

# Practice of Application of Latest Digital Technologies

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## Abstract

The basic principles of practical application of digital technologies in the conditions of virtual reality are investigated in the article. Strategic opportunities for business to get out of the crisis due to the digital transformation of business and improvement of cloud infrastructure have been identified. Peculiarities of the application of a secure system of video meetings with the possibility of authorized voting with an electronic digital signature in the field of services are substantiated. Practical application of innovative services in the work of Logitech enterprise is presented, indicating innovation and digital capabilities and a new solution protocol.

## Keywords

Innovative opportunities, secure system, digital technologies.

## 1. Introduction

Development of digital entrepreneurship in the conditions of virtual reality is one of the most relevant in connection with the need to ensure the growth and renewal of the economy of modern Ukraine. With each passing year, competition in world markets is only growing, and quarantine restrictions have been added. The question arises about the secret of successful sale of products and services produced by national producers. The principles that ensure digital direction of strategic development of entrepreneurship is the complexity of providing digital technologies in the implementation of business processes; adaptability to the requirements of the digital consumer. We consider it necessary to note that the principles of ensuring the social direction of the strategic development of digital entrepreneurship are accountability, humanity, social responsibility.

Today, companies and entire industries are choosing the path of digitalization of development as the only way to meet the ever-changing conditions of the world around them. Due to this, digital transformation of industry, retail, public sector and other areas is already changing the lives of every person and every enterprise.

## 2. Formulation of the Problem

### 2.1. Analysis of Recent Research and Publications, which Initiated the Solution of This Problem and on which the Author Relies

Valuable in the scientific sense of research on the problems of digitalization of the economy are scientific works and practical research and development of such well-known scientists and inventors as W. Isaacson, S. Brand, J. Wales, E. Williams, B. Gates, B. Elbrecht, W. Efimushkin, O. Zerniuk, M. Iavich, T. Ledovsky, M. Swan, D. Tapscott, E. Shcherbakova.

In the light of deep digitalization, innovation and automation of production, Ukrainian economists are also actively involved in systematic research into the practice of digital technology and which are gaining momentum in relation to corporations. Among them are the names of N. Andrusyak [1], L. Boldyreva, O. Goloborodko, M. Zgurovsky, O. Kryvoruchko [2], N. Kraus, K. Kraus [3],

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P. Leonenko, O. Manzhuri [4–5], A. Maslov [6], O. Marchenko [7–10], V. Osetskyi [11–12], V. Shtepa [13–14] and others. But, at the same time, a significant number of problems regarding new quality of the vision of the practice of using the latest digital technologies in terms of security of companies remain insufficiently disclosed.

## **2.2. Formulation of Goals**

The aim of the article is to study the basic principles of practical application of digital technologies in virtual reality. Exploring strategic opportunities for business to emerge from the crisis through digital transformation of business and the improvement of cloud infrastructure. Substantiation of features of application in the sphere of services of the protected system of video meetings with a possibility of the authorized voting with electronic digital signature. Presentation of practical application of innovative services in the work of Logitech enterprise with indication of innovation and digital capabilities and a new protocol of solutions.

## **3. Presentation of Main Material of the Study with a Full Justification of the Obtained Scientific Results**

### **3.1. World Experience of using Digital Technologies**

The high-tech industry is by nature restless. Leading companies need to make a double effort to defend their positions, because if they lag behind, it will be difficult to catch up with competitors. As a result, in order to stay ahead, they have to constantly develop and implement innovative approaches. The intensity of the competition for the first places is evidenced by the list of 15 most expensive technology companies in the world, which in the period from 1999 to 2009 was updated by about half, and from 2009 to 2019 – by 40%. Only four companies were able to remain on the list for 20 years: Microsoft, Intel, Cisco, Oracle.

In 2019, the international consulting company Bain & Company conducted a study that examined the activities of more than 1,300 companies in the period from 1996 to 2018. The study found that technology companies are 12% more likely to face problems than retailers and 25% more likely than financial services companies. And if a technology company lags behind in its sector for three years, its chances of improving the situation fall below 20% and continue to decline over time.

The situation is further complicated by the fact that regulatory control is increasing around the world. After all, if earlier the largest companies almost did not enter the “foreign field”, then in the last five years they are increasingly “encroaching” on each other’s business activities. For example, Amazon.com has challenged Facebook and Google in online advertising, and Microsoft and Google are vying with Amazon for leadership in cloud infrastructure as a service. On the one hand, this makes it difficult to control the acquisitions of some companies by others, and on the other hand, it can threaten innovation and the associated benefits for consumers from scaling up new concepts.

At the same time, newcomers who did not belong to it before are catching up with the technological sector. For example, Walmart challenges Amazon in online commerce, and Disney competes with Netflix, Amazon and Apple in the streaming video niche.

Paul Silverlight, deputy chairman of Deloitte Audit and Consulting, has compiled a list of key strategic opportunities for overcoming the coronary crisis and successful future development, including:

1. Redoubled efforts on digital transformation with a focus on improving cloud infrastructure, data and analytics capabilities, cybersecurity and business model transformation. As many companies have already made significant progress in their efforts to digitize their operations, the pioneer’s advantage has been lost. The only way out for those who are not so advanced is to start right now.

2. Reorientation and retraining of the workforce to optimize remote work opportunities and make full use of advanced technologies such as artificial intelligence. Virtual work environments can also foster innovation and diversity in the workforce by enabling technology companies to leverage ideas and talent from wider geographic areas.

3. Study where and how production takes place, with an emphasis on improving transparency,

flexibility and sustainability. Companies need to know how their supply chains are built to quickly adjust their course in the event of a failure. Leaders of technology companies should pay attention not only to changes in the regulatory framework, but do not ignore their most difficult challenges: to anticipate the needs and behavior of customers (in terms of technology implementation) and remain “paranoid” about competition.

A good example of digitization in service sector is a secure video meeting system with the possibility of authorized voting with an electronic digital signature (EDS). The problem that caused the need is the need for a universal solution for secure video meetings with the ability to keep records and vote using CEP. The decisions that have been made are a course for the development of a modern and fully secure system that simultaneously supports video functions and the ability to work with documents.

### **3.2. New Technology Solution: Cisco Meeting Server (CMS)**

The event, which took place using a secure video meeting system, is the G20 Summit in 2020. For the first time in history, the G20 meeting took place in a virtual format. The Cisco Meeting Server (CMS) solution was used as the “meeting place” for the virtual summit.

Among the opportunities provided by the video meeting system are:

- Registration and pre-registration of all participants;
- Preparation of documents;
- Scanning and recognition of document texts;
- Photo fixation of the voter;
- Formation of the schedule of scheduled meetings with date, time;
- Maintaining the voting threshold;
- Voting and displaying the results online;
- Logging decisions and generating reports;
- Flexible search of documents;
- The possibility of including the secretary of the discussion regime on the agenda;
- Registration of participants for a speech on a specific issue;
- Setting the rules of speeches leading;
- Conducting and managing the queue of speakers;
- Presentation of the results of voting by voters, by groups or after the voting took place: for, against, abstained;
- Maintaining an archive of documents;
- Support and recording of audio and video conferences;
- The ability to lock the microphone;
- Formation of the agenda of the meeting;
- Authorization of the participant with the help of hardware keys;
- EDS/CEP voting.

An example of a speaker’s/voter’s workplace using a secure video meeting system is as follows: online voting results; video speakers; the location of the participants is fixed; information that the person is speaking and everyone sees and hears him; voting buttons; the issue on which the voting takes place; voting timer; performance duration indicator; the speech application button is active when the speaker allows; the number of those who signed up for the performance; number in the queue for the performance; the number of speakers in the queue for questions. The Secretary’s post is endowed with the following opportunities and access:

- Online voting results;
- Video of speakers. The location of the participants is fixed;
- Information on the speaker with timing and information that it is visible and audible;
- Voting timer with the possibility of starting;
- The issue on which the voting takes place;
- The ability to change the layout of the speakers;
- Opportunity for everyone to turn off the microphones;
- Display the current list of participants.

However, among the features of the video meeting system are:

- Logging decisions and generating reports;
- Notification;
- Flexible search of documents;
- Maintaining an archive of documents;
- Recording of audio and video conferences;
- The ability to lock the microphone;
- Support for audio and video conferences;
- Administration and audit.

Scheduling a meeting takes place during the use of a secure video system by:

- Formation of the schedule of scheduled meetings with the date, time and place;
- Formation of the agenda of the meeting;
- Reservation of premises and video conferencing resources according to the schedule;
- Display in calendar.

Preparation of documents for the meeting during the application of a secure video system is by:

- Opportunities to submit proposals on the agenda of the meeting and the list of speakers;
- Submission of proposals on inclusion of the draft decision in the meeting;
- Control of terms of preparation of the project of the decision and materials to it concerning each

of questions;

- Formation of the list of guests to the meeting;
- Scanning and text recognition;
- Import of documents from external systems;
- Keeping a history of document preparation.

During the application of a secure video system, voting takes place by:

- Conducting electronic voting of the meeting members by imposing QES on the draft decision;
- Logging decisions and generating reports;
- Reports are signed with an electronic signature;
- Video recording of voting is conducted;
- Automatic keeping of the minutes of the meeting (with the possibility of modification by the

secretary);

- Visualization of the process of discussion of draft decisions and voting;
- Automatic formation of the voting protocol;
- Recording the results of voting with checking the legitimacy of the CEP and the possibility of

revision;

- The ability to automatically publish the decision protocol on the website of the institution.

Administration and audit during the application of a secure video system allows all actions of users and administrators to be logged in the system, while the logs are unchanged and cannot be edited.

The general architecture of a secure video system is as follows:

- Construction of a fault-tolerant solution;
- Protection against external interference;
- Secure access using Cisco VPN;
- DataCenter (Rental of communication channels and equipment);
- “Private cloud” (Deployment of the System on the servers of the Organization, Construction of

KSZI, Compliance with the requirements of DSTU-4145-2002, Authorization using EDS, Encryption of traffic according to DSTU).

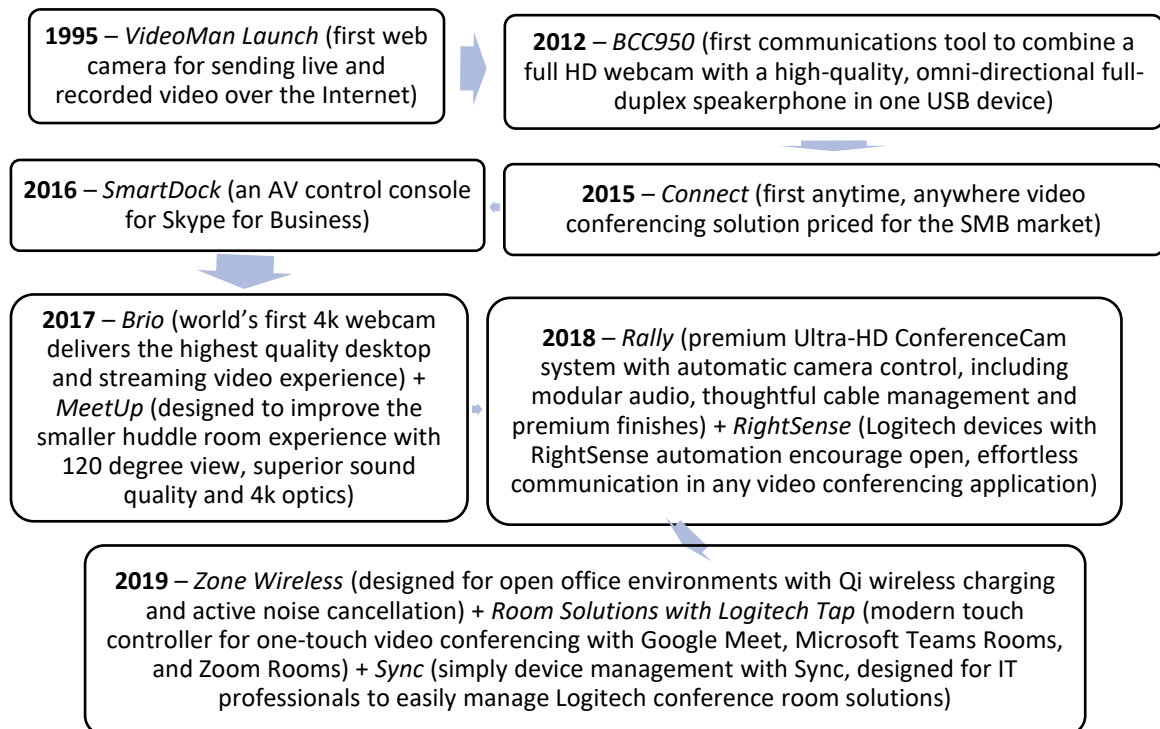
### 3.3. The Practice of using Innovative Services

If we consider successful practical examples of the use of innovative services, it is worth focusing scientific attention on the digitized work of Logitech enterprise, which is presented in Figure 1.

Key benefits that users of a secure video system receive:

- Open-source product code Megapolis.DocNet.
- Full-featured web-client – “thin client.”
- Support for the use of multiple industrial DBMS Oracle, MS SQLServer, and free DBMS PostgreSQL.

- Support for Windows and Linux/Unix on client sites and servers.
- U-disk (collective work with documents and document library).
- Support for free LibreOffice, OnlyOffice.
- Support of parallel use of EDS of Ukrainian ASCC and EDS of RSA.
- Open API for integration with third-party information systems.
- Built-in document storage.
- Use of Cisco, the world’s leading video conferencing system.
- Possibility of integration into the system of interdepartmental communication.
- The opportunity to involve third-party participants in video meetings, such as the chairmen of the boards of commercial banks.



**Figure 1:** History of Innovating Since 1995 Logitech enterprise (*author’s development*)

A general description of innovation and digital capabilities and a new solution protocol on the example of Logitech enterprise are given in Table 1.

**Table 1**  
Innovative capabilities and solutions on the example of Logitech enterprise

Innovative opportunities and solutions	Contents and general characteristics
<i>Simple portfolio for the entire work environment:</i>	<ul style="list-style-type: none"> <li>• Personal (BRIO, Zone Wireless)</li> <li>• Small (Tap, MeetUp, Computer)</li> <li>• Medium (Tap, Rally, Computer)</li> <li>• Large (Tap, Rally Plus, Computer)</li> </ul>
<i>Tap into better meetings:</i>	<ul style="list-style-type: none"> <li>• Constant user interface across all rooms</li> <li>• Ease of use</li> <li>• One easy to support architecture</li> </ul>
<i>Best-selling huddle room solution:</i>	<ul style="list-style-type: none"> <li>• View everyone in small rooms</li> <li>• Simple and compact form factor</li> <li>• Computer Vision based Automatic Auto-framing</li> </ul>
<i>Logitech solution for medium and large rooms</i>	<p>Logitech’s Rally Portfolio delivers a modular design and RightSense proactive technologies for better meetings in mid- to large-size conference rooms. Rally Portfolio:</p> <ul style="list-style-type: none"> <li>• Premium AV components (Camera, Speakers, Mic Pods)</li> </ul>

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*RightLight with Wide Dynamic Range (WDR) optimizes light balance to emphasize faces, even in dim or backlit conditions*

- Wall mounting kits
- Table, Display, and Mic Hubs

*Without RightSight:*

- Manual camera control
- In-room participants don't want to change default camera settings
- Remote participants can't see facial expressions
- Low visual engagement

*With RightSight:*

- Automatic camera control
- RightSight finds human figures in the room throughout the meeting
- Camera automatically pans, tilts, and zooms to center and comfortably frame participants
- High visual engagement, no user action required

*Without RightSound:*

- Hard to understand: echo and reverb
- Distracting background noise
- Near voices too loud, far voices too soft

*With RightSound:*

- Automatic suppression of echo and reverb
  - Minimized background noise
  - Beamforming and automatic leveling make every voice comfortable to hear and understand
- 

Among the TOP 5 benefits of Logitech switch are the following:

- Flexible: Join any meeting from every room.
- Easy on End Users: Combines simplicity with flexibility, even when changing services.
- Universal: Works with any laptop.
- Affordable: No apps or contracts.
- Capable: Differentiating features like 4K resolution and laptop charging deliver a superior solution.

## 4. Conclusion

As a result, we note that the concept of digital transformation of entrepreneurship has three main advantages relevant to any type of business: improving the efficiency of existing infrastructure; emergence of qualitatively new business models; increase revenue or reduce costs in existing business models. Digital transformation of entrepreneurship goes far beyond information and communication technologies, it has an impact on the entire value chain. In addition, we are convinced that there are three key areas in which new digital technologies can be used in business, namely: customer search (firms can use digital information and social networks to attract their customers in new ways. For example, they can create digital user communities to add value); operational processes (digital technologies allow to achieve great results in operational activities at all stages of the value chain); business models (digital transformation allows you to develop completely new forms of creating and obtaining value).

Guided by a number of topical issues that we have tried to focus on in this article, we remain true to the idea that it is still important to conduct future research aimed at presenting the effects of digital transformation. Among them, we believe: significant release of working time of employees to focus on more important tasks, reducing the number of specific tasks, improving the coherence of business processes within the digital enterprise, accelerating the processing of analytical information for management decisions, etc.

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