FREQUENTIS – FOR A SAFER WORLD

Seamless digital radio communication

Possibilities to improve interoperability between multiple TETRA networks

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FREQUENTIS

→ Accessing Multiple Digital Radio Networks

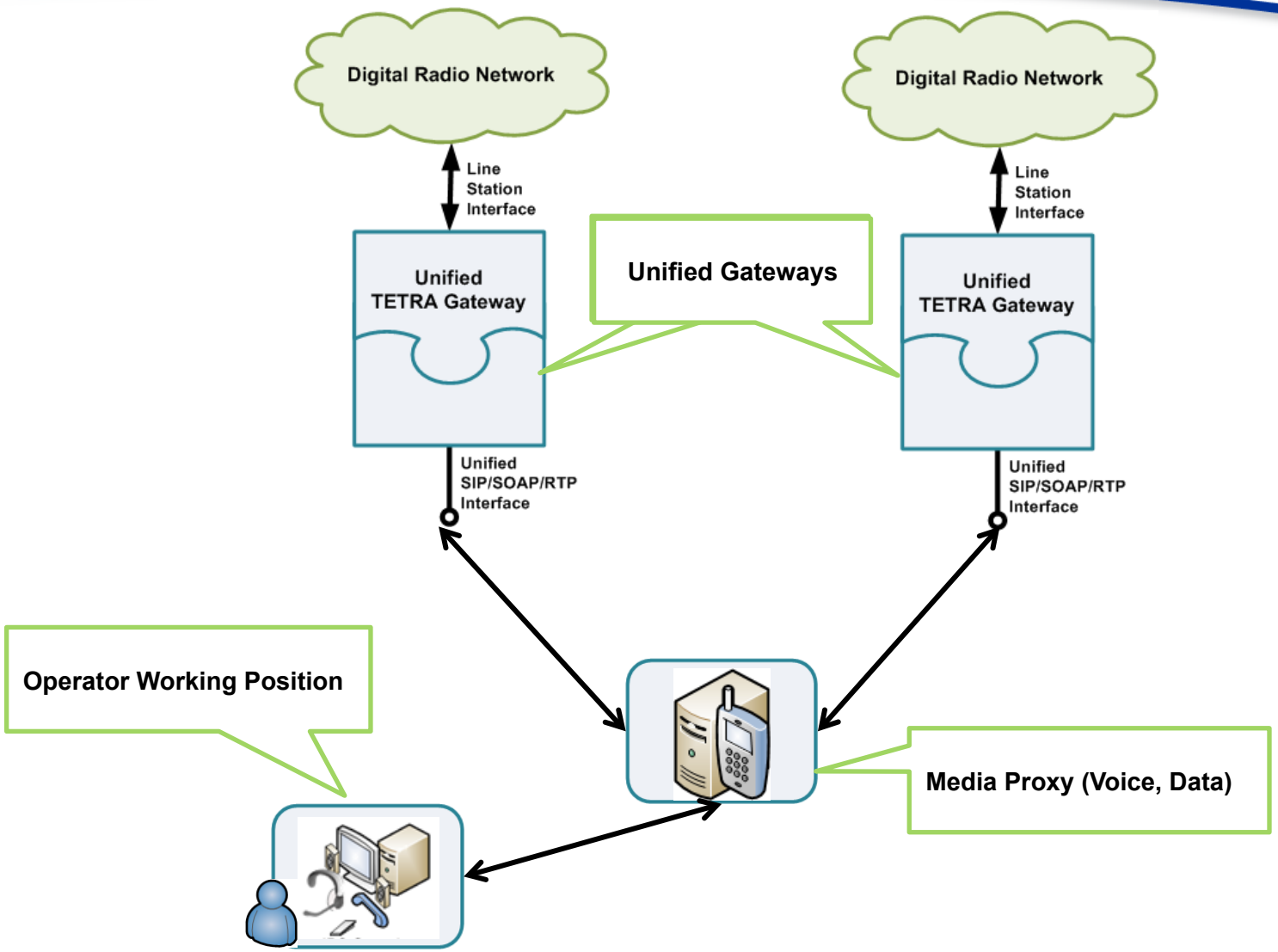
Situation

- → Several different digital radio networks are available for communication.
- → A dispatch center operator (control center operator) wants to talk to certain mobile radio users, no matter to which particular network they are subscribed to at a certain time.
- → Mobile radio users on different networks want to communicate with each other

→ Seamless digital radio communication

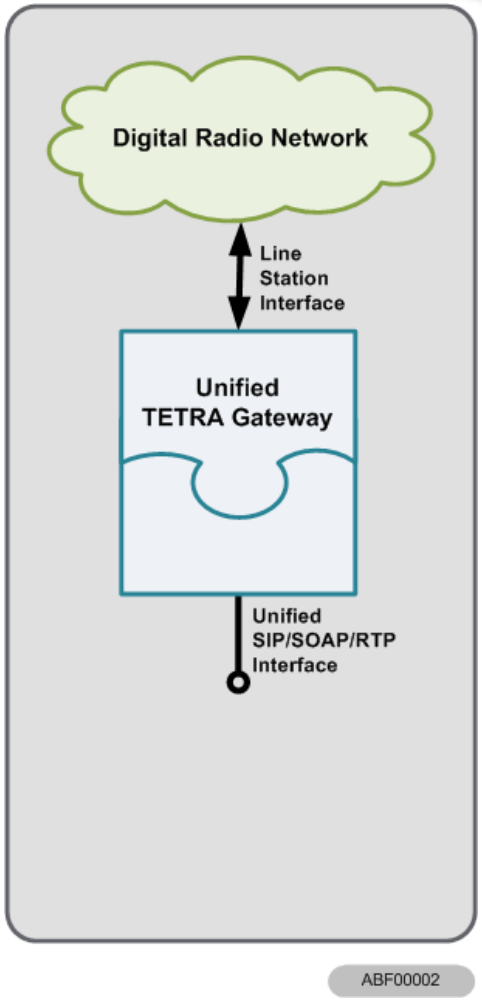
- → why? …in order to ensure most efficient and effective public safety operations
- → how? …by reducing or eliminating media disruptions
  - …allowing for interoperability between multiple TETRA networks
  - …allowing control centre operators to communicate with resources that are connected to different networks
- → what? …unified access and standardized technologies and protocols
  - …using unified access points and gateways that allow connecting the line station interface of digital radio network providers to a VoIP-based control-room environment
  - …by using state-of-the art technologies and protocols like SIP, SOAP and RTP

→ Schematic Overview



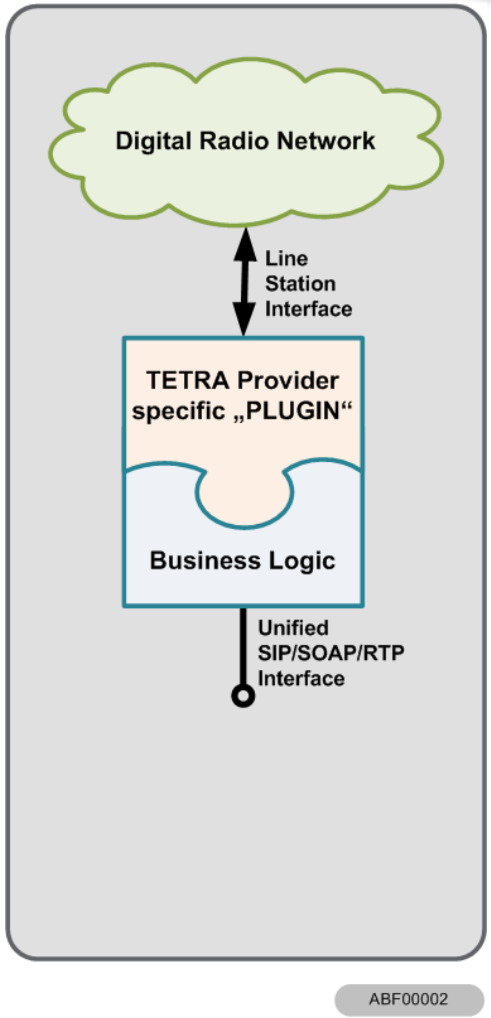
→ Unified TETRA Gateway (UTG): Basics

- → UTG converts the Line Station Interface Audio and Data into a common interface using SIP/ RTP for audio access and SOAP für data access.
- → Different clients may access the UTG simultaneously:
  - control room operator positions
  - remote operator positions
  - VoIP telephones (allows talkgroup monitoring)
  - recording devices
- → This common interface might be standardized in as an interface between all client suppliers and all TETRA gateway suppliers.

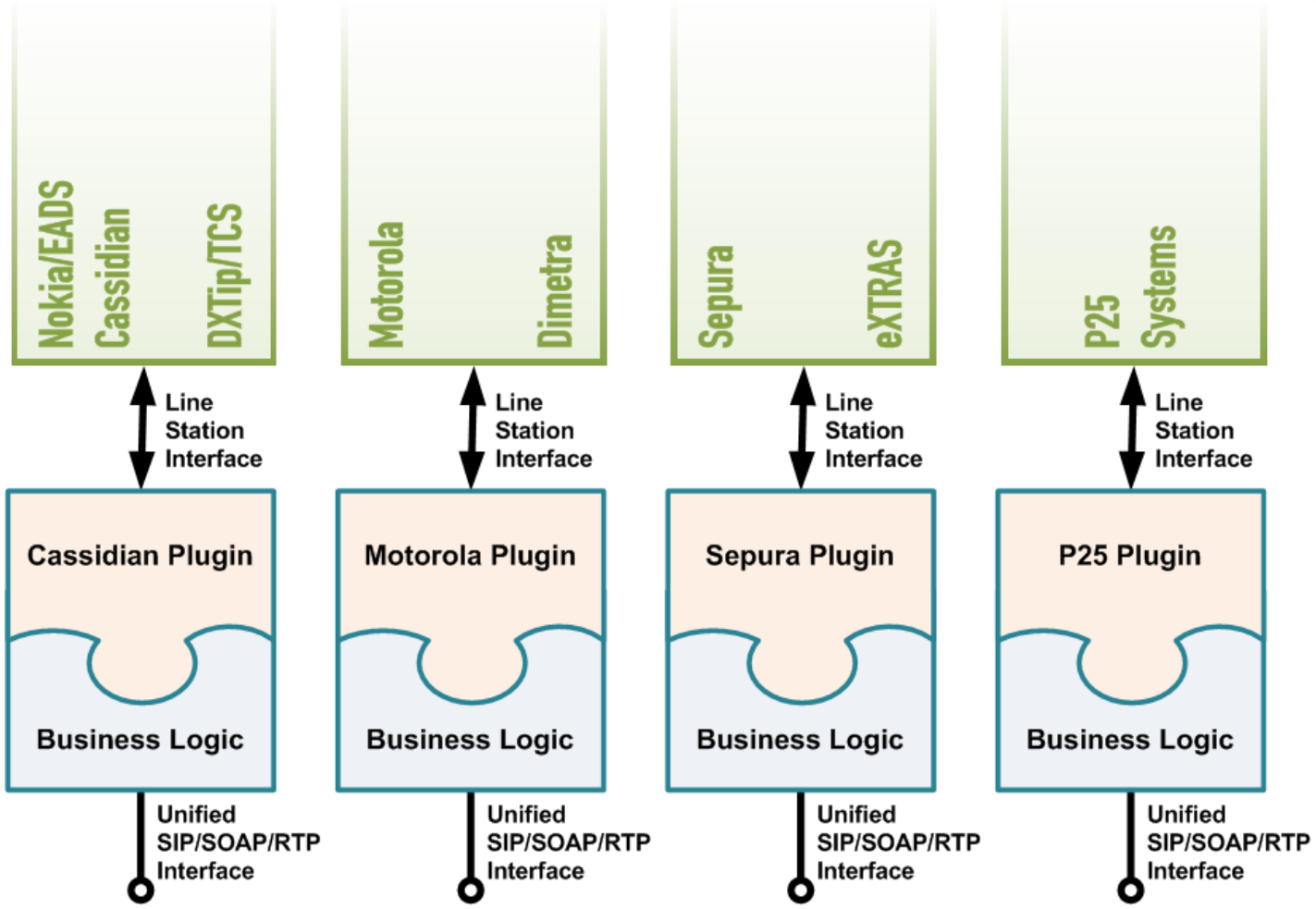


→ Unified TETRA Gateway: Architecture

- → Business logic software provides the common SIP/SOAP/RTP interface to connected clients.
- → A „plugin“ in the TETRA gateway adapts the line station interface of different digital radio network providers.
- → UTG clients do not have to know about the TETRA providers interface.
- → UTG features vary dependent on the connected TETRA system.

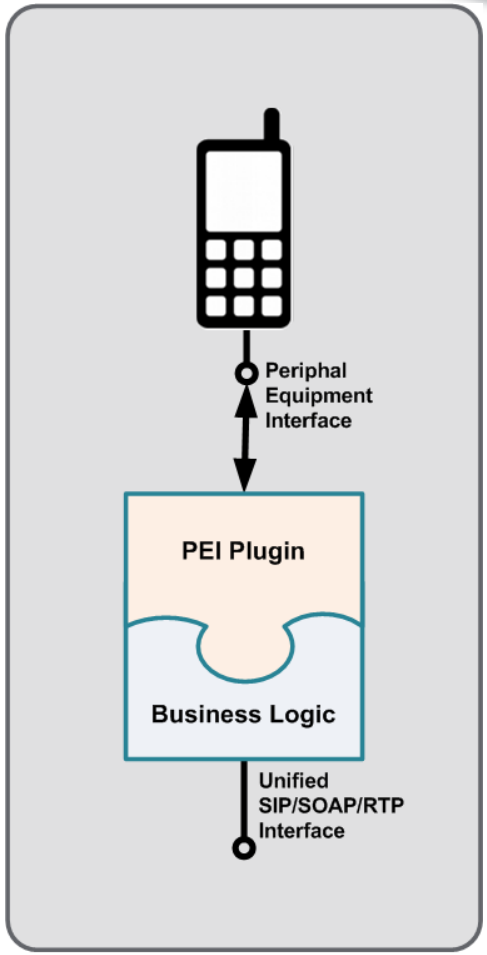


→ Unified TETRA Gateway: Plugins



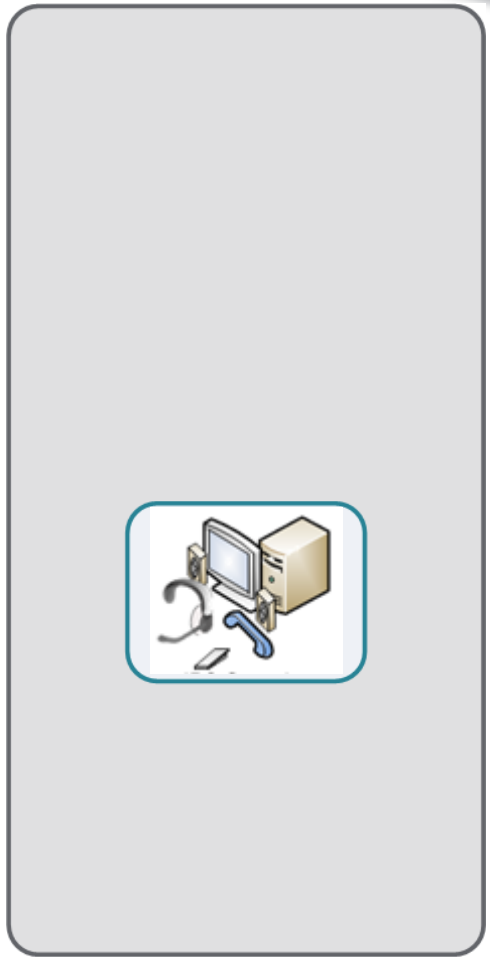
→ Special Case: Air Interface via PEI

- → UTG provides a „plugin“ for access to the PEI interface instead of the line station interface.
- → UTG clients use just the same access protocol.
- → UTG allows changing from PEI to LSI without changing the UTG clients.
  - back-up scenarios
  - upgrade scenarios
  - TETRA provider change



→ Operator Position (OP)

- → Public Safety operator positions access the UTG via a unified SIP/SOAP/RTP Interface to:
  - access talkgroups (talk and monitor)
  - make TETRA individual calls (private calls)
  - send and receive SDS messages
  - send and receive TETRA status messages
  - manage TETRA emergency calls
  - receive location information (vehicle or people)
  - control the cryptography status of a call
- → VoIP phones access the UTG via a unified SIP/ SOAP/RTP Interface to:
  - monitor talkgroups
  - make TETRA individual calls (private calls)
- → Recording Devices access the UTG via a unified SIP/SOAP/RTP Interface to:
  - record audio and assigned data (ISSI, GSSI,..)



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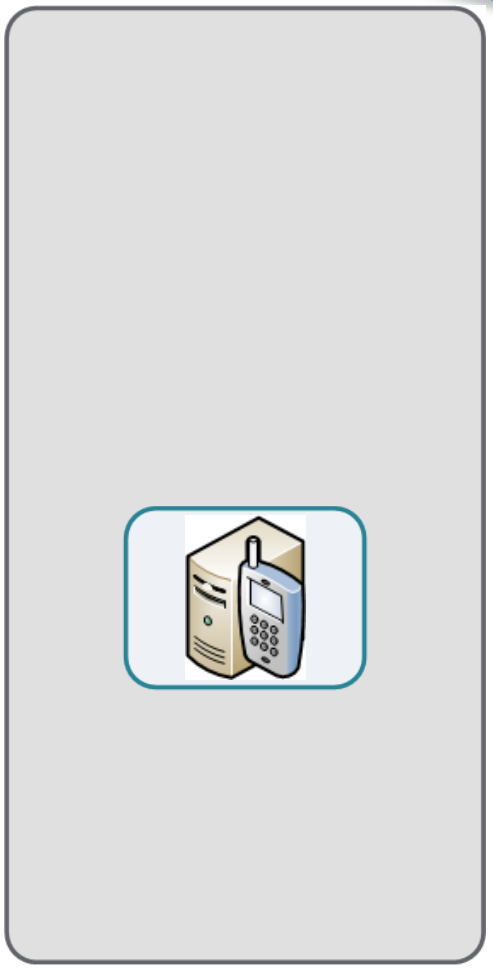
→ Media Proxy - Channel Rendezvous Point (CRP)

- → A component that allows conferencing of talkgroups.
- → Accesses the UTG via the unified SIP/RTP protocol
- → Clients control the CRP via SIP.

- → Merges incoming RTP audio from multiple talkgroups and sends one RTP stream to clients.
- → Distributes outgoing audio by sending multiple RTP streams to the UTGs (one per talkgroup).



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→ Accessing Multiple Digital Radio Networks

Situation and Requirements

- → Several different digital radio networks are available for communication.
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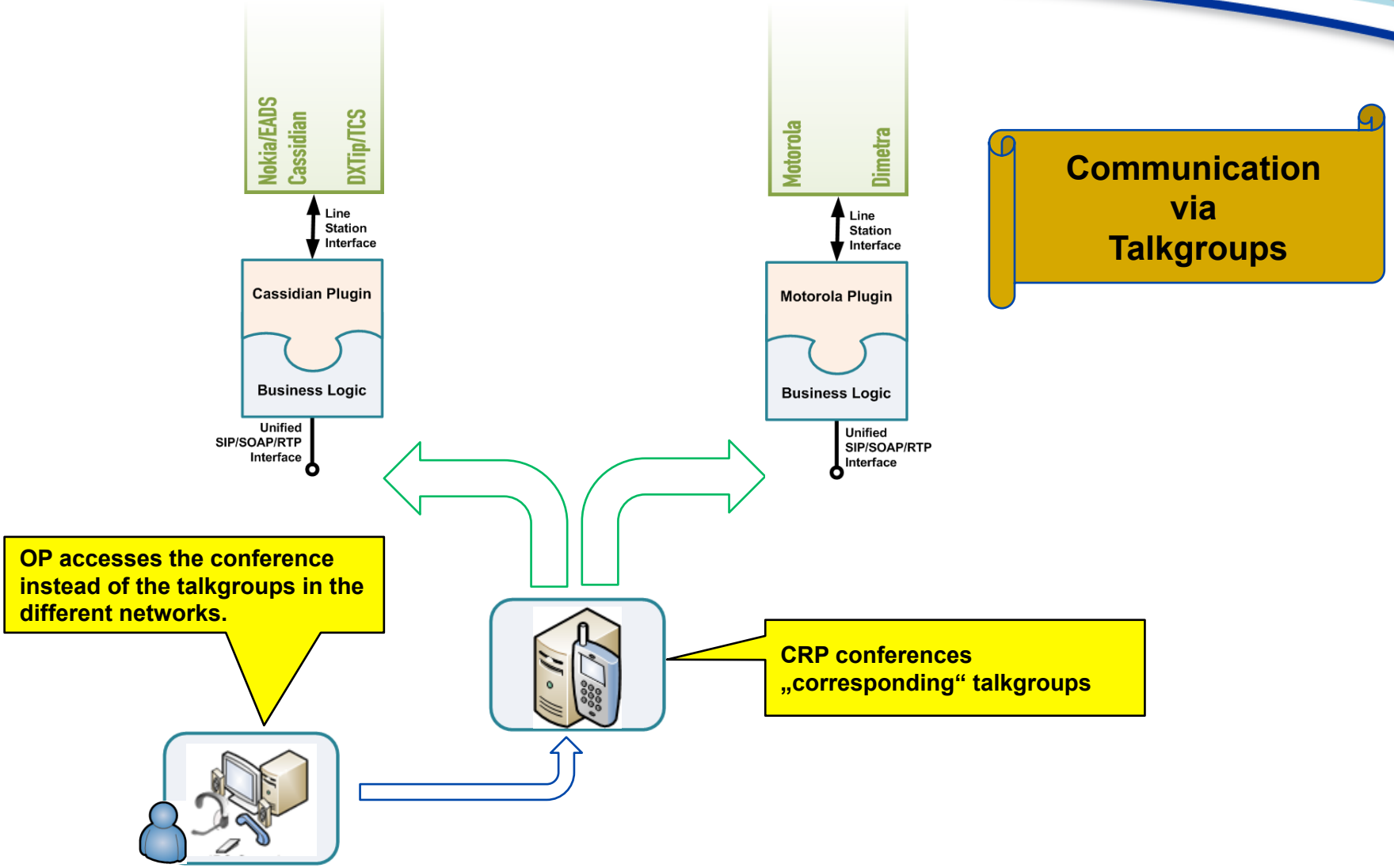
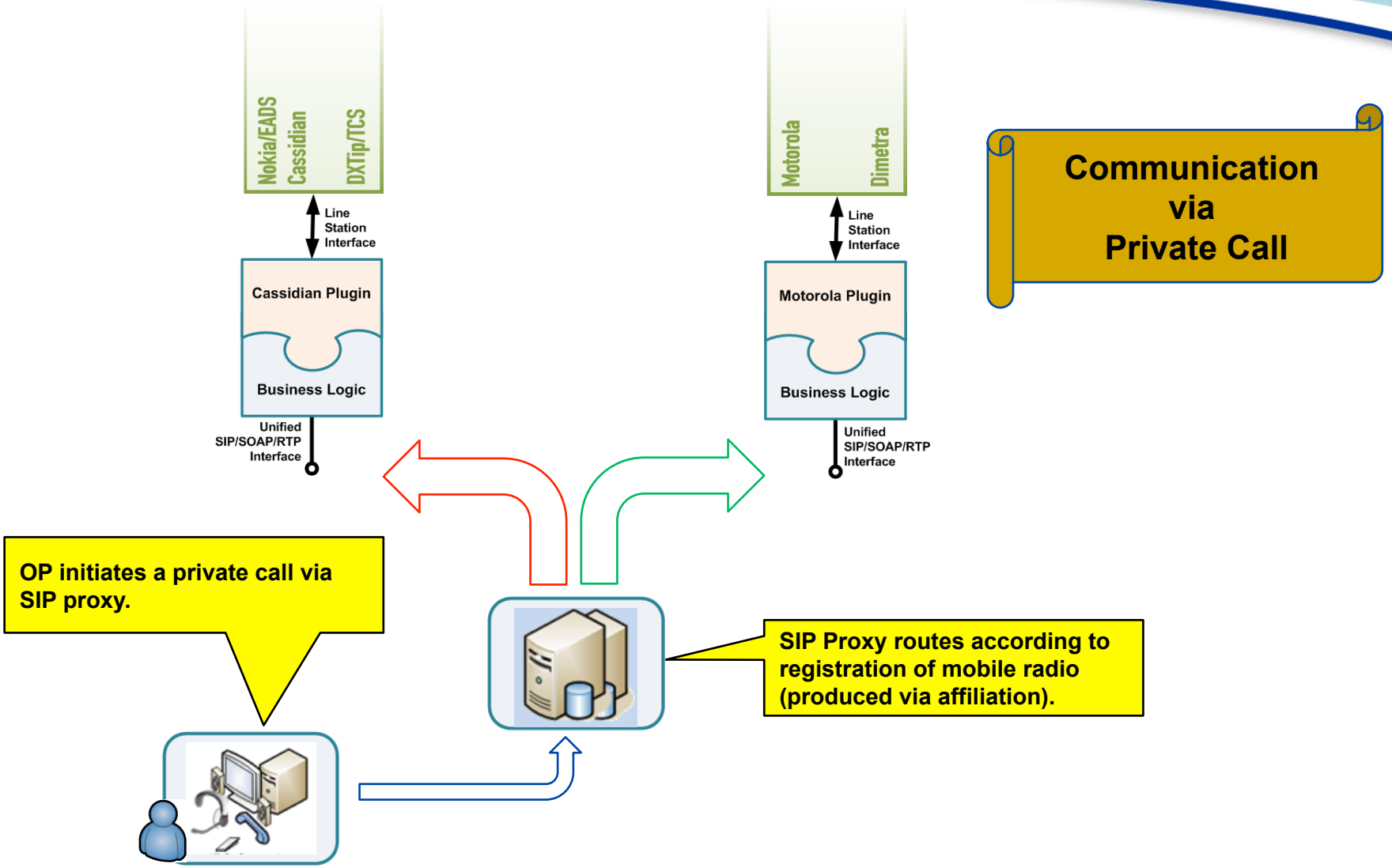
Pre-Conditions

- → Both radio networks allow a certain mobile radio to subscribe.
- → Operator has access rights to both radio networks.
- → For ease of use, a list of “corresponding” talkgroups can be provided to the system administrators.

→ Accessing Multiple Digital Radio Networks



→ Accessing Multiple Digital Radio Networks



→ Summary

- → Interoperability between multiple networks and systems is critical for seamless communication in a heterogeneous environment.
- → For a user perspecitve, access to and usage of different communications means must be as simple and straight forward as possible.
- → Any media disruptions must be avoided.
- → Systems implemented must focus on state-of-the art technologies and protocols which allows for proven and cost efficient solutions.

Contact

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