

**Internet Briefing. Developer Konferenz.
Clientseitige Last- & Performancetesting. Namics.**

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Thema 1

**Verstehen was zwischen
User Agent und Server
geschwätzt wird...**

Thema 2

Verhalten der Anwendung unter Last (#User und #Traffic)

Verstehen

Welche Elemente lädt der Browser?

- unconditional request
- conditional request

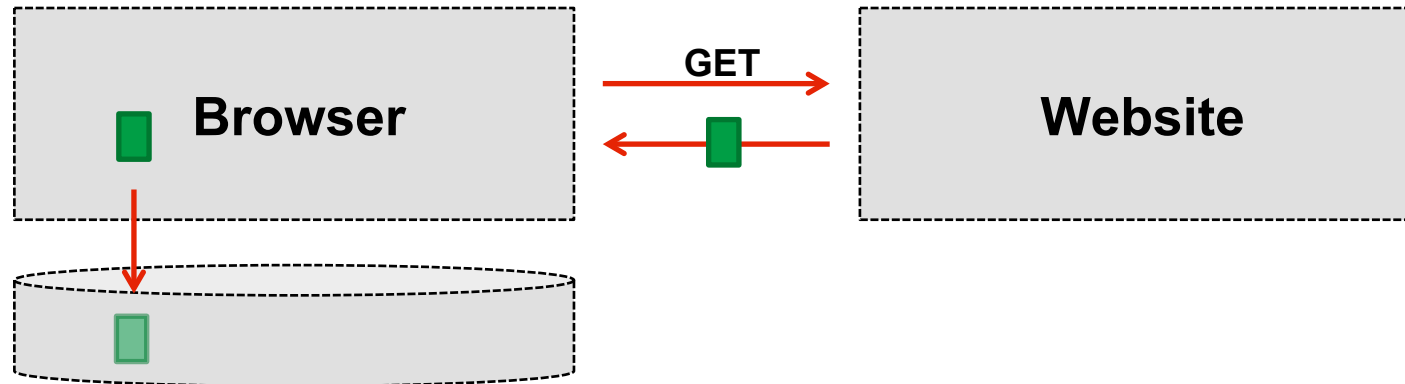
Browser

http/s

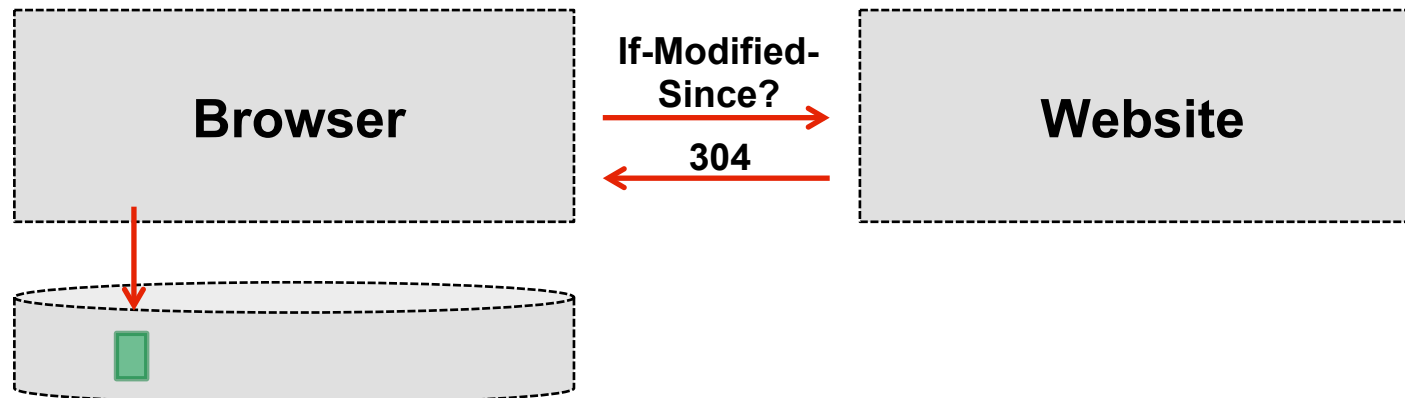
Website

Unconditional versus conditional

→ **Unconditional (leerer Cache / erster Besuch)**



→ **Conditional (hat das/ein Element lokal)**



Was lädt der Browser?

- Quelle
- Grösse
- Anzahl Requests
- Reihenfolge
- Headerdaten / Protokoll

Browser

http/s

Website

**Welche Elemente lädt der Browser?
- im Vergleich zur alten Website**

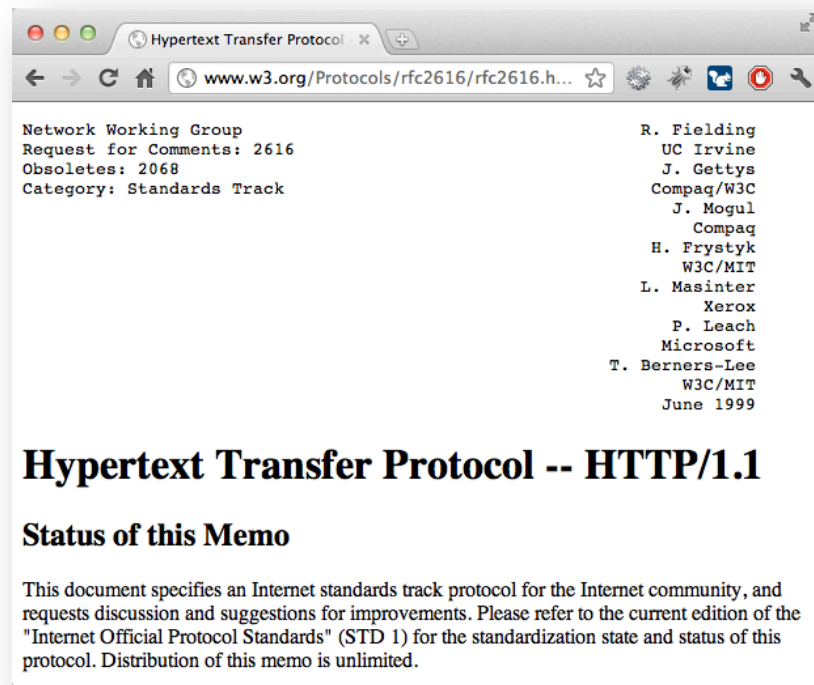
Browser

http/s

Website

Lesen...

must

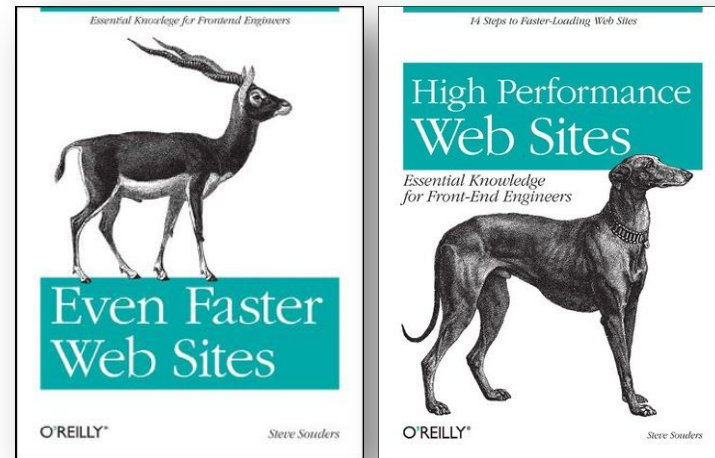


→ **Caching verstehen!**

- z.B. http://www.mnot.net/cache_docs/

should

→ <http://stevesouders.com/>



→ <http://code.google.com/speed/articles/>

Tools

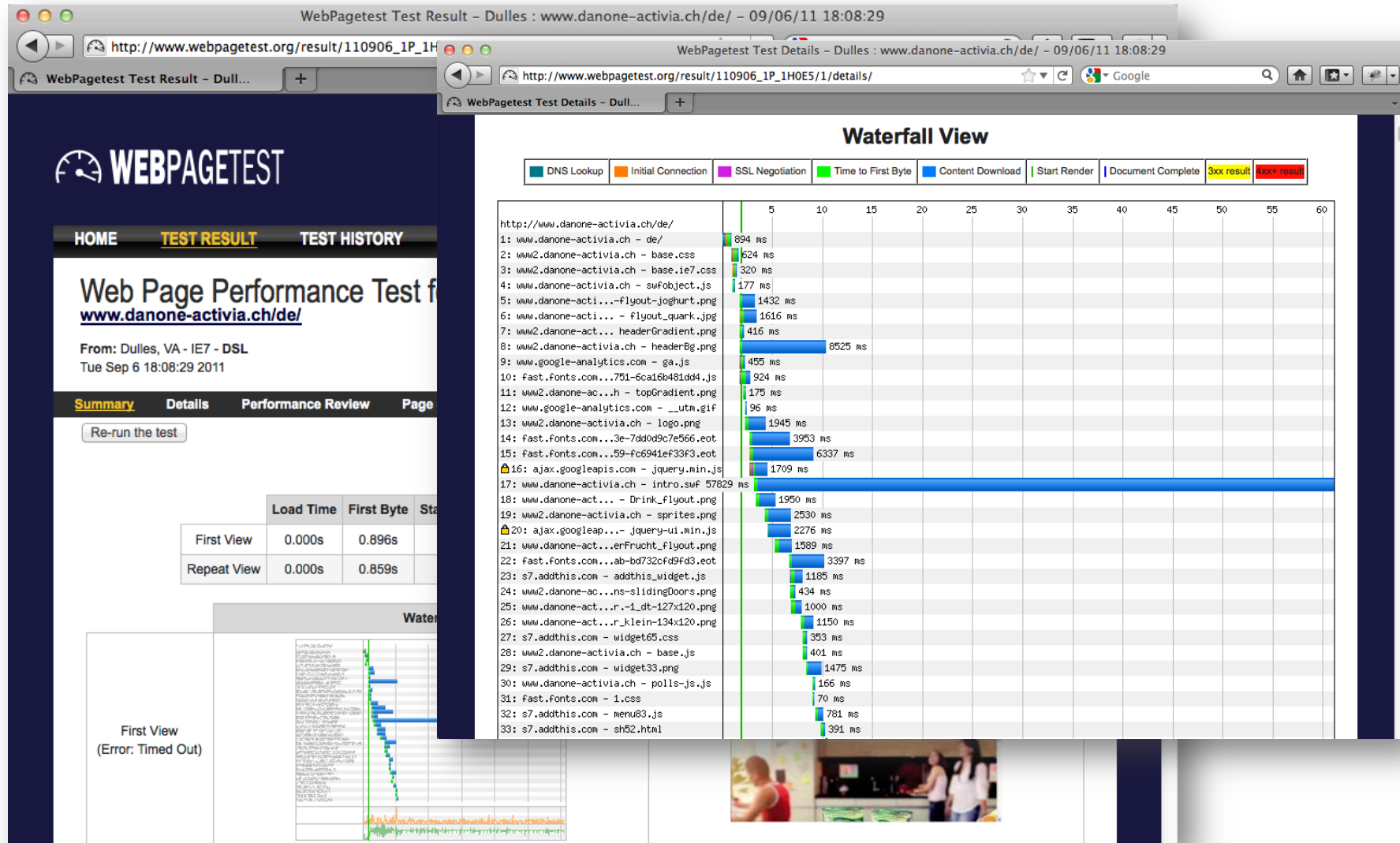
Tool 1: Firebug



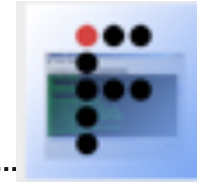
→ <https://addons.mozilla.org/de/firefox/addon/firebug/>

URL	Status	Domain	Size	Remote IP	Timeline
▶ GET www.danone-	301 Moved Permanently	danone-activia.ch	233 B		86ms
▶ GET de	200 OK	danone-activia.ch	3.3 KB		105ms
▶ GET base.css?ver=	200 OK	www2.danone-activia.ch	5.8 KB		26ms
▶ GET swfobject.js	200 OK	danone-activia.ch	3.4 KB		32ms
▶ GET 9c74a2d5-e0f	200 OK	fast.fonts.com	6.7 KB		33ms
▶ GET jquery.min.js	200 OK	ajax.googleapis.com	31.3 KB		33ms
▶ GET jquery-ui.min,	200 OK	ajax.googleapis.com	50.7 KB		36ms
▶ GET addthis_widge	200 OK	s7.addthis.com	26 KB		50ms
▶ GET base.js?ver=lq	200 OK	www2.danone-activia.ch	5.6 KB		53ms
▶ GET polls-js.js?ver	200 OK	danone-activia.ch	644 B		55ms
▶ GET intro.swf	200 OK	danone-activia.ch	382.9 KB	194.6.194.218:80	226ms
▶ GET ga.js	200 OK	google-analytics.com	12.1 KB		455ms
▶ GET 4ab41cf3-cda	200 OK	fast.fonts.com	43.7 KB		463ms
▶ GET 324bd528-de	200 OK	fast.fonts.com	45.4 KB		465ms
▶ GET widget65.css	200 OK	s7.addthis.com	7.8 KB		359ms
▶ GET intro.ogg	206 Partial Content	danone-activia.ch	768 KB	194.6.194.218:80	375ms
▶ GET sh52.html#	200 OK	s7.addthis.com	14.1 KB		717ms
▶ GET _utm.gif?utm	200 OK	google-analytics.com	35 B	209.85.146.101:80	18ms
▶ GET 0f5dd27f-682	200 OK	fast.fonts.com	67.5 KB		634ms
▶ GET menu83.js	200 OK	s7.addthis.com	21.4 KB		414ms
▶ GET intro.ogg	206 Partial Content	danone-activia.ch	12.9 KB	194.6.194.218:80	66ms
▶ GET 1.css?apiType	304 Not Modified	fast.fonts.com	0	68.232.35.119:80	32ms
▶ GET intro.ogg	206 Partial Content	danone-activia.ch	6.1 MB	194.6.194.218:80	7.57s
▶ GET 250lo.gif?dt03	200 OK	l.addthiscdn.com	43 B	2.19.69.115:80	9ms
24 requests			7.6 MB	(6.5 MB from cache)	9.44s (onload: 1.88s)

Tool 2: <http://www.webpagetest.org/>



Tool 3: <http://www.proxy-sniffer.com/>



The screenshot displays the Proxy Sniffer Web Admin interface. The main window shows a recorded session with a table of items. The 'URL Details / Var Handler' window is open, showing the details for a specific item.

Recorded Session Table:

Item	Test	Offset	Position	Content Size	Time	HTTP Request	HTTP Response
0	[0]						
1	[1]	0.00 sec		7'150 bytes	474 ms	GET http://testhost/sbf/	200 (OK) "TEXT/HTML" (7'150 bytes)
2	[2]	0.53 sec		26'726 bytes	34 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/css/style-fancybox-1.3.4.css?v=1	304 (Not Modified) -- no content type --
3	[3]	0.53 sec		24'695 bytes	51 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/external/modernizr-1.7.min.js	304 (Not Modified) -- no content type --
4	[4]	0.54 sec		3'364 bytes	40 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/110n.js?ver=20101110	304 (Not Modified) -- no content type --
5	[5]	0.53 sec		9'162 bytes	34 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/2.js?v=1	304 (Not Modified) -- no content type --
6	[6]	0.53 sec		308 bytes	23 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/3.js?v=1	304 (Not Modified) -- no content type --
7	[7]	0.55 sec		88'027 bytes	24 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/4.js?v=1	304 (Not Modified) -- no content type --
8	[8]	0.56 sec		15'624 bytes	25 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/5.js?v=1	304 (Not Modified) -- no content type --
9	[9]	0.57 sec		2'681 bytes	7 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/6.js?v=1	304 (Not Modified) -- no content type --
10	[10]	0.58 sec		4'763 bytes	13 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/7.js?v=1	304 (Not Modified) -- no content type --
11	[11]	0.58 sec		4'286 bytes	15 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/8.js?v=1	304 (Not Modified) -- no content type --
12	[12]	0.69 sec		85'277 bytes	5 ms	GET http://testhost/sbf/wp-content/themes/sbf/assets/js/9.js?v=1	304 (Not Modified) -- no content type --
Total:				0.70 sec	272'063 bytes	12 Requests	390.90 kbyte

URL Details / Var Handler - Item 1:

Item 1 on Page 1: Initial Load → GET http://testhost/sbf/ ← 200 (OK) "TEXT/HTML" (7'150 bytes)

HTTP Request Header:

```
1 GET /sbf/ HTTP/1.1
2 Host: testhost
3 User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.7; rv:1.9.2.1) Gecko/20100101 Firefox/3.6.10
4 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
5 Accept-Language: en-us,en;q=0.5
6 Accept-Encoding: gzip, deflate
```

HTTP Response Header:

```
1 HTTP/1.1 200 OK
2 Date: Wed, 07 Sep 2011 09:52:25 GMT
3 Server: Apache/2.2.14 (Unix) DAV/2 mod_ssl/2.2.14 OpenSSL/1.0.1e PHP/5.3.3
4 X-Powered-By: PHP/5.3.3
5 X-Pingback: http://testhost/sbf/xmlrpc.php
6 Content-Length: 7150
```

HTTP Response Content:

```
1 <!DOCTYPE html>
2 <!--[if IE 6]><html class="ie ielt9 ielt8 ielt7 ie6" lang="de-DE"><![endif]-->
3 <!--[if IE 7]><html class="ie ielt9 ielt8 ie7" lang="de-DE"><![endif]-->
```

Tool 4: <http://www.charlesproxy.com/> (USD 50)



The screenshot displays the Charles Proxy 3.6.3 interface. The top window shows a list of intercepted requests:

RC	Mthd	Host	Path
200	GET	www.danone-activia.ch	/de/
206	GET	www.danone-activia.ch	/img/home/intro.ogg
200	GET	www.danone-activia.ch	/img/home/intro.swf
304	GET	www.danone-activia.ch	/de/files/2011/06/p-flyout-joghurt.png
304	GET	www.danone-activia.ch	/de/files/2011/06/flyout_quark.jpg
304	GET	www.danone-activia.ch	/de/files/2011/07/Drink_flyout.png
304	GET	www.danone-activia.ch	/de/files/2011/07/becher_klein-134x120.png

The bottom window shows a resource list:

#	Resource
1	<default>
2	intro.ogg
3	intro.swf
4	p-flyout-joghurt.png
5	becher_klein-134x120.png
6	8erFrucht_flyout.png
7	flyout_quark.jpg
8	Drink_flyout.png
9	Mio-Signet_web_ppt_dt-139x120.png
10	intro.ogg
11	intro.ogg
12	1.css?apiType=css&projectId=9c74a2d5-e062-4efe-8751-6ca1...
13	__utm.gif?utmwv=5.1.5&utms=1&utmn=1601615560&utmhn=www...
Total	
Grand Total	
Duration	

The right window shows the 'Overview' tab for the selected request:

Name	Value
URL	http://www.danone-activia.ch/de/
Status	Complete
Response Code	200 OK
Protocol	HTTP/1.1
Method	GET
Content-Type	text/html; charset=UTF-8
Client Address	/127.0.0.1
Remote Address	www.danone-activia.ch/194.6.194.218
▼ Timing	
Request Start Time	9/7/11 12:58:24 AM
Request End Time	9/7/11 12:58:26 AM
Response Start Time	9/7/11 12:58:27 AM
Response End Time	9/7/11 12:58:27 AM
Duration	2.65 sec
Request Duration	2.02 sec
Response Duration	11 ms
Latency	622 ms
Speed	1.54 KB/s
Response Speed	327.50 KB/s
▼ Size	
Request Header Size	497 bytes
Response Header Size	294 bytes
Request Size	-
Response Size	3.32 KB (3395 bytes)
Total Size	4.09 KB (4186 bytes)
Request Compression	-
Response Compression	72.5% (gzip)

Wann welches Tool (Fokus Ladeverhalten)?

	Firebug	Webpagetest	Charles	Proxy Sniffer
Browser	nur FFox	ausgewählte	alle	alle
Testpunkt	lokal	remote (unkontrolliert)	lokal	lokal / remote (kontrolliert)
Details	++	-	++	+
Aufzeichnung	nein	nein	ja	ja
Automatisierung	nein	nein	nein	ja
Kosten	gratis	gratis	USD 50	gratis / Lizenz
für Mobile	nein	nein	ja (Proxy)	ja (Proxy)
Spezialität	- Clientcode Analyse - Übersicht	- Sicht "aus dem Internet"	- Throttling - Rewrite - FFox Menu	- CMD Line - Lasttest

Sackmesser

Fast Food

Rolls Royce

Alles drin

Last- und Performancetesting (mit Proxy Sniffer)

Was?

→ **Lastverhalten und Performance**

- Auslieferungszeit der Seiten (Usersicht)
- Anzahl parallele Users
- benötigte Bandbreite

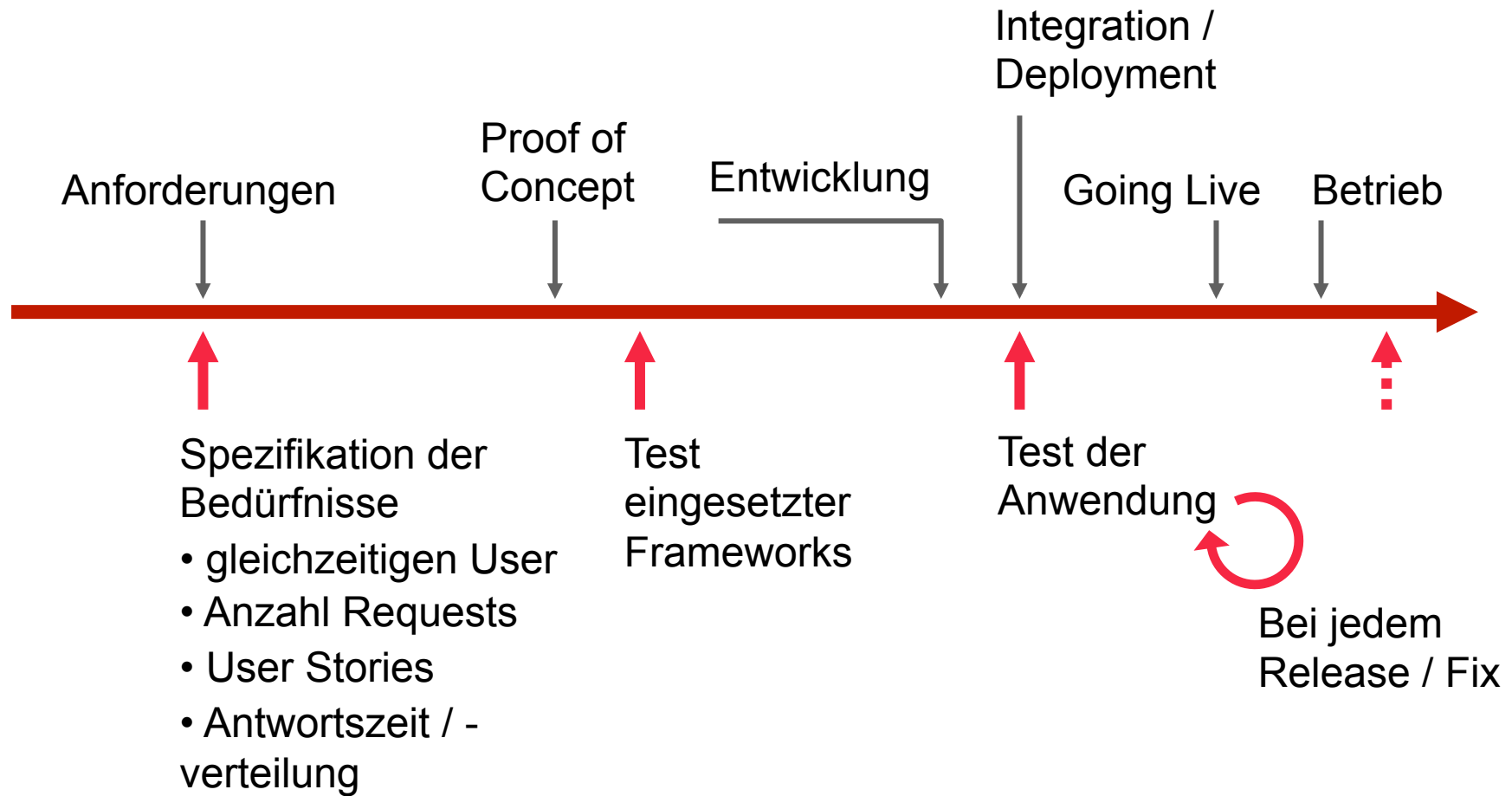
→ **Stabilität**

- über Zeit → Memory Leaks & Overflows
- unter Last → Concurrency & Deadlocks

→ **Fitness der Infrastruktur**

→ **Reproduktion von Problemen für Fixing**

Wann?



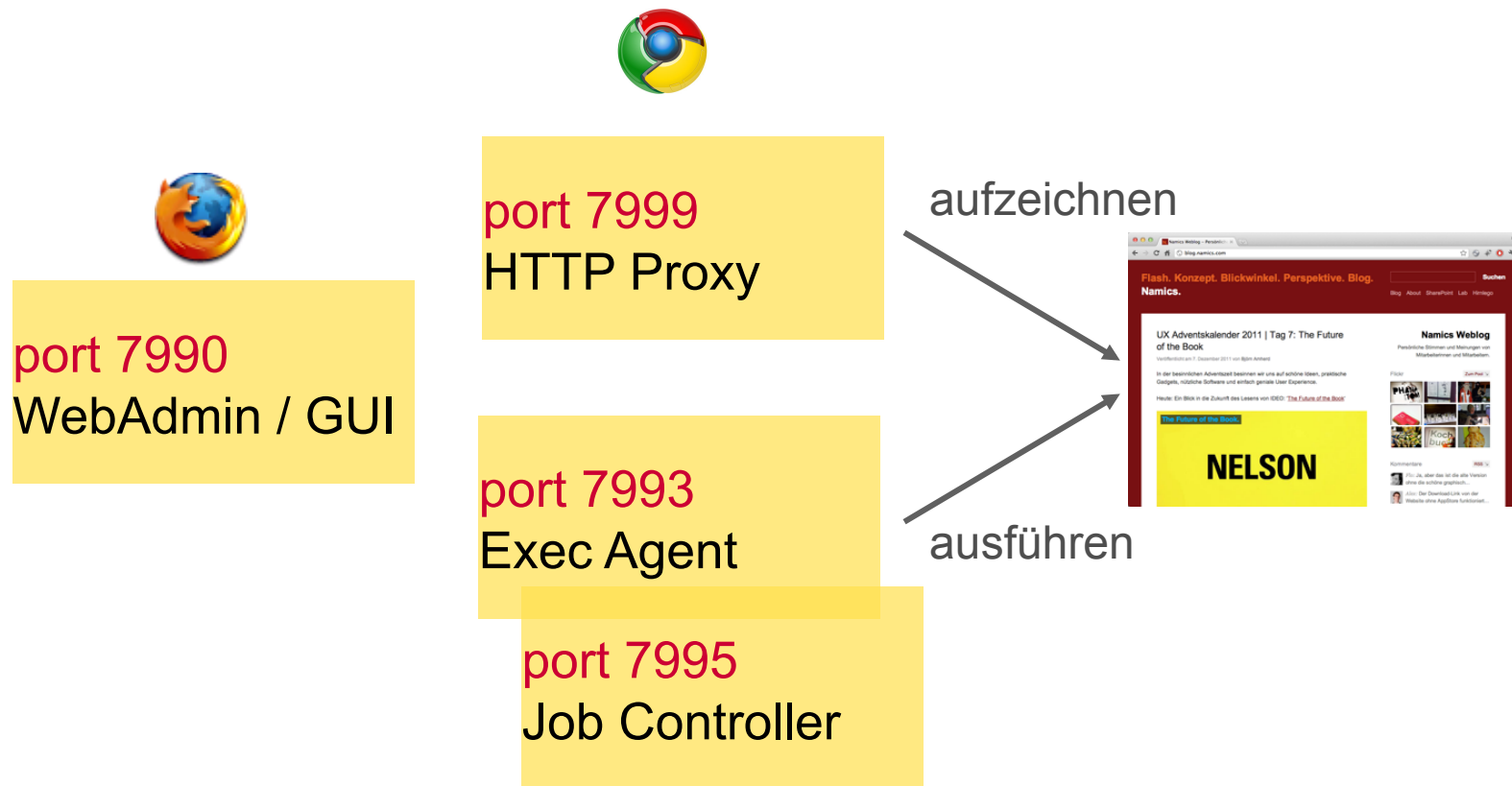
Vorsicht

→ **Lasttests generieren Last!**

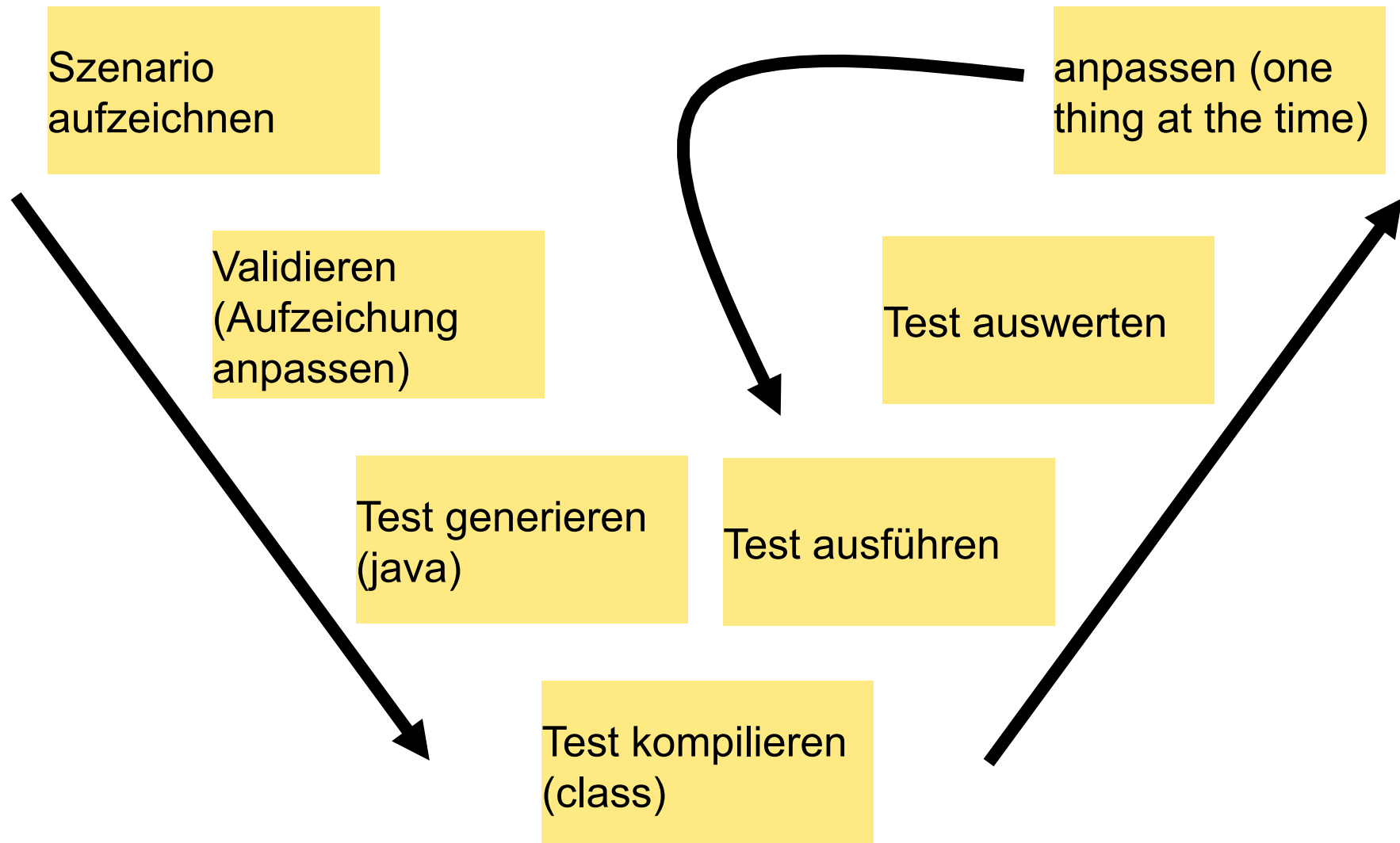
Komponenten von Proxy Sniffer

→ Nur zwei Dateien: prxsniiff.jar (16.4 MB) and prxsniiff.key

→ Gute Doku



Ablauf einer Testsequenz



Test ausführen und auswerten

Demo von Proxy Sniffer

→ Am Vortrag live gezeigt und sich hier im Überblick:

<http://www.youtube.com/watch?v=kP7ZxGTBync>

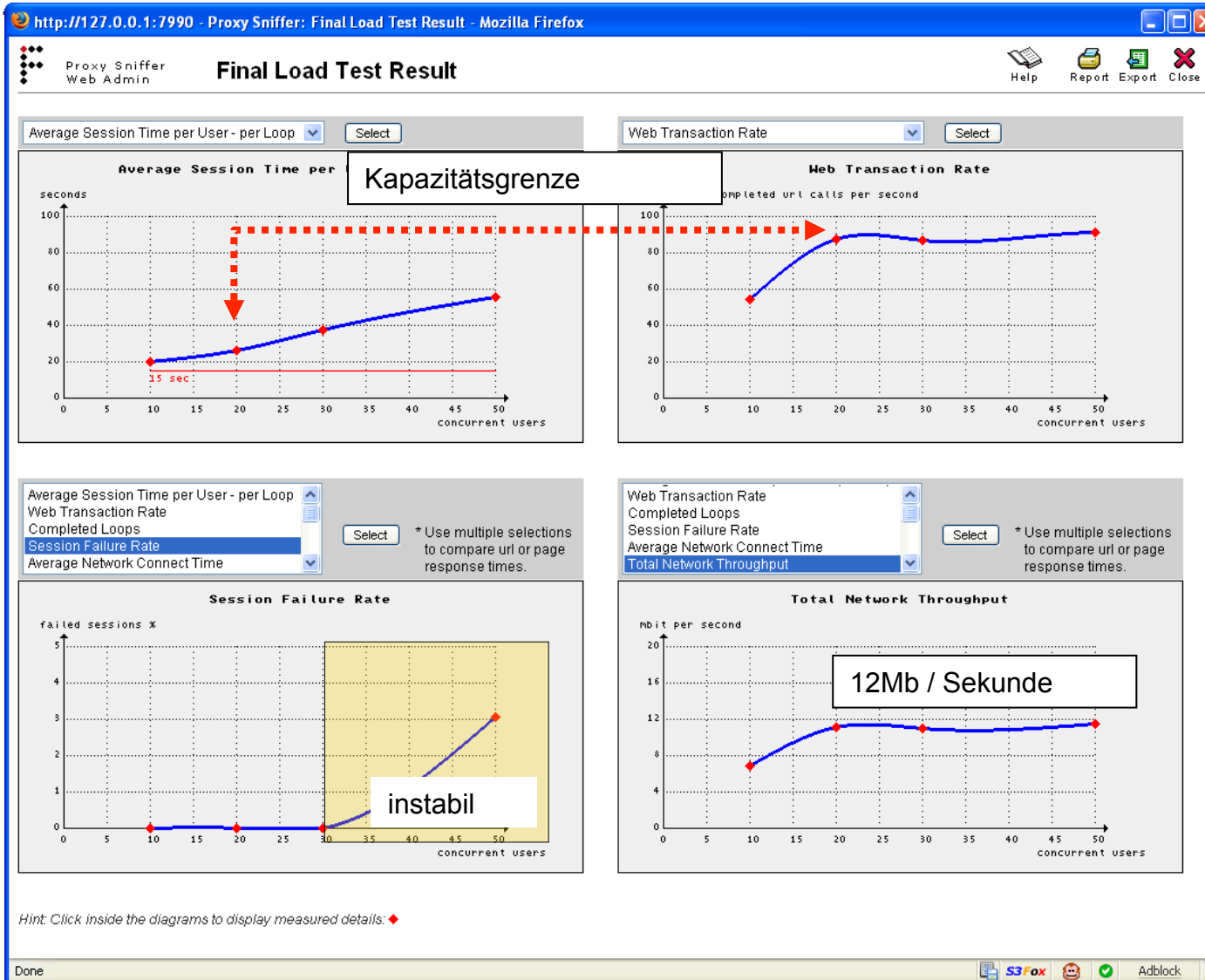
Interpretation

→ **Viel Lesen**

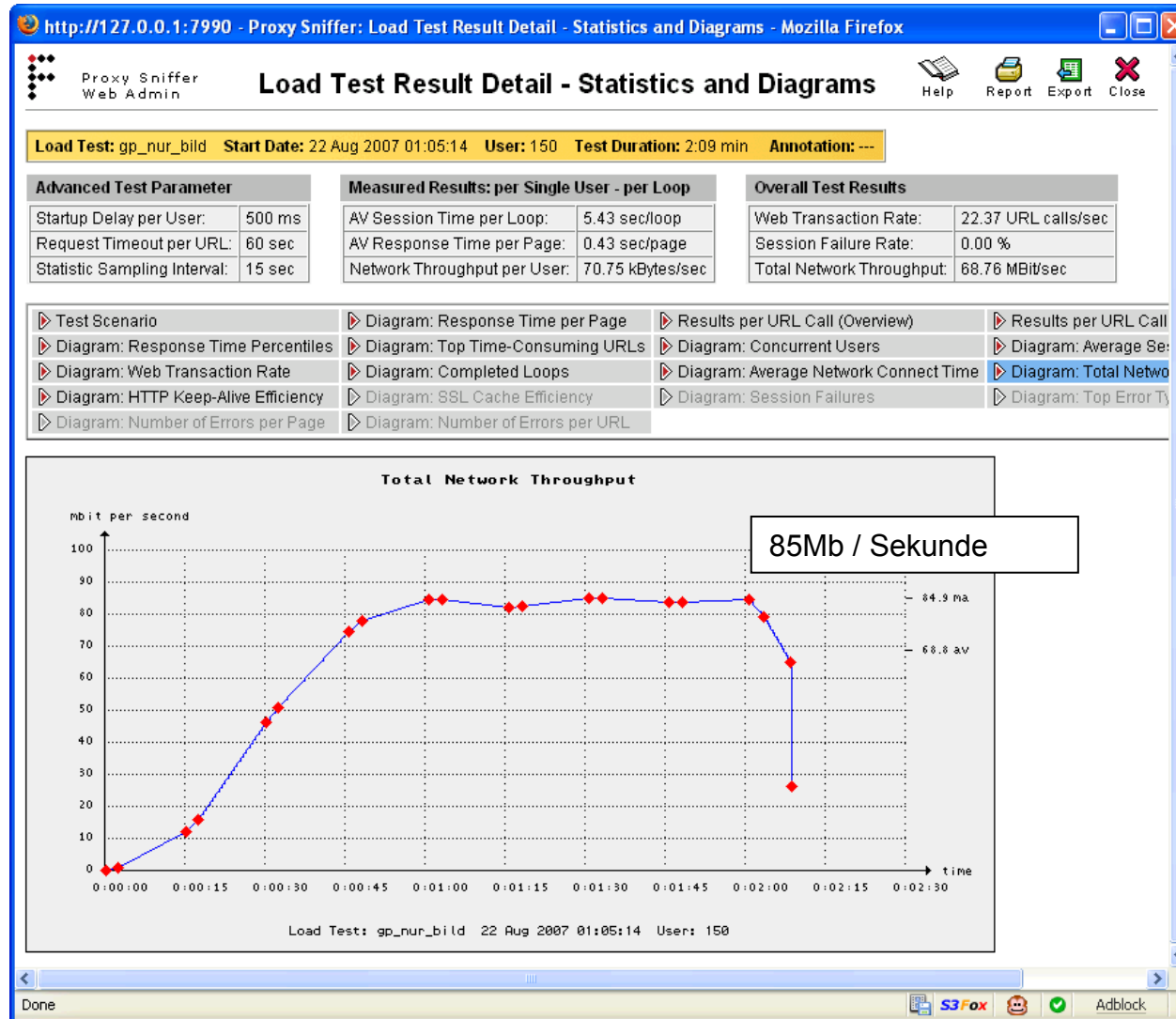
→ **Erfahrung**

→ ...

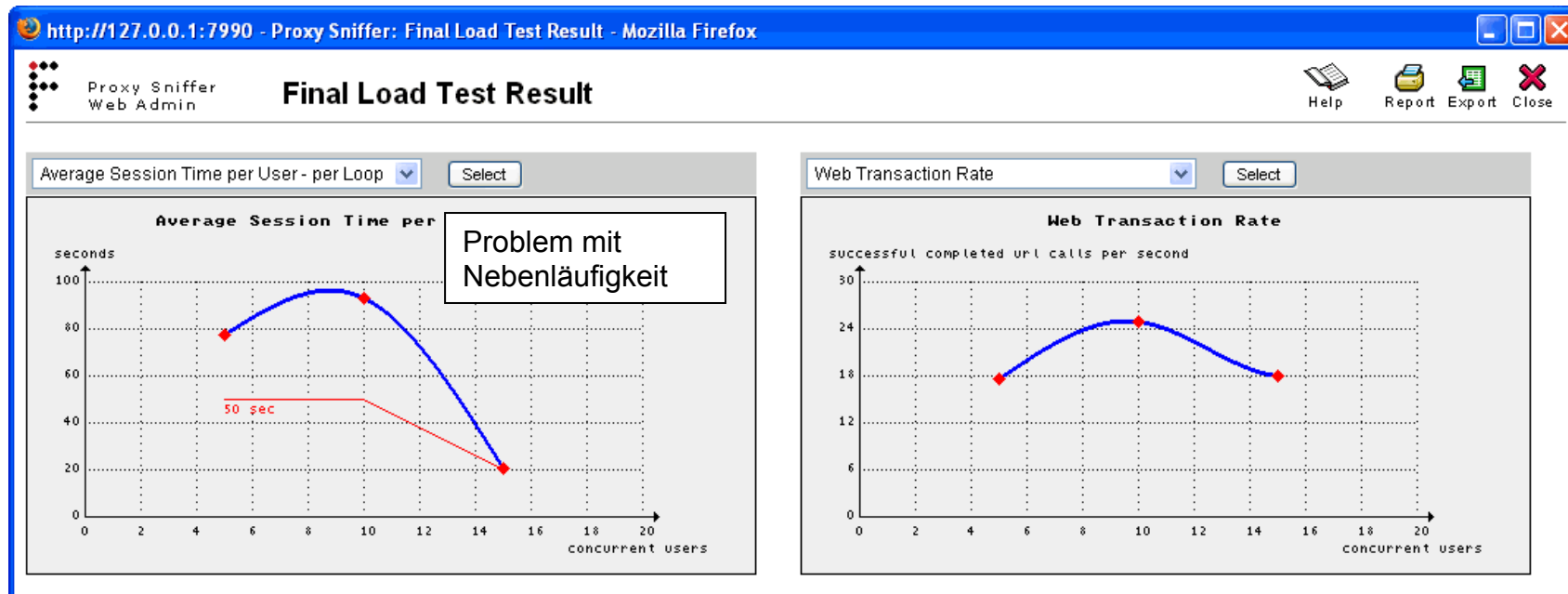
Beispiel 1



Beispiel 2



Beispiel 3



Beispiel 4



Wie?

→ **Richtig schwierig ist das Szenario**

- User Stories als Grundlage (“follow the money”)
- Auftraggeber / Domänenexperte
- Analytics (zuzüglich Sicherheitsmarge)

→ **Unterschiedliche Testaspekte**

- Bandbreite → ein grosses Element max. wiederholen
- Anzahl Transaktionen: Kurze Testzyklen mit steigender Nutzerzahl 1, 5, 25, 50, 75, 100... (Asymptote / Crash)
- Long Runner → Wenig Last aber sehr lange
- System unter Last stoppen und starten

Wo klemmts (typischerweise)?

→ Network (Pipe, Router, Firewall)	< 1%
→ Load Balancer	5 %
→ Reverse Proxy (Produkt)	5 %
→ Reverse Proxy (Konfiguration)	10 %
→ OS Konfiguration (TCP/IP Stack)	5 %
→ Framework	10 %
→ Konfiguration der Anwendung	20 %
→ Programmcode der Anwendung	40 %
→ Datenbankmanagementsystem	5%

Quelle: David Fischer

Zusammenfassung

Zusammenfassung

- **IMMER testen**
- **Produkteigentümer definiert die Anforderungen**
- **früh im Projekt testen (aber spät optimieren)**
- **Möglichst nahe am Produktionssystem testen**
- **90% der Requests genügen (ausser bei Fehlern)**
- **Guten Szenarien sind die Knacknuss**

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