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**DIGITISATION OF CULTURAL
HERITAGE AND MODEL OF
REGULATION IN DIGITAL
COPYRIGHT
(Azerbaijan Study)**

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Digitisation of cultural heritage and model of regulation in digital copyright (Azerbaijan study). Baku, 2018

This brochure has been prepared on the basis of the presentation, by the Chairman of Board of the Intellectual Property Agency of the Republic of Azerbaijan Kamran Imanov named “Digitization of cultural heritage and model of regulation in digital copyright (Azerbaijan study)” presented at the “Baku conference - the first platform for the exchange of culture and digitization” within the frame of chairmanship of the Republic of Azerbaijan to The Committee of Ministers of the Council of Europe on 4-5 July, 2014.

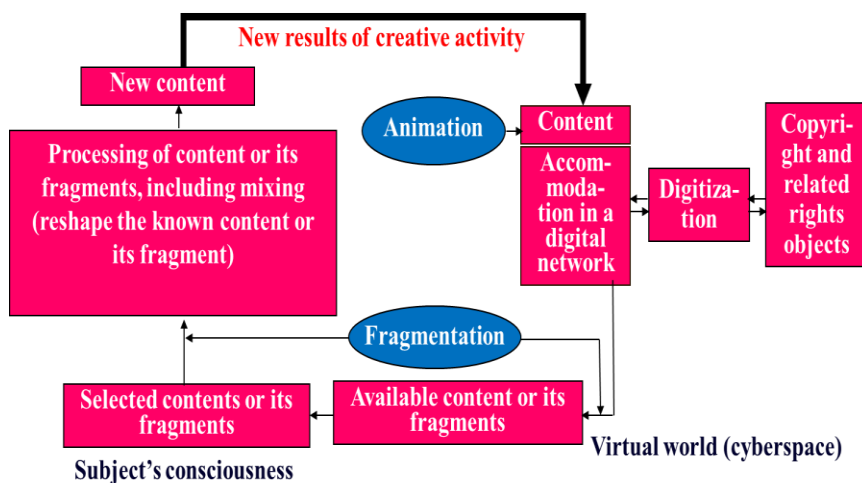
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Circulation of content in virtual world (cyber environment)



I. Methodological aspect of digitisation of culture (cause and effects of digital description of culture)

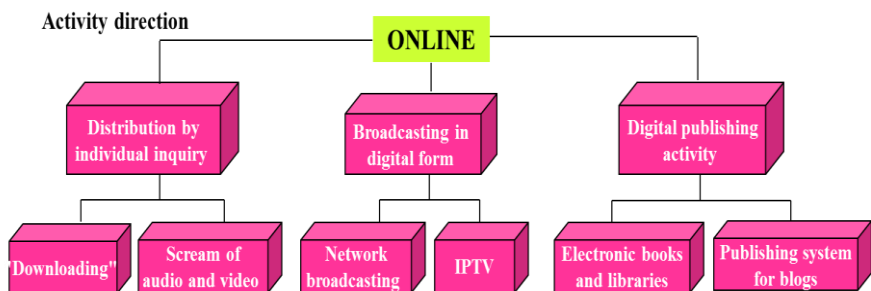
1. Digital technologies and computer networks, especially Internet create unique opportunities for popularization, safeguarding, restoration (revival) and protection of cultural heritage (See: WIPO Creative Heritage Project).
- **Challenges:** digitisation as method in passing cultural heritage from generation to generation meet with requirements of keeping of natural essence, identity of cultural object, not distorting of original, presenting to user its cultural-historical volume.

- **Cause:** "quantity" character style of digitisation from Claude E. Shannon is a finding of common ground of single quantitative units of mathematics with multi units of cultural expressions (information in a form of number, images presented as pixel convert cultural object to majority of discrete elements, a majority of relevant number of dots and in the result form decomposes from its content and value).
 - Arising difficulties are gradually eliminated, for example, Semantic Web Technology (work with words, their value and meaning, also is completed with cultural, territorial and interpretation components requiring culture) or Fuzzy logic models (substitutes polysemantic human language with fuzzy expressions).
2. Digitisation and cultural, spreading the intangible heritage leads illegal misappropriating and unfair use of cultural objects (works, traditional cultural expressions etc.).
- These cultural objects are intellectual property and are protected by copyright legislation or sui-generis.

Digital networks (on-line environment)



ONLINE SERVICES IN DIGITAL NETWORKS



II. The balancing issues of modern copyright on digital environment

1. Objects of copyright as a content (form and content):

- ❖ «Content» - informative significance of contents, «form» - container carrying the content.
- ❖ Informational nature of the content: copyright: regulation of disclosed (public) information, authorized use;
right of information: regulation of information with limited access but its free dissemination.
- ❖ **The term «content»** - increasing of significance of work's content and decreasing of content's significance (infinite cloning, replication, division of information content = modification of forms, creation of new adapted works.

2. New types of creativity and services:

- fragmentation – splitting of data files into small parts from which infinite set of forms are created;
- mixing – reshaping the known content or its fragments, including expurgation of films – removing or adding certain parts;
- mash-ups – creation of new audiovisual works by combining audio and video materials;
- digital sampling– borrowing and processing of pieces of musical works in new musical recordings;
- animation – giving dynamic and flexible indications to static forms;
- Development of interactive exchange services (Wikipedia, Facebook, Myspace), platforms (Youtube, Flickr) and blogs (Twitter, P2P, BitTorrent) on the base of Web 2.0.

3. Consequences of new forms of creativity and services:
- losing of unity, integrity and static character; acquisition of plurality, divisibility and dynamic character of the form of work;
 - Changing the border of originality of work and disruption of “right holder – user” balance;
 - Change of essence of concept of “copy” and “replicate” and new concept of “obtain”.



4. **Exclusive rights: «may» or «may not»:**

- Exclusive rights in IP and property right in the material world.
- «Prohibition on the use» prohibitive mechanism in Copyright = “ownership” principle does not work in the material world.

Causes and effects:

- ✓ information behaves differently than the objects of the material world (D.Bell, A.Touraine, O.Toffler, J.Baudrillard, P.Drucker);

- ✓ distinctive work of law of value: information – endless resource increased by spread of value, dependence of material objects upon a deficit of value and a labor expenses for creation;
- ✓ mediation in “author-society” chain: decomposition of copyright conception from real value and social justice conception;
- ✓ direct of private (human) character of IP toward corporative interests, weaken of motivation to creative results and work for protection losses of industries in IP market.

Effects: disturb the equilibrium in ”Author- Right holder – User” system and expansion of contradictions.

III. Parties of conflict “Internet-Copyright”



**Copyright
protection**

**Openness of the
Internet**

1. Collision of interests:

- | | | |
|--|---|--|
| <ul style="list-style-type: none">▪ User – Right Holder▪ User – Author | } | <p>Main bearers of contradiction
«Copyright – openness of Internet»
(may regulate by conflict and
compromise theory)</p> |
| <ul style="list-style-type: none">▪ Author – Right Holder▪ Right Holder - Author – Provider | } | <p>Indirect bearers of
collision (may
regulate by special,
mandatory rules)</p> |

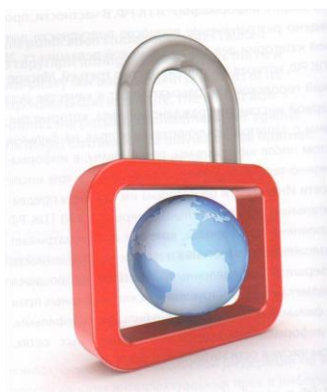
IV. Practical model of regulation in digital copyright

a). Models without limitations on free use (CC, Copyleft, Ficher, Dolgin, Koziryov and other models) are proposed and developed, difference of these models in a system of compensation to right holders;

b). Models of free use with term of payment of remuneration (compulsory licenses), including are proposed and developed by collective management;

c). Models stipulated enforcement:

- ✓ SOPA, PIPA, ACTA – legal acts on strict of traditional copyright (prohibition mechanism of exclusive rights). Not adopted, researched.



V. Mathematical description of Collision of interests in Cyberspace

1. Users (1), Authors (2), Right holders (3):
 x_1, x_2, x_3 - decisions adopted by appropriate party (strategies). Party tries to derive benefit maximum to achieve its aim.

$$f_i(x_1, x_2, x_3) \rightarrow \max_{x_i \in X_i} (i=1, 2, 3):$$

mathematical game construction of 3 persons with a possibility to create a coalition

2. Principle of guaranteed results:

$$\alpha_i = \max_{x_i \in X_i} \min_{x_j \in X_j (j \neq i)} f_i(x) \quad (i=1, 2, 3)$$

$I = \{f_i(x) \geq \alpha_i\} \quad i = (1, 2, 3)$ - **Majority of guaranteed strategies.**

3. Pareto-optimal outcomes and Pareto majority

P: if $\forall y$ in $f_i(y) \leq f_i(x)$ line at least one $i=1, 2, 3 \exists j=1, 2, 3$, there is $f_i(y) < f_i(x)$.

4. Search of compromise is achieved from “majority of negotiation” $I \cap P$.

5. Not breaking of obtained agreement (contract) – sustainable Agreements.

Strong or coalition equilibrium: last x then sustainable equilibrium, if any coalition S and every common y_s on strategy \exists party $i \in S$ for which

$$f_i(y_s, x_{N \setminus S}) > f_i(x) \quad [x_{N \setminus S} = \{x_i\}, i \in N \setminus S]$$

that \exists is participant of $j \in S$ for which $f_j(y_s, x_{N \setminus S}) < f_j(x)$.



VI. Mathematical game and voting (selected) model

1. Each of the parts must choose one of a, b, c variants, i.e. X_u, X_{rh}, X_a is relevantly choice of users, right holders and authors.
2. Rule of voting

$$\pi(x) = \begin{cases} X_u, & \text{if } X_{rh} \neq X_a \\ X_{rh} = X_a, & \text{if } X_{rh} = X_a \end{cases}$$

(Right holders' choice does not coincide with authors' choice)

(Right holders' choice coincides with authors' choice)

If there is a unanimity choice (regardless preference tendencies of the parts), i.e. $X_u = X_{rh} = X_a$ is a balance.

Sustainability for different choice (strong, balance of coalition) is closed with preference tendencies of the parts.

3. Preference tendency of the parts:

Right holders: $u_{rh}(c) > u_{rh}(b) > u_{rh}(a)$ - (I) permanent;

Authors: $u_a(a) > u_a(b) > u_a(c)$ - (II) probably and
 $u_a(b) > u_a(a) > u_a(c)$ - (III) possible;

Users: $u_u(b) > u_u(c) > u_u(a)$ - (IV) probably and
 $u_u(c) > u_u(b) > u_u(a)$ - (V) possible.

VII. Analyse of voting model:

Four situation is researches from position of sustainable agreement (strong, coalition balance).

$$\begin{cases} u_{rh}(c) > u_{rh}(b) > u_{rh}(a) \\ u_a(b) > u_a(c) > u_a(a) \\ u_u(a) > u_u(b) > u_u(c) \end{cases} \quad (1)$$

Sustainable balance refused the coalition is obtained in unanimous voting of project b (free use by getting remuneration).

rh – permanent; a – probably; u – probably

$$\begin{cases} u_{rh}(c) > u_{rh}(b) > u_{rh}(a) \\ u_a(c) > u_a(b) > u_a(a) \\ u_u(a) > u_u(b) > u_u(c) \end{cases} \quad (2)$$

Sustainable balance refused the coalition is obtained in unanimous voting of project c (hardening of enforcement).

rh – permanent; a – possible; u – probably

$$\begin{cases} u_{rh}(c) > u_{rh}(b) > u_{rh}(a) \\ u_a(b) > u_a(c) > u_a(a) \\ u_u(b) > u_u(a) > u_u(c) \end{cases} \quad (3)$$

Sustainable balance refused the coalition is obtained in unanimous voting of project b (free use by getting remuneration).

rh – permanent; a – probably; u – possible

$$\begin{cases} u_{rh}(c) > u_{rh}(b) > u_{rh}(a) \\ u_a(c) > u_a(b) > u_a(a) \\ u_u(b) > u_u(a) > u_u(c) \end{cases} \quad (4)$$

Sustainable balance refused the coalition is obtained in unanimous voting of project c (hardening of enforcement).

rh – permanent; a – possible; u – possible

Conclusions:

1. Strong balance in favor of variant b is obtained in variants 1) and 3) (if preference tendency of authors and right holders does not coincide, and does not depend on preference tendencies a or b of the users).

2. Strong balance in favor of variant c is obtained in variants 2) and 4) (if preference tendency of authors and right holders coincide, and does not depend on preference tendencies a or b of the users).

3. There is not any sustainable (coalition) balance in favor of variant a).

4. The stronger sustainable balance is appeared in the variants of preference tendencies "permanent" of the right holders, "probably" of the authors and users, in different choice (Right holders – project c), Authors – project b) and Users – project a)).

Offer: project b) → project c) → project a) is more convenient.

So the law with function of prohibit of use must be substituted by the law with function of positive permission (free use with remuneration right - compulsory license, including taking into account collective management).

VIII. Implementation

1. Legislation

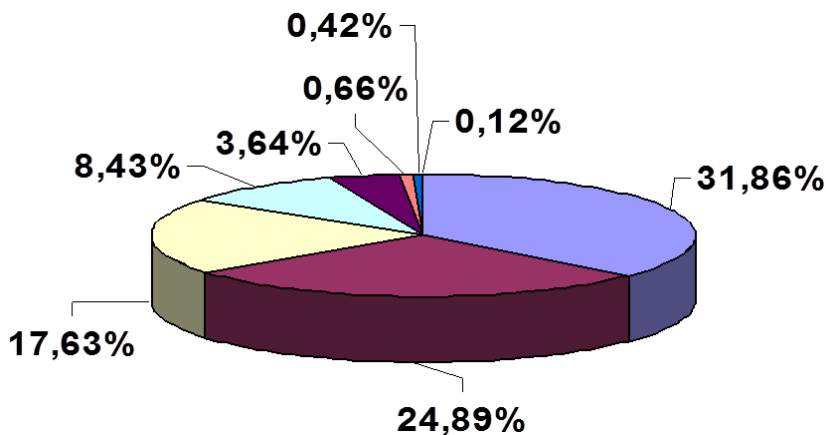
The extract from the Law “On the Enforcement of Intellectual property rights and fight against piracy”

12.4. The relevant executive agency dealing with the copyright issues shall control over the use of property rights of authors, performers and phonogram producers in digital rights, arrange their management on collective grounds in accordance with interests and aims of right holders, take appropriate measures, within its authority, when the rights are infringed, technical protection facilities providing restrictions on the use of rights are illegally disrupted, also the information on management of rights is destroyed or changed without a right holder's consent.

2. DRM-system.



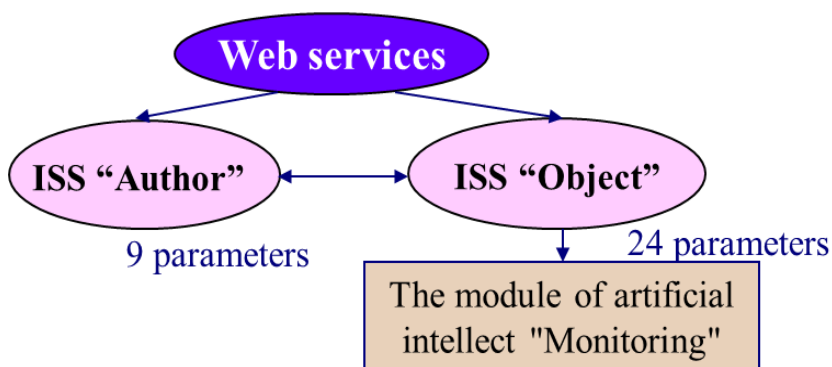
DIGITAL REGISTRATION, INCLUDING ONLINE



- Musical
- Literary
- Scientific and educational
- Design and decorative
- Collections
- Multimedia
- Phonograms and programs of broadcasting bodies
- Data bases

**Types of the registered objects in %
(total number 9133)**

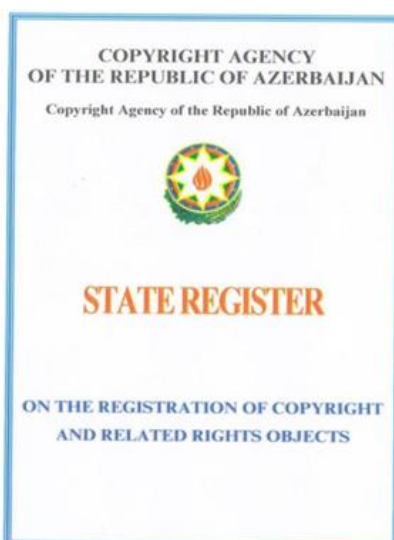
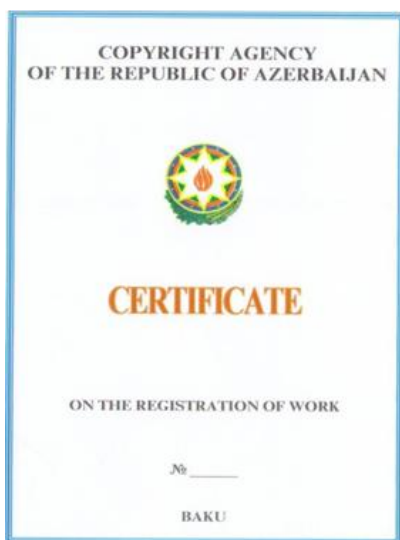
DIGITAL DATA BASE



Programming environment: Delphi

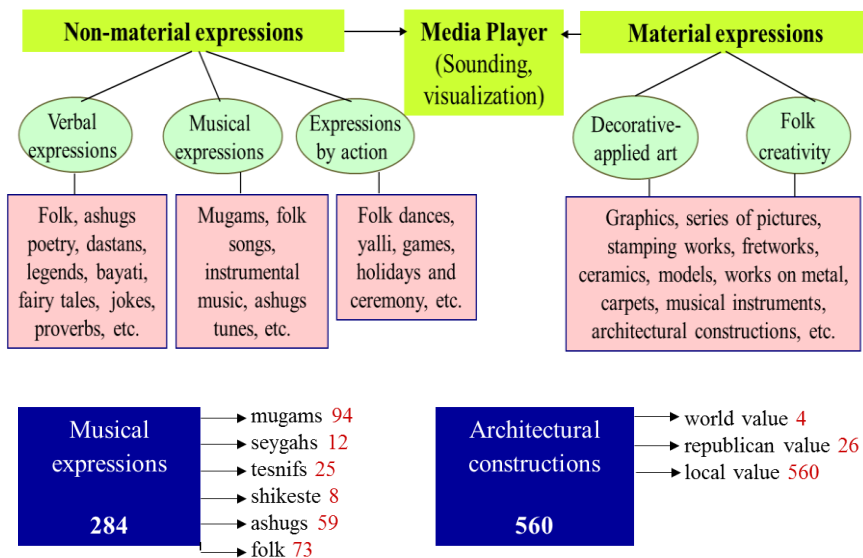
Language: Pascal, Search language - SQL

Output: Search on any parameters, accounting and statistical data.



Creation and conducting of multimedia digital library on TCE (folklore)

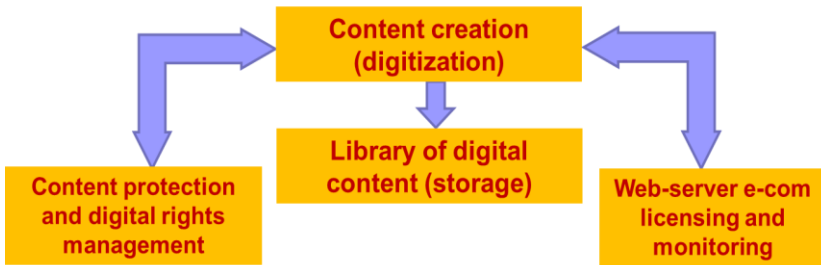
MULTIMEDIA DIGITAL LIBRARY “FOLKLORE”



DRM-system: purposes and appointments

- ✓ Creating infrastructure (platforms), providing services based on the characteristics of digital content and registration, digital rights management and E-com, digital monitoring and detection of illegal use.
- ✓ Transformation National Agency to the Aqreqator of the cultural digital content.

DRM – system: general structure



Subsystems:

- On-line officializing and registration.
- Protecting content by Watermark.
- Digital Content Management, based on the metadata.
- Monitoring and evaluation of the use content.
- Implementation of E-sales.

Watermark and system identification and content protection

Rəqəmsal Hüquqların İdarəetmə Sistemi (Digital Rights Management) - addım-addım bələdçi kitabı

Rəqəmsal hüquqların effektiv idarə edilməsi və rəqəmsal əsərlərin, videoların, audioların, 3D modellərin və Web üzərində ərsəyə düşən lazımlı əsərlər:

1. Şəkil, audio və ya video faylı seçin.
2. Düzgün aləti seçib, sənədinəni yerləşdirin (imagemark, videomark, audiomark, 3Dmark).
3. Bütün alətlərə sualınan açarı üçün 100 100 nömrədən istifadə edin (Müəllif Hüquqları Agentliyinin unikal nömrəsi).
4. Müəllif Hüquqları Agentliyin Elektron möhürünü əlavə etmək və müəllif hüquqlarının metadata-sını idarə etmək üçün SDRM alətini açın ("yerləşdirilən möhür menyusunda" Unikal ID Nömrələr "- 32667").
5. Internet üzərində Agentliyin su işarələrini aşkar etmək üçün WebCrawler alətindən istifadə edin.
6. Daha çox dərslik üçün aşağıdakı dərsləyə baxın!

Run ImageMark Run VideoMark Run AudioMark Run 3DMark Run WebCrawler

2 modes of use:

- a) **Cyber Monitoring:** Observation of the use of the works in network and Payment Mode to the right holders for a free use.
- b) E-shop.

Informational Structure of E-sales.

