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Opportunity:

Use the internet of things and satellite GPS to create an interactive car communication system and advanced car detection system that provides a radar-like map of all vehicles near the user. This new system would reduce the traffic problems and facilitate vehicular communication systems, basically a new way of gathering information to improve our daily life.
Our stakeholders played an integral part in the design.
Survey results indicated the need for a solution allowing drivers to communicate.
Technical Research provided important information regarding technical specifications.
3) Benchmarking research:
   --- Obama administration: online survey and proposal of car communication system
   Specification: cost, feasibility, security, privacy
   --- Project named Securing Vehicular Communications:
   Specification: Both-sides of vehicular communication system
   vulnerability: privacy, security
Technical specifications included long range, inexpensiveness, and ease of use.
Survey results indicated customer needs for a simple and fast solution.

What method of wireless communication would you rather purchase?

<table>
<thead>
<tr>
<th>Method</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wi-Fi Hotspot</td>
<td>54</td>
<td>63%</td>
</tr>
<tr>
<td>Cellular Data</td>
<td>32</td>
<td>37%</td>
</tr>
</tbody>
</table>

Wi-Fi Hotspot [54]
After establishing specifications, concepts were generated using a table.

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Location Detection</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car User Interface</td>
<td>GPS</td>
<td>Wi-Fi</td>
</tr>
<tr>
<td>Smartphone Application</td>
<td>Radar</td>
<td>3G, 4G, LTE</td>
</tr>
<tr>
<td>Cell Tower Triangulation</td>
<td></td>
<td>Bluetooth</td>
</tr>
</tbody>
</table>

2  X  3  X  3

18 concepts generated
The best concept was selected through concept screening.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Weight</th>
<th>Bluetooth</th>
<th>Wi-Fi</th>
<th>3G</th>
<th>4G</th>
<th>LTE</th>
<th>GPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Range (&gt;1km)</td>
<td>7</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Compatible with User Interface</td>
<td>9</td>
<td>-</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Compatible with Smartphone</td>
<td>5</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Secure</td>
<td>10</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not traceable to user</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Compatible with existing data plans</td>
<td>7</td>
<td>-</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Cost</td>
<td>9</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Speed</td>
<td>7</td>
<td>-</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>-20</td>
<td>-7</td>
<td>21</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>30</td>
</tr>
</tbody>
</table>
A detailed wireless diagram was formed from the winning design.
Systems Flow Chart

SERVER

TOWER

VEHICLE

VEHICLE

GPS SATELLITE

1  2

3  6

4  5
The software will be compatible with and utilize existing technology.
Users will see a radar-type display on their screen and be able to communicate with the tap of a button.
AT&T will benefit through sales and subscriptions to internet data plans and wireless hotspots.

- Prepaid purchase with vehicle
- Subscription through software download
Our final product will be a comprehensive intervehicular system which customers love and find easy to use.
Questions?