A Practical Approach
to Service Oriented Architecture for
Broadcast and Video Production

Ed Casaccia, Senior Marketing Director
It’s Never “Our” Service Oriented Architecture

- Here’s how Wikipedia defines SOA:
  “Service-oriented architecture (SOA) is a flexible set of design principles used during the phases of systems development and integration in computing.”

- SOA is **not a technology**, but more a philosophy of implementing software

*Illustration based on IBM SOA Guidebook*
A state of the art approach to SOA

- In the concept SOA works to enable interaction between system modules in a *loosely coupled* way, making changes:
  - 1 possible
  - 2 easier
  - 3 more seamless
Although “result” oriented, SOA also happens to fit perfectly with modern software development process.
Taking a state of the art approach to SOA

- SOA has primarily been applied to “back office” system features, like asset management.
Taking a state of the art approach to SOA

- SOA has primarily been applied to “back office” system features, like asset management.
- But every organizational function can be expressed as a set of tools.
Taking a state of the art approach to SOA

- SOA has primarily been applied to “back office” system features, like asset management.
- But every organizational function can be expressed as a set of tools.
- The interactions in current SOA tend to standardize on the use of web services, either using SOAP or RESTful over HTTP.
Acronyms!

- **SOAP** = Simple Object Access Protocol
  - XML Based
  - Transport agnostic (RPC, HTTP)
  - Requires multiple parsing
    - Identify the message as a SOAP communication
    - Read the header to find out what kind of communication
    - Read the body to identify specific resources
Acronyms!

- **REST** = Representational State Transfer
  - XML based
  - Inherently HTTP… it uses URLs
  - Simple parsing
    - Resources identified in URL
    - Each call to a URL changes the state of the client, hence the name
  - Like SOA, RESTful is a style, not a technology
Taking a state of the art approach to SOA

- Grass Valley uses the RESTful-over-HTTP model of interface due to its simplicity and light weight

- STRATUS defines a series of web services interfaces and these are used by all STRATUS components
  - Search, enumeration, transfer, device control, messaging etc…
Is it SOAP vs. REST?

- The two methods can, and typically do, coexist
  - Both are based on XML
  - Simple XML filters (connectors) provide two-way translation
    - Message structure
    - Syntax
    - Lexicon
- Use of connectors makes SOA implementations interoperable
Taking it a step farther

- The SOA approach can revolutionize how to design user interfaces
  - The GUI is not a monolithic application
  - It is a framework housing functional objects that are developed independently of the main app but are interconnected through that common framework and through the use of the web services.

- Define a single desktop application space, adapting to the users based on assigned user roles and permissions.
  - You don’t have to select what to install but rather launch/configure based on the task at hand.
Taking a state of the art approach in SOA

The Framework allows addition of other functional modules in the future:

Channel Panel  Scheduler  Navigator  Asset Display  ?

User
PC

STRATUS Application Framework

RESTful I/F

STRATUS Core Services

GV Infrastructure

grass valley
So what does all this get you?

- Individualized tools to:
  - Ingest video feeds
  - Ingest removable media (P2, XDCAM)
  - Search, browse, and annotate content
  - Manage assets
  - Control multiple record/play channels
  - Build playlists and simple sequences
  - Link to newsroom computer systems
Increased efficiency

One application houses all the workflow tools.

All the tools are consistent in look, feel and operation.

All are extremely intuitive.
Unprecedented versatility

Where can SOA be used?

- Entertainment
- Live Studio Production
- News
A basic studio operation:
- Four cameras, one 4x2 Summit
- SAN
- STRATUS Core Services
- Two STRATUS clients
- Two EDIUS clients
Ingest/Playback Operator
Her job is to start record on several cameras at the same time. During the show, she has to play clips on the on-set monitors. From time to time, she also makes notations for the editors and producers.
To accomplish all this, she used to press the REC button on four tape decks, then load tapes from a cart into two other decks for playout.

And when she had time, she wrote down timecodes and notes for editors on a legal pad.
Entertainment / Studio Production

- Multi-channel record and playback
- Live streaming of channel
- Add notations for editors and producers

grass valley
Tape Producer
He prepares the clips for playback.
He also makes notes for the editors where fixes will be required.
Entertainment / Studio Production

- Playlists are playable immediately by K2
- EDIUS / FCP can open playlists natively
- Add comments for editors
News

Let’s look at a basic news system: (maybe not that basic…)
- 4 IN / 4 OUT, SAN
- Removable Media ingest
- **STRATUS** Core Services
- Seven **STRATUS** licenses
- Three EDIUS clients
- Aurora Playout (**STRATUS** license)
Ingest operator. She records feeds, monitors them and makes annotations for editors. She assembles playlists for feed to remote sites. At other times, she prepares clips for playout.
News

- Schedule records
- View any channel
- Build playlists
- Control channels
News

Writer watches incoming feeds and make notes. He sees ingested content, and adds to it by creating simple sequences. He worka within the newsroom computer system.
News

- View incoming feeds
- Add notations for editors
- Build playlists and simple sequences
- EDIUS / FCP can open sequences natively
Things to Remember

- Service Oriented Architecture is a style or method, not a technology
- Lightweight XML-based transport makes multi-vendor interoperability easy
- The SOA concept can be extended to how the user interface is customized to the task at hand
- And finally
Things to Remember

- SOA as used here does NOT refer to…
A Practical Approach to Service Oriented Architecture for Broadcast and Video Production

Ed Casaccia, Senior Marketing Director