

ICBL

Interactive Computer aided
Blended Learning

Florianópolis

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Towards a Reference Model for ODL: a Case Study in the Tourism Undergraduate Course

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Agenda

- **Introduction**
- Data Modeling Background
- Our ODL Modeling Approach
- Applying our Approach in Tourism Course
- Conclusions

Open Distance Learning (ODL)

- ODL is associated to a physical and temporal separation between student and teacher
- Teaching resources includes texts, films, databases and discussion forums, as well as interactive exercises, and other features
- Internet as mainstream for communication
- Organized in virtual or semi-presence mode
 - Virtual mode: all access to the content is remotely granted via Internet
 - Semi-presence mode: there are educational stations where students go to study and to meet tutors

Difficulties in ODL

- Lacks systematic approaches
 - Ad-hoc course composition
- Trade off between multimedia resources and infrastructure
- Trade off between traditional pedagogical knowledge and innovative approaches

Our goal: Support the composition process of an ODL environment

- Establish a systematic process
- Encompass a data modeling technique
- Inspiration
 - Database modeling techniques
 - Object Oriented Hypermedia Design Method (OOHDM)
- Related work in ODL models
 - Some focus on computation environment
 - Some focus on software development and authoring
- Evaluation
 - Using a *proof of concepts* case study

Case Study: Tourism course

- The Tourism Course (TC) of Technical High-School was chosen as the case study (CEFET/RJ)
 - is composed of 20 classes in 6 semesters
 - offers classes related to main sectors of Tourist System (Agency, Lodging, Transportation, Entertainment, Events)
 - qualifies students for medium and long-term job positions according the specific demands of tourism market sector of Rio de Janeiro

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Data Modeling Background

- Data modeling process creates elements (*i.e.* models) that ease the comprehension and design of an information system
- **Data-centric** perspective with emphasis on modeling
- The data modeling process consists of three phases: **Conceptual**, **Logical** and **Physical** modeling

Data modeling notation and assets

- **Conceptual** model is a graphical representation of objects modeled as entities and relationships between them
- **Logical** model expands conceptual model providing information in database model, such as tables, primary and foreign keys
- **Physical** model expands logical model including properties such as storage, indexes, and physical allocation
- Assets include all products developed in these phases

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Our Reference Model

- Systematic process and data model for ODL
- Composed of three layers: **Pedagogical, Content, and Environment**
 - **Pedagogical** layer defines educational and pedagogical standards
 - **Content** layer defines the aspects of the course content
 - **Environment** layer defines the application environment in which the course is instantiated
- **is not**
 - a methodology to build new ODL tools
 - a methodology to develop new type of applications
 - intended to establish new approaches for teaching
- Conceived as a process that enables class development within an ODL environment

Pedagogical Layer

- Elicitate aspects related to the ODL courses, considering pedagogical requirements identified by main actors (professors, students etc)
- Answer questions such as:
 - i. What are the goals to be achieved by the course?
 - ii. Who are the users and components of this course?
 - iii. How the pedagogical components are organized?
 - iv. How the contents of the course are presented?

Content Layer

- Models the contents according to the pedagogical layer
- Uses Unified Modeling Language (UML) to establish the relationship between the main actors and pedagogical contents
- Models the content tree of the course, its pedagogical structure, prerequisites and relationships with support tools (forums, chats)

Environment Layer

- Describe the place in which all elements specified in the content layer are going to be used
- Establish the activities defined in the pedagogical and content layer
- Setup ODL software applications, machines, operating systems, and any physical instrument needed for the learning activities

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Tourism Course

- Modeling and instantiation of the class of “Software for Tourism” in an ODL environment for TC
 - Mainly a traditional course
 - Maximum of 20% of ODL classes allowed
 - Small proof of concept
 - True demand for that class
 - Encompasses all composition process

Pedagogical Layer

- Identified the main actors involved, including professors, target students, and staff
- Interviewed two professors of the tourism course, to address perspectives and pedagogical advantages of the ODL
 - Specification of main software applications
- Survey conducted with some students to check relevant software applications from their perspective
- Final interview with professors and surveyed students

Survey of applications

Application Options	% of students
<i>Excel</i>	77%
<i>Word</i>	58%
<i>PowerPoint</i>	58%
<i>Access</i>	15%
<i>Tourism Management Software</i>	15%
<i>Outlook</i>	9%
Do you know ODL?	23% yes, 77% no
Have you ever learned from ODL?	13% yes, 87% no
What is the best didactic form for you?	25% expositive classes, 20% debates, 20% technical visits, and 35% do not know
What is your stage in the course?	90% between fourth and sixth semester

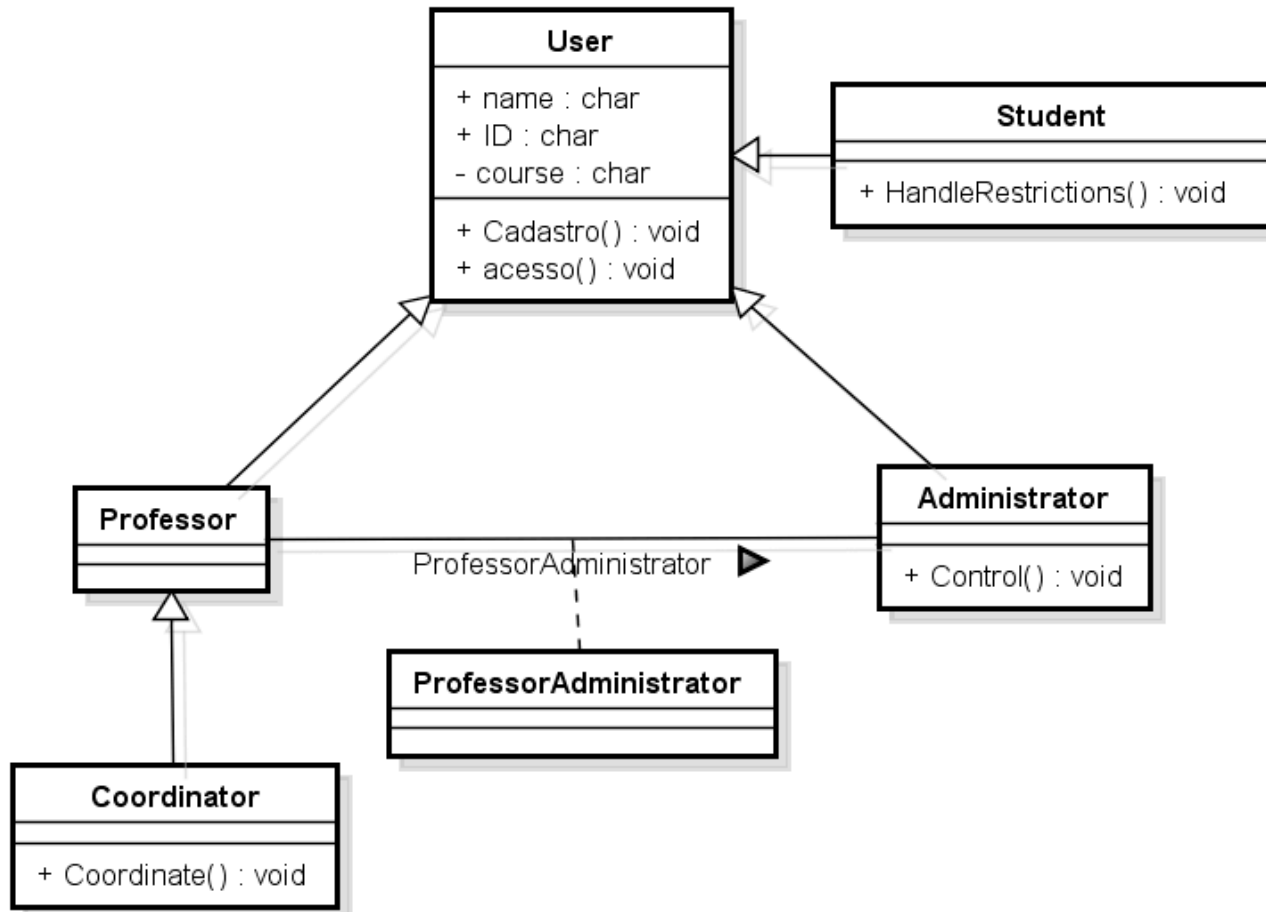
Final Interview after Survey

- 15 volunteers students chosen the format of classes
 - videos, slides or handouts
- Results of Interview
 - It was observed that 60% preferred handouts, while 40% preferred video lessons
 - Software for Tourism ODL class focused on teaching the 3 top-rated applications: MS-Excel™, MS-Word™ and MS-PowerPoint™

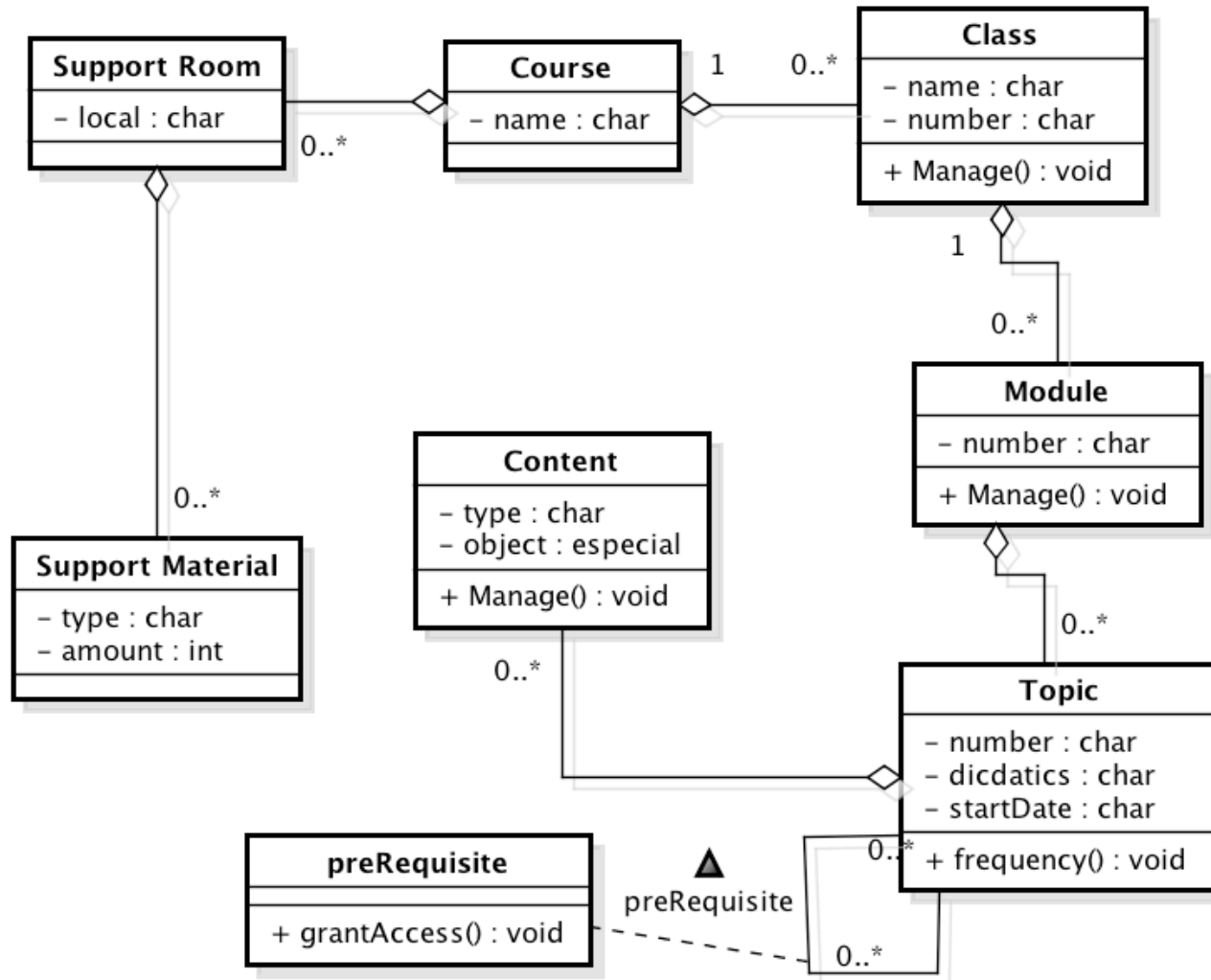
Content Layer

- Definition of actors and scope
 - Professors, students, coordinators, and administrators
 - Specification of roles
- Relationships between *courses*, *classes*, *modules*, and *topics*.
 - Classes have modules (min. of 2 and max. of 4)
 - Modules are composed of topics

Actors View



Pedagogical View



Environment Layer

- Describe physically the logical elements identified in the content layer
- Moodle as a platform for ODL
 - All data in the Moodle is stored in MySQL databases
 - Apache Tomcat
 - Intranet of our Institution

Software for Tourism class

- Composed of three modules
 - MS-Word™ module contains 4 topics
 - (three textbooks and a test)
 - MS Excel™ module contains 3 topics
 - (two textbooks and a test)
 - MS-PowerPoint™ module contains 2 topics,
 - (one textbook and a test)

First Version of Software for Tourism

The screenshot shows a web browser window displaying a Moodle course page titled "Curso de Office". The browser's address bar shows the URL "localhost/moodle/course/view.php?id=2". The page header includes the course name "Curso de Office" and the user's login information "Você acessou como Admin cefet(Sair)".

The main content area is titled "Curso de Office" and contains a breadcrumb trail: "Página inicial ► Meus cursos ► Office". A button labeled "Ativar edição" is located in the top right corner of the main content area.

The page is organized into several sections:

- Navegação:** A sidebar menu with options like "Página inicial", "Minha página inicial", "Páginas do site", "Meu perfil", and "Meus cursos". Under "Meus cursos", the "Office" course is expanded, showing sub-items: "Participantes", "Relatórios", "Geral", "3 julho - 9 julho", and "10 julho - 16 julho".
- Configurações:** A sidebar menu with options like "Administração do curso", "Ativar edição", "Editar configurações", "Usuários", "Cancelar a minha inscrição no curso Office", "Notas", "Backup", "Restaurar", "Importar", "Publicar", and "Reconfigurar".
- Agenda do Curso:** A central section displaying a course calendar. It lists activities for different dates:
 - 3 julho - 9 julho: Fórum de notícias
 - 10 julho - 16 julho: Aula de Word I, Aula de Word II, Aula de Word III, Aula de Word IV
 - 17 julho - 23 julho: Aula de PowerPoint I, Aula de PowerPoint II
 - 17 julho - 23 julho: Aula de Excel I, Aula de Excel II, Aula de Excel III
- Pesquisar nos Fóruns:** A search box with a "Vai" button and a link to "Pesquisa Avançada".
- Últimas notícias:** A section with a link to "Acrescentar um novo tópico..." and a note "(Nenhuma notícia publicada)".
- Próximos eventos:** A section stating "Não há nenhum evento próximo" with links to "Calendário..." and "Novo evento...".
- Atividade recente:** A section showing "Atividade desde segunda-feira, 3 setembro 2012, 20:24" and a link to "Relatório completo da atividade recente".
- Atualizações do curso:** A section showing "Atualizado Página: Aula de Word IV" and "Atualizado Página: Aula de Word III".

The Windows taskbar at the bottom shows the "Iniciar" button, several application icons, and the system tray with the time "11:36".

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Conclusions

- Enables a systematic way to prepare ODL courses
 - Evaluated using of Software for Tourism class
- Composed of pedagogical, content, and environment layers
- The tourism class
 - Focused on the standard software of the tourism market
 - Organized as handouts in PDF
 - Containing exercises and tests
- Future work is to evaluate if ODL will increase the productivity of the students in the Tourism Course

Acknowledgments



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