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Converged Sensor Network Architecture (CSNA)

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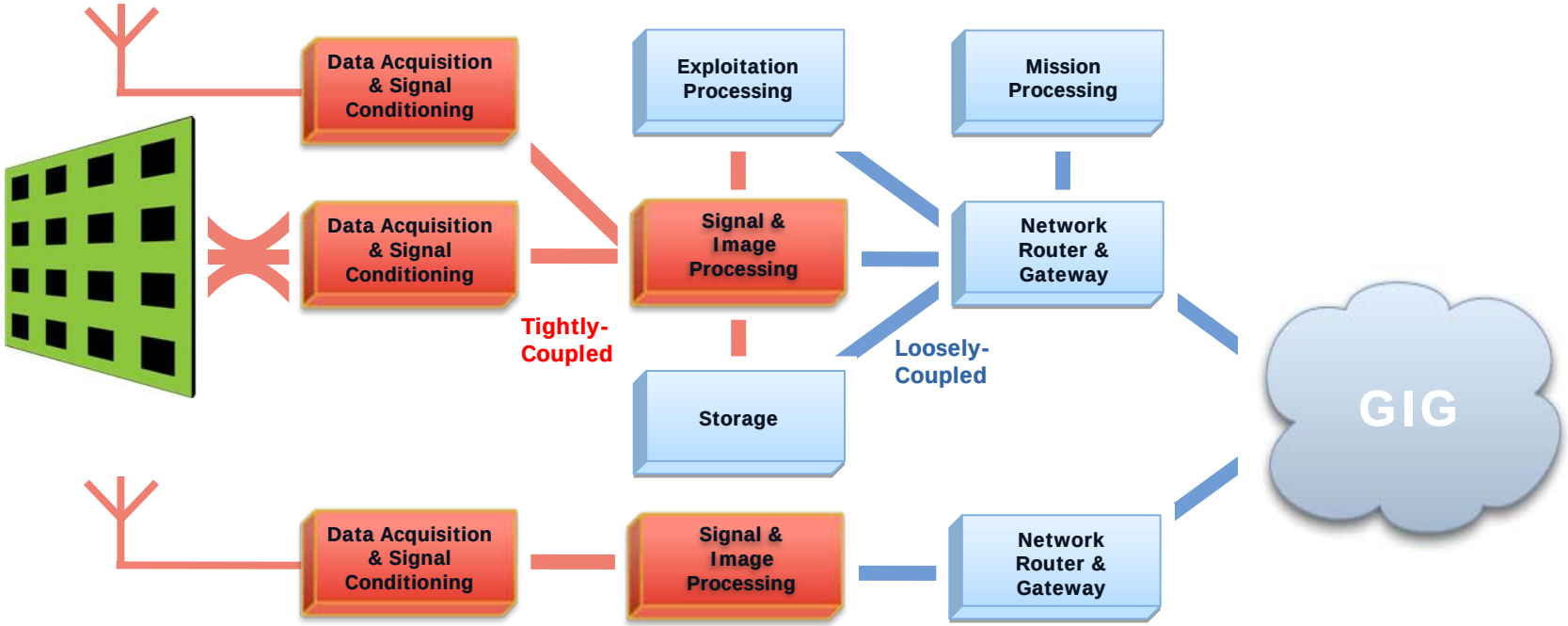
Problem Statement

ISR should do more "in the current conflicts while their outcomes may still be in doubt" – Sec. Gates

More Timely, More Accessible	**Strategic Precision Targeting for use by a select few, to a Need for Tactical Precision Targeting for every warfighter** • Sensor data rates continue to outstrip available data link bandwidths, exacerbated by jamming • Ground-based exploitation cells introduce too much latency for time-sensitive targeting • Warfighters don't believe they will get appropriate sensing support when they need it
Persistent, Accurate Surveillance	**Multiple platforms are needed for persistence** • Single sensor platforms don't collect adequate target information • Difficult targets in heavy clutter require interoperable platforms that can cooperatively find, classify and track targets (peer-to-peer)
Size, Weight, & Power Efficient	**Proliferation of sensors on platforms is begetting ever more costly tradeoffs in SWaP**

Converged Sensor Network Architecture (CSNA)

A unique approach to sensor networking that brings together signal and image processing, information exploitation, and information management into a high-performance, most productive, and cost-effective embedded compute platform



- **Integrated, optimized for low latency, high throughput, and SWaP**
- **Designed to deliver an "embedded" Quality-of-Service that supports the convergence of processing and net-centric capabilities**

Distributed Packet Processor over RapidIO

- **Implemented as a layered architecture that**
  - Bridges physical layer protocols
  - Maps multiple logical layer protocols onto a bridge architecture
- **PHY: automatic termination and throttling**
- **ROUTING: programmable field lookup, routing, and prioritization**
  - Header translation and/or encapsulation
  - Traffic management
  - Software-based exception handling
- **LOGICAL: end-to-end buffer management, timeouts for robust operation**
  - Adjustable buffer watermarks per logical type (IP, ...)
  - Timeout and failover