# DEVELOPING THE V4 VIRTUAL REGION CONCEPT
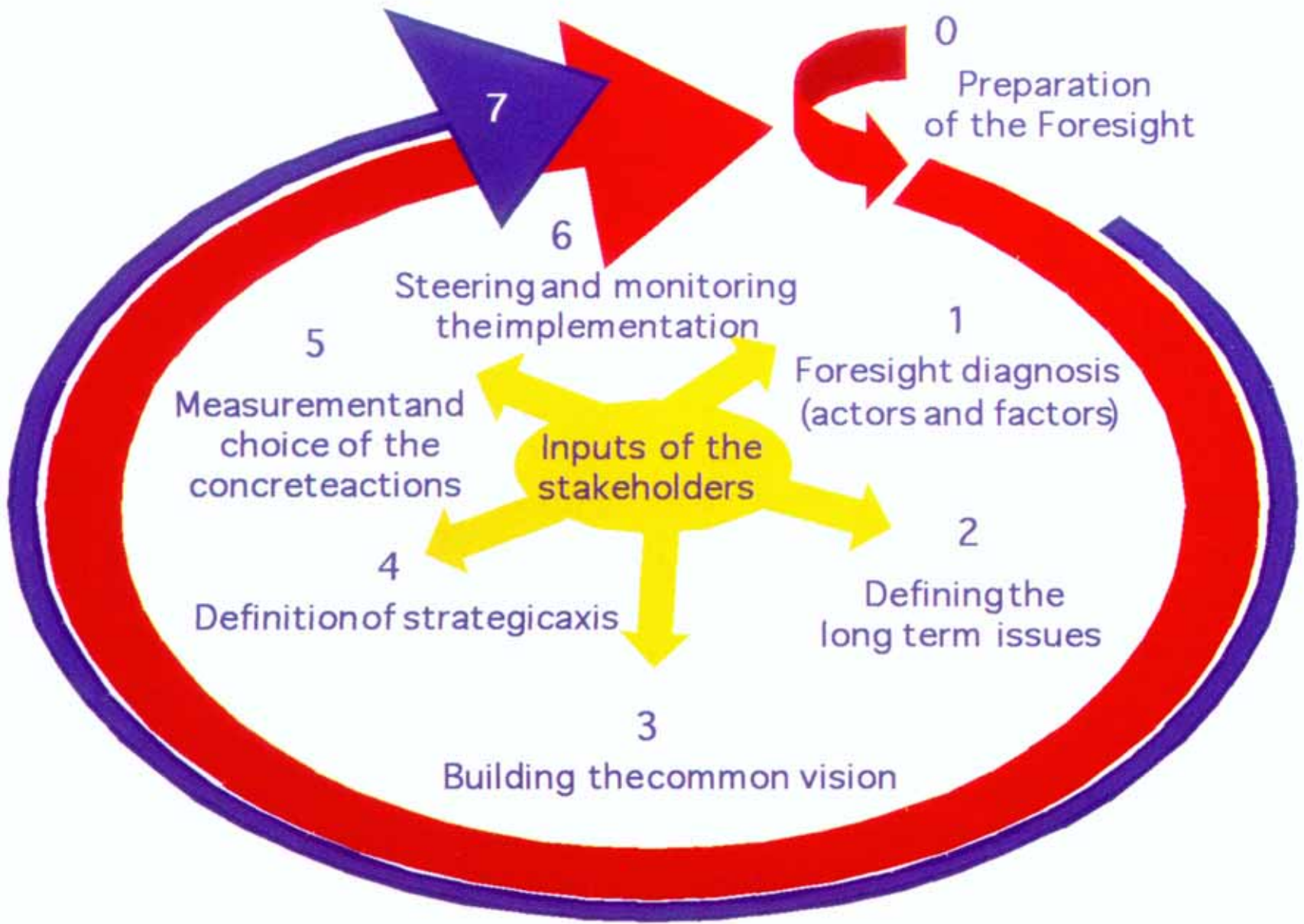
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# Agenda

- Introduction
- What is broker orienteted transaction system?
- What is proposed broad-band infrastructure?

# Introduction

- We use the term **KSA** as a rationally combined triangle:

  ***knowledge, skill*** *and* ***activity.***

- KSA is strongly connected with so called ***knowledge driven information society.***

- ***KSA* systems** as an important mainstream technology which develope this society and support business processes.

0
Preparation
of the Foresight

7

6
Steering and monitoring
the implementation

5
Measurement and
choice of the
concrete actions

Inputs of the
stakeholders

1
Foresight diagnosis
(actors and factors)

4
Definition of strategic axis

2
Defining the
long term issues

3
Building the common vision

Developed by MLP Coaches: Philippe Destatte and Günter Clar

# What is proposed transaction system ?

- The term *transaction* means all kinds of real transactions someone has in his mind

- The term *price* means any value which could play a leading role to fix current transaction.

- *Intelligent agents* are a partner sides across negotiation proccess.

- They are able to posses the buyer or seller position adequately to a kind of transaction.

# Questions:

In any transactions /negotiating processes/ it is necessary to answer the questions:

- **How to set** the right price /value/?
- **When and how** to stop the negotiating process?

The **satisfying solution** is the method of fixing price of agreement applied to the *broker module* as a part of transaction/negotiating systems.

Authors assume membership function of fuzzy set of buyer's prices as (1):

$$\mu_i(ck) = \begin{cases} 0 & \text{for} \quad ck > nck_i \\ \dfrac{nck_i - ck}{nck_i - ck_i} & \text{for} \quad ck_i \leq ck \leq nck_i \\ 1 & \text{for} \quad ck < ck_i \end{cases} \qquad (1)$$

where:   $CK$ – set of buyer's prices,
          $ck$ – buyer's price,
          $ck \in CK$
          $ck_i$ – price of buyer i,
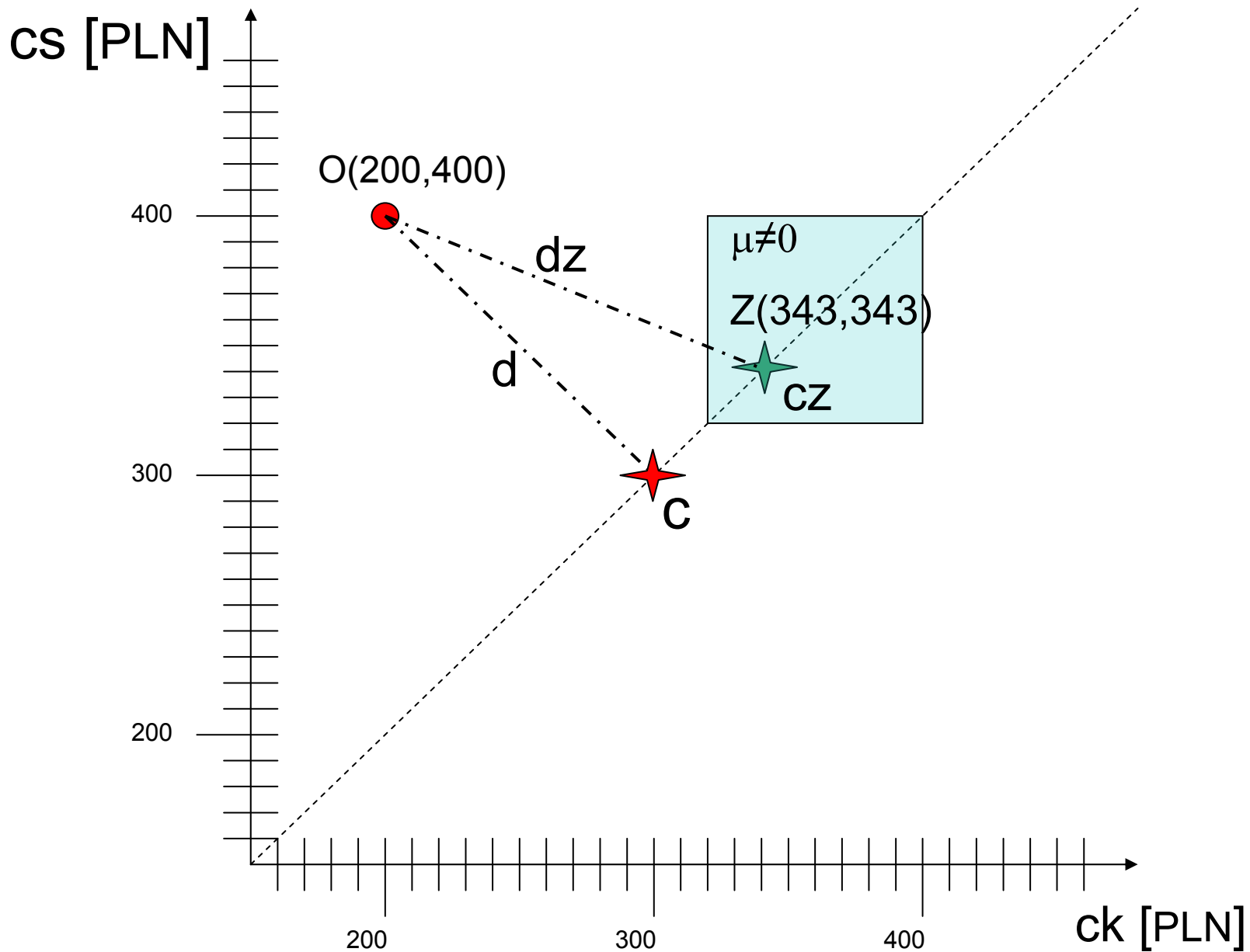          $nck_i$ – the highest price of buyer i.
          Similarly assume membership function of fuzzy set of seller's prices as (2):

$$\mu_j(cs) = \begin{cases} 0 & \text{for} \quad cs < ncs_j \\ \dfrac{ncs_j - cs}{ncs_j - cs_j} & \text{for} \quad cs_j \geq cs \geq ncs_j \\ 1 & \text{for} \quad cs > cs_j \end{cases} \qquad (2)$$

where:   $CS$ – set of seller's prices,
          $cs$ – seller's price,
          $cs \in CS$
          $cs_j$ – price of seller j
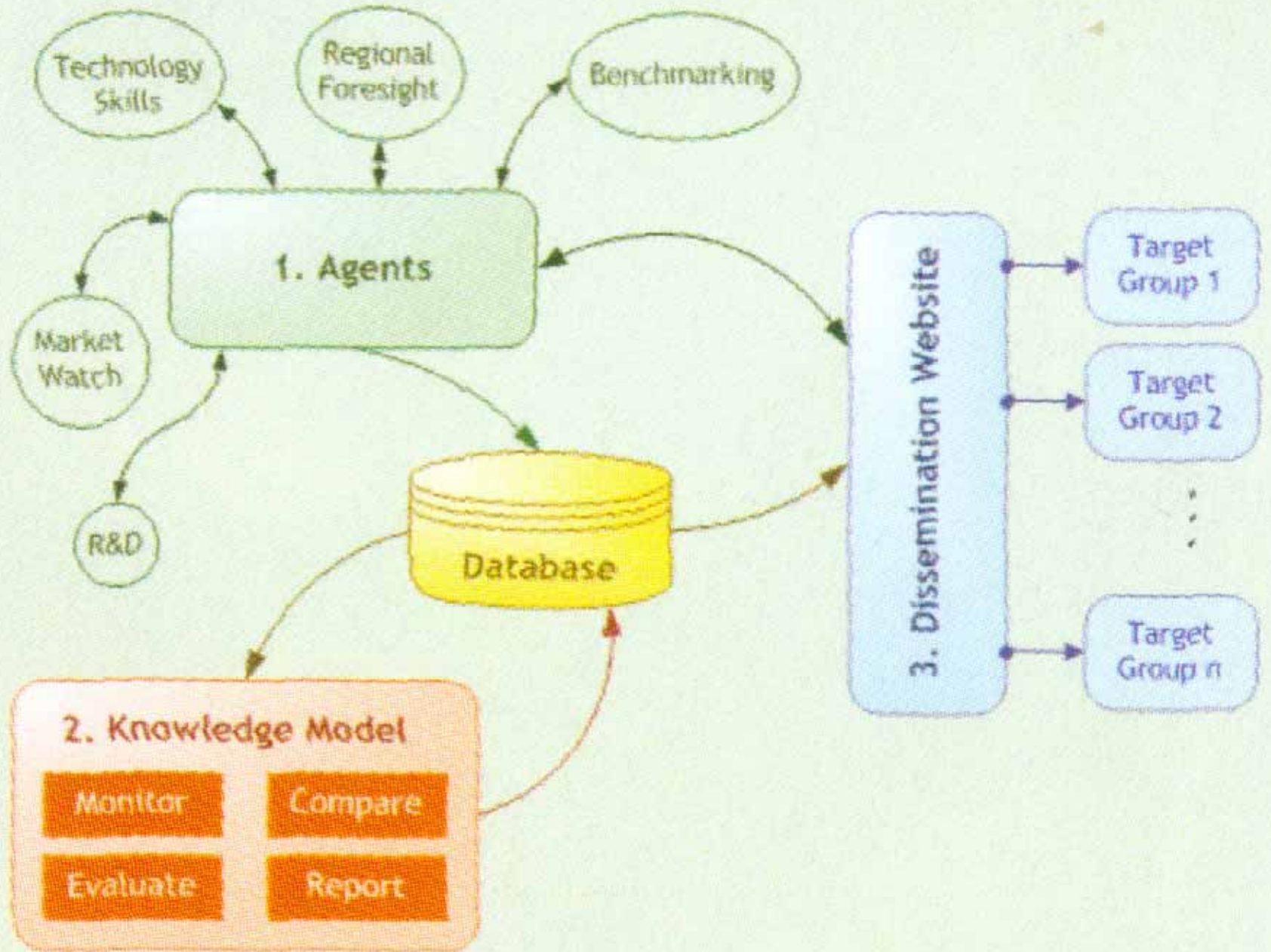          $ncs_j$ – the lowest price of seller j.
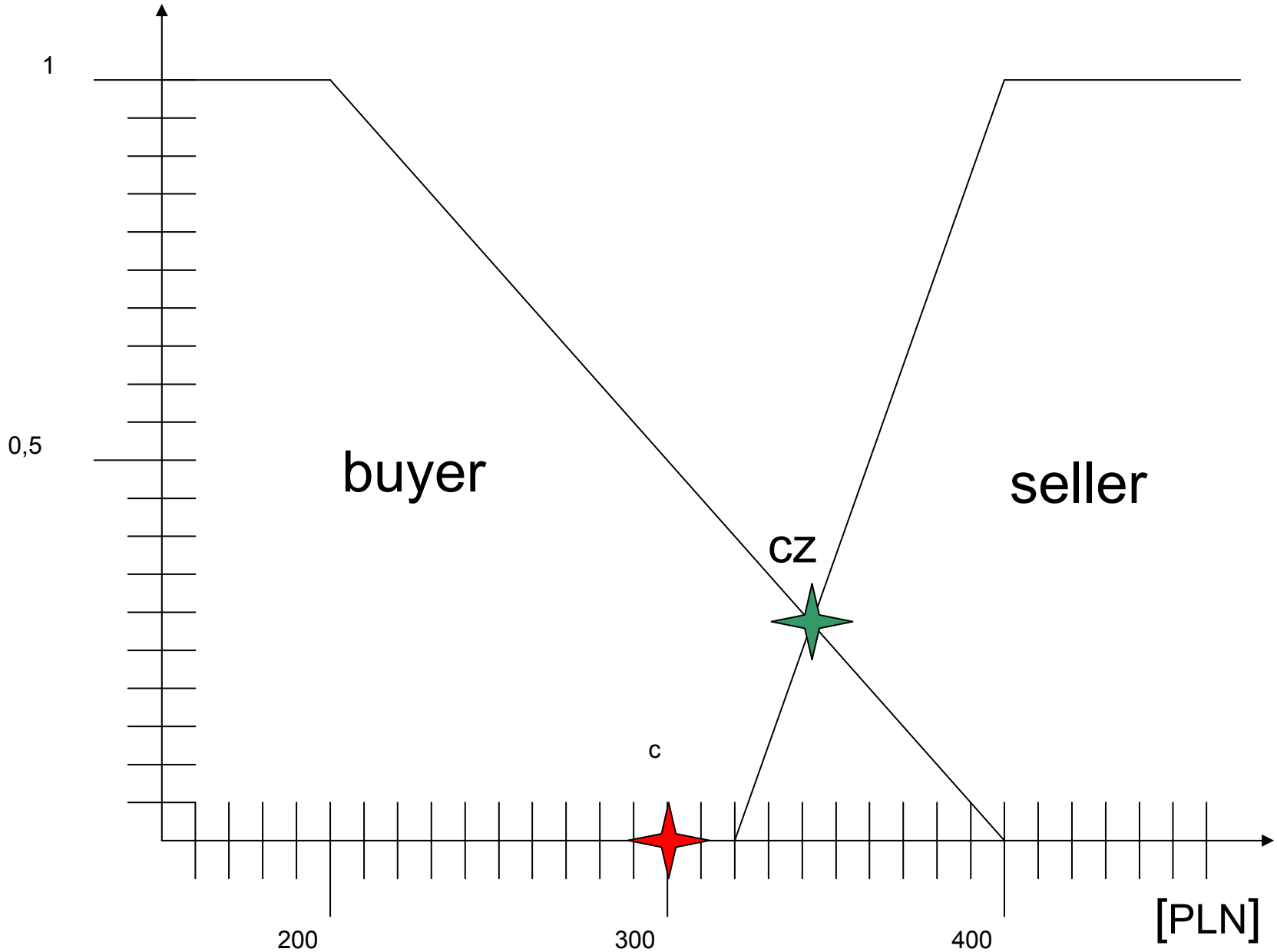
Fuzzy sets of seller and buyer price

Relation of fuzzy sets seller's and buyer's prices

# knowledge integration

# What is proposed broad-band infrastructure?

- System structure which organise the safety communication between end-users of many kinds of networks.

- The main module of the structure is multi-networks mobile platform /Communication Control Unit – CCU/.

- The structure is based on such solutions as: GSM, Hot Spots, TETRA, Mobile Satellite Systems,Wireless Broadband.

# V4 Virtual Region Comunication Platform - TETRA /GSM/ SatCom

Tetra is the standard for emergency services

Tetra is a cost effective solution for the cities / urban areas

Tetra Direct mode gives local coverage on the rescue site

Mobile GSM networks are available and can provide affordable solutions.

GSM is the carrier between the vehicles and the control-room

Mobile satellite systems like Globalstar, Iridium, Inmarsat are available but more expensive than GSM.

Beck up via SatCom

GSM network operators can offer priority and pre-emption services for the emergency services – available from several GSM infrastructure suppliers

GPS Position exchange – Map Plot + Overlays

- GPS receiver in each vehicle, and optionally in selected   handsets

- Vehicles may have map display capability (Site-local and remote units)

- Gateway vehicles can relay   handset positions.
  They report GPS positions (their own, and from selected handsets)

- Positions relayed to the Rescue Coordination Central are routed to a
  "Position distribution control" server, so that vehicles related to the same task
  get each others position information (mapping may equal the Talk Groups)

- Rescue operators may send map overlay information to selected groups,
  i.e. marking incidents and important locations on the map of each map display
  for the whole group.

- The operator should be able to display Map Info for multiple groups at once,
  on-the-fly selectable, to obtain a total view of an area.

# General on Infrastructures

## GSM

- Available and typically 98% coverage of population area
- Well proven
- Constantly improving in quality
- Constantly adding new technology and services
- Good data capability

## Hot Spots

- High bandwidth
- Not available everywhere

## TETRA

- Tetra is the standard for emergency services
- Private Mobile Radio dedicated usage by companies and industries
- Tetra is a cost effective solution for the cities / urban areas for emergency services
- Needs dedicated purpose designed deployment
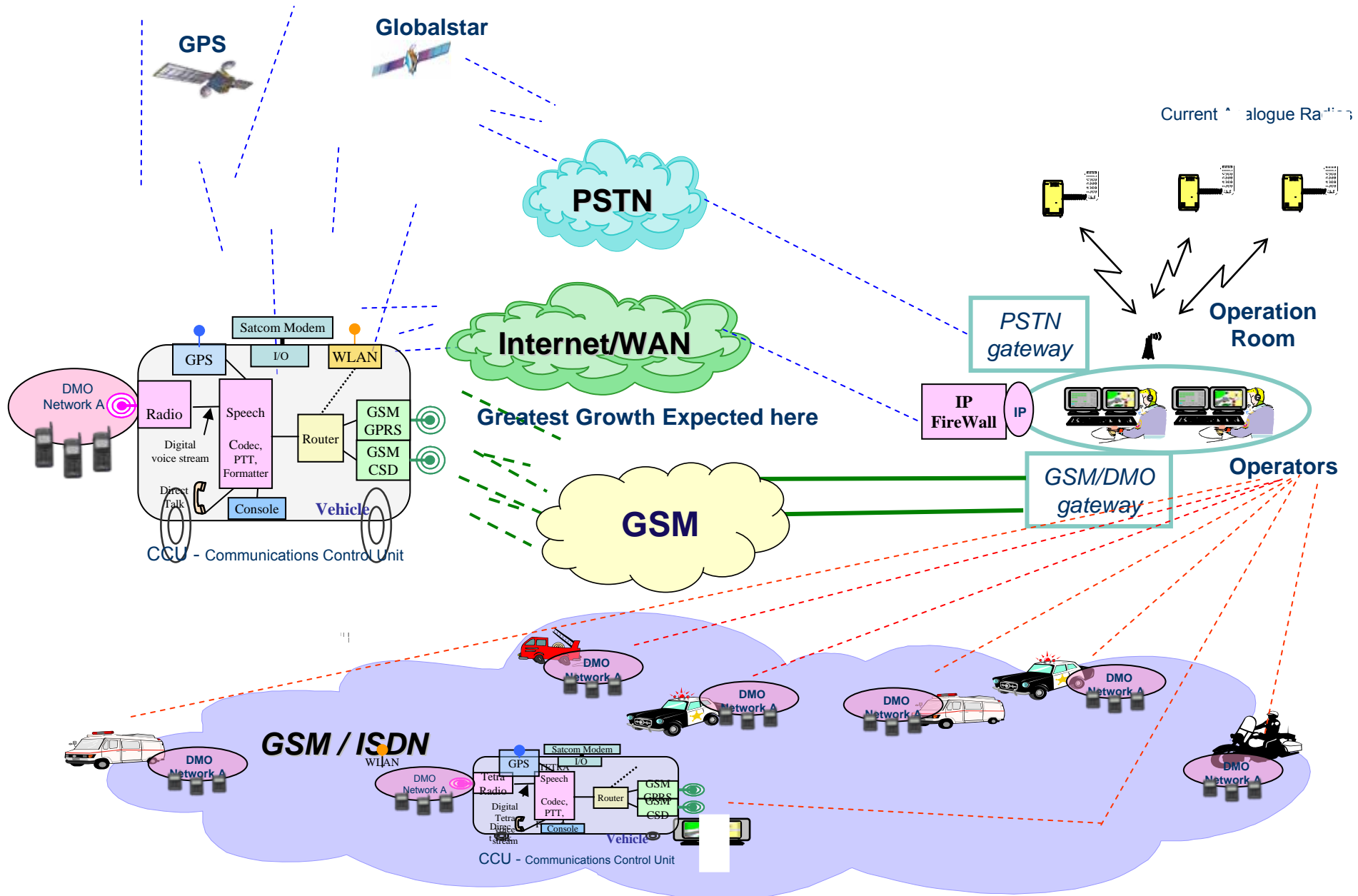
## Satellites (many different types)

- Provides coverage in difficult terrain and inaccessible areas
- Poland is covered by minimum 2 and max. 4 satellites (Globalstar). Shadows reduced
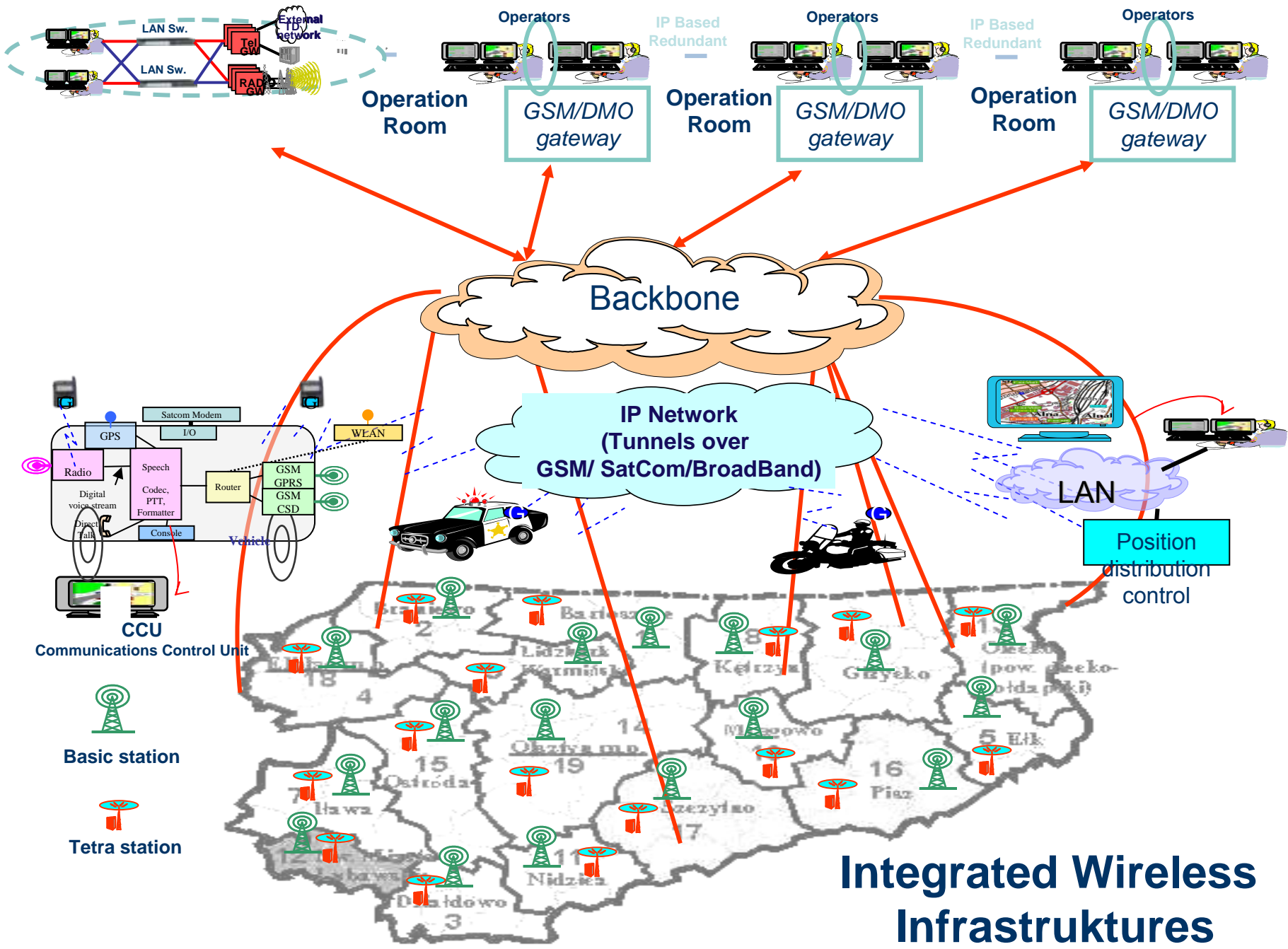
## Wireless Broadband

- High bandwidth
- Not available everywhere but **will be**

**All the infrastructures have both advantages and disadvantages**

# MSN CONCEPT – To provide coverage where none exist

**Integrated Wireless Infrastruktures**

# Future Progression - Introduction of TETRA
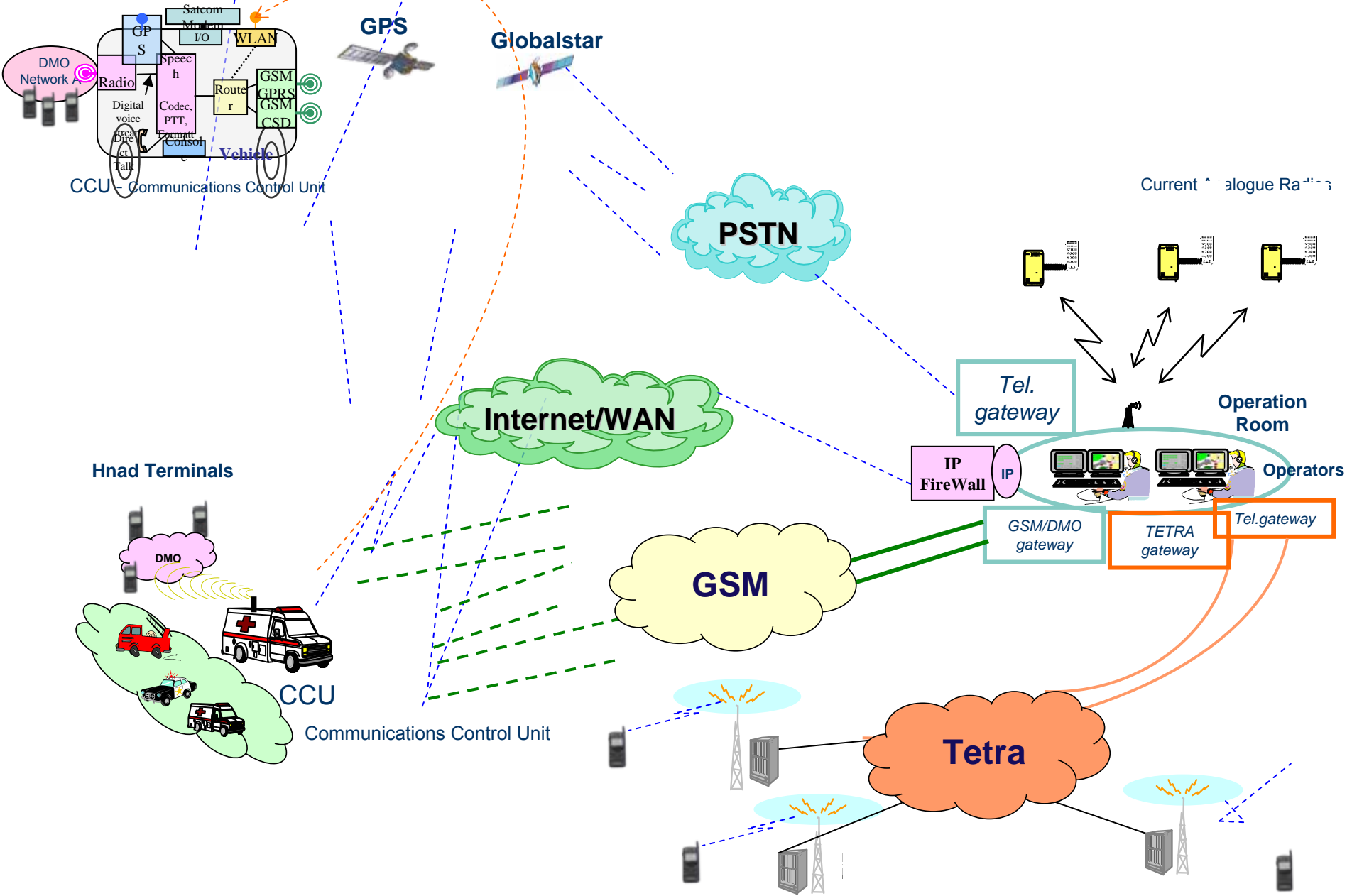
# Conclusions

Not to compete but to utilise the available technologies

To combine the best of all available technologies

To ensure smooth transition from legacy systems to new

To improve survivability and availability

# Conclusions (1)

The proposed broad-band infrastructure can be effectively used:

- **To cover** the rural areas giving cost savings for the TETRA investment.

- **Initially** when the TETRA infrastructure is not yet available.

- During the **role out** of the TETRA infrastructure.

- Can also helps **to cover** areas if no coverage by TETRA.

# Conclusions (2)

- In fostering effective ***Public-Private Partnerships*** the V4 Virtual Region Concept with proposed technology platforms have the potential ***to contribute*** significantly to the development of the renewed Lisbon Strategy, European Research Area as well as the cross-border co-operation.

- The open question: ***how to secure investments and be 'future safe***' as usually still remains.

# THANK YOU FOR ATTANTION

# General on Infrastructures - Characteristics



Satellite Systems

Data

**Still Growing Tech.**
WiFi
WLAN/Broadband
Hot Spots
EDGE/UMTS

GSM

TETRA

TETRAPOL

Analogue Net

Coverage

Emergency Services