

Goodbye Render Button

Realtime workflows



Ad de Haan Dave van Roon

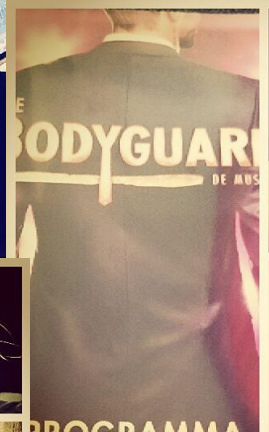
Live Legends
[The Unit Showcontrol & LiveLAB]

Moeder, ik wil bij de revue
The Bodyguard
Das Wunder von Bern
El Guardiaespaldas
Nick & Simon

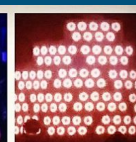
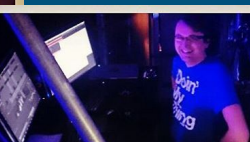
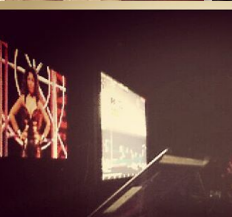




LOCATION: **The Bodyguard Madrid**
WEIGHT: COLLE:



Ad de Haan
Beeldregie & realisatie
Ad zorgt voor de creatieve invulling, normgeving en beweging van het programma.





Spreek standje
Film standje

Color of general
theme?

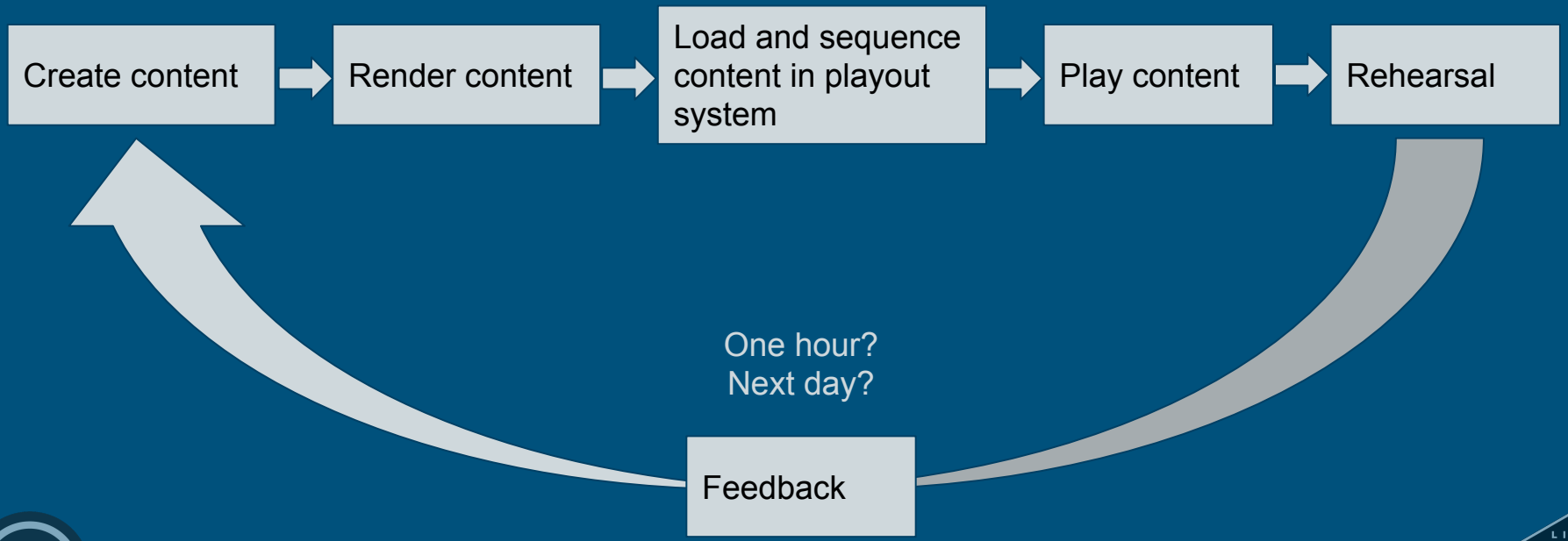
Order of speakers?
Order of movies?

Which movie?

How much
time left for
this movie?

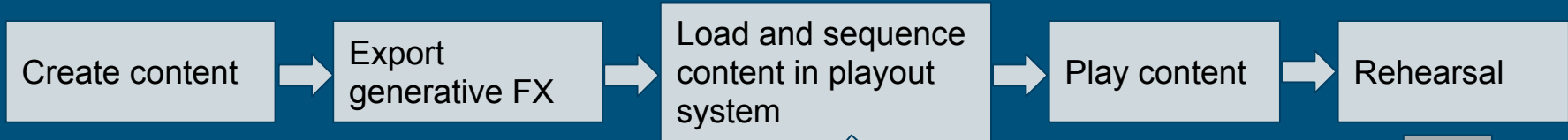


Opacity
Speed
Size
Position
Crop
Color



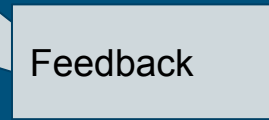
Direction
Amount
Wavyness
Texture
Whatever you
exposed...

Live camera
Artnet
Motion tracking
Midi
Keyframes



As long as it takes,
to change the keyframes

NO RE-RENDERING!



Example: Artnet controlled organpipes



Corporate event 2015 - Barcelona



112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129

```
for(var x=0; x<=aantal_pijpen; x++){  
var totaal = height - pijp[x][1] - p  
var stapje = round(totaal/100);  
var aantal = round(totaal/stapje);  
var intens = map(max(licht[x]), 0,255,255,0)/aantal;  
//text(""+intens+" ", 10,(90+x*30));
```

Create pipes

```
//maak een pijp  
for(var i=1; i<=aantal; i++){  
fill(2*licht[x][0],2*licht[x][1],2*intens*i*3));  
var y = pijp[x][2] + totaal - (2  
rect(pijp[x][0],y,pijp[x][3],stapje,  
}
```

Create gradient for
each pipe based on
Artnet value



NOTCH

disguise




2016: Notch surfaced in our workflow quest





IMAG

Big, ugly, flat obligation,
'cause "That's what they came for"





Dedicated IMAG screens





Flat IMAG integration







Example: Particle



VOPAK 400 YEARS

ferry corsten

ferry corsten

NICO
ALSEMGEEST



LIVE TIME



Example: Custom post-FX



Example: Placement



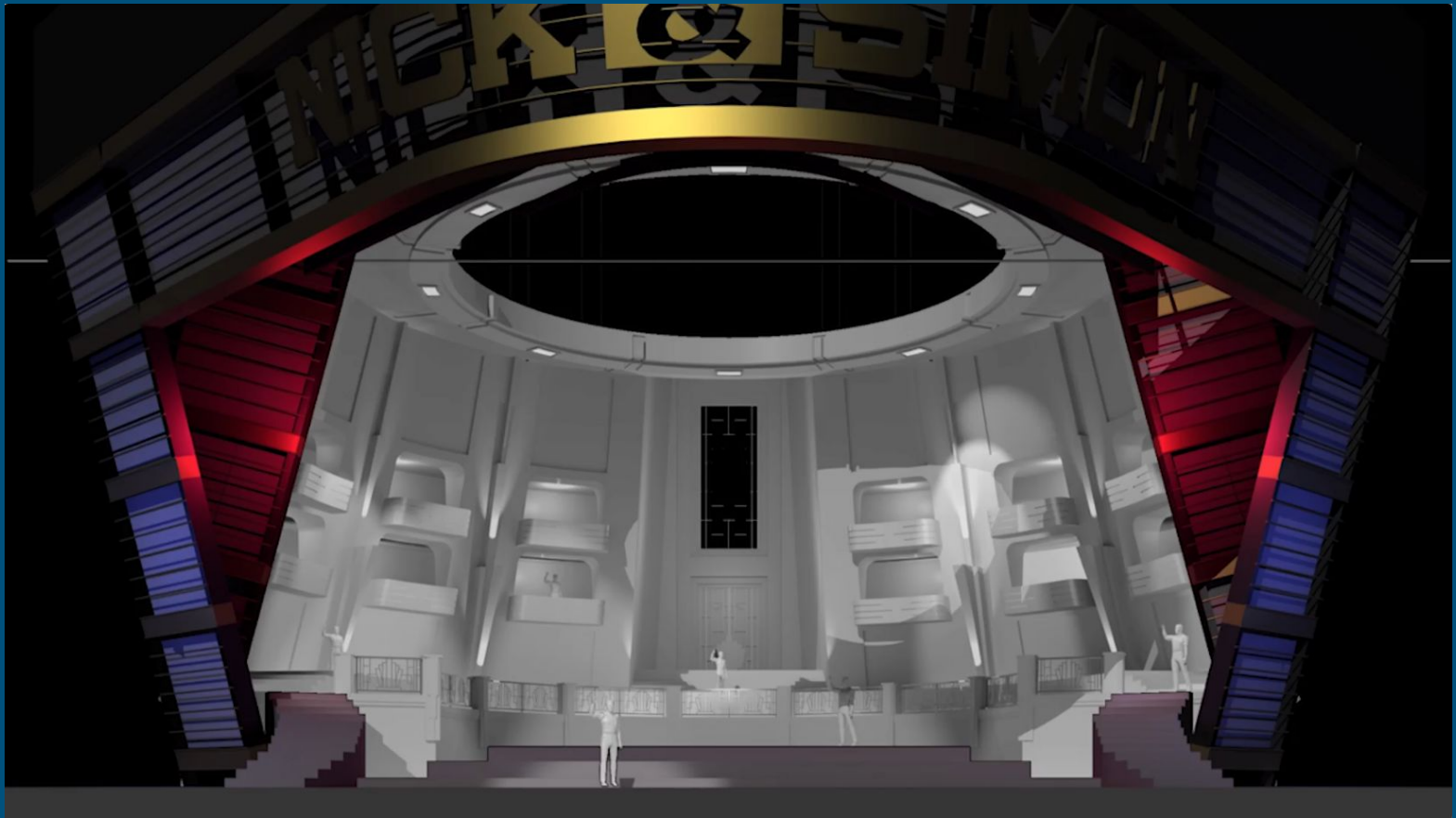
LIVE TIME

NICO
ALSEMGEEST
FOTOGRAFIE



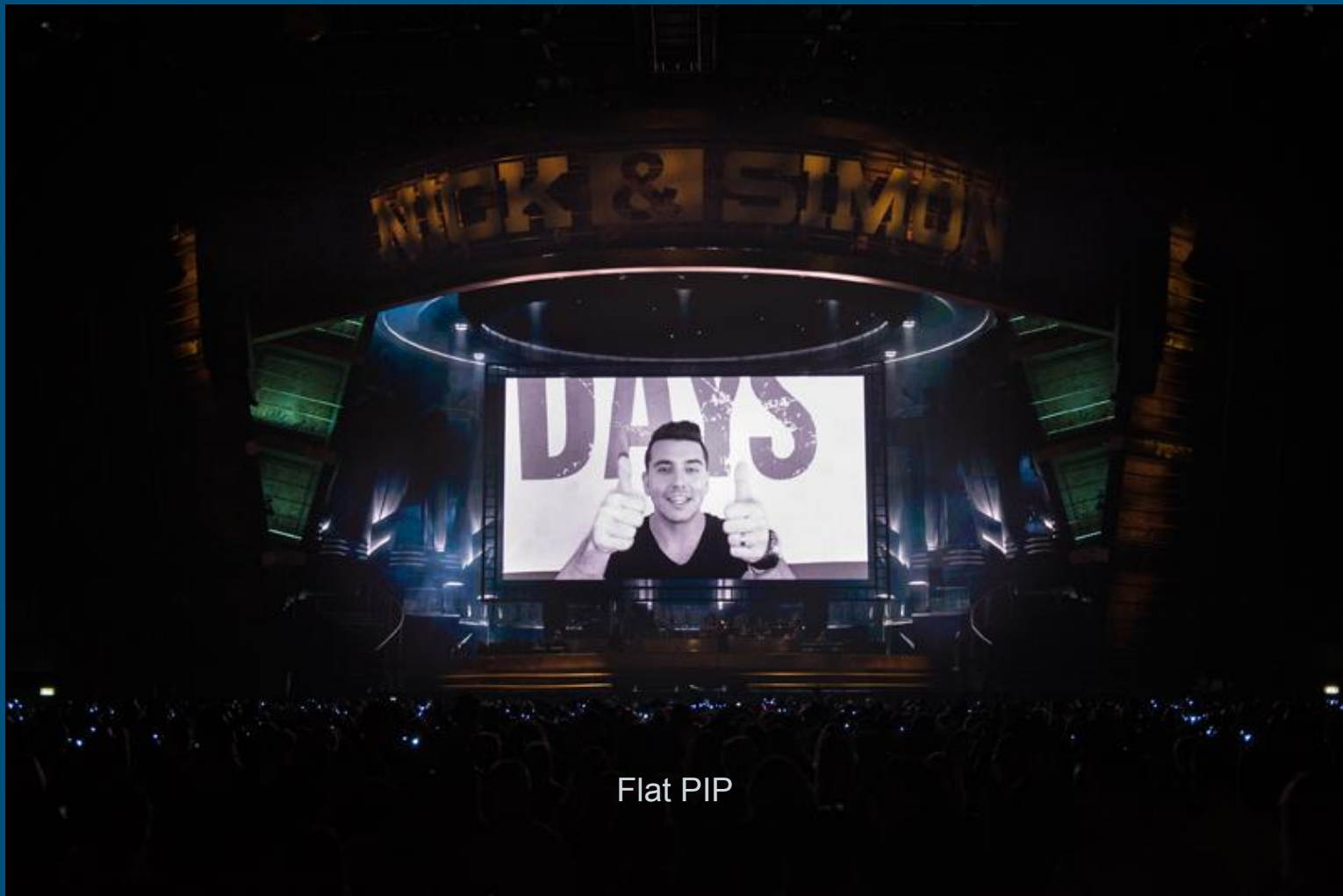


Just a flat LED
screen



Common base 3D model
shared across content team





Flat PIP





NICK & SIMON

Spherical PIP





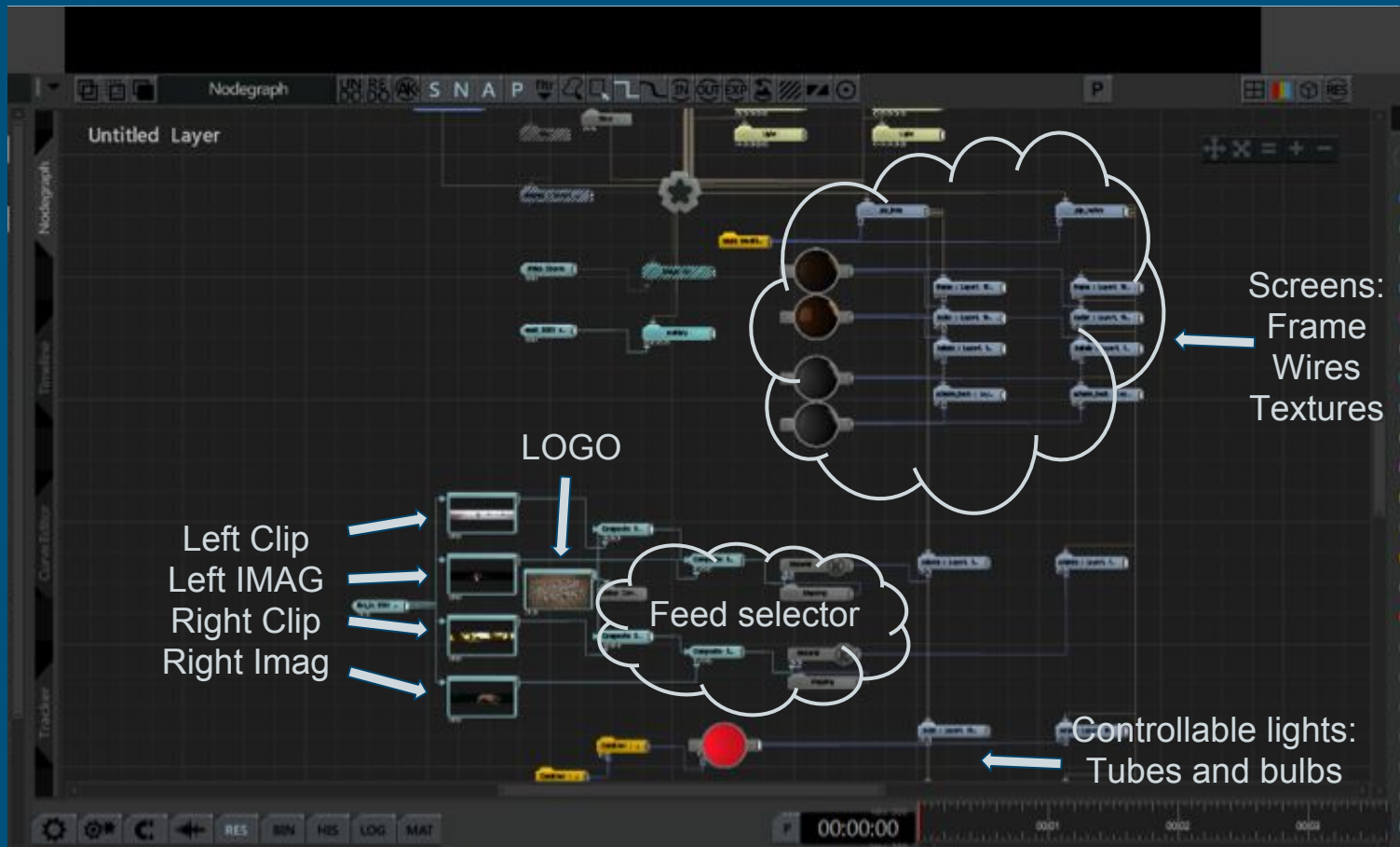
Arty PIP





3D PIP



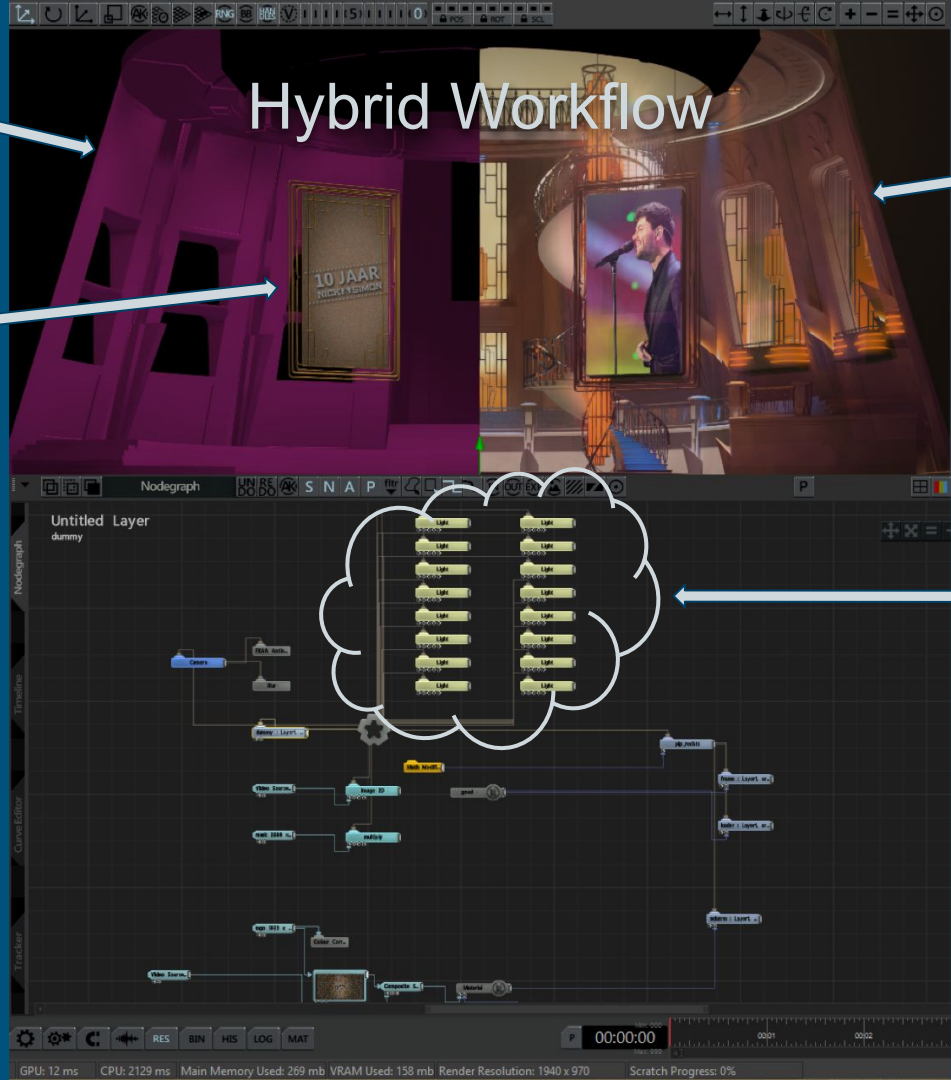


Hybrid Workflow

Shared 3D model, loaded as reference to match camera

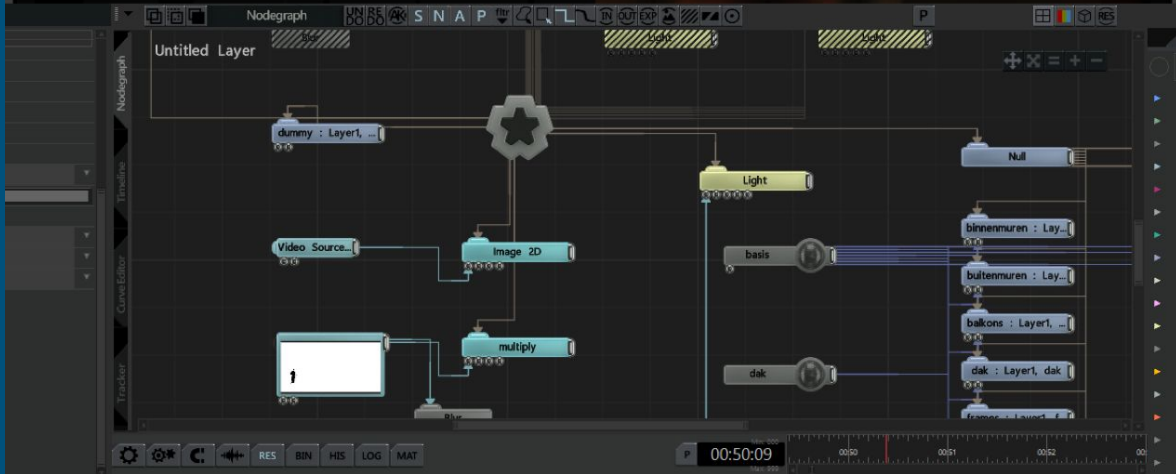
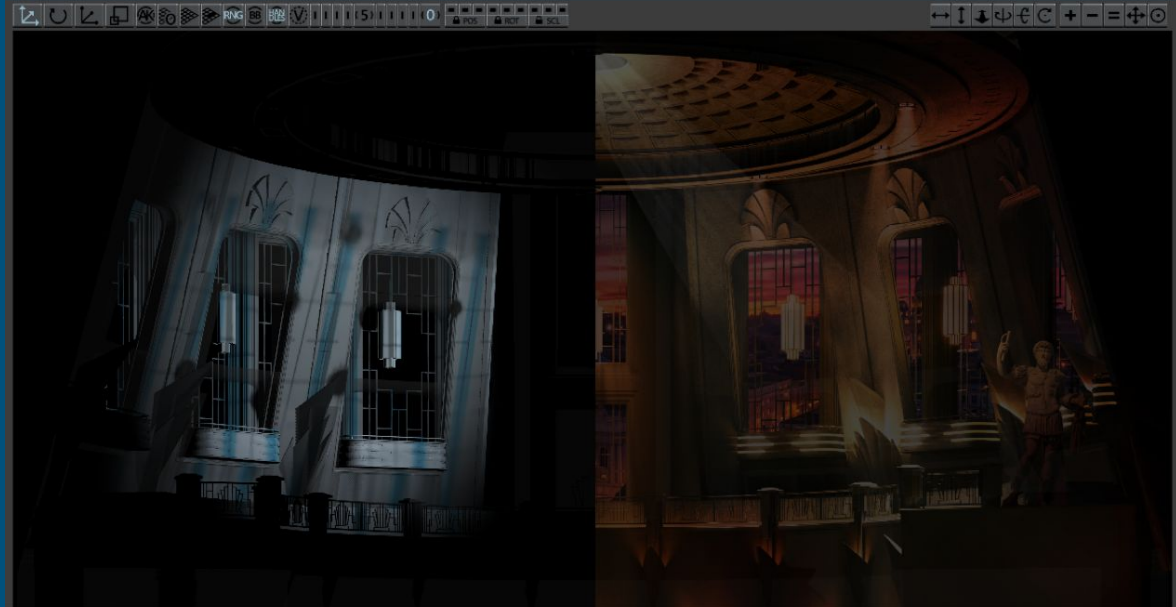
Rendered content, loaded as reference

Actual output



Matched lighting





Sales complexities


Load	1.000 particles	2.000 particles
Rendered	1 HD	1 HD
Realtime	1 ms	4 ms

Price	16 sec loop	32 sec loop
Rendered	n €	2n €
Realtime	n €	n €



Content creation

3D Objects, Cloners, Particles,
Fluid simulations,
and a bunch of keyframes



3D world
Cloners

19:28 min

SIGNAL HEAD

67

Name and title
updateable in
mediaserver

ANDRE MIKKERS

Partner FS & DA @ PwC



Corporate event 2017 - SPANT!





Presentation elements
placed in 3D:

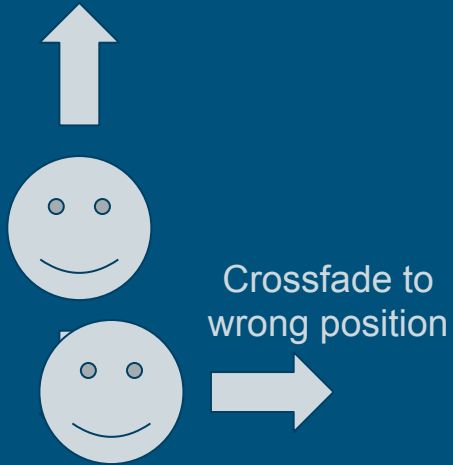
Van Gogh painting
Dance rehearsal video
Depth sensor video



Turning mills need crossfade to transition from loop to animation

Transitions between animations

Rendered



Realtime





JAN TRAAS

Partner @ EMCS II

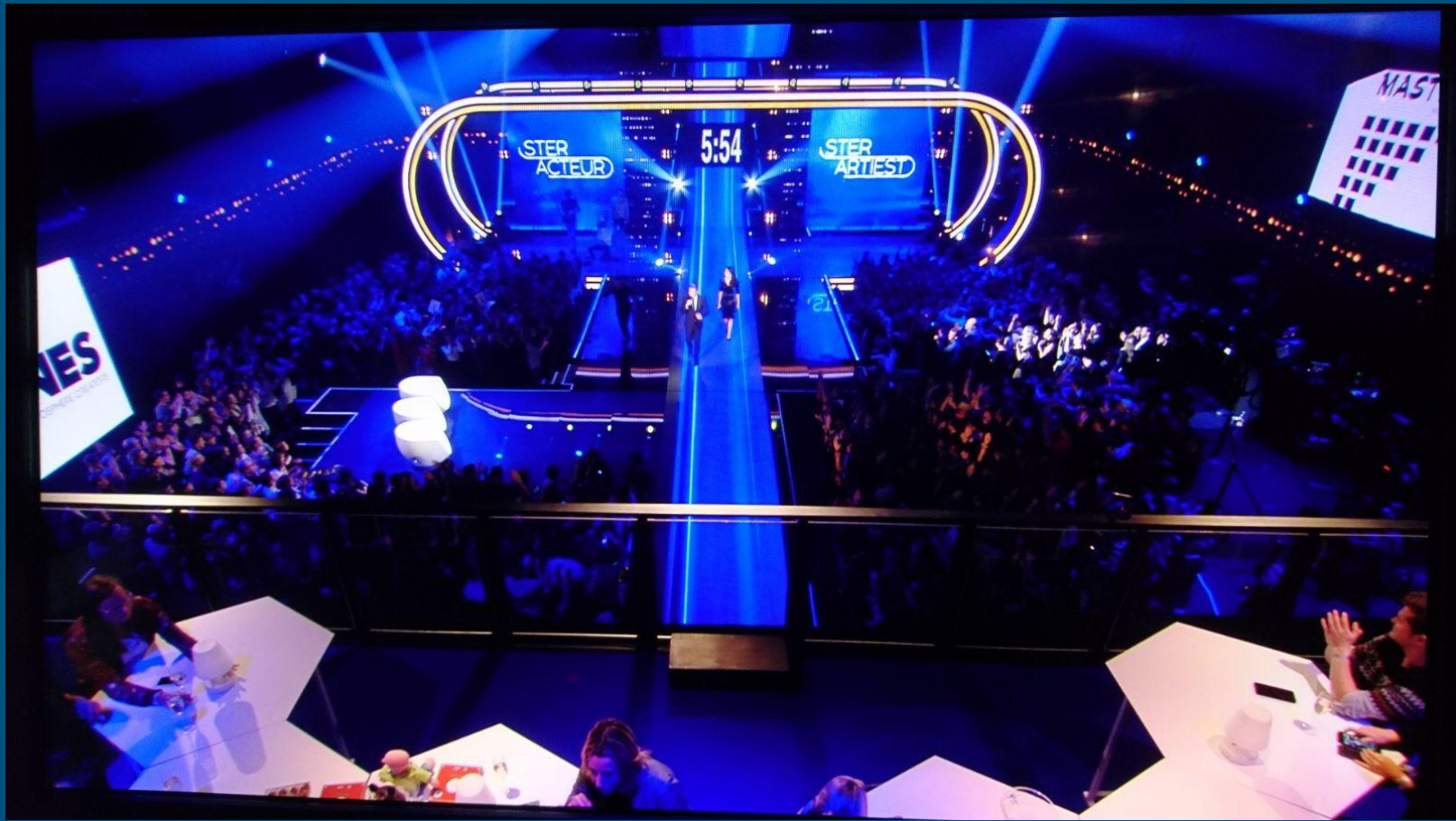
19 to 30

SIGNAL READ

67

[NOT IF]
[BUT WHEN]
[FREE WIFI]





Ster Acteur Ster Artiest 2017 - Vilvoorde BE (één)



Corporate event 2017 - Madrid





Data ingestion

API Data, Artnet,
Motion, Midi





3D environment
Presentation elements embedded

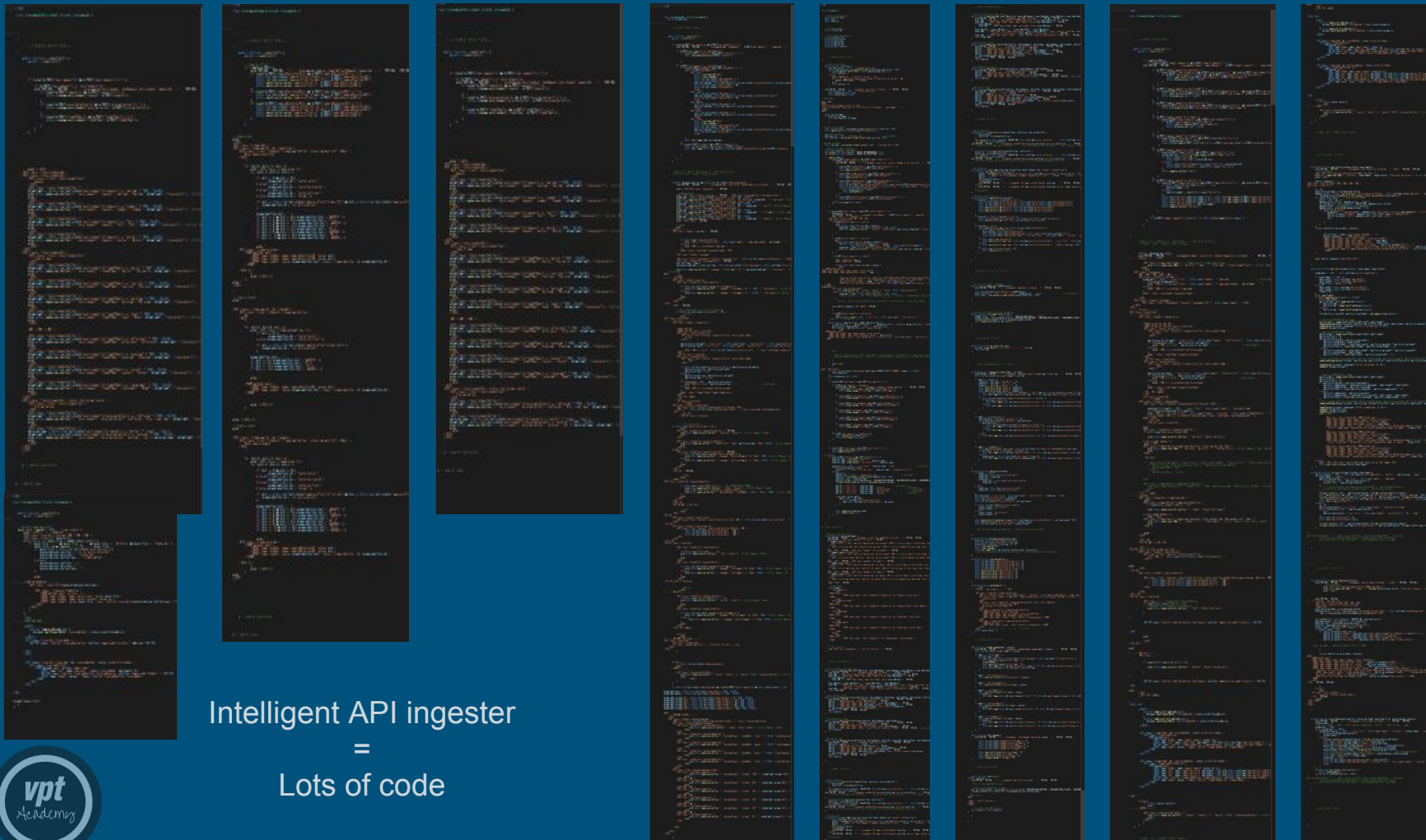


MPI Proeftuin 2017 - Utrecht



iPad APP for API ingestion and control





Intelligent API ingester
=
Lots of code



iPad APP for API ingestion and control

```
362 /*
363
364 == PICTURE STUFF ==
365
366 */
367
368
369
370 protected function search_picture($searchterm, $searchgoal){
371     echo PHP_EOL . PHP_EOL . "<!-- LiveLegends::search_picture initiated --> </DIV>" . PHP_EOL . PHP_EOL;
372     // Extra zoekbalk
373     echo "<DIV style=position:absolute;left:200px;top:75px;'>";
374     echo $this->make_searchBar("", "picture", "$searchgoal", "$searchterm", "Find other pictures"); //Action, Request, Goal, Query, Submit
375     echo "</DIV>";
376
377     $buffer_thumbnails = ""
378     <DIV class='lsearchlistbg'> <BR /><BR /><BR /><BR />
379     <DIV class='lsearchlist'>
380     ";
381
382     $j = 0;
383     $searchterm_encoded = urlencode($searchterm);
384     $google_server = "https://www.googleapis.com/customsearch/v1?key=" . $this->settings["google_api_key"] . "&cx=" . $this->settings["google_cse"] .
385     "&q=$searchterm_encoded&searchType=image&fileType=jpg,png&imgSize=medium&start=";
386     for ($sk=0; $sk<3; $sk++){ //TIDDELIIJK WAT MINDER
387         $start = ($sk * 10) + 1;
388         $google_server_offset = $google_server . "$start";
389         curl_setopt($this->curl_connector, CURLOPT_URL, $google_server_offset);
390         $google_output = curl_exec($this->curl_connector);
391         $google_json = json_decode($google_output, true);
392         for ($i=0; $i<10; $i++){
393             if (preg_match('/\.(jpg|png|jpeg)$/i', $google_json['items'][$i]['link'])==1 && preg_match('/[a-zA-Z0-9?_!@-\.\/\\\|\/]/', $google_json['items'][$i]['link'])==0) {
394                 $buffer_array[$j]['thumb'] = $google_json['items'][$i]['image']['thumbnailLink'];
395                 $buffer_array[$j]['full'] = $google_json['items'][$i]['link'];
396                 $j++;
397             }
398         }
399     }
400     foreach ($buffer_array as $key => $value){
401
402
403         $first_offset = ($key == 0 ? "margin-top:20px;" : "");
404         $buffer_thumbnails .= "<FORM method='post'>
405         <INPUT type='hidden' name='ingest_request' value='pictureEdit'>
406         <INPUT type='hidden' name='search_goal' value='' . $searchgoal . "'>
407         <INPUT type='hidden' name='search_query' value='' . $searchterm . "'>
408         <INPUT type='hidden' name='selected_picture' value='' . $buffer_array[$key]['full'] . "'>
409         <INPUT type='submit' value=' ' class='lsearchlistthumb' style='background-image:url(\" . $buffer_array[$key]['thumb'] .
410         "\");background-repeat:no-repeat;background-size:contain;background-position:center;' . $first_offset . "'>
411         </FORM>;
412
413
414
415     echo $buffer_thumbnails</DIV</DIV></DIV>;
```

Google API request
In this case:
Pictures & Youtube

Same goes for:
The weather
Trafic
Twitter
Instagram
Valves in bridges
Flight status
Police stuff
A lot more..



iPad APP for API ingestion and control

```
472 // Generate CROPPED buffer image
473 $picture_dest = imageCreateTrueColor($edit_width, $edit_height);
474 $picture_offset_x = 0;
475 $picture_offset_y = 0;
476 if ($picture_orig_width > $picture_orig_height){
477     $picture_cropped_width = round(($picture_orig_height / $edit_height) * $edit_width);
478     $picture_cropped_height = $picture_orig_height;
479     $picture_offset_x = round(($picture_orig_width - $picture_cropped_width) / 2);
480 } else {
481     $picture_cropped_width = $picture_orig_width;
482     $picture_cropped_height = round(($picture_orig_width / $edit_width) * $edit_height);
483     $picture_offset_y = round(($picture_orig_height - $picture_cropped_height) / 2);
484 }
485 //echo "cropped $picture_scaled_width, $picture_scaled_height, $picture_orig_width, $picture_orig_height";
486 imageCopyResampled($picture_dest, $picture_tmp, 0,0,$picture_offset_x,$picture_offset_y, $edit_width, $edit_height, $picture_cropped_width, $picture_cropped_height);
487
488 imagePng($picture_dest, $temp_path."buffer_cropped.png", 0, NULL);
489 imageDestroy($picture_tmp);
490 imageDestroy($picture_dest);
```

Picture processing

Analyze for compatibility

Get resolution

Resize

Crop and stretch if needed

Store

Register



iPad APP for API ingestion and control

```
556 /*
557
558     == ENVIRONMENTAL STUFF ==
559
560 */
561
562     protected function change_environment($part, $string){
563         echo PHP_EOL . PHP_EOL . "<!-- LiveLegends::changeEnvironment changed $part to $string -->" . PHP_EOL . PHP_EOL;
564         $this->current_state["environment"][$part] = $string;
565
566         if ($part == "season") {
567             $season_a = ($string == "spring" ? 1 : 0);
568             $season_b = ($string == "fall" ? 1 : 0);
569             $season_c = ($string == "winter" ? 1 : 0);
570             $this->push_notch_value("season_a", $season_a);
571             $this->push_notch_value("season_b", $season_b);
572             $this->push_notch_value("season_c", $season_c);
573             if ($this->current_state["environment"]["timeOfDay"] != "early" && $this->current_state["environment"]["timeOfDay"] != "latenight" ) {
574                 $this->d3_trigger($this->d3_cues["season"][$string], "0", $this->d3_cues["season"]["player"], $this->d3_cues["season"]["track"]);
575             }
576             if ($this->current_state["environment"]["precipitation"] == "precip") {
577                 if ($string == "winter") {
578                     $this->d3_trigger($this->d3_cues["precipitation"]["snow"], "0", $this->d3_cues["precipitation"]["player"], $this->d3_cues["precipitation"]["track"]);
579                 } else {
580                     $this->d3_trigger($this->d3_cues["precipitation"]["rain"], "0", $this->d3_cues["precipitation"]["player"], $this->d3_cues["precipitation"]["track"]);
581                 }
582             }
583         }
584     }
585
586     if ($part == "precipitation") {
587         $precipitation = ($string == "precip" ? 1 : 0);
588         $this->push_notch_value("precipitation", $precipitation);
589         if ($precipitation) {
590             if ($this->current_state["environment"]["season"] == "winter") {
591                 $this->d3_trigger($this->d3_cues["precipitation"]["snow"], "0", $this->d3_cues["precipitation"]["player"], $this->d3_cues["precipitation"]["track"]);
592             } else {
593                 $this->d3_trigger($this->d3_cues["precipitation"]["rain"], "0", $this->d3_cues["precipitation"]["player"], $this->d3_cues["precipitation"]["track"]);
594             }
595         } else {
596             $this->d3_trigger($this->d3_cues["precipitation"]["dry"], "0", $this->d3_cues["precipitation"]["player"], $this->d3_cues["precipitation"]["track"]);
597         }
598     }
599 }
```

Change Environment

Season

Push data to Notch

Precipitation

Trigger d3 timelines



iPad APP for API ingestion and control

Push data to Notch

HTTP GET

Trigger d3 timelines

TELNET

```
425  /*
426  == COMM STUFF ==
427
428
429
430
431
432
433  // Notch connection
protected function push_notch_string($notch_par, $notch_val, $val_encode=TRUE) {
    if ($val_encode){
        $notch_val = urlencode($notch_val);
    }
    curl_setopt($this->curl_connector, CURLOPT_URL, $this->settings['server_notch_ip'] . ':' . $this->settings['server_notch_port'] . '/control?value=' . $
    curl_exec($this->curl_connector);
echo PHP_EOL . PHP_EOL . "<!-- LiveLegends::pushNotchString pushed $notch_par with value $notch_val -->" . PHP_EOL . PHP_EOL;
//echo $this->settings['server_notch_ip'] . ':' . $this->settings['server_notch_port'] . '/control?value=' . $notch_val . '&uid=' . $notch_par;
}

444  protected function push_notch_value($notch_par, $notch_val) {
445  $notch_val = urlencode($notch_val);
446  curl_setopt($this->curl_connector, CURLOPT_URL, $this->settings['server_notch_ip'] . ":" . $this->settings['server_notch_port'] . "/control?uid=" . $no
447  curl_exec($this->curl_connector);
448  echo PHP_EOL . PHP_EOL . "<!-- LiveLegends::pushNotchValue pushed $notch_par with value $notch_val -->" . PHP_EOL . PHP_EOL;
449  //echo "$this->server_notch_ip:$this->server_notch_port/control?uid=$notch_par&value=$notch_val";
450  }
451
452
453  // d3 connection
protected function d3_trigger($cue_time, $transition_time=0, $player="mpi_transport", $track="show"){
    if ($this->settings["server_d3_active"]){
        $sokje = fsockopen($this->settings["server_d3_ip"], $this->settings["server_d3_port"], $errno, $errstr, '10'); //@fsock @ errn
        $buffer = '{"request":12,"track_command":{"command":"playSection","track":"' . $track . '"},"location":"' . $cue_time . '" ,"player":"' . $player . '"
        $buffer .= "\n";
        fwrite($sokje, $buffer);
        fclose($sokje);
        echo PHP_EOL . PHP_EOL . "<!-- LiveLegends::d3Trigger called timecode: $cue_time -->" . PHP_EOL . PHP_EOL;
    } else {
        echo PHP_EOL . PHP_EOL . "<!-- LiveLegends::d3Trigger called timecode: $cue_time, but no trigger send as server is inactive -->" . PHP_EOL . PHP
    }
    //echo $buffer;
}

466  }
467
468  // Push new content to server
protected function update_content($content){
    if ($content == "bullets" || $content == "all"){
470  $this->current_state["bullet_a_selected"] = $this->user["bullet"][$this->user["bulletChosen"]]["a"];
471  $this->current_state["bullet_b_selected"] = $this->user["bullet"][$this->user["bulletChosen"]]["b"];
472  $this->current_state["bullet_c_selected"] = $this->user["bullet"][$this->user["bulletChosen"]]["c"];
473  $this->push_notch_string("bullet_a", $this->current_state["bullet_a_selected"]);
474  $this->push_notch_string("bullet_b", $this->current_state["bullet_b_selected"]);
475  $this->push_notch_string("bullet_c", $this->current_state["bullet_c_selected"]);
476  }
477  }
```



iPad APP for API ingestion and control

```
1
2
3 "name": "Mier",
4 "logo_selected": 1,
5 "picture_a_current": 0,
6 "picture_a_next": 1,
7 "pictures_stored": 2,
8 "videoChosen": 0,
9 "video": [
10   {
11     "full": "mwiwfao-lrE",
12     "thumb": "https://i.ytimg.com/vi/mwiwfao-lrE/m",
13     "title": "Mier improvisatie in gedachten",
14     "description": "2100 mensen van een groot fac",
15   },
16 ],
17 "textChosen": 3,
18 "text": [
19   "Impro",
20   "Lekker wijven",
21   "Workshops",
22   "Heel leuk"
23 ],
24 "bulletChosen": 0,
25 "bullet": [
26   {
27     "a": "- film",
28     "b": "- rap",
29     "c": "- gedachte"
30   }
31 ]
```

User data
Chosen data
(Meta) Data

```
1
2 "selected_user": "Mier",
3 "locationId": 10,
4 "title_timestamp": 1497887407,
5 "video_playing": 0,
6 "video_volume": 60,
7 "video_mode": 0,
8 "picture_a_current": "/user_files/Mier/picture/full/0.png",
9 "picture_a_stream": 0,
10 "video_youtube_selected": "mwiwfao-lrE",
11 "video_youtube_thumb": "core/user_files/Mier/youtube/0.jpg",
12 "text_selected": "Heel leuk",
13 "bullet_a_selected": "- film",
14 "bullet_b_selected": "- rap",
15 "bullet_c_selected": "- gedachte",
16 "camera_offset": {
17   "pos_lr": 0,
18   "pos_fb": 0,
19   "pos_ud": 0,
20   "rot_lr": 0,
21   "rot_ud": 0
22 },
23 "environment": {
24   "season": "summer",
25   "timeOfDay": "afternoon",
26   "timeOfDayOptions": {
27     "early": 100,
28     "sunrise": 80,
29     "morning": 45,
30     "noon": 0,
31     "afternoon": -20,
32     "evening": -45,
33     "sunset": -80,
34     "night": -90,
35     "latenight": -100
36   },
37   "precipitation": "noPrecip"
38 },
39 "signage": {
40   "titleTrigger": 0,
41   "pictureASelector": 0,
42   "pictureAToggle": 0,
43   "textToggle": 0,
44   "bulletsToggle": 0,
45   "liveToggle": 0,
46   "live_toggle": 0
47 }
48 }
```

Current state
Selected user
Loaded data
Viewport

```
1
2 "server_d3_active": 1,
3 "server_d3_ip": "172.25.16.182",
4 "server_d3_port": "54321",
5 "server_notch_active": 1,
6 "server_notch_ip": "172.25.16.182",
7 "server_notch_port": "8910",
8 "_comment": "79 dave 87 rody",
9
10
11 "title_time_offset": 46,
12 "max_text_length": 20,
13 "max_bullet_length": 26,
14 "logo_width": 768,
15 "logo_height": 768,
16 "picture_width": 1024,
17 "picture_height": 768,
18 "picture_tempfolder": "/buffert/",
19 "picture_destfolder": "/volumes/livelegends/",
20 "picture_internalfolder": "d:/livelegends",
21
22
23 "_comment": "// Dave prive:
24 "youtube_api_key":
25 "google_api_key":
26 "google_cse": "
27
28
29
```

System
Defaults
Addresses

```
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
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46
47
48
```

Memory





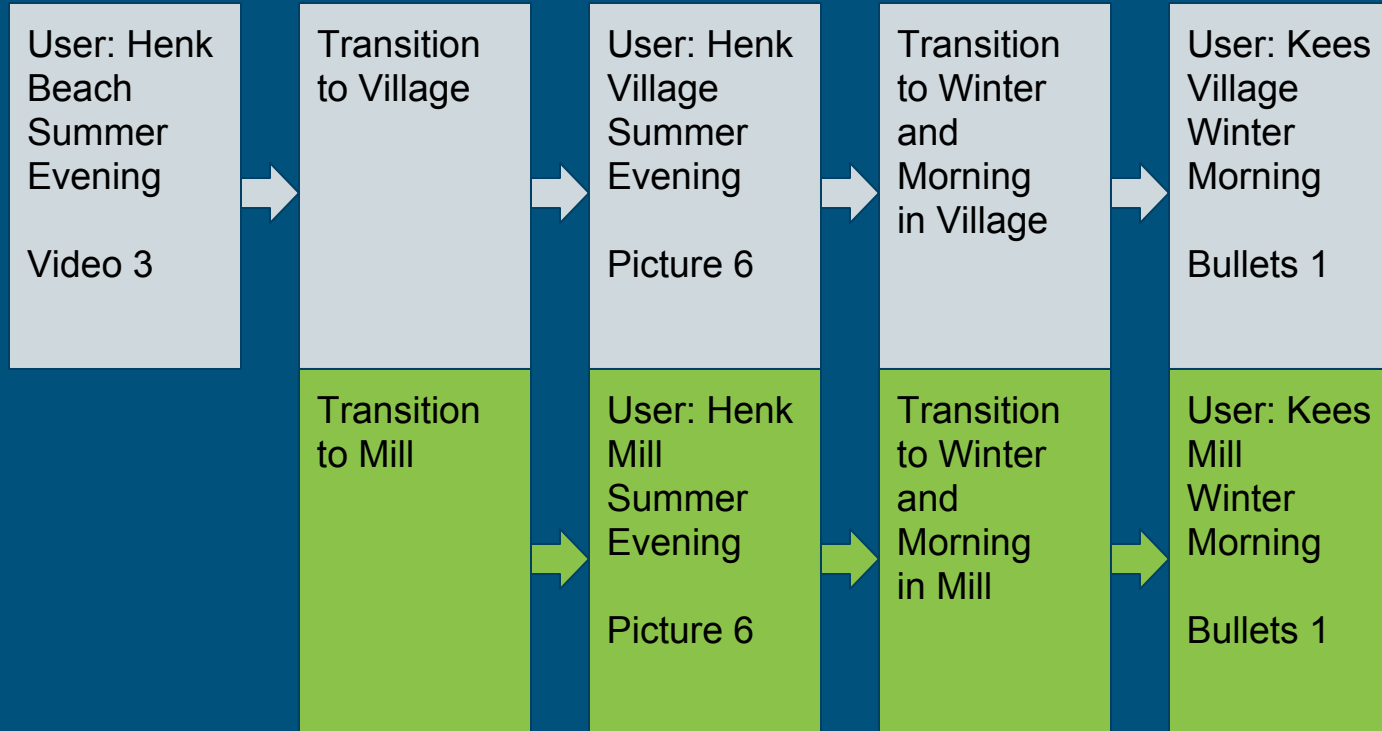
3D environment
Presentation elements embedded



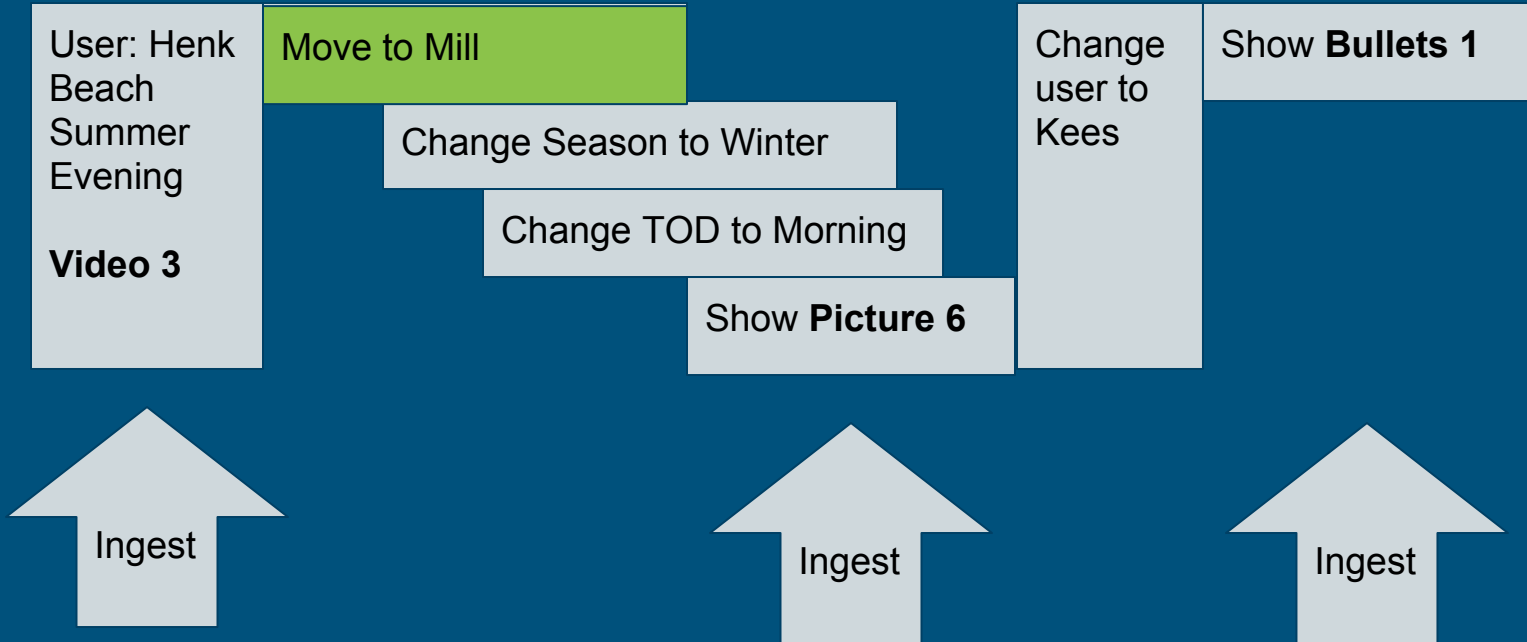
MPI Proeftuin 2017 - Utrecht



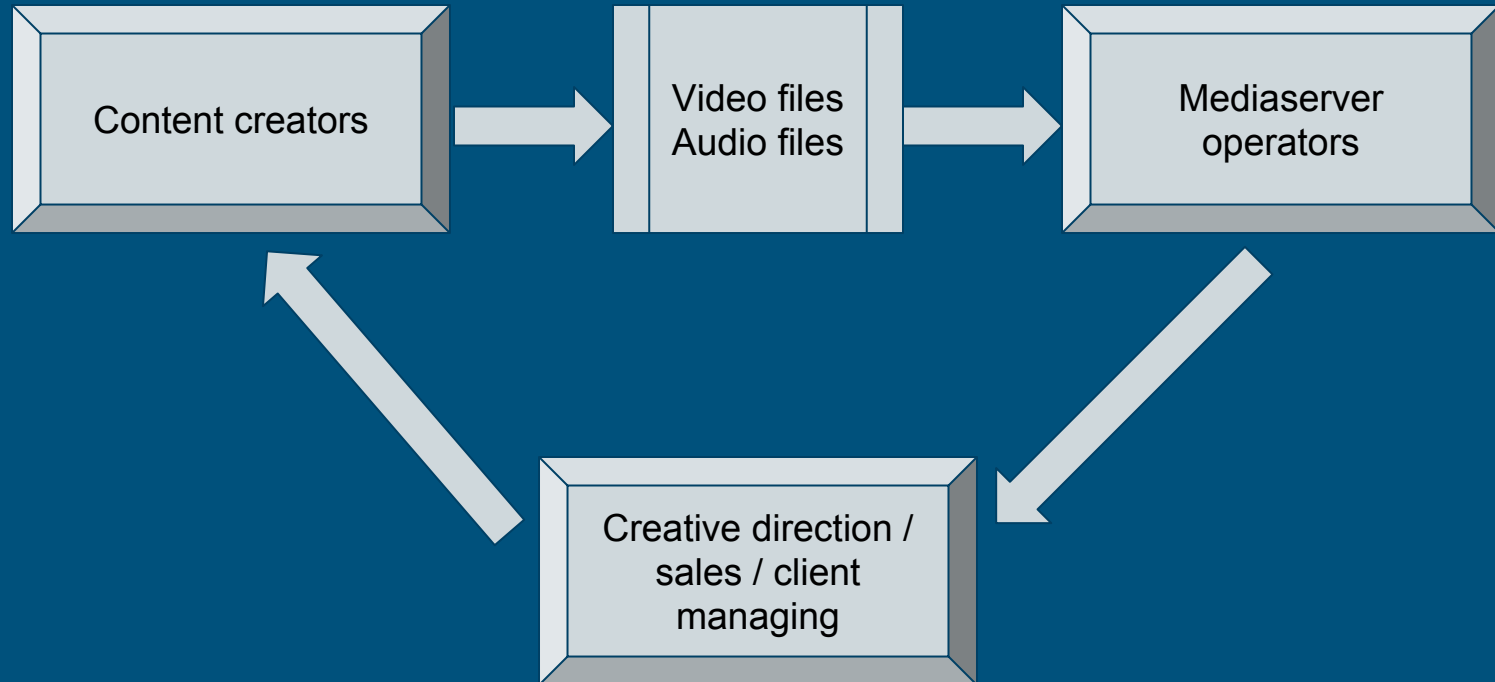
Linear timeline



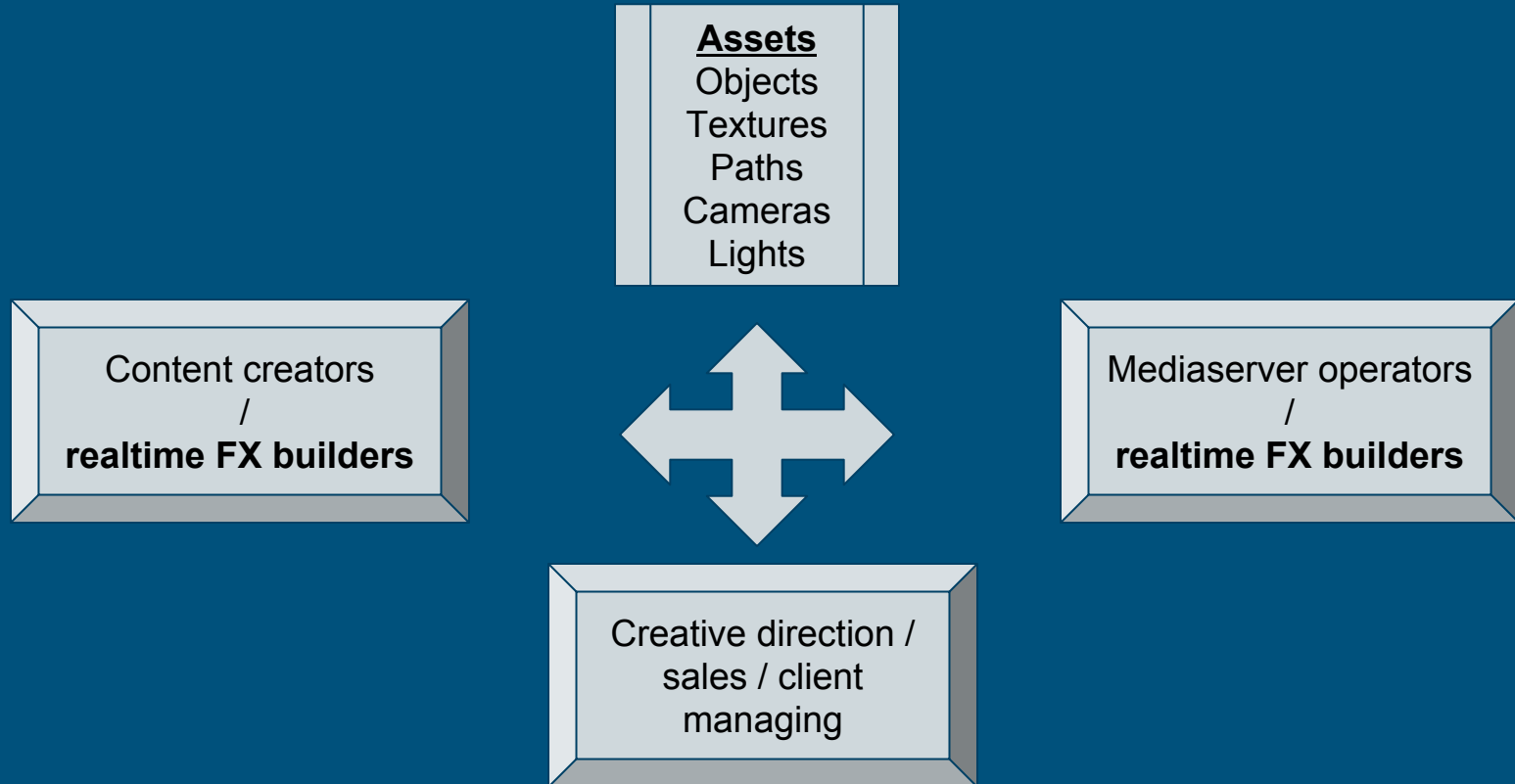
Non-Linear timeline



Rendered files workflow



Realtime workflow



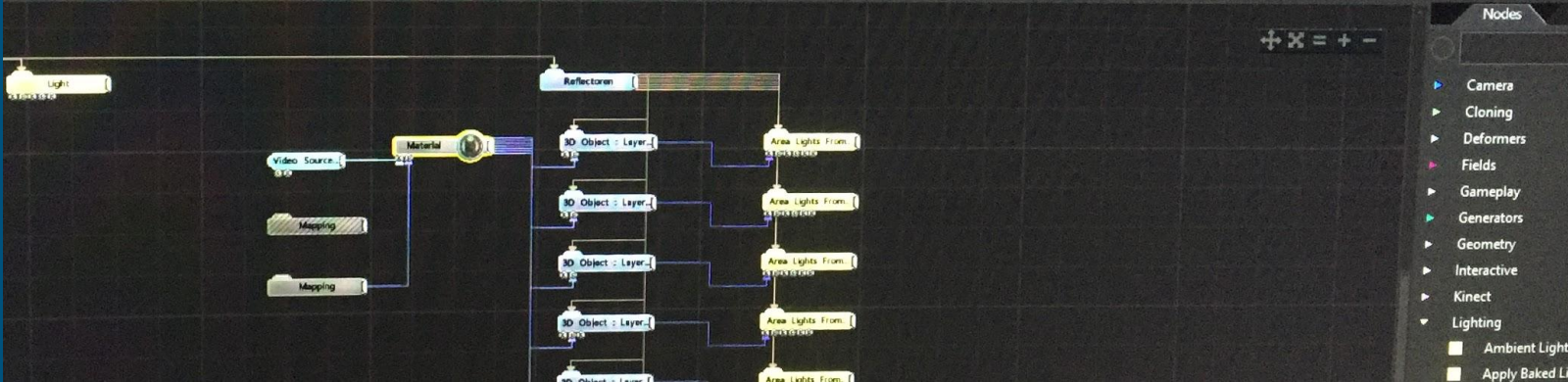
AWAKENINGS

Artnet input
Motion data
IMAG FX





AWAKENINGS



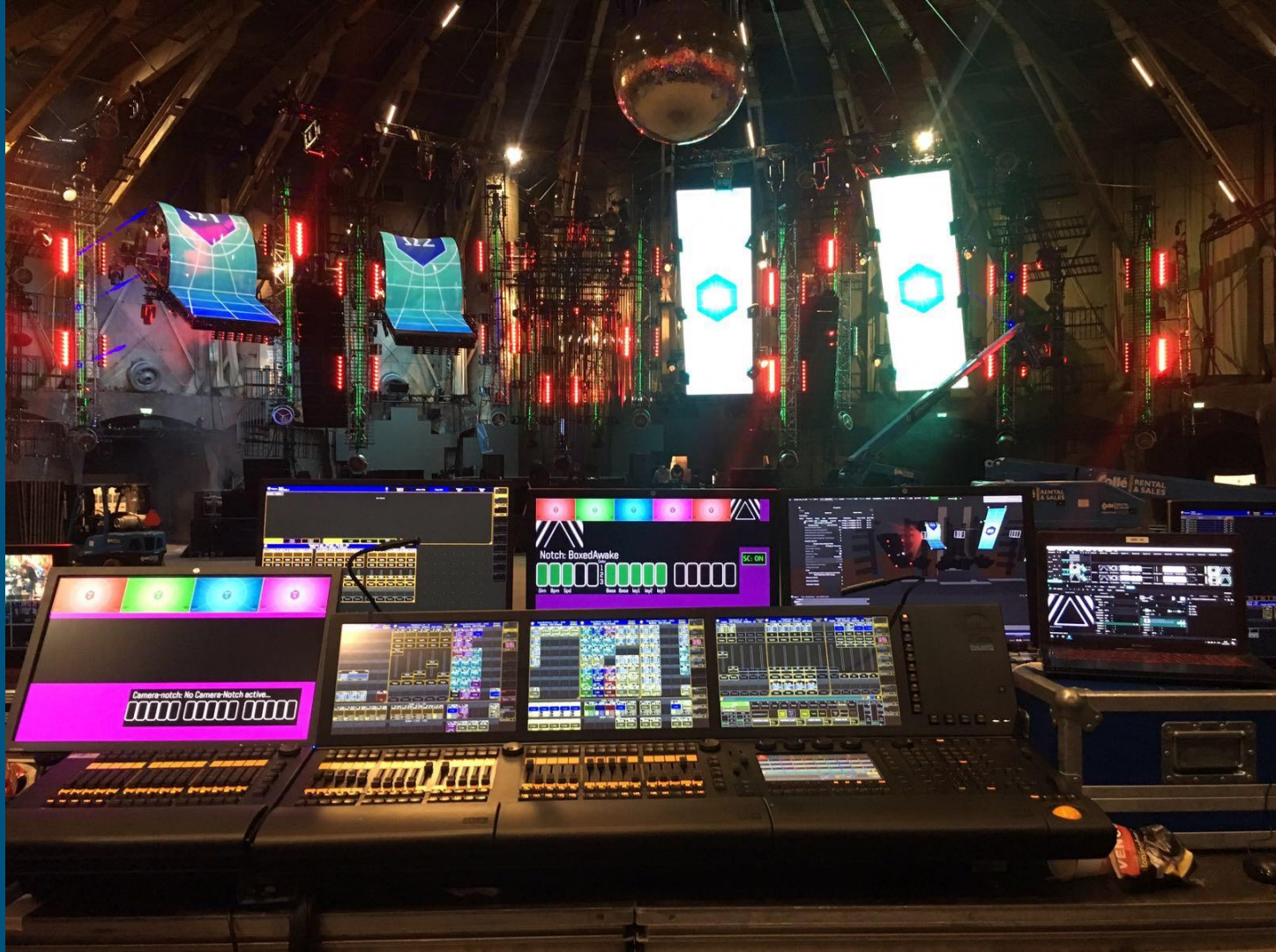


VL5

Pan
Tilt
Color
Dimmer



AWAKENINGS



Picture
Size

1.31

Picture 25

1.32

View 0 0

1.33

Layout 28



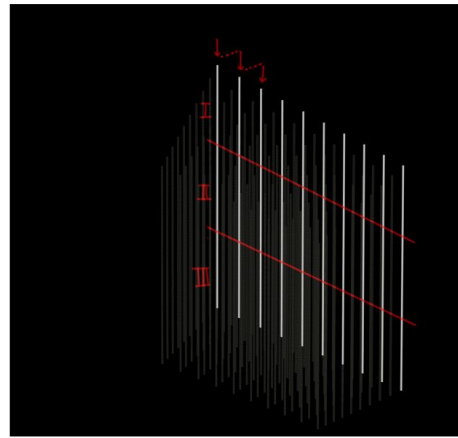
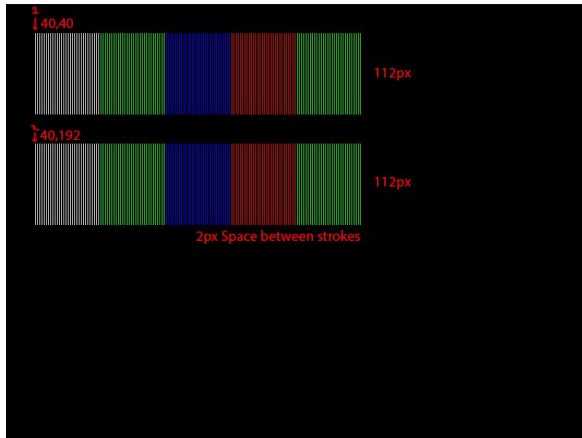
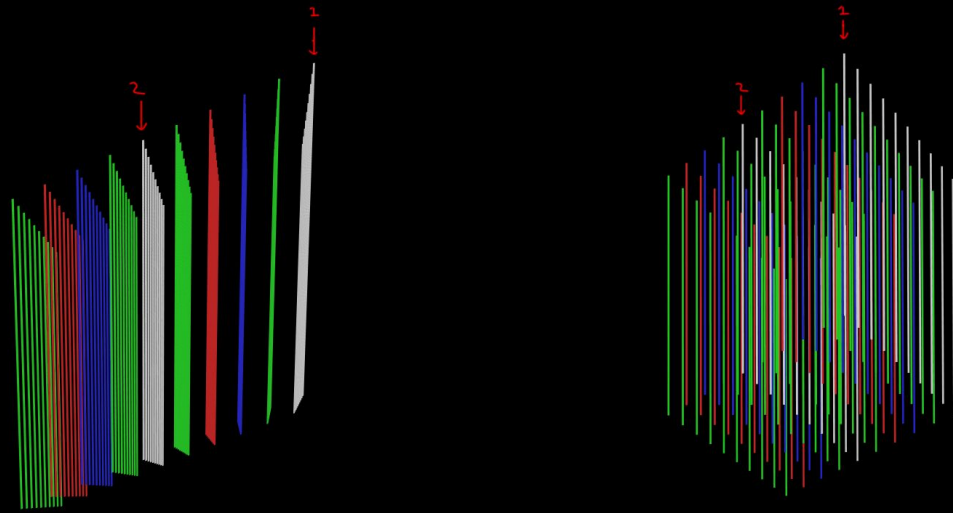
Notch: Dreiecken vor deine bakkes

SC: ON

Color

					1								SUB TIEL		
Dim	Spd	Size	Mv 1	Mv 2	2	Emit	XtrDr	Glitz	Emiss	Light	Dot	Curl	Sinus	Blur	FBck

3



FUTURE

Mocap, facetracking, HLSL

Workflow optimizations

Growing community



Standalone

Ai



dHTML

disguise

Notch

Green Hippo

7th Sense

Touchdesigner

Realtime



Max/MSP

Ventuz

Unity

Unreal

openFrameworks



Goodbye Render Button

Realtime workflows

