

# Factum Electronics AB

A look into the Development of CAS

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# History of Factum Electronics AB

- ✚ 1986: Company established
- ✚ 1988: Development of NICAM starts
- ✚ 1995: Development of DAB equipment starts
- ✚ 1998-: Members of World DAB Forum
- ✚ 1998: Acquired by Teracom
- ✚ 2000-: Active in Asia DAB, WDF TC and MC
- ✚ 2002: Acquired by Effnet

# Company Profile

- ✚ **Activities: Development, marketing and sales**  
Production is mainly performed by sub-contractors but all final testing is performed in the Factum facilities.
- ✚ **Customers in more than 40 countries**
- ✚ **Focus on DAB/DMB Head-End Systems**  
Audio DRC & compression, audio encoder & decoder, MOT data server, IP gateway, DMB gateway, S-MUX systems, E-MUX systems, redundancy solutions, control and management, (receiver).
- ✚ **Complete NICAM product range**  
For both Broadcast and CATV (professional applications).

**Factum is the world-wide leading supplier of  
DAB/DMB technology and NICAM products**

# Sample of DAB/DMB Customers/Countries

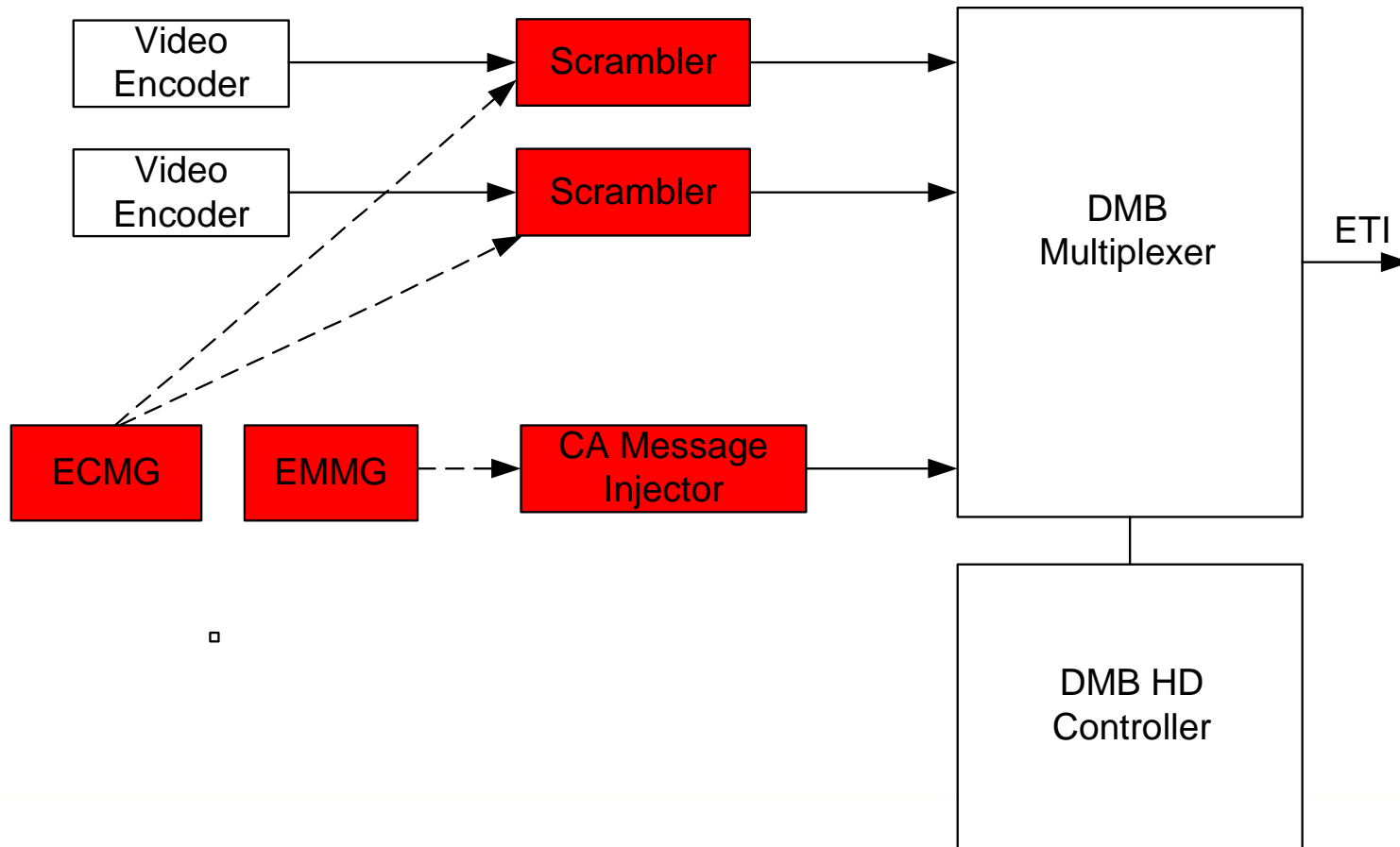
- SR, Teracom (Sweden)
- NRK, Norkring, P4 Hele Norge (Norway)
- DR (Denmark)
- RTL, Club DAB Italia, RAS, Vatican Radio, Raiway (Italy)
- TDF, Towercast (France)
- T-Systems, IRT, Bosch/Blaupunkt (Germany)
- VRT (Belgium)
- TELEKO (Czech Republic)
- Antenna Hungaria (Hungary)
- SRG-SSR (Switzerland)
- Arqiva, BBC, NDS, Frontier Silicon (UK)
- CRA (Australia)
- Sentech (South Africa)
- CBC, Rogers Media (Canada)
- SBS, MBC, KBS, EBC, KMMB, TBN, K-DMB, Samsung, ETRI (South Korea)
- RBC, Dalian, Beijing IPTV (China)
- GoMobile, MCR, Ngee Ann, Temasek, (Singapore)

# Importance of Conditional Access (CA)

- Extends possible revenues for mobile TV
- CA is a standard component of TV and is likely to be inherited into mobile TV
- Other mobile TV standards includes CA (DVB-H), or are in progress (MediaFLO)

# DMB Installations to date

## - External scrambling

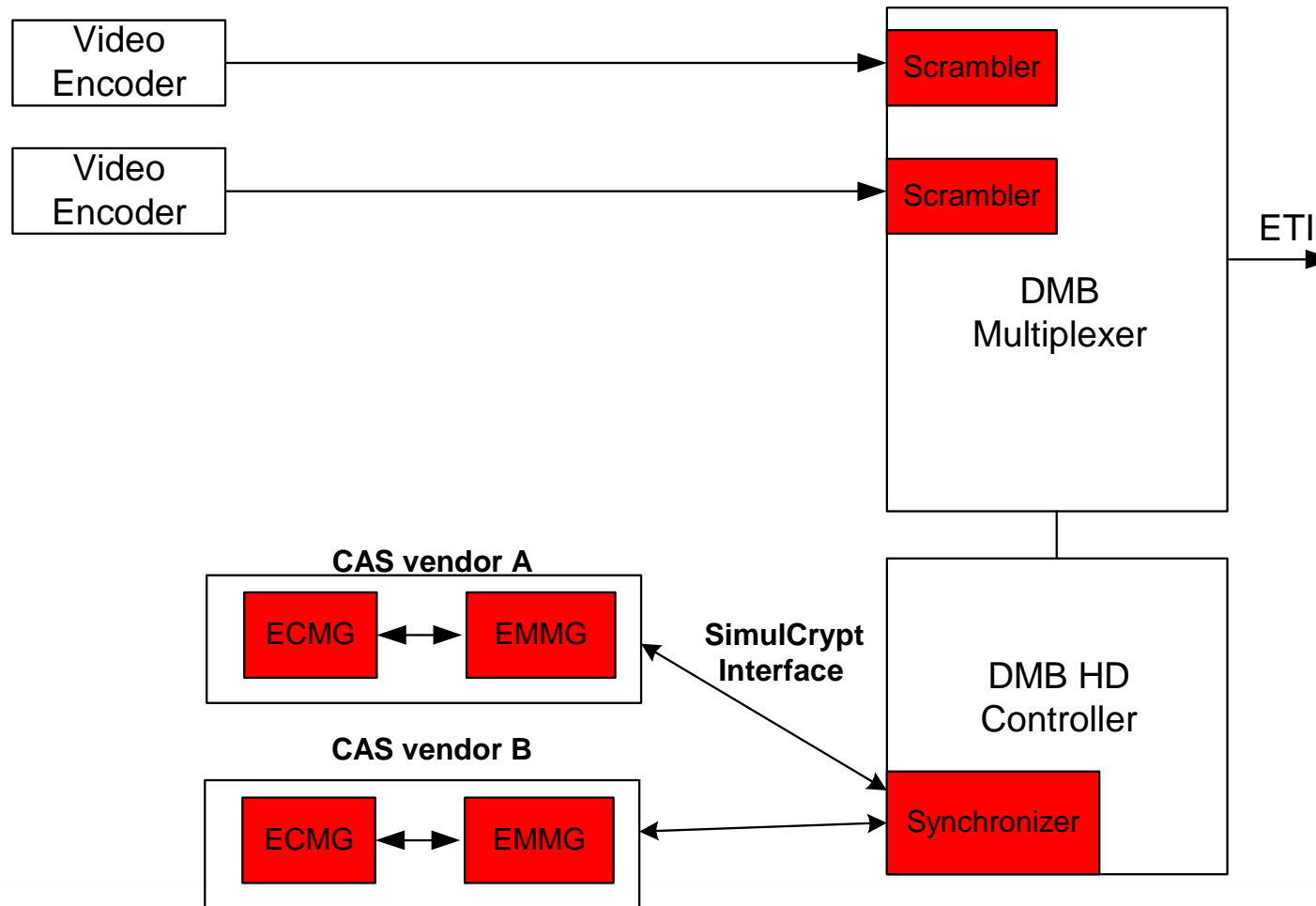


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# Drawbacks with external scrambling

- Scrambler unit is (typically) CAS vendor specific
- Only limited scrambling modes possible
- No common management of DMB head-end and CAS
- Additional HW costs

# Shared Scrambler System (SSS)





# Benefits with SSS

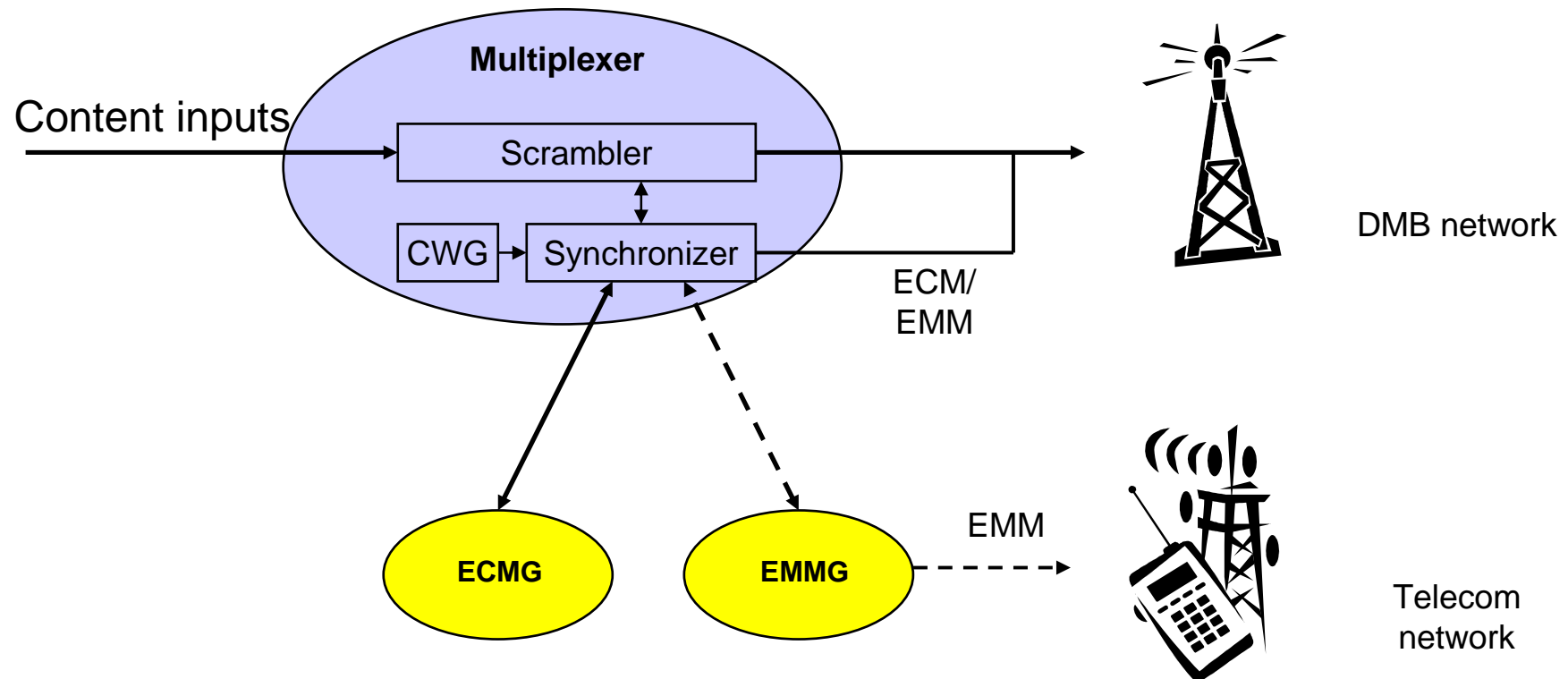
- Up to eight different CAS vendors can share the same scrambler
- Any CAS vendor can be added/removed by SW controlled management
- Synchronous operation of CA when re-configuring the DMB multiplex
- No extra HW needed
- All CA modes can be supported

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# Standards in use

- ETSI 102 367, DAB CA Standard
- ETSI 103 197, DVB SimulCrypt Standard
- Both these standards has been accepted as Korean standards TTAS.KO-07.0043 and TTAS.KO-07.0044 for DMB

# Possible network convergence



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# THANK YOU!

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