



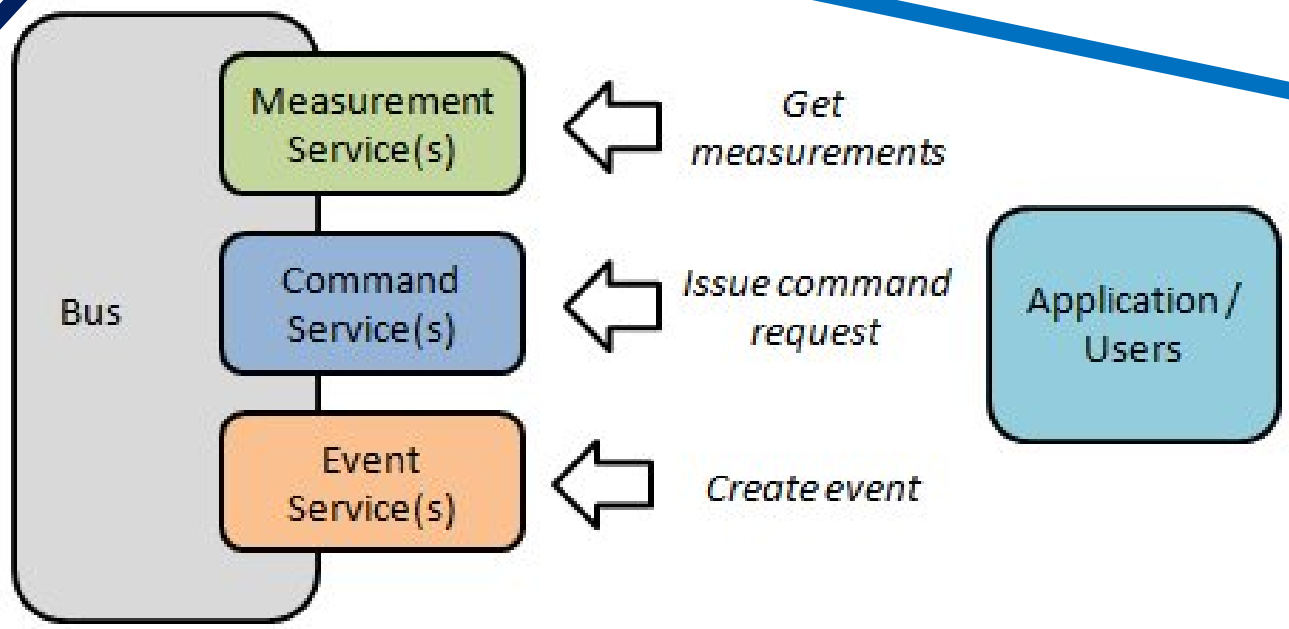
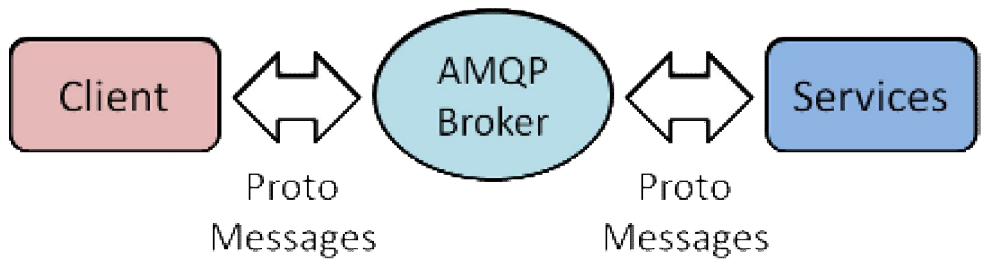
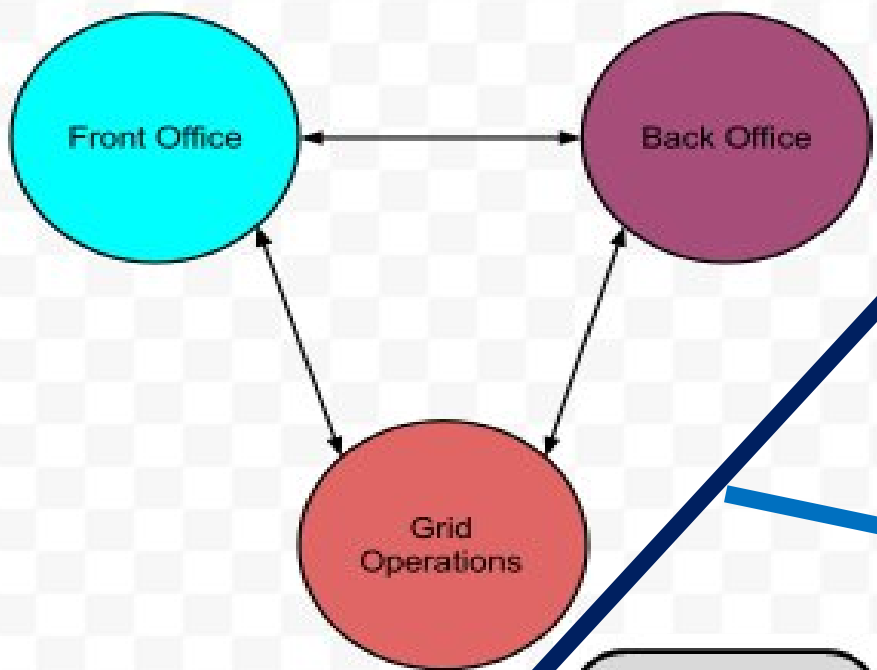
Next Generation Automation – Effective Platform Design and Practical Implementation

Daniel Evans, Sam Hendley, Adam Crain, John S. Camilleri

- Bridging the operational technologies (OT) and information technologies (IT) to support increasing interoperability needs
- Avoid architecture brittleness
- Remove the island of automation
- Exponential growth in remote sensing data
- Manage the effects of a diminishing workforce
- Harmonization of enterprise data models
- Leveraging/Enhancing the legacy IT investment

- Service Oriented Architecture
- Open Platform
- Cross Platform
- Open Source

- AMQP – Advanced Message Queuing Protocol
 - Message oriented middleware
- Protocol Buffers
 - Multiple language bindings
 - Lightweight schema
- RESTful Style
 - Uniform Interface
 - Opaque Transport
 - Stateless



Component	License	Description
Reef Core	AGPL	http://reef.totalgrid.org
Reef API	Apache 2.0	http://reef.totalgrid.org
DNP3	Apache 2.0	http://dnp3.totalgrid.org
Cassandra	Apache 2.0	http://cassandra.apache.org
PostgreSQL	GPL	www.postgresql.org
qpid	Apache 2.0	qpid.apache.org
Spring		www.springsource.org
Protocol Buffers	Apache 2.0	Google Protocol Buffers

- Ubiquitous messaging across multiple domains
- Open source components to drive innovation and provide a path for industry adoption
- Purpose built automation services
- Reliable, high performance messaging infrastructure