Virtual Walking in Historical Prague

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Interactive DEMO on eCulture session TIP2013
January 14th, 2013, Hawaii University at Manoa, Honolulu, USA
Our demo is one of the examples how to preserve and to use cultural heritage

Interactive DEMO is based on several interdisciplinary fundaments:

• Langweil historical model of old Prague
• Advanced IT - Virtual Reality tools as CAVE and the applications for modeling of architectural objects
• Extreme fast networks and tools for transporting huge volume of data in real time
• 3D visualization
The Langweil model of Prague
The Langweil model of Prague as a three-dimensional illustration of the city is a unique work of art unlike any other in the world.

The model made from paperboard on a wooden construction was created in 1826-1837 by single man Antonín Langweil, an assistant at the university library in the Klementinum.

In 2006 Prague City Hall together with the City of Prague Museum announced a public tender for Digitalization of the Langweil model of Prague. KIT Digital Company (ex. Visual Connection) spends more than two years by this project and hundreds people finally participated at this project.
The Langweil model of Prague
From Paperback to Digital

The result of the photography process was approx. 250,000 photographs with 16 Mpix resolution. The total capacity of the stored rough data exceeded 6 TB.

The actual 3D reconstruction of the model was carried out on the basis of specially adapted 3D computer vision algorithms.

The details can be found:
CAVE 3D visualization

Digital model

Visitors view
From CAVE to the network
Rendering and streaming

CAVE 3D-VR

Video
Left - Right

IIM – FEL - CTU

To the network 10G
MVTP-4K (Modular Video Transfer Platform)

- 2x 4K or 8x 2K/HD
- unlimited distance over regular Internet
- full-duplex
- embedded audio
- adds less than 1 ms to networking delay
- output synchronization without clock source

IN: 8x HD-SDI
OUT: 8x HD-SDI

Network – 10 Gigabit Ethernet

More details: http://www.ces.net/project/qosip/hw/mvtp-4K-v2.pdf
Virtual walking in historical Prague

Real Time Demo on TIP2013, Monday, January 14th, 10:00-10:30 in Pacific room

General 3D scenario using MVTP-4K

IP NETWORK 10Gbps

2 HD videosignals
  Left a Right eye

Stereo projector
  F10AS3D

CAVE
Remote control

MVTP-4k

IP network
DEMO on IP network with 2.5 Gbps traffic

Networking partners

Honolulu → Atlanta → Washington DC → Frankfurt → Prague

Rtt 217 ms

tracking

3D projection

rendering & streaming

Langweil model
What you should see

Without 3D glasses
the picture is doubled and blurred
We should thanks to all people from the realization team on digitalization of Langweil model, specially to Dr. Jan Burianek who was the leader of this huge work Dr. Roman Berka head of the IIM FEL CTU Prague and Prof. Jiri Zara head of the Department of Computer graphics and Interactions CTU Prague for permission to use theirs work for our scientific research

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The References:
http://www.langweil.cz
http://www.iim.cz/?id=148&lang=1#node
http://www.ces.net/project/qosip/hw/mvtp-4K-v2.pdf
http://www.4kgateway.com/
Thank You for Your attention
Please, enjoy your trip to historical Prague