It is 

- Based on the existing graph query language UnQL
- Built upon bidirectional UnCAL: a graph algebra with clear bidirectional semantics
- It is an integrated development environment
- Graph editor, graph validation, graph transformation checking, visualizations of bidirectional behavior

Model-based

- Requirements Analysis
- Software Design
- Component Composition
- Application Deployment
- Testing

Bidirectional Transformation (BX)

Graphs have node sharing and cycles
- How to deal with termination of graph transformations?
  - Structural Recursion (fold on graphs)
- How to deal with equality of two graphs?
  - Bisimulation (graphs as regular trees)
- How to correctly reflect changes on the view to the source?
  - Traceability based on Bulk Semantics

Applications:

- Towards automatic Bidirectionalization of ATL
  - ICMT’11

Automatic Feature Model Fixing
  - MODELS’10

Model-Code Co-evolution
  - ICSE’12

GRoundTram: A General Functional Framework

- It is compositional (functional)
- It is well-behaved
- It is an integrated development environment

- Graph editor, graph validation, graph transformation checking, visualizations of bidirectional behavior

BiG Challenges

http://www.biglab.org/