

GIScience Grand Research Challenges: from Spatial Integration to Spatiotemporal Inspiration

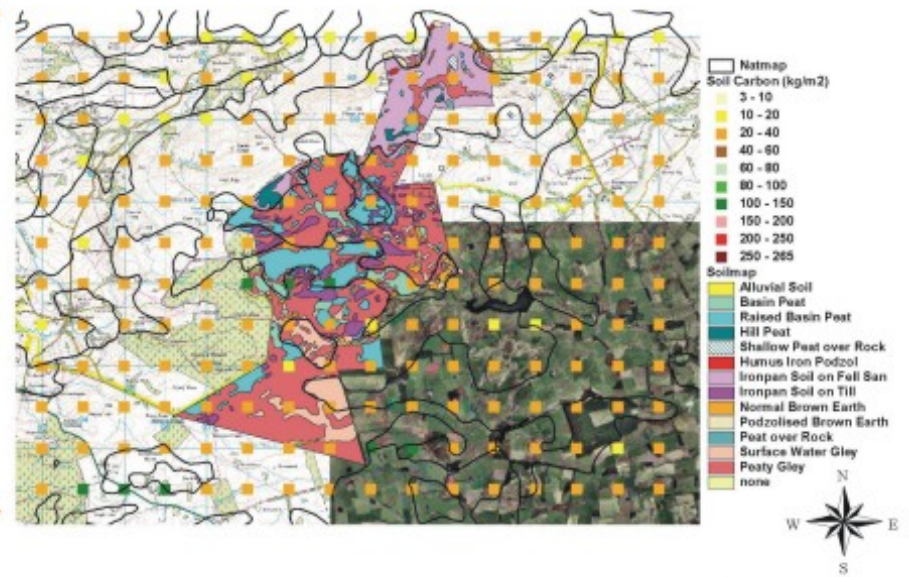
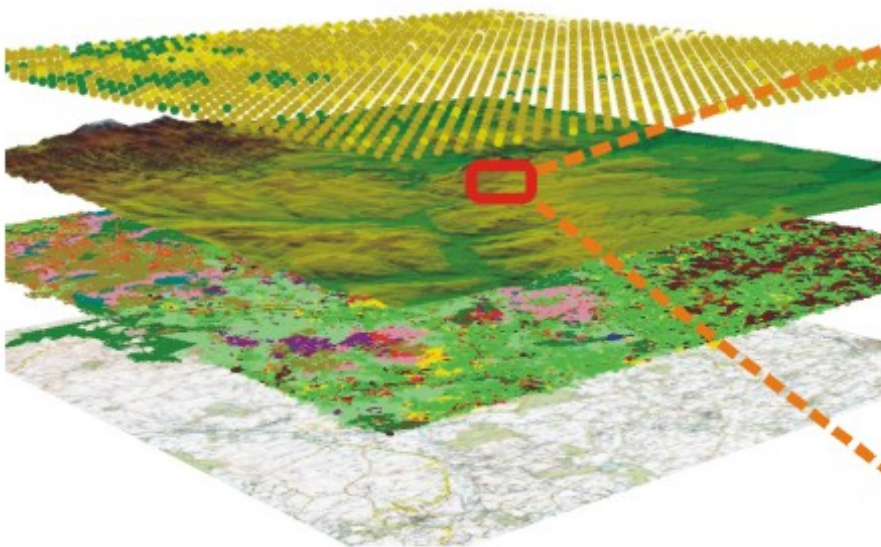


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Overlays



Mashup

The screenshot displays a web browser window titled "WeatherBug Maps - Microsoft Internet Explorer". The address bar shows a URL: <http://maps.weatherbug.com/?zoom=13&lat=33.452840&lon=-111.94326&w=0&h=0>. The page features the WeatherBug logo and the word "Maps" in a large font. Below the logo is a search bar with the text "Enter Location: Tempe AZ 85281" and a "GO" button. To the right of the search bar are links for "Google Maps", "BETA", "Create Account", and "Feedback". The main content is a map of the Phoenix, Arizona area, showing various weather stations marked with icons. A legend at the bottom left identifies the icons: a blue pin for "WeatherBug station", a green pin for "WeatherBug station with Camera", and a red pin for "Non-WeatherBug station". The map also shows major roads, landmarks like the Phoenix Mountains, and various neighborhoods. The browser's status bar at the bottom indicates "Internet".

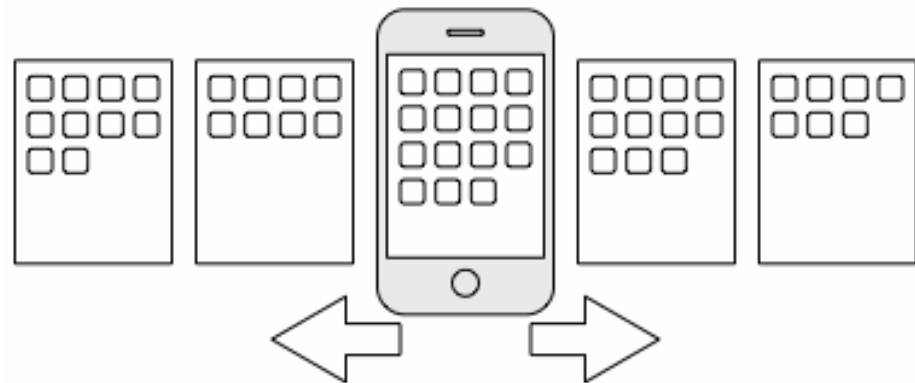
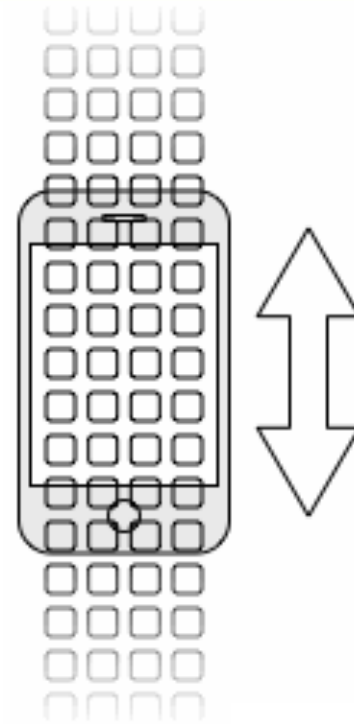


Spatial Integration

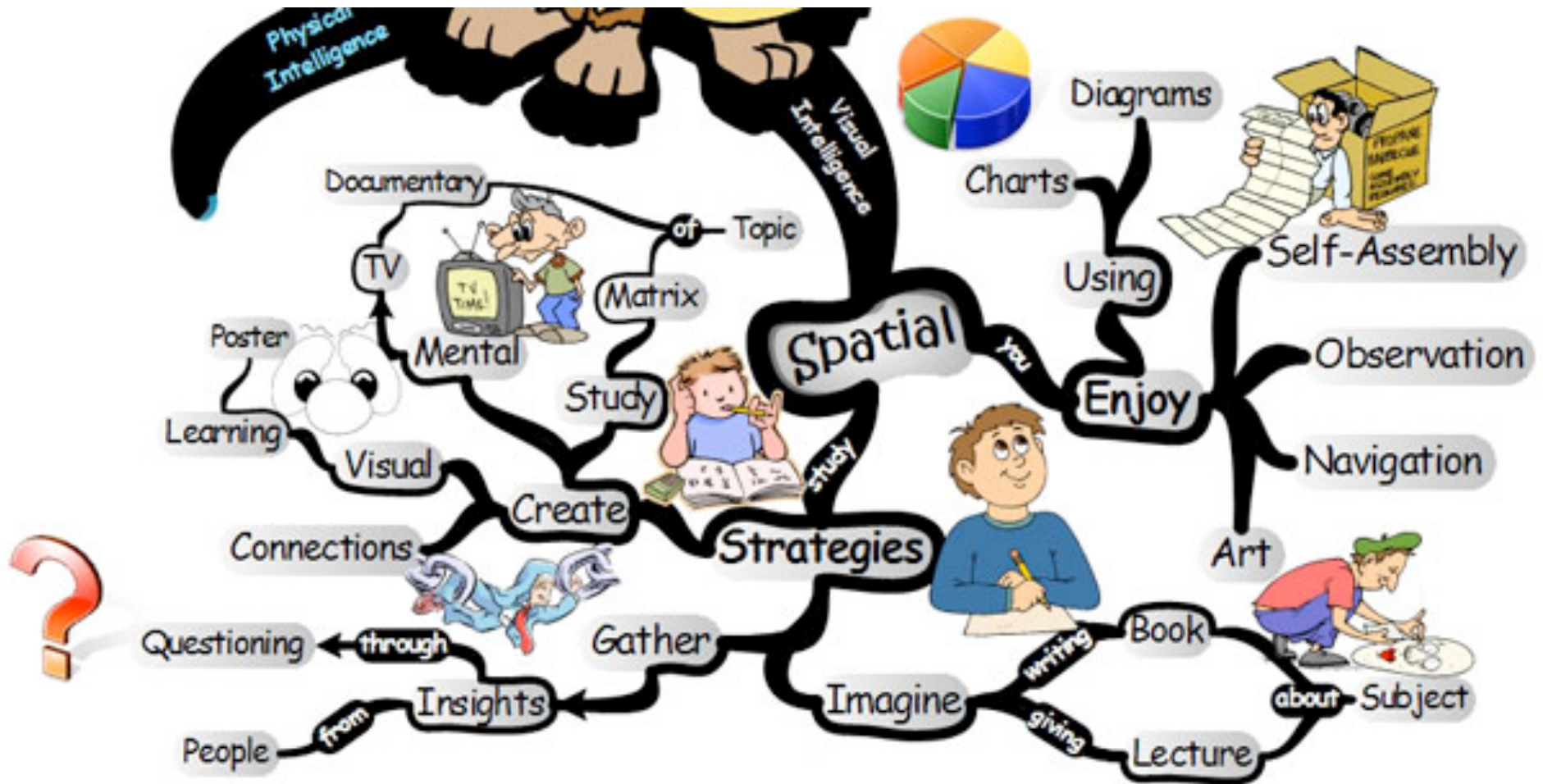
- Spatially integrated framework
 - Data
 - Model
 - Decision support
- Vertical Integration vs. Horizontal Integration
 - Scale
 - Fusion
 - Mash-up
- Analysis and modeling
 - Locations and Proximity
 - Networks and Topology
 - Pattern and Dispersion



iPhone and Space-Time



Spatial Intelligence





Spatiotemporal Inspiration

- **Space-time as a source of inspiration for new ideas**
- **Space-time memory and space-time clues**
 - Find things in a mess
 - Transform patterns to actions >> forms to processes
 - Identify missing pieces or something out of the ordinary
 - Recognize what to do next
- **Space-time ordering and spatiotemporal language**
 - Computational thinking: abstraction, sorting, queuing, recursively, heuristically,
 - System thinking: multi-scalar, interactions, relations, feedbacks, equilibrium
 - Characterize
- **Cyber GIS and real-time applications**
 - Real-time geographic nowcasting
 - Cloud computing: data centric to app centric
- **Space-time and geographic dynamics**
 - Connect the dots and build narratives
 - Expect and anticipate what is coming