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GIS technology as tool to bring out the role of geological interpretation in the assessment of geological hazard

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Since GIS technology is currently used in modern geological mapping, geo-databases are now available for assessing natural hazard. Nevertheless the informations included in those geological databases are not always readable and really understandable for technical end-users. This mainly because structural geological field data come mostly from observations of partially exposed objects and scientific theories or conceptual models are required to define geological setting. In this frame, a mutual interplay of observation and interpretation often occurs, so that geological "data" indeed consist of "mixed" observation and ideas. Therefore, GIS project should contain the knowledge path originally followed by the data maker to synthesise data. In particular, concepts like "logical consistency of data", "level of scientific confidence of data makers" "data representativeness" "data appropriateness for a given purpose" should constrain the architecture of database for geological data (knowledgebase). Exisisting geo-databases models can be integrated by means of specific connections between data and with a larger use of metadata (information about data-identification and data-quality). This strategy improves the flexibility of structural geological databases and makes informations easily readable: end-user can value if data fit with his investigation and if dataset is appropriate for assessing natural hazards. New geo-databases physical model and operative tools have been compiled in order to explain relations between data and interpretations. The starting point is the data model used by APAT (former Italian Geological Service) for the Italian national geological Mapping Program; database integrations have been devoleped according to standard used by USGS (FGDC - Content Standard for Digital Geospatial Metadata). Some examples are here described to illustrate the use of "key-tools" in order to get more clear how different structural geological data could be linked, separated or grouped in GIS projects to bring out the role

of structural interpretation in the assessment of geological hazard.