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EDITION

DAILY BUGLE

ENTERPRISE INTEGRATION

TEAM 6

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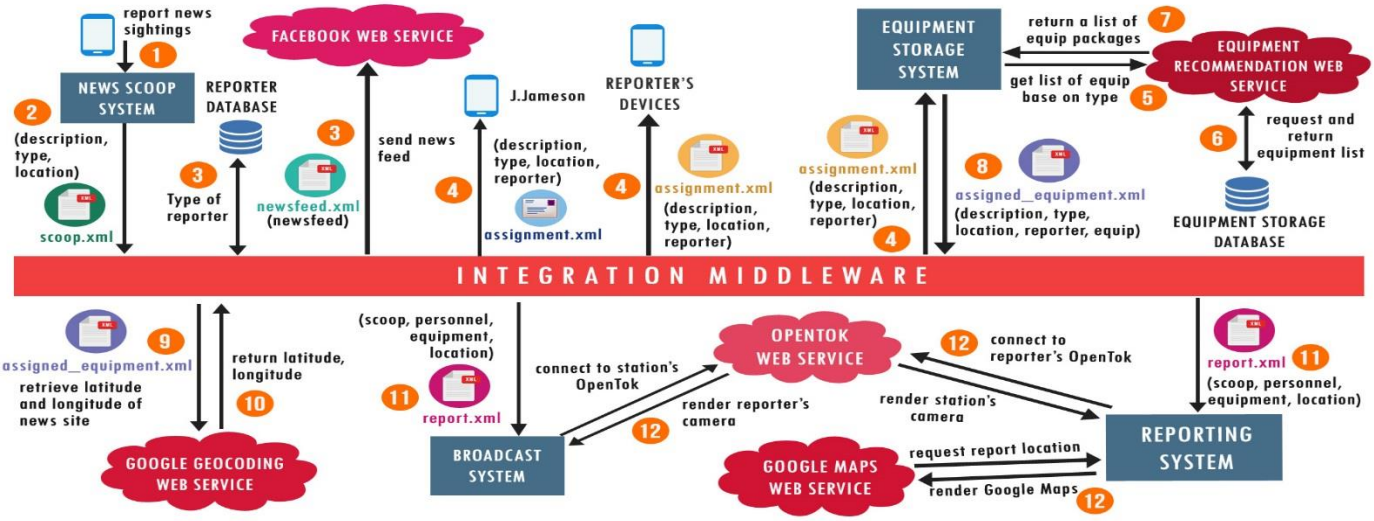
1. OVERVIEW OF BUSINESS SCENARIO

The Daily Bugle is a New York City news holding established by the infamous J. Jonah Jameson. The newspaper publishes a wide spectrum of news including important exposes of political corruption and organized crime in the city. Despite being just a mid-size press, the Daily Bugle is amongst the most celebrated press in New York City. It is able to achieve this feat for two reasons: (1) it has a wide network of dedicated informants which enables it to get first-hand notification of any potential scoop, (2) and it has a tightly-woven IT system which, upon a tip-off from its informants, allows it to despatch the most suitable reporter crew, with the most appropriate equipment, in the fastest manner to the news site.



1.1 Business Assumptions

1. The scoop sent by informants is definitely newsworthy.
2. There are always available reporters for the specified scoop.
3. Every reporter has his own set of cameraman, and news van (news van houses one of the IT system which will be further elucidated below).

1.2 Business Scenario Process

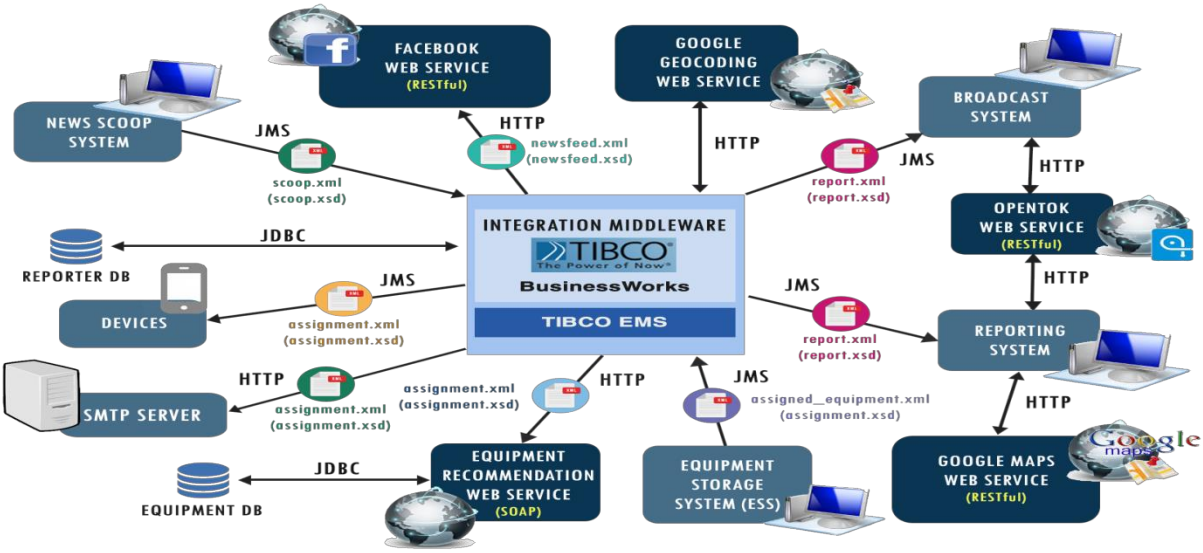
1. The **News Scoop System (NSS)** receives scoop from informants sent via a dedicated mobile application for informants, whenever they sight any scoop.
2. The **NSS** will create a scoop.xml based on the information given by the informants and send it to the Integration Middleware (IM) via a JMS Queue **(q.scoop.receiver)**.
3. The **IM** will consume the message from q.scoop.receiver (sent from NSS)
    a. The **IM** then creates newsfeed.xml and uses it to invoke the **Facebook Web Service** to post a brief description of the scoop on the Daily Bugle's Facebook page. This is done so give the public a heads-up about the upcoming news.
    b. Concurrently, the **IM** queries the **Reporter Database** to obtain the most suitable reporter based on the scoop type. Then **assignment.xml**, containing location, type, and description of scoop, and reporter name is created and sent to the device of the selected reporter and **Equipment Reservation System (ERS)**.
    c. Simultaneously, the **IM** will send an email containing details like type, description and location of scoop, and assigned reporter to the boss of Daily Bugle.
4. The **ERS**, on receiving the **assignment.xml,** invokes the **Equipment Recommendation Web Service (ERWS)** to retrieve recommended equipment packages relevant to the news type.
5. The **ERWS** then queries the **Equipment Database** to retrieve the recommended equipment packages based on the news type. This queried information will then be returned to the **ERS**.
6. The **ERS** receives the list of recommended equipment packages and allows the storeman at the Daily Bugle's Headquarter to choose from the recommended equipment packages for the reporter based on the availability in the store. An **assigned_equipment.xml** will then be created and sent to the **IM** via a JMS queue **(q.equipment.reply).**
7. The **IM** then consumes the message from the queue **(q.equipment.reply)** and retrieves information from **assigned_equipment.xml** before invoking the **Google Geocoding Web Service (GGWS)** to retrieve the latitude and longitude of the scoop location.

8. The **IM** then creates **report.xml**, by transforming data from both **assigned_equipment.xml** and the xml data retrieved from the **GGWS**. From here, **report.xml** is sent based on the priority level of the scoop (will be decided through filter of News Type).
    a. If the scoop is of a high priority, the news will be broadcasted live. As such, the **IM** will send the **report.xml** via **q.broadcast.live** and **q.van.reporting** respectively to both the **Broadcast System (BS)** and **Reporting System (RS)**.
    b. If the scoop is of a lower priority, the news would not be broadcasted live. Then, the **IM** will simply send the report.xml via **q.van.reporting** to only the **RS**.
9. The **RS**, upon receiving report.xml, uses the location of the scoop retrieved from report.xml to invoke the **Google Maps Web Service** to give the reporter a graphical orientation to allow the reporter to arrive at the location of the scoop in the fastest time possible.
10. In the event that **report.xml** is sent to the **BS** and **RS** (signifying that this is a high priority news which requires live telecast), both the **RS** and **BS** will invoke the **OpenTok Web Service**, creating a live video conference between the two systems. This essentially simulates the live telecast of news between News Anchors and the on-site reporters.

2. TECHNOLOGICAL ASPECT

In the following section we shall cover the technological aspects of Daily Bugle: (1) IT System, (2) JMS Implementation, (3) Web Services, (4) XML, (5) Database, (6) Usage of Middleware, and (7) Content-based Routing.

2.1 Technical Diagram



2.2 Involved IT System

IT System	Description
News Scoop System (NSS)	The **NSS** is a system that receives any reporting of scoops by Daily Bugle's dedicated informants.
Equipment System (ES)	The **ES** is a system used by the Daily Bugle Headquarters to determine the package of equipment to be used for the type of scoop. It invokes the **Equipment Recommendation Web Service** which will recommend a list of appropriate equipment given the type of news. The system then allows the storeman at the Daily Bugle's logistics store to select an equipment package from amongst the recommended packages based on the availability in the store.
Broadcast System (BS)	The **BS** is a system basically functions as the News Anchor Room of Daily Bugle. If a live telecast is required, BS will initiate an Opentok video session with the Reporting System to simulate live telecast.
Reporting System (RS)	The **RS** is a system that is set inside each of the news vans of the reporters

and camera crew. The **RS** has two functions: (1) functions as a medium to enable live telecast between the reporter and the **BS**, and (2) illustrate the google maps location of the reported scoop.

2.3 JMS Implementation

Integration	From	To	Pattern	JMS Queue / Topic	XML
1	NSS	IM	PTP	Q	scoop.xml
2	IM	Reporter's Device	PTP	Q	assignment.xml
3	IM	ERS	PTP	Q	assignment.xml
	ERS	IM	PTP	Q (RR)	assigned_equipment.xml
4	IM	BS	PTP	Q	report.xml
5	IM	RS	PTP	Q	report.xml

Integration 1 (q.scoop.receiver):
A JMS queue is used for the transfer of information (**scoop.xml**) from the **NSS** to the **IM**. A Point-to-Point queue was chosen as guaranteed delivery is required in order to ensure information is transferred from the **NSS** to the **IM** to trigger the entire process.
Integration 2 (q.elite.<dynamic>:
This queue is to transfer information **(assignment.xml)** of the assignment from the **IM** to the respective reporter's device. The dynamic queue names are generated with the reporter's name.
A Point-to-Point queue was chosen as guaranteed delivery is required in order for the information to be transmitted to the assigned reporter's device.
I**ntegration 3 (q.equipment.request / q.equipment.reply)**
This is a synchronous request-reply queue for the transfer of information (**assignment.xml**) from the **IM** to the ERS. The **IM** will have to wait for the **ERS** to retrieve the list of recommended equipment, via the invocation of the **Equipment Recommendation Web Service,** before proceeding to send out the retrieved information (**assigned_equipment.xml**).
Integration 4 (q.broadcast.live)
This JMS queue is used for the transfer of information (**report.xml**) from the **IM** to the **BS** to invoke the **Opentok Web Service**. A Point-to-Point queue was chosen as guaranteed delivery is required in order to ensure information is transferred from the **Im** to the **BS** to trigger the entire process.
Integration 5 (q.van.reporting)
This JMS queue is used for the transfer of information (**report.xml**) from the **IM** to the **RS** to invoke the **Opentok Web Service** (depending on whether a live telecast is required) and the **Google Maps Web Service**. A Point-to-Point queue was chosen as guaranteed delivery is required in order to ensure information is transferred from the **Im** to the **RS** to trigger the entire process.

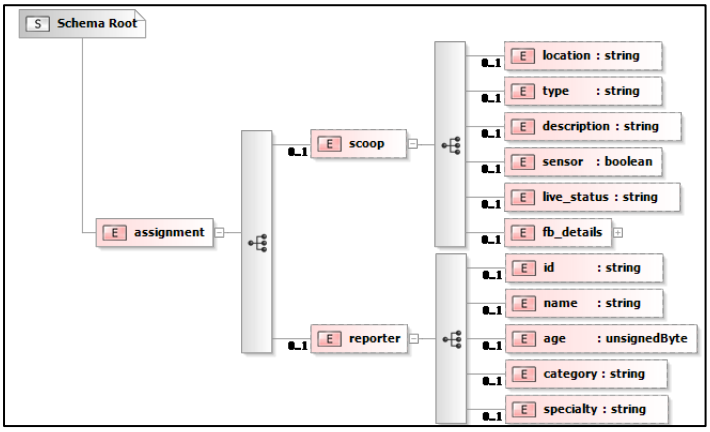
2.4 Database – MYSQL Database

Daily Bugle chose MYSQL as its database because of a few key considerations:

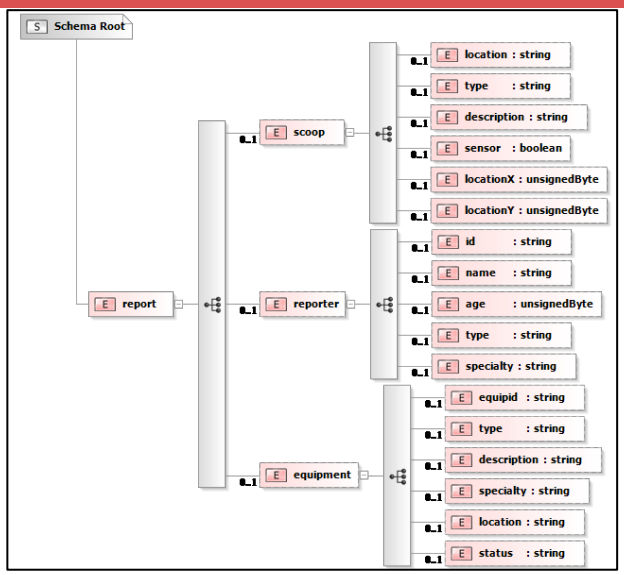
1. MYSQL promises **availability and round-the-clock technical support**. This is imperative to Daily Bugle, as the nature of its business operations (news channel) requires its database to be functional and available around-the-clock.
2. The MySQL database server provides the ultimate in **scalability**, sporting the capacity to handle with varying footprints. Such Scalability is important as it enables Daily Bugle to constantly expand its business operations without incurring exponential costs for its database.
3. The commercial license for MySQL is **relatively cheaper** as compared to other databases such as Microsoft SQL Server and Oracle. Daily Bugle may thus utilize the money saved from database on better equipment to further its business advantage.

Name of Database	Description
Reporter Database	The Reporter Database holds details of all of Daily Bugle's Reporters.
Equipment Database	The Equipment Database holds details of all kinds of videography equipment.

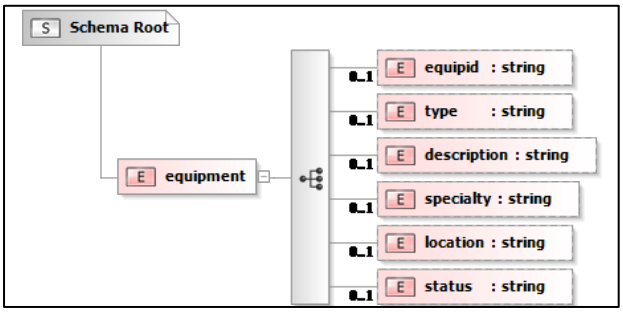
2.5 Data Design & Content



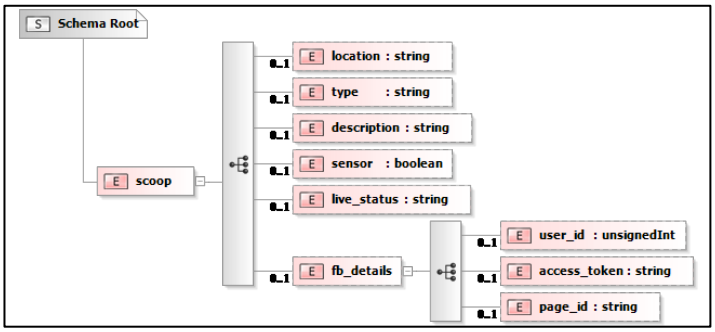
assignment.xsd



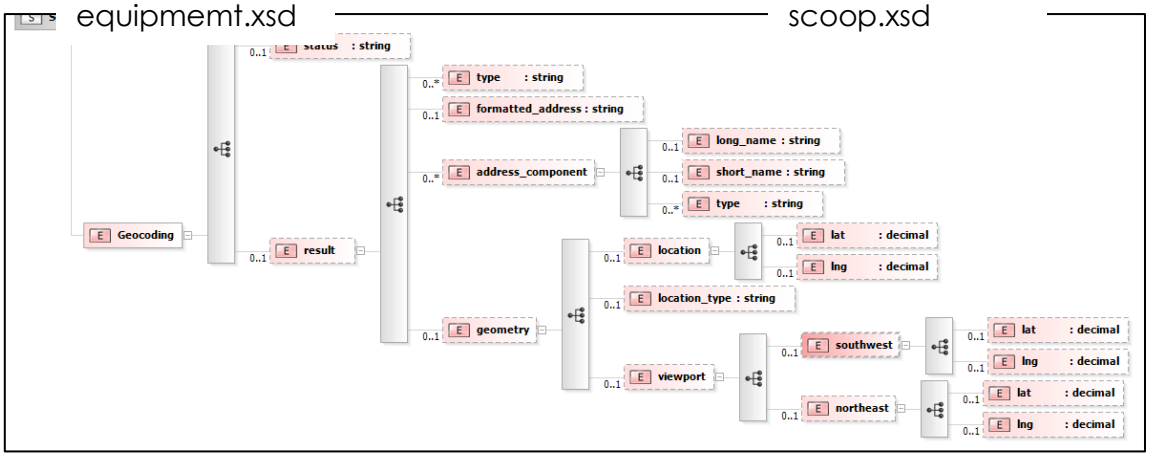
report.xsd



equipmemt.xsd



scoop.xsd



Geocoding.xsd

2.6 Web Services

Name	Protocol	Input	Output	Justifications / Purpose
Equipment Recommendation Web Service (Self-coded)	SOAP	Scoop description, location and type.	A list of the most appropriate recording device based on the type of scoop.	Other news press or individuals that requires videography equipment recommendations can invoke the web service to retrieve recommendations based on the environment (type of scoop and location).
Google Geocoding	RESTful	Scoop location provided by	Latitude and Longitude of the	Use the web service to retrieve the exact latitude and longitude of the scoop

Web Service		the informants.	scoop location based on Google map.	given the location description provided by the informants.
Google Maps Web Service	RESTful	Scoop location in the form of latitude and longitude.		Provide a visual aid to the reporter crew on the location of scoop to allow them to get there before the reporters from other press.
Opentok Web Service	RESTful	Opentok session ID and secret token.	Real-time video stream between Daily Bugle's News Anchor and on site reporter	To allow live-telecasting between the News anchor and the on-site reporter
Facebook Web Service	RESTful	UserID and access token.		Social media in the form of Facebook is used to enable Daily Bugle

2.7 XML

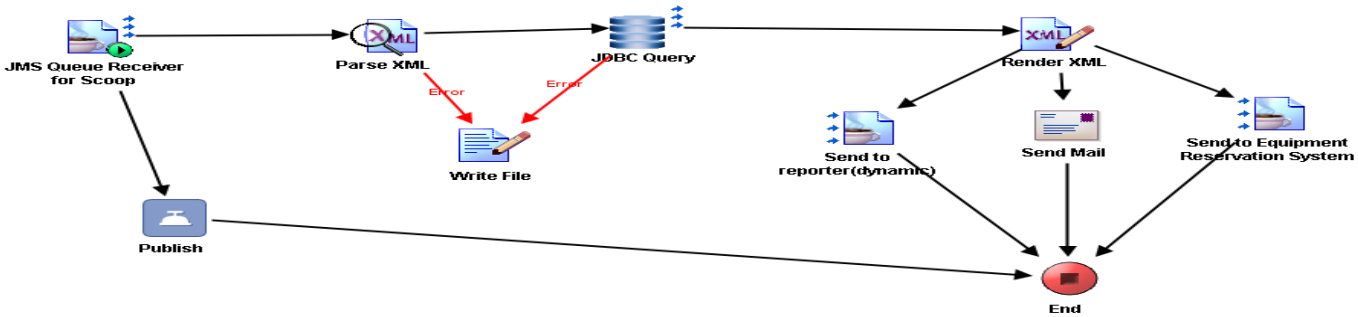
Name of XML	Purpose of XML
Scoop.xml	To record the details of the scoop. Such details includes: description of scoop, type of scoop, and location of scoop
Newsfeed.xml	To record details like the description of scoop.
Assignment.xml	To record details like type of scoop, description of scoop, location of scoop, and reporter assigned.
Assigned_equipment.xml	To record details like type of scoop, description of scoop, location of scoop, reporter assigned and equipment assigned.
Report.xml	To record details like type of scoop, description of scoop, location of scoop (in latitude and longitude), reporter assigned and equipment assigned.

2.8 Usage of Integration Middleware

Usage of IM (Process –**Agent Allocation** and **Send Mission Details**)

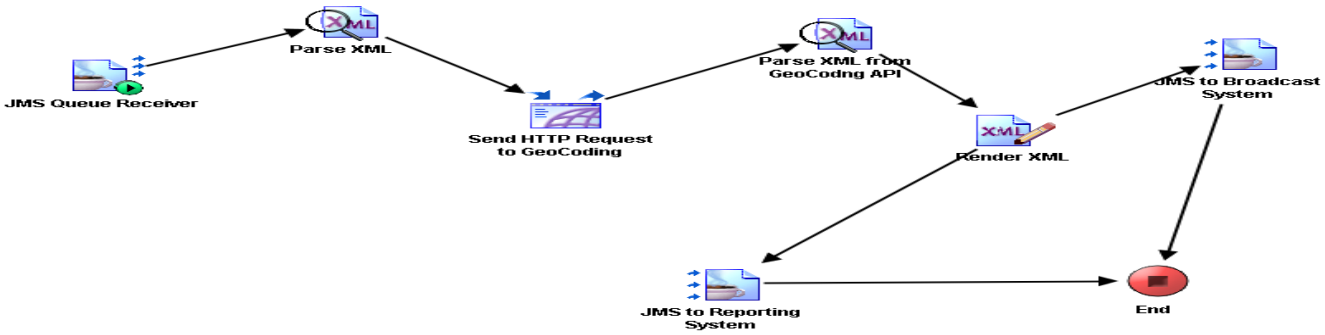
Reporter Assignment Process

The process is initiated when the JMS Queue Receiver receives a JMS message containing scoop.xml via a JMS Queue (q.new.scoop). Next, the scoop.xml will be parsed into a Document Object Model (DOM). TibcoBusinessworks would then check the Reporter Database to identify the most promising reporter for the news based on his/her specialty. Thereafter, data transformation of reporter and scoop would be transformed by Render XML activity int(scoop.xsd .xml which would then be sent to Equipment Reservation System via a JMS queue (q.equipment.request). In the Parse XML and Querying of Database activities, errors will be written to an error file using the Write to Error file activity.



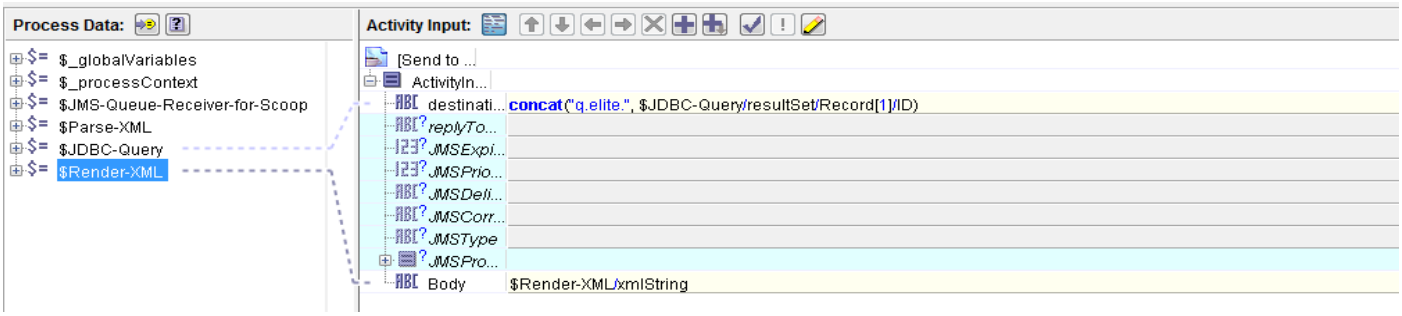
Send News Scoop Process

Similarly, the process would begin when the JMS message is received by the JMS Queue Receiver via q.equipment.reply. It would contain assigned_equipement.xml. Then, the XML received will be parsed into DOM object by the Parse XML activity. Next, **HTTP Request** is sent to **Google Geocoding Web Services** to retrieve the latitude and longitude of the news location. This process is triggered when the **JMS Queue Receiver** receives a JMS message containing **allocation.xml** via a JMS Queue (**q.gadget.reply)**. The **allocation.xml** then goes through the **Parse XML** activity for it to be converted into a DOM object. Data transformation is being carried out in this process and the newly compiled information document, **reporter.xml** will be sent to the Broadcast System **and Reporter System.**



2.9 Content-based Routing

Content-based routing is being implemented in the **IM** to send the notification of a new scoop assignment to the relevant reporter when **assignment.xml** is sent out from the **IM**. The routing is based on the reporter retrieved from assignment.xml. This will ensure that one the reporter assigned to the scoop will receive the scoop details.

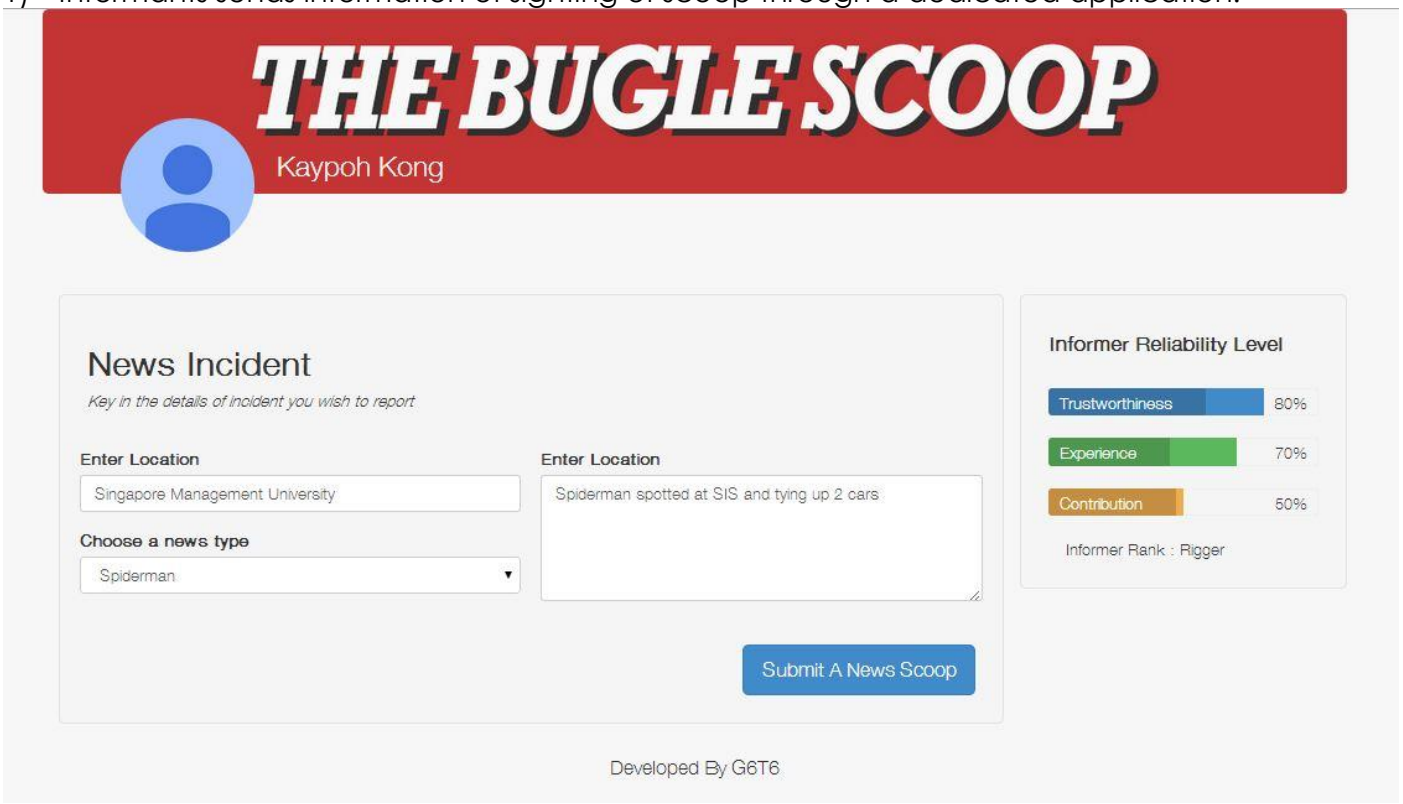


3. BEYOND THE LAB

Component	Description
OpenTok (WS)	Use of a RESTful service to provide an avenue for live telecast between two parties so as to simulate real life news reporting that requires a duplex video connection.
Google Geocoding (WS)	Use of a RESTful service to provide exact latitude and longitude of location given a description of location. This allows one to make further use of the latitude and longitude coordinates, such as to invoke the Google Map Web Services
Google Map (WS)	Use of a RESTful service to provide visual representation of the location of the news scoop with Google Maps. This is what enables Daily Bugle's Reporters to always be the first reporters on the news site.
Facebook Plugin	Use of TIBCO Facebook plugin.
JMS implementation on JSP	Gui-enabled JSP pages is used in conjunction with JMS implementation to provide a platform for interfacing.
TIBCO Designer Mail Palette	Use of TIBCO Designer Mail Palette enables sending of email containing details of the scoop to the Editor-in-Chief - Mr J. Jonah Jameson.

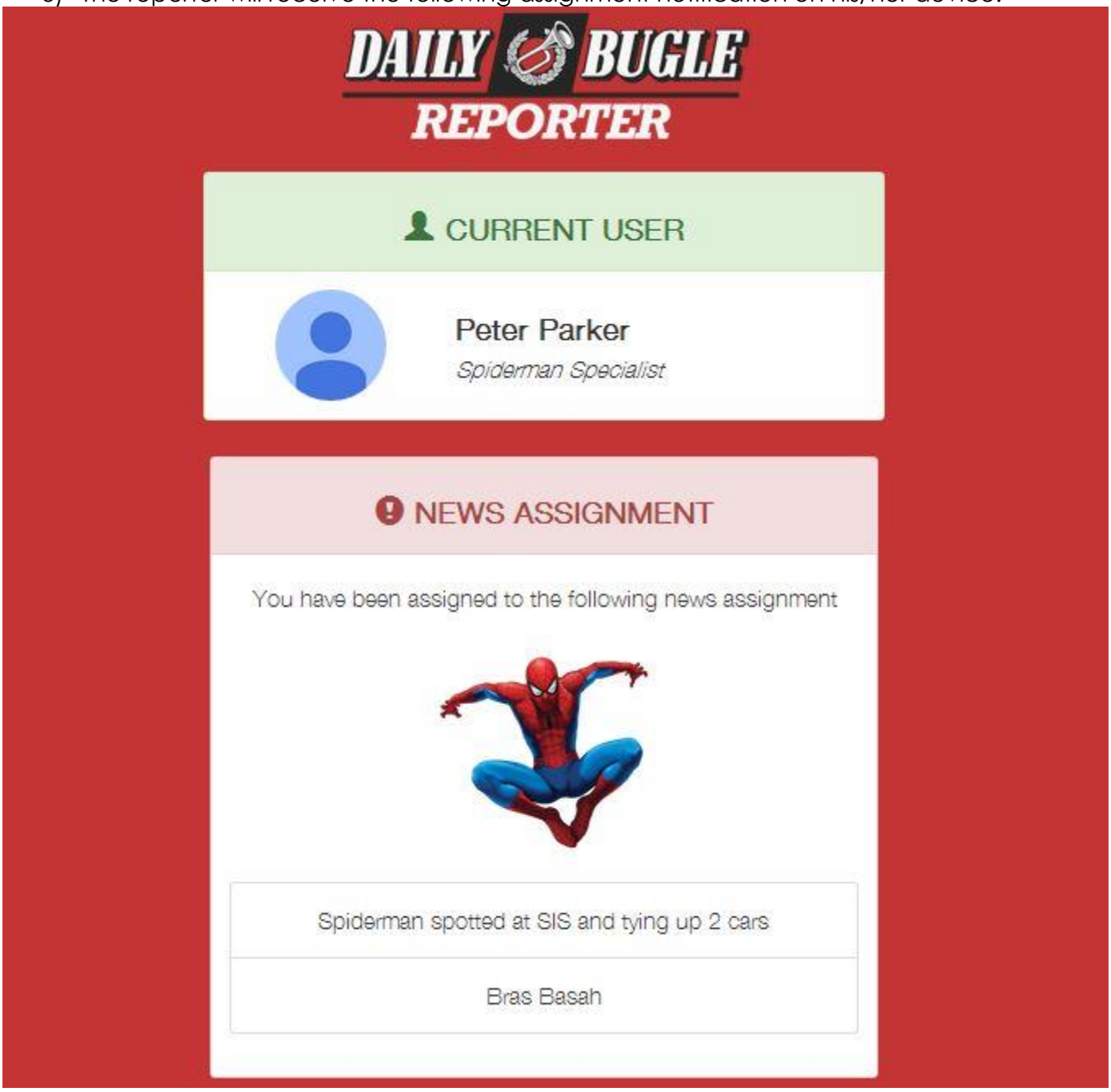
4. SYSTEM WALKTHROUGH

1) Informants sends information of sighting of scoop through a dedicated application:

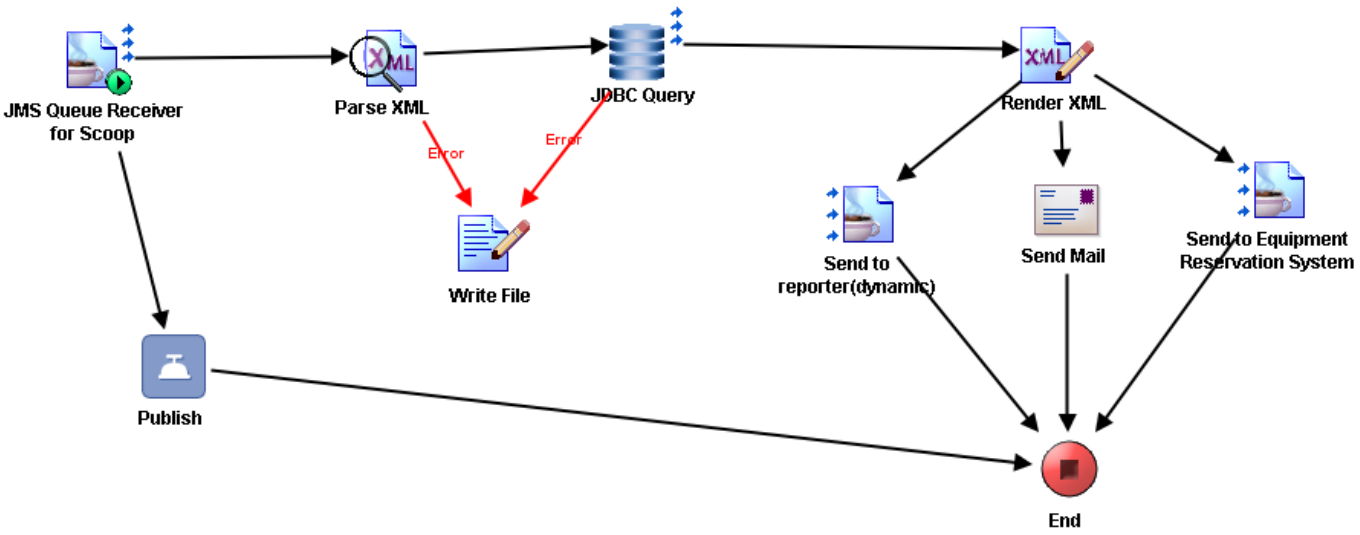


2) A confirmation message is sent back to the informant upon submission of scoop details.The information is the then sent to the **IM**. The **IM** queries the **Reporter Database** and selects the most suitable Reporter according to the scoop type
    a. Concurrently the a facebook message specifying the description of the scoop will be published onto facebook

3) The reporter will receive the following assignment notification on his/her device:



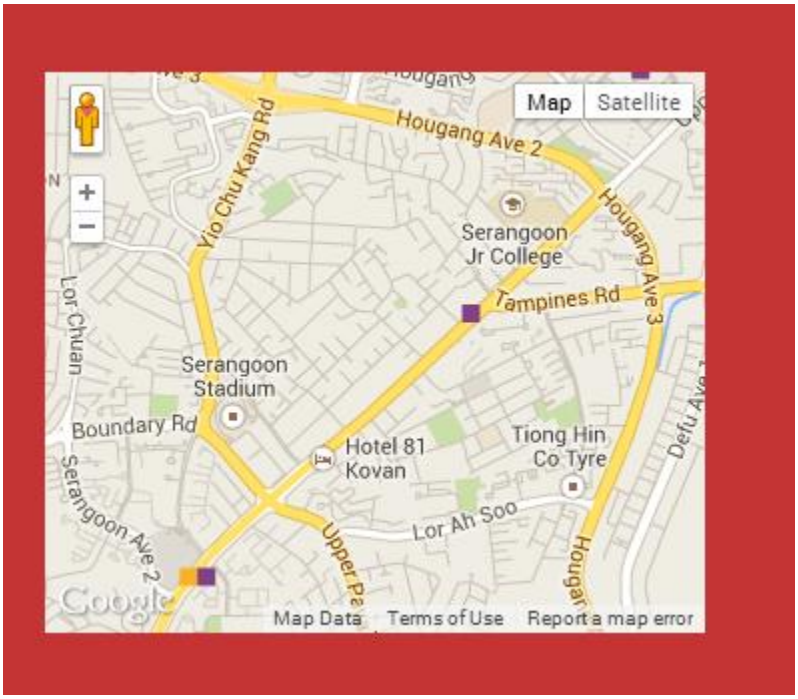
3) The IM sends the information of scoop type and assigned reporter in a message via a queue to the **ERS**. The **ERS** retrieves a list of equipment by invoking the **Equipment Reccomendation Web Service**.



4) The storeman will get to choose from one of the recommend equipment packages based on the availability in the store:

5) In the event that report.xml is sent to both the **Broadcast System (BS)** and **Reporting System (RS)**, a video conference stream is opened, via OpenTok web service, on both the **ERS** and **MRS** to enable face-to-face communication between the reporter and the News Anchor (Broadcast System):

6) The **IM** receives the **assigned_equipement.xml** details comprising of the assigned equipment, scoop, assigned reporter and scoop location. The **IM** then invokes the GeoCode Web Services with the scoop location to get the latitude and longitude coordinates and pass them on to the **RS** in the form of report.xml**.** Through that the **RS** can invoke the Google Maps Web Service for a visual Orientation. The **IM** will also send the report.xml to **BS** if there is a need for live telecast. In doing so, the **RS** and **BS** will invoke a life video stream which simulates a live telecast between the News Anchor and Reporter on Site.


Map
Satellite
Hougang Ave 2
Yio Chu Kang Rd
Serangoon
Jr College
Hougang Ave 3
Tampines Rd
Lor Chuan
Serangoon
Stadium
Boundary Rd
Hotel 81
Kovan
Tiong Hin
Co Tyre
Lor Ah Soo
Serangoon Ave 2
Upper Pa
Hougar
Map Data
Terms of Use
Report a map error