



GEMA ART GROUP a.s.

CITADEL VISUALIZATION AND INFORMATION SYSTEM (CIVIS)

2010



2010

Petr Justa / Miroslav Houska
International Projects Department

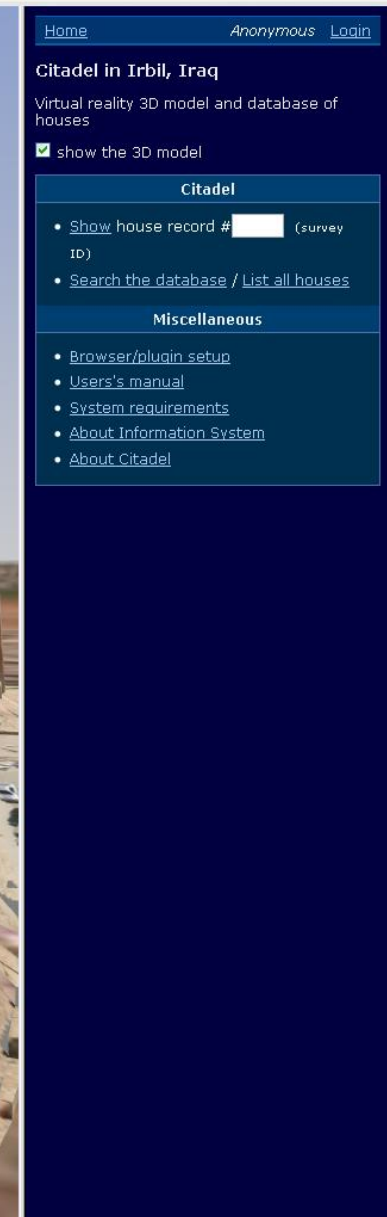
| | |
|--|--|
| Home Anonymous Login | |
| Database record for the selected house | |
| Show the house in the VRML model | |
| Survey ID # | 56 |
| Official ID # | 223 |
| Historical ID # | |
| Historical name(s) | Rashid Agha |
| Quarter | Saray |
| Historical data | In the relief-decoration on the lintel of the left portal to oda is date of building 1321ÖÇð1323AH / 1903/4ÖÇð1905/6AD |
| Key architect. elements | <ul style="list-style-type: none">• balcony• eyvan• fountain• one-wing tarma• serdab |
| Detailed description | Two-storey, one-wing tarma-house with rich decorated ursi in the middle, linked by wide eyvan with balcony, with two rooms (oda) on each side. Three vaulted, separate rooms (neem, serdab) in the basement. Wide-opened courtyard (ho?) with the fountain. |
| Historical elements | <ul style="list-style-type: none">• tarma with gypsum panelling• ursi with painted and stucco decoration• ornamented portal leading to corridor to left oda from red marble(?) |
| Technical state | 2 - reparations of smaller extent required |
| Tech. state desc. | The house belongs to the group of the maintained buildings, last reconstruction was realized in 1979. Small reparations of the wooden cornices of the side walls are necessary. In 2006 and 2007, however, the sets of diagonal cracks near the outer frontage of the house were identified, which indicates a static danger of the house. |

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Project history

- **CIVIS** project started in the frame of the Czech Governmental Aid for the Preservation of the Iraqi Heritage in 2006
- **CIVIS** was developed by the GEMA according to the Kurdish partners needs to be used for the Erbil Citadel Archive System
- **CIVIS** was realized by GEMA in close cooperation with the Czech Technical University and the West Bohemian University
- **CIVIS** is freely accessible on <http://lfgm.fsv.cvut.cz/citadel/>
- **CIVIS** was presented:
 - To **Mr. Masoud Barzani** the president of Kurdistan Region of Iraq
 - To **Mr. Nachirvan Barzani** the former prime minister of the KRG
 - To **Mr. Nawzad Hadi** the Governor of Erbil
 - At the **CIPA Athens Symposium 2007** (International Committee for Architectural Photogrammetry - one of the international committees of ICOMOS established in collaboration with ISPRS)



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The actual setup - 2010, advantages, disadvantages and vision of the near future

The current solution is based on the modern technology and the state of hardware in 2007. The system was designed and developed as a low-cost system, i.e. maximum of the possible free software and minimum of the maintenance requirements for the technical support and hardware.

Overall summary:

CIVIS was developed especially for the Erbil Citadel.

CIVIS was created by GEMA due to absence of such information system in 3D, which doesn't exist until now.

CIVIS is unique archiving utility, produced specially for the Erbil Citadel as simple, clear and user-friendly data archive system, to support the citadel researches and projects.

CIVIS was designed as a low-cost information system with the 3D visualization for the data storage and displaying of the collected data about the citadel.

CIVIS offers the possibility of the online work and presentation of the ongoing works and its results to the Kurdish public.

CIVIS was processed as the universal system build on free software.

CIVIS is intended for general purposes to store research data, photos, pictures, plans and texts and is functional. It is able to store easily thousands of objects without any modification of the system (for now has about 120 objects).

CIVIS is open for further development, regulation, management and extension, because the data is located in structures that allow further transfer to other structures or into eventual commercial software, if some will be developed in future.

CIVIS is simple and always actual, because it is unique on the network.

CIVIS if installed on many servers, or user computers, the topicality of different "user's versions" will be impaired and the necessary data supervision could not be ensured.

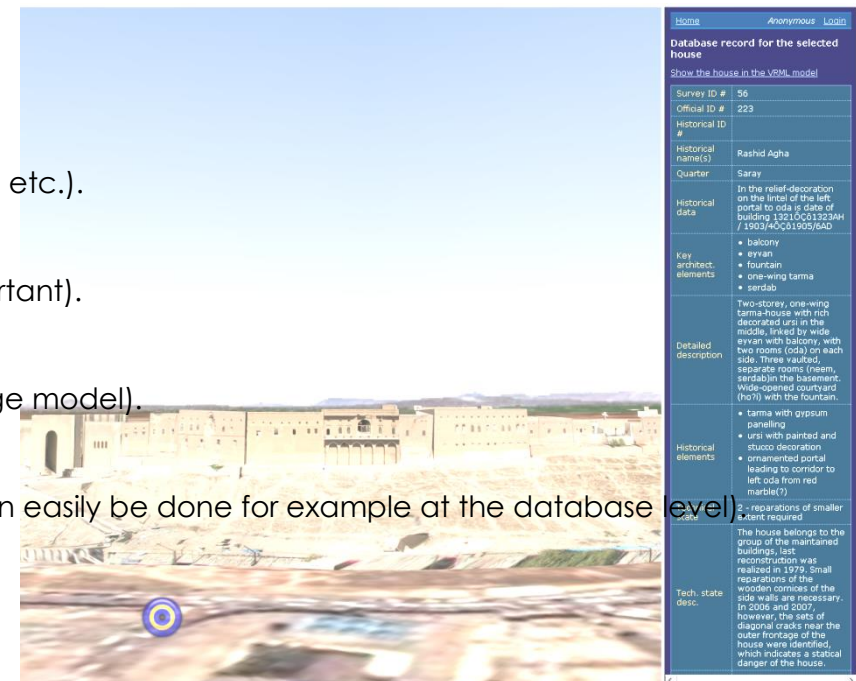


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Advantages of the current solution:

- Internet solution (accessible from anywhere).
- Multiple users can operate on the same model at one moment.
- System update doesn't require a new data distribution to the users (data is updated directly in the browser, just click refresh – refresh the page).
- Project presentation to the public is one of the system preferences.
- Permanent remote control over the project (adding users, backups, etc.).
- Simple connection of 3D models and database (for data storage).
- The data is stored in relational database with simple search and filtering data by criteria, with the possibility of the connection to the data for other applications and the possibility of the data replication.
- Used technology is completely under free licenses:
 - HTML, PHP, Apache, MySQL, VRML - all free technology.
 - Basic browser of the VRML model is also free software (BS Contact, Cortona, etc.).
- Security of the system:
 - Data is stored on the server (free remote, but the connection quality is important).
 - Editing of the destined data is only under the log.
 - The user cannot get to the 3D VRML model and textures editing (not damage model).
 - There is an opportunity to back up all data easily.
 - Data management can be chronologized (although it is not done, but it can easily be done for example at the database level).

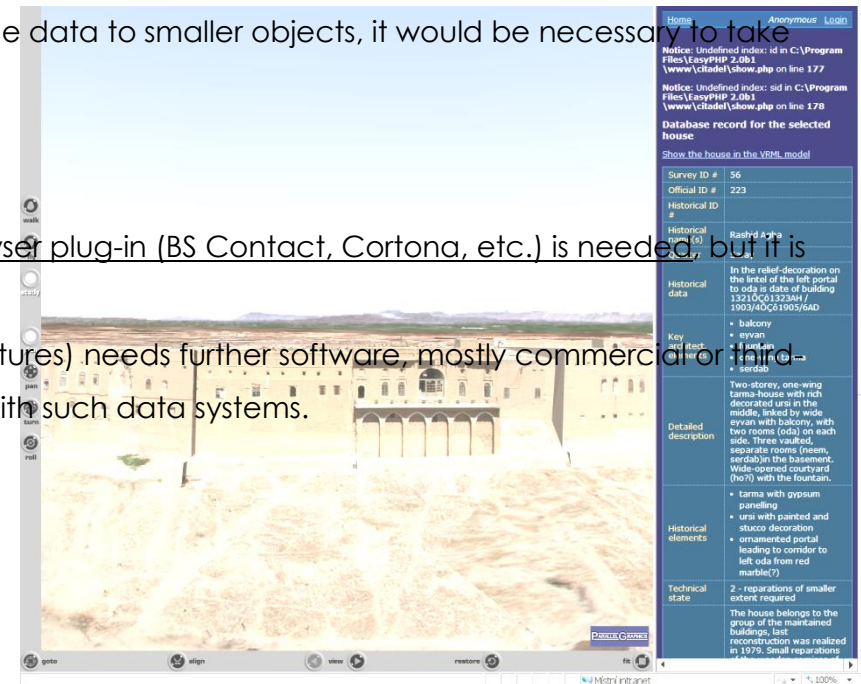


Disadvantages of the current solutions:

- Internet solution depends on the quality of the network (loading of the 3D model can be slow due to the low speed Internet connection, but there is possibility to turn off the 3D model and work only with text data in the database).
- With the gradual extending of the 3D model (by adding more buildings - mostly textures) its loading will gradually slow down, if the network connection will be slow.
- The used ISO standard VRML (Virtual Reality Modeling Language, known as VRML97) may be considered obsolete but this standard is widely used and technologically supported and the possibility of the end of its support in the next decade is very small, but of course there is a possibility to upgrade it to a newer technology - X3D (Extensible 3D). The X3D standard is based on VRML and it is partially backwards compatible and the X3D may already be completely in the XML standard (Extensible Markup Language), while the current VRML cannot.
- The "house" is the smallest unit of the current 3D model, if required to assign some data to smaller objects, it would be necessary to take into account (e.g. a wall, window, etc.) and adapt the system.

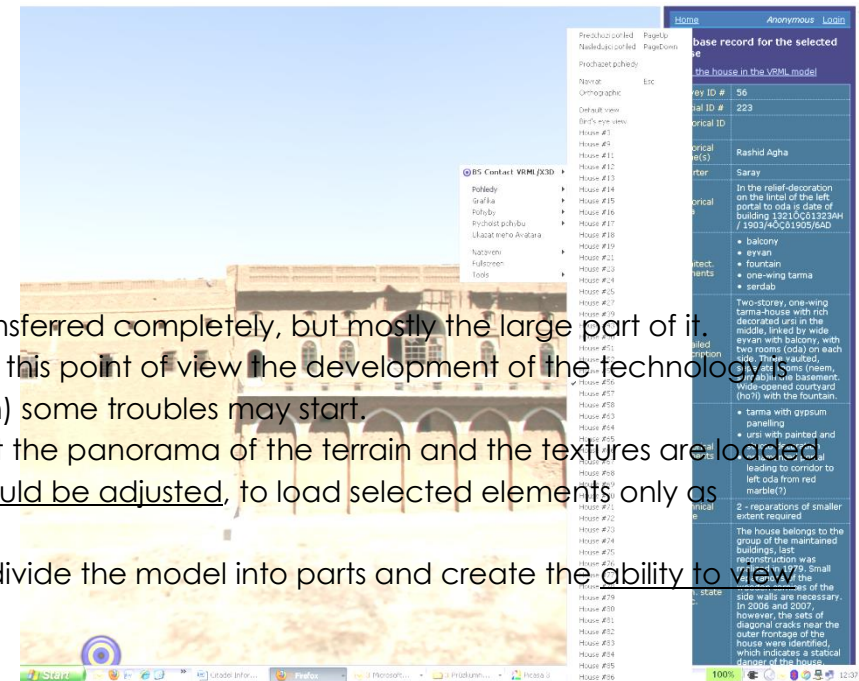
Additional software requirement:

- For the viewing of the 3D model on user's PC the manual installation of the browser plug-in (BS Contact, Cortona, etc.) is needed, but it is simple downloading operation offered on line.
- The completion of the 3D model (the addition of new models - buildings or structures) needs further software, mostly commercial or third-party software (e.g. AutoCAD, MicroStation etc.), but this is the standard work with such data systems.



The size of the current model:

- Total size of overall model is about **13 MB**, but the volume of this data is not transferred completely, but mostly the large part of it.
- There are not any problems, when the standard Internet connection is used (in this point of view the development of the technology is on our side), but when the network connection is slow (e.g. dial-up connection) some troubles may start.
- Although the model is loading progressively (always the part, what is seen), but the panorama of the terrain and the textures are loaded completely at the beginning, and here the possibility of the optional setting could be adjusted, to load selected elements only as optional.
- The possibility to display the only part of the model can be prepared also, i.e. divide the model into parts and create the ability to view only certain parts of the model.



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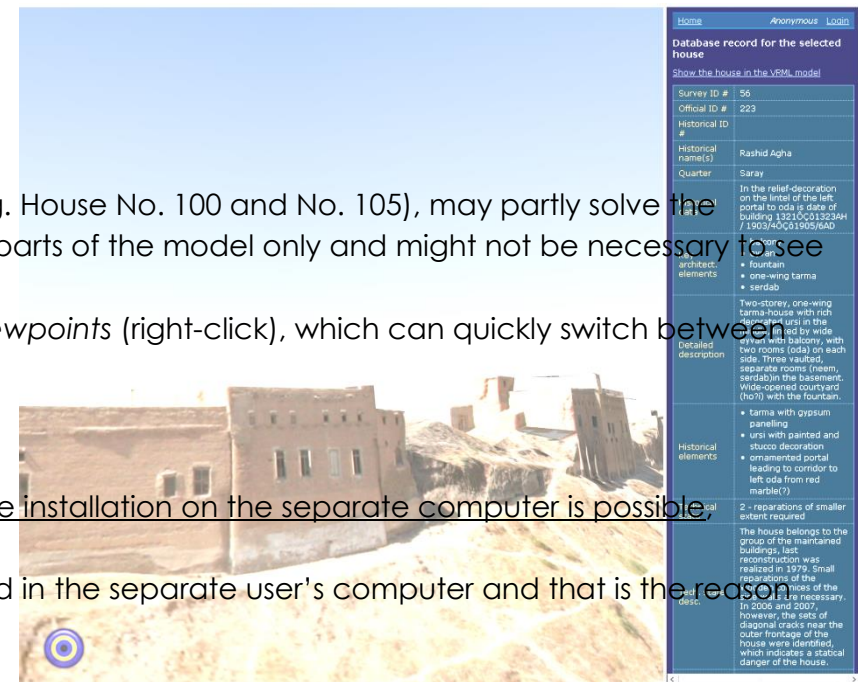
- The further extension of the model will affect on the extension of the second part of the model (homes) only, other parts may remain at current values.
- The textures could be done better and smaller, regarding to the file size, but it might increase the cost of the CIVIS significantly, because it needs a lot of work.
- Part of the VRML models was stored in binary format (smaller) and part in the text format (larger), so there is a possibility of conversion all to the binary format to reduce the size of the model.

b) The work with the model and user interface

- On the initial data configuration page is link to download and install VRML viewer (BS Contact, Cortona etc.), preferably including simple instructions.
- Extension of the capabilities of the browser settings:
 - Show / Hide Textures,
 - Show / Hide Panoramas
 - There could be adjusted other options if necessary.
- Better search options:
 - The display filter, e.g. the opportunity to display only part of the 3D model (e.g. House No. 100 and No. 105), may partly solve the download speed of 3D model. Often, there will be need to work with certain parts of the model only and might not be necessary to see a complete model.
 - Faster navigation in the 3D model is possible through the elements such as Viewpoints (right-click), which can quickly switch between the buildings / houses, by right-click, way users must learn.

c) Installation on local computer

- The CIVIS is designed as a web-based system, located on a certain server but the installation on the separate computer is possible, although it is against the overall system design.
- Such installation represents independent steps to emulate the server background in the separate user's computer and that is the reason why the creation of CIVIS installation CD is not possible (see installation guide).



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Installation on the client server

There is obviously an option (probably it would be appropriate) that the whole CIVIS system will be completely installed on the client server, that eliminates the constant data transfer between Europe and Iraq. The GEMA role could be in some kind of surveillance / service, i.e. the content of the server should be mirrored on the Czech server in certain time cycles (daily, weekly etc.). This will ensure the system backup on the independent source and maximize speed on both servers. The possible erroneous inputs could be corrected, due to this mirroring, and the adding of the data to the CIVIS system may continue without any interruptions.

Current status:

The circuit houses and several buildings inside the citadel are actually in the 3D model. Some buildings can be still estimated from the GEMA photogrammetric records, but other buildings should be measured or there is possibility to create a simpler model, based on floor plans and the approximate height (especially the ruins of the dwellings of "slum"), or on the Master Plan Project data.

Reconstruction of the historical photos

If the UNESCO or HCECR will be interested, the GEMA is ready to attempt the reconstruction of the historical spatial stereo-photogrammetric aerial photos (from the Fifties of the 20th Century - Bradford / aerial photographs). We consider this work as possible and valuable especially for the future projects, because it documents the initial state of the Erbil citadel.

GEMA ART GROUP a.s. offers repeatedly that is ready to discuss any aspects regarding the applications of the CIVIS for the benefit of the Erbil citadel.

Petr Justa, Miroslav Houska

GEMA ART GROUP a.s.

Karel Pavelka, Veronika Králová

Czech Technical University in Prague

Karel Nováček

University of West Bohemia

