



DRUPALCON
ASIA
2016



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Seamless inter-operability of mobility and web using **Drupal**



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2016

Introductions
Problem
Challenges
The Solution
How it's done?
Live demo
The future



Introductions

Melvin & Azhan
Singapore Management
University (SMU)



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The team



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SMU Quick Facts



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SMU Quick Facts

ESTABLISHED IN JANUARY 2000

ALMOST 10,000 UNDERGRADUATES & POSTGRADUATES

50% INTERNATIONAL POSTGRADUATE STUDENTS FROM 34 COUNTRIES

11% INTERNATIONAL UNDERGRADUATE STUDENTS FROM 25 COUNTRIES

OVER 14,000 ALUMNI



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SMU & Drupal

Started Drupal - 2013

40-50 active webmasters

Over 100 Drupal-based sites



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Office of
Global Learning

- ABOUT US
- GLOBAL PROGRAMMES
- INTERNATIONAL STUDENTS
- DIVERSITY & INCLUSION
- CONTACT US
- NEWS
- EVENTS

DIVERSITY & INCLUSION

**EMBRACE NEW PERSPECTIVES, IDENTIFY
NICHE OPPORTUNITIES, AND ENGAGE
DIFFERENT AUDIENCES WHILE DRIVING
INNOVATION AND CHANGE.**

> LEARN MORE

Office of Global Learning

NEWS



NEWS



NEWS





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GLOBAL STUDENT PROGRAMMES

INTERNATIONAL
STUDENT EXPERIENCE



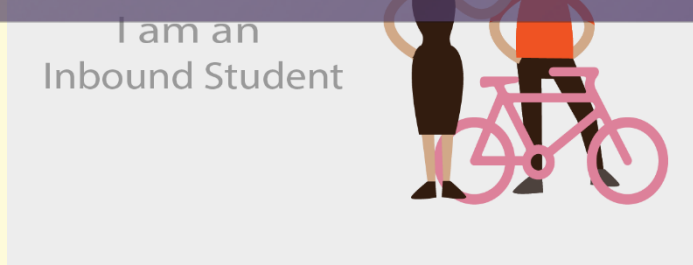
DIVERSITY
AND INCLUSION



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The Global Exchange App





The problem

Mobile App
to improve comms
accessibility to
&
notification of
important information



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Challenges

works **without internet** access
single source **of content**
simple content management
automatic **content sync**
notification of urgent advisories



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Possible Solutions

FrontEnd: Native Mobile App

BackEnd:

Evernote-ish?

WordPress?

Drupal?



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The Solution

FrontEnd: Native Mobile App

BackEnd:

~~Evernote-ish?~~

~~WordPress?~~

Drupal



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How it works



SMU GLOBAL EXCHANGE



How It Works?

1 Student downloads App from Apple App Store, Google Play



Available on the iPhone
App Store



ANDROID APP ON
Google play

2 App launches and updates itself with the latest content from Web

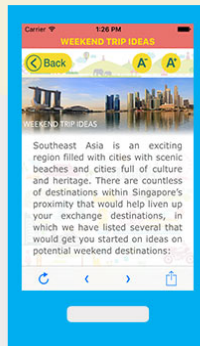


JSON

Images

Videos

Documents



3 Content Owner makes changes to a webpage and saves

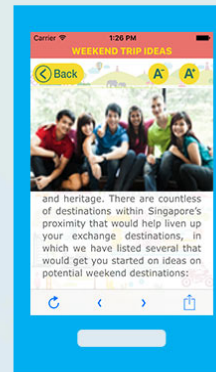


Saves



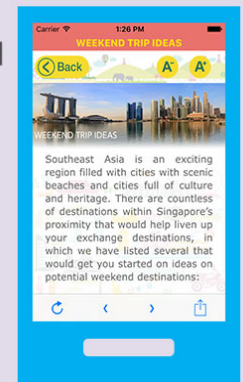
Internet Available

- a** App transparently updates and displays new content.
- b** All the assets in the page are saved for future offline viewing.



Internet Unavailable

- a** App retrieves and displays the saved copy of the page.
- b** Awaits for internet to be available.
- c** Updates content when there is internet.





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APPLE APP STORE

1:04 AM 82%

SMU Global Exchange [4+]
Singapore Management University >

OPEN

Details | Reviews | Related

Description

Global exposure is an integral part of the SMU learning experience because it is important for students to know how to engage and thrive in an international environment – the Office of Global Learning (OGL) reflects the broader intent of nurturing all SMU students to be citizens of the world.... [more](#)

Featured | Top Charts | Explore | Search | Updates

GOOGLE PLAY STORE

SMU Global Exchange
Singapore Management University
[3+]

INSTALL

50 Downloads | 5.0 (5 stars) | Education | Similar



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2

App launches and updates itself with the latest content from Web



- JSON
- Images
- Videos
- Documents





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3

Content Owner makes changes to a webpage and saves





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Internet Available

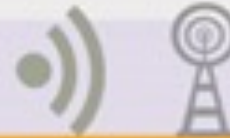
- a** App transparently updates and displays new content.
- b** All the assets in the page are saved for future offline viewing.





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Internet Unavailable



- a** App retrieves and displays the saved copy of the page.
- b** Awaits for internet to be available.
- c** Updates content when there is internet.





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How is it done?



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Backend – Drupal modules

VIEWS, VIEWS UI, CTOOLS, TOKEN, LIBRARIES

**SERVICES, REST SERVER, SERVICES VIEWS,
SERVICES MENU**

DRUPAL



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Structure > Services > Add+

[Home](#) » [Administration](#) » [Structure](#) » [Services](#)

Add a new endpoint

Machine-readable name of the endpoint *

The endpoint name can only consist of lowercase letters, underscores, and numbers.

Server *

Select a the server that should be used to handle requests to this endpoint.

Path to endpoint *

Debug mode enabled

Useful for developers. Do not enable on production environments

Authentication

Session authentication

Choose which authentication schemes that should be used with your endpoint. If no authentication is selected, all requests will be done by an anonymous user.

Save



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Structure > Services > Server

[Home](#) » [Administration](#) » [Structure](#) » [Services](#)

Services +

EDIT

SERVER

REST

Response formatters ^{*}

- bencode
- json
- jsonp
- php
- xml

Select the response formats you want to enable for the rest server.

Request parsing ^{*}

- application/json
- application/vnd.php.serialized



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Structure > Services > Auth

Edit endpoint mobile +

EDIT

SERVER

AUTHENTICATION

SESSION AUTHENTICATION

Services has no settings available.

Save



Structure > Services > Resources

Home » Administration » Structure » Services

Services +

EDIT SERVER AUTHENTICATION RESOURCES

Resources


Select the resource(s) or methods you would like to enable, and click Save.

<input type="checkbox"/>	RESOURCE	SETTINGS	ALIAS
<input type="checkbox"/>	▶ comment		<input type="text"/>
<input type="checkbox"/>	▼ file		<input type="text"/>
CRUD operations			
<input type="checkbox"/>	create Create a file with base64 encoded data		
<input checked="" type="checkbox"/>	retrieve Retrieve a file		
<input type="checkbox"/>	delete Delete a file		
<input checked="" type="checkbox"/>	index List all files		



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The Drupal site



Home Services About Us

User login

Username *

Password *

- [Create new account](#)
- [Request new password](#)

Home

We are the caretakers of your office when you end your day, and ensure your next day with a clean, safe and conducive environment.

Your productivity is our utmost concern!



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Drupal node (normal view)

The screenshot shows a Drupal node page in normal view. At the top, there is a navigation menu with links: Dashboard, Content, Structure, Appearance, People, Modules, Configuration, Reports, and Help. Below this is a secondary navigation bar with "Add content" and "Find content" on the left, and "Edit shortcuts" on the right. The main content area has a blue background with a teal brush icon. Below the icon are three tabs: "Home", "Services", and "About Us". The "Services" tab is selected. Below the tabs, the word "Home" is visible. A dark overlay at the bottom contains a toolbar with icons for navigation, zoom, and editing, along with "View" and "Edit" buttons. A mouse cursor is pointing at the "Edit" button. In the top right corner, there is a "Hello jani" greeting and a "powered by Screencastify Lite" watermark.



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Drupal node (normal view)

A screenshot of a Drupal node page in normal view. The page has a dark blue header with a home icon and the text "Hello jani". Below the header is a navigation menu with links: Dashboard, Content, Structure, Appearance, People, Modules, Configuration, Reports, and Help. Underneath the navigation menu is a secondary bar with "Add content", "Find content", and "Edit shortcuts". The main content area has a blue background with a teal comb icon. Below the icon are three tabs: "Home", "Services", and "About Us". The "Services" tab is active. Below the tabs, the word "Home" is visible. At the bottom of the screenshot, there is a dark grey toolbar with icons for navigation and editing, and two buttons labeled "View" and "Edit". A mouse cursor is pointing at the "View" button. In the top right corner of the screenshot, there is a small watermark that says "powered by Screencastify Lite".



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Drupal node as JSON feed


```
mothership/drupal/mobile/1
mothership/drupal/mobile/node/1
// 20160214180312
// http://mothership/drupal/mobile/node/1
{
  "vid": "1",
  "uid": "1",
  "title": "Home",
  "log": "",
  "status": "1",
  "comment": "1",
  "promote": "0",
  "sticky": "0",
  "nid": "1",
  "type": "page",
  "language": "und",
  "created": "1455435153",
  "changed": "1455435242",
  "tnid": "0",
  "translate": "0",
  "revision_timestamp": "1455435242",
  "revision_uid": "1",
  "body": {
    "und": [
```



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Exporting the Main menu

[Home](#) » [Administration](#) » [Structure](#) » [Menus](#) » [Main menu](#)

Main menu 

Menu name *

main-menu

machine
name

A unique name to construct the URL for the menu. It must be unique across all menus.

Description

The *Main* menu is used on many sites to show the main navigation.



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Drupal menu as JSON feed

```
mothership/drupal/mobile X
mothership/drupal/mobile/menu/main-menu
Too Many Good Thi... Android Forums at... Installing Android Ki... Bookmarks 8 Classic storytelling... Other bookmarks

1 // 20160214180133
2 // http://mothership/drupal/mobile/menu/main-menu
3
4 {
5   "name": "main-menu",
6   "tree": {
7     "Home | 221": {
8       "link": {
9         "mlid": "221",
10        "plid": "0",
11        "title": "Home",
12        "description": null,
13        "path": "<front>",
14        "path_alias": false,
15        "href": "<front>",
16        "hidden": "0",
17        "external": "1",
18        "has_children": "0",
19        "weight": "0",
20        "depth": "1",
21        "options": [
```




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Drupal with iOS and Android





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Consuming JSON feed

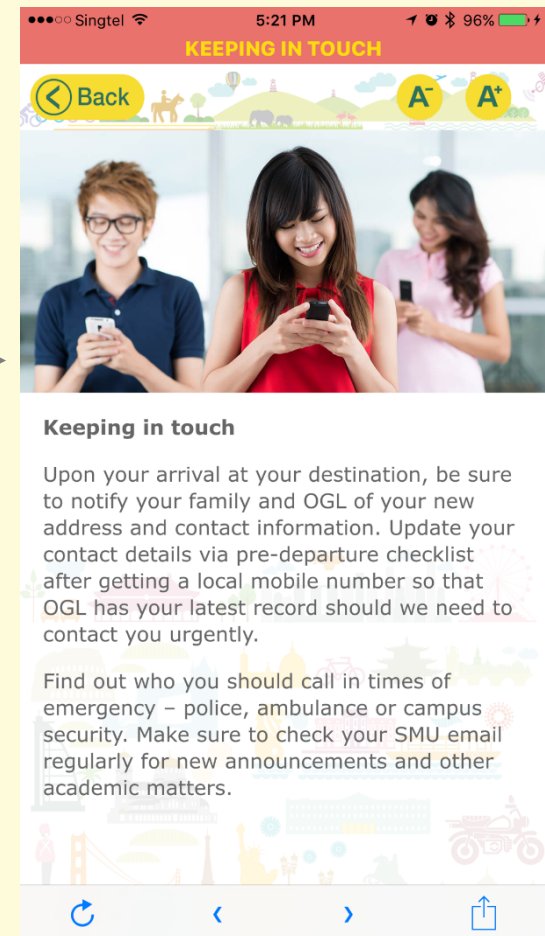
MAIN MENU



SUB MENU



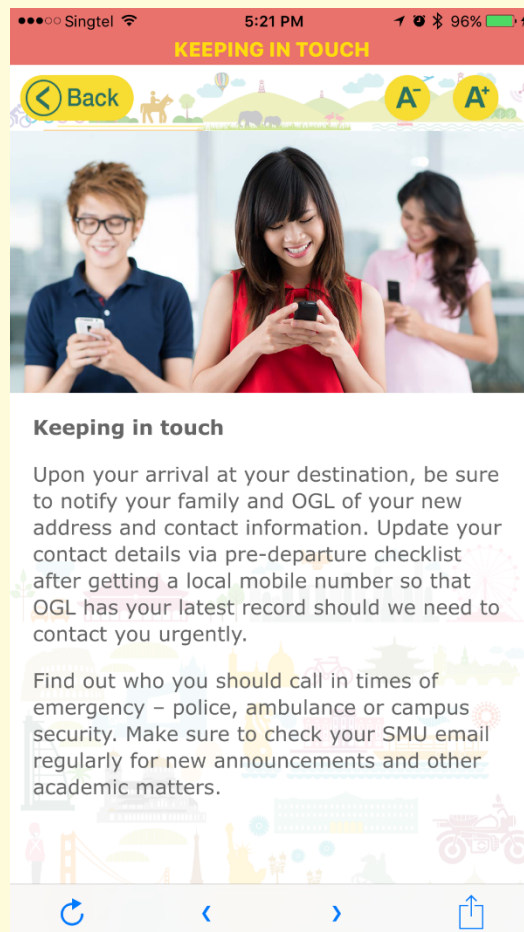
CONTENT





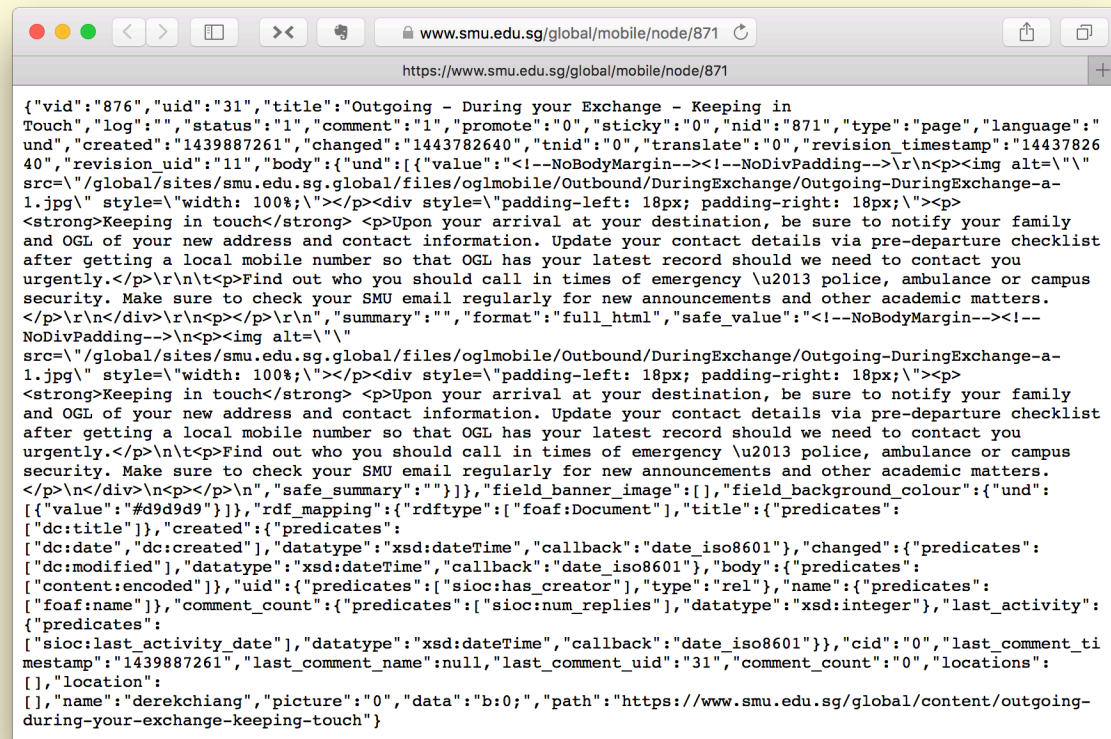
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Consuming JSON feed



Node 871

<https://www.smu.edu.sg/global/mobile/node/871>





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Consuming JSON feed

Node 871

<https://www.smu.edu.sg/global/mobile/node/871>

```
1 {
2   "vid": "876",
3   "uid": "31",
4   "title": "Outgoing - During your Exchange - Keeping in Touch",
5   "log": "",
6   "status": "1",
7   "comment": "1",
8   "promote": "0",
9   "sticky": "0",
10  "nid": "871",
11  "type": "page",
12  "language": "und",
13  "created": "1439887261",
14  "changed": "1443782640",
15  "tnid": "0",
16  "translate": "0",
17  "revision_timestamp": "1443782640",
18  "revision_uid": "11",
19  "body": {
20    "und": [
21      {
22        "value": "<!--NoBodyMargin--><!--NoDivPadding-->\r\n<p><img alt=\"\" src=\"/global/sites/smu.edu.sg.global/files/oglmobile/Outbound/
                /DuringExchange/Outgoing-DuringExchange-a-1.jpg\" style=\"width: 100%;\"></p><div style=\"padding-left: 18px; padding-right: 18px;\"><p><strong
                >Keeping in touch</strong> <p>Upon your arrival at your destination, be sure to notify your family and OGL of your new address and contact
                information. Update your contact details via pre-departure checklist after getting a local mobile number so that OGL has your latest record
                should we need to contact you urgently.</p>\r\n\t<p>Find out who you should call in times of emergency - police, ambulance or campus security.
                Make sure to check your SMU email regularly for new announcements and other academic matters.</p>\r\n</div>\r\n<p></p>\r\n",
23        "summary": "",
24        "format": "full_html",
25        "safe_value": "<!--NoBodyMargin--><!--NoDivPadding-->\n<p><img alt=\"\" src=\"/global/sites/smu.edu.sg.global/files/oglmobile/Outbound/
                /DuringExchange/Outgoing-DuringExchange-a-1.jpg\" style=\"width: 100%;\"></p><div style=\"padding-left: 18px; padding-right: 18px;\"><p><strong
                >Keeping in touch</strong> <p>Upon your arrival at your destination, be sure to notify your family and OGL of your new address and contact
                information. Update your contact details via pre-departure checklist after getting a local mobile number so that OGL has your latest record
                should we need to contact you urgently.</p>\n\t<p>Find out who you should call in times of emergency - police, ambulance or campus security.
                Make sure to check your SMU email regularly for new announcements and other academic matters.</p>\n</div>\n<p></p>\n",
26        "safe_summary": ""
27      }
28    ]
29  },
}
```



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JSON Field 'safe_value'

```
"safe_value": "<p><img alt=\"\" src=\"/global/sites/smu.edu.sg
.global/files/oglmobile/Outbound/DuringExchange/Outgoing
-DuringExchange-a-1.jpg\" style=\"width: 100%;\"></p><div style
=\"padding-left: 18px; padding-right: 18px;\"><p><strong
>Keeping in touch</strong> <p>Upon your arrival at your
destination, be sure to notify your family and OGL of your new
address and contact information. Update your contact details
via pre-departure checklist after getting a local mobile number
so that OGL has your latest record should we need to contact
you urgently.</p>\n\t<p>Find out who you should call in times
of emergency - police, ambulance or campus security. Make sure
to check your SMU email regularly for new announcements and
other academic matters.</p>\n</div>\n<p></p>\n",
```



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Relative Path and Base URL



```
"safe_value": "<p></p><div style="padding-left
```

Base URL



```

```




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Consuming JSON feed on iOS

```
NSURLResponse *response;
NSError *error = nil;
NSURL *url = [NSURL URLWithString:@"https://www.smu.edu.sg/global/mobile/node/871"];
NSMutableURLRequest *urlReq=[NSMutableURLRequest requestWithURL:url];

NSData *receivedData = [NSURLConnection sendSynchronousRequest:urlReq
                                       returningResponse:&response
                                       error:&error];

if(receivedData !=nil)
{
    NSError *jError = nil;
    NSDictionary* jsonDict = [NSJSONSerialization JSONObjectWithData:receivedData options:0 error:&jError];

    NSDictionary *body = (NSDictionary *)[jsonDict objectForKey:@"body"];

    NSArray *array = [body objectForKey:@"und"];
    NSDictionary *und = [array objectAtIndex:0];
    contentHTML = [und objectForKey:@"safe_value"];

    [self.webView loadHTMLString:contentHTML baseURL:[NSURL URLWithString:@"https://www.smu.edu.sg"]];
}
```



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Consuming JSON feed on Android

```
private void loadWebView() {
    final WebView webView = (WebView) findViewById(R.id.webview);
    webView.post(new Runnable() {
        @Override
        public void run() {
            try {
                URL url = new URL("https://www.smu.edu.sg/global/mobile/node/871");
                HttpURLConnection urlConnection = (HttpURLConnection) url.openConnection();

                InputStream in = new BufferedInputStream(urlConnection.getInputStream());

                JSONObject response = new JSONObject(convertInputStreamToString(in));
                JSONObject body = response.getJSONObject("body");
                JSONArray und_array = body.optJSONArray("und");
                JSONObject und = und_array.optJSONObject(0);
                String safe_value = und.optString("safe_value");

                webView.loadDataWithBaseURL("https://www.smu.edu.sg", safe_value, "text/html", "UTF-8", null);
            }
            catch (Exception e) { e.printStackTrace(); }
        }
    });
}

private String convertInputStreamToString(InputStream inputStream) throws IOException {
    String line = ""; String result = "";
    BufferedReader bufferedReader = new BufferedReader(new InputStreamReader(inputStream));

    while((line = bufferedReader.readLine()) != null)
        result += line;

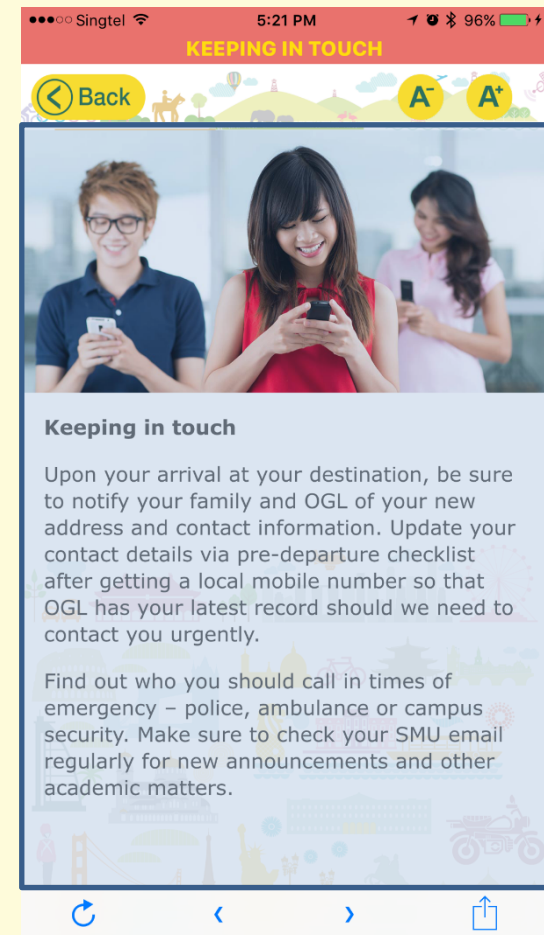
    return result;
}
```



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JSON feed on native WebView

```
"safe_value": "<!--NoBodyMargin--><!--NoDivPadding-->\n<p><img alt=\"\" src=\"/global/sites/smu.edu.sg.global/files/oglmobile/Outbound/DuringExchange/Outgoing-DuringExchange-a-1.jpg\" style=\"width: 100%;\"></p>\n<div style=\"padding-left: 18px; padding-right: 18px;\">\n<p><strong>Keeping in touch</strong> <p>Upon your arrival at your destination, be sure to notify your family and OGL of your new address and contact information. Update your contact details via pre-departure checklist after getting a local mobile number so that OGL has your latest record should we need to contact you urgently.</p>\n<p>Find out who you should call in times of emergency - police, ambulance or campus security. Make sure to check your SMU email regularly for new announcements and other academic matters.</p>\n</div>\n<p></p>\n",
```





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Offline Caching

3

Content Owner makes changes to a webpage and saves



Internet Available

a

App transparently updates and displays new content.

b

All the assets in the page are saved for future offline viewing.



a

App retrieves and displays the saved copy of the page.

b

Awaits for internet to be available.

c

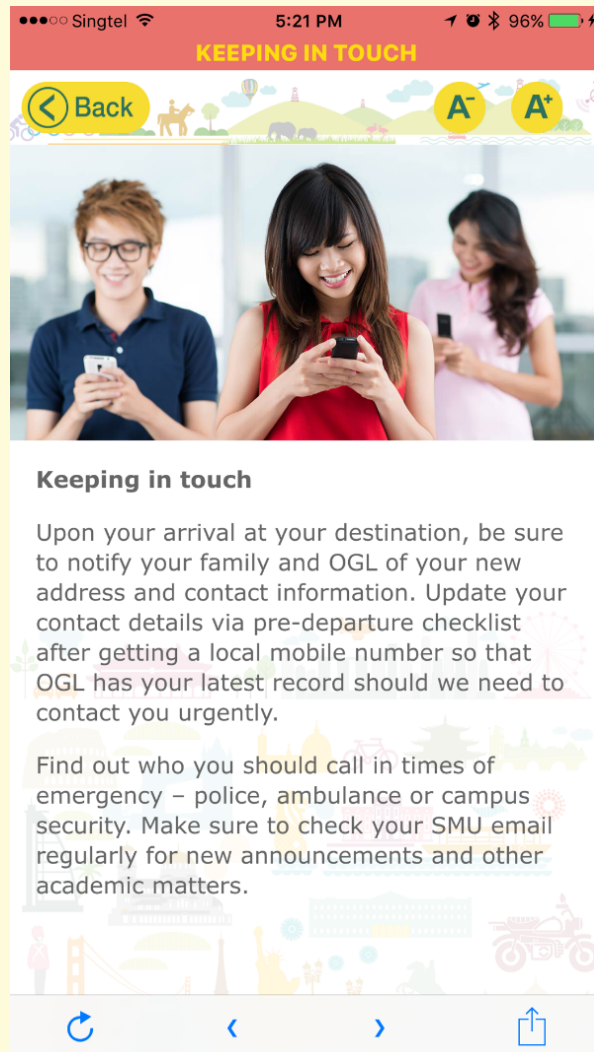
Updates content when there is internet.





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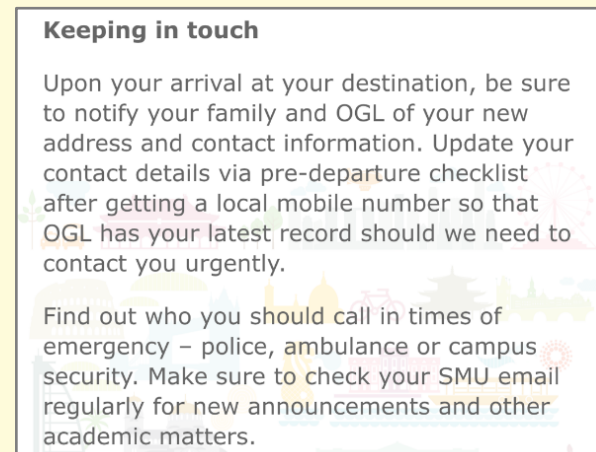
Offline Caching



Image



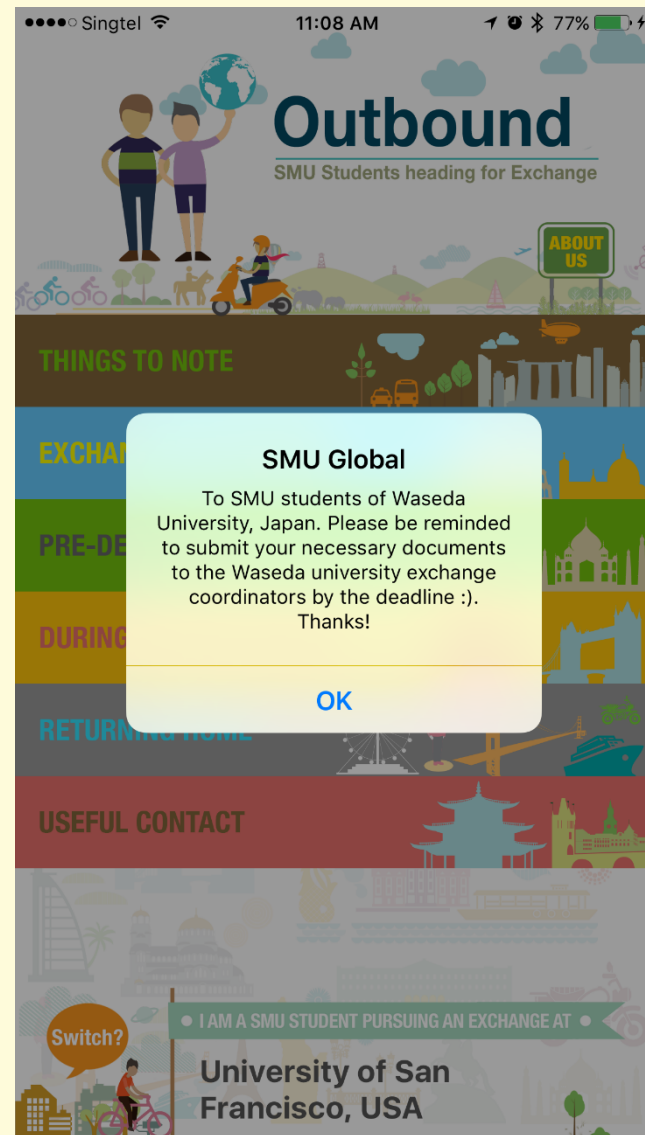
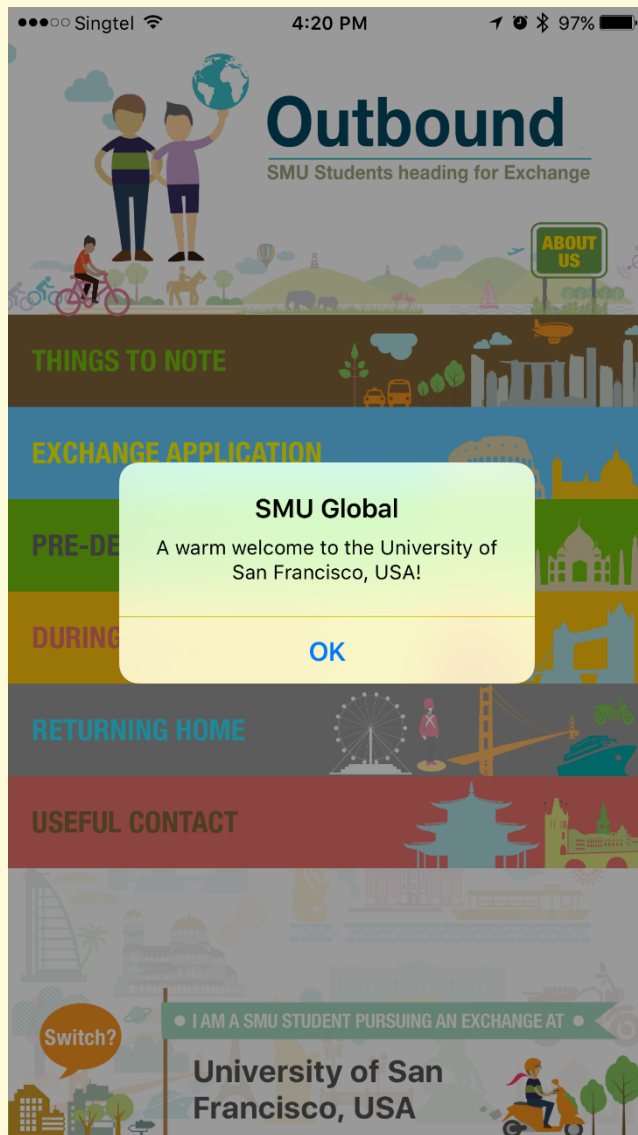
HTML Text





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Push Notifications





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Push Notifications - Channels



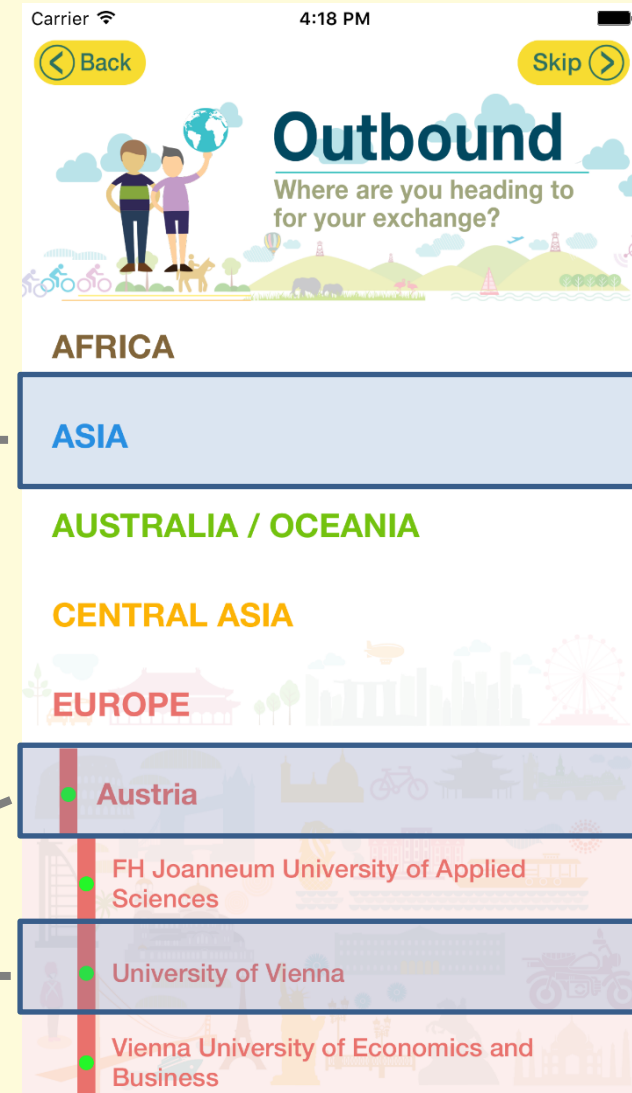
Outbound
SMU students visiting overseas Universities

Region

Inbound
Overseas students visiting SMU

Country

University





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Push Notifications using Parse

The screenshot shows the Parse dashboard interface. At the top, there is a navigation bar with the Parse logo, the text 'SMU Glob...' and 'PROD', and menu items for 'Core', 'Analytics', 'Push', 'Settings', and 'Docs'. The 'Push' menu item is highlighted. Below the navigation bar, the 'Pushes' section is active, showing a 'Back' button and the text 'Send a push notification'. The main content area displays a 'Choose Your Recipients' dialog box. The dialog has a title 'Choose Your Recipients' and a subtitle 'Send to everyone, or use segments to choose the right users.' Below the title, there is a 'Cancel' button and a 'Create an Audience' section. The 'Create an Audience' section is divided into two parts: 'CHOOSE PLATFORMS' and 'INSTALLATION CONDITIONS'. Under 'CHOOSE PLATFORMS', there are two blue buttons for 'iOS' and 'Android', both of which have a checkmark in the top right corner. Under 'INSTALLATION CONDITIONS', there is a dropdown menu with 'channels' selected, followed by a 'contains any of' dropdown. To the right of these dropdowns, there is a list of selected conditions: 'ASIA', 'India', and 'United_Kingdom_University_of_Manchester'. Below the list, there is an 'Add condition' button. At the bottom of the dialog, there is a 'Save this Audience?' section with a 'No' button and a 'Yes' toggle switch that is currently turned on.



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Live Demo



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The Future of inter-operability



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Opportunities, Resources

**More “Evernote-like” apps
“Save” a website offline**

Other sessions

***“The New Mobile Web
Trinity” -callahad***



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Thank You!

Email us:
nextweb@smu.edu.sg



WHAT DID YOU THINK?
EVALUATE THIS SESSION

asia2016.drupal.org/schedule