



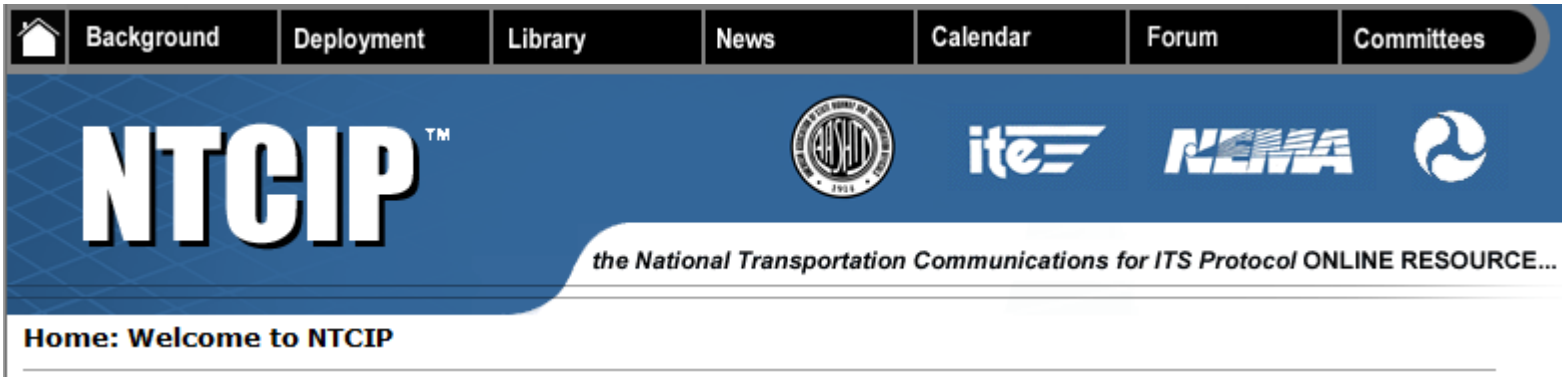
Swarco Sverige AB

Protocols for traffic control and supervision

- Standardized protocols take long time to establish in a wider market.
 - Definition
 - Development
 - Deployment
- The process often takes >10 years
- On a new market with new products the process is “simple”
- On a mature market with legacy products in operation the process is complex, since you have to take care of existing installations.
- When a new technology emerges it is important to act quickly before next technology sets new requirements.
- It is not always the best solution that becomes the standard, but the one that comes first.

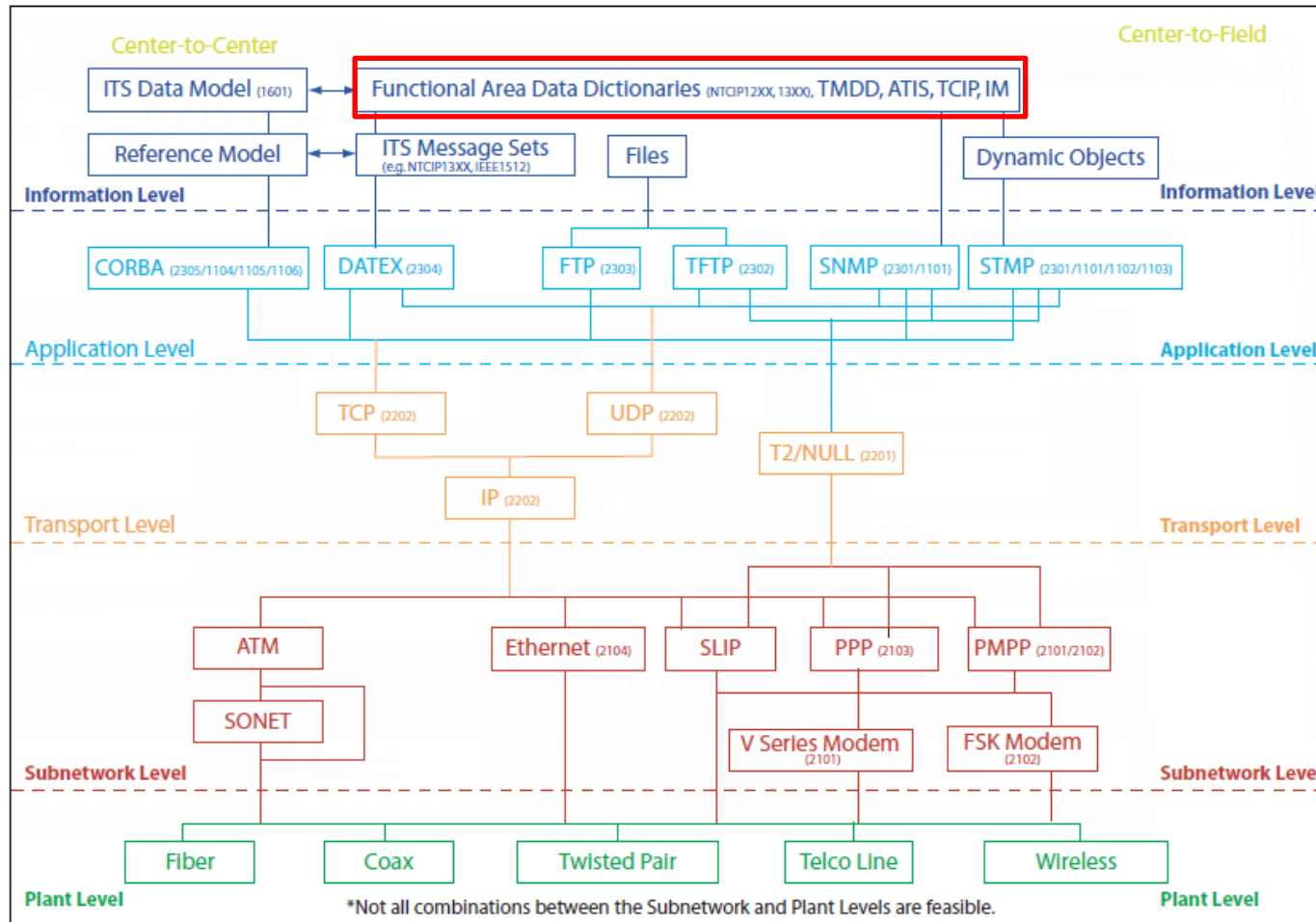
There are few known functional standards worldwide

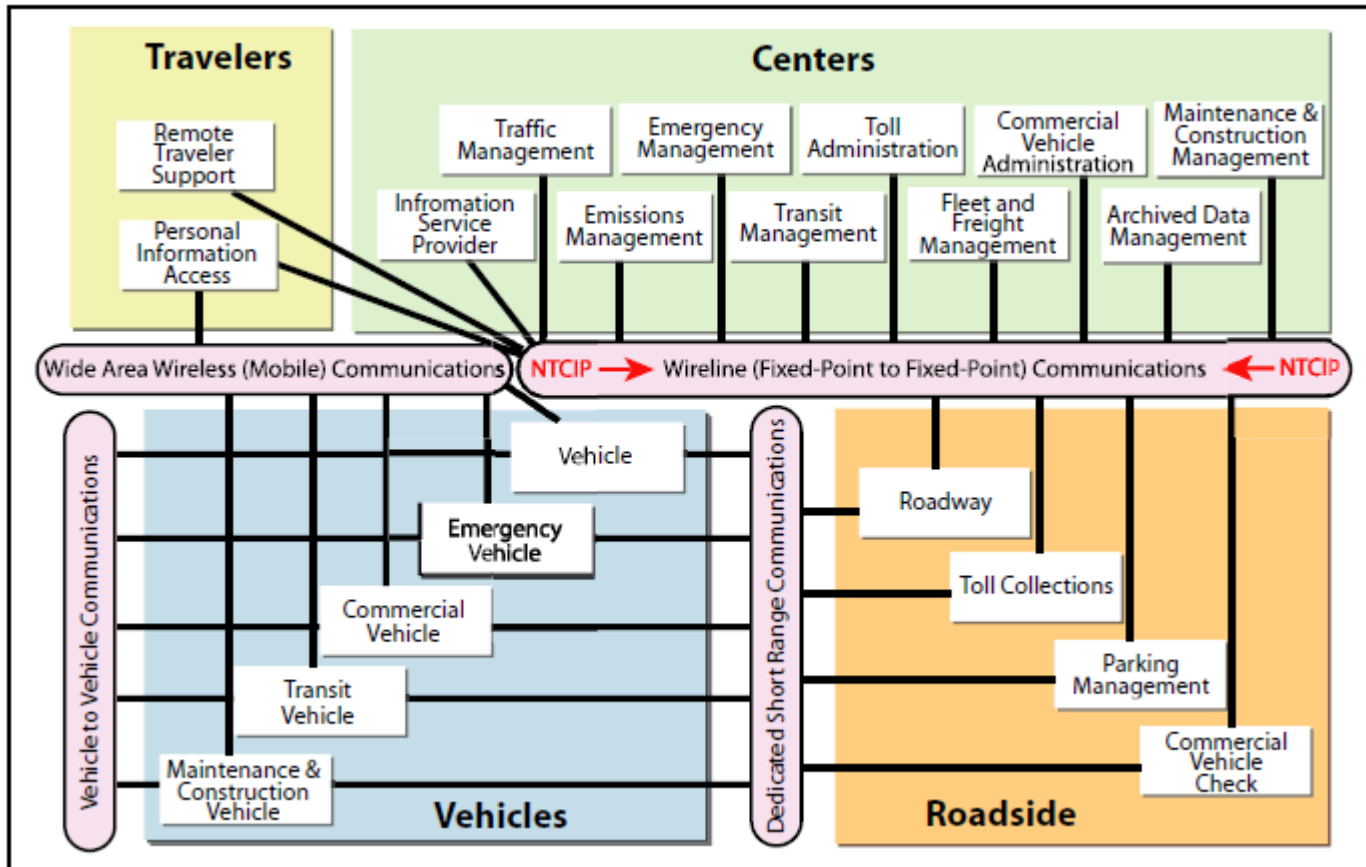
- ▶ NTCIP: USA, NEMA-group
- ▶ OCIT: Germany, Austria, Switzerland
 - ▶ ODG (development group), OCA (City association)
- ▶ IVERA: Holland, Astrin
- ▶ All has been in operation for >10 years
- ▶ All having a large market with many suppliers



The screenshot shows the top navigation bar of the NTCIP website. It features a dark blue background with white text for the navigation menu: Home, Background, Deployment, Library, News, Calendar, Forum, and Committees. Below the navigation bar is a large blue banner with the NTCIP logo in white, the text "the National Transportation Communications for ITS Protocol ONLINE RESOURCE...", and logos for ITE, NEMA, and another organization. Below the banner, the text "Home: Welcome to NTCIP" is displayed.

- NTCIP-group started 1992 (sponsored by NEMA)
- In operation since 1999
- Based on existing communications standards (IP, TCP, SNMP, CORBA)
- Covers both C2F and C2C
- Large number of objects: TSC, VMS, Counters, WIM, RM, CCTV, ...
- Probably >100.000 controllers using ntcip
- Becoming a standard outside US (South America, ...)
- More info: www.ntcip.org





OCIT® Offene Schnittstellen für die Straßenverkehrstechnik / Open Communication Interface for Road Traffic Control Systems

Aktuell

ODG

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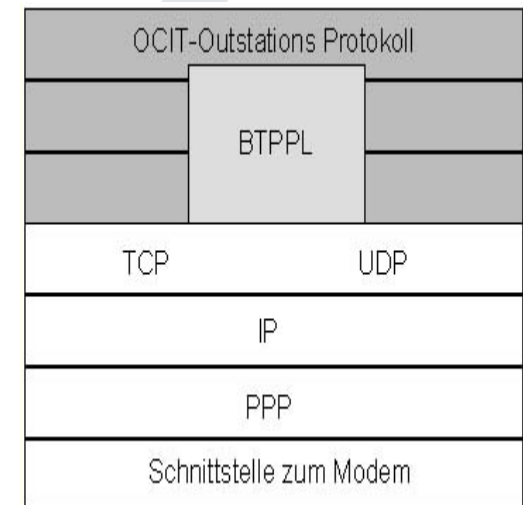
Links

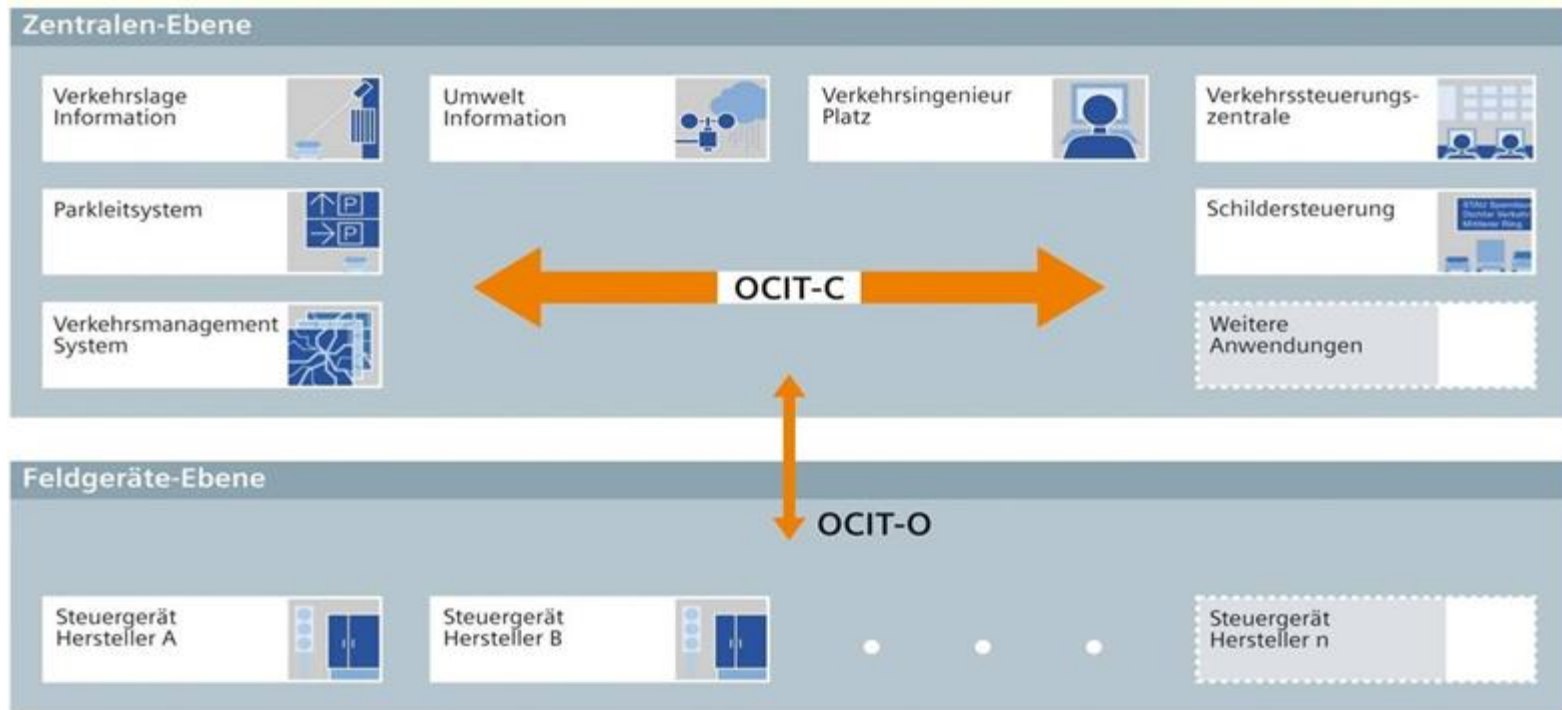
Kontakt



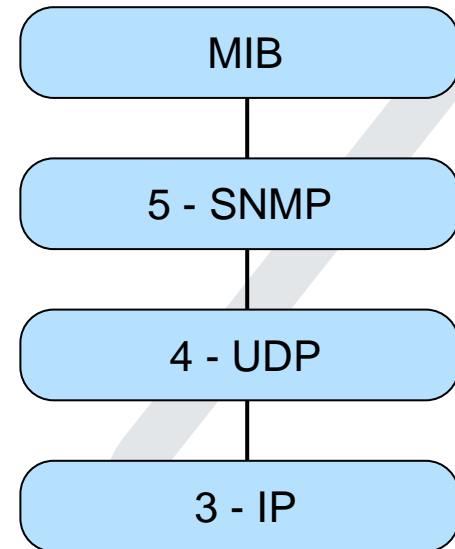
ODG - OCIT-Developer Group

- OCIT Developer Group:
 - Siemens, Swarco, Stührenberg, ATV Stoye
 - Swarco acquisition: Signalbau Huber and Dambach
- OCIT started 1999
- Covers C2F (OCIT-O) and C2C (OCIT-C)
- Based on TCP/UDP/IP but uses a proprietary BTPPT data level
- More info: www.ocit.org





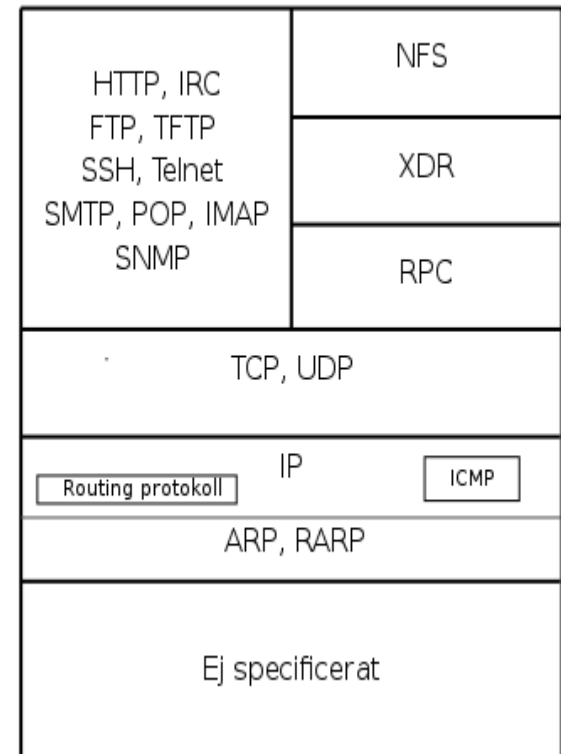
- STCIP is based on principals of NTCIP
 - Started in 2001
 - First installation Omnivue Oslo 2003
 - Published in 2003 opened for licensing.
- Using ISO/OSI layers model
 - Layers 3-5 defined
 - Layers 1-2 any (ethernet, dsl, gprs, fddi,...)
- MIB registered by IANA
- Native in new version of ITC-2
- Proxy to all other legacy controller
 - Full control to ELC-2/-3, EC-1, ITC-1/-2
 - Limited control to KLT5000, Siemens MR/MQ
- Fully supported by Omnivue and Omnia systems

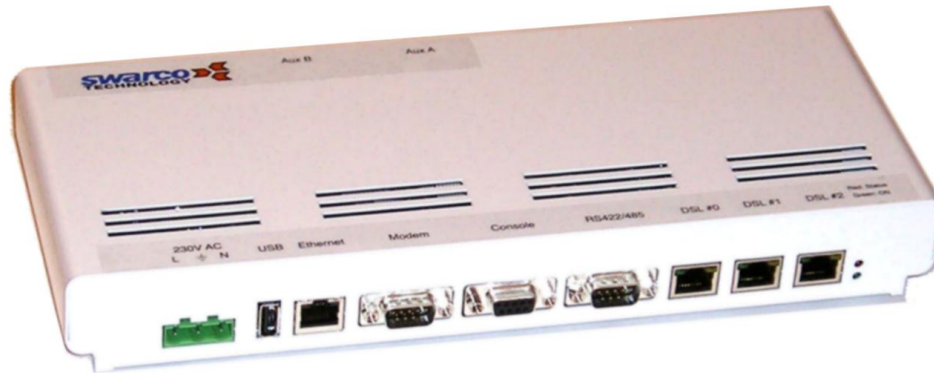


- Simple Network Management Protocol
 - World standard for management of devices in IP networks
 - Routers, switches, servers, modems, etc
 - Component of Internet Protocol Suite
 - Defined by the Internet Engineering Task Force
 - Used by all companies
 - Cisco, 3Com, Sun, Nokia, Ericsson, etc

- MIB (Management Information Base)
 - Defines data content
 - Data is organized hierarchically (stacked)
 - Object Identifiers (OID)
 - Can be any size
 - Products can be certified for a range of MIB's
 - Example: Defined for MIB's xxx + yyy + zzz

Internet protokollstack





- Linux based proxy router
 - Proxy to all ITC/ELC/EC-1 controllers
 - I/O interface to other types
 - RS232/RS485
 - Ethernet 10/100 Mbit/s
 - OSPF routing protocol
 - SNMP agent for network mgmt
 - Options:
 - 3x DSL-ports @2.3 Mbit/s
 - 3x Fiber (single/multi mode)
 - 3x Ethernet 10/100

Systems using STCIP



Omnia and Omnivue system use STCIP to connect to controllers. Present installations:

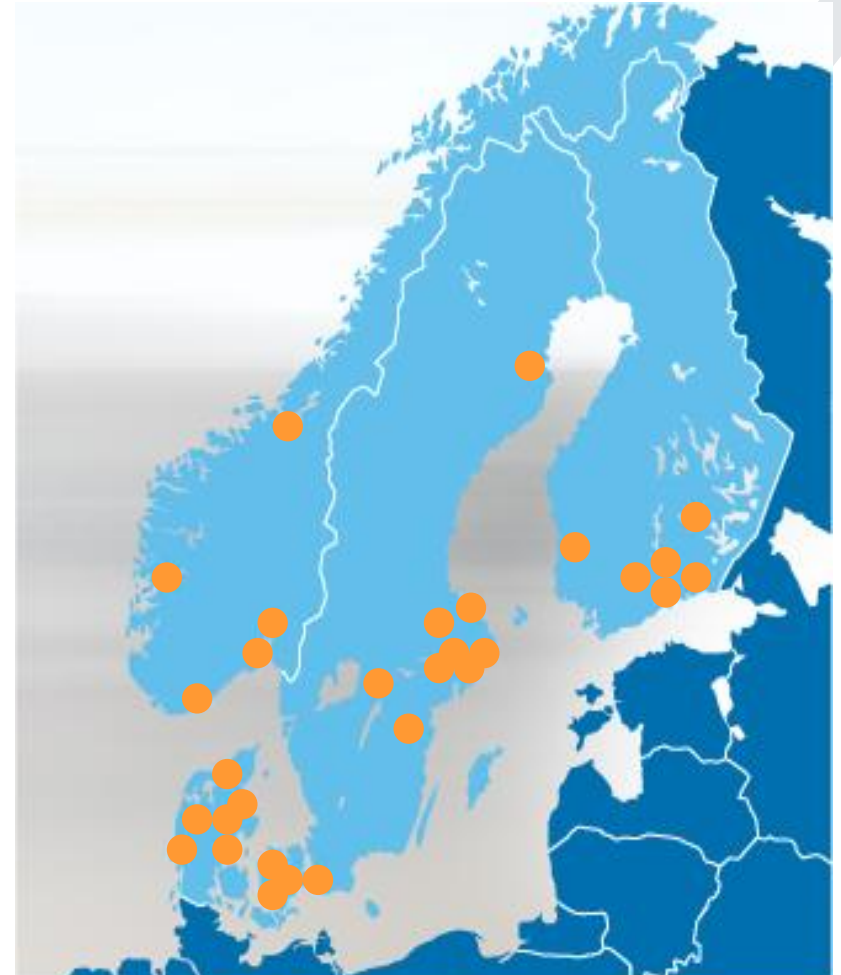
Sweden: Stockholm, Malmö, Skellefteå, Uppsala, Linköping, Örebro, Solna, TrV reg Sthlm, Norrtälje, Lidingö

Norway: Oslo, Trondheim, Bergen, Kristiansand, Buskerud

Denmark: Aalborg, Aarhus, Aabenraa, Esbjerg, Skive, Roskilde, Guldborgsund, Vejdirektoratet, Hillerød, Gentofte, Næstved

Finland: Helsinki, Keravaa, Porvoo, Pori, Varkaus, Hyvinkää, Järvenpää

In total 34 systems connecting about 2700 contr.



- Defined by Trafikverket
 - No influence by suppliers

- Using TCP/IP
 - XML-tagged objects
 - No standardized application layer
 - Similar to proprietary OCIT BTPPL

- No traffic control
 - Only simple monitoring

- Not compatible with anything
 - Only for new controllers
 - Requires web-servers
 - Not compatible with existing systems
 - New system required
 - New system not compatible with existing controllers

- First controllers available in late 2012
 - Fully implemented in 2030



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