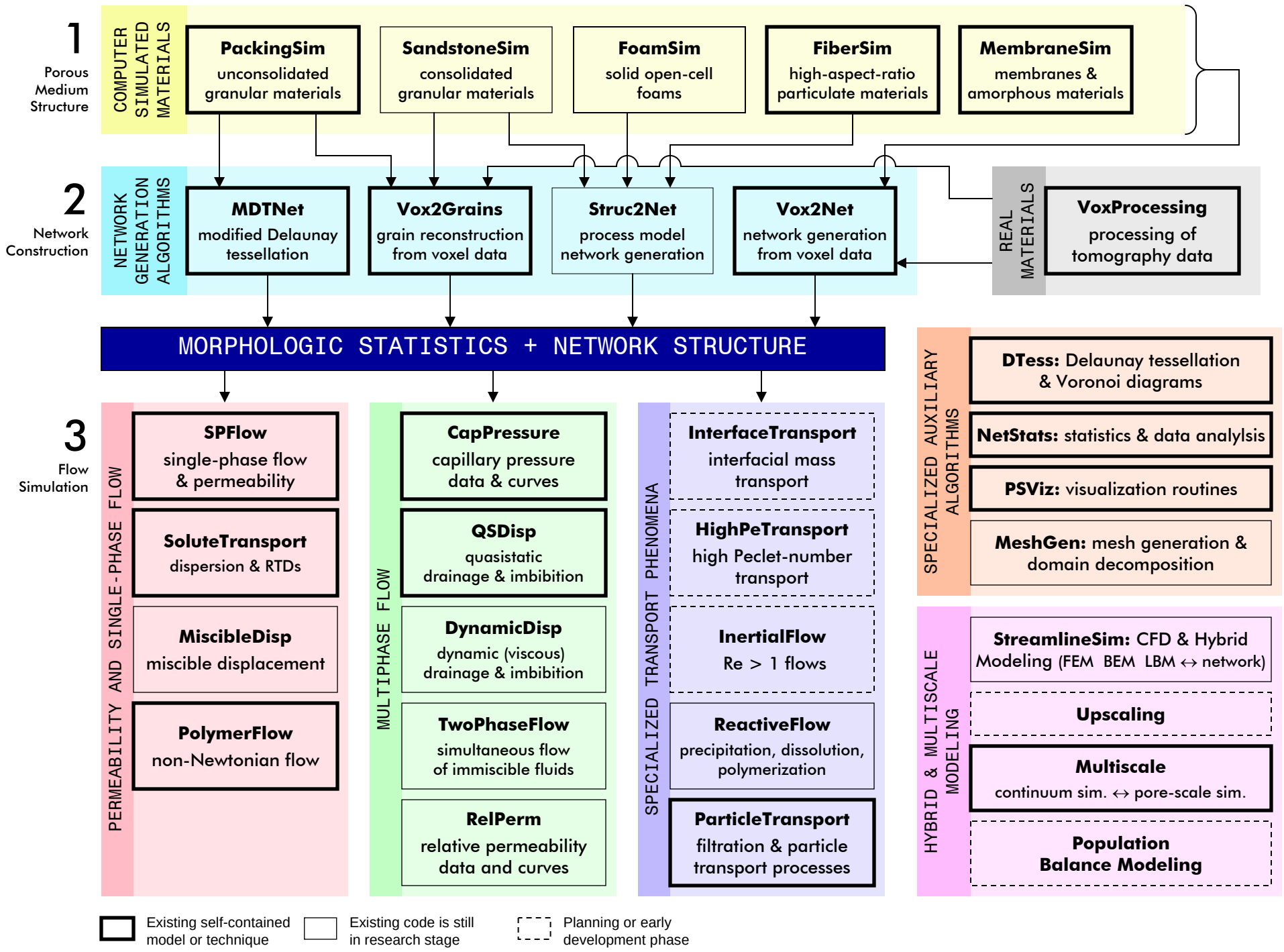
1
Porous Medium Structure
COMPUTER SIMULATED MATERIALS
PackingSim
unconsolidated granular materials
SandstoneSim
consolidated granular materials
FoamSim
solid open-cell foams
FiberSim
high-aspect-ratio particulate materials
MembraneSim
membranes & amorphous materials
2
Network Construction
NETWORK GENERATION ALGORITHMS
MDTNet
modified Delaunay tessellation
Vox2Grains
grain reconstruction from voxel data
Struc2Net
process model network generation
Vox2Net
network generation from voxel data
REAL MATERIALS
VoxProcessing
processing of tomography data
MORPHOLOGIC STATISTICS + NETWORK STRUCTURE
3
Flow Simulation
PERMEABILITY AND SINGLE-PHASE FLOW
SPFlow
single-phase flow & permeability
SoluteTransport
dispersion & RTDs
MiscibleDisp
miscible displacement
PolymerFlow
non-Newtonian flow
MULTIPHASE FLOW
CapPressure
capillary pressure data & curves
QSDisp
quasistatic drainage & imbibition
DynamicDisp
dynamic (viscous) drainage & imbibition
TwoPhaseFlow
simultaneous flow of immiscible fluids
RelPerm
relative permeability data and curves
SPECIALIZED TRANSPORT PHENOMENA
InterfaceTransport
interfacial mass transport
HighPeTransport
high Peclet-number transport
InertialFlow
Re > 1 flows
ReactiveFlow
precipitation, dissolution, polymerization
ParticleTransport
filtration & particle transport processes
SPECIALIZED AUXILIARY ALGORITHMS
DTess: Delaunay tessellation & Voronoi diagrams
NetStats: statistics & data analylsis
PSViz: visualization routines
MeshGen: mesh generation & domain decomposition
HYBRID & MULTISCALE MODELING
StreamlineSim: CFD & Hybrid Modeling (FEM BEM LBM ↔ network)
Upscaling
Multiscale
continuum sim. ↔ pore-scale sim.
Population Balance Modeling
Existing self-contained model or technique
Existing code is still in research stage
Planning or early development phase