



Maintenance and Refactoring of Information Systems

Implementation of my planned contribution to the PDFBox Project

Short Description of the PDFBox (1)



Project name: **PDFBox**

Project web site URL:

<http://sourceforge.net/projects/pdfbox>,
www.pdfbox.org

Topic: **Dynamic Content, Indexing/Search, Text Processing**

Development Status: **4 – Beta**

Implementation - Programming language: **Java**

Platform: **OS Independent**

Short Description of the PDFBox (2)



Administrator: [Ben Litchfield](#)

Approximate source code size: [30 packages, 139 classes, more than 10000 lines of java code](#)

Registration Date: [7/4/2003](#)

Last version: [PDFBox – 0.6.6, Released 20/7/2004](#)

Short description of the project:

[PDFBox is a Java PDF Library.](#)

[This project allows access to all of the components in a PDF document.](#)

My First Decision



**Conversion of a PDF
document
to XML format**

Rejected

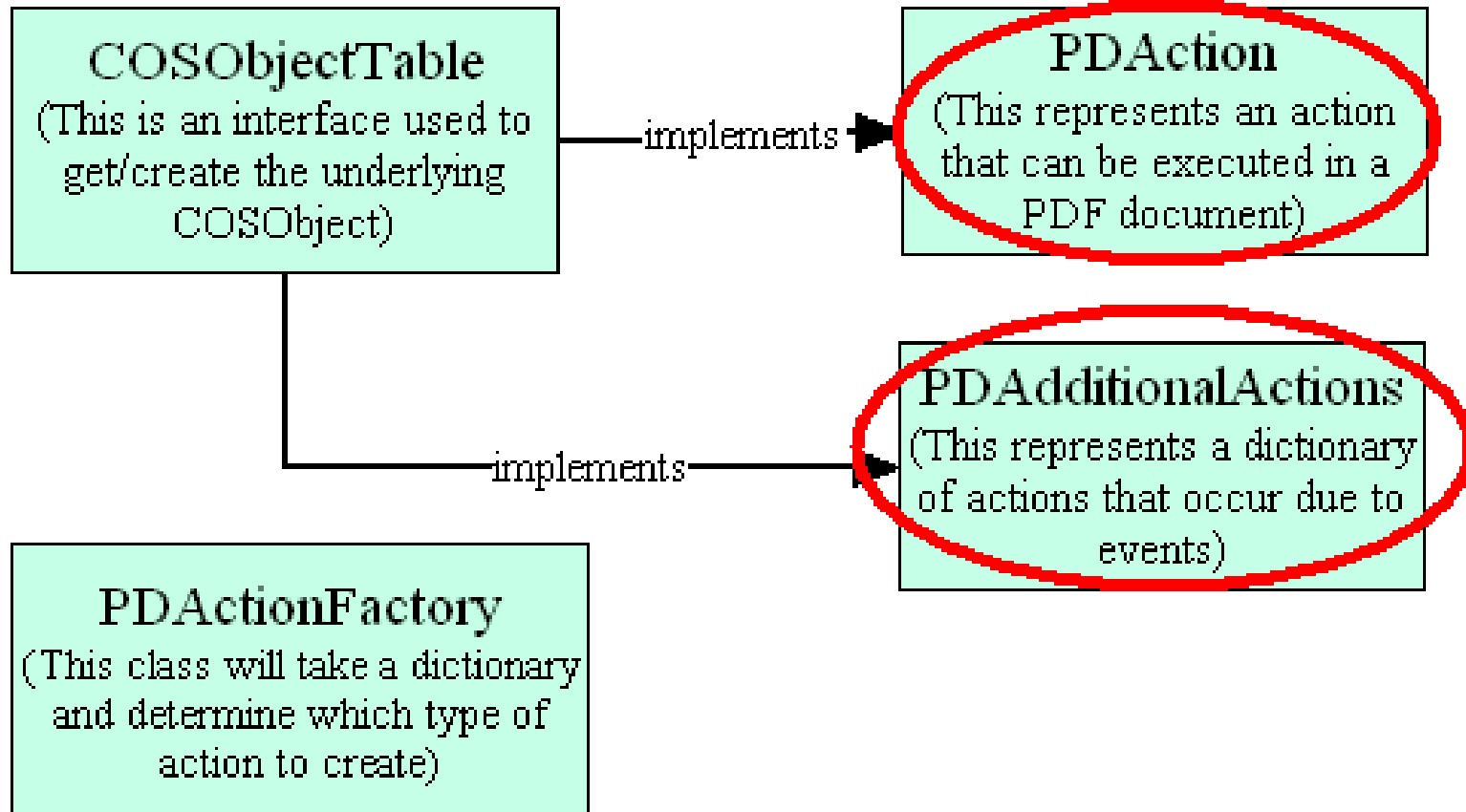
My Final Decision



Adding Support for PDF Actions

Carried out

Existing classes Hierarchy



New Java Classes (1)



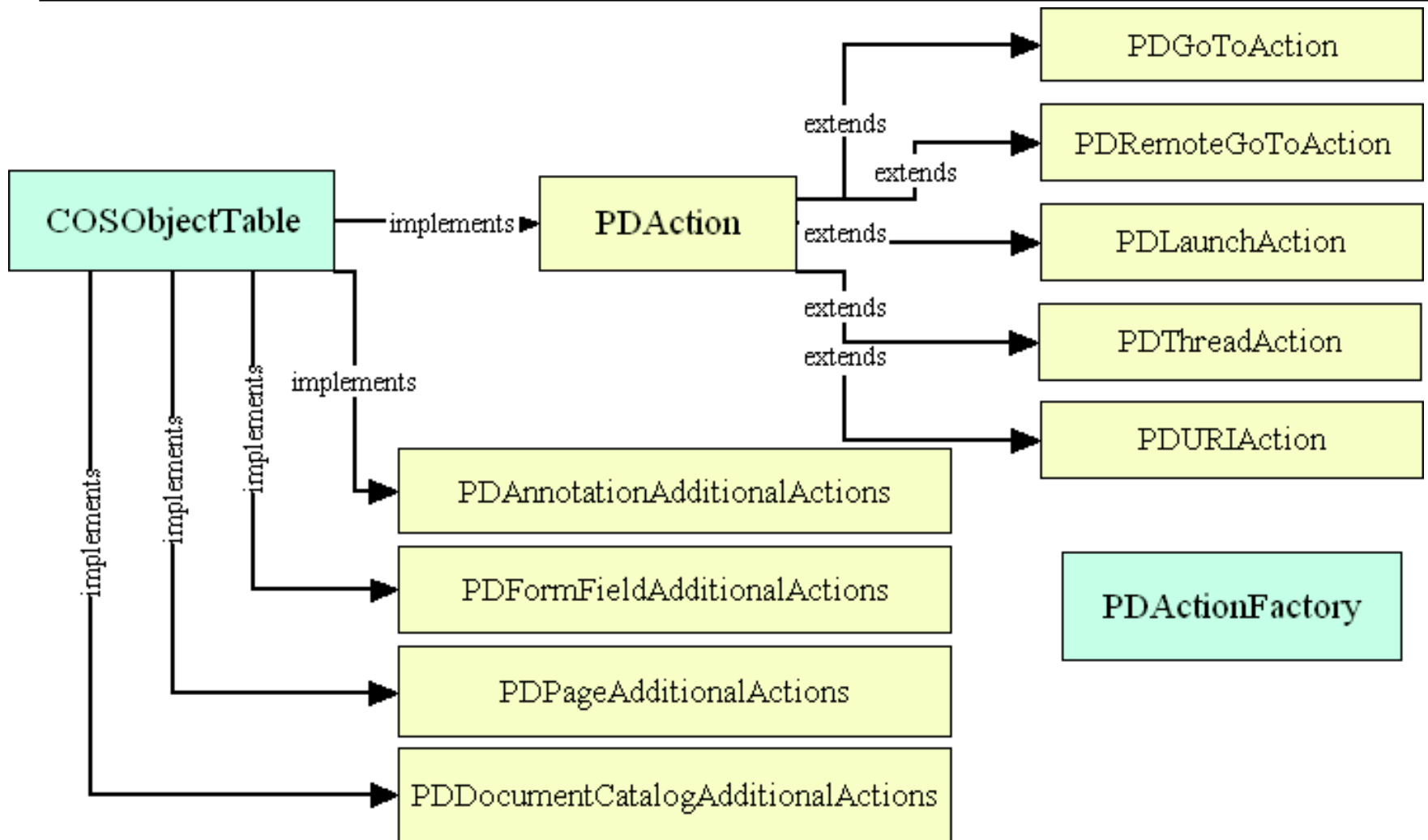
Java Class Name	Summary of Class Function	Code lines	Changed / New
PDAction	This represents an action that can be executed in a PDF document.	184	Changed
PDAnnotationAdditionalActions	This class represents an annotation's dictionary of actions that occur due to events.	379	Changed
PDFFormFieldAdditionalActions	This class represents a form field's dictionary of actions that occur due to events.	215	New
PDPageAdditionalActions	This class represents a page object's dictionary of actions that occur due to events.	149	New
PDDocumentCatalogAdditionalActions	This class represents a document catalog's dictionary of actions that occur due to events.	237	New

New Java Classes (2)



Java Class Name	Summary of Class Function	Code lines	Changed / New
PDGoToAction	This represents a go-to action that can be executed in a PDF document.	163	New
PDRemoteGoToAction	This represents a remote go-to action that can be executed in a PDF document.	214	New
PDLaunchAction	This represents a launch action that can be executed in a PDF document.	283	New
PDThreadAction	This represents a thread action that can be executed in a PDF document.	271	New
PDURIAction	This represents a URI action that can be executed in a PDF document.	182	New
Sum	-	2277	-

New Classes Hierarchy



A Java Code Example (1)



```
package org.pdfbox.pdmodel.interactive.action;

import java.util.ArrayList;
import java.util.List;

import org.pdfbox.cos.COSArray;
import org.pdfbox.cos.COSBase;
import org.pdfbox.cos.COSDictionary;
import org.pdfbox.cos.COSStream;

import org.pdfbox.pdmodel.common.COSObjectable;
import org.pdfbox.pdmodel.common.COSArrayList;

/**
 * This represents an action that can be executed in a PDF document.
 *
 * @authors Ben Litchfield (ben@csh.rit.edu)
 *          Panagiotis Toumasis (ptoumasis@mail.gr)
 * @version $Revision: 1.2 $
 */
public class PDAction implements COSObjectable
```

A Java Code Example (2)



```
/**
 * This will get the type of action that the actions dictionary describes.
 * If present, must be Action for an action dictionary.
 *
 * @return The S entry of actions dictionary.
 */
public String getS()
{
    return action.getNameAsString( "S" );
}
/**
 * This will set the type of action that the actions dictionary describes.
 * If present, must be Action for an action dictionary.
 *
 * @param S The new type of action.
 */
public void setS( String S )
{
    action.setName( "S", S );
}
```

Cooperation with Mr. Litchfield



- Ⓢ Exchange of about a dozen e-mails.
- Ⓢ Instant response.
- Ⓢ Always eager to help.
- Ⓢ Excellent communication.

Conclusion



- ⊗ One of the most demanding projects I've ever done.
- ⊗ I gain a lot of experience which will be useful for the continuation of my studies.
- ⊗ I hope this type of project to be implemented in many other lessons in Greece.