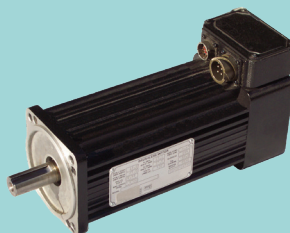
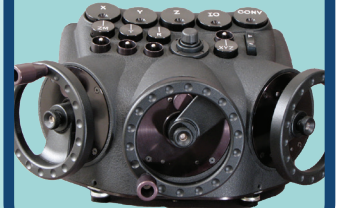
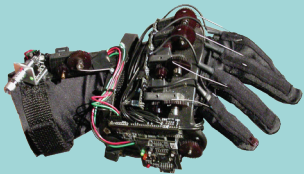


# overdrive<sup>®</sup>

*motion systems*





The Overdrive motion system is the hub of a network which streams live and recorded motion data. Utilizing high-bandwidth digital technologies, Overdrive offers flexibility and expandability when problem-solving in production environments. As a hard real time constraint system, Overdrive is suitable for Robotics, Motion Control, Animatronics, Virtual Production, Augmented Reality/AR, and Metadata Capture.

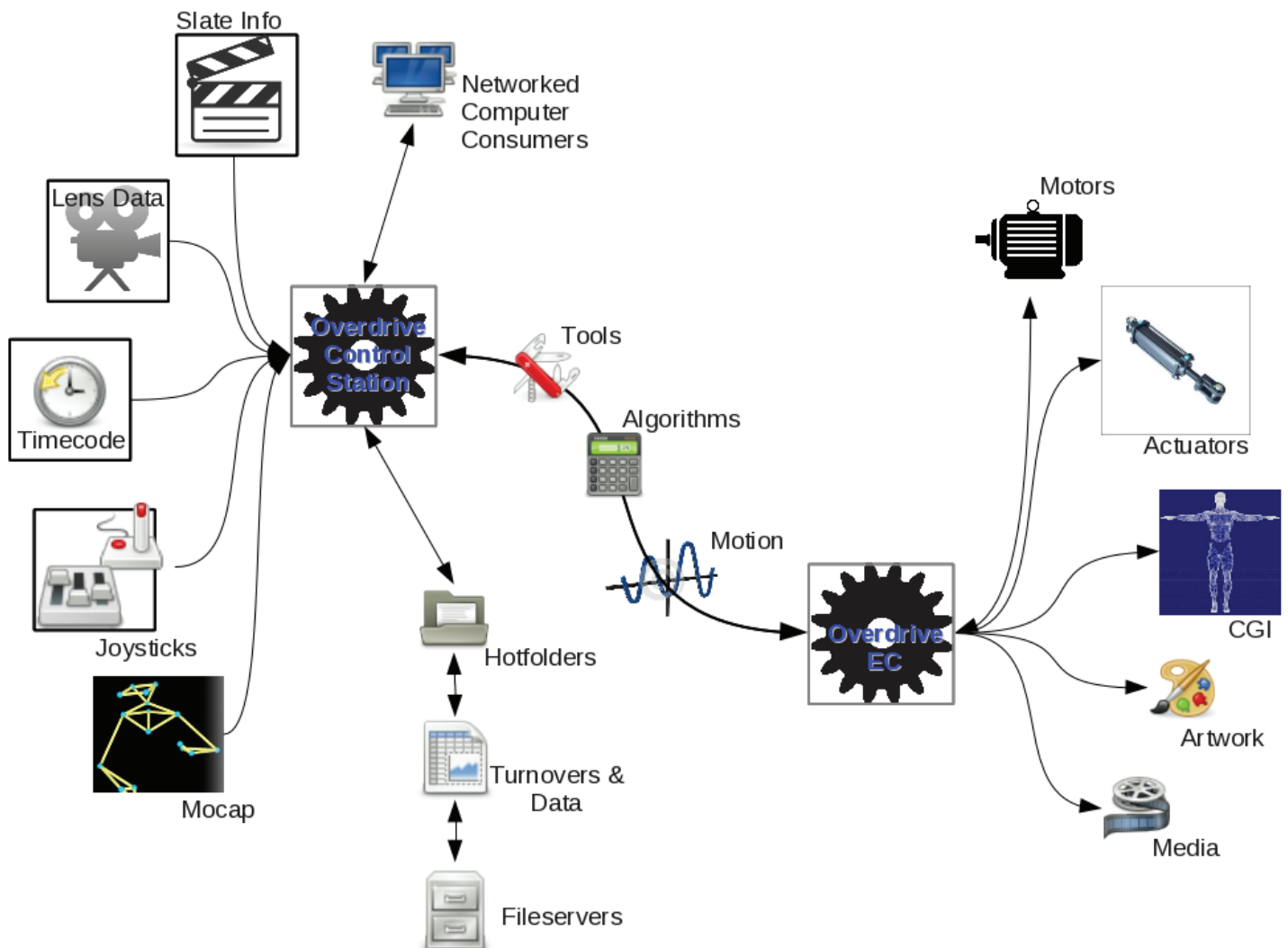
### Software Highlights :

- Intuitive graphical user interface runs locally or remotely
- Motion Editor to record, play, keyframe & edit motion and sound
- Channels, groups and nonlinear-scaling
- 3D graphics scene for pre-visualization
- Math Plugins: from arithmetic to 3D matrices
- Events and Triggers as conditional decision-making
- Collision avoidance and real-time attribute modification
- "Hard Real Time" computing environment - no timing glitches
- 127 analog input channels, 64 binary input chans, up to 500 output chans
- 300 virtual chans, 475 Ethernet telemetry chans, 64 attribute chans
- 450 "Mixes" for lookup tables & motion blending (tables up to 4096 points)
- Data resolution: 8, 12, 16, 24, 32 bit channels (64 bit internal resolution)
- Motion framerates up to 250 fps
- Remote administration via network & Internet
- Analog and digital input device support: Serial, CAN, ADC, etc.
- Multiple digital output ports: serial, fiber, DIO, Ethernet, etc.
- Digital Sound : 48KHz, 24 bit, 2chan S/PDIF, AES/EBU, Word clock in/out
- SMPTE time code support, Ethernet time code
- Open architecture: SDK for interfacing new equipment (Serial, Ethernet, CAN, C, C++ Python, Objective C, C#)
- Formats: Autodesk, .FBX, .XML, Kuper, Flair, Overdrive .show for Maya, Motion-BUILDER, Moco compatibility
- Interfaces for Motion Builder, Maya, Unity, Unreal, Touch Designer, Vizrt, Pixotope, Zero Density, camera heads, Qtake, Faceware, & more

### Hardware Highlights :

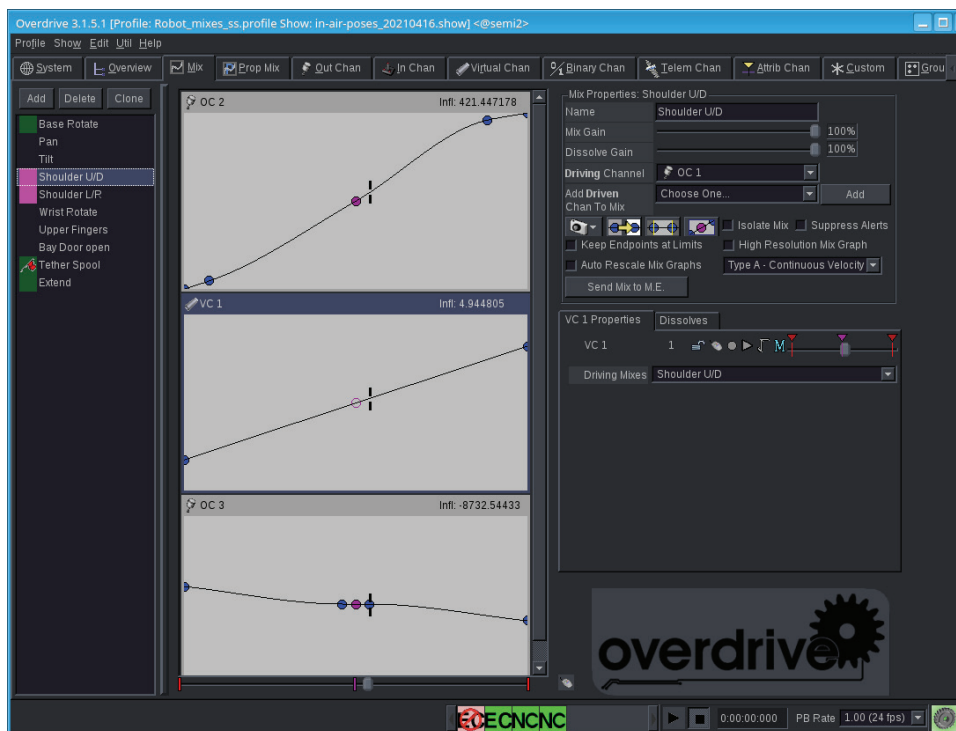
- Rack-mount PC, Portable PC, Laptop, and small Embedded computers
- Fiber optic and Diversity Wireless communications
- Actuators: AC/DC Servo Motor, Hydraulic, RC Servo ( PWM & Dynamixel), CANopen, Analog, Pneumatic, EtherCAT
- Redundant fail-safe features including wire-fault detection
- Interface technologies: Analog, CMOS/TTL DIO, RS232 & RS485 serial, SSI, Ethernet/UDP, CANopen, EtherCAT, Step & Direction, Dynamixel, USB input
- Support for over 30 varieties of servo motor drives, encoders, robots, and camera heads
- Metadata, Time code, Genlock & Tri-level sync interfaces

## Overdrive as the Hub of a Motion and Meta-data Network



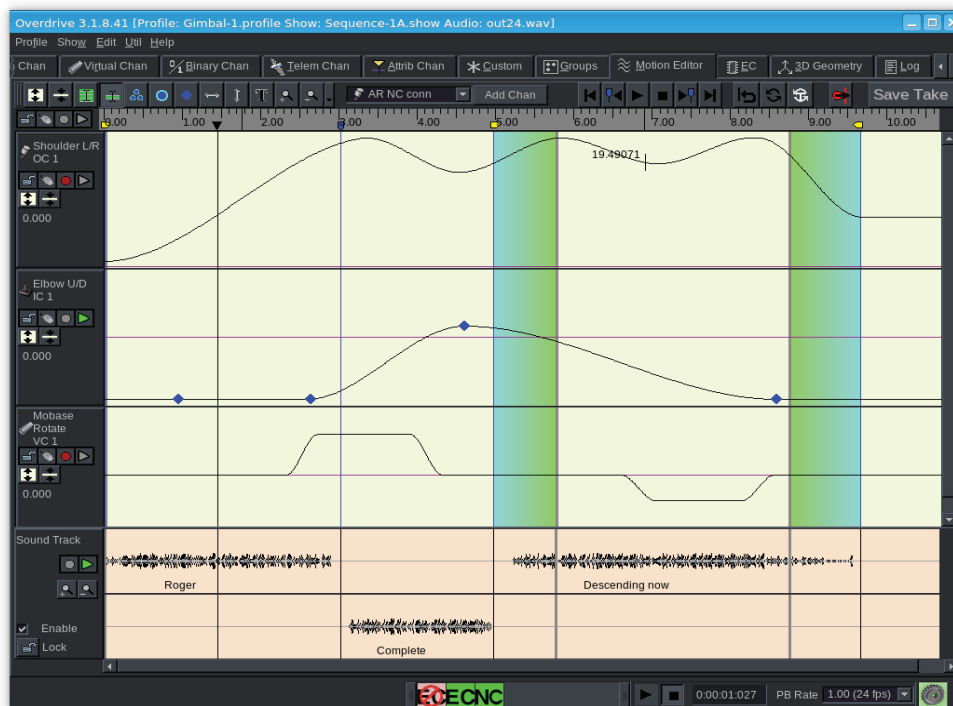
Overdrive is a PC-based motion control system. It is typically implemented with two computers. The front-end "Control Computer" runs a hard real time Operating System and is the center of control. It has a graphical user interface, executes constraints and is the recording/playback unit. Analog or Digital user input devices are connected to the Control Computer. Downstream via fiber optic, wireless, or Ethernet link is an "Embedded Computer" (EC). An EC is a hard real time computer which moves real-world actuators or collects telemetry data. The EC controls outputs in a one-to-many topology. The bidirectional communications link can also send data upstream to the Control Computer from sensors at the EC. In an "OV-one" configuration both the Control Computer and the EC software are together on one small board. A multi-language SDK allows third-party hardware or software modules to become an EC so as to send or receive motion by serial, CAN or Ethernet. Overdrive systems can also be linked together.

## Mixes: Define Channel Relationship and Scaling



Curve Editing • Lookup Tables • Graph Copy • Auto Scaling • Import/Export curves  
Transit Mode • Gains & Dissolves • Deadbands

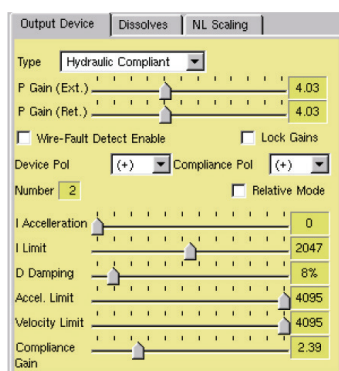
## Motion Editor: Motion Recording, Editing, and Playback



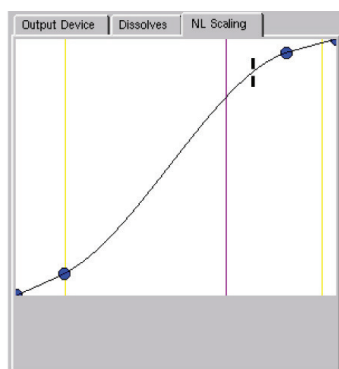
Smoothing • Keyframing • Curve Editing • Variable Speed & Reverse • Accel Zones  
Named Regions & Markers • 48KHz 24 bit Sound • Text Tracks • Triggering • Take Management



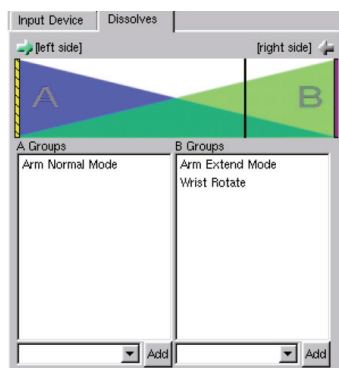
## Output Device



## Nonlinear Scaling



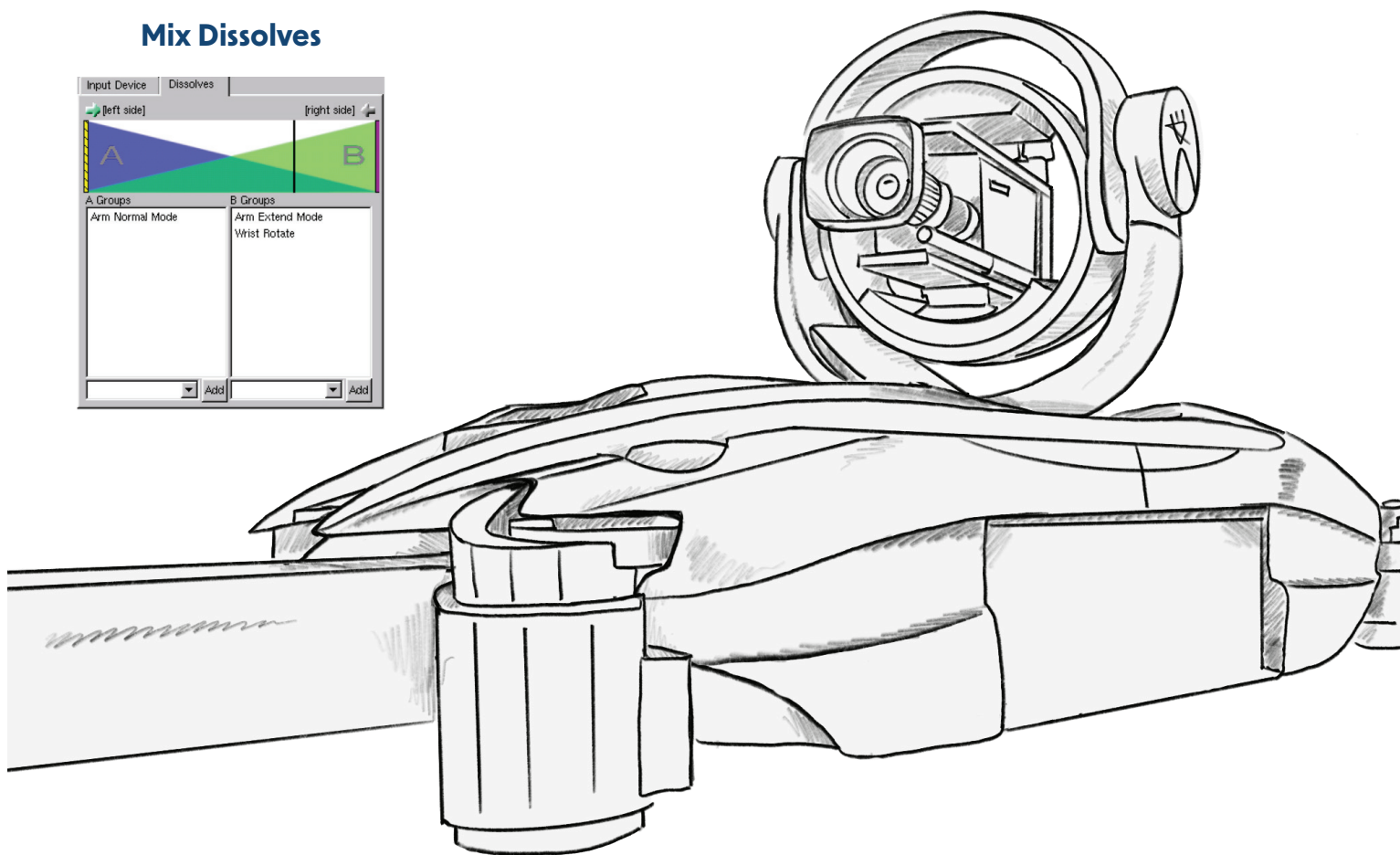
## Mix Dissolves



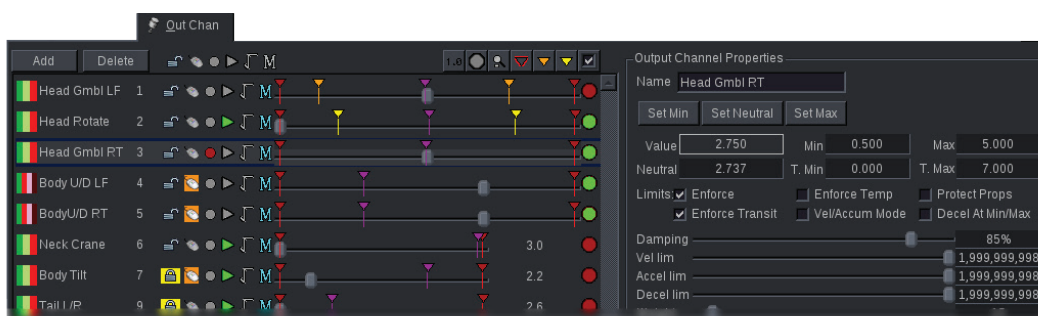
## Channels: The Pipeline for Constraints and Attributes



Live/Play/Record • Limits & Decel • Temp Limits • Mouse Override  
 Transit Safety Mode • Attribute Copy • Wire Fault Detection  
 Dynamic Attributes • Smoothing Physics • Remote Device Tuning  
 Nonlinear Scaling • Drive Mix Gain • Drive Dissolve



## Output Channels: Finalized motion sent to Actuators



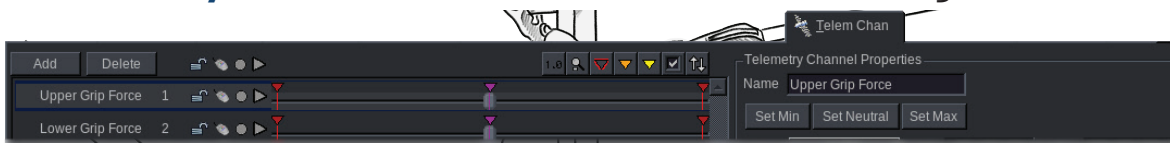
## Input Channels: Real world motion in from local input devices



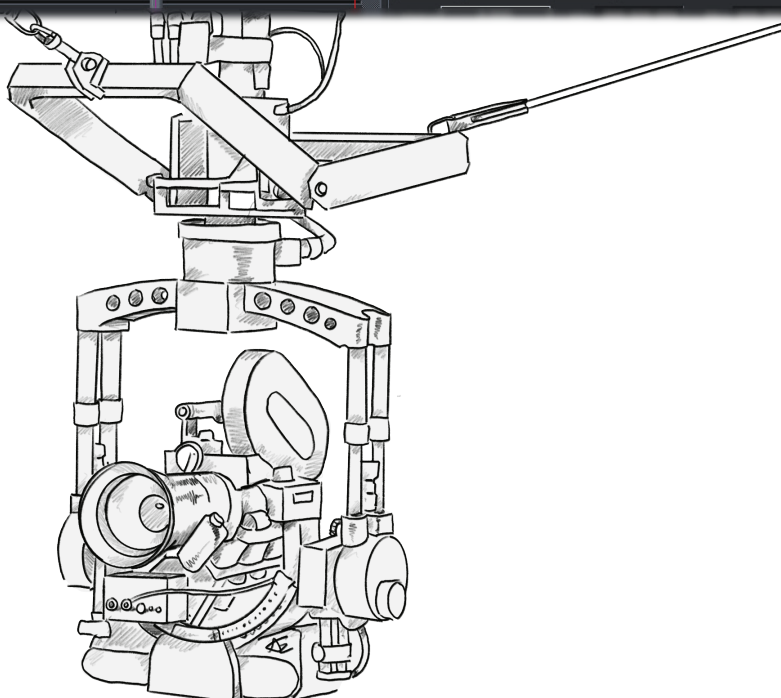
## Virtual Channels: Pipe motion between objects, adding attributes



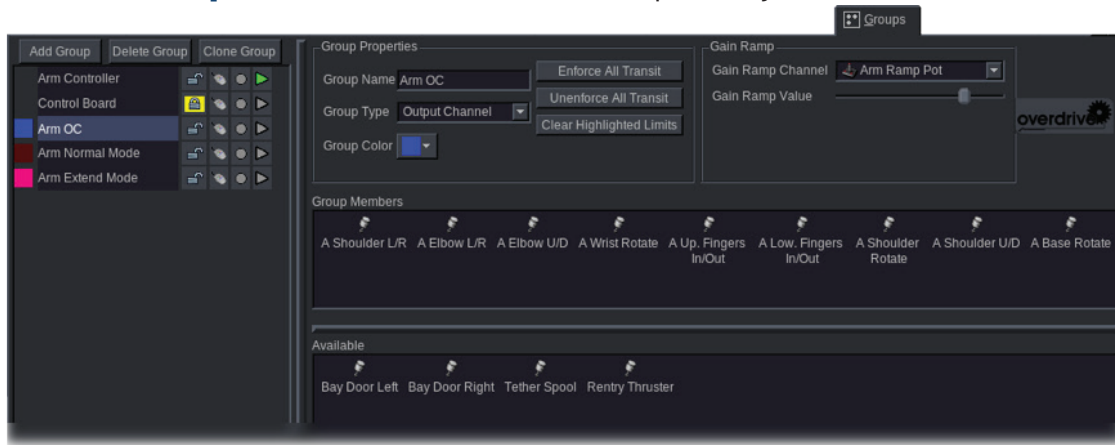
## Telemetry Channels: Stream motion in from remote digital devices



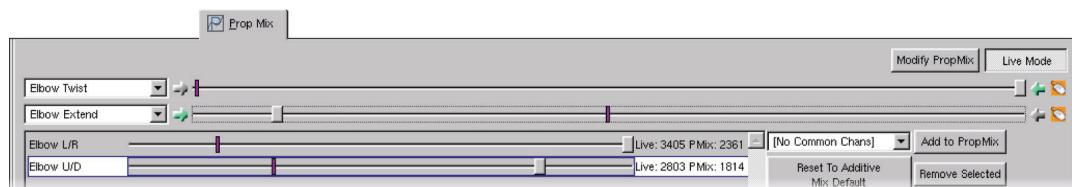
## Attribute Channels: Drive overrides and modes of other channels



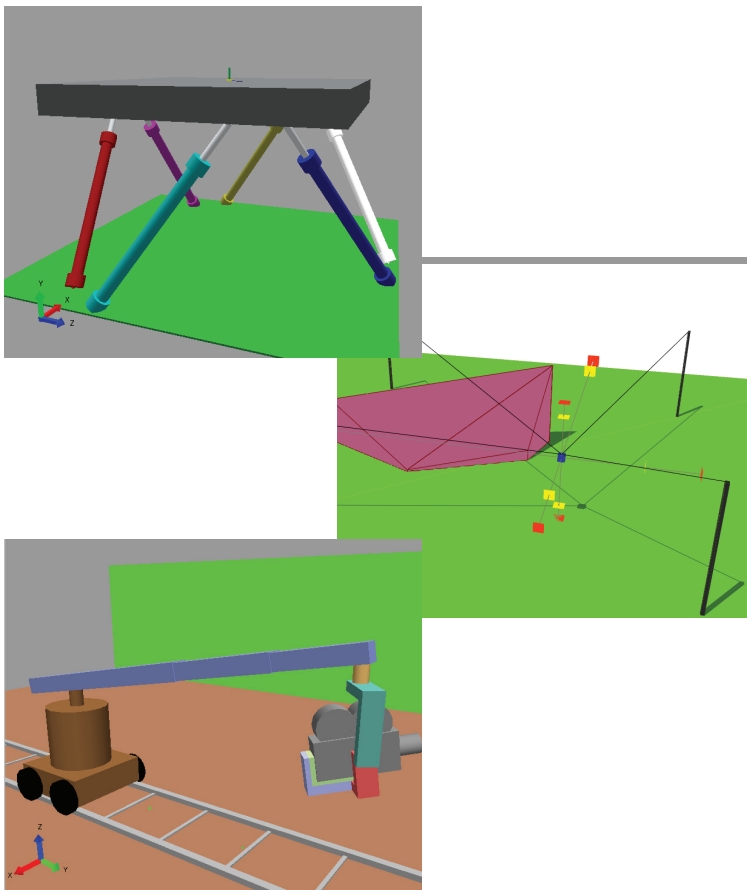
## Groups: Perform actions on multiple objects at once



## Proportional Mixing: Tune the way motion combines



## 3D Simulation Scene and Collision Avoidance



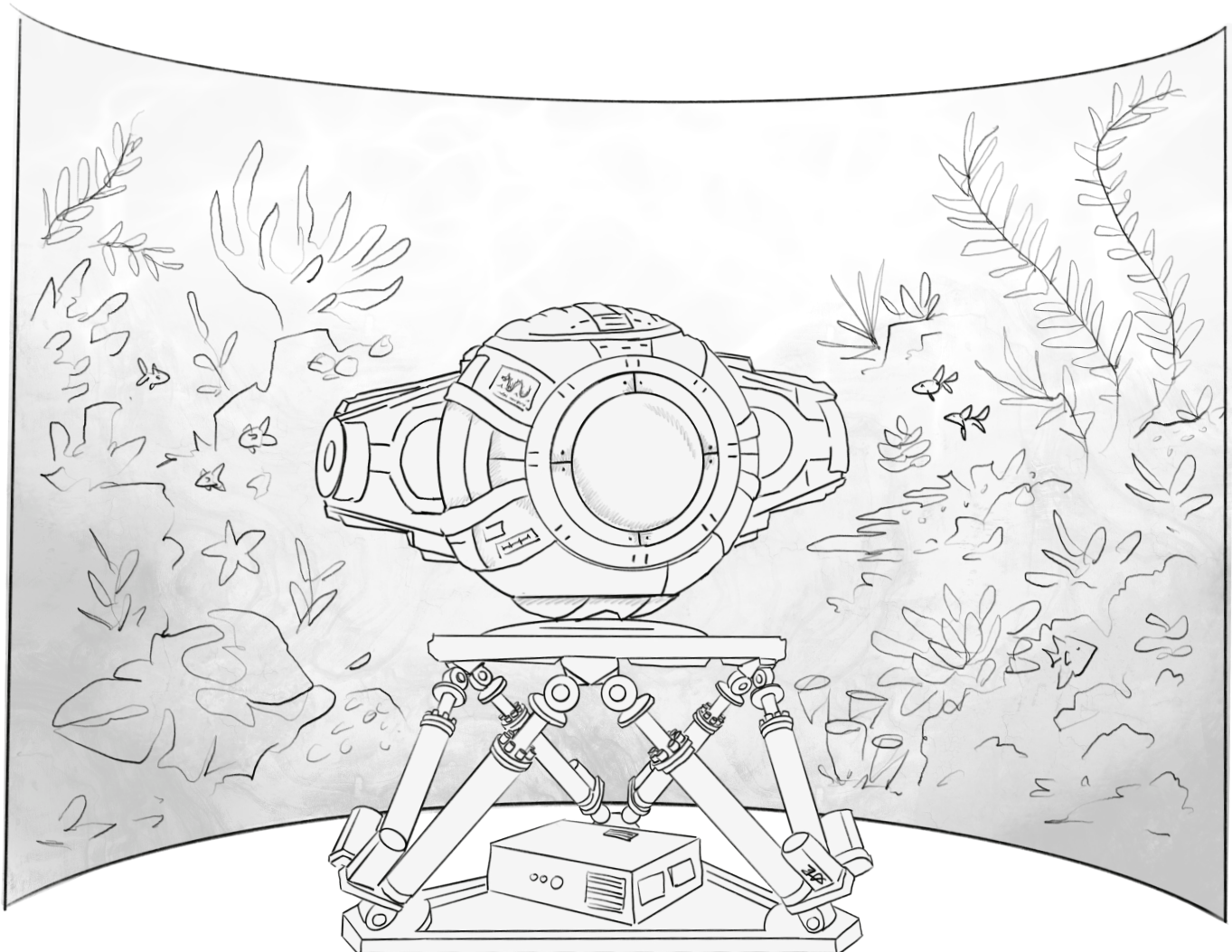
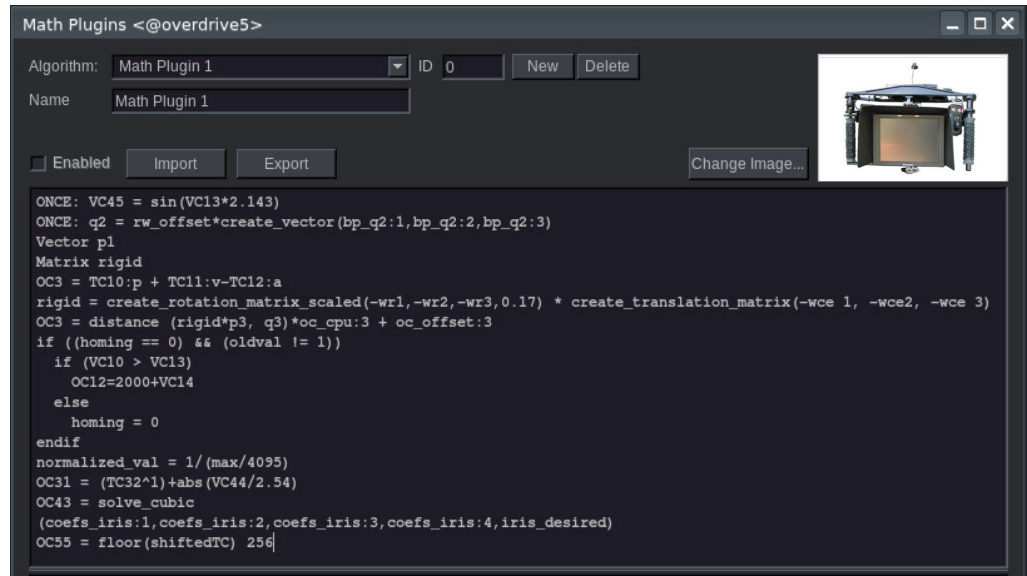
## Overview: Browse object influences





- Double Precision 64bit
- Standard Math Libraries
- Functions & Control Flow
- User Constants & Variables
- Matrices & Vectors
- Curve Lookups
- Channel Values/Attributes
- State Machines
- Edge Triggers
- Indexable Channels
- Execute at Framerate
- Closed Loops

## Math Engine: Hard Real Time User Plugins







Contact **Concept Overdrive** today to plan your motion system

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