

CEDES

Cost Efficient Dependable Electronic Systems



What is cost efficiency?

Erik Fröstad & Jakob Tivell

Agenda

- Observations and conclusion
- Approach for evaluation
- Cost efficiency evaluation

CEDES
Cost Efficient Dependable Electronic Systems



Answers from the automotive industry

Vad är kostnadseffektivitet?

"Det kan jag inte svara på"

"Att tänka efter, innan"

"Lite waste"

"Ökad kundnytta"

"Max output per input"

"Effektivt utnyttjande av systemets resurser"

CEDES
Cost Efficient Dependable Electronic Systems



To consider

$$\text{Cost efficiency} = \frac{\text{Output}}{\text{Input}}$$

- For whom?
- For what time perspective?



Generally valid

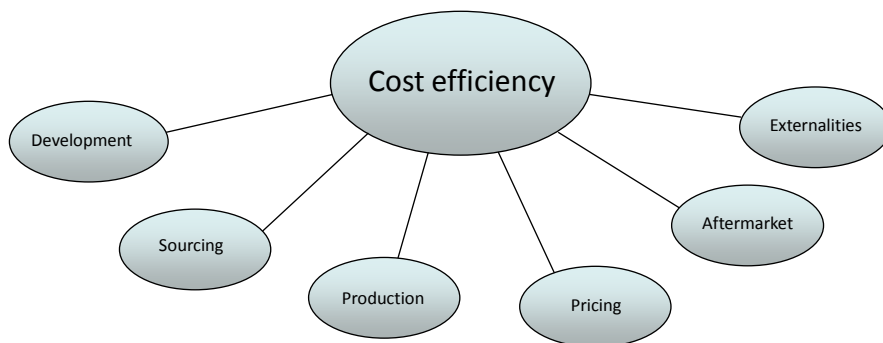
- Life cycle perspective
- Central platform
- Standardization
- Few variants



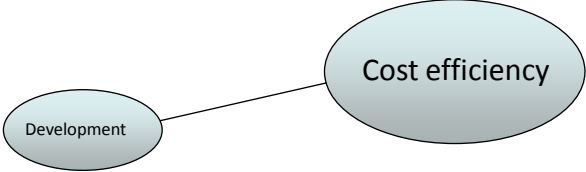
- Observations and conclusion
- Approach for evaluation
- Cost-efficiency evaluation



Our approach



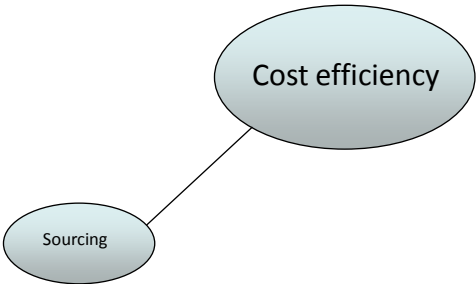
Our approach



- What drives the implementation of system architecture?



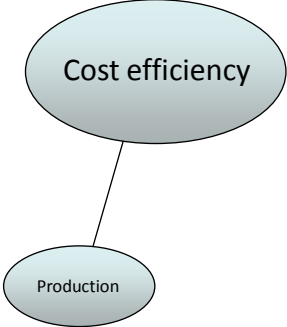
Our approach



- How is the use of materials and components affected by the system architecture?
- How are prices on ingoing components expected to change over time?



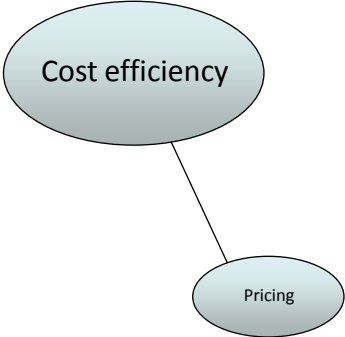
Our approach



- How must existing production facilities be adapted to handle the system architecture?



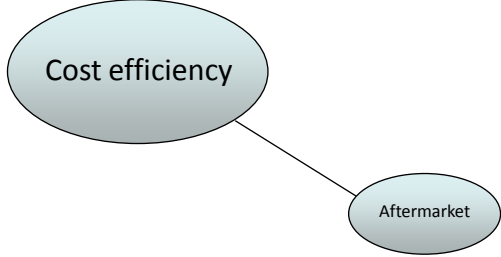
Our approach



- How does the system architecture affect pricing opportunities?



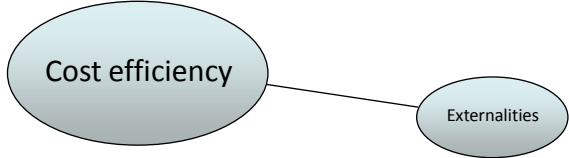
Our approach



- How does the system architecture affect cost in aftermarket service?
- What can be said of the effect on the volume of warranty repairs in long and short run?



Our approach



- What external effects can be seen through the introduction of the system architecture in question?

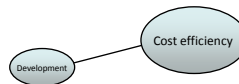


- Observations and conclusion
- Approach for evaluation
- Cost-efficiency evaluation



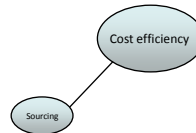
What drives the implementation of system architecture?

- Enable functionality
- Legislation
- Standardization
- Modularization
- Cost reduction



How is the use of materials and components affected by the system architecture?

- Number of ECUs and placement
- Number of sensors
- Software
- Information

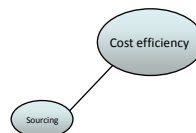


CEDES
Cost Efficient Dependable Electronic Systems



How are prices on ingoing components expected to change over time?

- Processor power, memory capacity
- Standardization
- Price of software
- 20% drop in cost reduced by increased functionality
- General price change 3%

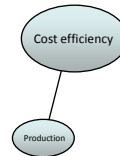


CEDES
Cost Efficient Dependable Electronic Systems



How must existing production facilities be adapted to handle the system architecture?

- Time for download
 - Pre-downloaded software
 - Downloading speed
 - Station time

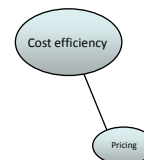


CEDES
Cost Efficient Dependable Electronic Systems



How does the system architecture affect pricing opportunities?

- Increased functionality
- Audiovisual interaction
- 1-2 years window
- Performance
- Relative price drop

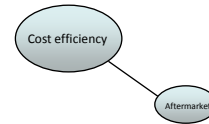


CEDES
Cost Efficient Dependable Electronic Systems



How does the system architecture affect cost in aftermarket service?

- Improved diagnostics
- Software update
- Backward compatibility
- Better quality
- Few variants

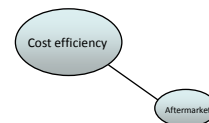


CEDES
Cost Efficient Dependable Electronic Systems



What can be said of the effect on the volume of warranty repairs?

- Newest version
- Spending time on verification
- Silent testing

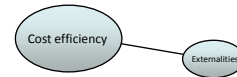


CEDES
Cost Efficient Dependable Electronic Systems



What external effects can be seen of the system architecture?

- Safety
- Efficiency
- 22.3 million SEK



CEDES
Cost Efficient Dependable Electronic Systems



CEDES

Cost Efficient Dependable Electronic Systems

