Bilag C: Systembeskrivelse

Markedsdialog, november 2026

Fortrolighed omkring udleverede oplysninger

FORTROLIGT BILAG

Dette bilag og samtlige oplysninger heri skal i deres helhed behandles som fortrolige.

Spørgsmål vedrørende fortrolighed kan rettes til:

etape2@odenseletbane.dk

1

Anvendelse

Bilaget stilles udelukkende til rådighed med henblik på leverandørernes deltagelse i Odense Letbanes igangværende markedsdialog vedrørende etape 2 herunder særligt besvarelse af de i Bilag A fremsendte spørgsmål. Oplysningerne i nærværende bilag må alene anvendes til dette formål og må ikke anvendes til andre formål uden Odense Letbanes forudgående skriftlige samtykke.

2

Videregivelse

Bilaget og dets indhold må ikke offentliggøres, distribueres, videregives eller på anden måde gøres tilgængeligt for uvedkommende tredjemand uden Odense Letbanes forudgående skriftlige samtykke.

3

Intern deling

Internt hos leverandøren må oplysningerne alene deles med medarbejdere og eventuelle tilknyttede rådgivere, som har et sagligt behov for adgang til oplysningerne i forbindelse med markedsdialogen. Leverandøren er ansvarlig for at sikre, at disse personer er bekendt med og overholder fortrolighedsforpligtelsen.

4

Beskyttelse

Leverandøren skal træffe passende foranstaltninger til at beskytte bilaget og dets indhold mod uautoriseret adgang, anvendelse og videregivelse.

5

Varighed

Fortrolighedsforpligtelsen gælder også efter markedsdialogens afslutning, medmindre Odense Letbane skriftligt meddeler andet, eller oplysningerne lovligt bliver offentligt tilgængelige uden tilsidesættelse af fortrolighedsforpligtelsen.

Bilag C – Systembeskrivelse

BILAG C
Formål

Bilag C beskriver systemerne i Odense Letbanes E1 og de mulige scenarier for E2-systemerne.

Bilaget viser E1-systemernes afgrænsning og grænseflader på overordnet niveau og på mellemniveau samt forklarer de anvendte forkortelser.

E2-scenarierne beskriver, om E2-systemerne er de samme som E1-systemerne, delvist de samme eller helt nye, og hvilke fordele og ulemper hvert scenarie vurderes at have.

Bilaget indeholder desuden en introduktion til Odense Letbanes operationelle landskab og indledende kompatibilitetskrav til de nye tog.

Bilagets tekniske indhold er på engelsk.

BILAGET INDEHOLDER

1 **E1 Areas** — Side 4
E1 TS scope of supply: OCC, Infrastructure og On-board.

2 **E1 Systems' (high-level) interfaces overview** — Side 5
Overordnet overblik over E1-systemernes grænseflader.

3 **E1 Systems' and E2** — Side 6
E1- og E2-systemerne på tværs af niveauerne.

4 **E1 Systems' (mid-level) interfaces overview** — Side 7-8
E1-systemernes grænseflader på mellemniveau.

5 **Abbreviations** — Side 9
Forkortelser og betegnelser brugt i bilaget.

6 **E1 Systems' and E2 scenarios** — Side 10
Tre scenarier for E2-systemerne med fordele og ulemper.

7 **Introduction to the operational landscape of Odense Letbane** — Side 11
Introduktion til Odense Letbanes operationelle landskab.

8 **Initial compatibility requirements for the new Trains** — Side 12
Indledende kompatibilitetskrav til de nye tog.

E1 Areas

E1
TS scope of supply

OCC

CMC

Infrastructure

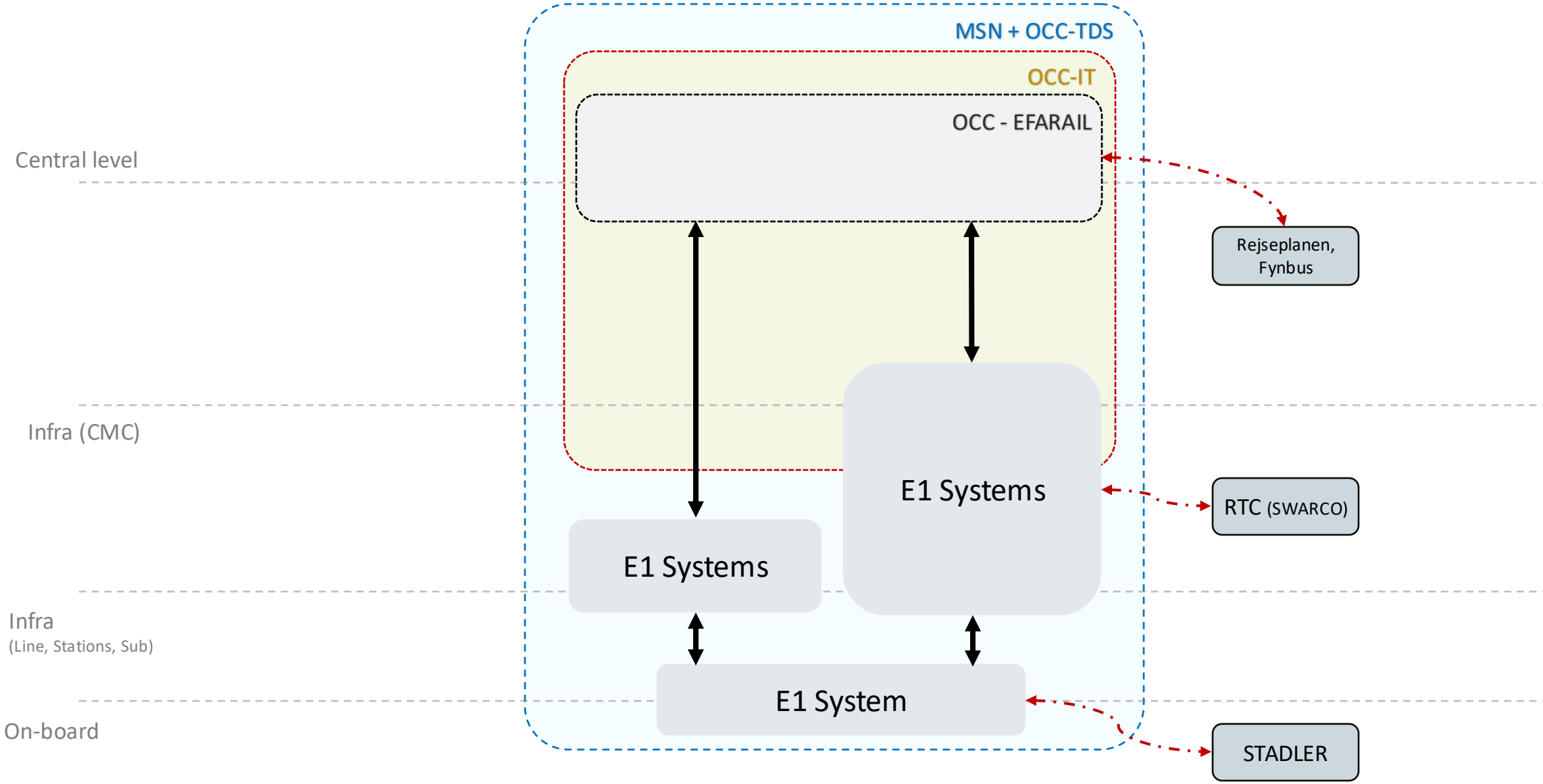
CMC

Mainline
(Line, Stations and Substations)

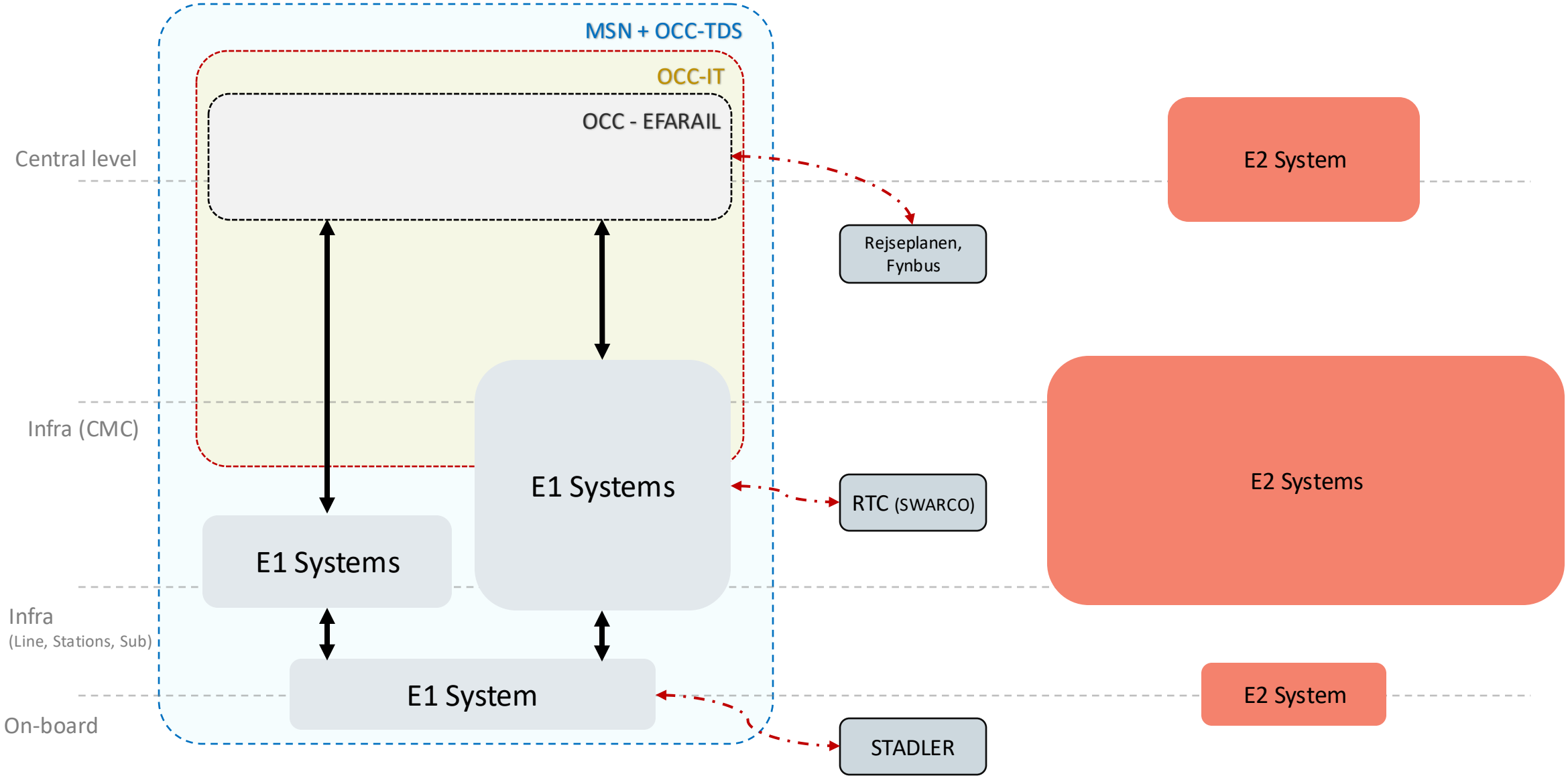
On-board

Trams

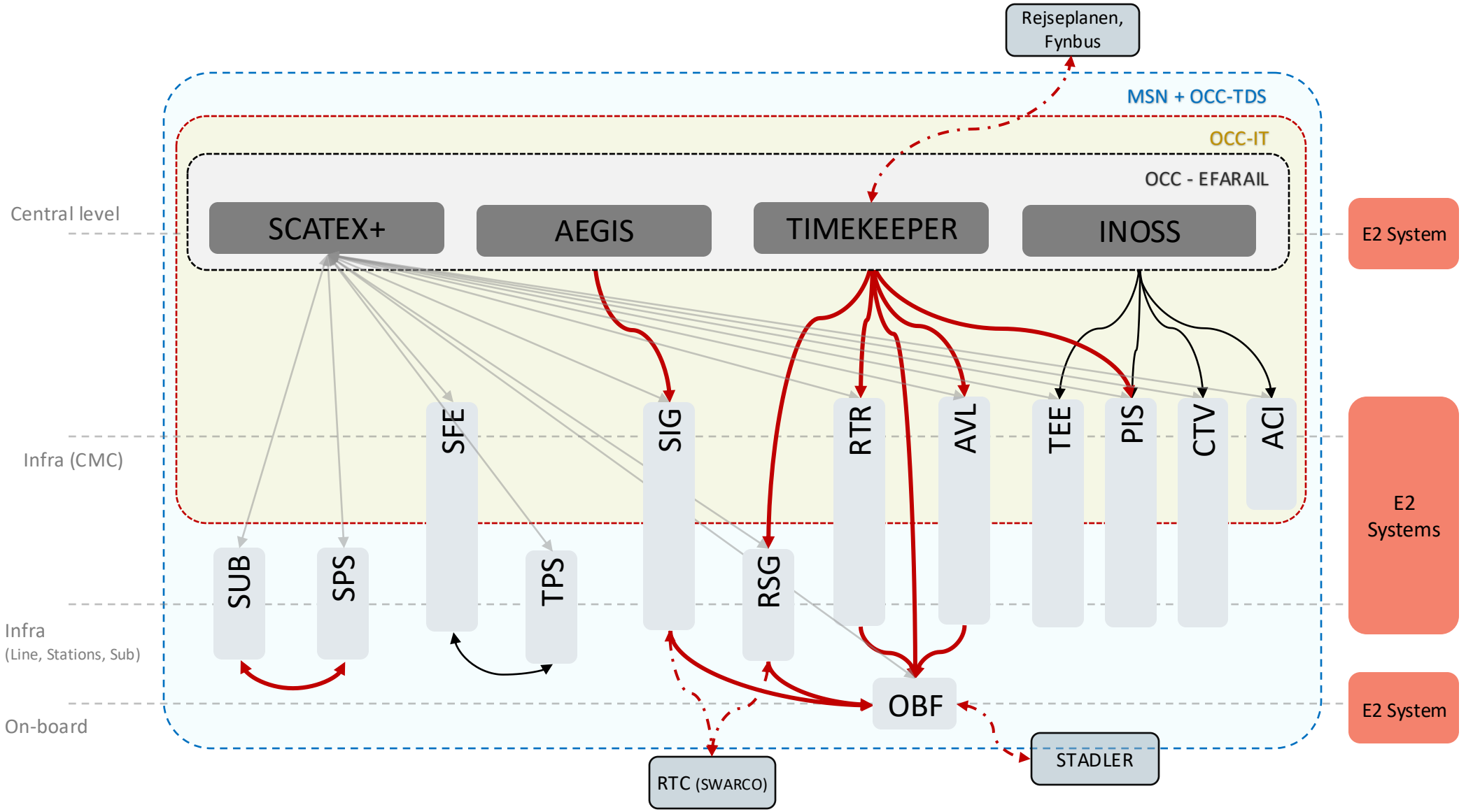
E1 Systems' (high-level) interfaces overview



E1 Systems' and E2

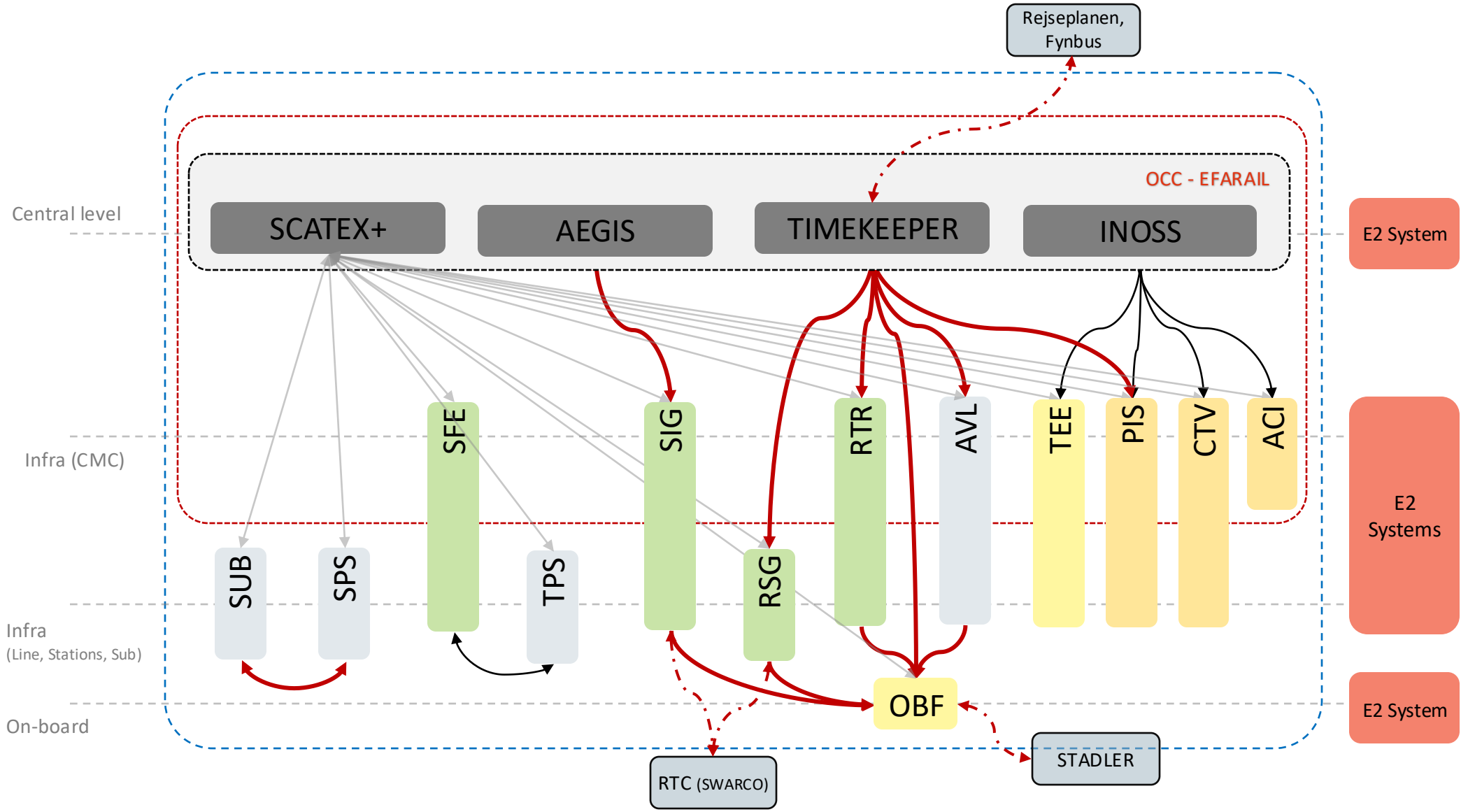


E1 Systems' (mid-level) interfaces overview



E1 Systems' (mid-level) interfaces overview

MSN | OCC-IT | OCC-TDS



Abbreviations

SYSTEMS	
ACI	Access Control System (CMC)
AVL	Automatic Vehicle Location System
CTV	Closed-Circuit TV
MSN	Multi Service Network
OCC	Operational Control Center (EFARAIL)
OBF	On-board Infrastructure (TS Supply)
PIS	Public Information System
RSG	Road Crossing Signalling
RTC	Road Traffic Controller (Odense Kommune - SWARCO)

SYSTEMS (CONTINUED)	
RTR	Radio TETRA
SFE	SCADA Fixed Equipment
SIG	Rail Interlocking Signalling
SPS	SCADA Power Supply
SUB	Substations
TDS	Time Distribution System
TEE	Telephone and Emergency System
TPS	Power Supply at Stations

EFACEC	
EFARAIL	EFACEC's Unified Platform
SCATEX+	EFACEC's SCADA
AEGIS	EFACEC's Signalling/Interlocking
TIMEKEEPER	EFACEC's AVL
INOSS	EFACEC's Complementary

E1 Systems' and E2 scenarios

SCENARIO #1
E2 systems the same as E1 Systems (continuation)

ADVANTAGES
- Adding more elements
- Less integration/migration needed
- Similar operational process
- Known systems / performance

DISADVANTAGES
- Dependence on one supplier
- Less opportunity for New Systems

SCENARIO #2
Some E2 systems the same as E1 Systems, and others new E2 systems

ADVANTAGES
- Keeping some existing interfaces
- Untied to a unique supplier

DISADVANTAGES
- Integrate new systems to existing infra
- More interfaces to manage
- Changes to current operation mode
- Potential impact on operation
- Medium integration needed
- Decommission existing systems

SCENARIO #3
All E2 systems are new (≠ E1)

ADVANTAGES
- Potential upgrade of technology

DISADVANTAGES
- More integration/migration needed
- Dependence on one supplier
- Change to operational mode
- New Systems (to know)
- Impact on operation

Introduction to the operational landscape of Odense Letbane



1

Network and potential services

The current network is the line from Hjallese via Korsløkke and Vesterbro to Tarup Center operated by line L1. With the extension of the network with the new infrastructure to Seden and Sukkerkogeriet, new lines can be implemented:
L2: Seden – Korsløkke – Vesterbro – Sukkerkogeriet
L3: Seden – Korsløkke – Hjallese
L1X; An additional peak hour service on the central part of the network from Parkering Syd via Korsløkke to Odense Banegård Center.
The exact timetable and operational concept is not decided yet. Expected planned headway is 3 minutes in the central part from Vesterbro to Korsløkke.

2

Maintenance

All trains are maintained at the workshop at Parkering Syd (two stops from Hjallese) that is also housing the OCC. Maintenance of the new Trains is under investigation in terms of workshop capacity and set-up. The current workshop is equipped with one track for the reprofiling of the wheels on the trains, two tracks with pits and roof access, and one track for lifting (no pit).
In general, there are two scenarios being investigated:
Rebuilding the existing workshop: Prolonging the existing tracks to facilitate existing fleet and the New Trains, adding one or two tracks with pit and roof access, and adding one additional track for lifting of the new Trains. Additional space for spare parts stock and workshop staff will be provided as well
Building a new workshop dedicated to the new Trains.

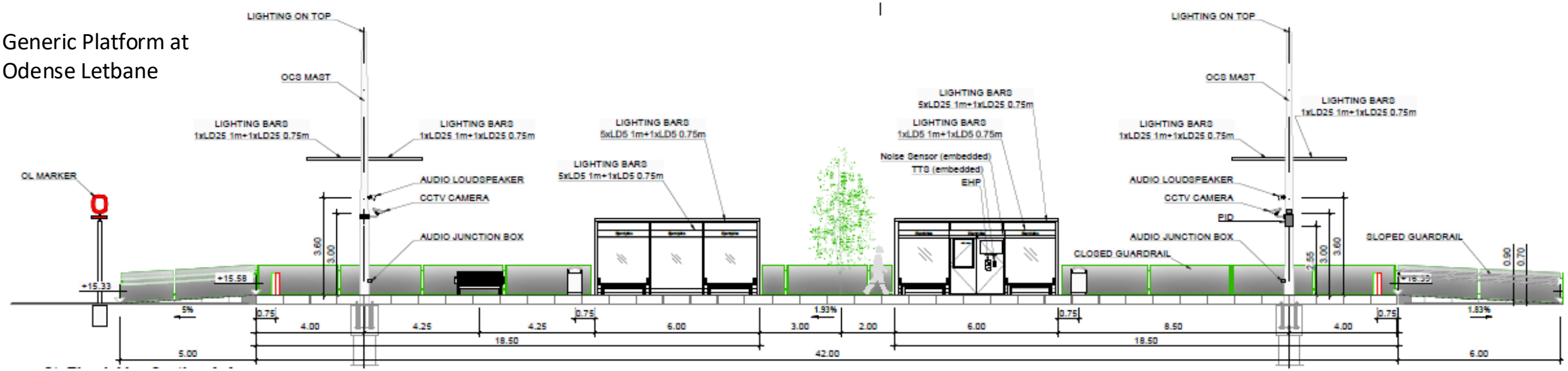
3

Maintainer

Maintenance is currently performed by the operator Keolis, who has subcontracted with Stadler Rail Service. It can be assumed that Odense Letbane will ensure that Stadler Rail Service will not get access to Trains or critical documentation from other suppliers.

Initial compatibility requirements for the new Trains

Generic Platform at
Odense Letbane



New Trains

- Length optimized for platform length of 42 meters
- Width 2.650 mm
- Level free access from platforms of 300 mm above TOR
- 70 km/h
- Annual mileage up to 100.000 km in average
- Lifetime 30 years

Infrastructure

- Track gauge: 1.435 mm
- Voltage 750 V DC (Peaks of 1.000 V DC)
- Minimum curve radius 25 meter (depot) 27 meter in operation
- Vertical climb 40‰
- Operations on sight – with prioritization of signals at intersections