L' OMNI X 2018

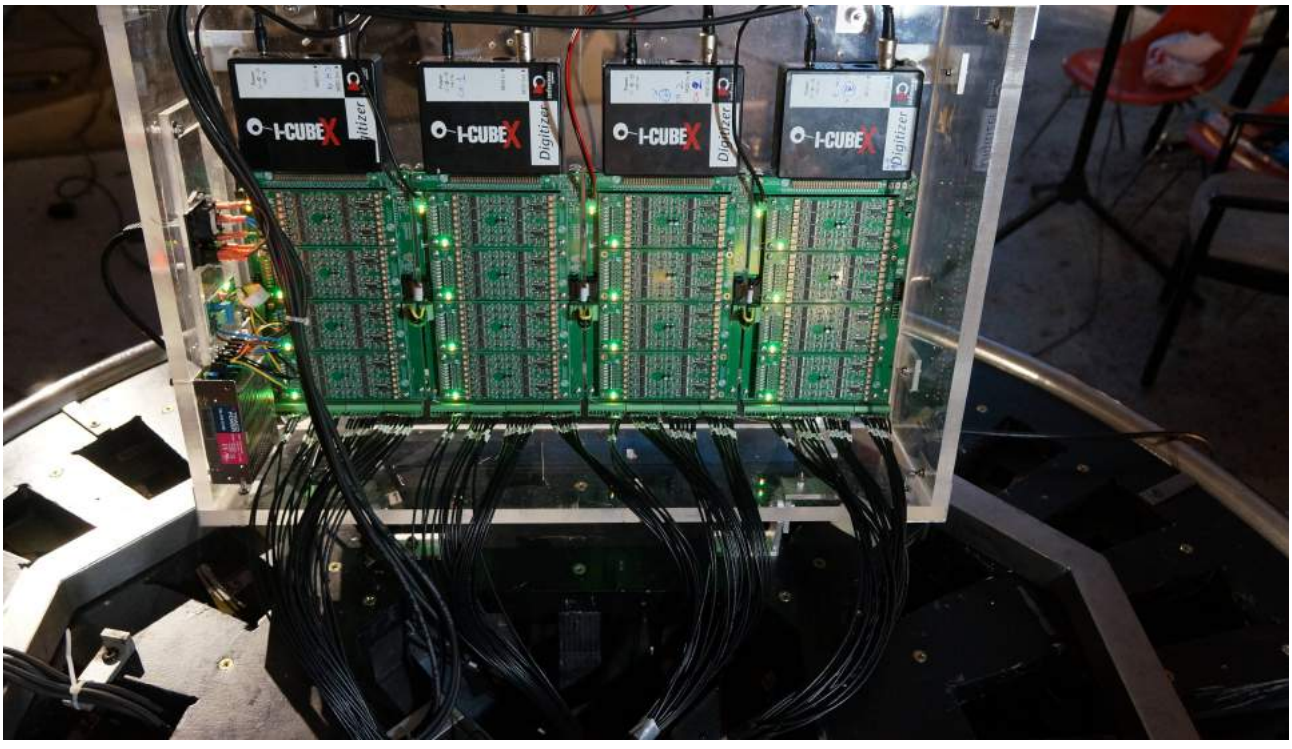
INTERACTIVE DIGITAL AUDIO SCULPTURE

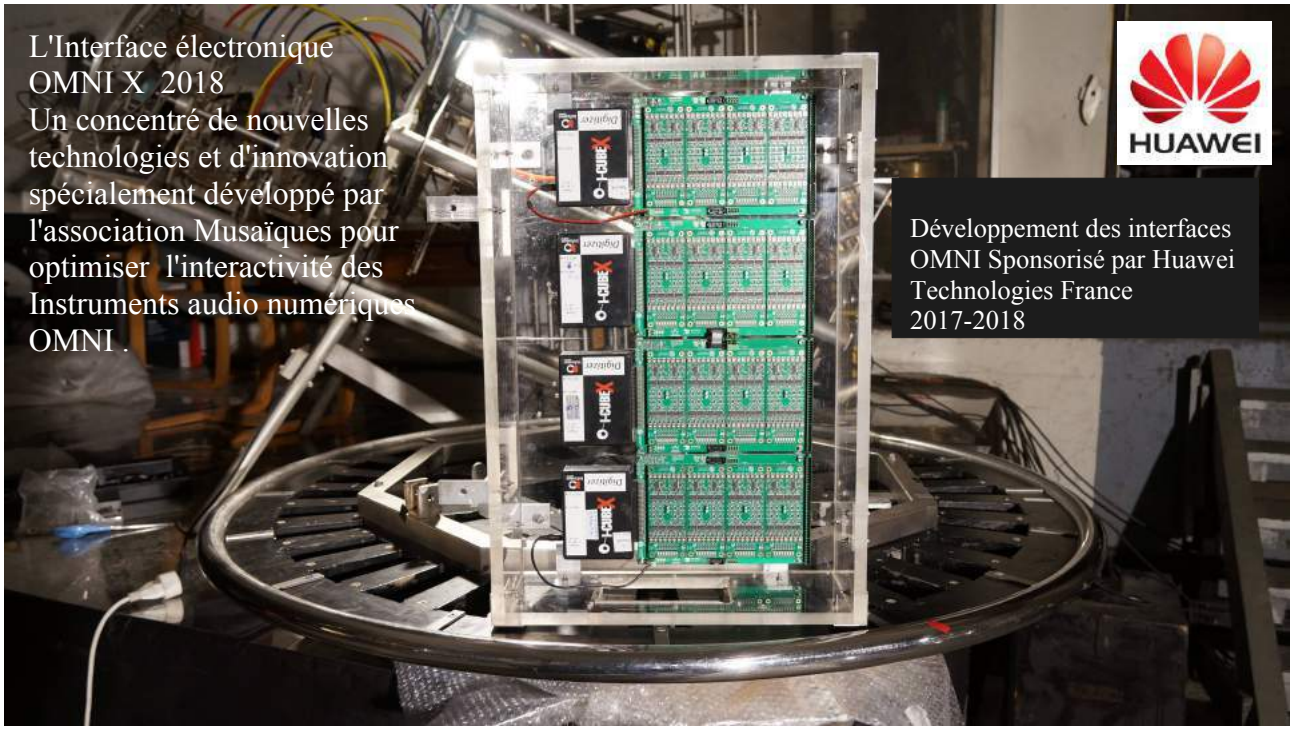
OMNI, Unidentified Musical Object / Multimedia, the most emblematic creation of Patrice Moullet. Developed since 1985, it has evolved with advances in electronics and computers since then. Designed as a sound library, this instrument continues to generate more applications. He was particularly good at bringing people together around the world. The object has a slightly spherical surface. Its round shape is attractive and user-friendly. A 1.6 meter diameter stainless steel ring surrounds 108 brightly colored ceramic plates organized in 4 zones of 27 from 4 top plates, colored in red, black, yellow and blue. The plates are sensitive to the touch.

One or more people can play OMNI; it is a communication, exploration, experimentation, sensory instrument. The sound of OMNI comes from the vibration caused by a very light strike of the plate, which is relayed by sensors that send the information to a computer, each plate being fully programmable.

OMNI contains a multitude of sound environments: its database of 20,000 sounds, samples or "sound images" is constantly updated. When they see OMNI, people are naturally attracted to interact with it by touching it. The gesture is almost automatic ... That's why, in addition to being particularly well suited to spectacular staging in all worlds of musical expression, it also allows people with or without musical or technical knowledge to play and experience the pleasure of to play and immerse themselves in the music they have created. They can also explore multiple touch or body games, making the instrument perfectly suited for motor experiences.

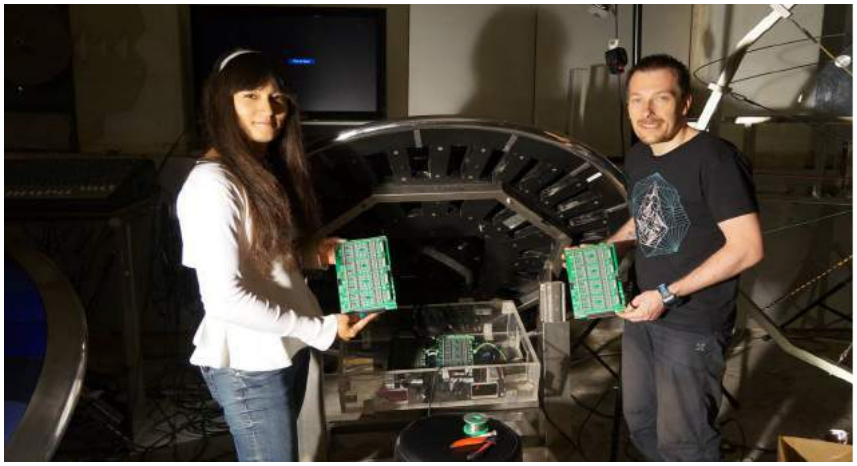
OMNI 2018 - NEW TECHNOLOGIES

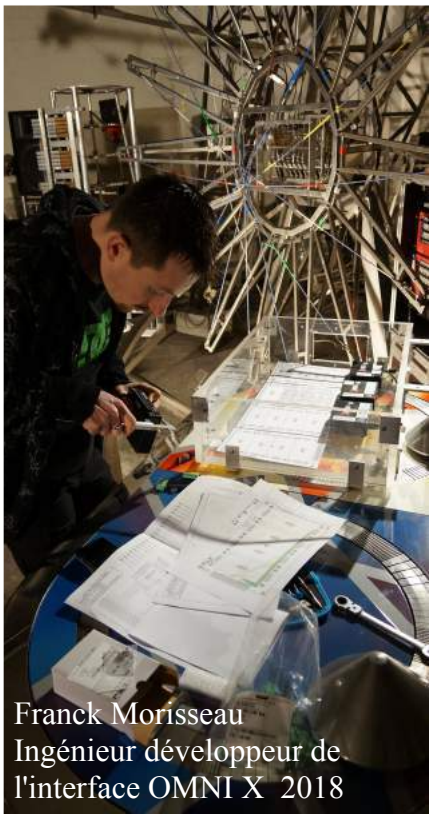



L'Interface électronique
OMNI X 2018
Un concentré de nouvelles technologies et d'innovation spécialement développé par l'association Musaïques pour optimiser l'interactivité des Instruments audio numériques OMNI .
HUAWEI
Développement des interfaces OMNI Sponsorisé par Huawei Technologies France
2017-2018


Les nouvelles technologies au service des projets socioculturels

Cédric Villani – Président de l'association Musaïques

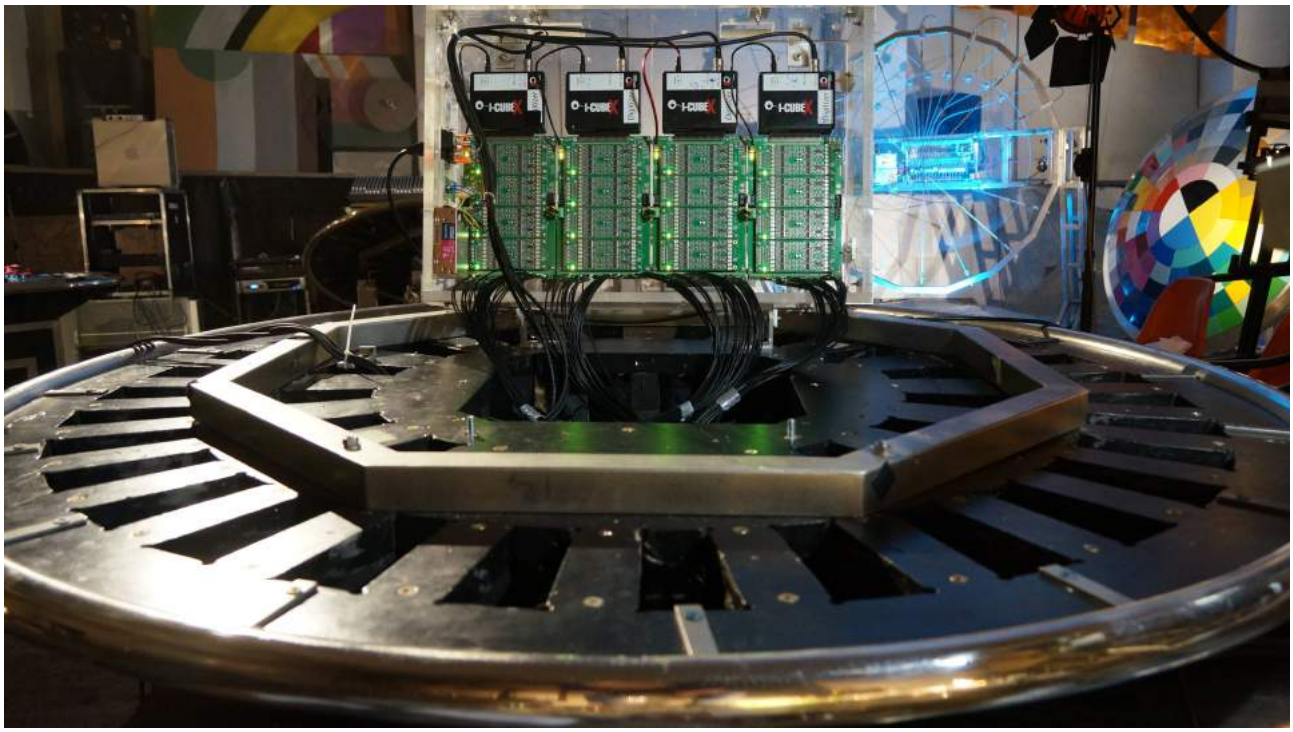



Franck Morisseau
Ingénieur développeur de l'interface OMNI X 2018

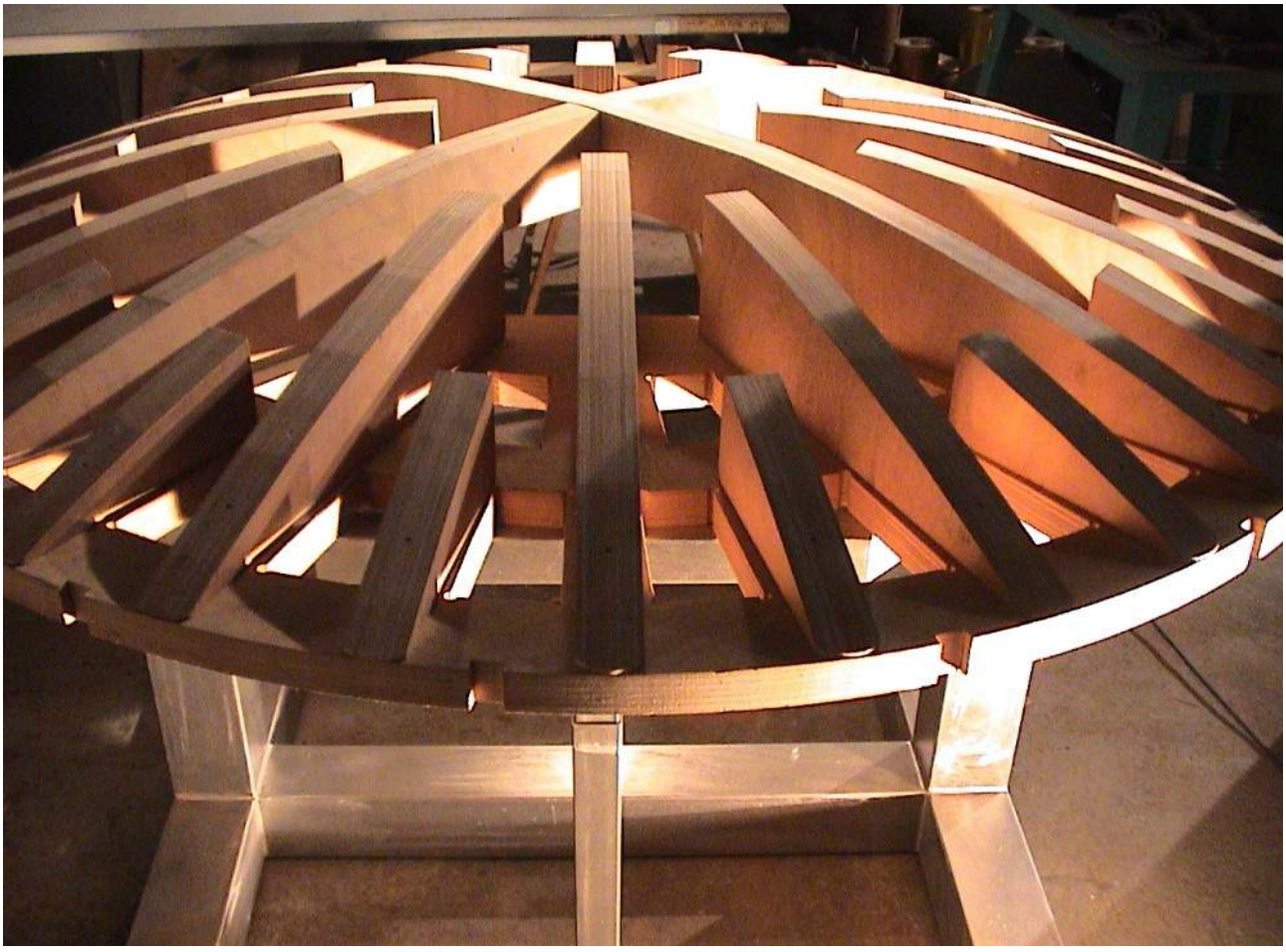
REALIZATION OF THE OMNI X 2018 SCULPTURE

... Realization of OMNI specific plans (Dome structure, recotation and optimization of plates, supports, base, edge of protection, electronic housing, cable circulation, maintenance windows)
... Realization of the elements of the dome structure (integral in marine CP 40 mm) (Circular plate, 16 arched supports SA4, 8 arched supports SA3, 4 SA 2, 2 SA1).
... Realization of the base (stainless steel - argon welding) (In square profile of 100x100mm 15/10, sliding system of adjustment, and base of reception of the dome structure tilted with 45 °)
... Realization of the 108 plates (decarburized steel - lazer cutting)
... Creation of a color design for 108 plates (108 colors)
... enameling of the 108 plates (108 colors in the oven at 820 °)
... Realization of the protective edge, 15/10 stainless steel cone trunk of 1600 mm diameter (stainless steel circular ring - lazer cutting of the elements of the truncated cone - and joining to the ring bent tube by argon welding - polishing).
... 3 - layer lacquering and assembly of all the elements of the Domique structure ... Realization of the 432 suspension cushions. ... Gluing 432 suspension cushions (864 neoprene points). ...
Installation of the protective edge (peripheral adjustment and pressure adjustments of the 16 lateral holding pieces) ... Organization of the digital mosaic and 1/10 ° setting of the 108 enamelled plates before bonding with 864 needles. ... Gluing the 108 enamelled plates on the 432 suspension cushions (864 neoprene points)
... Acquisition and bonding of the 108 sensors (108 points Bi structural acrylic adhesive component 3M DP 8405)
... Welds (324 points) of the sensors and fixed organization of the paths of the 108 cables. (108 x 1 conductors + 108 x 2 masses - 200 meters of shielded cable.)
Connection of the 108 shielded cables of the sensors to the electronic interfaces by 16 plug-in connectors.
... Realization of the 8 electronic interfaces:
4 Pre-converter 32-channel motherboard electronic interfaces each consisting of 4 independent daughter cards, each with 8 sensor outputs, 8x2 gain and ofset settings, 8 micro-processor crosstalk limiters. A general setting of the values for taking into account crosstalk limiters, 1 pre-amplification stage and 4 outputs with 32-point plug-in connection
4 32-channel IcubeX analog / digital conversion interfaces, Midi assignments complete, programmable, MIDI inputs and outputs.
Realization of a set of emergency interfaces for rapid intervention.
... Assemblies of all the circuits, realization of the connections, realization of the boxes-bases with circular opening, general settings, tests and fine adjustments of the electronic chain of the 108 plates of the tactlile surface.
Installation of OMNI dedicated interactive sound programs (dispatching virtual sampler Kontakt) of 108 samples.
... Output MIDI data configuration:
Red Zone: channel1 27 samples distributed from C1 to D3, Black Zone: channel2 27 samples distributed from C1 to D3, Yellow Zone: channel3 27 samples distributed from C1 to D3, Blue Zone: channel4 27 samples distributed from C1 to D3
Completeness of parameter settings independently programmable by plate / sample on the virtual sampler: Taking into account the velocity, spatialization, polyphony, grouping, etc., inherent to Kontakt.
Recall of the digital audio channel:
4 midi channels (midi OMNI outputs) to the midi input of the Midi Motu espress 128 interface, USB output to the computer input.

Digital audio interface RME 800 or Motu 828 Hybrid MK3, transmission to the computer via USB (2-3) or Thunderbolt.
4 audio outputs to quad sound (4 points or dual stereo) - the interface has 8 separate audio outputs and of course digital outputs. Octophony possible with the installation delivered out of 4 additional speakers.
Sound diffusion system: 4 Yamaha DBR 12 auto-amplified speakers.
Computer: Power Book Pro SSD storage 250 GB.
4 audio cables and 8 midi cables of 10 meters.

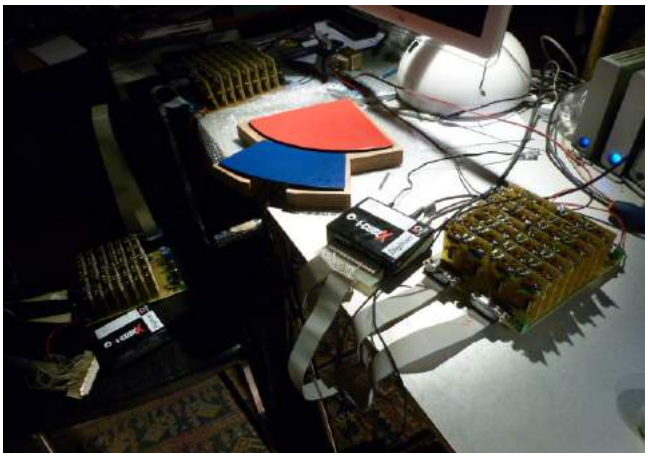
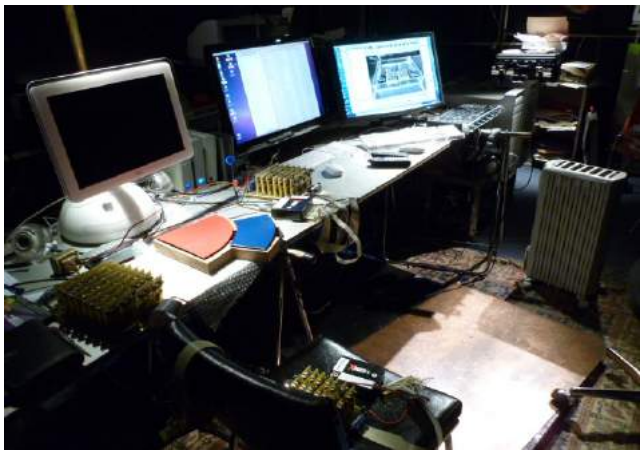
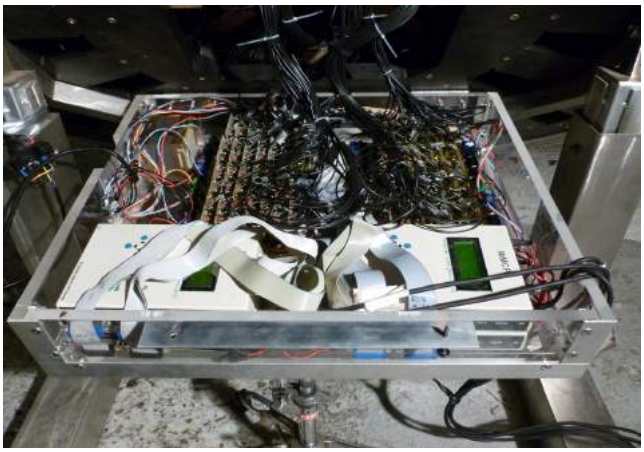
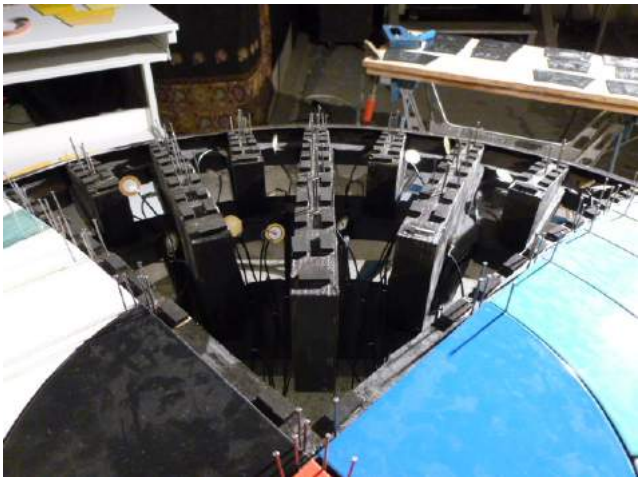


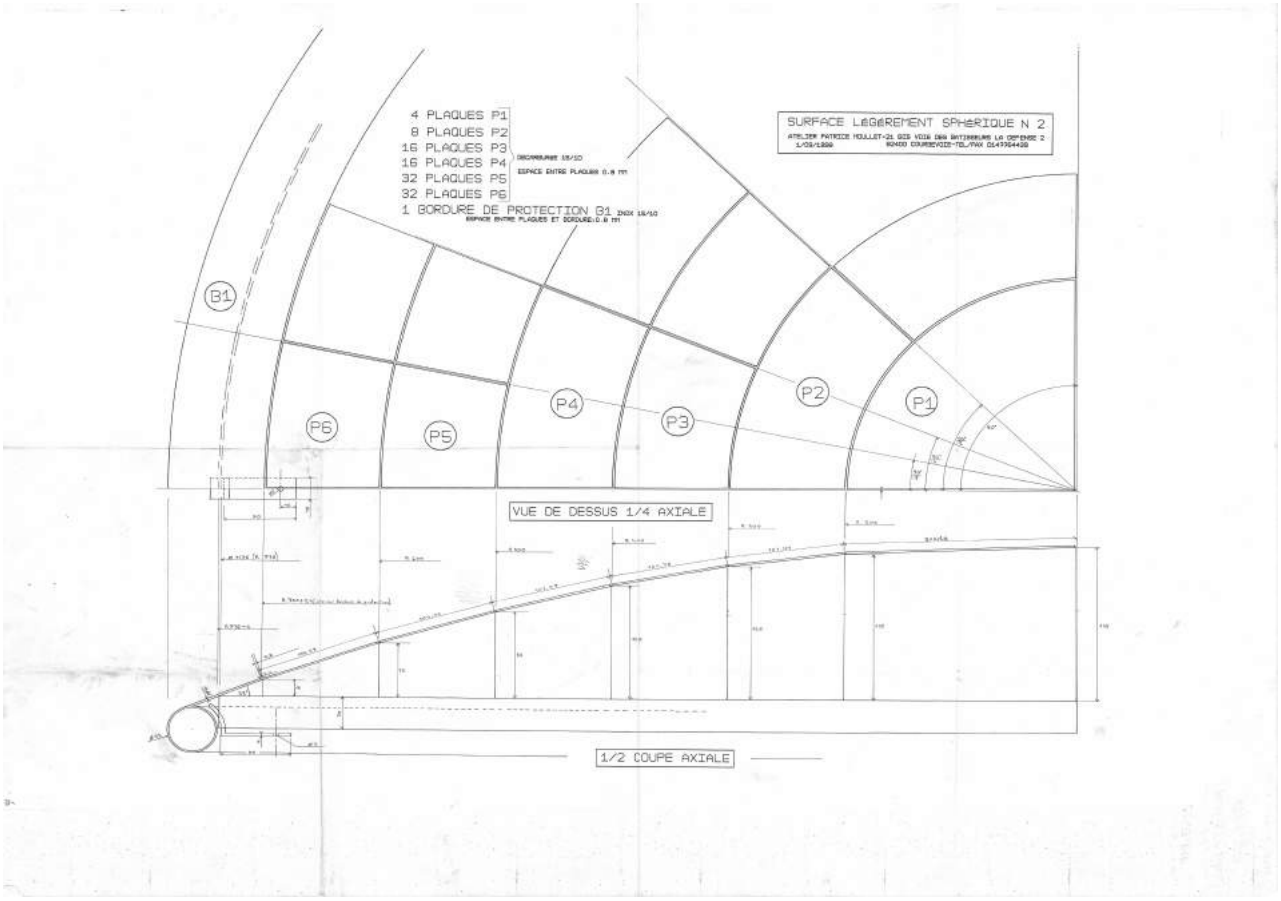
ONMI TECHNOLOGIE - Plateau circulaire – arceaux et structure dômique

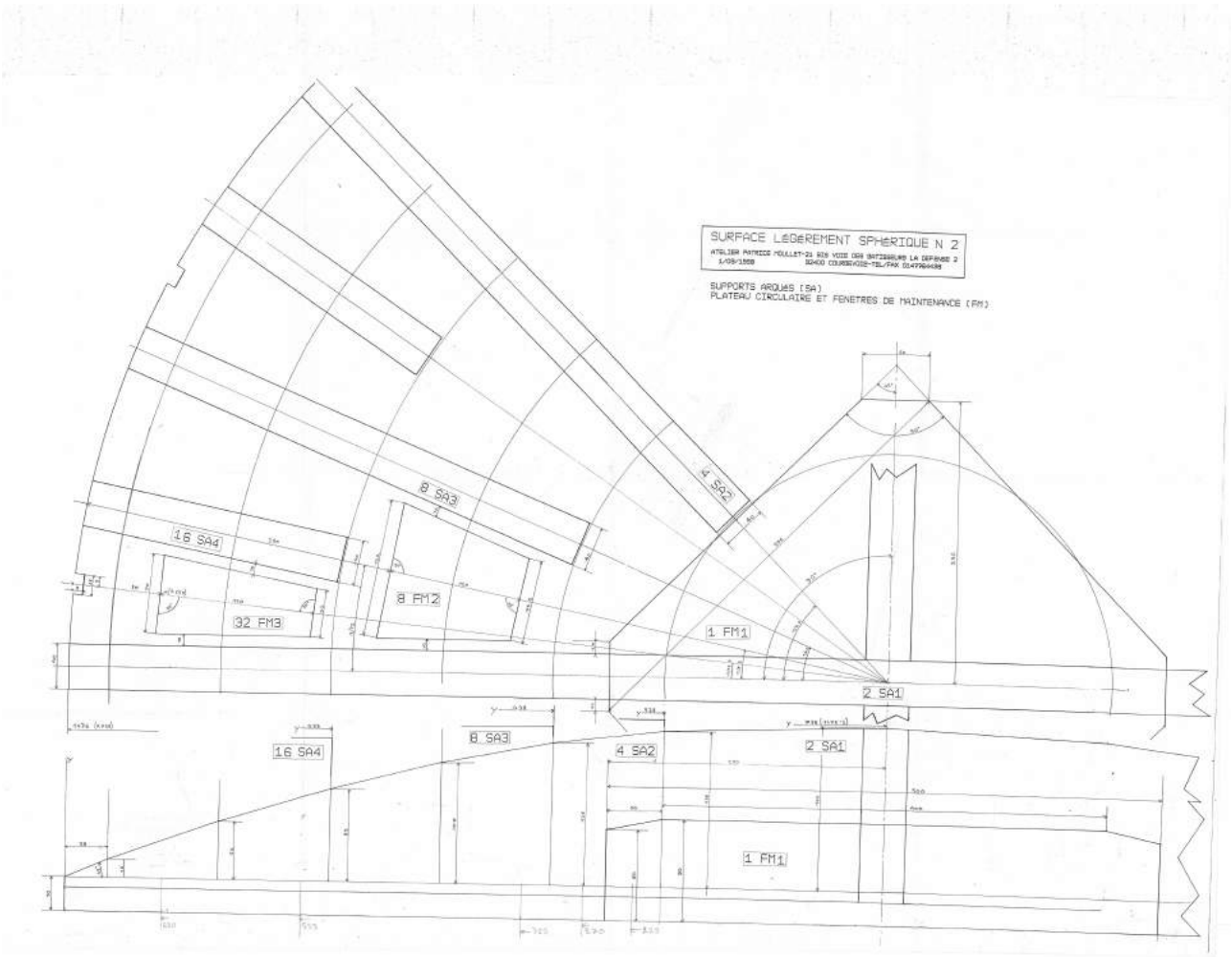


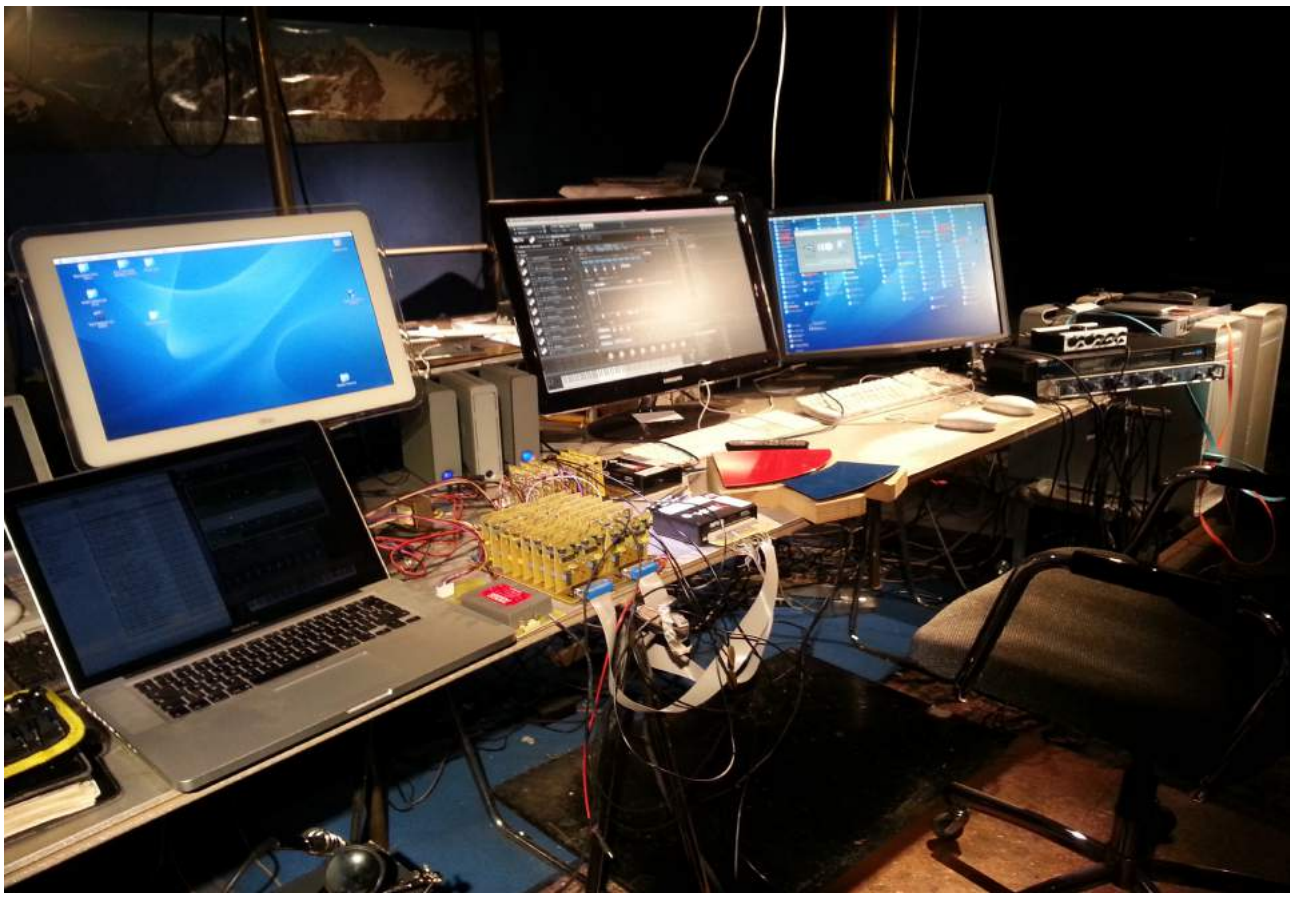
ONMI TECHNOLOGIE - FIXATION MOSAÏQUE PLAQUES ÉMAILLÉES – CABLAGE - CONNECTIQUE





4 PLAQUES P1
8 PLAQUES P2
16 PLAQUES P3
16 PLAQUES P4
32 PLAQUES P5
32 PLAQUES P6
1 BORDURE DE PROTECTION B1 INOX 15/10
SURFACE LéGèREMENT SPHèRIQUE N 2
B1
P6
P5
P4
P3
P2
P1
VUE DE DESSUS 1/4 AXIALE
1/2 COUPE AXIALE


SURFACE LéGèREMENT SPHèRIQUE N 2
SUPPORTS ARQUES (SA)
PLATEAU CIRCULAIRE ET FENETRES DE MAINTENANCE (FM)
16 SA4
8 SA3
4 SA2
8 FM2
32 FM3
1 FM1
2 SA1
16 SA4
8 SA3
4 SA2
2 SA1
1 FM1

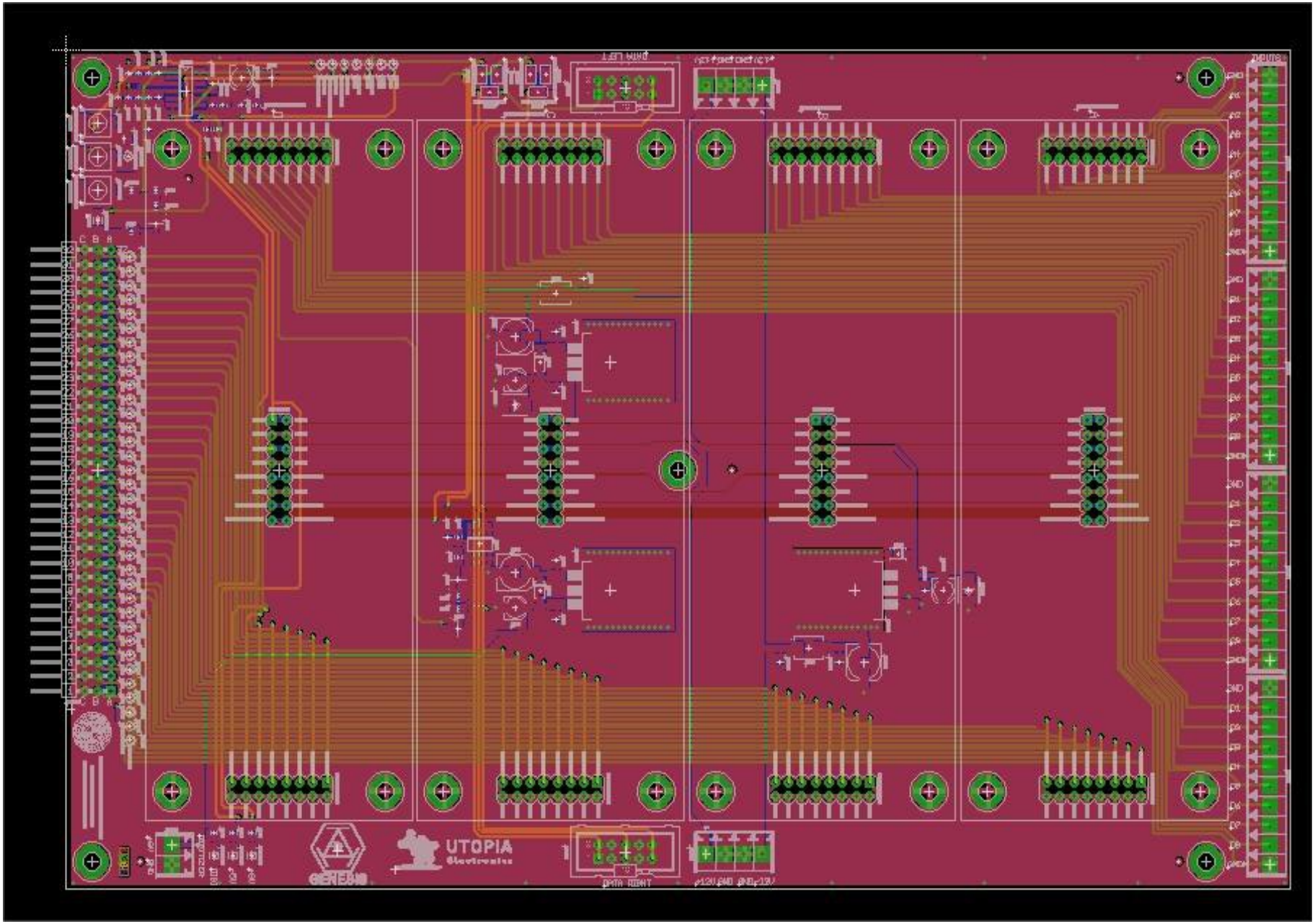


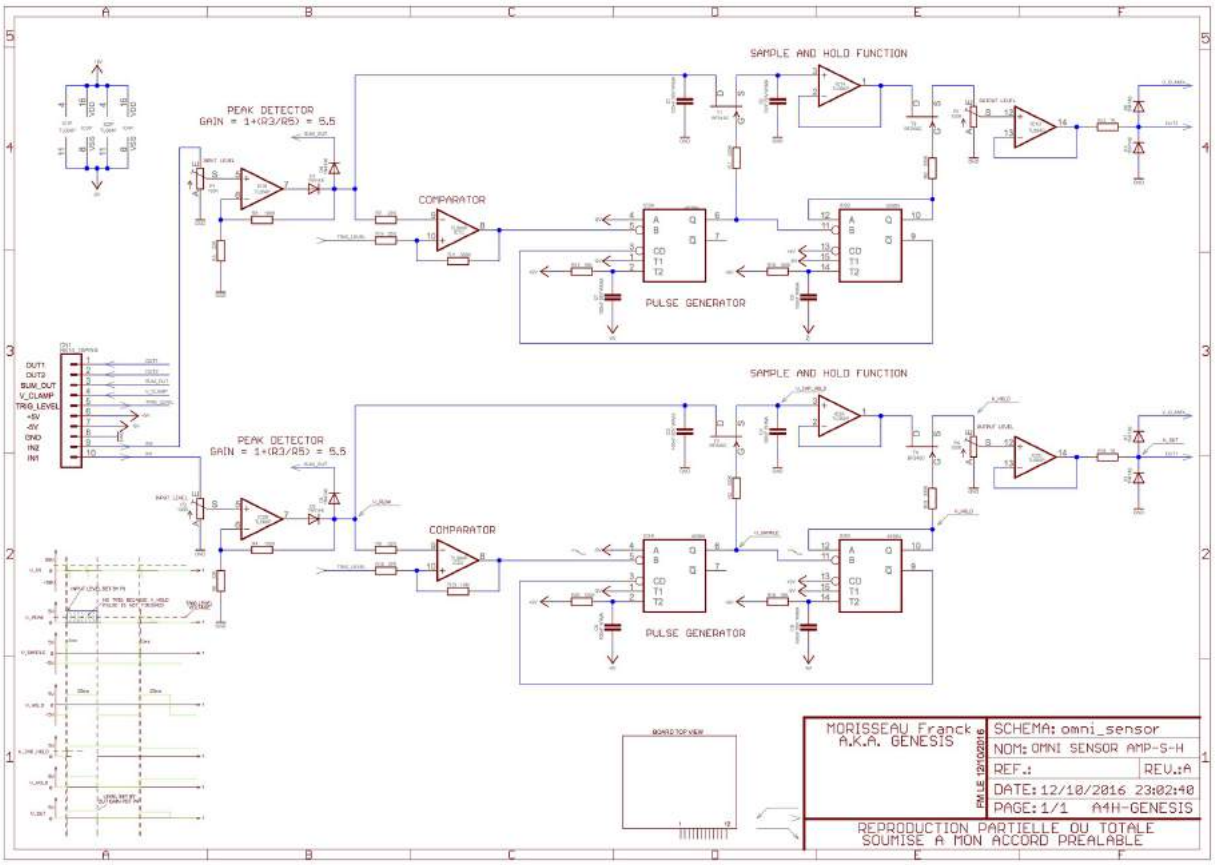
Studio-Labo de l'Atelier d'expérimentation musicale Patrice Moullet – La Défense

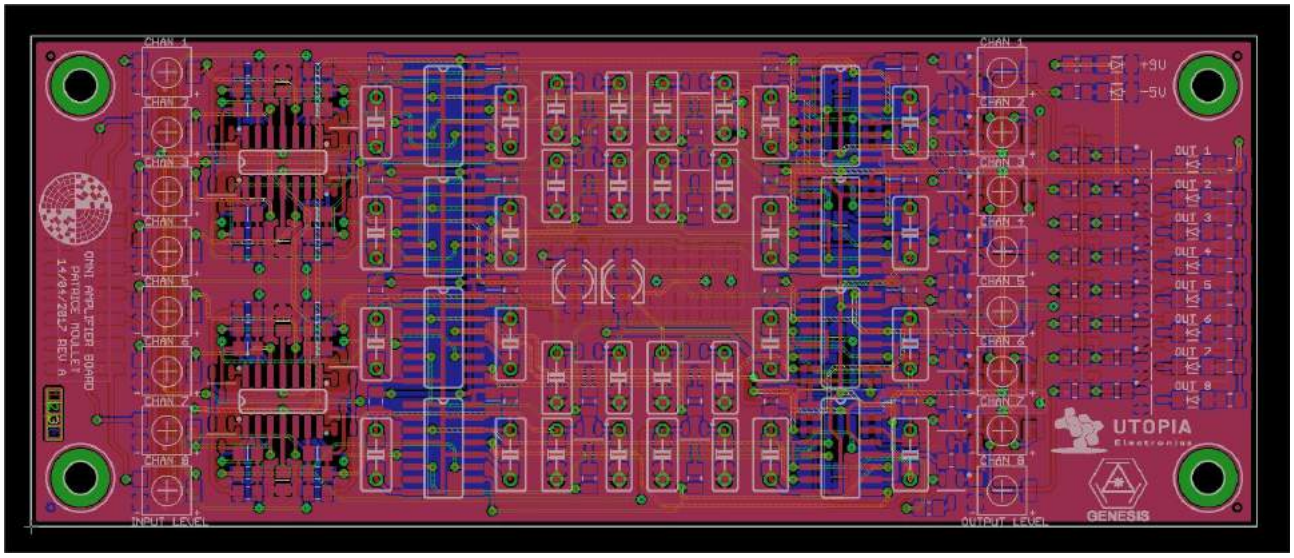
KONTAKT - Le Sampleur logiciel OMNI

Gestion de l'ensemble des multiples paramétrages des sons des banques OMNI

Nom	Date de modification	Taille	Type
1 - PERCUPHONE 2016.nkm	15 décembre 2016 à 12:21	58 Ko	Kontakt Multi
30 Body perk pour STI.nkm	1 décembre 2016 à 15:54	25 Ko	Kontakt Multi
7 BODY MUSIC 1.nkm	24 novembre 2016 à 16:51	25 Ko	Kontakt Multi
3 KORAL OPÉRA SAX VOCODER.nkm	26 novembre 2016 à 11:27	17 Ko	Kontakt Multi
8 BODY MUSIC 2.nkm	24 novembre 2016 à 18:04	16 Ko	Kontakt Multi
11 FRACTALES 4C Stéréo.nkm	1 novembre 2017 à 19:43	15 Ko	Kontakt Multi
11 FRACTALES 4C.nkm	20 octobre 2017 à 17:36	15 Ko	Kontakt Multi
IMOS cepisco Stéréo.nkm	1 novembre 2017 à 19:42	15 Ko	Kontakt Multi
IMOS cepisco.nkm	27 janvier 2017 à 15:18	15 Ko	Kontakt Multi
12 FRACTALES ZEBULON.nkm	26 novembre 2016 à 14:47	15 Ko	Kontakt Multi
26 CEM 4C Chloé 2016.nkm	16 février 2017 à 10:07	14 Ko	Kontakt Multi
25 PERK LOOP TUNE OMNI.nkm	10 juin 2017 à 16:51	13 Ko	Kontakt Multi
21 PERCUSSIONS INDIENNES OMNI.nkm	24 novembre 2016 à 19:31	13 Ko	Kontakt Multi
1 IMOS .nkm	19 janvier 2017 à 09:10	13 Ko	Kontakt Multi
IRCAM OMNI POLY.nkm	31 mai 2017 à 11:31	13 Ko	Kontakt Multi
22 IRCAM OMNI.nkm	24 novembre 2016 à 19:33	12 Ko	Kontakt Multi
27 Harpe IRCAM .nkm	30 novembre 2016 à 10:50	12 Ko	Kontakt Multi
KAO MULTI KLANK OMNI.nkm	31 mai 2017 à 08:38	12 Ko	Kontakt Multi
5 VOX CLASSIQUE GAELIQUE.nkm	24 novembre 2016 à 16:38	12 Ko	Kontakt Multi
20 ABSYNTH PERK TEK.nkm	24 novembre 2016 à 19:30	12 Ko	Kontakt Multi
28 hip hop .nkm	30 novembre 2016 à 14:04	12 Ko	Kontakt Multi
29 PERK SYMPHO OMNI+STI.nkm	30 novembre 2016 à 16:09	12 Ko	Kontakt Multi
18 ETHNO INSTRUMENTS OMNI .nkm	24 novembre 2016 à 19:26	11 Ko	Kontakt Multi
4 SPIRALES .nkm	26 novembre 2016 à 10:14	11 Ko	Kontakt Multi
14 VOX ETHNO OMNI.nkm	29 janvier 2017 à 13:29	11 Ko	Kontakt Multi
23 bis HANG OMNI 3 prog.nkm	22 avril 2017 à 12:17	11 Ko	Kontakt Multi
23 HANG OMNI.nkm	4 mars 2017 à 14:58	11 Ko	Kontakt Multi
16 PERK SYMPHO c4.nkm	24 novembre 2016 à 19:25	11 Ko	Kontakt Multi
17 PERK SYMPHO OMNI.nkm	26 novembre 2016 à 11:17	11 Ko	Kontakt Multi
19 PERK SYMPHO cymb + Timb.nkm	25 novembre 2016 à 17:26	11 Ko	Kontakt Multi
13 VOX ETHNO 4c.nkm	10 mai 2017 à 11:43	11 Ko	Kontakt Multi
24 Metal Loop + Harmo vox.nkm	24 novembre 2016 à 21:18	11 Ko	Kontakt Multi
2 Alighieri 4C.nkm	24 novembre 2016 à 16:33	11 Ko	Kontakt Multi
6 REAKTOR MULTI OMNI .nkm	24 novembre 2016 à 16:42	10 Ko	Kontakt Multi
SONNA-TUBULAR MULTI K.nkm	21 juillet 2017 à 15:15	8 Ko	Kontakt Multi
15 RYTHM AQUA .nkm	24 novembre 2016 à 19:23	8 Ko	Kontakt Multi
9 PERK GRECE.nkm	30 novembre 2016 à 14:45	8 Ko	Kontakt Multi
10 PIANO - HARP INTERAKTIV .nkm	27 janvier 2017 à 17:40	7 Ko	Kontakt Multi


UTOPIA
Electronics


SAMPLE AND HOLD FUNCTION
PEAK DETECTOR
GAIN = 1+(R3/R5) = 5.5
COMPARATOR
PULSE GENERATOR
SAMPLE AND HOLD FUNCTION
PEAK DETECTOR
GAIN = 1+(R3/R5) = 5.5
COMPARATOR
PULSE GENERATOR
OUT1
OUT2
SUM_OUT
V_CLAMP
TRIG_LEVEL
+5V
-5V
GND
IN2
IN1
MORISSEAU Franck
A.K.A. GENESIS
SCHEMA: omni_sensor
NOM: OMNI SENSOR AMP-S-H
REF.:
REV.:A
DATE: 12/10/2016 23:02:40
PAGE: 1/1 A4H-GENESIS
REPRODUCTION PARTIELLE OU TOTALE
SOUMISE A MON ACCORD PREALABLE


CHAN 1
CHAN 2
CHAN 3
CHAN 4
CHAN 5
CHAN 6
CHAN 7
CHAN 8
INPUT LEVEL
OUTPUT LEVEL
+9V
-5V
OUT 1
OUT 2
OUT 3
OUT 4
OUT 5
OUT 6
OUT 7
OUT 8
OMNI AMPLIFIER BOARD
PATRICE MOULET
14/04/2017 REV A
UTOPIA
Electronics
GENESIS

Détails connecteur pitch 3.5mm 10 points :

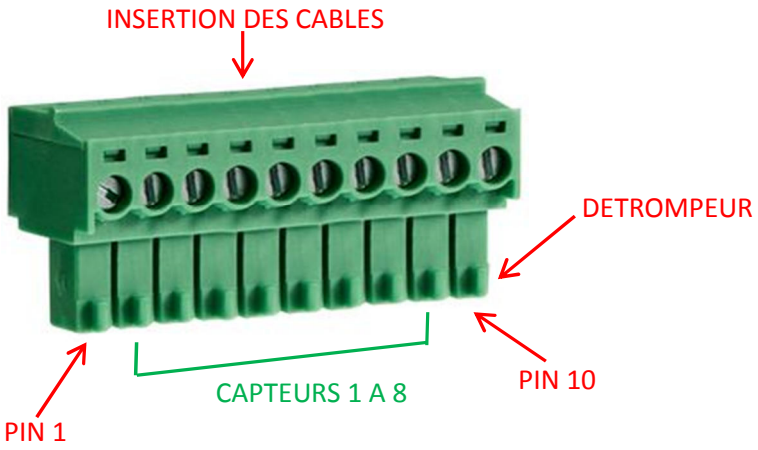
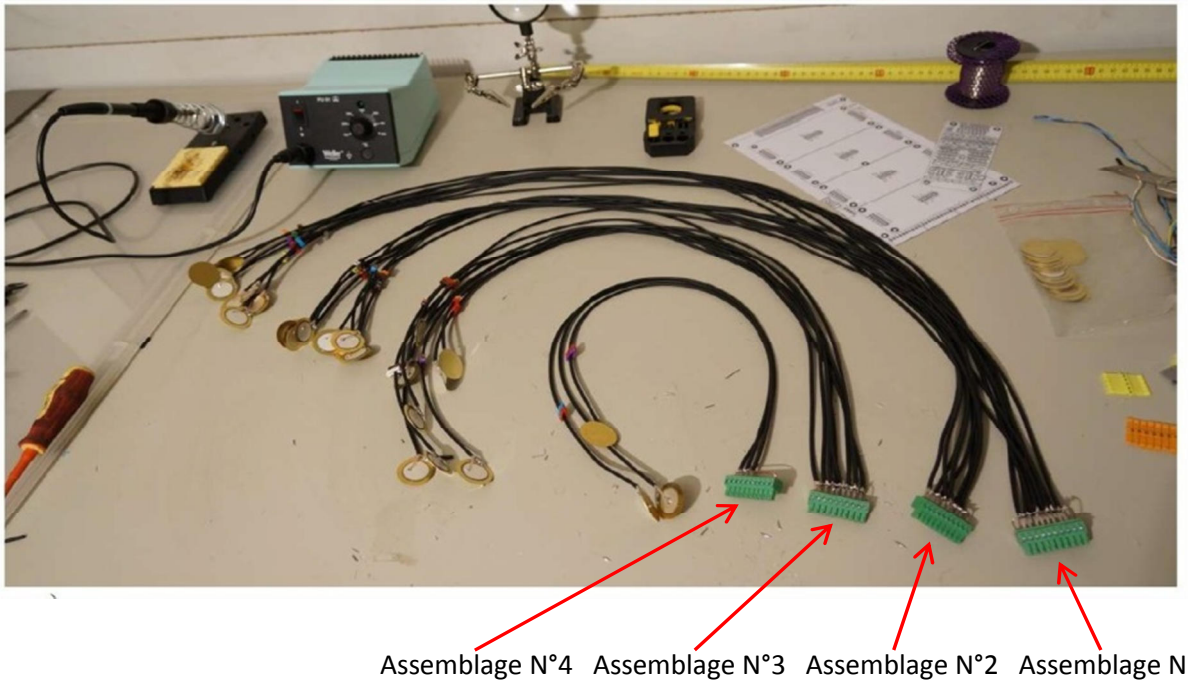


Photo prototypes :



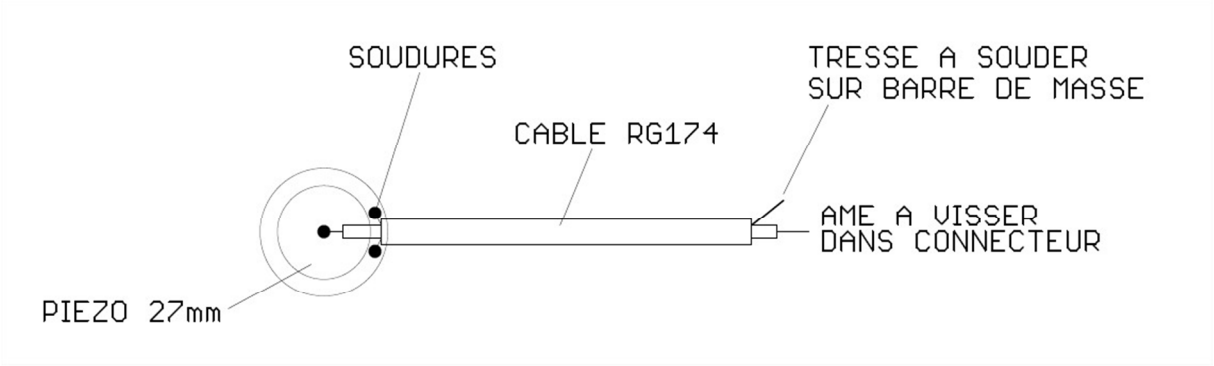
Si possible, ajouter un repère numéroté (bague ou autre) coté capteur et coté connecteur comme suit (ordre incrémental) :
Assemblage N°1 repères 1 à 8, assemblage N°2 repères 9 à 16, assemblage N°3 repères 17 à 24 et assemblage N°4 repères 25 à 27.

Un set complet OMNI est donc composé de
4 pièces d'assemblages N°1
4 pièces d'assemblages N°2
4 pièces d'assemblages N°3
4 pièces d'assemblages N°4
Soit 32 assemblages au total.
Les piezos et connecteurs sont fournis, mais pas le câble RG174 de 3mm.

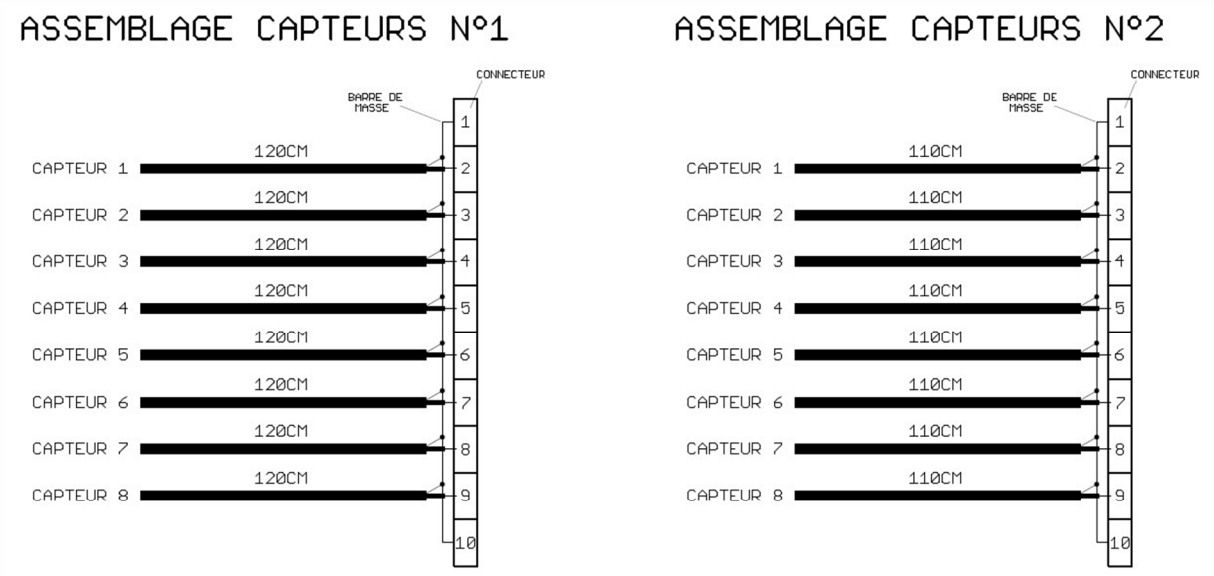
V1.0 FM le 13 septembre 2017

PLANS CABLES PIEZZOS OMNI

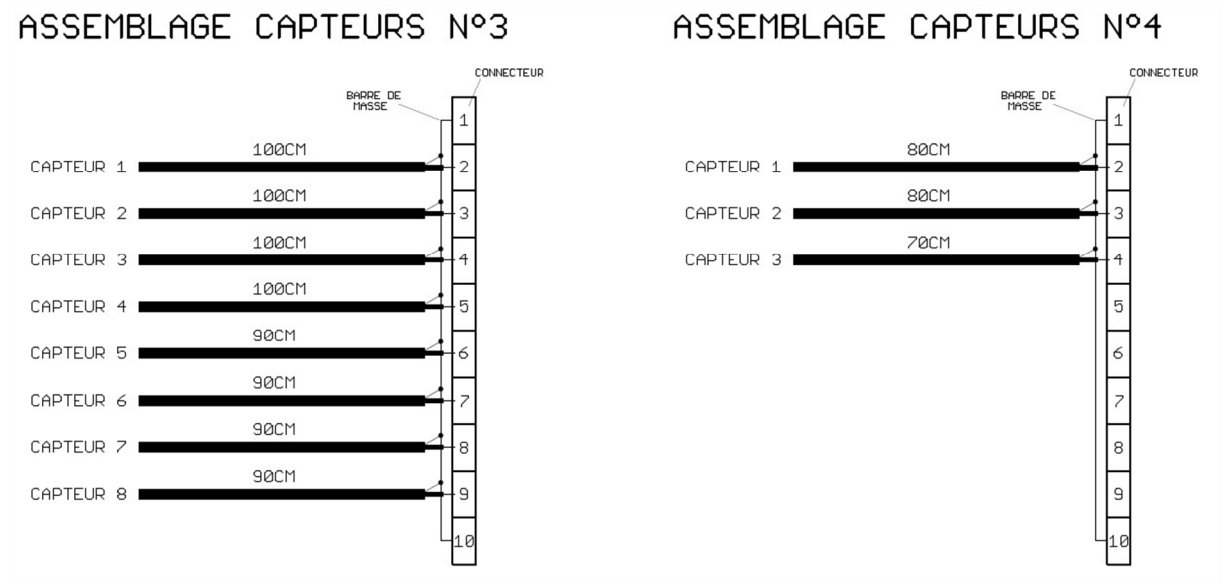
Chaque omni est composé de 4 sections comportant 27 capteurs soit un total de 108 capteurs.
Chaque section de 27 capteurs est composée de 4 assemblages:
3 de 8 capteurs
1 de 3 capteurs.
Chaque capteur est composé d'une pastille piezo de 27mm sur laquelle est soudé un câble type RG174 de 3mm de diamètre et dont la longueur est variable.



L'autre extrémité des câbles est reliée à un connecteur 10 positions à serrage par vis.
Les points 1 et 10 étant des prises de masses communes pour tous les câbles.
Plans des deux premiers assemblages de capteurs :



Plans des deux assemblages de capteurs suivants:



LE MOTEUR DE L'OMNI 2018

Une sensibilité programmable maximum

Une création électronique de l'équipe d'ingénieurs de l'association Musaïques

Interfaces interchangeables par connectique simplifiée et accessible – réalisées sur machine automatisée programmable
Duplication automatique - grande fiabilité – sensiblité er rendement optimisés.