Lecture 1 - Introduction

Open Data Management & the Cloud

(Data Science & Scientific Computing / UniTS – DMG)

Lecturers & contacts

- Lecturers
  - Istituto Nazionale di AstroFisica (INAF) staff
    - Andrea Bignamini (andrea.bignamini@inaf.it)
    - Sara Bertocco (sara.bertocco@inaf.it)
    - Marco Frailis (marco.frailis@inaf.it)
    - Giuliano Taffoni (giuliano.taffoni@inaf.it)

- Moodle@UniTs --> Lecture materials
- Microsoft Teams --> Live recordings
- Mailing list

Lecture “blocks”

- Introduction
- Data and Metadata Models and Structures
- Data Cloud and Cloud Computing
- Data Resource Interoperability and Access

Description of the course & lessons (1)

- Introduction
  - Big Data
  - Open Data
  - FAIR principles

- Data and Metadata Models and Structures
  - data models
    - definitions and design
  - data structures and metadata
  - UML, ORM, XSD, JSON, data structure formats, tabular formats, images, hierarchical structures, including metadata query-ability.

Description of the course & lessons (2)

- Data Cloud and Cloud Computing
  - Introduction on computing and cloud computing
  - Cloud computing main concepts and architecture
  - Virtualization
  - Containers and orchestration
  - Infrastructure as a Service: theory and examples
  - Platform as a Service: theory and examples
  - Service orchestration and cloudnomics
  - Cloud storage and data cloud
- Interoperability
  - (Persistent) Identifiers
  - (Resource) Catalogues
  - Data models for Discovery
  - Data Curation & Preservation
  - Interfaces & Dataset Access

Lessons' Calendar

October

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
~~31~~						

November

M	T	W	T	F	S	S
	1	~~2~~	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

December

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

- Bignamini
- Frailis
- Taffoni/Bertocco
- Bertocco

- Introduction
- Data and Metadata Models and Structures
- Data Cloud and Cloud Computing
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Monday: 13:00 - 15:00 (Classroom 5C - H2bis)

Wednesday: 9:00 - 12:00 (Classroom 5C - H2bis)

Knowledge verification

- Preparation of a small “project” on data management and interoperability
  - Using what’s been learned during the course
  - Including cloud solution identification
  - Possibly showing some real snippets or ideas of implementation
- Presentation of the project to the class & lecturers
  - With dedicated Q&A time

Survey & Discussion

- Organisational set-up
  - Register on Moodle@UniTs
  - Join on Microsoft Teams (code jnj7kup)
  - Do you have any requests?
- Fill in the survey form
  - Discuss it
- Open discussion on the expectations
- (and/or) insights on the course content