Web Service and Analysis on XBRL in Advanced Programming Course

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ACDM9, 3:08 - 3:30 p.m. Wednesday - Room: Liffey Meeting Room 2.

OUTLINE

- Building **programming experience** for XBRL is important in the era of an information network society.

- Last academic year, the **advanced programming course** including **web service and financial analysis for XBRL** was opened in the Japanese university.

- This course provides an introduction to **JavaScript** programming language, and exposes students to **practical programming** techniques combined with **internet web services**.

- This presentation will discuss the way of teaching programming with XBRL for effective **financial analysis**, and its extension to university information analysis.

Programming Course

Advanced Programing (Programing B)

Masaaki Ida

Lectures or computer practice Labs, 2 sessions/week for 15 weeks, 1.5 hour/session, 4 credit course

Advanced course for Junior and Senior undergraduates, Departments of **Accounting** and **Marketing**

Texts: no required texts.

Readings and sample codes are distributed or **available online**.

Course Description (1/2)

- This course is a introductory course to the JavaScript **programming** language for developing web site.
  - It is intended for those with little programming background (for social sciences).
    - This course introduces the student to fundamental JavaScript programming concepts:
      - (contents) variables and data, functions, controlling program flow, JavaScript object model (window, document, image, ...), and JavaScript language objects (String, Array, Date, and Math objects).

Course Description (2/2)

- This course also addresses the development of internet web programing and its application to XBRL financial analysis.
  - RSS 

  - XBRL and Financial Analysis

- OBJECTIVE:
  - By the end of this course, student should be able to:
    - Utilize the basic **programming technique** of JavaScript,
    - Understand and use advanced **web programming** (Web API)
    - and Write small-scale **Financial Analysis** programs using the above skills

Assessment and Grading

- Projects
  - There will be two programming projects:
    - **RSS reader**
    - **Financial analysis tool (using XBRL Instance)**
  - Students are encouraged to collaborate, but any code and must be own.
- Grading
  - Assigned based on the following weights (No Exam):
    - Projects: 70%
    - Attendance and class-participation: 30%

Course Schedule (1/2)

Introducing programming

- Client and server
- Building web pages
- Contents, style, programming
- HTML, tags, CSS

JavaScript

- Adding JavaScript to web page
- Operators and expressions
- Arrays, loops, conditions
- Functions, input, returning values
- Selection: if-then-else, loops, arrays
- File reading, writing
- Form, browser, window, frame
- DOM
- **jQuery** (rendering: **multicolumn, accordion, jqPlot**, ...)
- Coding, debugging

Course Schedule (2/2)

Internet and Web service programming

- **XML**, JSON
- **Ajax**
- **Web service (Web API)**
- **Internet and programming 1: RSS**

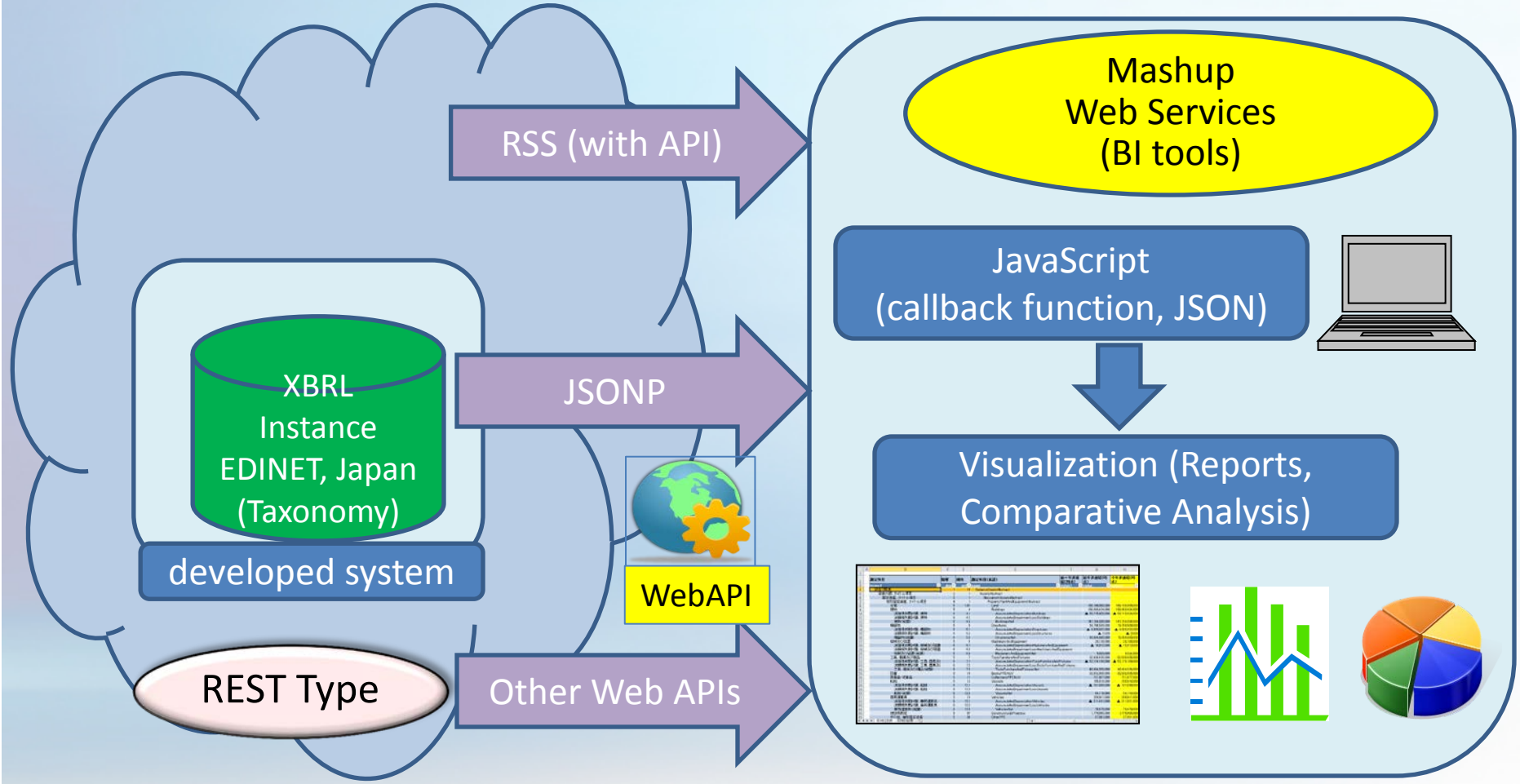
Business and programming

- **Financial repot**
- **XBRL**
- **Instance, Taxonomy**
- **Financial analysis**
- **JSONP**
- **Internet and programming 2: XBRL and financial analysis**

Project Results

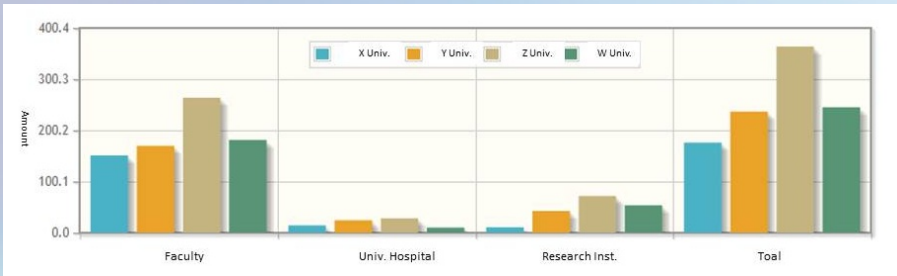
- Students reports
  - Difficulty for social science students (not computer science)
  - Coding Environment:
    - Development of **RESTful API (callback function)**, JSONP data providing system
    - integrated development environment
  - Examples

Programming Environment

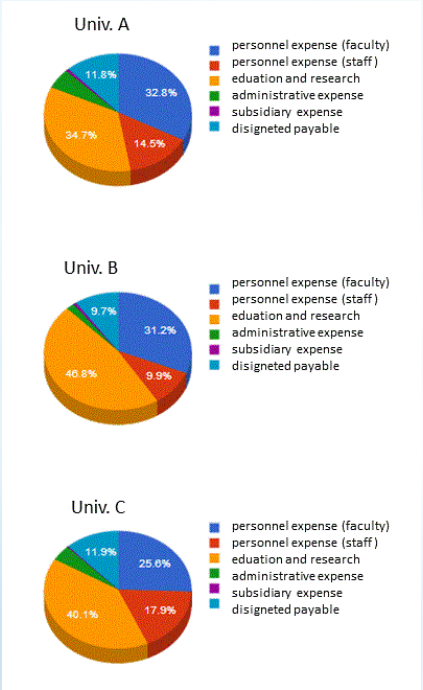


University Information

- **Mashup** with other Web APIs
  - institution information
    - Nonprofit organization
    - higher education
    - .....



Example of university survey analysis for financial information (Total salary on sections)



Example of university survey data analysis (Annual expenditure of three national universities in Japan)

Conclusion

- (XBRL) advanced programming course
  - including web service and financial analysis on XBRL (practical programming)

- There remains issues:
  - Motivation (students: social science)
  - Brief description of XBRL in programming class
    - Instance, taxonomy, ...
  - Source internet data (XBRL Web API)
    - Development of RESTful **Web API** (callback function), JSONP data providing system
  - Textbook and sample programs (XBRL and computer programming)
  - Mashup with other information (university data, institution data)