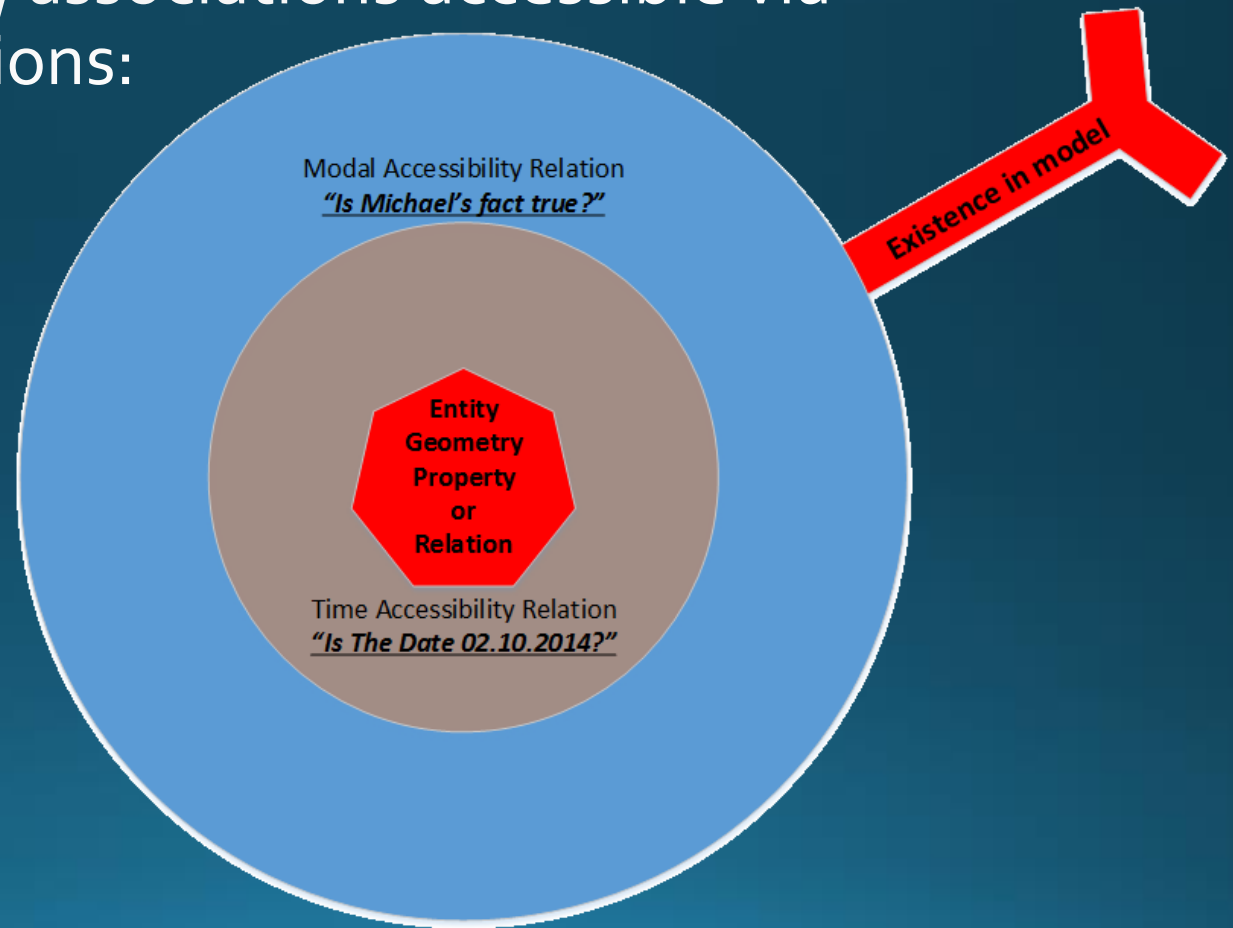


CityGML 3.0 WP-06

# Use Cases

# Use Cases Involving Time and Modes

- Entities, geometry, properties, associations accessible via gateways or accessibility relations:
  - Temporal accessibility relations
  - Modal accessibility relations



# Examples

- A simulation moves an elevator from the ground floor to the top level of a hotel.
- A historical reconstruction contains both changes with time and mutually exclusive facts.
- A person is guided through a tunnel system while its geometry is changed by an earthquake.
- Two cars collide on a street.
- An archaeologist records the successive stages of an excavation.
- A water pipeline is replaced.

# Elevator

Consider two approaches:

1. Translational space:

1. Model the space the elevator moves in as a vertical corridor
2. Model the car as a movable room

2. Magic room:

1. There is a room conditionally accessible through a door on each floor
2. Doors follow a rule that at most only one may be open at any time
3. A person may request a door opening by pressing a button if outside
4. A person may request the floor of door opening by pressing a button inside the room
5. Door opening requests are eventually satisfied

# Generalization: Moving Parts

- Foreground/background dichotomy
  - Earthquake
    - Land surface is background
    - Structures are foreground
  - Door operation
    - Building is background
    - Door is foreground
  - Elevator operation
    - Building or elevator space is background
    - Elevator car is foreground
  - Mobile agents
    - All other entities are background
    - Agent is foreground
- Time animation of relationship between foreground and background

# Abstraction

1. Entity creation and destruction
  - Temporal predicates
  - One world, many times
2. Entity property changes
  - Animation of properties
  - One world, many characteristics
3. Event (re-)construction
  - Needs 1. and 2.
  - Needs mutually exclusive choice predicates
  - Many worlds, many times
  - Must be composable with temporal predicates

