

UITP
8th Trolleybus Working Group and
3rd Trolleybus Workshop

Session 3:
New Technologies available for
worldwide Trolleybus Markets
(Tendency of Market Segments)

Arnulf Schuchmann, Managing Partner



Member of



TrolleyMotion

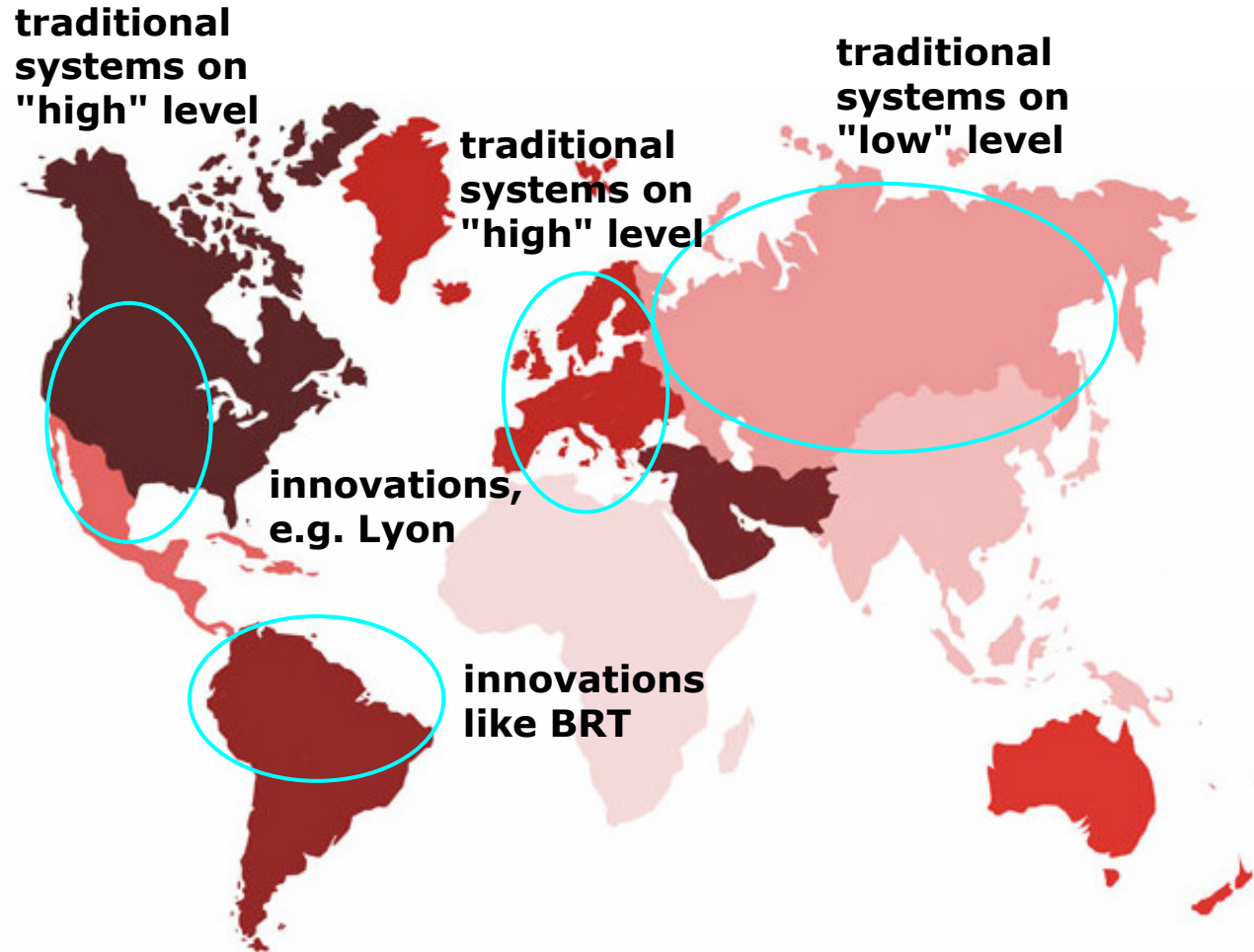
VÖV UTP



Presentation

Vologda
28th February 2008

Worldwide trolleybus markets can currently be segmented - tendency



Overview

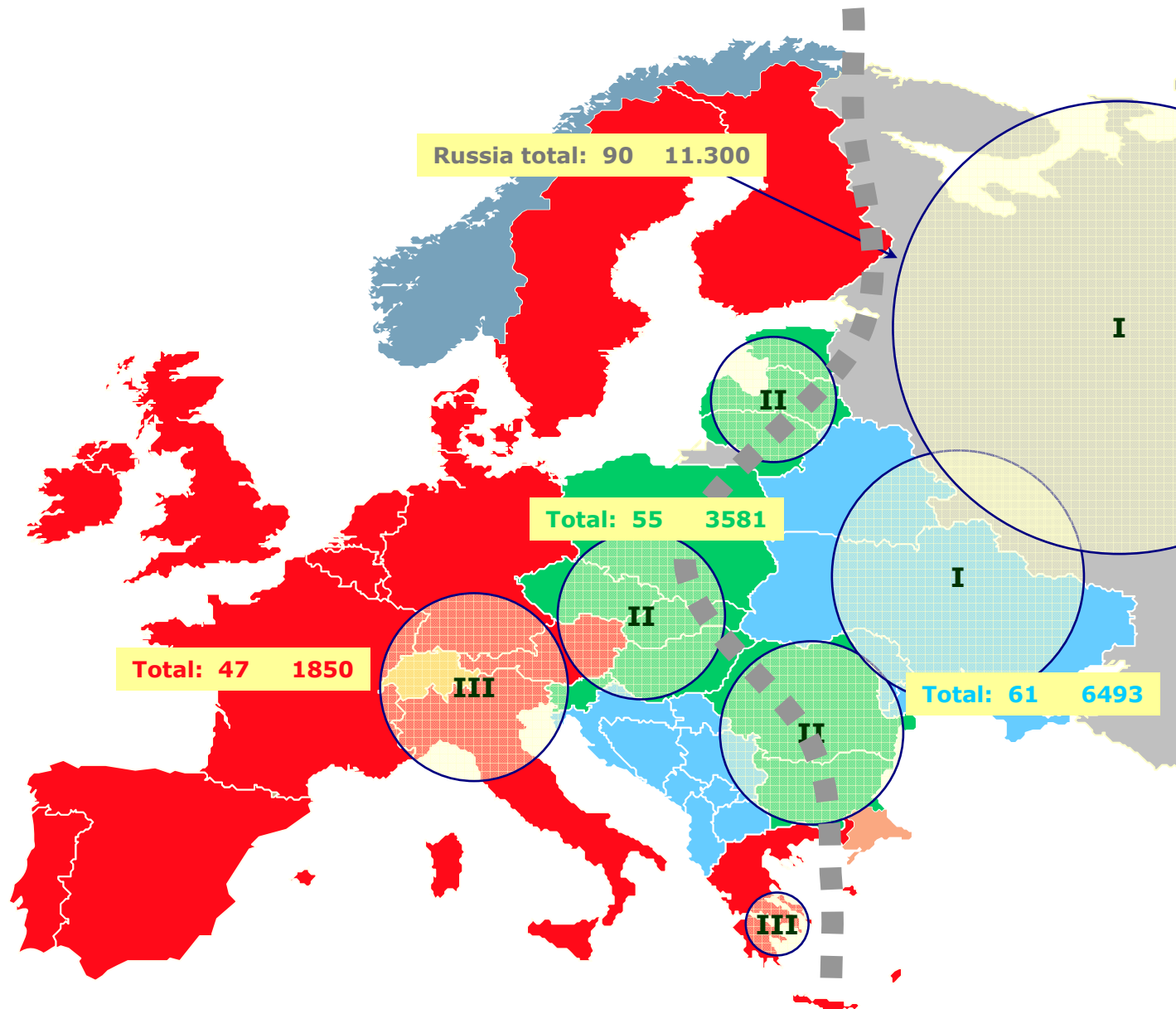


New Technologies available for worldwide Trolleybus markets (Market segmentation)

Presentation

Vologda,
28th February 2008

Current market segments within Europe



Overview

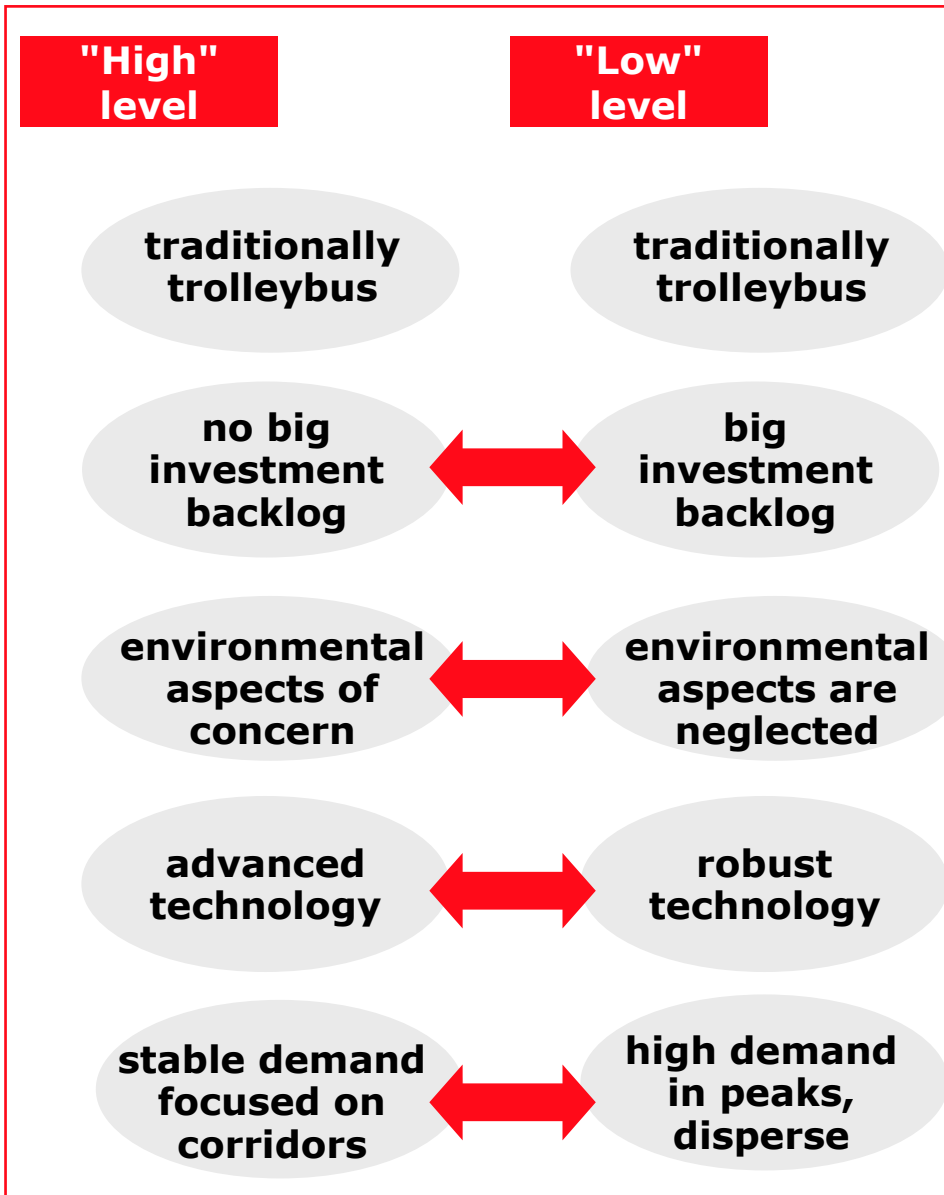


New Technologies
available for worldwide
Trolleybus markets
(Market segmentation)

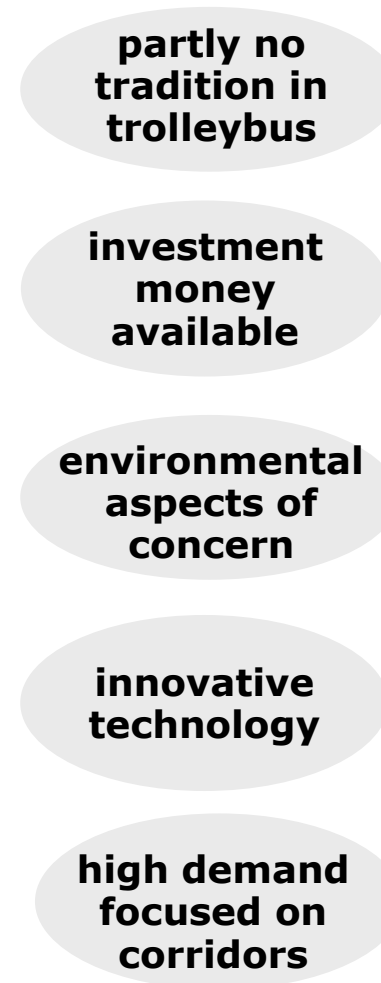
Presentation

Vologda,
28th February 2008

Key indicators for segmenting the market



Innovative systems



Segmentation

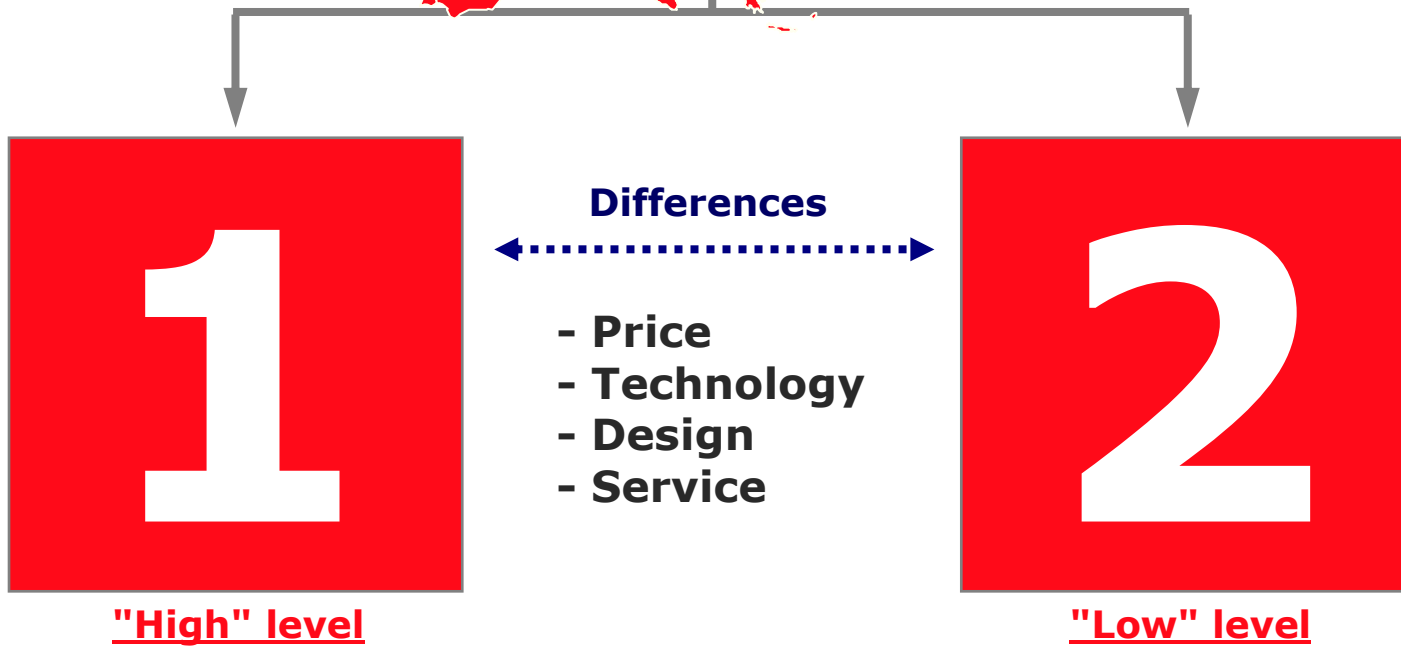
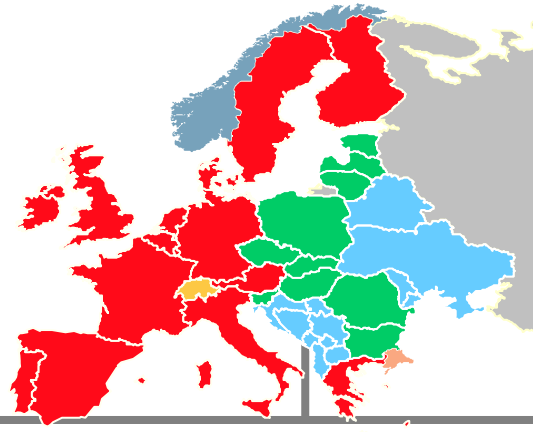


New Technologies available for worldwide Trolleybus markets (Market segmentation)

Presentation

Vologda, 28th February 2008

Main market differences



Segmentation



New Technologies
available for worldwide
Trolleybus markets
(Market segmentation)

Presentation

Vologda,
28th February 2008

Relevant aspects for trolleybus cities and operators in traditional "high" level markets

Aspects

Life cycle cost

- long term cost pressure
- investment budgets available

articulated low floor buses

- try to focus on corridors
- stable or increasing demand
- passenger comfort
- investment (capital cost) are less than 20% of the cost structure

environmental aspects

- zero emission, noise issue becomes crucial
- super caps instead of diesel for auxiliary

auxiliary drive or super caps

- higher flexibility (for politicians often an argument)
- no overhead line in depots needed

Segmentation



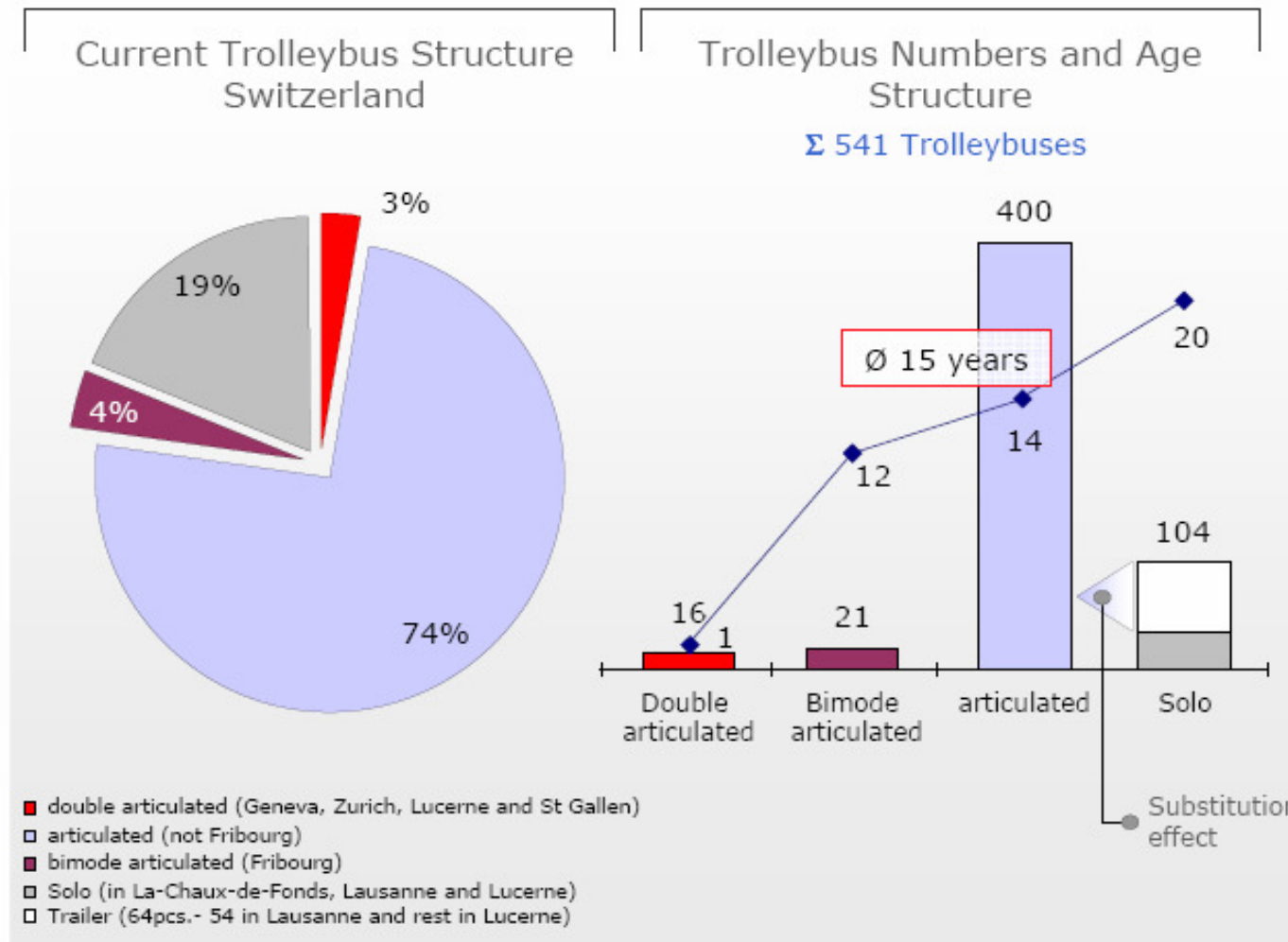
**New Technologies
available for worldwide
Trolleybus markets
(Market segmentation)**

Presentation

*Vologda,
28th February 2008*

Trolleybus market overview - 2007

... the use of large scale vehicles is dominant in the Swiss market. Solo vehicles have an average age of 20 years



Segmentation

Switzerland - example for an traditional market on "high" level



New Technologies available for worldwide Trolleybus markets (Market segmentation)

Presentation

Vologda, 28th February 2008

Source: Interviews with PT-Companies; S2R Database 2007

Relevant aspects for trolleybus cities and operators in traditional "low" level markets

Aspects

investment cost

- scarce investment budgets available
- loss making business (less subsidies)

solo buses

- disperse demand structure
- decreasing demand
- cheaper than articulated
- more flexibility

robust technology

- easy to operate and maintain
- no foreign spare parts needed,
- spare parts to be self made

Segmentation



**New Technologies
available for worldwide
Trolleybus markets
(Market segmentation)**

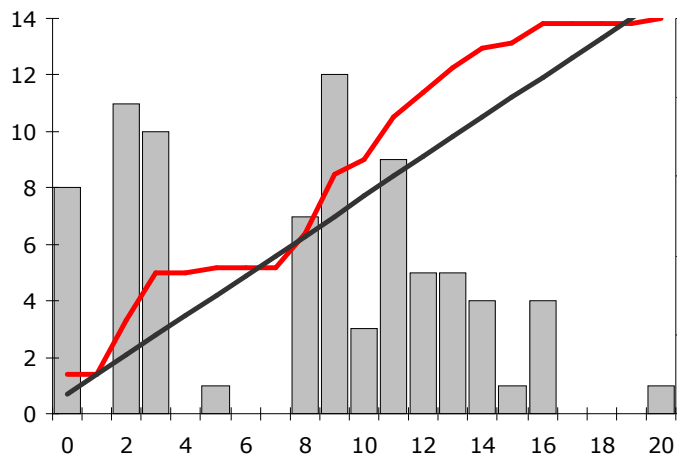
Presentation

*Vologda,
28th February 2008*

Trolleybus operators in "low" level markets need to overcome its investment backlog

Age structure of vehicles

"High" level market

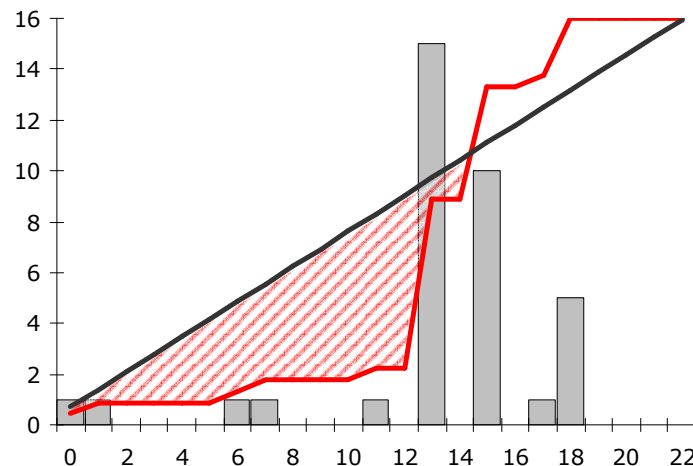


Average price: 400 thousand Euro

Average age: 8-10 years

- ➔ increase service quality by low floor, AC, etc.
- ➔ optimise LCC

"Low" level market



Average price: 80-100 thousand Euro

Average age: 63% more than 10 years

- ➔ first: renew fleet within given budget
- ➔ second: think about typical optimisation topics (like in W.E.)

Segmentation



New Technologies available for worldwide Trolleybus markets (Market segmentation)

Presentation

*Vologda,
28th February 2008*

Main decision within traditional markets on "low" level is the price of the bus ...

Market analysis for trolleybuses

| Decision criteria | Weight |
|--|--------|
| 1 → Price of the bus | ~55% |
| 2 → Life cycle cost: <ul style="list-style-type: none"> - spare part prices - maintainability - maintenance cycles/intervals | ~25% |
| 3 → Additional criteria: <ul style="list-style-type: none"> - workplace driver - passenger benefits - second hand price - availability of spare parts | ~20% |

Segmentation



New Technologies available for worldwide Trolleybus markets (Market segmentation)

Presentation

Vologda,
28th February 2008

... whereas in mature ("high" level) markets additional services become more crucial

Market analysis for trolleybuses

| | Decision criteria | Weight |
|----------|--|---------------|
| 1 | Life cycle cost | ~30% |
| 2 | Availability of spare parts throughout vehicle life time | ~20% |
| 3 | Experiences, quality and references | ~20% |
| 4 | Workplace drivers | ~10% |
| 5 | Passenger benefits | ~10% |
| 6 | Maintainability | ~10% |

Segmentation



New Technologies available for worldwide Trolleybus markets (Market segmentation)

Presentation

Vologda, 28th February 2008

Tendency

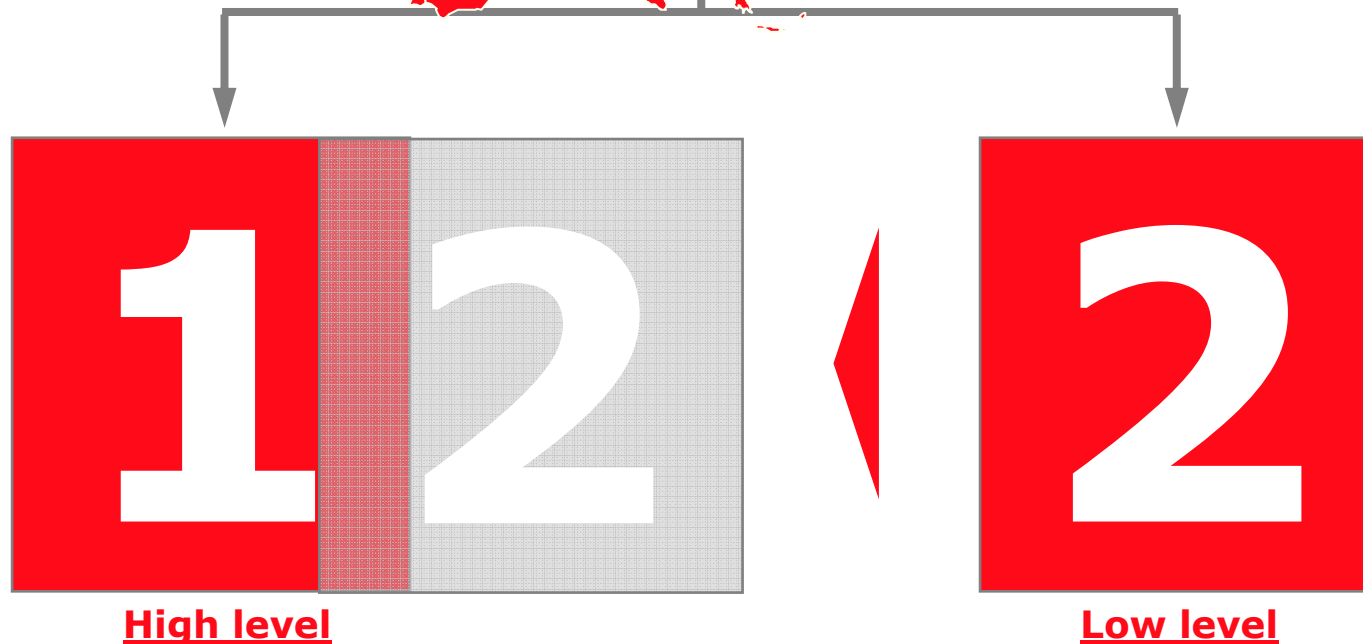
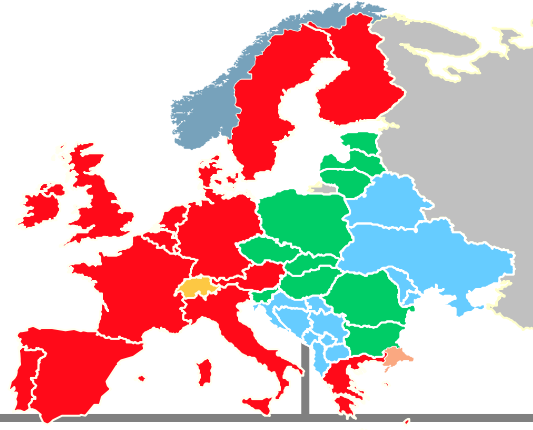


New Technologies
available for worldwide
Trolleybus markets
(Market segmentation)

Presentation

Vologda,
28th February 2008

Markets are different currently, from products perspective markets will be unified in future



- **Quality**
- **Technology**
- **Design**
- **Environment**

**If you have any questions or if you
would like to receive further
information, please do not hesitate
to contact us!**

schuchmann@s2r-consulting.com



www.s2r-consulting.com

S2R Consulting GmbH
Friedheimstrasse 17
CH – 8057 Zurich

S2R Consulting KG
Kurze Mühren 1
D – 22083 Hamburg