



# **Building Social Applications with the IBM Social Business Toolkit SDK**

Rishi Bhargava,

Collaboration Solutions Architect, IBM India



# Goals

- The new version of IBM Collaboration Solutions products (IBM Connections, Domino, Portal, ...) support **a set of new, open standards : Activity Stream, Open Social, OAuth.**
  
- The interest of these new standards lays in their ability to **better integrate business processes with the collaboration** in the enterprise.
  - Building **Social Applications**
  
- A Toolkit, the **Social Business Toolkit**, has been built in order to simplify and speed up the process of creating Social Applications
  
- This session presents these new components of the IBM Connections architecture, the Social Business Toolkit and the business value they bring



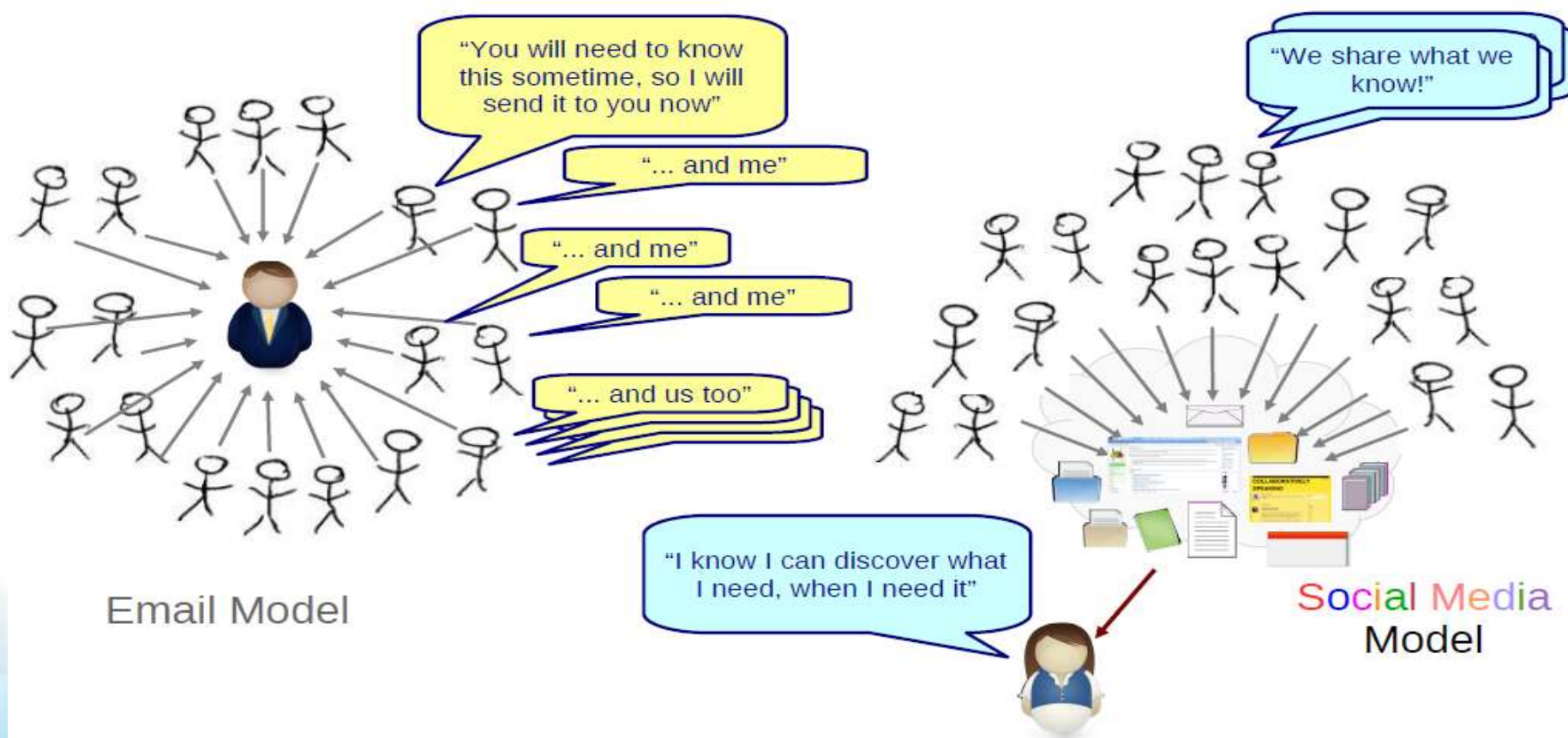
# What is Social Networking?

- A social network is a network of people.
- The value is in the relationship “between” people – and the reciprocal activity of giving and receiving, i.e. of helping others out, (so they can help you back)
- As individuals we are already using social collaboration for Personal Social Networking to communicate more effectively in our network.



# Enterprise Social Networking

- How can organizations improve upon collaboration using these tools ?
- Typically knowledge used to exist in personal notes and is brought forward in meetings.
- Most of the employees are anyway using social software, can we make them use it in way which enhances personal and enterprise effectiveness.



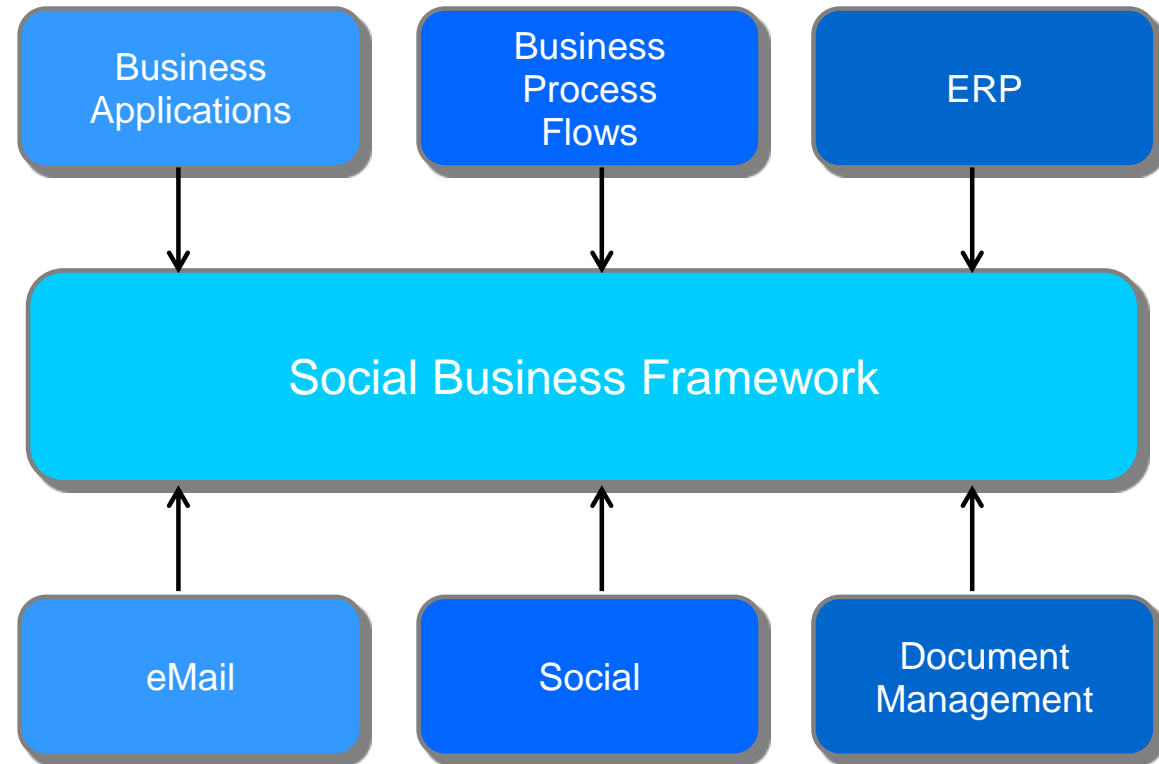
# Agenda

- ActivityStream, OpenSocial and OAuth for the beginners
  
- Introducing IBM Social Business SDK
  - Explain rationale behind this project
  - What is available now?
  
- Social Applications
  - Examples of why you would add social features to an application
    - Introducing Acme Airlines
  - Social features in action
    - Demonstration of flight booking workflow in Social Acme Airlines
  - How to “easily” add social features to an application
    - SDK Playground
    - API Explorer
  
- Questions
  - How do I get involved?

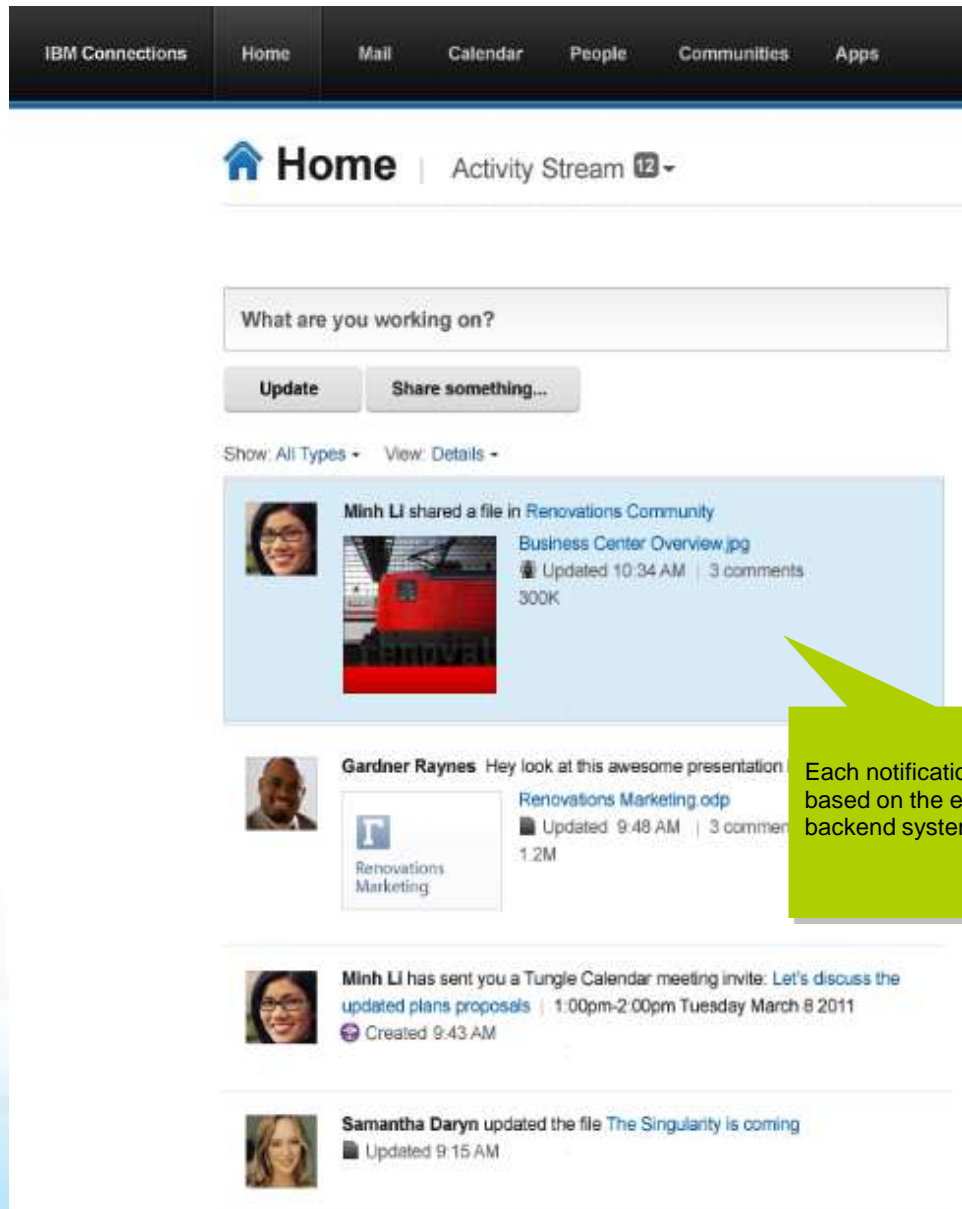


## What if ...

- We could simplify our workload by **aggregating important events** that need attention all in one place ?
- We could filter and **prioritize events to help focus** in a way that we want (**need**) ?
- We could **discover things** we should have known and **don't miss** the things we shouldn't have missed ?



# Introducing the Activity Stream



IBM Connections Home Mail Calendar People Communities Apps

Home | Activity Stream 12

What are you working on?

Update Share something...

Show: All Types View: Details

Minh Li shared a file in Renovations Community  
Business Center Overview.jpg  
Updated 10:34 AM | 3 comments  
300K

Gardner Raynes Hey look at this awesome presentation  
Renovations Marketing.odp  
Updated 9:48 AM | 3 comments  
1.2M

Minh Li has sent you a Tungle Calendar meeting invite: Let's discuss the updated plans proposals | 1:00pm-2:00pm Tuesday March 8 2011  
Created 9:43 AM

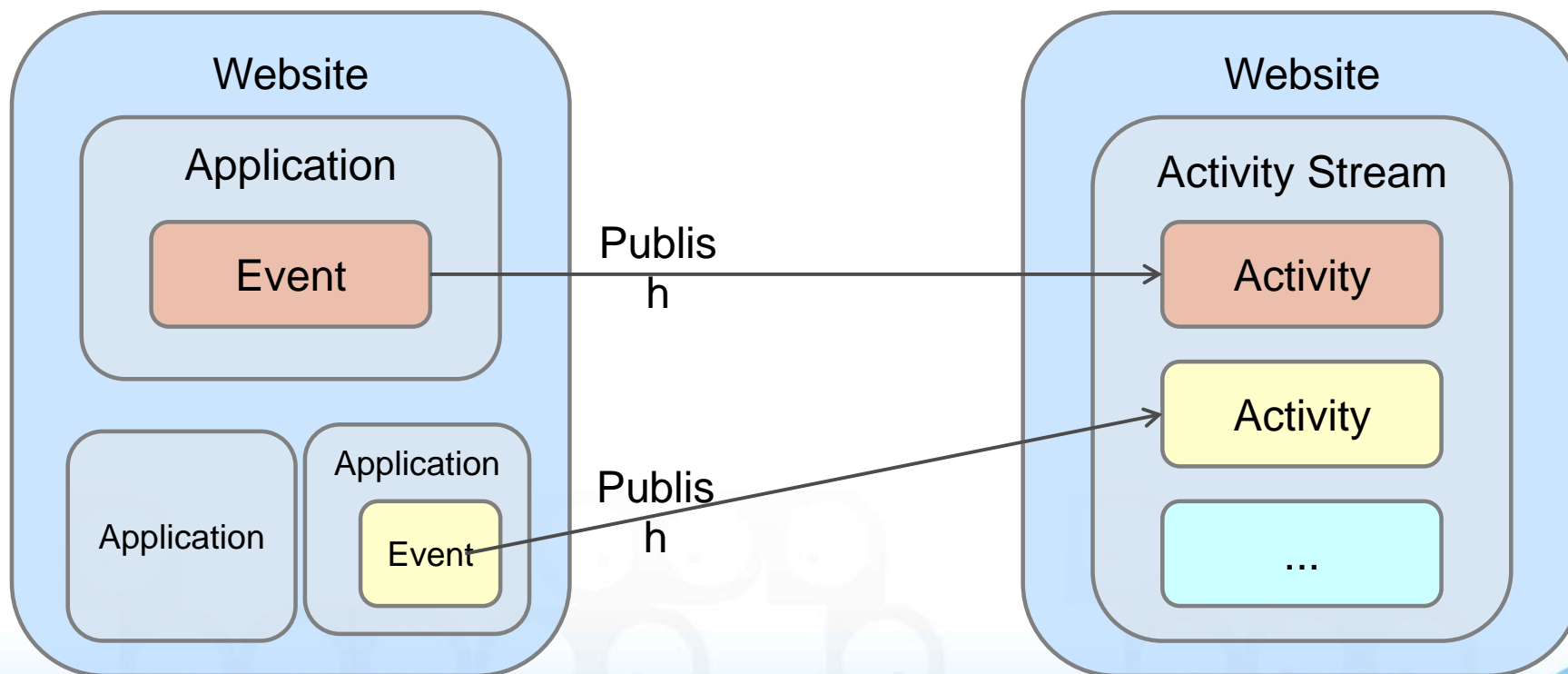
Samantha Daryn updated the file The Singularity is coming  
Updated 9:15 AM

- Aggregates notifications coming from different source
- Each entry surfaces additional information about the notification
- Simplified access through filtering of notifications
- Triggers
  - Backend system events/changes
  - People
  - Analytics

Each notification is unique based on the event from the backend system or activity

## Activity stream : let's think « business »

- A **Personal View** on **information that matters**
- Lists **recent activities**, yours or the ones of your network
  - For instance, “Vikas Tiwari uploaded a new picture to his album 'Lucknow 2013”





## One way of thinking about activity streams...

*“As people share more, the timeline gets filled in more and more with **what is happening with everything you're connected to.** [...]*

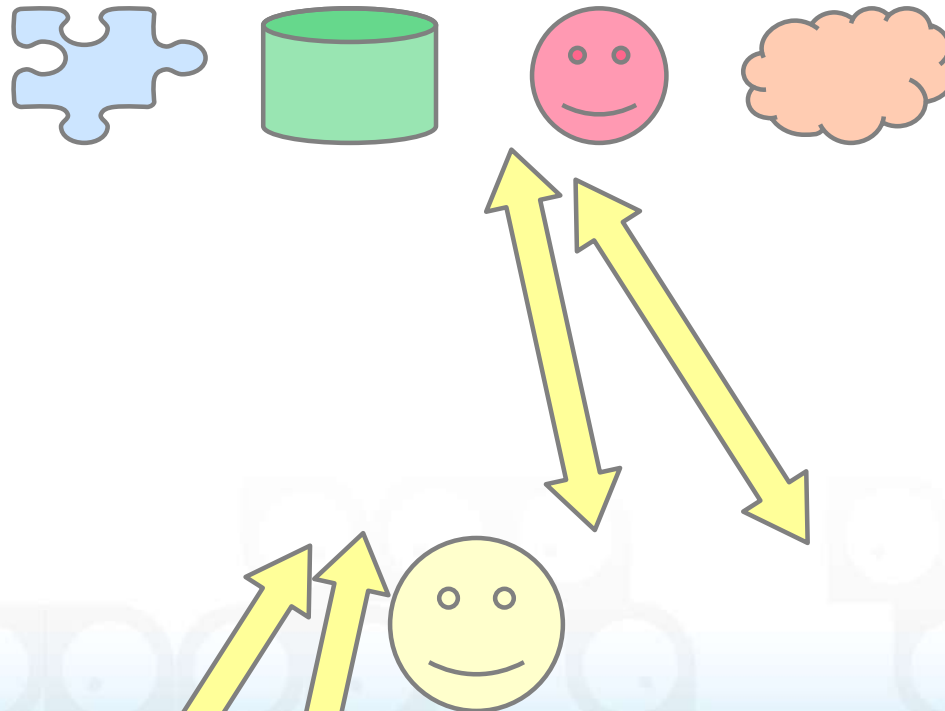
*This creates a **continuous stream of information** that delivers a deeper understanding for everyone participating in it. As this happens, people will no longer come to Facebook to consume a particular piece or type of content, but to **consume and participate in the stream itself.**”\**



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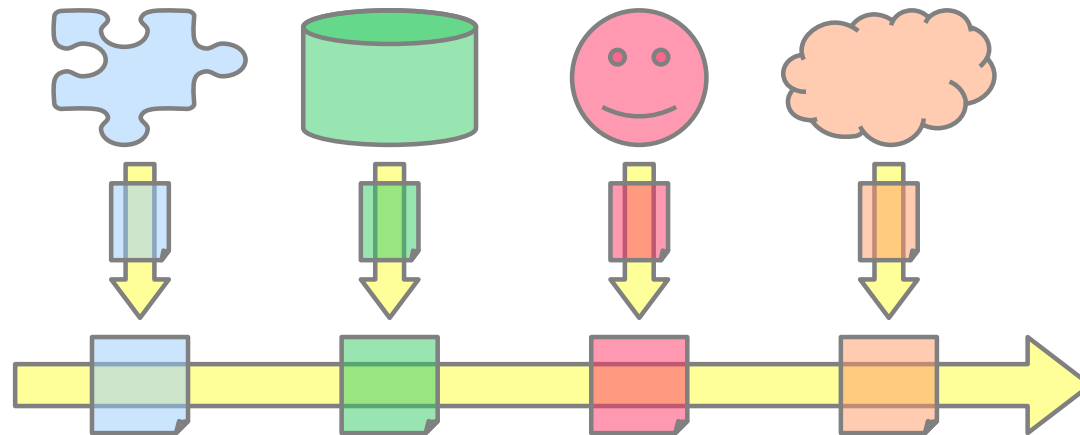
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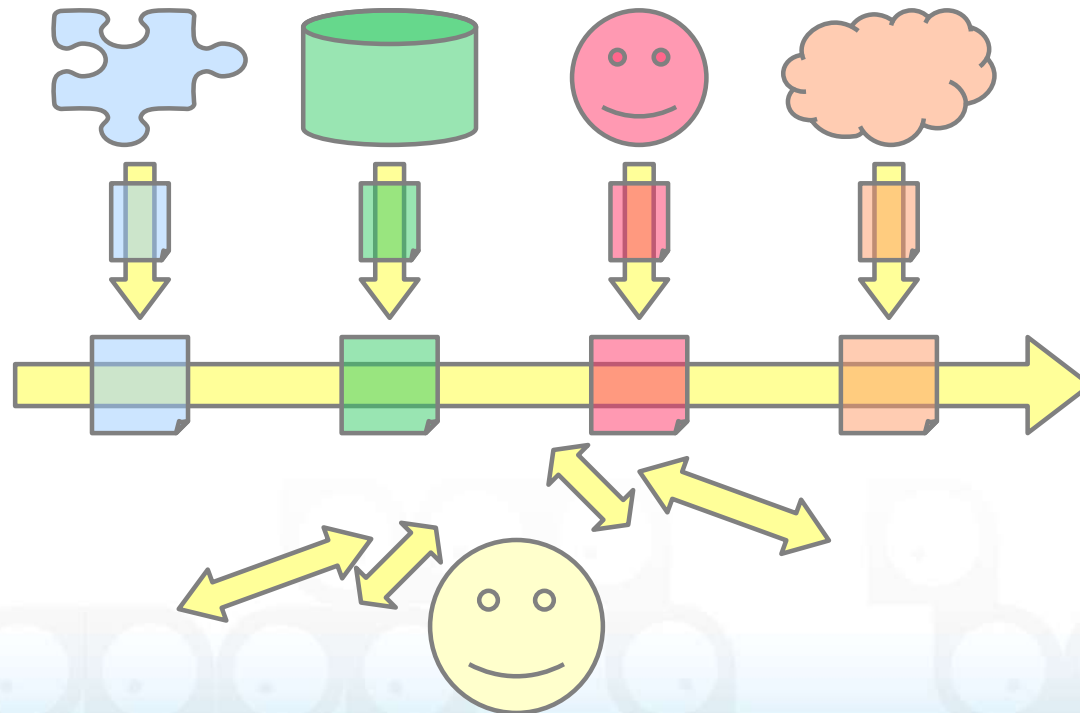
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# Standards Profile :

## Activity Streams



The Activity Streams specification is managed by the Activity Streams community

### What is it?

The Activity Streams spec is the **primary event propagation mechanism for Social Business**. It uses a common model to syndicate events to end users. While inspired by consumer social spaces, businesses are rapidly building on capability to share & consume business related events

### What is new?

Activity Streams 1.0 is the current version, which supports the JavaScript Object Notation (JSON) specification.

### Why is it important?

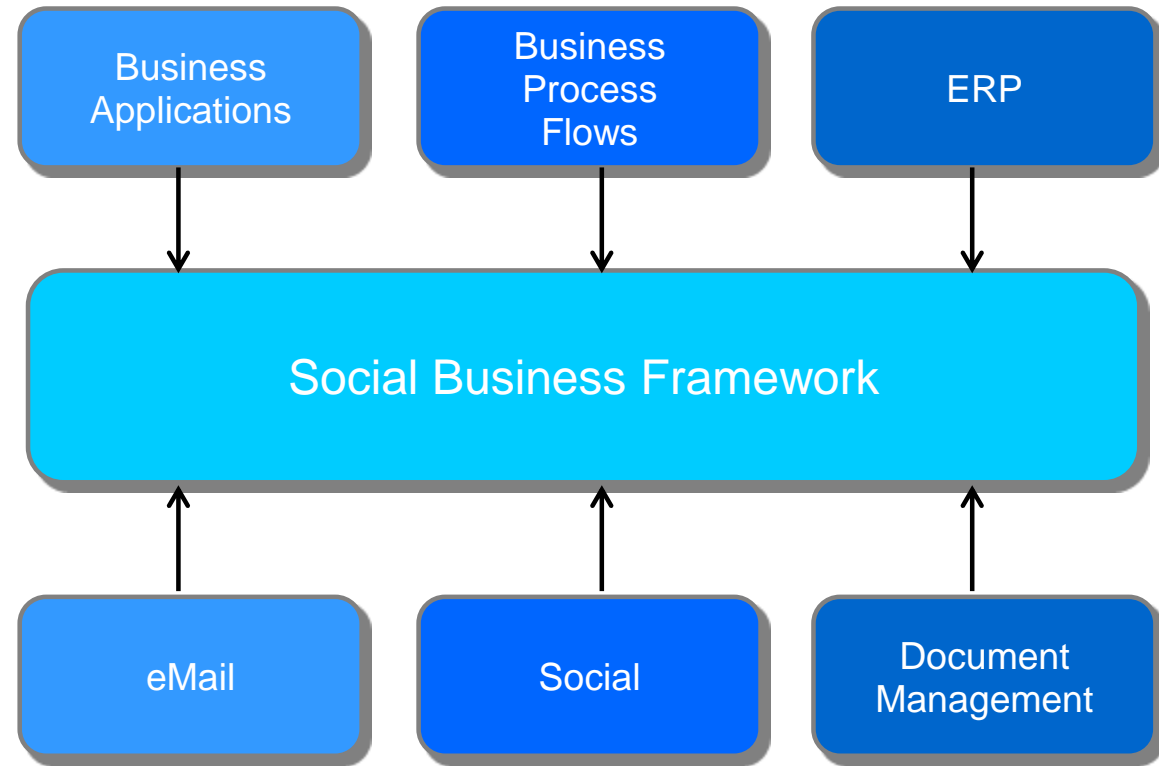
Activity Streams provide app developers with **a common language to describe business events for users**.

Implementation of Activity Streams **simplifies line of business visibility** across users & **supports the ability to share, comment & collaborate**.

- The lead editor for the ActivityStreams specification (JSON) is James Snell from IBM
- Current implementations include: Facebook, G+, Microsoft Windows Live, Office 365, Yammer, SocialCast, Tibber, BBC, Opera, TypePad, Gowalla, Gnip, Superfeedr, YIID
- Find out more about Activity Streams at <http://activitystrea.ms/>

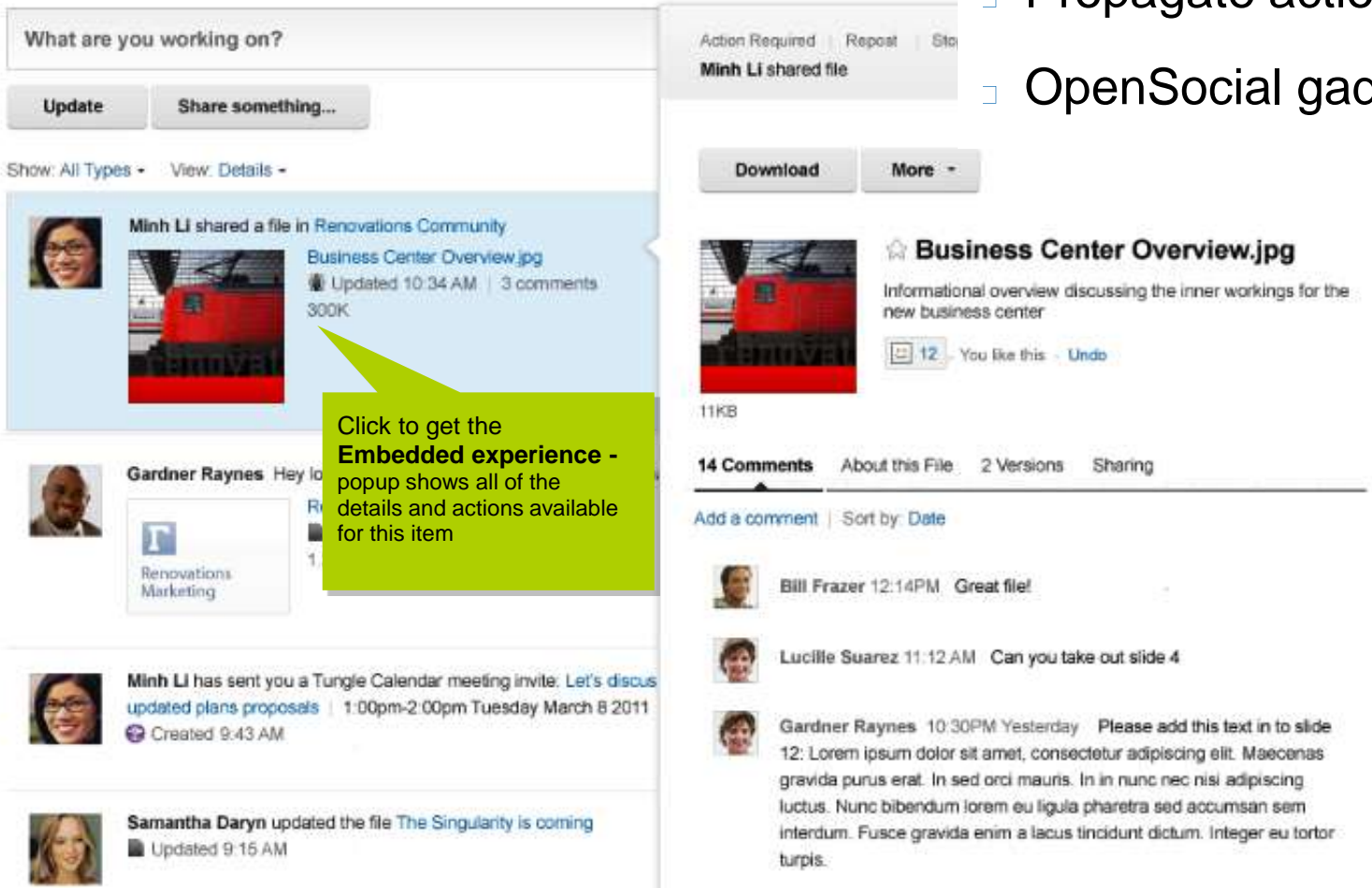
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- We could **fast-switch** between events, and then **get back to work** ?
- We could **take action** on an event without having to go into the target application ?



# Introducing Embedded Experiences

- Take Action Now
- Actions and metadata tied to event
- Event types with unique UI
- Propagate actions to back-end
- OpenSocial gadgets for re-use



The screenshot displays a social media feed on the left and a detailed view of a file share on the right. The feed shows a post by Minh Li sharing a file in the 'Renovations Community'. A green callout box points to the file thumbnail with the text: 'Click to get the Embedded experience - popup shows all of the details and actions available for this item'. The detailed view on the right shows the file 'Business Center Overview.jpg' with a description, a 'Download' button, and a 'More' dropdown menu. Below the file details are 14 comments from users like Bill Frazer, Lucille Suarez, and Gardner Raynes.

What are you working on?

Update Share something...

Show: All Types ▾ View: Details ▾

Minh Li shared a file in Renovations Community

**Business Center Overview.jpg**

Updated 10:34 AM | 3 comments | 300K

Click to get the Embedded experience - popup shows all of the details and actions available for this item

Gardner Raynes Hey lo

Renovations Marketing

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Samantha Daryn updated the file The Singularity is coming | Updated 9:15 AM

Action Required | Repeat | Stop

Minh Li shared file

Download More ▾

**Business Center Overview.jpg**

Informational overview discussing the inner workings for the new business center

12 You like this - Undo

11KB

14 Comments About this File 2 Versions Sharing

Add a comment | Sort by: Date

Bill Frazer 12:14PM Great file!

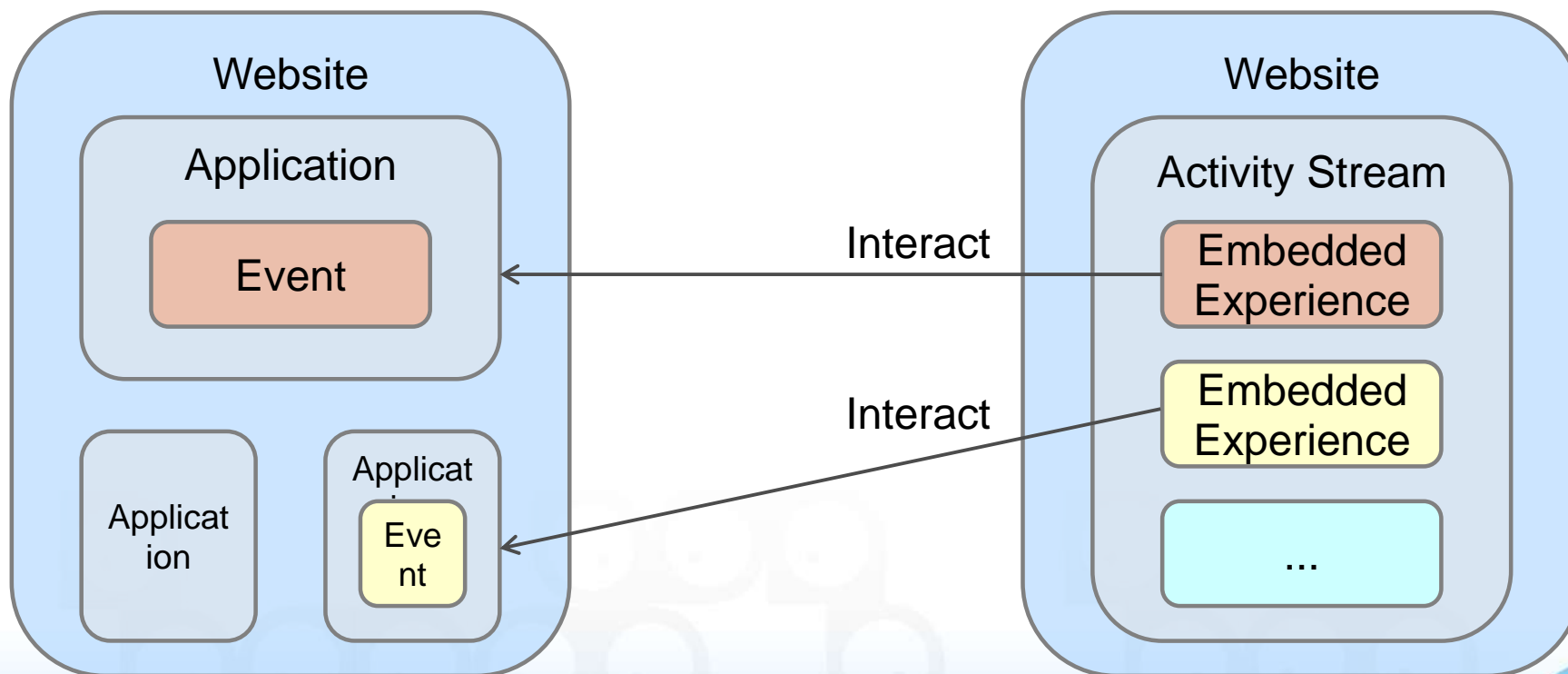
Lucille Suarez 11:12 AM Can you take out slide 4

Gardner Raynes 10:30PM Yesterday Please add this text in to slide 12: Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas gravida purus erat. In sed orci mauns. In in nunc nec nisi adipiscing luctus. Nunc bibendum lorem eu ligula pharetra sed accumsan sem interdum. Fusce gravida enim a lacus tincidunt dictum. Integer eu tortor turpis.



# Embedded experience

- Embedded experiences enable you to **interact with the content** right there and then **without leaving the site**
- For example, **share links** that are automatically **converted into objects** that can be **interacted** with





# From the consumer world...



**Omnisophie - Gunter Dueck**  
Ich habe ein Video zu einer @YouTube-Playlist hinzugefügt.  
<http://t.co/zkNUNGWT> iico2012 - Keynote Rede von P

**iico2012 - Keynote Rede von Professor Gunter Dueck**  
[youtu.be/4ZFA3ZQ5geo?e](http://youtu.be/4ZFA3ZQ5geo?e)  
Keynote: Das Internet als Gesellschaftsbetriebssystem, Professor Gunter Dueck, Omnisophie Weitere Informationen zum iico finden Sie unter <http://www.iico.de>

Like · Comment · 2 hours ago via Twitter · 

Mein erster DRM-frei erworbener Film: <http://buy.indiegamethemovie.com/>  
Hoffe davon gibt es in Zukunft mehr!  
Like · Comment · Share · 6 hours ago · 

2 people like this.

Write a comment...

was tagged in 's photos.

7 hours ago · 

Lindo tema para un día de invierno como hoy.  
See Translation

**Pensando em você - Paulinho Moska**  
[www.youtube.com](http://www.youtube.com)  
Paulinho Moska na MPB FM

Like · Comment · Share · 9 hours ago · 

19 people like this.

- Social networking including activity streams are a **popular tool in the consumer world**
- Companies realize the need to **integrate business processes into the social networking model** including activity streams

## ... to the business world



Vince Gibson submitted a new sales opportunity for Open Financial Network

Mar 9 | 0 likes


SAP CRM Sales Opportunity

Frank Adams has a new sales opportunity with Open Financial Network. View in SAP

Customer: **Open Financial Network** View Customer History  
Deal Size: \$5,000,000 View Similar Sales  
Deal Stage: Qualified Lead

Comments Business Intelligence **Social Intelligence** About Customer

Experts that might offer insight:

Sales Team:  Vince Gibson  Trisha Collins

People with customer relationship: 

Collaborate Create a Meeting Launch Meeting

Add a comment...

Wendi Hammond added Vince Gibson to their network.

Mar 9 | 0 likes

Wendi Hammond tagged Vince Gibson with press, chemical\_expert.

Mar 9 | 0 likes

- Activity streams **tap the information silos to create a centralized access point**
- **Relevant content and events** managed across different systems of the IT infrastructure is:
  - **Instantly** available and
  - **Unified** in its presentation
- **Embedded experiences** enable users to **directly interact with the content** on the spot

# Standards Profile :



The OpenSocial specification is managed by the OpenSocial foundation, who's mission is to sustain the free and open development of social standards & specifications.

## What is it?

OpenSocial provides a set of specifications defining **APIs for rendering and embedded web-based applications as well as surfacing social data** (Profile, Relationship & Activity Streams).

It provides for enterprise extensions, & alignment with enterprise content mgmt systems.

## What is new?

The latest version of OpenSocial is 2.0.1. It aligns with several important standards-based components, including Activity Streams v.1.0, OAuth 2.0, Embedded Experiences, & Common Container APIs.

## Why is it important?

OpenSocial provides a common app model & base **set of APIs to enable extension of the Social platform.**

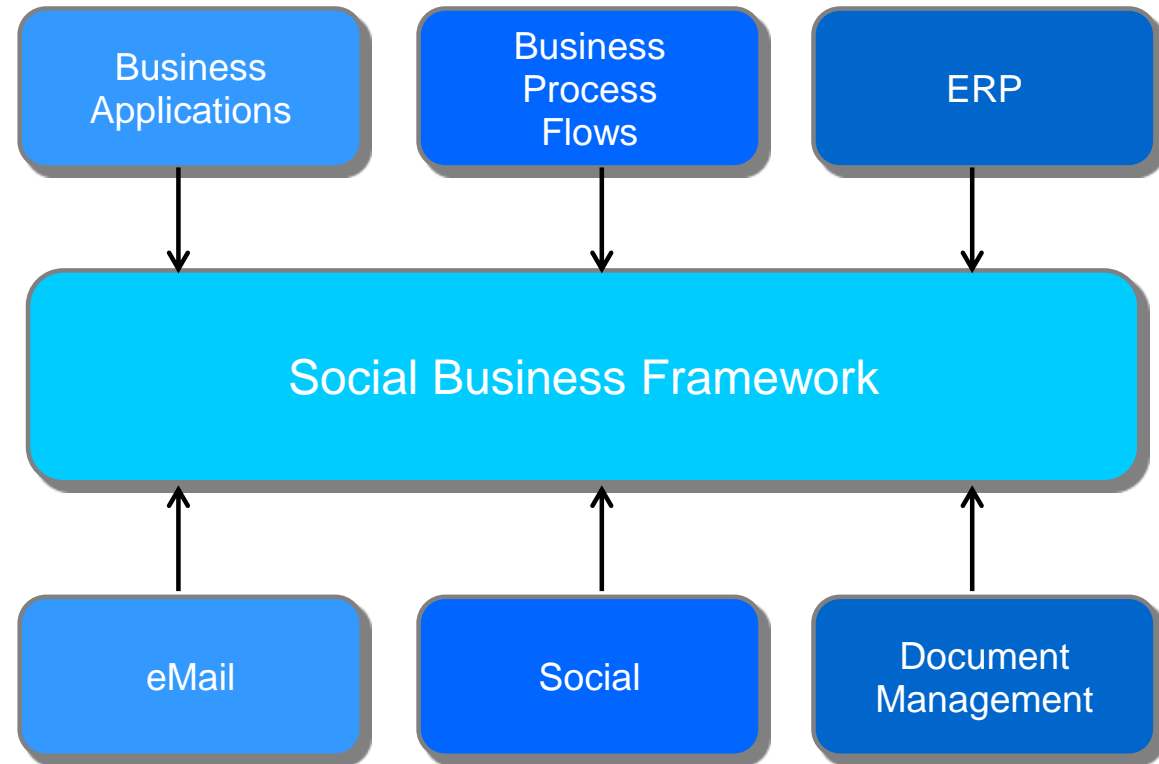
Additionally, continued outreach efforts are driving broader alignment in the standards community to adjacent standards (i.e. OAuth 2.0 & CMIS) & emerging scenarios

- IBM participates on the OpenSocial board of directors and is working to drive a three-year strategy with community members.
- Planned Implementations: LotusLive, IBM Connections, IBM Lotus Notes/Domino, Rational Team Concert, Sterling
- Current Implementations: Cisco, SAP, Jive, Atlassian, Google, Yahoo, LifeRay, Oracle, Magneto, Tibco, Tibbr, Surfnet, Paypal
- Find out more about OpenSocial at [www.opensocial.org](http://www.opensocial.org)

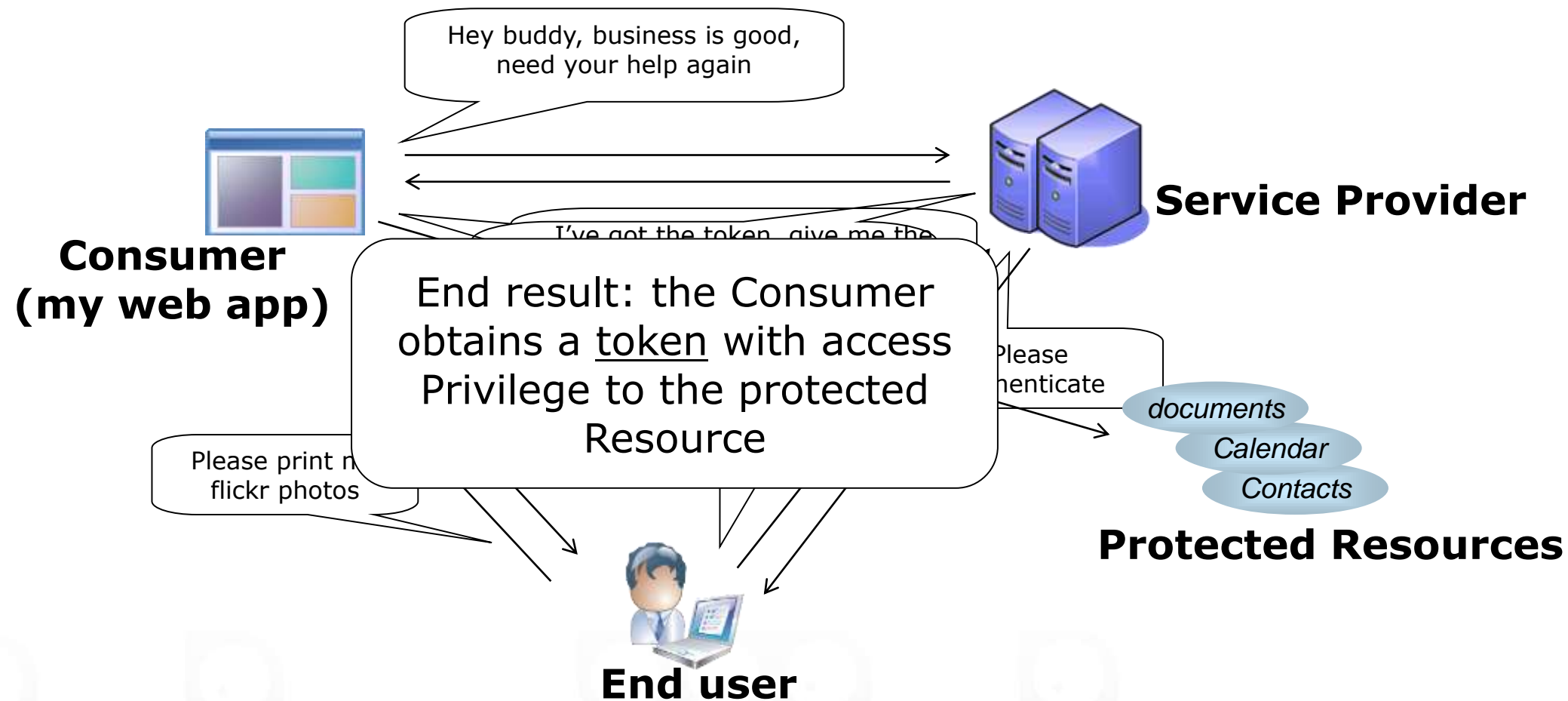


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- We could **take action** on an event without having to go into the target application ?
- We could avoid **passing username/passwords** each time we need to interact with a different source of information?



# Introducing OAuth





# Standards Profile :

The OAuth 2.0 authorization framework enables a third-party application to obtain limited access to an HTTP service (**authorization**).

## What is it?

An open protocol to allow **secure authorization** in a **simple** and standard method from **web, mobile and desktop** applications.

IETF RFC 5849 (spec 1.0 as of April)

## What is new?

OAuth 2.0 focuses on client developer simplicity while providing specific authorization flows for web applications, desktop applications, mobile phones, and living room devices. The specification is being developed[2] within the IETF OAuth WG and was expected to be finalized by the end of 2010

## Why is it important?

OAuth is a **simple way to publish and interact with protected data**. It's also a safer and more secure way for people to give you access. We've kept it simple to save you time.

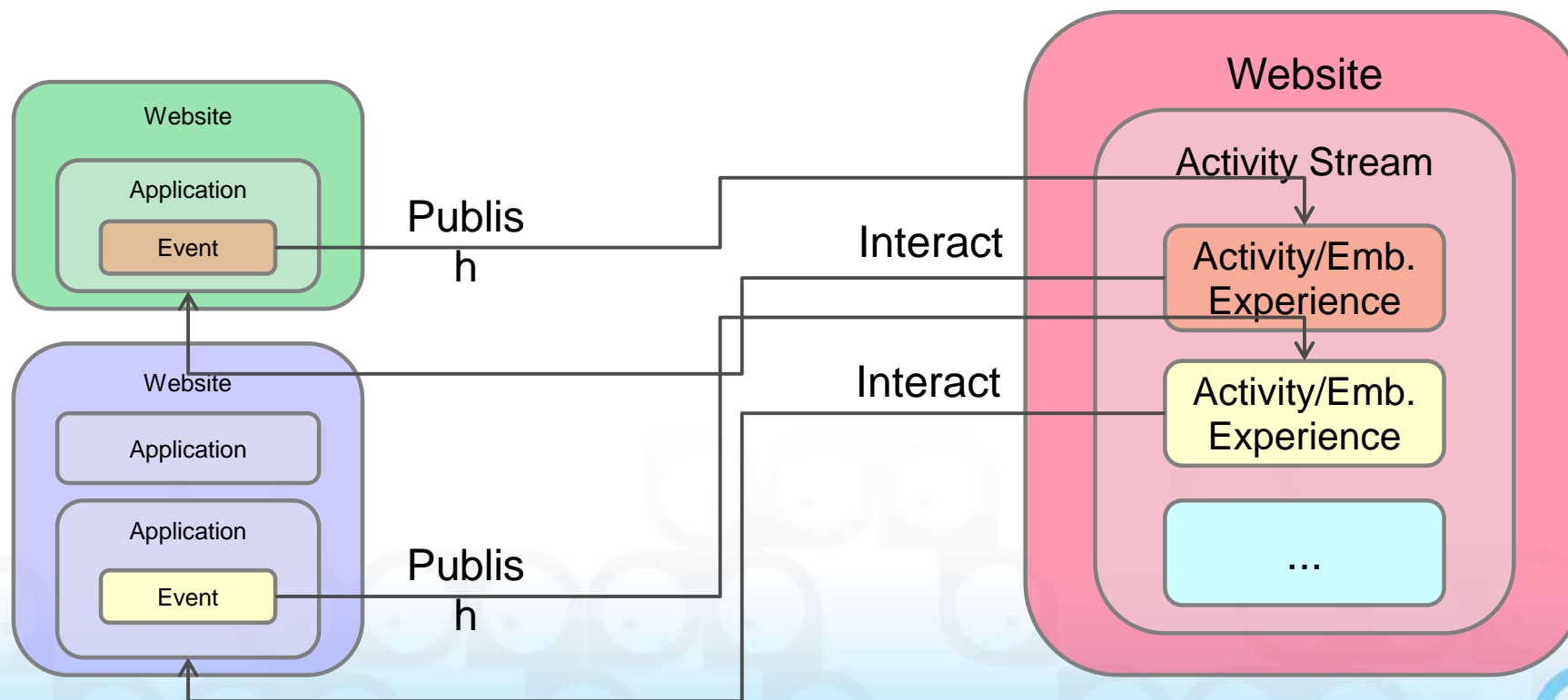
If you're storing protected data on your users' behalf, OAuth gives your users access to their data while **protecting their account credentials**.

- Find out more about OAuth at <http://oauth.net/>
- Current Implementations include : [Photobucket](#), [SmugMug](#), [Twitter](#), [Magnolia](#), [88 Miles](#), [thmbnl](#), [Pownce](#), [Google](#), [MySpace](#), [Agree2](#), [Brightkite](#), [Fire Eagle](#), [Praized](#), [Meetup.com](#), [OpenSocial](#), [Yammer](#), [GetSatisfaction](#), [Netflix](#), [Ohloh](#), [Iron Money](#), [Triplt](#), [Skydeck](#), [Yahoo!](#), [Smart.fm](#), [Cliqset](#), [tarpipe](#), [EchoWaves](#), [Evernote](#), [Vimeo](#)
- Note : OpenID is about delegating user authentication and user registry management



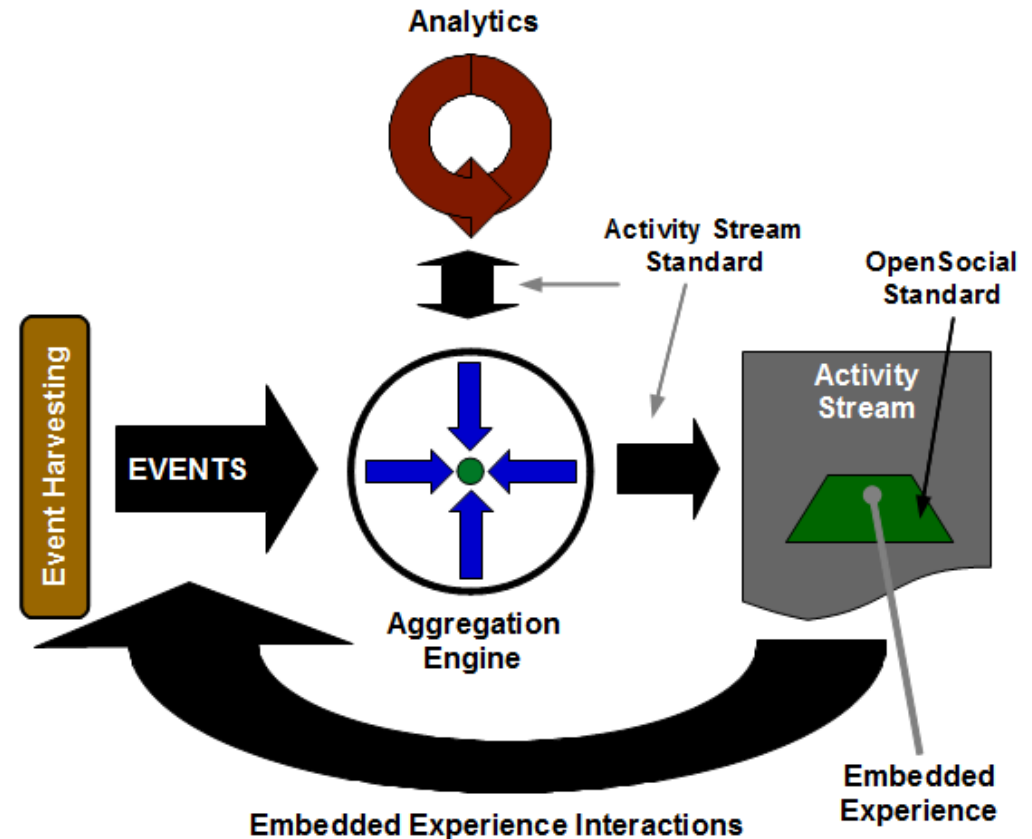
## Standards open a world of new possibilities!

- Activity Streams project specified an **open format for activity streams**
- OpenSocial specified an **open format for embedded experiences**
- OAuth specified an **open format for authorization**
- The 3 together provide **open cross-product integration**



## « Consume and participate in the stream » (\*)

- Activity Stream Aggregation Engine can **receive Events from external Systems** and **integrate** them in the Activity Stream **UI**
- Each **Event is associated with a UI Element** to render and interact with the information, that can be
  - iFrame
  - Embedded Experience (OpenSocial 2.0 Gadget)
- UI Element provide **direct interaction with the system** the event was originated in





# What is the real game-changer ?



# Integrate legacy systems !

## Aggregating Enterprise Events

- Increasing awareness
- Attention management
- Contextual
- Reuse existing assets

## Adding Social to Enterprise Events

- Share message with secondary users
- Commenting and discussions
- Collaboration as activity action
- Social analytics to broaden awareness

The **integration** of **Business Processes** with the '**world of collaboration**' requires  
« **Social Business** » technologies ! (\*)



# Enterprise Events and Embedded Experiences

- SAP
- BPM
- ECM

The screenshot displays the IBM Social Business interface. At the top, there is a navigation bar with 'Home', 'Mail', 'People', and 'Apps'. A search bar is located on the right. The main content area is divided into several sections:

- Connect and Share:** A section for sharing and connecting with others.
- My Newsfeed:** A feed of updates from team members.
  - Bill Ranney marked a task complete in Design Team Activity. **Prepare Lotusphere Materials**. Due date: July 15. 10:33 AM. Reopen, Comment, Recommend.
  - Natalie Olmos added an event in my team place. **Customer Council**. Friday, June 32 at 10:00 AM, Westford Regency Hotel. 10:33 AM. RSVP, Comment, Recommend.
  - Heather Reeds Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. 10:33 AM. Comment, Recommend.
  - Frank Adams has a new sales opportunity with Open Financial Network. **\$5M Sales Opportunity**. Bid on materials for OFN's new Pasadena office. Includes a 'Sales Pipeline' chart showing 0 to 45M Opportunity. 10:33 AM. Comment, View.
  - Frank Adams created a blog post in Traffic Conditions Blog. **Traffic Jam**. I-05 is a mess today! 10:33 AM. Comment, Recommend.
  - Betty Zechman shared a file in in AwesomeTown Place. **Business Center Overview**. 1.5 MB. 10:33 AM. Preview, Comment, Recommend. 2 people recommended this.
  - Arnadou Alain created a blog post in in Lotus Web Content Management Blog. **WCM Cumulative Fix 6, including the 'Quick Select' usability**.
- Mail:** A section for messages.
  - 12 new messages.
  - Natalie Olmos: Task Request: Status Updates. 10:33 AM.
  - Minh Li: Can you send me your updated project reports. 10:32 AM.
  - Natalie Olmos: Activities: You have been added to. 10:31 AM.
- Renovations - SAP CRM Sales Opportunity:** A detailed view of a sales opportunity.
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  - SAP** logo.
  - Customer: **Open Financial Network**. [View Customer History](#)
  - Deal Size: \$5,000,000. [View Similar Sales](#)
  - Deal Stage: Qualified Lead
  - Navigation tabs: Comments, Business Intelligence, **Social Intelligence**, About Customer.
  - Experts that might offer insight:**
    - Sales Team: Dan Misawa, Dennis Michaels, Ed El-Amon.
    - People with customer relationship: [A row of 8 profile pictures]
    - Actions: [Collaborate](#), [Create a Meeting](#), [Launch Emeeting](#)

# Enterprise Events and Embedded Experiences

## Updates

What are you working on right now?

Filter By: All Updates



Heather Reeds commented on the file [Greenwell Web Marketing Text.odt](#).



**Greenwell Web Marketing Text.odt**

ODT 800 KB | Public

Jan 13



Frank Adams wrote Jan 13  
looking good!



Heather Reeds wrote Jan 13  
Is this final now?



Gardner Raynes updated the [Trilog ProjExec Plan](#) in the Project Management Community



Jan 13

Save this



Frank Adams submitted the [catering order](#) for the Greenwell Meeting



Jan 13

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Repost

### Project Health

#### Planned vs. Actual Progress



Expected End Date: 12/12/11 ( Pending )

### My Tasks

Project:  All Status:  All Search

1-1 of 1 Previous

Sort by: Name  Start Date  End Date

0% LotusLive Prod

Start: 12/9/11 | End: 12/12/11 | Project: Demo Project

Show: 10 | 20 | 50 | 100 | All Items Previous

# Enterprise Events and Embedded Experiences

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Jan 13

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## New Service Order

New catering order for Renovations

Download

More ▾

Overview

Categorization

Actions

Edit Order Info

Change History

Transaction History

Description

New catering order for GFS

Priority/Status

Medium ▾

Open ▾

Component

Product ID

4356

Object



Escalate

Service Order

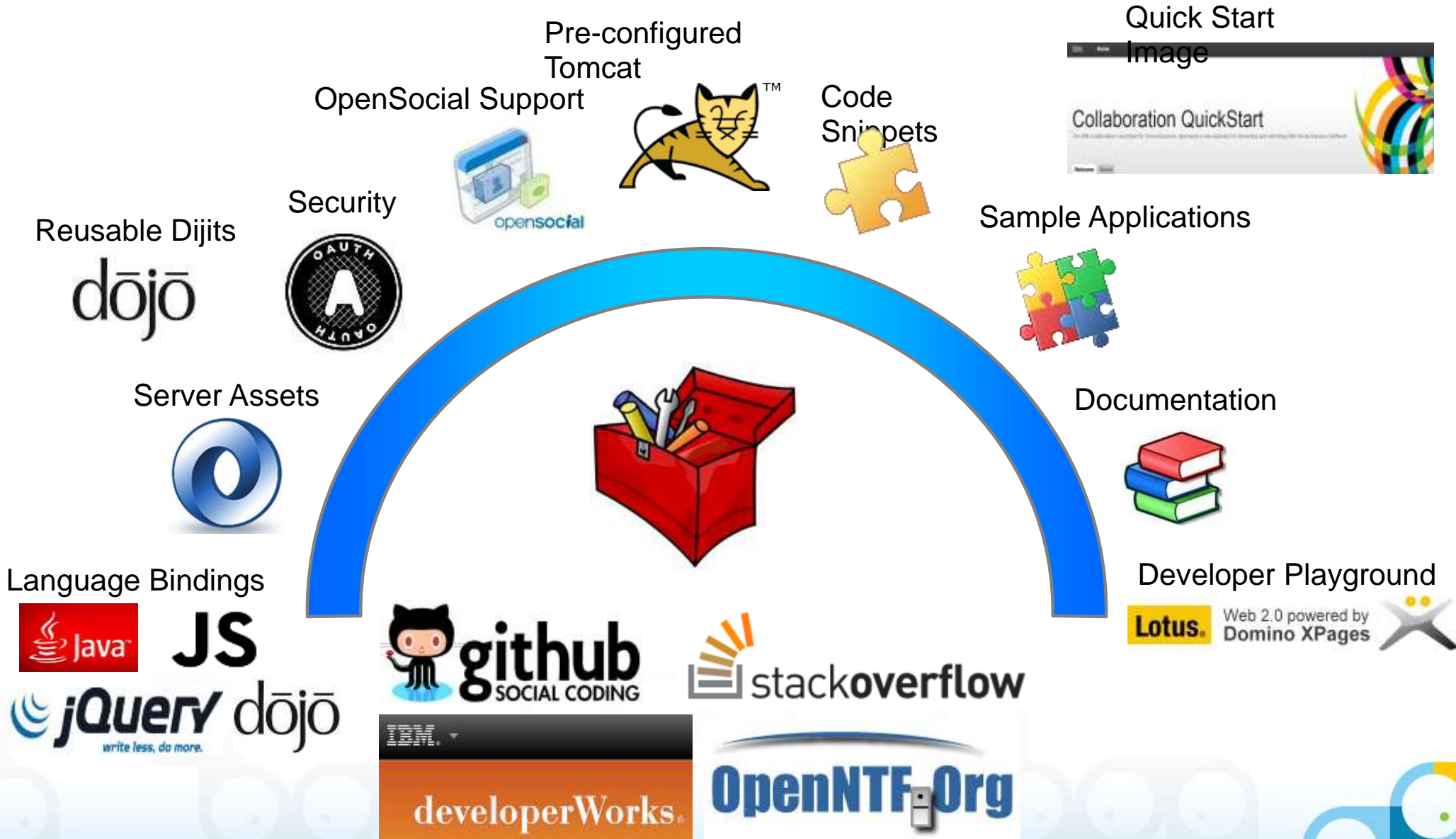


# Introducing the IBM Social Business SDK

- IBM Social Business Platform
  - Standards based support e.g. REST, OAuth, OpenSocial, ...
  - Highly scalable and available deployment options
  - High barrier to entry for application developers
  
- Social Business SDK simplifies this
  - Samples versus Documentation
  - Configuration versus Coding
  - Virtual Image versus Deployment
  
- Social Business SDK an Open Source Project
  - Transparent development
  - Continuous releases
  - External contributions



# IBM Social Business SDK - Now!



## Why IBM Social Business Toolkit ?

- Social SDK provides Not a new set of APIs, but helpers on top of the existing APIs of IBM social software
- It encapsulates the low level coding from the user like handling security, authentication, parsing etc, thus making it very simple to integrate Social in Applications as compared to calling the REST based APIs of the Social Software.

*Traditional  
Way*

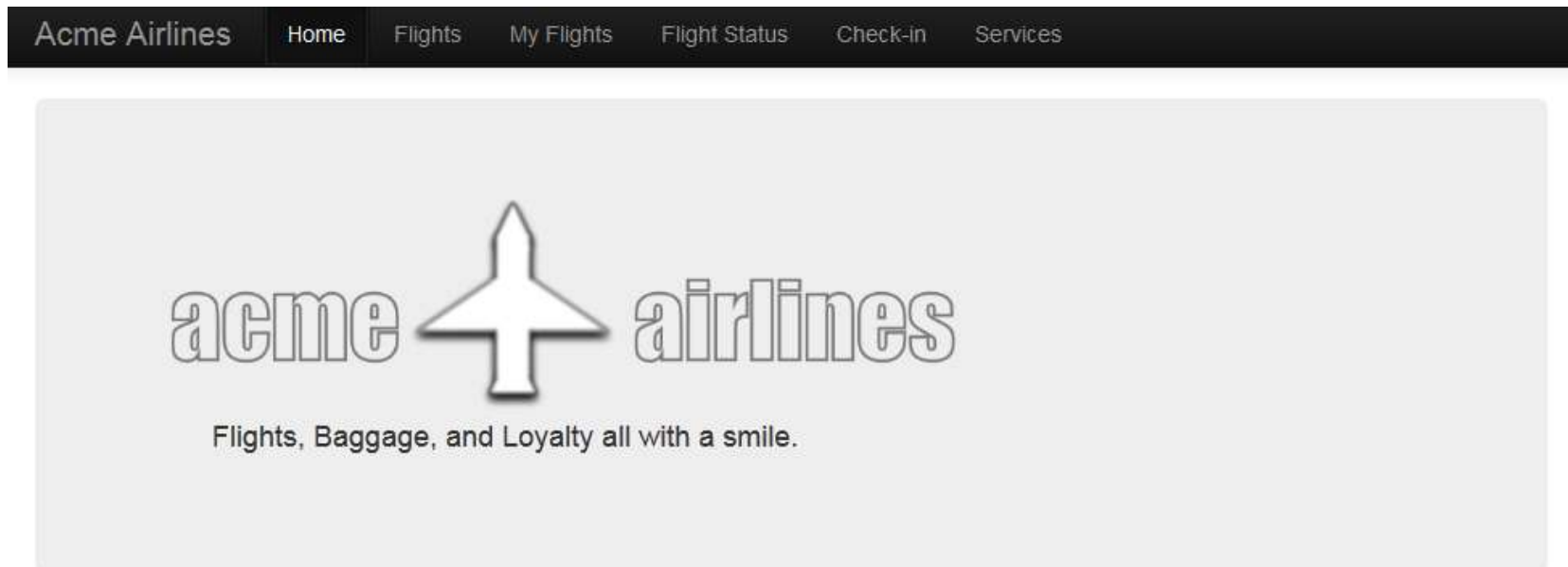
SBT Way





# Getting Started with Social Business SDK - Demos

- Acme Airlines
  - Adding Social Features

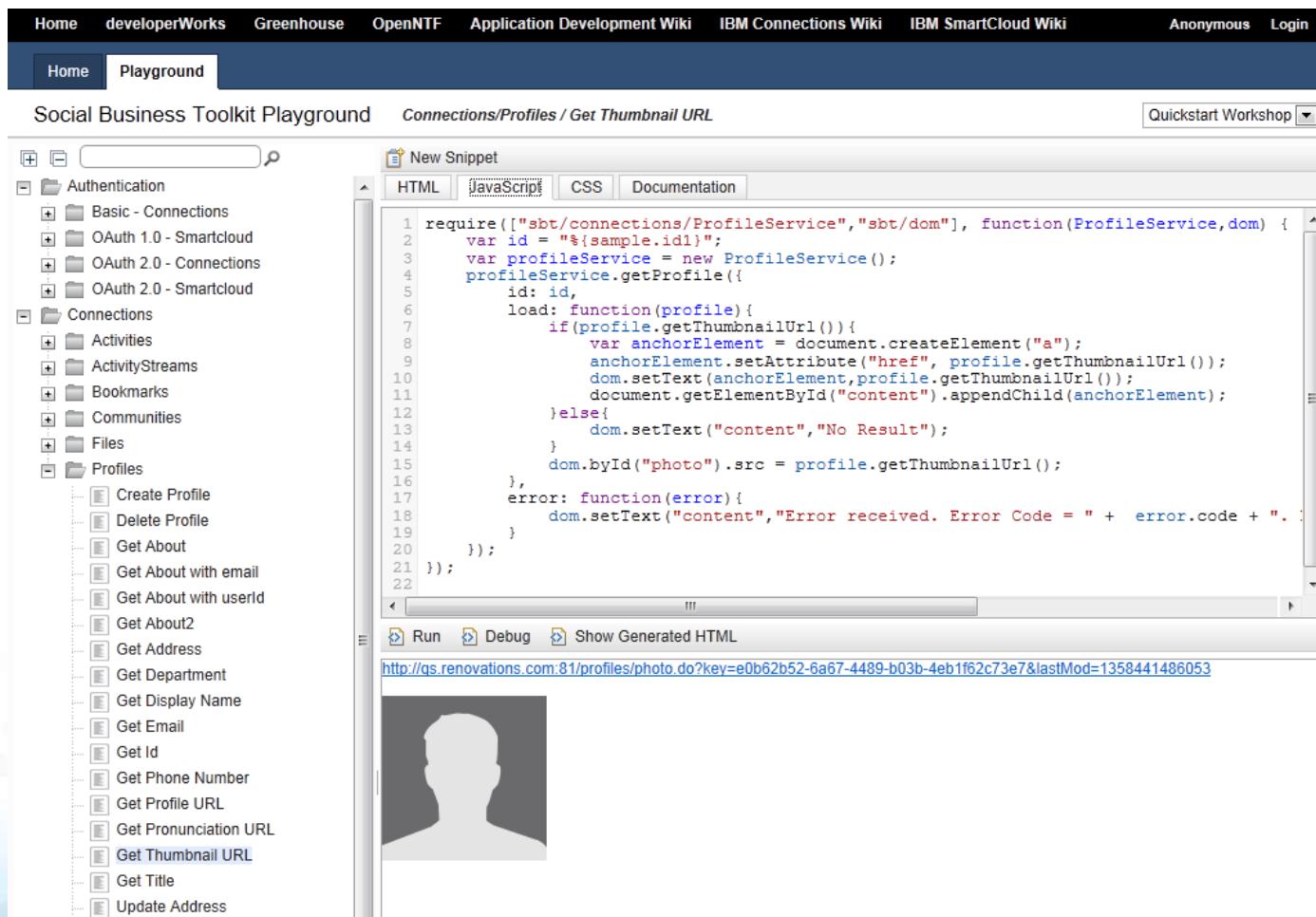


## About Acme Airlines

Founded in 2012, Acme Airlines is the leader in aviation to the leading technology locations around the globe. Acme Airlines operates in over twenty cities on six continents around the globe.

# Getting Started with Social Business SDK - Demos

- Developer Sample Framework and Playground
  - Exploring SDK API's



The screenshot displays the Social Business Toolkit Playground interface. The top navigation bar includes links for Home, developerWorks, Greenhouse, OpenNTF, Application Development Wiki, IBM Connections Wiki, IBM SmartCloud Wiki, Anonymous, and Login. The main content area is titled "Social Business Toolkit Playground" and shows the path "Connections/Profiles / Get Thumbnail URL". A "Quickstart Workshop" dropdown is visible in the top right.

The interface features a left-hand sidebar with a tree view of API endpoints under the "Profiles" folder, including "Create Profile", "Delete Profile", "Get About", "Get About with email", "Get About with userID", "Get About2", "Get Address", "Get Department", "Get Display Name", "Get Email", "Get Id", "Get Phone Number", "Get Profile URL", "Get Pronunciation URL", "Get Thumbnail URL", "Get Title", and "Update Address".

The main workspace is a "New Snippet" editor with tabs for HTML, JavaScript, CSS, and Documentation. The JavaScript tab is active, showing the following code:

```
1 require(["sbt/connections/ProfileService","sbt/dom"], function(ProfileService,dom) {
2   var id = "%{sample.id1}";
3   var profileService = new ProfileService();
4   profileService.getProfile({
5     id: id,
6     load: function(profile) {
7       if(profile.getThumbnailUrl()){
8         var anchorElement = document.createElement("a");
9         anchorElement.setAttribute("href", profile.getThumbnailUrl());
10        dom.setText(anchorElement,profile.getThumbnailUrl());
11        document.getElementById("content").appendChild(anchorElement);
12      }else{
13        dom.setText("content","No Result");
14      }
15      dom.byId("photo").src = profile.getThumbnailUrl();
16    },
17    error: function(error){
18      dom.setText("content","Error received. Error Code = " + error.code + ".");
19    }
20  });
21 });
22
```

Below the code editor, there are buttons for "Run", "Debug", and "Show Generated HTML". The "Show Generated HTML" button is selected, and the output area displays the URL: <http://qs.renovations.com:81/profiles/photo.do?key=e0b62b52-6a67-4489-b03b-4eb1f62c73e7&lastMod=1358441486053>. Below the URL, a placeholder image for a profile picture is shown.

# Adding Social Features To Your Application

- Find and customize sample
  - Start with samples in Playground
  - Edit the sample and test your changes
  
- Deploy SDK JavaScript library
  - Works with existing JavaScript libraries
    - Dojo 1.4.3 or higher
    - jQuery 1.8.0 or higher
  
- Include SDK libraries in your application
  - Add jars to web application or deploy SDK feature to Domino
  - Include the SDK JavaScript libraries in your application pages
  - Configure SDK Proxy (Same Origin Request Policy)
  - Configure Endpoints



# Getting Involved

## □ Join the Community

<http://bit.ly/ibmsbtcommunity>

- Community Calls
- Announced via the Community
- Download the SDK
- <http://ibmsbt.openntf.org/>
- Ask and answer questions on Stack Overflow
- <http://stackoverflow.com/questions/tagged/ibmsbt>
- Get the code from GitHub
- <https://github.com/OpenNTF/SocialSDK>
- Follow us on Twitter
- <https://twitter.com/ibmsbt>
- Experiment with latest samples on Greenhouse
- <http://bit.ly/sbtplayground>



# Getting Involved

## □ Early Adopters

- Talk to us about what you need in the SDK

## □ Open Source Developers

- Contribute new projects e.g. new language bindings
- Working with an internal IBM team to add PHP support





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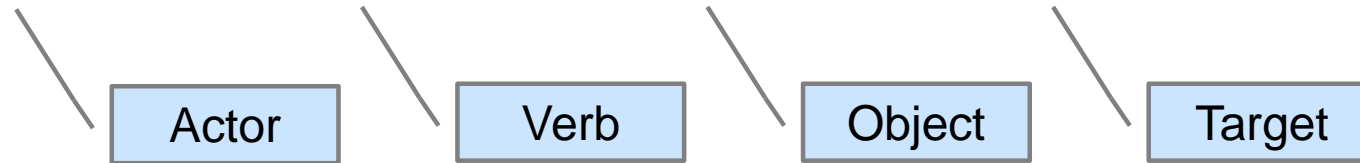
# Appendix





## How it works ? The Semantic of an event

- “John Doe posted a new picture to his album 'cats'”



- actor: The entity that performed the activity (for example, “John Doe”)
  - verb: The action that the activity describes (for example, “post”)
  - object: The primary object of the activity (for example, “picture”)
  - target: The target of the activity (for example, “album 'cats'”)
- 
- According to the Activity Streams specification activities can be serialized using
    - An ATOM document
    - or a JSON documents



# JSON representation of an activity

```
{
  "published": "2012-07-05T22:11:55Z",
  "actor": {
    "url": "http://example.org/jdoe",
    "objectType": "person",
    "id": "tag:example.org,2012:jdoe",
    "image": {
      "url": "http://example.org/jdoe/image.png",
      "width": 50,
      "height": 50
    },
    "displayName": "John Doe"
  },
  "verb": "post",
  "object": {
    "url": "http://example.org/jdoe/albums/cats/cute_cat.png",
    "objectType": "photo",
    "id": "tag:example.org,2012:cute_cat",
    "image": {
      "url": "http://example.org/jdoe/albums/cats/cute_cat_thumb.png",
      "width": 50,
      "height": 50
    },
    "displayName": "Cute Cat"
  },
  "target": {
    "url": "http://example.org/jdoe/albums/cats/",
    "objectType": "photo-album",
    "id": "tag:example.org,2012:cats",
    "displayName": "John's Cats"
  }
}
```

JSON object

# JSON representation of an activity

```
{
  "published": "2012-07-05T22:11:55Z",
  "actor": {
    "url": "http://example.org/jdoe",
    "objectType": "person",
    "id": "tag:example.org,2012:jdoe",
    "image": {
      "url": "http://example.org/jdoe/image.png",
      "width": 50,
      "height": 50
    },
    "displayName": "John Doe"
  },
  "verb": "post",
  "object": {
    "url": "http://example.org/jdoe/albums/cats/cute_cat.png",
    "objectType": "photo",
    "id": "tag:example.org,2012:cute_cat",
    "image": {
      "url": "http://example.org/jdoe/albums/cats/cute_cat_thumb.png",
      "width": 50,
      "height": 50
    },
    "displayName": "Cute Cat"
  },
  "target": {
    "url": "http://example.org/jdoe/albums/cats/",
    "objectType": "photo-album",
    "id": "tag:example.org,2012:cats",
    "displayName": "John's Cats"
  }
}
```

Actor

# JSON representation of an activity

```
{
  "published": "2012-07-05T22:11:55Z",
  "actor": {
    "url": "http://example.org/jdoe",
    "objectType": "person",
    "id": "tag:example.org,2012:jdoe",
    "image": {
      "url": "http://example.org/jdoe/image.png",
      "width": 50,
      "height": 50
    },
    "displayName": "John Doe"
  },
  "verb": "post",
  "object": {
    "url": "http://example.org/jdoe/albums/cats/cute_cat.png",
    "objectType": "photo",
    "id": "tag:example.org,2012:cute_cat",
    "image": {
      "url": "http://example.org/jdoe/albums/cats/cute_cat_thumb.png",
      "width": 50,
      "height": 50
    }
  },
  "target": {
    "url": "http://example.org/jdoe/albums/cats/",
    "objectType": "photo-album",
    "id": "tag:example.org,2012:cats",
    "displayName": "John's Cats"
  }
}
```

Verb

# JSON representation of an activity

```
{
  "published": "2012-07-05T22:11:55Z",
  "actor": {
    "url": "http://example.org/jdoe",
    "objectType": "person",
    "id": "tag:example.org,2012:jdoe",
    "image": {
      "url": "http://example.org/jdoe/image.png",
      "width": 50,
      "height": 50
    },
    "displayName": "John Doe"
  },
  "verb": "post",
  "object": {
    "url": "http://example.org/jdoe/albums/cats/cute_cat.png",
    "objectType": "photo",
    "id": "tag:example.org,2012:cute_cat",
    "image": {
      "url": "http://example.org/jdoe/albums/cats/cute_cat_thumb.png",
      "width": 50,
      "height": 50
    },
    "displayName": "Cute Cat"
  },
  "target": {
    "url": "http://example.org/jdoe/albums/cats/",
    "objectType": "photo-album",
    "id": "tag:example.org,2012:cats",
    "displayName": "John's Cats"
  }
}
```

Object

# JSON representation of an activity

```
{
  "published": "2012-07-05T22:11:55Z",
  "actor": {
    "url": "http://example.org/jdoe",
    "objectType": "person",
    "id": "tag:example.org,2012:jdoe",
    "image": {
      "url": "http://example.org/jdoe/image.png",
      "width": 50,
      "height": 50
    },
    "displayName": "John Doe"
  },
  "verb": "post",
  "object": {
    "url": "http://example.org/jdoe/albums/cats/cute_cat.png",
    "objectType": "photo",
    "id": "tag:example.org,2012:cute_cat",
    "image": {
      "url": "http://example.org/jdoe/albums/cats/cute_cat_thumb.png",
      "width": 50,
      "height": 50
    },
    "displayName": "Cute Cat"
  },
  "target": {
    "url": "http://example.org/jdoe/albums/cats/",
    "objectType": "photo-album",
    "id": "tag:example.org,2012:cats",
    "displayName": "John's Cats"
  }
}
```

Target