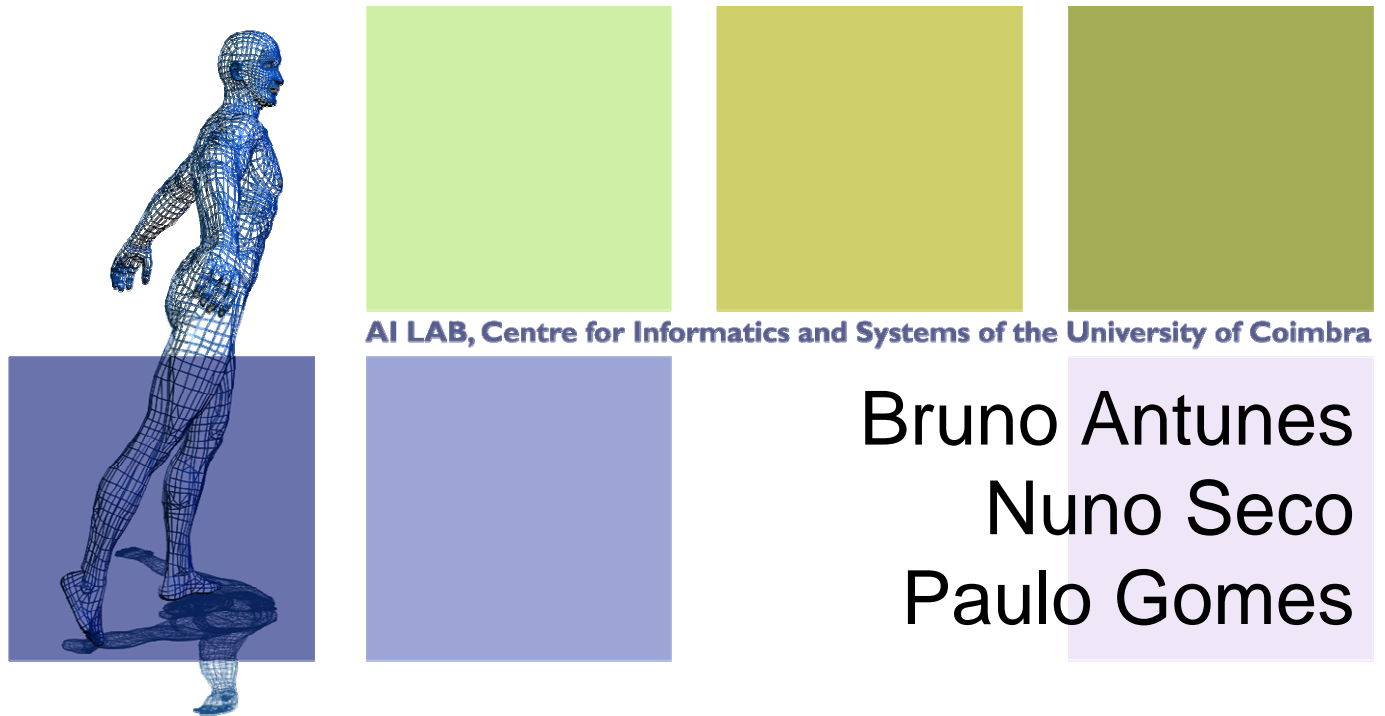


Knowledge Acquisition and Management using Semantic Web Technologies: An Application in Software Development





Agenda



- Motivation and Goals
- Approach
- SRS – Semantic Reuse System
 - Architecture
 - Demos
- Conclusions



Motivation



- *Software Development Projects* have grown by complexity and size.
- The resources produced in such projects are an important source of *knowledge*.
- To make this knowledge useful, organizations need efficient *Knowledge Management Systems*.



Goals



■ A platform for:

■ *Storing and Managing* Software Development Knowledge.

- Organization-level

■ Helping software developers through search and suggestion of knowledge.

- User-level



Approach



- Semantic Web technologies
 - *Access and Exchange* of relevant information.
- Use of Ontologies
 - Describe and classify knowledge.
- Web Service
 - Easy integration and dissemination of knowledge.



Approach



- *Software Development Knowledge Elements (SDKE's)*
 - Code: classes, methods ...
 - Documents: manuals, specification docs ...
 - URLs
 - Notes
 - ...

- Any piece of information related to software development.

SRS – Semantic Reuse System

The image displays two software interfaces. On the left is the 'SRS Knowledge Base Manager' showing a 'Domain Ontology Management' window with a tree view of concepts like 'entity', 'object', and 'relation'. A context menu is open over the 'relation' node, listing actions such as 'Add...', 'Remove', 'Edit...', 'Validate', 'Delete', and 'Refresh'. On the right is the 'sharpPDF - Microsoft Visual Studio' interface. The 'Solution Explorer' shows a project structure with files like 'pdfBasePage.cs' and 'pdfPage.cs'. The 'Class View' shows a class hierarchy. The 'SRS Suggestions' window is open, displaying a list of suggestions including 'LogBook', 'sharpPDF Tutorial', and 'Portable Documenter'. The main code editor shows the implementation of the 'pdfPage' class, including namespace declarations, using statements, and class definitions.

```
using System;
using System.Collections;
using System.Text;
using System.Drawing;

using sharpPDF.Elements;
using sharpPDF.Exceptions;
using sharpPDF.Enumerators;
using sharpPDF.Fonts;

namespace sharpPDF
{
    /// <summary>
    /// A Class that implements a PDF page
    /// </summary>
    public class pdfPage : pdfBasePage, I
    {
        private int _height;
        private int _width;
    }
}
```



SRS – Requirements



- Reuse of Knowledge from different Sources
- Integration of User Interface on common IDE's
- Work in Networked Environments
- Automatically Build the Domain Ontology from other Source Ontology(ies)

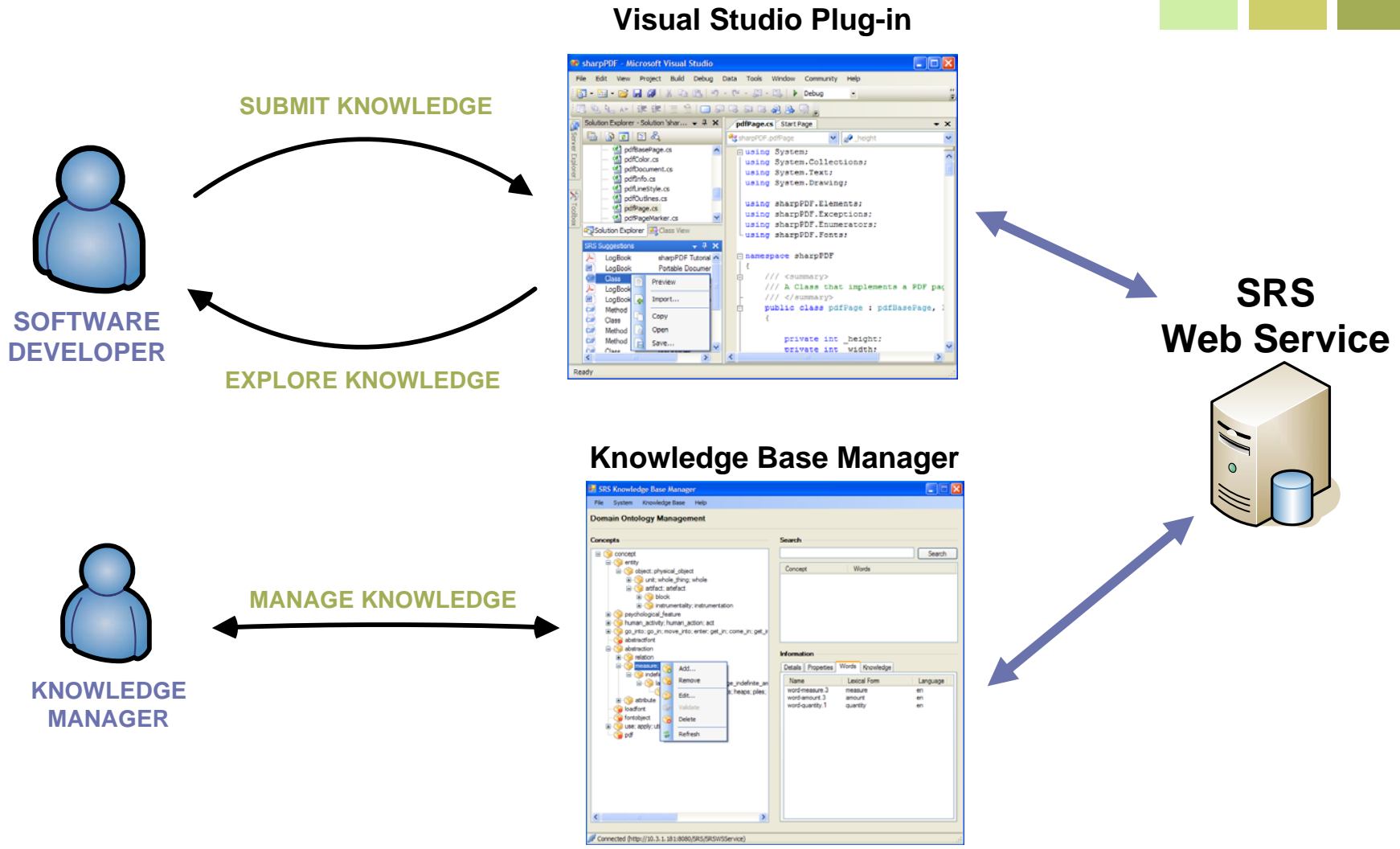


SRS – Functionalities

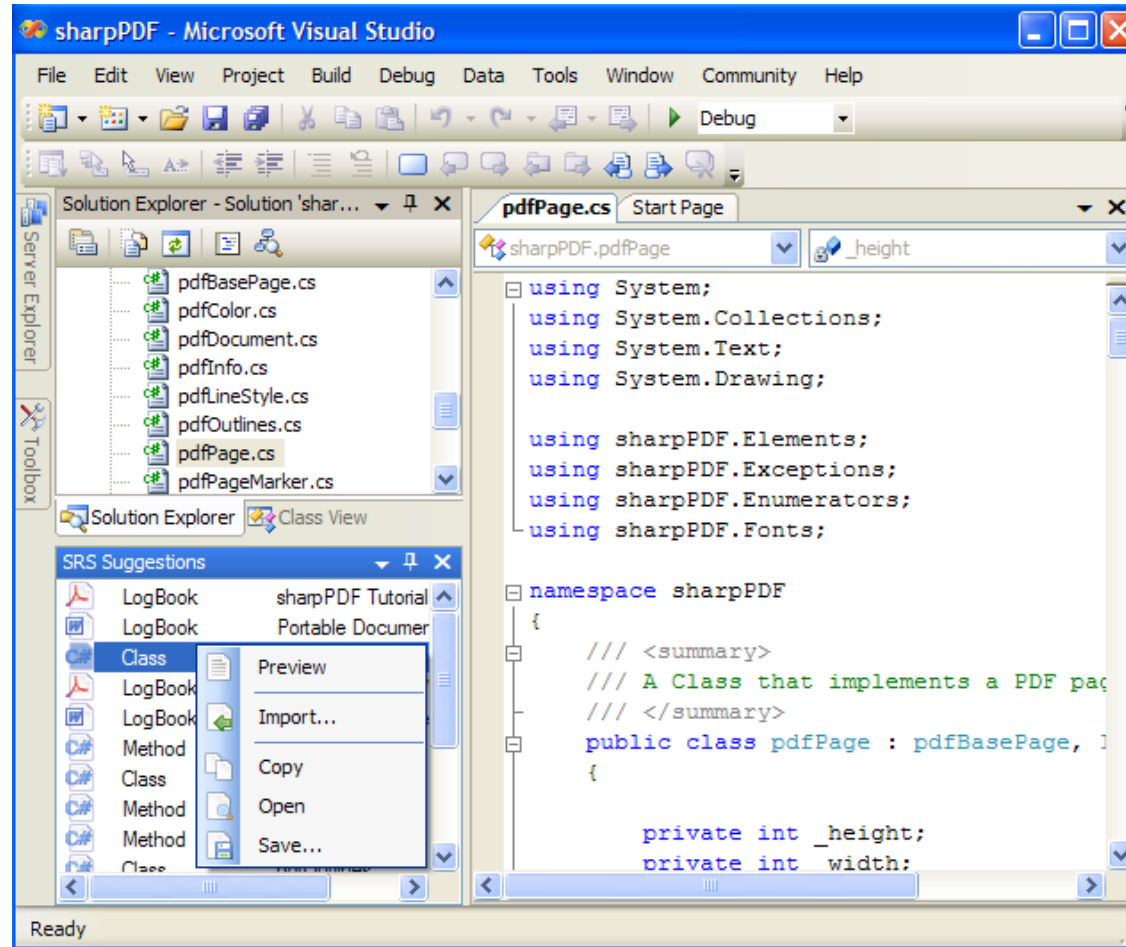


- Submission and Storage of SDKE's
- Classification of SDKE's
- Browsing SDKE's
- Searching SDKE's
- Pro-Active Suggestion of SDKE's

SRS – Use Scenario



SRS – VS Plug-in



SRS – KB Manager

The screenshot displays the SRS Knowledge Base Manager application window. The title bar reads "SRS Knowledge Base Manager" and the menu bar includes "File", "System", "Knowledge Base", and "Help". The main area is titled "Domain Ontology Management".

Concepts: A tree view on the left shows a hierarchy of concepts. The "measure" concept is selected, and a context menu is open over it with the following options: "Add...", "Remove", "Edit...", "Validate", "Delete", and "Refresh".

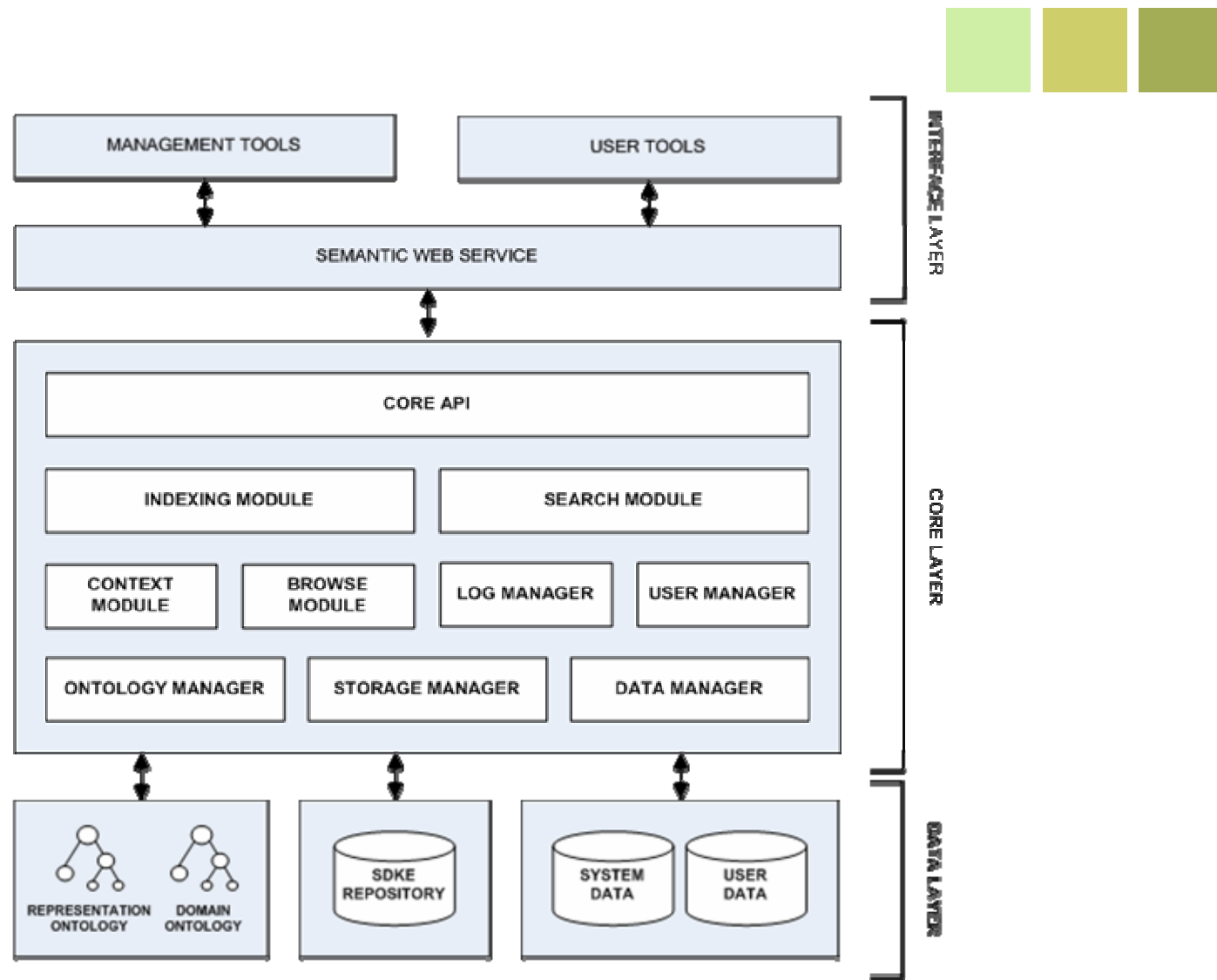
Search: A search bar with a "Search" button is located above a table. The table has two columns: "Concept" and "Words".

Information: A tabbed interface with "Details", "Properties", "Words", and "Knowledge" tabs. The "Words" tab is active, displaying a table with the following data:

Name	Lexical Form	Language
word-measure.3	measure	en
word-amount.3	amount	en
word-quantity.1	quantity	en

At the bottom of the window, a status bar indicates the connection: "Connected (http://10.3.1.181:8080/SRS/SRSWSService)".

SRS – Architecture





Conclusions



- *Software Development Knowledge* is becoming more *Relevant*.
- This Knowledge should be *Stored, Managed* and *Reused*.
- Our Approach provides a *Platform* to accomplish these Tasks.



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Thank You!