# USE OF MULTIMEDIA AND VIRTUAL REALITY TECHNOLOGIES TO REPRESENT RUSSIAN CULTURAL HERITAGE

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Preservation of the cultural heritage in digital form and its presentation in the Internet using multimedia and virtual reality technologies is a priority activity of the Center for Design and Multimedia of the ITMO University. In recent years, the Center has implemented a number of projects in this field with the support of the Foundation for Humanities.

The projects are aimed at creating a Multimedia Information Systems for various cultural monuments of the North-West of Russia. Among them are: "Architectural Ensemble of the Solovetsky Monastery in the Period of Its Highest Prosperity (XVI-XVII Centuries)" (http://solovky.ifmo.ru), "Architecture and art complex Theodore town in Tsarskoye Selo as an example of Russian style" (http:// russianstyle.ifmo.ru /).  In each project, multimedia and virtual reality technologies to give the most complete representation of the object of cultural heritage.

In the XVth century the Solovetsky Monastery was the spiritual, cultural and political center of the Russian North, playing a crucial part in the emergence of the economy and maritime practices of Pomorye region.  The Solovetsky Monastery features some remarkable monuments of ancient Russian architecture – Assumption Church (1552-1557), Cathedral of Transfiguration of Our Savior (1558-1566), gatehouse Annunciation Church (1601). Virtual reconstruction provides an opportunity to get acquainted with the original appearance of Solovetsky Monastery XVI - XVII centuries.



**Fig. 1.** A general view of the Solovetsky Monastery (XVI-XVII Centuries) -3D reconstruction

Russky Gorodok was built in Tsarskoye Selo, an imperial residence outside St. Petersburg, in 1913-1918 by the order of Nicholas II. The main idea was to visualize the history of Russian art and architecture in the 12-17$^{th}$ cents., to give the people from the metropolitan, largely European city of St. Petersburg an opportunity to appreciate the authentic Russian Style. From the very start, Fedorovsky Gorodok was informed by certain virtuality, for the idea was to create an entity that had never existed before, yet would absorb the elements of the authentic artistic lexicon on one hand, and the most advanced contemporary technologies on the other.



**Fig. 1.** A general view of the Russky Gorodok -3D reconstruction

We used various virtual reality technologies to fully represent reconstructed monuments in multimedia information systems. Among them:

- Virtual excursions via video 360 as in present time and in reconstructed reality. Video 360° of historical attractions is a unique opportunity for users to see the main sights at any time with effect of presence

- Interactive maps with active points thanks to which the user is able to learn about the architecture and have access to virtual tours shooting in format video 360 and additional historical information.

- Video films (in standard format and in video 360 format) telling about the architecture and the history of cultural monuments.

- Interactive 4D-excursions that allow you to combine virtual tours, shot with the help of 360 video at the present time, with interactive excursions in the historically reconstructed virtual reality with the option of moving from 360° video to 3D reconstruction format and back at all the key points.