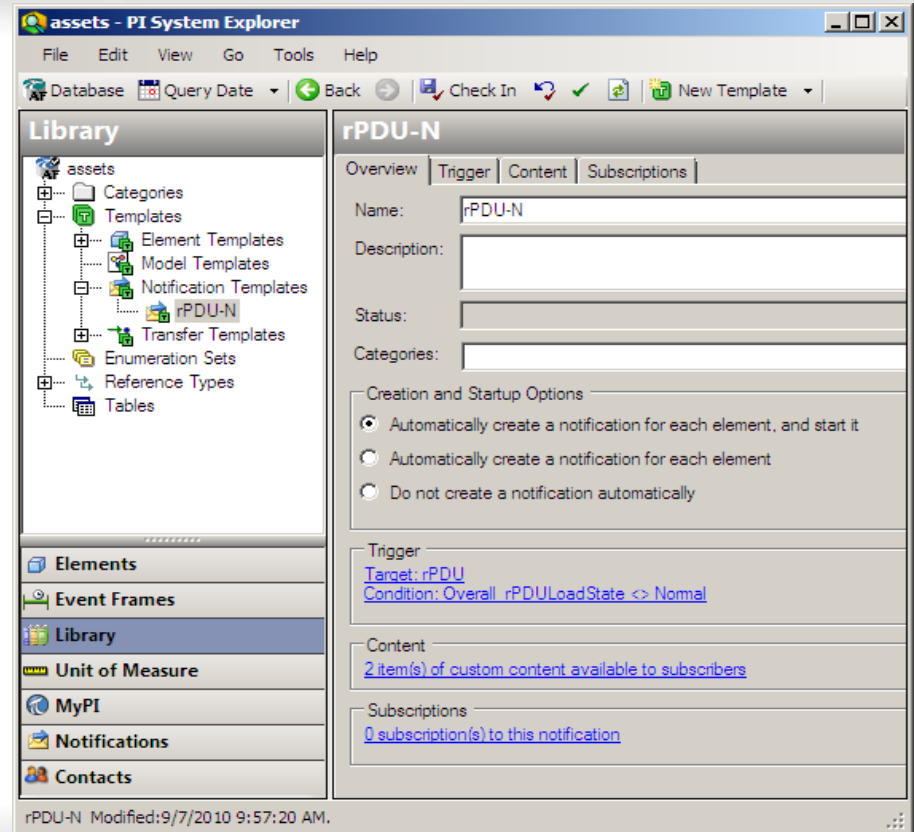
PI Notification Clients

- PI ProcessBook
- Excel
- Desktop
- PI System Explorer
- Office Communicator



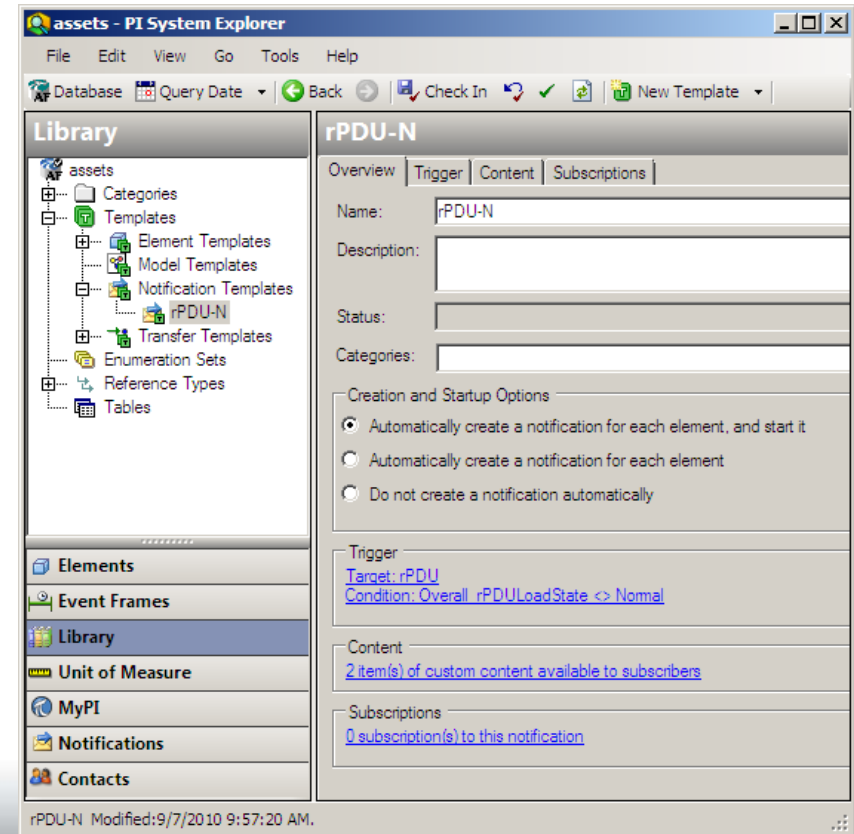
Configure Notifications

- PI System Explorer
- ANSDK/AFSDK



Notification Templates

- Based on element templates
- Create template once
- Notification created when element created
- Options include
 - Create
 - Start



Delivery Channels

- How a message is delivered
 - Email, web service and OCS included
- Extensible – write your own!
 - Helper classes available
- vCampus example
 - XML delivery channel



PI Notifications 2010

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Features

- Faster Notification History searches
- Native 64 bit support
- Formatting Notification Messages

Current: Message

- Specify subject (not dynamic)
- Specify content (no control over layout)

Specify static subject for email

Choose what content to include

Subject
\\PIANODEMO\DM\Element1\Notifications[New Notification6] generated a new notification event.

Selected Content

Standard Content

Include Standard Content

Trigger Input

Include Trigger Input

Attribute Value

\\PIANODEMO\DM\Element1\Attribute1

Link

Instant RtWebParts Trend

This message was sent with High importance.

From: dthompson@osisoft.com Sent: Fri 4-Jun-10 10:43 AM
To: David Moler
Cc:
Subject: PIANODEMO\DM\Element1\Notifications[New Notification6] generated a new notification event.

Name: New Notification6
Server: PIANODEMO
Database: DM
Start Time: 4-Jun-10 10:43:02 AM Pacific Daylight Time (GMT-07:00:00)
Trigger Time: 4-Jun-10 10:43:02 AM Pacific Daylight Time (GMT-07:00:00)
Target: PIANODEMO\DM\Element1
State: OutsideControl
Priority: Normal

Attribute Value:
[\\PIANODEMO\DM\Element1\Attribute1](#): 77

Actions:
[Acknowledge](#)
[Acknowledge with comment](#)

Current: Subscriptions

Notification

Content

1. Trigger Input
2. Attribute
3. Web Page
4. Acknowledgement
5. Web Part Trend



1



1, 2, 4, 5



1, 2, 4, 5

- Content defined on notification
- Each subscriber requests content individually

Current: Subscriptions

Notification

Content

1. Trigger Input
2. Attribute
3. Web Page
4. Acknowledgement
5. Web Part Trend

- Each new subscribers must request content – not scalable/maintainable



1



1, 2, 4, 5



1, 2, 4, 5



?!?!

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PI Notifications 2010: Message

Microsoft Sans Serif 11

Subject
Alert on element **[Target]**

Attachments

Body
Warning: [Triggering Condition:Triggering Condition]
[Attribute1:Name]: [Attribute1:Value] [Attribute1:UOM] ([Attribute1:TimeStamp])

Free-form composition of subject and body

Content is substituted when alert is triggered

This message was sent with High importance.

From: dthompson@osisoft.com Sent: Mon 7-Jun-10 9:09 AM
To: David Moler
Cc:
Subject: Alert on element [\\PIANODEMO\Demo1.2\Demo 01](#)

Warning: Attribute1 has exceeded target:
Attribute1: 11 (7-Jun-10 9:08:40 AM)

PI Notifications 2010: Subscriptions

Notification

Format

1. Simple Email
2. Detailed Email (default)
3. ...

- New paradigm: message format
 - Subscribers request a message format
 - Group, notification, global defaults
 - Message format and subscribers can be set on Notification Template



Simple Email



Detailed Email



Detailed Email



Detailed Email

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Message Formatting



- How to configure formatting

Delivery Channels



Sample Delivery Channel Web Page

- Custom delivery channel that outputs a web page when triggered
- Review contact configuration & available helper
- Support formatting so user can compose web page content
- Exhibit preview and improved test



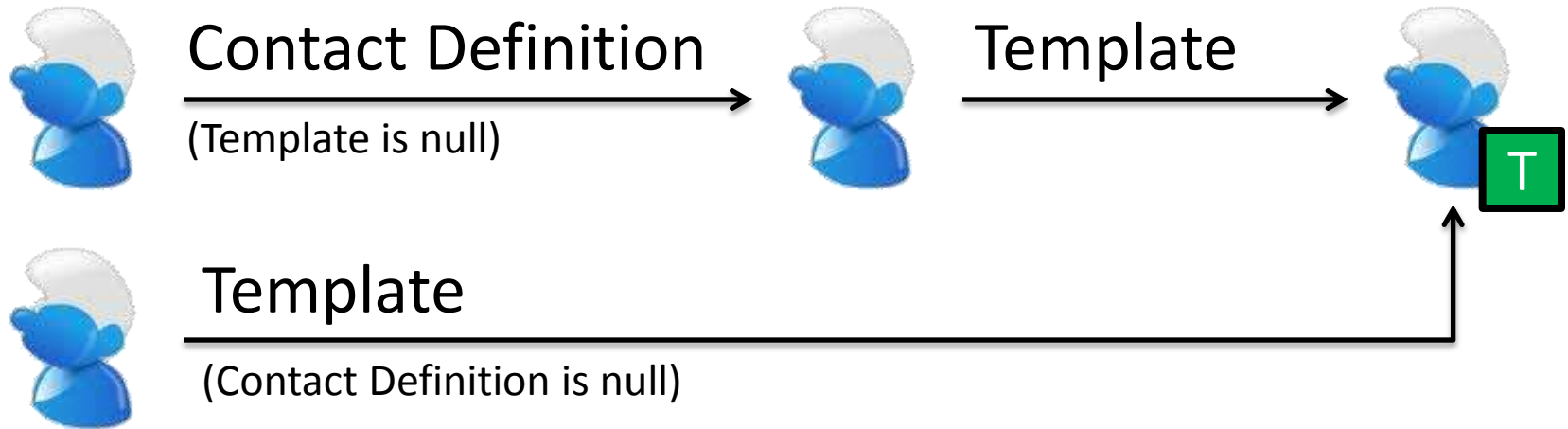
Delivery Channel configuration behavior

- Configuration stored in ConfigString
- Contact Properties (e.g. Importance) are inherited from “parent”
- Values can be overridden or defaulted
- When formatting is available, only contact properties should be stored

Delivery Channel: Property Inheritance

Notification

Notification
Template



 = AFNotificationContact

 = AFNotificationContactTemplate

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Delivery Channel: Property Inheritance

Notification

Notification
Template

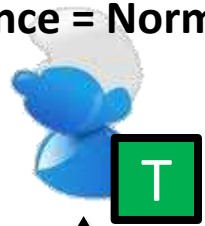
High (inherited)



Importance = High



Importance = Normal



Normal (inherited)



= AFNotificationContact



= AFNotificationContactTemplate

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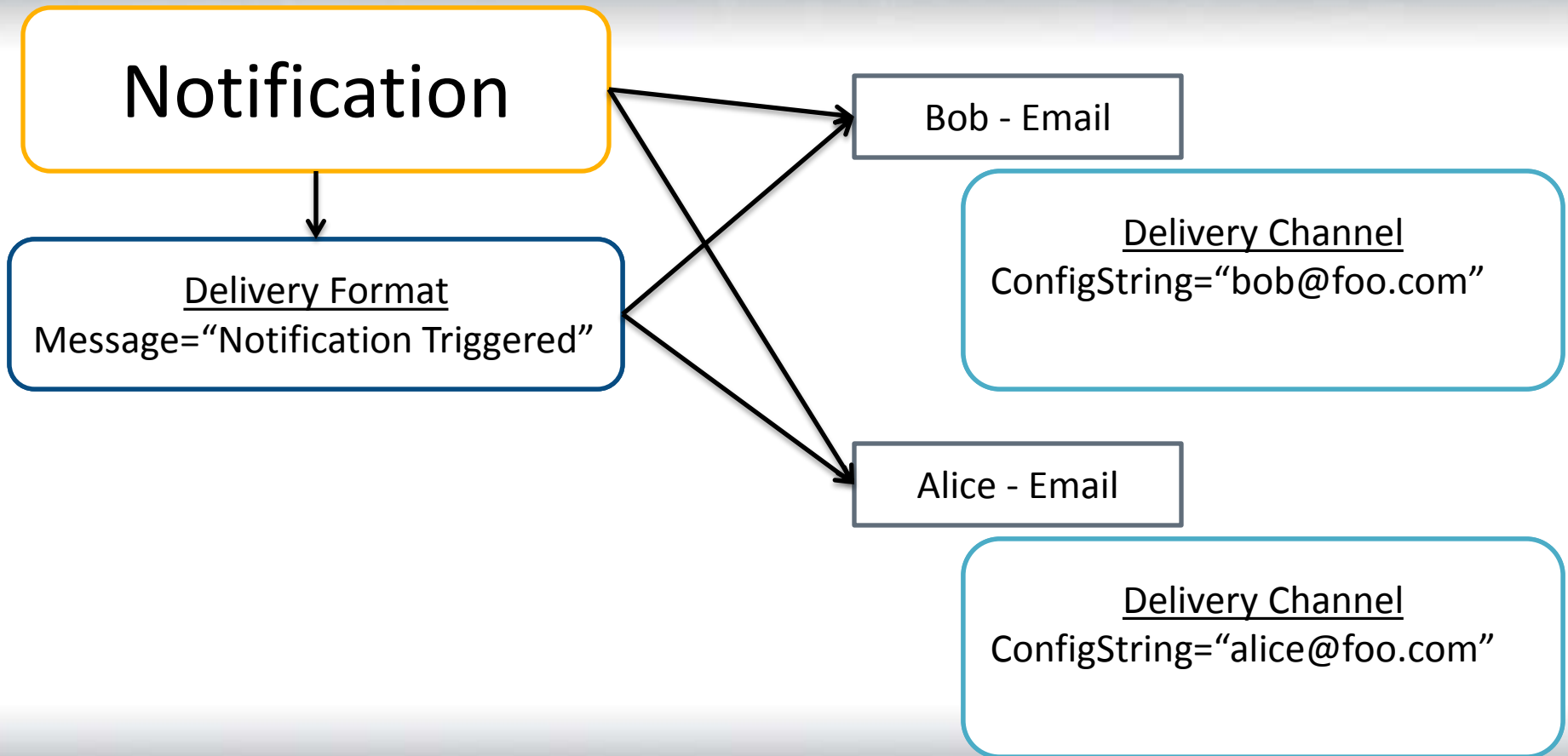
How to I use the ConfigStringHelper?

```
public override string ConfigString
{
    get { return _configHelper.ConfigString; }
    set
    {
        if (ConfigString != value)
        {
            _configHelper.ConfigString = value;
            SaveConfigChanges();
        }
    }
}
```

How to I use the ConfigStringHelper?

```
public string Url
{
    get { return _configHelper.GetValue("Url"); }
    set
    {
        if (_configHelper.SetValue("Url", value))
        {
            SaveConfigChanges();
        }
    }
}
```


Delivery Channels: ~~write~~-formatting



Delivery Channel



- Review components

What objects are available?

- ANDeliveryFormat
 - Stores plug-in specific message configuration
 - Key value pairs <string, string>
(e.g. [“Subject”] = “Notification Triggered”)
- Built-In components to work with common types (rich text, plain text, attachments)

What needs to change in my Delivery Channel?

```
public class WebPage : AFDeliveryChannel
{

    ///*** old delivery channel implementation hidden***///

    public void Send(
        ANProcessedDeliveryFormat processedFormat,
        bool test)

    public static Type ConfigurationManagerType { get; }
}
```

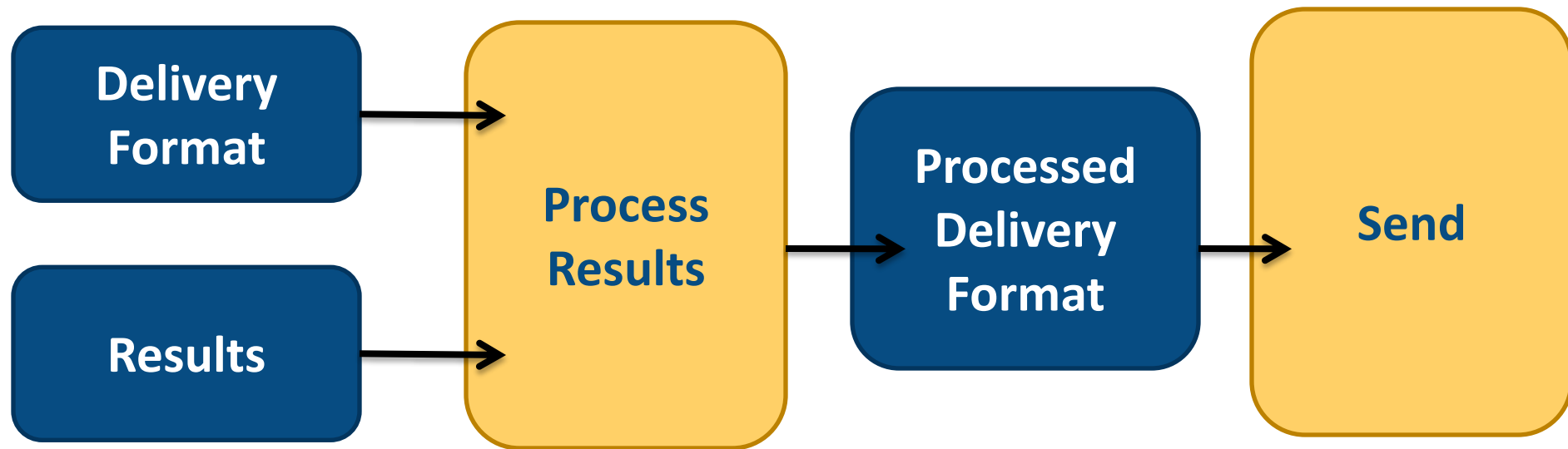
How do I implement the Configuration Helper?

```
internal class WebPageConfigurationManager
    : ANFormattableDeliveryChannelConfigurationManager
{
    public override void InitializeGlobalFormat(
        ANDeliveryFormat globalDefaultFormat)

    public override ANProcessedDeliveryFormat ProcessResults(
        ANDeliveryFormat deliveryFormat,
        ANNotificationResults results,
        bool test)

    public override Type GetEditorType()
}
```

Sending Formatted Notification



What else do I need to implement?

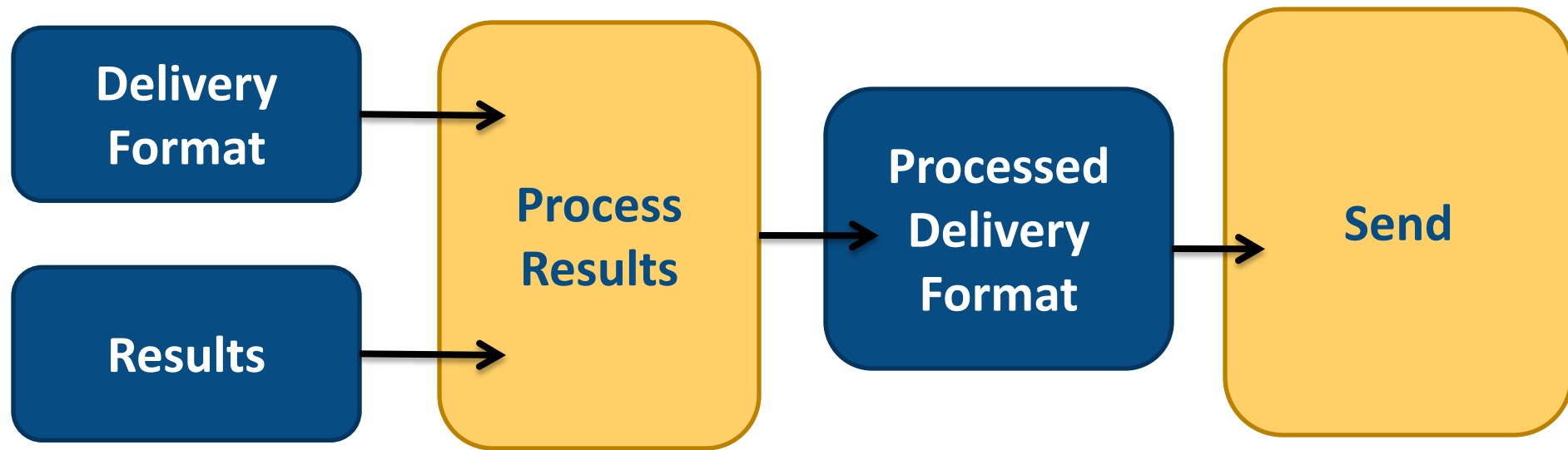
```
internal partial class WebPageEditorControl
    : ANWPFDeliveryFormatEditor
{
    protected override void LoadFromDeliveryFormat(
        ANDeliveryFormat deliveryFormat,
        bool readOnly)

    protected override void SaveToDeliveryFormat(
        ANDeliveryFormat deliveryFormat)
}
```

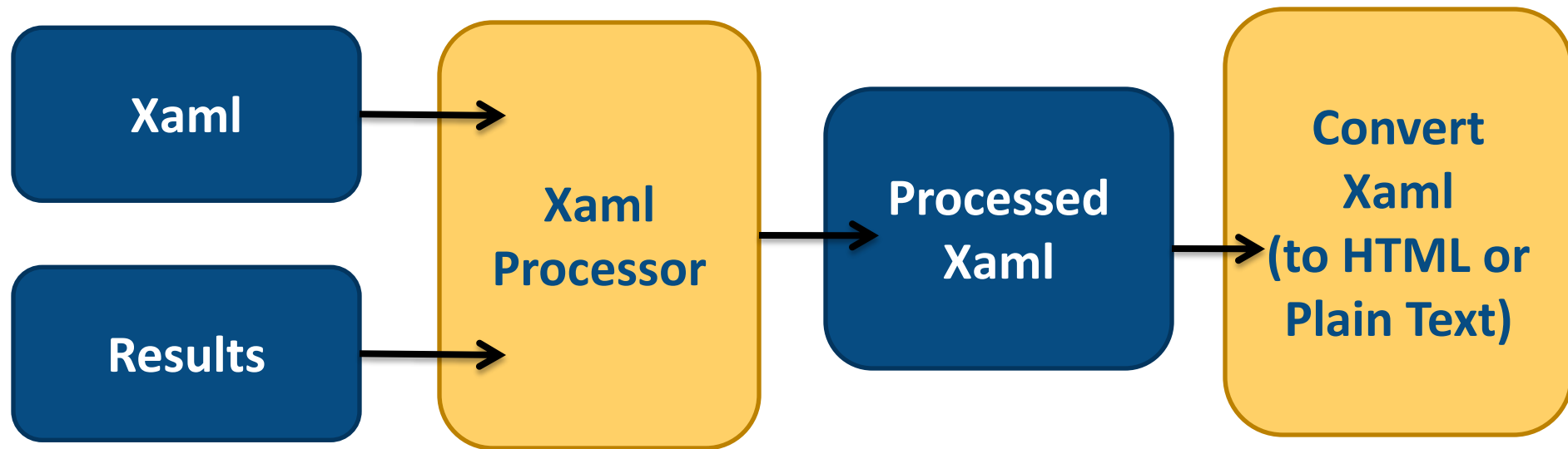
Editor Implementation

```
protected override void LoadFromDeliveryFormat(  
    ANDeliveryFormat deliveryFormat, bool readOnly)  
{  
    _messageEditor.ReadOnly = readOnly;  
    _messageEditor.NotificationContext = base.NotificationContext;  
    _messageEditor.MessageConfiguration = deliveryFormat["Message"];  
}  
  
protected override void SaveToDeliveryFormat(ANDeliveryFormat deliveryFormat)  
{  
    deliveryFormat["Message"] = _messageEditor.MessageConfiguration;  
}
```


Sending Formatted Notification



Sending Formatted Notification



```
public override ANProcessedDeliveryFormat ProcessResults(
    ANDeliveryFormat deliveryFormat,
    ANNotificationResults results, bool test)
{
    var processedResults = new ANProcessedDeliveryFormat();
    string processedXaml = ANXamlFormatProcessor.ProcessResults(
        deliveryFormat["Message"], results);
    processedResults["Message"] = processedXaml;
    return processedResults;
}

public void Send(ANProcessedDeliveryFormat processedFormat, bool test)
{
    string processedXaml = processedFormat["Message"];
    using (StreamWriter writer = new StreamWriter(Uri))
        writer.WriteLine(ANXamlConverter.ConvertToHtml(processedXaml));
}
```

Summary

- Message composition is highly desired
- Formats improve configuration for users
- Implementation straightforward using built-in components
- Old delivery channels will still work

Wrap-up

- Power of notification templates assist implementation
- Delivery Channel enables extensibility
- Customize content with new formatting features in upcoming release

More Information

- Previous Presentations - vCampus
 - [Builders' Café Webinar Series: Tour of the AF and PI Notifications Developer Tools](#)
- vCampus - forums



Thank You!

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