UTILIZING ESRI AND VALARM FOR REAL-TIME WATER MANAGEMENT

Jacob Boyle, GISP
Seneca Resources
boylej@srcx.com

Edward Pultar, PhD
Valarm
edward@valarm.net

Esri User Conference, 2015

SENECA RESOURCES

SRC OVERVIEW AND GOALS

- Establish procedures for acquiring data
- Assess the capabilities of Valarm's real-time technology
- Establish server to host created data (Geo-Event)

Valarm® MONITOR ANYTHING, ANYWHERE™

SENECA RESOURCES

REAL-TIME WATER MONITORING

Valarm
MONITOR ANYTHING, ANYWHERE™

Esri User Conference, 2015

VALARM SENSOR CONNECTOR DEVICES

Sensor Hub - WiFi or Ethernet

- Connect to sensors for any factors you can think of

OR

Android Device

- GPS
- USB + Bluetooth connections

+

Sensors, 1000s of factors, e.g.:

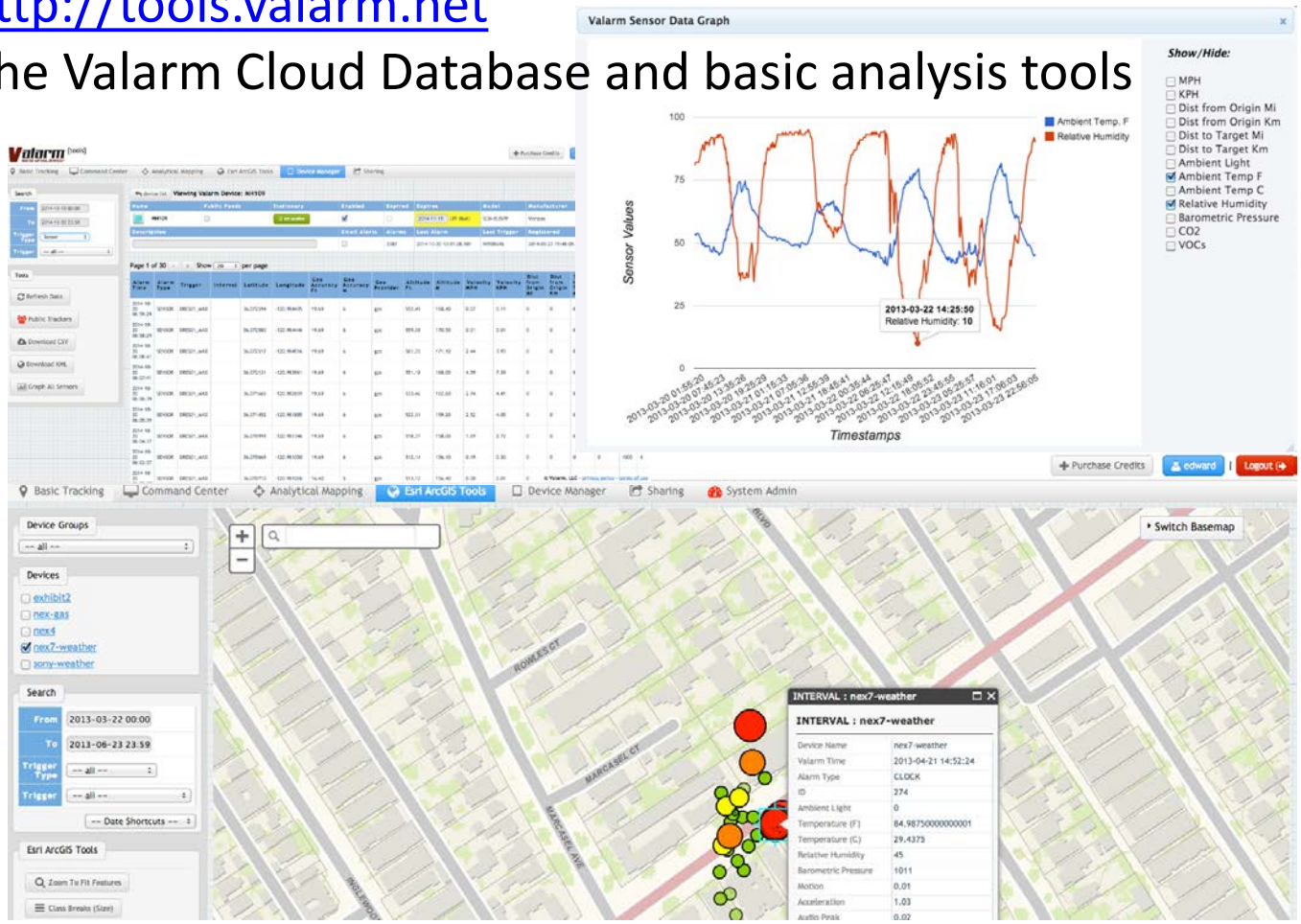
- Liquids
- Air
- Assets

Esri User Conference, 2015

VALARM TOOLS CLOUD – TOOLS.VALARM.NET

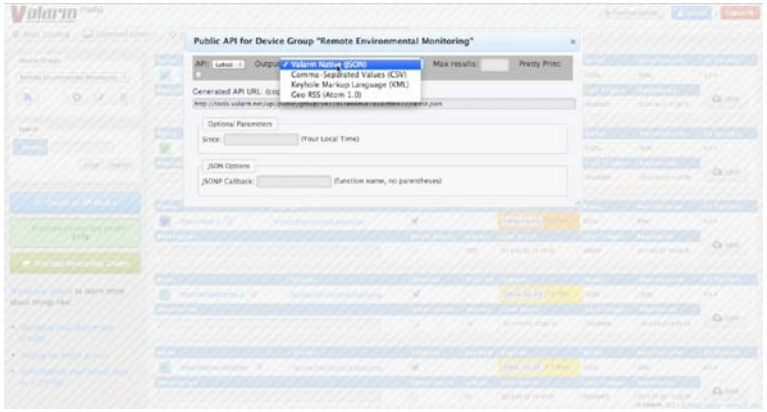
http://tools.valarm.net

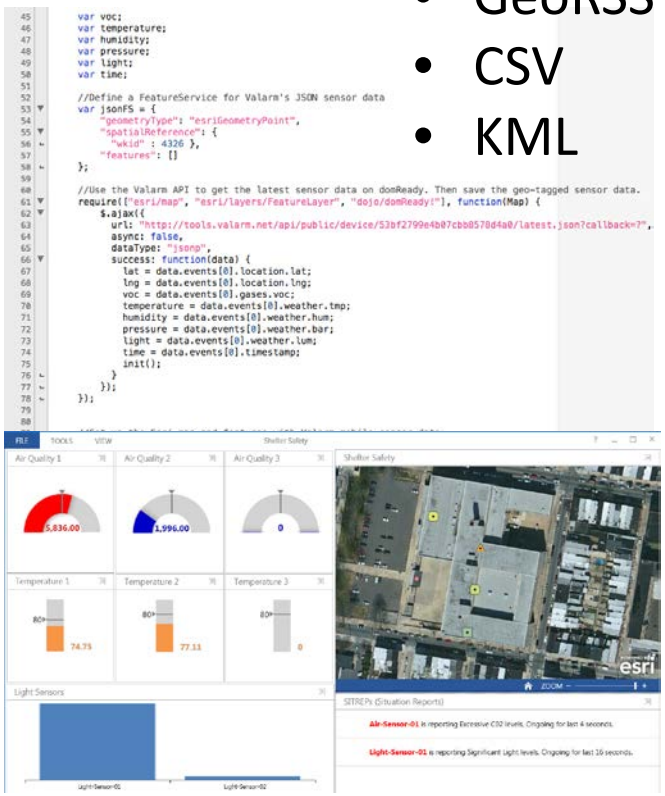
The Valarm Cloud Database and basic analysis tools



Esri User Conference, 2015

APIS (APPLICATION PROGRAM INTERFACE)





- JSON
- GeoRSS
- CSV
- KML

Esri User Conference, 2015

SENECA RESOURCES

VALARM IS NOT SCADA

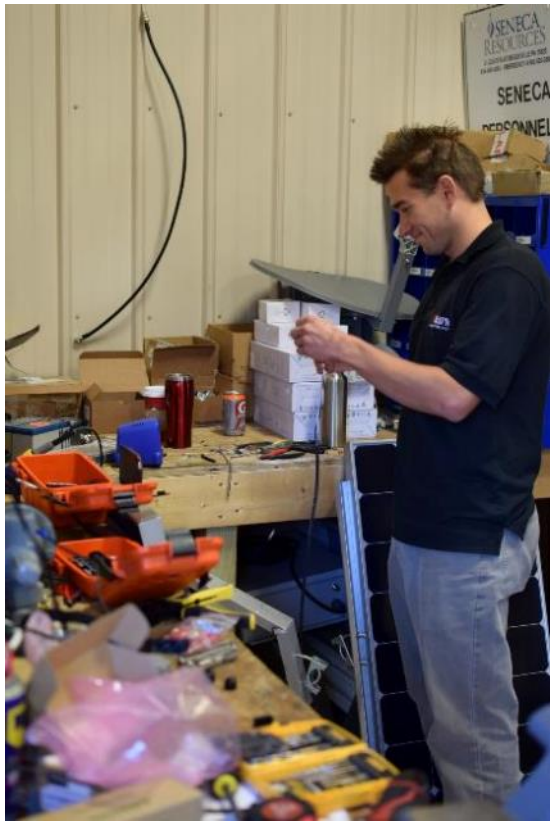
- Valarm sensor data is open and EASY to download, save, integrate via APIs
- Valarm is rapidly deployable
- Less complex => less expensive
- More flexible, modular and mobile

Valarm
MONITOR ANYTHING, ANYWHERE™

Esri User Conference, 2015

SENECA RESOURCES

SOLAR-POWERED REMOTE MONITORING



Valarm
MONITOR ANYTHING, ANYWHERE™

Esri User Conference, 2015

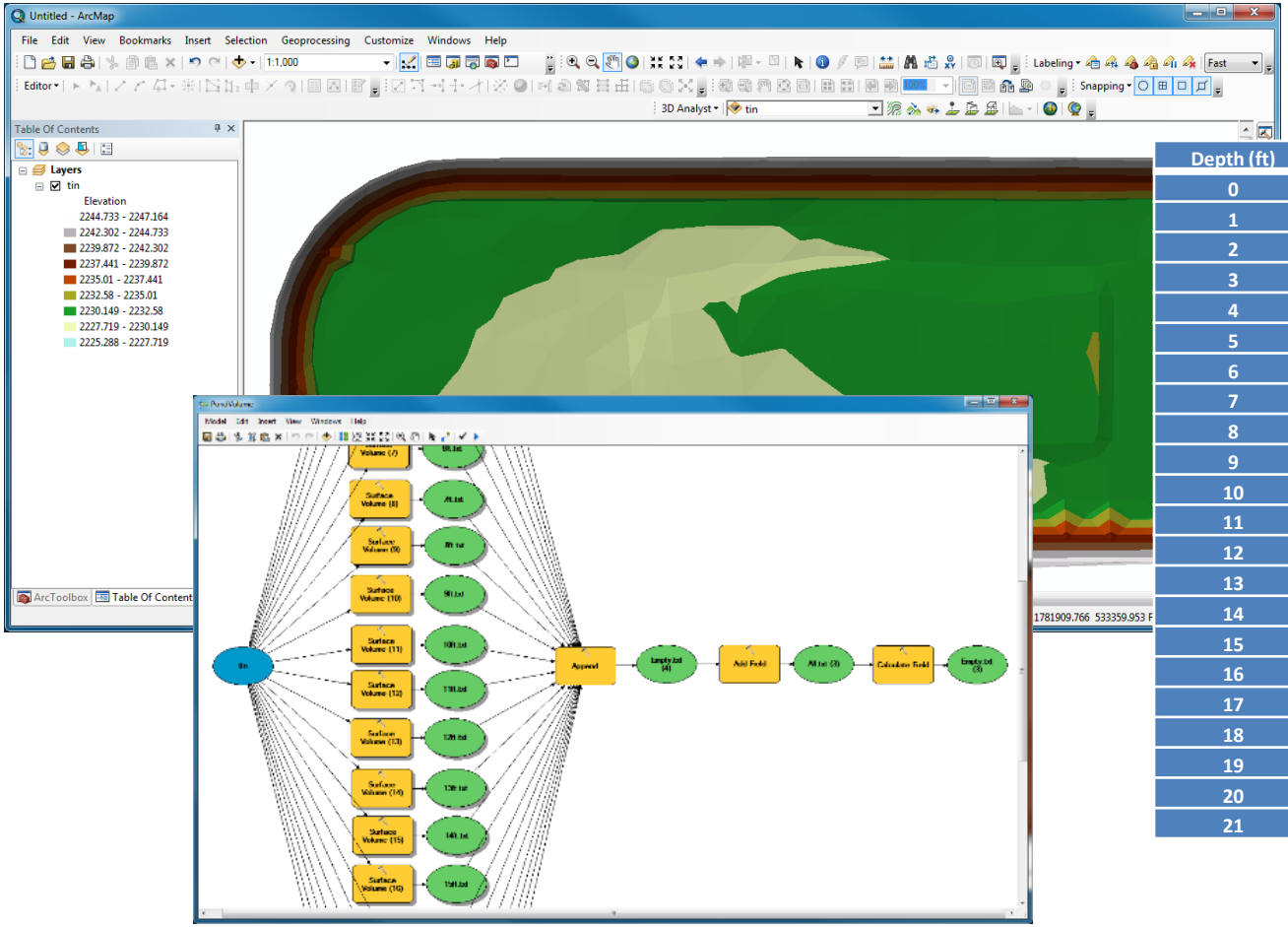
TELEMETRY DEPLOYMENT IN PENNSYLVANIA

Esri User Conference, 2015

TELEMETRY DEPLOYMENT IN PENNSYLVANIA

Esri User Conference, 2015

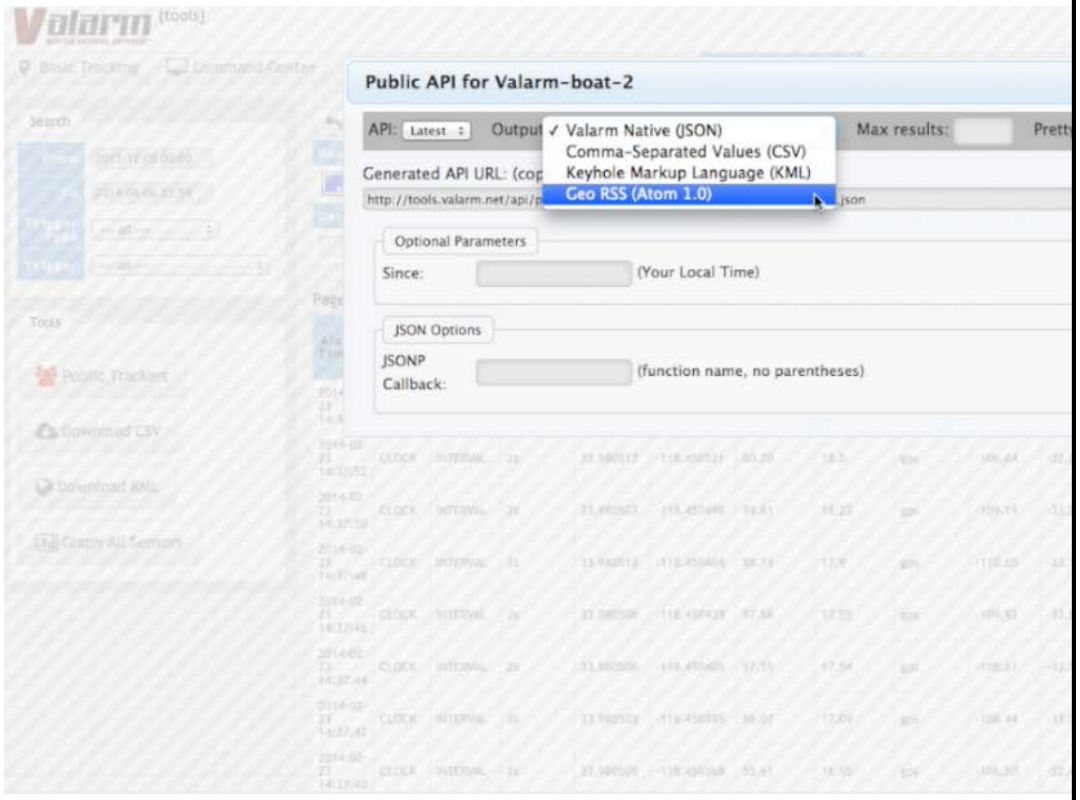
WATER DEPTHS & VOLUMES WITH ESRI



Depth (ft)	Volume (ft³)	Gallons
0	0	0
1	292.799795	2,190
2	905.536438	6,774
3	10975.1525	82,100
4	40424.05924	302,393
5	117184.2034	876,599
6	258037.5470	1,930,255
7	476969.2897	3,567,978
8	741137.3983	5,544,093
9	1030274.607	7,706,990
10	1310748.508	9,805,080
11	1598743.908	11,959,436
12	1894304.355	14,170,382
13	2197469.089	16,438,211
14	2508258.433	18,763,077
15	2826636.692	21,144,712
16	3152539.311	23,582,633
17	3486027.36	26,077,297
18	3827158.955	28,629,139
19	4175973.407	31,238,453
20	4532505.659	33,905,499
21	4897071.68	36,632,643

Esri User Conference, 2015

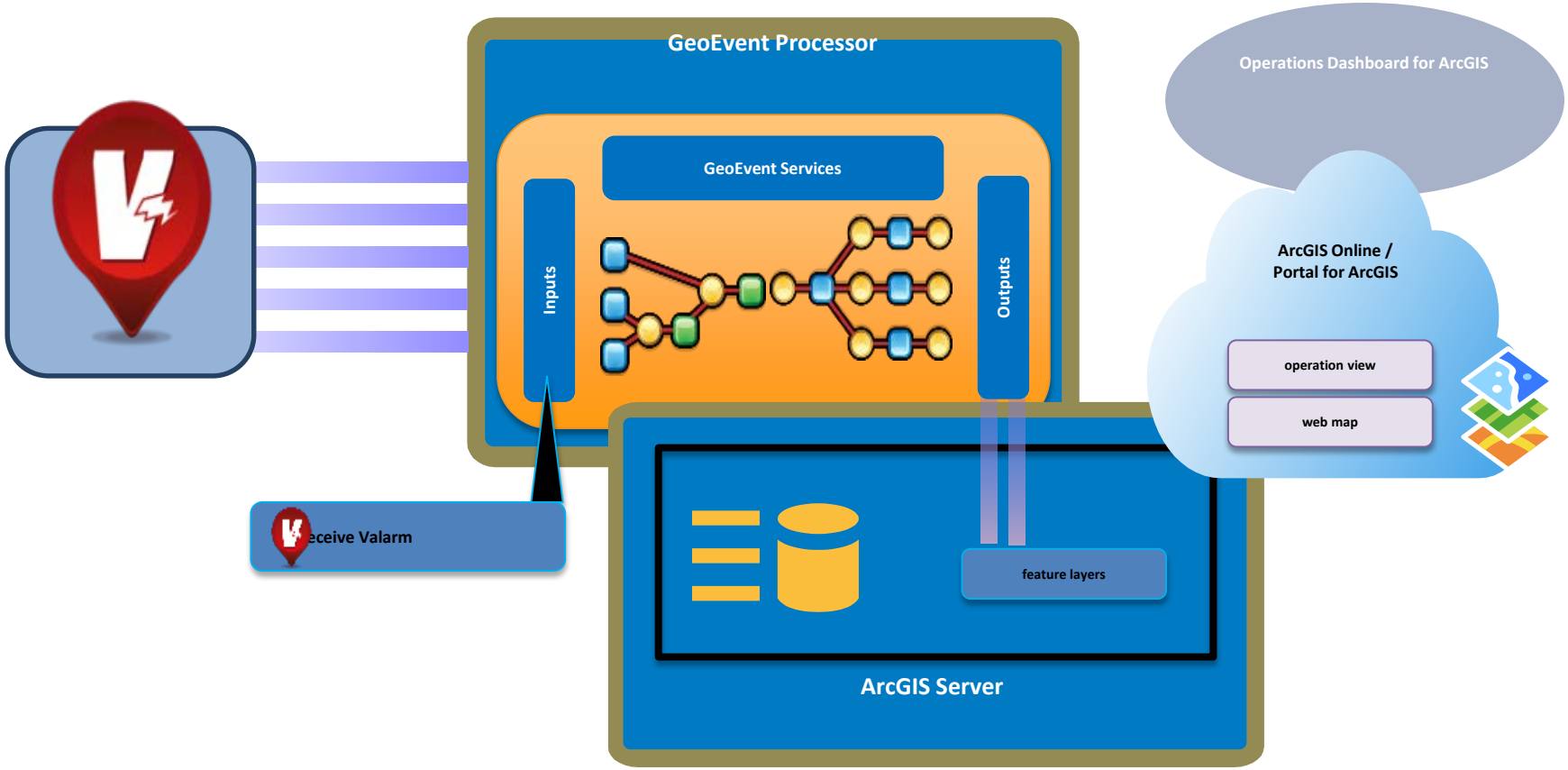
VALARM JSON API




```
{
  "events" : [ {
    "id" : "551c5a28e4b0d7de249cc0d6",
    "tsRaw" : 1427921448087,
    "timestamp" : "2015-04-01T20:50:48.087+00:00",
    "tsReceived" : 1427921448087,
    "timestampReceived" : "2015-04-01T20:50:48.087+00:00",
    "sessionId" : "0",
    "type" : "API",
    "trigger" : "API_PUSH",
    "location" : {
      "lat" : 34.0364746424251,
      "lng" : -118.46238746101032,
      "alt" : 0,
      "acc" : 1,
      "src" : "man"
    },
    "weather" : {
      "tmp" : 28.5,
      "hum" : 36.0,
      "lum" : null,
      "bar" : 1010.0
    }
  }, {
    "id" : "551c59ffe4b06add47453a7d",
    "tsRaw" : 1427921407756,
    "timestamp" : "2015-04-01T20:50:07.756+00:00",
    "tsReceived" : 1427921407756,
    "timestampReceived" : "2015-04-01T20:50:07.756+00:00",
    "sessionId" : "0",
    "type" : "API",
    "trigger" : "API_PUSH",
    "location" : {
      "lat" : 34.0364746424251,
      "lng" : -118.46238746101032,
      "alt" : 0,
      "acc" : 1,
      "src" : "man"
    },
    "weather" : {
      "tmp" : 28.8125,
      "hum" : 36.0,
      "lum" : null,
      "bar" : 1011.0
    }
```

SENECA RESOURCES

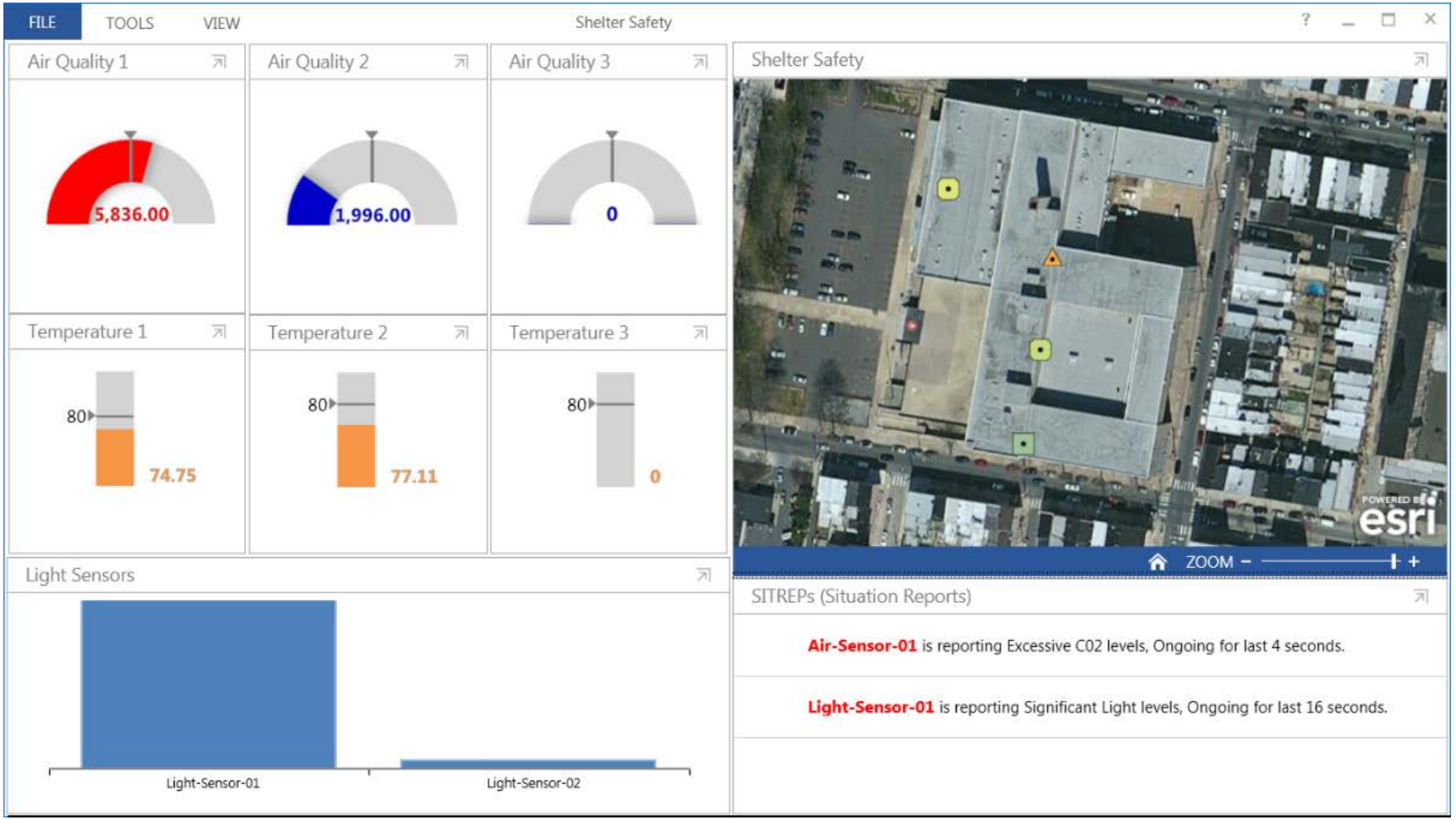
VALARM APIS + ARCGIS PLATFORM



Valarm
MONITOR ANYTHING, ANYWHERE™

Esri User Conference, 2015

VALARM + GEOEVENT + DASHBOARD



Esri User Conference, 2015

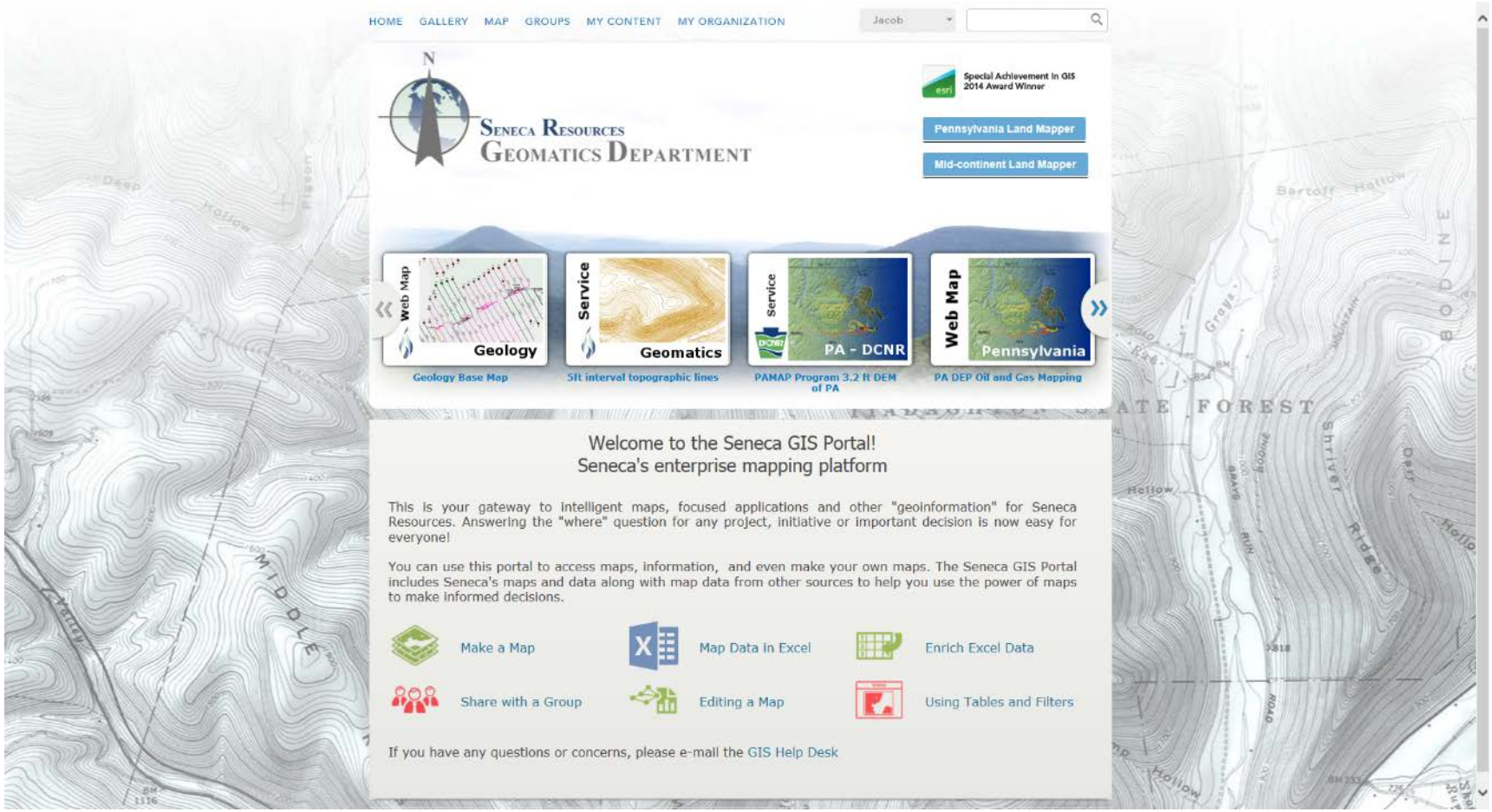
WATER MONITORING WITH VALARM + ESRI

Esri User Conference, 2015

SENECA'S NEXT STEPS

- Sound monitoring pilot project – Deployed in Early July
- Weather stations – Monitoring weather conditions in remote areas
- Stream water quality – measuring pH and Turbidity in headwater streams
- Full Integration with all stages of water acquisition and usage in real time

DEMO



Esri User Conference, 2015

SENECA RESOURCES

ANY QUESTIONS???

Valarm
MONITOR ANYTHING, ANYWHERE™