

# Loop Control in the System of Digitally Transformed Museum Communication



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## Abstract

The modern paradigm of the museum mission requires the innovative methods and tools for scientific investigations and applied informatics in museum work. The open access electronic resources turn to be storage of useful data on cultural heritage, national history and cultural relations. The continuous museum social research has revealed the museums to be the place where people try to avoid social cataclysm and any crisis, financial or psychological – museum attendance increases at the time of economic or political instability. At the same time, the digital and communication technologies result in change in ordinary museum functioning. The museums try to apply some successful marketing solutions for their top-line growth, like VR for attractive dissemination. While the interactive and mobile applications are based on cognitive approach, museum audience prefers emotional component. Thus a loop control in virtual museum space requires a tool for emotional balance control.

**Keywords:** Digital transformation; Museum communication; Loop control; Convolution of the functions

## Introduction

In accordance with the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions, “the protection, promotion and maintenance of cultural diversity are an essential requirement for sustainable development”. The same idea was fixed in Strategy of Innovative Development of the Russian Federation until 2020. The modern paradigm of the museum mission requires the innovative methods and tools for scientific investigations and applied informatics in museum work. The open access electronic resources turn to be storage of useful data on cultural heritage, national history and cultural relations [1]. The focus has shifted from arte facts to individuals. We started to speak about researchers, scientists and personalities referring to a museum object. Aiming at being innovative and effective the museums need scientific cooperation with various institutions. The continuous museum social research has revealed them to be the place where people try to avoid social cataclysm and any crisis, financial or psychological – museum attendance increases at the time of economic or political instability. Museums are associated with traditional values which are closely linked with social stability. They give people a feeling of safety, a hope for the future.

At the same time, the digital and communication technologies result in changes in ordinary museum functioning. Digital transformation is a popular term in marketing [2]. It has

penetrated from business and describes how the ICT change our traditional functional processes. I believe, businessmen are playing words in order to increase attractiveness of a product.

## Digital Transformation and Museum Communication

If we use mathematics, there is another concept – convolution of functions. The physical analogue of the process can be presented as short-time impulse influences to a periodic signal, e.g. sinusoid. Imagine, you have your ordinary, traditional everyday functionality but a weather-forecast says you must adapt your business to the new climate conditions, like an impulse. The changes in business and in museum activity will be the convolution of functions: typical and a new one, influenced by innovative technologies, helping your stakeholders and you too, to get more benefits from your activity. Sometimes new technologies enter our everyday life so fast that we think they are designed only for pleasure. We do not realise them being not only entertainment, but labour-intensive work. We completely forget numerous designers and engineers developing them for us. For example, virtual reality looks nice only on pictures and in films. Virtual space possesses its own rules, modes of interaction and even limits. That means we have a span between scopes of museum visit and being in virtual space even a lot of financial or material efforts were applied. The museum visitors arrive for special type of communication – museum communication, based

on both a cognitive component and positive emotions. Museum space is not Disney land, the positive emotions have another origin than simple entertainment. So, the specialised software must be adaptive in very specific meaning. That is the subject the State Hermitage Museum tries to investigate together with the psychologists and the specialists in VR-simulators working for aero cosmic instrumentations [3]. We believe our visitors being researchers too, like astronauts, for them museum space turns to be Space.

A reasonable solution was found in scientific collaboration, cooperation between museums and universities. Museums possess informative content and creative ideas, universities have equipment and modern technologies. Their mutual activity creates positive atmosphere for education of new generation of specialists who could be attracted in future for cultural heritage preservation.

## Loop Control in Museum Communication

Commercial sector has digital and soft skills to collect users' opinions, to calculate visitors, "likes" and other signs of satisfaction. In my opinion, we are mistaken expecting benefit from the interaction with computer. Being a means of human communication, museum communication requires more complex system than simple human-computer interaction. A "signal" we transmit from a person to another person is an emotion [4]. There are different ways to fix the emotional state but it is not the same as engineers do for simulators in education

and training. Today we are not ready to offer suitable AR or VR equipment helping people enjoy a museum, as well as we propose them certain simulacres instead of virtual museums.

## Conclusion

While the interactive and mobile applications are based on cognitive approach, museum audience prefers emotional component in any museum space, virtual or real. Thus, a loop control in virtual museum space requires a tool for emotional balance control. All researchers, museologists and engineers together are only in the beginning of mutual way.

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