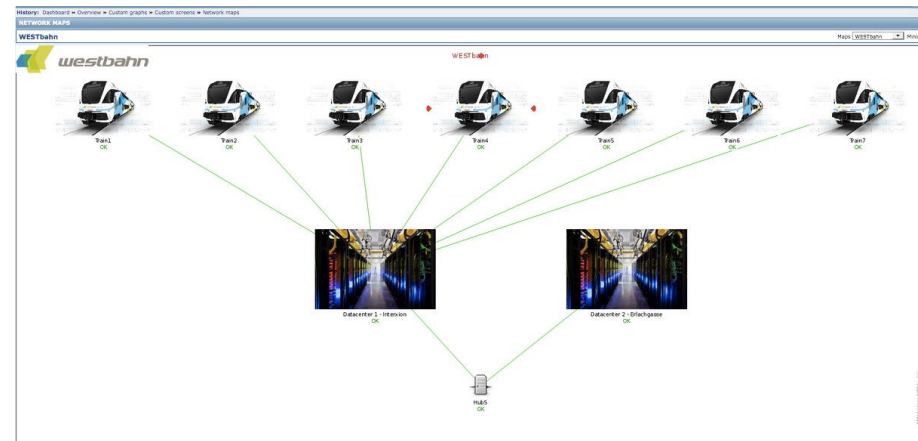




## Telematic applications



# operations

- ◀ sign in to duty
  - ◀ wake-up-SMS
  - ◀ reaction of dispatcher
  
- ◀ loco drivers
  - ◀ iPad for electronic timetable, regulations, manuals
  - ◀ CMS for internal regulations (Dienstweisungen)
    - ◀ no signature necessary
    - ◀ you can't ignore a message
    - ◀ if opening the file, you know it was read
    - ◀ he „signs“ that he read it and understood it
  - ◀ planned: information about crew on the train



# reports & gimmicks

- reservation system: Report Bad Battery State on train
- getting data from the train for maintaining the system
- Wifi: consumption
- Crew: where are the reserve devices
- using an iPad for Crew interviews – reduced the time needed to the half
- also for uniform distribution

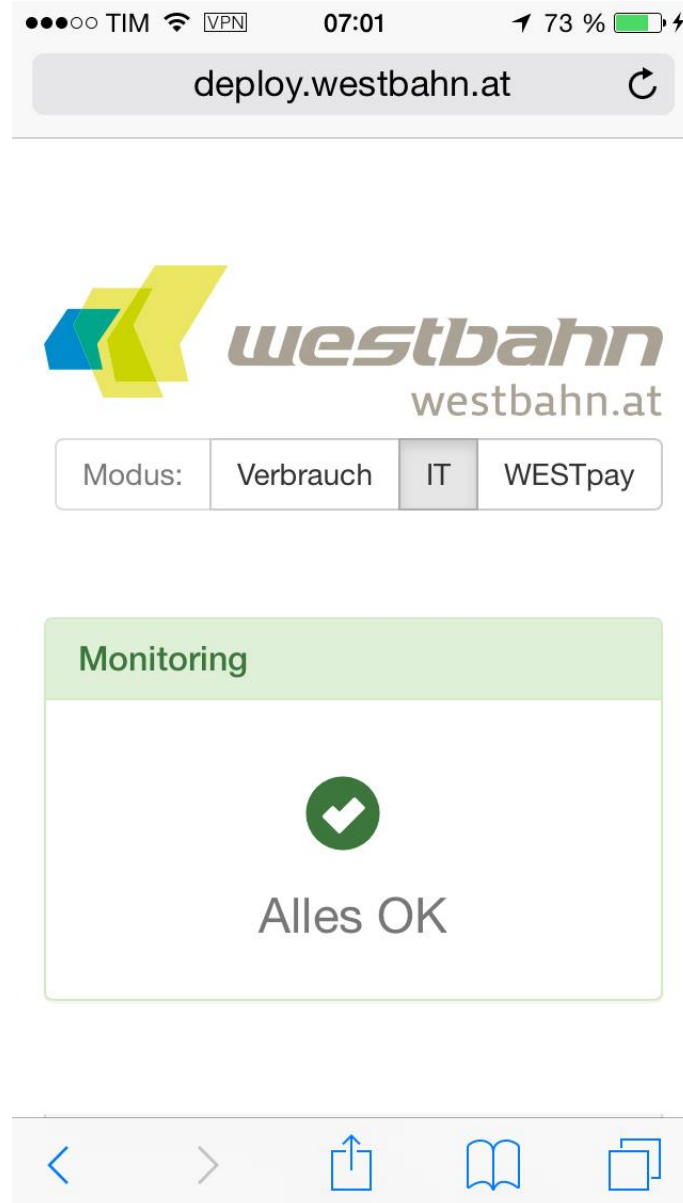
The screenshot displays the Zabbix web interface. At the top, the 'ZABBIX' logo is visible, followed by navigation tabs for Monitoring, Inventory, Reports, Configuration, and Administration. Below these are links for Dashboard, Overview, Web, Latest data, Triggers, Events, Graphs, Screens, Maps, and Discovery. A history breadcrumb trail is shown: Configuration of maintenance periods » Configuration of actions » Configuration of templates » Configuration of Items.

The main content area is titled 'PERSONAL DASHBOARD' and contains three panels:

- System status:** A table showing the status of various host groups. All categories show 0 for Disaster, High, Average, Warning, Information, and Not classified.
- Web monitoring:** A table showing the status of web servers. 1 server is 'Ok', 0 are 'Failed', and 0 are 'Unknown'.
- Host status:** A table showing the status of host groups. The 'Without problems' column shows 5, and the 'With problems' column shows 0.

Zabbix is an open source network monitor

# the simplified version



# data is available

Fzg	1	2	3	4	5	6	7
Letzte Statusmeldung	08:51:37	08:50:15	08:47:12	08:50:16	08:50:40	08:51:26	08:51:10
01) Depot EW100 aktiv	0	0	0	0	0	0	0
02) Depot EW600 aktiv	0	0	0	0	0	0	0
03) Kilometerstand	2092818 km	2105854 km	2079777 km	2102395 km	2084900 km	2072826 km	2089098 km
04) Uprim Zug	17.0 kV	17.1 kV	17.0 kV	17.0 kV	16.8 kV	17.1 kV	16.7 kV
05) Vist	0 km/h	0 km/h	160 km/h	160 km/h	163 km/h	110 km/h	147 km/h
10) Sammelstatus Stromrichter	1	1	1	1	1	1	1
11) Sammelstatus Transformator	1	1	1	1	1	1	1
12) Sammelstatus Motorstromrichter	0	0	1	1	1	1	1
13) Sammelstatus Batterieladung	1	1	1	1	1	1	1
14) Sammelstatus Klimaanlage	0	0	0	0	0	0	0
15) Sammelzustand Türen	0x00	0x00	0x00	0x00	0x00	0x00	0x00
16) Sammelzustand Gleitschutz	1	1	1	1	1	1	1
17) Sammelstatus WC	0	0	0	1	0	0	0
18) Sammelzustand Brandmeldezentralen	0	0	0	0	0	0	0
20) Notbremsanforderung aktiv	0	0	0	0	0	0	0
21) Parkstellung aktiv	0	0	0	0	0	0	0
23) Frischwasser MW1 IWC1	77 %	80 %	87 %	69 %	65 %	58 %	82 %
24) Frischwasser MW2 IWC1	93 %	74 %	84 %	66 %	46 %	77 %	77 %
25) Frischwasser MW3 IWC1	75 %	81 %	80 %	58 %	64 %	68 %	77 %
26) Frischwasser MW4 IWC1	77 %	79 %	84 %	73 %	55 %	65 %	79 %
30) Aussentemperatur	10 °C	9 °C	12 °C	12 °C	13 °C	9 °C	12 °C
31) Isttemperatur Mittelwert FGR	22 °C	22 °C	22 °C	23 °C	23 °C	22 °C	22 °C
40) Füllstand Datenrecorder EW1	98 %	98 %	97 %	99 %	96 %	96 %	97 %
41) Füllstand Datenrecorder EW2	99 %	98 %	96 %	99 %	99 %	95 %	96 %
Import Datum	08:52:05	08:50:47	08:47:47	08:50:47	08:51:04	08:51:45	08:51:34

# maintenance

- ◀ only during the night
- ◀ no reserve in the fleet
- ◀ if there is a problem
  - ◀ short turn-arounds in Vienna (20 min)
  - ◀ sometimes cancellation of some trains

## ad data

- ◀ data is available, but there is more data existing “in the network”

# ticketing

- tickets can be bought
  - on the train
  - internet
  - tobacco shops
- standard ticket
  - valid for a year
  - if not used today – use it on another day, or cancel it
- all WESTbahn tickets
  - blacklisted, whitelisted
  - all servers – landside and on the train connected and real-time updated
  - We know when and where the ticket was validated
- but: not available via big railway information and ticketing platforms

BUSINESS TRANSACTION: 32 / 1968 / 34

Stammdaten:

Erstellungsdatum und Uhrzeit:	28.04.2016 07:59
Booking:	1664
Pointserver:	32 (tr6ps2)
Mitarbeiter:	[REDACTED]
Device:	40 [REDACTED]
Position:	48.296436 N 15.956203 O

48°17'47.2"N 15°57'22.3"E

Größere Karte ansehen

Routen... Speichern

Größere Kartenansicht

Zugfahrt: Zug: 904, 28.04.2016

Billed Items:

Tickets nachdrucken:

Email - Kunde

Unique ID: 32-1968 -34-1

Business Case: Verbrauch / Consumption
Produkt: Einfache Fahrt (pvid 15394)
Station1: Wien Westbahnhof
Station2: Linz
Preis: 0.00 EUR
VAT: 0.00 EUR

tno\_sub:

563-9857-2058 GNH-FHZ
quantity_sub: 1
cent_sub: 17.18 EUR

# main point

- data is available
  - most of the data can be processed
  - a lot of data we get from third parties – or even not
  - ...and we have a lot of powerful computers - almost everywhere
- so it is like © Nike says: just do it