



Web development with PHP

Speaker

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- Active in various PHP related open source projects
 - PHPUnit
 - eZ Components
 - PEAR
 - PHP itself
- Speaker on various webtechnology related conferences
 - International PHP Conference
 - Dynamic Languages World
 - FrOSCon
- Regular authors in various magazines
 - PHP Magazine
 - Linux Magazine

Agenda

- History
- Architecture
- The easy way
- Object orientation
- Database access
- Templating
- Security
- Common infrastructure

General

- Please ask!
 - Whenever a question occurs
 - How stupid you think the question might be
- Slides will be online later today on
 - <http://udo.edu/.../php.zip>

What is PHP?

- Most important programming language in the web
 - Fourth popular language (TIOBE)
- Easy to learn
- Web-centric, but not web-only
 - CLI
 - GTK
 - Embedded
- Portable

Who uses PHP?

- Do you?
 - What do you do with PHP?
 - Do you like / hate PHP?
 - Did you already use PHP 4 (maybe even 3)?
- In the „real“ world:
 - Yahoo, Facebook, StudiVZ, Wikipedia, ...
 - Siemens, T-Online, ...
 - Add \$bigCompany here

Use Case: StudiVZ

- 550 High-End-Server
- 2,200 Processor Cores
- 7,000 GB RAM
- Peek 4,300 Mbit / sec.
- Peek 150,000 database queries / sec.

Statistics estimated in June 2009

Open Source

- Vital Open Source community
 - Professionals
 - Zend (Zend Engine 2)
 - IBM (Project Zero)
 - Yahoo! (APC)
 - eZ Systems (Xdebug)
 - ...
 - Volunteers
 - Extension developers
 - Testers
 - Documentors (12 languages)
 - User-space libraries (PEAR, Zend Framework, eZ Components,...)

Agenda

- History
 - The past
 - The present
 - The future
- Architecture
- The easy way
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The past

- PHP/FI (Personal Homepage Tools / Form Interpreter)
 - Collection of Perl scripts from Rasmus Lerdorf
 - Converted to C a bit later
- PHP 3 (PHP Hypertext Processor)
 - Rewrite by Andi Gutmans and Zeev Suraski
 - Zend develops the Zend Engine 1
- PHP 4
 - Merges parts of PHPLib (Sessions)
 - Very simple object orientation

The present

- PHP 5 / Zend Engine 2
 - „Real“ object orientation
 - Important features (currently 5.2.9)
 - Better XML handling
 - Database abstraction layer
 - Speed improvements
- PHP 5 has actually been released four years ago.
- Support for PHP 4 has officially been dropped end 2007.

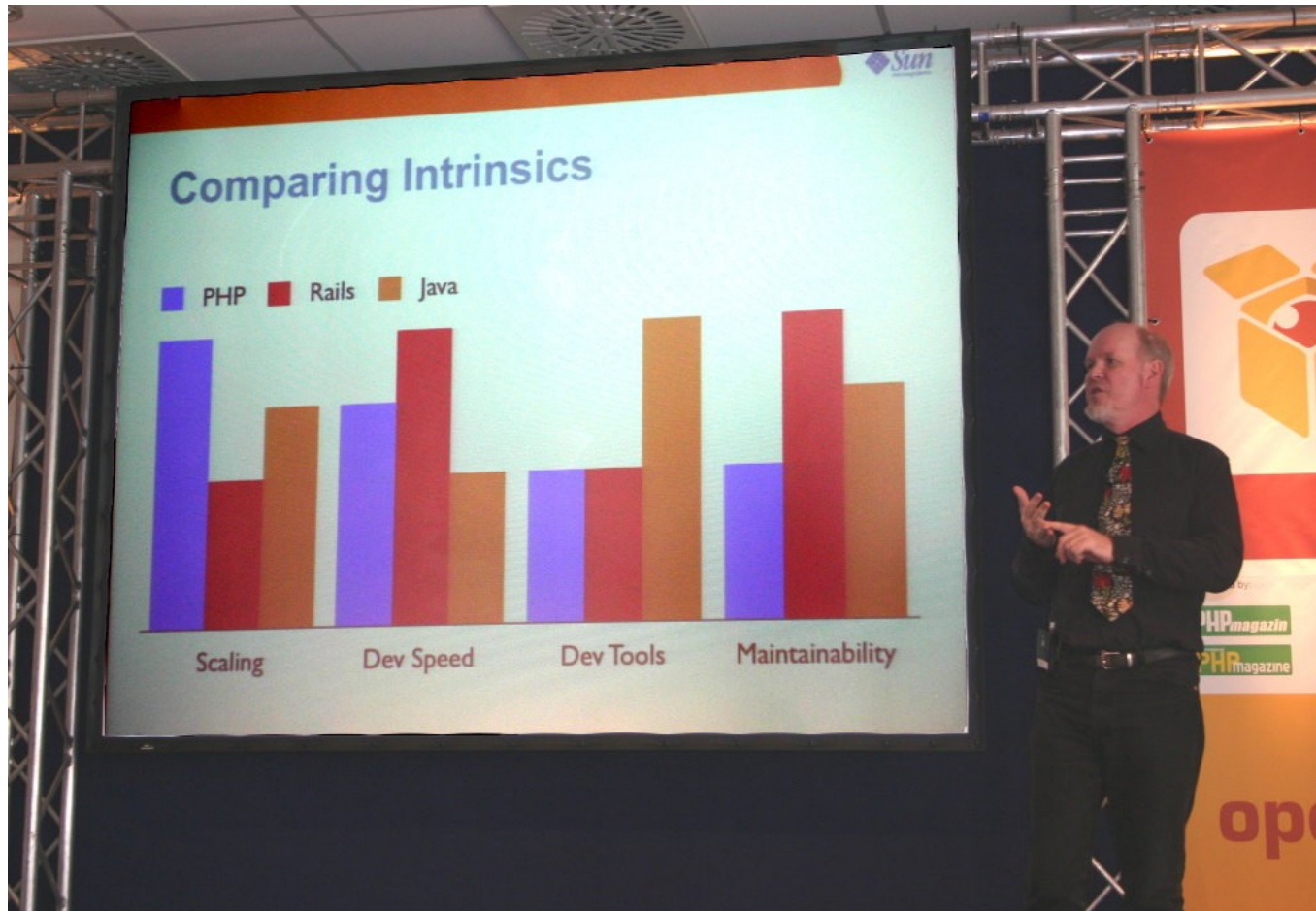
The future

- PHP 5.3 (right ahead, today?)
 - Namespaces
 - Late static binding
 - Closures / lambda functions
 - Goto (sic!)
- PHP 6 (no promises!)
 - Native Unicode support
 - Traits
 - Cleanup of deprecated features
 - Register globals
 - Safe mode
 - ...

Agenda

- History
- **Architecture**
 - Language properties
 - Share nothing
 - Installation
 - Documentation
- The easy way
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Tim Bray (Sun) 2006:



Language properties (1/2)

- Typing:
 - Dynamic (similar to Python, Perl)
 - Weak (similar to JavaScript, Python, Ruby)
- Paradigms
 - Imperative
 - Procedural
 - Object oriented
 - Functional
 - Structured
 - (Aspect oriented)

➔ Freedom vs. Clarity

Language properties (2/2)

- Libraries
 - PHP uses C/C++ libraries as „extensions“
 - Several core extensions
 - Standard
 - Array
 - ...
 - Optional extensions shipped with the core
 - Additional extensions installable via PECL

Share nothing

- Designed for HTTP
 - Stateless
 - Resources are freed at the end of a request
 - Environment reinitilisation
- No application server
- Persistent states in shared memory
 - RAM
 - memcache / APC / ...
 - File systems
 - Databases
- Threadsafe environment
 - No threading in language

Installation

- Normally used inside a web server
 - Apache
 - Lighttpd
 - Standalone applications possible
- Interfacing through:
 - mod_php
 - CGI (clustering)
 - CGI

<http://www.php.net/manual/en/install.php>

PEAR Installer

- Unified installation infrastructure for PHP
 - Manage
 - PHP code packages
 - C-Extensions to PHP
 - Channel support
 - Provide your own code via PEAR Installer
 - Application setup facilities
 - Pre- / post install scripts
- Shipped with PHP since 4.3.0

Documentation

- [http://docs.php.net/\(extension|function|class\)](http://docs.php.net/(extension|function|class))
 - Good coverage of core functions / classes
 - English version very up to date
 - Translations sometimes outdated
- Books
 - Many many books...
- Magazines
 - PHP Magazin (<http://it-republik.de/php/>)
 - php|architect (<http://www.phparch.com/>)
 - ...

Agenda

- History
- Architecture
- **The easy way**
 - Request / response handling
 - PHP by example
- Object orientation
- Database access
- Templating
- Security
- Common infrastructure

Request handling

- Request data is available in **superglobal** arrays
 - `$_GET`
 - `$_POST`
 - `$_COOKIE`
 - `$_FILES`
 - `($_SERVER / $_ENV)`
- **Live example:** Simple form

Session handling

- Session data in superglobal array
 - `$_SESSION`
- Data stored serialized in:
 - File system (standard)
 - User extendable
 - Memcache (-server)
 - Database
- Session-user-association:
 - Trans-ID
 - Cookie
- **Live example:** Simple extended form

Agenda

- History
- Architecture
- The easy way
- Object orientation
 - Example
 - Specialities
- Database access
- Templating
- Security
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OOP Features

- Classes
 - Methods
 - Attributes
 - Constants
 - Ctor / Dtor
 - Scopes
- Interfaces
- Abstract classes
- Static

Live example

- OOP in PHP

Specialities

- Autoloading
- Type hints
- Interceptors

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Supported databases

- Mysql
- Oracle
- PostgreSQL
- Sqlite
- Firebird
- MSSQL
- DB2
- ...

PDO

- PDO = PHP Data Objects
- Object oriented interface
- Standardised API (kind of)
 - No SQL abstraction
 - No automatic data persistence

Database abstraction

- Abstraction layers written in PHP instead of C
- SQL abstraction
 - eZ Database
 - PEAR MDB2
- „Active record“-like implementations
 - PEAR DB_DataObject (PHP 4)
 - eZ PersistentObject (PHP 5)
 - Zend ActiveRecord

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- **Templating**
- Security
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PHP is a templating language

- Original idea for PHP
- Problems
 - PHP got too powerful
 - User provided templates (security!)
 - No automatic output escaping (security)
 - Designers don't want to write real code

Template languages

- Restricted functionality
- Automatic output escaping
- Simple syntax

- Highly specialized template languages written in PHP
 - Smarty
 - eZ Template
 - PHPTAL
 - ...

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Is PHP an unsafe language?

- Security problems are not language specific
- There are bugs in all language interpreters / virtual machines
 - The web environment is an „easy“ target
- ext/filter for general input filtering
 - Global prefiltering

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- Architecture
- Easy as in...
- Database access
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Related technology (1/2)

- Bytecode caches
 - APC (open source)
 - Zend Performance Suite (commercial)
- XML
 - 4 different APIs
- JSON
 - Integrated
- Webservices
 - XML-RPC
 - SOAP
 - REST

Related technology (2/2)

- Development tools
 - IDEs
 - Standalone Debuggers
- Testing
 - Unit Testing (PHPUnit)
 - Acceptance testing (Selenium)

Conclusion

- PHP is easy and fast to hack
 - Beginners might publish (unsecure) apps
 - C-like syntax
- Object orientation
 - Re-usable components
 - Good web architecture still not easy
 - PHP gives you freedom
- PHP scales
 - Development wise
 - Performance wise
 - Customer wise

Thank you for listening

- Any questions?
 - Kore Nordmann <kore@php.net>
 - Tobias Schlitt <toby@php.net>
 - Jakob Westhoff <jakob@php.net>

- We hope you enjoyed the session

- If you like PHP and Open Source in general
 - Free and Open Source Conference (FrOSCon)
 - 2009-08-22 / 23 St. Augustin (Bonn)
 - „Original Linuxtag“-like atmosphere (and better)
 - <http://froscon.de>