

simviz: a package to visualize simulated telecommunication mobile network event data

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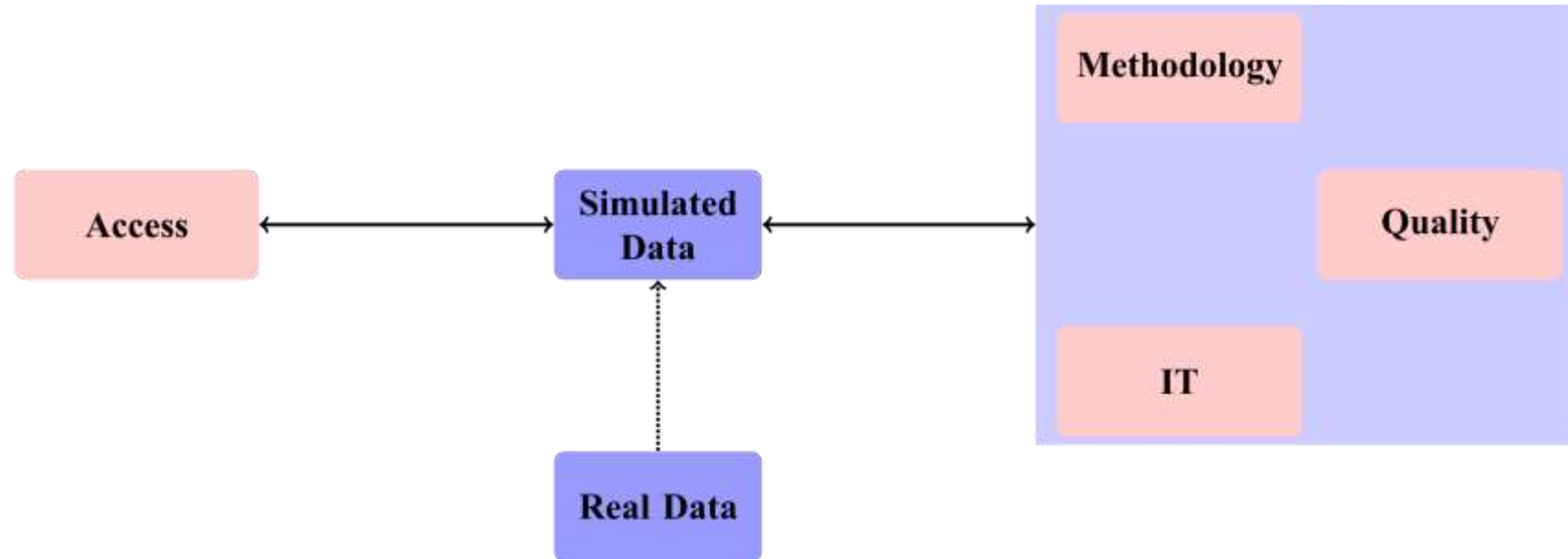


Overview

1. Data Simulation and the Network Event Data Simulator
2. Execution pipeline
 - Design
 - Implementation on `simutils` R package
3. Graphical outputs
 - Visualization with `simviz` R package



A (new) approach to production framework development: data simulation



Challenge: incorporation of real metadata into simulators

- + Legal issues: solved
- + Costs: highly reduced
- + Ground truth: known
- + Full-range parametrization (mobility patterns, network configuration, territory)

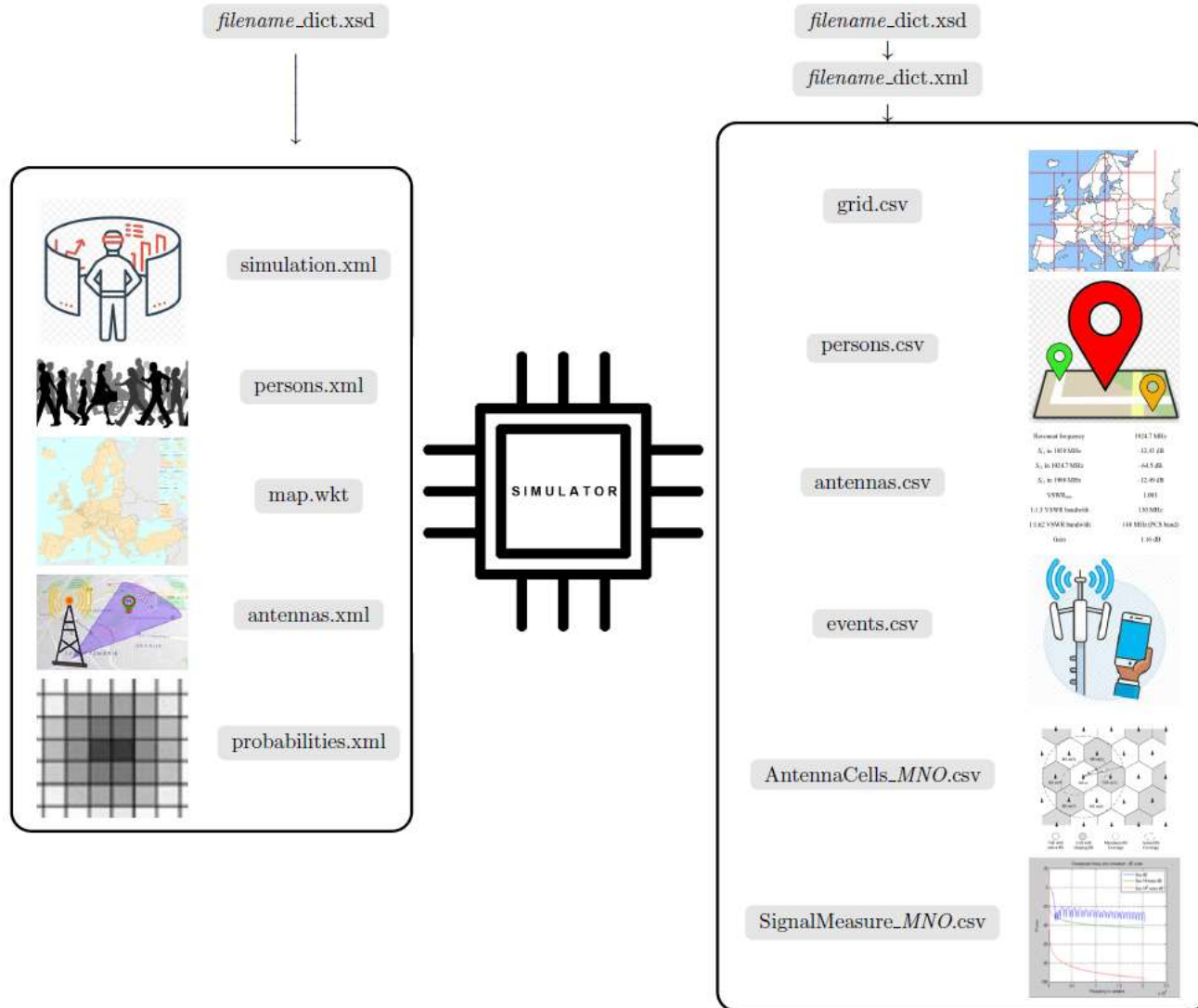
**NOT SIMULATED DATA
BUT DATA SIMULATIONS**



Mobile Network Data Simulator

INPUT

OUTPUT



github.com/bogdanoancea/simulator

[simulator](#) Public

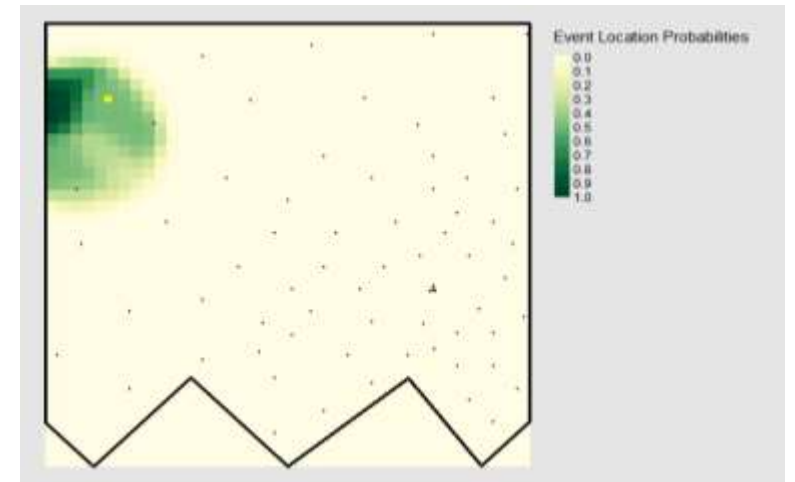
A simulator for mobile phone data

● C++ ☆ 3 🗄️ 3 📄 European Union Public License 1.2

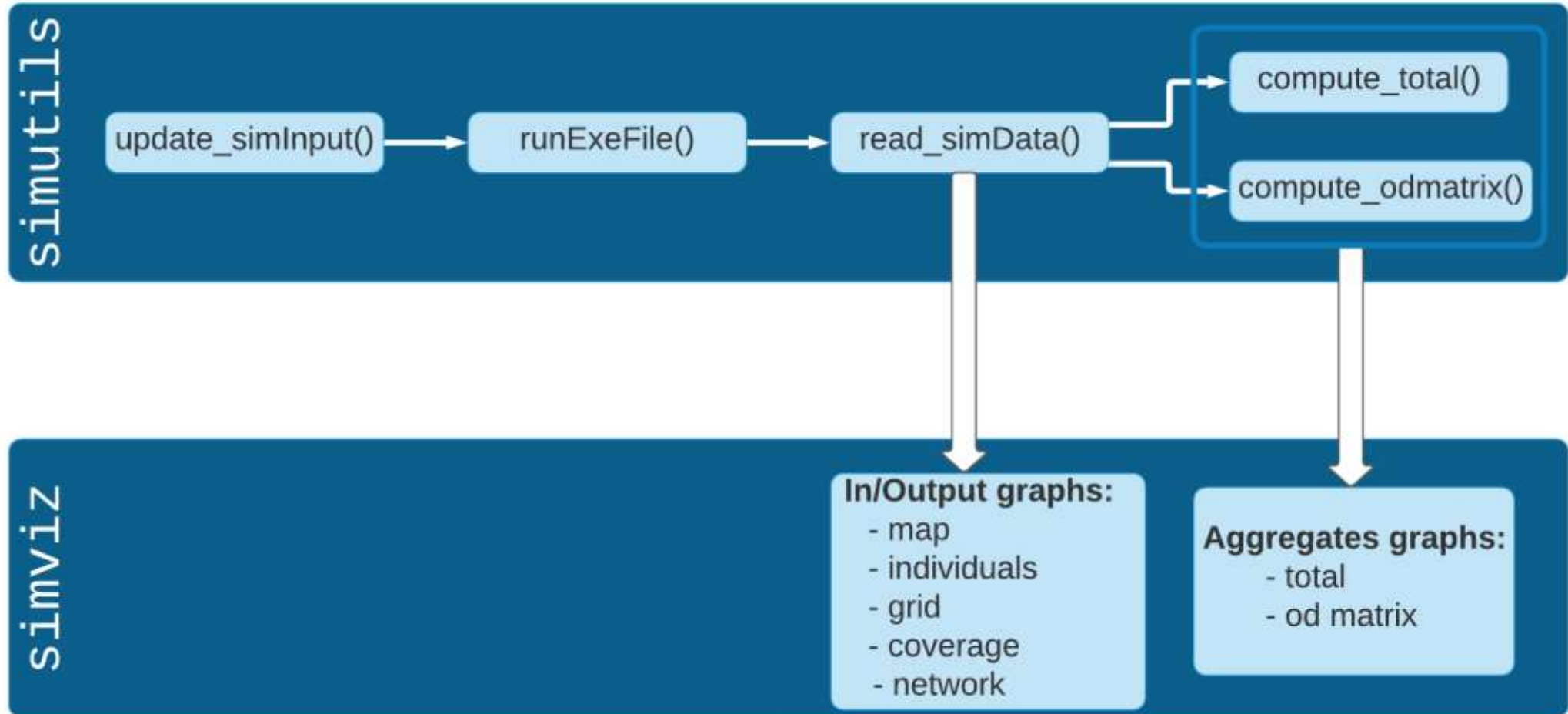
ESSnet Mobile Network Data Software

<https://github.com/MobilePhoneESSnetBigData>

Deliverable I2 [Network Event Data Simulator](#)



Execution pipeline: design

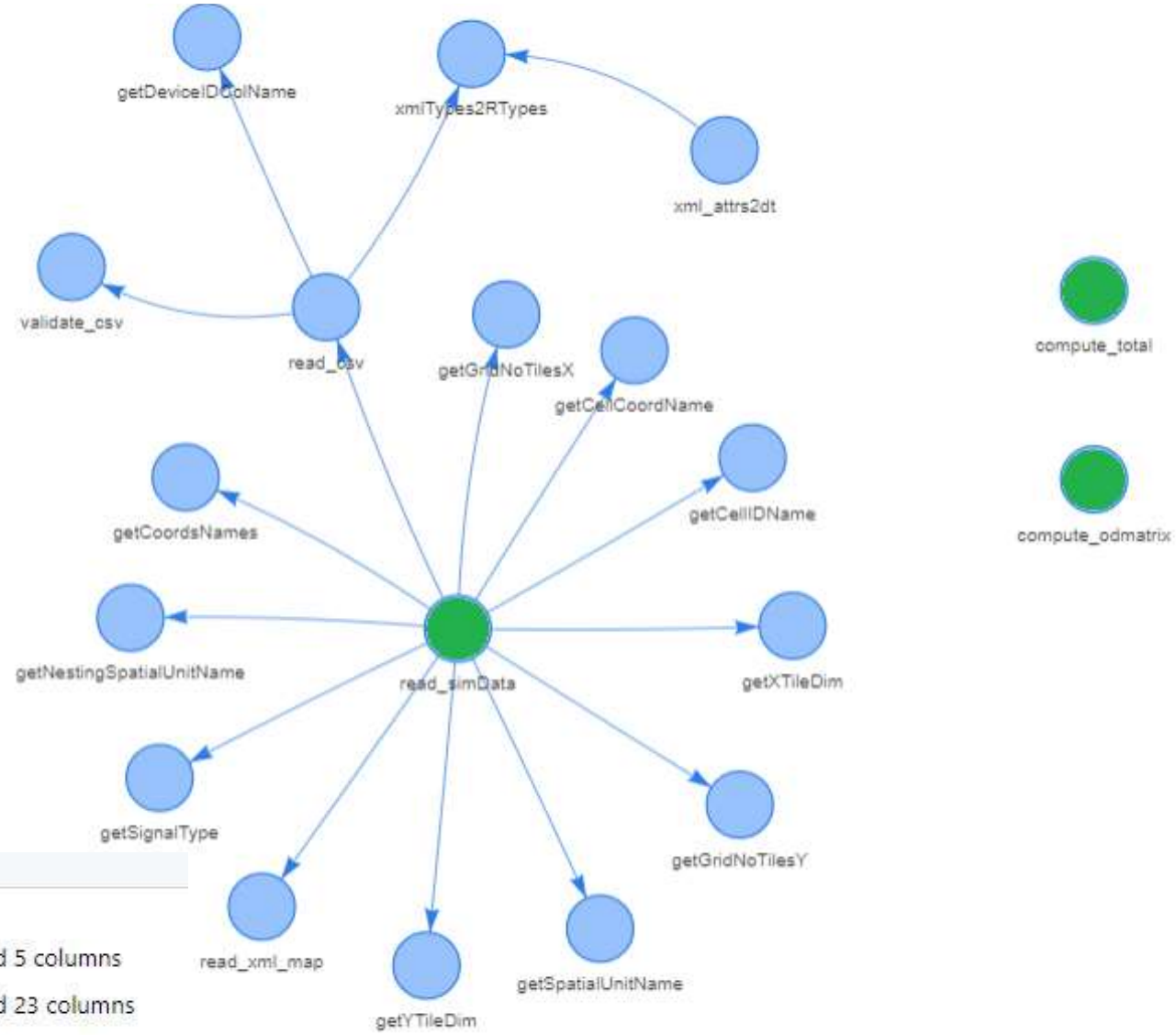
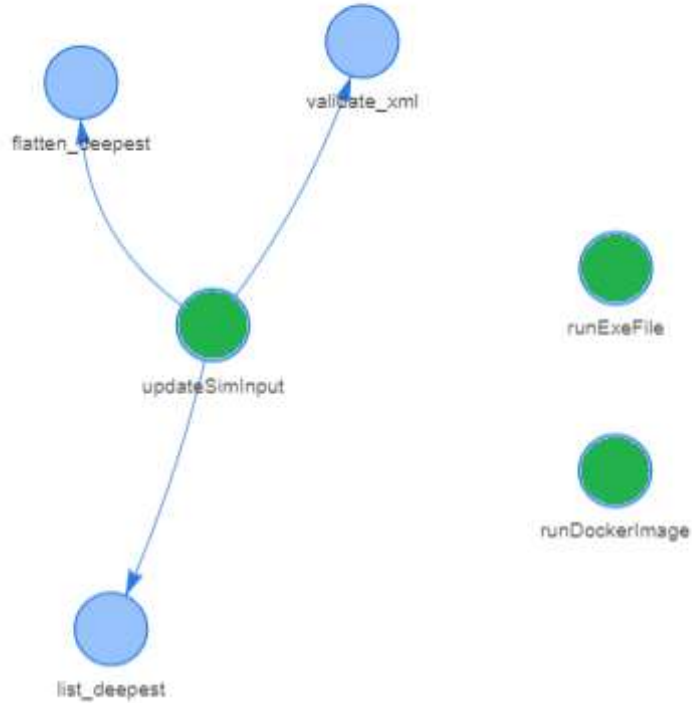


github.com/bogdanoancea/simutils
github.com/bogdanoancea/simviz

github.com/bogdanoancea/simulator/releases/tag/1.2.0-kit



Execution pipeline: implementation on simutils

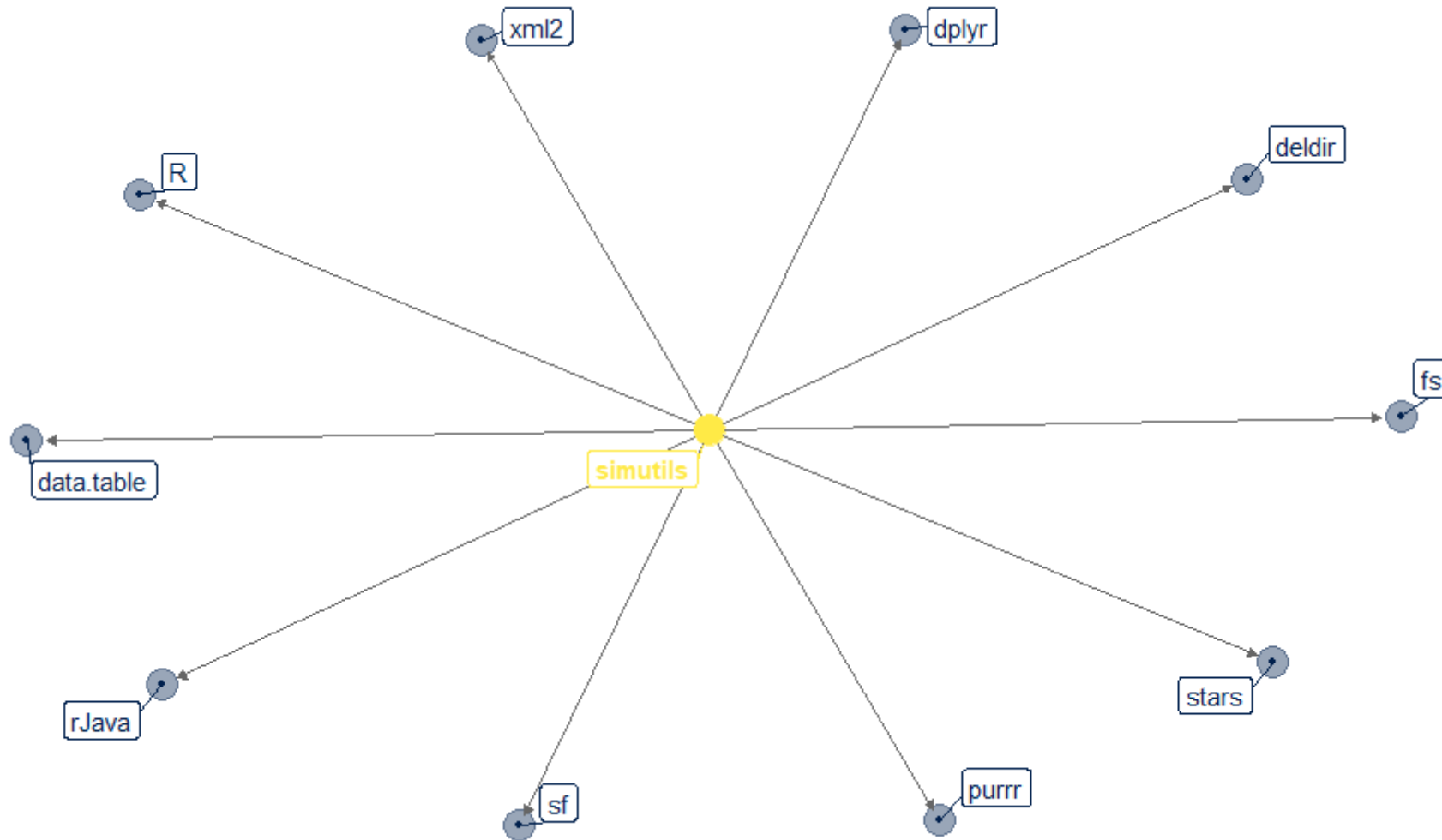


Name	Type	Value
simData	list [5]	List of length 5
map	list [10 x 5] (S3: sf, data.table, data.frame)	A data.table with 10 rows and 5 columns
network	list [70 x 23] (S3: sf, data.table, data.frame)	A data.table with 70 rows and 23 columns
coverage	list [70 x 2] (S3: sf, data.table, data.frame)	A data.table with 70 rows and 2 columns
grid	list [40 x 40 x 70] (S3: stars)	List of length 1
individuals	list [450000 x 9] (S3: sf, data.table, data.frame)	A data.table with 450000 rows and 9 columns

Graph made with DependenciesGraph R package



Execution pipeline: implementation on simutils

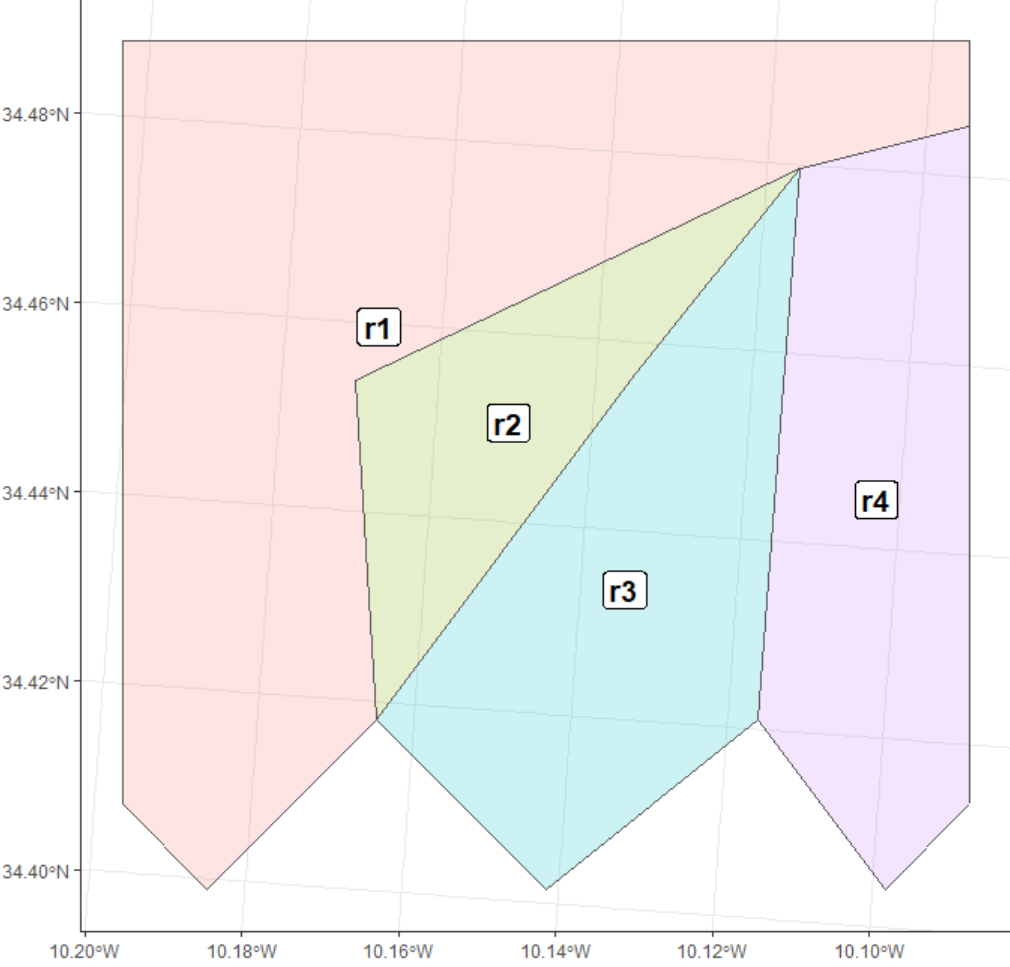


Graph made with `depgraph` R package



Graphical outputs: simviz

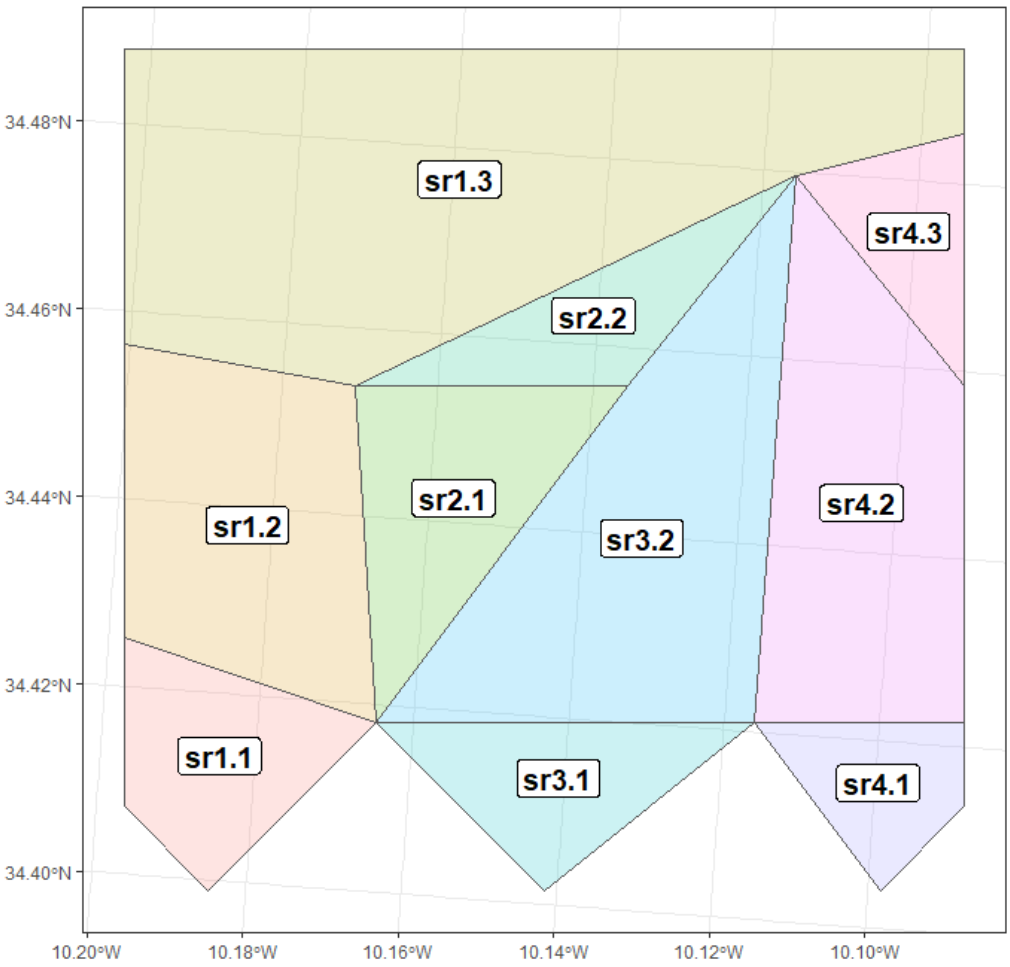
Territorial map for simulation



Regions

- r1
- r2
- r3
- r4

Territorial map for simulation



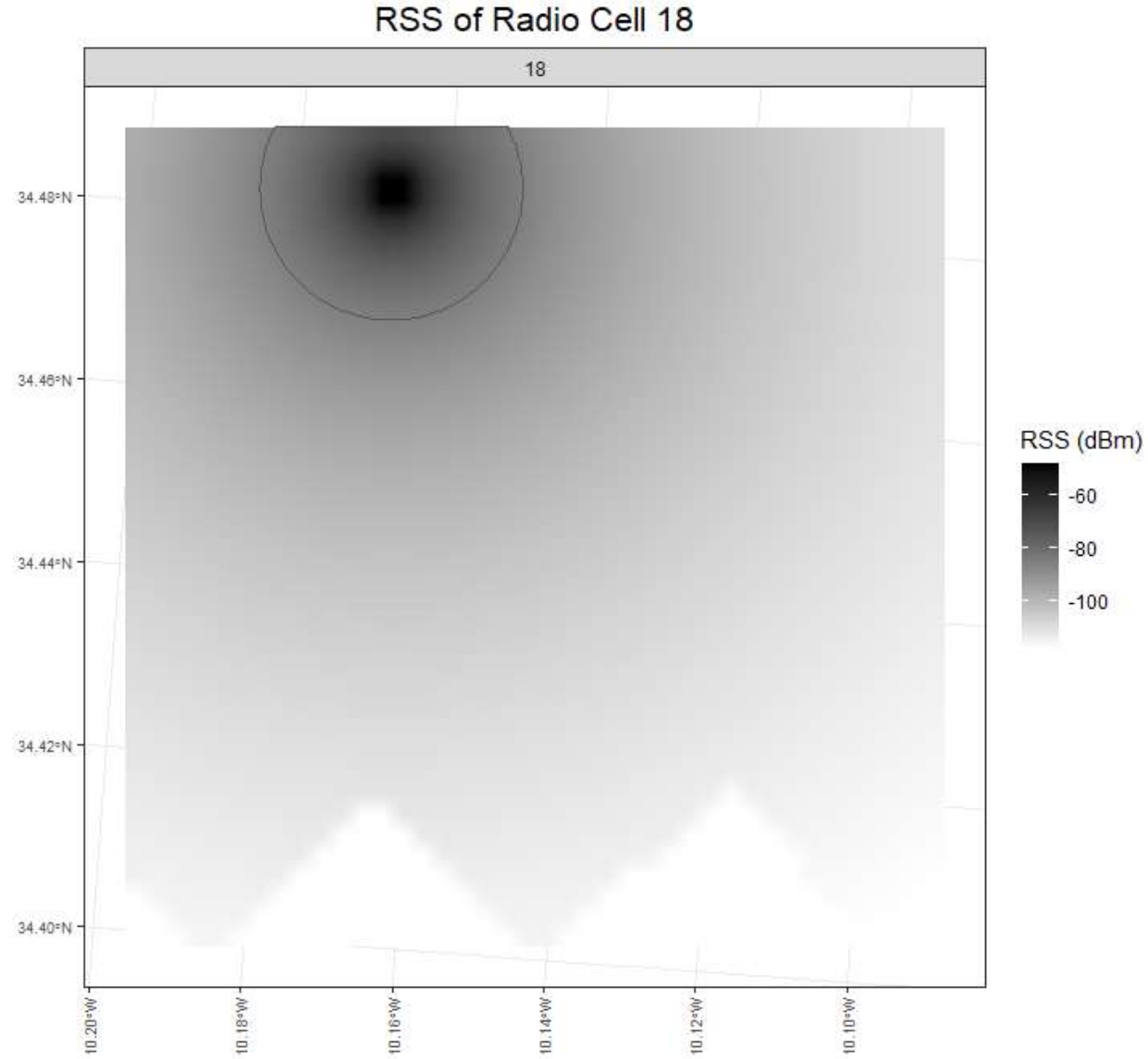
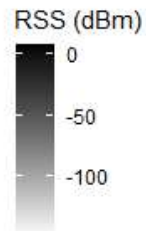
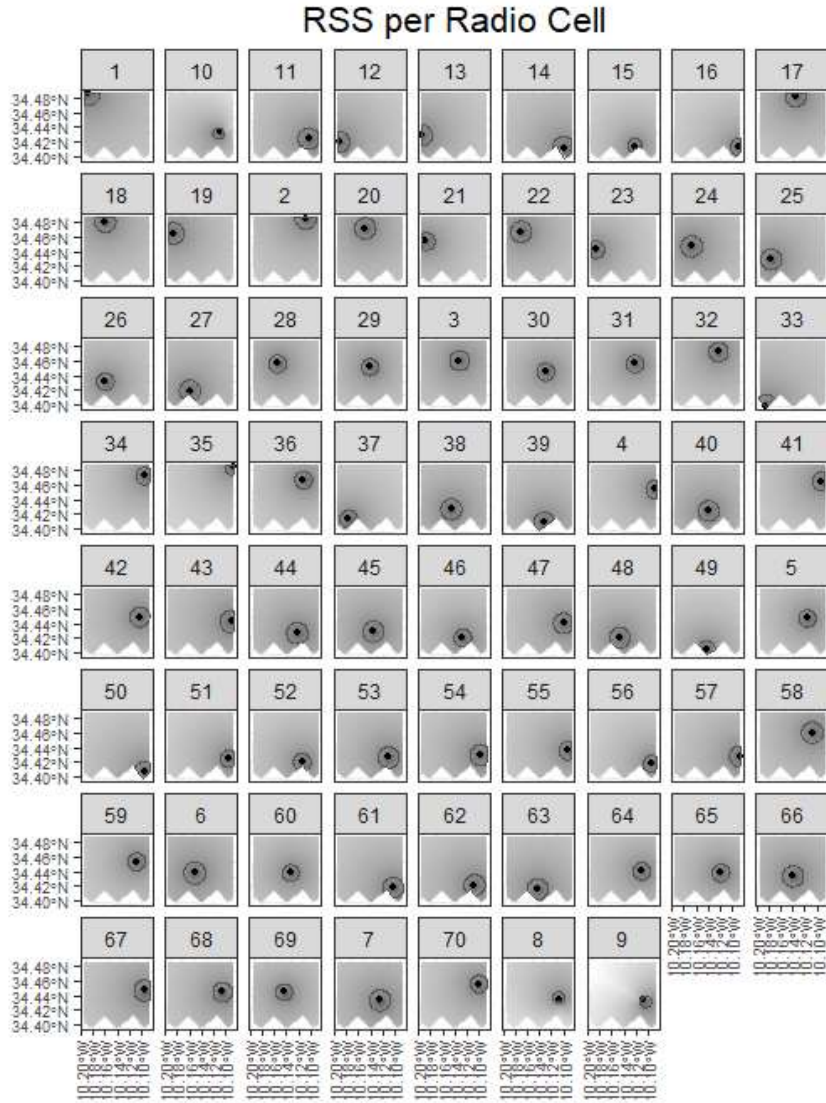
Subregions

- sr1.1
- sr1.2
- sr1.3
- sr2.1
- sr2.2
- sr3.1
- sr3.2
- sr4.1
- sr4.2
- sr4.3

```
simviz::simPlot_territory()
```



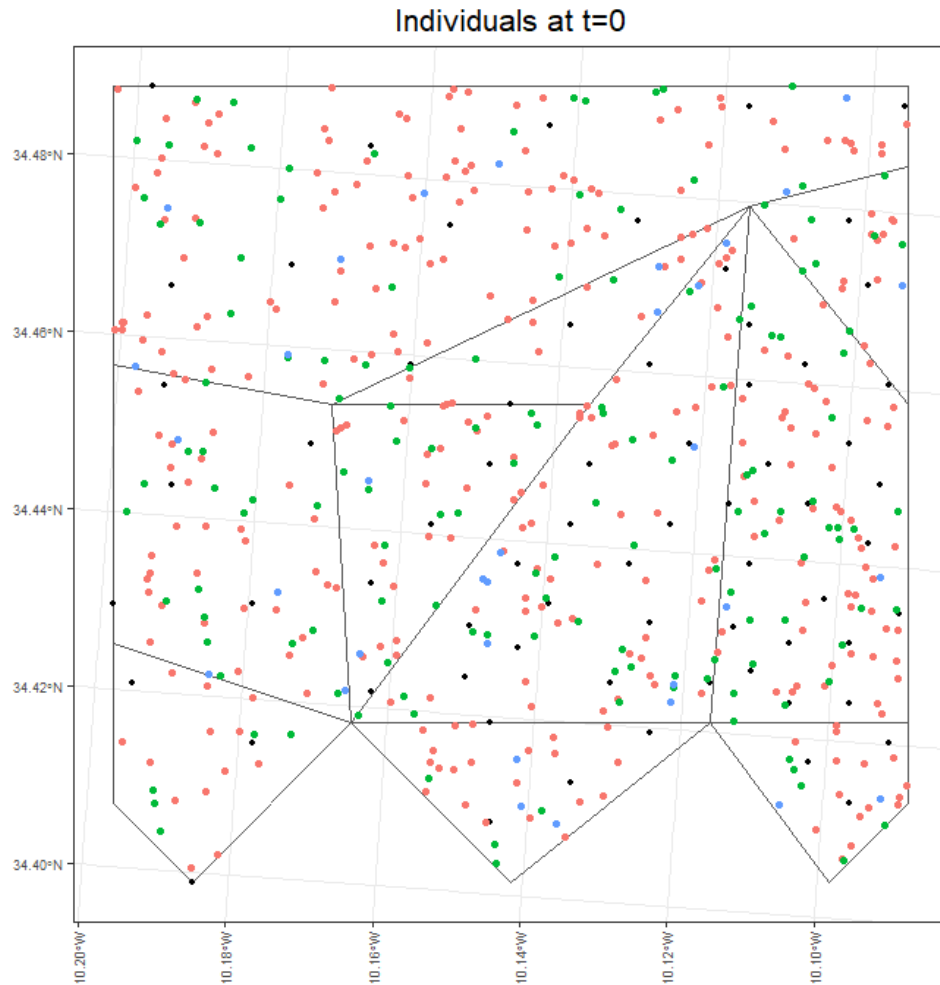
Graphical outputs: simviz



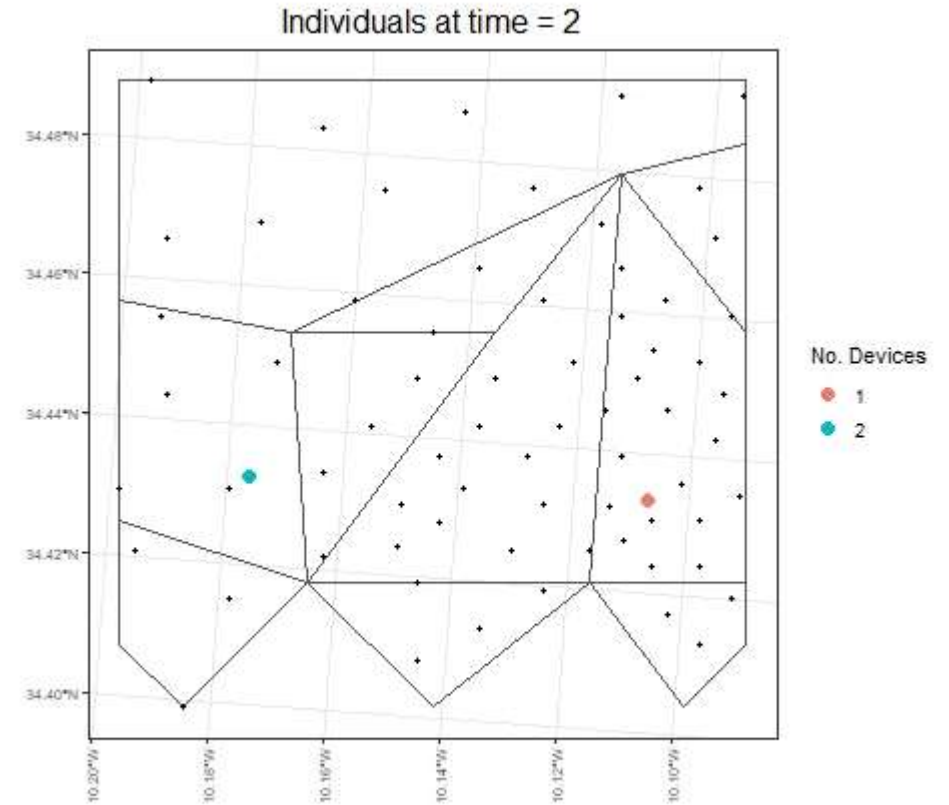
`simviz::simPlot_network()`



Graphical outputs: simviz



```
simviz::simPlot_individuals()
```



```
simviz::simAnimate_individuals()
```



Ongoing and future work

