



Mal sehen was das kostet – Softwarekonfiguration unter wirtschaftlichen Aspekten

Adolf-Adam-Informatikpreis 2012

Daniela Lettner



Daniela Lettner

- HTL-Perg EDVO
- Informatik-Studium JKU
- Arbeit am CD Labor für Automated Software Engineering im Bereich Software Produktlinien

Software Produktlinien

- Wiederverwendbare Komponenten
- Time-to-market ↓ Softwarequalität ↑
- Konfiguration maßgeschneiderter Software

Softwarekonfiguration unter wirtschaftlichen Aspekten

- Kosteninformation benötigt
- Vergleich verschiedener Produktvarianten

Was sind Produktlinien?



Produktlinien

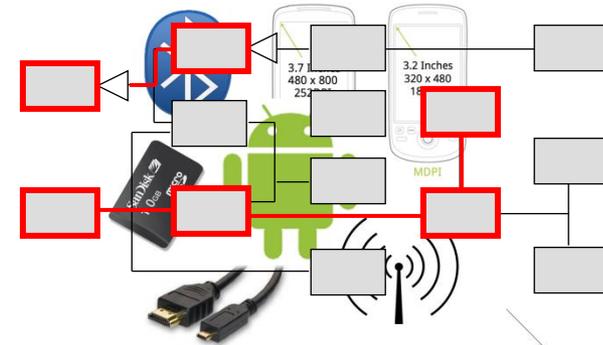


Wiederverwendbare Komponenten

Problemstellung



- Softwaresysteme bestehen aus hunderten von Komponenten
- Kundenwünsche bilden sich auf Komponenten ab
- Manuelle Konfiguration fehleranfällig
- Bessere Unterstützung notwendig:
 - Ist ein Kundenwunsch realisierbar?
 - Was kostet die Umsetzung?



Smartphone / Tablet pictures taken from http://presse.samsung.at/app/news_bildarchiv.aspx

Lösung: Wirtschaftliche Aspekte bei der Produktkonfiguration



- Bieten Unterstützung beim Vergleich verschiedener Produktvarianten
- Beispiel 1: Smartphone/Tablet Produktlinie
 - **Geschätzte Akkulaufzeit**
 - Preisliste
 - Gesamtkosten (Vertragshandy vs. Freigeschaltetes Gerät)
- Beispiel 2: Elektrolichtbogenofen Produktlinie
 - **Gewinnschwelle**
 - Energieeinsparungen
 - Erwartete CO₂ Emissionsreduktion



Beispiel 1: Geschätzte Akkulaufzeit?



DOPLER ConfigurationWizard

Project Role Advanced Help Perspective

1. Start 2. Configure 3. Generate 4. Share Save Filter Decisions Undo Redo

Stromverbrauchende Komponenten?

- ✓ Which power supply from plant side?
- ✓ Power supply backup via UPS from plant side?
- ? Provision of UPS (Rack design) mounted inside the cubicle?
- ? Requested capacity of UPS (Rack design) mounted inside the cubicle?
- ? Minimum power HDD time?
- ✓ Which existing protective system?
- ✓ Which existing furnace automation (=Furnace PLC)?

Bluetooth icon, Wireless antenna icon, Mobile phone icons (3.7 Inches 480 x 800 252DPI, 3.2 Inches 320 x 480 180DPI MDP1)

SIEMENS VAI

text

TN*-Net
Manuf. X, Type X, Proc. X

Geschätzte Akkulaufzeit: 600 h

Annual Production Output	319.490,14	tons
Saved tap to tap time	4,12	minutes
Tap to tap time	60,88	minutes
Saved electric current	143.770,57	EUR
Saved electrode consumption	98.914,15	EUR
Additional Heats per day	1,5	
Additional annual output	19.490,14	tons
Additional annual profits	389.802,89	EUR
Total benefits	632.487,6	EUR
Break Even after	1,89	months
CO2 emission saved	696.000	kg

Beispiel 1: Geschätzte Akkulaufzeit?



DOPLER ConfigurationWizard

Project Role Advanced Help Perspective

1. Start 2. Configure 3. Generate 4. Share Save Filter Decisions Undo Redo

Stromverbrauchende Komponenten?

- ✓ Which power supply from plant side?
- ✓ Power supply backup via UPS from plant side?
- ⊛ Provision of UPS (Rack design) mounted inside the cubicle?
- ⊛ Requested capacity of UPS (Rack design) mounted inside the cubicle?
- ⊛ Minimum power HDD time?
- ✓ Which existing protective system?
- ✓ Which existing furnace automation (=Furnace PLC)?

3.7 Inches 480 x 800 252DPI

3.2 Inches 320 x 480 180DPI

MDPI

TN*-Net

Manuf. X, Type X, Proc. X

Geschätzte Akkulaufzeit: 590 h

Annual Production Output	319.490,14	tons
Saved tap to tap time	4,12	minutes
Tap to tap time	60,88	minutes
Saved electric current	143.770,57	EUR
Saved electrode consumption	98.914,15	EUR
Additional Heats per day	1,5	
Additional annual output	19.490,14	tons
Additional annual profits	389.802,89	EUR
Total benefits	632.487,6	EUR
Break Even after	1,89	months
CO2 emission saved	696.000	kg

Beispiel 1: Geschätzte Akkulaufzeit?



DOPLER ConfigurationWizard

Project Role Advanced Help Perspective

1. Start 2. Configure 3. Generate 4. Share Save Filter Decisions Undo Redo

Stromverbrauchende Komponenten?

- ✓ Which power supply from plant side?
- ✓ Power supply backup via UPS from plant side?
- ⊙ Provision of UPS (Rack design) mounted inside the cubicle?
- ⊙ Requested capacity of UPS (Rack design) mounted inside the cubicle?
- ⊙ Minimum power HDD time?
- ✓ Which existing protective system?
- ✓ Which existing furnace automation (=Furnace PLC)?

3.7 Inches 480 x 800 252DPI

3.2 Inches 320 x 480 180DPI

MDPI

TN*-Net

Manuf. X, Type X, Proc. X

Geschätzte Akkulaufzeit: 580 h

Annual Production Output	319.490,14	tons
Saved tap to tap time	4,12	minutes
Tap to tap time	60,88	minutes
Saved electric current	143.770,57	EUR
Saved electrode consumption	98.914,15	EUR
Additional Heats per day	1,5	
Additional annual output	19.490,14	tons
Additional annual profits	389.802,89	EUR
Total benefits	632.487,6	EUR
Break Even after	1,89	months
CO2 emission saved	696.000	kg

Beispiel 1: Geschätzte Akkulaufzeit?



DOPLER ConfigurationWizard

Project Role Advanced Help Perspective

1. Start 2. Configure 3. Generate 4. Share Save Filter Decisions Undo Redo

Stromverbrauchende Komponenten?

- ✓ Which power supply from plant side?
- ✓ Power supply backup via UPS from plant side?
- ⊕ Provision of UPS (Rack design) mounted inside the cubicle?
- ⊕ Requested capacity of UPS (Rack design) mounted inside the cubicle?
- ⊕ Minimum power HDD time?
- ✓ Which existing protective system?
- ✓ Which existing furnace automation (=Furnace PLC)?

3.7 Inches 480 x 800 252DPI

3.2 Inches 320 x 480 180DPI

MDPI

TN*-Net

Manuf. X, Type X, Proc. X

Geschätzte Akkulaufzeit: 560 h

Annual Production Output	319.490,14	tons
Saved tap to tap time	4,12	minutes
Tap to tap time	60,88	minutes
Saved electric current	143.770,57	EUR
Saved electrode consumption	98.914,15	EUR
Additional Heats per day	1,5	
Additional annual output	19.490,14	tons
Additional annual profits	389.802,89	EUR
Total benefits	632.487,6	EUR
Break Even after	1,89	months
CO2 emission saved	696.000	kg

Beispiel 2: Gewinnschwelle?



DOPLER ConfigurationWizard

Project Role Advanced Help Perspective

1. Start 2. Configure 3. Generate 4. Share Save Filter Decisions Undo Redo

SIEMENS VAI

enter search text

Zusatzpakete?

✓ Which power supply from plant side?	115V
✓ Power supply backup via UPS from plant side?	yes
⊙ Provision of UPS (Rack design) mounted inside the cubicle?	
⊙ Requested capacity of UPS (Rack design) mounted inside the cubicle?	
⊙ Minimum power HDD time?	
✓ Which existing protective system?	TN*-Net
✓ Which existing furnace automation (=Furnace PLC)?	Manuf. X, Type X, Proc. X

Calculated Values € Price List

Gewinnschwelle: 1,54 Monate

Annual Production Output	319.490,14	tons
Saved tap to tap time	4,12	minutes
Tap to tap time	60,88	minutes
Saved electric current	143.770,57	EUR
Saved electrode consumption	98.914,15	EUR
Additional Heats per day	1,5	
Additional annual output	19.490,14	tons
Additional annual profits	389.802,89	EUR
Total benefits	632.487,6	EUR
Break Even after	1,89	months
CO2 emission saved	696.000	kg

Beispiel 2: Gewinnschwelle?



DOPLER ConfigurationWizard

Project Role Advanced Help Perspective

1. Start 2. Configure 3. Generate 4. Share Save Filter Decisions Undo Redo

SIEMENS VAI

enter search text

Zusatzpakete? Visualization System

Which power supply from plant side?	115V
Power supply backup via UPS from plant side?	yes
Provision of UPS (Rack design) mounted inside the cubicle?	
Requested capacity of UPS (Rack design) mounted inside the cubicle?	
Minimum power HDD time?	
Which existing protective system?	TN*-Net
Which existing furnace automation (=Furnace PLC)?	Manuf. X, Type X, Proc. X

Gewinnschwelle: 2,1 Monate

Annual Production Output	319.490,14	tons
Saved tap to tap time	4,12	minutes
Tap to tap time	60,88	minutes
Saved electric current	143.770,57	EUR
Saved electrode consumption	98.914,15	EUR
Additional Heats per day	1,5	
Additional annual output	19.490,14	tons
Additional annual profits	389.802,89	EUR
Total benefits	632.487,6	EUR
Break Even after	1,89	months
CO2 emission saved	696.000	kg

Beispiel 2: Gewinnschwelle?



DOPLER ConfigurationWizard

Project Role Advanced Help Perspective

1. Start 2. Configure 3. Generate 4. Share Save Filter Decisions Undo Redo

Zusatzpakete? Visualization System, no Local Voltage Matching Box

Which power supply from plant side? 115V

Power supply backup via UPS from plant side? yes

Provision of UPS (Rack design) mounted inside the cubicle?

Requested capacity of UPS (Rack design) mounted inside the cubicle?

Minimum power HDD time?

Which existing protective system? TN*-Net

Which existing furnace automation (=Furnace PLC)? Manuf. X, Type X, Proc. X

Gewinnschwelle: 1,9 Monate

Annual Production Output	319.490,14	tons
Saved tap to tap time	4,12	minutes
Tap to tap time	60,88	minutes
Saved electric current	143.770,57	EUR
Saved electrode consumption	98.914,15	EUR
Additional Heats per day	1,5	
Additional annual output	19.490,14	tons
Additional annual profits	389.802,89	EUR
Total benefits	632.487,6	EUR
Break Even after	1,89	months
CO2 emission saved	696.000	kg

Vorteile / Zusammenfassung



- **Kosten im Blick** – während der Produktkonfiguration
- **Schnellere Entscheidungen** – für die beste Produktvariante
- **Nachhaltige Investitionen** – damit es sich für den Kunden lohnt
- **Bessere Visualisierung** – sehen und verstehen

