

NATIONAL IoT STRATEGIC ROAD

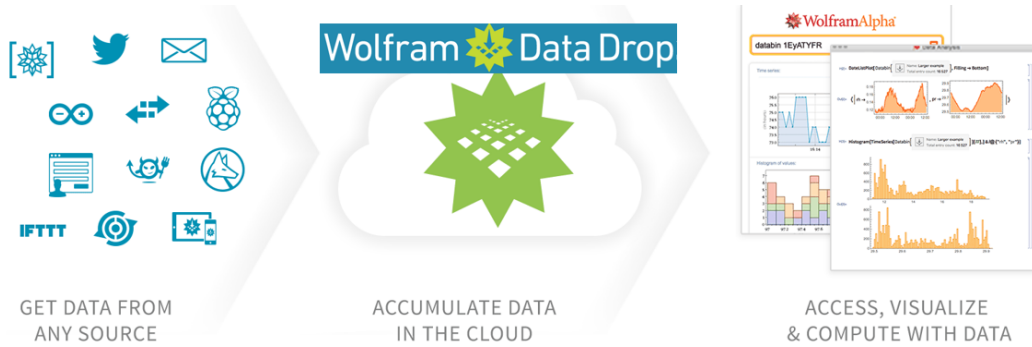
IMPACT OF IoT



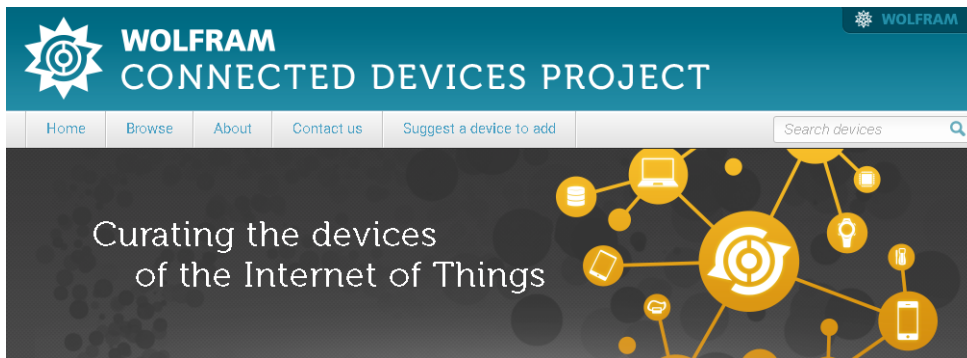
	MOBILE DEVICE PENETRATION	INTERNET USERS	MOBILE BROADBAND PENETRATION	SOCIAL NETWORK PENETRATION	MOBILE SERVICES (US\$)
2025	↑280%	↑195%	↑167%	↑135%	↑US\$16B
TODAY	143.7%	65.8%	13.34%	45%	US\$8B



Wolfram's View of IoT Components

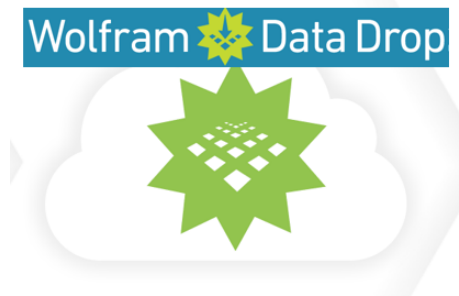


Connected Devices in the Wolfram Language



```
FindDevices[]  
dev = DeviceOpen[First[FindDevices[]]]  
dev["Properties"]  
DeviceClose@dev
```

Wolfram Data Drop -- Accumulate Data in the Cloud

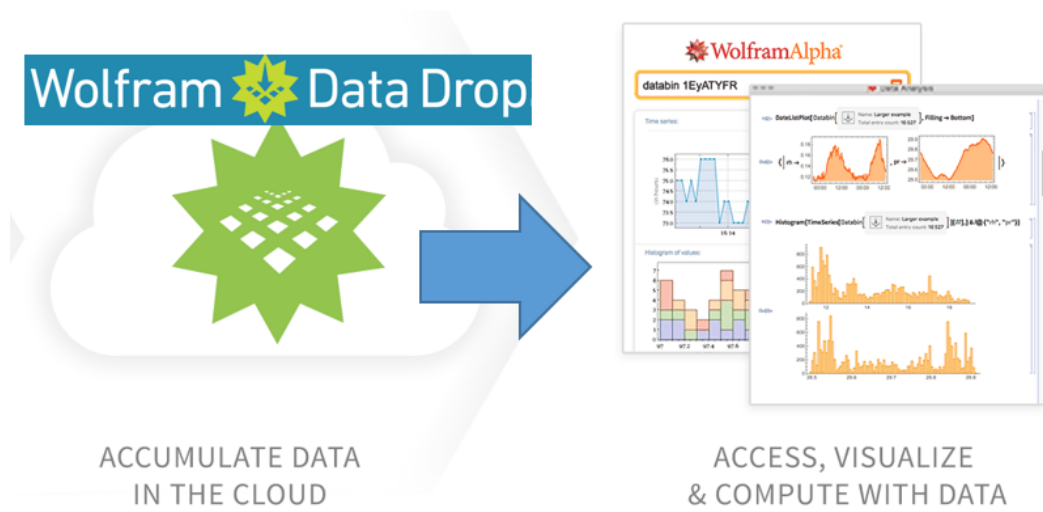


```
CreateDataBin[<|"Name" → "My Position"|>, "Interpretation" → {"position" → "Location"}]
```

Accessing a Data Bin in Wolfram Data Drop

```
geoLocate = Values[Databin["fxjIXR7A"]]["position"]
```

Processing data from Wolfram Data Bin



Visualizing all the points on map

GeoGraphics [{ GeoMarker [geoLocate] }]



Processing data from Wolfram Data Bin

More Sample Visualizations

```
GeoGraphics[{GeoMarker[geoLocate], Blue, Line[geoLocate]}]
```



Robust Computations

```
GeoElevationData /@ geoLocate
```

```
{10. m, 10. m, 10. m, 9. m, 24. m, 161. m, 161. m, 23. m, 27. m, 70. m, 70. m, 56. m}
```

More Sample Computations

```
GeoGraphics[  
  {GeoMarker[geoLocate], Inset[WeatherData[#, "Temperature"], #] & /@ geoLocate}]
```

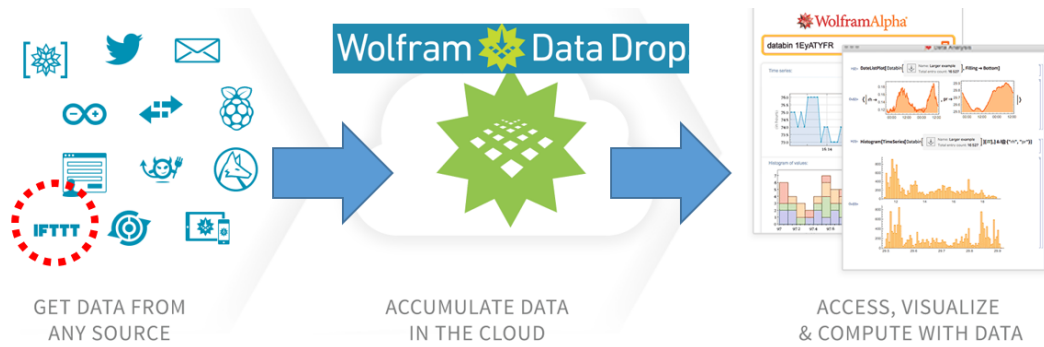


GeoGraphics [


```
{GeoMarker[geoLocate], Inset[WeatherData[#, "WindSpeed"], #] & /@ geoLocate}]
```




Linking Wolfram DataDrop to IFTTT (Do Recipe)




Example I, IFTTT (Do Recipe) Populating Wolfram Databin

 **Databin ID**

Short ID, UUID or URL of target databin

 **Data to add**



Give values or key=value pairs (e.g. x=1&y={{trigger value}})

After installing IFTTT services on a Android mobile system, users may opt to either automatically or manually trigger to push data into Wolfram datadrop. For instance, in this case, we manually trigger a GPS location information push to the databin with ID fxjLXR7A

Example 2, IFTTT (Do Camera) Populating Wolfram Databin

Create databin in Wolfram Data drop

```
CreateDatabin[<|"Name" → "Add Photo"|>, "Interpretation" → {"photo" → "URL"}]
```

Import images from Wolfram Data drop

```
url = Values[Databin["fxnZqtMS"]]["photoURL"];
```

```
InstagramPictures = Map[Quiet[Import[#]] &, url]
```



```
TotalPicCount = Length[InstagramPictures]
```

3

Robust Computations

```
InstagramPictures[[3]]
```



```
faces = FindFaces /@ InstagramPictures
```

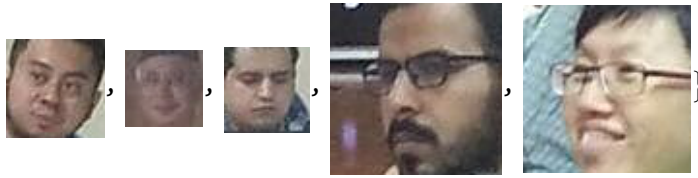
```
faces[[3]]
```

More Robust Computations

```
Show[InstagramPictures[[3]],  
Graphics[{EdgeForm[{Thick, Green}], Transparent, Rectangle@@#} & /@ faces[[3]]]]
```



```
ImageTrim[InstagramPictures[[3]], #] & /@ faces[[3]]
```



```
Table[ImageTrim[InstagramPictures[[i]], #] & /@ faces[[i]], {i, TotalPicCount}]
```

Cloud-deploy the Application

```
CloudDeploy[url = Values[Databin["fxnZqtMS"]]["photoURL"];  
InstagramPictures = Map[Quiet[Import[#] &, url];  
faces = FindFaces /@ InstagramPictures;  
TotalPicCount = Length[InstagramPictures];  
Table[ImageTrim[InstagramPictures[[i]], #] & /@ faces[[i]], {i, TotalPicCount}]]  
CloudObject[  
  https://www.wolframcloud.com/objects/547910ba-b616-450b-bf0d-4fa0e7ca6875]
```


Example 3, IFTTT (Android Battery) Populating Wolfram Databin

Create databin in Wolfram Data drop

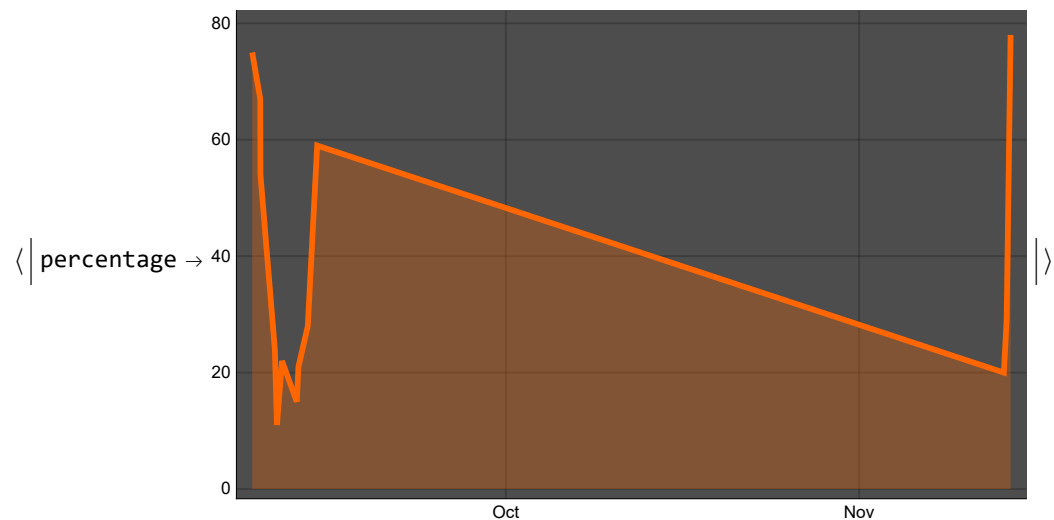
```
CreateDatabin[<|"Name" → "Battery percentage" |>,
  "Interpretation" → {"percentage" → "Number"}]
```

Connect databin in Wolfram Data drop

```
data = Databin["fyWtaZzk"]
```

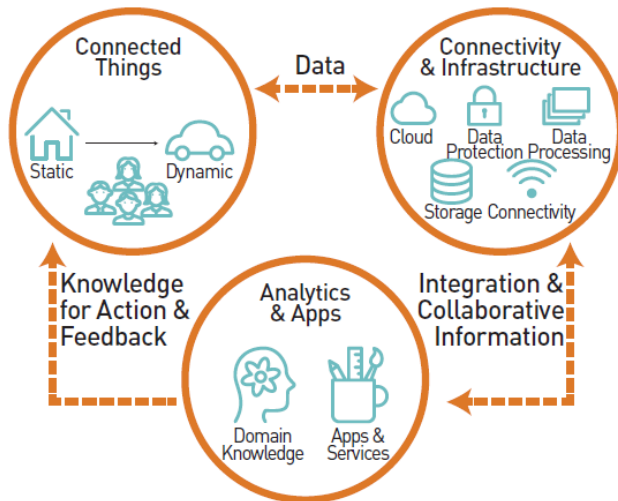
Robust Computations

```
DateListPlot[data, Filling → Bottom, PlotTheme → "Marketing"]
```



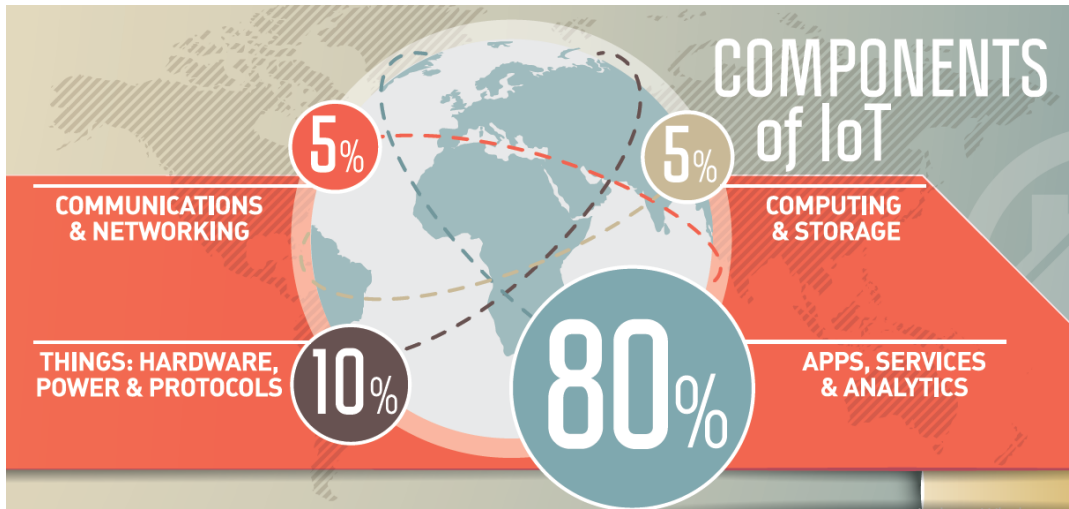
What could be the future trend?

A. INTERNET OF THINGS



- Ready integration to Big Data & IoT by lay users
- Ready access to bigger computation powers by lay users
- Ready deployment of ideas by lay users

What could be the future trend?



How IoT matters in Wolfram Technologies?

- Connected Devices in the Wolfram language
- Wolfram DATA DROP
- Data Analysis, Visualization & Deployment

