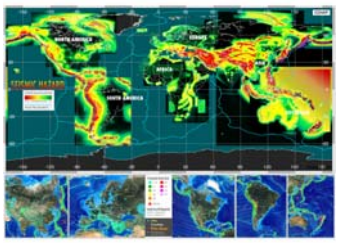
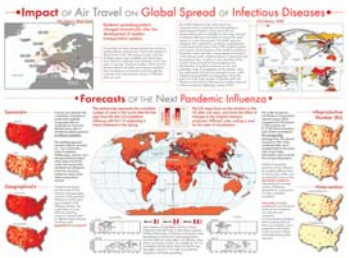
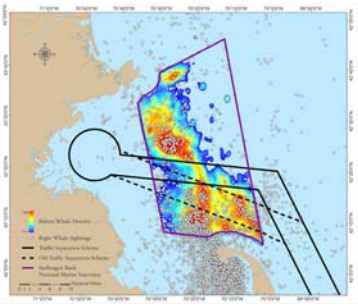
Thematic Map Types

Classification according to content:

- *Physio-geographical* maps: geological, geophysical, meteorological, soils, vegetation
- *Socio-economic* maps: historical, political, population, economy, cultural, voting, epidemics
- *Technical* maps: navigation, cadastre (shows boundaries and ownership of land parcels), civil engineering







Information Visualization MOOC

Unit 3 – "Where": Geospatial Data

Overview and Terminology

Relevant Research Disciplines:
Geography, Cartography, Statistics, Information Visualization

General Map Types

Emphasis on location:

- General reference maps
- Topographic maps
- Thematic maps

Focus here is on **thematic maps** that emphasize the spatial distribution of one or more geographic variables.

Thematic Map Types

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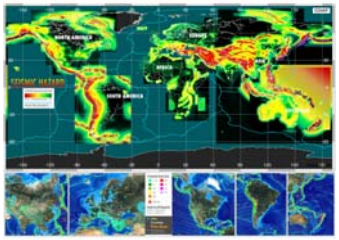
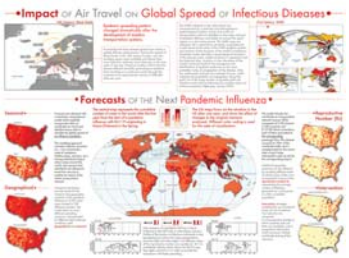
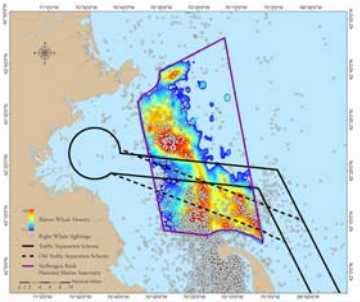




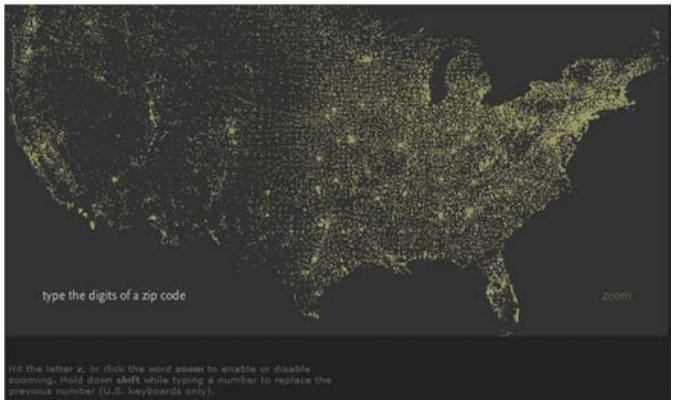


Representation of Geospatial Data

- Addresses
- US Zip codes, see http://benfry.com/zipdecode
- US Census blocks
- US Congressional districts
- US States
- Countries

↓

- Latitude/Longitude



Terminology

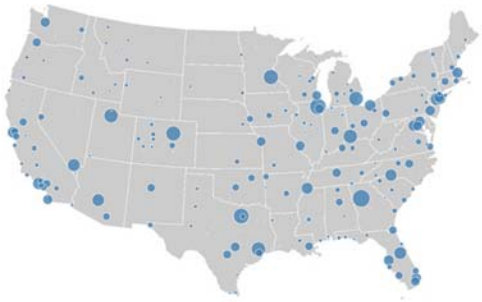
- ***Geocode***: Location of a record (e.g., address, census tract, postal code, geographic coordinates).
- ***Geographic coordinates***: Locations on the surface of the Earth expressed in degrees of latitude and longitude.
- ***Geodesic*****:** The shortest distance between two points on the surface of a spheroid.
- ***Great Circle***: Shortest distance between two points on Earth—i.e., a circular line which runs around the Earth at its fattest point.
- ***Gazetteers***: Lists of geographic places and their coordinates, along with other information such as area, population, and cultural statistics used to geocode—see Yahoo! Geocoder in Hands-on.

Map Types

Proportional symbol map

Represents data variables by symbols that are sized, colored, etc. according to their amount. Data is (or can be) aggregated at points within areas.

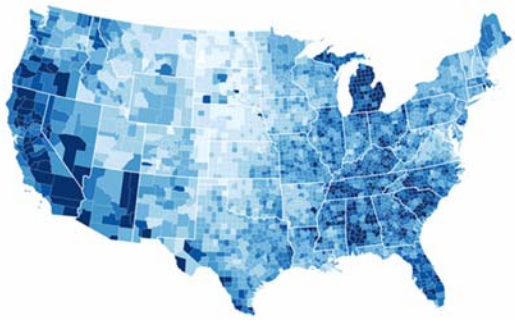
Do NOT use for densities, ratios, or scales, which should be rendered as choropleth map.

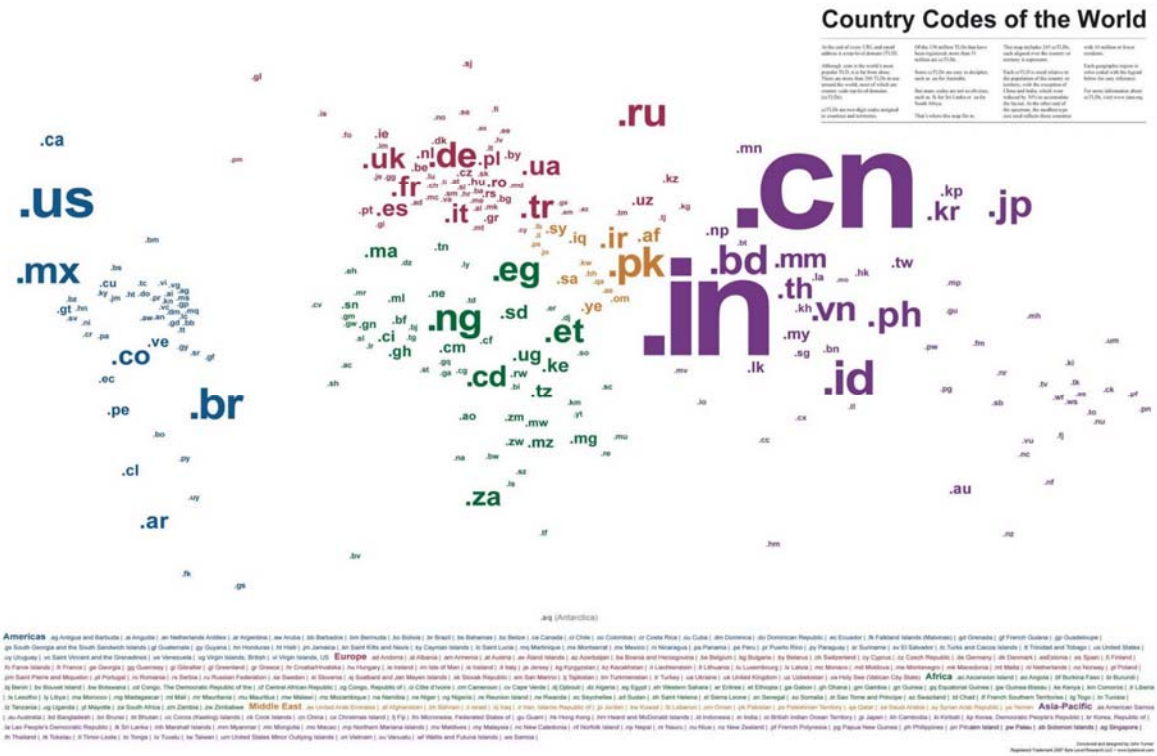


Choropleth map

Represents data variables such as densities, ratios, or rates by proportionally colored or patterned areas.

Each artificial collection unit is called a ***chronogram*** and has a distinctive color or shading.



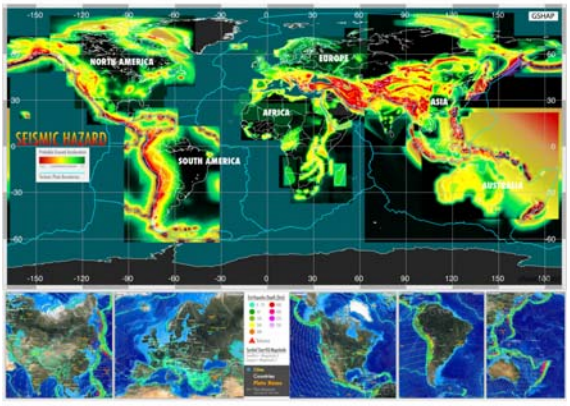


www.bytelevel.com

Map Types cont.

Heat (isopleth) maps

represent continuous data variable values by colors. While choropleth maps color predefined regions, heat maps might show color-based contour lines that connect points of equal value or value-by-area maps.



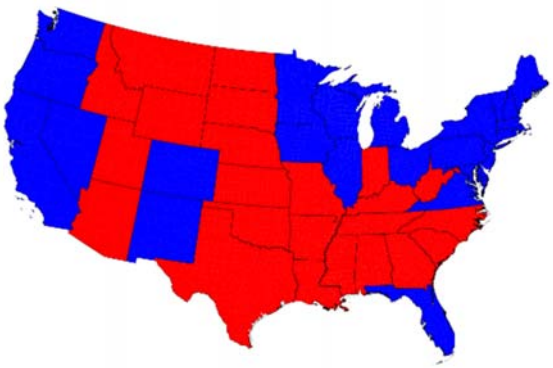
Cartograms

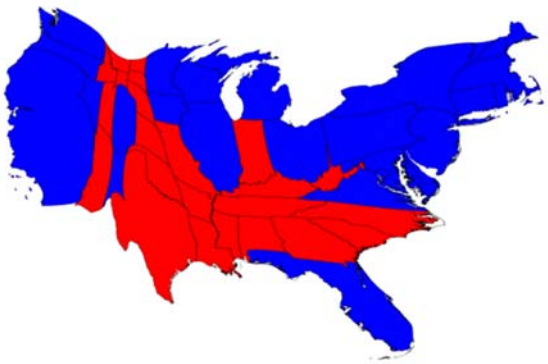
are not drawn to scale. Instead, they distort geographical areas in proportion to data values. Familiarity with regions is necessary. Mostly used for world, continental, and country maps.

2012 US presidential election results

States are colored in

- Red if majority of their voters voted for the Republican candidate, Mitt Romney, and
- Blue if they voted for the Democratic candidate, Barack Obama.



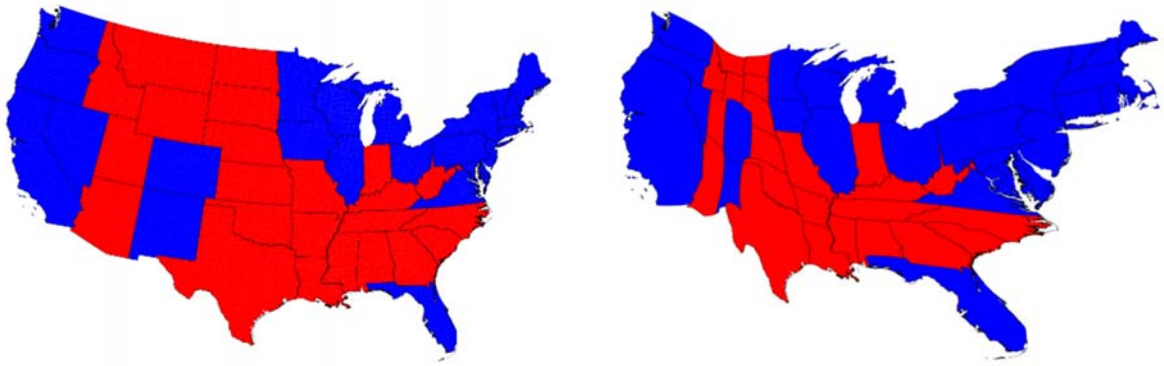


The Cartogram sizes of states according to their population.

http://www-personal.umich.edu/~mejn/election/2012/

2012 US presidential election results

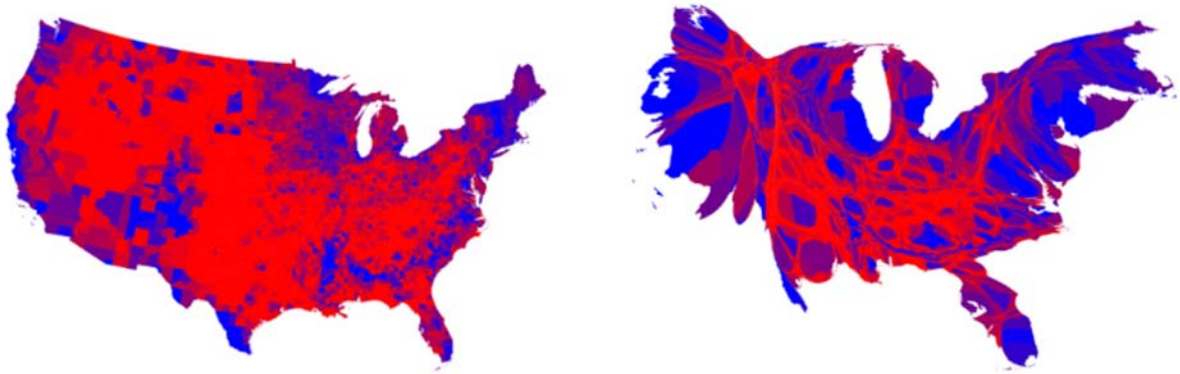
The presidential election is decided not on the basis of the number of people who vote for each candidate but on the basis of the electoral college—with a small but deliberate bias in favor of less populous states.



http://www-personal.umich.edu/~mejn/election/2012/

2012 US presidential election results

Election results by county. Red, blue, and shades of purple in between are used to indicate percentages of votes. Color scale ranges from red for 70% or more Republican, to blue for 70% or more Democrat.



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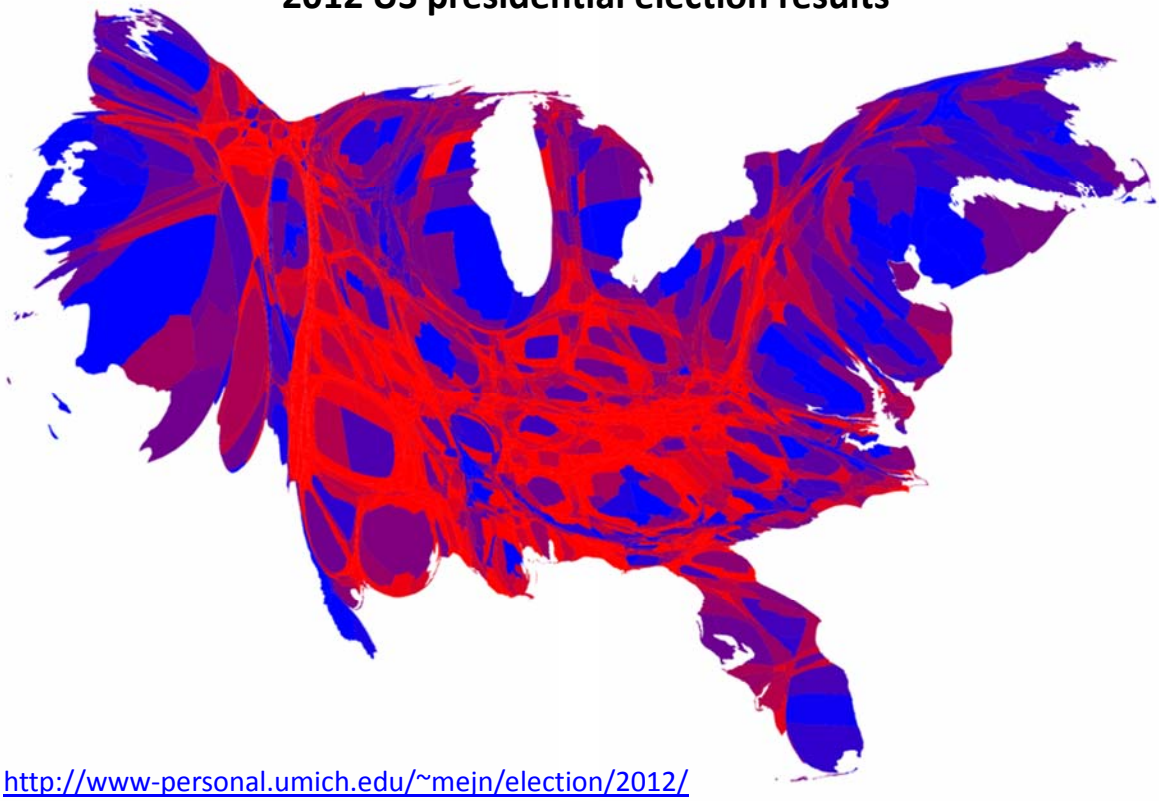
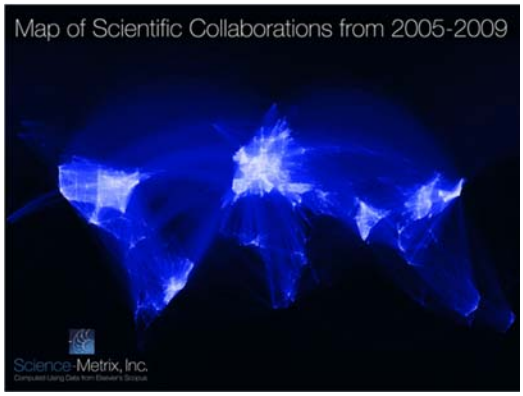


http://www-personal.umich.edu/~mejn/election/2012/

Map Types cont.

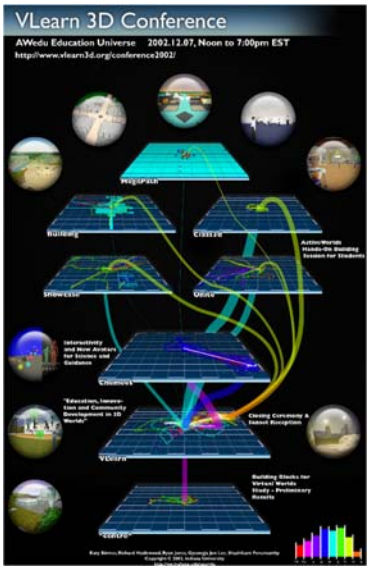
Flow maps

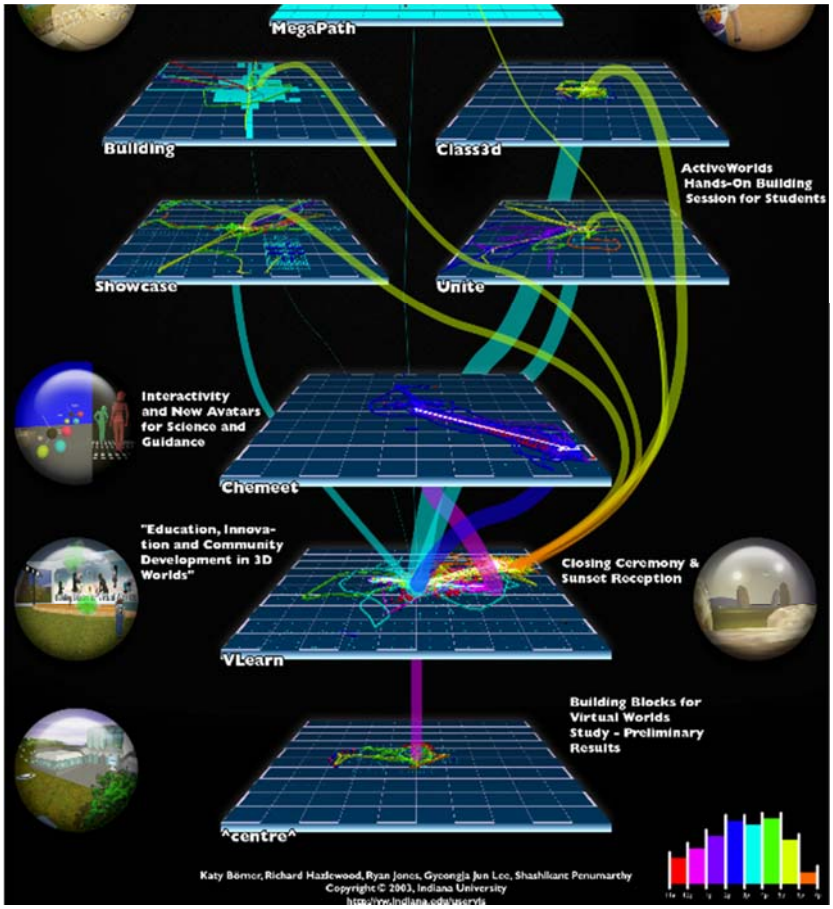
show the paths that (in)tangible objects take to get from one geospatial place to another. Variables such as capacity or maximum speed are encoded proportionally by line width or color.



Space-time cubes

Display entities, locations, and events over time.




MegaPath
Building
Class3d
ActiveWorlds
Hands-On Building
Session for Students
Showcase
Unite
Interactivity
and New Avatars
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Chemeet
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tion and Community
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Results
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Katy Börner, Richard Hazlewood, Ryan Jones, Gyeongja Jun Lee, Shashikant Penumarthy
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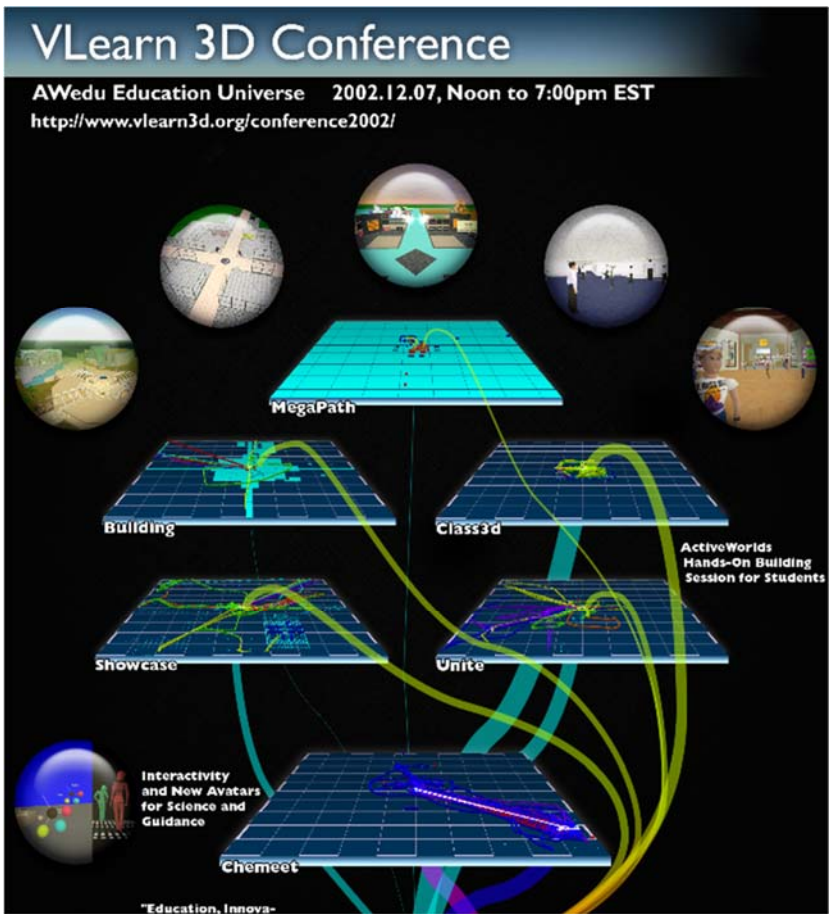
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