Polish Tactical Data Exchange System

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Organization of Presentation

• Short characteristic of the system
• Construction and functionality remarks
• Concept of database replication
• Summary
Wide Area Network for Operational Data Exchange (WANODE)

- Integration of all communications media for automated data exchange (WCS, PSN, Combat Radio, SCRAS, MCRAS);
- Mobile nodes and subscriber equipment for full mobility;
- Automated management and maintenance;
- Internet services gateways (e-mail);
- Both packet & message switching;
- Security & access rights management;
- User identification;
- ADAT P-3 and combat formats according to STANAG 2014 for interoperability.
WANODE Automated Command Vehicle

10 BASE T ETHERNET

Digital trunks

Digital and analog subscribers

LK 24
WANODE Nodes

Communication Server (CS) main tasks:

- All media integration;
- Automated data sending & packet switching routines between subscribers;
- Access control, user authorisation;
- Subscriber addressing unification.

• All media integration;
• Automated data sending & packet switching routines between subscribers;
• Access control, user authorisation;
• Subscriber addressing unification.
Automated Work Posts connections to CS
WANODE Mobility
WANODE Clients - General Structure of Communications

- SCRA & MCRA Interface
- Data transmission
- Remote control of VHF PR4G radio

Irys 2000 - VHF PR4G

- Security functions
- WANODE protocol stack
- modem & LAN interface

Irys 2000 - Communication Interface

- Direct access to WANODE
- TCP/IP & UDP/IP for Ethernet & RAS connections

Irys 2000 - NP Server

- Data transmission
- Remote control of HF Harris radio

Irys 2000 - HF RF5200

- SCRA & MCRA Clients
- Data transmission
- Remote control of radio equipment

Irys 2000 Configurator

- DLL
- External software

- Service of Windows NT/2000
- User application

Client applic.
WANODE Clients - General Structure of DB Layer

- **WANODE**
  - Irys 2000 - NP Server
  - DB Replicator

- **DB**
- DB Server Process

- **Client application**

*ODBC or dedicated client interface*
WANODE Clients
Concept of DB replications
WANODE Clients
Concept of DB Replications

• Relation of DB replication is same as information relation between users’ (AWPs)
• The entity of data exchanged between AWPs corresponds to contracts agreed between them
• There are two kinds of contracts:
  - answering for each query
  - replication after each change of data of contract interest
• Data synchronisation depends on timestamps differences between data source and data contractor
• There is unique indication of data entries in scale of whole combat system
• Differential data exchange ensures sending only changes and not whole records of data
• There is possibility to work with local database in disconnection from WANODE
• There is possibility to connect an external database
• Included history of data changes gives possibility to analyse of combat operation progress
• Fully distributed structure of database system ensures reliability and efficiency
• The system has built in database compression and archive recording
WANODE Clients
Database Connections

Client application

External DB

Database of external DB structure

Identity control

WANODE interface

Delta module

Internal synchronisation

External synchronisation

DB REPLICATOR

History DB

Tx/Rx evidence DB

Contract DB

operational data

tables and fields indication, access data to external DB, alias parameters

time indication and operation type indication of each change in external DB

ACK control, priority management

events handling

information relations between AWPs storing