

Nokia X

Same code base.
New user base.



NOKIA X SOFTWARE PLATFORM

DEVELOPER OVERVIEW:

- PLATFORM
- TOOLS
- PORTING

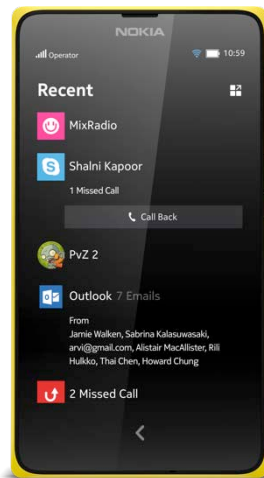


WHY NOKIA X



ACCESS THE WORLD OF ANDROID
COMPATIBLE APPS

DIFFERENTIATED WITH FIRST PARTY
NOKIA AND MICROSOFT APPS AND
SERVICES.



FLOW BETWEEN YOUR FAVOURITE
APPS IN A SMOOTHER, FASTER WAY

FASTLANE GIVES YOU FREEDOM,
SPEED AND CONTROL.

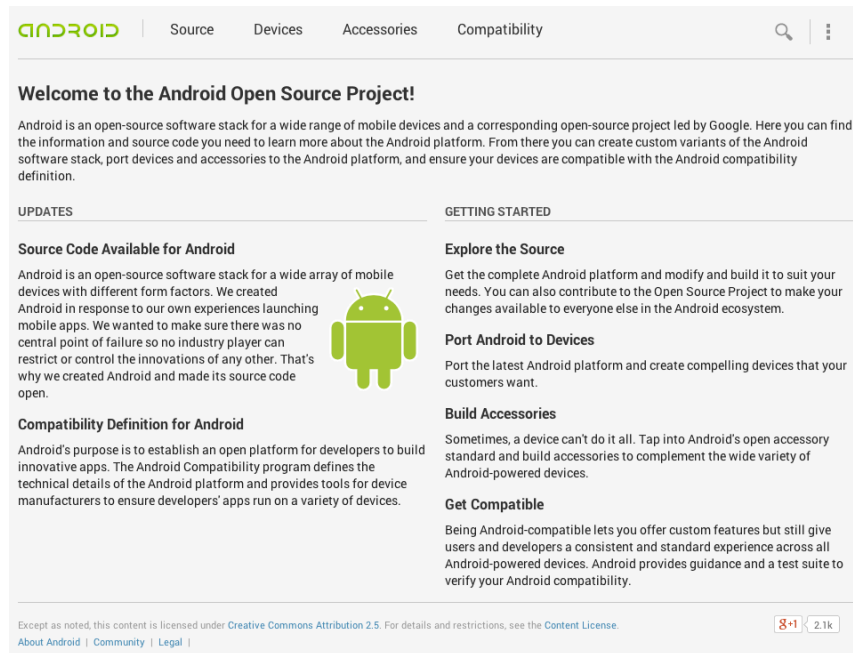


STANDOUT DESIGN
THAT'S BUILT TO LAST

IT'S A NOKIA.

WHAT IS NOKIA X PLATFORM

- AOSP – Android Open Source Project
 - <http://source.android.com>
 - Android 4.1.2 API Level 16
- Nokia Services and Associated APIs
 - HERE Maps
 - Nokia In-App Payment
 - Nokia Push Notifications
- Nokia X User Experience
- Nokia Store publishing
- Inexpensive hardware to feel the devices gap between 50\$ - 100\$



The screenshot shows the 'Welcome to the Android Open Source Project!' page. The header includes the Android logo and navigation links for Source, Devices, Accessories, and Compatibility. The main content is divided into two columns under the heading 'GETTING STARTED'. The left column contains sections for 'Source Code Available for Android' and 'Compatibility Definition for Android'. The right column contains sections for 'Explore the Source', 'Port Android to Devices', 'Build Accessories', and 'Get Compatible'. A green Android robot icon is positioned between the two columns. At the bottom, there is a Creative Commons Attribution 2.5 license notice and a GitHub repository link with 2.1k stars.

Welcome to the Android Open Source Project!

Android is an open-source software stack for a wide range of mobile devices and a corresponding open-source project led by Google. Here you can find the information and source code you need to learn more about the Android platform. From there you can create custom variants of the Android software stack, port devices and accessories to the Android platform, and ensure your devices are compatible with the Android compatibility definition.

Source Code Available for Android

Android is an open-source software stack for a wide array of mobile devices with different form factors. We created Android in response to our own experiences launching mobile apps. We wanted to make sure there was no central point of failure so no industry player can restrict or control the innovations of any other. That's why we created Android and made its source code open.

Compatibility Definition for Android

Android's purpose is to establish an open platform for developers to build innovative apps. The Android Compatibility program defines the technical details of the Android platform and provides tools for device manufacturers to ensure developers' apps run on a variety of devices.

Explore the Source

Get the complete Android platform and modify and build it to suit your needs. You can also contribute to the Open Source Project to make your changes available to everyone else in the Android ecosystem.

Port Android to Devices

Port the latest Android platform and create compelling devices that your customers want.

Build Accessories

Sometimes, a device can't do it all. Tap into Android's open accessory standard and build accessories to complement the wide variety of Android-powered devices.

Get Compatible

Being Android-compatible lets you offer custom features but still give users and developers a consistent and standard experience across all Android-powered devices. Android provides guidance and a test suite to verify your Android compatibility.

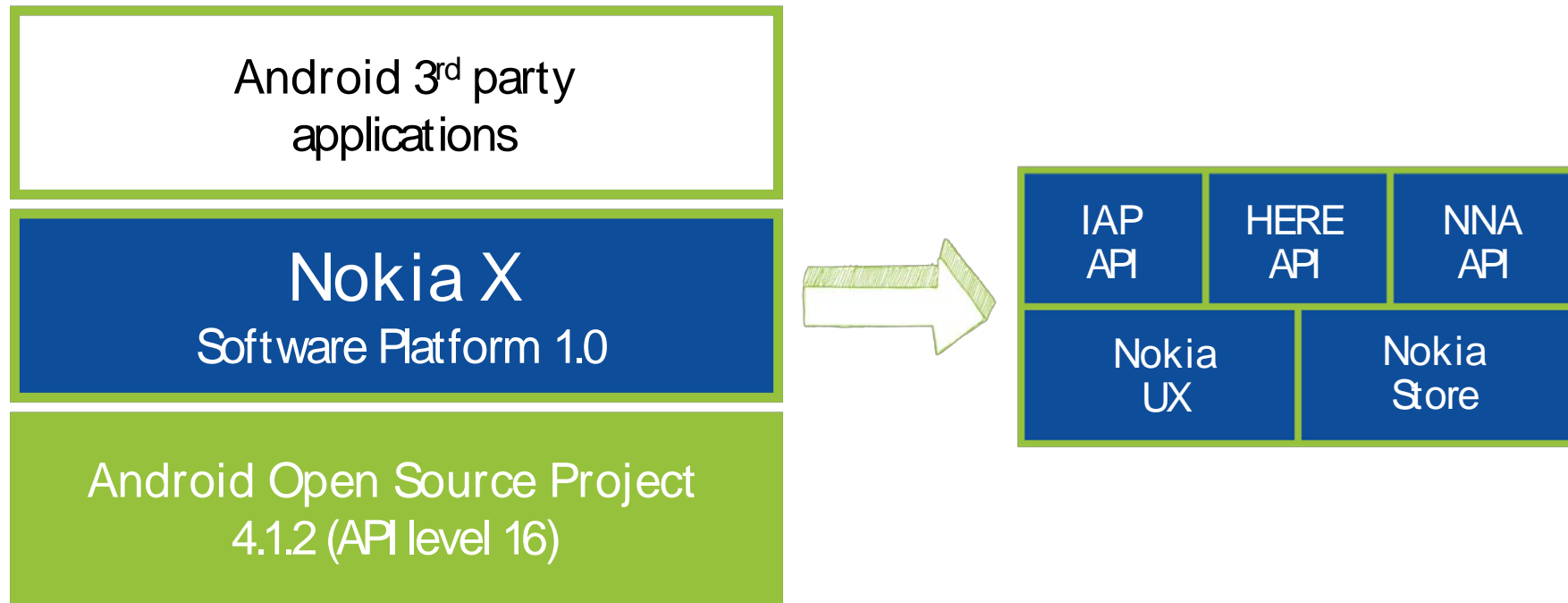
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8+1 2.1k

NOKIA X SOFTWARE PLATFORM

A new platform built with Android Open Source Project at its core.. It combines a popular smartphone software base with Nokia's global reach and strength to create new opportunities for your apps.



NOKIA X SOFTWARE PLATFORM 1.0

- When planning apps for Nokia X platform, developers should assume following hardware capabilities:
 - 4 inch screen (800*480 FWGA resolution)
 - Capacitive Dual-Touch
 - 1GHz Cortex A5 dual core processor (Qualcomm S4 Play, MSM8225), GPU 350Mhz (Adreno 203)
 - One front hardware back-key
 - 3MP camera
 - 7.2Mbps 3G
 - 100 Mbps Wi-Fi
 - 4GB internal memory, 512MB RAM, 32GB Micro SD slot
 - 3D Accelerometer
 - OpenGL ES2 support
 - *Not having*. Gyroscope, magnetometer, NFC



NOKIA X TECHNICAL SPECIFICATIONS



Nokia X

4" screen (800*480)
1GHz Dual core CPU
3MP camera
7.2Mbps 3G
100 Mbps Wi-Fi
Fastlane UI
4GB internal memory,
512MB RAM, 32GB Micro SD slot
API level 16 (Android version 4.1.2)



Nokia X+

4" screen (800*480)
1GHz Dual core CPU
3MP camera
7.2Mbps 3G
100 Mbps Wi-Fi
Fastlane UI
4GB internal memory, **768MB RAM**, 32GB
Micro SD slot
API level 16 (Android version 4.1.2)

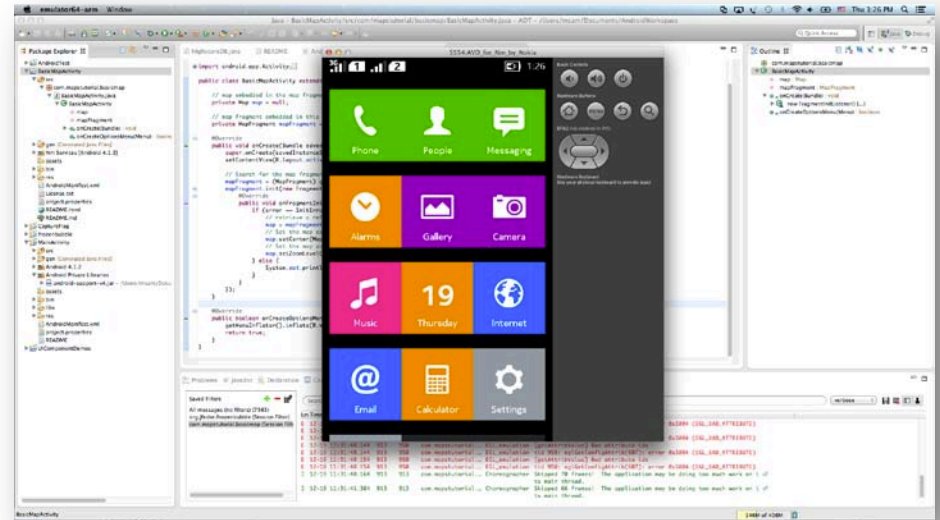


Nokia XL

5" screen (800*480)
1GHz Dual core CPU
5MP AF camera
1MP front facing camera
7.2Mbps 3G
100 Mbps Wi-Fi
Fastlane UI
4GB/ 768MB memory
API level 16 (Android version 4.1.2)

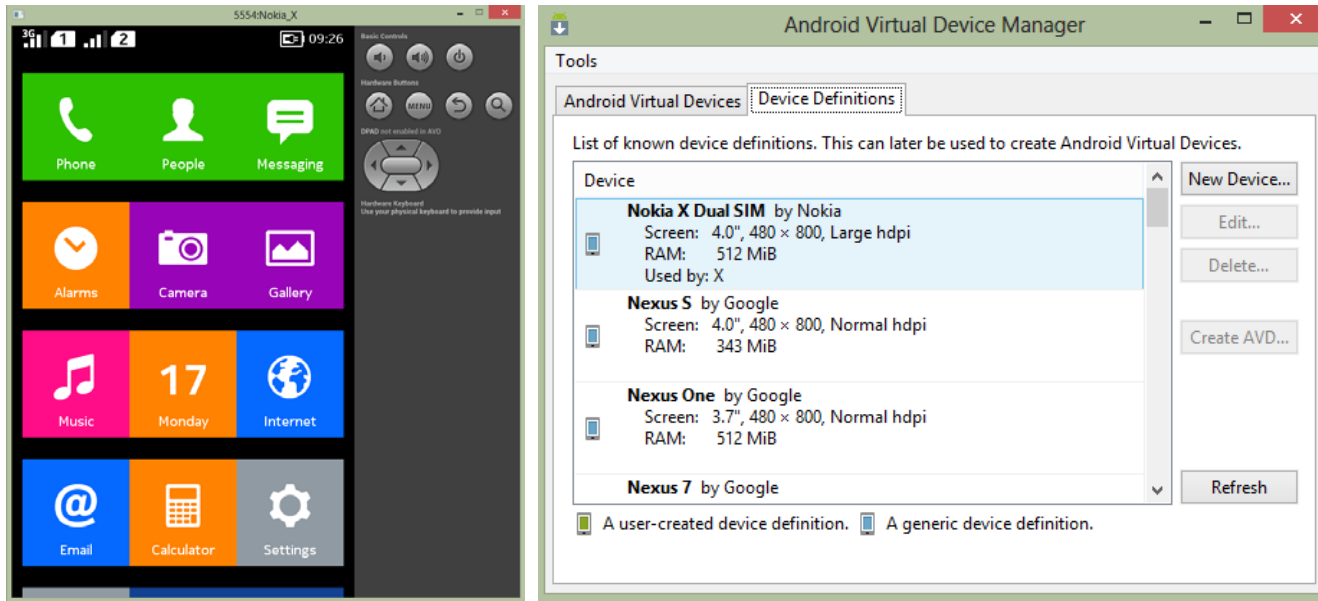
DEVELOPMENT ENVIRONMENT

- Standard Android SDK:
- Eclipse + ADT (Android Developer Tools)
 - or
- Android Studio (IDEA)
- Nokia Add-Ons and Extras
- Supported:
 - Windows, Mac OS X, Linux



NOKIA X EMULATOR

- An API level 16 Android Virtual Device (AVD) with the Nokia X services enabled
- Both ARM & X86 images, works with ADB



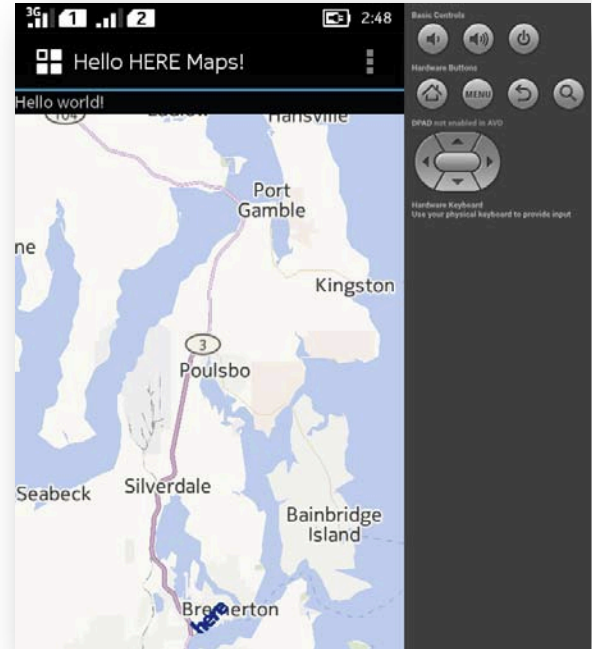
PORTABILITY (I)

- Minimal effort or *no porting effort at all* for Android applications at the same API level 16:
 - App doesn't use Google specific platform APIs
 - Same binary can be used on Nokia X or any Android device
 - Unity 3D games
 - Applications utilizing native libraries with NDK (as long as correct architecture is in use)



PORTABILITY (II)

- Porting required:
 - App uses Google APIs, not found in AOSP
 - For apps using APIs such as Google Billing, Google Maps, Cloud to Device Messaging (C2DM) and Google Cloud Messaging (GCM) Nokia provides wrappers and porting documentation for following services:
 - HERE Maps
 - Nokia In-App Purchase
 - Nokia Push Notifications

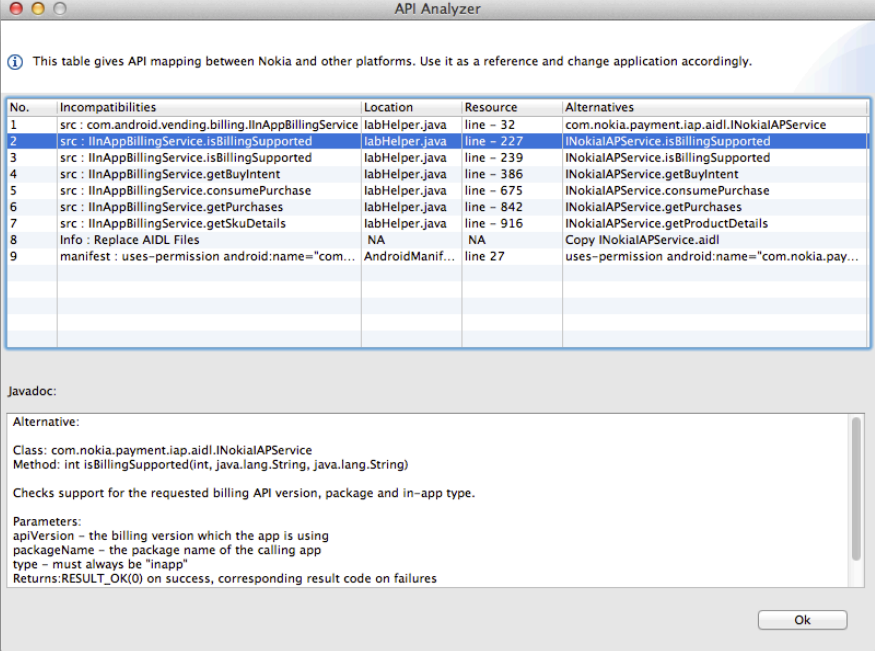


NOKIA X PORTING WORKFLOW

- Verify general compatibility (Nokia X Analysis tool)
- Install Nokia X SDK
- Adapting to Nokia Services
- Polish and UI considerations
- Test the application
 - Check application in Nokia X Emulator
 - Check application with Remote Device Access
 - Check application locally
- Publish

NOKIA X ANALYSIS TOOL

- You can use the Nokia X Analysis Tool to analyze and check whether alternate Nokia-specific service APIs are available for use instead of default Google service APIs.
- The tool also provides a mapping table that you can use to directly go to the respective source code where the API change to a Nokia-specific API is needed.
- Once the tool is launched, it scans the source code and generates a one-to-one API mapping between the default Google service APIs and the relevant Nokia-specific service APIs.



The screenshot shows the 'API Analyzer' window. At the top, a message states: 'This table gives API mapping between Nokia and other platforms. Use it as a reference and change application accordingly.' Below this is a table with 5 columns: No., Incompatibilities, Location, Resource, and Alternatives. The table lists 9 items, with item 2 highlighted. Below the table, there is a 'Javadoc:' section showing the alternative API details for the selected item.

No.	Incompatibilities	Location	Resource	Alternatives
1	src : com.android.vending.billing.IInAppBillingService	labHelper.java	line - 32	com.nokia.payment.iap.aidl.INokiaIAPService
2	src : IInAppBillingService.isBillingSupported	labHelper.java	line - 227	INokiaIAPService.isBillingSupported
3	src : IInAppBillingService.isBillingSupported	labHelper.java	line - 239	INokiaIAPService.isBillingSupported
4	src : IInAppBillingService.getBuyIntent	labHelper.java	line - 386	INokiaIAPService.getBuyIntent
5	src : IInAppBillingService.consumePurchase	labHelper.java	line - 675	INokiaIAPService.consumePurchase
6	src : IInAppBillingService.getPurchases	labHelper.java	line - 842	INokiaIAPService.getPurchases
7	src : IInAppBillingService.getSkuDetails	labHelper.java	line - 916	INokiaIAPService.getProductDetails
8	Info : Replace AIDL Files	NA	NA	Copy INokiaIAPService.aidl
9	manifest : uses-permission android:name="com...	AndroidManif...	line 27	uses-permission android:name="com.nokia.pay...

Javadoc:

Alternative:

Class: com.nokia.payment.iap.aidl.INokiaIAPService
Method: int isBillingSupported(int, java.lang.String, java.lang.String)

Checks support for the requested billing API version, package and in-app type.

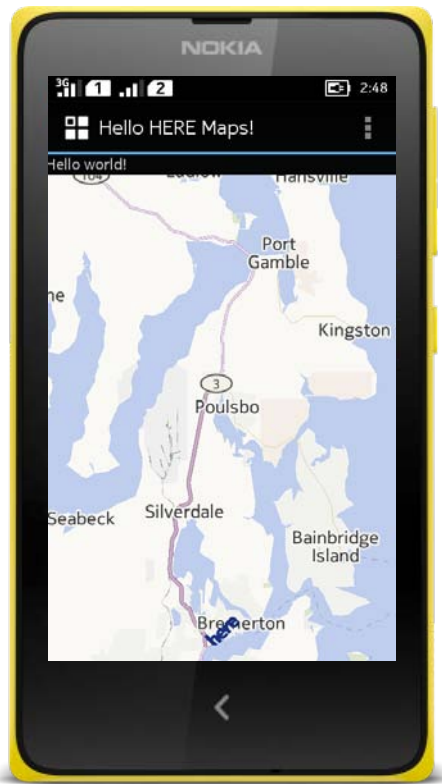
Parameters:
apiVersion - the billing version which the app is using
packageName - the package name of the calling app
type - must always be "inapp"

Returns: RESULT_OK(0) on success, corresponding result code on failures

Ok

NOKIA X PLATFORM DIFFERENTIATORS

HERE MAPS

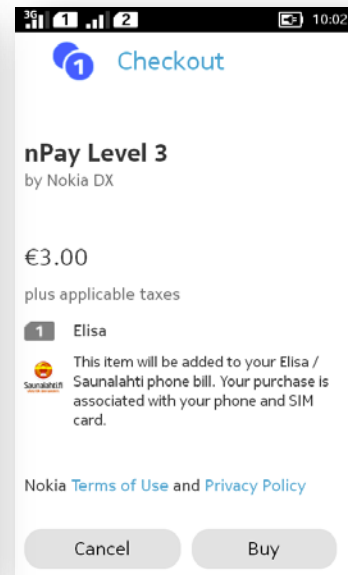
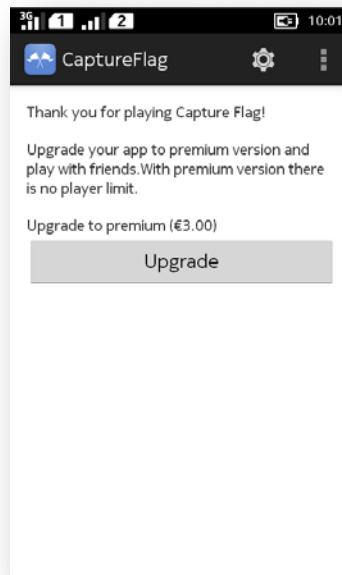


WHAT IS THE HERE API FOR NOKIA X

- The HERE API for Nokia X Software Platform provides a set of programming interfaces that enable developers to build immersive Nokia X Software Platform applications by leveraging a powerful and flexible mapping platform.
- Through these APIs, developers can add rich location features such as routing, interactive maps, and searching a global Place database to their applications. The powerful client-side HERE API for Nokia X Software Platform also includes a sophisticated engine for rendering map data and route calculation.
- In addition to downloading map data dynamically as needed, it also supports **offline maps** through use of previously cached map data or previously downloaded map packages.

NOKIA X PLATFORM DIFFERENTIATORS

NOKIA IN-APP PAYMENT

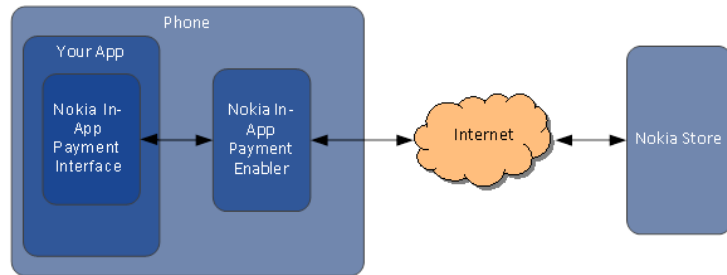


NOKIA IN-APP PAYMENT API

- Nokia In-App Payment offers simple, seamless integration of a payment event into an app published on Nokia Store.
- The key features of Nokia In-App Payment are:
 - Requesting details of purchasable products.
 - Initiating the purchase flow.
 - Marking products as consumed from the app.
 - Requesting details of already purchased products.

SYSTEM DESCRIPTION

- Nokia In-App Payment interface (INokiaIAPService.aidl) handles the communication between your apps and the Nokia In-App Payment Enabler.
- The Nokia In-App Payment Enabler is responsible for the payment processing and interaction with Nokia Store. It also implements all UIs for payment transactions.
- Nokia Store provides the repository with product details and the mechanism for making the payment through operator billing.



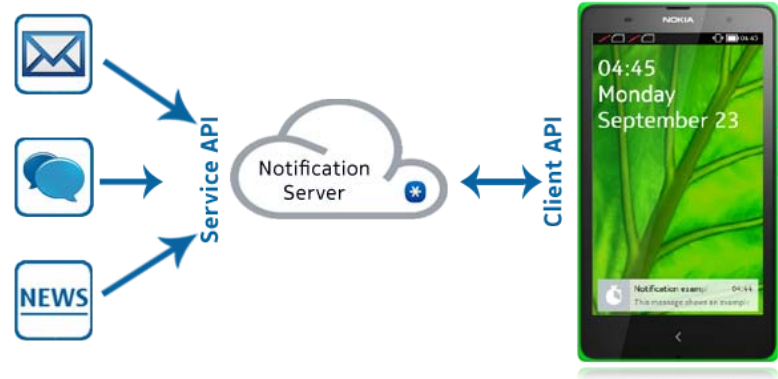
NOKIA X PLATFORM DIFFERENTIATORS

NOKIA NOTIFICATIONS



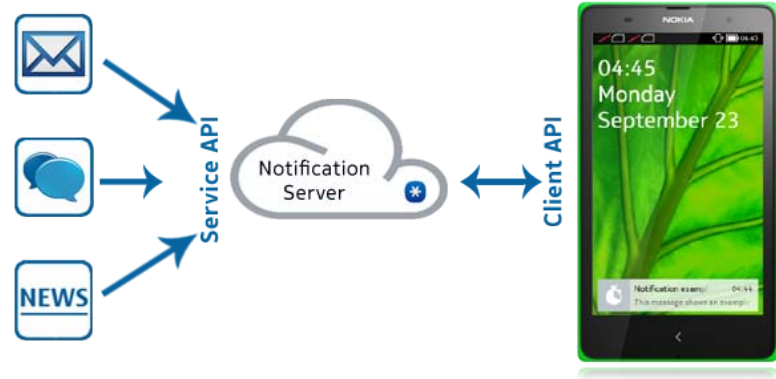
NOKIA NOTIFICATIONS (I)

- Nokia Notifications enables real-time push notifications to your application running on Nokia X software platform. Notification is a message that is sent from a specific notification service to an application installed on the device. Nokia Notifications API consists of two parts: Nokia Notifications Client API (Client API) is the Java API enabling an application to register to a service, and receive and handle notifications. Nokia Notifications Service API (Service API) defines the communication method between a 3rd party service and Nokia Notifications service.



NOKIA NOTIFICATIONS (II)

- The process of receiving notifications is straightforward. The application, implementing Client API, registers itself for receiving notifications by sending service specific *sender identification* (sender ID) to Nokia Notifications server. Nokia Notifications server responds by sending a device specific *registration identification* (registration ID, RID) to the client device. The client application then provides the RID for the 3rd party server, which implements Service API. Finally, the 3rd party server can send notifications, via Nokia Notifications server, for the devices whose registration ID it knows. It is the responsibility of the developer to implement a) client application with Client API and b) server with Service API.



DEVELOPER RESOURCES

Nokia X website

<http://developer.nokia.com/nokia-x>

Code samples

<http://developer.nokia.com/resources/code-sample/capture-the-flag-v1.0>

Capture the Flag game is a Nokia example application demonstrating the use of Nokia services on Nokia X software platform: HERE Maps, Nokia Notifications and Nokia In-App Payment.

Nokia X Tutorials (video clips)

<http://www.youtube.com/playlist?list=PLuc1ZjZXgzePUQmR9X8p59pe629668ACy>

NokiaX

Same Code Base.
New User Base.

Thanks!

Michael Samarin
Director,
Developer Training and Evangelism
Futurice

