Make Live Easy™

About id3as

- 100s of thousands of live events a year
- 1000s of live 24/7 channels
- Early access to technology (LL-HLS, WebRTC...)
- Rare skills (deep media expertise, cloud, PureScript, Erlang, Rust...)
- Good on a Bad Day
- Founders of Greening of Streaming

About Our Deployments

- Cloud native
  - “Infinite” capacity
  - Great for spikey load
- ...but about half of our customers run on-prem or hybrid
  - Source acquisition
  - Density
  - Cost
  - Energy

We Are Going to Need a Bigger Boat...

- 256 physical cores (512 logical)
- 24x 2.5" U.2 hot-swappable bays
- 2U in height

- Good excuse for a new screen!

Why Norsk?

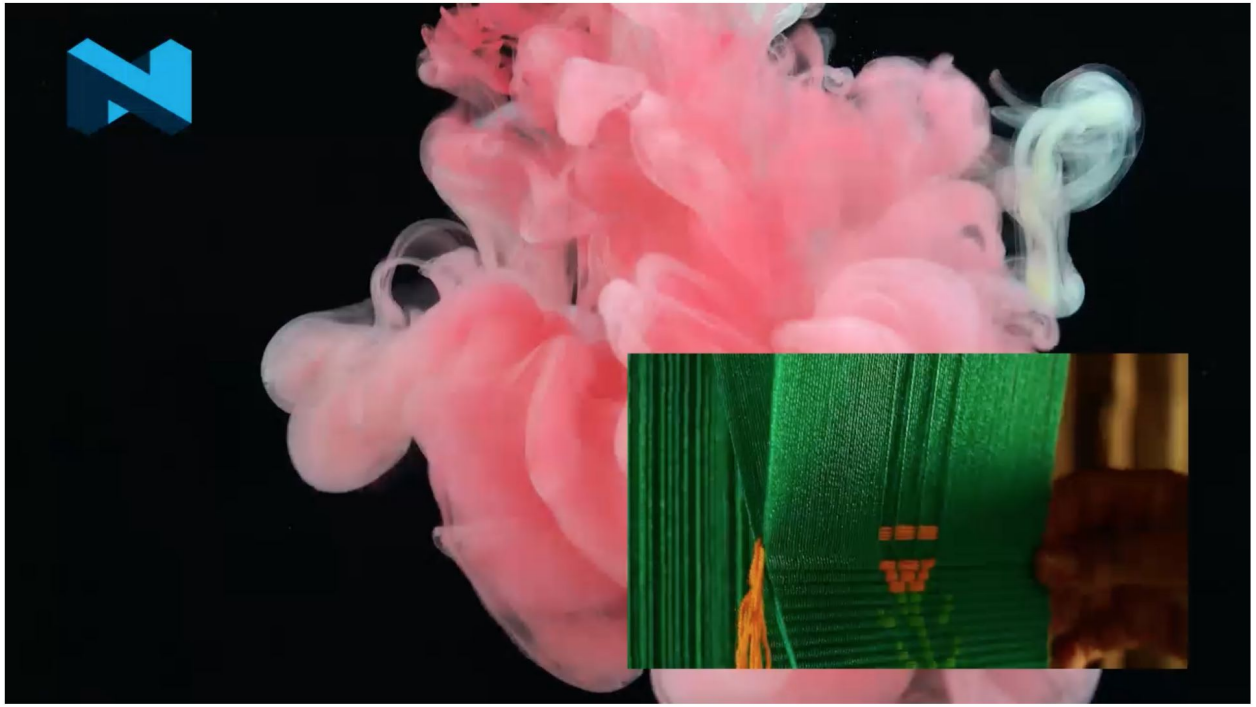
Off-the-shelf products can be limiting.

Building your own media technology stack is time-consuming and complex.

There has to be a better way!

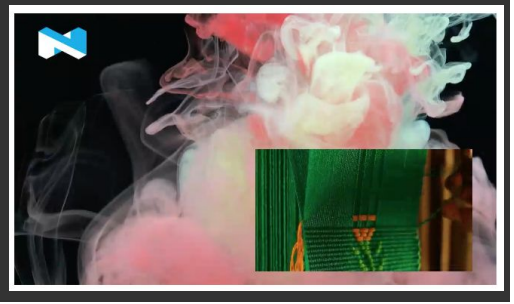
Norsk: Live Media Manipulation

Made Easy!



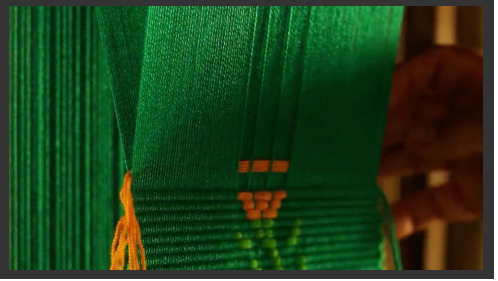
Norsk: Picture in Picture

```
const input1  = await norsk.input.srt(srtSettings);
const input2  = await norsk.input.rtmpServer(rtmpSettings);
const input3  = await norsk.input.imageFile(fileInputSettings);
const compose = await norsk.processor.transform.composeOverlay(composeSettings);
const mixer   = await norsk.processor.transform.audioMix(mixerSettings);
const output  = await norsk.output.whep(rtcSettings);

compose.subscribeToPins([
  { source: input1, sourceSelector: videoToPin(background.pin) },
  { source: input2, sourceSelector: videoToPin(embedded.pin) },
  { source: input3, sourceSelector: videoToPin(logo.pin) },
]);
mixer.subscribeToPins([
  { source: input1, sourceSelector: audioToPin('input1') },
  { source: input2, sourceSelector: audioToPin('input2') }
]);
output.subscribe([
  { source: compose, sourceSelector: selectVideo },
  { source: input1,  sourceSelector: selectAudio },
]);
```



Norsk: RTMP => WebRTC

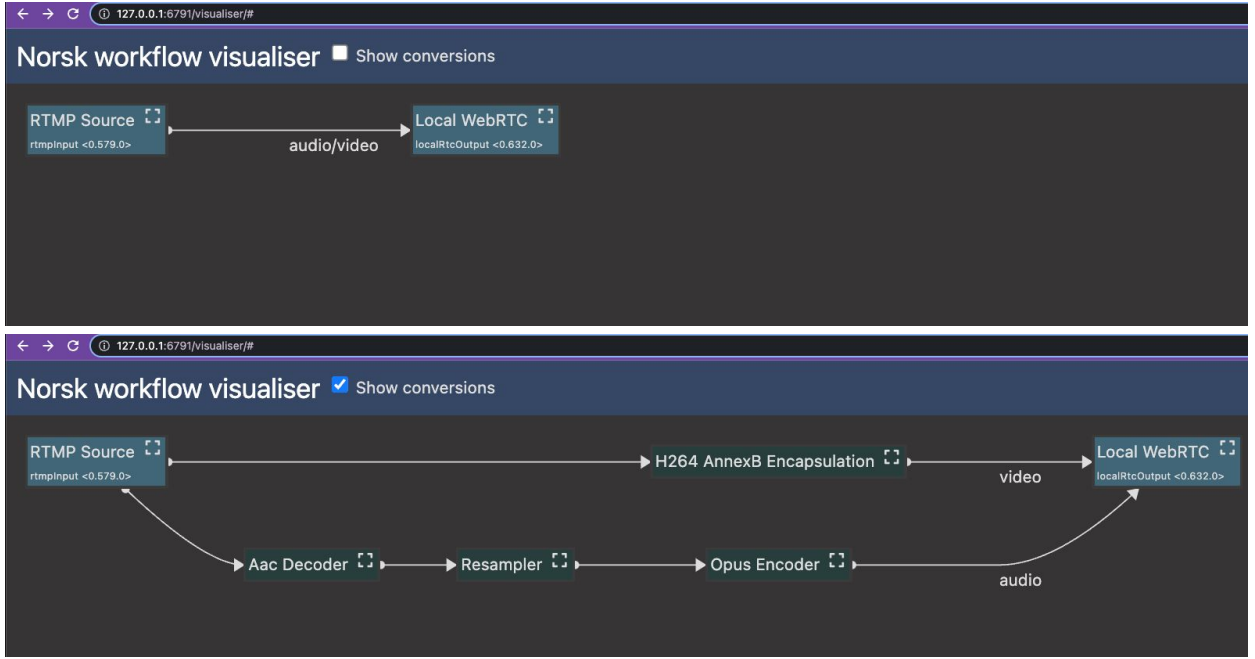
```
const norsk = await Norsk.connect();

const input  = await norsk.input.rtmpServer();
const output = await norsk.output.whep();

output.subscribe([{ source: input, sourceSelector: selectAV }]);
```



Norsk: Taking Care of the Detail

Norsk is expert in the intricate details of media

So you don't have to be!



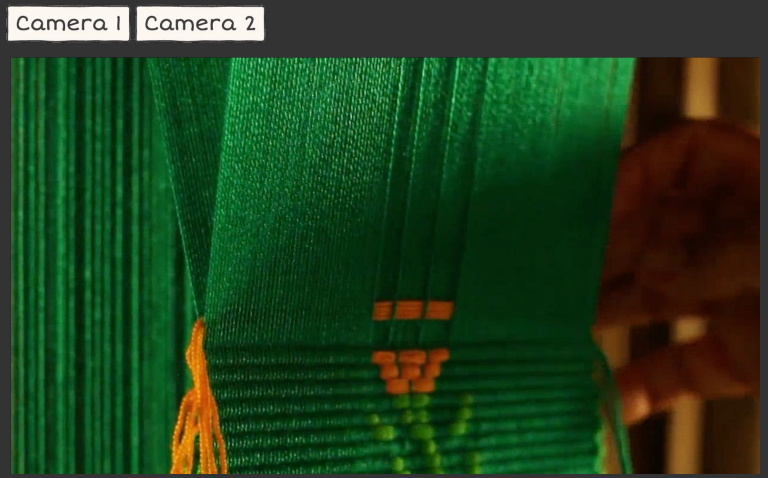
Norsk: Source Switcher

```
const norsk = await Norsk.connect();

const camera1        = await norsk.input.srt(srtCamera1Settings);
const camera2        = await norsk.input.srt(srtCamera2Settings);

const sourceSwitcher = await norsk.processor.control.sourceSwitcher(sourceSwitcherSettings);

const output         = await norsk.output.whep(rtcOutputSettings);

sourceSwitcher.subscribe([
  { source: camera1, sourceSelector: selectAV },
  { source: camera2, sourceSelector: selectAV },
]);

output.subscribe([
  { source: sourceSwitcher, sourceSelector: selectAV }
]);
```

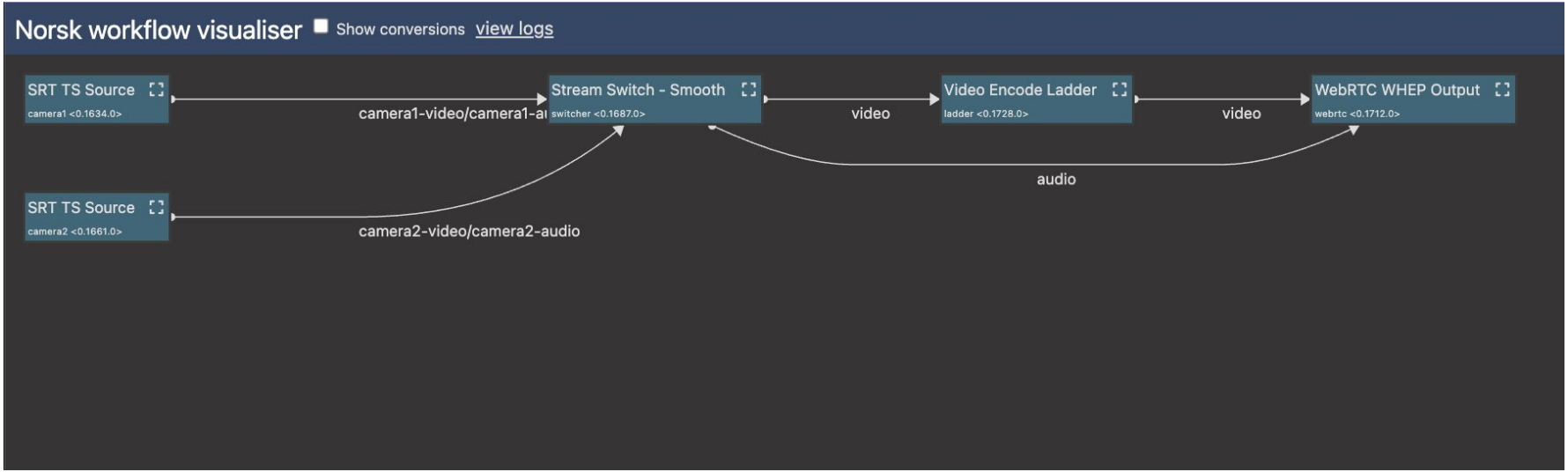

Norsk: Source Switcher

Then just call:

```
sourceSwitcher.switchSource(newSource);
```

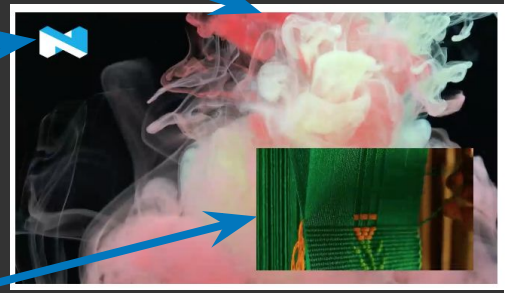


Norsk: Taking Care of the Detail



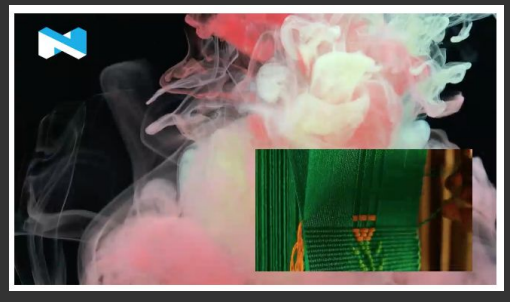
Norsk: Picture in Picture

```ts
const background: ComposePart<'background'> = {
  pin: 'background',opacity: 1.0, zIndex: 0,
  sourceRect: { x: 0, y: 0, width: 100, height: 100 },
  destRect: { x: 0, y: 0, width: 100, height: 100 },
};

const logo: ComposePart<'logo'> = {
  pin: 'logo', opacity: 1.0, zIndex: 2,
  sourceRect: { x: 0, y: 0, width: 100, height: 100 },
  destRect: { x: 5, y: 5, width: 10, height: 8 },
};

const embedded: ComposePart<'embedded'> = {
  pin: 'embedded', opacity: 1.0, zIndex: 1,
  sourceRect: { x: 0, y: 0, width: 100, height: 100 },
  destRect: { x: 50, y: 50, width: 45, height: 45 },
};
```

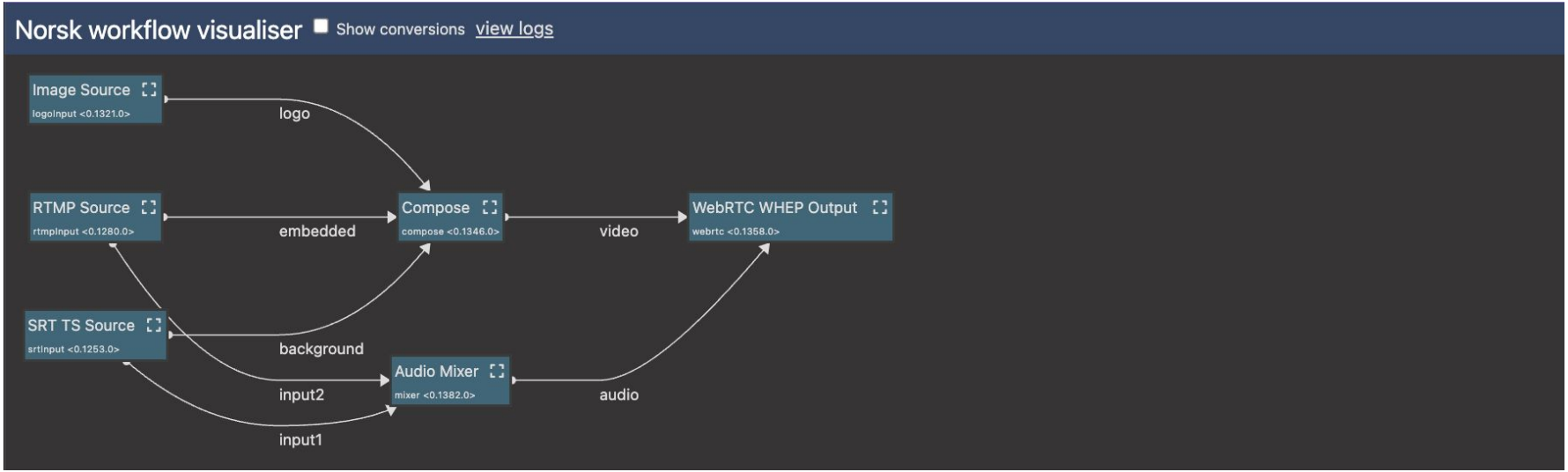


Norsk: Picture in Picture

```
const input1  = await norsk.input.srt(srtSettings);
const input2  = await norsk.input.rtmpServer(rtmpSettings);
const input3  = await norsk.input.imageFile(fileInputSettings);
const compose = await norsk.processor.transform.composeOverlay(composeSettings);
const mixer   = await norsk.processor.transform.audioMix(mixerSettings);
const output  = await norsk.output.whep(rtcSettings);

compose.subscribeToPins([
  { source: input1, sourceSelector: videoToPin(background.pin) },
  { source: input2, sourceSelector: videoToPin(embedded.pin) },
  { source: input3, sourceSelector: videoToPin(logo.pin) },
]);
mixer.subscribeToPins([
  { source: input1, sourceSelector: audioToPin('input1') },
  { source: input2, sourceSelector: audioToPin('input2') }
]);
output.subscribe([
  { source: compose, sourceSelector: selectVideo },
  { source: input1,  sourceSelector: selectAudio },
]);
```



Norsk: Taking Care of the Detail

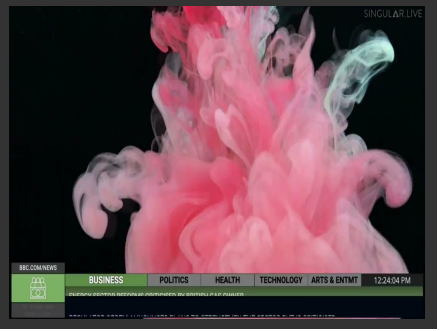


Norsk: Picture in Picture (Dynamic)

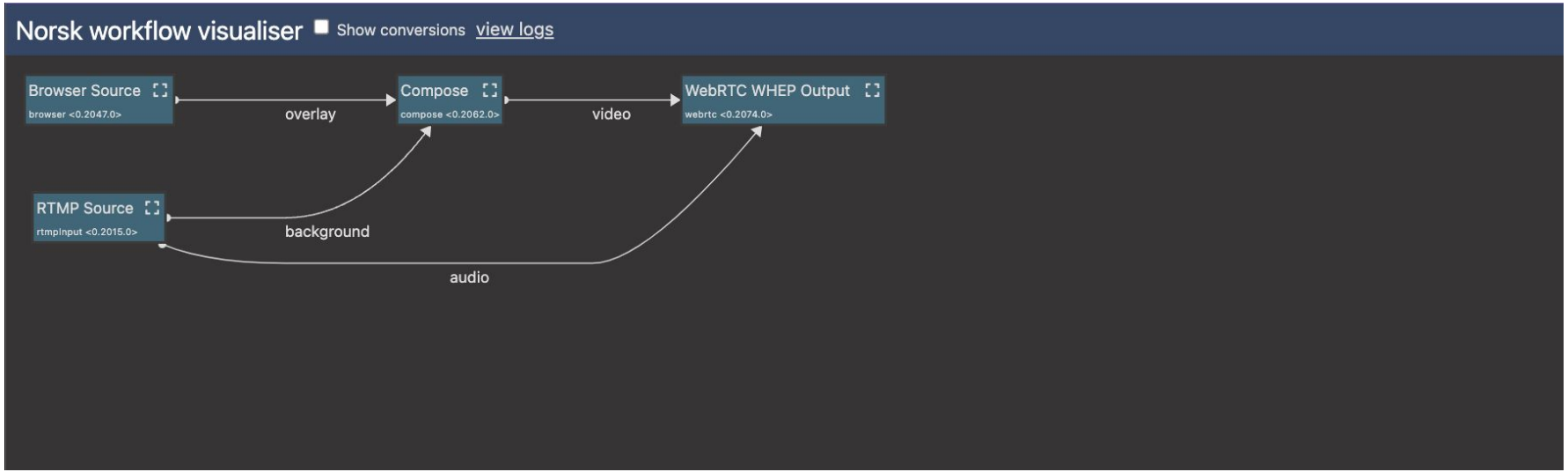
```
compose.updateConfig(newComposeSettings);
```

Norsk: Browser Overlay

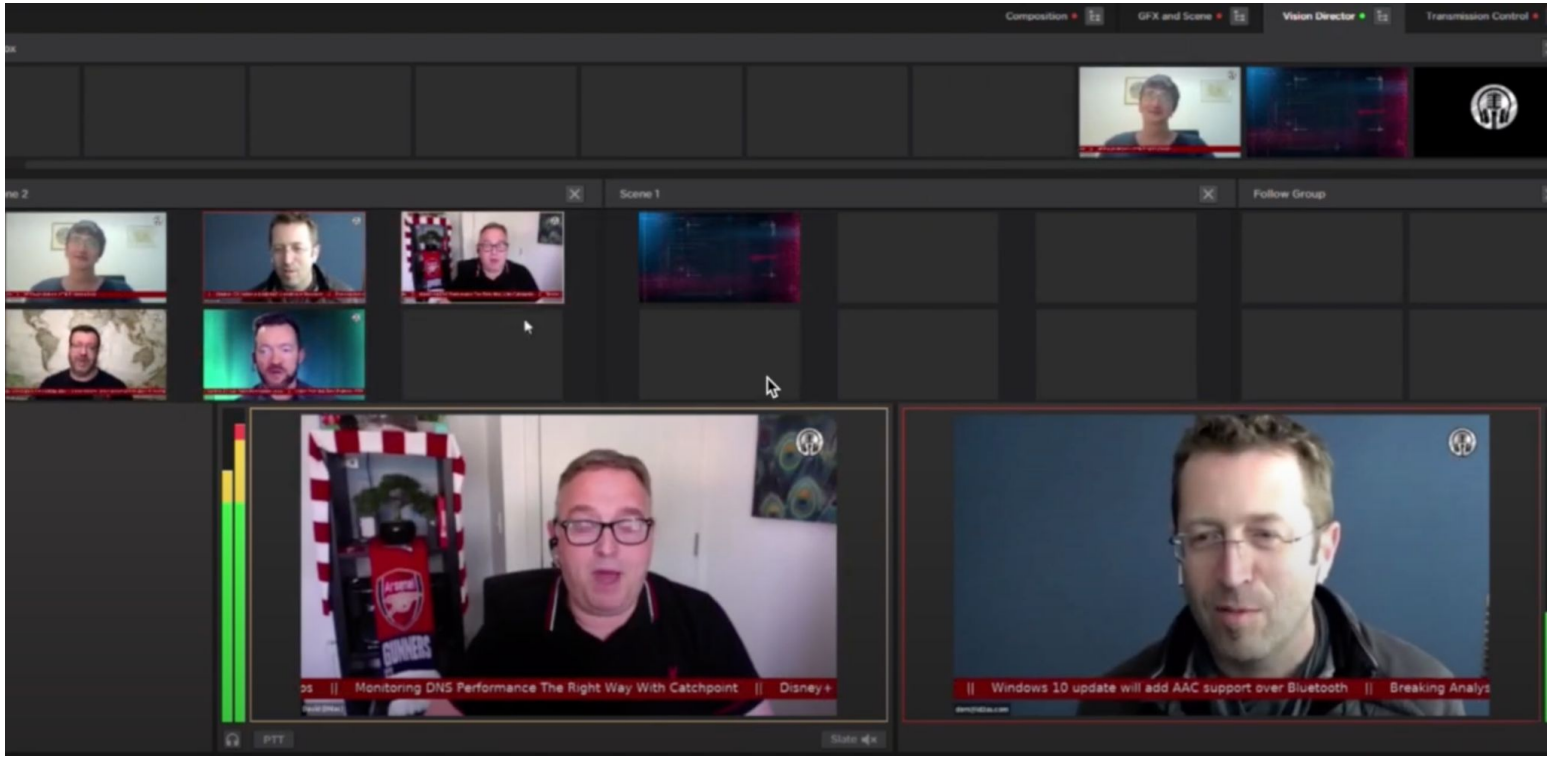
```
const source  = await norsk.input.rtmpServer(rtmpSettings);
const browser = await norsk.input.browser(browserSettings);
const compose = await norsk.processor.transform.videoCompose(composeSettings);
const output  = await norsk.output.whep(webrtcSettings);

compose.subscribeToPins([
   { source: source,  sourceSelector: videoToPin(background.pin) },
   { source: browser, sourceSelector: videoToPin(overlay.pin) },
]);

output.subscribe([
   { source: compose, sourceSelector: selectVideo },
   { source: source,  sourceSelector: selectAudio },
]);
```



Norsk: Taking Care of the Detail



That’s everything you need to build...

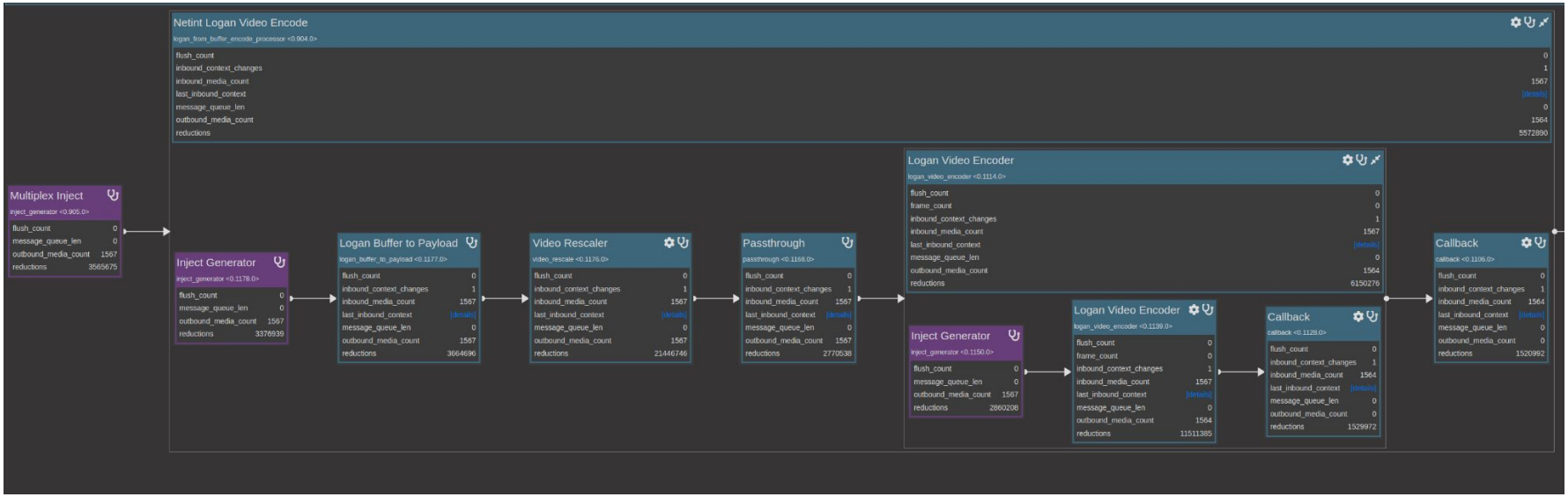


Norsk: Control and Flexibility

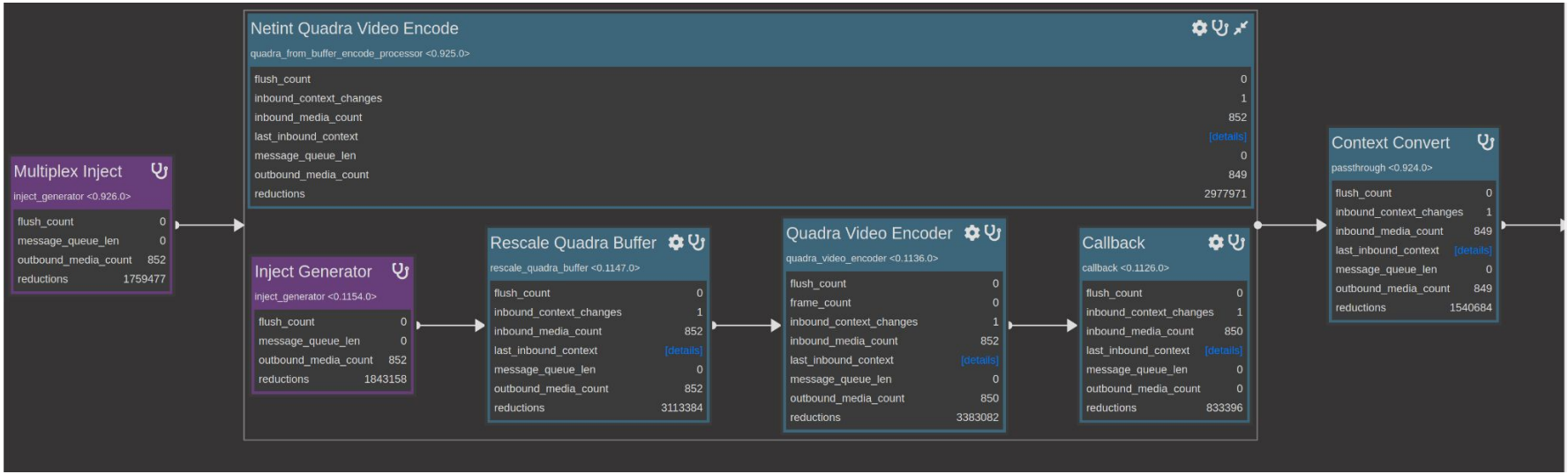
```
const highRung: VideoEncodeRung =
  if (process.env.ENVIRONMENT !== "DEV") return {
      name: "high",
      width: 1920,
      height: 1080,
      frameRate: { frames: 60, seconds: 1 },
      codec: {
        type: "quadra-h264",
        profile: "high",
        level: 5.1,
        bitrate: 2_800_000,
        intraPeriod: 50,
        rcEnable: 1,
        intraQp: 30,
      }
    };
```

```
else return {
  name: "high",
  width: 1280,
  height: 720,
  frameRate: { frames: 30, seconds: 1 },
  codec: {
    type: "x264",
    profile: "high",
    level: 4.1,
    bitrateMode: { value: 800_000, mode: "abr" },
    keyFrameIntervalMax: 50,
    keyFrameIntervalMin: 50,
    sceneCut: 0,
    preset: "ultrafast",
    tune: "zerolatency",
  }
};
```

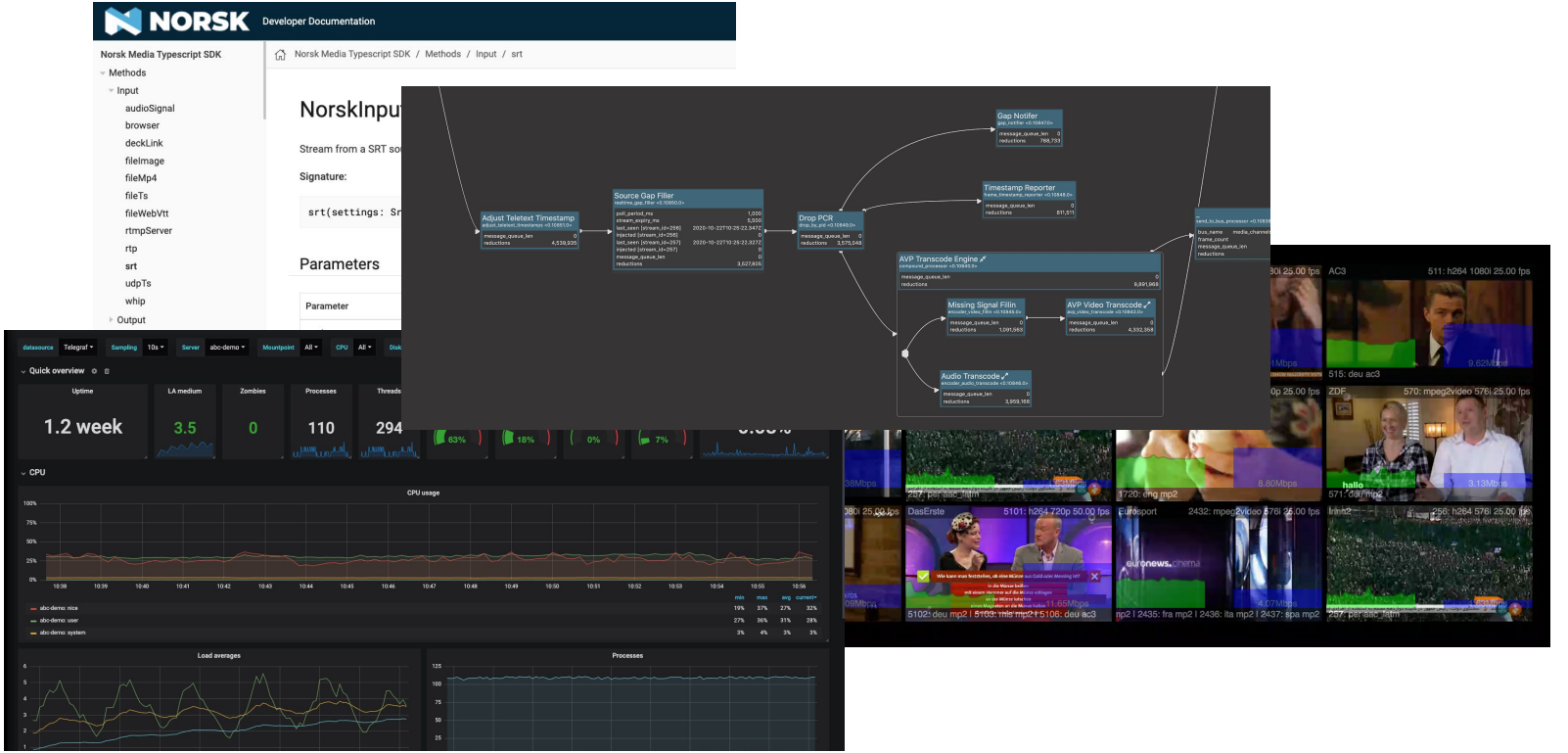

Norsk: Automated Efficiency & Flexibility



Norsk: Automated Efficiency & Flexibility



Norsk: Make Live Practical



Norsk: Make Live Easy™