

Oregon Statewide Geologic Map Data:

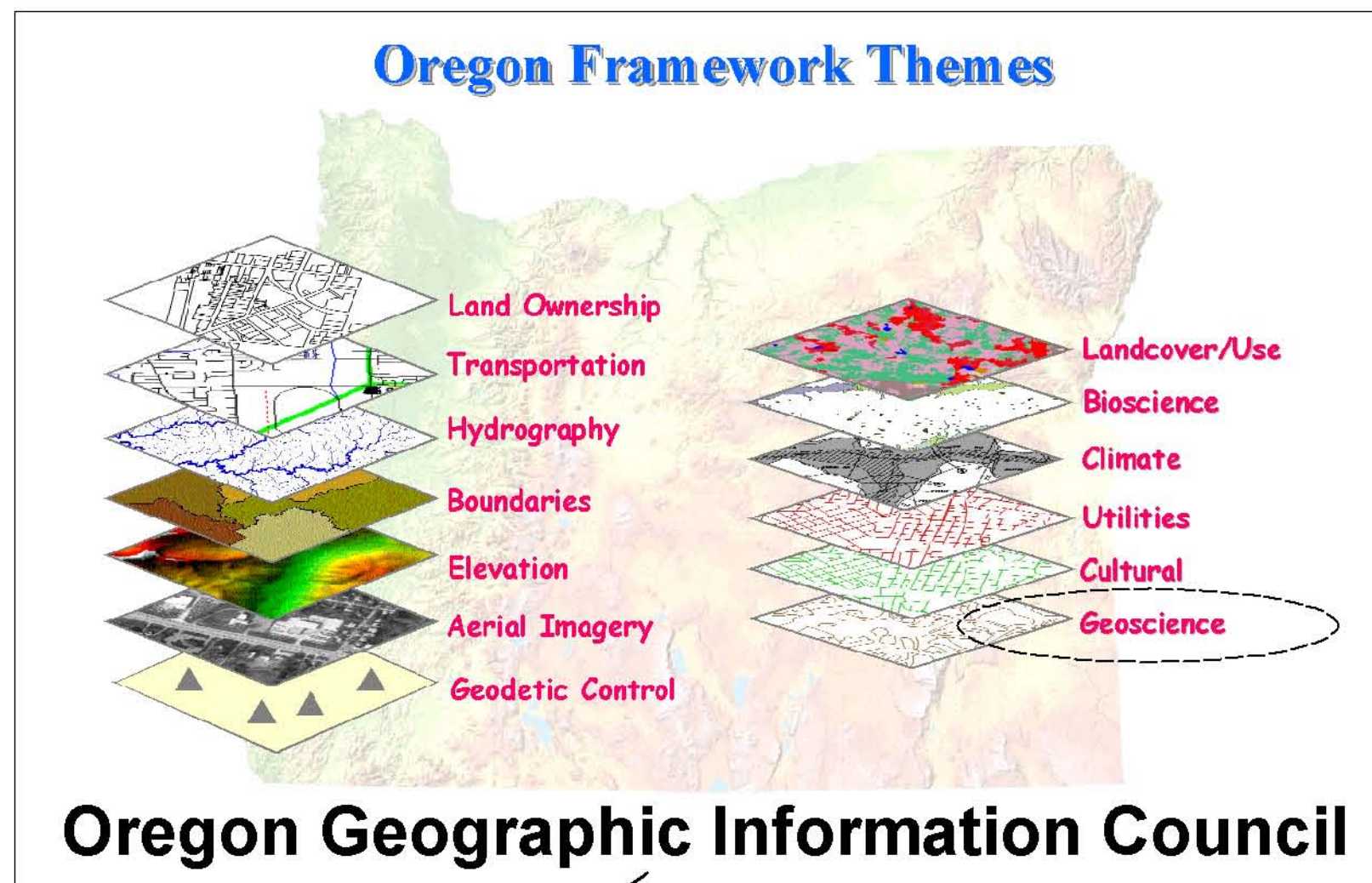
A pilot project where digital techniques changed the map compilation process and product

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Oregon Department of Geology & Mineral Industries

The Project:

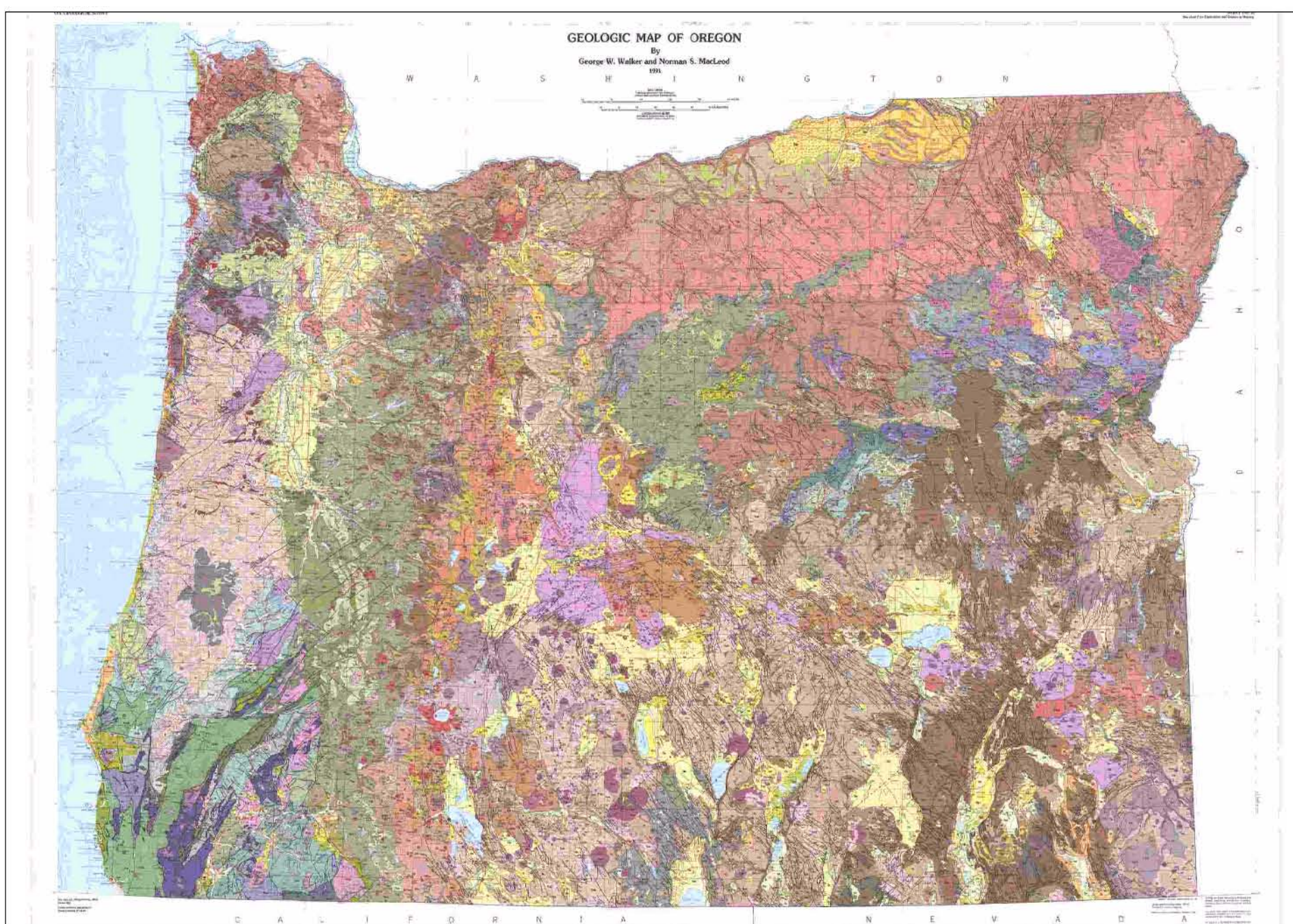
Create a new statewide digitally-compiled geologic map coverage that will become an Oregon Geoscience Framework Layer.

U.S. Geological Survey
STATEMAP program:
Compilation category



STATEMAP + OGIC = Compilation project \$\$\$

Existing state geologic map compiled in 1991



Conventional method advantages:

- Seamless coverage
- Uniform scale
- Easy to use
- Easier to construct

Disadvantages:

- Not updateable
- Not transparent
- Not flexible
- Not scalable
- Not revealing

Two different approaches to the process of making compiled geologic maps:

1) Conventional method:

- Give the best available geologic maps to a geologist or team of geologists.
- Draw new coverage at a particular scale that assigns new compilation units.
- Digitize the new unit linework into GIS.
- Enter into a database the data about each unit, based on a newly written explanation of units for the compiled units.

2) Oregon Pilot method:

- Digitize the polygons/units for each of the best available geologic maps into GIS.
- Enter the information from the original author's explanation of units into a relational database.
- Design links between the geometry of the spatial objects, and the information tables in the relational database.
- Rank the maps and decide on their order of supersedence.
- Put the best available information together into a single coverage, primarily using the more detailed or better quality maps but retaining the less detailed or poorer quality maps in areas where no other coverage is available. This process creates an "appended" map that contains all of the best geologic coverage.
- Create new compilation merge labels for all of the unit polygons in the appended map, including different labels for geologic units, for lithologic units, and for general lithology type units.

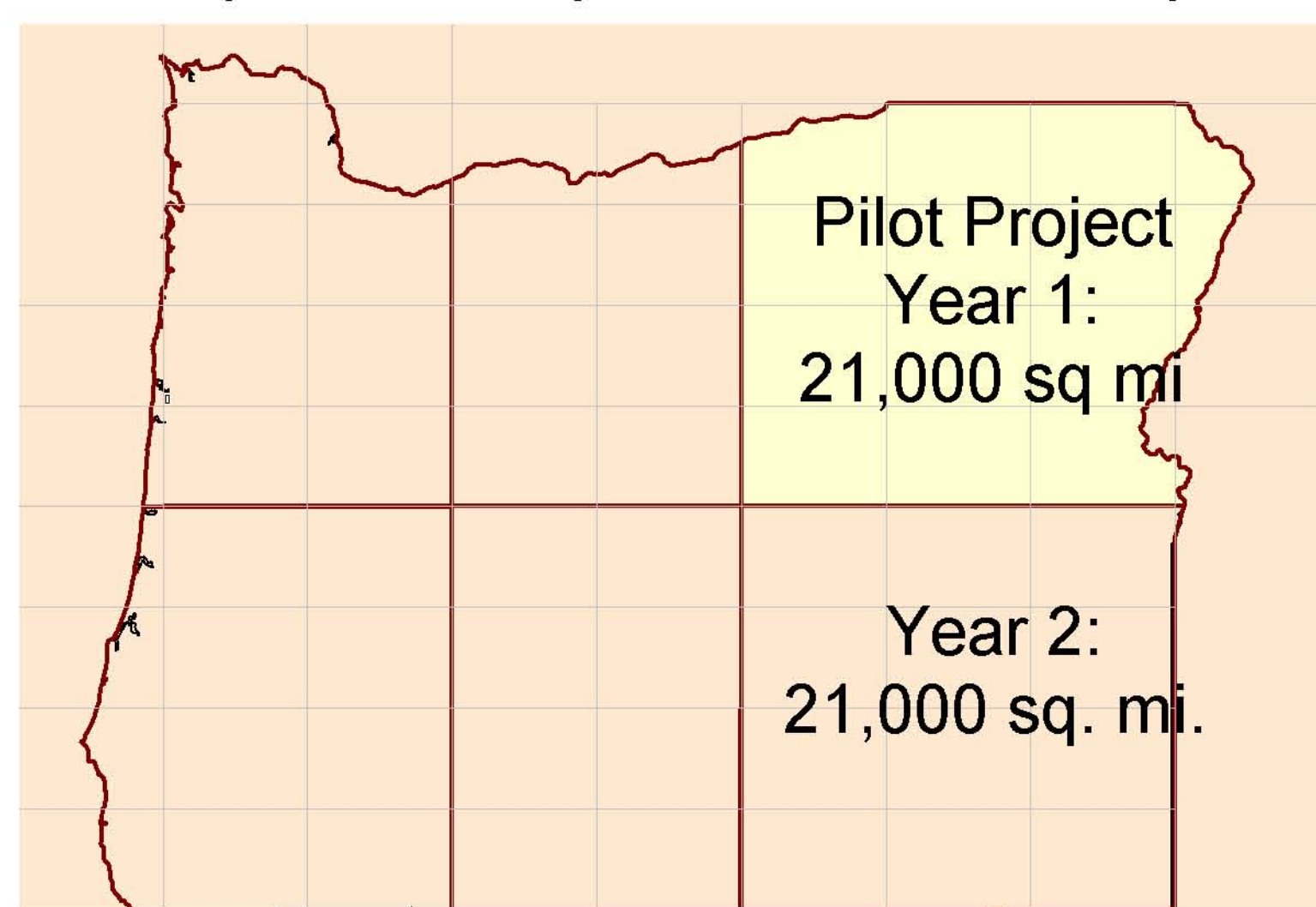
Oregon Pilot Method Advantages:

- Updateable
- Transparent
- Flexible
- Scaleable
- Revealing

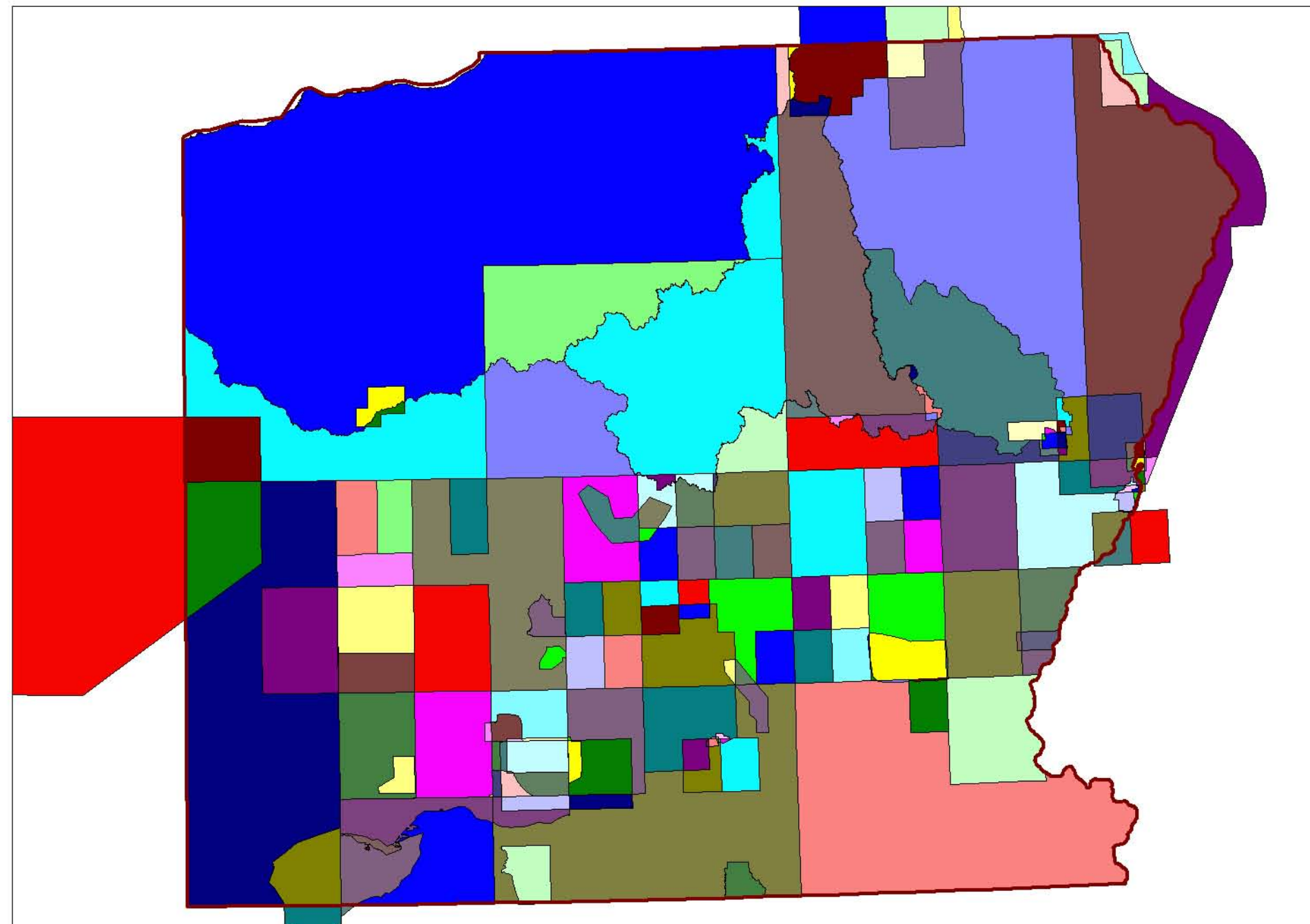
Disadvantages:

- Seamed coverage
- no official "Geologic Map of the State of Oregon"
- More difficult to use
- Not easily printable
- Varied in quality
- Large volume of information needs loading

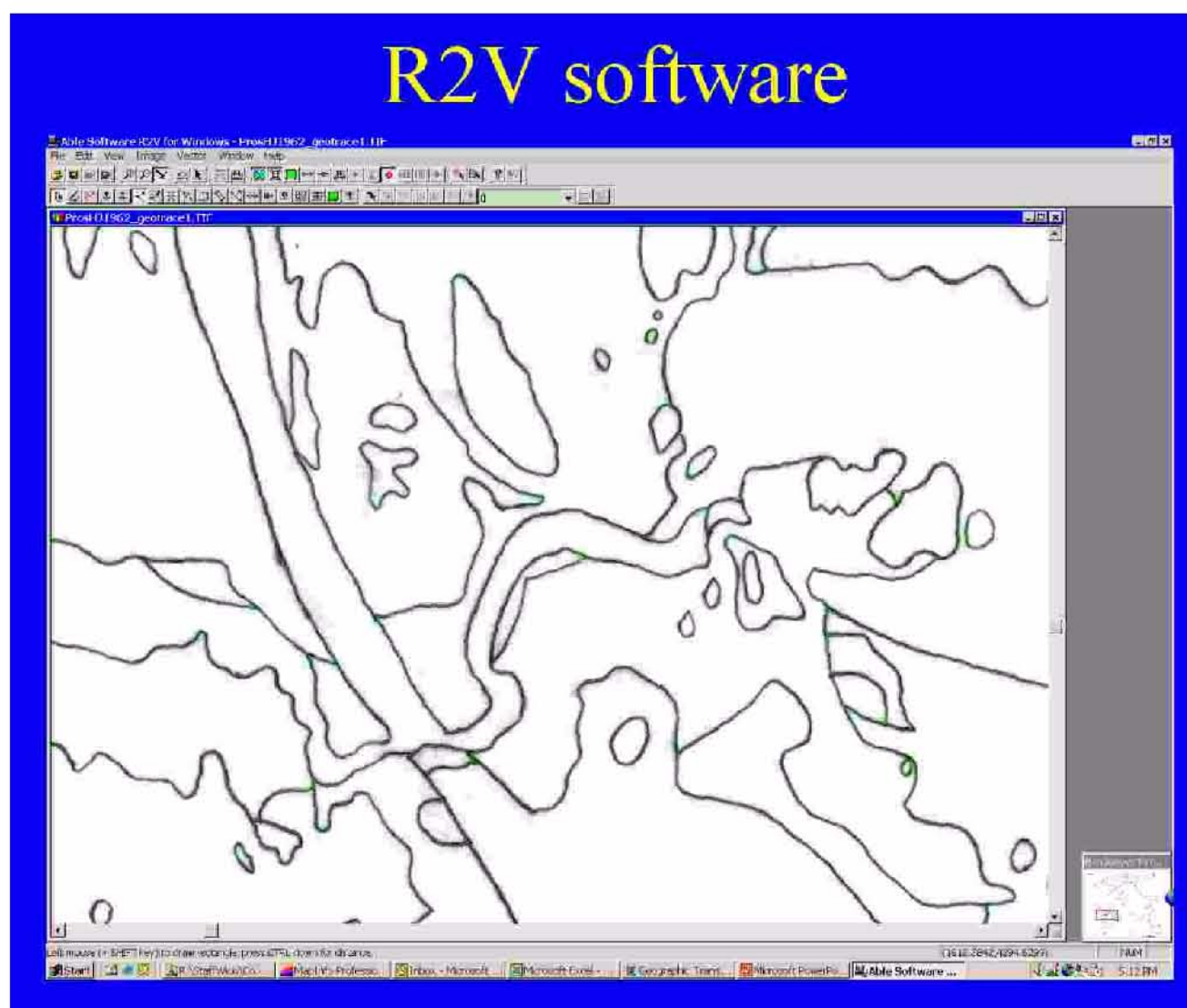
Oregon Department of Geology
6 Year plan to complete statewide compilation



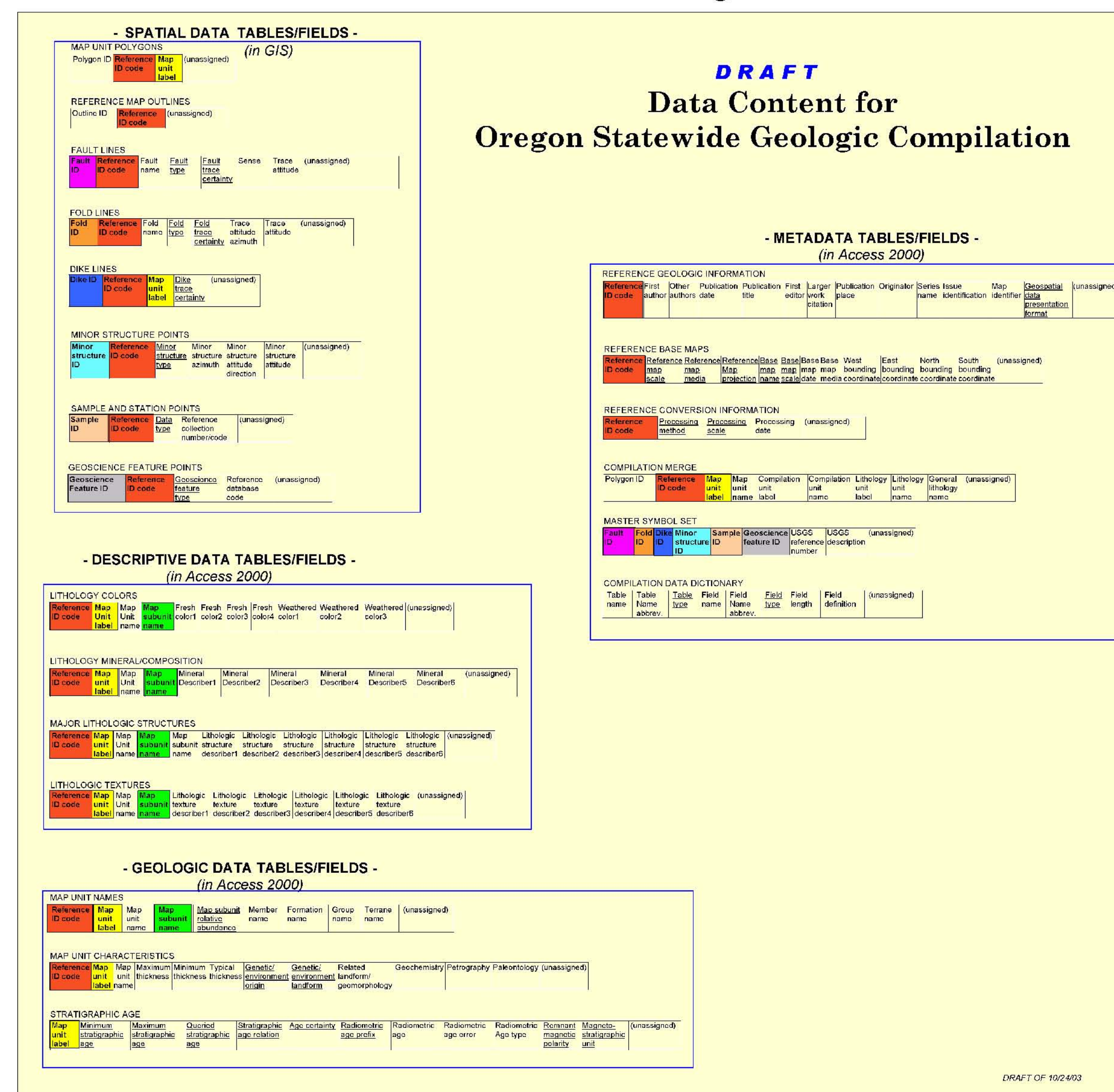
Year 1 Reference Map Outlines



R2V software



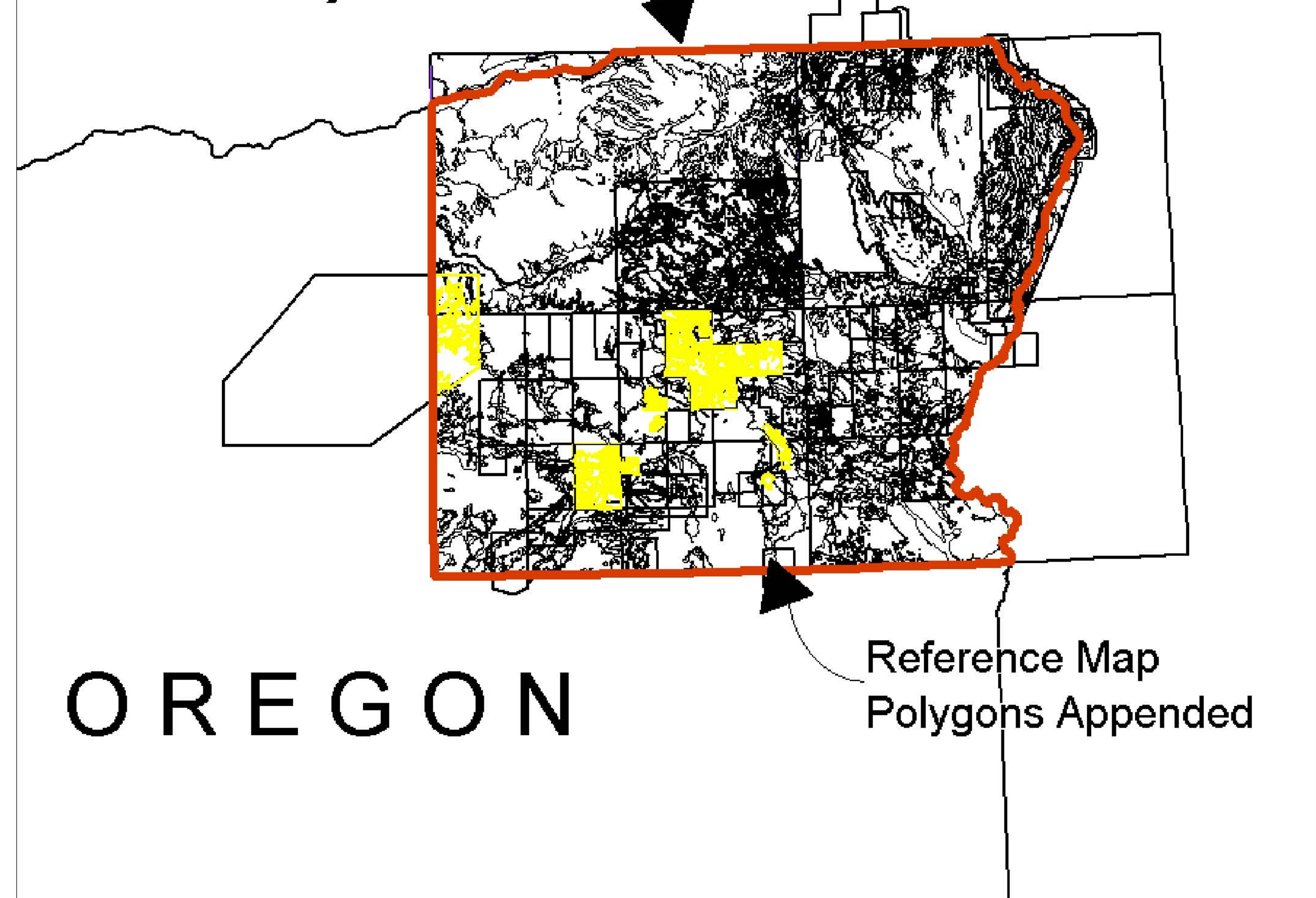
Tables/Fields in the draft Oregon data model



Reference Geologic Map Information table (in Access 2000)
(88 total reference maps in Pilot Project)

Map ID	Map Name	Map Date	Map Scale	Map Author	Map Status	Map Notes
0001	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0002	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0003	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0004	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0005	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0006	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0007	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0008	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0009	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation
0010	Geologic Map of Oregon	1991	1:250,000	U.S. Geological Survey	Active	Statewide compilation

NE Oregon
Pilot Project Area



DIGITAL CONCEPTS WERE THE IMPETUS BEHIND THE OREGON PILOT METHOD:

- 1) Digital maps do not have to be made at a particular scale and do not have to be printable on standard paper sheet sizes.
- 2) Digital techniques make it easy to convert maps individually into digital products and then later splice or append them together to make the final compilation product.
- 3) Compact digital storage media has grown large enough to allow for the inclusion of scanned and digitized original maps as well as the final single appended statewide geologic map.
- 4) Most federal, state, and local governments have GIS systems that they use for land-use decision-making. These entities need a digital geologic coverage that is as detailed as possible and that is understandable by non-geologists. The appended original maps can provide the most detailed available information at the largest possible scale
- 5) Digital geologic data can be layered with many other themes of digital information, to provide a more complete understanding of a project or a planning dilemma.

Goals of the Oregon Pilot Compilation Method:

- Break free of the need every few years to recompile the state's geologic information from scratch because new geologic information has become available.
- Create a product that can be used by a wide range of disciplines, not just geologists.
- Constantly provide the most current geologic information possible to the Oregon Framework Themes process, which serves all state, federal, and local decision makers.
- Keep the amount of non-mnemonic database information to a minimum. Geology as a science has enough difficult-to-understand vocabulary without adding layers of database classification.
- Refrain from re-interpreting the original authors' work.
- Take advantage of relational database efficiencies, i.e. enter descriptive geologic information only once for each unit.

References

Johnson, B.R., Brodaric, Boyan, Raines, G.L., Hastings, J.T., and Wahl, Ron, 1999, Digital Geologic Map Data Model, version 4.3: AASG/USGS Data Model Working Group Report. Available at <http://geology.usgs.gov/dnm/model/Model43a.pdf>

Stanford, L.R., 2002, A Brief Documentation of the Idaho Geological Survey's Digital Geologic Map Data Model, V 2.1. Available at <http://www.idahogeology.org/Lab/default.htm>