# GIS: Data Formats, Design & Quality

## Vector Data Concepts

# Learning Objectives

At the end of this lesson, you should be able to:

- Explain how vector data is structured
- Explain how vector features are created
- Discuss object model of vector data
- Discuss precision of vector calculations

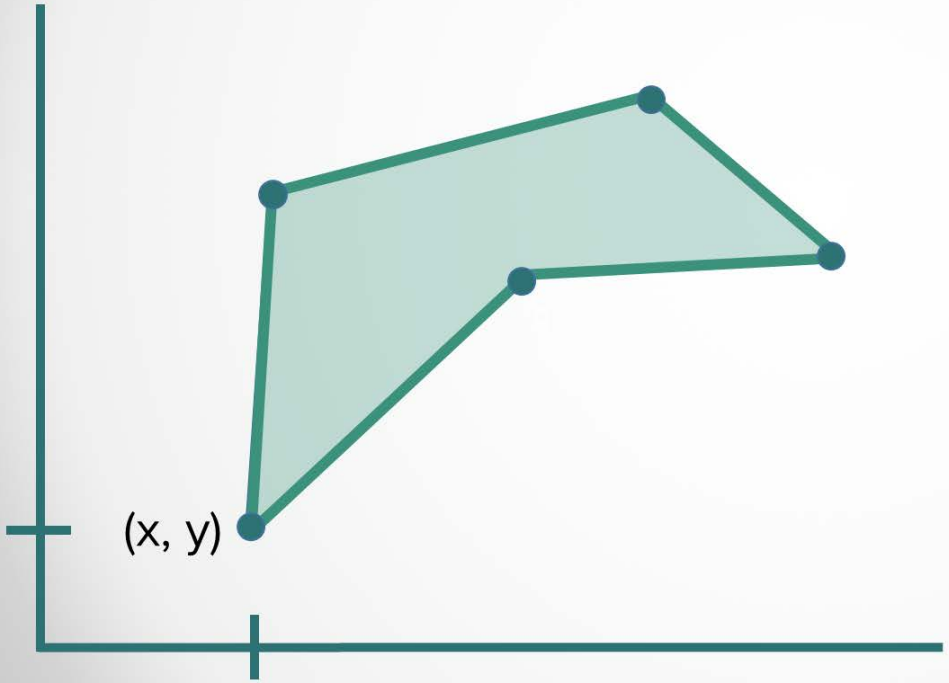
# Classifying Vector Data

Two types of data in GIS:

- Vector (points, lines, polygons)
- Raster (a grid of pixels)

# Classifying Vector Data

## Vector Data Model



# Object Data Model

Generalization

Represent real things as locations and attributes

Objects = conceptualizations of real items

Concrete or abstract

# Object Data Model

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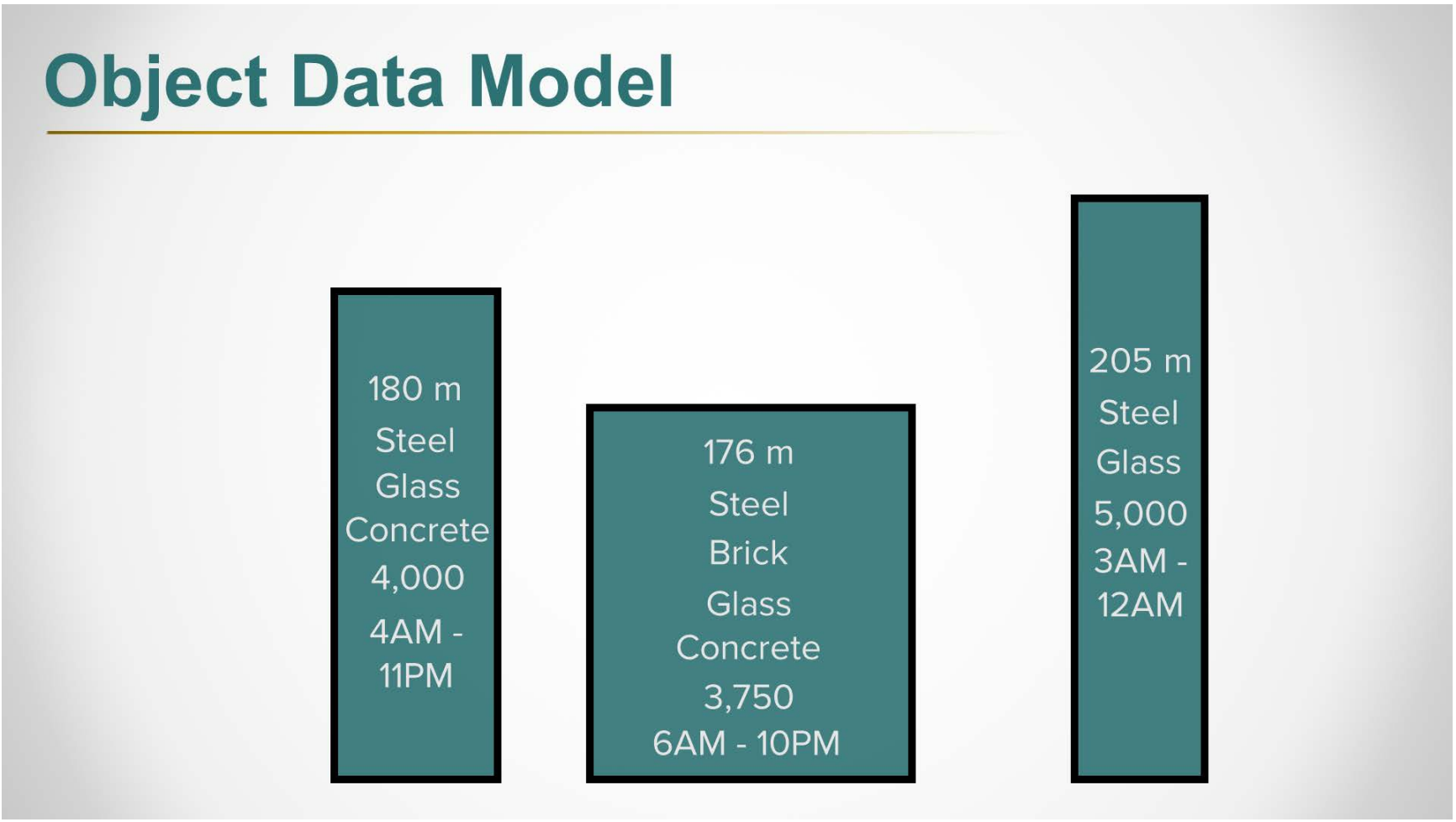


# Object Data Model

| Building | Height | Construction Materials | Capacity | Hours |
|---|---|---|---|---|
| Building 1 | 205 m | Steel, Glass | 5,000 | 3AM-12AM |
| Building 2 | 180 m | Steel, Glass, Concrete | 4,000 | 4AM-11PM |
| Building 3 | 176 m | Steel, Brick, Glass, Concrete | 3,750 | 6AM-10PM |

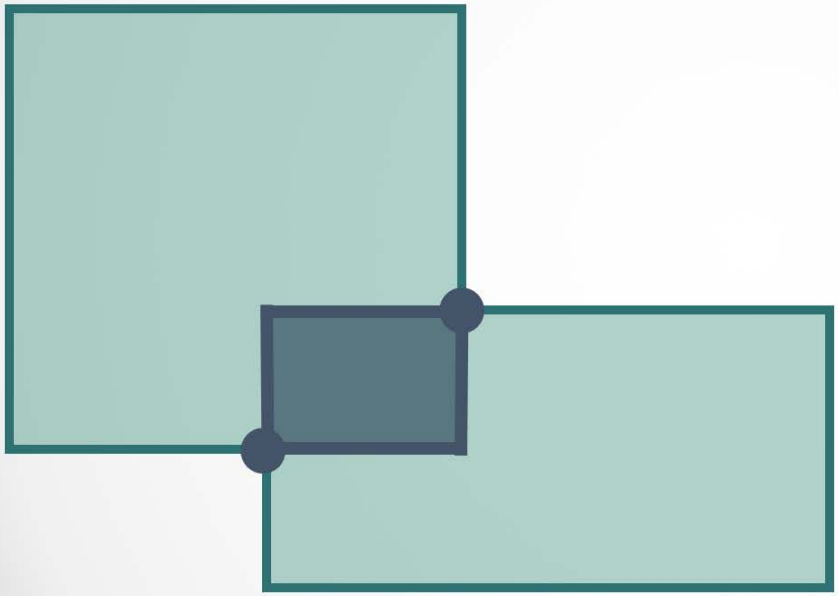
# Vector Calculations

Raster is faster,

but

vector is “corrector”

# Vector Calculations



# Vector Calculations

Re-projection is precise

Vector data is great for reliably storing:

- Point observations
- Edges
- Boundaries

Attributes stay reliable if joined properly

Vector and raster data use different tools

# Summary

Vector Data follows an object model:

- Select attributes of items
- Create a conceptualization (object)
- Data tables
- Feature classes

Locations are constructed of:

- Points
- Lines
- Polygons

Good precision for geospatial calculations