COLLISION PIPELINE

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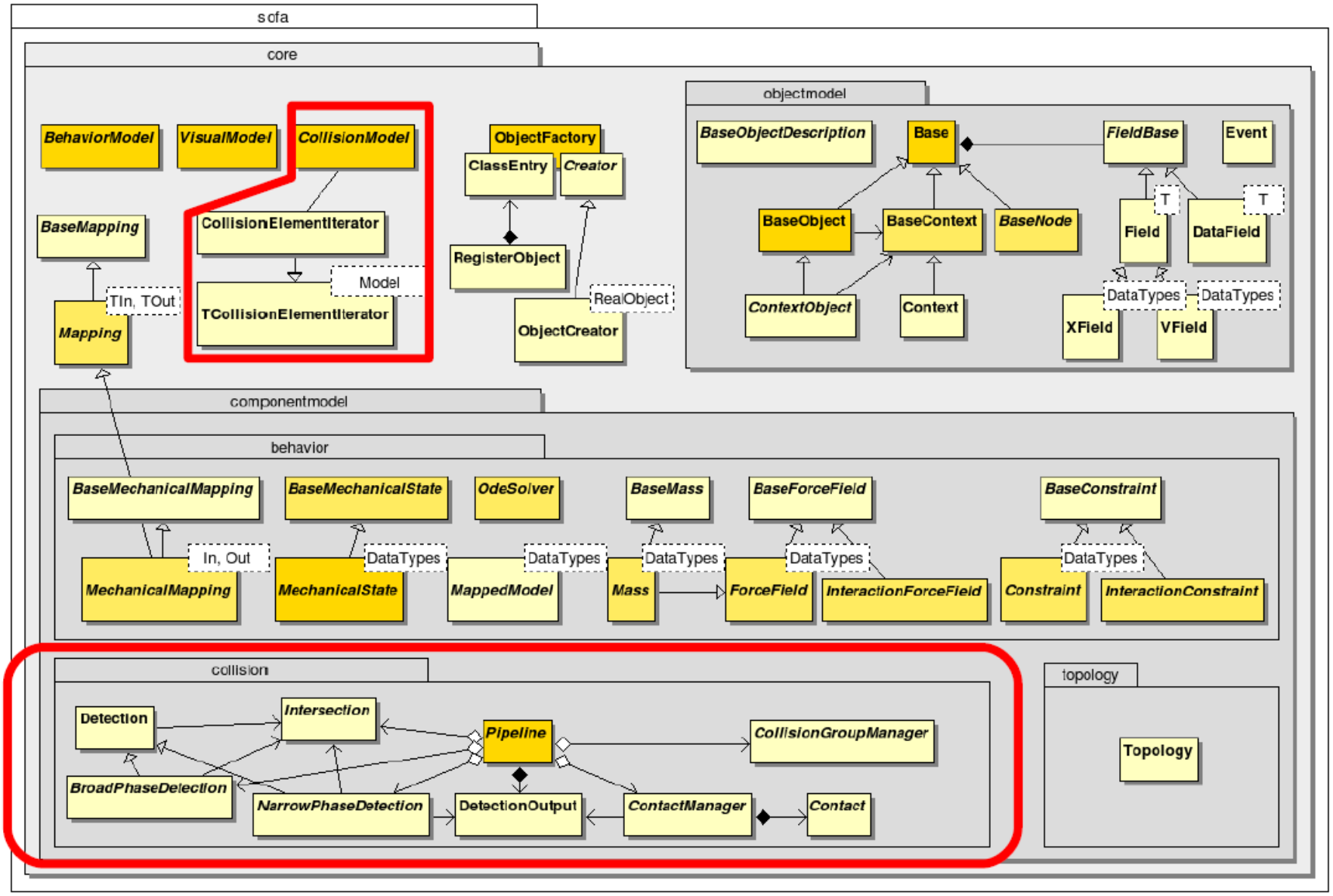
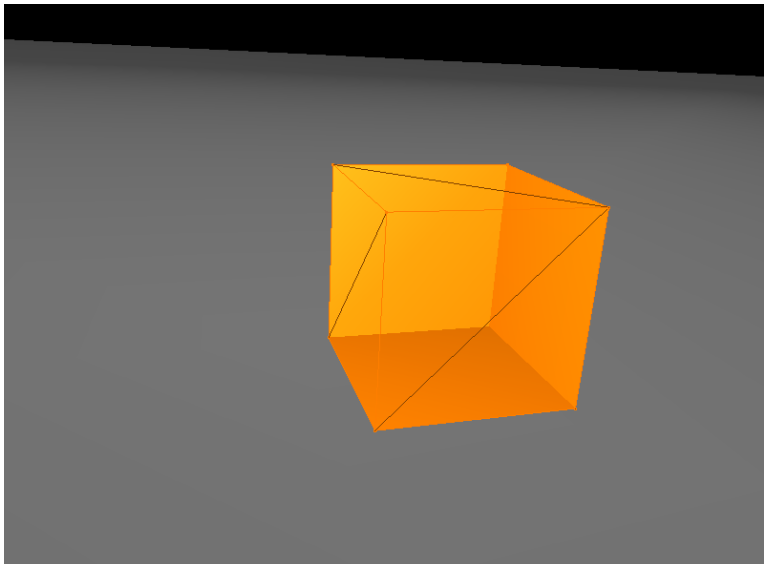
High-Level Design



Collision Models

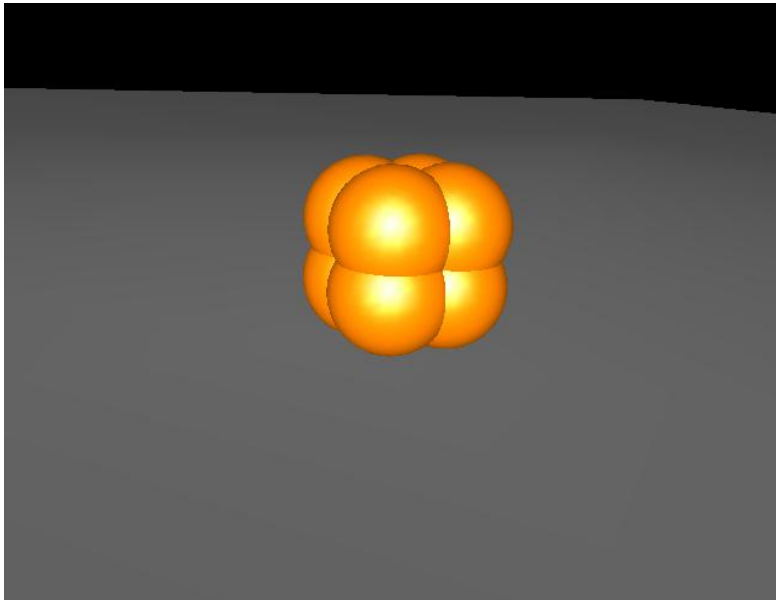


- TTriangleModel

- LineModel

- PointModel

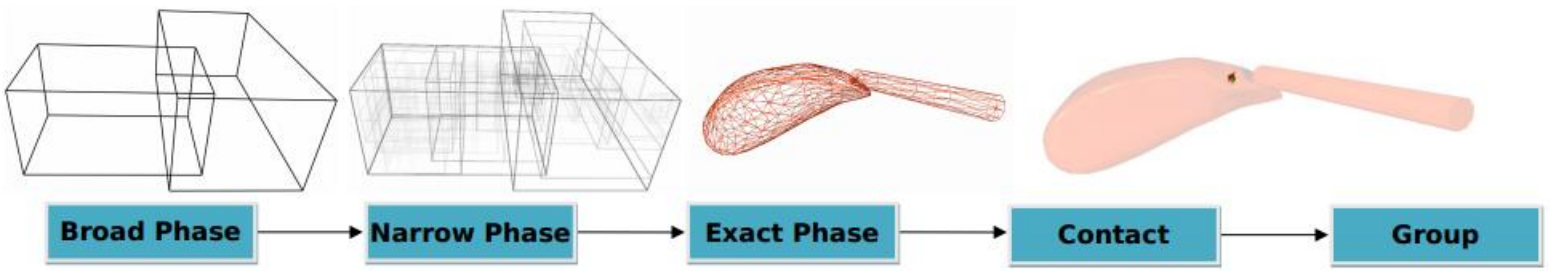
- TSphereModel



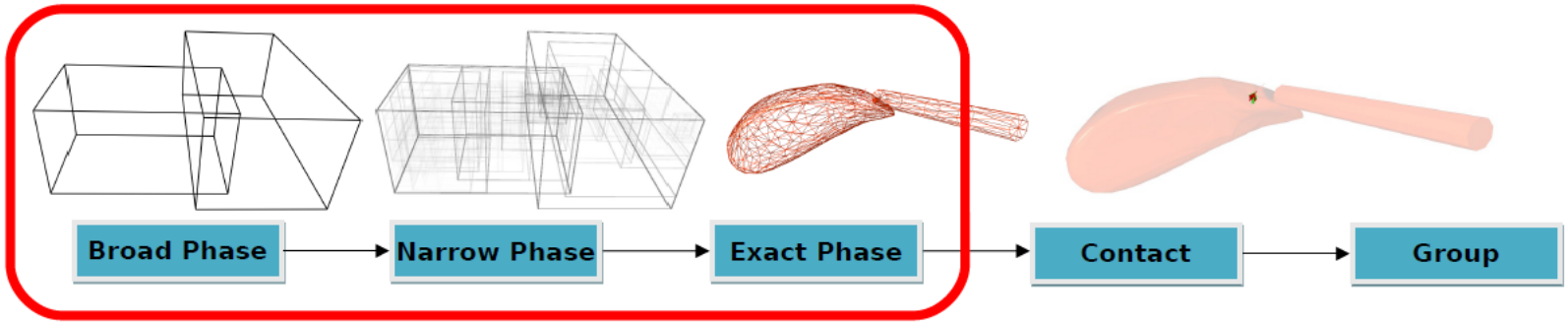
Collision Pipeline

- Each piece of the pipeline is added to the scene root
No support for different algorithms in parts of the scene

- Pipeline component gather list of collision models and control the sequence of computations

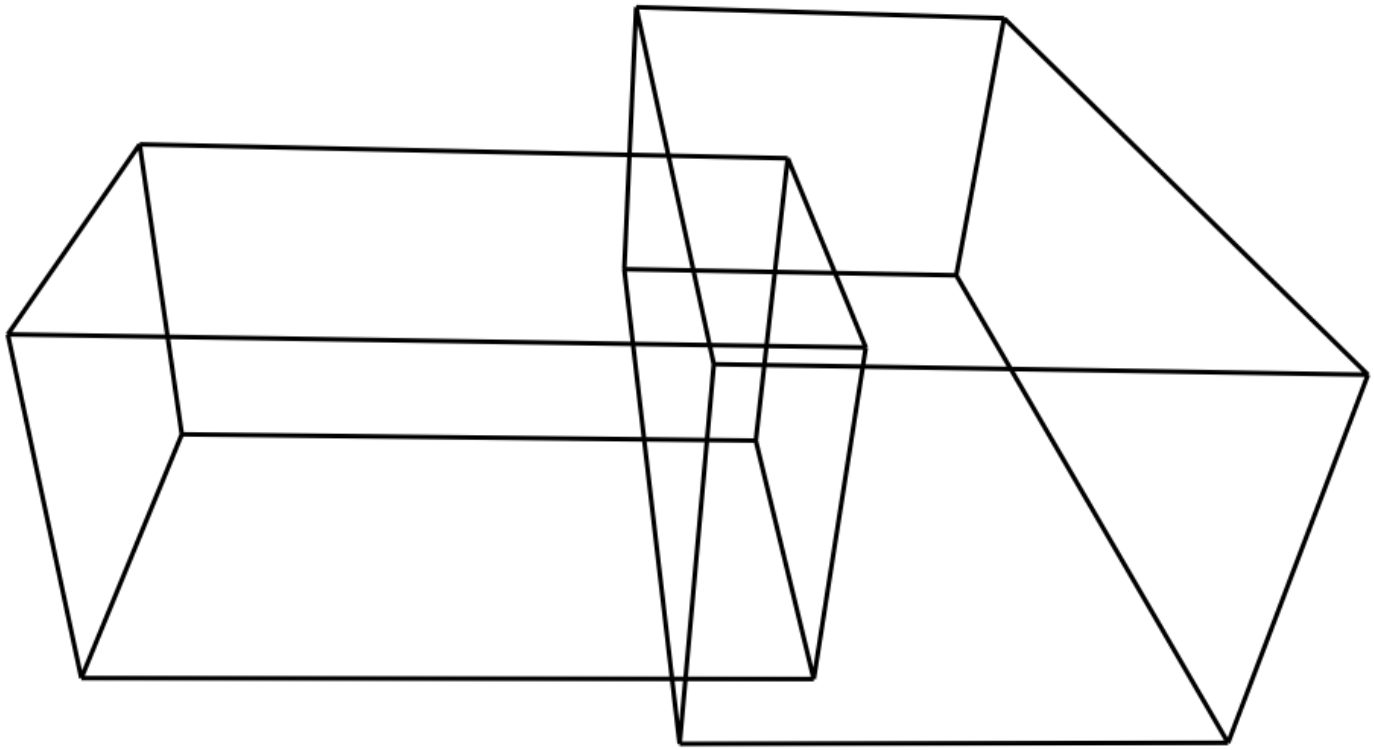


Collision Detection



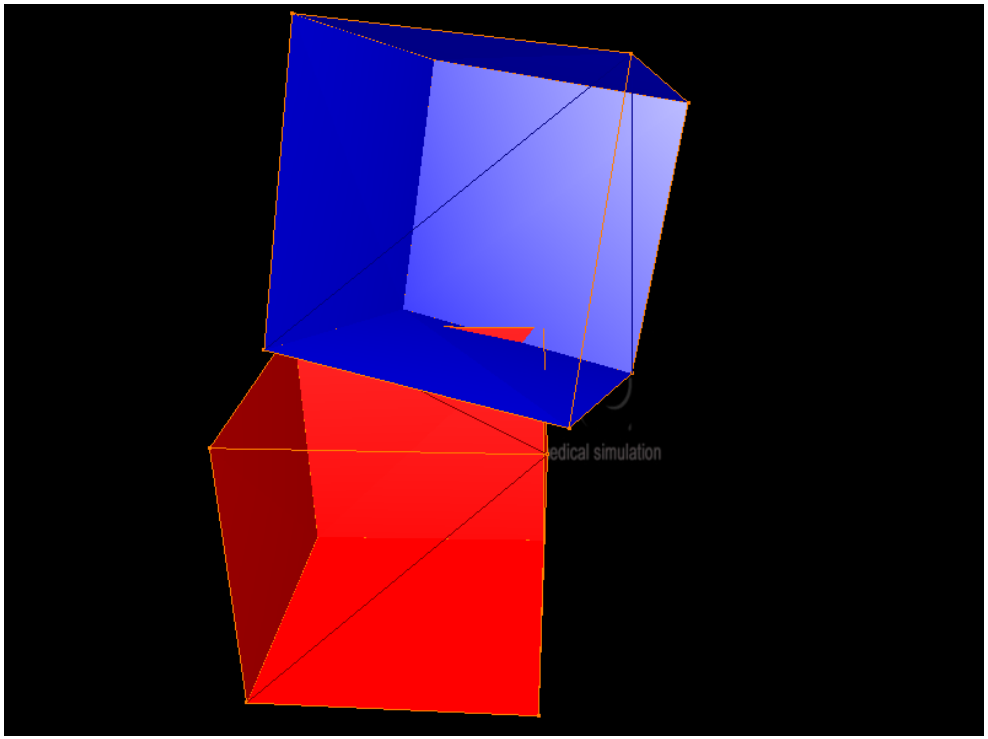
Broad Phase

The broad phase component returns pairs of colliding bounding boxes (currently, axis-aligned bounding boxes)



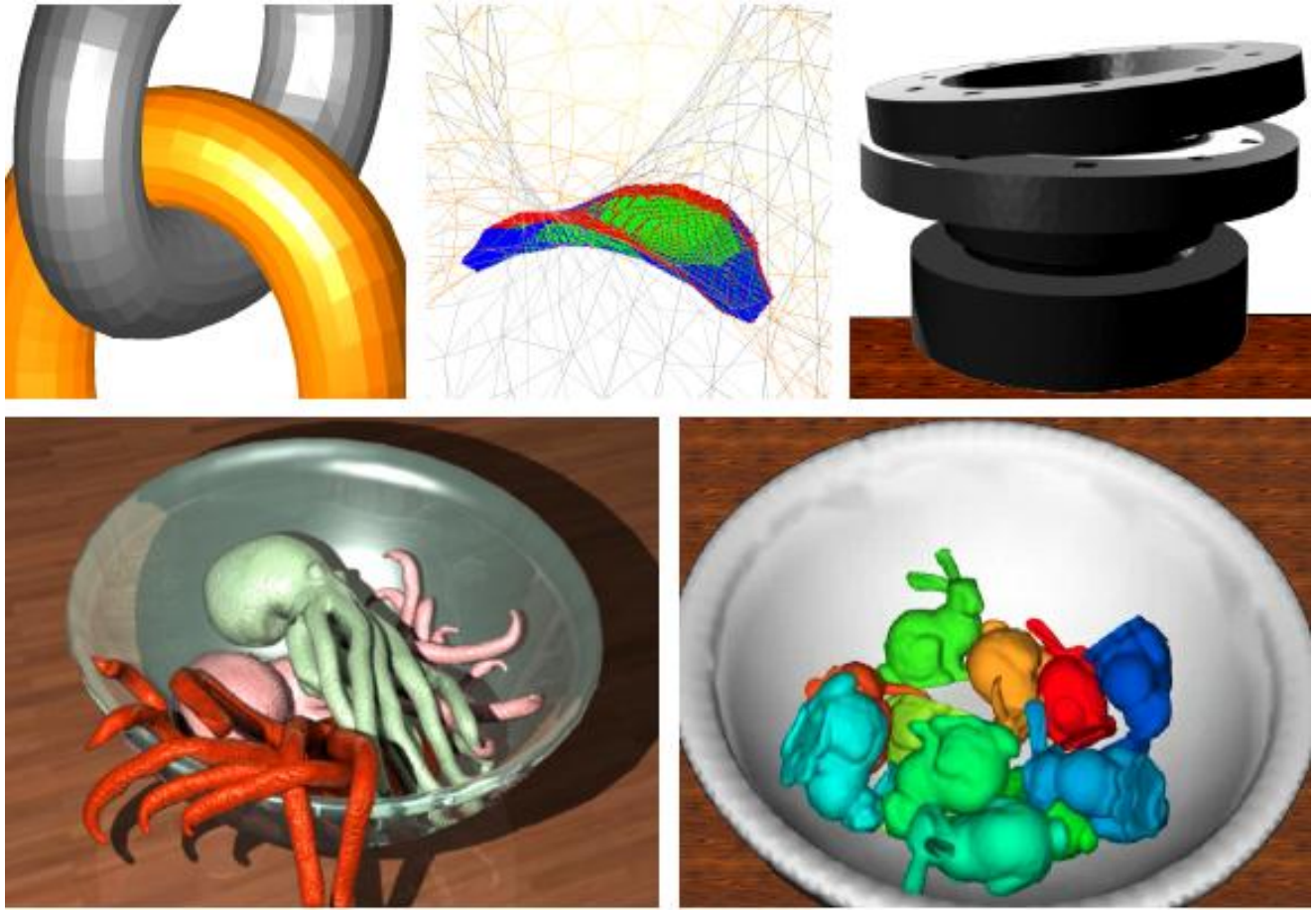
Narrow Phase

Returns pairs of geometric primitives with the corresponding collision points



Different Approaches

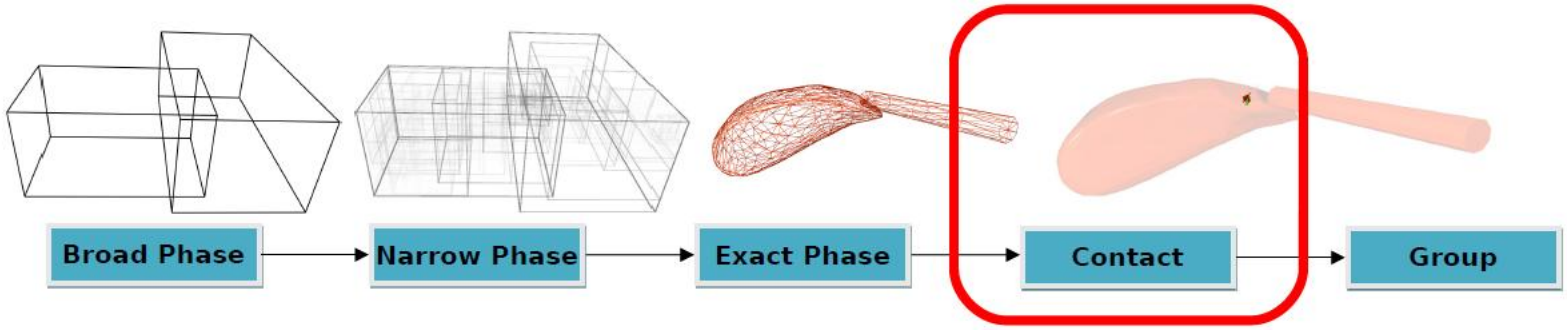
Brute force, rasterization, ray tracing ...



Contacts

- ContactManager : given a set of detected contact points, create contact response components

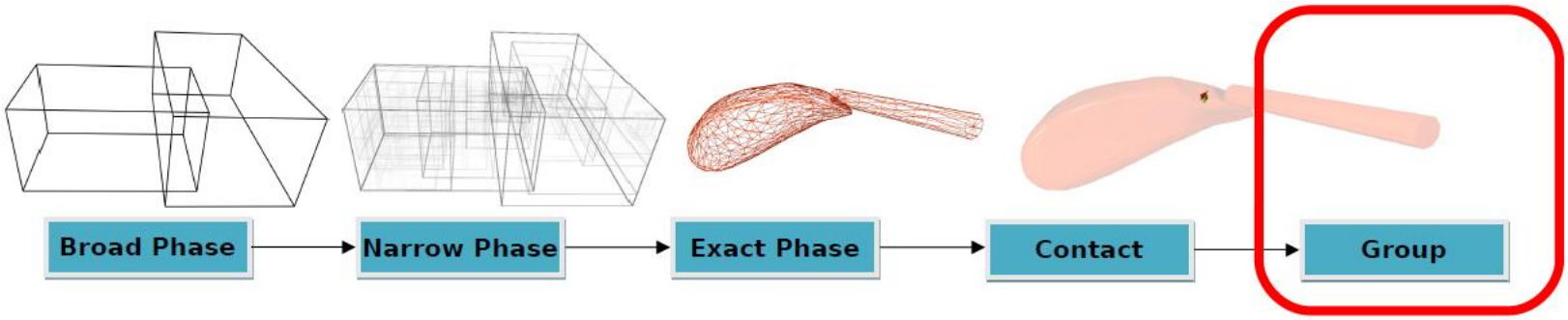
- Contact : contact response component handling the response between a pair of models



Collision Group

CollisionGroupManager : given a set of contacts, create integration groups

– Contacts between models defines a graph
– “Simply” gather connected subgraphs
– Decide which integrator/solver algorithms will be used



Finally

- The pipeline is complete !

- Next is the mechanical integration step