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Radio Tele-switching Arrangements

Keavy Larkin
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Introduction

The Radio Tele-switching System (RTS) was introduced in the early 80's by the Central Electricity Generating Board

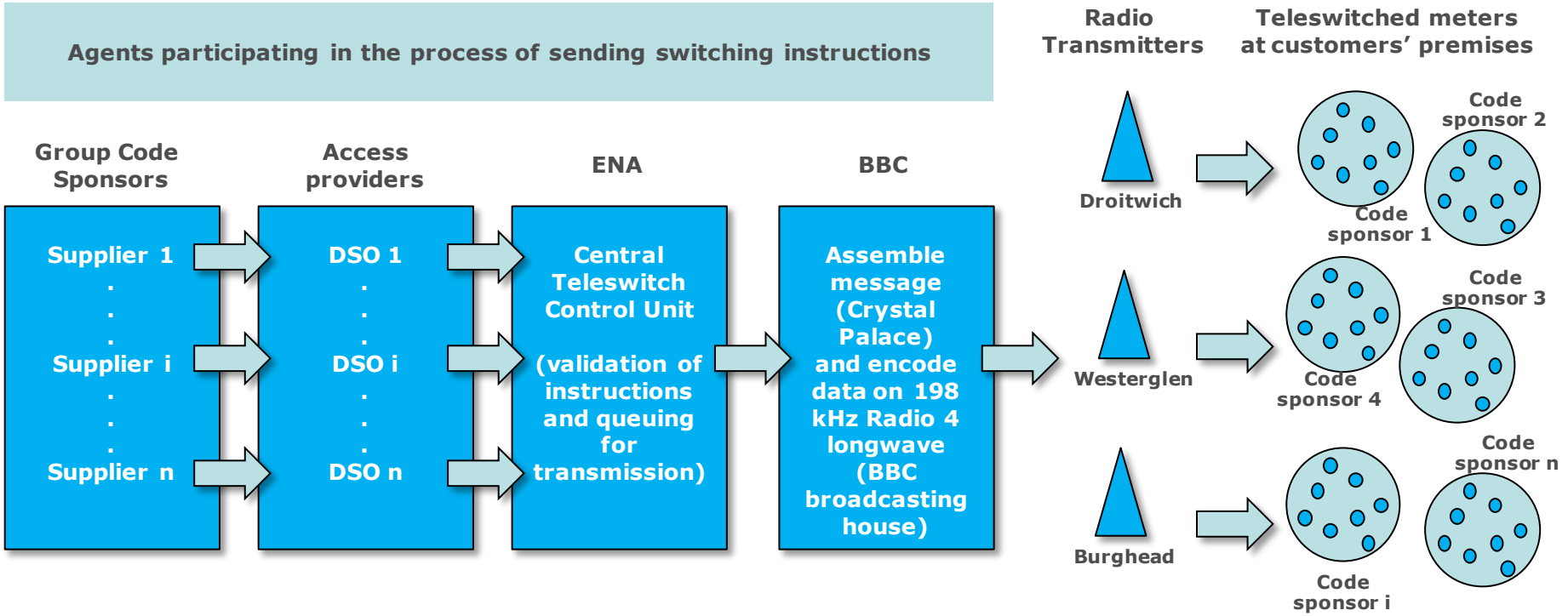
Uses BBC's long wave Radio 4 service infrastructure through which tele-switched meters receive signals that allow for remote load control.

Introduction was prompted by the need for a load management tool to tackle growing night-time demand

<u>Challenge was to develop :</u>

- Cost efficient system for flexible control of electric heating load
- Ability to spread it over different periods through the day
- Allow the application of dynamic time of use tariffs

Working arrangements



Working arrangements (extra slide)

1. Suppliers (typically PES)– determine the switching time for pre-established groups of meters (teleswitches installed at consumer premises). Radio teleswitches with same group code respond simultaneously to signal.

2. DNOs act as access providers, managing the schedules on behalf of the suppliers. DNO can also directly issue immediate messages to shed or boost loads.

1. The CTCU, owned and operated by ENA, received, monitors and validates the instructions transmitted by the DNOs, preparing them for transmission.

2. The BBS assembles and encodes the switching instructions sent by the CTCU on its 198 kHz signal. These are transmitted simultaneously to customers' meters.

Uses

1. Enables load control timer switches to synchronise their clocks
2. Enables switch schedules to be adjusted when needed

e.g. 'weather' or 'warmth' tariffs may need daily updates

Programme mode and Immediate mode:

- Used to manage schedules: Static, semi static (changes only few times p/yr) and Dynamic
- Can switch extremely quickly (12s response time)
- Immediate mode is used exceptionally rarely: unplanned outage (emergency load shedding), National Grid's Fast Reserve (load shedding within mechanism for grid balancing)

<u>For Distribution Network:</u>

- In some geographic locations RTS is used to help manage network loading
- Enables creation of variety of switching times to avoid surges of demand
- Load Managed Areas where night peaks occur
- **Provides DNOs with an additional tool to meet security of supply obligations, especially in remote and isolated areas.**

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Issue – Distribution Network Considerations

Types of load and load management have been relatively static over last 20 years but new technologies, demand and generation will bring network challenges. The use of RTS has enabled DNOs to avoid significant network reinforcement. But RTS is due to be decommissioned ~ 2019-2020.

Concerns:

- RTS demand control (& time switching generally) being changed by suppliers
- Alignment of switching times and tariffs
- Loss of diversity between switching times
- Process for agreeing smart switching times
- Lack of recourse if the switching times implemented are 'not agreed'
- The existing arrangements generally relate to static rather than dynamic switching regimes
- Lack of clarity of existing switching times
- Load managed areas are poorly defined
- Uncertainty re Suppliers future thinking on dynamic switching
- Managing the transition between RTS to Smart Meter
- Balance between network reinforcement and 'supplier' services

Mitigation

RTS has enabled Network peak demand reduction by up to 25%.
Cost of losing switching arrangements could be high, for example SSEPD have indicated that cost could be £160min SHEPD licence area alone (EATL report).

Schedule 8 of DCUSA provides a framework – it defines Load Managed Areas (LMAs). DNOs are able to formally declare LMAs and switching times are 'controlled' within defined LMAs. But Schedule 8 relates only to changes from present arrangements.

Short Term Mitigation: keep the current arrangements through DCUSA change

Long Term Mitigation: Suppliers and DNOs will need to work together so as not to lose this functionality.

We will need to make sure this functionality is reflected in future commercial and regulatory arrangements for smart grids.

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Discussion

- How can we reflect this in the future commercial and regulatory arrangements?

- Do the smart grid options we have developed reflect this?
- Is it fully accommodated under the following options?

Option 10 Static Tariff	Option 11 Critical Tariff	Option 12 Dynamic Tariff
(a) Without automation	(b) Remote load control	(b) Remote load control
(b) Automation at premises		
(c) Remote automation		

- What are the technical arrangements that are necessary?

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