Graduation @ Sogeti Java

SOGETI

Java EE, REST, AngularJS, Code generation, Websockets, NoSQL

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Sogeti Java CoE

Amsterdam, September 2015

WhoAmI

- Erwin de Gier
- Software Architect
- Coach Young Professionals
- Technical coach graduation assignments

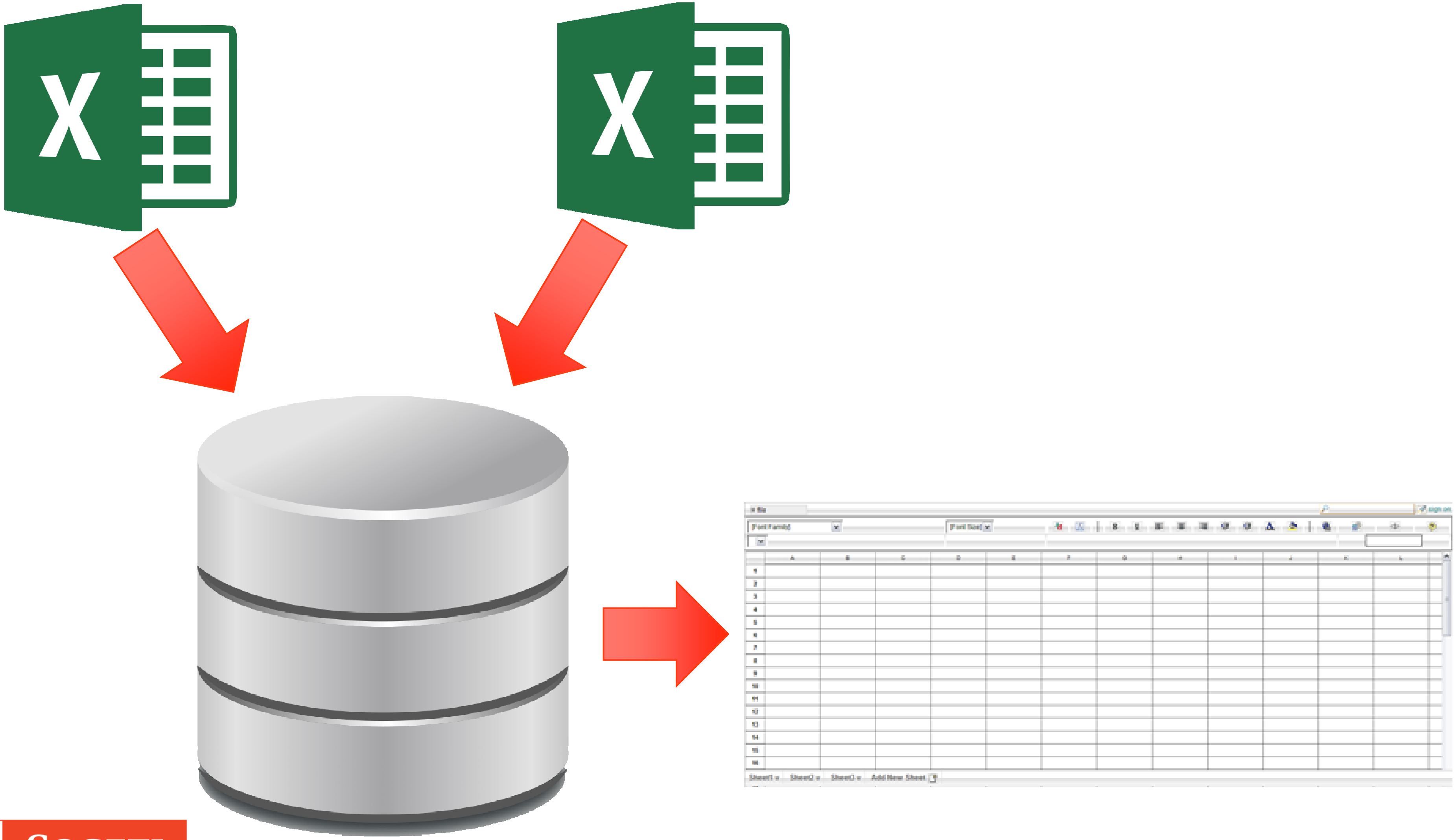
Introduction

- Graduation assignments, the technical side
- Product owner / Technical coach
- Research topic (technology selection)
- Development of an application

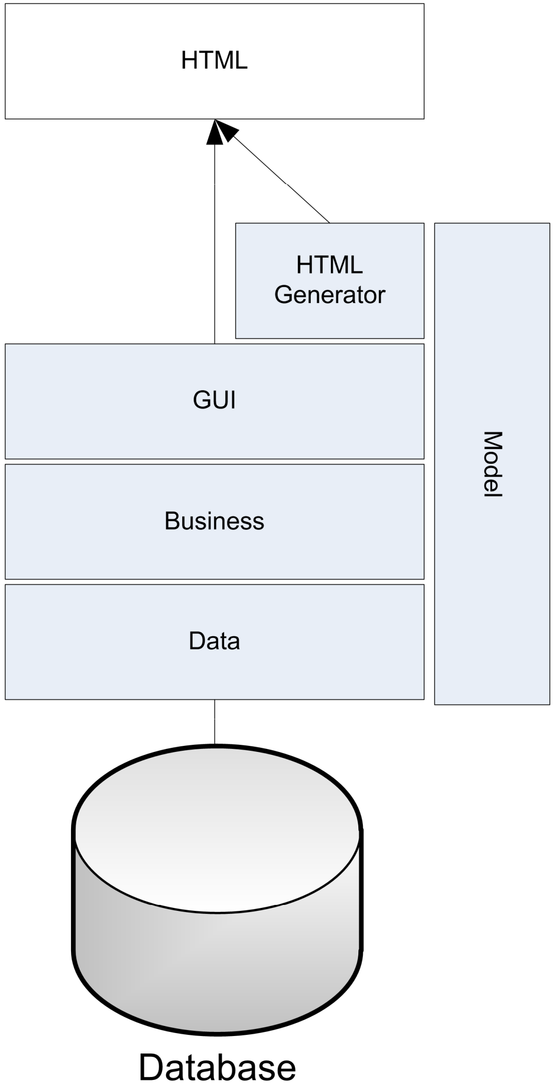
Projects

- NLJUG Registration system
  - *Code generation*
- Remote Presentation environment
  - *Websockets, Javascript*
- Knowledge Map (Roy Straub)
  - *Java EE, Angular JS*

NLJUG Registration system

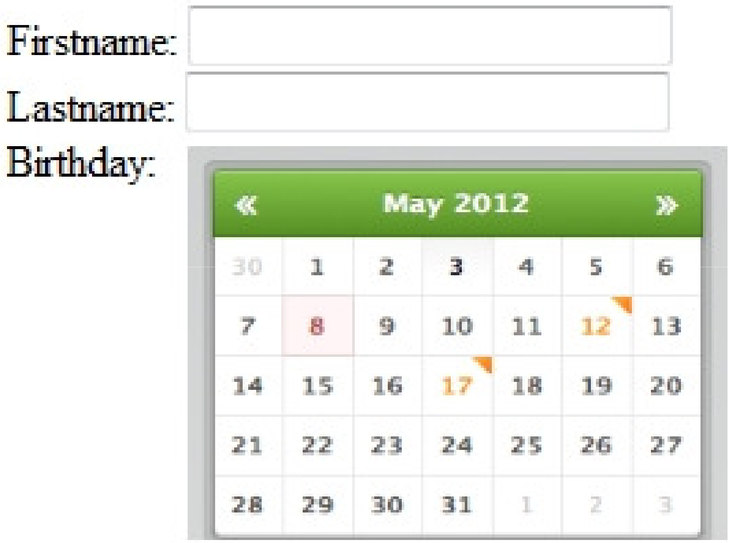


Design



Generating HTML

```
public class Employee {
    private String firstname;
    private String lastname;
    private Date birthday;
}
```



Firstname:

Lastname:

Birthday:

« May 2012 »

30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

Java Reflection API

```java
for(Field field : employee.getClass().getDeclaredFields()){
    Element div = new Element(Tag.valueOf("div"), "");
    //Generate Label
    Element label = createLabel(field.getName());
    div.appendChild(label);
    //Check type of field (String, Date, Number, etc.
    Class<?> type = field.getType();
    //Generate input field
    Element input = createInput(type);
    div.appendChild(input);
}
```

JSoup and Servlets

```
protected void doGet(HttpServletRequest request,
HttpServletResponse response){
    Element page = generateHTML(request,response);
    String html = page.html();
    request.setAttribute("html",html);
}
```

```
<h:outputText value="${html}" />
```

JSR 303 Bean validation

```java
public class Employee {
    @NotNull
     @Size(Max=25)
     @CustomMessage(message="Use at most 25 characters")
    private String firstname;

    @Temporal(javax.persistence.TemporalType.DATE)
    private Date birthday;

    @Hidden
    private long id;
}
```

Pros / Cons

- ***Pros**:*
  - *No manual HTML work (Costs / Time)*
  - *Consistent look and feel, use of components*
  - *Validation on client and server*
- ***Cons**:*
- *Investment*
- *Only suits CRUD-like operations*
- *Pages must use standard structure*

In summary

- Java EE
  - JPA, EJB, Servlets, JSF
- Custom HTML Generator
- Jsoup
- Bean validation
- Java Reflection API

Remote presentations

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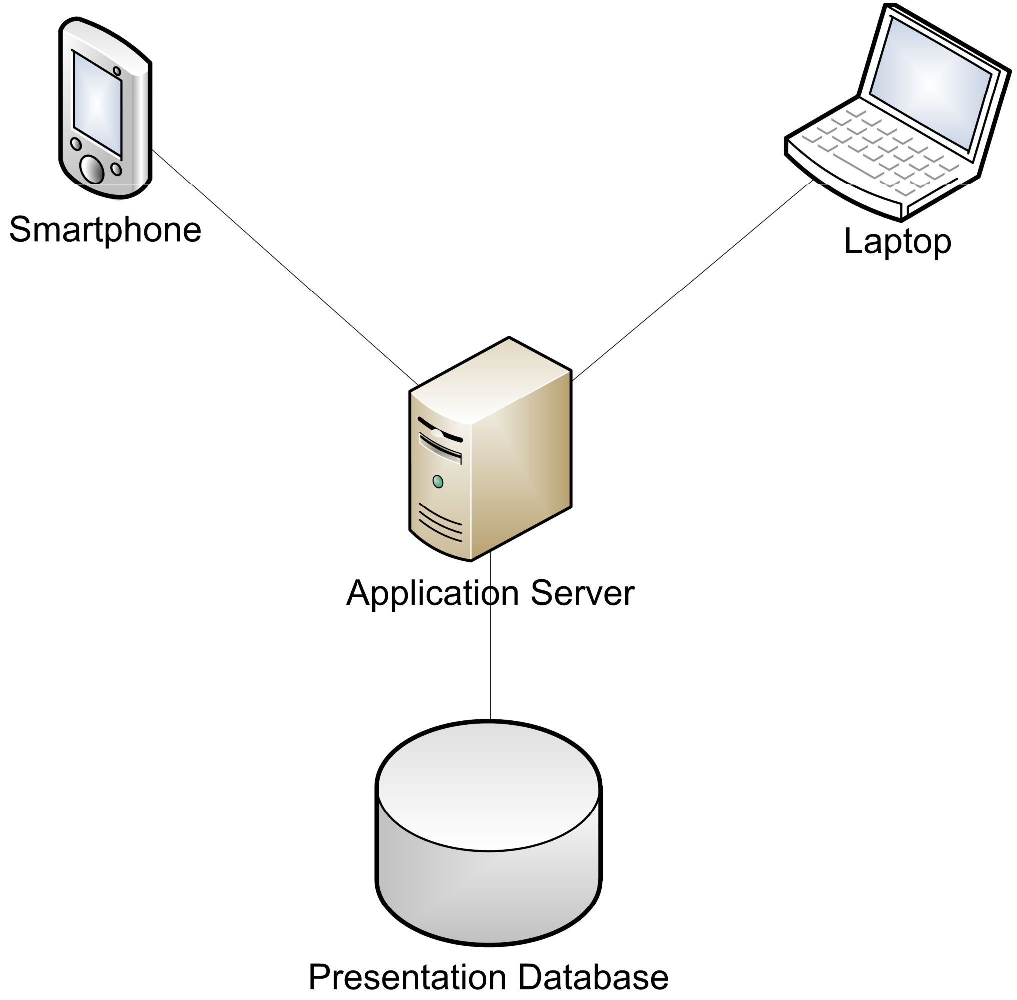
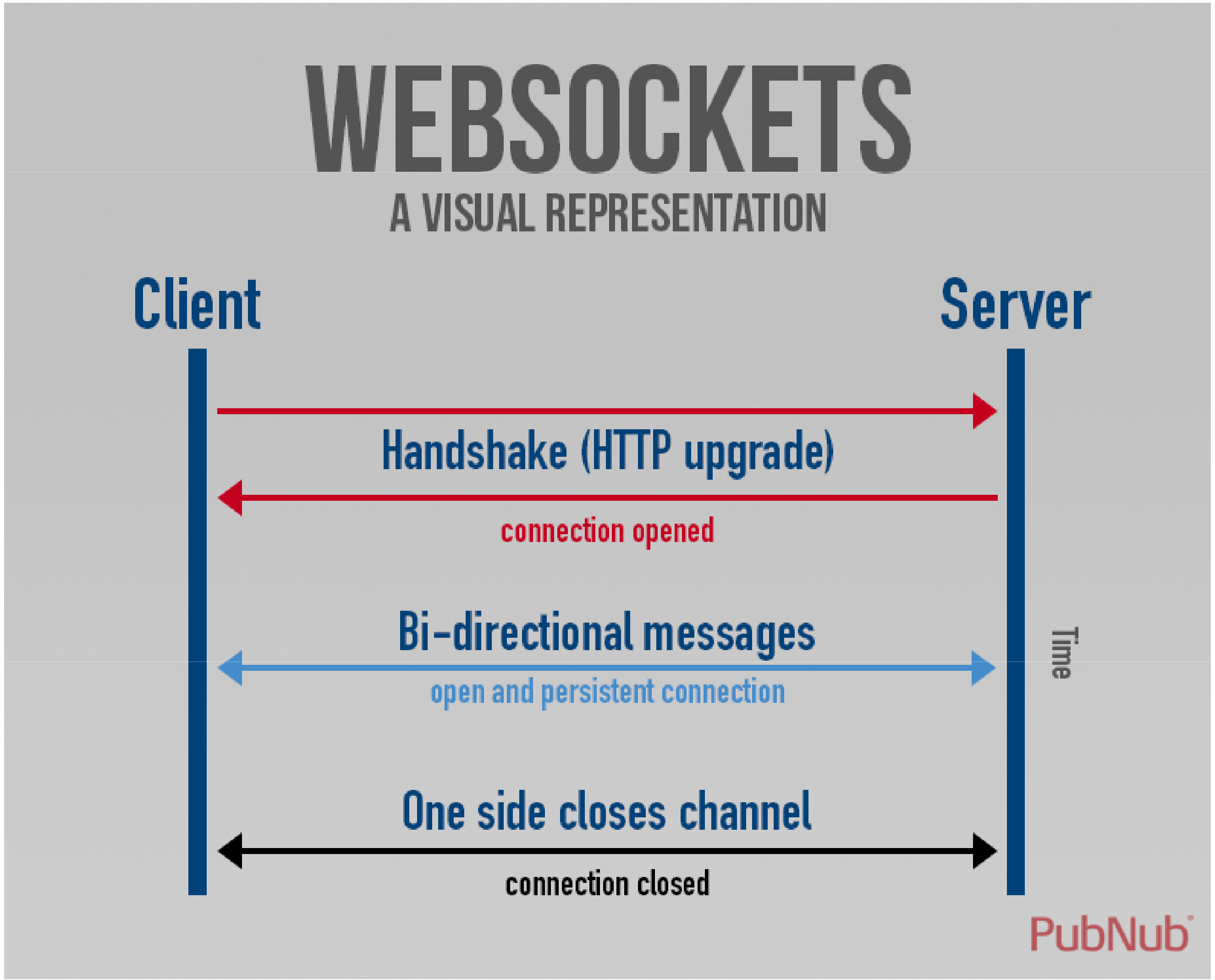
Design


Smartphone
Laptop
Application Server
Presentation Database

Technology

- Websockets
- Javascript
- Protocol selection

Websockets


WEBSOCKETS
A VISUAL REPRESENTATION
Client
Server
Handshake (HTTP upgrade)
connection opened
Bi-directional messages
open and persistent connection
One side closes channel
connection closed
Time
PubNub

Problem with websockets

- Low level protocol
- No receipt conformation
- No messages types
- No standard headers
- No heartbeat
- Every project implements own messaging system

Available protocols

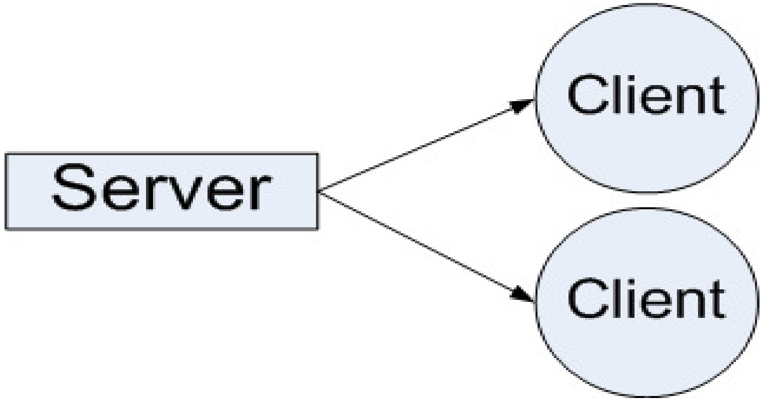
- Stomp https://stomp.github.io/
- WAMP http://wamp.ws/
- JSON - RPC http://www.jsonrpc.org/specification
- MSG-RPC https://github.com/rooseve/msg-rpc
- Swagger Socket (REST over websockets) https://github.com/swagger-api/swagger-socket

Protocol functions

- RPC (WAMP,JSON-RPC, MSG-RPC)

```
getUserProfile() -> {'user':'bob','id':'1'}
```

- PUB/SUB (WAMP, Stomp)



Protocol functions

- Headers / Body (Stomp, Swagger)

```
<StompCommand>
<HeaderName_1>:<HeaderValue_1>
<HeaderName_2>:<HeaderValue_1>
<FrameBody>
```

- Message types (WAMP, Stomp, JSON-RPC)

```
[WELCOME, Session|id, Details|dict]
```

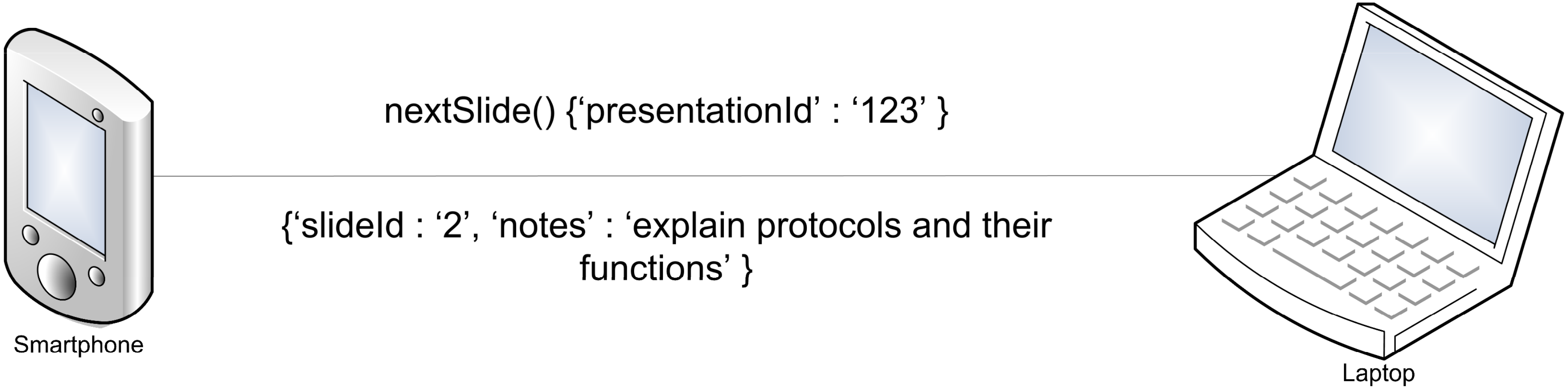
```
CONNECT
accept-version:1.2
host:stomp.github.org
```

Protocol functions

- REST (Swagger Socket)

```
GET    /product/123
DELETE /product/123
```

Example - RPC



nextSlide() {‘presentationId’ : ‘123’ }

{‘slideId : ‘2’, ‘notes’ : ‘explain protocols and their functions’ }

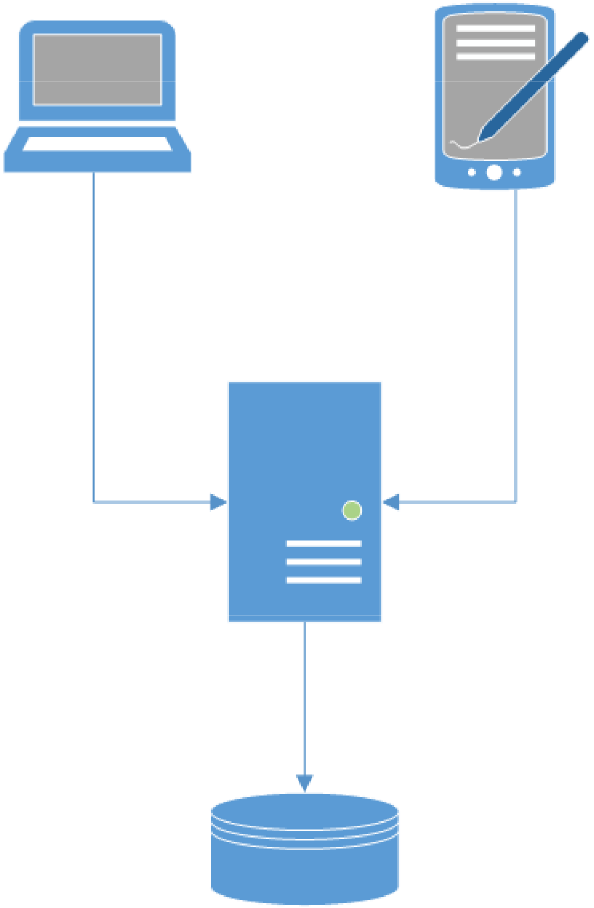
Summary

- Protocol functions
  - Available client and server libraries
  - Standards / community support
  - Maturity
- After the protocol selection is made the client and server technology can be selected

Knowledge Map

- Project management
- Skill insufficiencies
- Quality control
- Currently Excel

Design



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Technology

Java 8

WildFly

JAX-RS

ENTERPRISE Java Beans

JPA

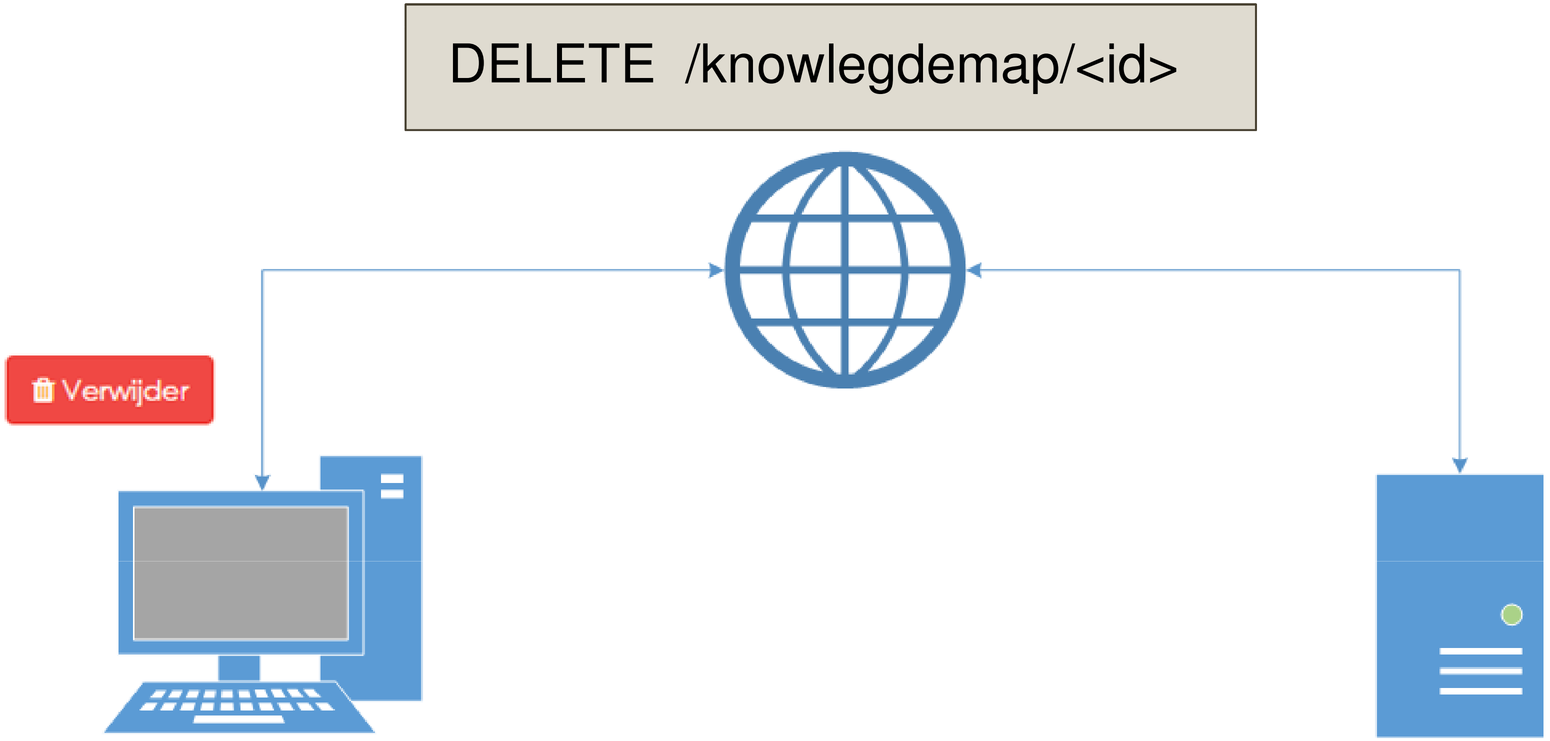
Java Persistence API

HIBERNATE

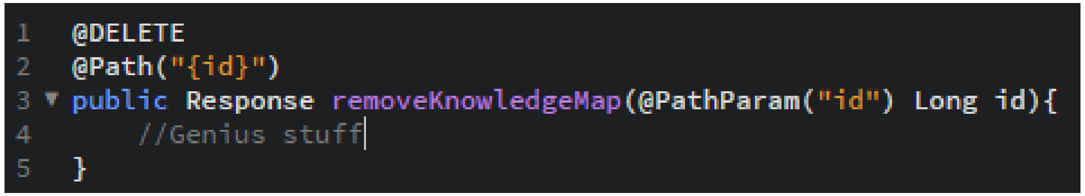
ANGULARJS

by Google

REST API



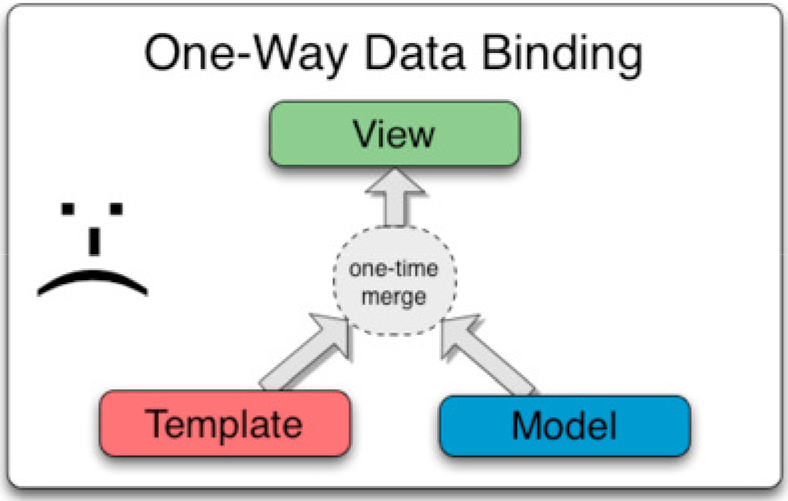
DELETE /knowlegdemap/<id>

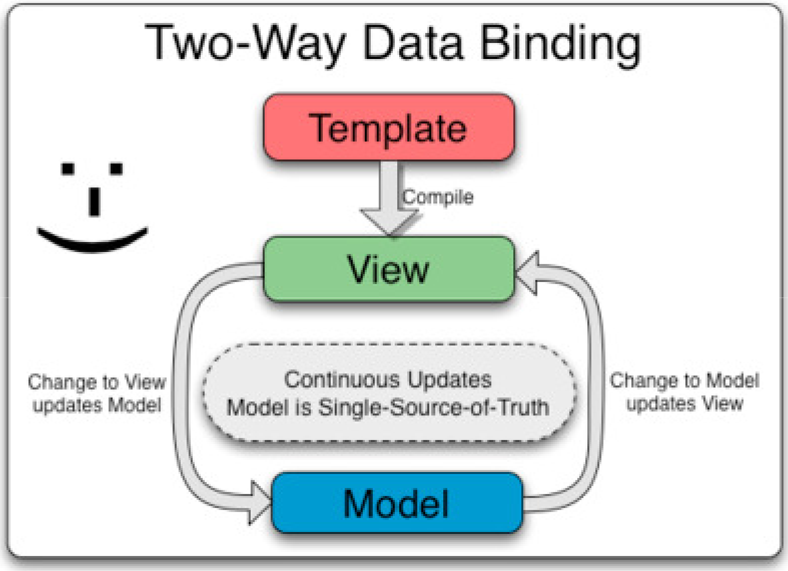


```
@DELETE
@Path("{id}")
public Response removeKnowledgeMap(@PathParam("id") Long id){
    //Genius stuff
}
```

Angular JS

- SPA (Single Page Applications)
- Data binding
- Reusability (Components)




Two-Way Data Binding
Template
Compile
View
Change to View updates Model
Continuous Updates Model is Single-Source-of-Truth
Change to Model updates View
Model

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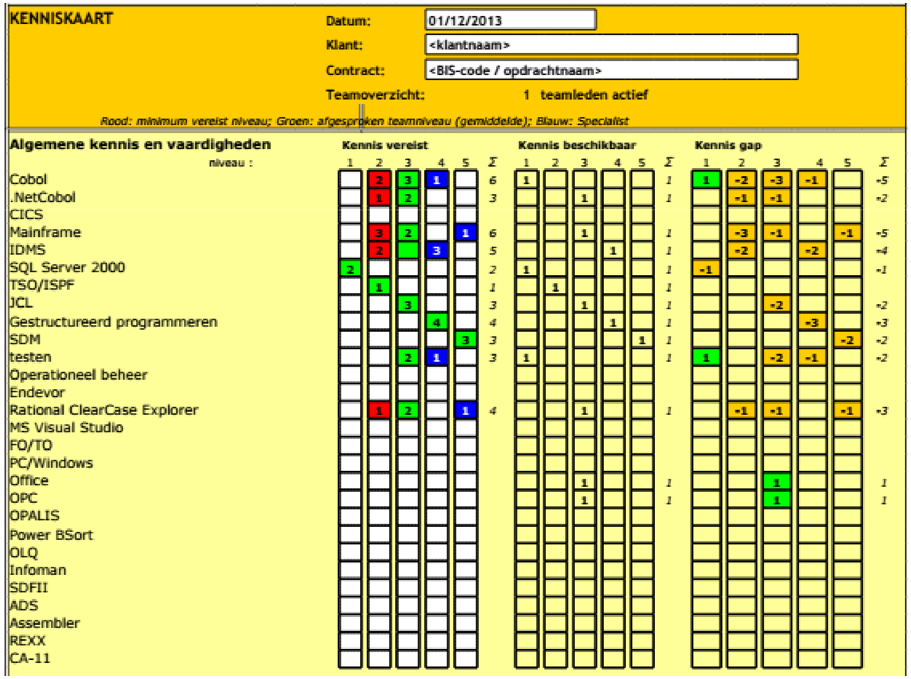
source: https://docs.angularjs.org/guide/databinding

Result



KENNISKAART

Datum: 01/12/2013

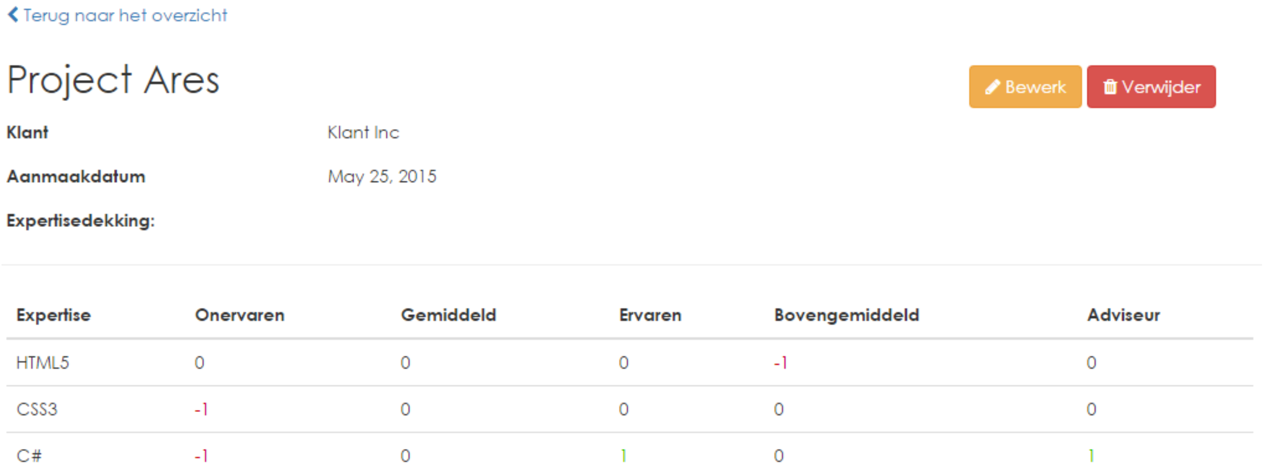
Klant: <klantnaam>

Contract: <BIS-code / opdrachtnaam>

Teamoverzicht: 1 teamleden actief

Rood: minimum vereist niveau; Groen: afgesproken teamniveau (gemiddelde); Blauw: Specialist

Algemene kennis en vaardigheden	Kennis vereist						Kennis beschikbaar						Kennis gap					
niveau :	1	2	3	4	5	Σ	1	2	3	4	5	Σ	1	2	3	4	5	Σ
Cobol		2	3	1		6	1					1	1	-2	-3	-1		-5
.NetCobol		1	2			3			1			1		-1	-1			-2
CICS																		
Mainframe		3	2		1	6			1			1		-3	-1		-1	-5
IDMS		2		3		5				1		1		-2		-2		-4
SQL Server 2000	2					2	1					1	-1					-1
TSO/ISPF		1				1		1				1						
JCL			3			3			1			1			-2			-2
Gestructureerd programmeren				4		4				1		1				-3		-3
SDM					3	3					1	1					-2	-2
testen			2	1		3	1					1	1		-2	-1		-2
Operationeel beheer																		
Endevor																		
Rational ClearCase Explorer		1	2		1	4			1			1		-1	-1		-1	-3
MS Visual Studio																		
FO/TO																		
PC/Windows																		
Office									1			1			1			1
OPC									1			1			1			1
OPALIS																		
Power BSort																		
OLQ																		
Infoman																		
SDFII																		
ADS																		
Assembler																		
REXX																		
CA-11																		



Project Ares

Klant	Klant Inc
Aanmaakdatum	May 25, 2015
Expertisedekking:	

Expertise	Onervaren	Gemiddeld	Ervaren	Bovengemiddeld	Adviseur
HTML5	0	0	0	-1	0
CSS3	-1	0	0	0	0
C#	-1	0	1	0	1

In Summary

- Project management
- Excel
- Web application
  - Angular
  - REST
- More possibilities!

Modern Technology Sogeti

SOGETI

Sneak peaks

- Enterprise Stack of the Future: Reactive Ready
- Data analysis with Open Source Big Data solutions

Reactive Ready

- Reactive JVM Applications
- Distributed Eventbus and Shared cluster data
- NoSQL Datastore

Reactive Ready

```
package examples;

public class MyVerticle extends AbstractVerticle {
    public void start() throws Exception {
        vertx.setPeriodic(1000,  arg -> {
            vertx.eventBus().publish("event",
            new JsonObject().put("eventmessage", "hello"));
        });
    }
}
```

Open Source Big Data

- Apache Spark
- Apache Hadoop
- MongoDB
- Spring XD