

## Referências bibliográficas

ANTONIOU G.; VAN HARMELEN; F. **A Semantic Web Primer**. Second Edition. The Mit Press, 2008.

ANTUNES, D. C. **Statecharts**. Revista Bate Byte, ed. 36, ago./set. 1994. Disponível em: <<http://www.pr.gov.br/batebyte/edicoes/1994/bb36/statecharts.htm>>. Acesso em: 28/07/2008.

ARAÚJO, S.; SCHWABE, D. **Explorator: a tool for exploring RDF data through direct manipulation**. Submitted to WWW 2009.

ASSIS, P. S. **Arquitetura para Adaptação e Meta-Adaptação de Sistemas Hiperímídia**. Tese de Doutorado, PUC-Rio em 2005.

BERNERS-LEE, T.; HENDLER, J.; LASSILA, O. **The Semantic Web**. Scientific American, 2001.

BERNERS-LEE, T. et al. **RFC 2616: Hypertext Transfer Protocol -- HTTP/1.1**. 1999. Disponível em: <<http://tools.ietf.org/html/rfc2616>>. Acesso em: 28 set. 2010.

BERNERS-LEE, T. **Linked Data**. W3C Design Issues, Jul 2007. Disponível em <<http://www.w3.org/DesignIssues/LinkedData.html>>, acessado em 29 Nov 2009.

BIZER, C.; HEATH, T.; AYERS, D.; RAYMOND, Y. **Interlinking Open Data on the Web**, ESWC2007 Poster Paper , 2007.

BIZER, C.; CYGANIAK, R.; HEATH, T. **How to Publish Linked Data on the Web**. Tutorial na ISWC, 2008.

BIZER, C.; HEATH, T.; BERNERS-LEE, T. **Linked data - the story so far**. Int. J. Semantic Web Inf. Syst., 5(3):1–22, 2009.

BOHN, R. E.; SHORT, J. E. **How Much Information? 2009 Report on American Consumers**. University of California, 2009. Disponível em: <[http://hmi.ucsd.edu/pdf/HMI\\_2009\\_ConsumerReport\\_Dec9\\_2009.pdf](http://hmi.ucsd.edu/pdf/HMI_2009_ConsumerReport_Dec9_2009.pdf)>. Acesso em: 21/01/2011.

BOZZON, A. et al. **Conceptual Modeling and code Generation for Rich Internet Applications**. In: 6TH International Conference on Web Engineering – ICWE '06, 2006, Palo Alto. **Proceedings of the 6th international conference on Web engineering**. New York: ACM Press, 2006. p. 353–360

BRICKLEY, D.; GUHA, R. V. **RDF Vocabulary Description Language 1.0: RDF Schema**. W3C, 2004. Disponível em: <<http://www.w3.org/TR/rdf-schema/>>. Acesso em: 21/01/2011.

BURBECK, S. **Applications Programming in Smalltalk-80: How to use Model-View-Controller (MVC)**. Smalltalk Archive, 1987, 1992. Disponível em

<<http://st-www.cs.uiuc.edu/users/smarch/st-docs/mvc.html>> Acesso em 15 mar. 2005

CERI, S.; FRATERNALI, P.; BONGIO, A. **Web Modeling Language (WebML): a modeling language for designing Web sites**. Proceedings of the WWW9 Conference, Amsterdam, May 2000.

COLEMAN, D.; HAYES, F.; BEAR, S. **Introducing Objectcharts or How to Use Statecharts in Object-Oriented Design**. IEEE Transactions on Software Engineering, vol.18, n.1, p. 9–18, jan. 1992.

DIJKSTRA, E. W. **On the role of scientific thought**. Selected writings on Computing: A Personal Perspective. New York, NY, USA. 1982. Springer-Verlag New York, Inc. p. 60 - 66. ISBN 0-387-90652-5

EBERSBACH, A.; GLASER, M.; HEIGL, R. **Wiki: Web Collaboration**. Springer, 2005.

FIALHO, A. **Transições Animadas em Aplicações Web Baseadas em Modelos**. Dissertação de Mestrado. PUC-Rio em 2007.

GAMMA, R. et al. **Design Patterns: Elements of reusable object-oriented software**. Addison Wesley, 1995.

GAUTHIER, R.; PONTO, S. **Designing Systems Programs**. Prentice Hall, 1970.

GOMEZ-PEREZ, A.; CORCHO, O.; FERNANDEZ-LOPEZ, M. **Ontological Engineering: with examples from the areas of Knowledge Management, e-Commerce and the Semantic Web**. First Edition. Springer, 2003.

HERMAN, I. **W3C Semantic Web Frequently Asked Questions**. W3C, 2001. (atualização 2009). Disponível em: <<http://www.w3.org/2001/sw/SW-FAQ>>. Acesso em: 20/01/2011.

JACOBS, I.; WALSH, N. **Architecture of the World Wide Web**. Volume 1, 2004. Disponível em: <<http://www.w3.org/TR/webarch>>. Acesso em: 18/01/2011.

KENDALL, G. C.; FEIGENBAUM, L.; TORRES, E. **SPARQL Protocol for RDF**. W3C, 2008. Disponível em: <<http://www.w3.org/TR/rdf-sparql-protocol>>. Acesso em: 21/01/2011.

KILOV, H. **From semantic to object-oriented data modeling**. First International Conference on System Integration, 1990. p. 385 - 393.

KOCH, N.; KRAUS, A. **The Expressive Power of UML-based Web Engineering**. Proceedings of the 2nd International Workshop on Web-Oriented Software Technology (IWOOST'02), CYTED, 2002. p.105-119.

KOCH, N.; KRAUS, A.; HENNICKER, R. **The Authoring Process of the UML-based Web Engineering Approach**. Proceedings of 1<sup>st</sup> International Workshop on Web-Oriented Software Technology (IWOOST' 01), Valencia, Spain, 2001.

LIEBERMAN, H. **Using prototypical objects to implement shared behavior in object-oriented systems**. Proceedings of the 1986 conference on Object-oriented programming systems, languages, and applications, p. 214-233, 1986.

LEITE, A. **Weblearning: um ambiente para autoria de aplicações de apoio ao aprendizado na Web**, Dissertação de Mestrado, PUC-Rio em 2001.

LIMA, F. **Modelagem semântica de aplicações na WWW**, Tese de Doutorado, PUC-Rio em 2003.

LUCKHAM, D. C.; SUZUKI, N. **Verification of array, record, and pointer operations in Pascal**. *ACM Transactions on Programming Languages and Systems* **1(2)**, p. 226–244, 1979.

LUNA, A. **Geração de Interfaces RIA Dirigida por Ontologias**. Dissertação de Mestrado, PUC-Rio em 2009.

MANOLA, F.; MILLER, E. **RDF Primer**, W3C Recommendation 10 February 2004. Disponível em <<http://www.w3.org/TR/rdf-primer/>>, Acesso em: 29 Nov. 2009.

MOURA, S. S. **Desenvolvimento de Interfaces Governadas por Ontologias para Aplicações na Web Semântica**. Dissertação de Mestrado. PUC-Rio em 2004.

NUNES, D. A. **HyperDE - um Framework e Ambiente de Desenvolvimento dirigido por Ontologias para Aplicações Hipermídia**, Dissertação de Mestrado, PUC-Rio em 2005.

ORENA, E.; HEITMANNB, B.; DECKERB, S. **ActiveRDF: Embedding Semantic Web data into object-oriented languages**. *Web Semantics: Science, Services and Agents on the World Wide Web*. 2008.

PARNAS, D. L. **On the Criteria to Be Used in Decomposing Systems into Modules**. *Comm. ACM*, vol. 15, no. 12, 1972, pp. 1053–1058. Disponível em: <<http://www.cs.umd.edu/class/spring2003/cmsc838p/Design/criteria.pdf>>. Acesso em: 14/01/2011.

PASTOR, O.; FONS, J.; PELECHANO, V. **OOWS: A Method to Develop Web Applications from Web-Oriented Conceptual Models**. Department of Information Systems and Computation Technical University of Valencia, 2003.

PRUD'HOMMEAUX, E. ; SEABORNE, A. **SPARQL Query Language for RDF**. W3C, 2008. Disponível em: <<http://www.w3.org/TR/rdf-sparql-query/>>. Acesso em: 10 Jan. 2011.

RAIMOND, Y. et al. **Case Study: Use of Semantic Web Technologies on the BBC Web Sites**. BBC, United Kingdom, 2010. Disponível em: <<http://www.w3.org/2001/sw/sweo/public/UseCases/BBC>>. Acesso em: 08 Jan. 2011.

RAYFIELD, J. **BBC World Cup 2010 dynamic semantic publishing**. Jul 2010. Disponível em:

<[http://www.bbc.co.uk/blogs/bbcinternet/2010/07/bbc\\_world\\_cup\\_2010\\_dynamic\\_sem.html](http://www.bbc.co.uk/blogs/bbcinternet/2010/07/bbc_world_cup_2010_dynamic_sem.html)>. Acesso em: 14/01/2011.

ROSSI, G. **Um método orientado a objetos para o projeto de aplicações hipermídia**, Tese de Doutorado, PUC-Rio em 1996.

ROSSI, G.; PASTOR, O.; SCHWABE, D.; OLSINA, L. **Web Engineering: Modelling and Implementing Web Applications**. Springer, 2008.

ROSSI, G.; SCHMID, H.; LYARDET, F. **Engineering business processes in web applications: modeling and navigation issues**. *Proceedings of the 3<sup>rd</sup>*

International Workshop on Web Oriented Software Technology (IWOOST 2003), Oviedo, Spain, July 2003.

SANTOS, D. L. **Um Modelo de Operações para aplicações na web semântica**. Dissertação de Mestrado, PUC-Rio em 2010.

SAUERMANN, L. et al. **Cool URIs for the Semantic Web**. W3C, 2008.

SCHWABE, D.; PONTES, R. A.; MOURA, I. **OOHDM-Web: An Environment for Implementation of Hypermedia Applications in the WWW**. ACM SigWEB Newsletter, v.8, n.2, June 1999.

SCHWABE, D.; ROSSI, G. **An Object Oriented Approach to Web-Based Application Design**. 1998. Disponível em: <<http://www-di.inf.puc-rio.br/schwabe/papers/TAPOSRevised.pdf>>. Acesso em: 26 Jan 2008.

SMITH, M. K.; WELTY, C.; MCGUINNESS, D. L. **OWL Web Ontology Language**. W3C, 2004. Disponível em: <<http://www.w3.org/TR/owl-guide>>. Acesso em: 10 Jan 2011.

STEELE, R. D.; **INFORMATION OPERATIONS: PUTTING THE “I” BACK INTO DIME**. 2006. Disponível em: <<http://scip.cms-plus.com/files/Resources/Steele-Information-Operations.pdf>>. Acesso em: 21/01/2011

SZUNDY, G. **Modelagem e Implementação de Aplicações Hiperídia Governadas por Ontologias para a Web Semântica**, Dissertação de Mestrado, PUC-Rio em 2004.

UML 2009. The Object Management Group (OMG), 2009. **Unified Modeling Language**. UML Version 2.2. February 2009. URL: <http://www.omg.org>.

VAN DEURSEN, A.; KLINT, P.; VISSER, J. **Domain-Specific Languages -- An Annotated Bibliography**. 2000. ACM SIGPLAN Notices.

VILAIN, P. **Modelagem da interação com o usuário em aplicações hiperídia**, Tese de Doutorado, PUC-Rio em 2002.



## Apêndice A – Vocabulário SHDM

@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .  
@prefix owl: <http://www.w3.org/2002/07/owl#> .  
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .  
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix shdm: <http://shdm#> .

### #Classes

**shdm:Context**  
rdfs:label "Context"^^xsd:string .

**shdm:ContextParameter**  
rdfs:label "ContextParameter"^^xsd:string .

**shdm:Index**  
rdfs:label "Index"^^xsd:string .

**shdm:ContextIndex**  
rdfs:label "ContextIndex"^^xsd:string ;  
rdfs:subClassOf shdm:Index .

**shdm:InContextClass**  
rdfs:label "InContextClass"^^xsd:string .

**shdm:Landmark**  
rdfs:label "Landmark"^^xsd:string .

**shdm:NavigationAttribute**  
rdfs:label "NavigationAttribute"^^xsd:string .

**shdm:IndexNavigationAttribute**  
rdfs:label "IndexNavigationAttribute"^^xsd:string ;  
rdfs:subClassOf shdm:NavigationAttribute .

**shdm:ComputedNavigationAttribute**  
rdfs:label "ComputedNavigationAttribute"^^xsd:string ;  
rdfs:subClassOf shdm:NavigationAttribute .

**shdm:ContextAnchorNavigationAttribute**  
rdfs:label "ContextAnchorNavigationAttribute"^^xsd:string ;  
rdfs:subClassOf shdm:NavigationAttribute .

**shdm:IndexAnchorNavigationAttribute**  
rdfs:label "IndexAnchorNavigationAttribute"^^xsd:string ;  
rdfs:subClassOf shdm:NavigationAttribute .

**shdm:NavigationAttributeParameter**  
rdfs:label "NavigationAttributeParameter"^^xsd:string .

**shdm:Operation**  
rdfs:label "Operation"^^xsd:string .

**shdm:PreCondition**  
rdfs:label "PreCondition"^^xsd:string .

**shdm:PostCondition**  
rdfs:label "PostCondition"^^xsd:string .

**shdm:OperationParameter**  
 rdfs:label "OperationParameter"^^xsd:string .

### **#Properties**

**shdm:index\_anchor\_attributes**  
 rdfs:label "index\_anchor\_attributes"^^xsd:string ;  
 rdfs:range shdm:IndexAnchorNavigationAttribute ;  
 rdfs:subPropertyOf shdm:index\_attributes .

**shdm:context\_anchor\_label\_expression**  
 rdfs:domain shdm:ContextAnchorNavigationAttribute ;  
 rdfs:label "context\_anchor\_label\_expression"^^xsd:string .

**shdm:landmark\_name**  
 rdfs:domain shdm:Landmark ;  
 rdfs:label "landmark\_name"^^xsd:string ;  
 rdfs:subPropertyOf rdfs:label .

**shdm:index\_anchor\_label\_expression**  
 rdfs:domain shdm:IndexAnchorNavigationAttribute ;  
 rdfs:label "index\_anchor\_label\_expression"^^xsd:string .

**shdm:index\_navigation\_attribute\_index**  
 rdfs:domain shdm:IndexNavigationAttribute ;  
 rdfs:label "index\_navigation\_attribute\_index"^^xsd:string ;  
 rdfs:range shdm:Index .

**shdm:context\_parameter\_name**  
 rdfs:domain shdm:ContextParameter ;  
 rdfs:label "context\_parameter\_name"^^xsd:string ;  
 rdfs:subPropertyOf rdfs:label .

**shdm:context\_anchor\_target\_node\_expression**  
 rdfs:domain shdm:ContextAnchorNavigationAttribute ;  
 rdfs:label "context\_anchor\_target\_node\_expression"^^xsd:string .

**shdm:computed\_attributes**  
 rdfs:label "computed\_attributes"^^xsd:string ;  
 rdfs:range shdm:ComputedNavigationAttribute ;  
 rdfs:subPropertyOf shdm:index\_attributes .

**shdm:context\_title**  
 rdfs:domain shdm:Context ;  
 rdfs:label "context\_title"^^xsd:string .

**shdm:in\_context\_class\_index\_attributes**  
 rdfs:label "in\_context\_class\_index\_attributes"^^xsd:string ;  
 rdfs:range shdm:IndexNavigationAttribute ;  
 rdfs:subPropertyOf shdm:in\_context\_class\_navigation\_attributes .

**shdm:index\_title**  
 rdfs:domain shdm:Index ;  
 rdfs:label "index\_title"^^xsd:string ;  
 rdfs:subPropertyOf rdfs:label .

**shdm:index\_attributes**  
 rdfs:domain shdm:Index ;  
 rdfs:label "index\_attributes"^^xsd:string ;  
 rdfs:range shdm:NavigationAttribute .

**shdm:navigation\_attribute\_parameter\_name**  
 rdfs:domain shdm:NavigationAttributeParameter ;  
 rdfs:label "navigation\_attribute\_parameter\_name"^^xsd:string ;

rdfs:subPropertyOf rdfs:label .

**shdm:context\_anchor\_target\_context**

rdfs:domain shdm:ContextAnchorNavigationAttribute ;  
rdfs:label "context\_anchor\_target\_context"^^xsd:string ;  
rdfs:range shdm:Context .

**shdm:index\_index\_attributes**

rdfs:label "index\_attributes"^^xsd:string ;  
rdfs:range shdm:IndexNavigationAttribute ;  
rdfs:subPropertyOf shdm:index\_attributes .

**shdm:computed\_navigation\_attribute\_value\_expression**

rdfs:domain shdm:ComputedNavigationAttribute ;  
rdfs:label  
"computed\_navigation\_attribute\_value\_expression"^^xsd:string .

**shdm:landmark\_position**

rdfs:domain shdm:Landmark ;  
rdfs:label "landmark\_position"^^xsd:string .

**shdm:context\_index\_context**

rdfs:domain shdm:ContextIndex ;  
rdfs:label "context\_index\_context"^^xsd:string ;  
rdfs:range shdm:Context .

**shdm:operation\_name**

rdfs:domain shdm:Operation ;  
rdfs:label "operation\_name"^^xsd:string ;  
rdfs:subPropertyOf rdfs:label .

**shdm:operation\_code**

rdfs:domain shdm:Operation ;  
rdfs:label "operation\_code"^^xsd:string .

**shdm:pre\_condition\_failure\_handling**

rdfs:domain shdm:PreCondition ;  
rdfs:label "pre\_condition\_failure\_handling"^^xsd:string .

**shdm:in\_context\_class\_context\_anchor\_attributes**

rdfs:label "in\_context\_class\_context\_anchor\_attributes"^^xsd:string  
;  
rdfs:range shdm:ContextAnchorNavigationAttribute ;  
rdfs:subPropertyOf shdm:in\_context\_class\_navigation\_attributes .

**shdm:index\_parameter\_index**

rdfs:domain shdm:IndexParameter ;  
rdfs:label "index\_parameter\_index"^^xsd:string ;  
rdfs:range shdm:ContextIndex ;  
owl:inverseOf shdm:navigation\_context\_index\_parameters .

**shdm:in\_context\_class\_class**

rdfs:domain shdm:InContextClass ;  
rdfs:label "in\_context\_class\_class"^^xsd:string ;  
rdfs:range rdfs:Class .

**shdm:context\_query**

rdfs:domain shdm:Context ;  
rdfs:label "context\_query"^^xsd:string .

**shdm:context\_parameter\_class**

rdfs:domain shdm:ContextParameter ;  
rdfs:label "context\_parameter\_class"^^xsd:string .

**shdm:context\_in\_context\_class**

rdfs:domain shdm:Context ;



```

rdfs:label "context_in_context_class"^^xsd:string ;
rdfs:range shdm:InContextClass ;
owl:inverseOf shdm:in_context_class_context .

```

**shdm:operation\_parameter\_name**

```

rdfs:domain shdm:OperationParameter ;
rdfs:label "operation_parameter_name"^^xsd:string ;
rdfs:subPropertyOf rdfs:label .

```

**shdm:pre\_condition\_name**

```

rdfs:domain shdm:PreCondition ;
rdfs:label "pre_condition_name"^^xsd:string ;
rdfs:subPropertyOf rdfs:label .

```

**shdm:operation\_post\_conditions**

```

rdfs:domain shdm:Operation ;
rdfs:label "operation_post_conditions"^^xsd:string ;
rdfs:range shdm:PostCondition ;
owl:inverseOf shdm:post_condition_operation .

```

**shdm:in\_context\_class\_context**

```

rdfs:label "in_context_class_context"^^xsd:string .

```

**shdm:in\_context\_class\_navigation\_attributes**

```

rdfs:domain shdm:InContextClass ;
rdfs:label "in_context_class_navigation_attributes"^^xsd:string ;
rdfs:range shdm:NavigationAttribute .

```

**shdm:operation\_type**

```

rdfs:domain shdm:Operation ;
rdfs:label "operation_type"^^xsd:string .

```

**shdm:context\_anchor\_target\_parameters**

```

rdfs:domain shdm:ContextAnchorNavigationAttribute ;
rdfs:label "context_anchor_target_parameters"^^xsd:string ;
rdfs:range shdm:NavigationAttributeParameter .

```

**shdm:index\_parameter\_name**

```

rdfs:domain shdm:IndexParameter ;
rdfs:label "index_parameter_name"^^xsd:string ;
rdfs:subPropertyOf rdfs:label .

```

**shdm:navigation\_attribute\_parameter\_value\_expression**

```

rdfs:domain shdm:NavigationAttributeParameter ;
rdfs:label
"navigation_attribute_parameter_value_expression"^^xsd:string .

```

**shdm:index\_parameter\_class**

```

rdfs:domain shdm:IndexParameter ;
rdfs:label "index_parameter_class"^^xsd:string .

```

**shdm:context\_anchor\_attributes**

```

rdfs:label "context_anchor_attributes"^^xsd:string ;
rdfs:range shdm:ContextAnchorNavigationAttribute ;
rdfs:subPropertyOf shdm:index_attributes .

```

**shdm:pre\_condition\_expression**

```

rdfs:domain shdm:PreCondition ;
rdfs:label "pre_condition_expression"^^xsd:string .

```

**shdm:index\_anchor\_target\_index**

```

rdfs:domain shdm:IndexAnchorNavigationAttribute ;
rdfs:label "index_anchor_target_index"^^xsd:string ;
rdfs:range shdm:Index .

```

**shdm:context\_name**

```

rdfs:domain shdm:Context ;
rdfs:label "context_name"^^xsd:string ;
rdfs:subPropertyOf rdfs:label .

```

**shdm:operation\_parameters**

```

rdfs:domain shdm:Operation ;
rdfs:label "operation_parameters"^^xsd:string ;
rdfs:range shdm:OperationParameter ;
owl:inverseOf shdm:parameter_operation .

```

**shdm:in\_context\_class\_computed\_attributes**

```

rdfs:label "in_context_class_computed_attributes"^^xsd:string ;
rdfs:range shdm:ComputedNavigationAttribute ;
rdfs:subPropertyOf shdm:in_context_class_navigation_attributes .

```

**shdm:index\_anchor\_target\_parameters**

```

rdfs:domain shdm:IndexAnchorNavigationAttribute ;
rdfs:label "index_anchor_target_parameters"^^xsd:string ;
rdfs:range shdm:NavigationAttributeParameter .

```

**shdm:navigation\_attribute\_index\_position**

```

rdfs:domain shdm:NavigationAttribute ;
rdfs:label "navigation_attribute_index_position"^^xsd:string ;
rdfs:range xsd:integer .

```

**shdm:operation\_pre\_conditions**

```

rdfs:domain shdm:Operation ;
rdfs:label "operation_pre_conditions"^^xsd:string ;
rdfs:range shdm:PreCondition ;
owl:inverseOf shdm:pre_condition_operation .

```

**shdm:navigation\_attribute\_name**

```

rdfs:domain shdm:NavigationAttribute ;
rdfs:label "navigation_attribute_name"^^xsd:string ;
rdfs:subPropertyOf rdfs:label .

```

**shdm:index\_name**

```

rdfs:domain shdm:Index ;
rdfs:label "index_name"^^xsd:string .

```

**shdm:context\_parameters**

```

rdfs:domain shdm:Context ;
rdfs:label "context_parameters"^^xsd:string ;
rdfs:range shdm:ContextParameter .

```

**shdm:post\_condition\_name**

```

rdfs:domain shdm:PostCondition ;
rdfs:label "post_condition_name"^^xsd:string ;
rdfs:subPropertyOf rdfs:label .

```

**shdm:in\_context\_class\_index\_anchor\_attributes**

```

rdfs:label "in_context_class_index_anchor_attributes"^^xsd:string ;
rdfs:range shdm:IndexAnchorNavigationAttribute ;
rdfs:subPropertyOf shdm:in_context_class_navigation_attributes .

```

**shdm:operation\_parameter\_data\_type**

```

rdfs:domain shdm:OperationParameter ;
rdfs:label "operation_parameter_data_type"^^xsd:string .

```

**shdm:post\_condition\_expression**

```

rdfs:domain shdm:PostCondition ;
rdfs:label "post_condition_expression"^^xsd:string .

```

**shdm:index\_navigation\_attribute\_index\_parameters**

```

rdfs:domain shdm:IndexNavigationAttribute ;

```

```
    rdfs:label  
    "index_navigation_attribute_index_parameters"^^xsd:string ;  
    rdfs:range shdm:NavigationAttributeParameter .  
  
shdm:landmark_navigation_attribute  
    rdfs:domain shdm:Landmark ;  
    rdfs:label "landmark_navigation_attribute"^^xsd:string .
```