**PLOVDIV UNIVERSITY "PAISII HILENDARSKI"**
**FACULTY OF MATHEMATICS AND INFORMATICS**
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# CREATING AN ONTOLOGY OF BULGARIAN DANCE FOLKLORE

## ABSTRACT

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# CONTENTS

# GENERAL CHARACTERISTICS OF THE DISSERTATION

This dissertation is focused on the semantic modeling of Bulgarian cultural and historical heritage, with a particular emphasis on Bulgarian dance folklore. The study presents an ontological specification of Bulgarian folk dance, highlighting five key characteristics that define its essence.

The preliminary scientific review related to the development of ontologies and Bulgarian dance folklore examines fundamental concepts such as ontology, semantic model, semantic web, semantic modeling through ontologies, ontological languages, and standards for cataloging cultural objects, among others. This review also introduces the concept of Virtual Physical Space (ViPS). A key component of the platform‘s extension is the development of an ontology for folk dances, enabling a scientifically grounded structuring and classification of Bulgarian dance heritage in a digital format.

## RELEVANCE OF THE SCIENTIFIC TOPIC

The development of an ontology of Bulgarian folk dance is a highly relevant topic in light of the growing interest in the digitization of Bulgaria›s cultural and historical heritage within projects aimed at creating virtual and physical educational spaces. Establishing an ontology for folk dances would enable the systematization, classification, and interpretation of various folk dances in Bulgaria, presenting them in a unified digital format that can be easily accessed and analyzed within intelligent learning systems.

Folk dance is an essential element of Bulgarian cultural heritage, carrying not only aesthetic value but also social, historical, and ethnographic information. This information often remains unknown or difficult to access outside specific geographic and social contexts. Building an ontology of Bulgarian folk dance within the framework of Virtual Physical Space (ViPS) would contribute to the broader promotion of these traditions globally, while simultaneously providing opportunities for interactive learning and research into the dances and their cultural significance.

There is a pressing need for scientific research and innovation that ex-

pands our knowledge of current societal developments and directly contributes to solutions for the future. To foster new thinking and propose solutions to social and economic challenges, the full integration of cultural and creative sectors into research and innovation processes is crucial. Both the scientific and applied work of researchers from Plovdiv University and the international scientific community, related to the concept of ViPS and the digitization processes of cultural and historical heritage, have been studied and analyzed.

Despite advancements in science and the processes of globalization, culture remains a fundamental pillar of human existence and a primary channel for passing down knowledge and skills. The research interest addressed in this study focuses on Bulgarian folk dance, which impresses with its appeal, dynamism, and ritualistic character.

The relevance of the problem under consideration is evident in the need to integrate digital technologies into the processes of education, cultural memory preservation, and, importantly, the contemporary society›s desire to connect with its roots. These circumstances underscore the importance and timeliness of the study, not only aligning with the need for modern methods to preserve Bulgarian folklore but also opening new perspectives for its representation and development in the digital age.

The relevance of this interdisciplinary topic is also determined by the priorities of the European Union›s new 9th Framework Programme for Research and Innovation, «Horizon Europe.» The conducted research aims to stimulate the process of co-design and collaboration within the program›s priorities by fostering partnerships between research teams from various scientific fields, as well as those geographically distributed.

## GOAL OF THE RESEARCH

The aim of the research, the results of which are presented in this dissertation, is to continue the development of a platform for the digitization of Bulgaria›s cultural and historical heritage. The implementation of this reference architecture aligns with the ViPS framework, expanding the domain of cultural and historical heritage (CHH). A key component of this platform extension is the ontology of folk dances.

The ontology includes a structured representation of dance forms, styles, and practices characteristic of different ethnographic regions of Bul-

garia. This ontology will serve as a foundation for integrating dance heritage into the broader context of cultural and historical digitization and will provide a scientifically grounded classification and interconnection between various types of folk dances. Additionally, the aim is to create tools for search and visualization, enabling users to easily navigate the rich diversity of dance forms and access authentic materials related to them.

The platform extension aims to ensure the sustainable and accessible preservation and promotion of Bulgarian folk dance heritage in digital format, providing opportunities for research and education.

Based on the research goals, the following hypothesis was formulated: Developing a specialized ontology of folk dances will allow for the effective structuring and classification of Bulgaria›s dance heritage, providing an accurate and scientifically substantiated classification of dance forms, styles, and practices characteristic of different ethnographic regions. This will contribute to strengthening cultural identity and deepening opportunities for the preservation and safeguarding of cultural and historical heritage.

The successful achievement of the stated aim involves the following tasks:

1. To present a conceptual framework, conducting an analysis of the current state and emphasizing existing experience related to Virtual Physical Space (ViPS).
2. To select and analyze examples of Bulgarian folk dance based on the works of Prof. Kiril Dzenev.
3. To analyze existing semantic models, evaluate their capacity, and lay the groundwork for creating new semantic models for Bulgarian dance folklore.
4. To implement the theoretical framework in an experimental setting and develop an architecture and ontology for the selected examples.
5. To disseminate the results within the scientific community through publications and participation in international scientific conferences.

The objects of the research are, on one hand, the ontology itself, and on the other hand, Bulgarian dance folklore.

# CHAPTER 2. SCIENTIFIC REVIEW

## CONCEPTUAL APPARATUS

Below are presented terms and concepts that are used in this dissertation.

**Ontology (philosophy).** In philosophy, ontology is a branch of metaphysics that deals with the study of existence, the nature of being, and the fundamental categories of what exists. It seeks to answer questions such as what exists, what are the fundamental characteristics of existence, how different types of existence relate to one another, and what their nature is. Ontology explores concepts such as substance, essence, existence, identity, and difference (Gruber, 1993).

**Ontology (information and computer science).** It serves to create standardized and understandable models that can be used for exchanging information between different systems and for the automatic processing of knowledge. Ontology typically includes definitions of key terms, classifications of objects, and descriptions of the relationships between them, helping to integrate knowledge from various sources and providing a better understanding of specific domains (Guarino, Oberle, & Staab, What Is an Ontology?, 2009).

**Semantic model.** It is a conceptual model used to represent knowledge and meanings within a specific domain, with its primary goal being to capture the meaning of concepts and the relationships between them. The term «semantic model» is associated with a number of scholars and researchers across various disciplines. In computer science and linguistics, the term is often used in the context of semantic networks, one of the early ideas for such a model being proposed by Warren S. McCulloch and Walter Pitts in the 1940s. The collaboration between neuropsychiatrist Warren McCulloch and mathematician Walter Pitts on the logic of neural networks and their 1943 publication “A Logical Calculus of the Ideas Immanent in Nervous Activity” is considered fundamental to the development of cognitive science and artificial intelligence (Abraham, 2002).

**Semantic Web.** The term encompasses technologies for creating data repositories and technologies, languages, and rules for data management (RDF, SPARQL, OWL, SKOS).

**Semantic modeling through ontologies.** This is the process of creating and using ontologies to represent knowledge and semantics in a specific domain. In this context, an ontology is a formal description of concepts within a given domain and the relationships between them, which enables computers to understand and process the meaning of the information.

**Ontological languages.** These are formal languages used to create, describe, and manipulate ontologies. These languages provide syntax and semantics for defining concepts, relationships, properties, and logic that define how concepts in the ontology interact with one another.

**RDF (Resource Description Framework).** RDF is a foundational standard for representing data in the semantic web, which describes resources and their properties using triples (subject-predicate-object), i.e., "subject-property-value" (OWL 2 Web Ontology Language , 2012). It can be used to integrate different data sources through SPARQL (query language). RDF is often used in combination with OWL to define more complex ontologies (Kalibatiene , D.; Vasilecas, O., 2011).

**RDFS (RDF Schema).** RDFS extends RDF (Resource Description Framework) and provides tools for defining the structure and types of data that can be used in RDF graphs. RDFS allows the definition of classes and properties, describing their hierarchy and relationships. The main components of RDFS include classes – which are used to group resources that share common characteristics; properties – define relationships between resources or between resources and literals; hierarchy – allows the creation of subclasses and inheritance of properties and characteristics between classes and properties; data types – provides mechanisms for specifying the types of values that can be associated with properties.

**The Standard for Cataloging Cultural Objects (CCO – Cataloging Cultural Objects)** is a guide and a set of guidelines for standardizing the process of cataloging cultural and museum objects, with the aim of facilitating their description and management in databases and digital archives (Baca, Murtha; Harpring, Patricia; Lanzi, Elisa; McRae, Linda; Whiteside, Ann, 2006).

**Virtual Physical Space (ViPS)** is a reference architecture developed at the DeLC (Distributed eLearning Center) laboratory within the Faculty of Mathematics and Informatics (FMI) at Plovdiv University "Paisii Hilendarski".[1]

**Cyber-Physical Systems (CPS).** The term is used to specify the increasing integration and coordination between computational resources (cyber space) and physical resources (real space). These systems are characterized by tight integration of computation, communication, and control, and interaction with the physical environment in which they are deployed.

**CPSS (Cyber-Physical-Social Systems).** For many application areas, it is essential to account for the presence of the human and social dimension in CPS. This is mainly due to the unprecedented impact of cyberspace on how people interact and communicate with each other.

**Protégé**. This is a powerful, widely used software tool for creating and managing ontologies, allowing users to define and manipulate complex structured knowledge models. It also includes deductive classifiers to validate that models are consistent and to infer new information based on ontology analysis. Similar to Eclipse, Protégé is a framework for which various other projects offer plugins.

## VIRTUAL PHYSICAL SPACE (VIPS)

The Virtual Physical Space (ViPS) is not something that materialized overnight; it is the culmination of more than fifteen years of scientific research. The initial concepts and motivations for creating a space that merges the virtual and physical realms were outlined in (Stoyanov, 2012).

ViPS evolves through several stages, with the latest version described in (Soyanov, Glushkova, Stoyanova-Doycheva, Ivanova, & Doychev, 2019). As a reference architecture, ViPS is designed to be adaptable in various application areas, such as smart agriculture, the digitization of Bulgaria's cultural and historical heritage, and e-learning (Stoyanov, S.; Glushkova, T.; Stoyanova-Doycheva, A.; Doychev, E.; Ivanova, V., 2019).

[1] https://delc2.fmi.uni-plovdiv.net/opendelc/index

The current state of the ViPS project is the result of an evolutionary development process, spanning various stages and supported by different software tools. The two most significant tools are the Distributed eLearning Center (DeLC) and the Virtual Educational Space (VES). DeLC is a comprehensive environment with software tools designed for creating, distributing, and delivering educational services and e-content. Its architecture consists of a network of nodes, called eLearning Nodes (eLN), that provide structures for planning, organizing, and conducting real educational processes. Each node functions as an autonomous host capable of offering specific e-services. The entire network of educational nodes is maintained and managed by specialized middleware (Stoyanov, S.; Ganchev, I.; Popchev, I.; O'Droma, M., 2010). The connections in the DeLC network represent different relationships between hosts, such as permissions, access rights, and the inclusion or exclusion of nodes from the network or specific clusters.

The ViPS architecture, in accordance with CPSS (Wang F.-Y., 2010), virtualizes real-world objects to suit specific domains. This means creating digital versions of physical objects that can be defined and interpreted digitally. The architecture reflects the physical world in the digital realm, where processes, users, and knowledge interact dynamically and personally.

ViPS middleware supports the virtualization of "things", accounting for events, time, space, and location, primarily through its analytical subspace.

# CHAPTER 3. BULGARIAN FOLK DANCE FOLKLORE

Tsvetanka Romanska defines Bulgarian musical folklore as "an inexhaustible treasure of Bulgarian folk poetic creativity" (Романска, 1965). Bulgarian folk dances are inseparably connected with music, folk songs, and folk customs. They are expressed through the diversity of types and forms, movements, the character and style of performance, musical instruments for accompaniment, melodies, and their metrorhythmic structure, as well as the folk costumes and customs they represent (Колев, 2001).

The genre we aim to classify is Bulgarian folk dance. We realize that describing the entire folk dance tradition and digitizing it is beyond the capabilities of a single doctoral student and would be too ambitious a task. Therefore, we have narrowed the scope and selected 10 leading pieces from the work of Prof. Kiril Denev: "Shepherd and Judas Maiden," "Festive Thracian Dance," "Kudi," "St. George's Day," "Haskovo Wedding Dances", "Horo in Sofia", "A Tale from the Danube", "Libe Le", "Kapan Dance", and "Dobruja Dance Impression". Five characteristics have been formulated, which will guide the development of the ontology matrix.

- ✓ **The first** criterion by which we will classify the dances is their affiliation with an ethnographic region.
- ✓ **The second** criterion by which we will classify the dances is their social-artistic function. Dances can be classified as ritual, customary, festive-calendar, and those in public and private life.
- ✓ **The third** criterion by which we will classify the dances is based on the composition of the participants. They can be male, female, or mixed participants.
- ✓ **The fourth** criterion we will use is the number of participants. Dances can be solo, duet, group, or public dances.
- ✓ **The fifth** criterion, according to which we will classify the dances, is the accompaniment of the dance. It can be sung, instrumental, or mixed.

The matrix of the qualification framework for the dances we will select, based on the five criteria described above, is presented as shown in Table 1.

*Table 1.* ***Matrix of the Qualification Framework for Dances***
*(Ivanova, T.; Madanska, S.; Stoyanov, I., 2023)*

| № | Criterion | Characteristic |
|---|---|---|
| 1. | Ethnographic region | ● North Bulgarian Folklore Region<br>● Thracian Folklore Region<br>● Shopluk Folklore Region<br>● Dobruja Folklore Region<br>● Pirin Folklore Region<br>● Rhodope Folklore Region |
| 2. | Sociocultural function | ● Ritual dances<br>● Customary dances<br>● Festive-calendar dances<br>● Dances related to public life<br>● Dances related to personal life |
| 3. | Composition of participants | ● Men<br>● Women<br>● Mixed participants |
| 4. | Number of participants | ● Solo dance<br>● Duet dance<br>● Group danc |
| 5. | Accompanimen | ● Song accompaniment<br>● Instrumental accompaniment<br>● Mixed accompaniment |

# CHAPTER 4. ARCHITECTURE AND PROTOTYPE OF THE BULGARIAN DANCE FOLKLORE ONTOLOGY

Ontologies created as a knowledge base for this dissertation have a cultural-historical focus and are divided into various subdomains. The subdomain "dance folklore" is an interesting area of study that could potentially be part of an ontological knowledge network for an intelligent tourist guide. To formally represent knowledge in this field, a certain systematics is required. The dance characteristics and their taxonomy can be semantically presented by creating a class hierarchy and defining axioms through various properties—object properties, data properties, and annotations. The axioms for the objects and their instances characterize the concepts with both their common and specific traits. Data consistency can be monitored based on these axioms.

The environment used for the ontology development is Protege. The classes are defined using the PascalCase approach, and the properties are defined using the camelCase approach. In the next phase, annotations were created in both English and Bulgarian languages. Statements about the classes are defined through properties. Each dance can be described according to the characteristics listed in the previous section. Traditional Bulgarian dances are represented as classes, and specific performances can be included as instances.

Figure 1 shows part of the class hierarchy in the ontology for Bulgarian dance folklore. The selected works by Kiril Djenov are: "Shepherd and Judas Maiden", "Festive Thracian Dance", "Kudi", "St. George's Day", "Haskovo Wedding Dances", "Horo in Sofia", "A Tale from the Danube", "Libe Le", "Kapan Dance", and "Dobruja Dance Impression". These are created in the ontology as classes. The five characteristics from *Table 1*. **Matrix of the Qualification Framework of Dances** are more visually represented in Figures 1, 2, and 3.

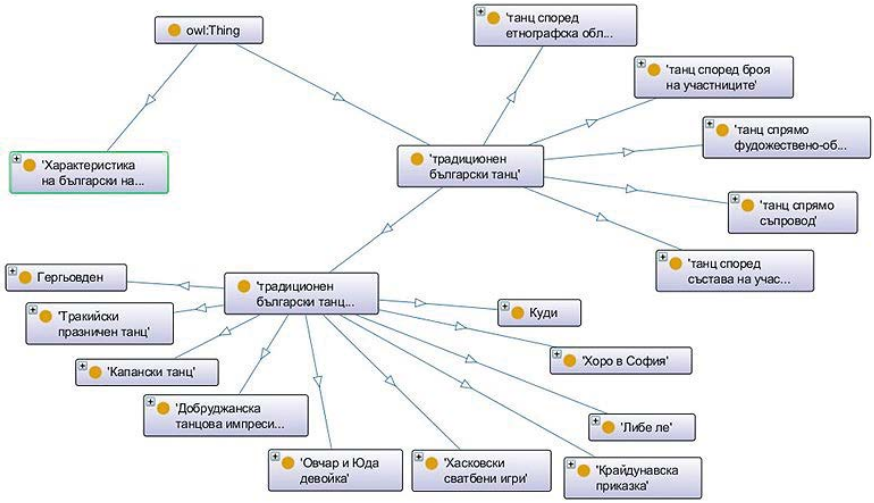



*Figure 1.* ***Class-Based Ontology***
*Source: Tsvetomira Kazashka*

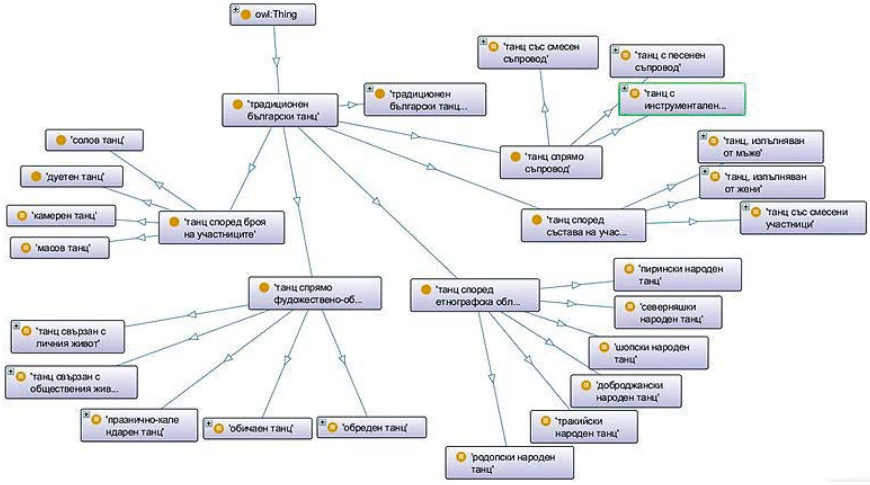



*Figure 2.* ***Ontology of "The Five Characteristics of the Dance"***
*Source: Tsvetomira Kazashka*

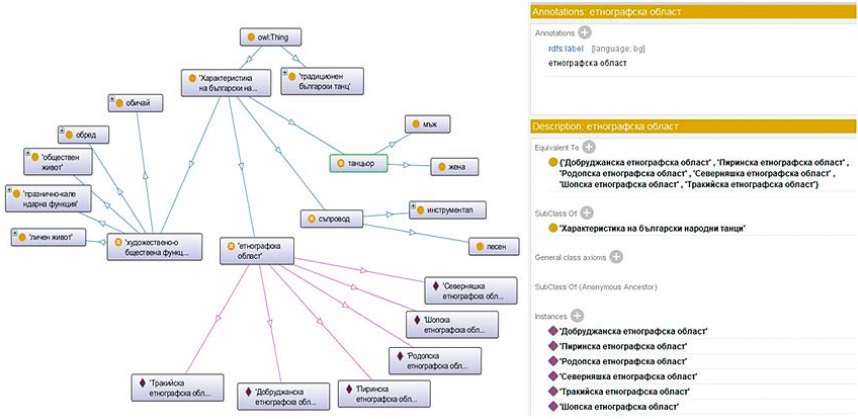



*Figure 3.* ***Ontology of Ethnographic Regions***
*Source: Tsvetomira Kazashka*

The classes are described with properties, which can be either object properties or data type properties. The property "hasParticipantComposition" connects the dance with the class "Participant Composition." The property "hasAccompaniment" connects the dance with the class "Dance Accompaniment." The data type properties are associated with specific numbers, such as the "number of participants.

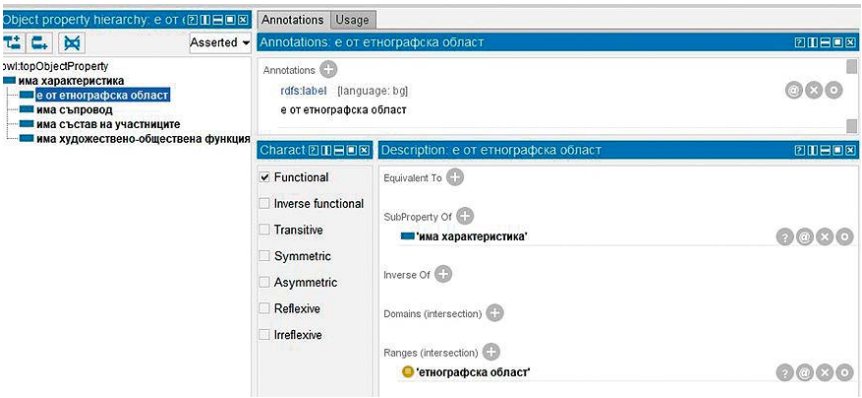



*Figure 4.* ***Classes described with properties***
*Source: Tsvetomira Kazashka*

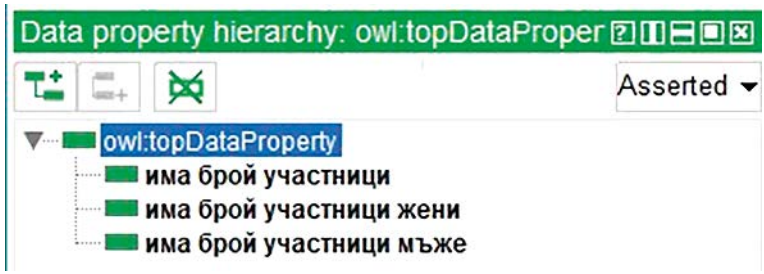



*Figure 5.* ***Classes described with properties 1***
*Source: Tsvetomira Kazashka*

A large part of the classes are described with axioms. For example, the chamber dance – it has a number of participants, an integer, less than or equal to 5 (Figure 6).

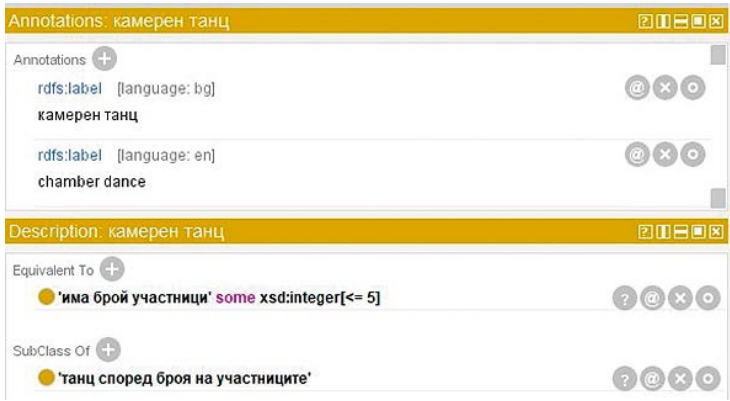



*Figure 6.* ***Classes described with axioms***
*Source: Tsvetomira Kazashka*

Each dance can be composed of only men or only women. It can also have a mixed composition of participants (men and women).

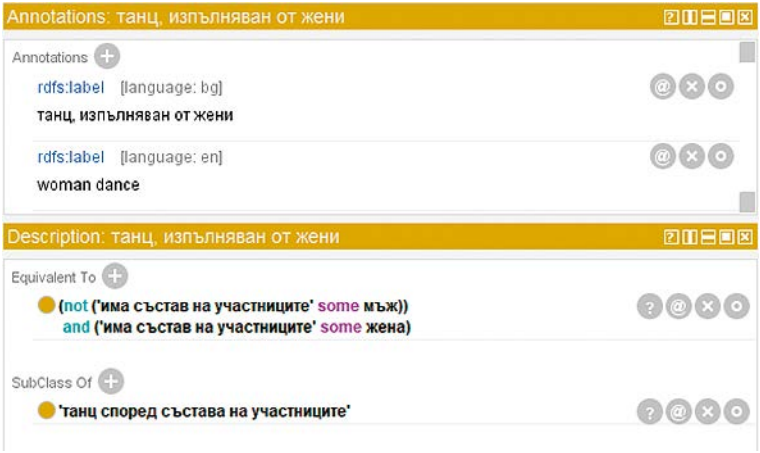



*Figure 7.* ***Composition of Participants***
*Source: Tsvetomira Kazashka*

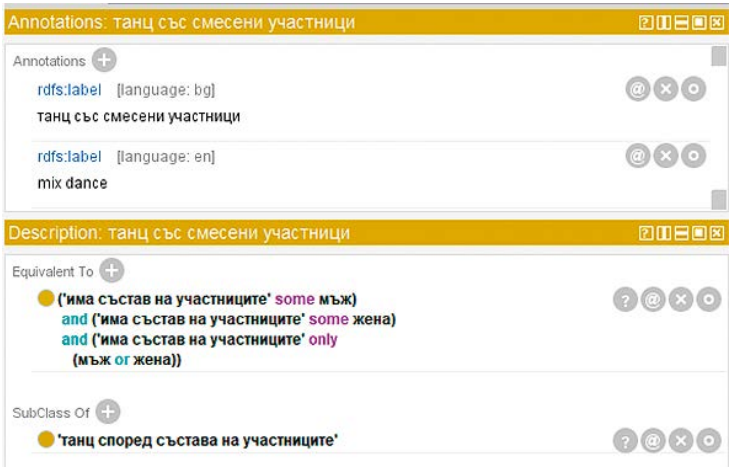



*Figure 8.* ***Mixed Composition of Participants***
*Source: Tsvetomira Kazashka*

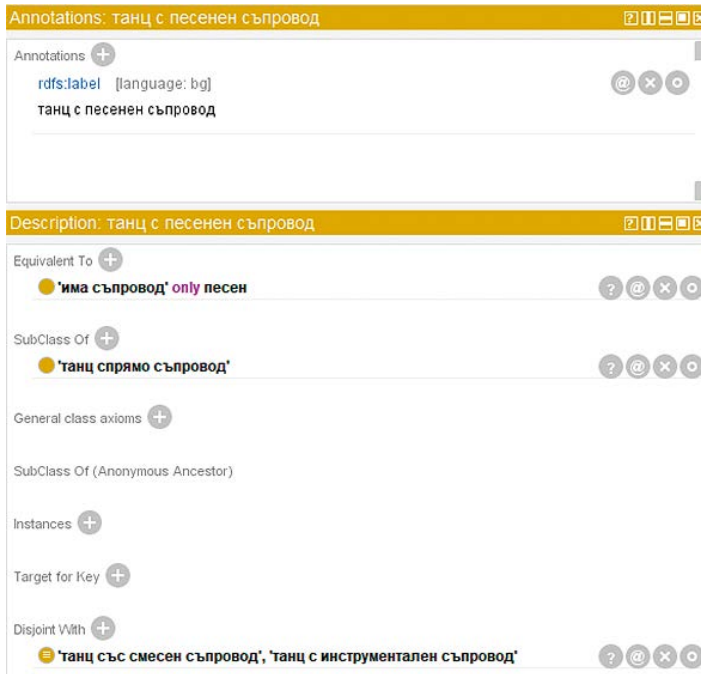



*Figure 9.* ***"Only" Accompaniment***
*Source: Tsvetomira Kazashka*

In Figure 9, the accompaniment is visualized, which can be "only" a song. Figures 10 and 11 present the accompaniment as mixed, either song-only or instrumental-only, with the relation "some".

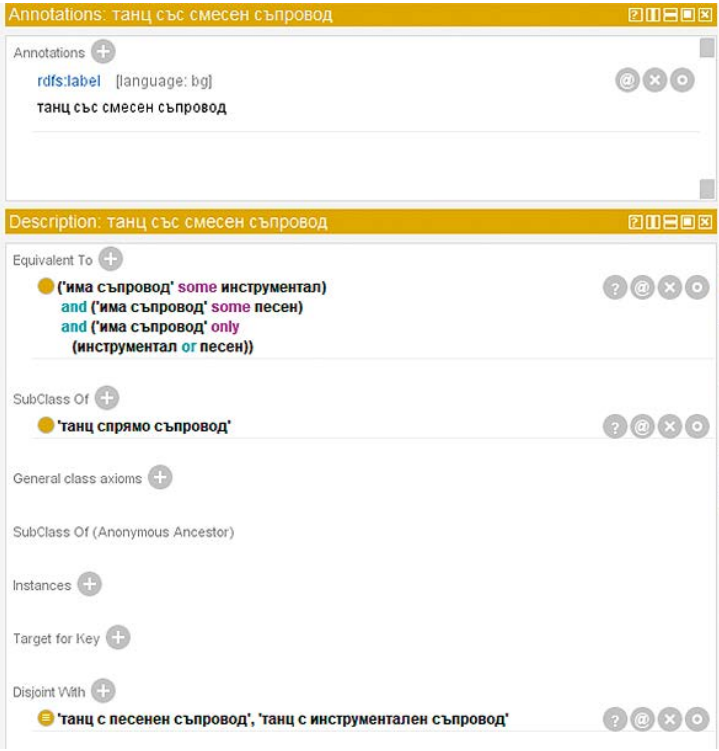



*Figure 10.* ***Accompaniment "some"*** *Source: Tsvetomira Kazashka*

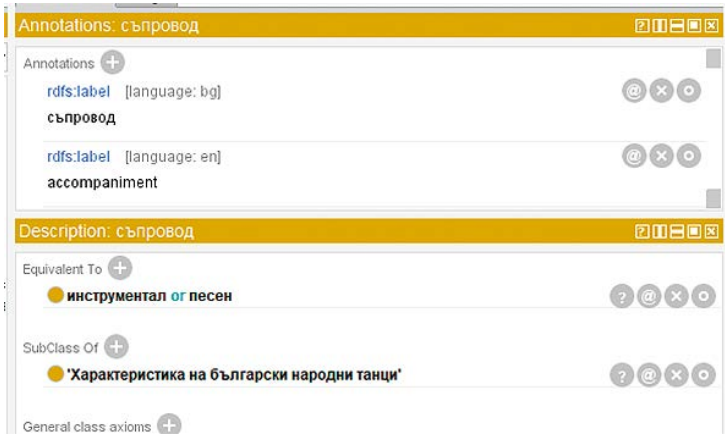



*Figure 11.* ***Accompaniment "some" 1*** *Source: Tsvetomira Kazashka*

Figure 12 presents the dance according to its artistic-social function. It has the function “only” – ritual only.

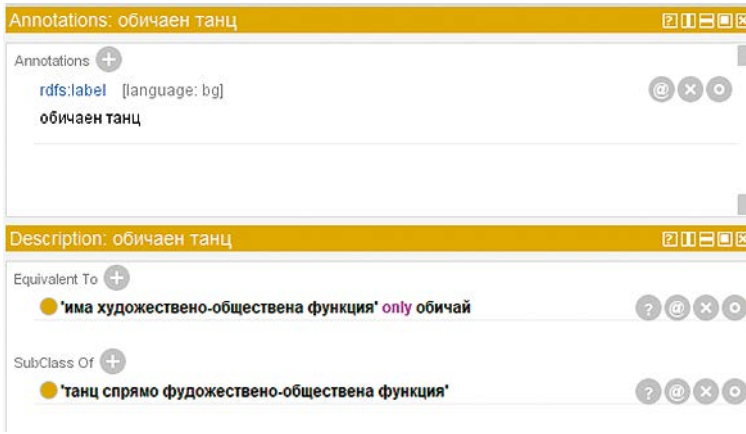



*Figure 12.* ***Dance according to its artistic-social function ‹only›***
*Source: Tsvetomira Kazashka*

Figure 13 shows the visualized ethnographic affiliation of the dance. The dance can belong to only one ethnographic region.

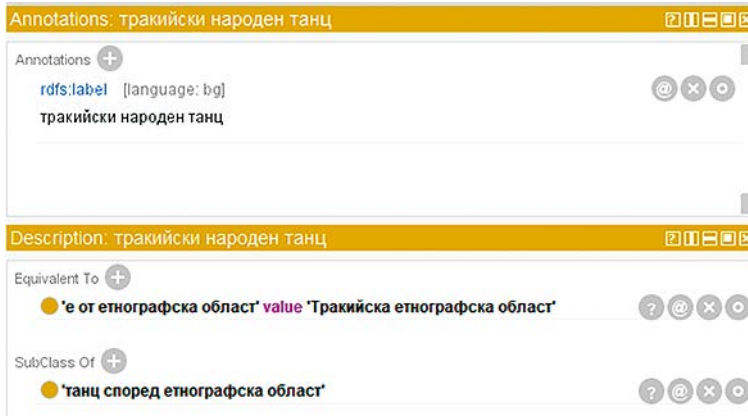



*Figure 13.* ***Ethnographic Affiliation of the Dance***
*Source: Tsvetomira Kazashka*

Figure 14 shows the dance “Kudi”. Each statement represents the so-called “triple” (subject-predicate-object), complemented by specific constraints – some, only, value, min, exactly. The statements presented include: the dance includes more than 5 participants; the individuals from the class are connected through a “Value” constraint with the individual “Thracian ethnographic region”. The dance has only instrumental accompaniment and features a mixed composition – men and women.

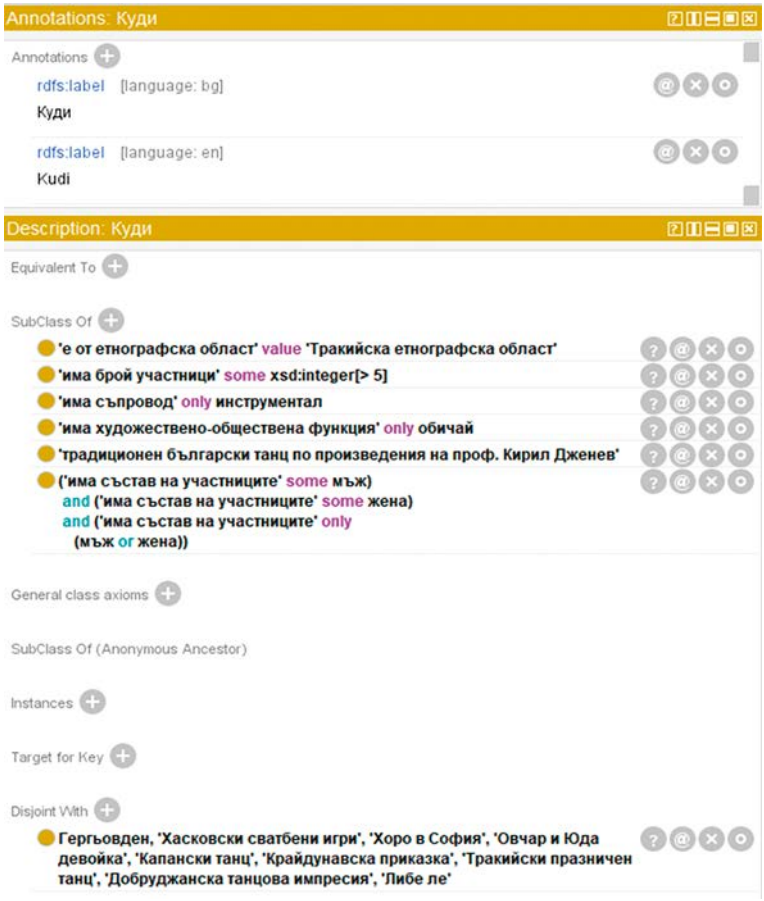



*Figure 14.* ***Visualization of the dance “Kudi”***
*Source: Tsvetomira Kazashka*

In the same way, the selected 10 dances, described earlier in the text, are presented. Based on the way the dances are presented, we can conclude that all attributes and characteristics are strictly defined for the specified dances. If any characteristic is changed, the dance itself also changes and no longer matches the results described and visualized above. For example, Figure 15.

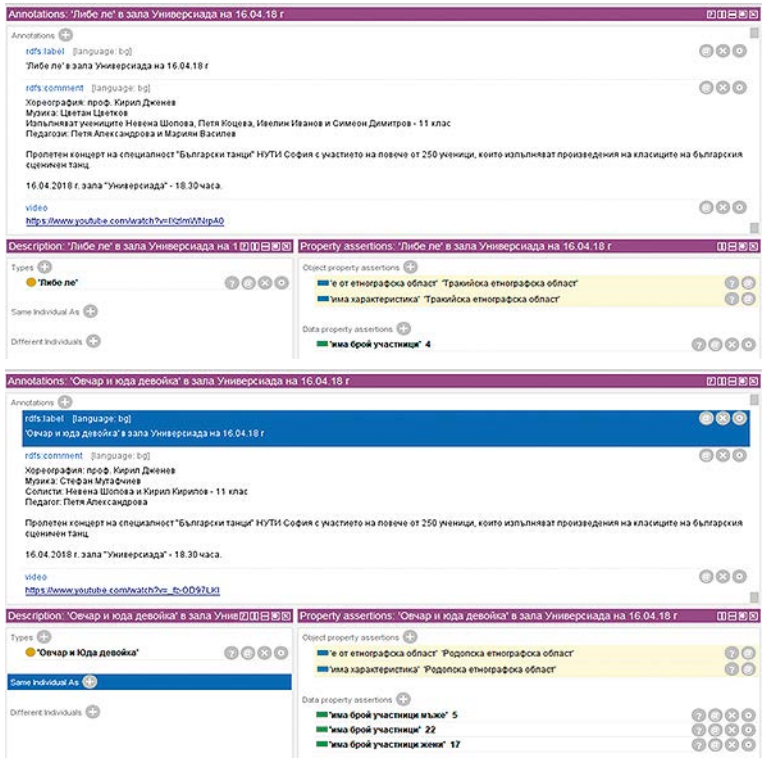
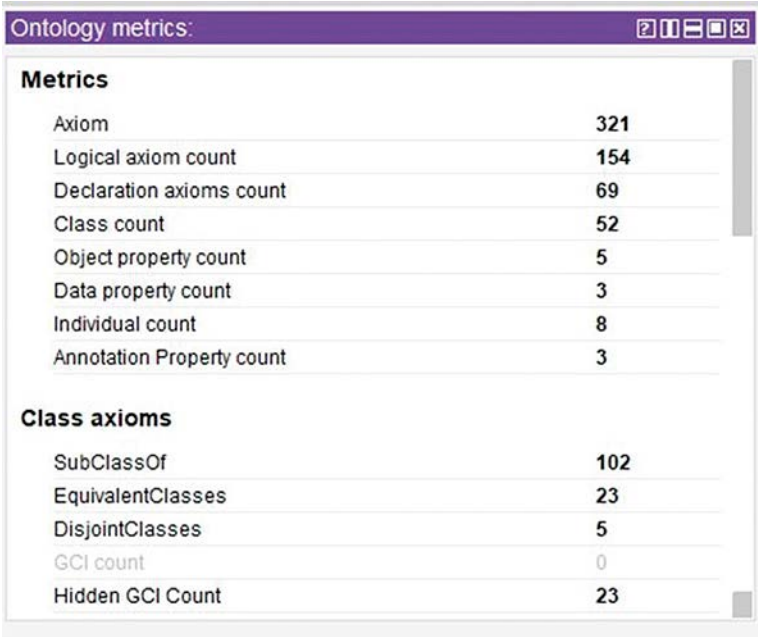



*Figure 15.* ***Visualization of the dance "Libe le"***
*Source: Tsvetomira Kazashka*

Ontology metrics are indicators used to assess the quality, structure, and functionality of ontological models. They assist in analyzing various aspects of the ontology, such as its complexity, consistency, efficiency, and suitability for specific applications. These metrics help evaluate whether the ontology is properly structured, logical, and coherent. This involves checking for potential conflicts or contradictions between the concepts and terms

within the ontology. Metrics can measure the complexity of the ontology by evaluating the number of concepts, the relationships between them, as well as their level of abstraction. For example, one could analyze how many different types of relationships (explanations, inheritance, etc.) exist within the ontology.




*Фигура 16.* ***Ontology Metrics***
*Source: Tsvetomira Kazashka*

The total number of axioms (Axiom count) is 321, which represents the total number of logical and declarative axioms in the ontology. The number of logical axioms (Logical axiom count) is 154, and these are used to define the relationships and conditions between classes, individuals, and their properties. The number of declarative axioms (Declaration axiom count) is 69, and they are used to declare classes, properties, and individuals within the ontology.

The class count (Class count) is 52, indicating the number of primary concepts in the ontology. The number of object properties (Object property count) is 5. The number of data properties (Data property count) is 3, showing

that the ontology is not heavily used for modeling a wide variety of data types but focuses more on object relations or categories. The individual count (Individual count) is 8, indicating that the ontology contains individual elements (specific objects or examples).

The last metric is the annotation property count (Annotation property count), which is 3. These three annotation properties indicate that the ontology includes elements for additional description or metadata.

The annotations of class axioms include subclasses, equivalent classes, disjoint classes, and hidden classes. There are 102 subclasses (Sub class of), which shows that the hierarchy of the ontology has branching classifications.

There are 23 equivalent classes (Equivalent classes), indicating that the ontology contains classes that are defined as equivalent (or synonyms). The number of disjoint classes (Disjoint classes) is 5, which shows that there are classes that cannot share common elements, helping to achieve logical clarity and a clear distinction between categories.

The number of hidden classes (Hidden GCI classes) is 23, and these are classes defined by logical expressions or constraints.

These metrics point to an ontology with potential for optimization, such as adding more individuals and properties to create a richer representation of the real world.

# CONCLUSION

This dissertation presents a significant contribution to the field of semantic modeling of cultural and historical heritage, with a special focus on Bulgarian folk dance. The development of an ontology for Bulgarian folk dance is a key step towards the digitization and systematization of the dance heritage, which has the potential to improve both academic and practical applications in digital technologies, ViPS, arts, culture, and education.

The advantages of this work lie in the comprehensive and scientifically grounded structuring of Bulgarian folk dances, realized through the integration of the concept of virtual physical space (ViPS) and the creation of a prototype ontology. Through modern methods of semantic modeling and the use of ontological languages and standards, this work lays the foundations of a digitization platform that can serve as a basis for future expansion of digital resources including cultural and artistic objects.

The use of ontologies in the context of cultural heritage is innovative, practical, and provides opportunities for automated data processing, which is crucial for the preservation, cataloging, and dissemination of information. Although the developed ontology covers the main aspects of Bulgarian folk dance, it also offers potential for future refinement and expansion. Including additional individuals, object properties, and data properties will contribute to a more complete representation of cultural elements while optimizing the logical structure and enhancing the functionality of the platform.

The practical application of this research could be in various fields, including the digitization of cultural archives, the development of educational platforms for dance arts, and in museum and cultural institutions that seek to integrate new technologies for presenting traditional heritage. Future perspectives for development include the integration of the ontology into broad informational and educational platforms, as well as its expansion with new functionalities for interaction and data analysis, related to both dance arts and other cultural-historical heritage.

In conclusion, the realization of this dissertation not only offers scientific results but also specific practical solutions for the modern cultural industry and presents new opportunities for the preservation and promotion of Bulgarian folk dance in the digital world. The results will find practical application in the digitization of cultural-historical heritage (CHH) at the Academy

of Music, Dance and Fine Arts "Prof. Asen Diamandiev" – Plovdiv, in the development of new project proposals, and in the advancement of scientific research in the fields of information and communication technologies and CHH.

The scientific contributions of the dissertation can be systematically categorized into two main types: scientific and practical contributions.

**Scientific Contributions:**

1. Study of the Problem Area.The analysis is presented in Chapter Two of the dissertation.
2. Creation of an Ontology Prototype. The use of contemporary methods for semantic modeling and ontological standards, which enable automated data processing for storage and dissemination. The developed ontology is presented in Chapter Four of the dissertation.
3. Contribution to the Implementation of this Reference Architecture in the ViPS. Expanding the domain of Cultural and Historical Heritage (CHH).

**Practical Contributions:**

1. Digitization of Cultural Archives. Practical applications of the developed ontology in museums and cultural institutions.
2. Improvement of Educational Platforms. Supporting the development of platforms for teaching dance art and culture.
3. Interdisciplinary Collaboration. Deepening the interaction between academic institutions in Bulgaria for digitization in the arts field.
4. Applications in the Cultural Industry. Providing concrete solutions for promoting Bulgarian folk dance in the digital world.

These contributions reflect the interdisciplinary value and practical application of the dissertation, as well as the perspectives for future development of scientific research in the field.

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## *APPENDIX 1: LIST OF TABLES*



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## *APPENDIX 3: LIST OF PUBLICATIONS*


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10. **MSCA-NIGHT-2020bis – 101036078** Researcher's in Knowledge triangle – KTRIO 5, Хоризонт 2020, член на колектива.
11. **HORIZON- MSCA-NIGHT-2022– CITIZENS-01-01 101061564** Researcher's in Knowledge triangle – KTRIO, Хоризонт 2020, ръководител за АМТИИ – Пловдив.
12. **TALENTify:** Transnational Acceleration and Learning for Enhancing Networking and Talent Circulation Hub" (Sub-GA – APRE –15/07/2024) Horizon Europe), Хоризонт Европа, член на колектива.
13. **КП-06-МНФ 21 от 21.09.2021** Юбилейна международна научна конференция „50 години традиции и развитие на българския фолклор", Фонд „Научни изследвания" – МОН, член на колектива.
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16. **Договор № КП-06-МНФ 31** от 08.08.2023 г. IV Международна научна конференция „Наука, образование и иновации в областта на изкуството", Фонд „Научни изследвания" – МОН, член на колектива.
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21. **Договор №16/2022** „Модернизиране на научната инфраструктура чрез подобряване на условията в Академичната библиотека“, АМТИИ „Проф. Асен Диамандиев“, ръководител на проекта.
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