Windows Phone

Tiles and Notifications

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Session 10.0

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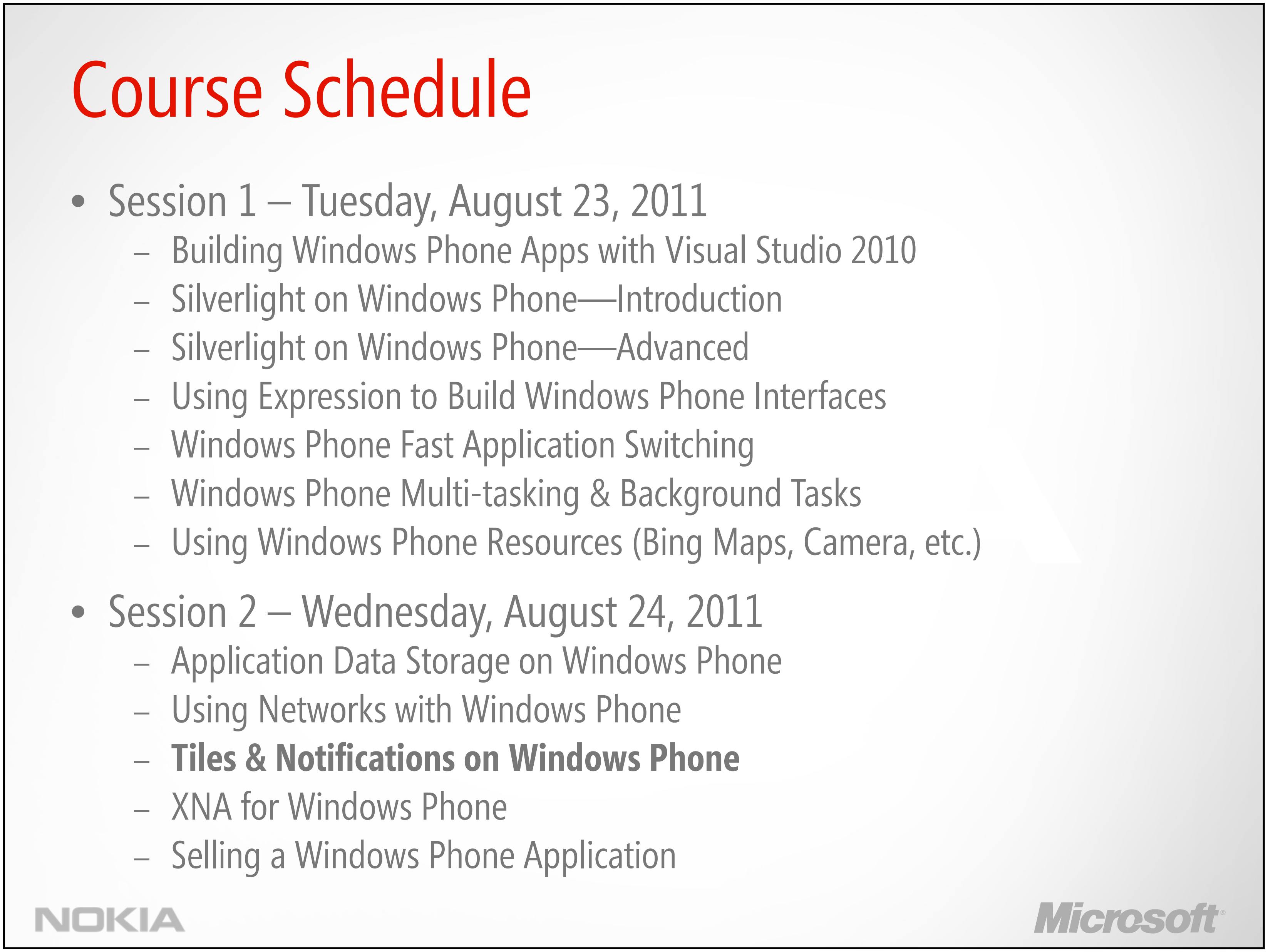

Course Schedule

- Session 1 – Tuesday, August 23, 2011
  - Building Windows Phone Apps with Visual Studio 2010
  - Silverlight on Windows Phone—Introduction
  - Silverlight on Windows Phone—Advanced
  - Using Expression to Build Windows Phone Interfaces
  - Windows Phone Fast Application Switching
  - Windows Phone Multi-tasking & Background Tasks
  - Using Windows Phone Resources (Bing Maps, Camera, etc.)
- Session 2 – Wednesday, August 24, 2011
  - Application Data Storage on Windows Phone
  - Using Networks with Windows Phone
  - **Tiles & Notifications on Windows Phone**
  - XNA for Windows Phone
  - Selling a Windows Phone Application

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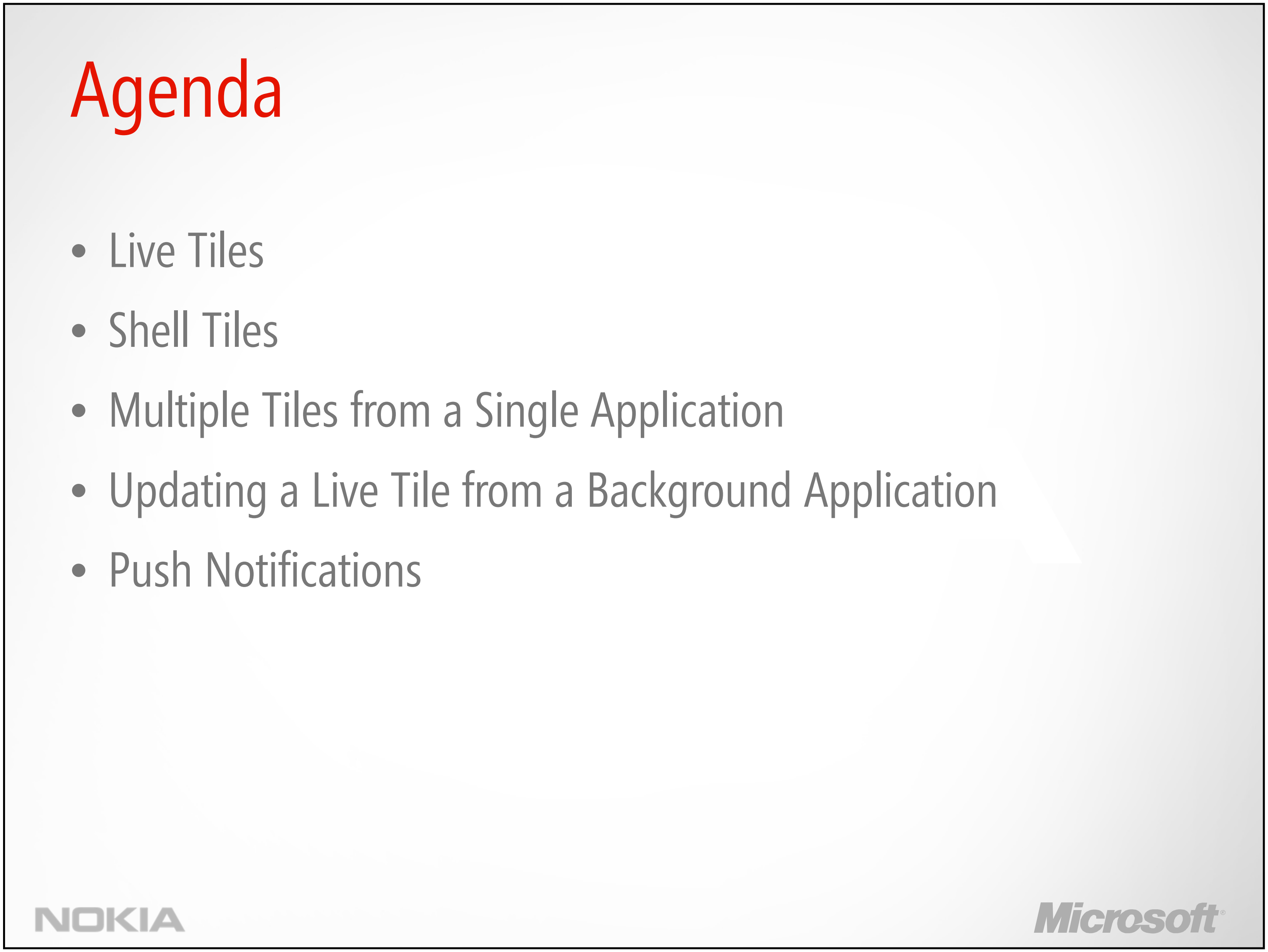

Agenda

- Live Tiles
- Shell Tiles
- Multiple Tiles from a Single Application
- Updating a Live Tile from a Background Application
- Push Notifications

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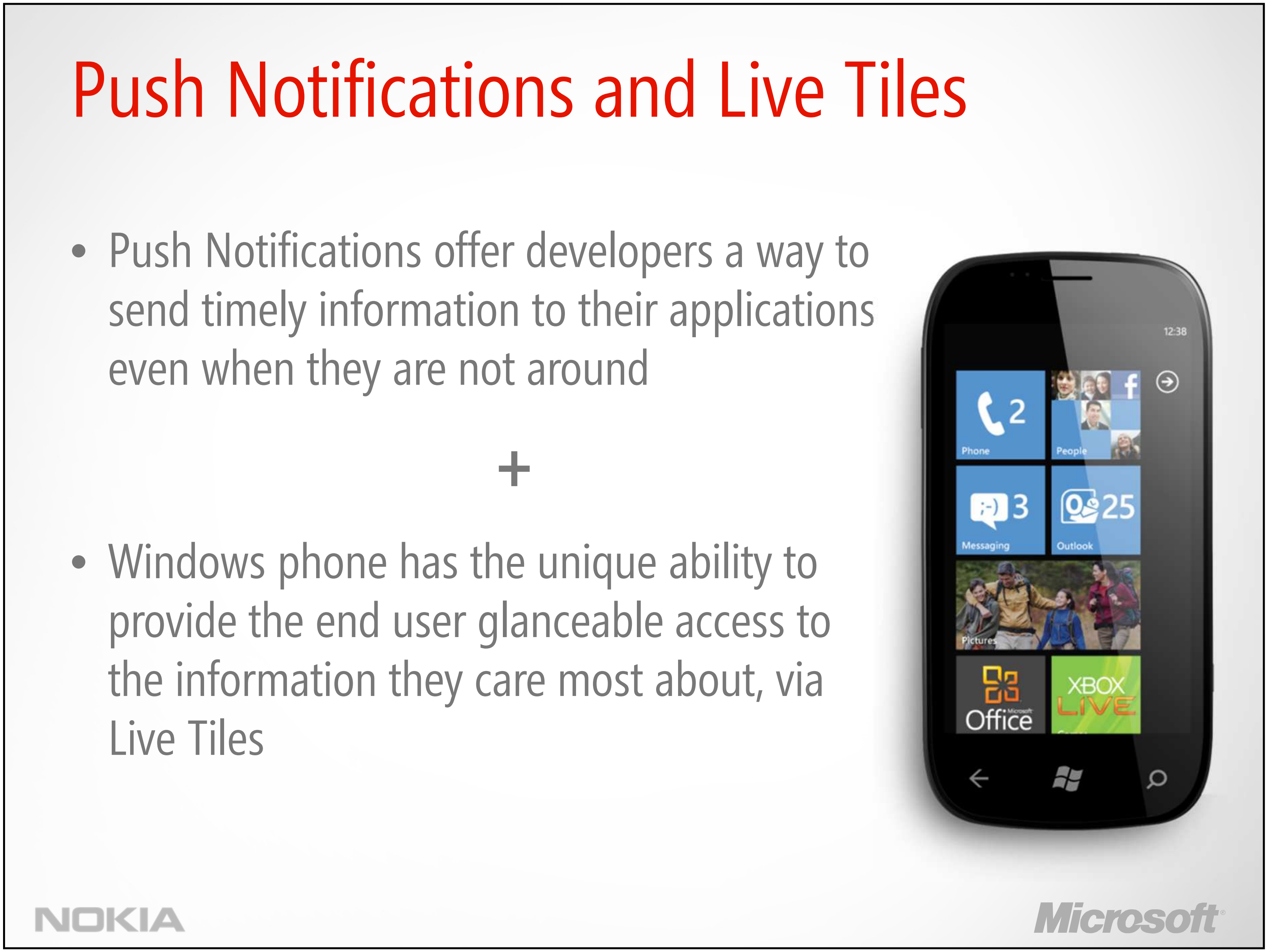

Push Notifications and Live Tiles

- Push Notifications offer developers a way to send timely information to their applications even when they are not around

+

- Windows phone has the unique ability to provide the end user glanceable access to the information they care most about, via Live Tiles

12:38
2
Phone
People
3
Messaging
25
Outlook
Pictures
Office
XBOX LIVE
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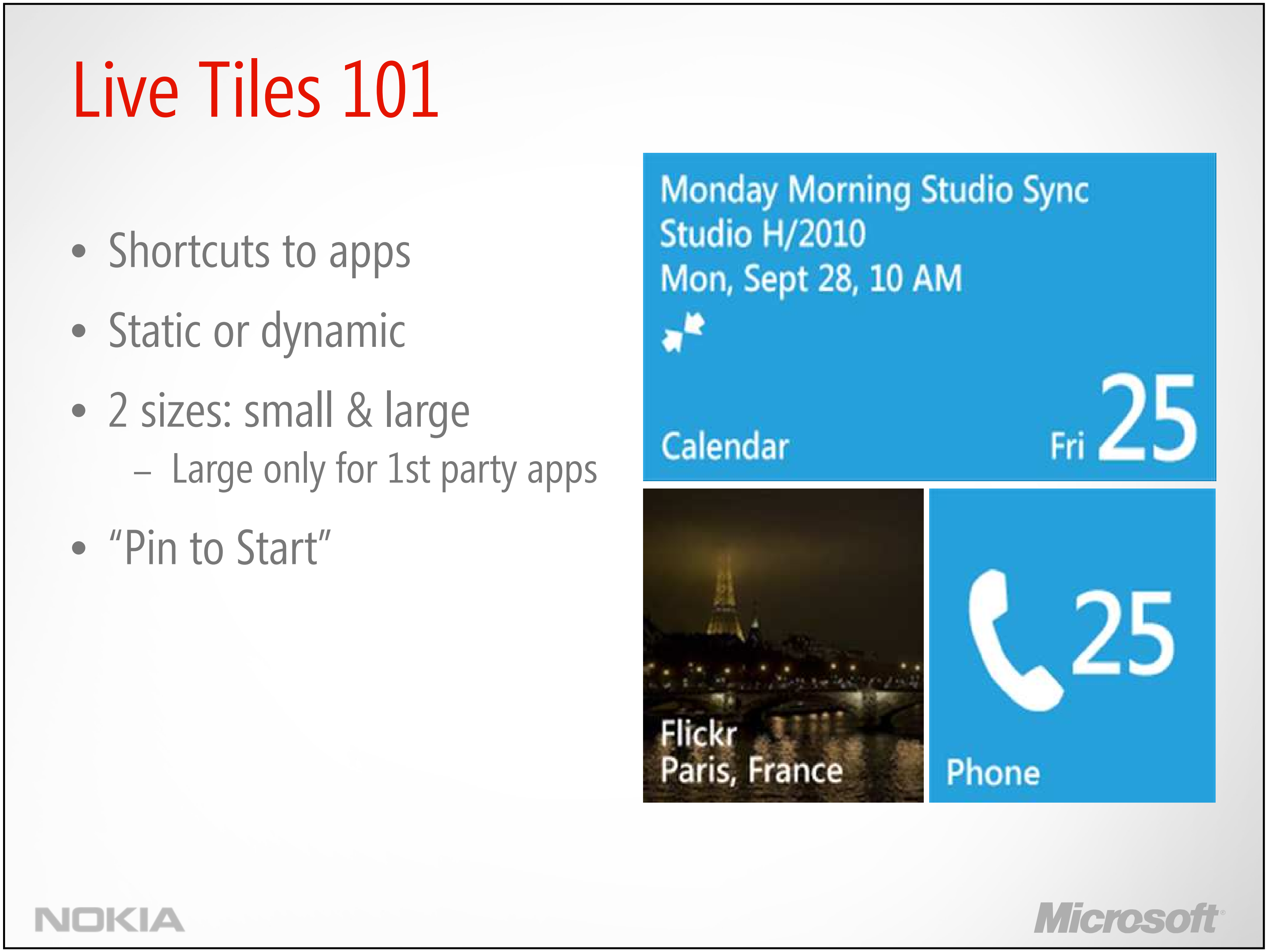

Live Tiles 101

- Shortcuts to apps
- Static or dynamic
- 2 sizes: small & large
  - Large only for 1st party apps
- "Pin to Start"

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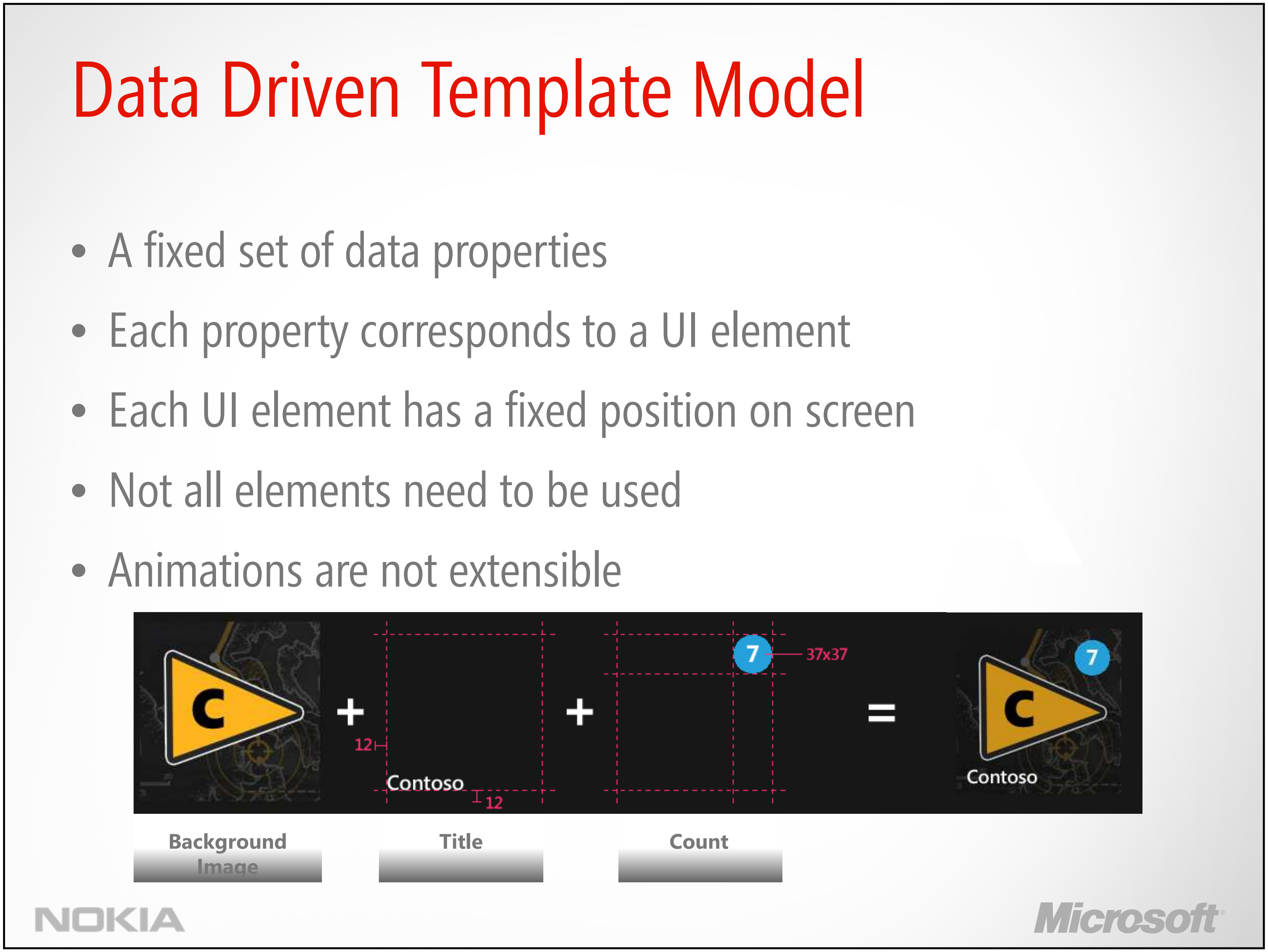

Data Driven Template Model

- A fixed set of data properties
- Each property corresponds to a UI element
- Each UI element has a fixed position on screen
- Not all elements need to be used
- Animations are not extensible

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Scenarios/Popular Applications

- Weather Apps
  - Weather Tile
  - Warning Toast

- Chess by Post
  - Turn Tile
  - Move Toast

- Beezz
  - Unread Tile
  - Direct Toast

- Send to WP7
  - Link Tile
  - Link Toast

- AlphaJax
  - Turn Tile
  - Move Toast

- Seattle Traffic Map
  - Traffic Tile

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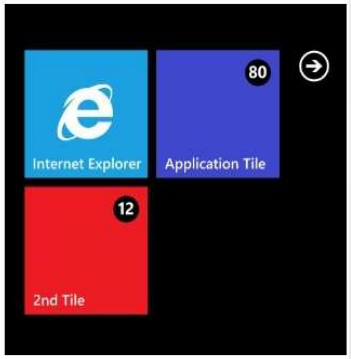
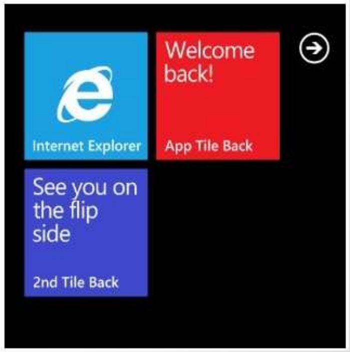
Primary and Secondary Tiles

- Application Tile
  - Can be created only when user taps and holds the application name in the Application List and then selects pin to start
  - Properties are set initially in the Application Manifest
- Secondary Tile
  - Can be created only as the result of user input in an application
  - The application then uses the Create(Uri, ShellTileData) method to create a Tile on Start
  - Because the UI will navigate to Start when a new secondary Tile is created, only one secondary Tile can be created at a time





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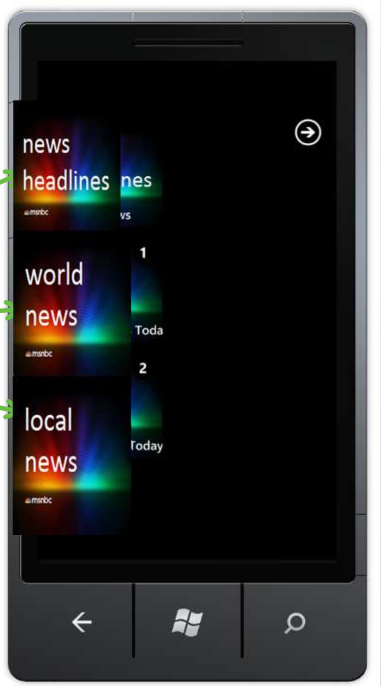
Live Tiles – Local Tile API

- New in Windows Phone 7.5!
- Local tile updates (these are *not* push)
  - Full control of all properties when your app is in the foreground or background
  - Calorie counter, sticky notes
- MultiTile!
  - Create/Update/Delete
  - Launches directly to page/experience



Application Tile
Launches main app experience

Secondary Tile
Launches world news page

Secondary Tile
Launches local news page

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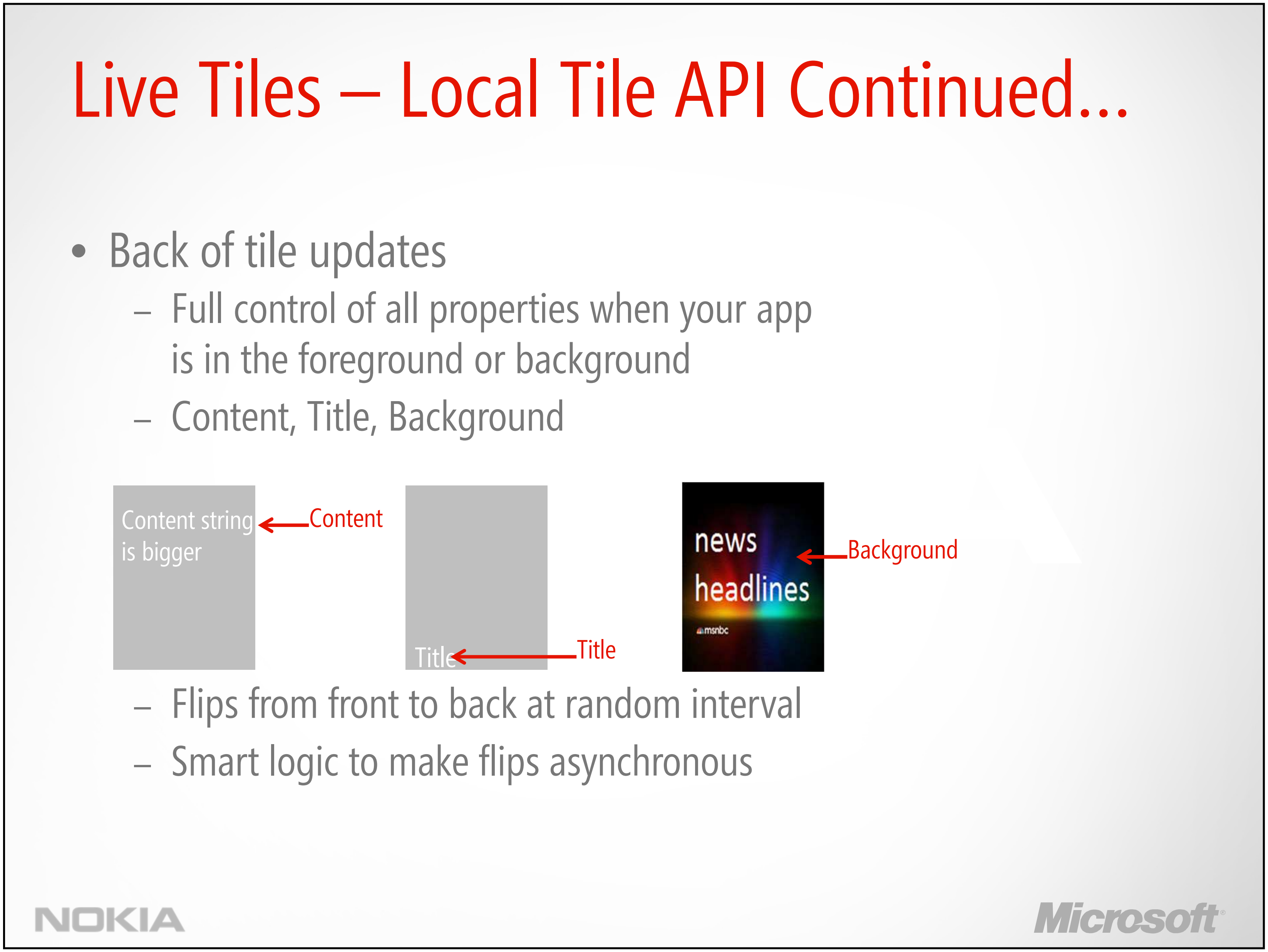

Live Tiles – Local Tile API Continued…

- Back of tile updates
  - Full control of all properties when your app is in the foreground or background
  - Content, Title, Background

  - Flips from front to back at random interval
  - Smart logic to make flips asynchronous

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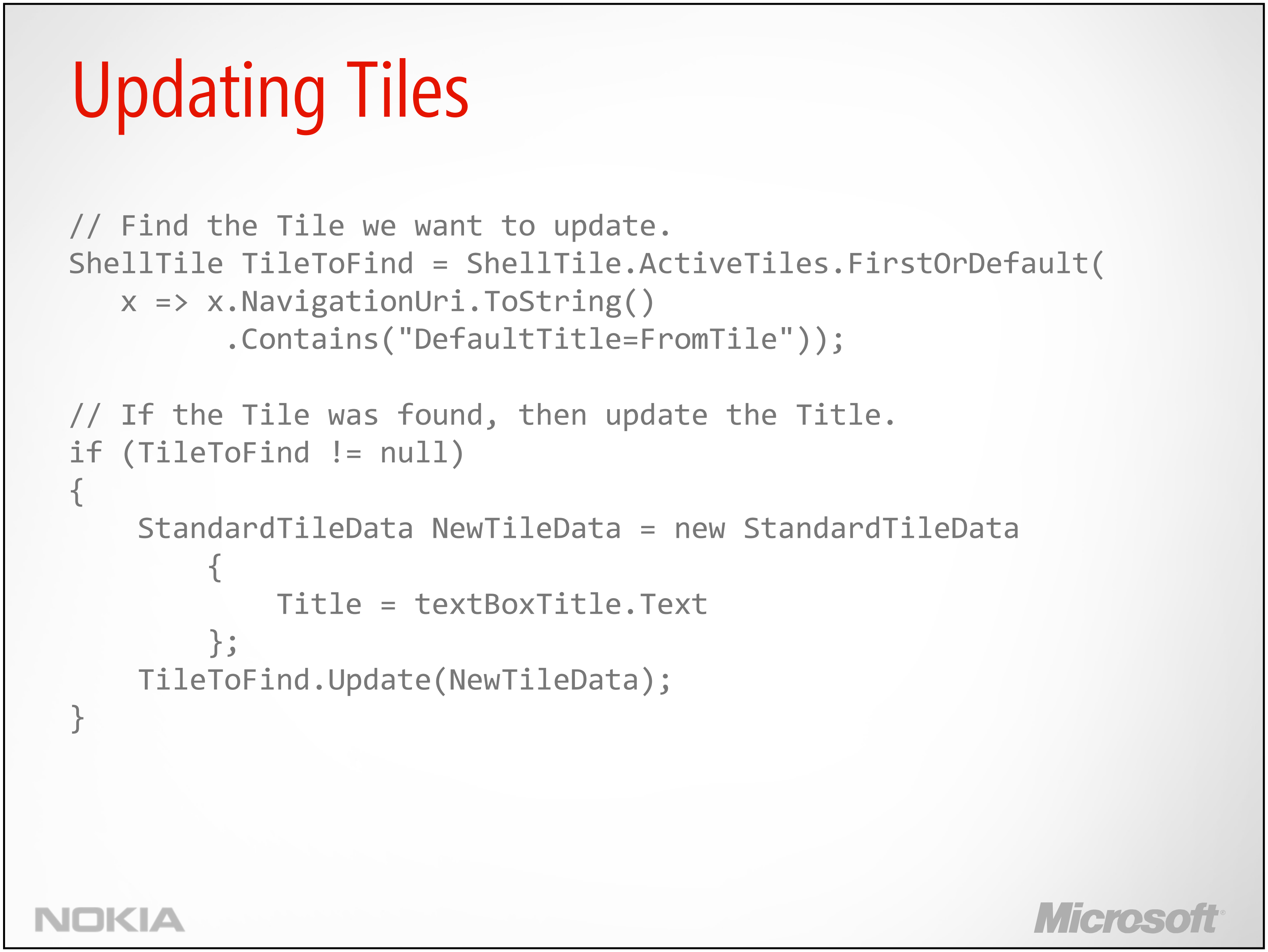

Updating Tiles

```
// Find the Tile we want to update.
ShellTile TileToFind = ShellTile.ActiveTiles.FirstOrDefault(
   x => x.NavigationUri.ToString()
         .Contains("DefaultTitle=FromTile"));

// If the Tile was found, then update the Title.
if (TileToFind != null)
{
    StandardTileData NewTileData = new StandardTileData
        {
            Title = textBoxTitle.Text
        };
    TileToFind.Update(NewTileData);
}
```

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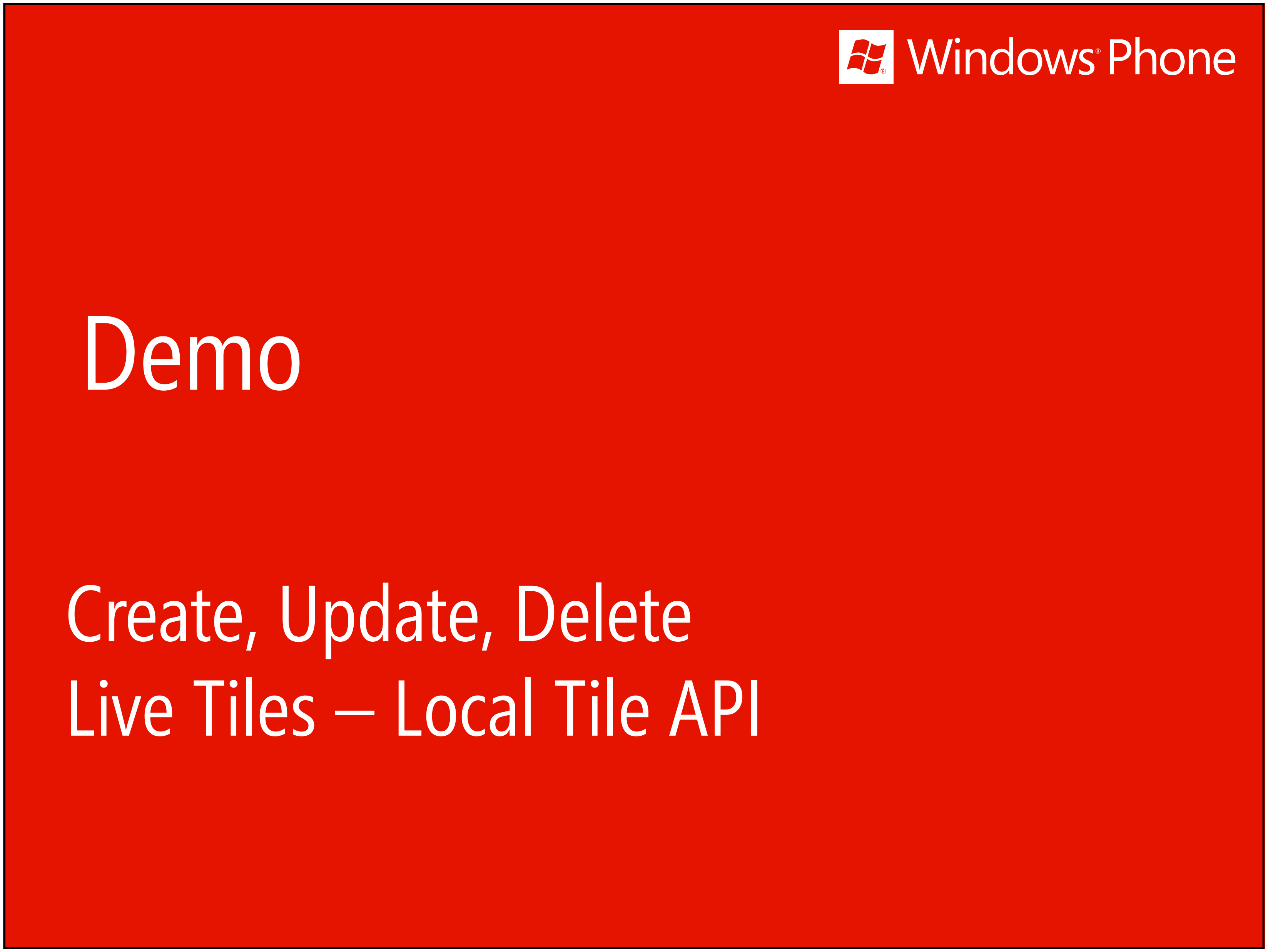

Demo

Create, Update, Delete
Live Tiles – Local Tile API

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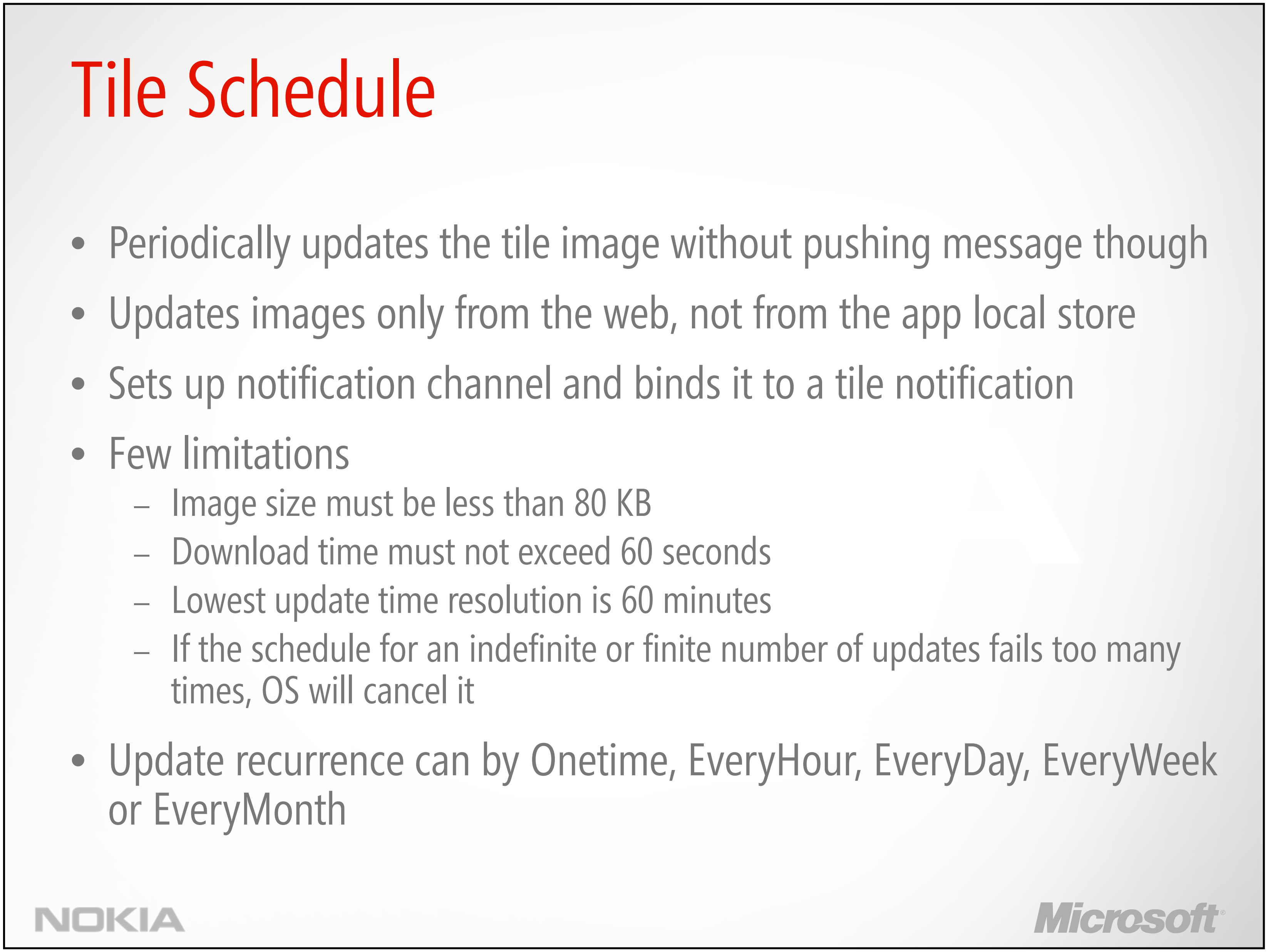

Tile Schedule

- Periodically updates the tile image without pushing message though
- Updates images only from the web, not from the app local store
- Sets up notification channel and binds it to a tile notification
- Few limitations
  - Image size must be less than 80 KB
  - Download time must not exceed 60 seconds
  - Lowest update time resolution is 60 minutes
  - If the schedule for an indefinite or finite number of updates fails too many times, OS will cancel it
- Update recurrence can by Onetime, EveryHour, EveryDay, EveryWeek or EveryMonth

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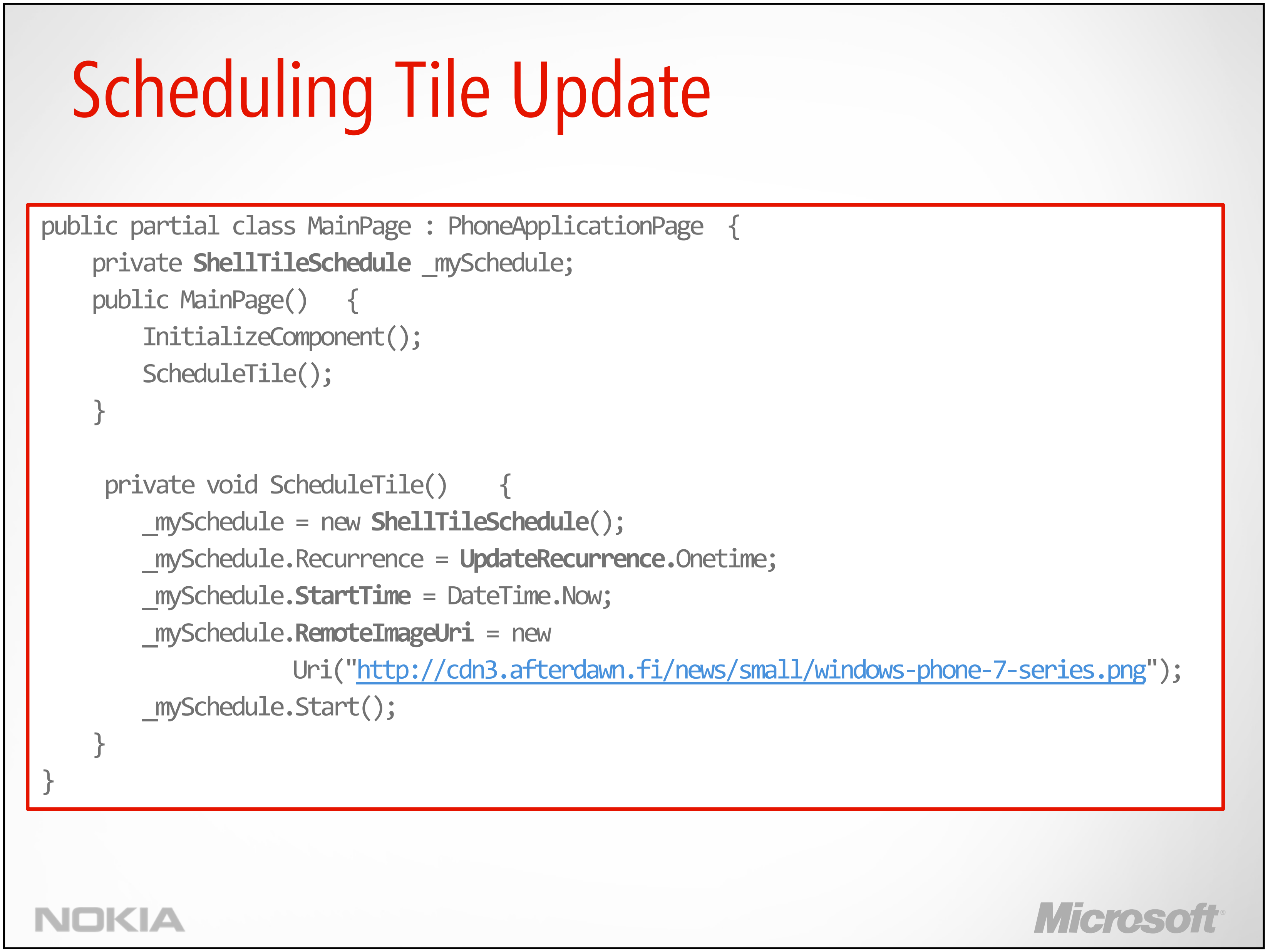

Scheduling Tile Update

```
public partial class MainPage : PhoneApplicationPage  {
    private ShellTileSchedule _mySchedule;
    public MainPage()   {
        InitializeComponent();
        ScheduleTile();
    }

     private void ScheduleTile()    {
        _mySchedule = new ShellTileSchedule();
        _mySchedule.Recurrence = UpdateRecurrence.Onetime;
        _mySchedule.StartTime = DateTime.Now;
        _mySchedule.RemoteImageUri = new
                   Uri("http://cdn3.afterdawn.fi/news/small/windows-phone-7-series.png");
        _mySchedule.Start();
    }
}
```

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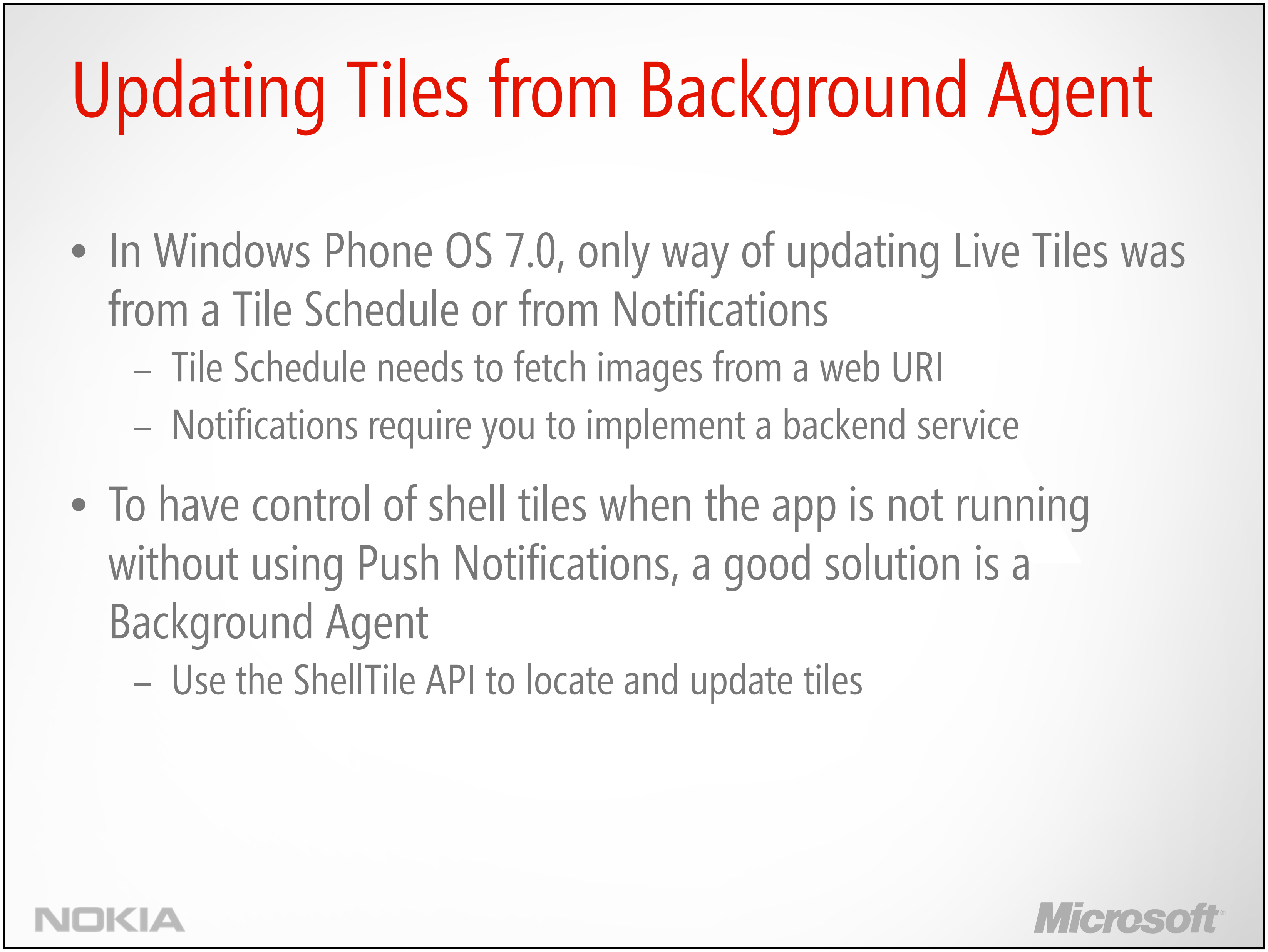

Updating Tiles from Background Agent

- In Windows Phone OS 7.0, only way of updating Live Tiles was from a Tile Schedule or from Notifications
  - Tile Schedule needs to fetch images from a web URI
  - Notifications require you to implement a backend service
- To have control of shell tiles when the app is not running without using Push Notifications, a good solution is a Background Agent
  - Use the ShellTile API to locate and update tiles

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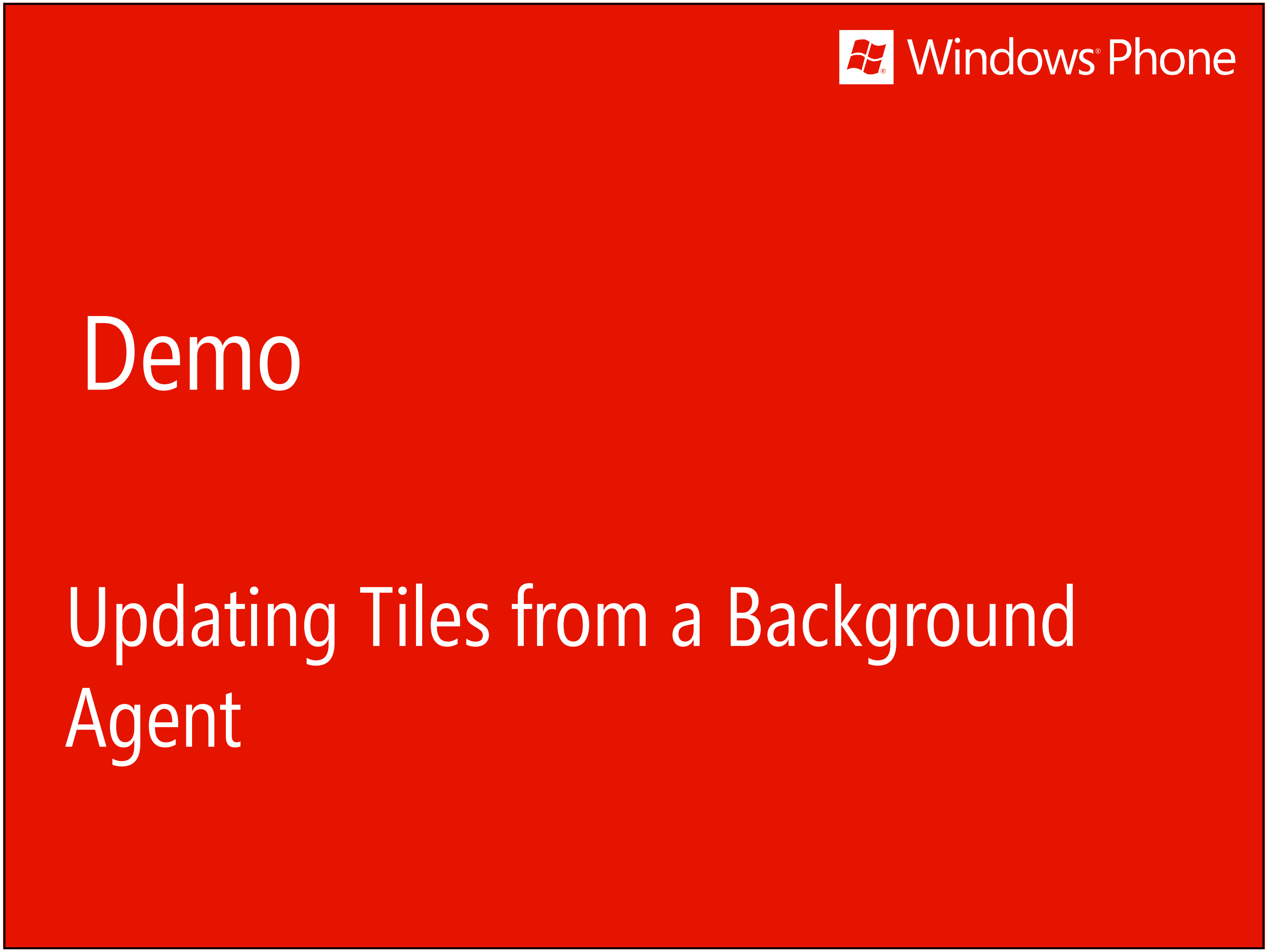

Windows Phone

Demo

Updating Tiles from a Background Agent

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Push Notifications

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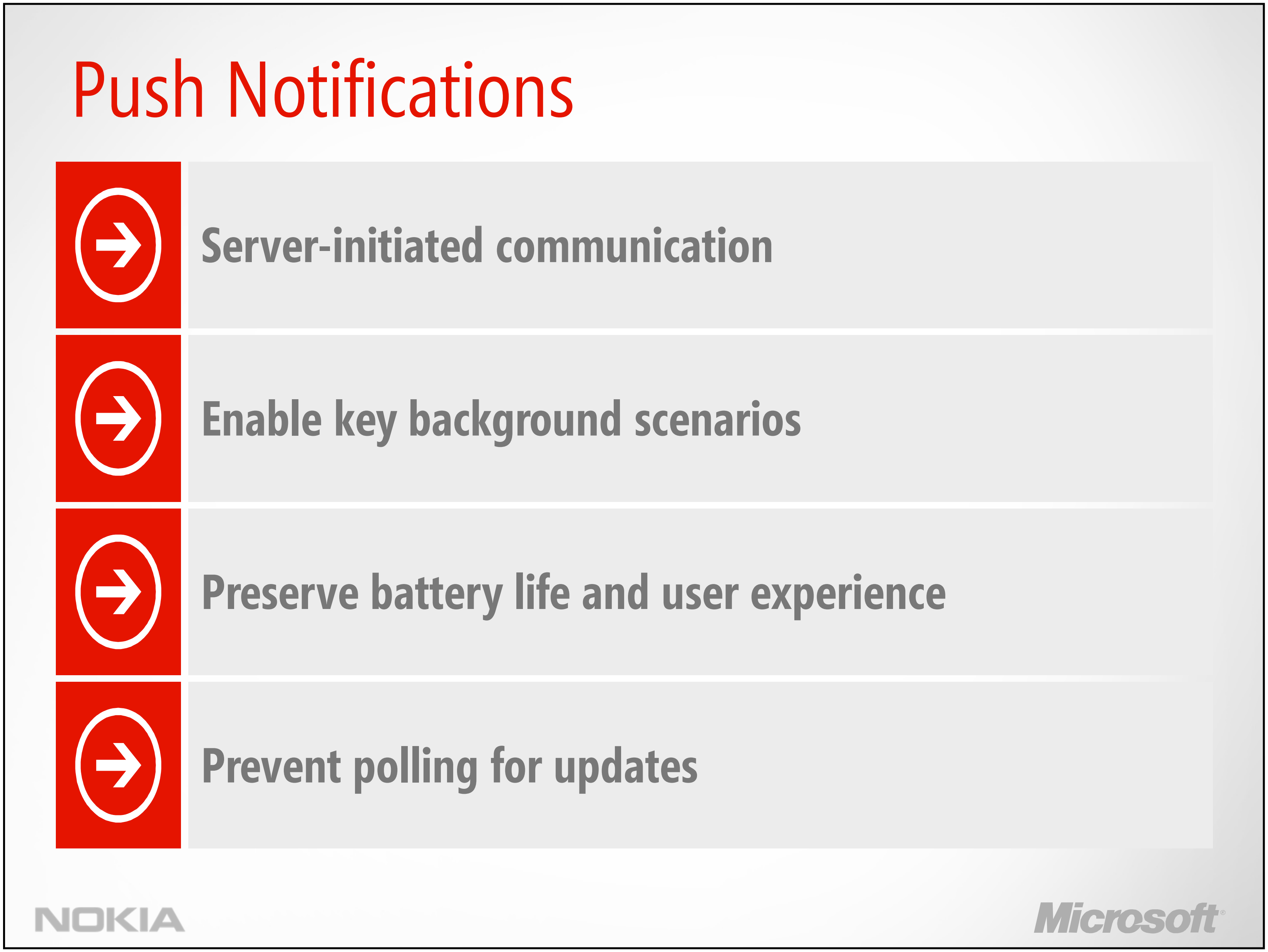

Push Notifications

- Server-initiated communication
- Enable key background scenarios
- Preserve battery life and user experience
- Prevent polling for updates

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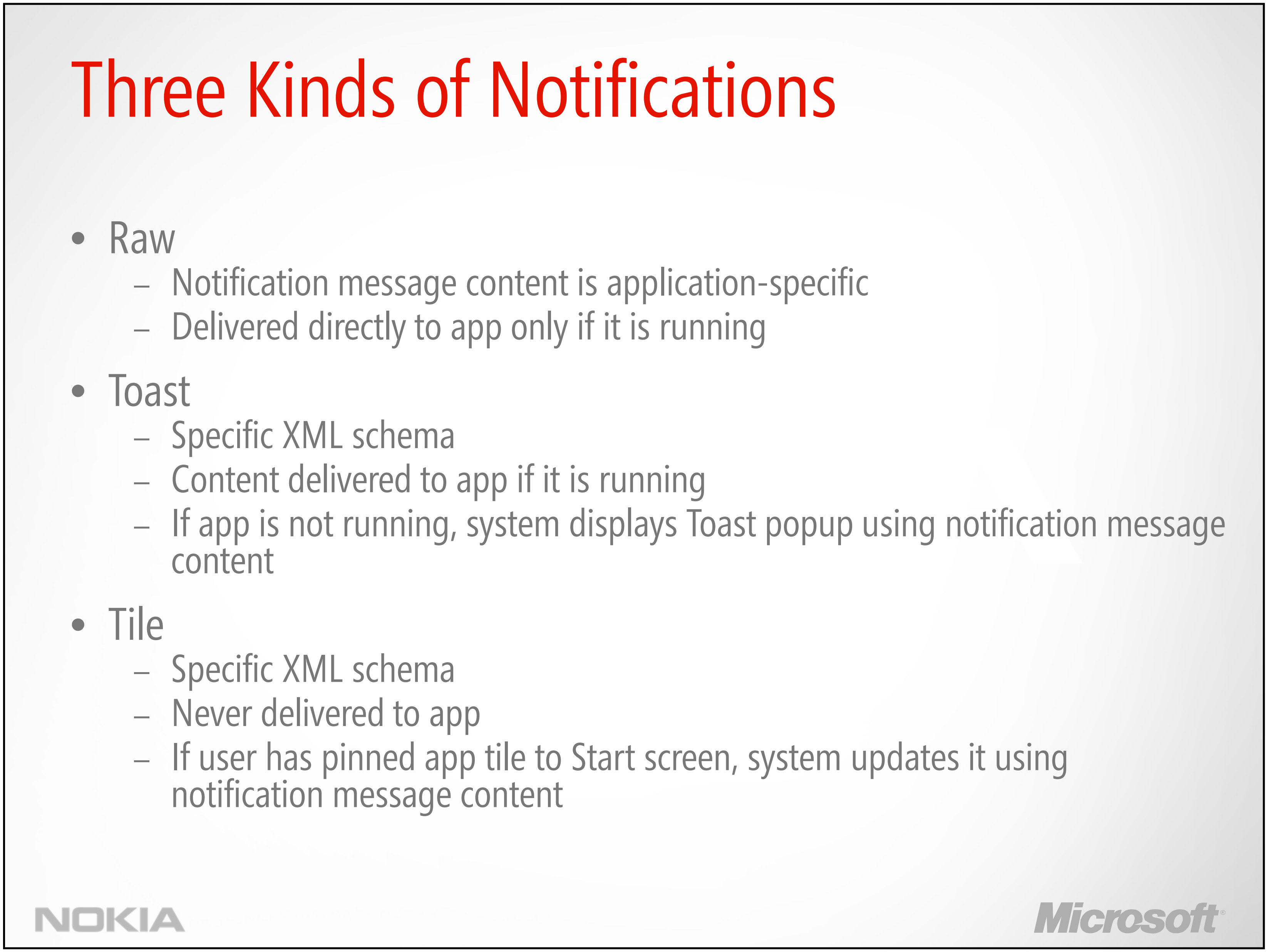

Three Kinds of Notifications

- Raw
  - Notification message content is application-specific
  - Delivered directly to app only if it is running
- Toast
  - Specific XML schema
  - Content delivered to app if it is running
  - If app is not running, system displays Toast popup using notification message content
- Tile
  - Specific XML schema
  - Never delivered to app
  - If user has pinned app tile to Start screen, system updates it using notification message content

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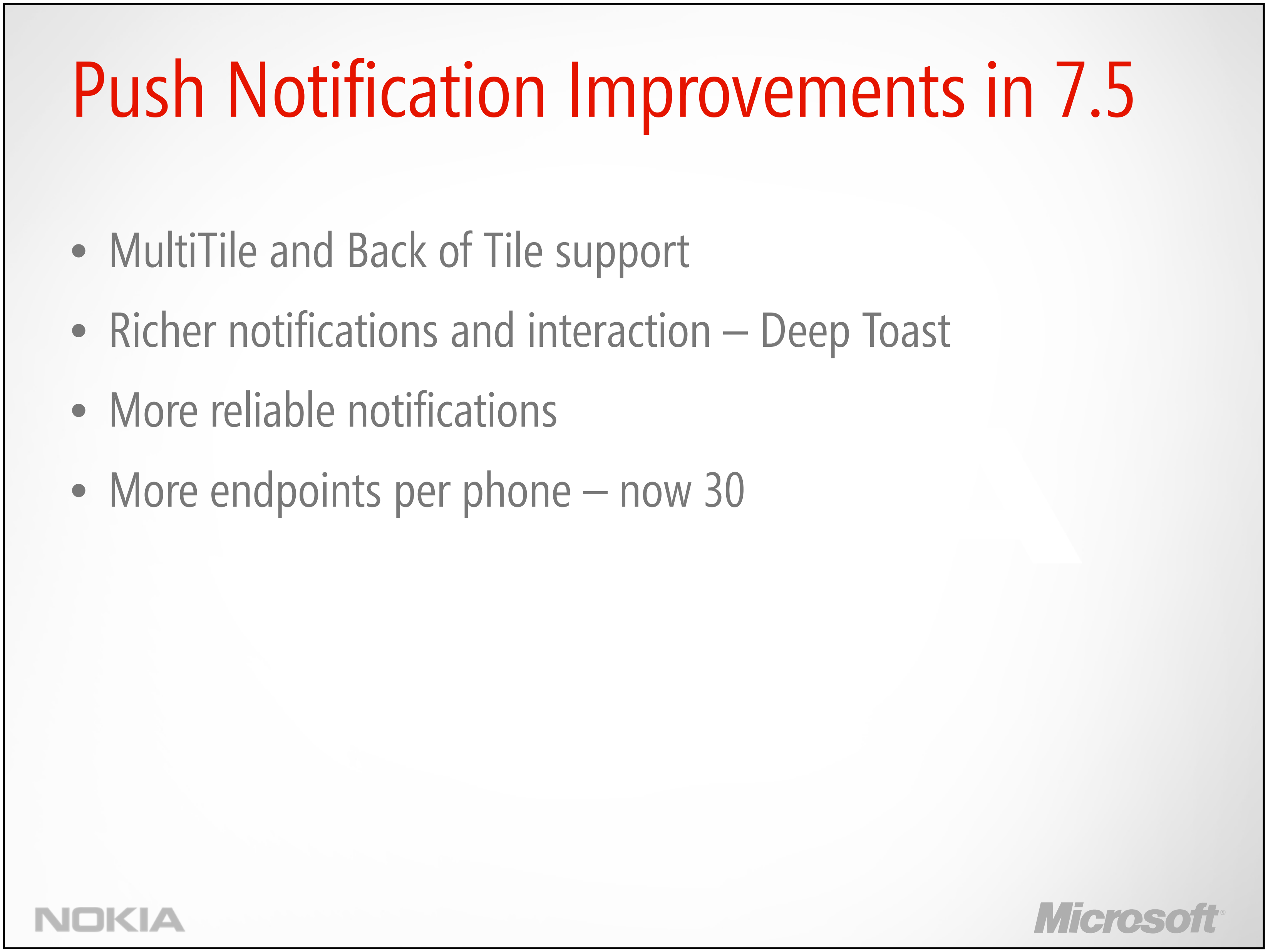

Push Notification Improvements in 7.5

- MultiTile and Back of Tile support
- Richer notifications and interaction – Deep Toast
- More reliable notifications
- More endpoints per phone – now 30

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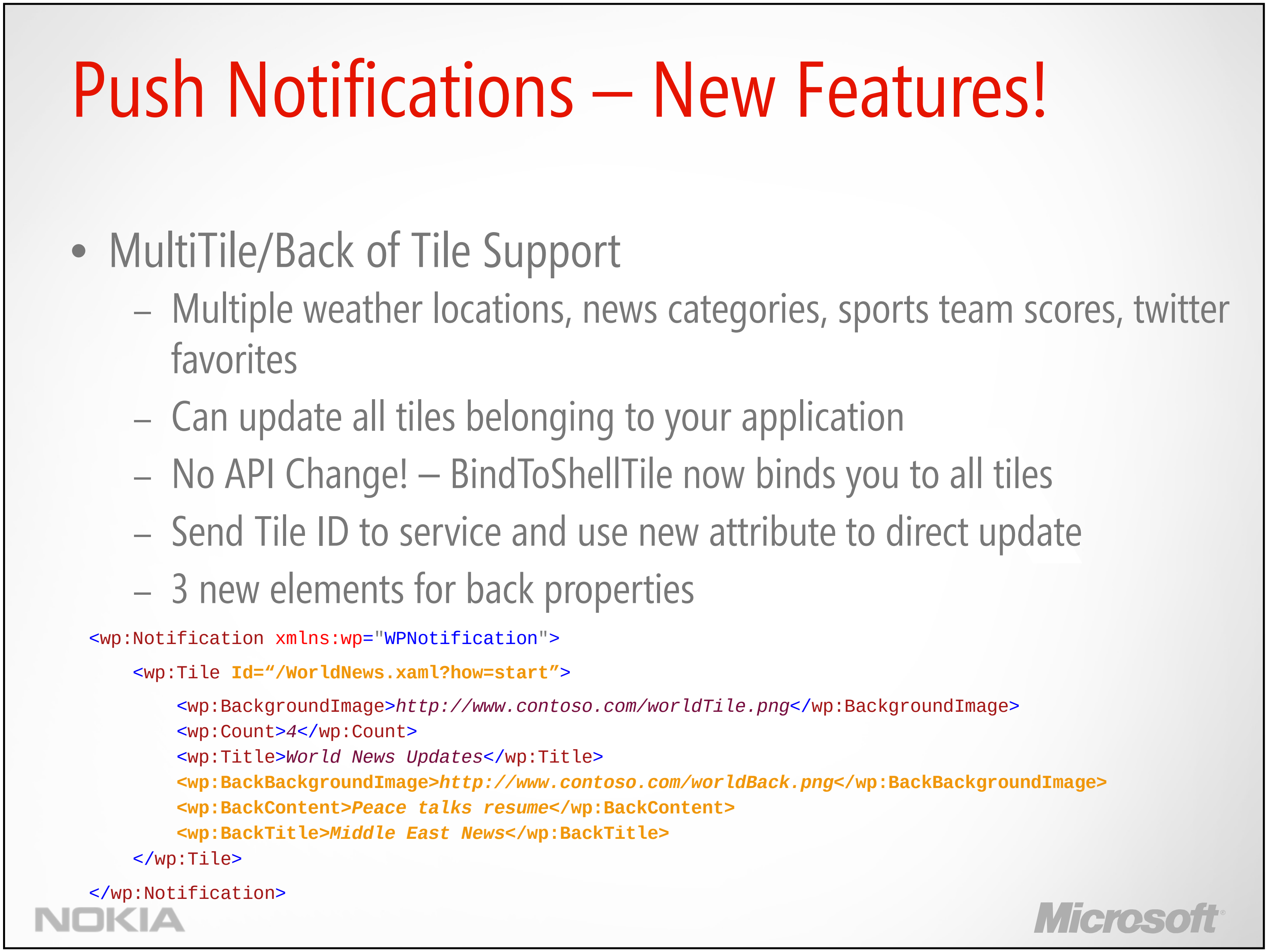

Push Notifications – New Features!

- MultiTile/Back of Tile Support
  - Multiple weather locations, news categories, sports team scores, twitter favorites
  - Can update all tiles belonging to your application
  - No API Change! – BindToShellTile now binds you to all tiles
  - Send Tile ID to service and use new attribute to direct update
  - 3 new elements for back properties

```
<wp:Notification xmlns:wp="WPNotification">
    <wp:Tile Id=“/WorldNews.xaml?how=start”>
        <wp:BackgroundImage>http://www.contoso.com/worldTile.png</wp:BackgroundImage>
        <wp:Count>4</wp:Count>
        <wp:Title>World News Updates</wp:Title>
        <wp:BackBackgroundImage>http://www.contoso.com/worldBack.png</wp:BackBackgroundImage>
        <wp:BackContent>Peace talks resume</wp:BackContent>
        <wp:BackTitle>Middle East News</wp:BackTitle>
    </wp:Tile>
</wp:Notification>
```

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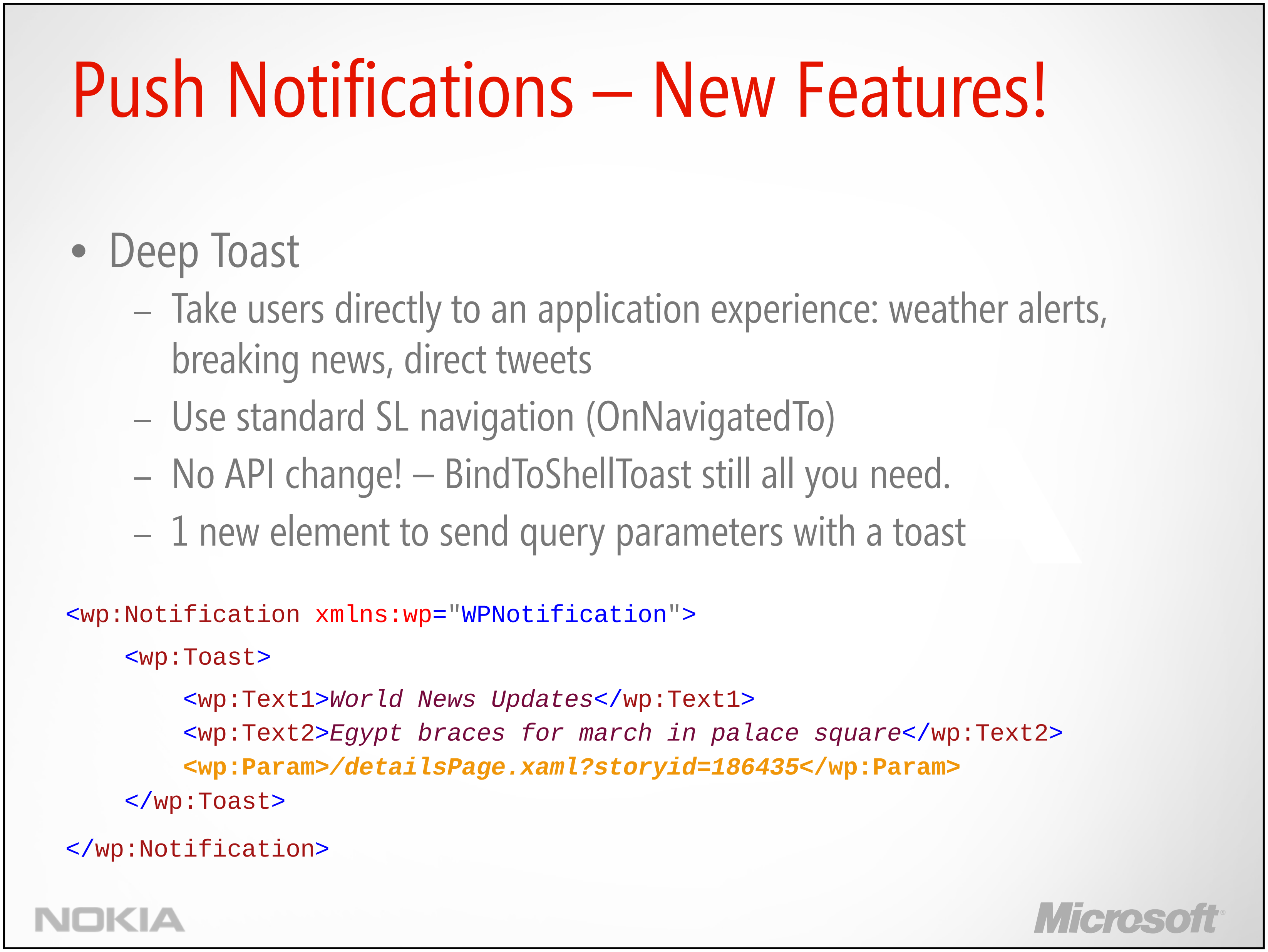

Push Notifications – New Features!

- Deep Toast
  - Take users directly to an application experience: weather alerts, breaking news, direct tweets
  - Use standard SL navigation (OnNavigatedTo)
  - No API change! – BindToShellToast still all you need.
  - 1 new element to send query parameters with a toast

```
<wp:Notification xmlns:wp="WPNotification">
    <wp:Toast>
        <wp:Text1>World News Updates</wp:Text1>
        <wp:Text2>Egypt braces for march in palace square</wp:Text2>
        <wp:Param>/detailsPage.xaml?storyid=186435</wp:Param>
    </wp:Toast>
</wp:Notification>
```

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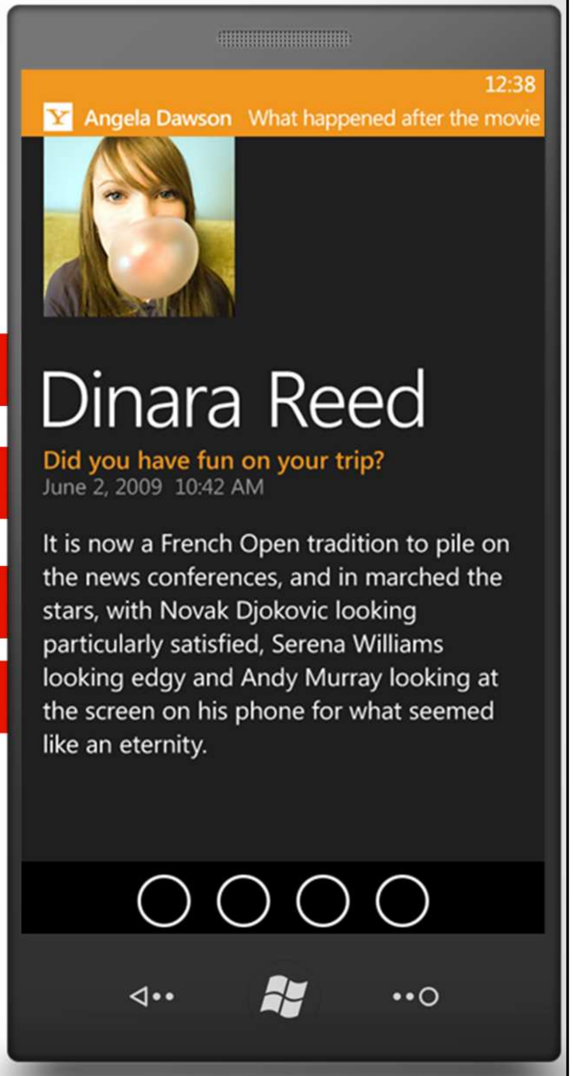
Notification Toasts 101

- App icon + 2 text fields
- Interruptive, transient and chase-able
- Time critical and personally relevant
- Users must opt-in via app UI



12:38

Angela Dawson What happened after the movie

Dinara Reed

Did you have fun on your trip?

June 2, 2009 10:42 AM

It is now a French Open tradition to pile on the news conferences, and in marched the stars, with Novak Djokovic looking particularly satisfied, Serena Williams looking edgy and Andy Murray looking at the screen on his phone for what seemed like an eternity.

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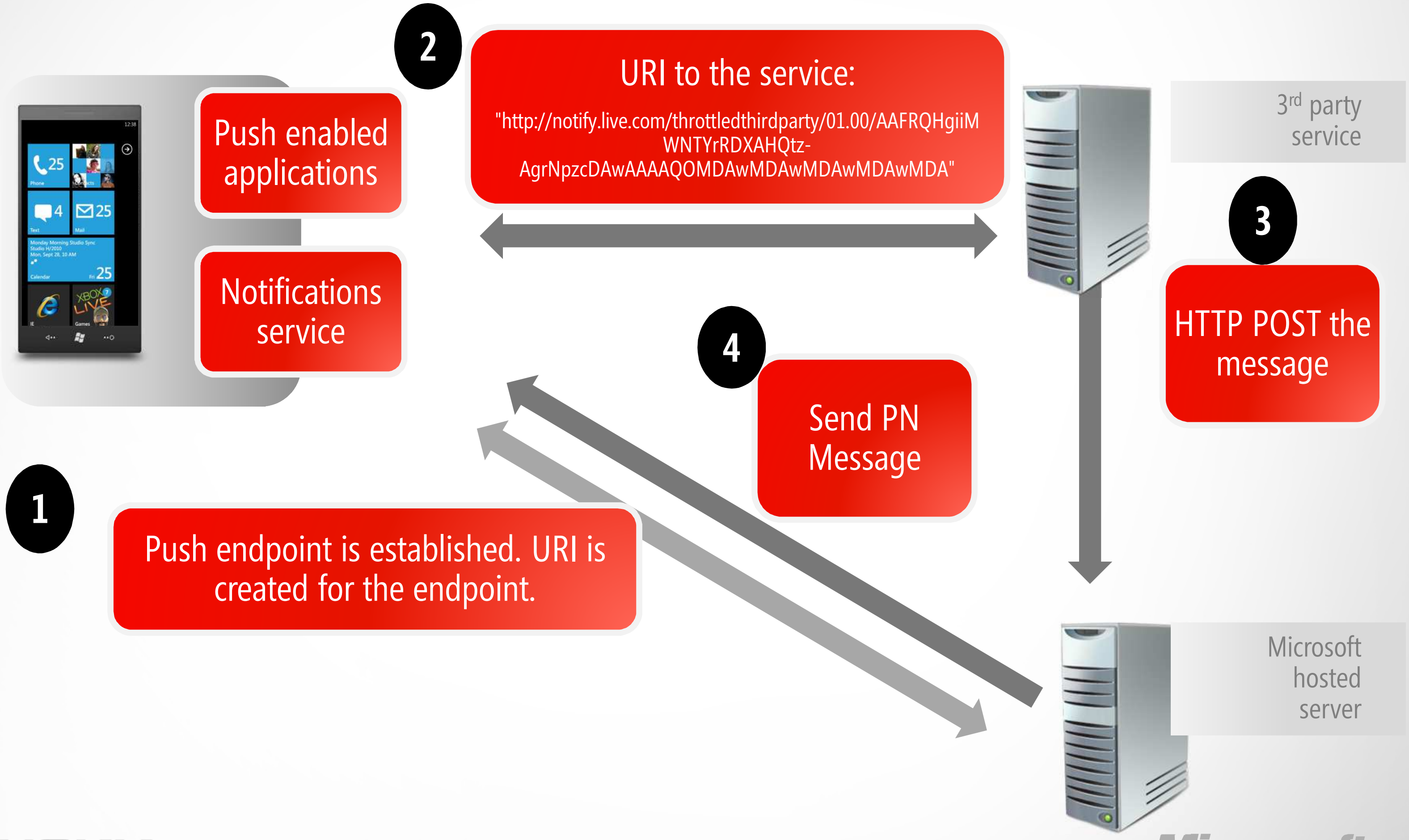
Push Notification Data Flow



1 Push endpoint is established. URI is created for the endpoint.

2 URI to the service:
"http://notify.live.com/throttledthirdparty/01.00/AAFRQHgiiM
WNTYrRDXAHQtz-
AgrNpzcDAwAAAAQOMDAwMDAwMDAwMDAwMDA"

3 HTTP POST the message

4 Send PN Message

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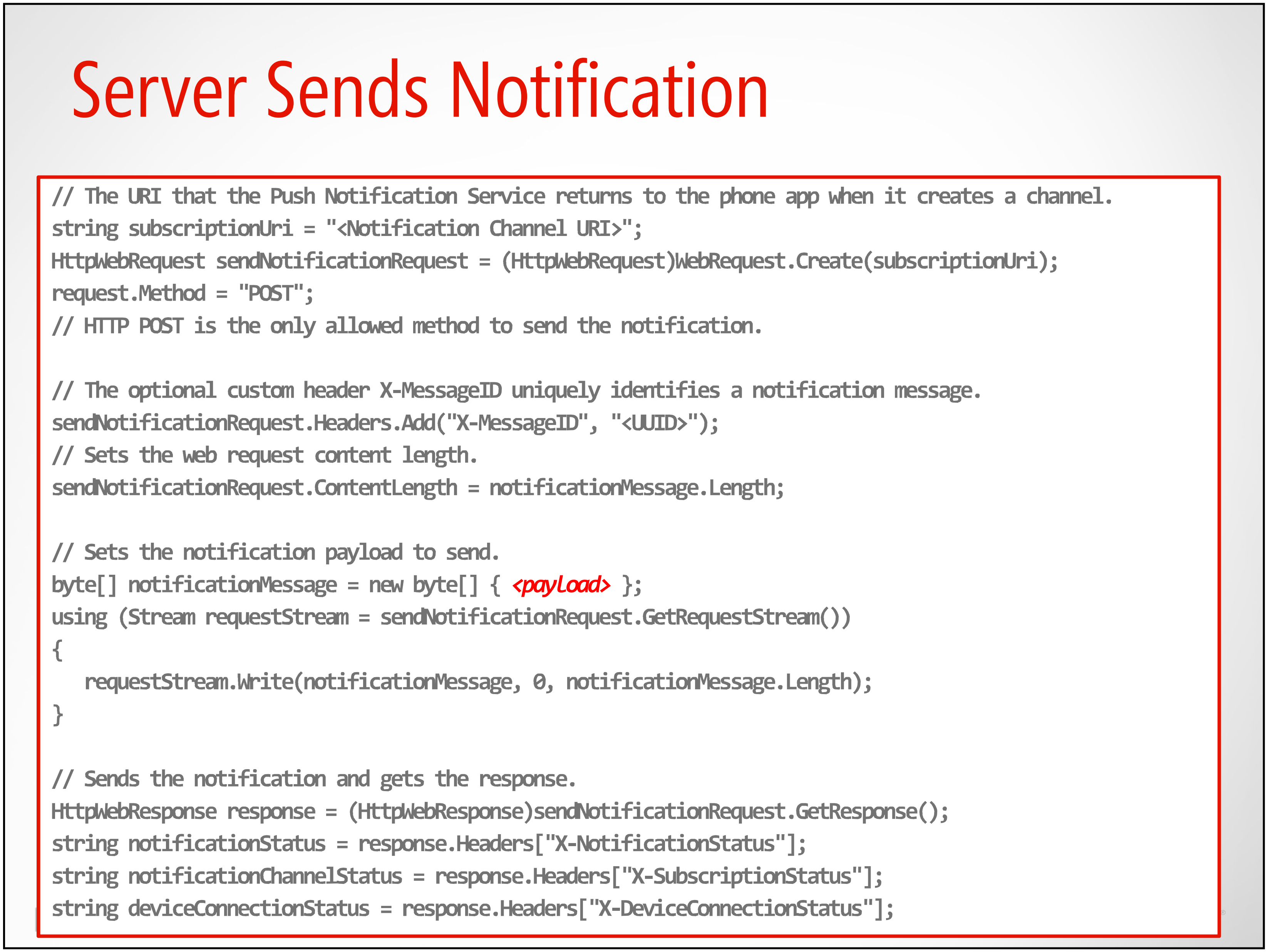

Server Sends Notification

```
// The URI that the Push Notification Service returns to the phone app when it creates a channel.
string subscriptionUri = "<Notification Channel URI>";
HttpWebRequest sendNotificationRequest = (HttpWebRequest)WebRequest.Create(subscriptionUri);
request.Method = "POST";
// HTTP POST is the only allowed method to send the notification.

// The optional custom header X-MessageID uniquely identifies a notification message.
sendNotificationRequest.Headers.Add("X-MessageID", "<UUID>");
// Sets the web request content length.
sendNotificationRequest.ContentLength = notificationMessage.Length;

// Sets the notification payload to send.
byte[] notificationMessage = new byte[] { <payload> };
using (Stream requestStream = sendNotificationRequest.GetRequestStream())
{
   requestStream.Write(notificationMessage, 0, notificationMessage.Length);
}

// Sends the notification and gets the response.
HttpWebResponse response = (HttpWebResponse)sendNotificationRequest.GetResponse();
string notificationStatus = response.Headers["X-NotificationStatus"];
string notificationChannelStatus = response.Headers["X-SubscriptionStatus"];
string deviceConnectionStatus = response.Headers["X-DeviceConnectionStatus"];
```

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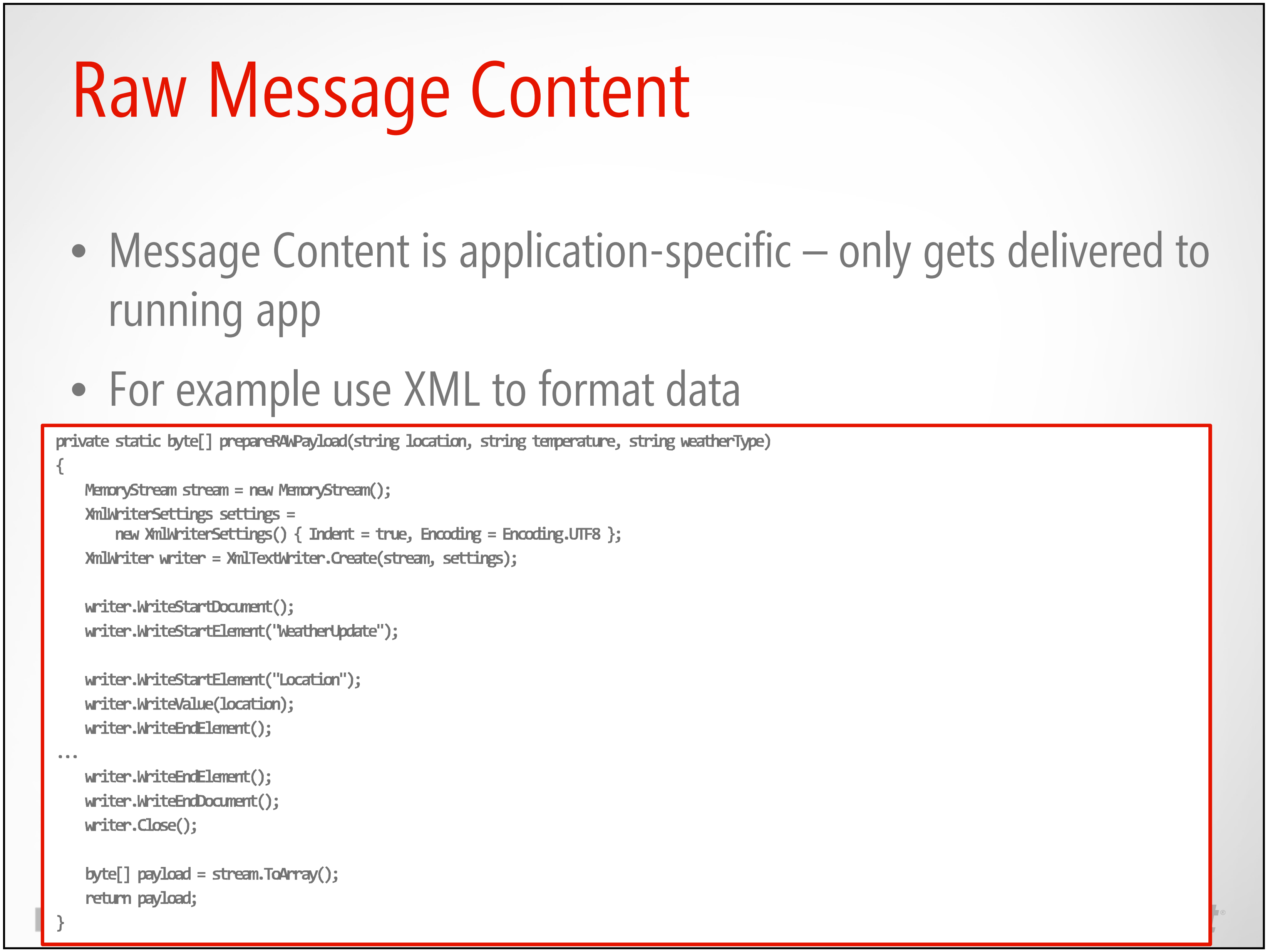

Raw Message Content

- Message Content is application-specific – only gets delivered to running app
- For example use XML to format data

```
private static byte[] prepareRAWPayload(string location, string temperature, string weatherType)
{
    MemoryStream stream = new MemoryStream();
    XmlWriterSettings settings =
        new XmlWriterSettings() { Indent = true, Encoding = Encoding.UTF8 };
    XmlWriter writer = XmlTextWriter.Create(stream, settings);

    writer.WriteStartDocument();
    writer.WriteStartElement("WeatherUpdate");

    writer.WriteStartElement("Location");
    writer.WriteValue(location);
    writer.WriteEndElement();
...
    writer.WriteEndElement();
    writer.WriteEndDocument();
    writer.Close();

    byte[] payload = stream.ToArray();
    return payload;
}
```

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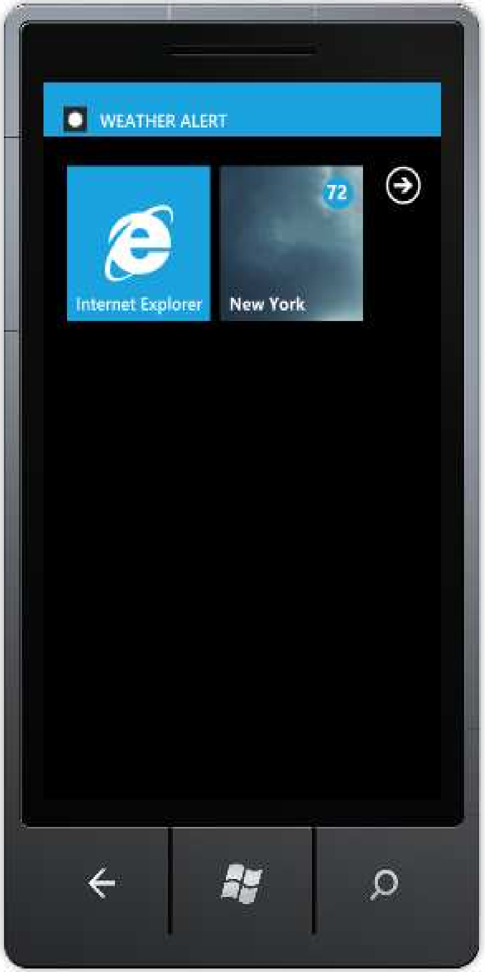
Toast Message Content

```
string toastMessage =
"<?xml version=\"1.0\" encoding=\"utf-8\"?>" +
"<wp:Notification xmlns:wp=\"WPNotification\">" +
  "<wp:Toast>" +
    "<wp:Text1><string></wp:Text1>" +
    "<wp:Text2><string></wp:Text2>" +
    "<wp:Param>/detailsPage.xaml?storyid=186435</wp:Param>“
+
  "</wp:Toast>" +
"</wp:Notification>";
```

- Used by system to display Toast message if app not running
  - Navigates to page specified in <Param> (if supplied)
- If app is already running:
  - ShellToastNotificationReceived event fires
  - <Text1> and <Text2> values in event args as Dictionary<string, string>



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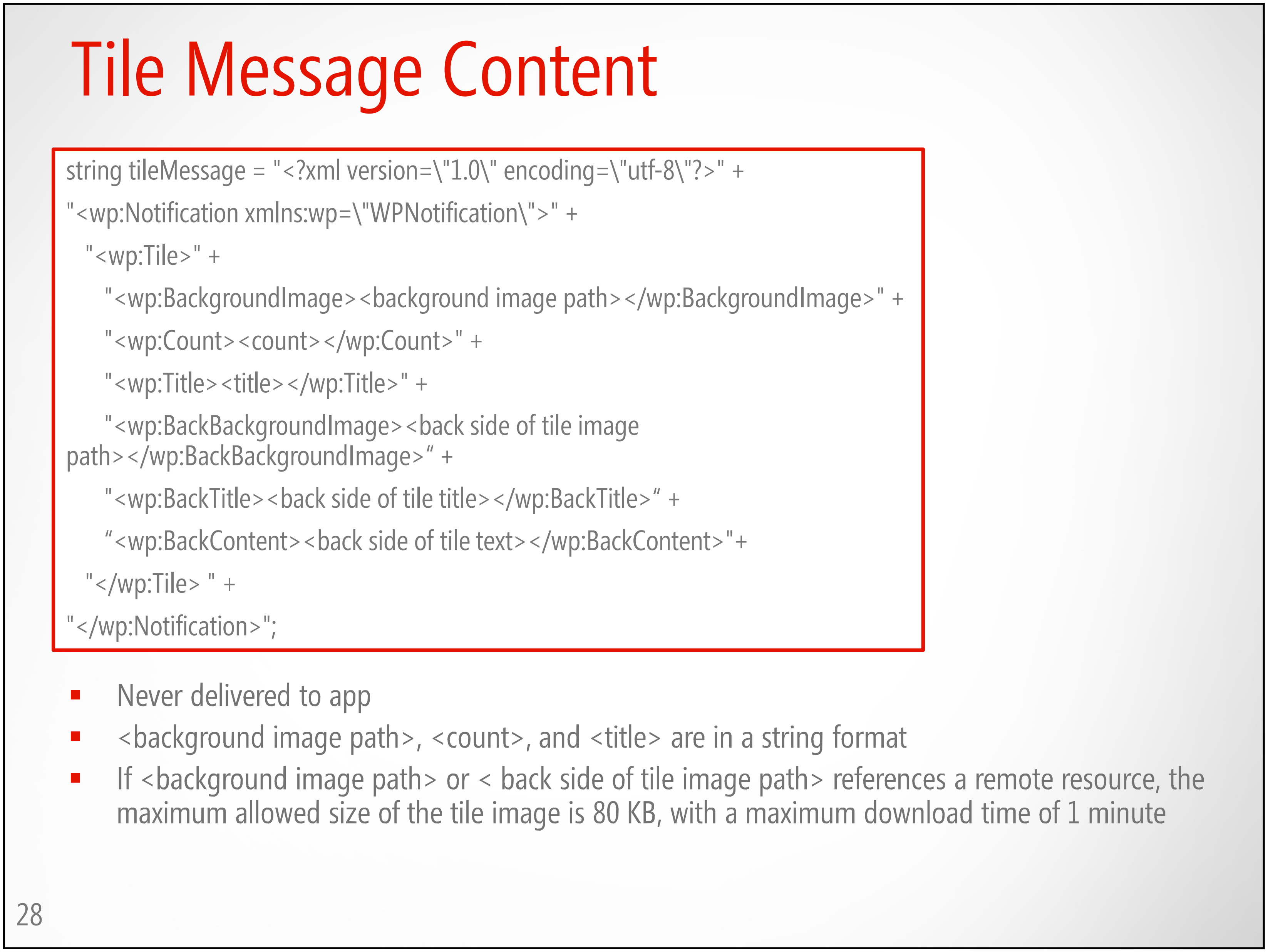

Tile Message Content

```
string tileMessage = "<?xml version=\"1.0\" encoding=\"utf-8\"?>" +
"<wp:Notification xmlns:wp=\"WPNotification\">" +
  "<wp:Tile>" +
    "<wp:BackgroundImage><background image path></wp:BackgroundImage>" +
    "<wp:Count><count></wp:Count>" +
    "<wp:Title><title></wp:Title>" +
    "<wp:BackBackgroundImage><back side of tile image
path></wp:BackBackgroundImage>“ +
    "<wp:BackTitle><back side of tile title></wp:BackTitle>“ +
    “<wp:BackContent><back side of tile text></wp:BackContent>"+
  "</wp:Tile> " +
"</wp:Notification>";
```

- Never delivered to app
- <background image path>, <count>, and <title> are in a string format
- If <background image path> or < back side of tile image path> references a remote resource, the maximum allowed size of the tile image is 80 KB, with a maximum download time of 1 minute

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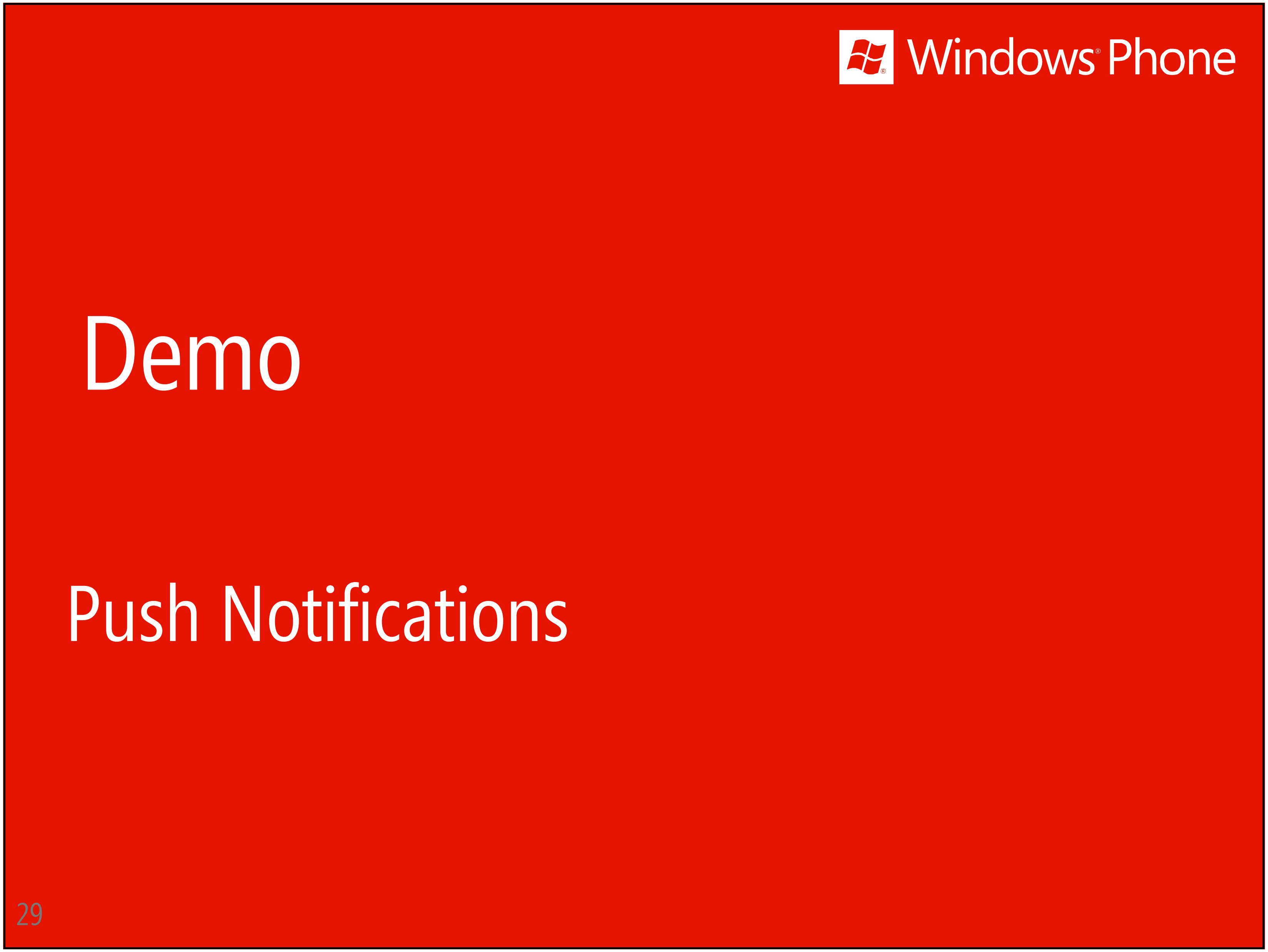

Windows Phone

Demo

Push Notifications

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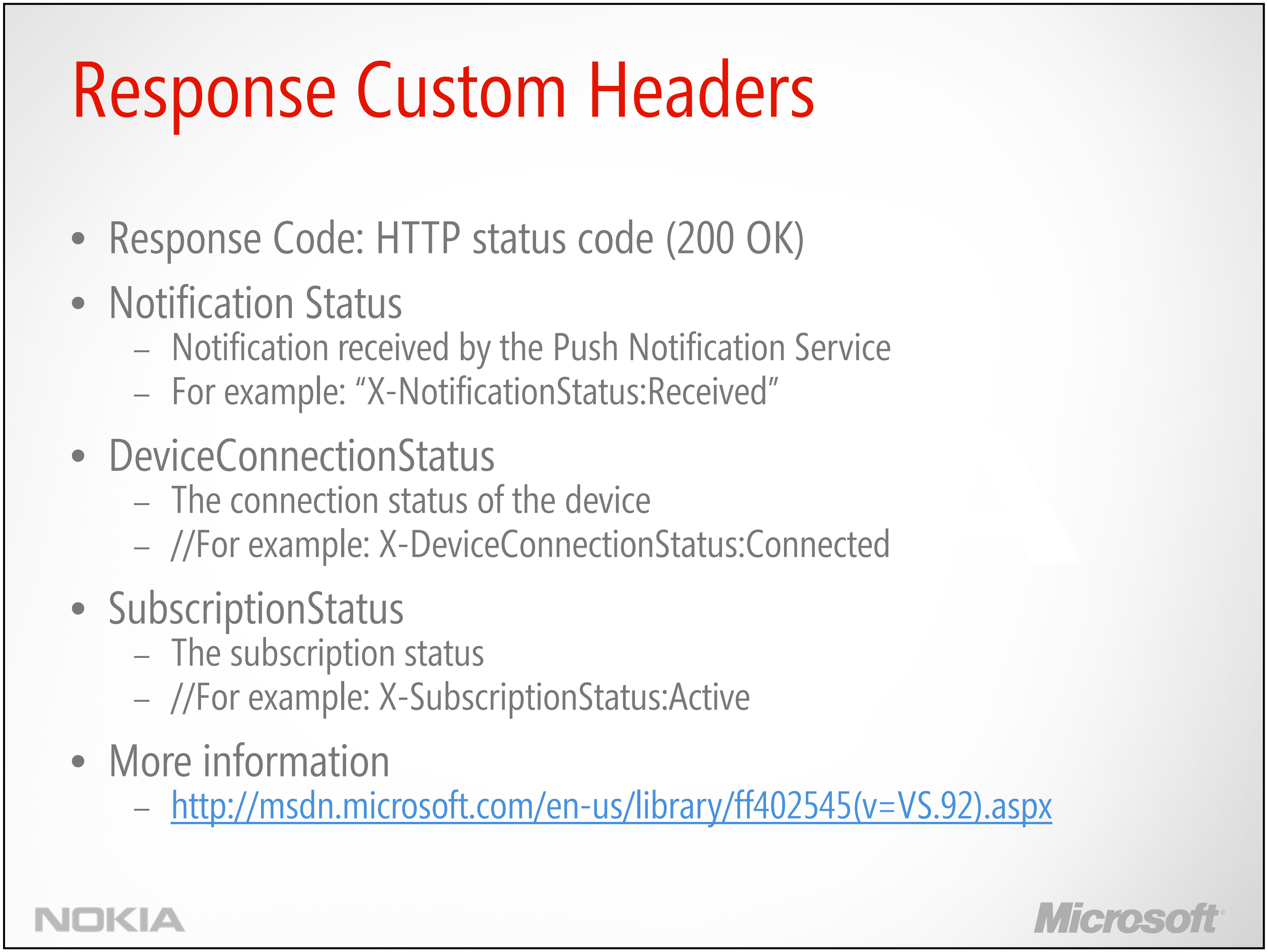

Response Custom Headers

- Response Code: HTTP status code (200 OK)
- Notification Status
  - Notification received by the Push Notification Service
  - For example: “X-NotificationStatus:Received”
- DeviceConnectionStatus
  - The connection status of the device
  - //For example: X-DeviceConnectionStatus:Connected
- SubscriptionStatus
  - The subscription status
  - //For example: X-SubscriptionStatus:Active
- More information
  - http://msdn.microsoft.com/en-us/library/ff402545(v=VS.92).aspx

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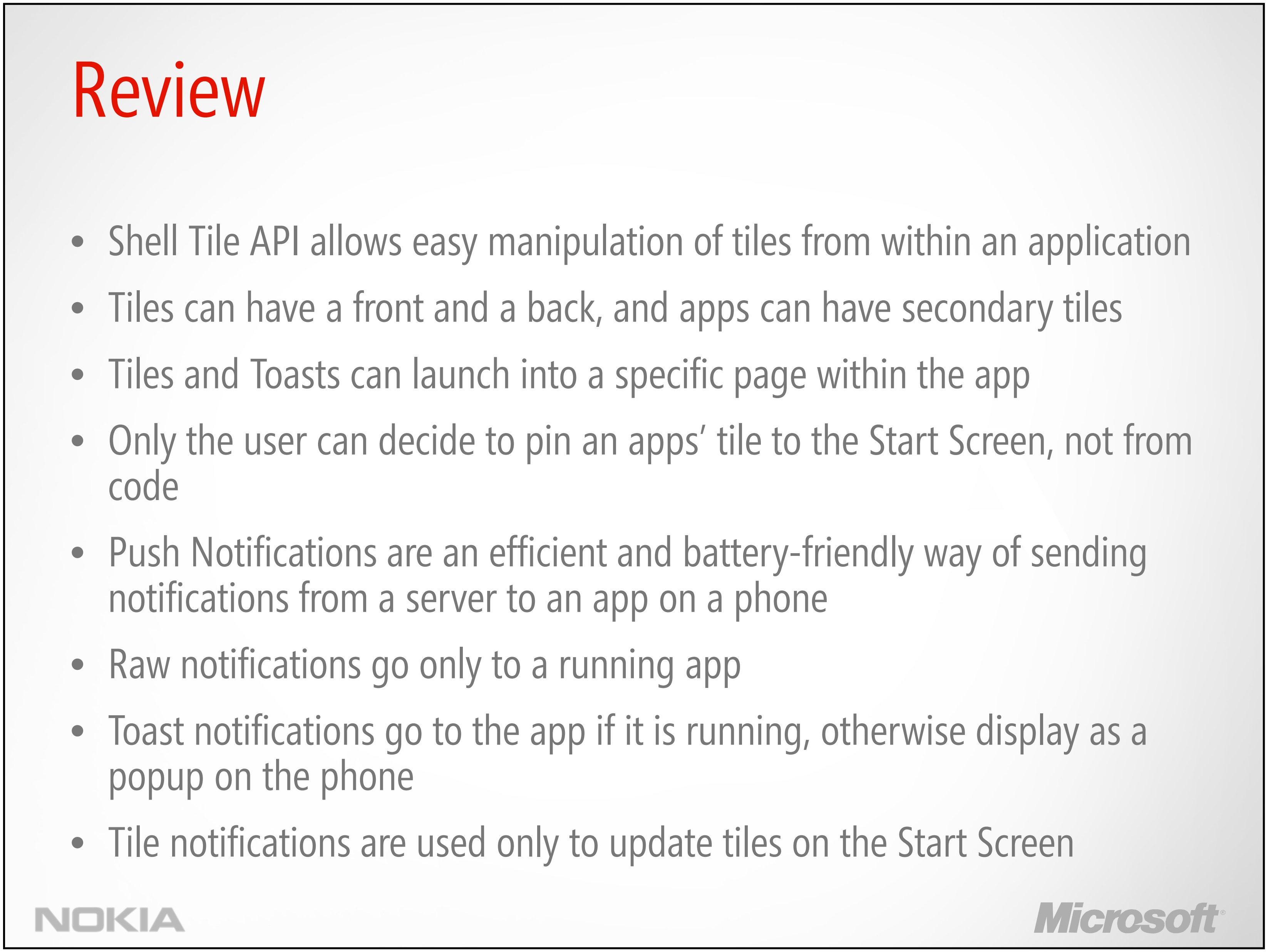

Review

- Shell Tile API allows easy manipulation of tiles from within an application
- Tiles can have a front and a back, and apps can have secondary tiles
- Tiles and Toasts can launch into a specific page within the app
- Only the user can decide to pin an apps' tile to the Start Screen, not from code
- Push Notifications are an efficient and battery-friendly way of sending notifications from a server to an app on a phone
- Raw notifications go only to a running app
- Toast notifications go to the app if it is running, otherwise display as a popup on the phone
- Tile notifications are used only to update tiles on the Start Screen

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