Enhancing Emergency Management in Ireland using Mobile Technologies
Cian O’Brien
if ( !function_exists('hex2rgb') ) {
    function hex2rgb($hex_str, $return_string = false, $separator = ',') {
        $rgb_array = array();
        if (strlen($hex_str) == 6) {
            $color_val = hexdec($hex_str);
            $rgb_array['r'] = 0xFF & ($color_val >> 0x10);
            $rgb_array['g'] = 0xFF & ($color_val >> 0x8);
            $rgb_array['b'] = 0xFF & $color_val;
        } elseif (strlen($hex_str) == 3) {
            $rgb_array['r'] = hexdec(substr($hex_str, 0, 1, 2));
            $rgb_array['g'] = hexdec(substr($hex_str, 1, 1, 2));
            $rgb_array['b'] = hexdec(substr($hex_str, 2, 1, 2));
        } else {
            return false;
        }
        return $return_string ? implode($separator, $rgb_array) : $rgb_array;
    }
}
The reason why the EU fund research activities is to develop identified ‘deficiencies’ within the union …
<table>
<thead>
<tr>
<th>Energy</th>
<th>Agriculture &amp; Forestry</th>
<th>Environment &amp; Climate</th>
<th>Innovation</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Resources</td>
<td>Food &amp; Healthy Diet</td>
<td>International Cooperation</td>
<td>SMEs</td>
</tr>
<tr>
<td>Bio-based Industries</td>
<td>Funding Researchers</td>
<td>Key Enabling Technologies</td>
<td>Social Sciences &amp; Humanities</td>
<td></td>
</tr>
<tr>
<td>Biotechnologies</td>
<td>Health</td>
<td>Raw Materials</td>
<td>Society</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>ICT Research &amp; Innovation</td>
<td>Research Infrastructures</td>
<td>Space</td>
<td></td>
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</tbody>
</table>
The EU Framework Programmes for Research have two main strategic objectives:

• to strengthen the scientific and technological base of European union;
• to promoting research that supports EU policies.
Overarching principles of EU research
Tackling Global Challenges Together
Funding for Excellent Science
Focus on Innovation
Access to World-Class Research Infrastructures
Access to new networks and alliances
JOIN THE TEAM
The central aim of S-HELP is to develop and deliver a holistic framed approach to healthcare preparedness, response and recovery. S-HELP is a people, process and technological solution to emergency situations.
THE GLOBAL AVIATION NETWORK
DISEASE CAN SPREAD NEARLY ANYWHERE WITHIN 24 HOURS
As increasing numbers of people travel by air, the potential risk of introduction and spread of infectious diseases by travelers is on the rise.
The transmission of influenza viruses, for example, is facilitated in closed/semi-closed settings through direct person-to-person contact or from contaminated surfaces. At the beginning of the influenza A(H1N1) pandemic in 2009, air travel was the cause of the introduction of this new virus into countries not primarily affected, and airplanes are likely to be a major vector when the next pandemic occurs.
International Health Regulations

Building international public health security

World Health Organization
Aer Lingus Flight 882 (Malaga) is on approach to Cork Airport.
The Pilot reports that 21 passengers on board are complaining of nausea, diarrhoea and vomiting.
Strengthening health security by implementing the International Health Regulations (2005)

Public health passenger locator card

To assist in passenger contact tracing, a public health passenger locator card has been developed by an informal transportation working group convened by the World Health Organization. The group consisted of representatives from national public health authorities and international transportation organizations.

This passenger locator card provides an appropriate method of rapidly collecting passenger contact information and is recommended to be used when public health authorities suspect the potential for disease transmission on board an aircraft and a subsequent need for contact tracing. The information is intended to be held by public health authorities in accordance with applicable law and is to be used only for authorized public health purposes.
**Public Health Passenger Locator Form:**

To protect your health, public health officers need you to complete this form whenever they suspect a communicable disease onboard a flight. Your information will help public health officers to contact you if you were exposed to a communicable disease. It is important to fill out this form completely and accurately. Your information is intended to be held in accordance with applicable laws and used only for public health purposes.

Thank you for helping us to protect your health.

One form should be completed by an adult member of each family. Print in capital (UPPERCASE) letters. Leave blank boxes for spaces.

<table>
<thead>
<tr>
<th>Flight Information:</th>
<th>Flight number</th>
<th>Date of arrival (yyyy/mm/dd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Personal Information:**

- Last (Family) Name
- First (Given) Name
- Middle Initial
- Your sex: Male [ ] Female [ ]

**Phone numbers:**\*Where you can be reached if needed. Include country code and city code.

<table>
<thead>
<tr>
<th>Mobile</th>
<th>Business</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Permanent Address:**

- Number and street (separate number and street with blank box)
- Apartment number

<table>
<thead>
<tr>
<th>City</th>
<th>State/Province</th>
<th>Country</th>
<th>ZIP/Postal code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
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</tr>
</tbody>
</table>

**Temporary Address:** If you are a visitor, write only the first place where you will be staying.

- Hotel name (if any)
- Number and street (separate number and street with blank box)

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<td></td>
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</tbody>
</table>

**Emergency Contact Information:** Of someone who can reach you during the next 30 days.

- Last (Family) Name
- First (Given) Name
- City

<table>
<thead>
<tr>
<th>Country</th>
<th>Email</th>
<th>Mobile phone</th>
<th>Other phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Travel Companions: Family:** Only include age if younger than 18 years

<table>
<thead>
<tr>
<th>Last (Family) Name</th>
<th>First (Given) Name</th>
<th>Seat number</th>
<th>Age &lt; 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 3</td>
<td></td>
<td></td>
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<tr>
<td>Line 4</td>
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</tr>
</tbody>
</table>
BA 747 has landed at Dublin airport with 47 ill passengers on board
Passenger Locator Form
The Passenger Locator Application provides an appropriate method of rapidly collecting passenger contact information including:

- flight information
The Passenger Locator Application provides an appropriate method of rapidly collecting passenger contact information including:

- flight information
- personal information

The potential ability to automatically notify the passenger’s Doctor of possible contact with an infectious disease.
The Passenger Locator Application provides an appropriate method of rapidly collecting passenger contact information including

- flight information
- personal information
- passport information
The Passenger Locator Application provides an appropriate method of rapidly collecting passenger contact information including:

- flight information
- personal information
- passport information
- permanent and temporary address and contact information
The Passenger Locator Application provides an appropriate method of rapidly collecting passenger contact information including

- flight information
- personal information
- passport information
- permanent and temporary address and contact information
- emergency contact information
The Passenger Locator Application provides an appropriate method of rapidly collecting passenger contact information including:

- flight information
- personal information
- passport information
- permanent and temporary address and contact information
- emergency contact information
- travel companions’ information both family and non-family
The Passenger Locator Application provides an effective Airport selection method, where the user can select

- Port of Origin
- Port of Arrival
- Journey Origin

By Country name or IATA code.
On completion, the Passenger Locator Application provides for a quick retrieval of passenger information.

It searches via the Passport Number of the passenger. Thus enabling Public Health Officials to quickly locate the infected passenger in relation to the aircraft seating map.

And those passengers in the immediate ‘At Risk’ vicinity.
NEXT STEPS
Platform for European Medical Support During Major Emergencies
PULSE is a European research funded project that defines, develops and validates a set of decision support tools to improve preparedness and response of European Health Services involved in emergency situations.
Mass Casualty Incidents
The French word “trier”, the origin of the word “triage”, was originally applied to a process of sorting wounded soldiers, around 1792, by Surgeon in Chief to Napoleon's Imperial Guard.
The original concepts of triage were primarily focused on mass casualty situations. Many of the original concepts of triage, the sorting into immediate, urgent, and non-urgent patients remain valid today in mass casualty incidents.
Multiple casualty incident

Can casualty walk
Yes

Is casualty breathing
Yes

Open airway one attempt

Breathing now
No

DEAD

No

Respiratory rate < 10 or > 29
Yes

No

Yes

Priority 1 (Immediate) RED

No

Capillary refill > 2 sec Or Pulse > 120

Yes

Priority 2 (Urgent) YELLOW

No
Tactical/Strategic managers are unclear about:

- Number of patients
- Condition of patients
- Location of patients
POC: Proof of Concept
Mobile Applications
Integrated Suite of Technologies
**Recognised Current Situation Module**
<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible agency</th>
<th>Priority</th>
<th>Estimated Start</th>
<th>Estimated Completion</th>
<th>Actual Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find-out composition-of-plume</td>
<td>Strategic Health Authorities</td>
<td>High</td>
<td>10/26/16 11:40 AM</td>
<td>10/26/16 11:59 PM</td>
<td>10/26/16 11:13 AM</td>
</tr>
<tr>
<td>Establish 3 control points for entering the site</td>
<td>Police</td>
<td>Medium low</td>
<td>10/26/16 3:00 AM</td>
<td>10/26/16 6:30 AM</td>
<td>Action not completed</td>
</tr>
<tr>
<td>Inform Ambulance-Control-of-incident</td>
<td>Ambulance-Service</td>
<td>Medium</td>
<td>10/26/16 8:00 AM</td>
<td>10/26/16 9:00 AM</td>
<td>10/26/16 11:13 AM</td>
</tr>
<tr>
<td>Put up water curtain</td>
<td>Fire Brigade</td>
<td>Low</td>
<td>10/26/16 8:30 AM</td>
<td>10/26/16 2:00 PM</td>
<td>Action not completed</td>
</tr>
<tr>
<td>Request EOD team</td>
<td>Military</td>
<td>Low</td>
<td>10/25/16 3:30 PM</td>
<td>10/26/16 9:30 PM</td>
<td>Action not completed</td>
</tr>
<tr>
<td>Deal with fatalities</td>
<td>Fire Brigade</td>
<td>Low</td>
<td>10/26/16 1:30 AM</td>
<td>10/26/16 4:00 AM</td>
<td>Action not completed</td>
</tr>
</tbody>
</table>
Geographical Information System
Flood Scenario

25th November 2016
MINDS ARE LIKE PARACHUTES

THEY FUNCTION BETTER WHEN THEY ARE OPEN
You can’t have an extraordinary response to an extraordinary incident unless you already have ordinary responses to ordinary incidents.