

Best Practices for Apache Cocoon

The logo for Apache Cocoon, featuring the word "COCOON" in a stylized, outlined font inside a blue rounded rectangle with a black border. The background of the slide features a large, faint, colorful feather graphic.

COCOON

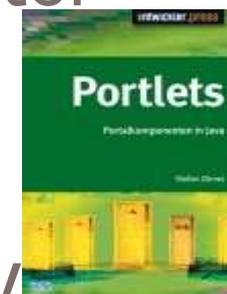
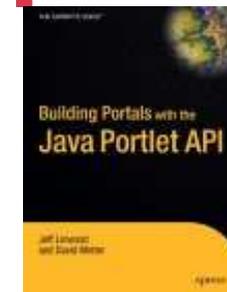
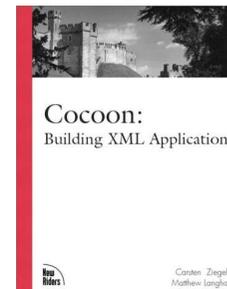
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S&N AG, Germany

ApacheCon
Europe 06

About

- Member of the Apache Software Foundation
- Committer in some Apache Projects
 - Cocoon, Excalibur, Pluto, WSRP4J, Incubator
 - PMC: Cocoon, Incubator, Portals
- Chief Architect of the Competence Center Open Source, S&N AG, Germany
- Article/Book Author, Technical Reviewer
- Member of the JSR 286 spec group (Portlet API 2.0)



Agenda

COCOON

- Cocoon in a Nutshell
- Cocoon Flow
- Cocoon Forms
- Business Layer
- Developing with Cocoon
- Outlook - Cocoon 2.2 and beyond
- Q/A

Expectations

- Rapid Development/Prototyping
- Use "Best of Breed"
- Flexibility
- Rich functionality out of the box
- Support for improved user experience (AJAX)

Cocoon in a Nutshell



Apache Cocoon

- Top-Level Apache Open Source project
 - <http://cocoon.apache.org>
- Started in 1999 (XML Publishing Framework)
- Today
 - One of the most important Apache projects
 - Incorporates technologies from various project
 - Used/Supported by several minor and major companies

Motivation

- Cocoon is a powerful web application framework
 - It is not just an XML web publishing platform
- Serious web applications can still be fun
 - Write code only when you need to
- The magical trio: pipelines, flow and forms
- Cocoon is aimed at larger projects/teams!

Extensible Architecture

- Component Based Architecture
- Focus on *Composing* rather than *Programming*
 - “We figure out the hard parts, you get to do the fun stuff.”
- Core + Blocks
 - Core = pipelines, sitemap, flow, forms, template
 - Blocks: Portal, Cron, FOP, Axis, POI, Batik, Databases, Authentication, OJB, SAP, WebDAV ...
 - Built-time application assembly configuration
 - (Hot-deployment and -reconfiguration is coming)

Scenarios

- Dynamic Document Generation
 - Based on XML/XSLT (but not limited to)
- Used for various application scenarios
 - Web Sites, Content Publishing
 - (XML) Portals/Workplaces
 - Processing Systems, Business Integration
 - CMS, Reporting, Administration Tools

Some References

- VNU
- Vodafone
- BASF
- ÖAMTC
- Raiffeisen Zentralbank Austria (RZB)
- Rheinland Versicherungen
- Digital Insight's Web Center

And more (we are not allowed to mention) 😊

Real World Applications

Partnerintegration

Admin Partner Dokumentation Favoriten Validator Kontakt Logout Angemeldet

Tagesschau - tagesschau

Details Dateien Benutzer Sicherheit

Servicename: *tagesschau

ServiceID: *tagesschau

XML-Typ: partnernml style: listed

Host: *http://www.tagesschau.de

Pfad: */index

Production Pfad: http://portal.com/Tagesschau/tagesschau/

Development Pfad: http://pi-tng.prod.portal.de/Tagesschau/tagesschau/

Firstname	Lastname	Phone	Email	Birthdate (dd/MM/yyyy):	Select
Carsten	Ziegeler		cziegeler@s-und-n.de		<input type="checkbox"/>
Matthew	Langham		mlangham@s-und-n.de		<input type="checkbox"/>
Martin	Dulisch		mdulisch@s-und-n.de		<input type="checkbox"/>
Guido	Casper		gcasper@s-und-n.de		<input type="checkbox"/>

Add contact Remove selected contacts

Anfrage senden

Real World Applications

Rhion
VERSICHERUNGEN

Home | Kontakt | Sitemap | Impressum | Datenschutz

Philosophie | Service | Produkte | Unternehmen | flash

Volle Leistung für deutlich mehr Profit.

Volle Leistung für deutlich mehr Profit

Rhion - der neue Maklerversicherer innerhalb der RheinLand Versicherungsgruppe.

Warum ein eigenständiger Maklerversicherer?

Ganz einfach: Weil wir das höchste Interesse daran haben, dass Sie Geld mit uns verdienen. Sie sind Profi, arbeiten seit langem erfolgreich als Makler und haben zu Recht einen hohen Anspruch an Ihr Geschäft. Sie erwarten einen hohen Profit wir stellen Ihnen die notwendigen Prozesse dafür zur Verfügung. Sie erwarten exzellente Serviceleistungen von uns - wir dafür qualitativ hochwertiges und wünschenswertes Geschäft von Ihnen.

Sie sind ein mittelständischer Makler mit professionellem Anspruch - wir eine mittelständische Versicherungsgruppe mit erstklassigen Produkten für Privat- und Gewerbekunden. Es ist für Sie an der Zeit, mit einem leistungsstarken Versicherer neue Maßstäbe für Ihren persönlichen unternehmerischen Erfolg zu setzen.

Folglich der exakt richtige Zeitpunkt für Sie, mit einem leistungsstarken Versicherer neue Maßstäbe für Ihren persönlichen Erfolg zu setzen.

Mehr Profit für Maklerprofis! Klaus hat

Mit Rhion dicht am Markt!
Loremiosum
SailPro

Artikel zum Thema

Unternehmen
Rhion- der Maklerversicherer
Innerhalb der RheinLand
Versicherungsgruppe zeichnet

Philosophie

volle Leistung

...optimale Prozesse

Technologie

exzellente Produkte

bester Service

Courtagemodell

Entwicklungsperspektive

Profitabel für Maklerprofis

Real World Applications

The screenshot displays the website for the Österreichischer Automobil-, Motorrad- und Touring Club (ÖAMTC). The header features the club's logo and a banner with the text "Nöthilfe 120". Below the header is a navigation menu with tabs for "Auto", "Reise", "Verkehr", "Versicherung", and "Recht". A secondary menu lists services such as "Mitgliedschaft & Schutzbrief", "Technische Dienste", "Clubdaten", "Fahrsicherheit", "Flugrettung", "Pannenhilfe", and "Akademie".

On the left side, there is a search bar labeled "Suche" with a search button and a link to "erweiterte Suche". Below it are sections for "Partnersites" (including "auto touring" and "Motor sport") and a "Pressebox" with links to "Richtlinie für Fußgänger", "Spritpreiserhöhung nicht gerechtfertigt", and "ÖAMTC-Ambulanzret holt Urlauber heim".

The main content area features a yellow banner that reads "Ihr Club sagt Danke!". Below this is a "Kontakte" section providing the following information:
Österreichischer Automobil-, Motorrad- und Touring Club (ÖAMTC)
Straße: Schuberttring 1-3
PLZ / Ort: 1010 Wien
Telefon: 0043/1/71199-0
E-mail: Online-Formular
Internet-Adresse: <http://www.oeamtc.at>
Vereinsregisternummer: XIV - 701
Vereinsregisterbehörde: Bundespolizeidirektion Wien, Vereinsbüro

On the right side, there is a "Login" section with fields for "Username" and "Passwort", an "anmelden" button, and links for "Passwort vergessen", "Username vergessen", and "Neu-Anmeldung". Below the login section is a "Shortcuts" area with icons for "Routenplaner", "Spritpreise", and "Verkehrsservice". At the bottom right, there is a "Landesvereine" section displaying a grid of regional club crests.

Your Benefits

- Solid Framework (more than 5 years of experience)
- Separation of Concerns
- Real Team Development
- Rich Set of Functionality
- "Modern" techniques and frameworks

What You Should Do ☺

- Download/checkout Cocoon (2.1.9/2.2)
- Build and Run
- Try out the Demos
 - Forms and Flow
 - AJAX
 - Portal

Introduction to Cocoon



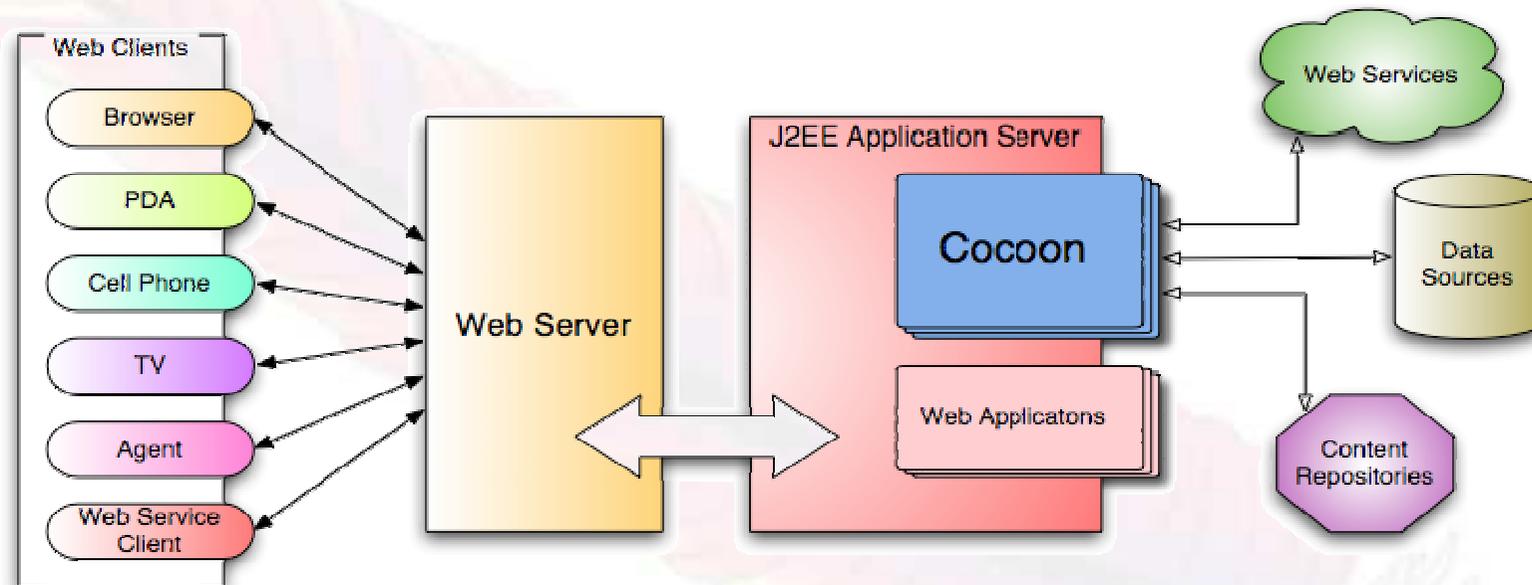
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Separation of Concerns

- UI: Templating and XSLT
 - Available components (Cocoon Forms)
 - XHTML, CSS, AJAX
- Controller/Application Flow
 - Cocoon Flow (JavaScript), Spring WebFlow
- Business Layer
 - Cocoon Forms
 - JavaScript/Java
 - 3rd party frameworks

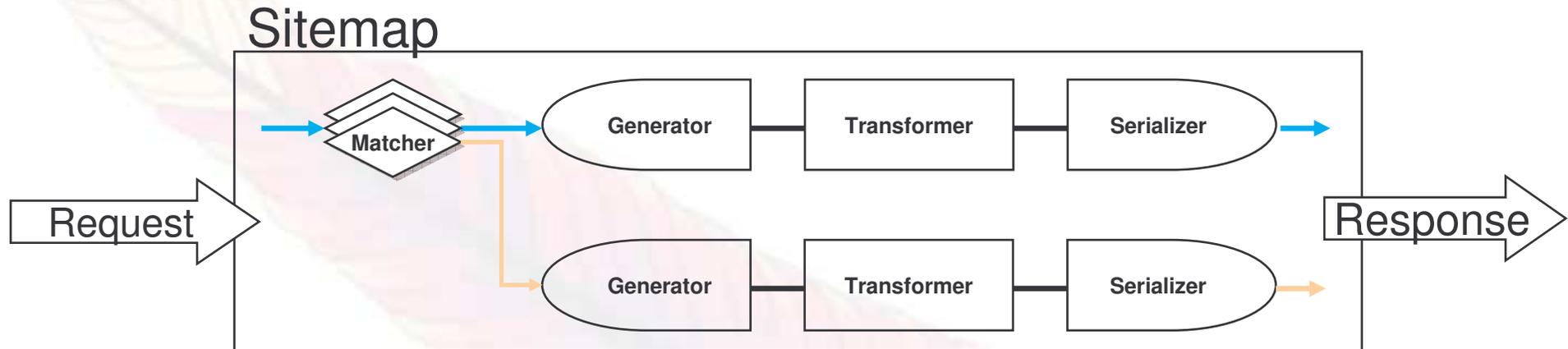
Apache Cocoon



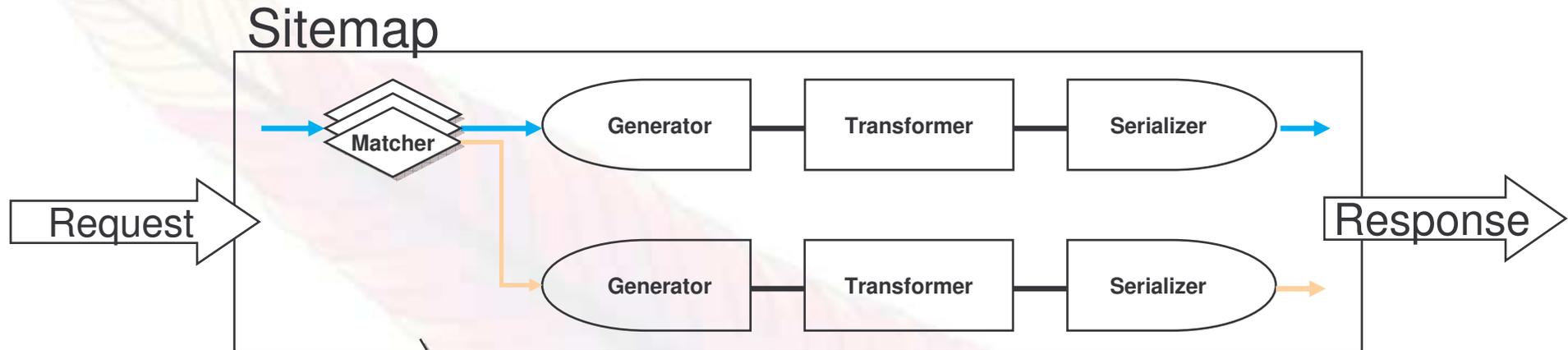
Web Publishing with Cocoon

- Flexible Data Integration / Aggregation
 - XML files, XML over HTTP
 - Databases, LDAP, SAP
 - ...
- Flexible Publishing (using XSLT)
 - HTML, WML, XML
 - PDF, SVG, PS, Office Documents
 - ...

Request Handling (Sitemap)

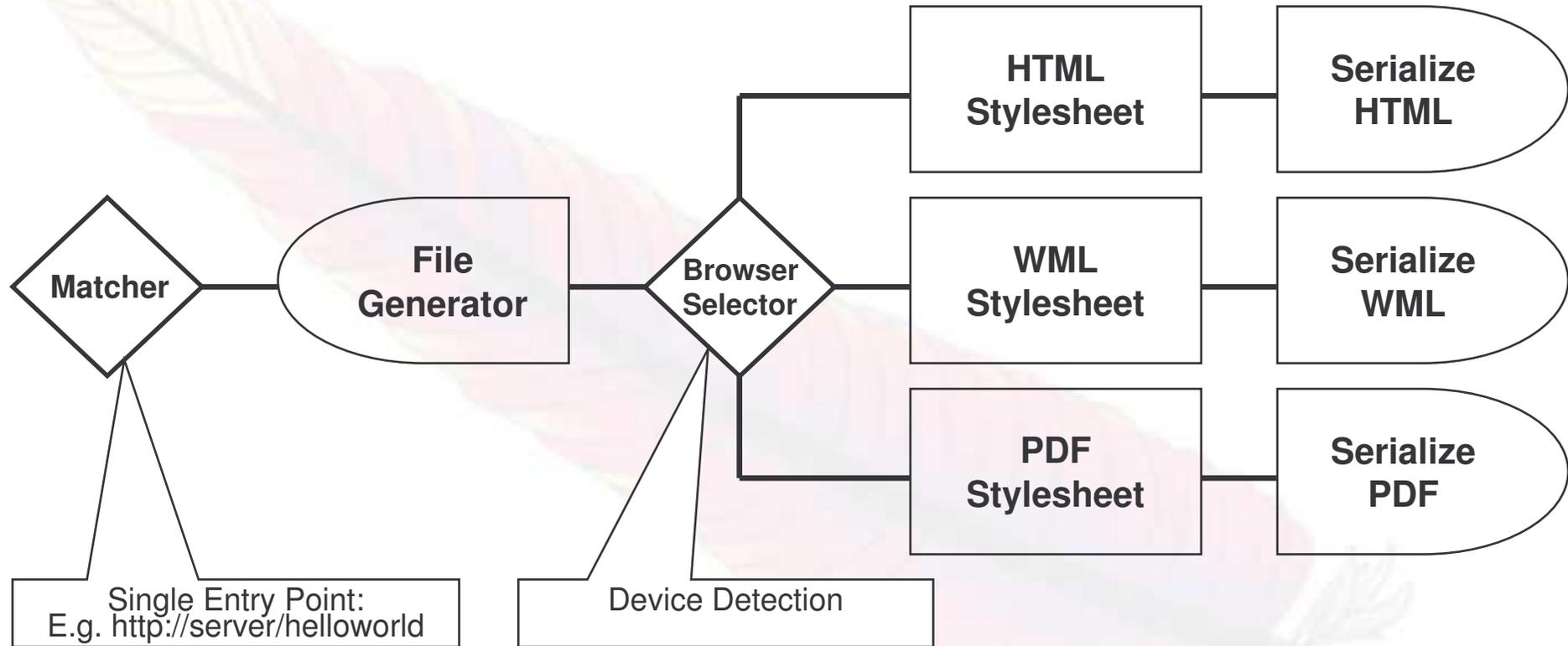


Request Handling (Sitemap)



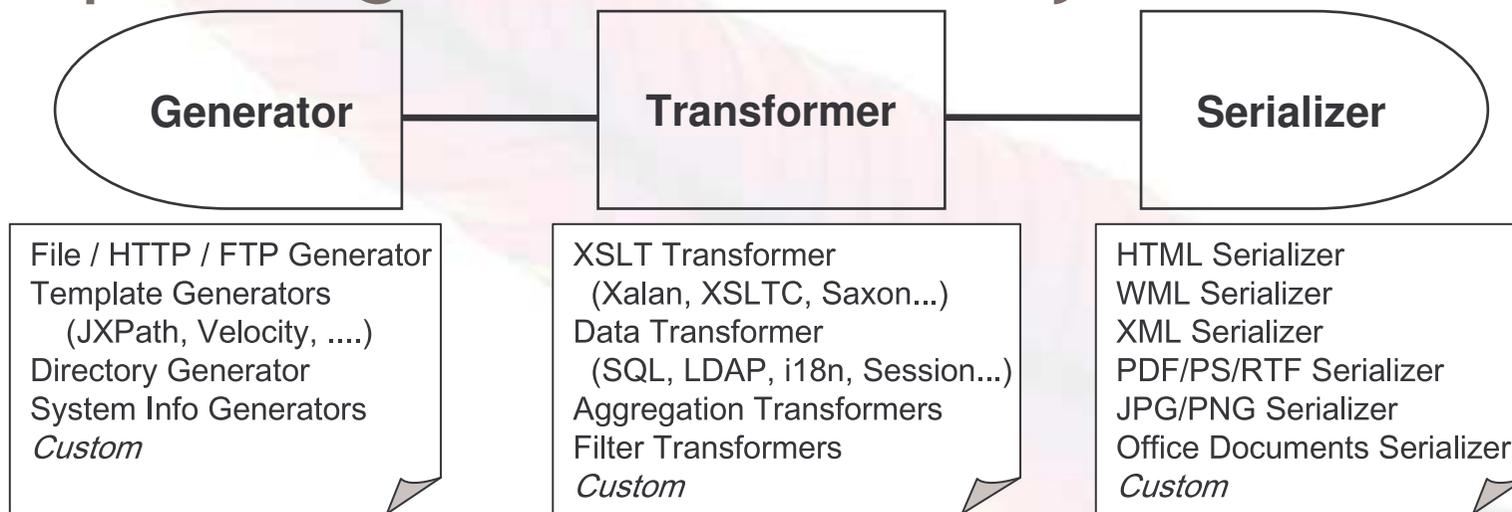
```
...  
<map:match pattern="helloworld" type="wildcard">  
  <map:generate type="file" src="helloworld.xml"/>  
  <map:transform type="xslt" src="helloworld2html.xsl"/>  
  <map:serialize type="html"/>  
</map:match>  
...
```

Device Detection / Multi Channel



Standard Pipeline Components

- Program the Sitemap
- Define the matches and pipelines
- Separating Content from Layout



Web Publishing with Cocoon

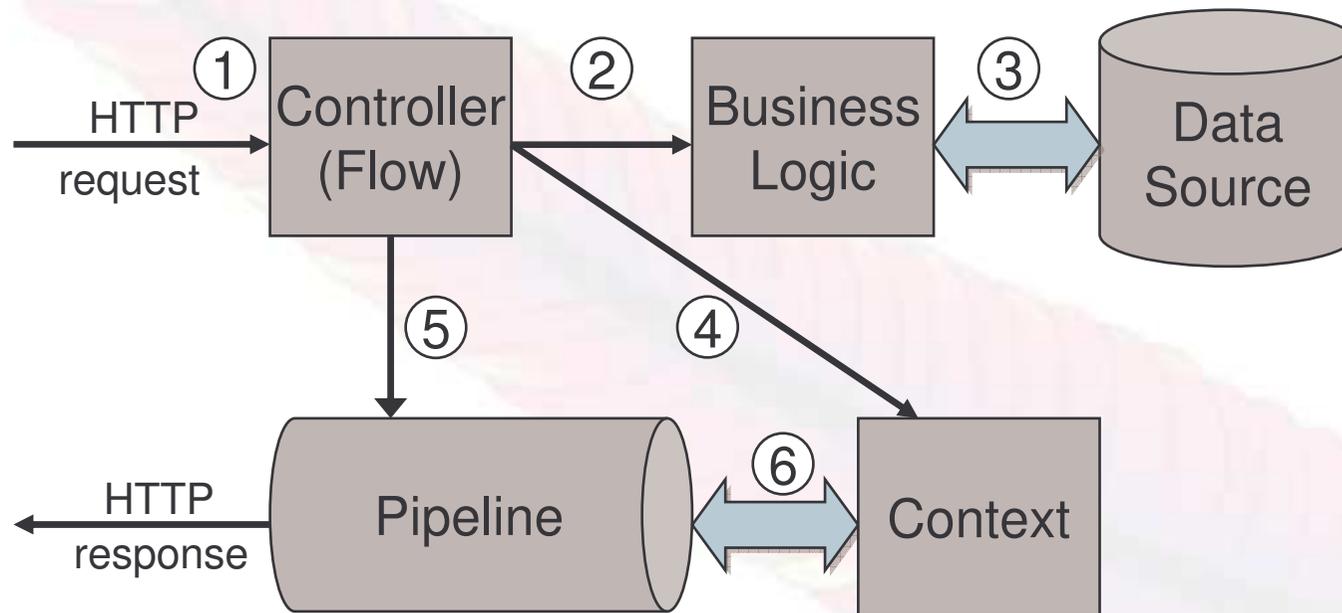
- Dynamic Document Generation
 - Separation of Content and Layout
- Powerful Processing Description (Sitemap)
- Flexible Pipeline Concept
 - Many available components
- Conditional Processing (Matches/Selects)
- Caching

Web Applications Cocoon Flow



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Cocoon "MVC"



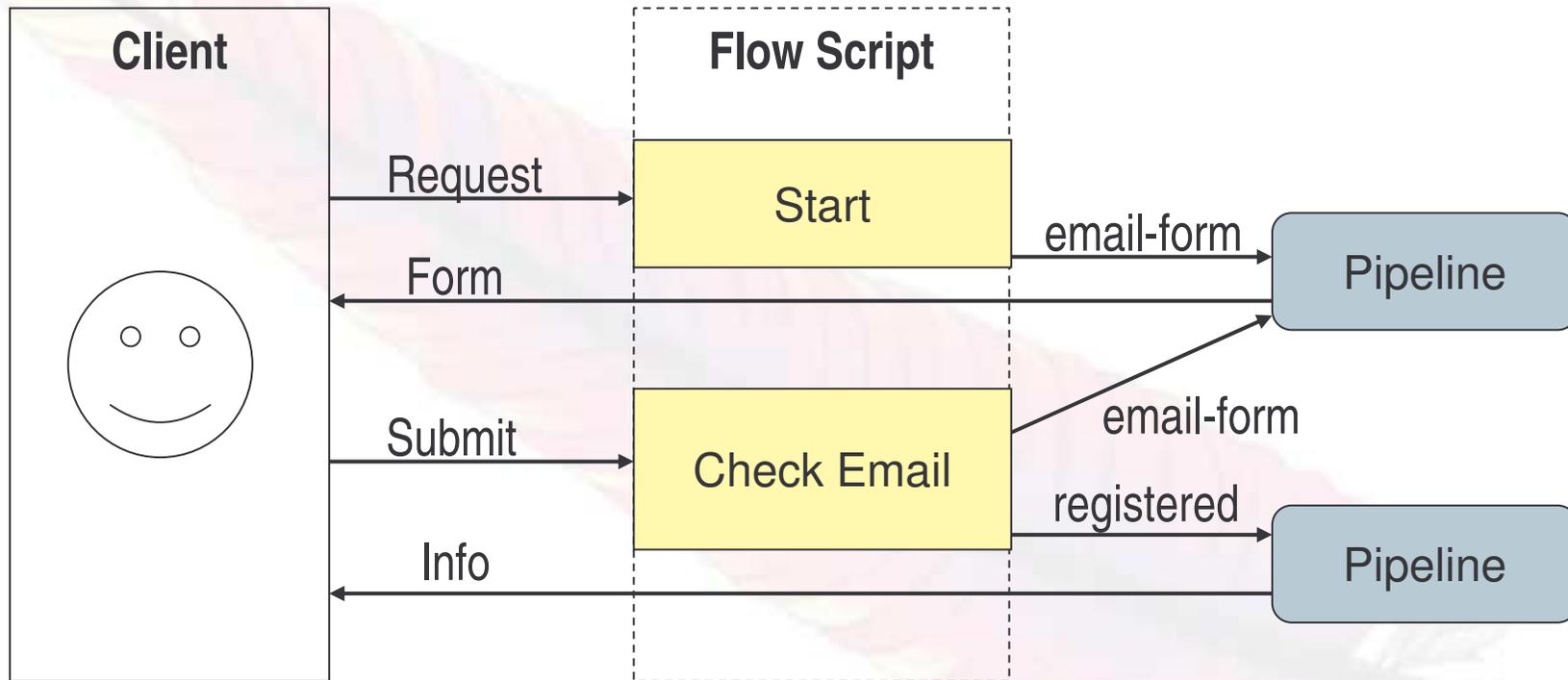
Cocoon Flow - A Control Layer

- Glues together:
 - business logic
 - page flow
 - presentation
- Uses JavaScript scripts
 - server side
 - with Continuations

Flow - Example

- Newsletter Registration
 - User enters email
 - Page with form
 - If the email is not valid, user has to re-enter
 - Redisplay page with form
 - If the email is valid, show message
 - Another Page

Flow - Example



Flow - Example

```
function newsletter() {  
  
    var email = null;  
  
    while(email == null) {  
        cocoon.sendPageAndWait("email-form");  
  
        email = cocoon.request.get("email");  
  
        if (!checkEmail(email))  
            email = null;  
    }  
    cocoon.sendPage("registered", {who: email});  
}
```

 Pipeline

 Pipeline

The View Layer - Pipeline

- Cocoon 2.1.9+: Template Block (new jxtg)
- JXTemplateGenerator
- JXTemplateTransformer
- Other alternatives available
 - Velocity, XSP
- Custom components

Flow In a Nutshell

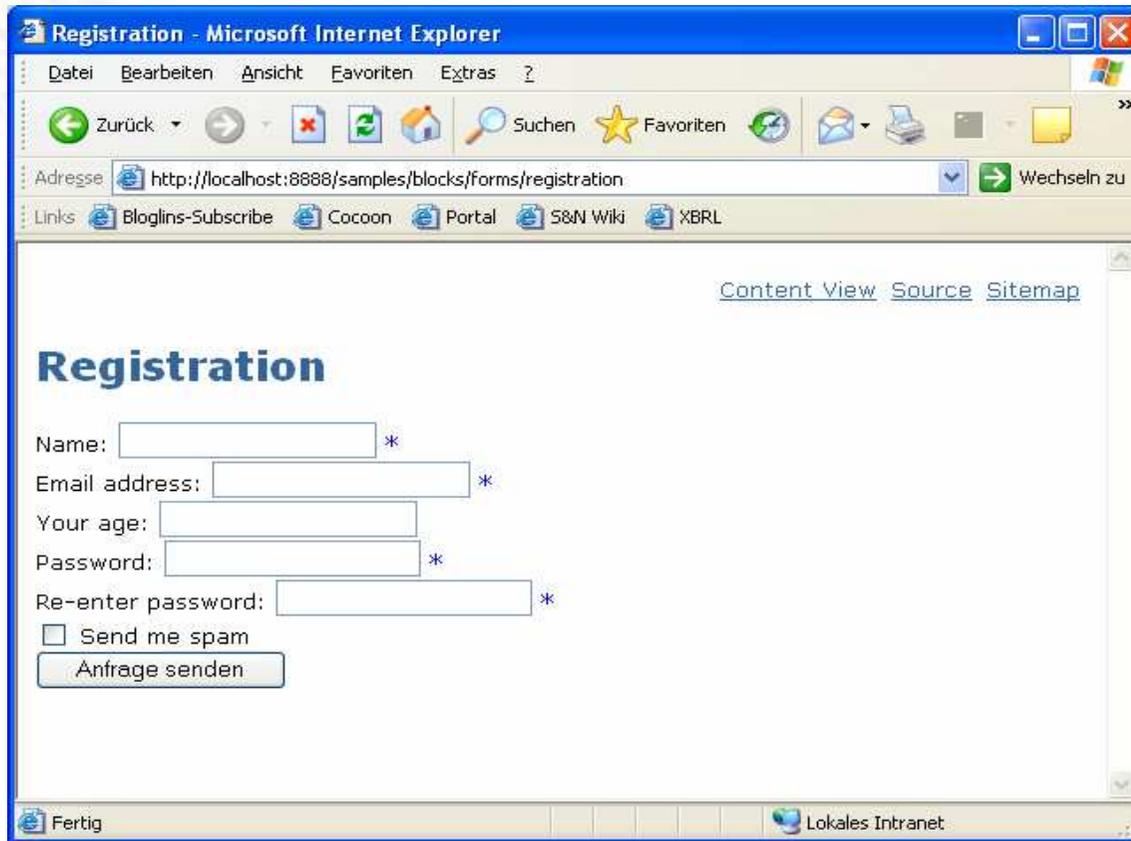
- Cocoon Flow is a big improvement
 - Powerful concept for building applications
 - Page flow
- Different options for building the View
 - JXTemplateGenerator (Template Block)
- Documentation is not that good
 - Check the Cocoon Wiki
 - Search the web!

Web Applications Cocoon Forms



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Simple Form Application



The screenshot shows a Microsoft Internet Explorer browser window titled "Registration - Microsoft Internet Explorer". The address bar displays "http://localhost:8888/samples/blocks/forms/registration". The page content includes a registration form with the following fields and elements:

- Navigation links: [Content View](#), [Source](#), [Sitemap](#)
- Section title: **Registration**
- Form fields:
 - Name: *
 - Email address: *
 - Your age:
 - Password: *
 - Re-enter password: *
- Checkbox: Send me spam
- Submit button:

The status bar at the bottom shows "Fertig" and "Lokales Intranet".

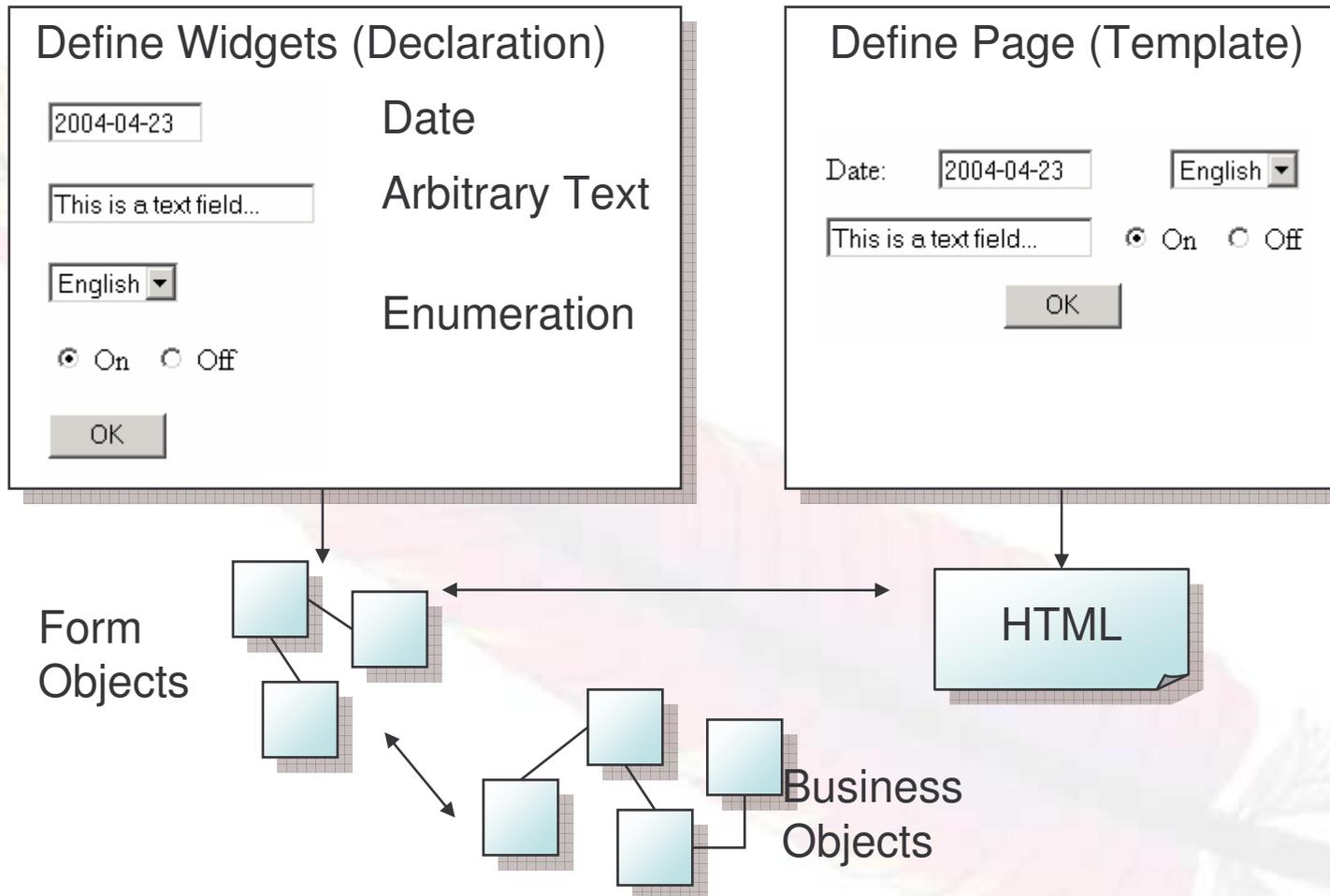
Cocoon Forms

- Official Cocoon Form framework “CForms”
- Fundamentals
 - Very little Java coding required
 - No Action/ActionBean required!
 - Strong datatyping & type conversion capabilities
 - Offers a growing set of ready-made widgets
 - Server-side form model plus event model

Widget Oriented Approach

- Set of standard widgets. For example:
 - Field (input, listbox, radiobuttons, textarea)
 - Booleanfield (checkbox)
 - Multivalue field (listbox, checkboxes)
 - Aggregated field
 - Action (button)
 - Upload
 - Repeater (tabular forms with functions)

How it works



Forms and Flow

- Use Cocoon Flow as the controller or „glue“
 - Java Script on the server
- Flow creates/manages the Forms model
- Forms Framework takes care of validation
- Predefined Functionality
 - For flow
 - For the view (jxtg)

Cocoon Forms

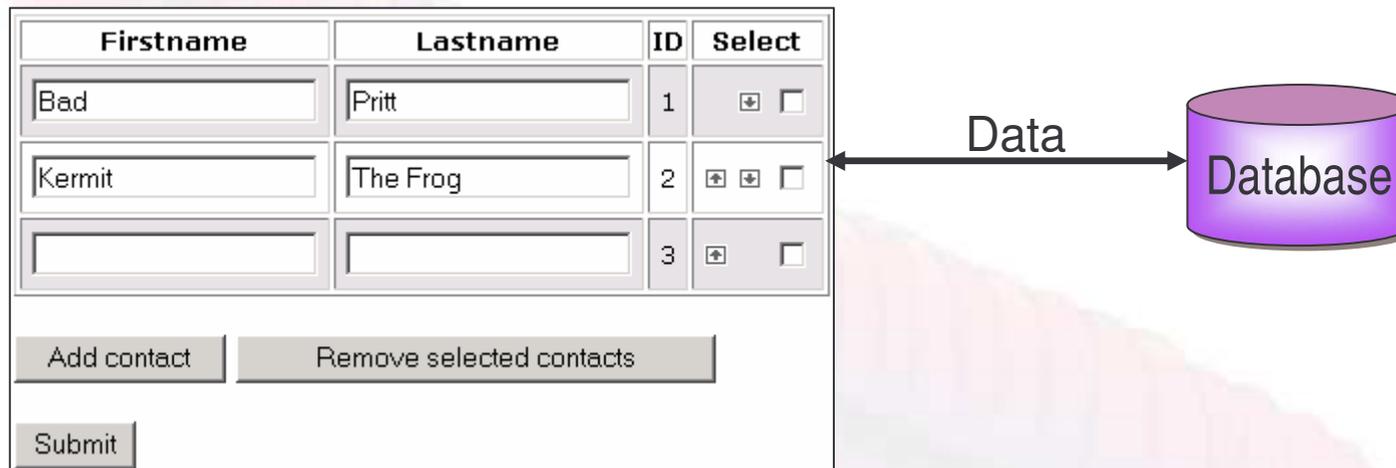
- Separation of Concerns
 - Model, Template(s) and
 - Optional Binding (XML, Beans)
- Predefined widgets and validation rules
- Many hooks incl. event handling
- AJAX ready - "it just works"

Web Applications Business Layer



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Simple Web Application



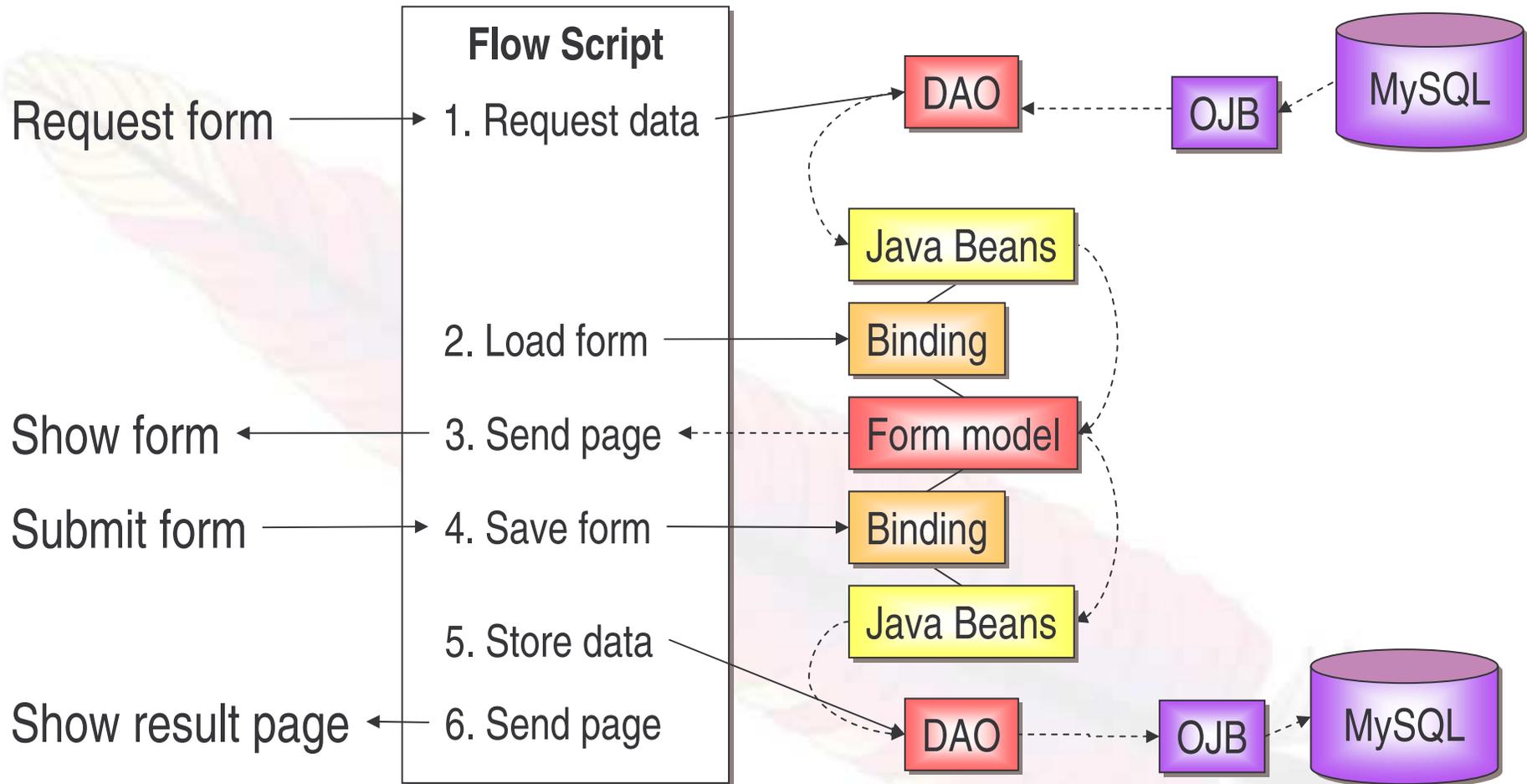
Business Layer: it is up to you!

- Use **FlowScript** all-the-way (bad!)
- Use some **O/R mapping** (OJB, Hibernate) from inside FlowScript (slightly better)
- **FlowScript + Java facade**, providing access to BO and methods on back-end
- (opt.) Avalon (config, monitoring, logging)
- Spring or Hivemind

Binding

- Forms usually used for editing data
- Declare binding between widgets and business objects instead of implementing it
- Support for binding to JavaBeans and XML documents

Sample Web Application



Building Web Applications

- There are many more features like
 - Dynamic form generation
 - Widgets depend on selected values/objects
 - Selection lists etc.
 - Hooks in the validation and binding framework
 - Prepared functionality for flow and jxtg
- You are not locked in - use what you need
 - Spring, Hibernate etc.

Developing with Cocoon



Development Environment

- Choose a Cocoon version (2.1.9 or "dev")
- Choose the blocks you need (now or later)
- Be prepared to update Cocoon during development (Important bugfixes/features)
- Separate your own code from Cocoon
- Don't use internals (classes/methods etc.)
- Remember: **it's open source!**

Development Environment

- Modules (in your CVS/SVN):
 - Cocoon (released/from SVN)
 - Own framework (if required)
 - Application One
 - Application Two
 - ...
 - Optional: Integration Test

Development Environment

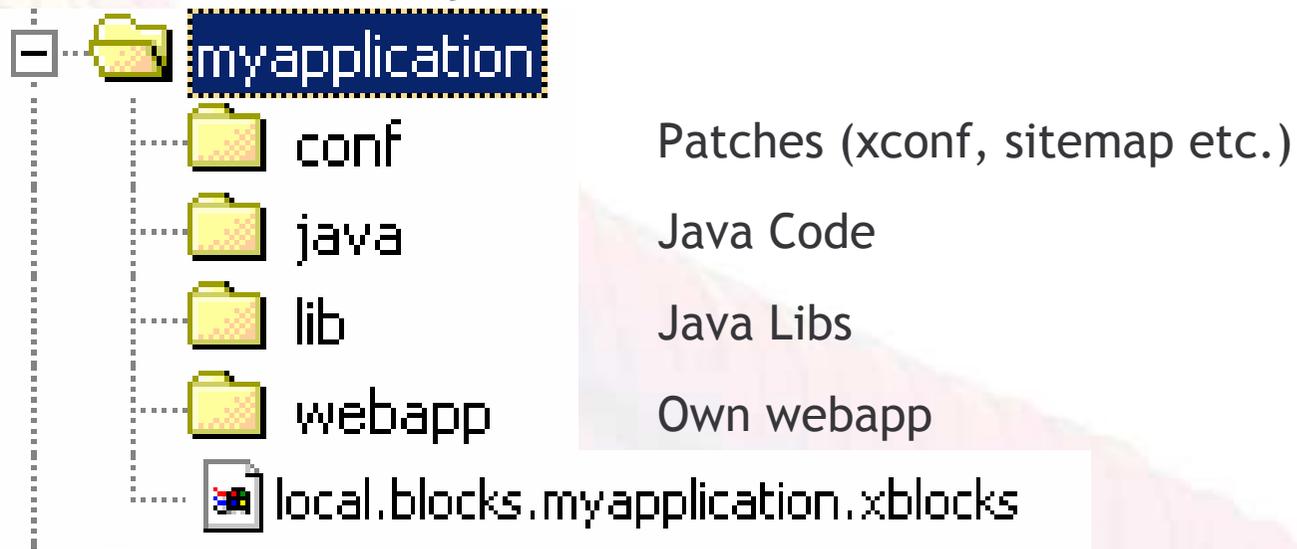
- Automated Build Process (Checkout, Build, Run)
- IDE: Eclipse
- Build System: Ant (in Cocoon)
- Run with Jetty (in Cocoon) or Tomcat
- Testing: JUnit (in Cocoon), AntEater
- CI: CruiseControl/Continuum /Cron Job
- QM: Checkstyle, PMD, Findbugs
- (Use Issue Tracking Systems)

Development Environment

- Process
 - Cocoon as Eclipse Project
 - Own Modules as separate Eclipse Projects
 - Cocoon Mounttable to mount own applications
 - Local Block Descriptor for own applications
 - Build Cocoon once (!)
 - Run/Debug from within Eclipse
 - (Own Build script to create war files for deployment)

Directory Structure for blocks

- Block Directory Structure



Summary and Outlook



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Building Web Applications

- The Easy Way
 - Use Cocoon with Flow, Forms and Template ☺
 - Add your own business layer (Spring, Hibernate)
 - Don't use flow script for everything
 - Benefit from separation of concerns
 - Develop component oriented
- But
 - The first steps might be hard!
 - Don't give up - the effort pays back

Building Web Applications

- The Easy Way
 - Create a developer friendly environment
 - No build script invocation during development
 - Use tests and CI
- Be part of the Cocoon community
 - Report problems or bugs
 - Make suggestions
 - Try to help out, submit patches etc.

Benefits I

- Stable platform (4 years+)
- Large community
 - Including large corporations
- Separation of Concerns
 - Team Development
- Optimized for performance and stability
 - Caching, Pooling

Benefits II

- Cocoon offers a great variety
 - Most of the hard work is done already
 - AJAX, Portal framework etc.
- Component orient architecture
 - Extensible with own components
- Flexible data integration and publishing
 - Often: No programming needed

And Development Continues!

- 2.1.9 Released (2.1.10 will follow)
- Release Early - Release Often ☺
- New features are constantly added
 - New Blocks
- Enhanced
 - Usability and Performance
- Bug Fixes
- Next major innovation: Cocoon 2.2

The Vision: Real Blocks™

- Hot-Deployment
- Resolving of dependencies
 - Maven-style repository downloads
 - Versioning
 - Classloading
- Reconfiguration
- Make blocks independent (own versioning)

Benefits of Cocoon 2.2

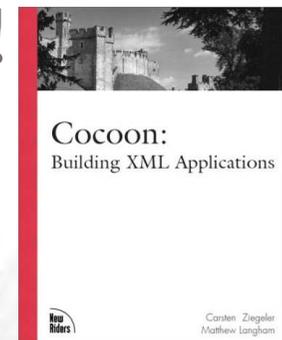
- Rapid Development
- Spring 2.0
- Modular Configuration
 - Avalon (Compatibility)
 - Spring
 - Property Replacements
- Running Modes
- Hierarchical Configuration

The Current State of 2.2

- Requires JDK 1.4 / Servlet 2.3
- New Build System
 - Maven 2
- First "Milestone Release" soon!
- Check it out and give feedback!

Further Information

- Apache Cocoon Project
 - <http://cocoon.apache.org>
 - Downloads, Mailing-Lists, Links
- Cocoon Documentation Wiki
 - <http://wiki.apache.org/cocoon>
- Apache Forrest, Apache Lenya and others!
- Books available
- Competence Center Open Source ☺
 - <http://www.ophelos.de>



Thanks for your attention!

Questions?