



TETRA
ASSOCIATION

The TETRA Business Case

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Summary

- *TETRA Affordability*
 - *Key figures*
 - *Coverage optimisation*
 - *Sharing one network through VPNs*
 - *TETRA and IP*
- *TETRA vs Public Cellular Systems*
- *Conclusions*

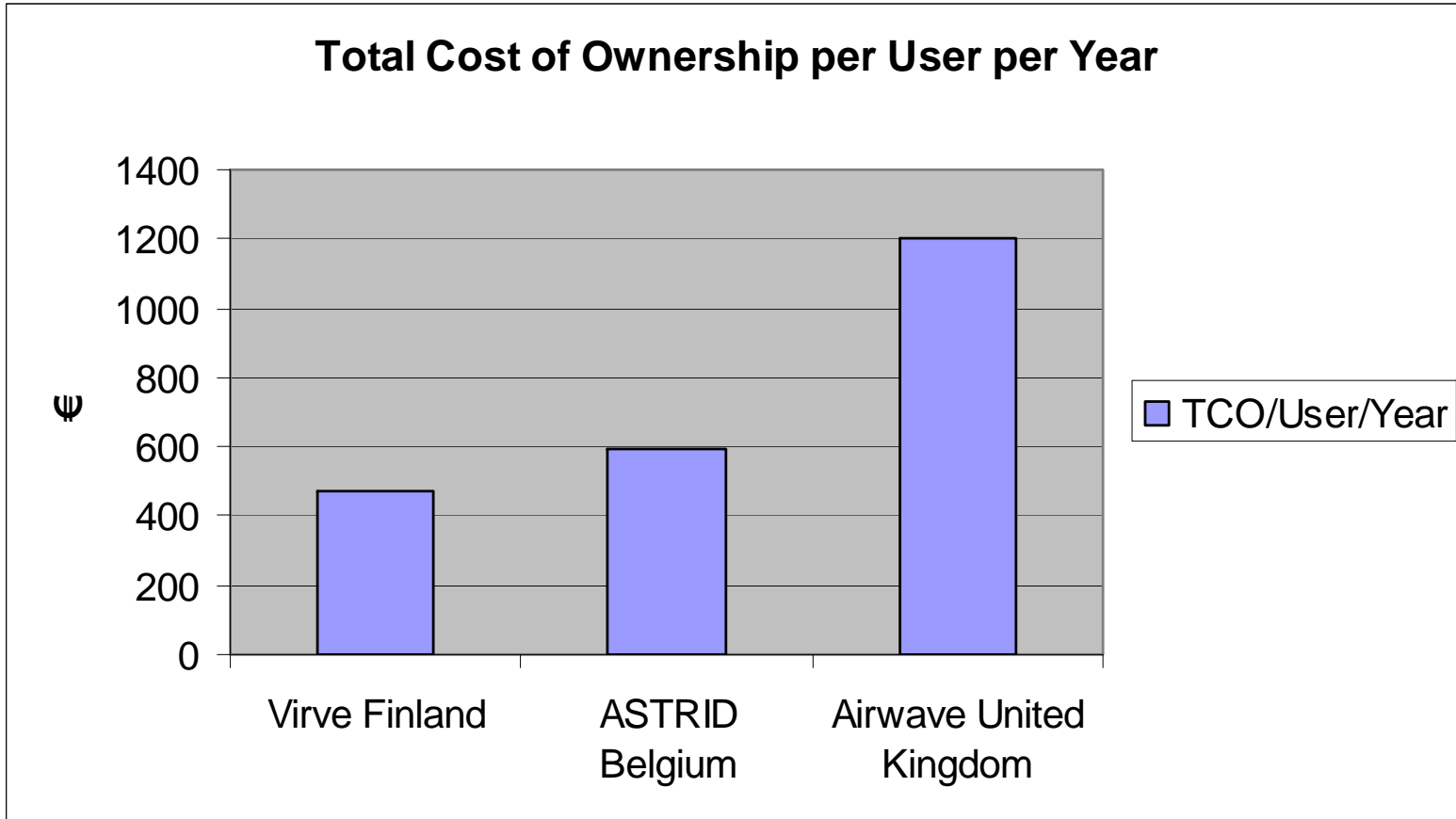


Key Figures

- **CAPEX – Capital expenditure**
 - network solution, infrastructure and terminals
- **IMPEX – Implementation expenditure**
 - cost of building the network
- **OPEX – Operating expenditure**
 - cost of keeping the network up and running
- **TCO – Total Cost of Ownership**
 - $TCO = CAPEX + IMPEX + OPEX$



Annual TCO per user

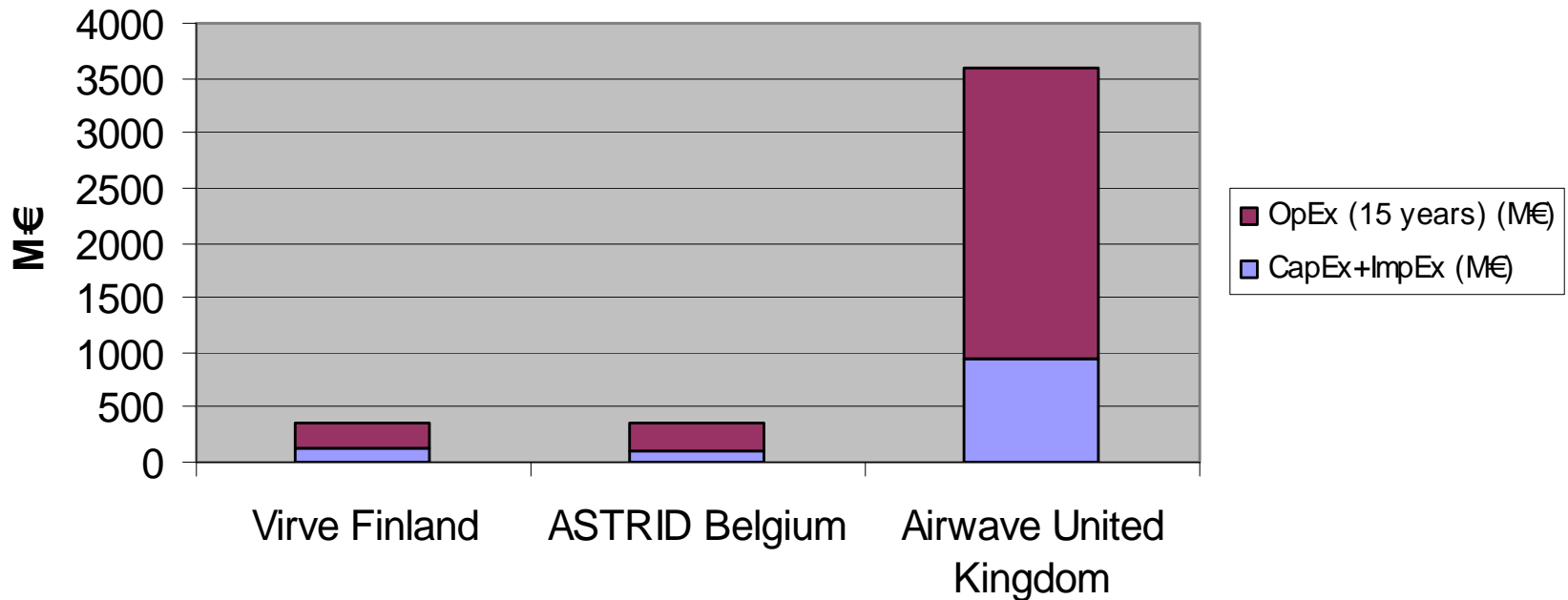


*All data from available public sources



Cost composition

Total Cost of Ownership Comparison (15 years)



*All data from available public sources



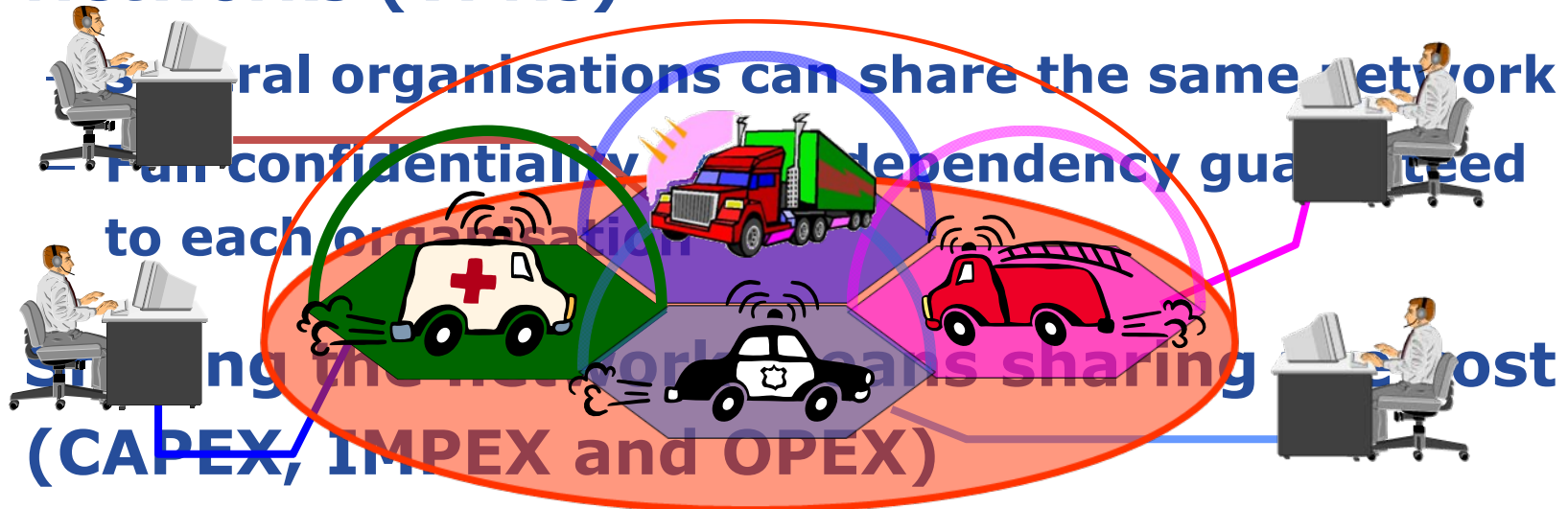
TETRA Coverage optimised

- **Most recent BS models have much improved coverage capabilities**
 - diversity or even tri-diversity
 - bi-cell or even tri-cell support
- **Better coverage capabilities implies**
 - Less Base Stations and sites
- **Most recent BS and switching solutions provide compact architectures**
 - Easier and cheaper site engineering and costs



Shared Networks

- **TETRA networks support Virtual Private Networks (VPNs)**



- Benefit to each organisation as “individual” costs are reduced



TETRA and IP

- TETRA recently **evolved** from circuit to **IP** packet switched nature
 - Data services from circuit data (dial-up like) to GPRS-like packet data (narrow band) and TEDS (wideband)
 - Network solutions of most TETRA network suppliers evolved **from TDM to IP** architecture
- Migration to IP was a **MARKET DEMAND**



But...why IP ?

- **Use of COTS components**
 - Take benefit of mass market technological

TETRA continuously evolves to be more and more affordable

- **Easier integration**
 - with complementary broadband technologies
 - LAN/WAN fixed networks
 - end user data applications



Commercial networks

- **Commercial networks (3G/4G) unable to fulfil basic PSS user reqs**
 - Extensive **RF coverage** even in rural/isolated areas
 - **Ruggedised** handheld terminals
 - **Fast call set-up** **group** communications
 - **Availability** especially in emergency ($\geq 99.99\%$)
 - Highest level of **Security**
 - **Direct Mode** (walkie-talkie style)
- **Dedicated networks still needed for mission critical voice/data**
 - Germany and Norway cases
 - Commercial networks can still offer complementary **NON mission critical broadband data service**



Conclusions

- **The use of commercial network is not a viable option for mission critical users**
- **Dedicated networks are still the only option for PSS organisations**
- **TETRA continuously evolves towards solutions aimed to optimise overall costs**



TETRA is...

Sharable

**Cost
Optimized**

**The winning
Choice**

Proof



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Thank you

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