

## Presenting a conceptual framework for organizing Persian serials based on the PRESSoo model

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### Abstract:

*PRESSoo is a conceptual model for expressing bibliographic information of continuing resources. The purpose of this paper is to present a conceptual framework for describing Persian serials in the linked data world. This research is an evaluative survey study. The population of this study is 90 Library and Information Science serials of the National Library of Iran. First, a checklist is made based on the characteristics of Persian serials and classes of PRESSoo model. The results showed that 59 IRANMARC fields are compatible with PRESSoo triples. Titles, publishing information, frequency, start date of publication, language, issuing body and classification numbers are inserted in all records. ISSN number of 23 records are mentioned in the records. One index, one supplement and one special issue are observed. In studied records 30 title changes observed. These changes include: continuation, merge, substitution and separation.*

*In order to better describe Persian resources in the linked data world it is necessary to pay more attention to complete and accurate cataloguing of serials and object-oriented modelling. Some characteristics of serials such as start and end date were absent from the records, especially for ceased serials. Information about splits, merges, absorption, separation, title changes, publisher changes and frequency changes should be added to records in appropriate fields. New models and technologies such as PRESSoo and linked data environment are more flexible to describe resources. Iranian libraries should pay more attention to implementing PRESSoo model for describing serials in the context of semantic web.*

**Keywords:** PRESSoo, Persian serials, Object-oriented models, IRANMARC.

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## Introduction

Since 1990s, IFLA and other international organizations have started to work on conceptual models. These models have been created to better describe resources, and make links between different types of materials. The first conceptual model was FRBR. This model was released in 1998. FRBR is an entity-relationship model for describing entities and their relationships.

Implementing conceptual models was an important step in changing the perspective of libraries from a system-centric approach to a user-centric formalism. In this method, the entities are held together in a meaningful way through the relationships (Oliver, 2016). But research showed that conceptual models could not really express detailed information about serials, and these resources have often been excluded from implementing conceptual models (Antelman, 2004; Jones, 2005; Shadle, 2006).

Cataloguing of continuing resources is a major difficulty in libraries and they are even more challenging for conceptual models because, serials face many changes in their life time. The related bibliographic information, i.e. publisher, country of publication, publication frequency, may change. On the other hand, they have a very specific nature and their records should be up-to-date.

Therefore, conceptual models such as FRBR and the most recent Library Reference Model (LRM) do not meet cataloguing needs related to serials. Although, the 5.8 section of LRM is dedicated to serials, it also states that for a complete and more detailed cataloguing of serials, implementers should utilize special models (Riva, Le Boeuf and Zumer, 2017).

Due to the problems of implementing FRBR in serials, a harmonization group with the participation of representatives of the ISBD, RDA and ISSN Network communities started to work on a new model (Le Boeuf & Pelegrin, 2014). This harmonization group debated over problems regarding the implementation of FRBR with serials with various FRBR experts. In the end, this group recognized that FRBRoo model could be a possible solution (Bequet, Howlett and Willer, 2015).

FRBRoo is the result of the harmonization between library and cultural heritage models. FRBRoo is an extension of FRBR and CIDOC CRM models (Le Boeuf, 2008). CIDOC CRM is a conceptual model that facilitates the integration of cultural heritage information (ICOM/CIDOC, 2019). FRBRoo is an object-oriented reformulation of FRBR. In the case of serials, FRBRoo has a special class named F18 serial work, which is used to describe serials.

Although, FRBRoo provides useful classes and properties for modelling serials, it only deals with serials at a very general level and it does not address all the characteristics of serials (Le Boeuf et al, 2017).

Therefore, at the end of 2012, the ISSN International Centre and the Bibliothèque nationale de France started to develop an extension of FRBRoo for describing serials. The working group started in January 2013 to draft PRESSoo whose version 1.0, endorsed by the FRBR Review Group, and was eventually released in June 2014 (Le Boeuf et al, 2014).

### **PRESSoo**

This model is a formal ontology devoted to serials and continuing resources. PRESSoo better describes characteristics and details of serials.

It is an extension of FRBRoo and CIDOC CRM models. PRESSoo have more detailed classes to represent characteristics of serials. PRESSoo utilizes FRBRoo and CIDOC CRM classes, and in special cases, where there was no adequate class for representing semantics of bibliographic, additional classes and properties are created (Oury, 2016). PRESSoo is developed to model serials in the context of semantic web and it uses RDF triples.

PRESSoo has 14 classes. These classes are identified by a letter Z, a number and a noun phrase. Classes borrowed from CIDOC CRM are identified by a letter E. And classes borrowed from FRBRoo are identified by a letter F.

This model has 43 properties which are held between two classes. These two classes are called "domain" and "range" of that property. Domain declares the class for which the property is defined, and Range defines the class which the property points (Riva, Doerr and Zumer, 2008).

The purpose of PRESSoo model is to provide solutions to precisely express serials in the context of the semantic web. Therefore, PRESSoo provides a complete set of classes and properties to describe continuing resources. PRESSoo formalizes bibliographic information as a set of triples (Le Boeuf & Oury, 2018). Figure 1 shows the main concepts of PRESSoo model.

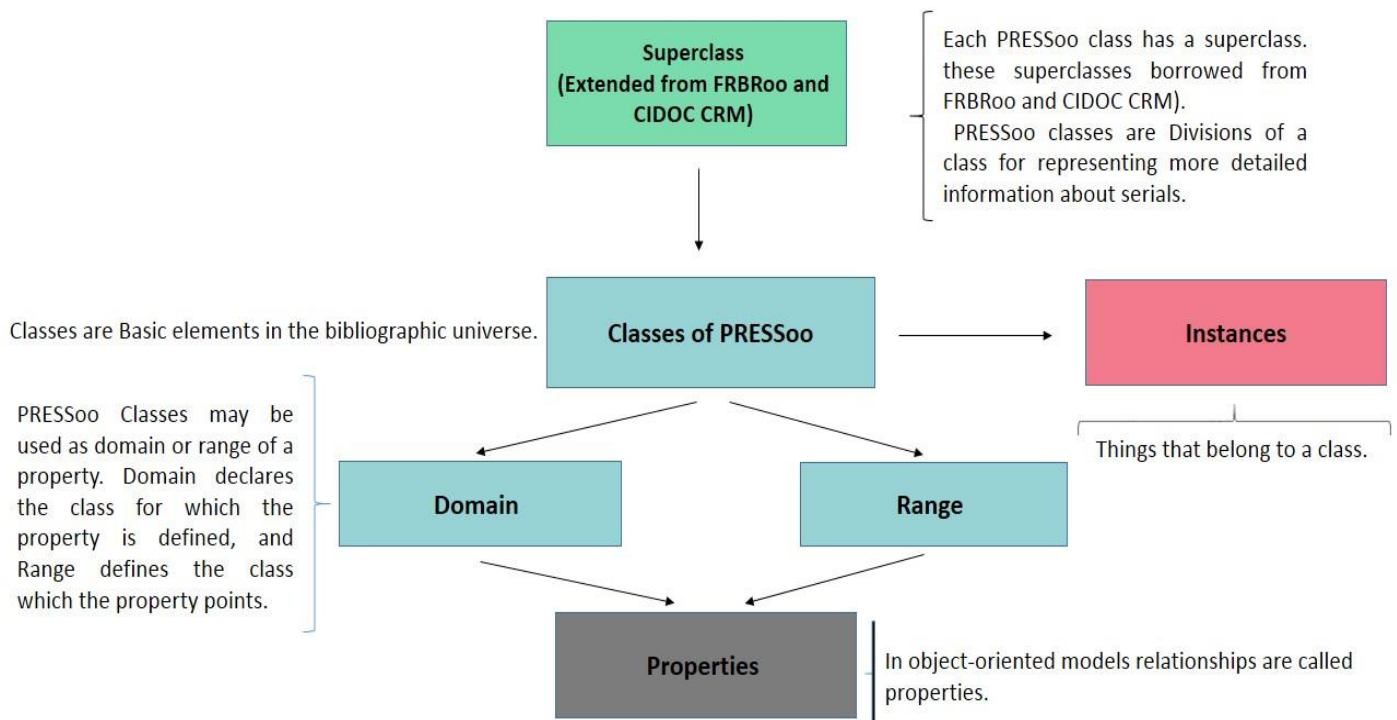


Figure 1: Concepts of PRESSoo model

As shown in figure 1, classes of the PRESSoo model are a subclass of FRBRoo and CIDOC CRM classes. PRESSoo classes may have their own Subclasses. This is a very important concept in object-oriented models which is called "inheritance". In object-oriented models relationships are called properties. Also the things that belong to a given class are called instances of that class.

According to inheritance concept, any instance of a class that is declared to be a subclass of another class is automatically also an instance of that other class. On the other hand, it is not sufficient to look only for the properties of a class. It is also important to look for properties of superclasses (Le Boeuf, 2015).

### Statement of Problem

Conceptual models such as FRBR and LRM do not pay enough attention to serials. It should be noted that there are many reasons for making serials problematic for models.

Serials are aggregate works and each serial is composed of smaller independent works that are intellectual works in their own right (Ballegoie & Borie, 2014). On the other hand, the definition of "work" and "manifestation" in serials, changes in title, publisher, frequency of serial and etc. needs more attributes and relationships. However, the benefits of cataloguing these resources should not be ignored.

It was obvious that FRBR did not fit well with the characteristics of serials. This model appears not to be flexible enough to accommodate serial relationships. Serials have a dynamic and changeable nature, and all these problems caused some inconsistencies in implementing FRBR for serials (Le Boeuf & Pelegrin, 2014). In the final report of PRESSoo it was mentioned that: "The main difference between cataloguing a monograph and cataloguing a serial could be expressed as follows: when you catalogue a monograph, you make statements about the past; when you catalogue a serial, you both make statements about the past and assumptions about the future" (Le Boeuf. et al, 2017).

In Iran Anglo-American cataloguing rules and MARC format are used to produce catalogues. In Anglo-American cataloguing rules and flat environment of MARC format, the position of each work and relations between works are not explicitly stated. Catalogues should develop to meet users' needs and make links between different works.

PRESSoo seeks to introduce a new concept of bibliographic information related to continuing resources. This model is based on the high level concepts of FRBR, and attempts to provide further details and attributes. In Iran few researches found about PRESSoo. And according to the benefits of PRESSoo model in describing serials, conducting more researches to implement this model is required. By analysing Persian serials and their characteristics we can identify the most appropriate model for these resources. Therefore, the main problem of this study is to identify the degree of adaptation between Persian serial cataloguing and the PRESSoo model.

## **Methodology**

This research is an evaluative survey study. The population of this study is 90 Library and Information Science serials held at the National Library of Iran and catalogued in RASA software. This software is a widespread library software in Iran produced by Pars Azarakhsh Company. RASA has been tailored to the needs of the National Library of Iran. IRANMARC fields are utilized for creating records in RASA software. IRANMARC is based on UNIMARC fields.

In order to gather the required data, a checklist was made based on the characteristics of Persian serials and classes of PRESSoo model. As stated in Oury (2016), PRESSoo has been created on the basis of the cataloguing guidelines provided by the *ISSN Manual*. Therefore, the ISSN Manual (ISSN Review Group, 2015) was used as a valid reference for identifying the compatibility of IRANMARC fields and PRESSoo triples. Mapping table between ISSN data elements and PRESSoo classes is available at PRESSoo final report. By studying mapping tables and checklist, the degree of adaptation between Persian LIS serials and PRESSoo triples has been identified.

## **Results**

By analysing the gathered data from checklist, the main characteristics and bibliographic information related to Persian serials have been identified. Table 1 shows characteristics of Persian LIS serials and their IRANMARC fields. These characteristics are named according to the data elements specified in the ISSN Manual.

Table 1: Persian Serials Bibliographic information

<i>Characteristics of Persian LIS serials</i>	<b>IRANMARC fields' label</b>	<b>Compatible records</b>
<i>ISSN number</i>	011	23
<i>ISSN-L</i>	011	0
<i>CODEN</i>	040	0
<i>Start date</i>	100-207	90
<i>End date</i>	100-207	0
<i>Language</i>	101	90
<i>Country of publication</i>	102	0
<i>Physical medium</i>	106-115-124-126-130-135	0
<i>Frequency</i>	110	90
<i>Title proper</i>	200	90
<i>Publishing information</i>	210	90
<i>Indexing services</i>	321	1
<i>Series</i>	410-411	0
<i>Supplement</i>	421	2
<i>Parent entry</i>	422	2
<i>Former title</i>	430-431-432-433-434-435-436-437	14
<i>Successor title</i>	440-441-442-443-444-445-446-447-448	16
<i>Other editions</i>	451-452	0
<i>Translation entry</i>	453	10
<i>Related title</i>	488	0
<i>Variant title</i>	510--512-513-514-515-516-517-520-532	11
<i>Key title</i>	530	5
<i>Abbreviated key title</i>	531	0
<i>DDC number</i>	676	90
<i>LCC number</i>	680	90
<i>Issuing body</i>	710-711-712	90
<i>ISSN Centre code</i>	802	0
<i>Location</i>	856	16

The results showed that 59 IRANMARC fields are compatible with PRESSoo triples. The best compatibility between IRANMARC fields and PRESSoo triples was observed in block 4 of IRANMARC format. Titles, publishing information, frequency, start date of publication, language, issuing body and classification numbers are included in all records.

The ISSN is specified in 23 records out of 90. One index, one supplement and one special issue have been wrongly included in the sample. Among the 90 serials, 30 title changes have been noted. These changes include: continuation, merge, substitution and separation.

Some important fields such as end date for ceased serials, and physical medium of serials are not observed in Persian LIS serials. Electronic location of 39 serials has been specified but only 16 URLs were accurate. In some cases, addresses had changed or email addresses had been wrongly included in the location field.

By analysing checklist and necessary information about serials, Figure 2 presents the linked data model that could be used for Persian LIS serials.

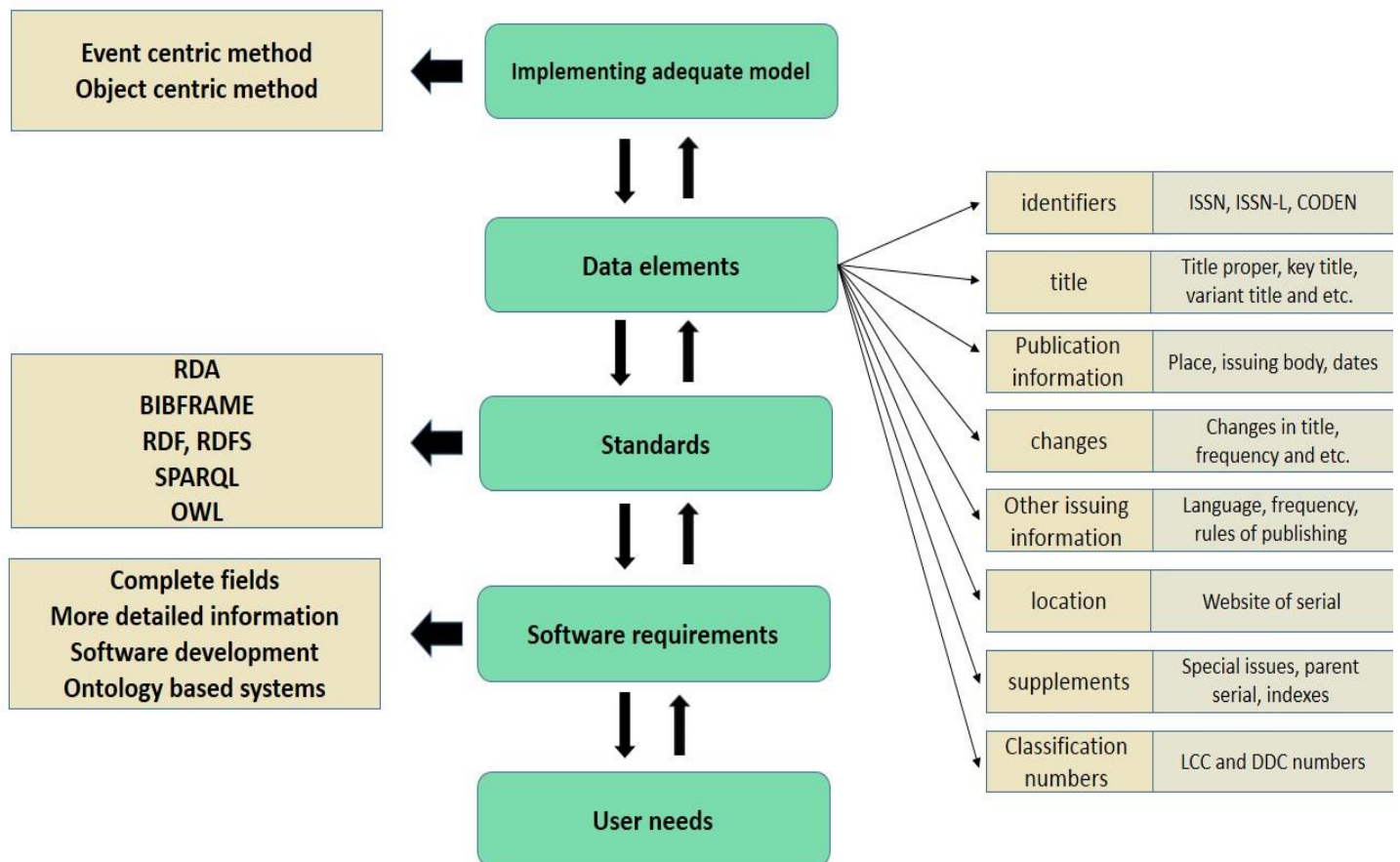


Figure 2: requirements for Persian serials' modelling

As shown in Figure 2, there are main requirements for organizing serials in the context of semantic web. First of all a more developed software is required to increase the consistency of records with the context of semantic web and linked data environment. New standards such as RDA and metadata formats, which are more compatible with PRESSoo model are required. PRESSoo is a very flexible model. After identifying the characteristics of serials it is important to choose between event-centric and object-centric methods. Event-centric method focuses on event itself and object-centric method considers the relationships between serials. These two methods require different properties but the result is the same.

## Conclusion

The main purpose of this paper was to present a conceptual framework for describing Persian serials in the linked data world. Therefore, a checklist was made according to the data elements of ISSN Centre and RASA records. Then, in order to identify the main characteristics of Persian LIS serials, Checklist was analysed. The results showed that 59 IRANMARC fields are compatible with PRESSoo triples.

Although there is a good conformity between IRANMARC field and PRESSoo model, but, the same consistency was not observed in the serials' records. Perhaps, the reason of this low compatibility are: library software problems and inattention to important IRANMARC fields.

Some important classes are absent in studied records. For example, there were no end of publication field in the records. Z7 ending of publication is an important class for identifying

the ceased serials. In order to have accurate catalogues some important classes such as end of publication, storage units for cumulative works, supplement works, and their properties should be added to the Persian serial catalogues. Besides, Information about splits, merges, absorption, separation, title changes, publisher changes and frequency changes should be added to records in appropriate IRANMARC fields. It is important to pay attention to block 4 and 5 fields of IRANMARC for title changes and transformation information.

Also, the results showed that in order to better describe Persian resources in the linked data world it is necessary to pay more attention to complete and accurate cataloguing of serials and object-oriented modelling.

PRESSoo is a new model for describing underlying semantics of serials and continuing resources. In 2017, PRESSoo was adopted as an IFLA standard.

In order to test the PRESSoo model, the ISSN International Centre, with the support of UNESCO, developed ROAD, the Directory of Open Access scholarly Resources (<https://portal.issn.org>). This service was launched in December 2013 and it provides a free access to bibliographic records of OA publications as a subset of the ISSN Register. As of June 2019, ROAD displays more than 33,000 bibliographic records.

In the MARC environment, cataloguers usually have no alternative to describe changes in serial resources. A linked data environment may offer greater flexibility in representing changing information. By using conceptual models, users can retrieve documents more rapidly, and the combination of existing serial bibliographic records with these models becomes possible.

New models such as PRESSoo and new technologies such as linked data environment make links between resources and better describe them. Iranian libraries should pay more attention to PRESSoo model. By implementing this detailed and complete model, libraries could acknowledge an adequate model for organizing serials and describe them in the context of the semantic web.

### **Suggestions**

- This paper identified the main characteristics of Persian LIS serials in consistency with PRESSoo triples. Further to this research the next steps are to identify bibliographic information of serials in other subjects.
- Because of the importance of RASA software in Iran, this research studied serials' records in RASA software. It is suggested to conduct studies to examine PRESSoo in other Iranian Library software's and test them to identify the best context and software for utilizing this model.

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