

# Map Your Particles!

[Originalartikel](#)

[Backup](#)

```
<html> <section class=„section-container“ id=„things“><h2 class=„section-title“><a class=„title-
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href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref_id=9500&am
p;offset=1#things“><i class=„fa fa-link“/></a>Things used in this project </h2><div
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table“><tbody><tr class=„title“><td colspan=„6“><strong>Hardware
components:</strong></td></tr><tr class=„fields part-row“ id=„part-9500“><td class=„part-
img“><img
src=„https://hackster.imgix.net/uploads/image/file/50450/photon-new-3706595d530dfb95d54f1e0e95
9e3386.jpg?auto=compress%2Cformat&w=48&h=48&fit=fill&bg=ffffff“
alt=„Photon new“/></td><td><table><tbody><tr><td><a
href=„https://www.hackster.io/particle/products/photon“>Particle
Photon</a></td></tr><tr><td></td></tr></tbody></table></td><td>&#215;</td><td>1</td><td>
</tr><tr class=„fields part-row“ id=„part-19589“><td class=„part-img“><img
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ess%2Cformat&w=48&h=48&fit=fill&bg=ffffff“ alt=„Compare
particleelectron“/></td><td><table><tbody><tr><td><a
href=„https://www.hackster.io/particle/products/electron“>Particle
Electron</a></td></tr><tr><td></td></tr></tbody></table></td><td>&#215;</td><td>1</td><td>
</tr><tr class=„title“><td colspan=„6“><strong>Software apps and online
services:</strong></td></tr><tr class=„fields part-row“ id=„part-43559“><td class=„part-
img“/><td><table><tbody><tr><td>Google The Google Maps Geolocation
API</td></tr><tr><td></td></tr></tbody></table></td><td colspan=„2“/><td><a target=„_blank“
rel=„nofollow“ class=„istooltip“ title=„More info“
href=„https://developers.google.com/maps/documentation/geolocation/intro“><i class=„fa fa-
link“/></a></td></tr><tr class=„fields part-row“ id=„part-43560“><td class=„part-
img“/><td><table><tbody><tr><td>particle-device-
locator</td></tr><tr><td></td></tr></tbody></table></td><td colspan=„2“/><td><a
target=„_blank“ rel=„nofollow“ class=„istooltip“ title=„More info“
href=„https://github.com/kwnevarez/particle-device-locator“><i class=„fa fa-
link“/></a></td></tr><tr class=„fields part-row“ id=„part-17031“><td class=„part-img“><img
src=„https://hackster.imgix.net/uploads/image/file/108718/new-google-maps-logo.png?auto=compres
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logo“/></td><td><table><tbody><tr><td><a
href=„https://www.hackster.io/google/products/google-maps“>Google
Maps</a></td></tr><tr><td></td></tr></tbody></table></td><td colspan=„2“/><td><a
target=„_blank“ rel=„nofollow“ class=„istooltip“ title=„More info“
href=„https://developers.google.com/maps“><i class=„fa fa-link“/></a></td></tr><tr class=„fields
part-row“ id=„part-13319“><td class=„part-img“><img
src=„https://hackster.imgix.net/uploads/image/file/81107/ubidots.png?auto=compress%2Cformat&
mp;w=48&h=48&fit=fill&bg=ffffff“
alt=„Ubidots“/></td><td><table><tbody><tr><td><a
href=„https://www.hackster.io/ubidots/products/ubidots“>Ubidots</a></td></tr><tr><td></td></tr></
tbody></table></td><td colspan=„2“/><td></td></tr></tbody></table></div></section><section
```

class=„section-container collapsed“ id=„about-project“><h2 class=„section-title“><a class=„title-anchor“ href=„[https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\\_id=9500&offset=1#about-project](https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref_id=9500&offset=1#about-project)“><i class=„fa fa-link“/></a>Story </h2><div class=„section-content hljs-active hljs-monokai“><div class=„medium-editor“ itemprop=„text“><p>In this write-up I'll tell you everything I learned about the <a href=„<https://docs.particle.io/tutorials/integrations/google-maps/>“ rel=„nofollow“>Particle integration with Google Maps</a>.</p><h3 id=„toc-wait-a-minute-location-without-gps-0“><a class=„title-anchor“ href=„[https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\\_id=9500&offset=1#toc-wait-a-minute--location-without-gps-0](https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref_id=9500&offset=1#toc-wait-a-minute--location-without-gps-0)“ rel=„nofollow“><i class=„fa fa-link“/></a>Wait a minute, location without GPS?</h3><p>Yes! We can now find the location of our Particles without needing extra hardware (eg: a GPS module). This is possible because <a href=„<https://developers.google.com/maps/documentation/geolocation/intro>“ rel=„nofollow“>the Google Maps Geolocation API</a> is able to return a location and an accuracy radius from visible Wi-Fi access points or cells towers. Pretty cool, huh?</p><h3 id=„toc-the-four-common-types-of-geolocation-1“><a class=„title-anchor“ href=„[https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\\_id=9500&offset=1#toc-the-four-common-types-of-geolocation-1](https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref_id=9500&offset=1#toc-the-four-common-types-of-geolocation-1)“ rel=„nofollow“><i class=„fa fa-link“/></a>The four common types of geolocation</h3><p>Some theory, from the <a href=„<https://docs.particle.io/tutorials/integrations/google-maps/#geolocation-basics>“ rel=„nofollow“>Particle site</a>:</p><p><strong><em>GPS (GLOBAL POSITIONING SYSTEM):</em></strong><em> The Global Positioning System (GPS) is generally the most accurate and it can provide device location continuously. Under normal conditions, GPS can locate a device with an accuracy of ~4 meters.</em></p><p><strong><em>CELLULAR TOWER LOCATION:</em></strong><em>Every cell tower has an identifier, and this can be looked up using the Google Geolocation API to find its location. This process is fast and provides a general location, usually within 4000 meters or a couple miles.</em></p><p><strong><em>Wi-Fi LOCATION:</em></strong><em> The Google Maps integration also supports this method of geolocation. Particle Photon and P1 (Wi-Fi) devices can collect visible Wi-Fi access points, and send these to the geolocation API in exchange for its location. Often times, Wi-Fi geolocation is more precise than cellular geolocation, often with an accuracy radius of 50 meters or less.</em></p><p><strong><em>IP ADDRESS LOCATION:</em></strong><em>Particle Wi-Fi devices report their last IP address to the cloud, which could be used for this geolocation method. This is most often the least accurate of the 4 methods described in this section. This technique is not used by the Particle-Google Maps integration.</em></p><p><strong>Recap:</strong> this integration uses Wi-Fi and cellular tower location.</p><h3 id=„toc-how-to-do-this-2“><a class=„title-anchor“ href=„[https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\\_id=9500&offset=1#toc-how-to-do-this-2](https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref_id=9500&offset=1#toc-how-to-do-this-2)“ rel=„nofollow“><i class=„fa fa-link“/></a>How to do this</h3><p>Let's start setting things up.</p><p><strong>STEP 1:</strong> get an API key. Go to <a href=„<https://developers.google.com/maps/documentation/geolocation/intro>“ rel=„nofollow“>this Google Maps Geolocation API link</a> and hit on the <strong>GET A KEY</strong> button -&gt; create a new project -&gt; enter the name and hit <strong>CREATE AND ENABLE API</strong>.</p><div data-react-class=„ImageCarousel“ data-react-props=„{&quot;images&quot;:[&quot;caption&quot;:&quot;Get a key, create a new project and hit CREATE AND ENABLE API&quot;,&quot;id&quot;:306928,&quot;image\_urls&quot;:{&quot;headline\_url&quot;:&quot;

key",&quot;id":306929,&quot;image\_urls":{&quot;headline\_url":&quot;

href=„<https://github.com/kwnevarez/particle-device-locator>“ rel=„nofollow“>the particle device locator</a>.</p><p><strong>Step a:</strong> Install the <a href=„<https://cloud.google.com/sdk/>“ rel=„nofollow“>Google Cloud SDK</a>.</p><p><strong>Step b:</strong> once you installed the SDK, set it up by running in a console:</p><pre>gcloud init </pre><p><strong>Step c:</strong> authenticate your SDK with the Google Cloud Platform:</p><pre>gcloud beta auth application-default login </pre><p><strong>Step d:</strong> clone the repo:</p><pre>git clone <https://github.com/kwnevarez/particle-device-locator> </pre><p>Note: If the previous command fails, it may mean that you don't have git installed on your computer. Please use <a href=„<https://git-scm.com/>“ rel=„nofollow“>this link</a> to install it. Once finished, run the command again.</p><p><strong>Step e:</strong> install the dependencies:</p><pre>cd particle-device-locator npm install </pre><p>Note: If the previous command fails, it may mean that you don't have npm or nodeJS installed on your computer. Please use <a href=„<https://nodejs.org/en/>“ rel=„nofollow“>this link</a> and <a href=„<https://www.npmjs.com/>“ rel=„nofollow“>this link </a>to install them. Once finished, run the command again.</p><p><strong>Step f:</strong> configure it, by entering in <a href=„<http://config.json/>“ rel=„nofollow“>config.json</a> the api key you got in step 1:</p><pre>cd particle-device-locator vi config.json </pre><p>Note: <a href=„<https://en.wikipedia.org/wiki/Vi>“ rel=„nofollow“>vi</a> is a command line editor. If you don't have ti around you can use <a href=„[https://en.wikipedia.org/wiki/Microsoft\\_Notepad](https://en.wikipedia.org/wiki/Microsoft_Notepad)“ rel=„nofollow“>notepad</a>, <a href=„<https://www.nano-editor.org/dist/v2.2/nano.html>“ rel=„nofollow“>nano</a>, or anything you like to edit the config.json file.</p><p>It should end up looking like this:</p><pre>{

```
"map_api_key": "AIzaSyDcuB2m-y7XxvFpIcNeeLP2MJCGLpm4lxs",
"event_name": "deviceLocator"
```

```
} </pre><p>HINT: use your api key, not mine (mine won't work - it's deactivated already...)</p><p><strong>Step g:</strong> on the <a href=„https://console.developers.google.com/apis/credentials“ rel=„nofollow“>Google Developer Credentials Console</a>, enable the google maps javascript API . It looks like this:</p><div data-react-class=„ImageCarousel“ data-react-props=„{&quot;images&quot;:[&quot;caption&quot;:&quot;You want to enable that JavaScript API&quot;,&quot;id&quot;:306932,&quot;image_urls&quot;:{&quot;headline_url&quot;:&quot;https://hackster.imgix.net/uploads/attachments/306932/screenshot\_from\_2017-05-19\_185258b\_uzqAZgPDFL.png?auto=compress%2Cformat&w=680&h=510&fit=max“ data-
```

```

reactid=„20“/></div></div></div></div><div class=„image_carouselcaption_2sZrD“ data-
reactid=„24“>1 / 2 &#8226; Just hit that ENABLE button on
top</div></div></div></div><p><strong>Step h:</strong> run it:</p><pre>npm install
</pre><p><strong>Step i:</strong> open it at <a href=„http://localhost:8080/“
rel=„nofollow“>http://localhost:8080</a>. After logging it with your Particle credentials, you should
be facing a map. Hitting <strong>All devices</strong> on the top right maps your particles with a
red arrow like this:</p><div data-react-class=„ImageCarousel“ data-react-
props=„{&quot;images&quot;:[&quot;caption&quot;:&quot;Los Roques, Venezuela, oh how I wish I
were writing this article from those
beaches...&quot;;&quot;id&quot;:306935,&quot;image_urls&quot;:{&quot;headline_url&quot;:&quot;h
ttps://hackster.imgix.net/uploads/attachments/306935/losroques_i2G44HW3FP.png?auto=compress%
2Cformat&u0026w=680&u0026h=510&u0026fit=max&quot;;&quot;lightbox_url&quot;:&quot;https://ha
ckster.imgix.net/uploads/attachments/306935/losroques_i2G44HW3FP.png?auto=compress%2Cforma
t&u0026w=1280&u0026h=960&u0026fit=max&quot;}}&quot;;position&quot;:0},{&quot;caption&quot;:
&quot;You should visit this place (yes my photon is in that green
bag)&quot;;&quot;id&quot;:306937,&quot;image_urls&quot;:{&quot;headline_url&quot;:&quot;https:/
/hackster.imgix.net/uploads/attachments/306937/los_roques_bajo_fabian_1k35tj386k.jpg?auto=compr
ess%2Cformat&u0026w=680&u0026h=510&u0026fit=max&quot;;&quot;lightbox_url&quot;:&quot;https
://hackster.imgix.net/uploads/attachments/306937/los_roques_bajo_fabian_1k35tj386k.jpg?auto=comp
ress%2Cformat&u0026w=1280&u0026h=960&u0026fit=max&quot;}}&quot;;position&quot;:1}]]&quot;;u
id&quot;:&quot;36dc3fa1f4&quot;}><div data-reactroot=„“ data-reactid=„1“ data-react-
checksum=„98140935“><div class=„image_carouselcontainer_hMJxn“ data-reactid=„2“><div
class=„image_carouselwrapper_102VA“ data-reactid=„3“><div
class=„image_carouselscrollContainer_3mmPE “ data-reactid=„14“><div
class=„image_carouselimageContainer_22WPm“ data-reactid=„18“><div
class=„image_carouselimageWrapper_39AG2“ data-reactid=„19“><img
class=„image_carouselimage_2-CjO “
src=„https://hackster.imgix.net/uploads/attachments/306935/losroques_i2G44HW3FP.png?auto=com
press%2Cformat&amp;w=680&amp;h=510&amp;fit=max“ data-
reactid=„20“/></div></div></div></div><div class=„image_carouselcaption_2sZrD“ data-
reactid=„24“>1 / 2 &#8226; You should visit this place (yes my photon is in that green
bag)</div></div></div></div><h3 id=„toc-map-it-on-ubidots-4“><a class=„title-anchor“
href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&amp;ref_id=9500&am
p;offset=1#toc-map-it-on-ubidots-4“ rel=„nofollow“><i class=„fa fa-link“/></a>Map it on
Ubidots</h3><p>In this section we'll use <a href=„https://ubidots.com/“
rel=„nofollow“>Ubidots</a>.</p><p><strong>Step a:</strong> flash the attached code (maps.ino)
in your Particle or add a publish like this in your locationCallback() function:</p><pre>
Particle.publish(„ubidotsLatLng“, „{\\“ubi-dsl-vl\\“:\\“ + Particle.deviceID() + “/,” + name + “\\“ , \\“ubi-
token\\“:\\“ + ubidotsToken + “\\“ , \\“ubi-value\\“:\\“ + value + “\\“ , \\“google-lat\\“:\\“ + lat + “\\“ ,
\\“google-lng\\“:\\“ + lon + “\\“}“ , 60, PRIVATE);
</pre><p><strong>Step b:</strong> setup a webhook hitting the Ubidots HTTPS API. Go to <a
href=„https://console.particle.io/integrations“ rel=„nofollow“>the particle integrations</a> and hit
NEW INTEGRATION. This is the webhook information:</p><ul><li><strong>Event name:</strong>
ubidotsLatLng</li></ul><ul><li><strong>url:</strong> <a
href=„https://things.ubidots.com/api/v1.6/devices/%7B%7Bubi-dsl-vl%7D%7D/values/?token=ubi-
token“ rel=„nofollow“>https://things.ubidots.com/api/v1.6/devices/ubi-dsl-vl/values/?token=ubi-
token</a></li></ul><ul><li><strong>Request type:</strong>
POST</li></ul><ul><li><strong>Device:</strong> Any</li></ul><ul><li><strong>Advanced
settings:</strong></li></ul><ul><li><strong>Send custom data:</strong>
JSON</li></ul><p>And then enter:</p><pre> {

```

```

    "value": "{{ubi-value}}",
    "context": {
      "lat": "{{google-lat}}",
      "lng": "{{google-lng}}"
    }
  }
}

```

include default data: no

enforce ssl: yes

This is what the webhook is doing for us:

<https://schnipsel.qgelm.de/>

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widget</div></div></div></div><p><strong>Step f:</strong> select the <strong>geo</strong>
variable on the device that is sending this data and hit on Add variable then Finish</p><div data-
react-class=„ImageCarousel“ data-react-
props=„{&quot;images&quot;:[&quot;caption&quot;:&quot;Select the variable with lat/long
coordinates
info&quot;,&quot;id&quot;:307117,&quot;image_urls&quot;:{&quot;headline_url&quot;:&quot;https://
hackster.imgix.net/uploads/attachments/307117/screenshot_from_2017-05-23_131239_Krq4LgAKAh.p
ng?auto=compress%2Cformat&w=680&h=510&fit=max&quot;,&quot;lightbox_url&q
uot;:&quot;https://hackster.imgix.net/uploads/attachments/307117/screenshot_from_2017-05-23_131
239_Krq4LgAKAh.png?auto=compress%2Cformat&w=1280&h=960&fit=max&quot;},
&quot;position&quot;:0}],&quot;uid&quot;:&quot;470b71e983&quot;}“><div data-reactroot=„“ data-
reactid=„1“ data-react-checksum=„64762274“><div class=„image_carouselcontainer_hMJxn“ data-
reactid=„2“><div class=„image_carouselwrapper_102VA“ data-reactid=„3“><div
class=„image_carouselscrollContainer_3mmPE “ data-reactid=„4“><div
class=„image_carouselimageContainer_22WPm“ data-reactid=„5“><div
class=„image_carouselimageWrapper_39AG2“ data-reactid=„6“><img
class=„image_carouselimage_2-CjO “
src=„https://hackster.imgix.net/uploads/attachments/307117/screenshot_from_2017-05-23_131239_K
rq4LgAKAh.png?auto=compress%2Cformat&w=680&h=510&fit=max“ data-
reactid=„7“></div></div></div></div><div class=„image_carouselcaption_2sZrD“ data-
reactid=„8“><!-- react-text: 10 --><!-- /react-text -->Select the variable with lat/long coordinates
info</div></div></div></div><p><strong>Step g:</strong> Enjoy looking at the location of your
Particle:</p><div data-react-class=„ImageCarousel“ data-react-
props=„{&quot;images&quot;:[&quot;caption&quot;:&quot;It's right
there!&quot;,&quot;id&quot;:307118,&quot;image_urls&quot;:{&quot;headline_url&quot;:&quot;https
://hackster.imgix.net/uploads/attachments/307118/screenshot_from_2017-05-23_131415_m1LI2v9nzk
.png?auto=compress%2Cformat&w=680&h=510&fit=max&quot;,&quot;lightbox_url
&quot;:&quot;https://hackster.imgix.net/uploads/attachments/307118/screenshot_from_2017-05-23_1
31415_m1LI2v9nzk.png?auto=compress%2Cformat&w=1280&h=960&fit=max&quot
;},&quot;position&quot;:0}],&quot;uid&quot;:&quot;cec16dfcb2&quot;}“><div data-reactroot=„“
data-reactid=„1“ data-react-checksum=„-1335286242“><div
class=„image_carouselcontainer_hMJxn“ data-reactid=„2“><div
class=„image_carouselwrapper_102VA“ data-reactid=„3“><div
class=„image_carouselscrollContainer_3mmPE “ data-reactid=„4“><div
class=„image_carouselimageContainer_22WPm“ data-reactid=„5“><div
class=„image_carouselimageWrapper_39AG2“ data-reactid=„6“><img
class=„image_carouselimage_2-CjO “
src=„https://hackster.imgix.net/uploads/attachments/307118/screenshot_from_2017-05-23_131415_
m1LI2v9nzk.png?auto=compress%2Cformat&w=680&h=510&fit=max“ data-
reactid=„7“></div></div></div></div><div class=„image_carouselcaption_2sZrD“ data-
reactid=„8“><!-- react-text: 10 --><!-- /react-text -->It's right there!</div></div></div></div><h3
id=„toc-references-5“><a class=„title-anchor“
href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref_id=9500&am
p;offset=1#toc-references-5“ rel=„nofollow“><i class=„fa fa-
link“></i></a>References</h3><p>These links help me get started on Ubidots:</p><ul><li><a
href=„https://ubidots.com/docs/es/get_started/quickstart/tutorial_geopoint.html“ rel=„nofollow“>Post
a GPS coordinate using curl</a></li></ul><ul><li><a
href=„https://ubidots.com/docs/api/index.html#send-values“ rel=„nofollow“>Ubidots
API</a></li></ul><h3 id=„toc-conclusion-6“><a class=„title-anchor“
href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref_id=9500&am
p;offset=1#toc-conclusion-6“ rel=„nofollow“><i class=„fa fa-

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link"/></a>Conclusion</h3><p>Particle, Google Maps and Ubidots made it really easy to put our projects on a map, without needing to add a GPS to our hardware. Impressive! </p><h3 id=„toc-need-help-7“><a class=„title-anchor“ href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\_id=9500&amp;offset=1#toc-need-help-7“ rel=„nofollow“><i class=„fa fa-link“/></a>Need help?</h3><p>If you require professional help with your projects, don't hesitate to write me a line about your needs at <a href=„http://gusgonnet@gmail.com/“ rel=„nofollow“>gusgonnet@gmail.com.</a> Thank you!</p></div></div><div class=„read-more“><a class=„btn btn-primary“ href=„javascript:void(0)“>Read more</a></div></section><section class=„section-container“ id=„code“><h2 class=„section-title“><a class=„title-anchor“ href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\_id=9500&amp;offset=1#code“><i class=„fa fa-link“/></a>Code </h2></section><section class=„section-container“ id=„team“><h2 class=„section-title“><a class=„title-anchor“ href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\_id=9500&amp;offset=1#team“><i class=„fa fa-link“/></a>Credits</h2><div class=„section-content“><div class=„member-thumb“>Thanks to Winston Ford.</div></div></section><section class=„section-container“ id=„replicas“><h2 class=„section-title“><a class=„title-anchor“ href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\_id=9500&amp;offset=1#replicas“><i class=„fa fa-link“/></a>Replications</h2><div class=„section-content“><p>Did you replicate this project? Share it!</p><a class=„btn btn-primary btn-sm reactPortal“ action=„SignInDialog“ data-container=„body“ data-redirect-to=„/gusgonnet/map-your-particles-e34878“ data-source=„replica“ data-react=„{&quot;currentPanel&quot;:&quot;signup&quot;,&quot;simplified&quot;:true}“ href=„https://www.hackster.io/users/sign\_up?id=41438&amp;m=base\_article&amp;reason=replica&amp;redirect\_to=%2Fgusgonnet%2Fmap-your-particles-e34878“><i class=„fa fa-retweet“/>I made one</a></div></section><section class=„section-container project-feedback-form“><section class=„section-container“ id=„comments“><h2 class=„section-title“><a class=„title-anchor“ href=„https://www.hackster.io/gusgonnet/map-your-particles-e34878?ref=part&ref\_id=9500&amp;offset=1#comments“><i class=„fa fa-link“/></a>Comments </h2></section> </html>

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