PRODUCT INFORMATION

Modern, pioneering voice communication in AVLC

Pioneering voice integration TASSTA

Further development in the field of voice and data communication is advancing rapidly. It is opening up chances for AVLC systems to implement new applications and thus modernise operational management. The aim is to fulfil future requirements in terms of availability, necessary bandwidth and also communication security in accordance with the ISO standard 27001. Alongside operational radio, the public mobile network is assuming ever greater significance.

With an eye to the future, there is a need for upgradeable systems that integrate new voice and data services. In the interests of sustainable further development of voice communication for the AVLC of tomorrow, ebblo has opted for collaboration with TASSTA.

TASSTA as partner for integrated voice radio

Integration of the VoIP system by TASSTA offers all ebblo customers the benefits of a modern, pioneering solution platform with great functional diversity.

TASSTA looks back on long-standing experience in operational voice communication and also collaborates closely with mobile radio providers. When it comes to AVLC and private railways, TASSTA will be collaborating exclusively with ebblo in future.

With TASSTA's solutions, ebblo can offer all customers a broad range of functionality and integration options for radio systems and subsystems. ebblo customers previously using a PA-R-I-Ty solution will find that TASSTA's VoIP system provides not just a follow-on solution but also an extended scope of functions.

Integrating TASSTA in LIO

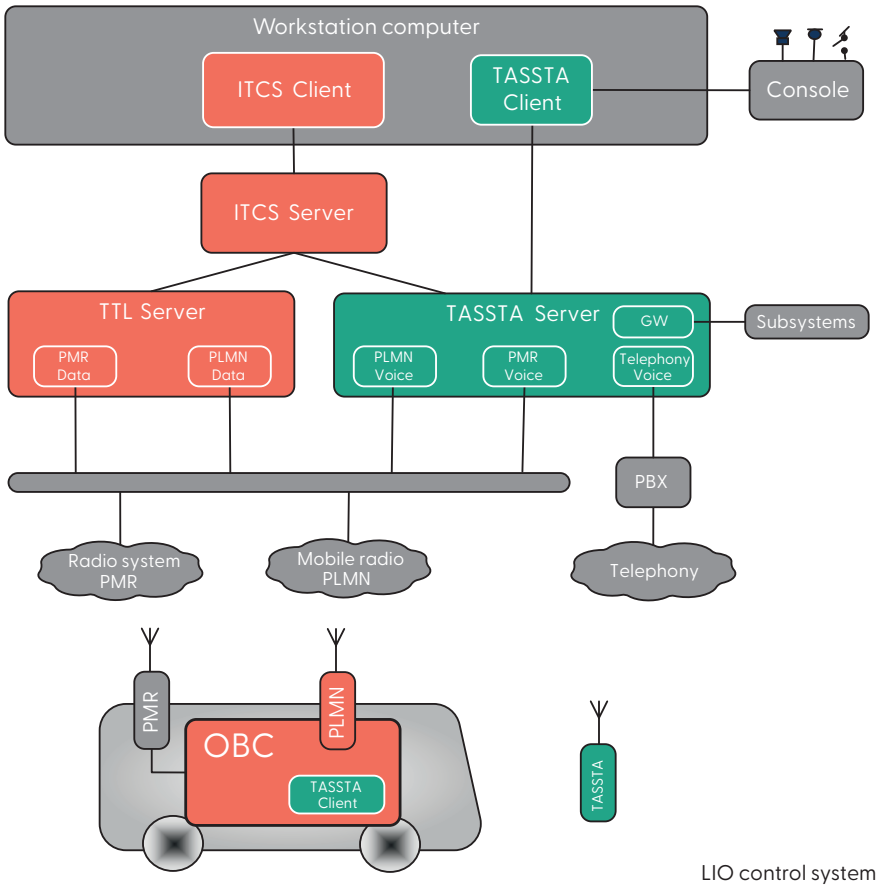
The TASSTA system is coupled to LIO in the same way as the existing PA-R-I-Ty system. When using the LIO user interfaces for voice communication, everything remains the same for the dispatcher. The TASSTA server offers the same functions at the interface to LIO so that users don't have to get used to new ways of doing things. They will find that the previous user interfaces in LIO continue to work with the same functionality as before.

A TASSTA client will be installed on the on-board computers for VoIP communication to the vehicles. This replaces the current PoC client for VoIP communication via PLMN or LAN/WAN.

The radio systems will be coupled to the TASSTA server for voice communication:

- PLMN for VoIP communication to vehicles and smartphones with the TASSTA client
- SIP gateway for coupling to telephone systems
- Analogue radio based on the existing QSoIP simulcast system
- TETRA gateway to TETRA systems (Airbus, Motorola, Hytera)

AVLC data communication using the TTL server with its interfaces to the radio systems remains unchanged. Customised subsystems will be coupled to the TASSTA server on a case-by-case basis (e.g. third-party voice recording systems).



LIO control system with TASSTA VoIP server

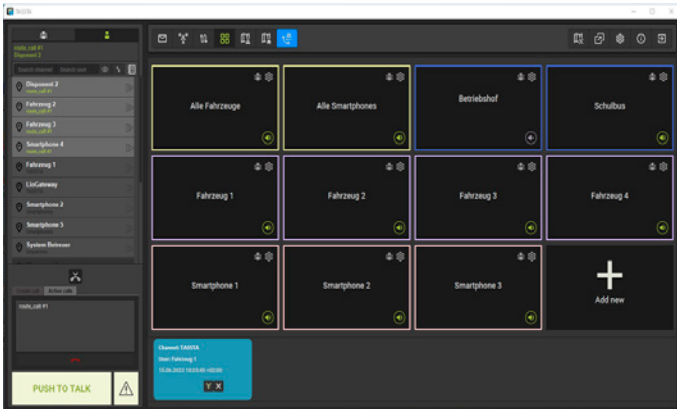
Operation from the AVLC
ebblo's LIO control system handles the voice radio commands to the vehicles and radio devices.

AVLC dialogues

Fallback level in the TASSTA client if the AVLC fails
Similar to the user interface of the PA-R-I-Ty server, the interface of the TASSTA server acts as voice fallback operation if the LIO server fails. If the LIO server fails, requests-to-talk, priority calls and emergency calls are visualised and signalised accordingly so that they can be dealt with in the same way.

The TASSTA system also offers many voice functions and services, thus providing continued support for all the usual functions of ebblo's control system.

The following diagram shows the TASSTA dispatcher user interface with the various areas:



TASSTA dispatcher user interface

- Visualisation of TASSTA users and groups
  - Search filter for individual subscribers and groups
  - Visualisation of the current calls
- Configurable user interfaces for direct connection of subscribers and fixed groups
  - Creating temporary groups of vehicles and smartphones
- Visualisation of requests-to-talk and priority calls when the LIO system fails

Supported voice functions to vehicles, smartphones and radio devices

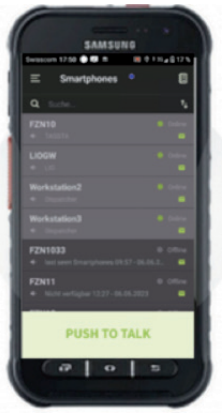
- Individual call to vehicles or smartphones
- Group call to fixed and dynamic groups (route/run, block)
- Call forwarding
- Listening in from other workstations or channels
- Call history with voice recording

Furthermore, the TASSTA system offers additional options such as:

- Map visualisation with geo zones for TASSTA users with TASSTA clients
- Voice recording with search filter
- Call queue with visualisation of concluded or missed requests-to-talk

Smartphones with TASSTA client

For communication by the road supervisors in the midst of actual traffic situations and in the depot, the TASSTA system offers smartphone apps with comprehensive functionality. They are an ideal supplement to operational communication in the AVLC for dealing with special situations such as major events.



Smartphone with TASSTA client

Audio voice radio consoles

For making it easy to handle voice radio at the workstation: Together with the TASSTA system, ebblo offers both USB audio consoles and also fanless IP audio touch consoles with programmable fixed buttons. The compatibility of other products must be clarified with ebblo.

USB audio console INTERCOM

Fanless IP touch console BeFREE22

TASSTA Advantages

Together with our partner TASSTA, we will be gradually replacing the existing VoIP systems used by transport operators. The TASSTA solutions offer numerous crucial advantages:

- Voice radio over PLMN offers improvements in push-to-talk communication with re-entry after interruptions.
- Support for end-to-end encryption of voice communication.
- The dialogues have search functions and additional voice functions of the TASSTA server.
- Possibility of configuring short-key buttons for direct calls from individual subscribers and groups.
- Many new possibilities are available when used with smartphones (messaging with the TASSTA client, task management, push-to-video with TASSTA smartphones, indoor location of smartphones, lone worker protection application).
- Secure data communication complying with the requirements of ISO standard 27001.
- New pioneering services are possible (MCX Mission Critical Communication standards, augmented reality functions).
- For dispatchers, everything stays the same on the LIO user interface.
- Existing functions in PA-R-I-Ty are supported with similar equivalent functions in TASSTA.
- Existing couplings to third-party subsystems can be replicated in TASSTA.

Availability

The TASSTA system is available from the first quarter 2025, initially for the following system configuration:

- LIO system with the following radio systems: PLMN, SIP telephone systems, QSoIP-based analogue radio
- Fusion-generation on-board computers: IDR-f, IDR-f2
- Acoustic DPI sign via PLMN: with Fusion DPI sign controller ISC

Other configurations will be announced step-by-step.

Information for ebblo customers with PA-R-I-Ty system

- The existing PA-R-I-Ty system will still be supported.
- PA-R-I-Ty will be replaced gradually and in consultation with the affected customers.
- Discontinuation for specific customer groups respectively for certain radio systems will take place at a later point in time.

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