

CFlex: How to integrate Macromedia Flex with ColdFusion

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Agenda

- **General overview:**
 - Software engineering
 - Software architectures
- **Software architectures for web applications**
- **Why rich clients?**
- **Rich client architectures**
- **Flex as a rich client technology**
- **Integrating ColdFusion and Flex and specific setups**
- **Wrap-up**
- **Q&A**

About Kai...

- **Software architect with msg at.NET GmbH in Neuss, Germany**
- **Macromedia Premier Partner and MATP**
- **Fields of work:**
 - Web applications with CF, J2EE and Flex
 - Systems and software engineering
 - Mobile devices
- **Macromedia Certified Professional ColdFusion, Flash**
- **Macromedia Certified Instructor**
- **Community**
 - User Group Manager CFUG Nordwest
 - Blog in Black (<http://www.bloginblack.de>)
- **Regular contributor to several German IT-/web-related magazines**

Software engineering

- **What does the term „software engineering“ mean?**
- **General idea: Sometimes there is a need for a more scientific and formalized way of software development**
- **Examples:**
 - How to organize large development teams?
 - Developing over several integration layers (development layer, test layer, production layer)?
 - Considering maintenance and further development of an application shouldn't end up in a mess of work
 - Creating software providing a certain level of reusability
- **-> „Software engineering“ might provide a solution**

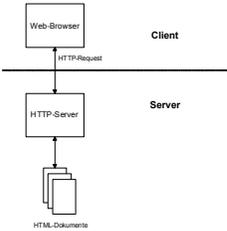
Software engineering

- **Approach: Consider software development as a discipline of engineering – nobody would allow a single craftsman to build a bridge over the Mississippi...**
- **Result:**
 - There is a need for methods, planned approaches and metrics
 - **Methods:** concepts for approved and well-known ways to solve problems
 - **Approaches:** a step-by-step process of using methods
 - **Metrics:** to provide a way of measuring success or failure
- **Examples:**
 - Modules and includes
 - OOP (Object-oriented programming), AOP (Aspect-oriented programming)
 - Unit testing
 - Modeling
 - Bug rate / lines of code
 - Frameworks like Fusebox, Mach II, Struts, Spring etc.

Software architectures

- **Software architectures use methods and processes of software engineering to ensure that large and complex systems are built following some guidelines:**
 - A proper and well-working interface design for incorporating single parts of the system into a larger and more complex system
 - Ensuring that the major system and all single parts stay maintainable over a given period
- **Choosing the proper technology**
 - .NET or J2EE or CF or PHP or Python...

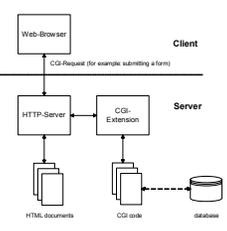
Software architectures for web applications 



- **Static HTML**
 - Request and response
 - A HTTP-Server delivers content from its file system:
 - HTML documents
 - Images
 - Media files
- **Web-browser play the role of a thin client**

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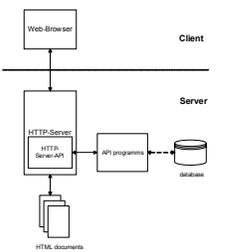
Software architectures for web applications 



- **CGI-Extensions...**
 - First step over server-sided development
 - Communication via CGI environment variables
- **Issues:**
 - Native code, usually platform-dependant
 - Hard to scale
 - Broad range of different technologies and languages

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Software architectures for web applications 



- **HTTP-Server-APIs:**
 - Function libs for HTTP-Server, Examples: ISAPI, NSAPI etc.
- **Issues:**
 - Platform-dependant after choosing an HTTP-Server
 - Strict coupling of the API and the process- and memory space of the HTTP-Server -> bad code often crashed HTTP-Server

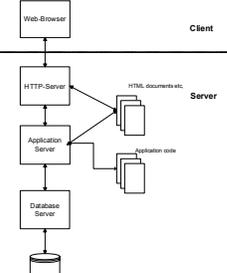
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Software architectures for web applications 

- **Minimal formal requirements to modern web application:**
 - Ability to integrate with external systems
 - Interoperability with different types of backend-technology
 - Scalability
 - Platform independence
- **Additional requirement delivered by software engineering:**
 - Robustness
 - Correctness
 - Stability
 - Portability etc.

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Software architectures for web applications 



- **4-tier model of a modern web application environment**

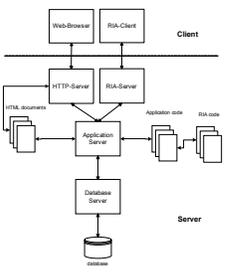
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Why rich clients? 

- **To have a complex topic fit on a single slide:**
 - HTML was never designed to be an application language, result is that HTML-based applications often show a lack of usability, comfort and ease of use
 - DHTML and JavaScript don't solve the problem (cross-browser issues etc.)
 - Result: People were looking for technologies allowing to develop rich clients for the web:
 - Macromedia: Flash
 - Microsoft: Avalon/Longhorn/XAML
 - Java Web Start, a lot more different approaches in the Java world...
- **-> there is a demand for real applications in the web!**

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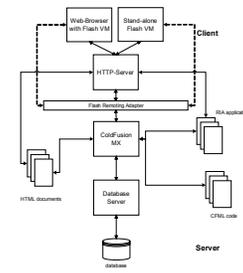
Rich client architectures 



- **4-tier architecture with a RIA-Server and RIA-Client**
 - Browser and rich client could be identical (like in the Flash model) – but they don't have to be

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RC architecture with CF, Flash and Flash Remoting 



- **Flash Remoting is a RPC communication gateway between the Flash client and CFMX**

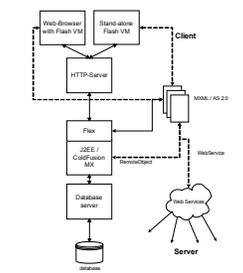
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Flex as a rich client technology 

- **Flex offers a different approach:**
 - Developers don't have to use the Flash authoring environment anymore
 - Flex offers two languages allowing the development of Flash-based apps on the server:
 - MXML (declarative XML language for the description of your UI)
 - Action Script 2.0 (OO-language for event handling, client-side logic etc.)
 - Flex compiles your code and delivers an .swf-file to the client
- Support for so called service oriented architectures (SOA) – services provided by some sort of backend technology: J2EE, ColdFusion or anything providing a XML-based web service interface

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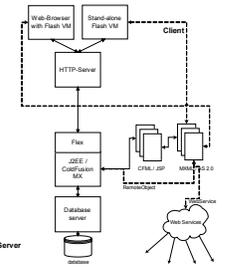
Integrating ColdFusion and Flex (1) 



- Flex app is getting compiled with the first call of the .mxml file, server creates the .swf and place it in its cache
- SOA: Flex client is using a middleware technology to access application/business logic – doesn't have to be local
- Communication via:
 - RemoteObject (Java, CF)
 - Web service (anything else)

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Integrating ColdFusion and Flex (2) 



- **Embedding Flex applications or widget in HTML-based web applications driven by CFML or JSP**

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Specific setups 

- Both products offer a setup which embeds an integrated JRun server in ColdFusion or Flex – this allows using architecture (1) quite easy.
- To combine Flex and CF tags, you'll need a more specific installation. A quite simple way to archive this is to
 - Install CFMX 6.1 in the J2EE – JRun 4 setup
 - Install Flex as another servlet within the same JRun 4 instance like CFMX is installed
 - See technote in the Flex support area on macromedia.com for detailed instructions
- This allows to use architecture (2).

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- **The demand for rich client applications will become stronger over the next two years – even not regarding any specific technology it seems to be the way how the web is going to evolve...**
- **Flex and ColdFusion provide good approaches to have the best of both worlds – watch out for Blackstone, which will make the situation even better...**