Smart Home Mashups:
A New Application Opportunity

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Presentation to:
OSGi
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Explosion of Smart Home Devices and Applications

- **Media sharing**
  - Woman swimming
  - Devices: tablet, TV, smartphone

- **Health Monitoring**
  - Doctor with medical equipment

- **Home Monitoring**
  - Dog on a couch

- **Energy Management**
  - Woman holding a phone
  - Devices: thermostat, smart plug, smart lock

- **Home Control**
  - House with outdoor view

- **Personal Devices**
  - Robot

- **Smart Appliances**
  - House with smart home features
How can developers take advantage of this growing market?

- Need a robust application platform
  - Hardware Independent
  - Rich feature set
  - Mature and stable
  - Multi-application support
  - Always On

- Need the ability to extend existing applications
  - Think “Mash-ups” for the home.
  - Applications are used in ways originally not considered.

- Need dynamic application deployment
  - Think app store.
Answer: OSGi on the Home Gateway

Application Platform for the Smart Home
OSGi: Enabling Dynamic Modular Applications

• Dynamic Loading
  • Application can be installed and upgraded independently.

• Many Apps/One Device
  • Gateways and embedded devices are no longer single purpose.

• Services
  • Applications can provide and/or use services
  • Enables extending device capabilities in new and creative ways.
  • Allows Mash-up applications. Think Google maps.

• Remote Management and Downloads
  • Applications can be downloaded remotely.
  • Allows app store model.
OSGi Application Enabled Home Gateways

Home Service Gateways and Control Points

Plug Computers

DLNA Media Renders

M2M Devices

Broadband Home Routers and Gateways

NAS and Home Servers

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The OSGi Enabled Home Gateway

Home Control Point or Gateway

Application Bundles
- Healthcare
- DLNA DMS
- EyeFi
- Home Control

Native Program (Linux Applications)
- Standard Service Bundles
- UPnP
- USB
- ZigBee
- Security

- FP
- Serial I/F
- JSSE

- JavaSE Embedded/JavaME

Linux (Kernel 2.6.*)

Hardware
Example and Demonstration

- Add new functionality to a Home Gateway by leveraging existing applications

- Flickr Mash-up
  - Extend existing Photo Sharing Application to share picture via Flickr

- Email Mash-up
  - Add a second application that will send the picture to an email account.

- No Changes required to core Photo Sharing application
Photo Sharing Application

EyeFi Server

DLNA
Photo Sharing Mashups

EyeFi Server → DLNA → Flickr → Email

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EyeFi Server Tracks Listeners

```java
// start tracking listeners waiting for jpeg picture events
eyefiListenerTracker =
    new ServiceTracker<>(bundleContext, EyeFiListenerService.class.getName(),
                        new EyeFiListenerServiceTracker<>(this, bundleContext));
eyefiListenerTracker.open();
```

EyeFi Flicker Registers the Service

```java
// Register EyeFi service listener as a OSGi service
EyeFiListenerService eyefiListener = new EyeFiListenerServiceFlickr();
eye2FlickrRegistration =
    argBcontext.registerService(EyeFiListenerService.class.getName(), eyefiListener, null);
System.out.println("Service registered: EyeFiListenerService (by eyefi2flickr)");
```
Questions and Answers
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