Seagull Framework

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Demian Turner <demian@phpkitchen.com>
Michał Pawłowski <misza@weblab.com.pl>

Table of contents

Why use a framework?

- Workflow
- Db abstraction
- Class library integration
- Form management
- Component reuse

Why use a framework?

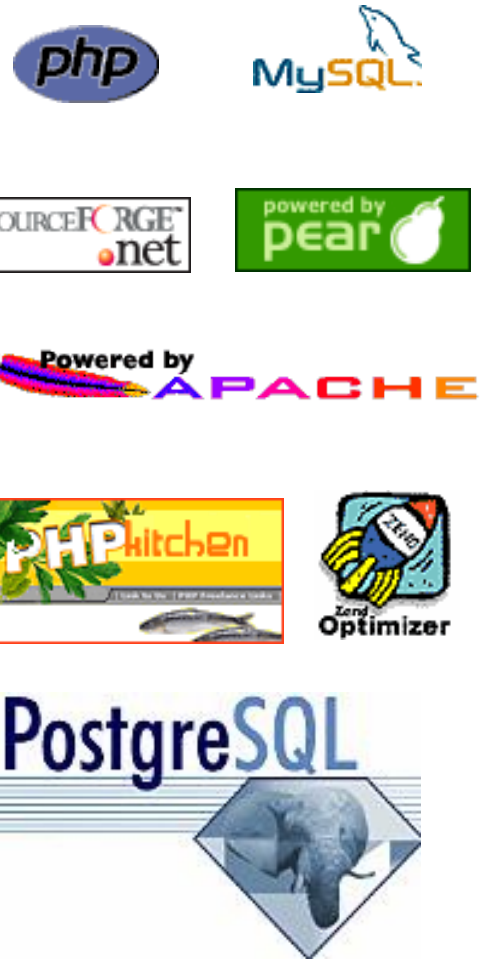
- Is anybody in the audience a PHP beginner?
- The result of using a framework is that 10–20% of the total code for a project is application specific, giving a huge reduction in code size, and improving readabilty and maintainability considerably.
- Because it's useful to get standard foundations, the same way to build an app. It may be harder at the beginning but then everyone speaks the same language. It's a reason why Java is popular.

Why use Seagull?

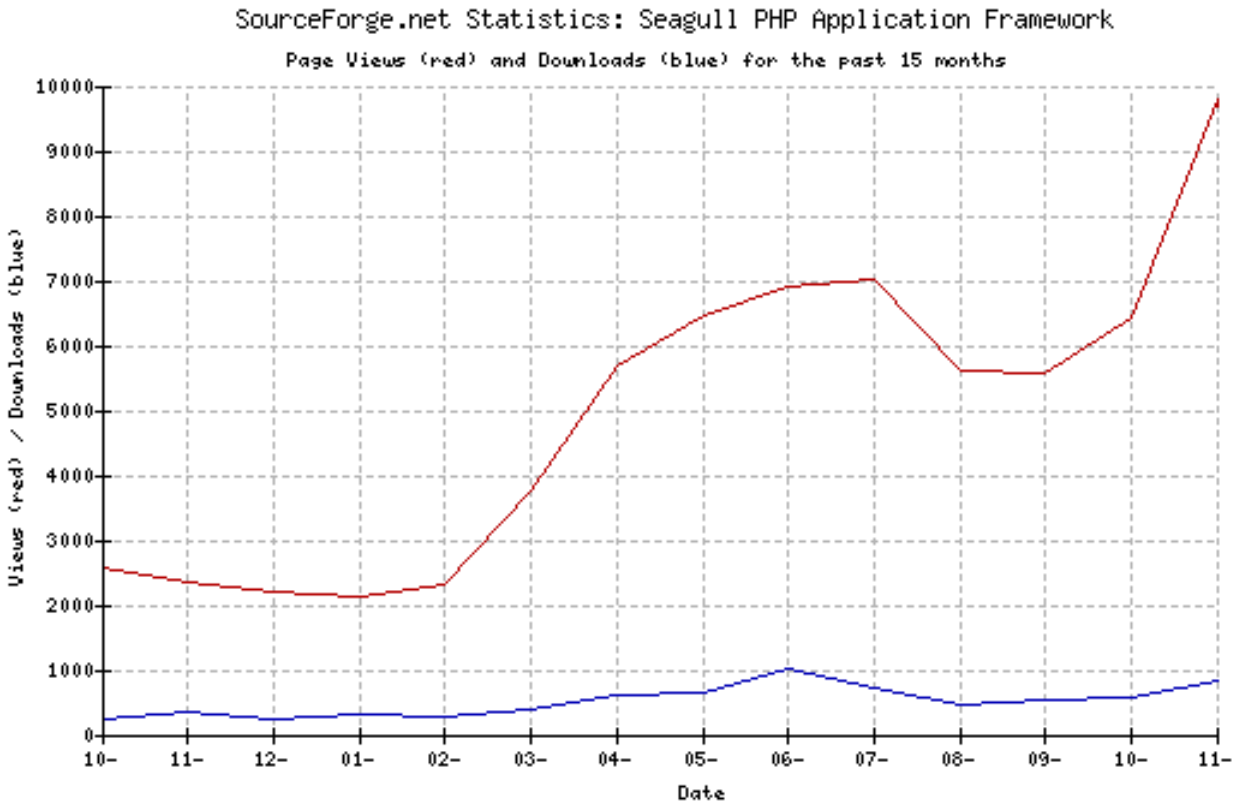
- Open Source project supported by a large developer community
- Emphasis on usage of PEAR libraries
- Use of design patterns

Community

- Active Sourceforge project
- 15 Core developers
- 100 + People on 3 mailing lists
- Wiki documentation project
- 62 users signed up
- Range of skills



Sourceforge Growth



Refresher on OOP, design patterns

- Why use OOP approach?
- Frequently used patterns:
  - Factory
  - Singleton
  - Template
  - Composite
  - Delegate

Introduction

- What is Seagull?
  - BSD licensed
  - Translated into 16 languages
  - Schemas provided for 4 DBs
  - 134, 931 LOC
  - 794 kb download with PEAR installer
- Target audience

What does Seagull do?

- Permissions handling and authentication
- Facilitates team development environment
- Internationalisation/localisation (demo)
- Application config (demo)
- Personalisation: preferences and themes
- Cacheing and performance
- Enhanced error handling

Seagull concepts

- libs, modules, managers and controller
- MVC, OOP, modular design
- workflow:
  - Validate
  - Process
  - Display

UML Overview

- Seagull is built from a number of system objects
- Overview diagram

System objects

- Session
- Config
- DB
- Cache
- Preferences
- User

DB Support

- Support for MySQL, PostgreSQL, Oracle, MaxDB (mySAP)
- Modified the way PEAR sequences work
- Connection cacheing for multiple DSNs
- Use of InnoDB foreign key constraints for data normalisation
- http://seagull.phpkitchen.com/docs/wakka.php?wakka=DbQueryExamples
- How many people use PEAR::DB?

Foreign Key Constraints

```
ALTER TABLE `role_permission`
ADD FOREIGN KEY (`role_id`)
REFERENCES `role` (`role_id`)
ON DELETE CASCADE;
```

- User: roles, permissions, preferences
- Typical user will have ~100 perms (10 modules, 10 actions each)

Demo/1

- **OBJECTIVE**: Integrate new supplier, grant access to content management tools
  - Create a new organisation
  - Define the role of the new users

PEAR

Pros

- High quality code base
- Active peer review
- Package manager
- Responsive maintainers

Cons

- Inconsistency of quality
- Occasional package obesity

PEAR installable

- Package generated with PEAR_PackageFileManager
- Dependency resolution
- Installable from remote source
- Web-based wizard installer

Packages Used

- Benchmark
- Cache_Lite
- Date
- DB
- DB_Pager
- DB_DataObject
- DB_NestedSet
- HTML_Javascript
- HTML_TreeMenu
- HTML_Template_Flexy
- Log
- Mail
- Net_UserAgent
- PHPdocumentor
- System
- Text_Password
- Text_Statistics
- Validate

Demo/2

- **OBJECTIVE**: Integrate new supplier, grant access to content management tools
  - Use the module generator to create functionality
  - Import users from CSV file
  - Flexibility to change perms at role level
  - Search for a particular user
  - Change perms at user level

Performance

- Without PHP cacheing or bytecode cache, around 12 reqs/sec
- Typical configuration
  - cpu: amd 1.4 Ghz
  - ram: 512MB
  - Apache/linux

63 reqs/sec

Best practices: Standards

- PEAR coding standards
- Emphasis on library usage (see tutorials)
- Profiling with Xdebug
- Unit testing: SimpleTest
- Self-generating documentation: phpDoc

Road Map

- xml-rpc wizard for upgrading/installing modules like PEAR/webmin
- separate core framework
- write tests for all modules
- 3rd party application bridge
- content versioning
- increase db vendor support

Resources

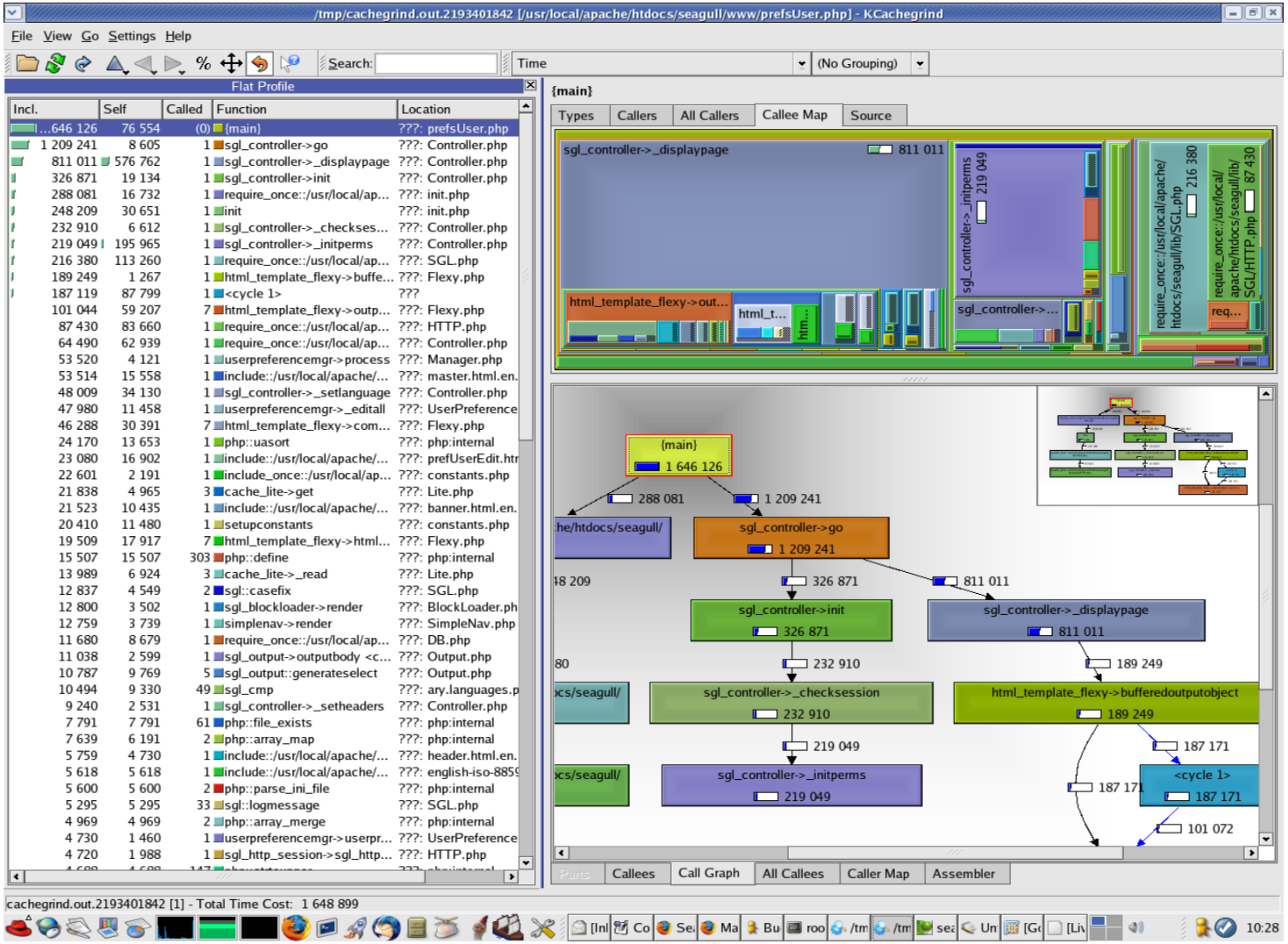
- Project homepage: http://seagull.phpkitchen.com
- Documentation: http://seagull.phpkitchen.com/docs
- SF project page: https://sourceforge.net/projects/seagull
- Mailing list archive: http://marc.theaimsgroup.com/?l=seagull-general
- PEAR packages: http://pear.php.net
- Framework material: http://www.phpkitchen.com/index.php?topic=phpFrameworks
- Xdebug: http://www.xdebug.org
- PhpDocumentor: http://www.phpdoc.org
- SimpleTest: http://www.lastcraft.com/simple_test.php
- Kcachegrind: http://kcachegrind.sourceforge.net/cgi-bin/show.cgi
- PEAR tutorials: http://www.phpkitchen.com/staticpages/index.php?page=20030412042039 62

Profiling / 1

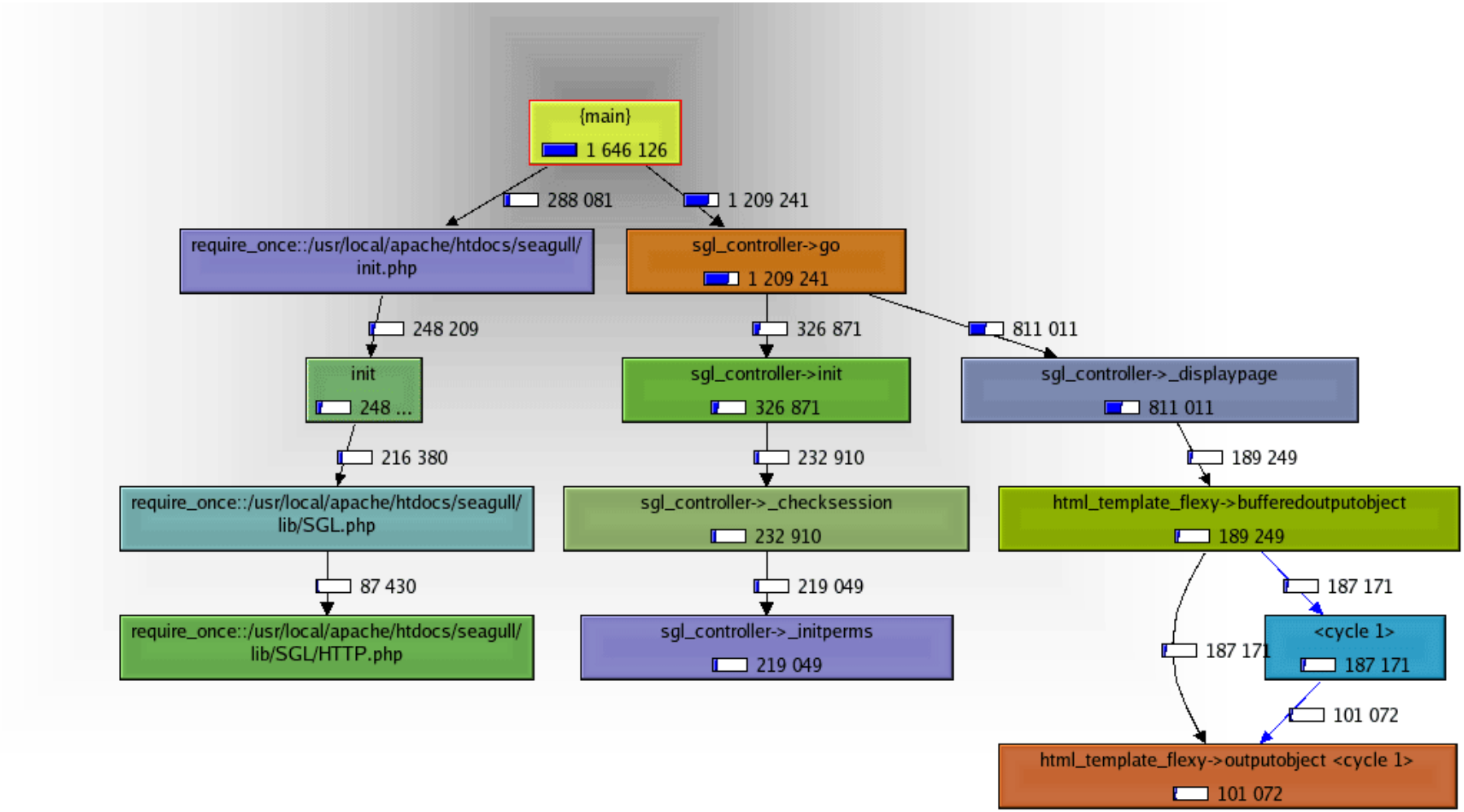
Typical Xdebug trace file output, cachegrind.out.2193401842:

```
version: 0.9.6
cmd: /usr/local/apache/htdocs/seagull/www/prefsUser.php
part: 1

events: Time Memory

fl=php:internal
fn=php::function_exists
0 378 16

fl=php:internal
fn=php::phpversion
0 38 0
```

Profiling / 2

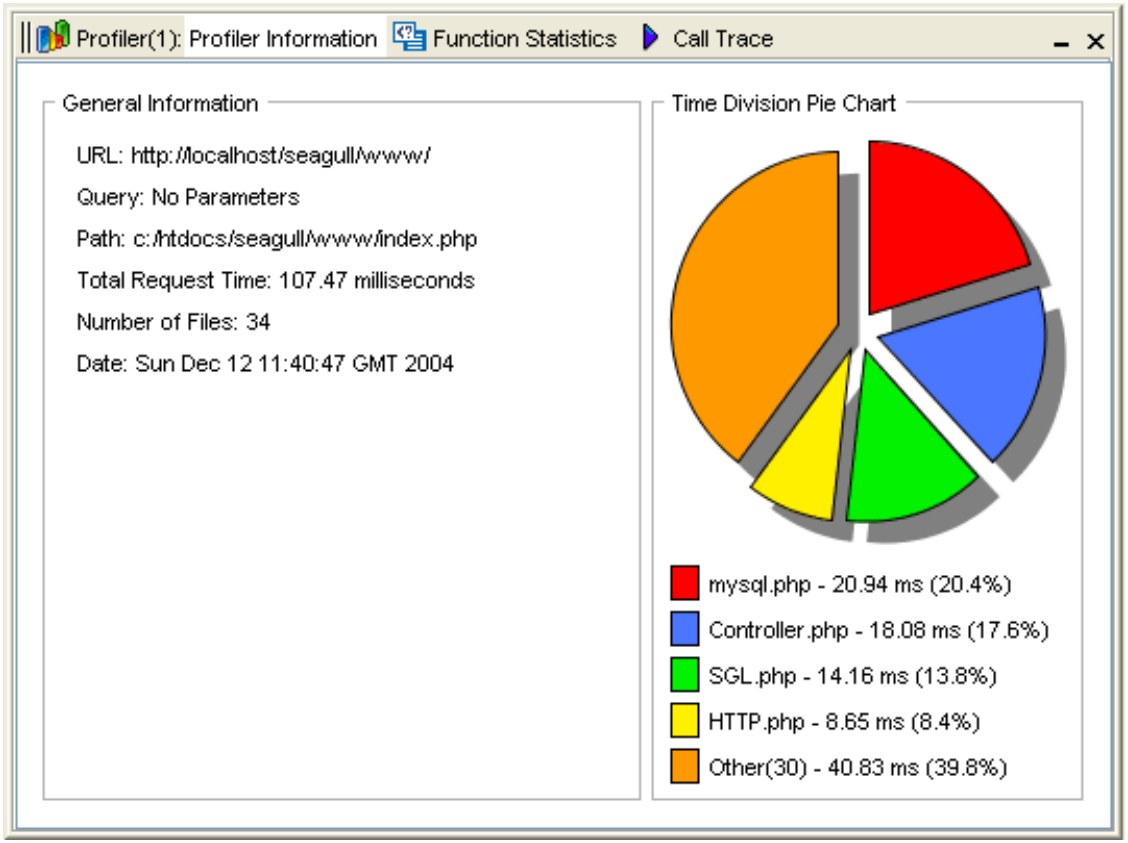

/tmp/cachegrind.out.2193401842 [/usr/local/apache/htdocs/seagull/www/prefsUser.php] - KCachegrind
File View Go Settings Help
Search:
Time
(No Grouping)
Flat Profile
Incl. Self Called Function Location
...646 126 76 554 (0) {main} ???: prefsUser.php
1 209 241 8 605 1 sgl_controller->go ???: Controller.php
811 011 576 762 1 sgl_controller->_displaypage ???: Controller.php
326 871 19 134 1 sgl_controller->init ???: Controller.php
288 081 16 732 1 require_once::/usr/local/ap... ???: init.php
248 209 30 651 1 init ???: init.php
232 910 6 612 1 sgl_controller->_checkses... ???: Controller.php
219 049 195 965 1 sgl_controller->_initperms ???: Controller.php
216 380 113 260 1 require_once::/usr/local/ap... ???: SGL.php
189 249 1 267 1 html_template_flexy->buffe... ???: Flexy.php
187 119 87 799 1 <cycle 1> ???
101 044 59 207 7 html_template_flexy->outp... ???: Flexy.php
87 430 83 660 1 require_once::/usr/local/ap... ???: HTTP.php
64 490 62 939 1 require_once::/usr/local/ap... ???: Controller.php
53 520 4 121 1 userpreferencemgr->process ???: Manager.php
53 514 15 558 1 include::/usr/local/apache/... ???: master.html.en.
48 009 34 130 1 sgl_controller->_setlanguage ???: Controller.php
47 980 11 458 1 userpreferencemgr->_editall ???: UserPreference
46 288 30 391 7 html_template_flexy->com... ???: Flexy.php
24 170 13 653 1 php::uasort ???: php:internal
23 080 16 902 1 include::/usr/local/apache/... ???: prefUserEdit.htr
22 601 2 191 1 include_once::/usr/local/ap... ???: constants.php
21 838 4 965 3 cache_lite->get ???: Lite.php
21 523 10 435 1 include::/usr/local/apache/... ???: banner.html.en.
20 410 11 480 1 setupconstants ???: constants.php
19 509 17 917 7 html_template_flexy->html... ???: Flexy.php
15 507 15 507 303 php::define ???: php:internal
13 989 6 924 3 cache_lite->_read ???: Lite.php
12 837 4 549 2 sgl::casefix ???: SGL.php
12 800 3 502 1 sgl_blockloader->render ???: BlockLoader.ph
12 759 3 739 1 simplenav->render ???: SimpleNav.php
11 680 8 679 1 require_once::/usr/local/ap... ???: DB.php
11 038 2 599 1 sgl_output->outputbody <c... ???: Output.php
10 787 9 769 5 sgl_output::generateselect ???: Output.php
10 494 9 330 49 sgl_cmp ???: ary.languages.p
9 240 2 531 1 sgl_controller->_setheaders ???: Controller.php
7 791 7 791 61 php::file_exists ???: php:internal
7 639 6 191 2 php::array_map ???: php:internal
5 759 4 730 1 include::/usr/local/apache/... ???: header.html.en.
5 618 5 618 1 include::/usr/local/apache/... ???: english-iso-8859
5 600 5 600 2 php::parse_ini_file ???: php:internal
5 295 5 295 33 sgl::logmessage ???: SGL.php
4 969 4 969 2 php::array_merge ???: php:internal
4 730 1 460 1 userpreferencemgr->userpr... ???: UserPreference
4 720 1 988 1 sgl_http_session->sgl_http... ???: HTTP.php
{main}
Types Callers All Callers Callee Map Source
sgl_controller->_displaypage 811 011
sgl_controller->_initperms 219 049
require_once::/usr/local/apache/htdocs/seagull/lib/SGL.php 216 380
require_once::/usr/local/apache/htdocs/seagull/lib/SGL/HTTP.php 87 430
html_template_flexy->out...
sgl_controller->...
req...
{main} 1 646 126
288 081
1 209 241
sgl_controller->go 1 209 241
326 871
811 011
sgl_controller->init 326 871
sgl_controller->_displaypage 811 011
232 910
189 249
sgl_controller->_checksession 232 910
html_template_flexy->bufferedoutputobject 189 249
219 049
187 171
sgl_controller->_initperms 219 049
<cycle 1> 187 171
101 072
Parts Callees Call Graph All Callees Caller Map Assembler
cachegrind.out.2193401842 [1] - Total Time Cost: 1 648 899
10:28

Profiling / 3


{main}
1 646 126
288 081
1 209 241
require_once::/usr/local/apache/htdocs/seagull/init.php
sgl_controller->go
1 209 241
248 209
326 871
811 011
init
248 ...
sgl_controller->init
326 871
sgl_controller->_displaypage
811 011
216 380
232 910
189 249
require_once::/usr/local/apache/htdocs/seagull/lib/SGL.php
sgl_controller->_checksession
232 910
html_template_flexy->bufferedoutputobject
189 249
87 430
219 049
187 171
require_once::/usr/local/apache/htdocs/seagull/lib/SGL/HTTP.php
sgl_controller->_initperms
219 049
187 171
<cycle 1>
187 171
101 072
html_template_flexy->outputobject <cycle 1>
101 072

Profiling / 4

- Notice the number of files per request, with caching this reduces to about 20



Questions?

Figure 1: Typical screen

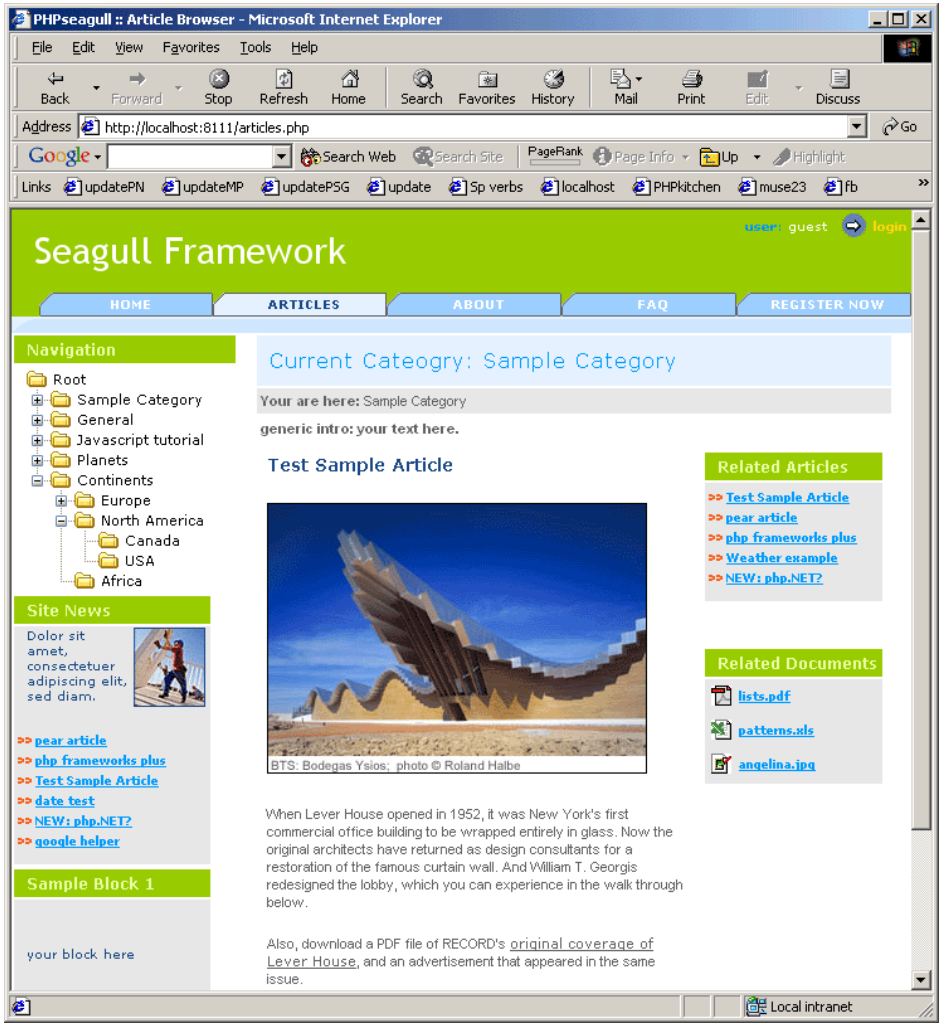


Figure 2: MVC

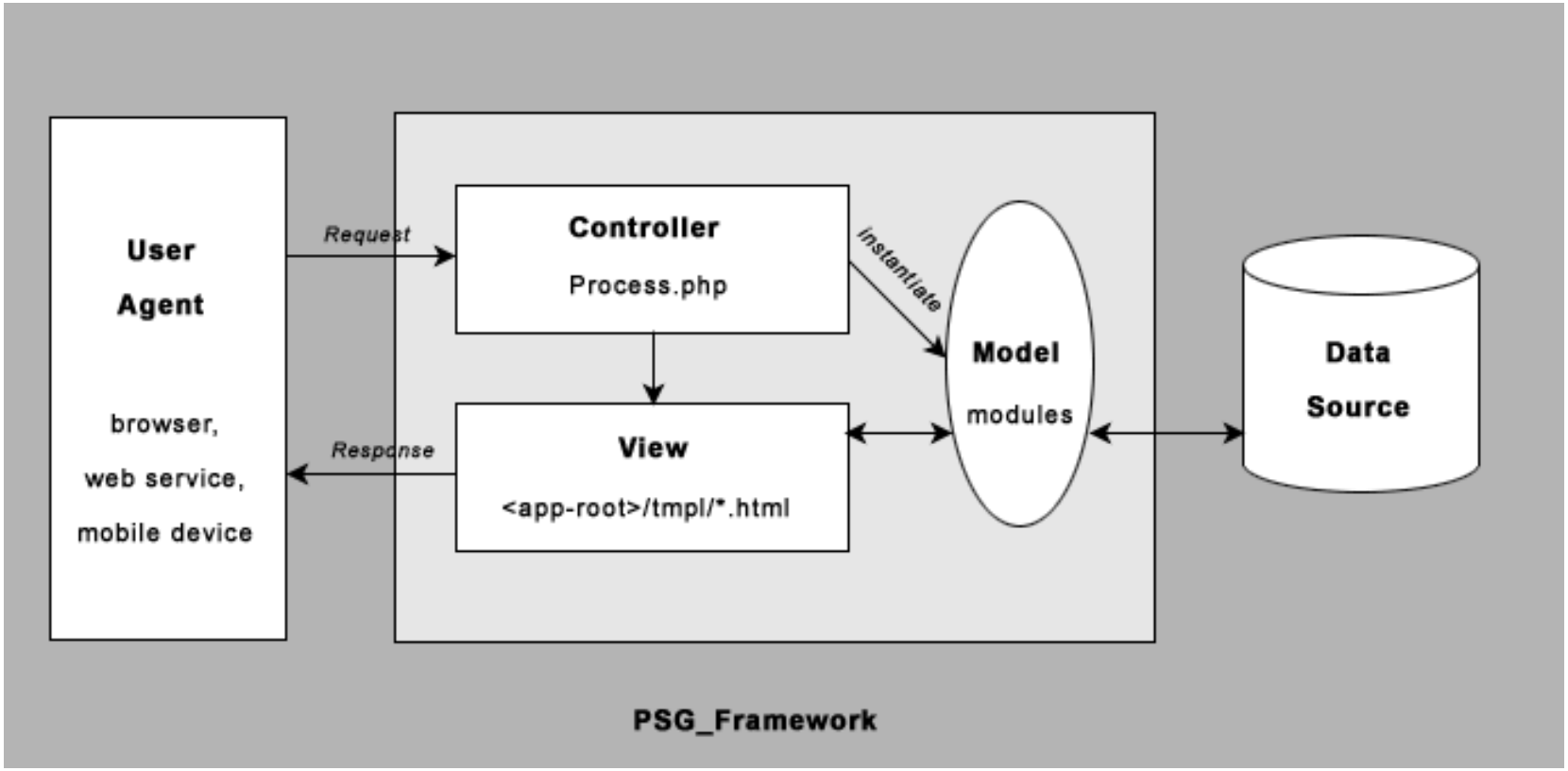
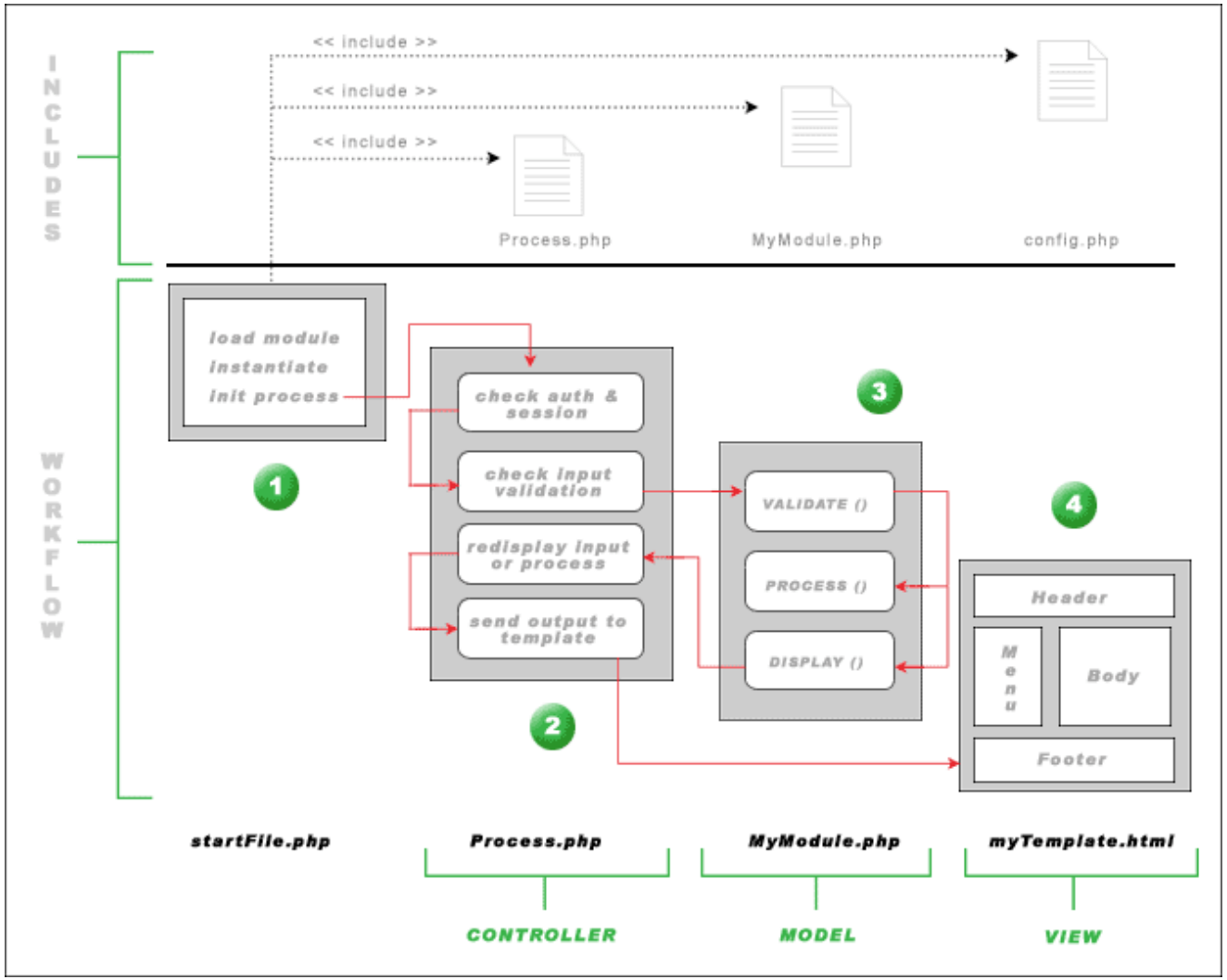
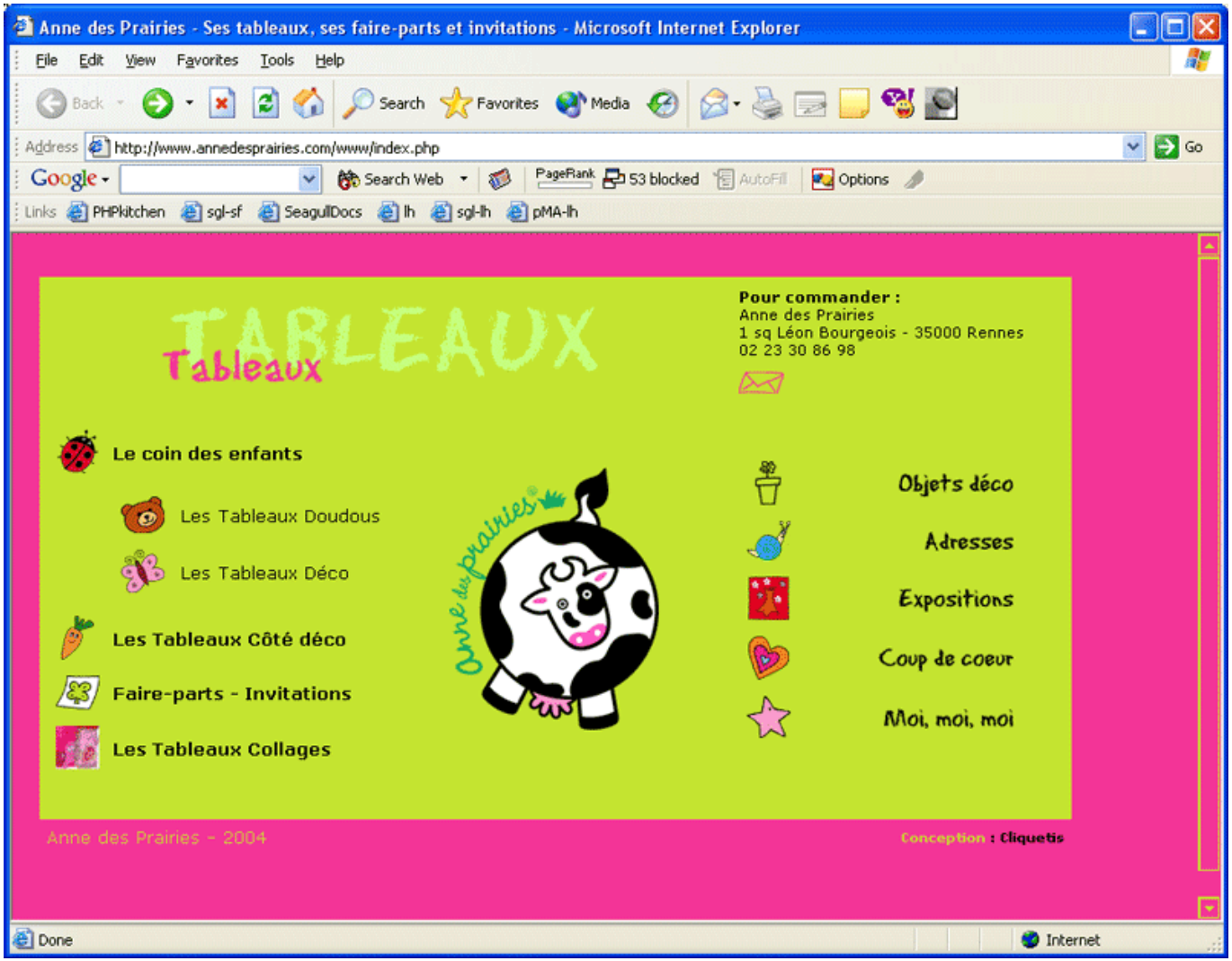

User
Agent
browser,
web service,
mobile device
Request
Response
Controller
Process.php
View
<app-root>/tmpl/*.html
instantiate
Model
modules
Data
Source
PSG_Framework

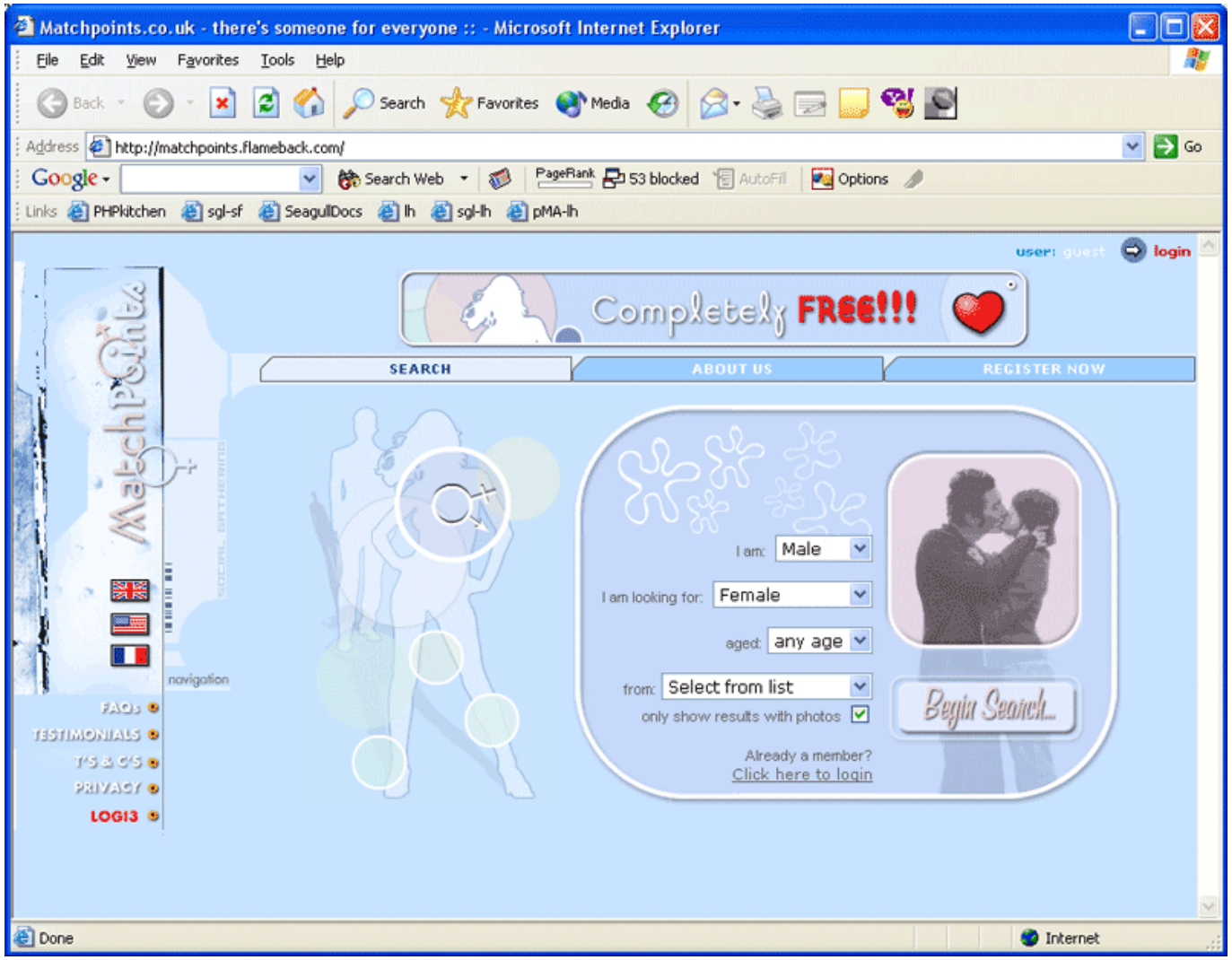
Figure 3: Workflow



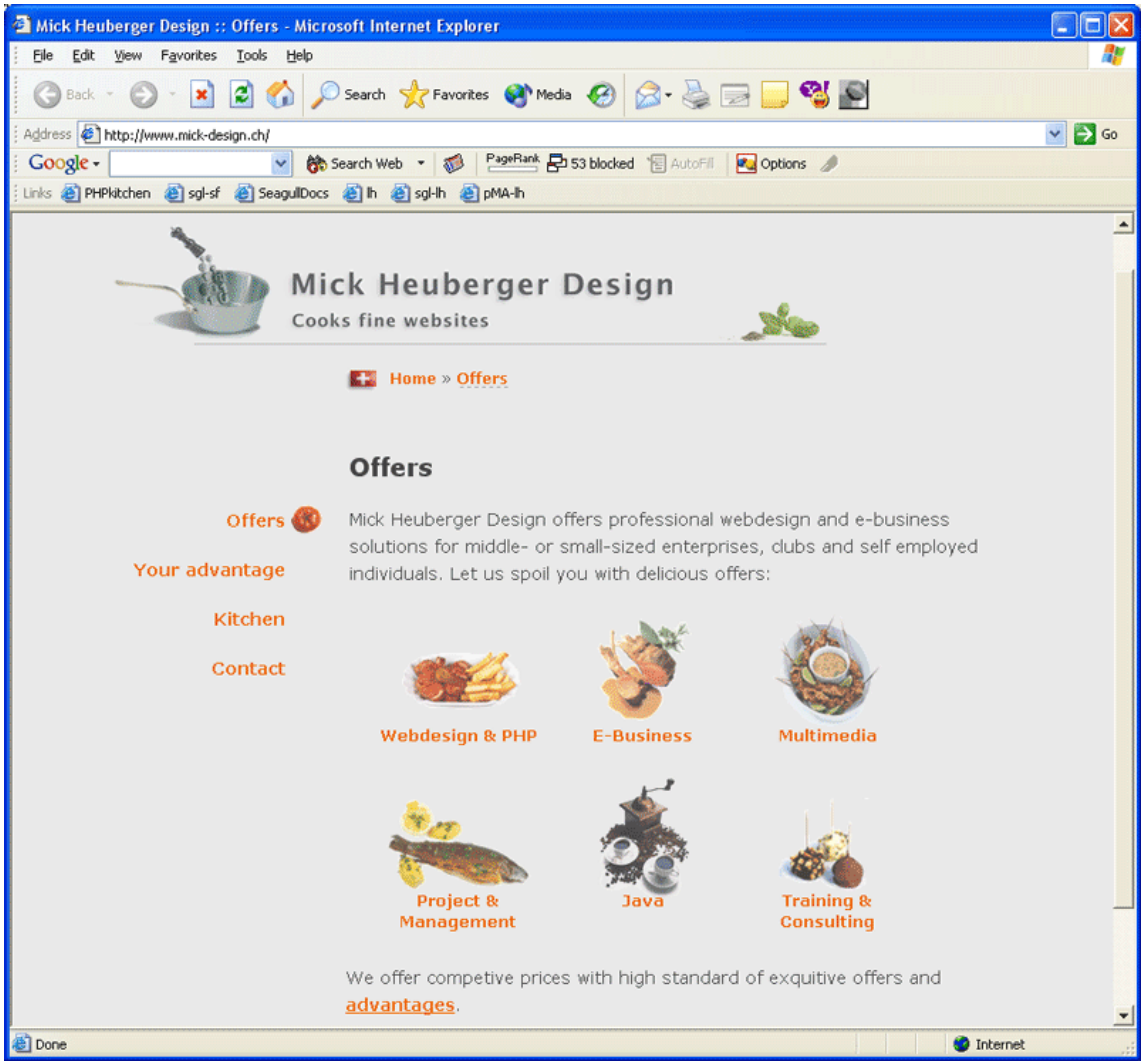
Projects using Seagull/1



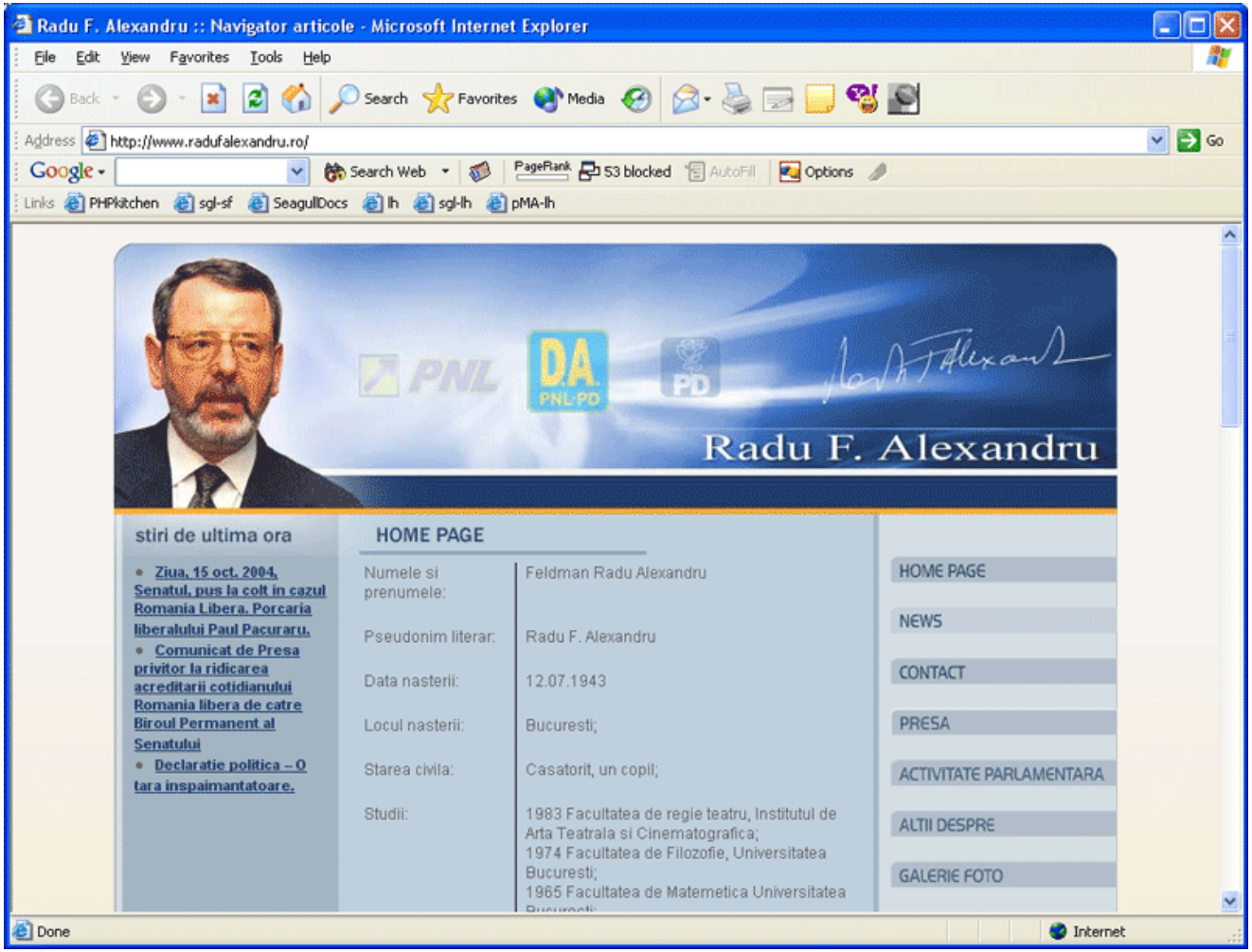
Projects using Seagull/2



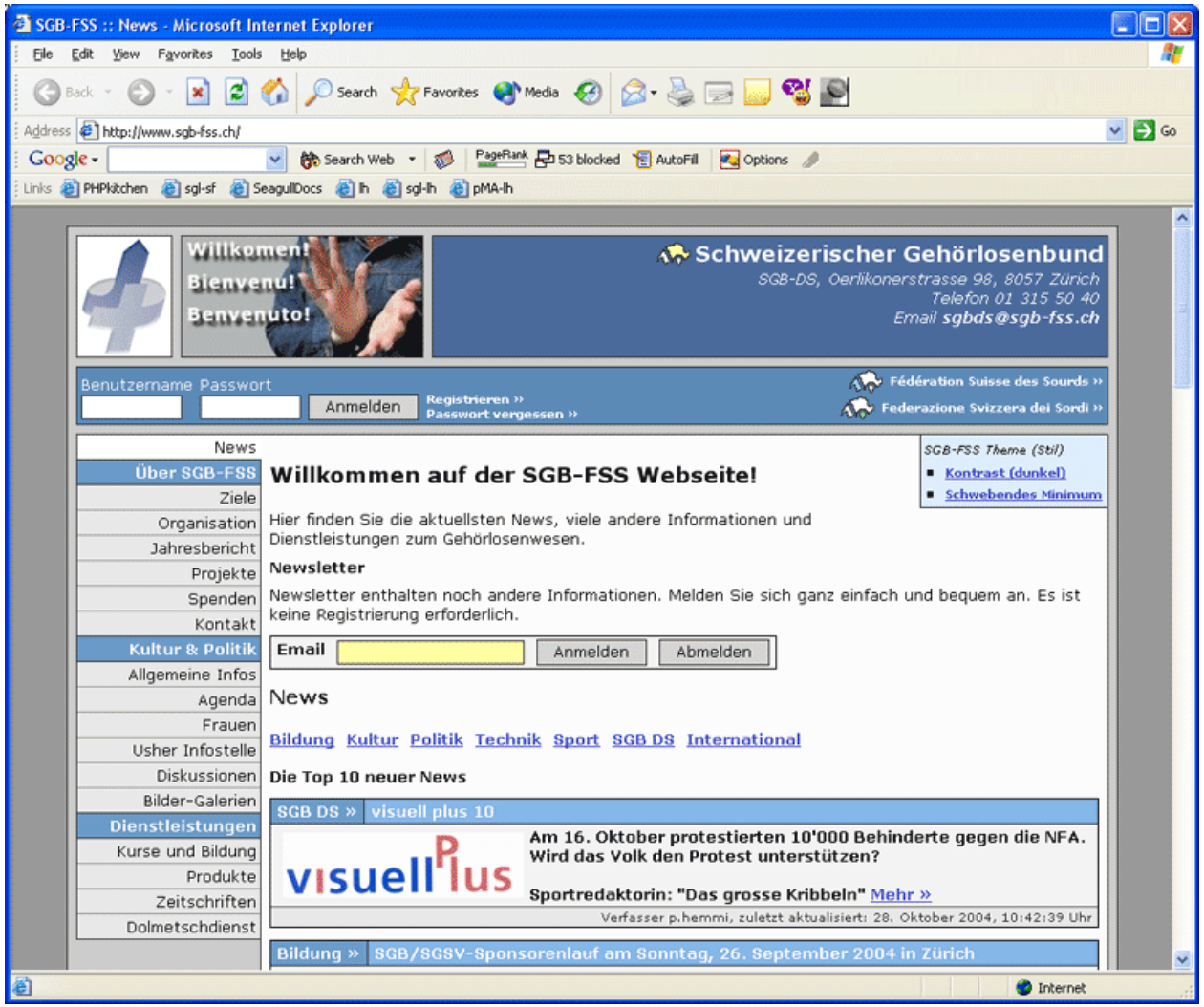
Projects using Seagull/3



Projects using Seagull/4



Projects using Seagull/5



Projects using Seagull/6

UML Class Diagram