What is Overdrive and what makes it unique?
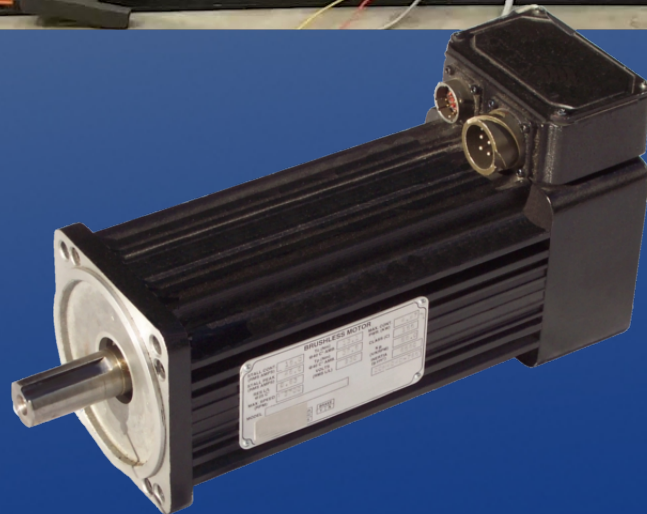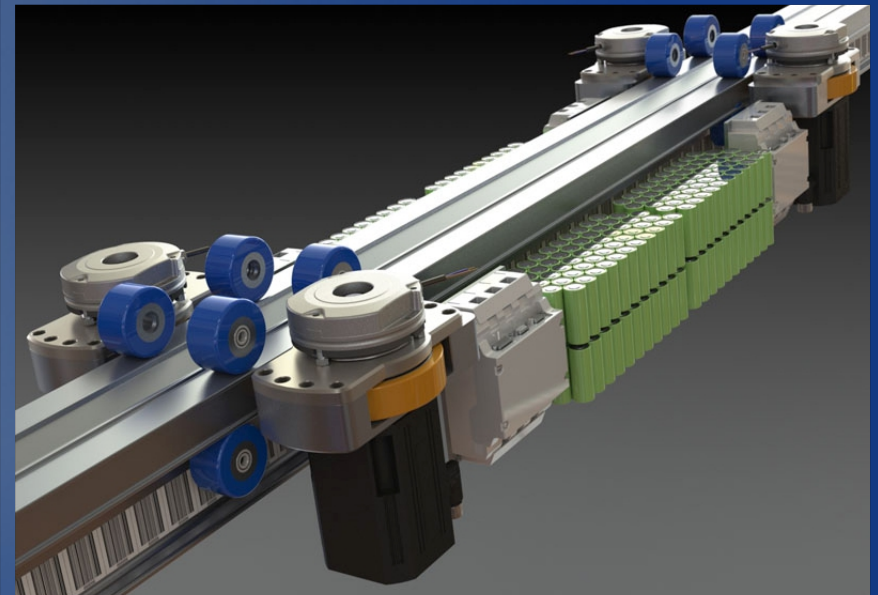
overdrive

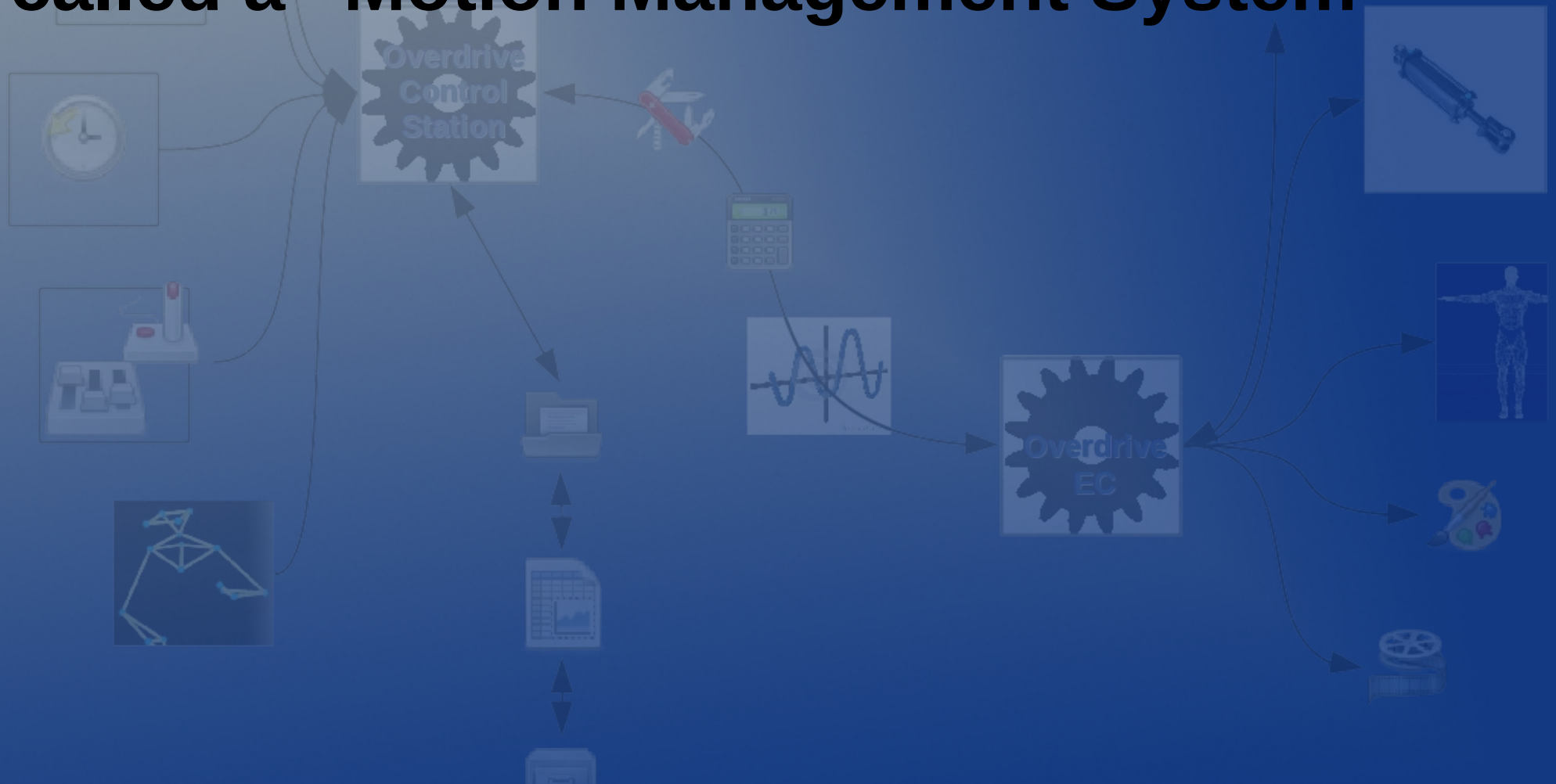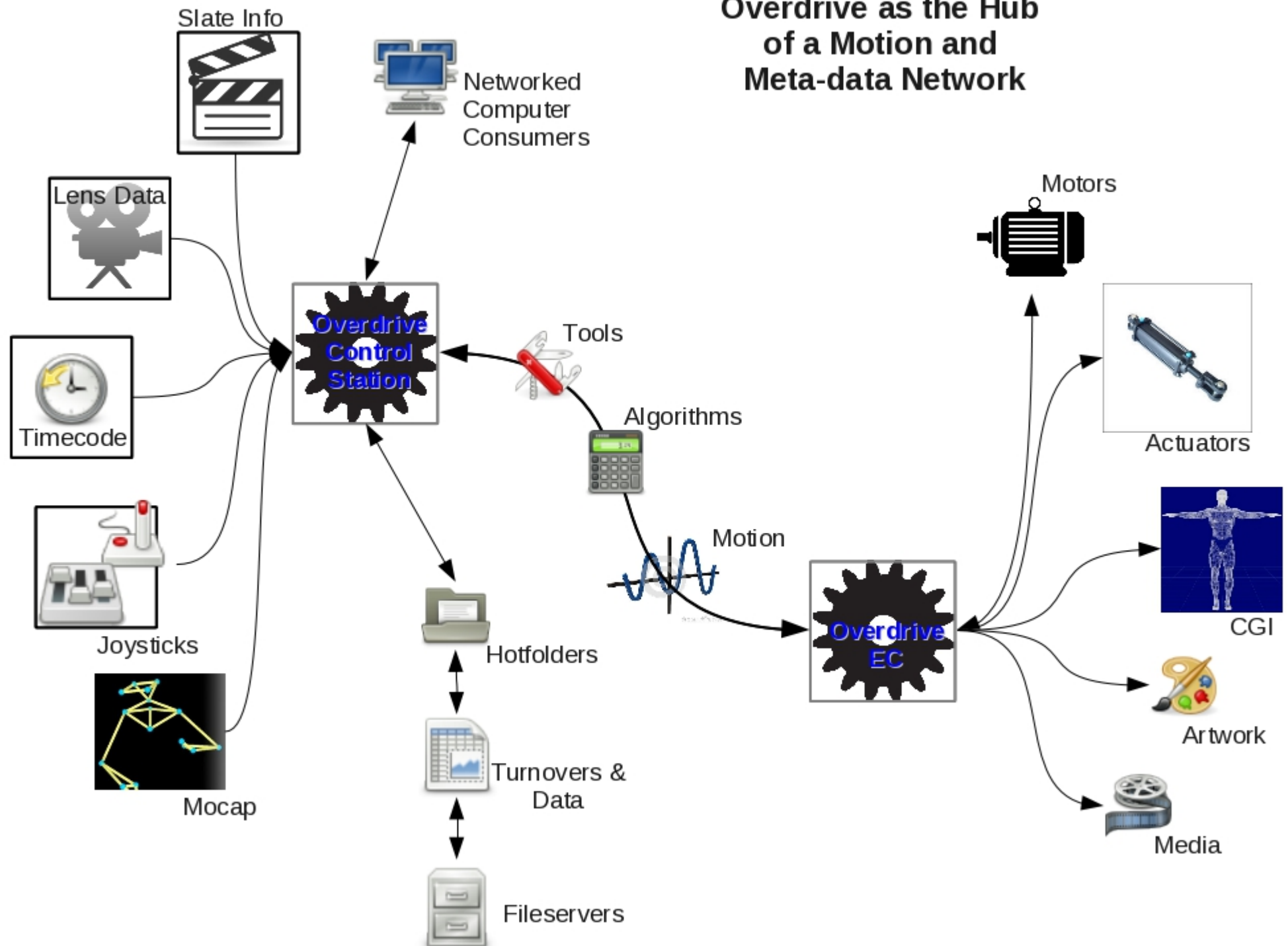# Overdrive is a
computer and electronic Motion System

… it moves actuators, like motors and hydraulic cylinders, to achieve robotic control of machines.

Perhaps more importantly, Overdrive streams pure motion on networks between many kinds of devices, which is why it is sometimes called a "Motion Management System"
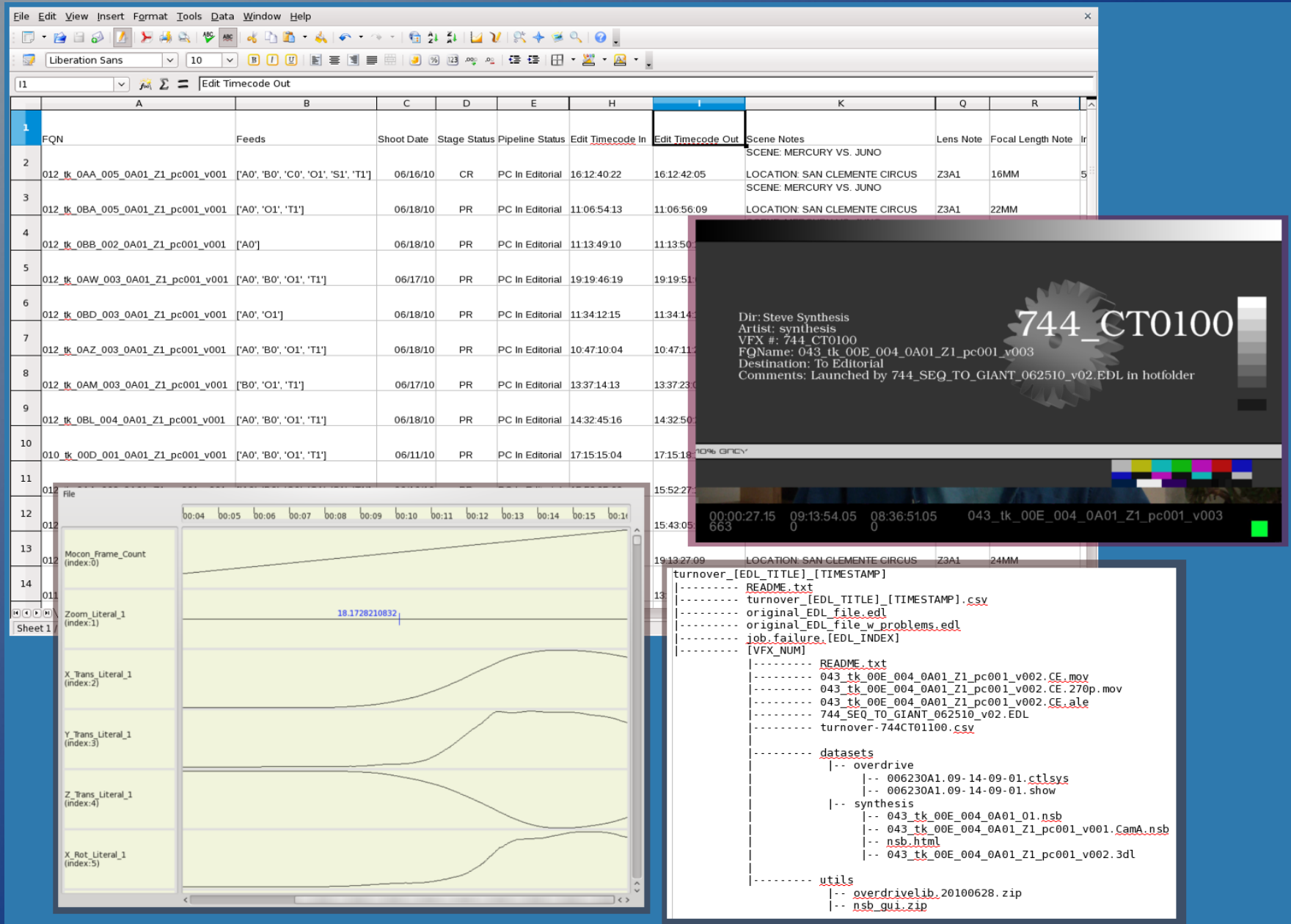
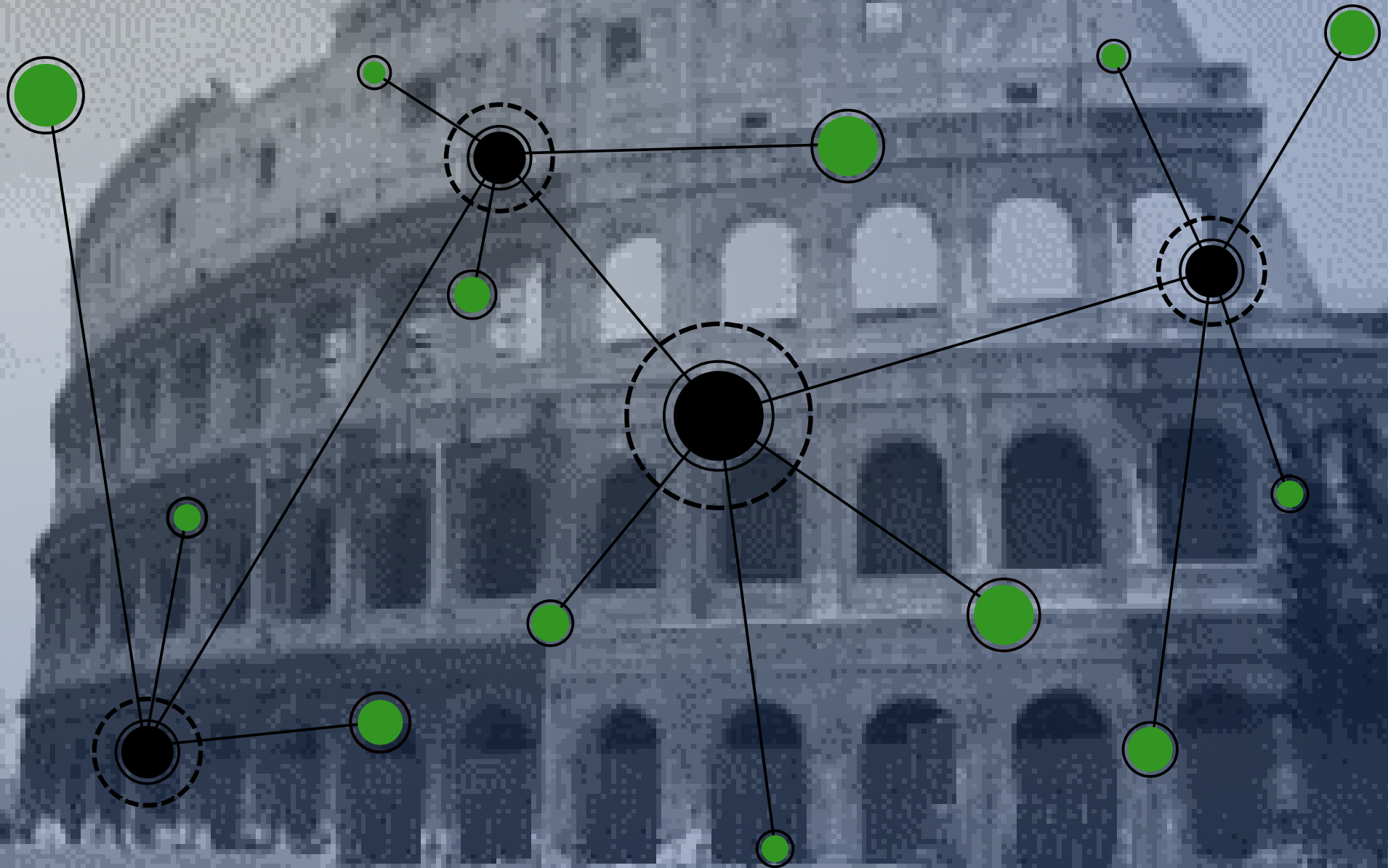Overdrive as the Hub of a Motion and Meta-data Network

Overdrive captures, stores, and distributes meta-data, take data, & motion data, and combines those datasets for VFX pipelines.
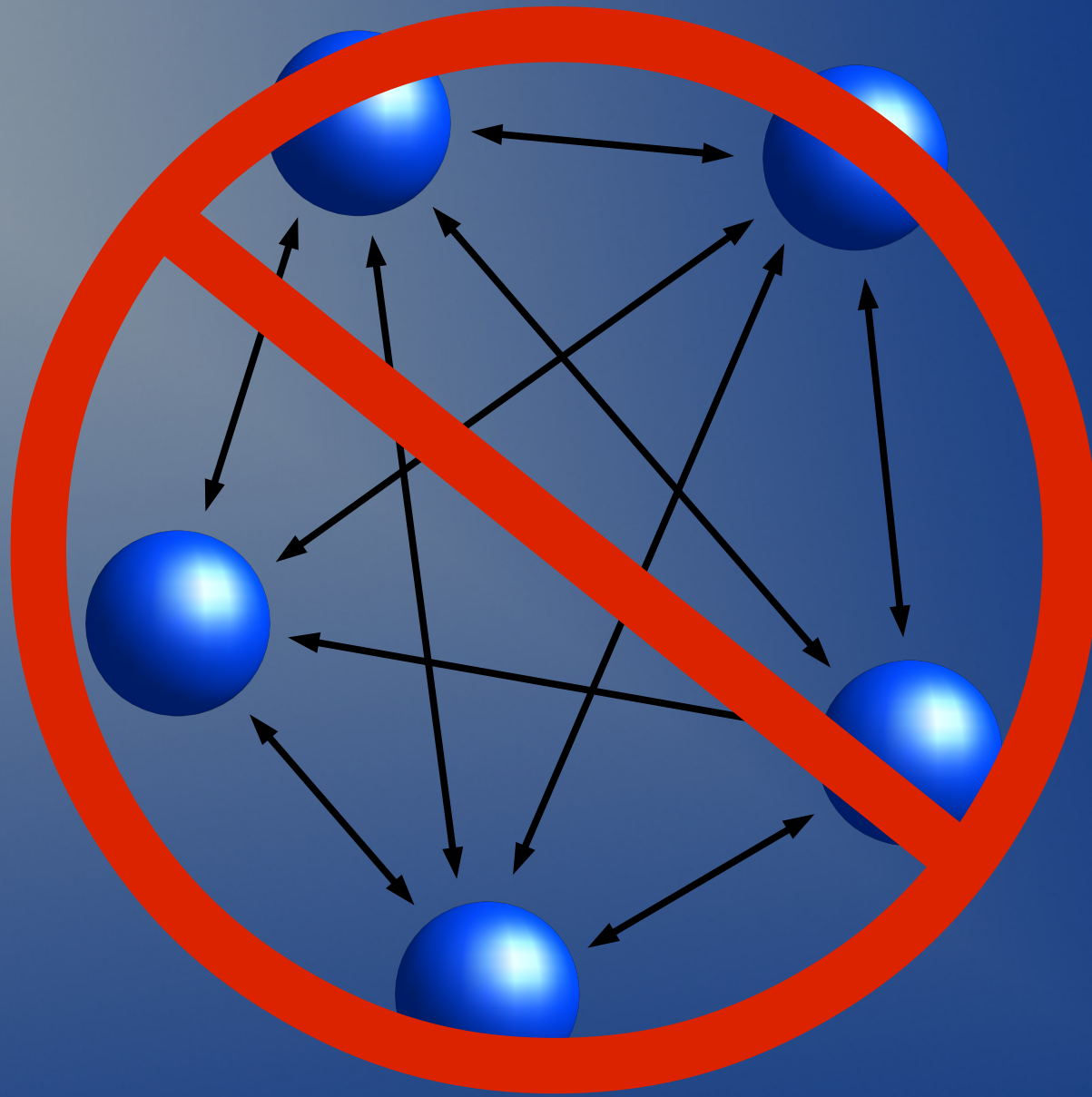
The Architecture is the key...

Traditional TV production tools were single-purpose and limited in scope, by design. They typically connected only two things together, and couldn't handle inter-department interfaces.
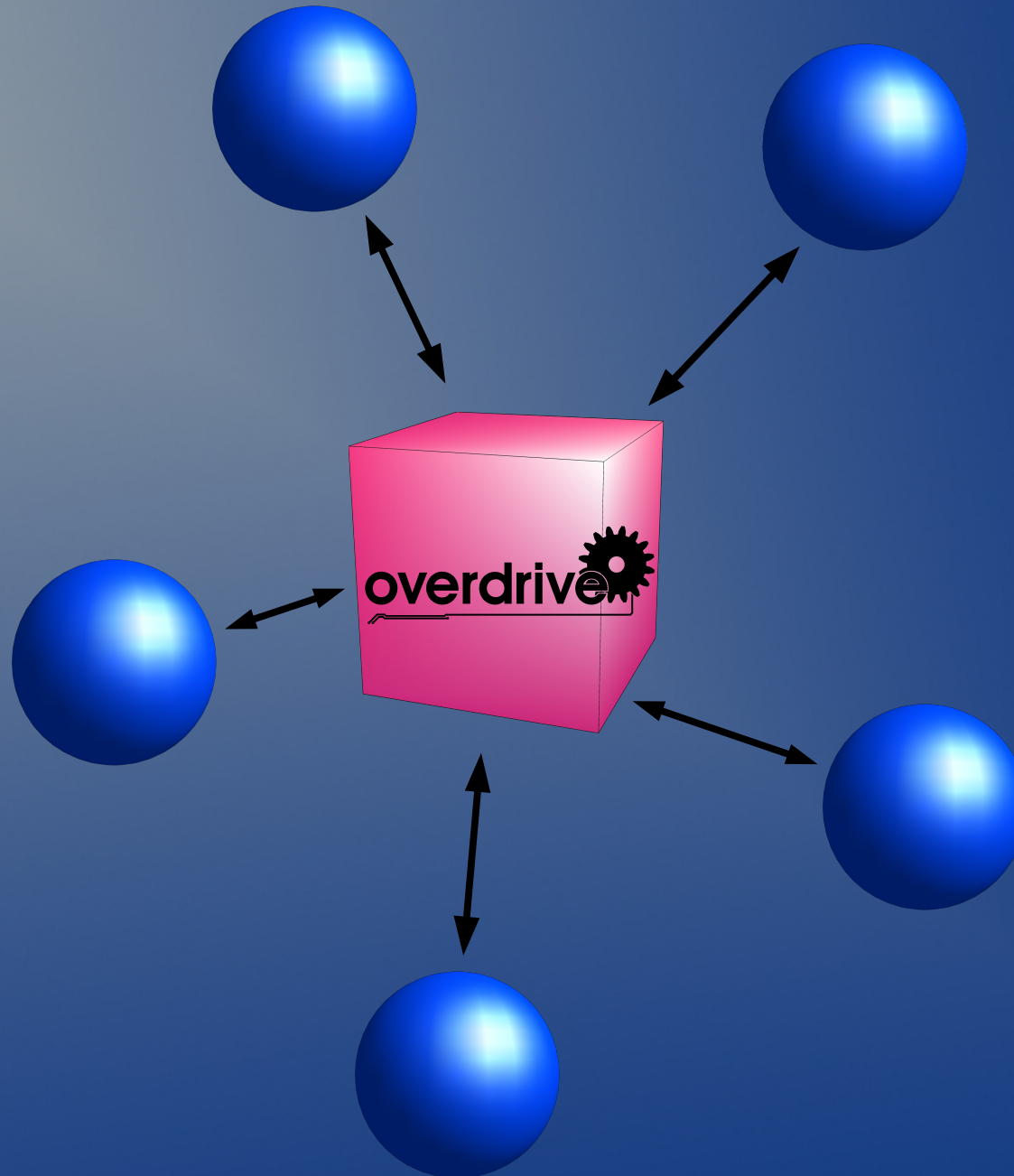

A point-to-point interface connects only two things, and...

the complexity of interfacing everything-to-everything is high.

What is simpler is a star-topology Network

Where a central system handles all the interfaces.

Using Overdrive in this way, 7 different departments can interconnect to achieve creative goals:

●**Camera**
 ●**Special Effects**
  ●**Animatronics**
  ●**Lighting**
   ●**Stunts**
    ●**AR graphics**
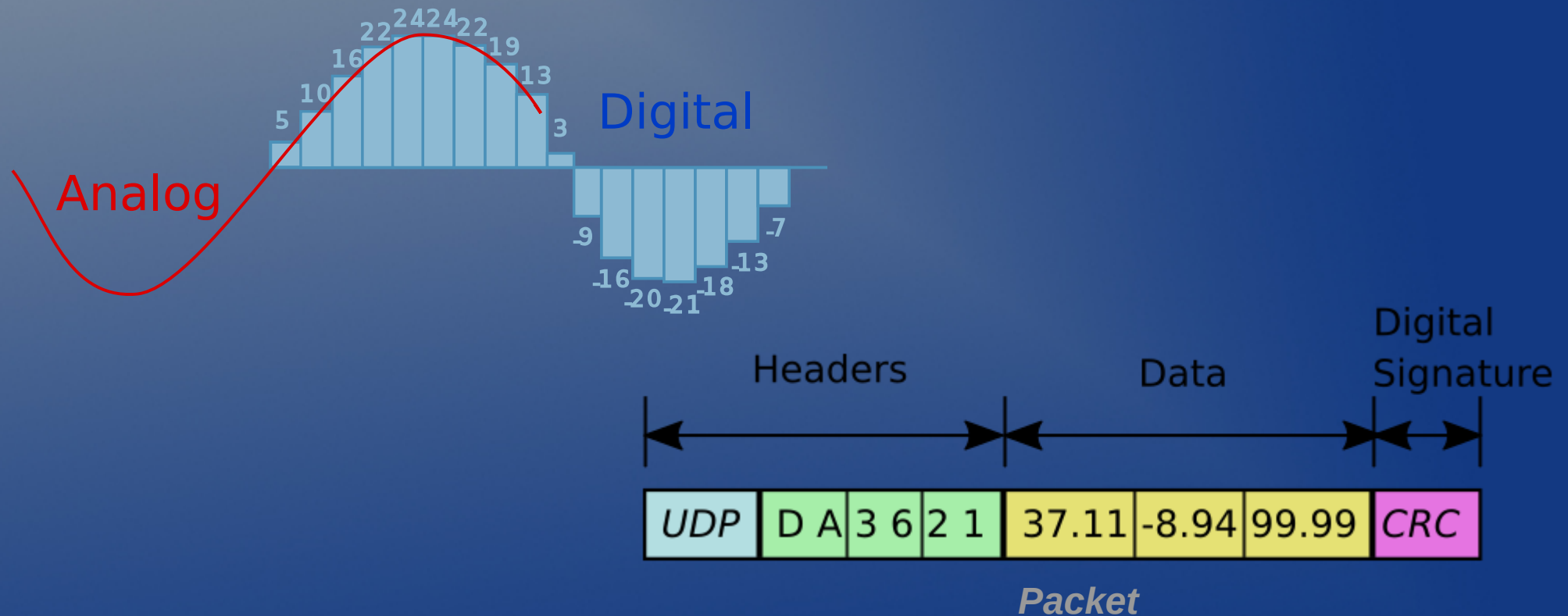   ●**Visual Effects**

Overdrive was designed from the ground up to do such networking. This was a novel idea in the late 1990s, yet has become common in recent years.

To allow custom motion relationships between departments the software was designed to be both object-oriented and constraint-based.
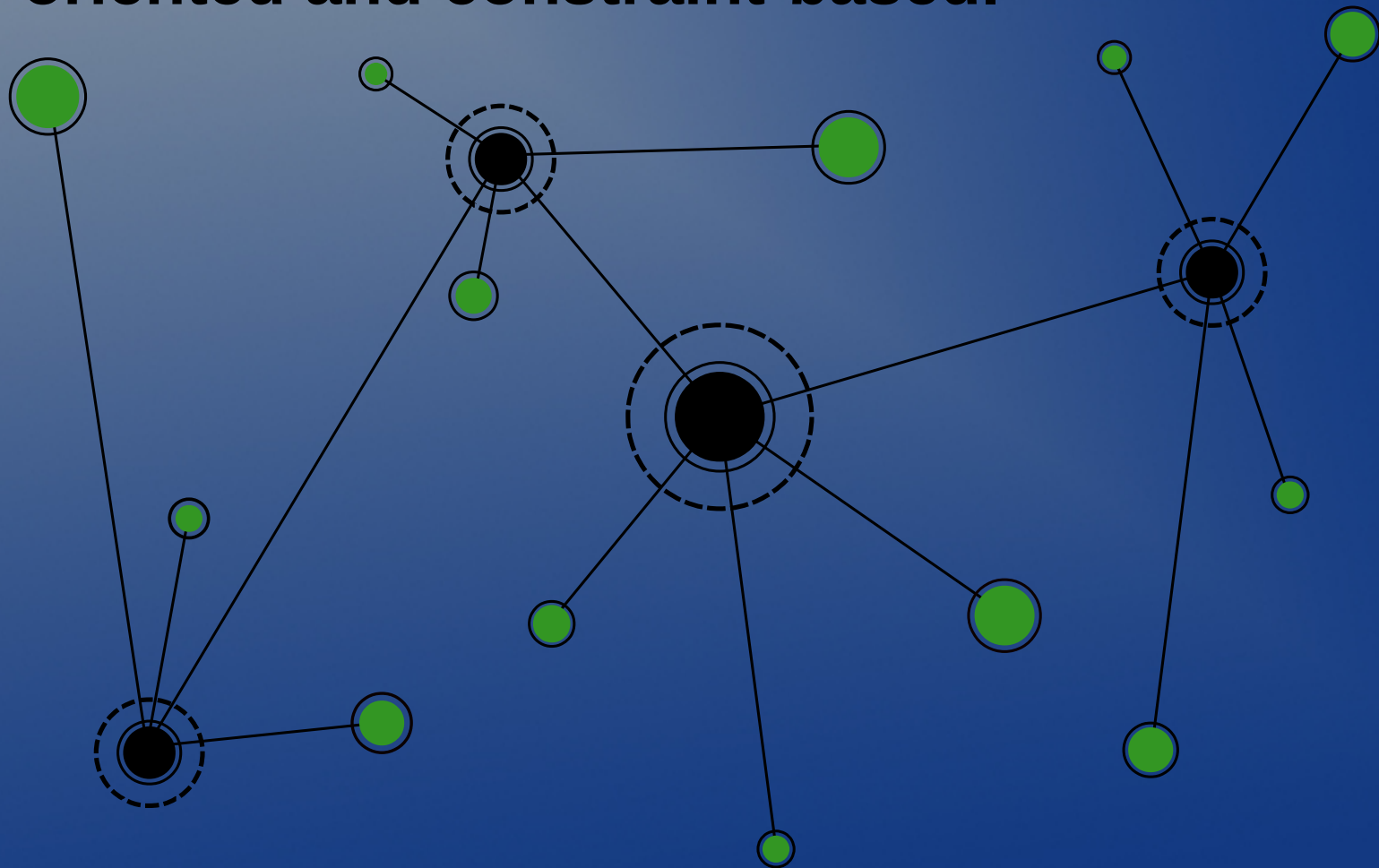
Designed to be maximally digital, Overdrive was also a pioneer in phasing out analog and "open-loop" interfaces, in favor of packetized digital motion streams, with reliable data and extensible protocols.

Analog

Digital

Headers | Data | Digital Signature

| UDP | D A 3 6 2 1 | 37.11 | -8.94 | 99.99 | CRC |

Packet

Overdrive became a tool of choice for creative projects because it is constraint-based and object-oriented by design, making it highly configurable and adaptive to the design of new products and complex applications.
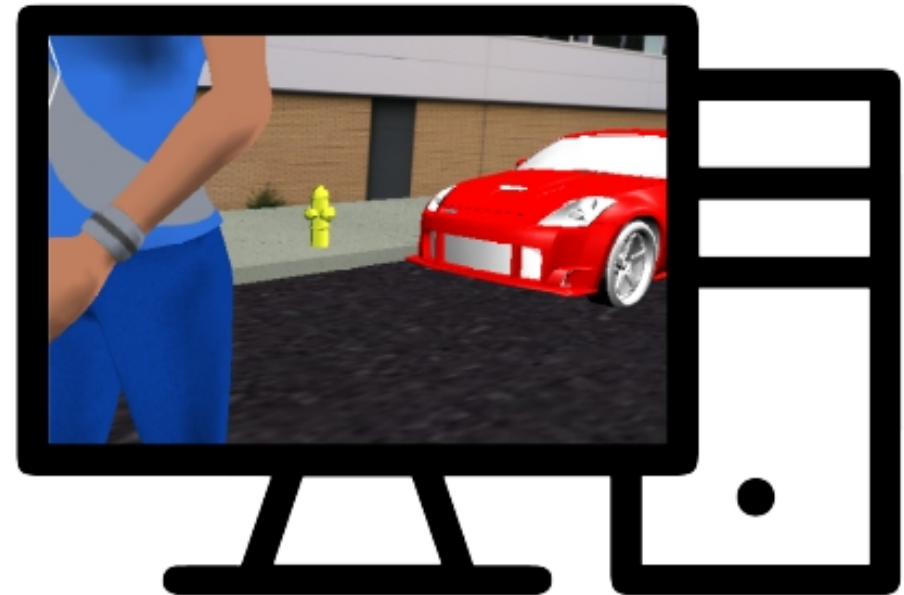
Motion Capture System
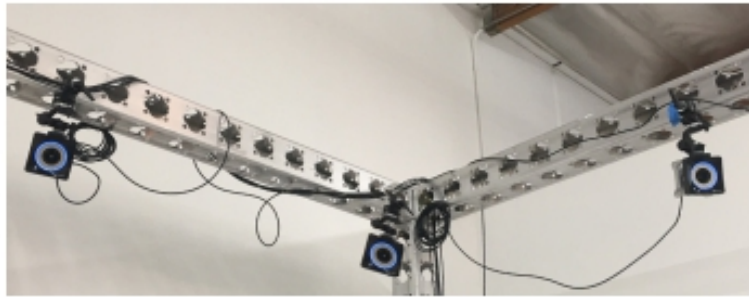
6 DOF

Overdrive Control Computer

Button/Joystick Inputs
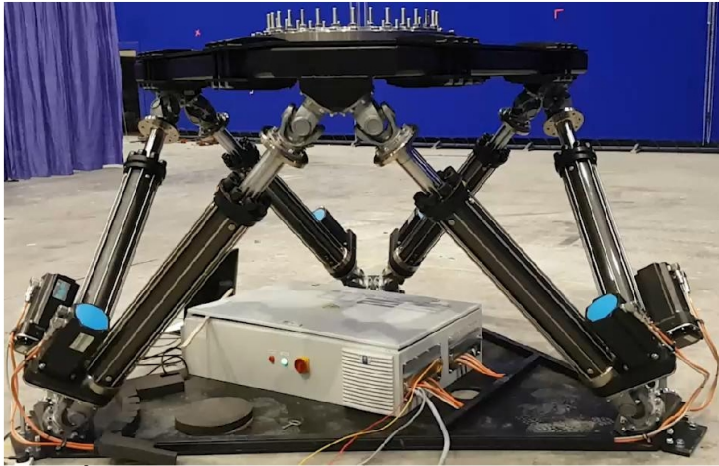
Ethernet

Virtual Camera

3D Display Computer

Virtual Camera Application
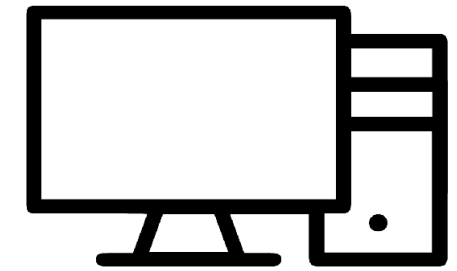
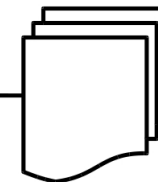# Motion Base Application

Motion Base

Video Wall

Fiber

Overdrive

Streaming Ethernet

Video Wall Computer

Gen-lock

Maya Moves

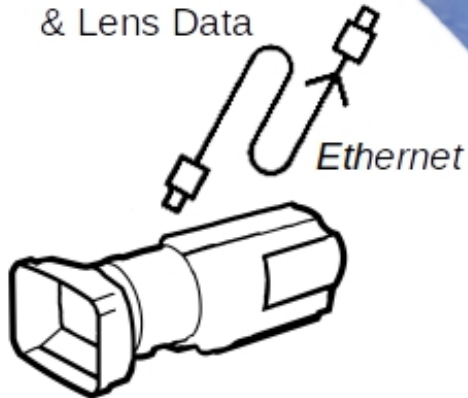# Augmented Reality Encoding Application

Camera Crane

Encoder positions
CANbus

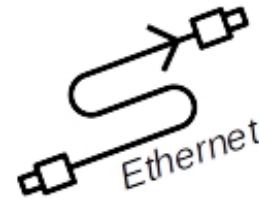Encoded Heads-up Display

AR composite scene
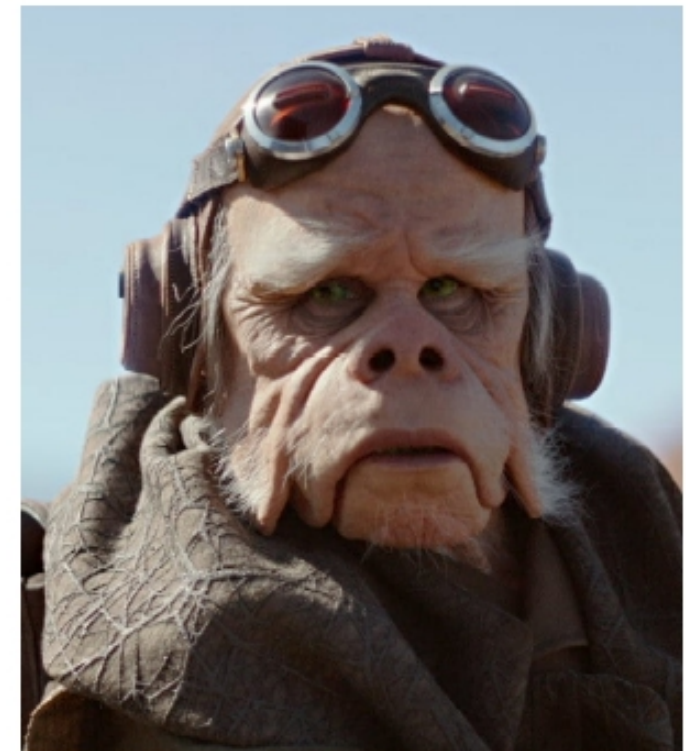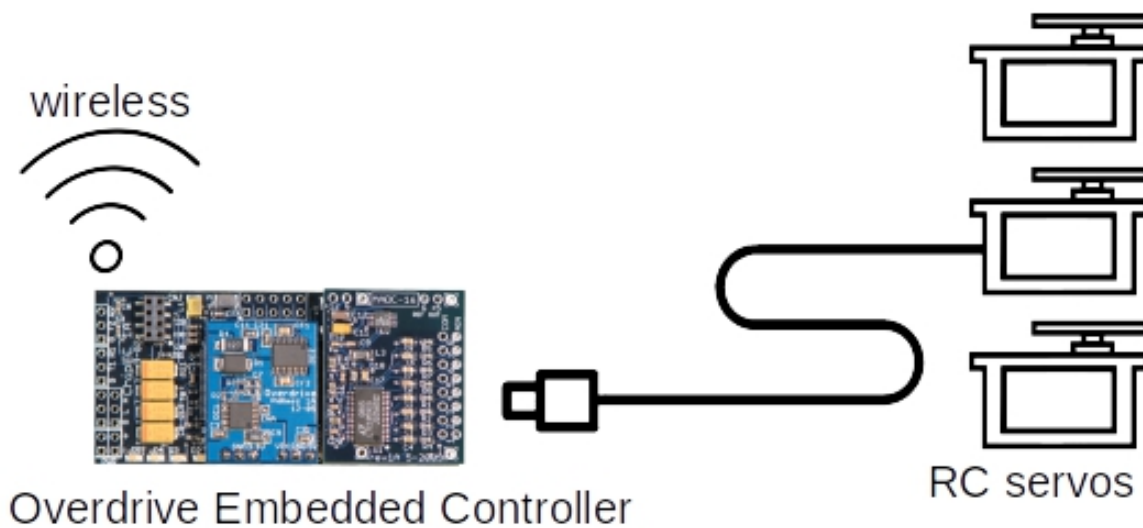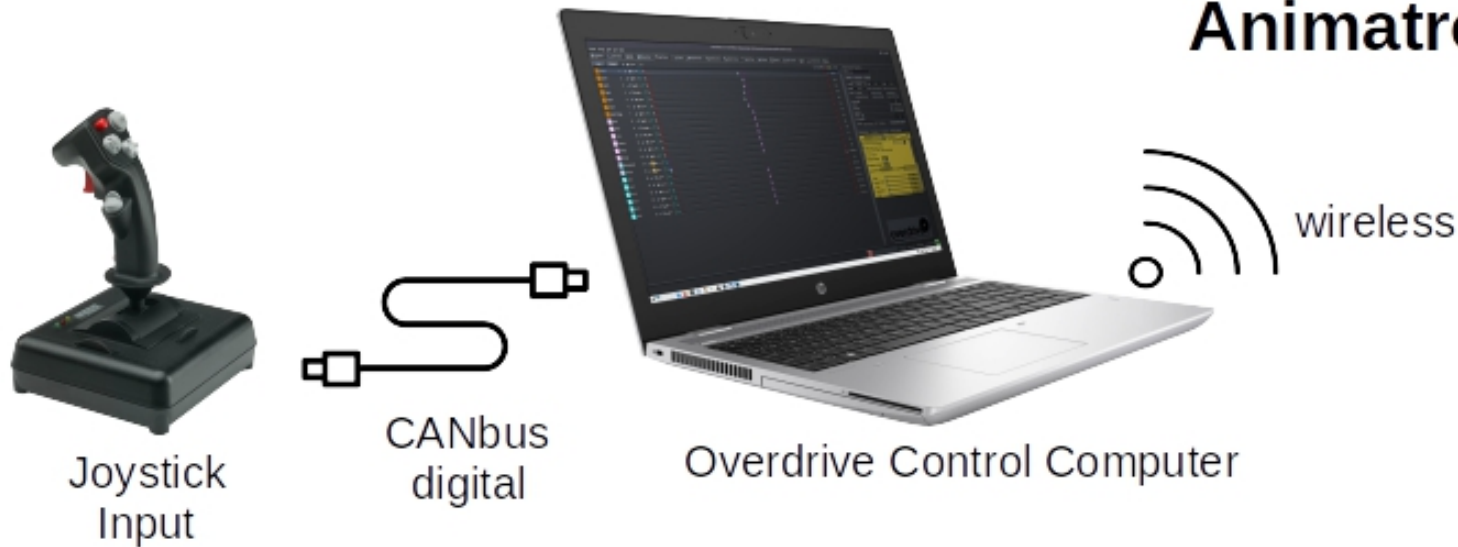
Reads
Camera Head
& Lens Data

Ethernet

Ethernet

Overdrive ONE
Solves position of the camera,
Based on encoder data

ArtNet

Lighting console, moves lights

Gen-lock

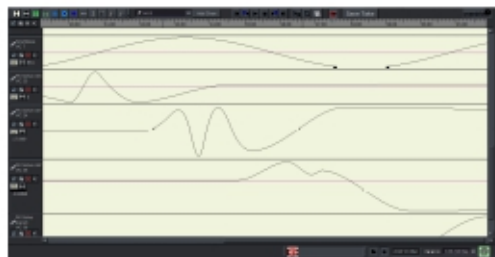# Animatronic Application

Joystick Input

CANbus digital

Overdrive Control Computer

wireless

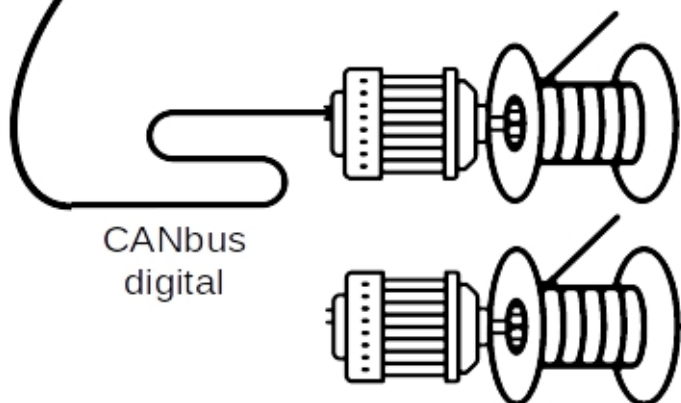wireless

Overdrive Embedded Controller

RC servos

Animatronic Puppet

Joystick Input

CANbus digital

Overdrive Control Computer

Fiber

Overdrive Embedded Computer

Pre-recorded move

Stunt and Camera Applications
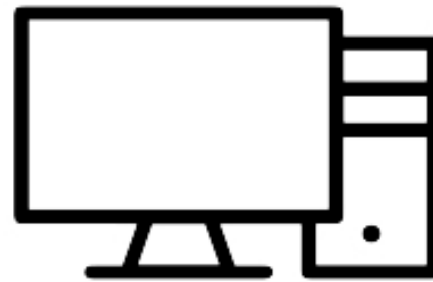
CANbus digital

Motorized winches

Flying camera

Flying performer

Motorized Camera Dolly Application

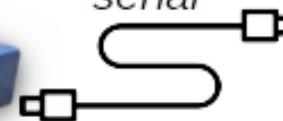Joystick Input
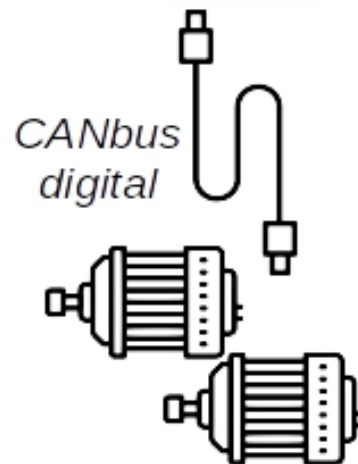
CANbus digital

Base station Computer

wireless

wireless

Overdrive on-board computer

serial

camera control unit
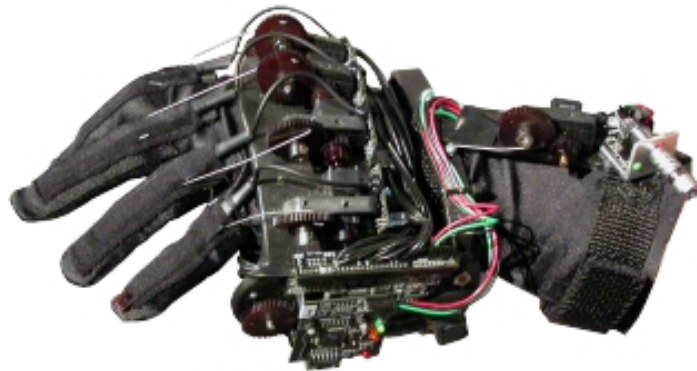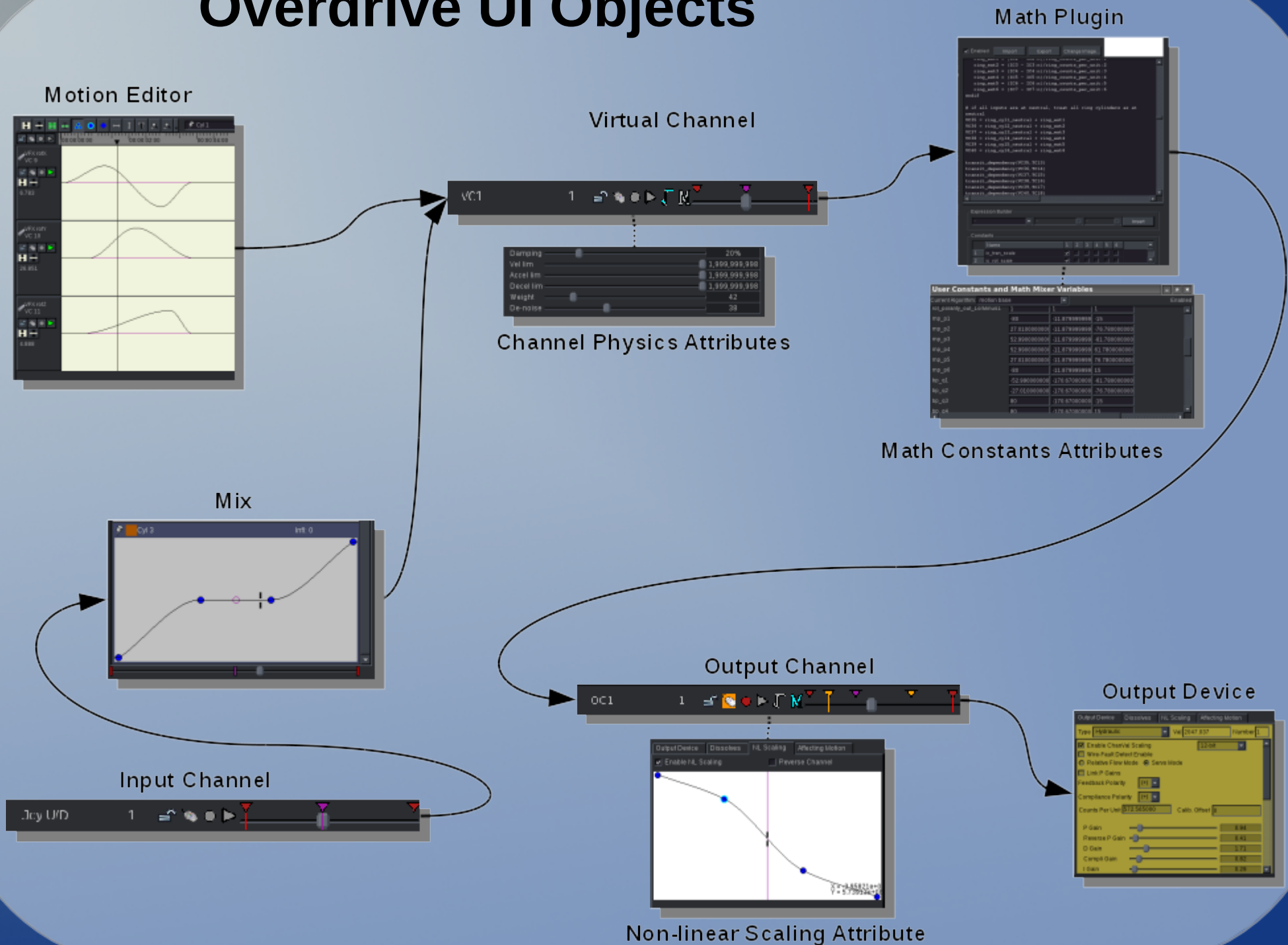
CANbus digital

Motors on dolly

CGI Puppeteering Application

Data glove

Overdrive Digital Input Device

wireless

3D Scene Computer

wireless
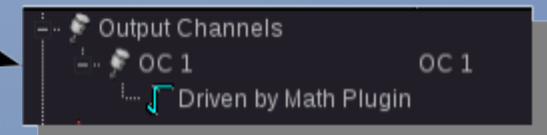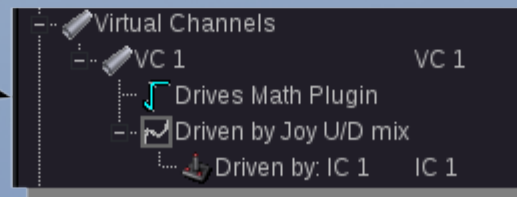
Overdrive Control Computer

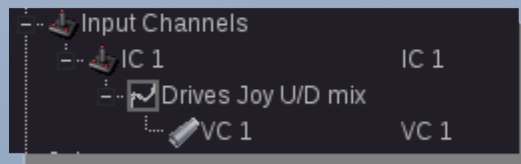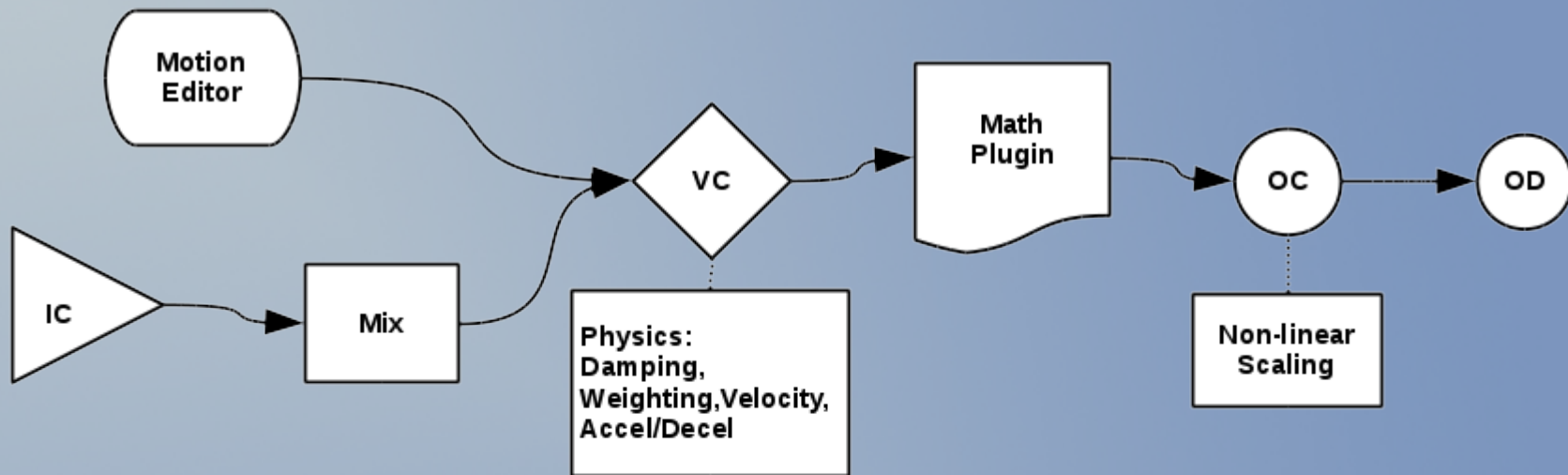Ethernet

Overdrive has an intuitive user interface which increases efficiency when on stage or on location.

Overdrive UI Objects

Motion Editor
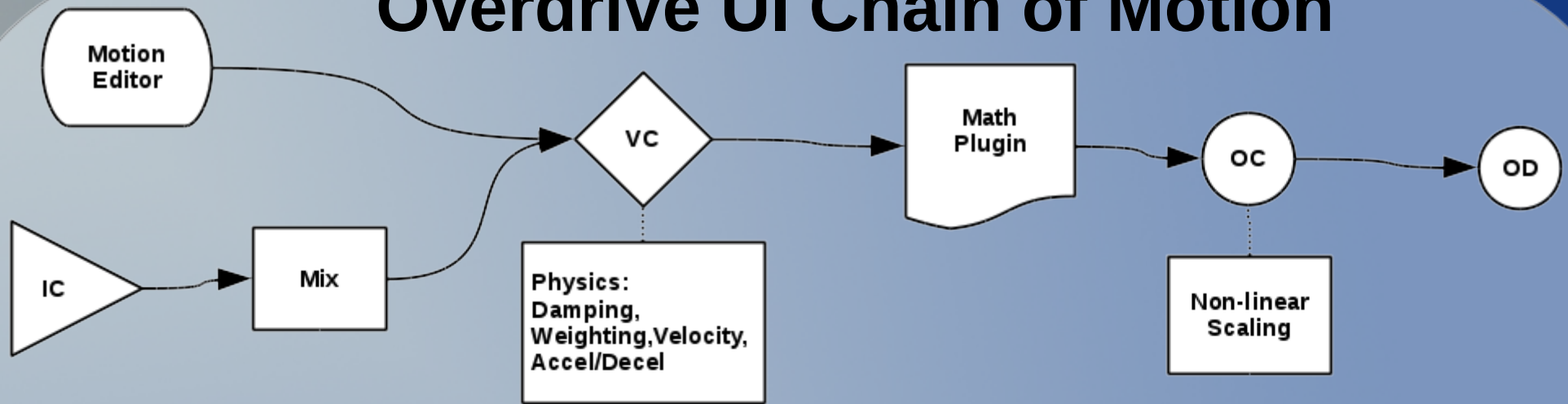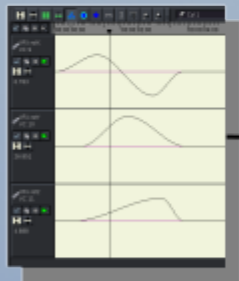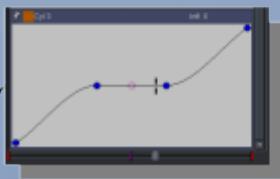
Virtual Channel

Math Plugin

Channel Physics Attributes

Math Constants Attributes

Mix

Output Channel

Output Device

Input Channel

Non-linear Scaling Attribute

Overdrive UI Hierarchy
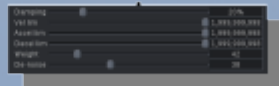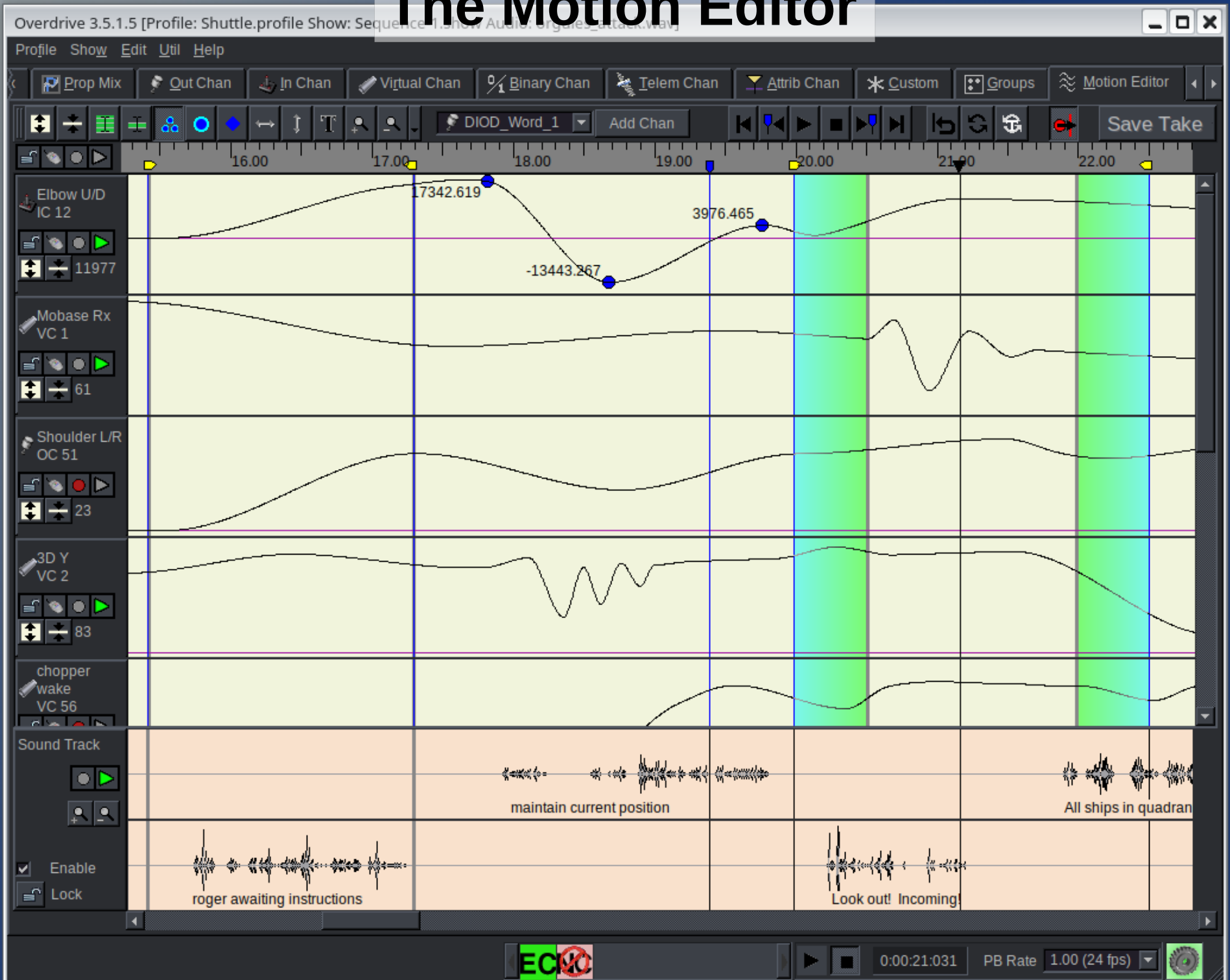
Overdrive UI Chain of Motion
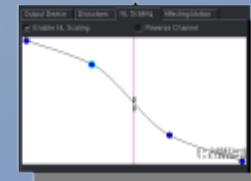
The Motion Editor

In summary, Overdrive has been a valuable inter-departmental technology, and a modernizing influence, in television production for decades.