Embedded Solutions

SG

Smart Gateway

About ES

We provide

Time Critical / Mission Critical

- **Products**

  and

- **Turn-key integrated solutions**

for military communication systems, various real-time and signal processing systems

Company Background

- **Military Systems**
  - COMINT, SIGINT
  - Aircraft Internal Communication
  - Embedded Mission Critical, Time Critical Systems
  - Data Link Management
  - Reconnaissance & Surveillance
  - Automatic Test Equipment
- **Civilian Systems**
  - Real-Time Systems
  - Signaling/Media Gateways (V^2oIP- PSTN)
  - Board Support Packages
  - Device Drivers

Company Background (cont'd)

- **Practical knowledge of network interfaces, standards and protocols**
  - **Data Link & MAC layer**
    - IEEE 802.XXX
    - MIL-STD 1553
    - ARINC 629
    - HDLC, SCP etc.
  - **Network & Transport layers**
    - TCP/UDP over IP (v.4, v.6) /ATM
    - Wireless networks
  - **Application Layer**
    - Voice/Video over IP (H.323, SIP, MEGACO)
    - Encryption/Decryption
    - Network Management

- **Practical knowledge of networking hardware (routers, gateways, firewalls)**

Company Background (cont'd)

- **Algorithms Development**
  - * **Image Processing**
    - – **Pattern Recognition**
    - – **Compression/Decompression (including MPEG, WAVELET, etc.)**
  - * **Voice Processing**
    - – **Compression/Decompression**
    - – **Voice Recognition**
  - * **Signal Processing**
    - – **Noise Filtration**
    - – **Compression/Decompression**
    - – **Mathematical & Statistical Models**
    - – **Identification**
    - – **Optimization**

Main (Happy) Customers

- Elta
- Mabat
- Malat
- Elbit
- Tadiran
- Rafael
- MOD supplier
- Others

Applications Highlights

- **Flight Control Computer**
- **Smart Gateway**
- **Real-Time Equipment Tester**
- **Real-Time Recording and Playback System**
- **Automatic Network Configuration**
- **ATM Communication System**

SG Presentation

The PROBLEM

- Military networks require more complex architecture than civilian networks:
  - Unstable end-to-end connectivity between source and destination
  - Limited bandwidth allowance per source and/or destination
  - Strict prioritization requirements
  - Hard real-time requirements
  - Traffic and protocols restrictions because of special military network devices (gateways, encoders, firewalls, etc.)

Our Solution

"Protocol Ruggedization"

- Adapting civilian standard systems into compatible military communication applications
  - It allows to adhere to strict military requirements and still be fully interoperable with existing civilian standards/protocols
  - We also simplify your choice: pay hundreds of thousands of dollars to create a completely new system, or adapt an existing civilian system at a fraction of the cost

We Propose the

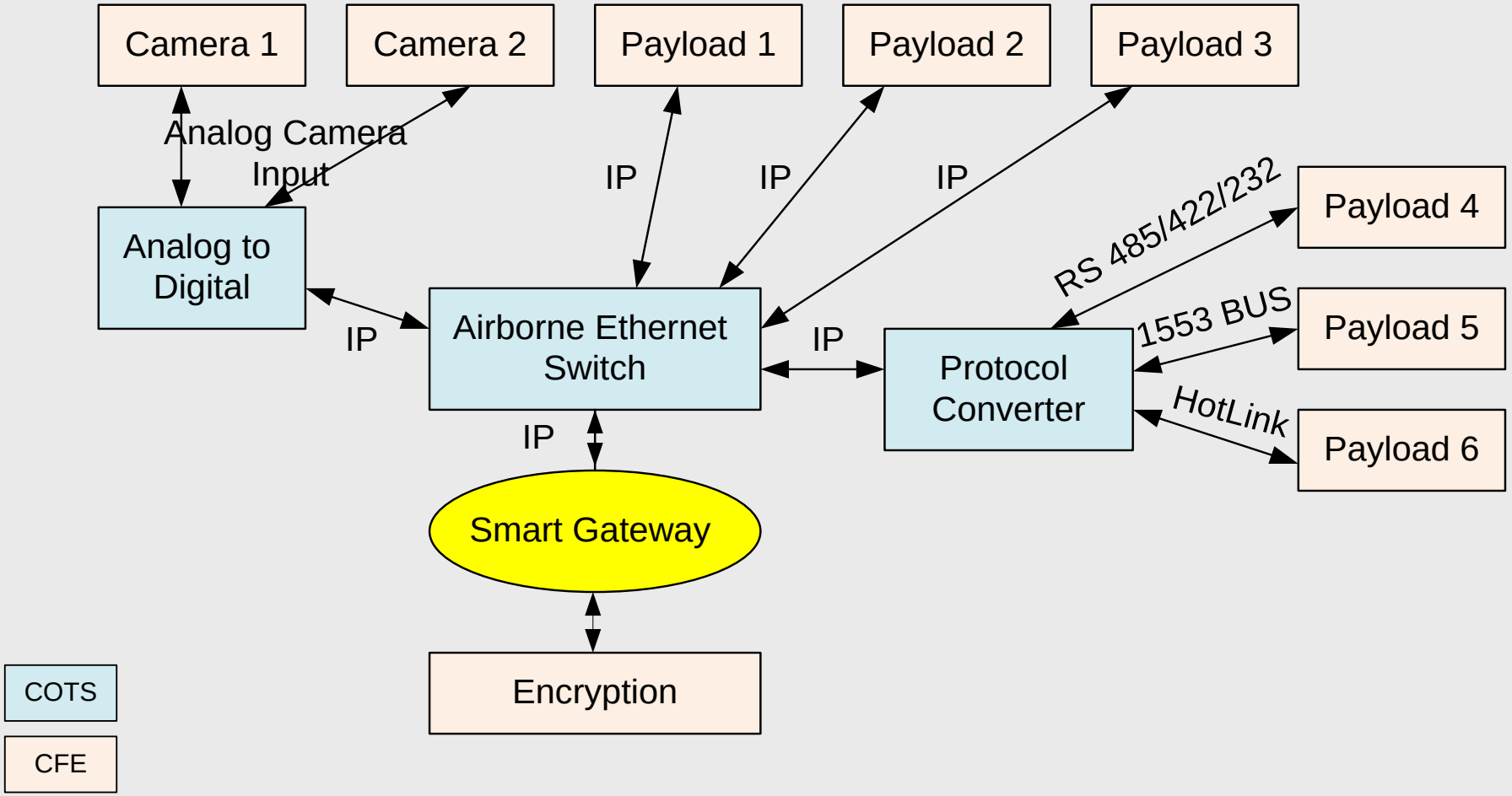
Smart Gateway

- Smart Gateway, SG, is a seamless network entity optimizing and controlling military communication, including data-link to/from ground
- SG may be implemented as an embedded software component on one of the application machines residing at a communication junction, or as a stand-alone hardware component
- The modular structure of SG allows to easily add, remove and configure services
- SG is a hard, real-time product. Adds latency to inspected network traffic depending on the service applied. Inspection time is negligible compared to data transportation time

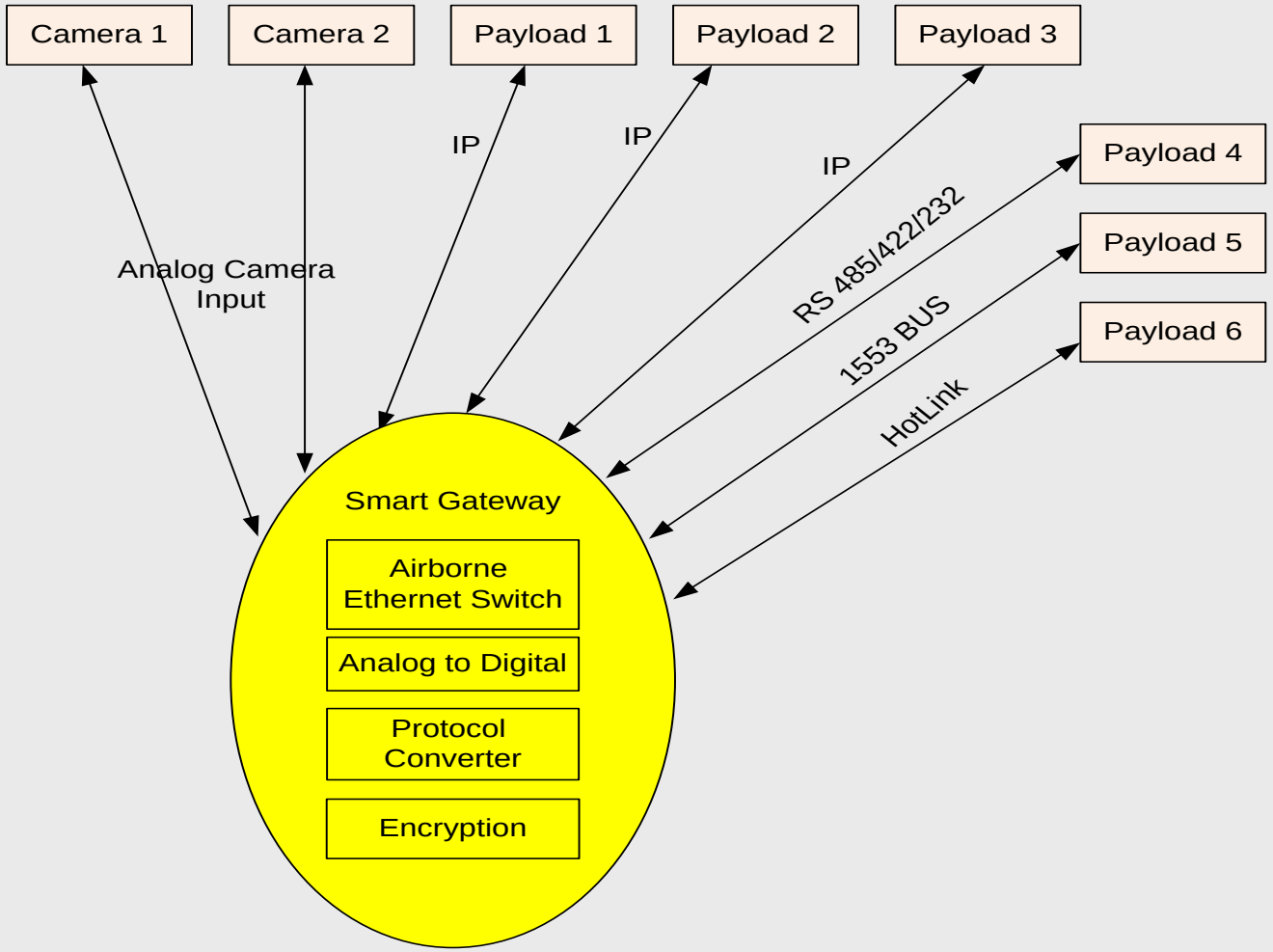
SG Features

- Transparent for other network entities
- **Add On** solution – No integration effort required.
- Inspects the traffic that crosses it, intervenes the data flow and applies services to the data
  - Detects network events (e.g. source/destination addresses, pre-defined message sequences and pre-defined data patterns.)
  - Provides pre-defined services upon detection of network events
    - **Special retransmission**
    - **Redirection of selected traffic to one or several destinations**
    - **Address resolutions**
    - **Protocol conversion**
    - **Bandwidth management**
    - **Prioritization**
    - **Encryption**
    - **Special Signaling**
    - **Alarms**
- SG will recover automatically after a communication loss

Smart Gateway Operational Environment – Basic Configuration



Smart Gateway Operational Environment – Full Network Solution



SG Main Advantages

- **Military networks become:**
  - **Standard**
  - **Fully interoperable**
- **Dramatically reduction of:**
  - **Number of failures**
  - **Development and unit cost**
  - **Time to market**
- **Compliance with international standards**

Embedded Solutions

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