



# **Cultural Heritage Conservation by GIS**

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Historical monuments represents the symbol, the outside image of a city or even a larger area.



# **Process of cultural heritage conservation include**

- Prospecting for cultural heritage and investigating correspondingly;
- Evaluation of cultural heritage, including its values, preservation status, potential hazards and so on;
- Establishing and carrying out reasonable preservation planning;
- Effective monitoring and conservation on cultural heritage and feedback in time.



## **Geographical Informational System have valuable applications**

- Research: historical and physical site documentation
- Analysis: assessment of physical condition, cultural significance and the social and administrative context
- Response: preparing conservation and management strategies
- Implementation: carrying out, monitoring and evaluating management policies



# Challenge

- To document the actual state of the architectural monuments in order to detect continuous damage by using change detection techniques and to restore the monument in case of heavy damage.



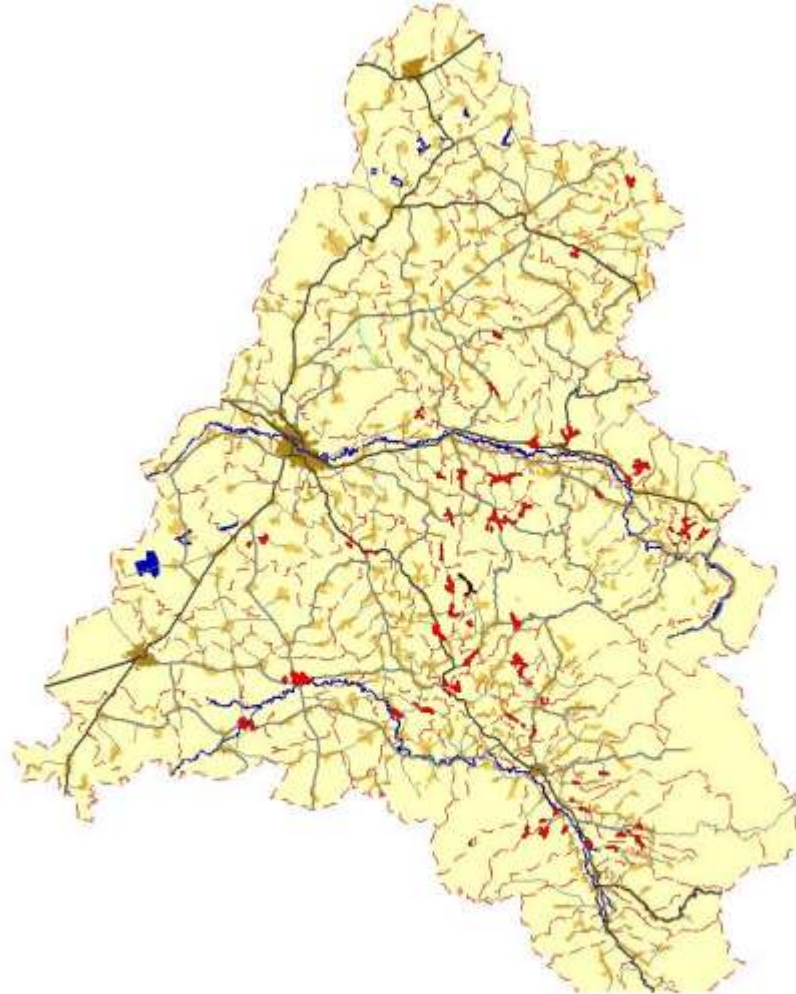
# BIHOR COUNTY CULTURAL HERITAGE

- Oradea - important social and cultural center, the first humanist city in Transylvania
- Oradea symbol of art nouveau for Romania
- More than 500 classified monuments in the county,
- The most vulnerable monuments are those located in rural areas,
- 60 wooden churches in rural areas,





# WOODEN CHURCHES





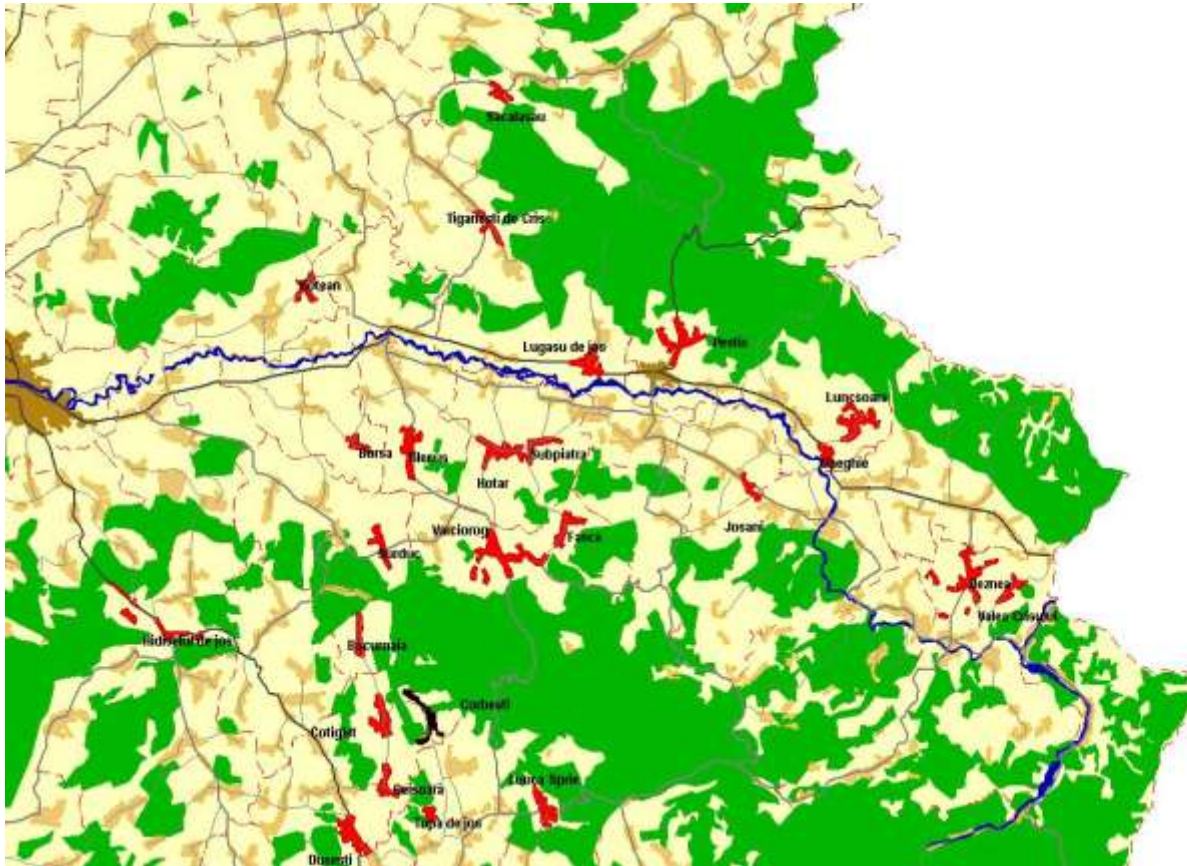
# **Valorificarea Patrimoniului Cultural Popular – Biserici De Lemn In Bihor**

University Of Oradea – Faculty of Architecture and Construction initiated a project regarding the documentation, promotion and conservation of historical monuments of wooden churches in BIHOR County – Basin Crisul Repede





# WOODEN CHURCHES IN CRIȘUL RIVER BASIN





# INFORMATION COLLECTED

- Identification of the monument:
  - Topological location,
  - Plan metric sketch of the monument,
  - Documentation through images and inventory of furniture, paintings, so on
  - 3D Model if was possible



# **INFORMATION COLLECTED**

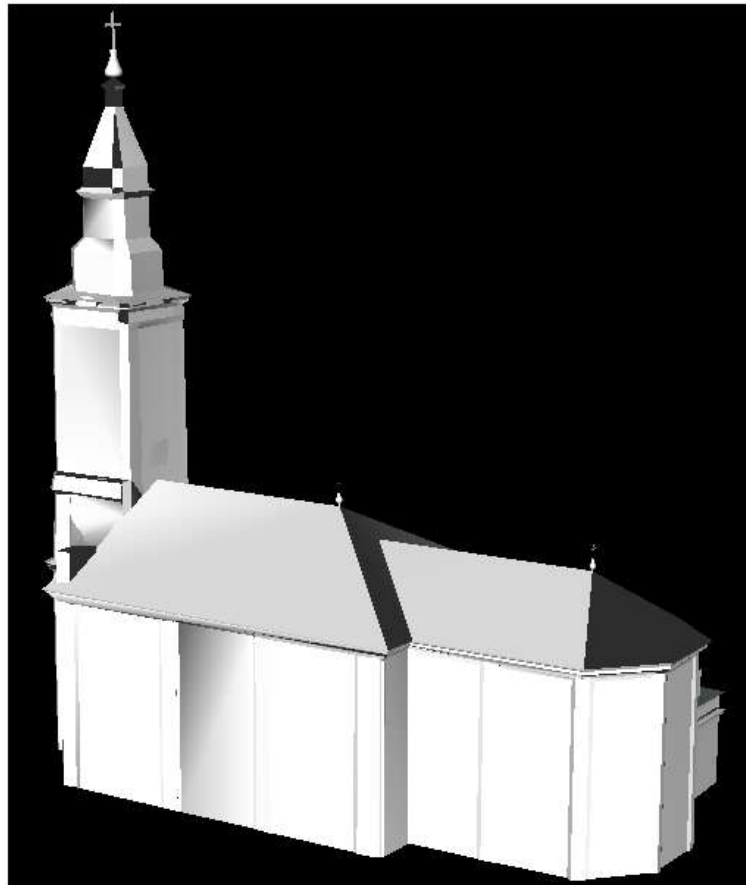
- **Time evolution of the monument:**
  - Historical and archive data about the monuments,
  - Characteristics of the monument: builder, when and where was build, architectural style,
  - Owners
  - Constructive intervention on the monument
- **Recommendations regarding further intervention on the monument**



# 3D MODEL FOR THE CULTURAL HERITAGE

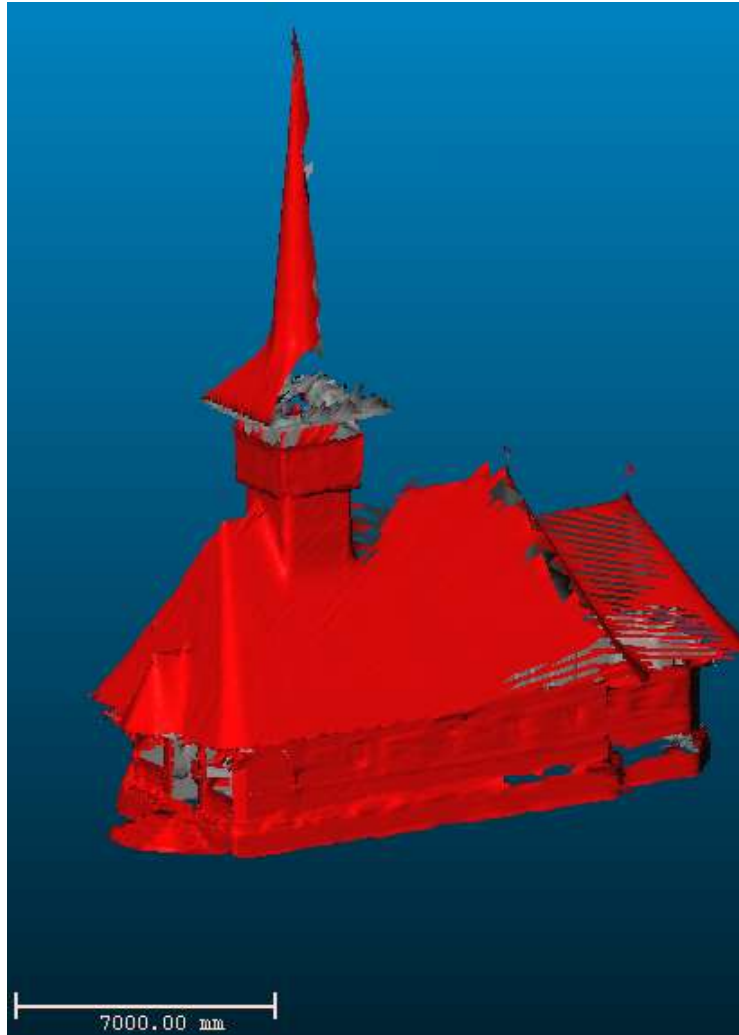
- Photogrammetric model
- Laser scan
- 3D model based on the points measured with total station

# PHOTOGRAMMETRIC 3 D MODEL



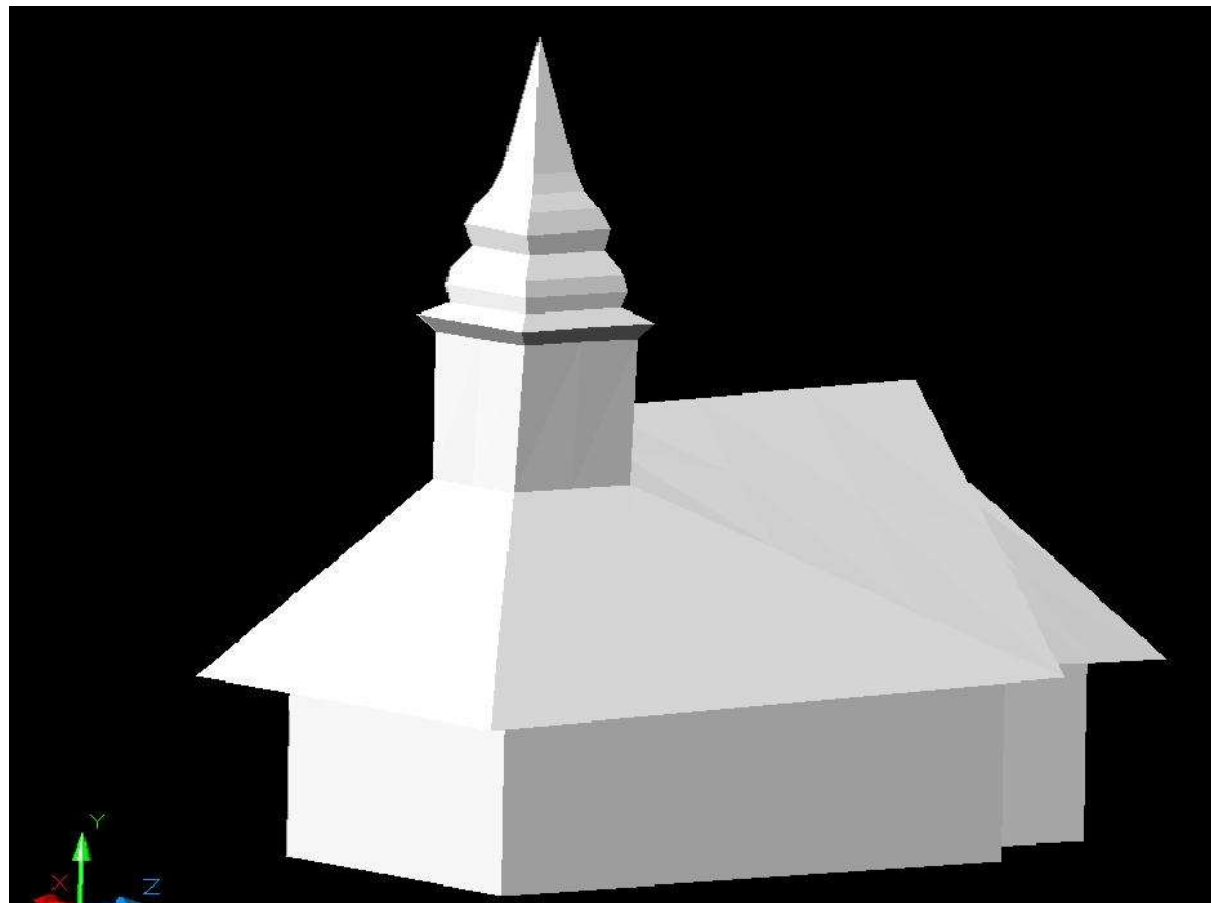


# LASER SCAN





# 3D MODEL BASED ON MEASURED POINTS





## **CONCLUSION**

- Usage of GIS for the documentation of the cultural heritage has impact on the development of economy and tourism.
- Beyond that further usage should be considered in preservation of monument and historic buildings, in different planning procedures, in local history and education.



**Thank You !**