TIRA

Eine ressourcen-orientierte, übersetzungsfreie Webapplikation für Information-Retrieval-Experimente

Clement Welsch

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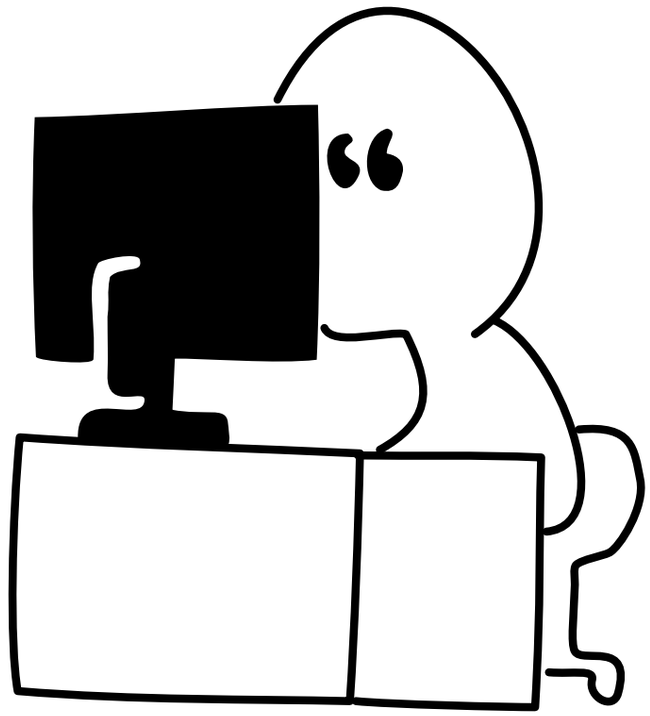
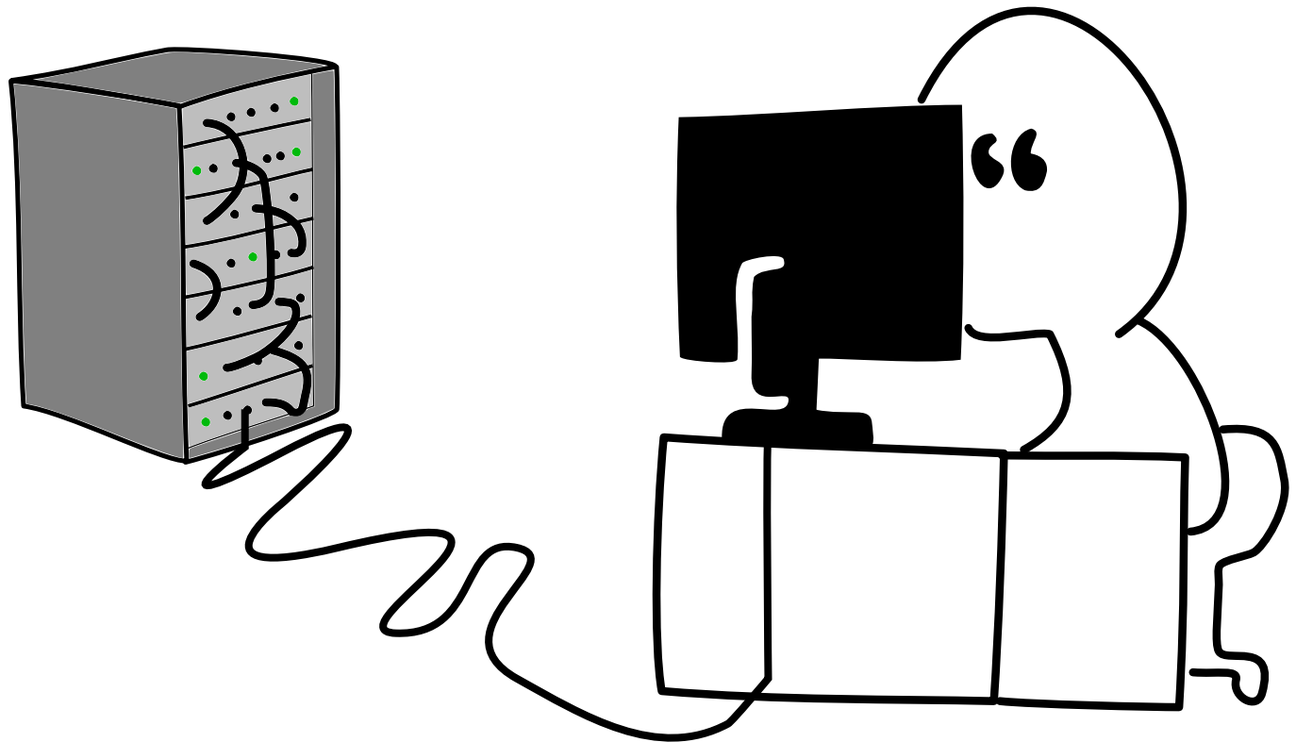
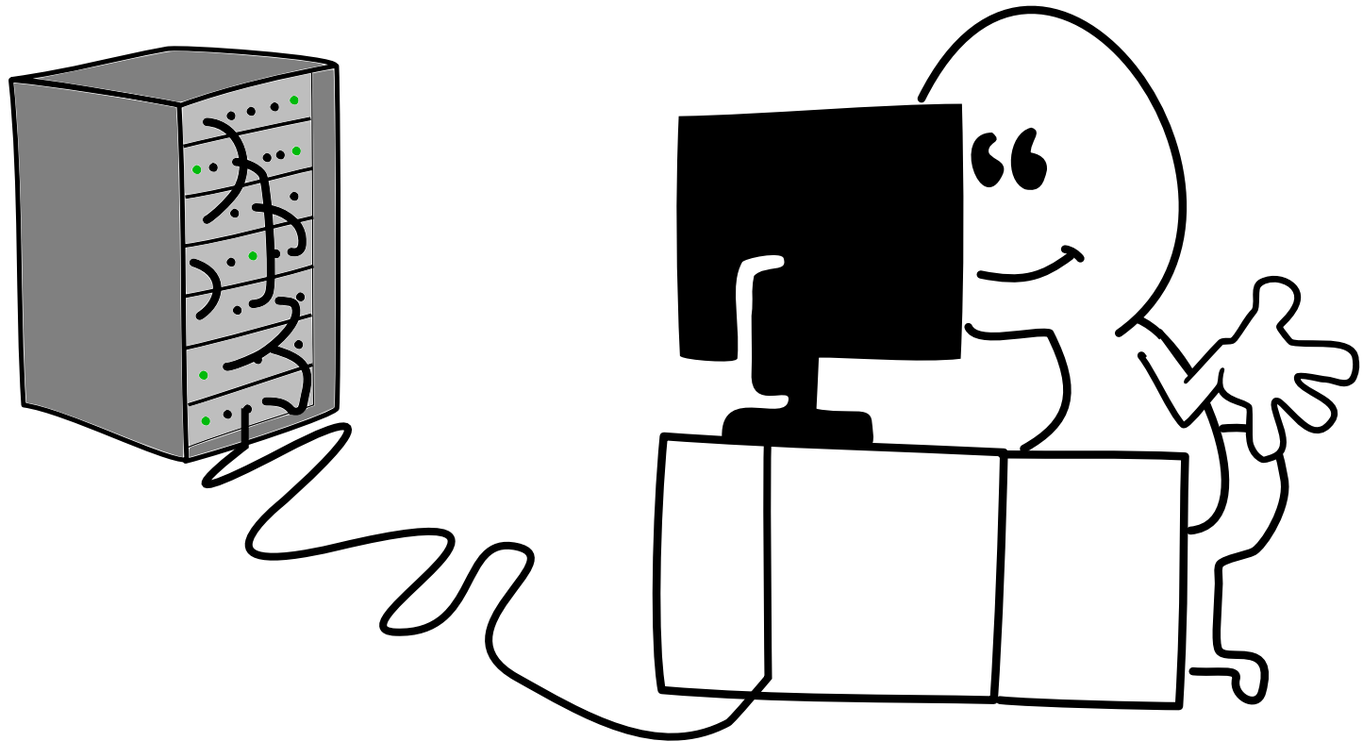
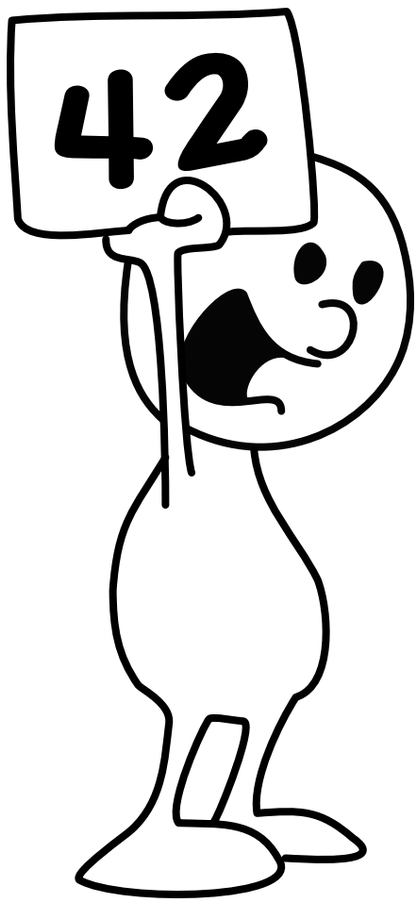
Web-Technologie & Informationssysteme — Fakultät Medien — Bauhaus-Universität Weimar





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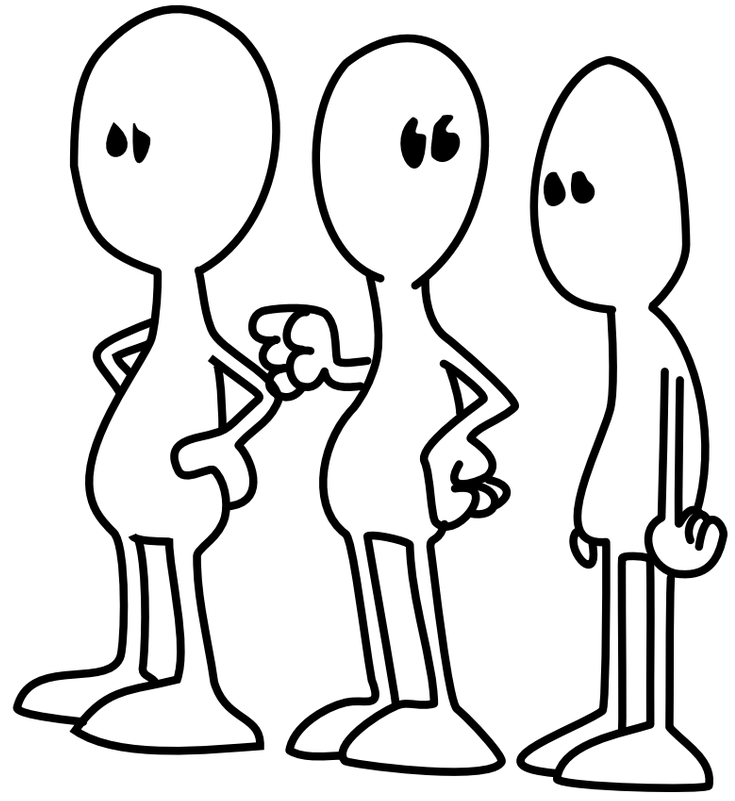

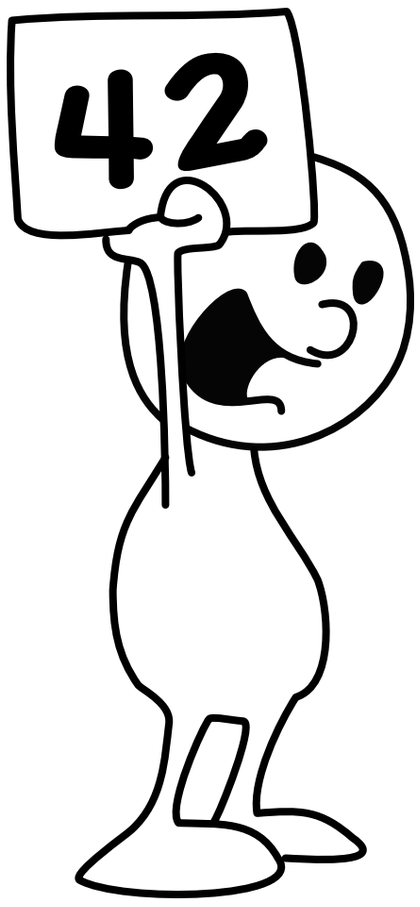
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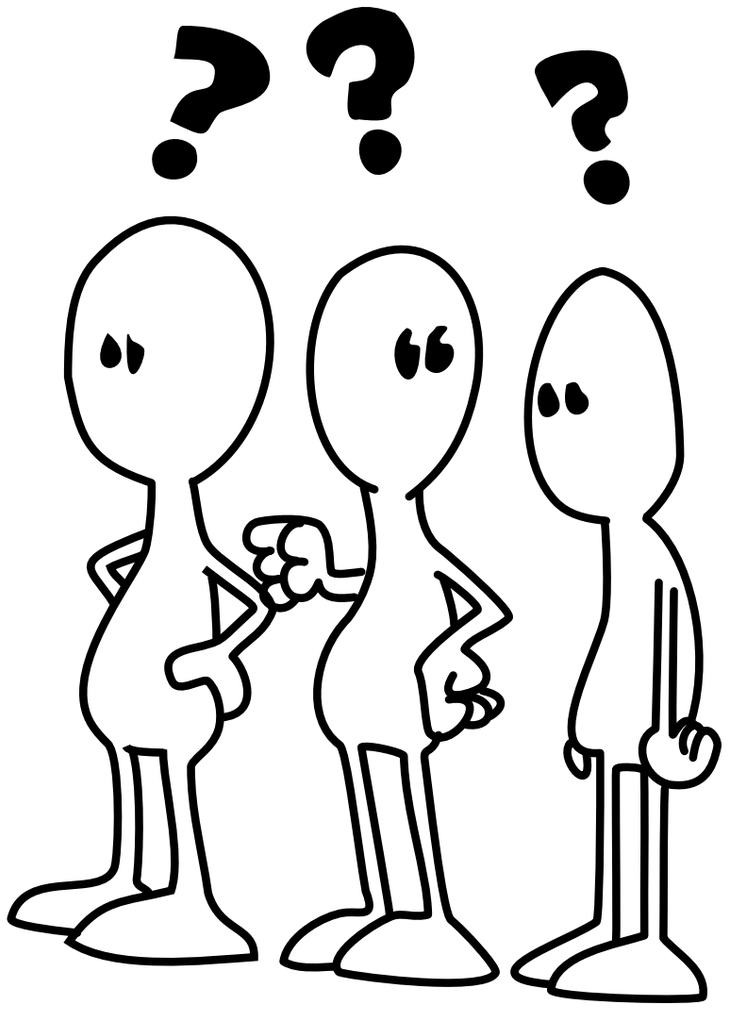
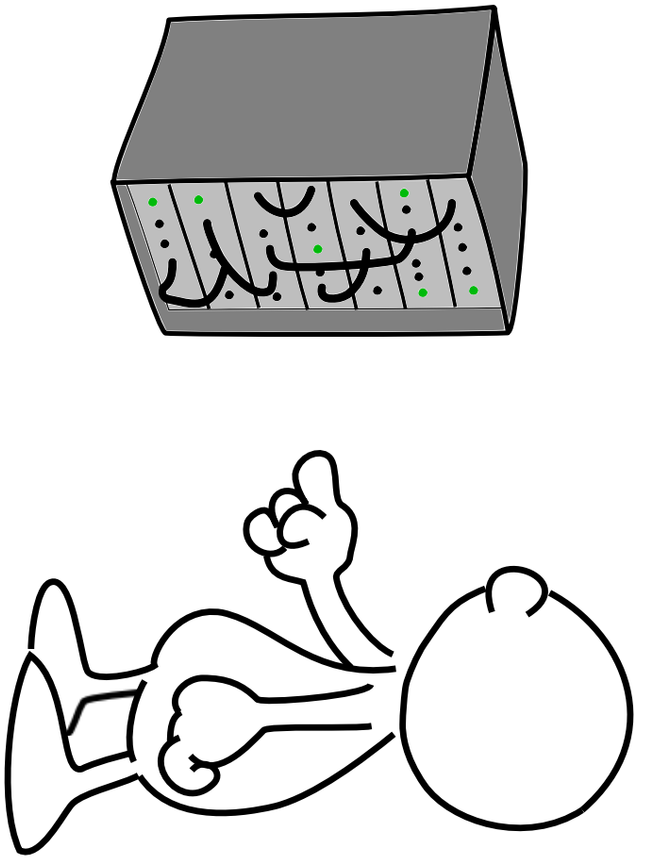
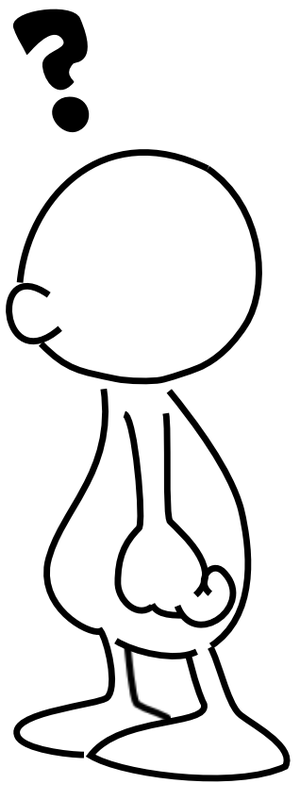
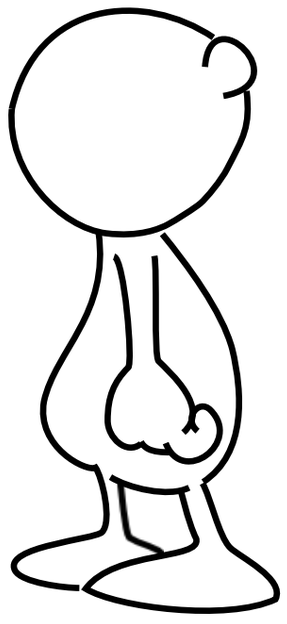
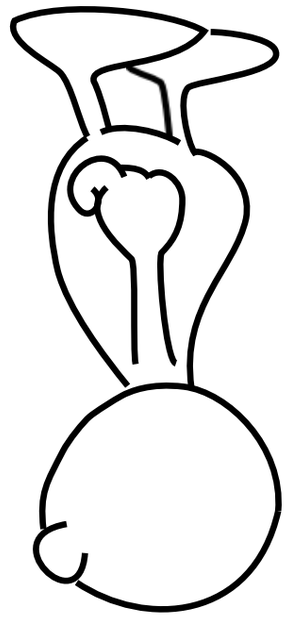
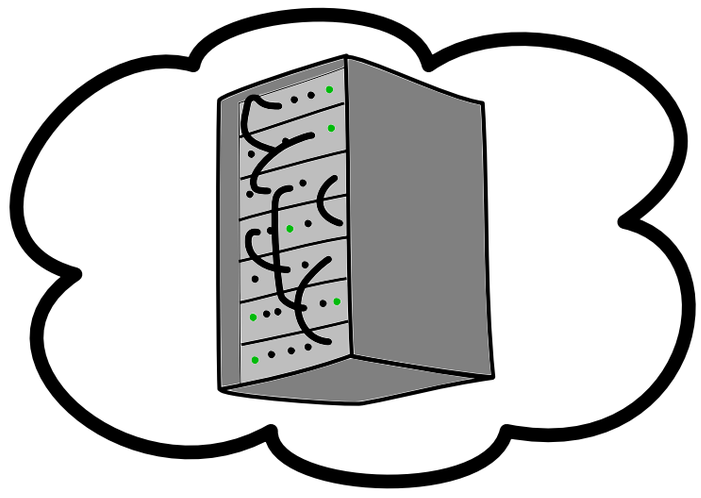


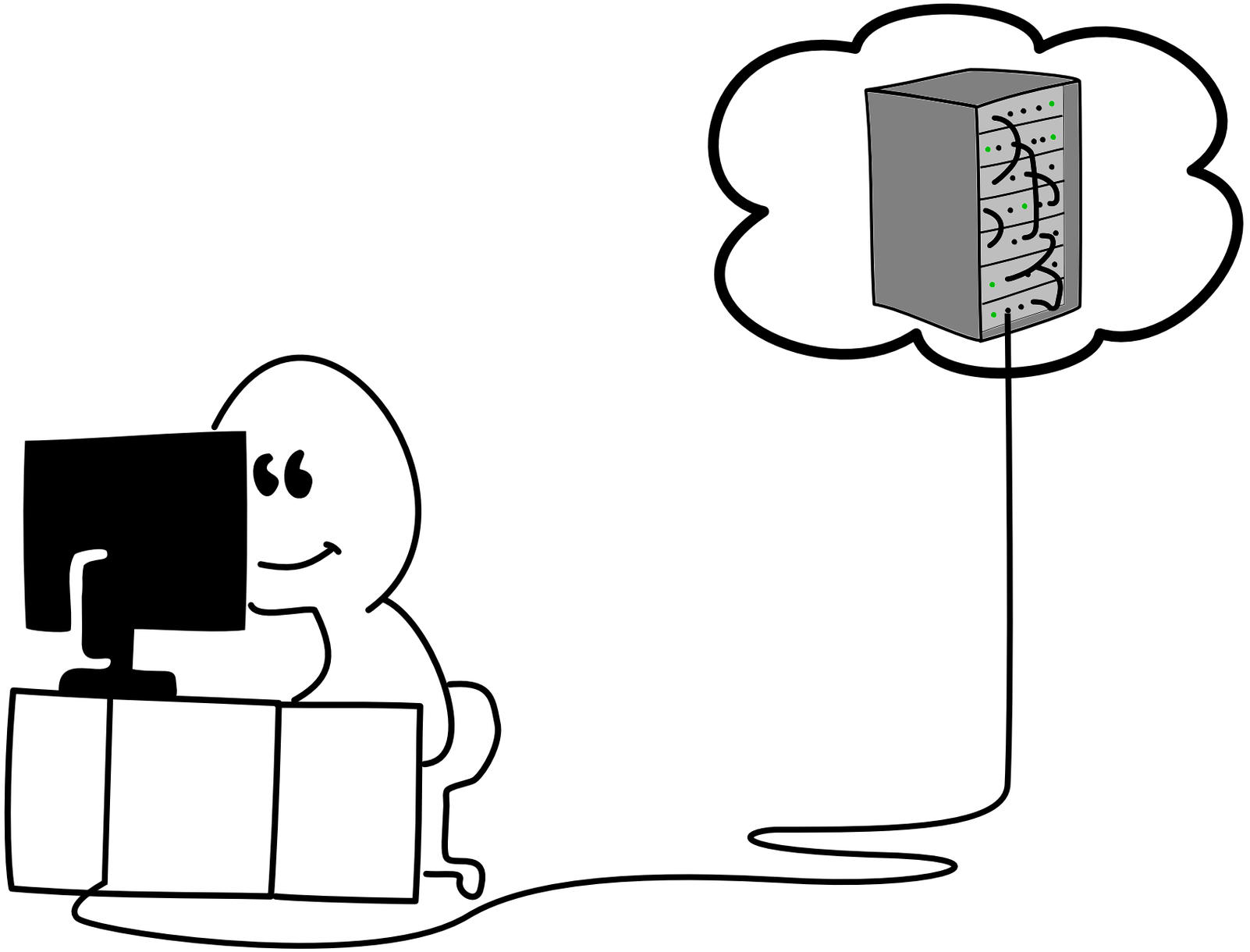


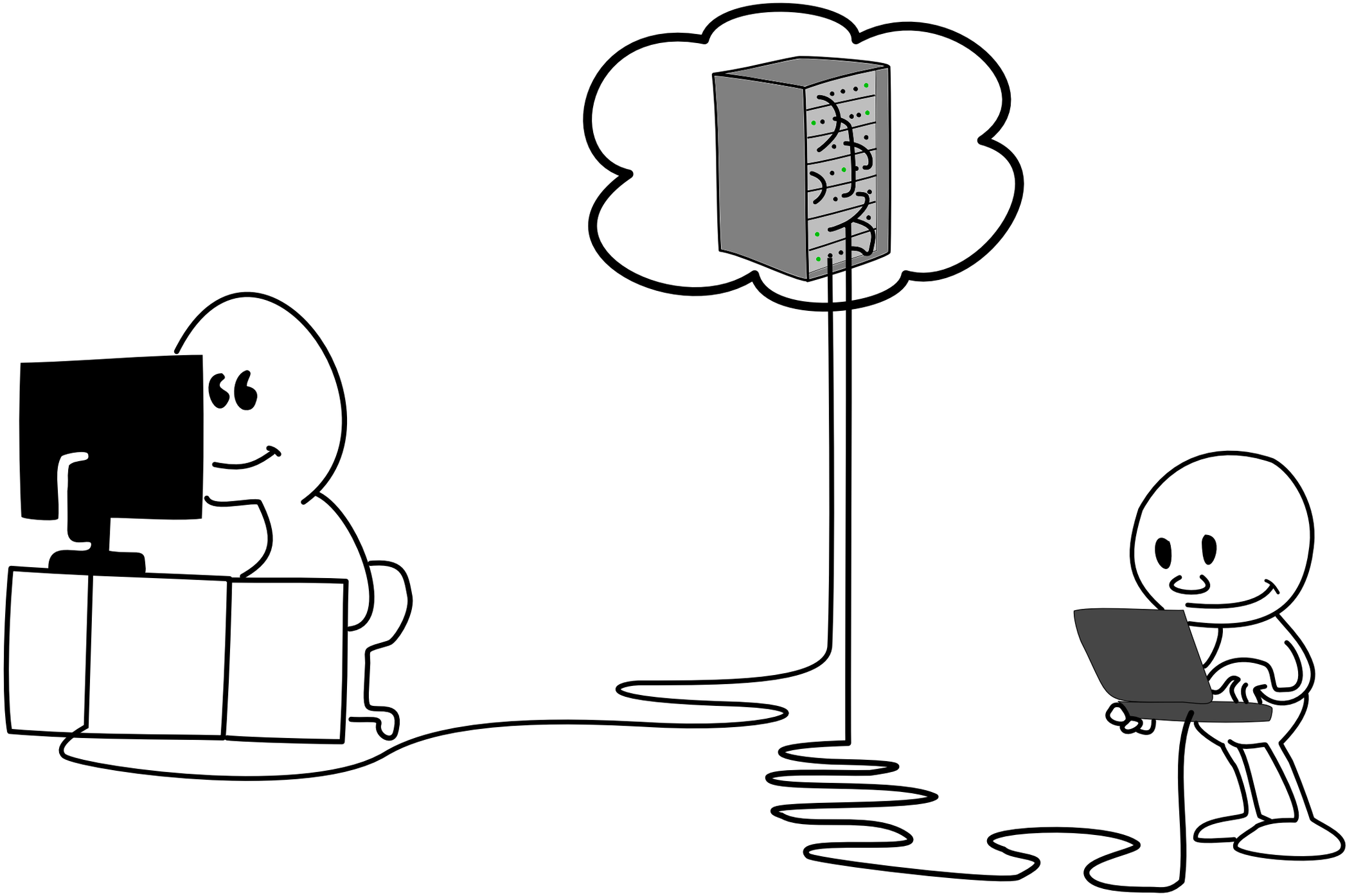


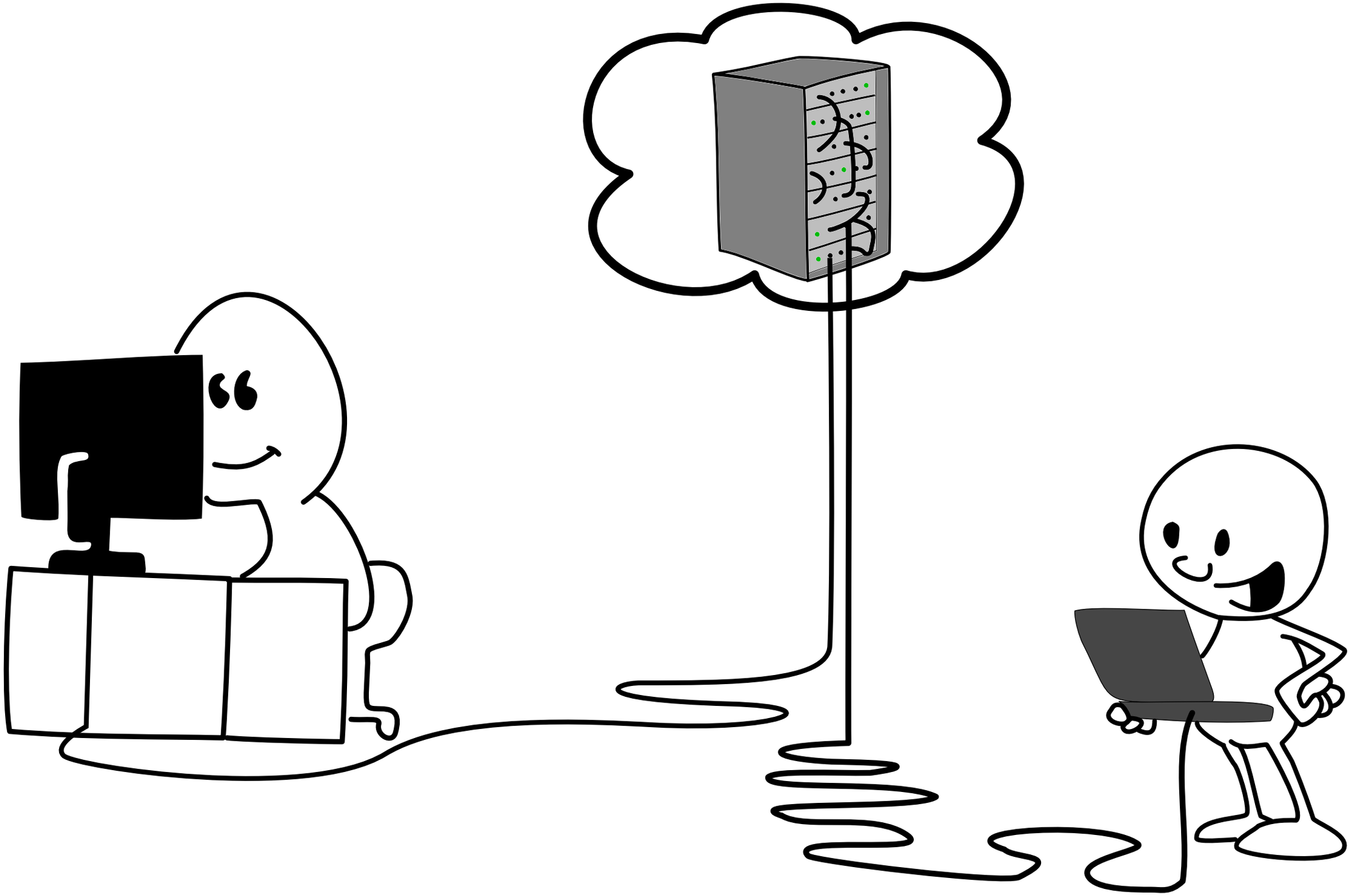












Geschichte

Erster Ansatz

- Vollkommen freie, graphische Modellierung von Experimenten
- auch der Algorithmen und Daten
- Gescheitert an Komplexität

Zweiter Ansatz

- Modellierung von Experimenten durch Konfiguration
- implementierte Algorithmen
- bereitgestellte Standardkollektionen
- Erweiterung um neue Algorithmen und Kollektionen

Motivation

„A complex system that works is invariably found to have evolved from a simple system that worked. The inverse proposition also appears to be true: A complex system desgined from scratch never works and cannot made to work. You have to start over, beginning with a working simple system.“

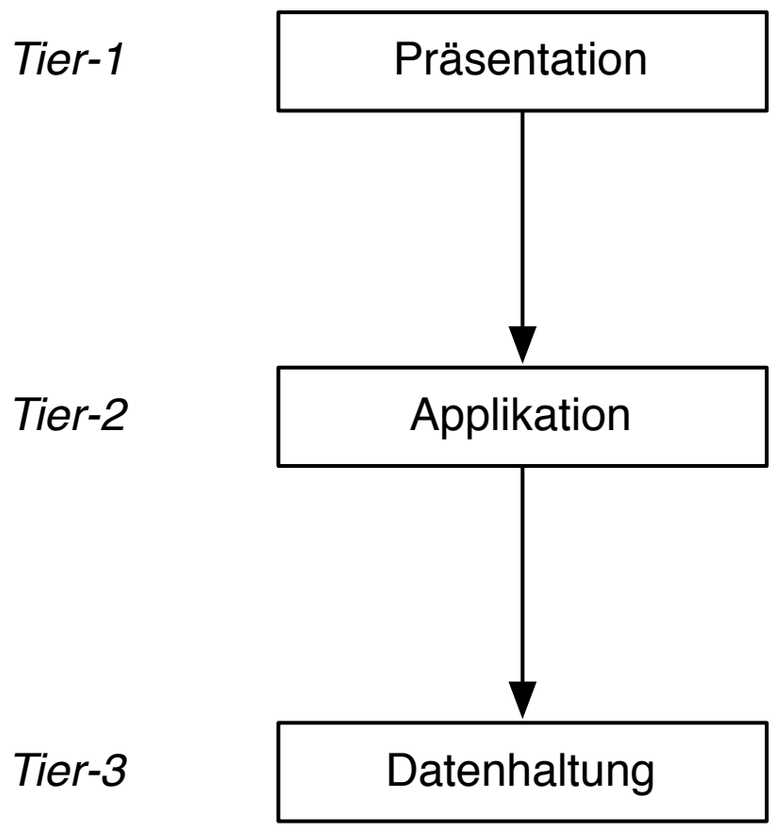
[Gall‘s Law, John Gall in Systemantics]

Motivation

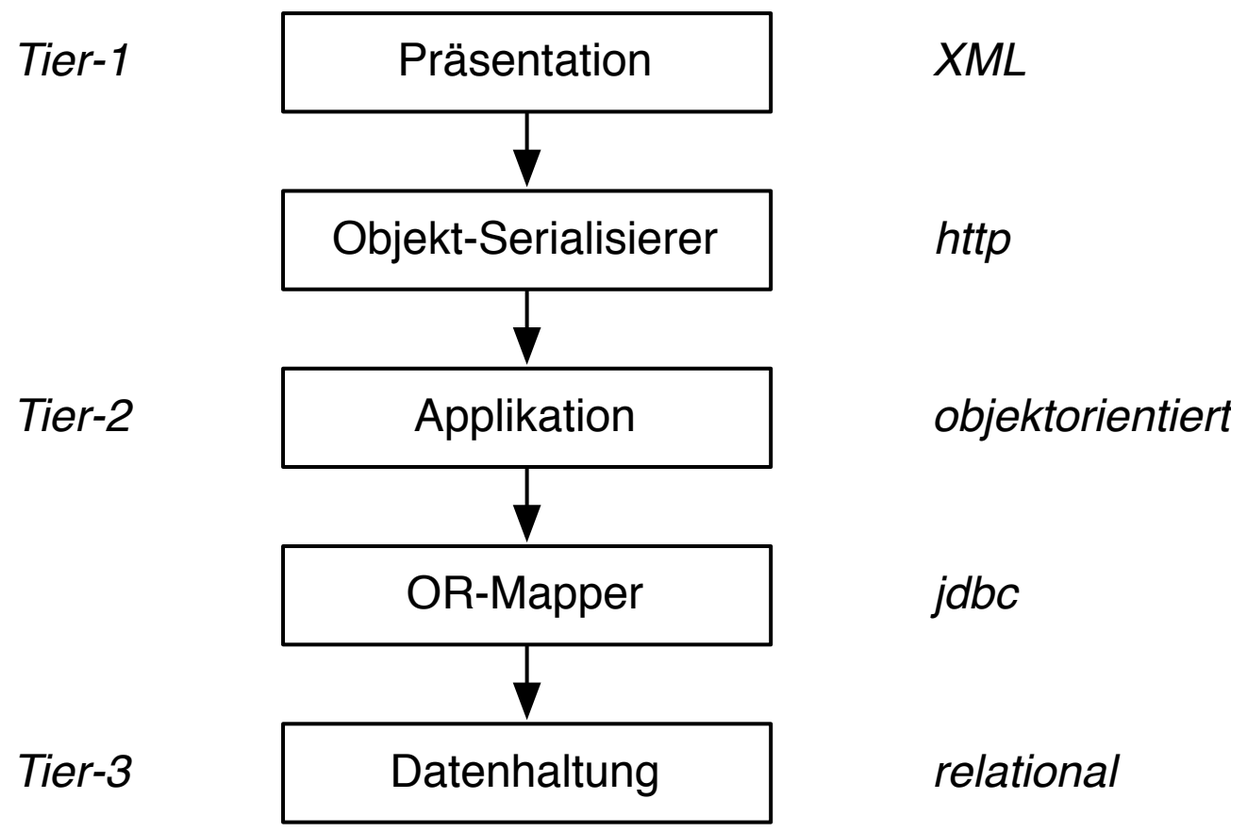
„Perfektion ist nicht dann erreicht, wenn man nichts mehr hinzu-
zufügen hat, sondern wenn man nichts mehr weglassen kann.“

[Antoine de Saint-Exupéry]

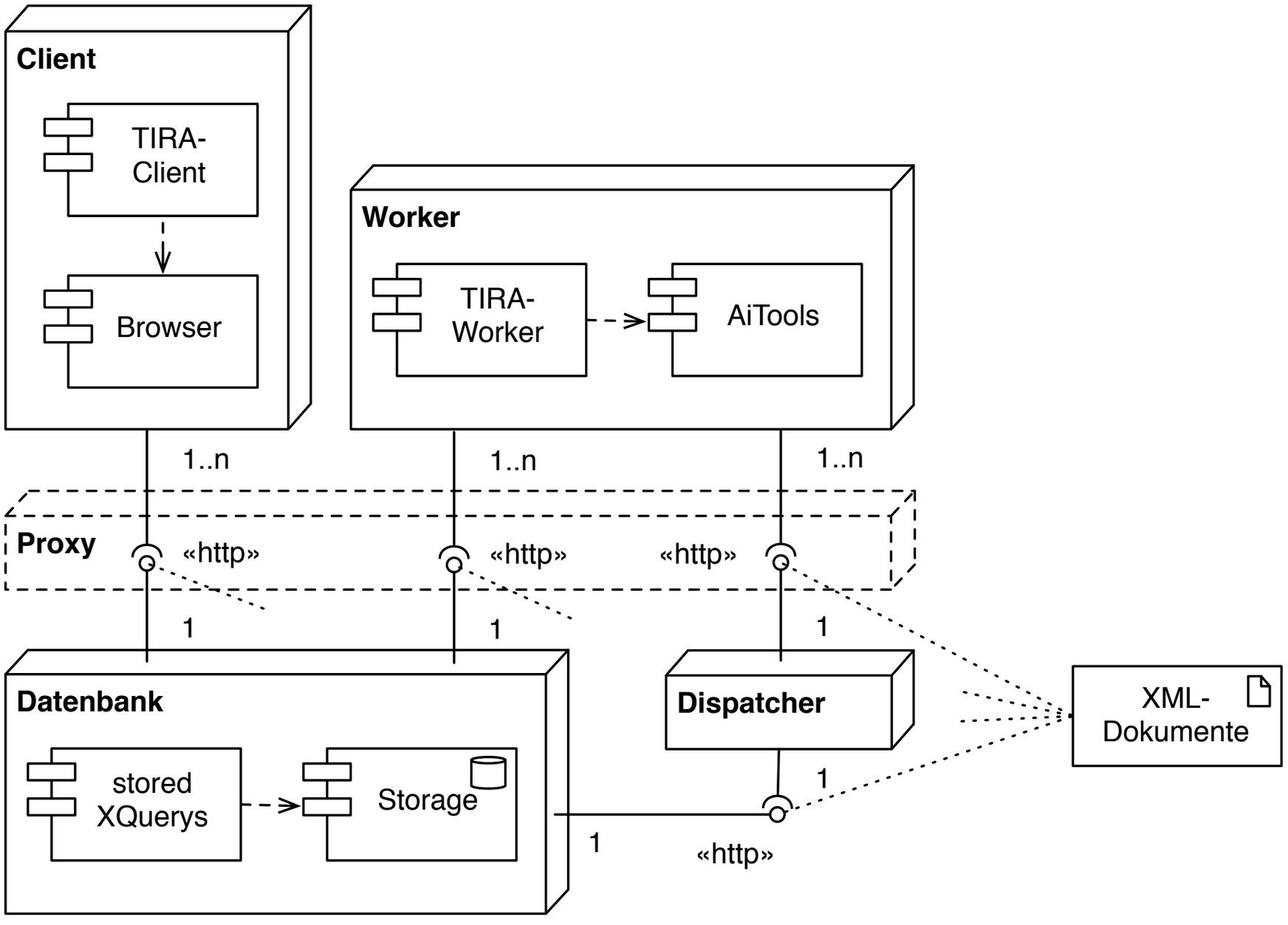
Drei-Schichten-Architektur



Drei-Schichten-Architektur



Architektur



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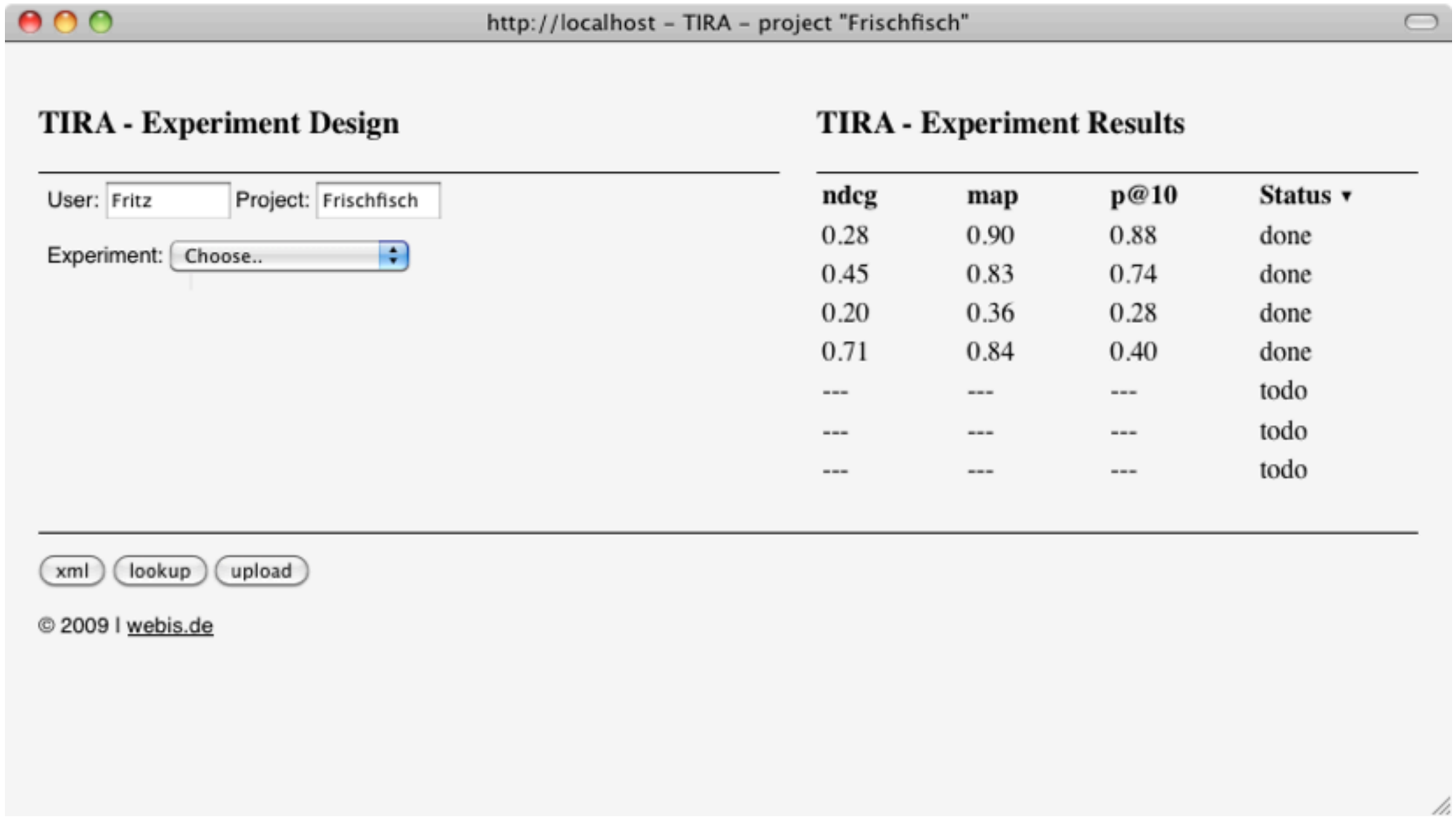
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TIRA - Experiment Design
User: Fritz
Project: Frischfisch
Experiment: Choose..
TIRA - Experiment Results
ndcg map p@10 Status
0.28 0.90 0.88 done
0.45 0.83 0.74 done
0.20 0.36 0.28 done
0.71 0.84 0.40 done
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xml
lookup
upload
© 2009 | webis.de

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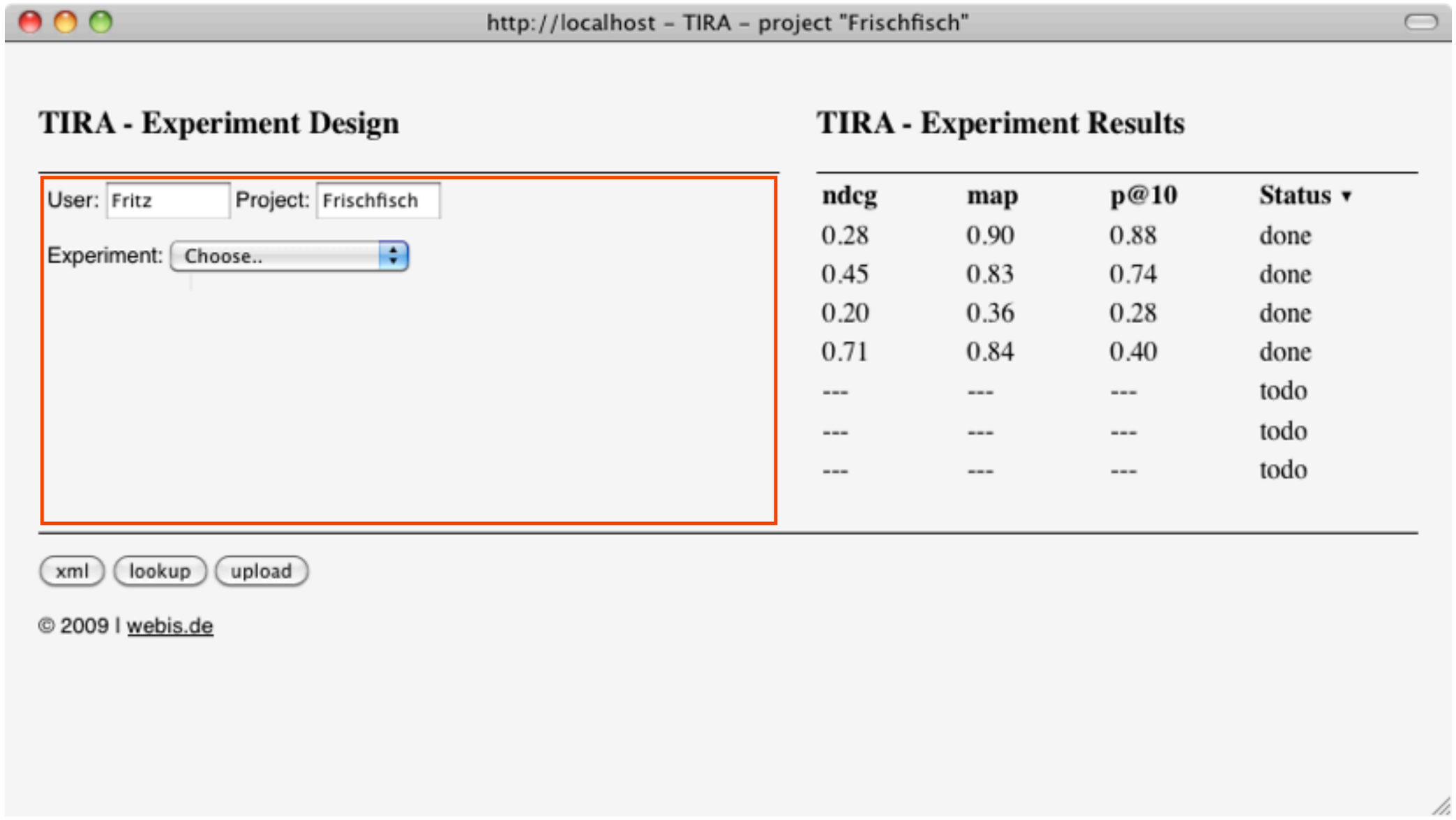
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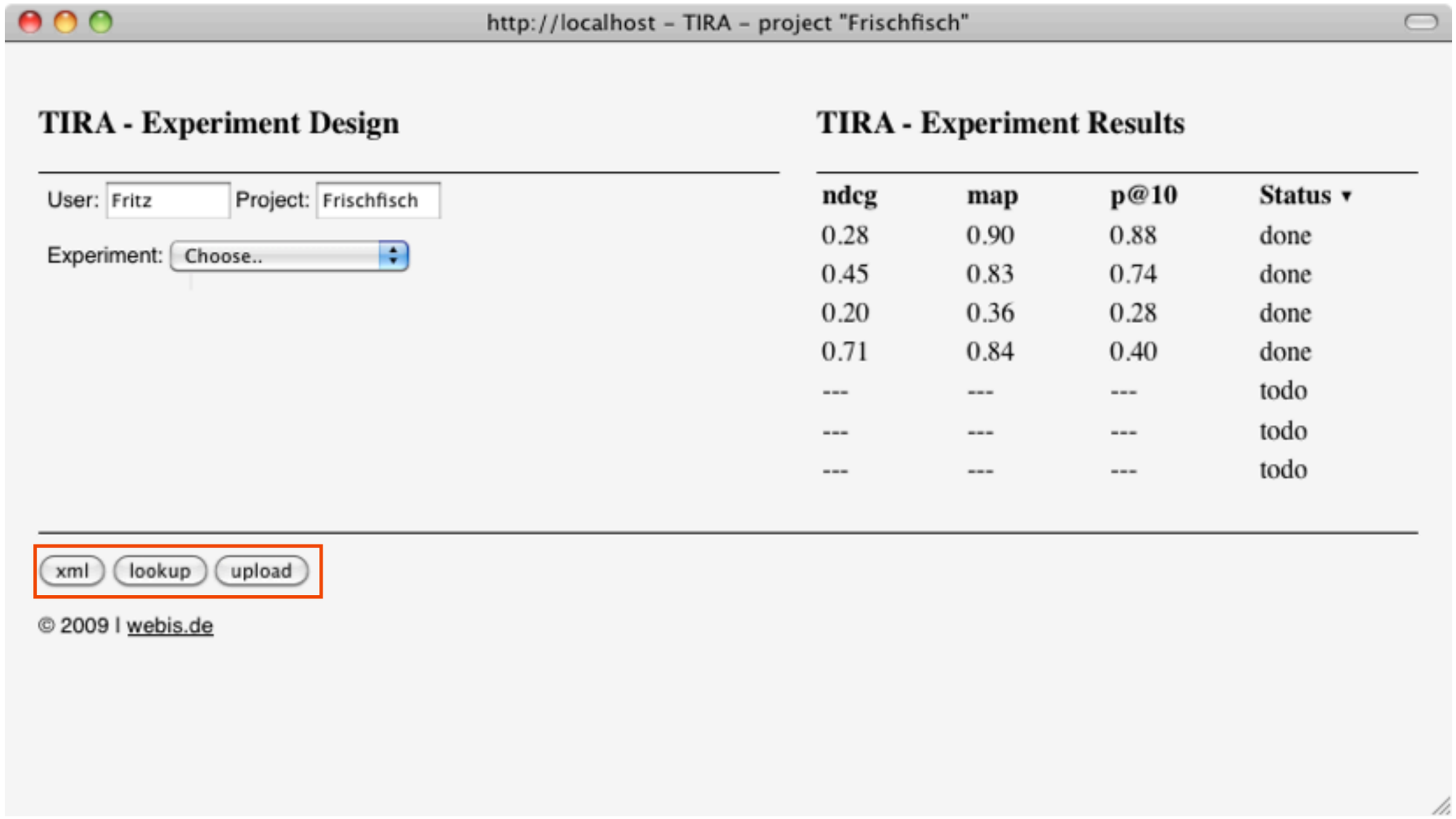
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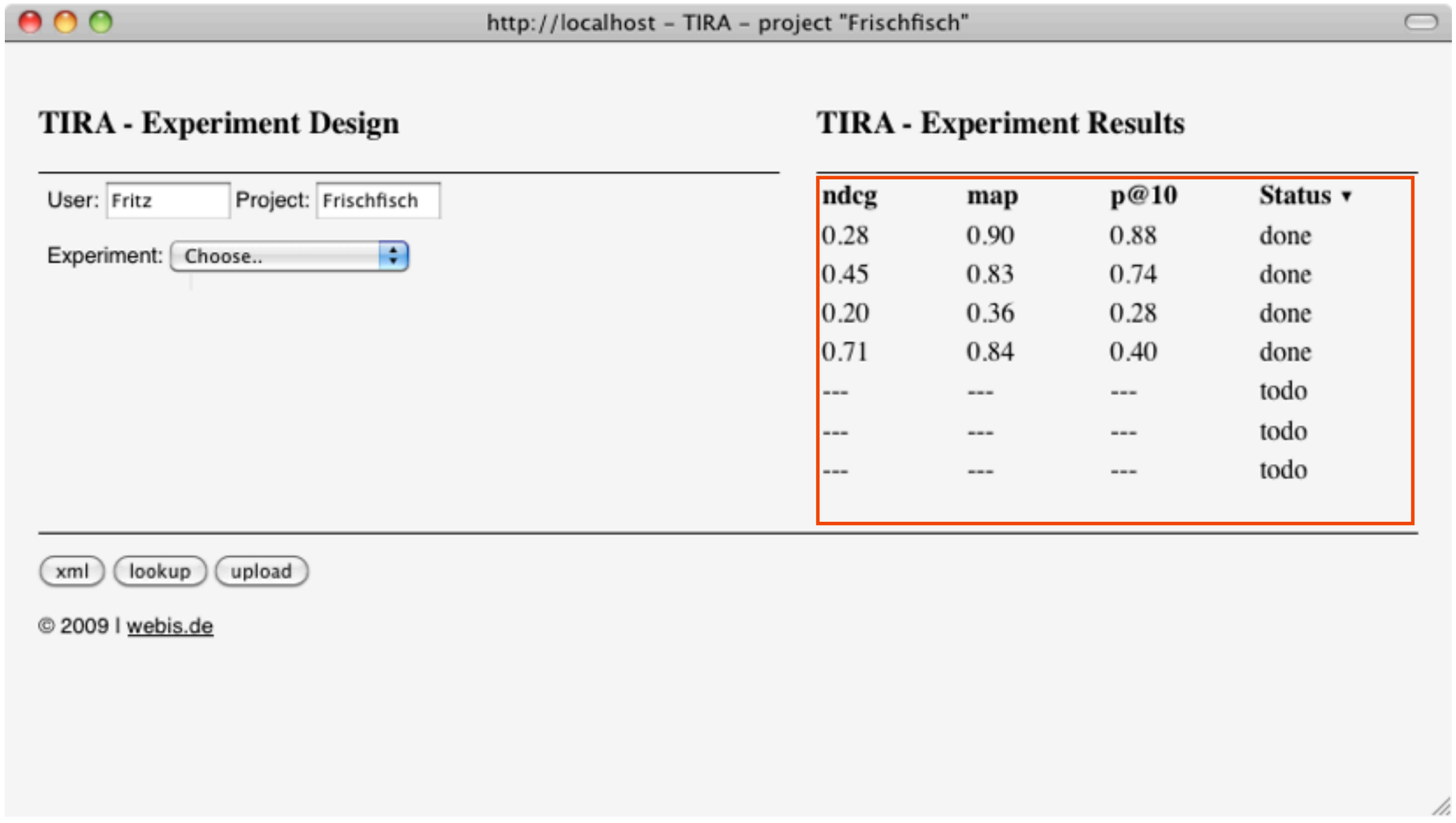
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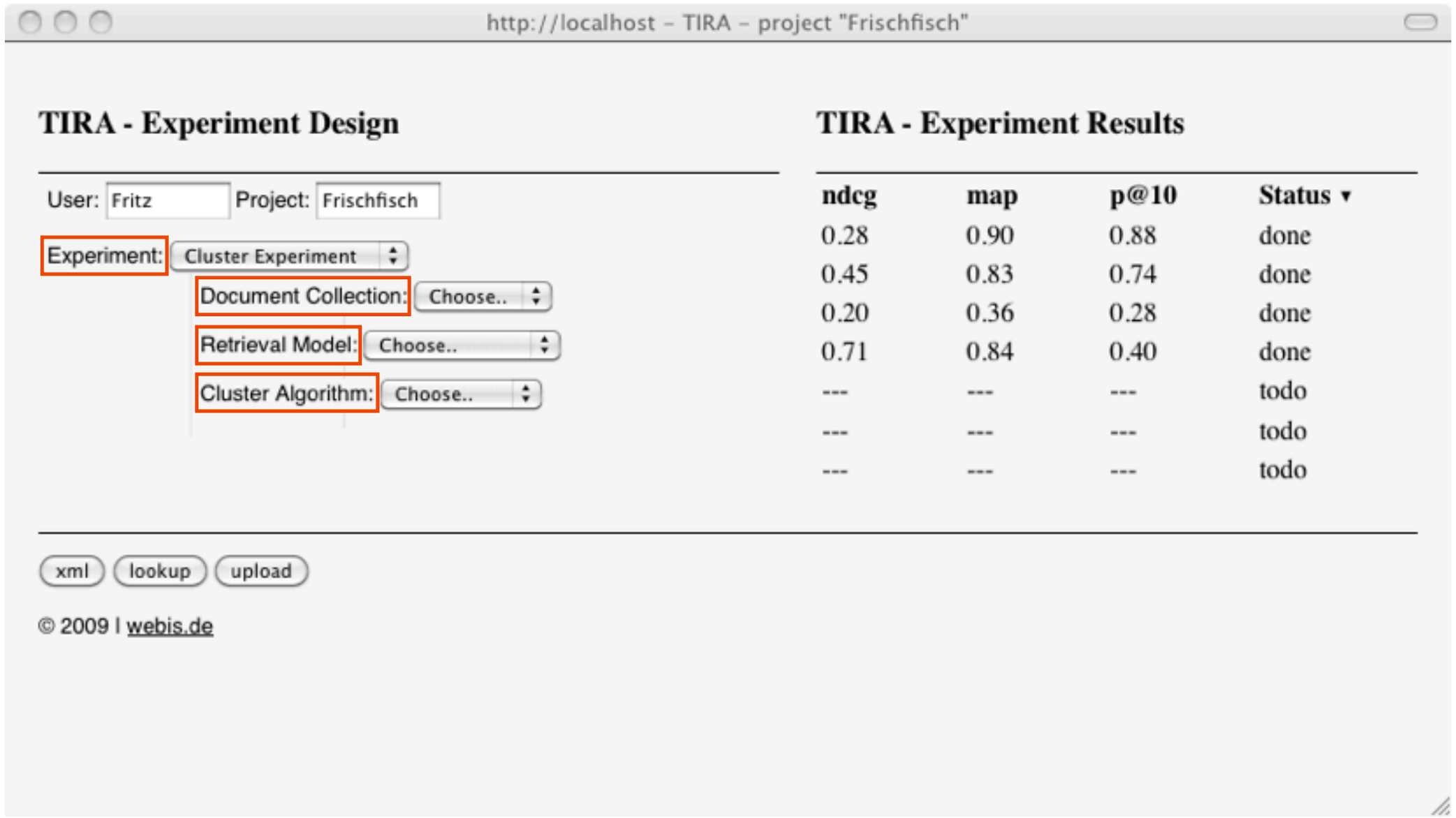
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TIRA - Experiment Design
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Project: Frischfisch
Experiment: Cluster Experiment
Document Collection: Choose..
Retrieval Model: Choose..
Cluster Algorithm: Choose..
TIRA - Experiment Results
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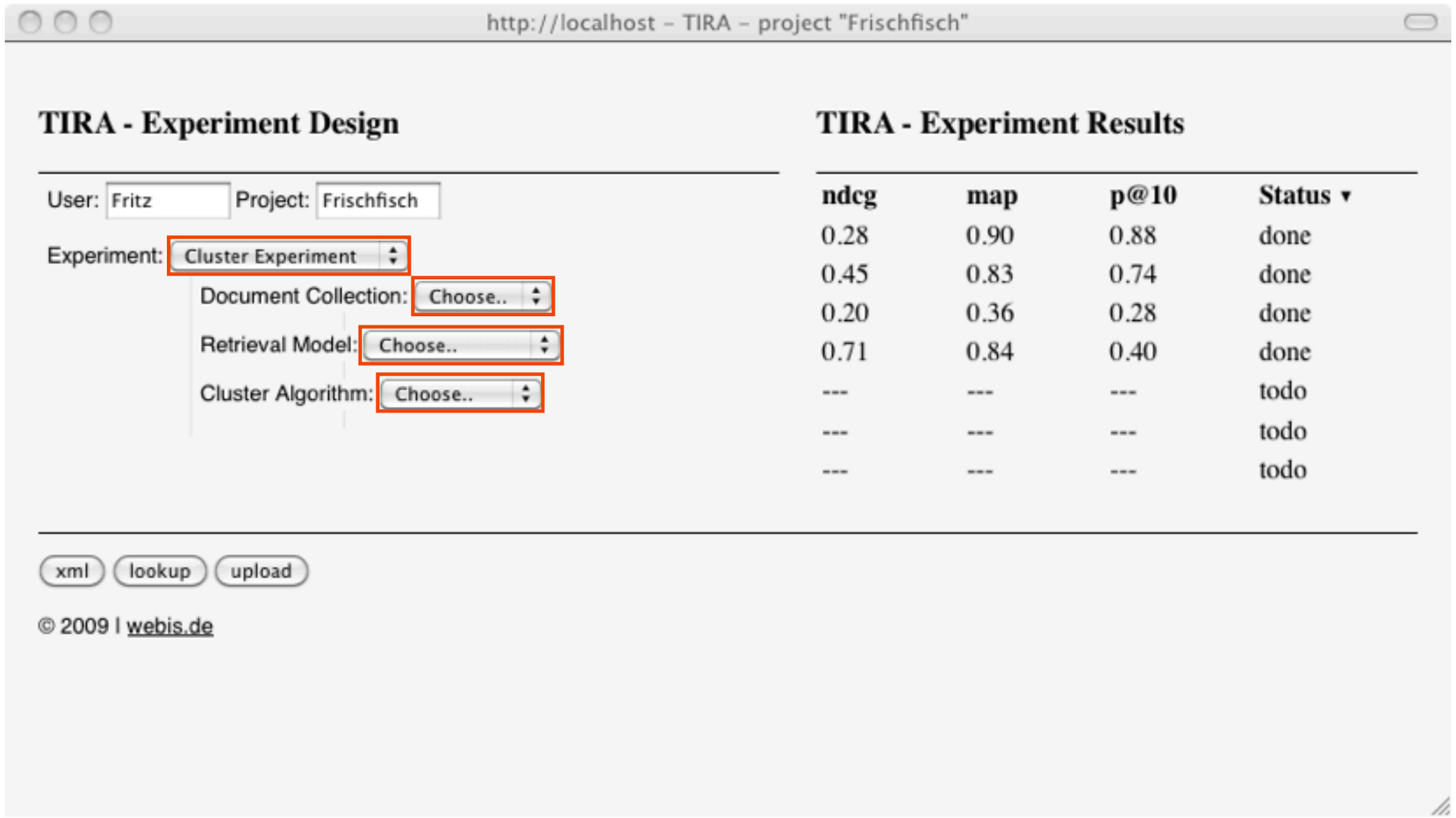
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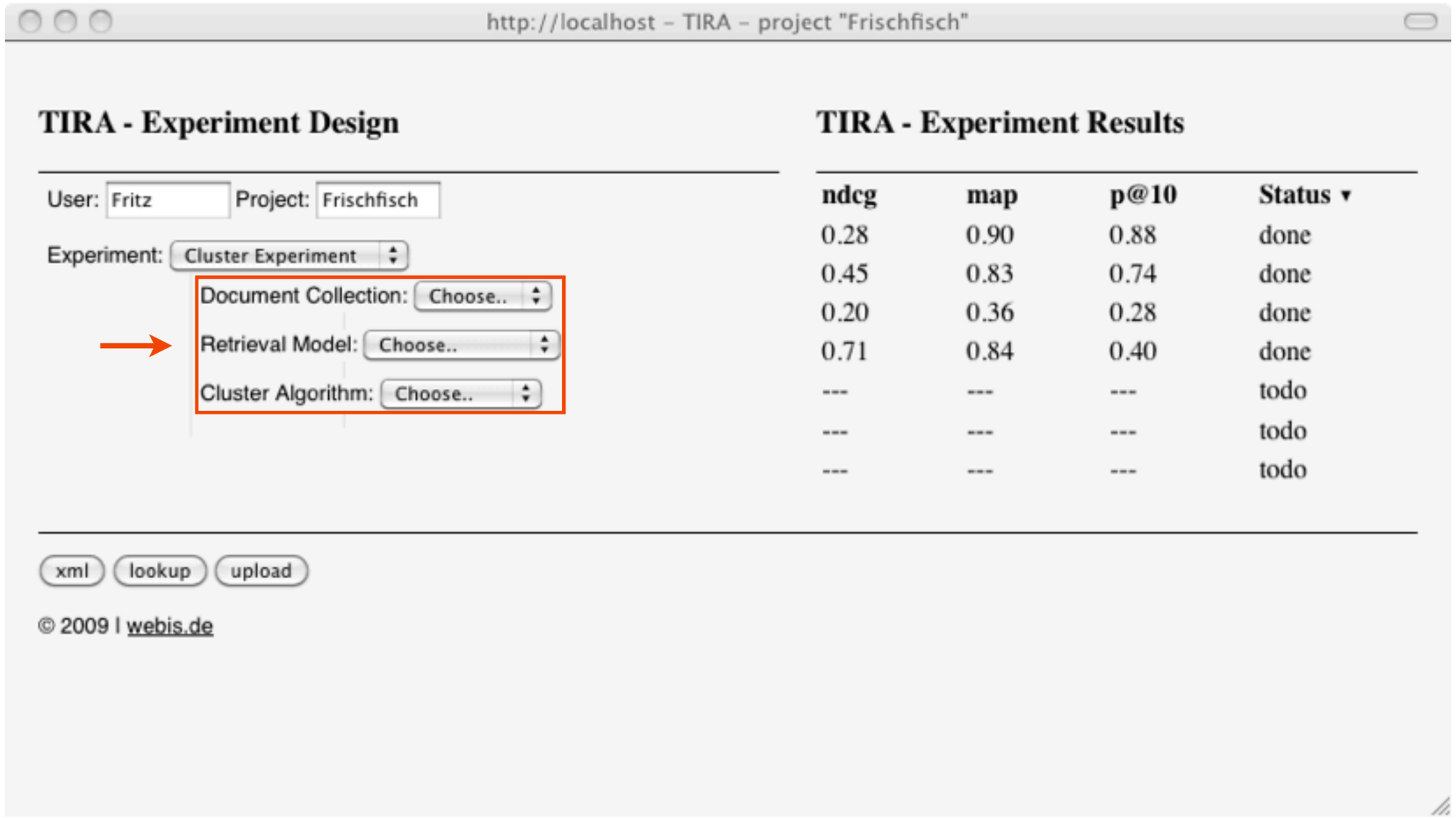
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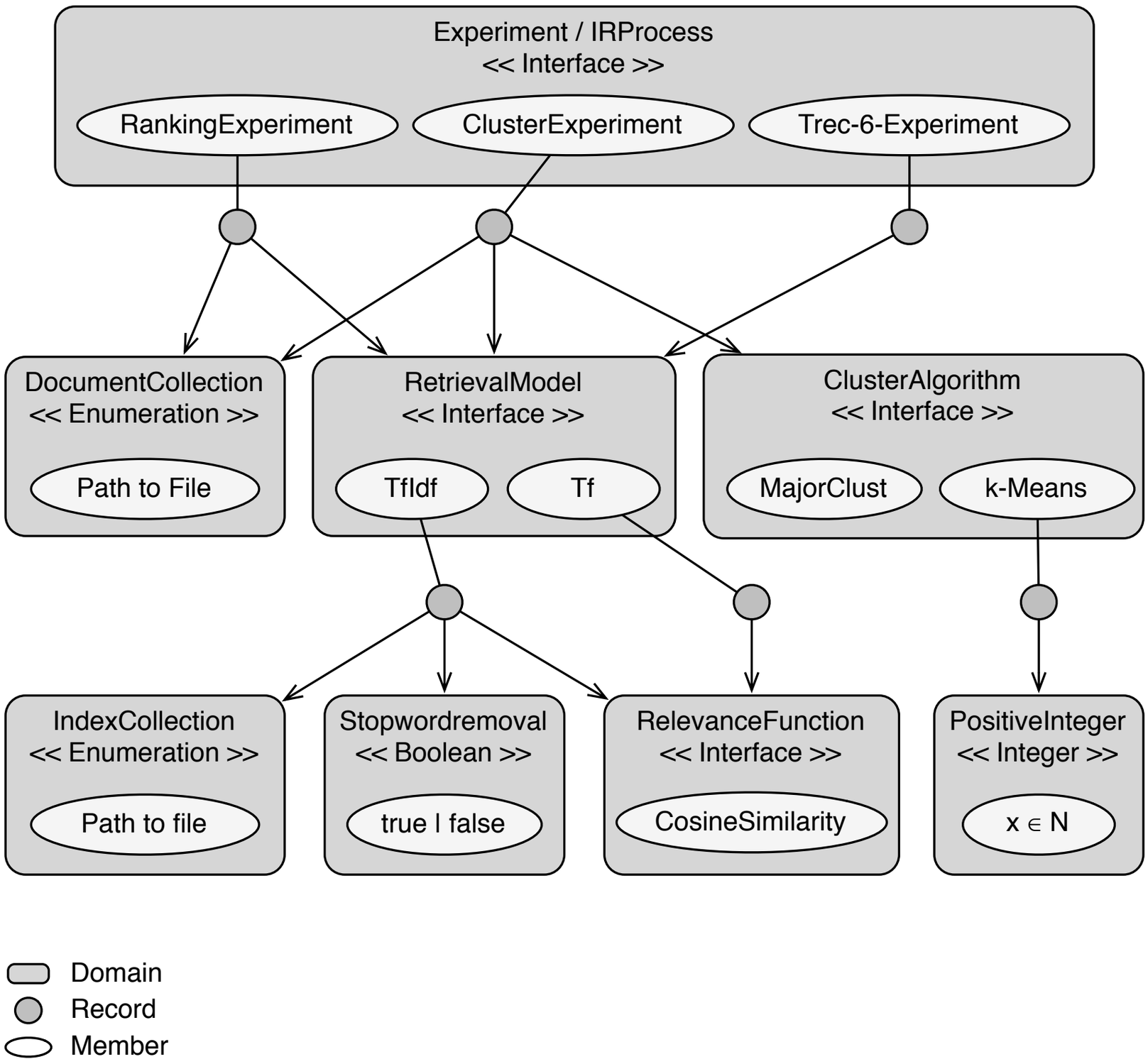
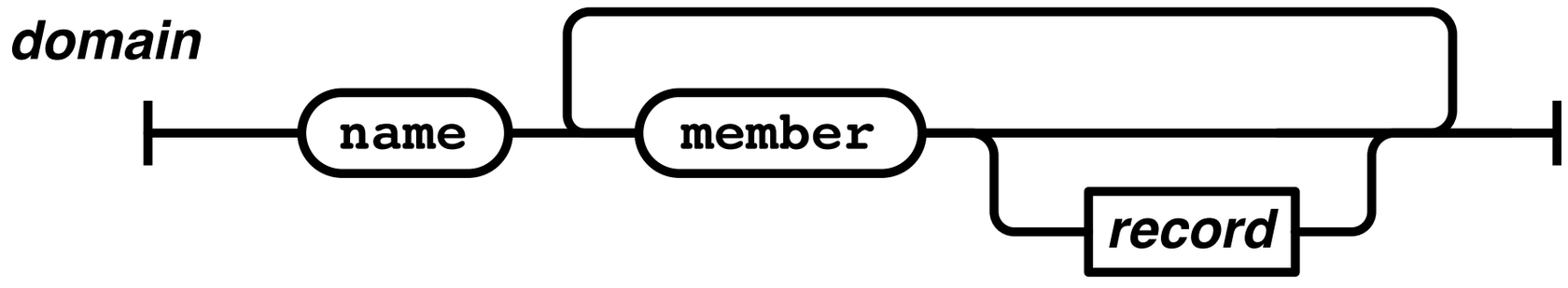
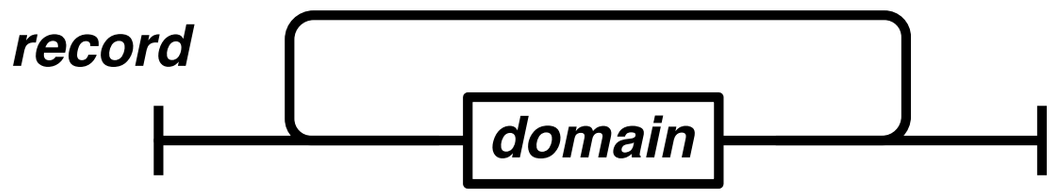
Datenmodell



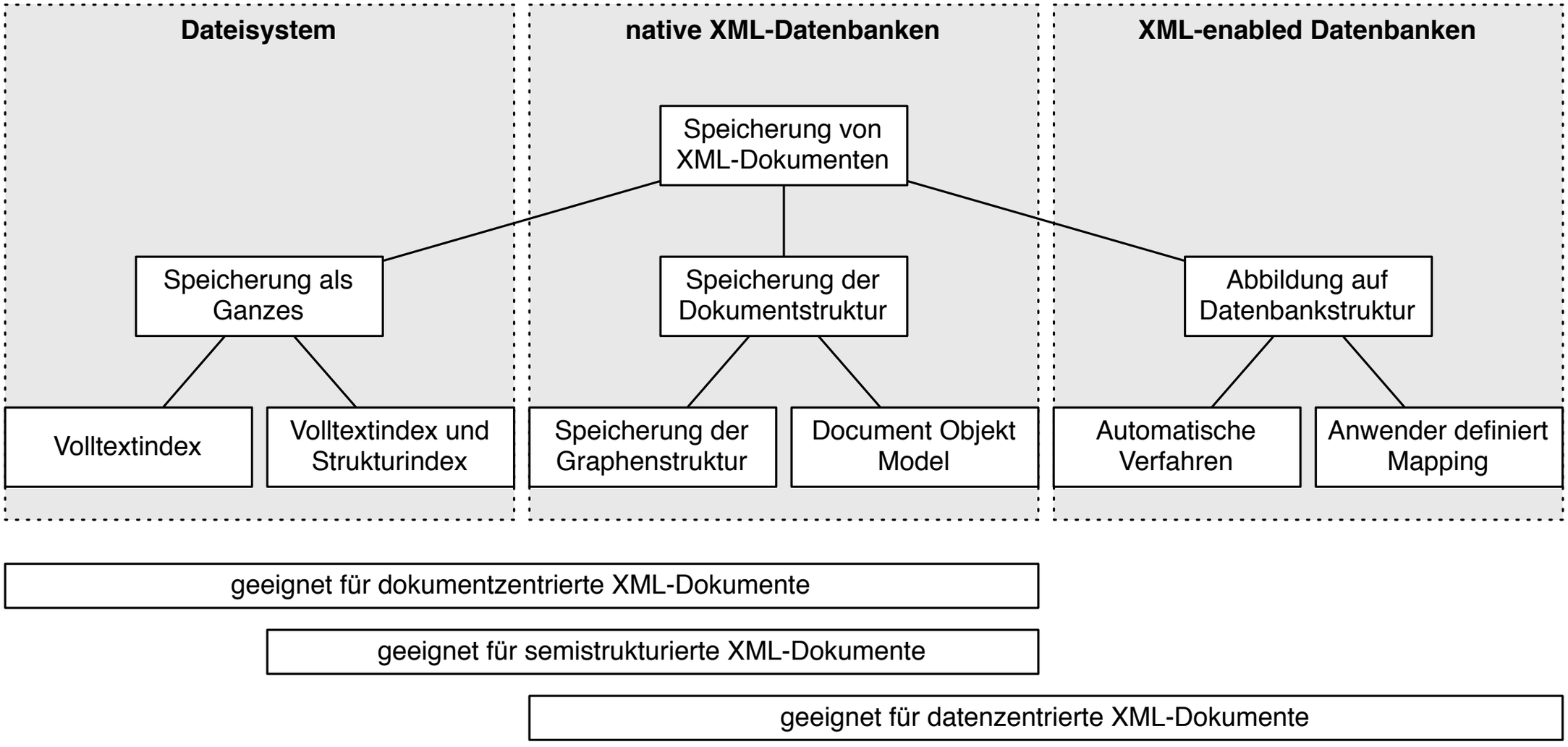
Datenmodell

Grammatik





Speicherung von XML



Quelle: M. Klettke und H. Meyer. XML & Datenbanken. Seite 190. dpunkt.verlag, 2003.

XML-Datenbank

XQuery

- XPath ⊂ XQuery
- FLOWR-Statement für Anfragen (for, let, where, order, return)
- Vollständige, funktionale Programmiersprache
- Strenge Typisierung
- XML lässt sich in XQuery einbetten

eXist

- native XML-Datenbank
- Open Source-Projekt von Wolfgang Meier
- basiert auf B^+-Bäumen und eigener XQuery-Implementierung
- Plattform für Webapplikationen (stored XQuerys)
- u.a. ReSTful HTTP-Schnittstelle

ReST

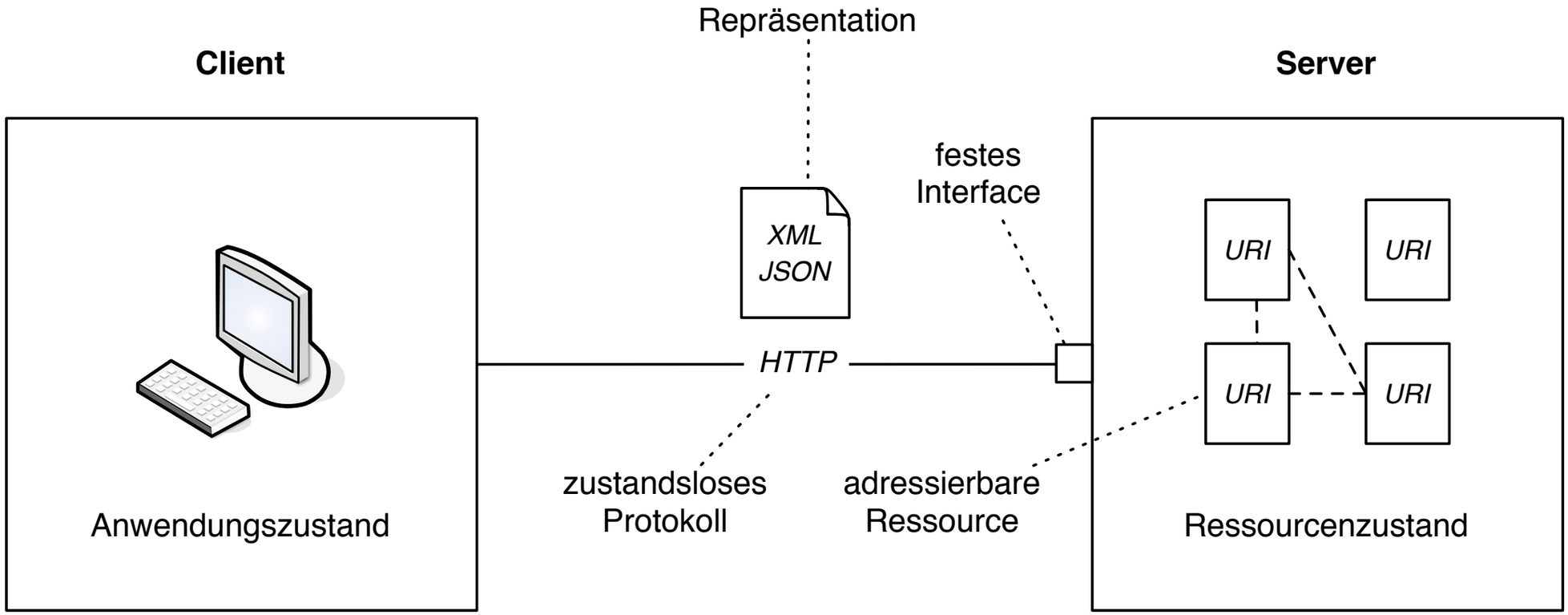
Representational State Transfer

- Eine kleiner Satz von Prinzipien
- Ein Architekturstil für verteilte Systeme
- Eine Gegenposition zu klassischen WebService-Architekturen
- Vorgeschlagene Technologiebasis: HTTP + URI + XML

Prinzipien

- Adressierbarkeit
- Zustandslosigkeit
- Verwendung von Hypermedia
- Wohldefinierte Operationen

ReST – Prinzipien



ReST – Prinzipien

Wohldefinierte Operationen

	HTTP-Methode	CRUD-Verb	Semantik
sichere Methoden	GET	Read	Ressource anfordern
	HEAD	—	Metainformationen anfordern
	OPTIONS	—	Auflistung der verfügbaren Verben
idempotente Methoden	PUT	Create	Ressource erzeugen
	DELETE	Delete	Ressource löschen
überladbare Methode	POST	Update	Ressource verändern

ReST

Beispiel

- Einkaufswagen in einem Online-Shop
- Artikel hinzufügen mit PUT, entfernen mit DELETE

```
http://toller.shop.tld/users/<username>/cart/<article>
```

- Kosten des Einkaufs mit GET erfragen

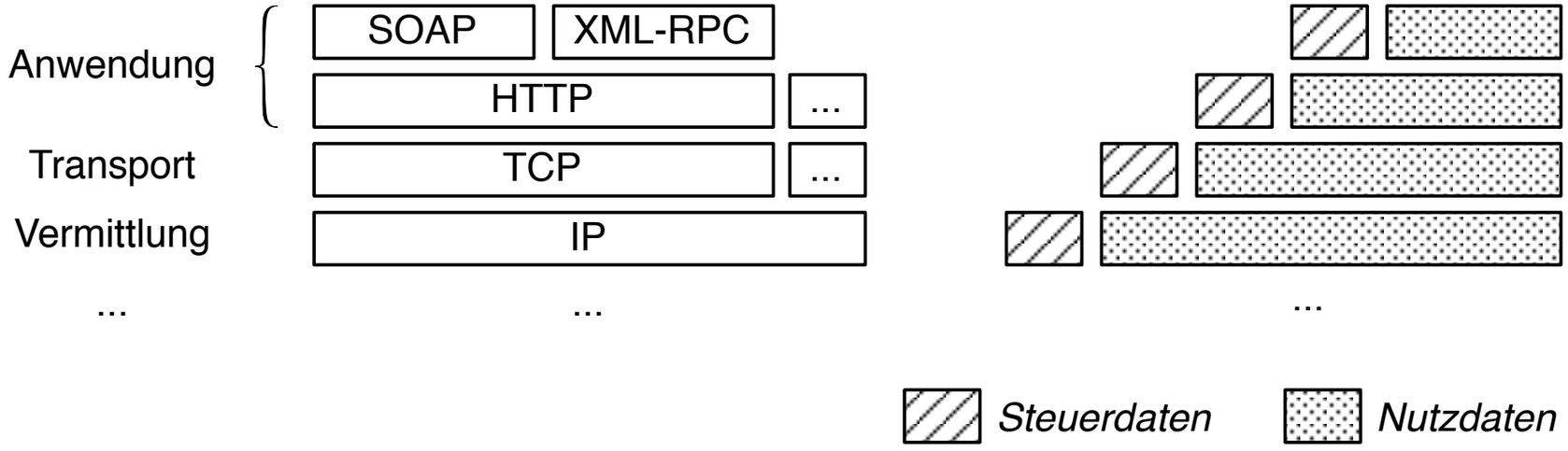
```
http://toller.shop.tld/users/<username>/cart/sum
```

- Inhalt des Einaufwagens mit GET erfragen

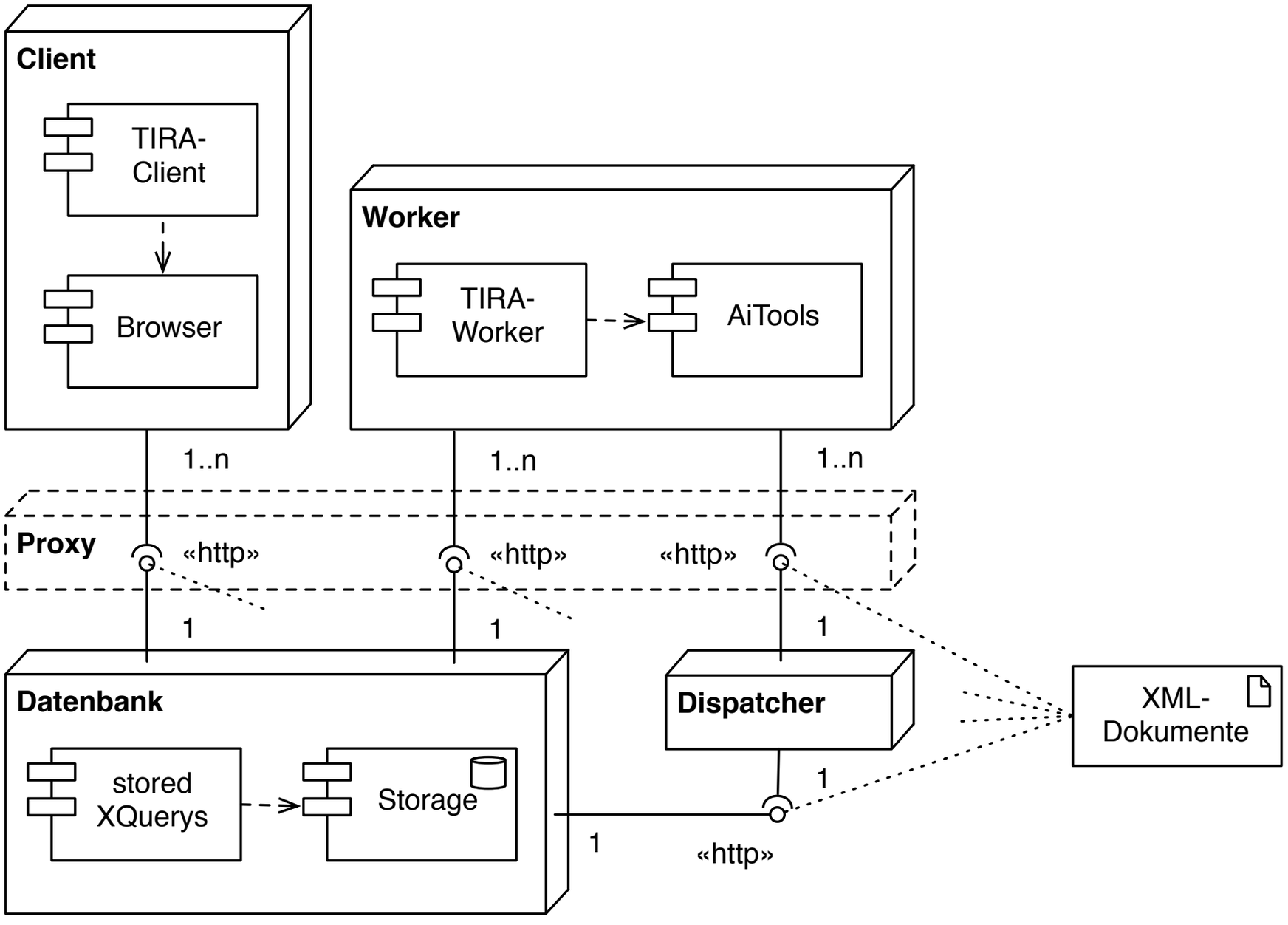
```
http://toller.shop.tld/users/<username>/cart/
```

ROA vs. SOA

Protokoll-Schichten



Architektur



Umfeld

XRX-Architektur

- Dan McCreary, „XRX:Simple, Elegant, Disruptive“, 2008
- XForms – ReST – XQuery
- derzeit mangelhafte Unterstützung von XForms

JSON statt XML

- „objekt-orientiertes“ Datenmodell
- verteilte, dokumenten-orientierte Datenbank
- JavaScript, MapReduce und ReST

Resümee & Ausblick

Resümee

- Einfachheit durch „Weniger“
- solide Basis für Weiterentwicklung
- einfache Erweiterung des Systems

Ausblick

- Umsetzung noch offener Anforderungen
- Cluster im Observer-Pattern
- Schnittstelle für Erweiterungen
- Plattformunabhängiger Client
- Mehrbenutzerbetrieb
- Mashups

Danke.