

**Skandinavisk  
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**The Swedish initiative  
by using XML for  
communication in the  
field of Traffic  
applications**

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**TRAFIKVERKET**

# Background

- Initiated by the Swedish Transport Administration (STA)
- Initiative supported by some mayor cities, like Stockholm, Göteborg, Malmö, and Uppsala regarding Traffic signal systems
- STA moving from regional independancy with limited national coordination to a national organisation for ITS development, investment and maintenance.
- The need of common national architecture for Traffic management, road operations and maintenance (ITS and ICT)
- Today situation – various types of communication protocols between supervisory systems and roadside Equipment

# Scope

- Create a standardized communication concept between
  - Management systems and Local equipment/systems
  - Different local Equipment/systems
- Open - not dependent of any specific vendor
- Promote technical innovations and further progress in different application areas
- Applicable in several different technical areas/applications

## Variable speed signs/systems

- 12 sites in south Sweden
- Monitoring and control from GSV/NTS
- Full operation - autumn 2011



Foto: Trafikverket

# Traffic signal systems

- Pilot sites/controllers with RSMP
- Monitoring and control from ÖTS2/NTS
- Full operation with pilots – autumn 2012



Foto: Inmind Scandinavia AB



## Congestion charging system

- Stockholm and Gothenburg
- Monitoring from SCADA/NTS
- Full operation 2013

Foto: Teknikens värld/Mikael Ullén

# Identified requirements

- Separation between the protocol specification and the application content
- Possible to easily add and delete signals in new plants and applications without having to extend or alter the standards and guidelines
- Efficient communication, suitable also for wireless networks
- Limited functionality - complemented with application specific web-interfaces

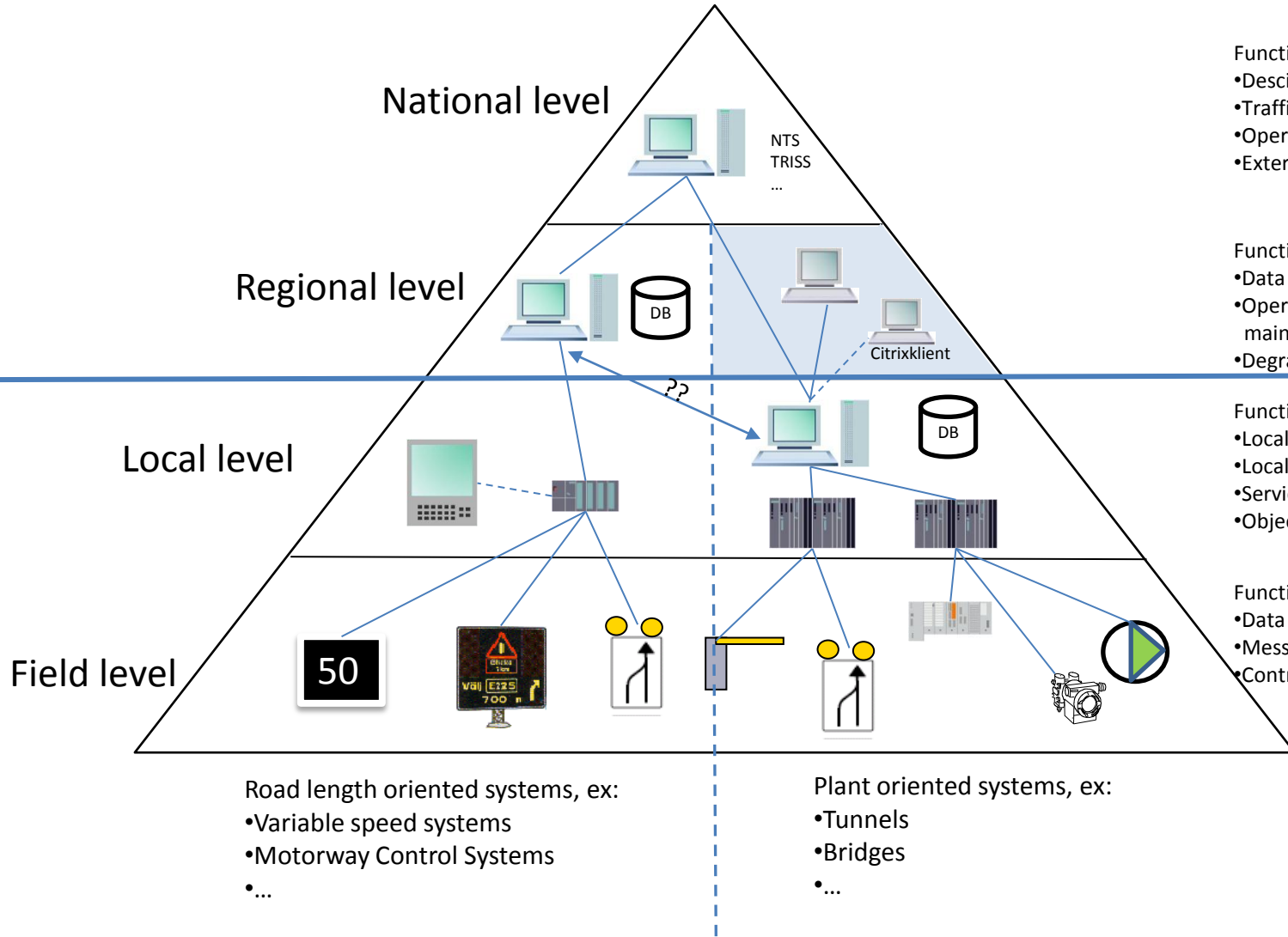
# RSMP

Roadside Message Protocol

# System Architecture

TMC

Geographical location



- Function:
- Decision support
  - Traffic management
  - Operations management
  - External services

- Function:
- Data storage
  - Operation and maintenance
  - Degraded operation

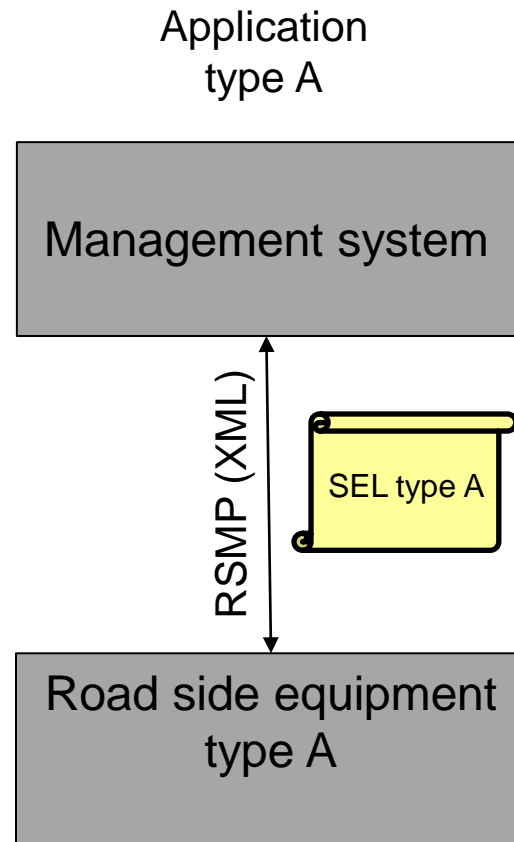
- Function:
- Local data storage
  - Local object control
  - Service
  - Object logic & sequences

- Function:
- Data input
  - Messages to drivers
  - Control output

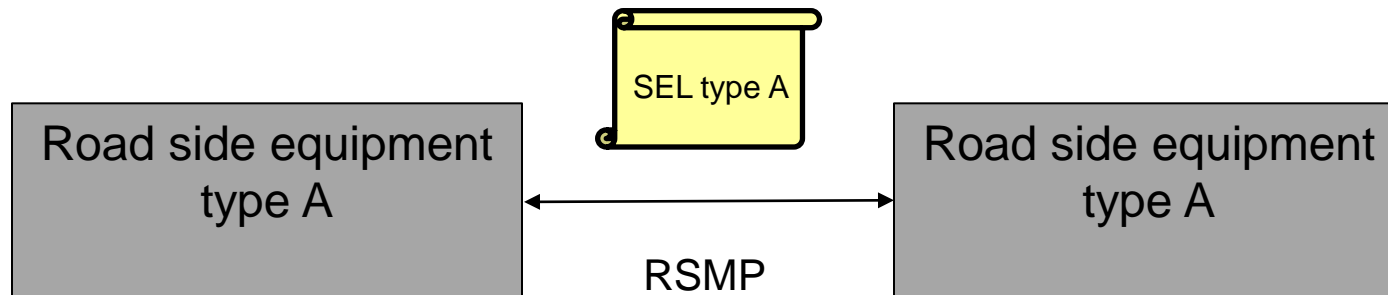
# RSMP – Examples of possible functionality

- **Supervision**, e.g. Alarm, events and status
- **Control**, e.g. manual or centralized control, bus and emergency priority/preemption in traffic signals
- **Traffic counting**, vehicles per hour/minutes
- **Advanced diagnosis** in realtime, e.g. continuously updated intersection status, Traffic flow charts, signal timing diagrams
- **Logging**, e.g. of detectors, signal groups, control mode
- **Interoperability** with other systems

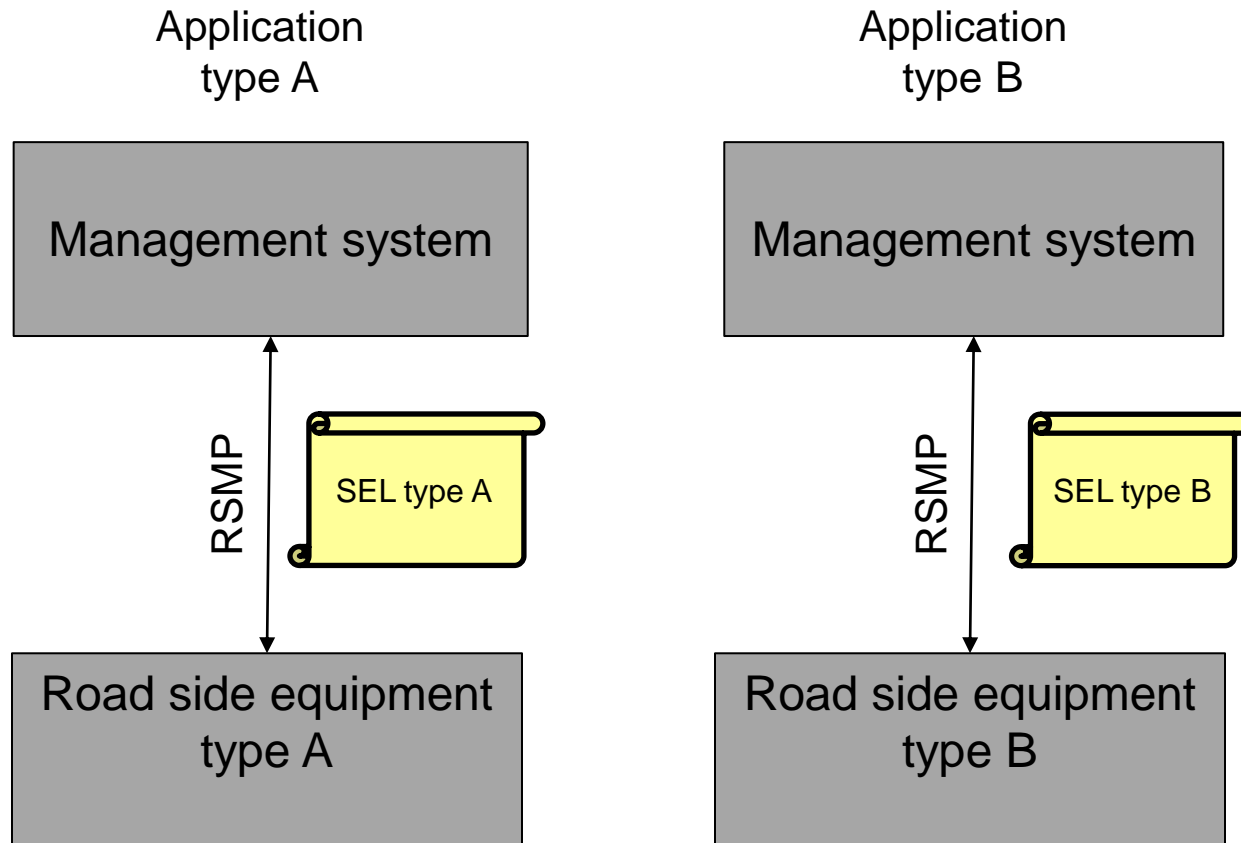
# RSMP – Principles of communication



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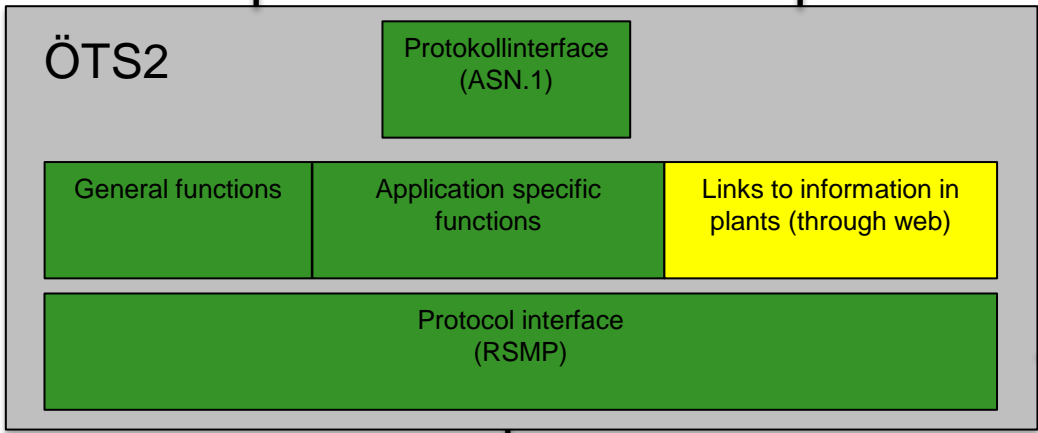


Traffic management (NTS)

Possible future systems

TCP/IP ASN.1-protocol

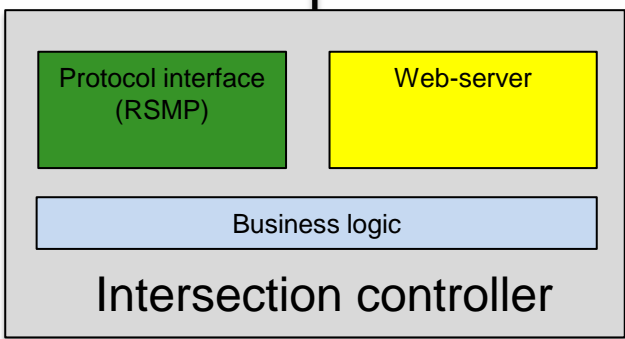
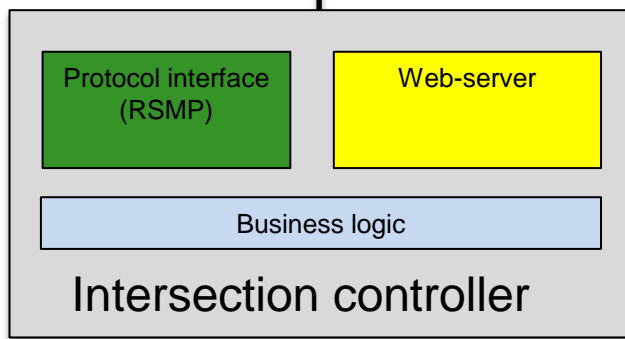
TCP/IP RSMP-protokoll



TCP/IP  
RSMP-protocol

External alarmsystem

TCP/IP RSMP-protocol



# RSMP – Conclusion

- **Uncomplicated design** - simplifies implementation, troubleshooting, etc.
- Modest hardware and software requirements - suitable for use with what the manufacturers offers today
- **Flexible and extendable** - One unified protocol, regardless of application
- **Additions and changes** in a specific application **do not affect** the protocol
- Owned by the Swedish Transport Administration - **same terms for all manufacturers, free to use** for other road authorities

Thank's for your attention!

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