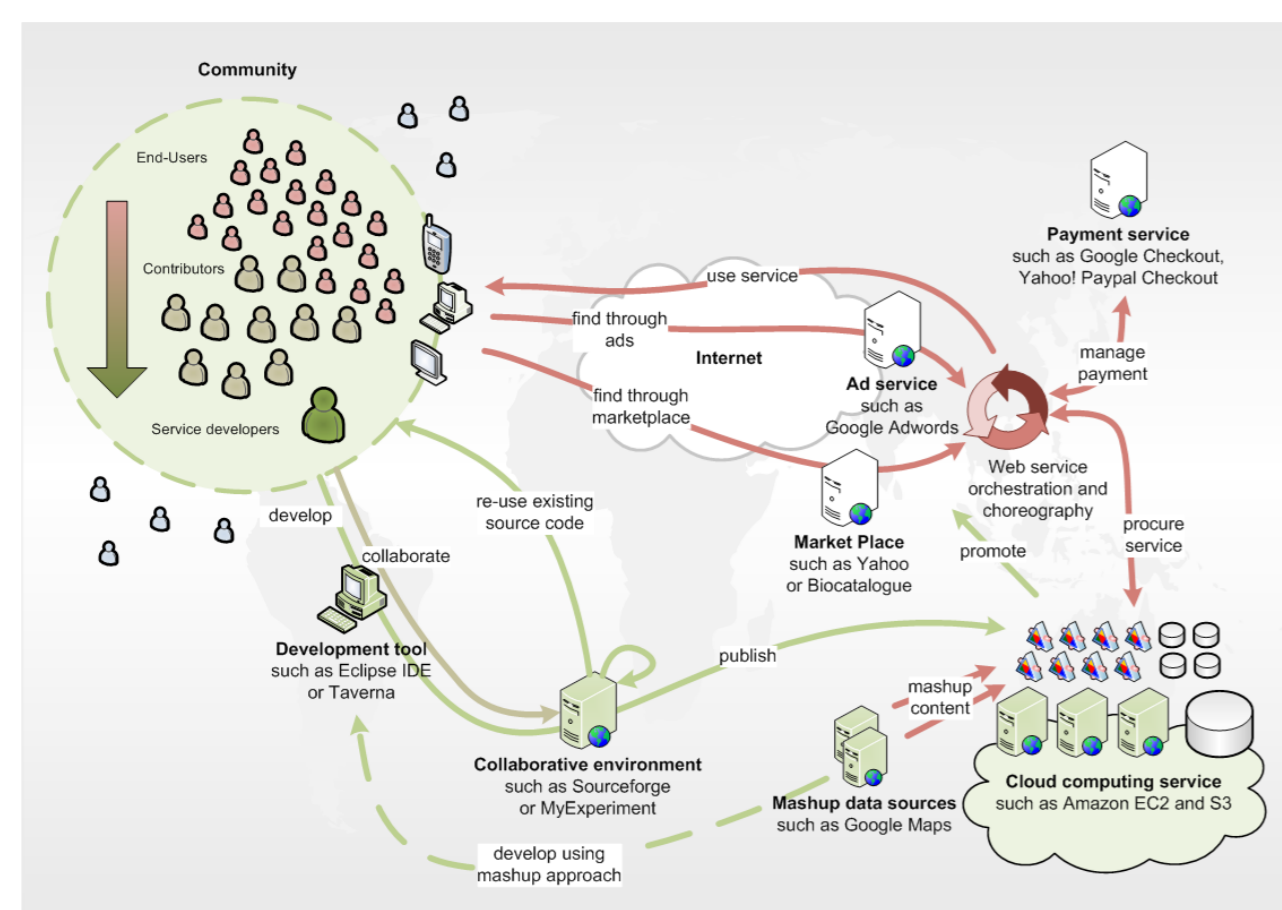


Understanding user innovation in digital ecosystems

UDOI Booster 2008–2010

GENERIC A Digital Ecosystem for Boosting User-driven Service Business



STANDARDS FOR SERVICE DEVELOPMENT

In order for developers to be able to co-operate, it is important that there exist some standards, such as WSDL for web services, that make re-using, combining, and interfacing with other services easier.

SIMPLE AND LIGHTWEIGHT DEVELOPMENT TECHNOLOGIES

Service development and composition need to be made easier to encourage more and more users to be involved in the service development. One step forward is the new style of mashup development technologies that provide a simple way to combine content from external services to form new services.

TOOLS FOR SHARING AND COLLABORATING WITH OTHERS

In order for a community to work together, there must be mechanisms and tools for sharing and collaborating with each other. Nowadays there exists several open-source hosting providers such as Sourceforge and Github.

ELECTRONIC COMMERCE (E-COMMERCE) SERVICES

To create business from a service, many basic e-commerce services are needed. In recent years, several new services have been introduced in these areas. For paying for goods and managing payment transactions, there are several providers available such as Google Checkout or Yahoo! Paypal Check-out. For promoting the service, there are online advertisement services such as Google Adwords and marketplaces such as Yahoo and eBay. So far, these services have been mainly geared toward selling goods, but support for selling services is added continuously.

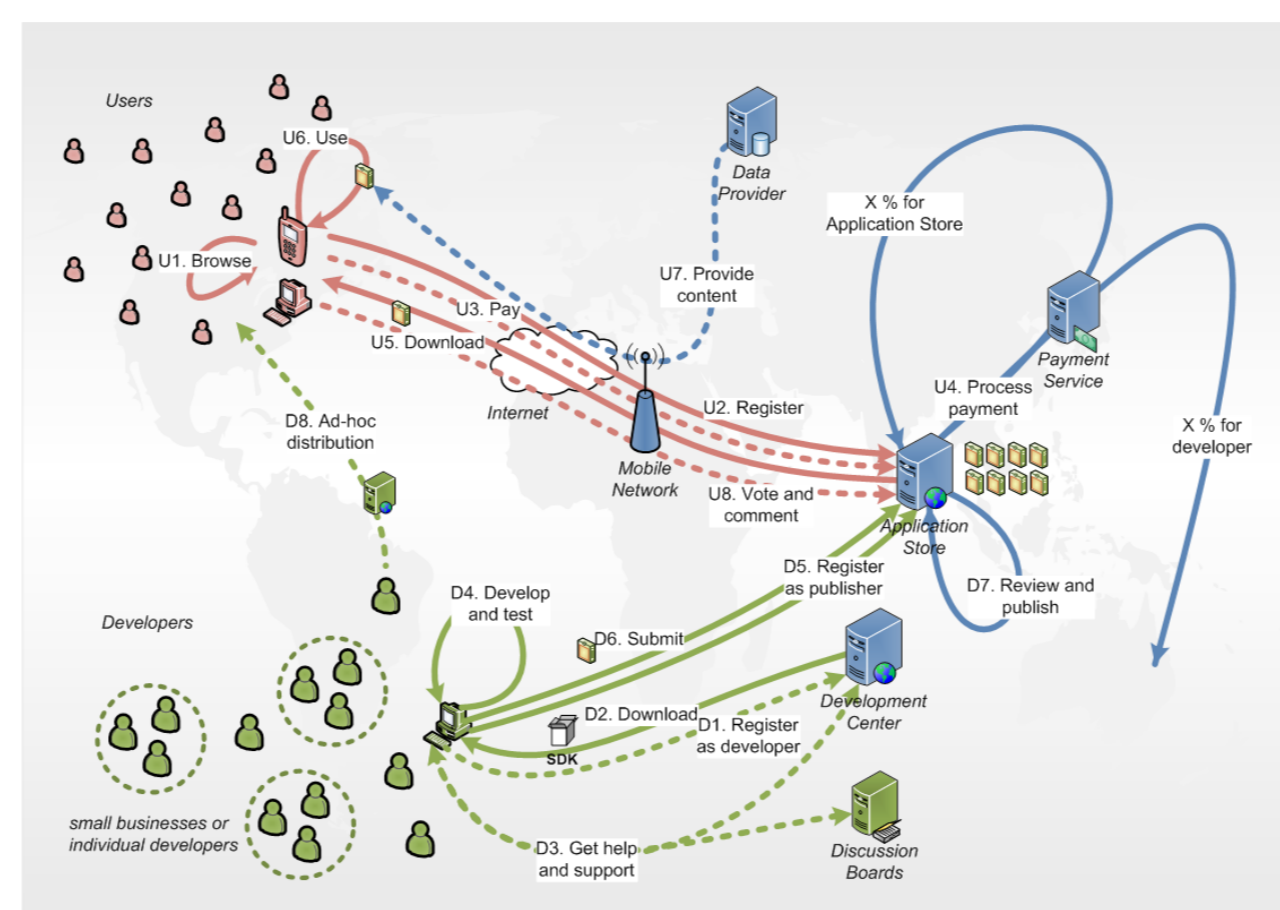
COST-EFFECTIVE AND SCALABLE DEPLOYMENT OF SERVICES

Lowering the barrier for service development and composition alone will not be enough. There must be an easy way to deploy the service and make it available for others. Recently, the introduction of cloud computing services, such as Amazon Elastic Compute Cloud (EC2) and Amazon Simple Storage Service (S3), have offered a comprehensive solution by providing an elastic computing infrastructure. In a such cloud, capacity can be easily increased or decreased in minutes and the payment model is more flexible and inexpensive where only the actual capacity consumed is paid for.

SERVICE ORCHESTRATION AND CHOREOGRAPHY

To produce a specific service for a customer, several related activities are typically required, such as payment processing and providing computing resources. Management of interactions between these sub-activities is essential and has to be solved somehow. If the choreography between basic services, such as payment and procuring computing resources, could be provided ready-made, this would further lower the barrier for users to create business from their services.

APPLIED A Digital Business Ecosystem around Smart Phone Application Stores



DEVELOP AND PUBLISH A NEW APPLICATION IN THE APPLICATION STORE

- D1:** Developer registers with the Development Center in order to download the SDK and access the support forums (optional).
- D2:** Developer downloads the SDK from the Development Center.
- D3:** Developer gets help and support from the official support forums in the Development Center or from unofficial community-hosted Discussion Boards (optional).
- D4:** Developer develops application using the SDK and other tools provided. Typically, the SDK contains an emulator that the Developer can use to test the application in addition to testing it using the real phone.
- D5:** Developer needs to register as publisher and accept the terms and conditions before he can submit an application to publish in the Application Store.
- D6:** Developer submits his application to publish in the Application Store.
- D7:** Typically, the Application Store reviews all applications before accepting them for publishing.
- D8:** Developer might deliver applications directly to other users using his own server, e-mail, or other means of transfer (optional)

FIND AND DOWNLOAD AN APPLICATION FROM THE APPLICATION STORE

- U1:** User can browse the various applications that are available in the Application Store.
- U2:** User needs to register with the Application Store before he can download the application.
- U3:** User pays for the application (optional). Typically, there are many free applications available.
- U4:** System processes payment using a Payment Service and tracks the payment so that revenue sharing can later be done according to the agreement between the Developer and the Application Store.
- U5:** User downloads the application from the Application Store using his smart phone and Mobile Network.
- U6:** User uses the application in his smart phone.
- U7:** Content Provider provides content for the application (optional). Smart phone applications are typically stand-alone, but some of them might use the data connection to fetch content from a Content Provider using the Mobile Network.
- U8:** User can rate applications by giving stars and also post comments about them.

ANALYSIS Case Comparison of Four Smart Phone Platforms

	APPLE IPHONE	NOKIA SYMBIAN	GOOGLE ANDROID	CHINA MOBILE OPHONE
DEVICE	Full. iPhone and some other devices	Full. Diverse selection of phone models.	No. Several phone models from several vendors.	
OPERATING SYSTEM	Full. Proprietary	Partial. Basically open source but leads development.	Partial. Uses Google Android as base.	
MOBILE NETWORK	None. Controlled by operator.			Full.
DEVELOPMENT CENTER	Full.		Partial. Developers can use resources from the Android developer site as well as from operator's or phone manufacturers site.	
APPLICATION STORE	Full. Apps cannot be sold in other stores.	Partial. Controls but applications can be sold in other stores as well.	Partial. Also sells apps from other platforms.	
PAYMENT SERVICE	No. Relies on credit card companies and operator billing	Partial. Uses Google Checkout. Operator billing also supported.	Full. Operator billing used for payments.	
CONTENT PROVIDER	Partial. Content provided by partnering companies as well as by acquired companies			

DIVERSITY OF STRATEGIES

As we can see from the table above, all companies have chosen a different strategy in controlling their ecosystems. The content provider row is the only row in which every company has similar control.

LEVEL OF CONTROL

We can also see that Apple has the tightest control of its actors and Google clearly uses the least control and is most open. Nokia and China Mobile seem to keep control of the areas of their traditional business.

COST OF DEVELOPMENT

All companies except Apple provide all development resources for free but typically require registration. Apple charges \$99 per year for its Apple Developer Program, which entitles developers to access to official developer forums and the possibility of testing applications on a phone instead of an emulator. Due to this policy, we think that after some time, there is a risk that Apple will have an increasing amount of unsatisfied developers who did not recover the development cost from their application sales. In addition, the up-front development cost might be too high for people from developing regions such as Africa and South America.

REVENUE SHARE

All companies except for China Mobile charge some kind of up-front payment for publishing applications in the application store. All four companies adopt a 70%-30% revenue sharing model. However, in Google's case, although developers still get 70% of sales revenue, the remaining 30% is not taken solely by Google but are divided with the operator. It is interesting that each company has chosen similar revenue sharing percentages even though that would have been an easy way of differentiating themselves from competitors and attracting developers to the ecosystem.

APPLICATION DISTRIBUTION

All companies except Apple place no restrictions on developers with respect to distributing their applications ad-hoc or selling them in other marketplaces. We assume that in the long run, Apple will need to loosen its policies to stay competitive.

Karhu, K. & Tang, T. (2010). A Comparison of Digital Business Ecosystems Built around Global Smart Phone Application Stores. To be published in the *JCeSBI 2010 Joint Conference on eServices and Business Intelligence*, Chengdu, China on 4-6 June 2010.