

Softwaretechnik Praktikum

Einführung und Thema



UNIVERSITÄT
LEIPZIG

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Software Systems



Organisatorisches

- Teams von bis zu 8 Personen
- Zufällig zusammen gestellt
- Alle bearbeiten dasselbe Thema
- Verschiedene Abgaben zu festen Zeitpunkten
- Remote Durchführung
- Begleitung durch Codecentric AG

Moodle

- 2 Wochen weniger
- wenige Betreuer

Tutorien und Tutoren / Betreuer

Remote Treffpunkte

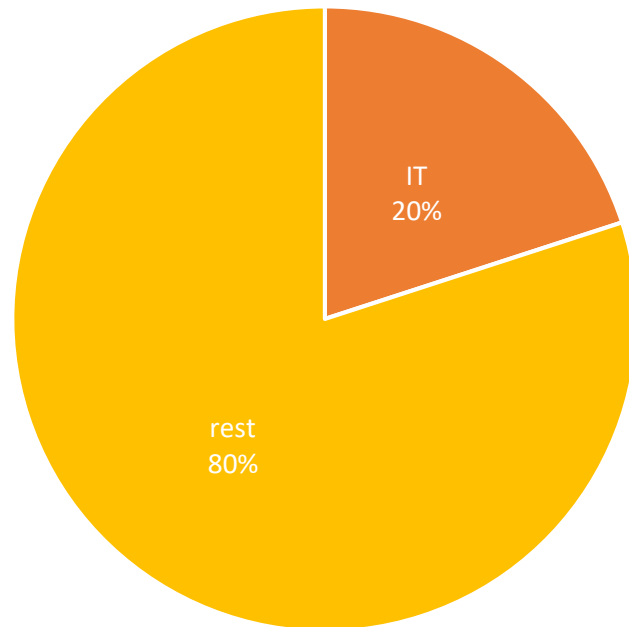
Mondays for Future: Green Configurator



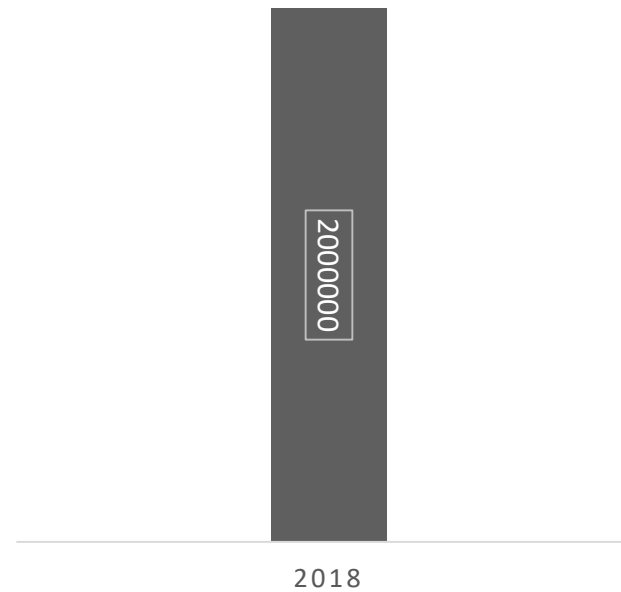


IT Drains Energy

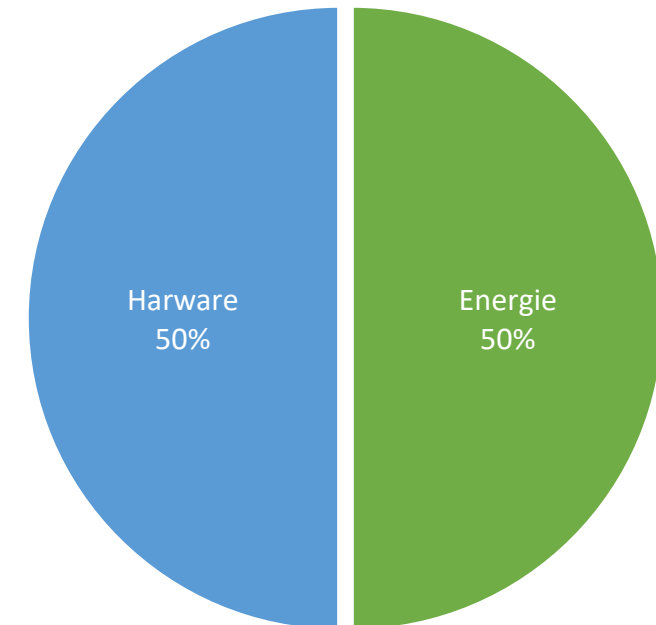
Global energy usage by
2025



SMARTHPONES



Server farm costs



8.7 billion connected devices to the Internet

... and all consume energy!





Wie wird Software benutzt?

Workload

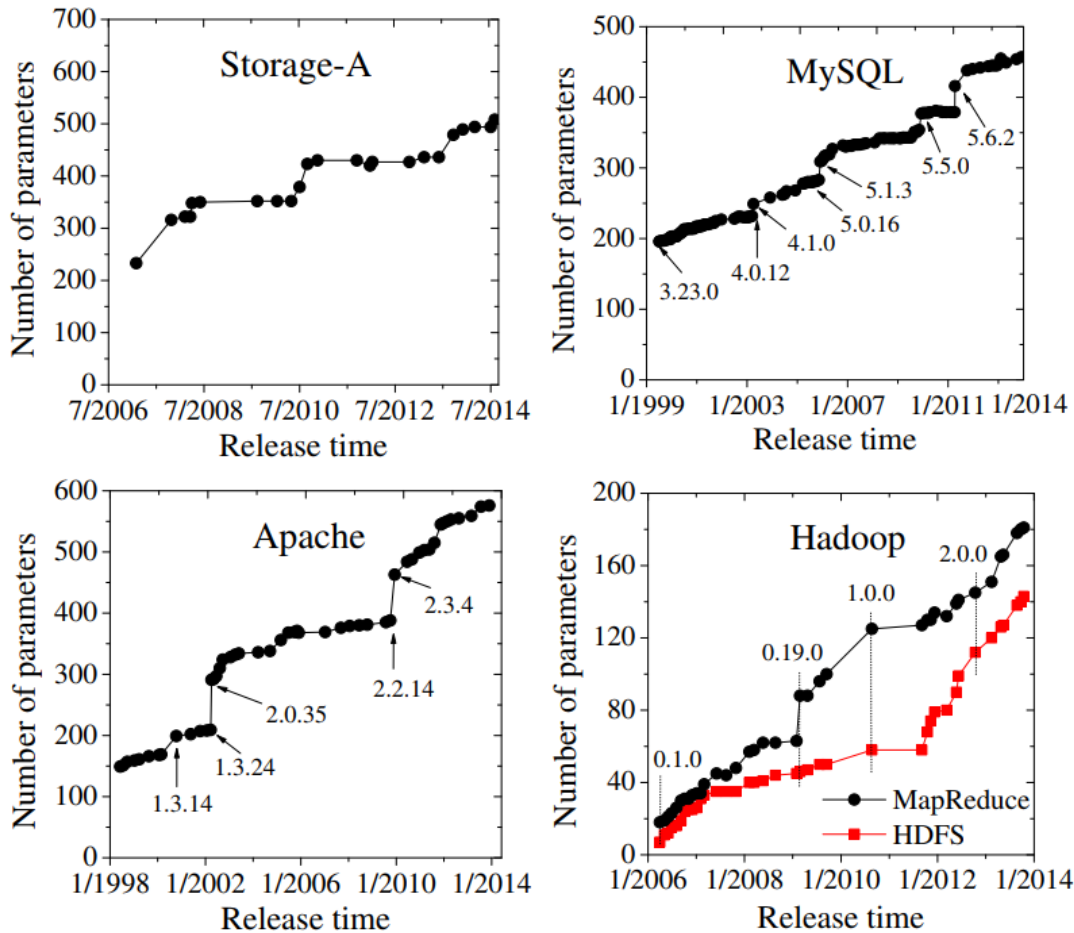


Konfigurierbarkeit zur Optimierung

Konfiguriere die Software basierend auf die tatsächlichen Anforderungen



Konfigurierbarkeit in der Praxis



Parameter:	optimizer_prune_level (Boolean)	/*MySQL*/
Desc.:	Controls the heuristics applied during query optimization to prune less-promising partial plans from the optimizer search space.	
Values:	0 or 1	
Usage:	No user set the parameter in our dataset.	

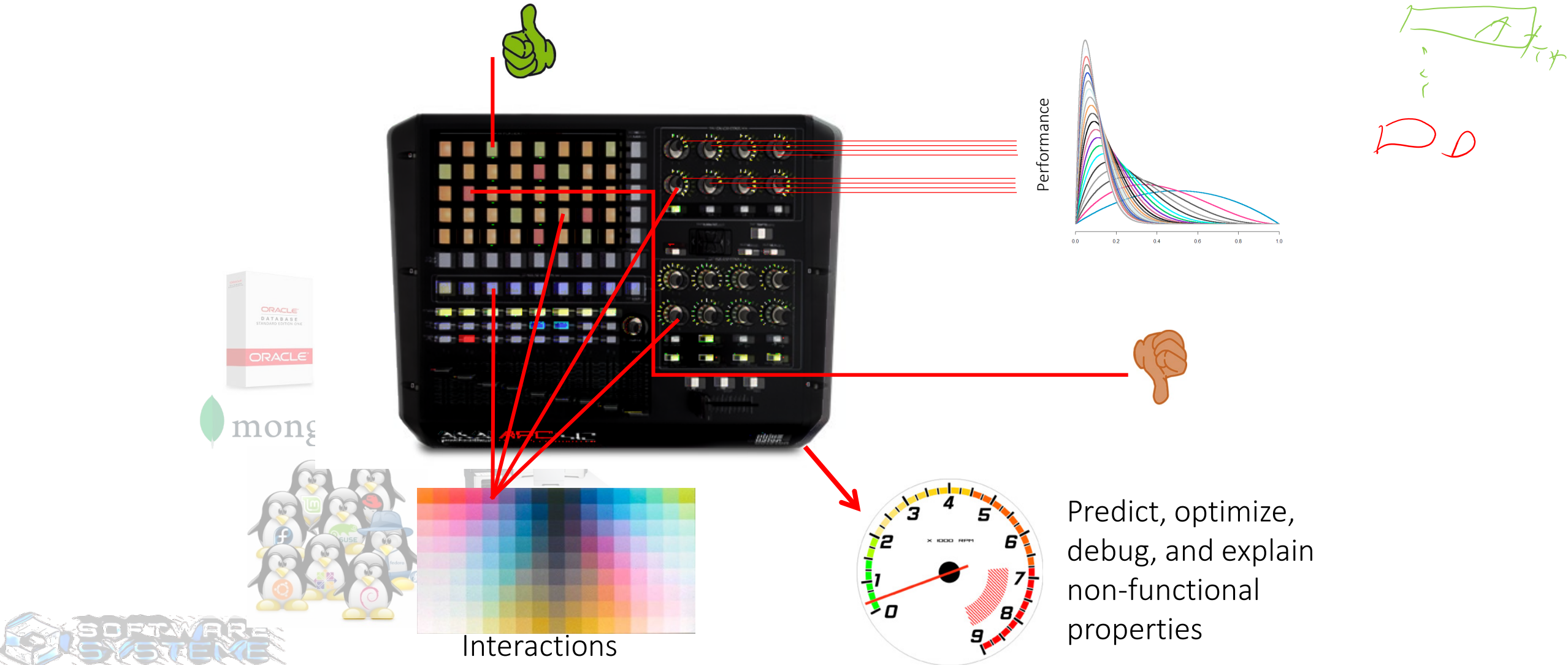
(a) Empirical, heuristic usages

Parameter:	key_cache_block_size (Numeric)	/*MySQL*/
Desc.:	The size in bytes of blocks in the key cache.	
Values:	[512, 16384]	
Usage:	All the users stay with the default value 1024 in our dataset.	

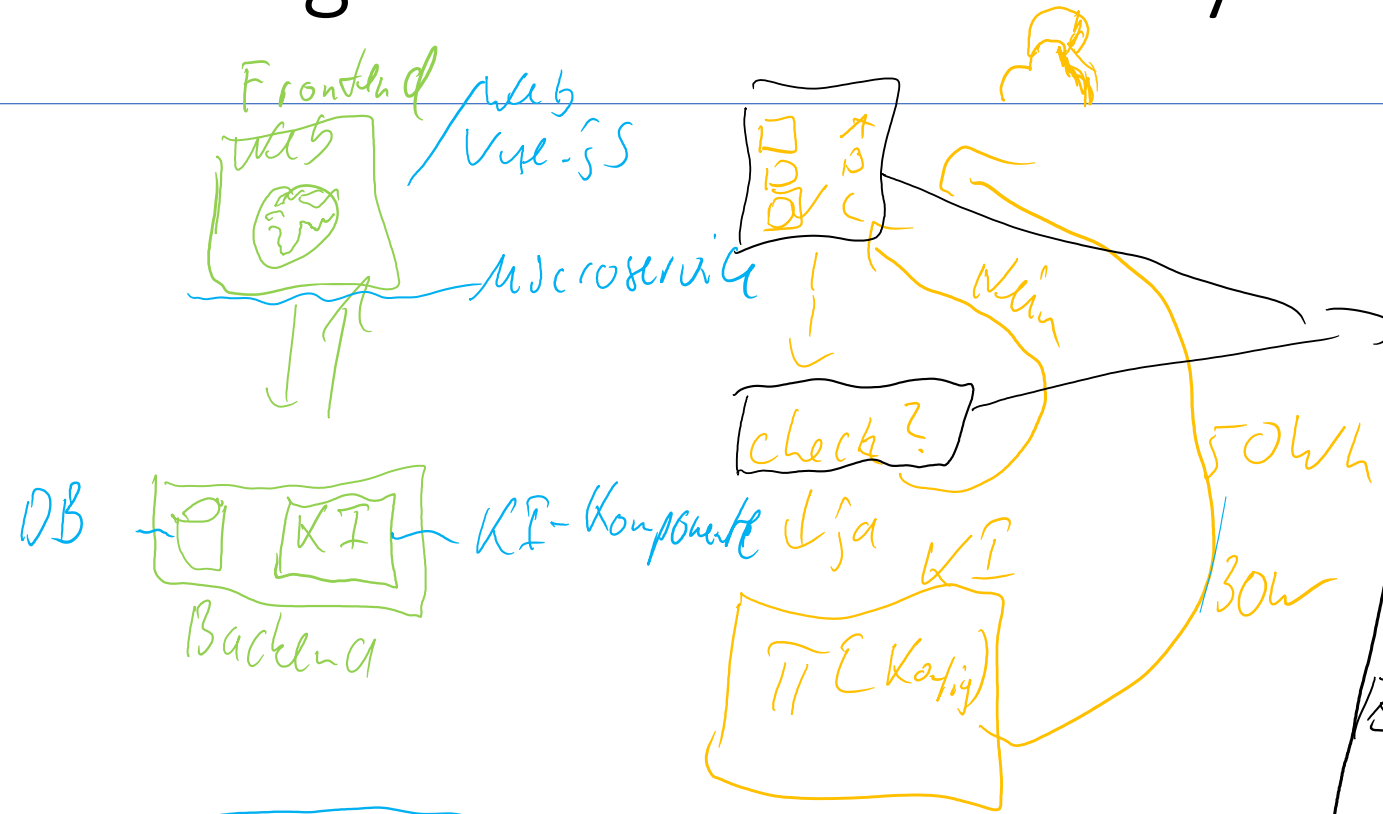
Unused optimization
(up to 80% of options ignored)

Substantial increase in configurability

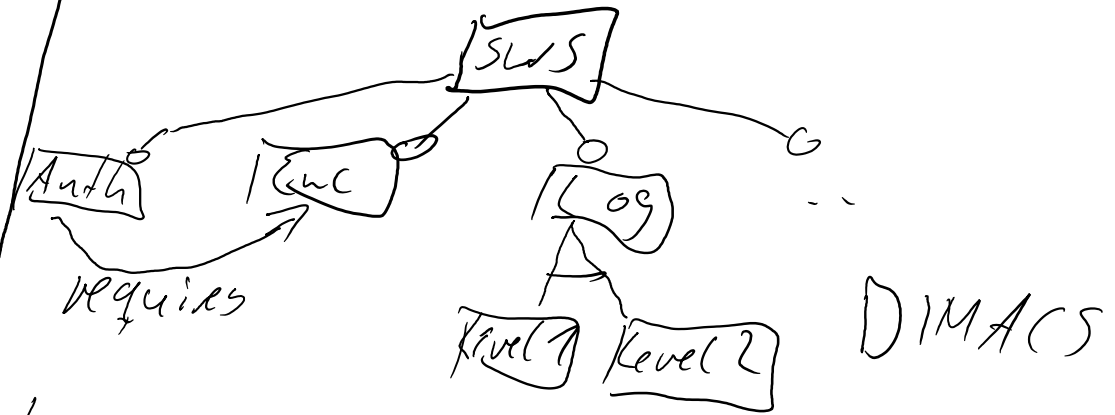
Konfigurierbare Softwaresysteme



Konfigurierbare Softwaresysteme & Feature Modelle



- ☐ Encryption
 - ☐ Compression
 - ☐ Logging
 - ☐ Search
 - ☐ Authentication
- requires / implies



→ SWS $Enc \vee Log \wedge (Log \rightarrow (Level 1 \vee Level 2))$

SAT-Solver \rightarrow satisfiability Solver

- Agile SW-Entwicklung
- DevOps / CI/CD

Einflussmodelle

Encryption: 30 W

Compression: 15 W

Search: 5 W

Encryption & Compression: ~ 10 W

Konfig: $E_{nc} = True$
 $Comp = True$

$$\{ 30 W + 15 W + (-10) W = 35 W$$

$$\Pi = 30 \cdot E_{nc} + 15 \cdot Comp + 5 \cdot Search + (-10) \cdot Comp \cdot E_{nc}$$

\uparrow
0/1

\uparrow
0/1

\uparrow
0/1

\uparrow
True