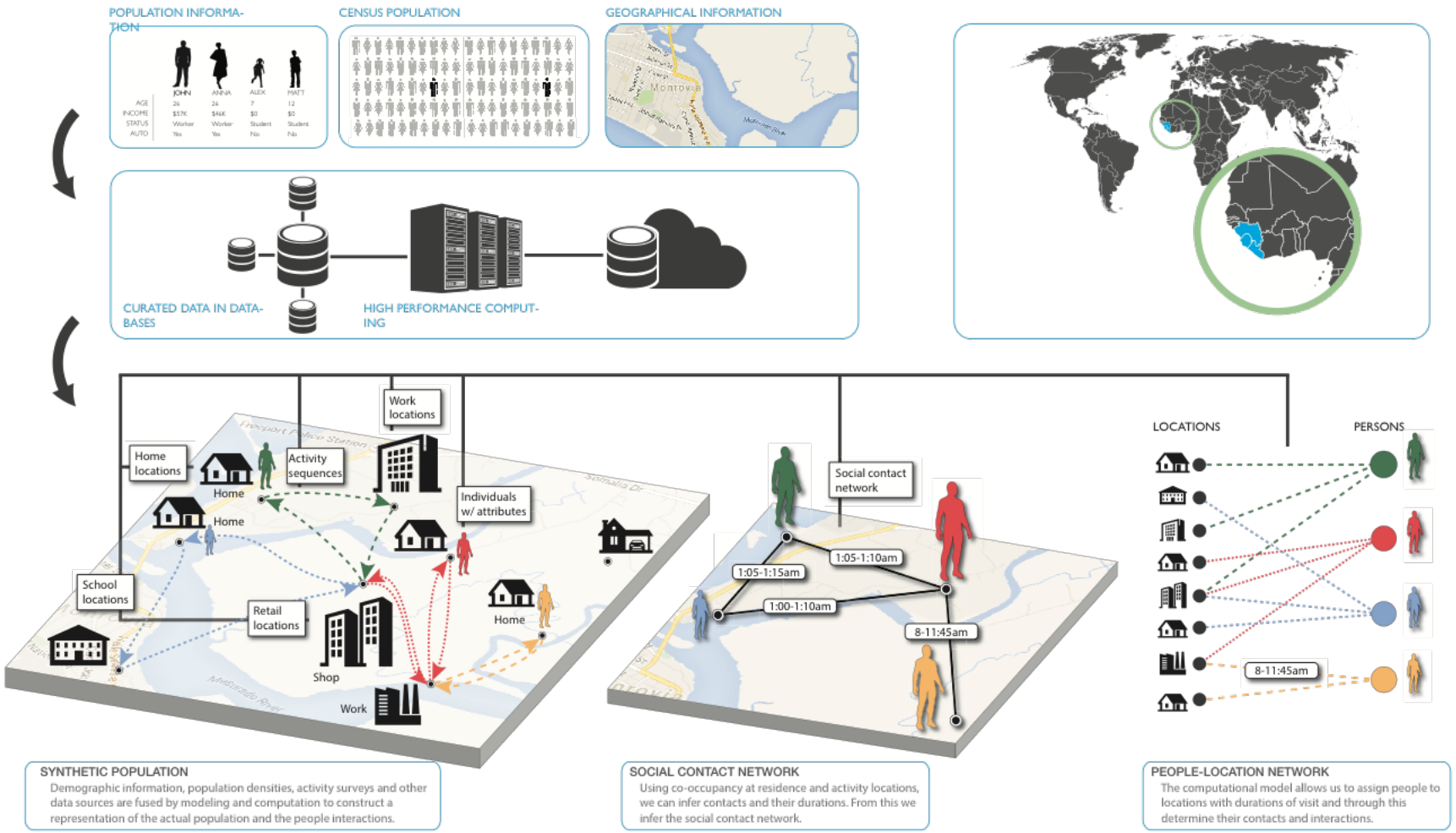
Social contact networks in computational epidemiology



Opportunities for HPC techniques for scaling up computational epidemiology

- Epidemic simulations are computations on highly heterogeneous temporal and dynamic graph ensembles
  - Edges vary over time and the graph co-evolves with the disease spread
- Epidemic quantities correspond to properties of ensembles of graphs
  - Ensembles generated by stochastic diffusion process
- Public health analyses involve large experimental designs
  - Large number of parameters, uncertainty, stochastic outcomes
- Good benchmark problems: temporal and dynamic network analysis, epidemic calibration, control
  - Stochastic optimization problems