



ERTMS

Laget av: JCS 14.2.2016

Hva er ERTMS

ERTMS består av:

- ETCS (den tekniske plattformen for trafikkstyring)
- Jernbanens eget mobilnett GSM-R (nivå 2 og nivå 3)

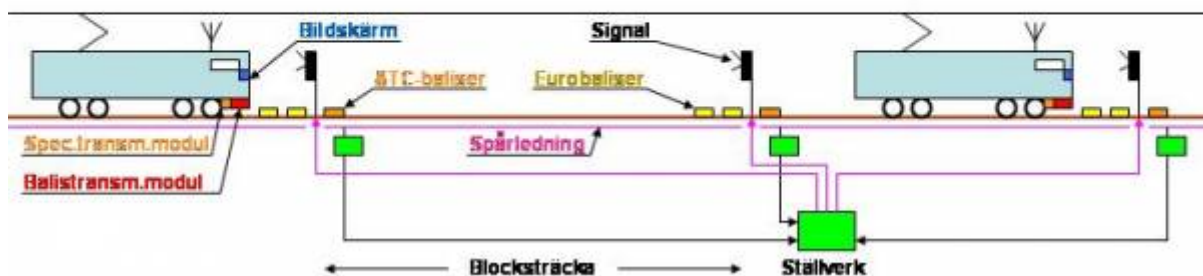
ERTMS - nivå 1

ERTMS

Nivå 1 – Hopbyggnad med tidligere sikkerhetssystem

- Spårledninger registrerer tåg (hinder)
- Stållverket sender lysaspekter til signalema
- Stållverket sender hastighetsprofiler til ATC-baliserna
- Tåget læser av posisjonen ved passage av Eurobaliser
- Tåget læser av hastighetsprofilen fra ATC-baliserna.
- Føreren får signaler om hastighetsendringer på skermen

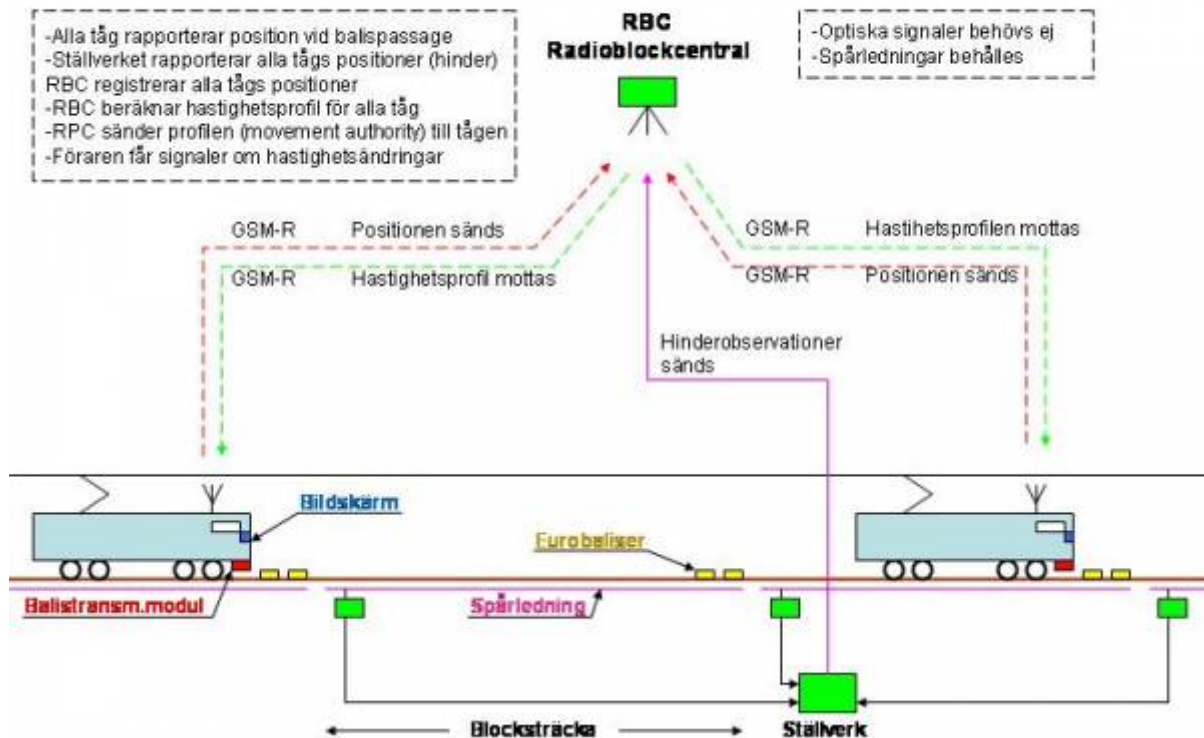
- Optiske signaler behåles
- Spårledninger behåles
- ATC-baliserna behåles
- Speciell transmissionsmodul (ATC) på tåget



ERTMS - nivå 2

ERTMS

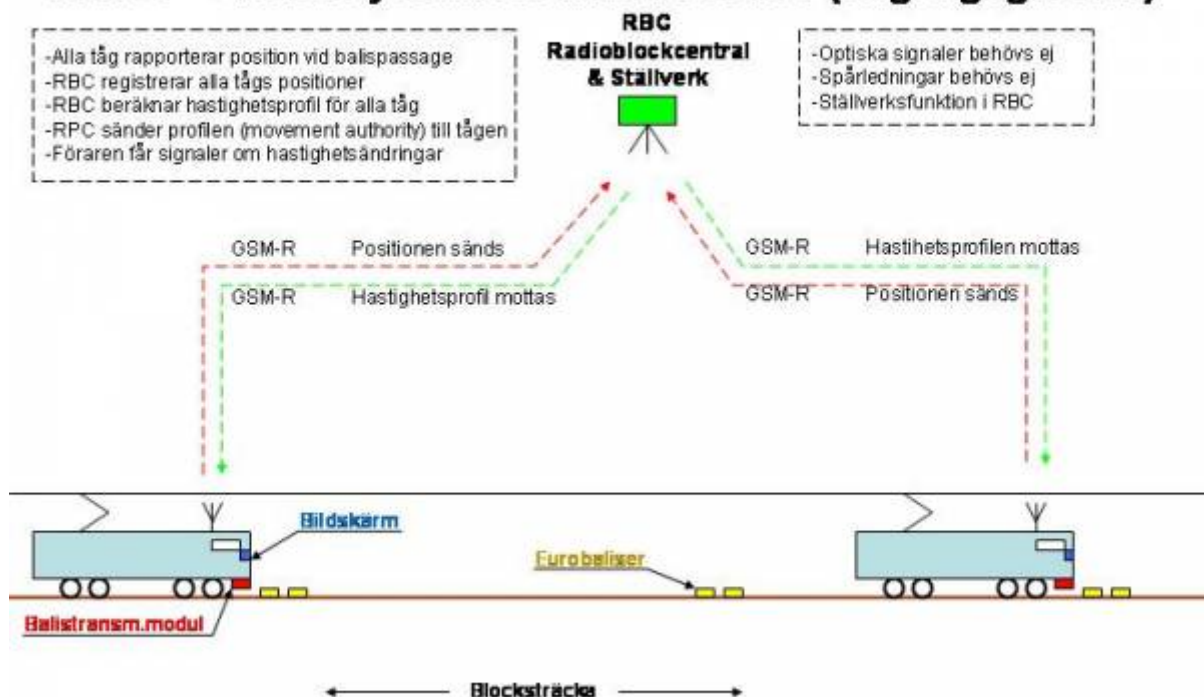
Nivå 2 – Signaler och ATC ersätts av Radioblockcentral



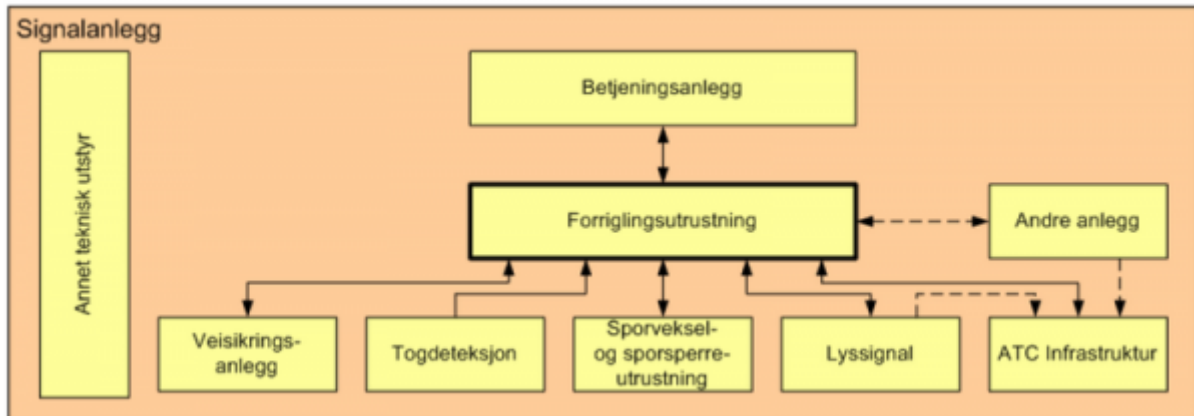
ERTMS - nivå 3

ERTMS

Nivå 3 – Enkelt system för mindre banor (tillgängligt 201x)



Systemoversikt



ERTMS i Norge

- [Nasjonal implementeringsplan](#)

ERTMS i Sverige

- [Sveriges införandeplan](#)

ERTMS i Danmark

- [Dansk utrullingsplan](#)
- [EU-krav tvinger 20 år gammel teknologi inn i danske tog](#)
- [Nye togsignaler er ikke testet](#)
- [Forsinket signalprogram forhindrer hastighetsoppgradering av jernbanen](#)

Åpne kildekodeprosjekter i EU

- [openECTS](#)
- [openRBC](#)

Utvikling av spesifikasjoner

- [ERA](#)

Kompetanse i JBV vedr. ERTMS

- [Kompetansedokument vedr. ERTMS](#)

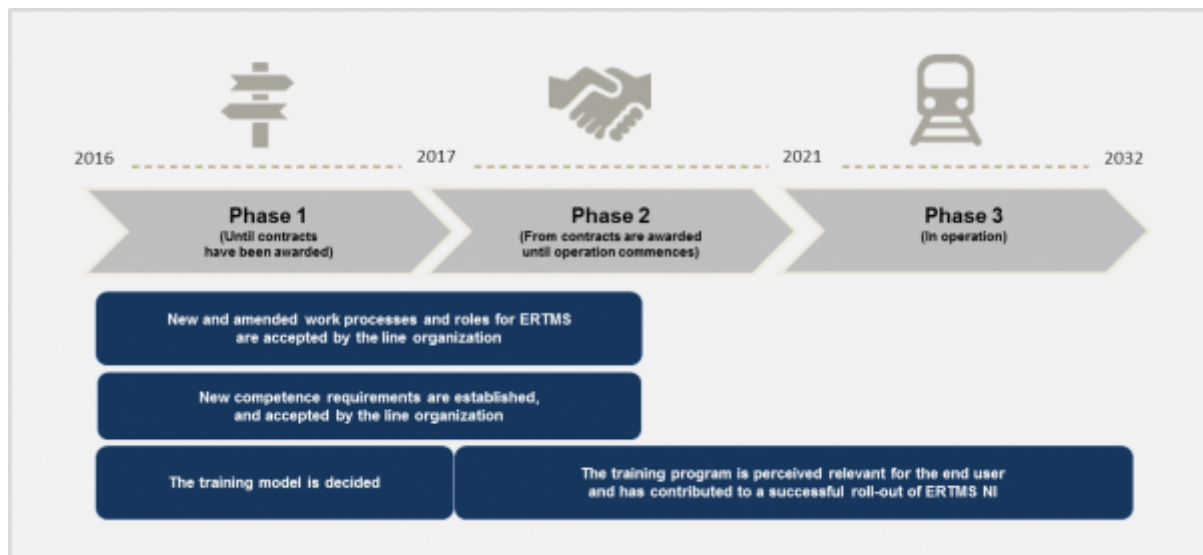
Background and purpose

The introduction of ERTMS in Norway will have a large impact on the organisation and competence needs within Jernbaneverket. It is estimated that approximately 3000 employees will require training in order for the organisation to achieve a successful implementation of the new signalling system.

Scope and dependencies



Efficacy objectives



Key performance indicators

	Process and roles	Competence requirements	Training
KPI	New and amended processes are described <i>(measured through the number of described processes vs total)</i> New and amended roles are described <i>(measured through the number of described roles vs total)</i>	Competence requirements are clearly defined per process and role <i>(measured through the number of roles with defined competence requirements, against the number of roles for ERTMS)</i>	Return on investment with regards to the project plan and perceived relevance for training for each role <i>(measured in the form of delays in operation as a result of training and evaluation forms after each training course)</i> The number of end users per line who have completed training <i>(measured according to a predefined target)</i> The cost of training for each role <i>(time/resources, measured against current situation)</i>