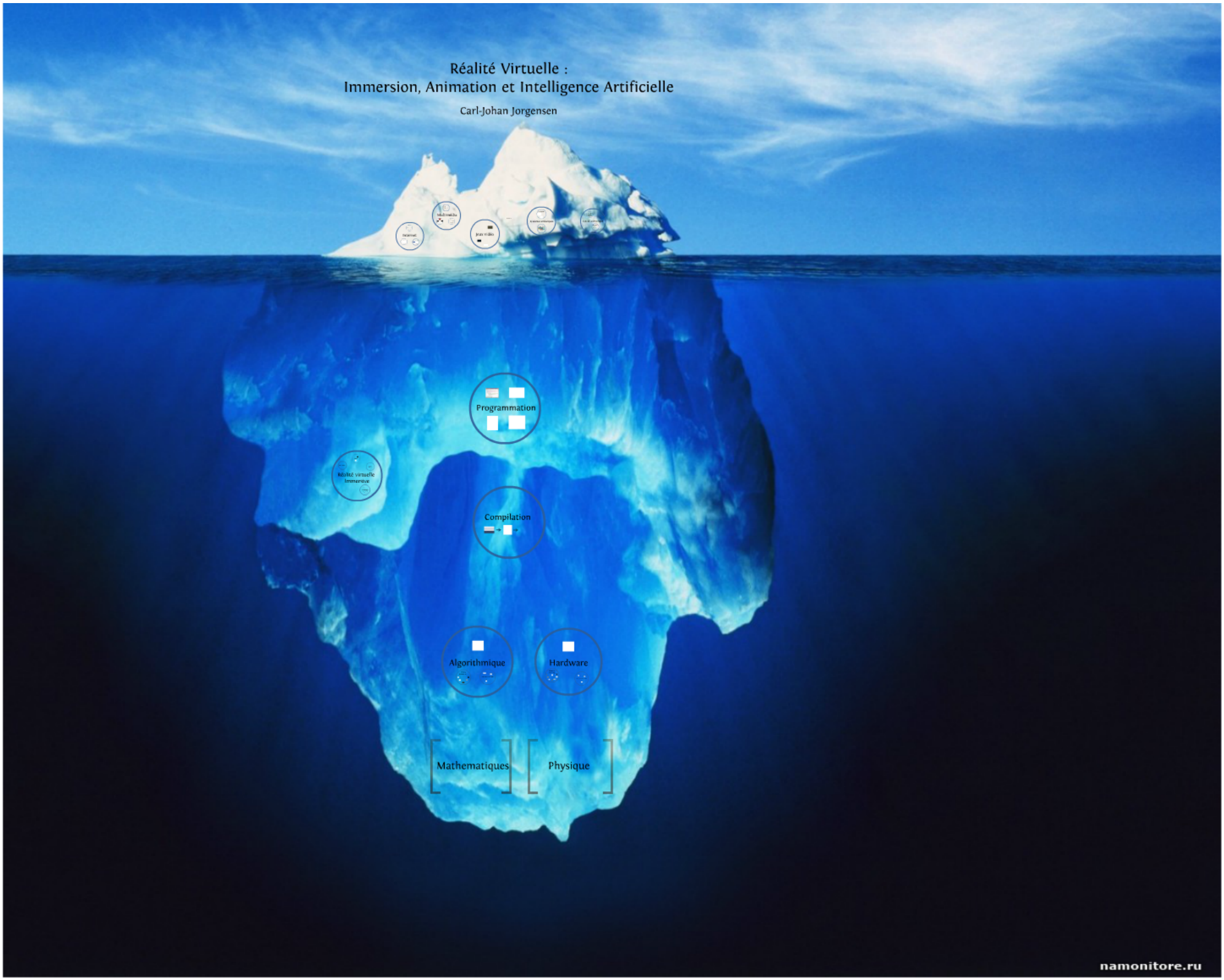
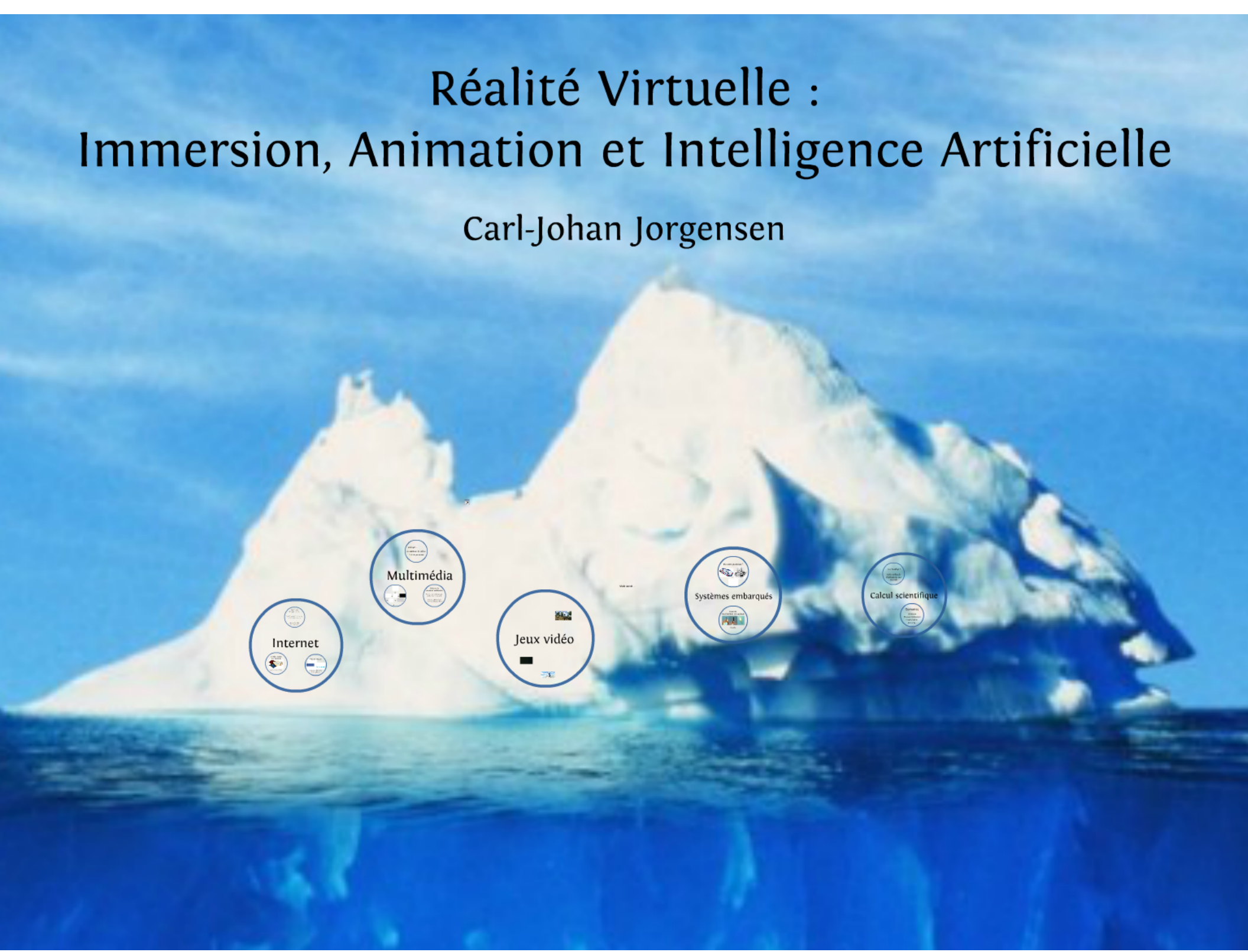

Réalité Virtuelle :
Immersion, Animation et Intelligence Artificielle
Carl-Johan Jorgensen
Programmation
Compilation
Algorithmique
Hardware
Mathematiques
Physique
namonitore.ru

Réalité Virtuelle : Immersion, Animation et Intelligence Artificielle

Carl-Johan Jorgensen



Internet

10 méga-octets par seconde

Réseaux sociaux

Près de 2 Milliards d'utilisateurs

Multimédia

Exemple : YouTube

120 Millions de vidéos

+ 72 h chaque minute

Echange de contenus multimédia

Pour le pair et Steaming : 50 % du débit mondial

Plus de 5 Milliards de fichiers échangés par an

Jeux vidéo

Internet

121 Milliards
de pages internet !

2,3 Milliards d'internautes :
Une personne sur 3 !

Wikipedia : 1736
volumes papier

10 méga-octets
par seconde

.... environ 6 romans

Résaux sociaux

LinkedIn
facebook
viadeo
Google+
twitter

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d'utilisateurs

121 Milliards
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Plus de 5 Milliards de fichiers échangés par an

Exemple : YouTube™

120 Millions de vidéos

+ 72 h chaque minute

=

+

+

+


0.2
Jackson Ave
Overlook Ave
N Parkway
Menu
9:49

+

+ ...

Echange de contenus multimédia

Peer to peer et Steaming :
50 % du débit mondial

Plus de 5 Milliards de fichiers échangés par an

Jeux vidéo


0
1
10:49

Mais aussi ...

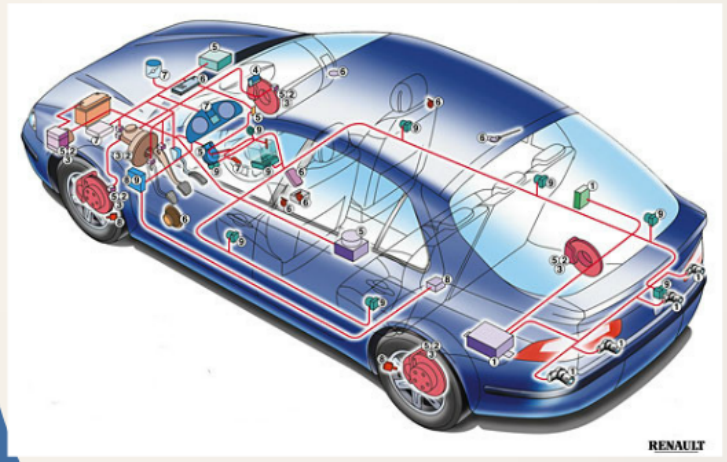
Ils sont partout !

Systèmes embarqués

Souvent,
leur fiabilité est capitale

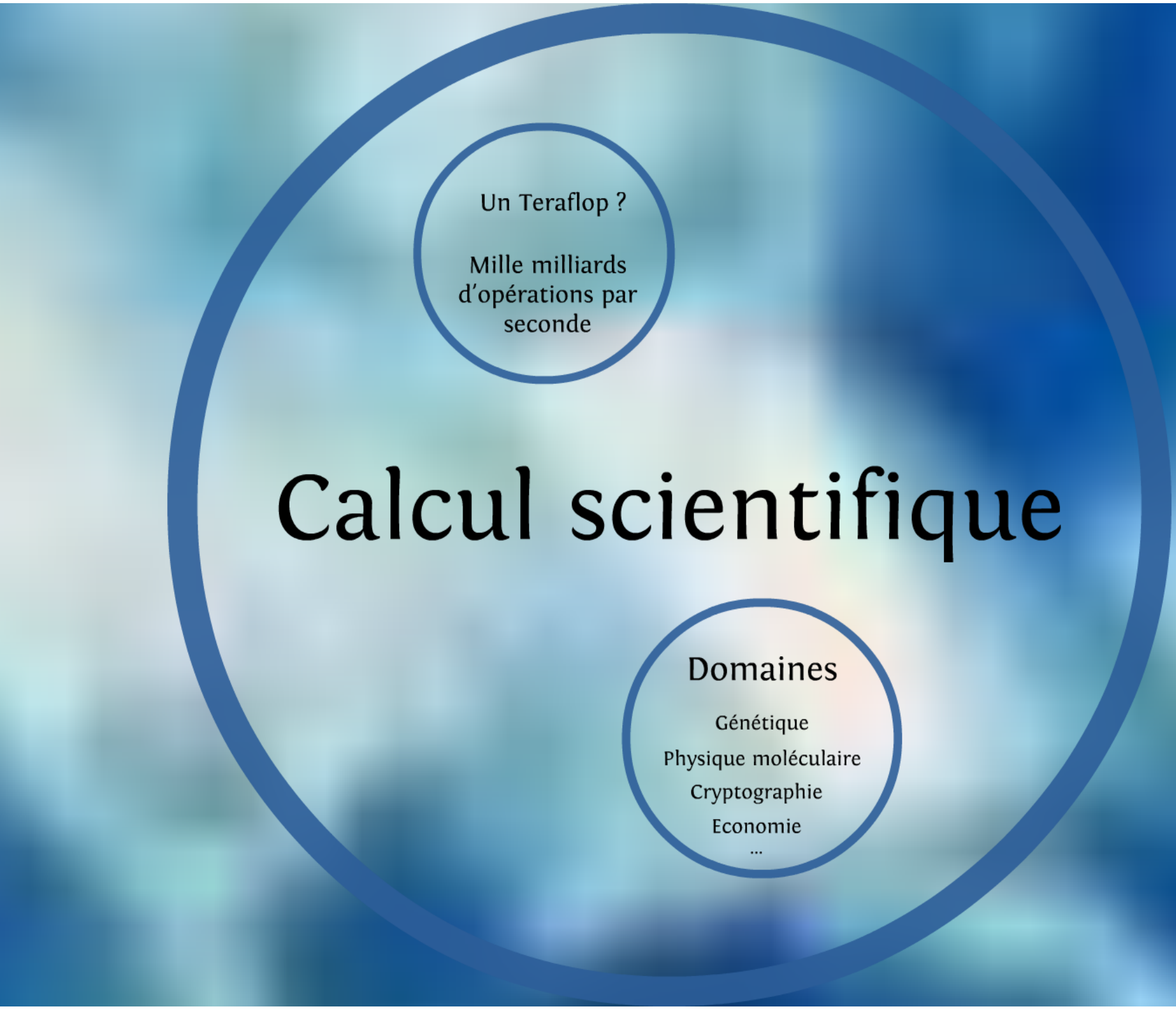
Ariane 5

Ils sont partout !



Souvent,
leur fiabilité est capitale

Ariane 5


Un Teraflop ?
Mille milliards d'opérations par seconde
Calcul scientifique
Domaines
Génétique
Physique moléculaire
Cryptographie
Economie
...

Un Teraflop ?

Mille milliards d'opérations par seconde

Domaines

Génétique

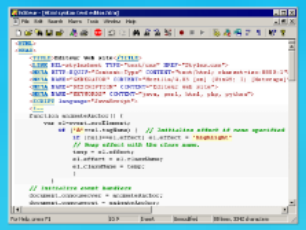
Physique moléculaire

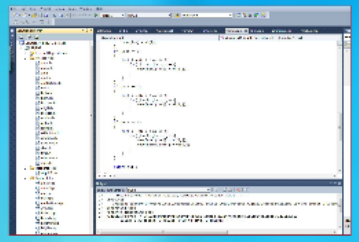
Cryptographie

Economie

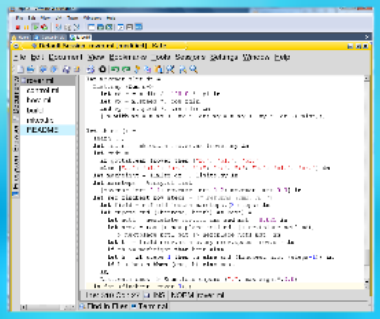
...

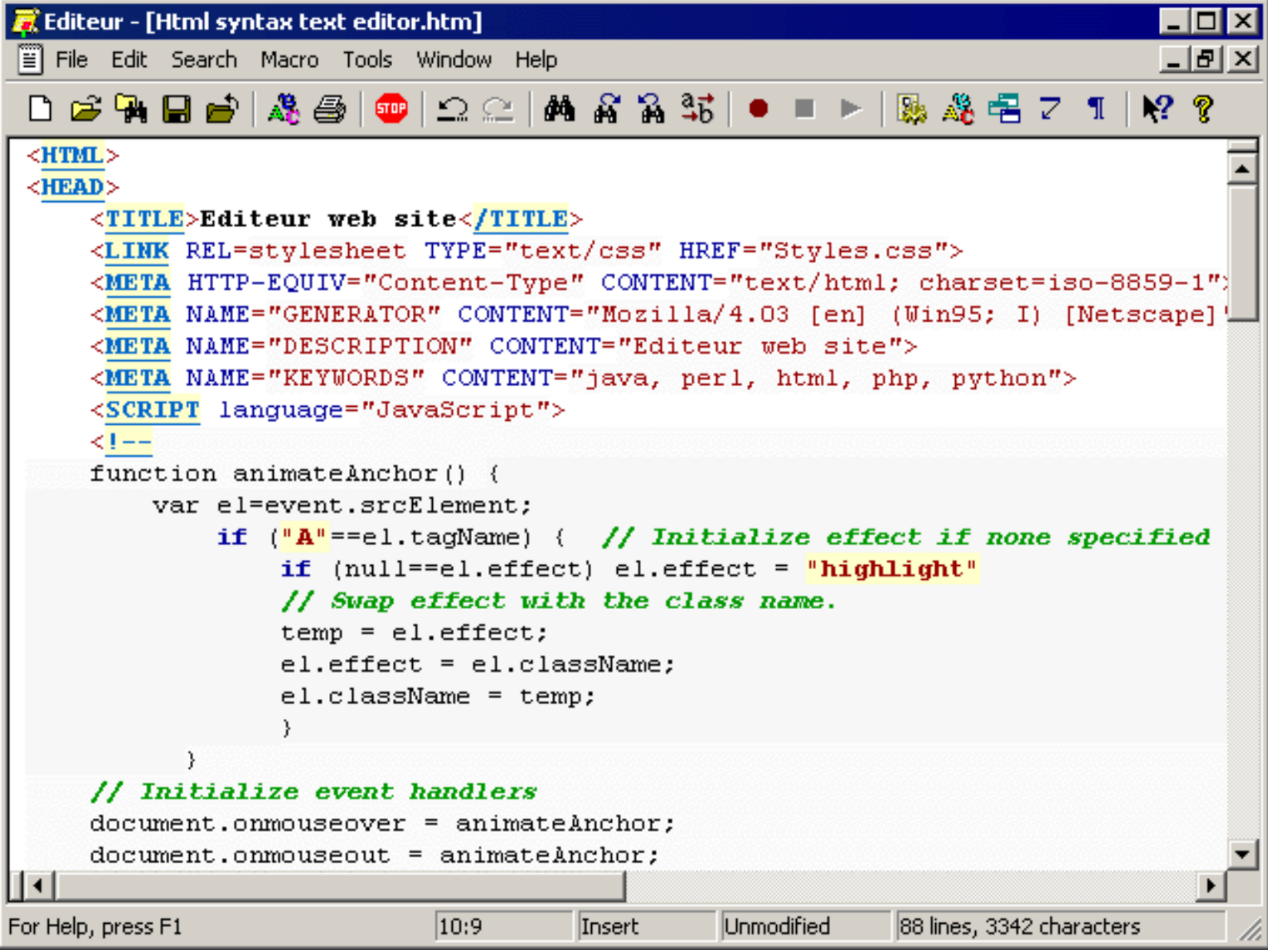

Internet
Multimédia
Jeux vidéo
Systèmes embarqués
Calcul scientifique

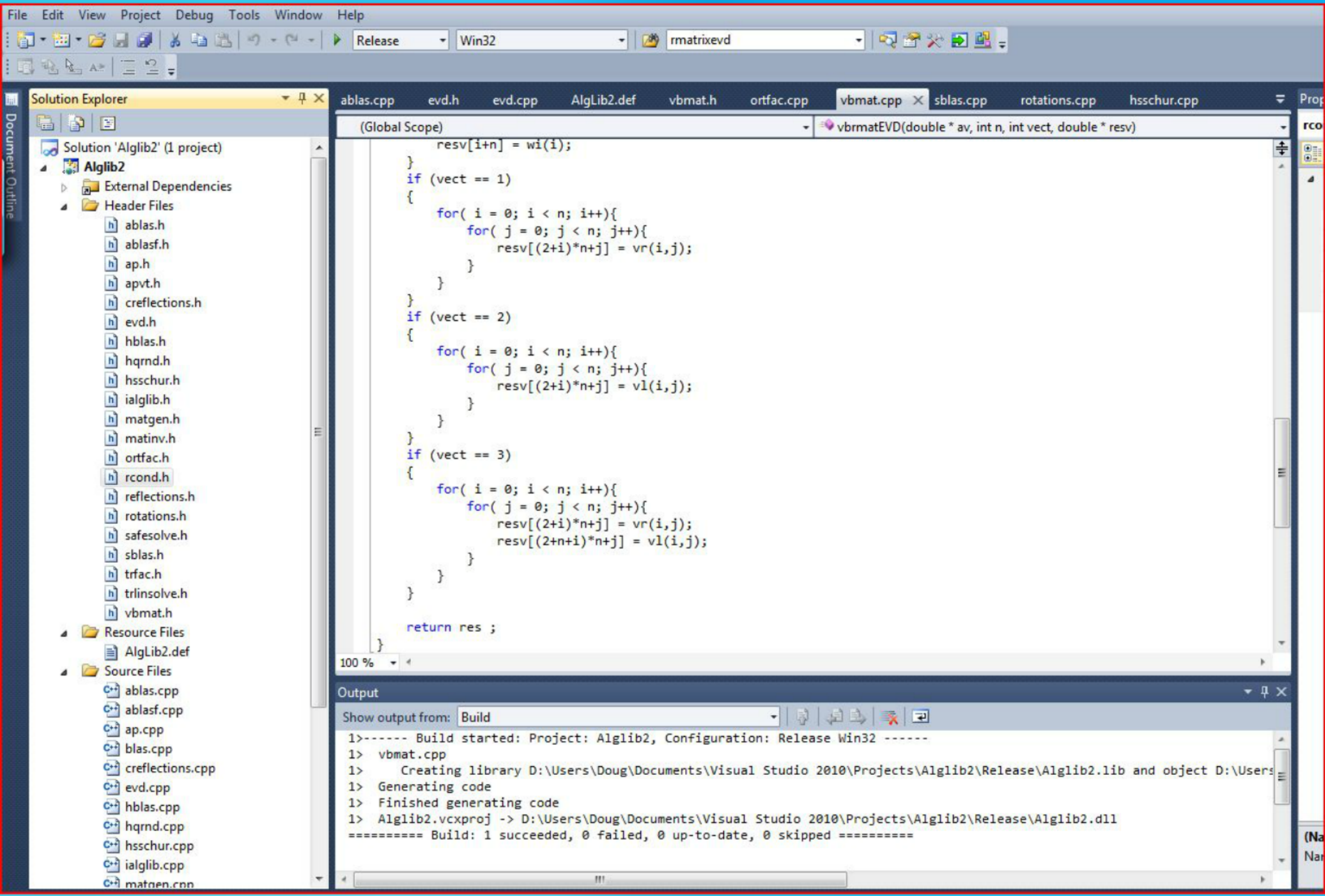




Programmation




Editeur - [Html syntax text editor.htm]
File Edit Search Macro Tools Window Help
<HTML>
<HEAD>
<TITLE>Editeur web site</TITLE>
<LINK REL=stylesheet TYPE="text/css" HREF="Styles.css">
<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">
<META NAME="GENERATOR" CONTENT="Mozilla/4.03 [en] (Win95; I) [Netscape]
<META NAME="DESCRIPTION" CONTENT="Editeur web site">
<META NAME="KEYWORDS" CONTENT="java, perl, html, php, python">
<SCRIPT language="JavaScript">
<!--
function animateAnchor() {
var el=event.srcElement;
if ("A"==el.tagName) { // Initialize effect if none specified
if (null==el.effect) el.effect = "highlight"
// Swap effect with the class name.
temp = el.effect;
el.effect = el.className;
el.className = temp;
}
}
// Initialize event handlers
document.onmouseover = animateAnchor;
document.onmouseout = animateAnchor;
For Help, press F1
10:9
Insert
Unmodified
88 lines, 3342 characters


File Edit View Project Debug Tools Window Help
Release
Win32
rmatrixevd
Solution Explorer
Solution 'Alglib2' (1 project)
Alglib2
External Dependencies
Header Files
ablas.h
ablasf.h
ap.h
apvt.h
creflections.h
evd.h
hblas.h
hqrnd.h
hsschur.h
ialglib.h
matgen.h
matinv.h
ortfac.h
rcond.h
reflections.h
rotations.h
safesolve.h
sblas.h
trfac.h
trlinsolve.h
vbmat.h
Resource Files
AlgLib2.def
Source Files
ablas.cpp
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evd.cpp
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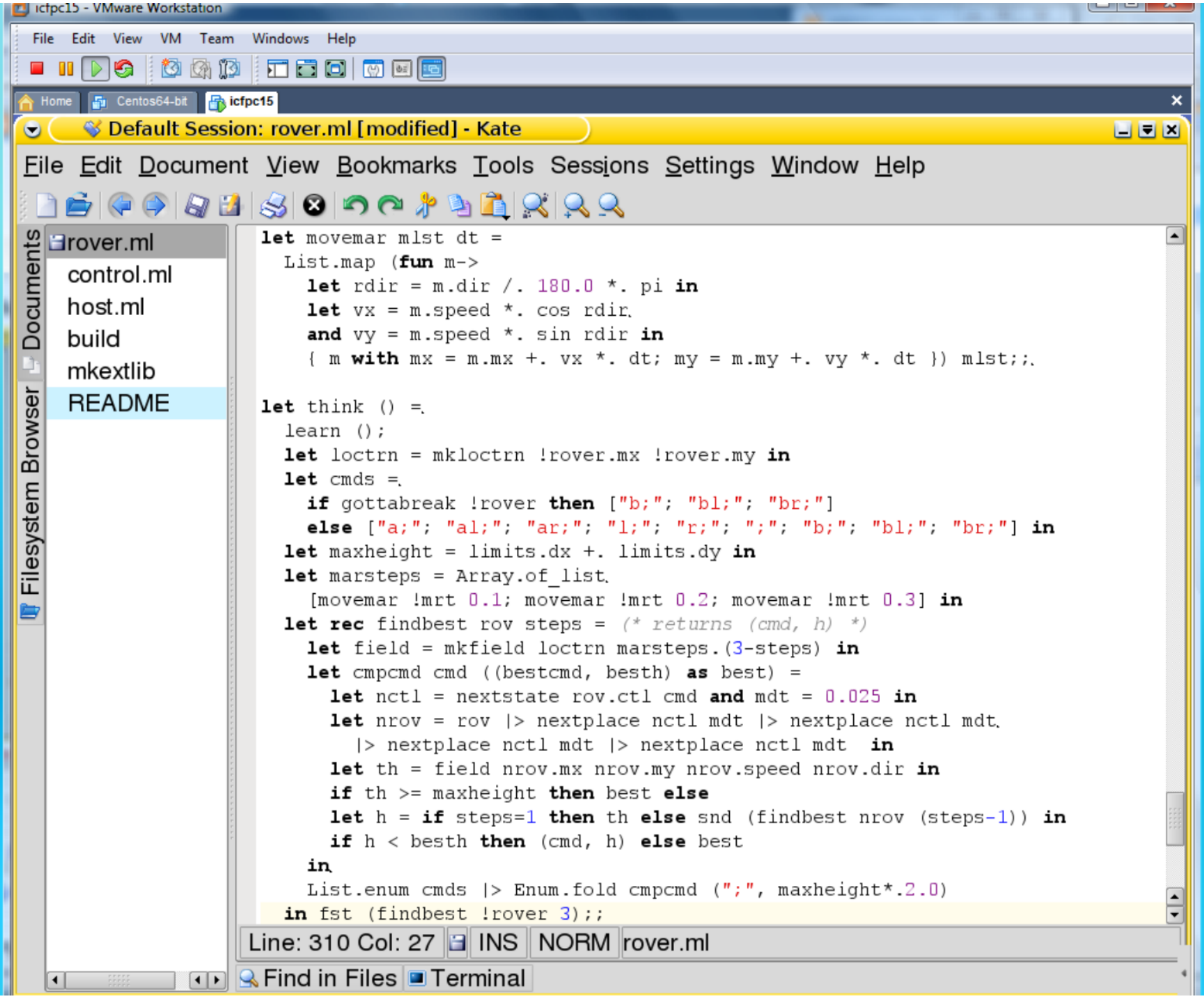
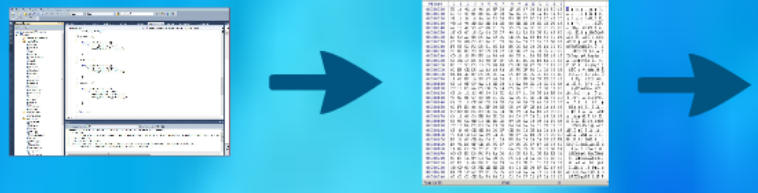
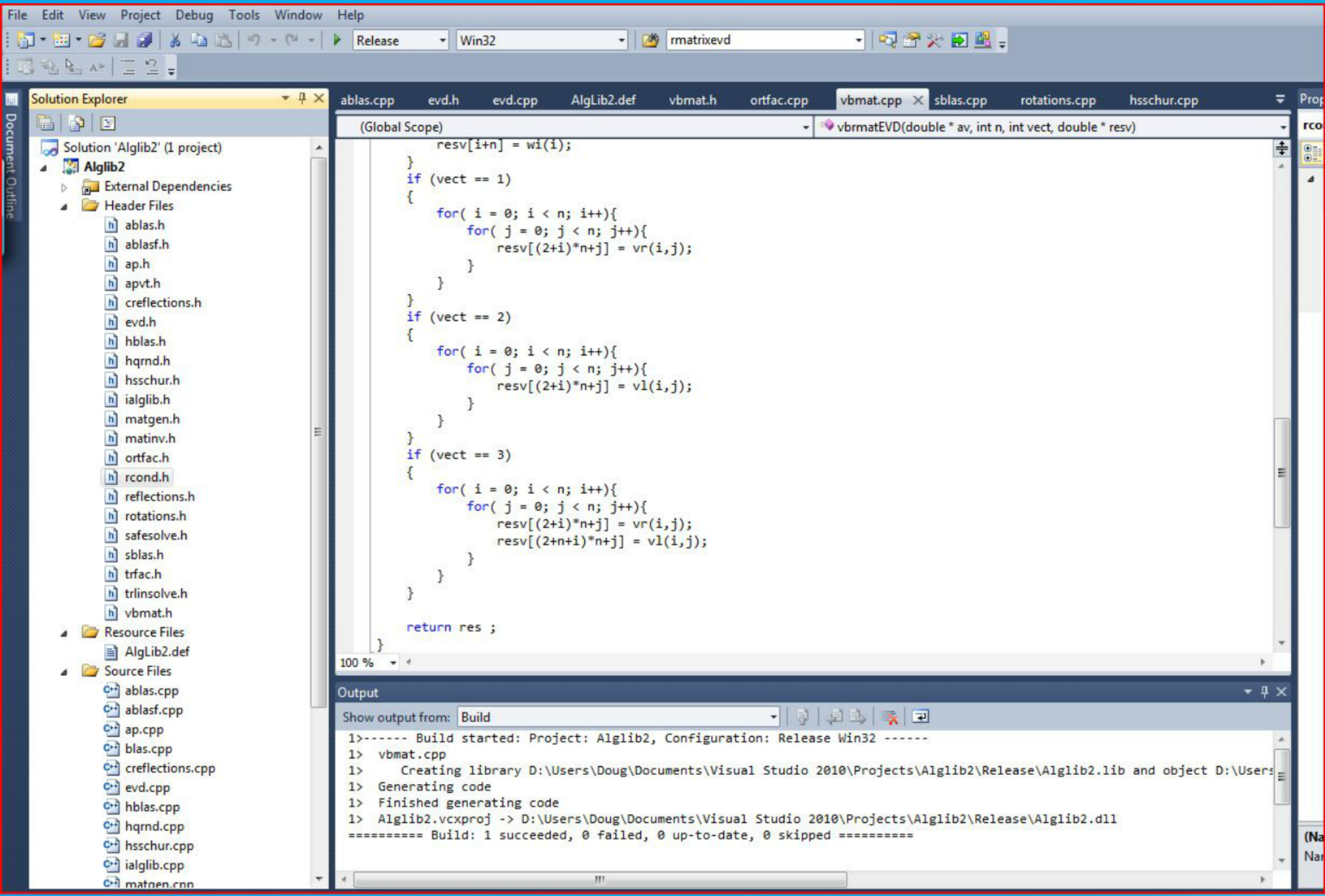
hqrnd.cpp
hsschur.cpp
ialglib.cpp
matgen.cpp
ablas.cpp evd.h evd.cpp AlgLib2.def vbmat.h ortfac.cpp vbmat.cpp sblas.cpp rotations.cpp hsschur.cpp
(Global Scope)
vbrmatEVD(double * av, int n, int vect, double * resv)
resv[i+n] = wi(i);
}
if (vect == 1)
{
for(i = 0; i < n; i++){
for(j = 0; j < n; j++){
resv[(2+i)*n+j] = vr(i,j);
}
}
}
if (vect == 2)
{
for(i = 0; i < n; i++){
for(j = 0; j < n; j++){
resv[(2+i)*n+j] = vl(i,j);
}
}
}
if (vect == 3)
{
for(i = 0; i < n; i++){
for(j = 0; j < n; j++){
resv[(2+i)*n+j] = vr(i,j);
resv[(2+n+i)*n+j] = vl(i,j);
}
}
}
return res ;
}
100 %
Output
Show output from: Build
1>------ Build started: Project: Alglib2, Configuration: Release Win32 ------
1> vbmat.cpp
1> Creating library D:\Users\Doug\Documents\Visual Studio 2010\Projects\Alglib2\Release\Alglib2.lib and object D:\Users
1> Generating code
1> Finished generating code
1> Alglib2.vcxproj -> D:\Users\Doug\Documents\Visual Studio 2010\Projects\Alglib2\Release\Alglib2.dll
========== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========


emacs: *scratch*
File Edit Apps Options Buffers Tools Help
#VRML V2.0 utf8
# A red sphere
Shape {
appearance Appearance {
material Material {
diffuseColor 1 0 0
}
}
geometry Sphere {}
}
# translate 3 units to the right
Transform {
translation 3 0 0
children [
# A green cone
Shape {
appearance Appearance {
material Material {
diffuseColor 0 1 0
}
}
geometry Cone {}
},
# translate 3 units down
Transform {
translation 0 -3 0
children [
# a blue cylinder
Shape {
appearance Appearance {
material Material {
diffuseColor 0 0 1
}
}
geometry Cylinder { radius 0.5 }
}
]
}
]
}
# translate 3 units down
Transform {
translation 0 -3 0
children [
# a yellow box
Shape {
appearance Appearance {
material Material {
diffuseColor 1 1 0
}
}
geometry Box {}
}
]
}
--**-XEmacs: *scratch* (VRML Font)----All----
File to save in:


icfpc15 - VMware Workstation
File Edit View VM Team Windows Help
Home Centos64-bit icfpc15
Default Session: rover.ml [modified] - Kate
File Edit Document View Bookmarks Tools Sessions Settings Window Help
Documents
Filesystem Browser
rover.ml
control.ml
host.ml
build
mkextlib
README
let movemar mlst dt =
List.map (fun m->
let rdir = m.dir /. 180.0 *. pi in
let vx = m.speed *. cos rdir
and vy = m.speed *. sin rdir in
{ m with mx = m.mx +. vx *. dt; my = m.my +. vy *. dt }) mlst;;
let think () =
learn ();
let loctrn = mkloctrn !rover.mx !rover.my in
let cmds =
if gottabreak !rover then ["b;"; "bl;"; "br;"]
else ["a;"; "al;"; "ar;"; "l;"; "r;"; ";"; "b;"; "bl;"; "br;"] in
let maxheight = limits.dx +. limits.dy in
let marsteps = Array.of_list
[movemar !mrt 0.1; movemar !mrt 0.2; movemar !mrt 0.3] in
let rec findbest rov steps = (* returns (cmd, h) *)
let field = mkfield loctrn marsteps.(3-steps) in
let cmpcmd cmd ((bestcmd, besth) as best) =
let nctl = nextstate rov.ctl cmd and mdt = 0.025 in
let nrov = rov |> nextplace nctl mdt |> nextplace nctl mdt
|> nextplace nctl mdt |> nextplace nctl mdt in
let th = field nrov.mx nrov.my nrov.speed nrov.dir in
if th >= maxheight then best else
let h = if steps=1 then th else snd (findbest nrov (steps-1)) in
if h < besth then (cmd, h) else best
in
List.enum cmds |> Enum.fold cmpcmd (";", maxheight*.2.0)
in fst (findbest !rover 3);;
Line: 310 Col: 27 INS NORM rover.ml
Find in Files Terminal

Compilation




File Edit View Project Debug Tools Window Help
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Win32
rmatrixevd
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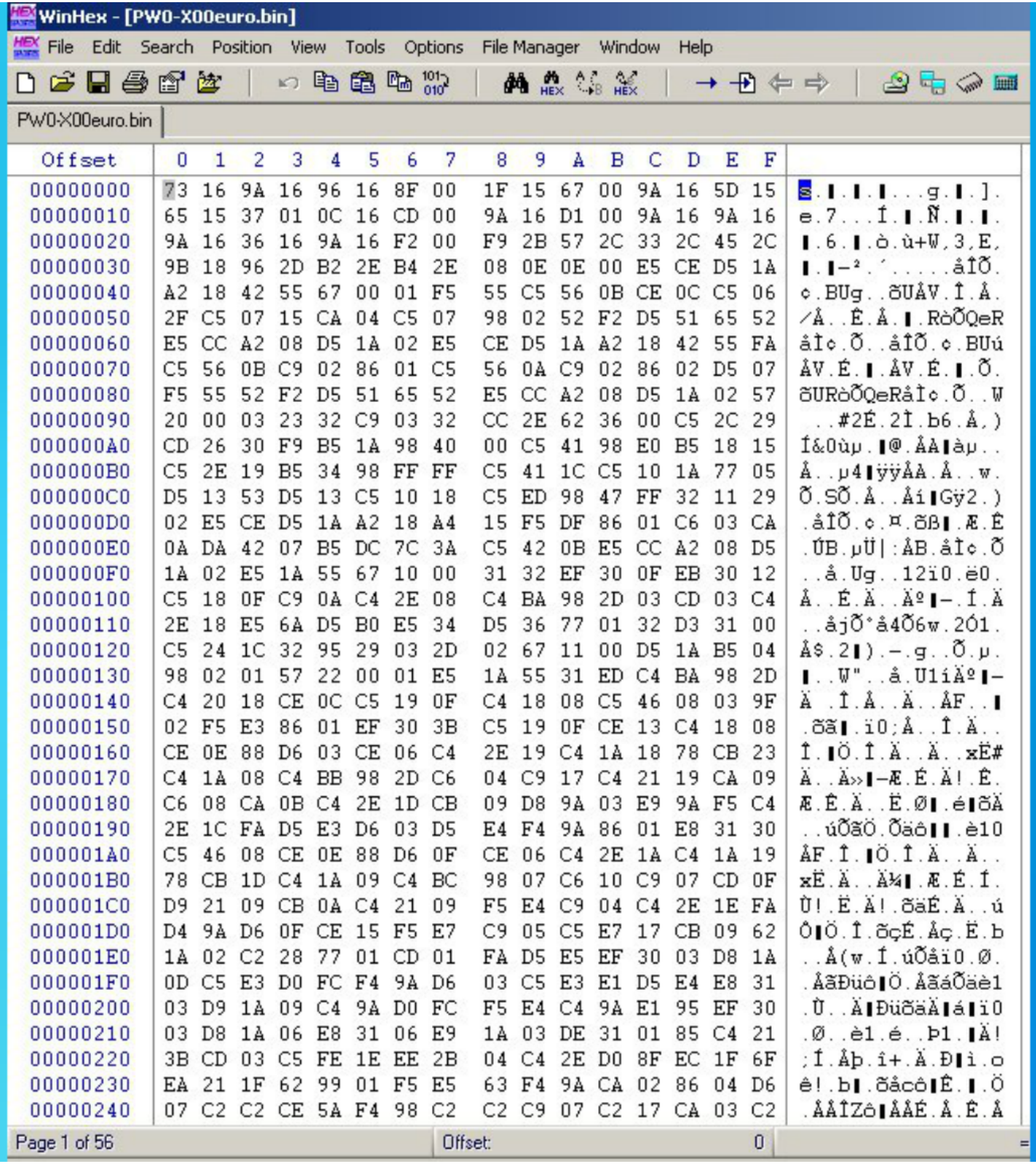
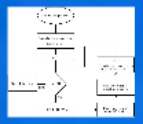
for(j = 0; j < n; j++){
resv[(2+i)*n+j] = vr(i,j);
}
}
}
if (vect == 2)
{
for(i = 0; i < n; i++){
for(j = 0; j < n; j++){
resv[(2+i)*n+j] = vl(i,j);
}
}
}
if (vect == 3)
{
for(i = 0; i < n; i++){
for(j = 0; j < n; j++){
resv[(2+i)*n+j] = vr(i,j);
resv[(2+n+i)*n+j] = vl(i,j);
}
}
}
return res ;
}
100 %
Output
Show output from: Build
1>------ Build started: Project: Alglib2, Configuration: Release Win32 ------
1> vbmat.cpp
1> Creating library D:\Users\Doug\Documents\Visual Studio 2010\Projects\Alglib2\Release\Alglib2.lib and object D:\Users
1> Generating code
1> Finished generating code
1> Alglib2.vcxproj -> D:\Users\Doug\Documents\Visual Studio 2010\Projects\Alglib2\Release\Alglib2.dll
========== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========


WinHex - [PW0-X00euro.bin]
File Edit Search Position View Tools Options File Manager Window Help
PW0-X00euro.bin
Offset 0 1 2 3 4 5 6 7 8 9 A B C D E F
00000000 73 16 9A 16 96 16 8F 00 1F 15 67 00 9A 16 5D 15
00000010 65 15 37 01 0C 16 CD 00 9A 16 D1 00 9A 16 9A 16
00000020 9A 16 36 16 9A 16 F2 00 F9 2B 57 2C 33 2C 45 2C
00000030 9B 18 96 2D B2 2E B4 2E 08 0E 0E 00 E5 CE D5 1A
00000040 A2 18 42 55 67 00 01 F5 55 C5 56 0B CE 0C C5 06
00000050 2F C5 07 15 CA 04 C5 07 98 02 52 F2 D5 51 65 52
00000060 E5 CC A2 08 D5 1A 02 E5 CE D5 1A A2 18 42 55 FA
00000070 C5 56 0B C9 02 86 01 C5 56 0A C9 02 86 02 D5 07
00000080 F5 55 52 F2 D5 51 65 52 E5 CC A2 08 D5 1A 02 57
00000090 20 00 03 23 32 C9 03 32 CC 2E 62 36 00 C5 2C 29
000000A0 CD 26 30 F9 B5 1A 98 40 00 C5 41 98 E0 B5 18 15
000000B0 C5 2E 19 B5 34 98 FF FF C5 41 1C C5 10 1A 77 05
000000C0 D5 13 53 D5 13 C5 10 18 C5 ED 98 47 FF 32 11 29
000000D0 02 E5 CE D5 1A A2 18 A4 15 F5 DF 86 01 C6 03 CA
000000E0 0A DA 42 07 B5 DC 7C 3A C5 42 0B E5 CC A2 08 D5
000000F0 1A 02 E5 1A 55 67 10 00 31 32 EF 30 0F EB 30 12
00000100 C5 18 0F C9 0A C4 2E 08 C4 BA 98 2D 03 CD 03 C4
00000110 2E 18 E5 6A D5 B0 E5 34 D5 36 77 01 32 D3 31 00
00000120 C5 24 1C 32 95 29 03 2D 02 67 11 00 D5 1A B5 04
00000130 98 02 01 57 22 00 01 E5 1A 55 31 ED C4 BA 98 2D
00000140 C4 20 18 CE 0C C5 19 0F C4 18 08 C5 46 08 03 9F
00000150 02 F5 E3 86 01 EF 30 3B C5 19 0F CE 13 C4 18 08
00000160 CE 0E 88 D6 03 CE 06 C4 2E 19 C4 1A 18 78 CB 23
00000170 C4 1A 08 C4 BB 98 2D C6 04 C9 17 C4 21 19 CA 09
00000180 C6 08 CA 0B C4 2E 1D CB 09 D8 9A 03 E9 9A F5 C4
00000190 2E 1C FA D5 E3 D6 03 D5 E4 F4 9A 86 01 E8 31 30
000001A0 C5 46 08 CE 0E 88 D6 0F CE 06 C4 2E 1A C4 1A 19
000001B0 78 CB 1D C4 1A 09 C4 BC 98 07 C6 10 C9 07 CD 0F
000001C0 D9 21 09 CB 0A C4 21 09 F5 E4 C9 04 C4 2E 1E FA
000001D0 D4 9A D6 0F CE 15 F5 E7 C9 05 C5 E7 17 CB 09 62
000001E0 1A 02 C2 28 77 01 CD 01 FA D5 E5 EF 30 03 D8 1A
000001F0 0D C5 E3 D0 FC F4 9A D6 03 C5 E3 E1 D5 E4 E8 31
00000200 03 D9 1A 09 C4 9A D0 FC F5 E4 C4 9A E1 95 EF 30
00000210 03 D8 1A 06 E8 31 06 E9 1A 03 DE 31 01 85 C4 21
00000220 3B CD 03 C5 FE 1E EE 2B 04 C4 2E D0 8F EC 1F 6F
00000230 EA 21 1F 62 99 01 F5 E5 63 F4 9A CA 02 86 04 D6
00000240 07 C2 C2 CE 5A F4 98 C2 C2 C9 07 C2 17 CA 03 C2
Page 1 of 56
Offset: 0



Algorithmique

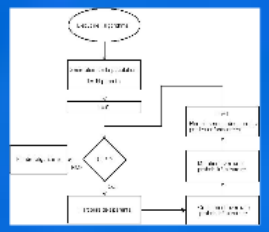
Un peu d'Histoire ...

Domaines scientifiques

Hardware

Histoire, toujours...

Domaines Scientifiques



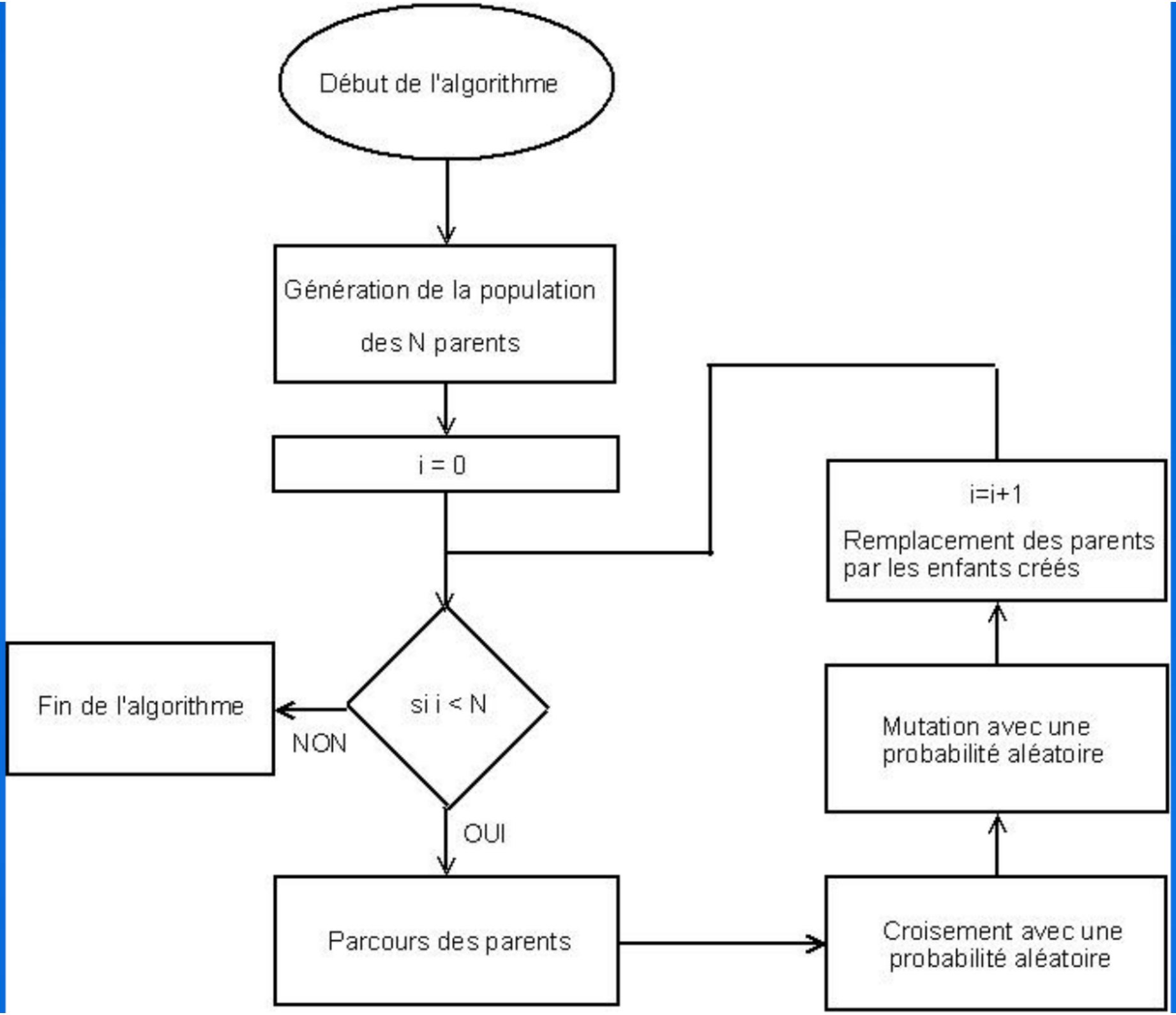
Algorithmique

Un peu d'Histoire ...





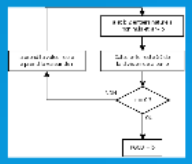

Domaines scientifiques


Début de l'algorithme
Génération de la population des N parents
i = 0
si i < N
NON
Fin de l'algorithme
OUI
Parcours des parents
Croisement avec une probabilité aléatoire
Mutation avec une probabilité aléatoire
i=i+1
Remplacement des parents par les enfants créés

Un peu d'Histoire ...

Abacus (-2700, Mesopotamie)

Alan Turing (1936, Angleterre)

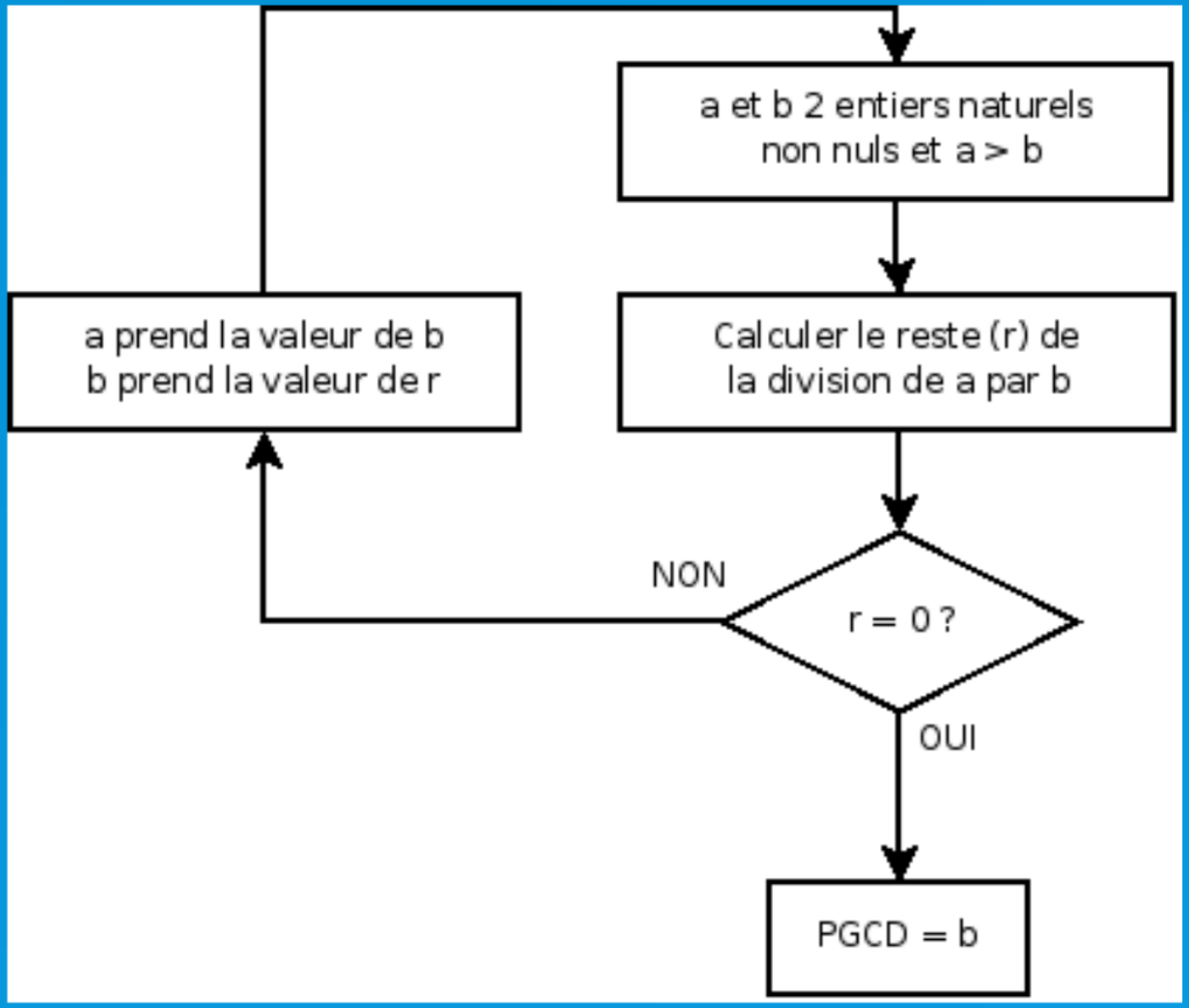


Algorithme d'Euclide (-300, Grèce)

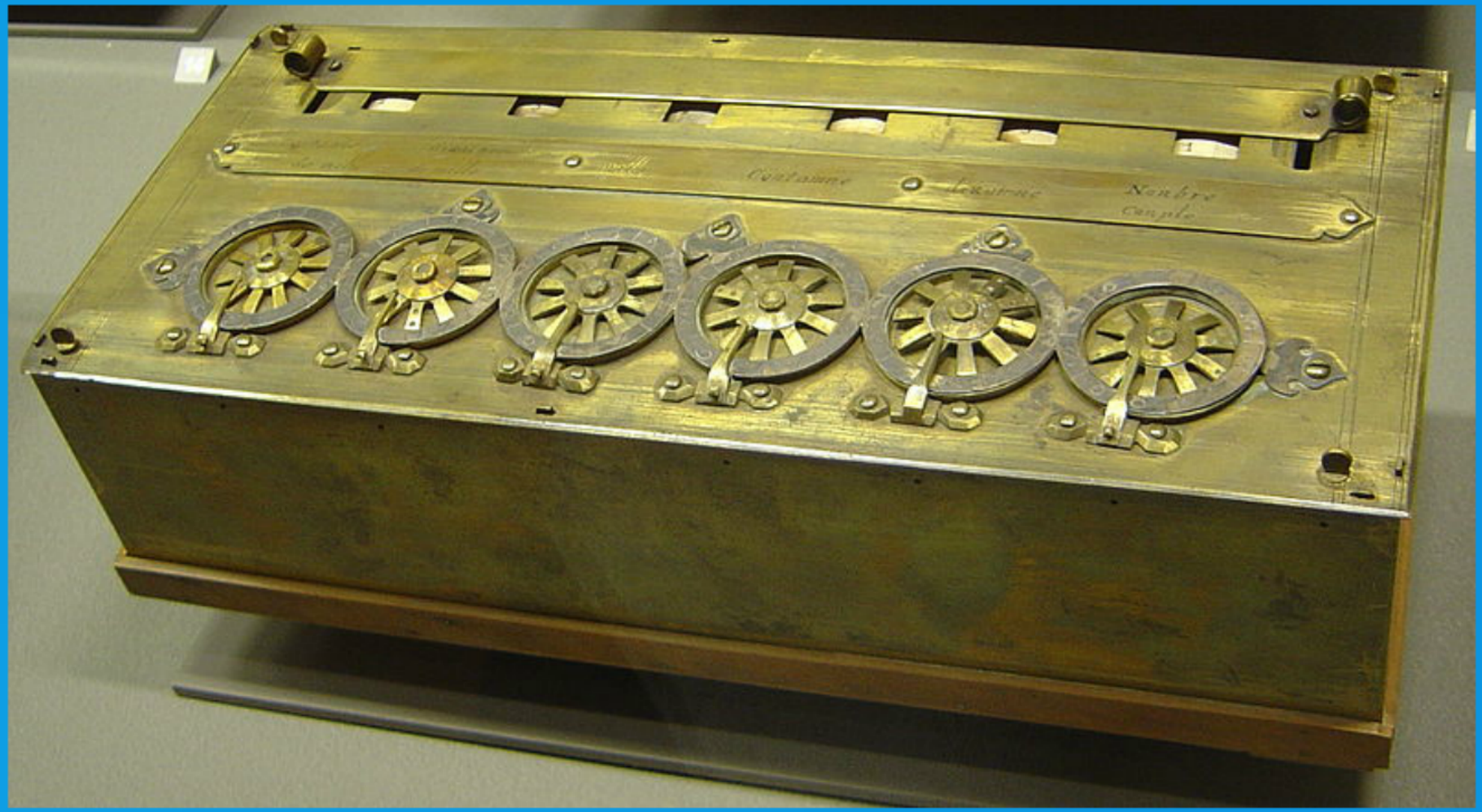
Ada Lovelace (1842, Angleterre)

Pascaline (1645, France)

Abacus (-2700, Mesopotamie)



Algorithme d'Euclide (-300, Grèce)

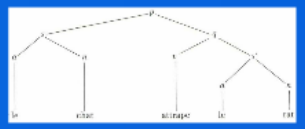


Pascaline (1645, France)

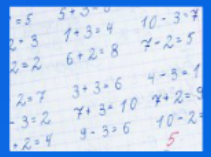
Ada Lovelace (1842, Angleterre)

Alan Turing (1936, Angleterre)

Langage formel

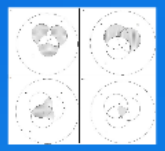


Arithmétique

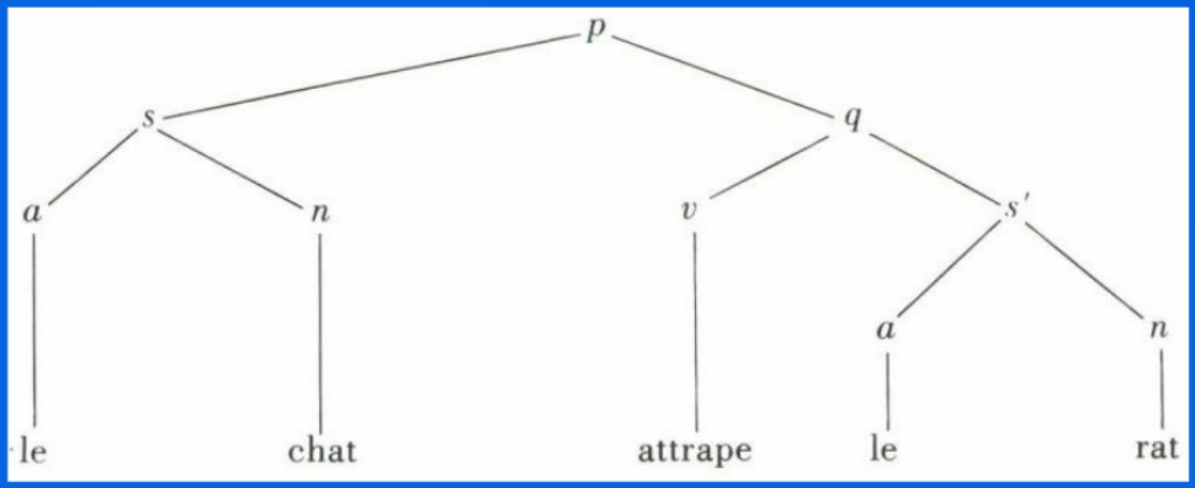


Domaines scientifiques

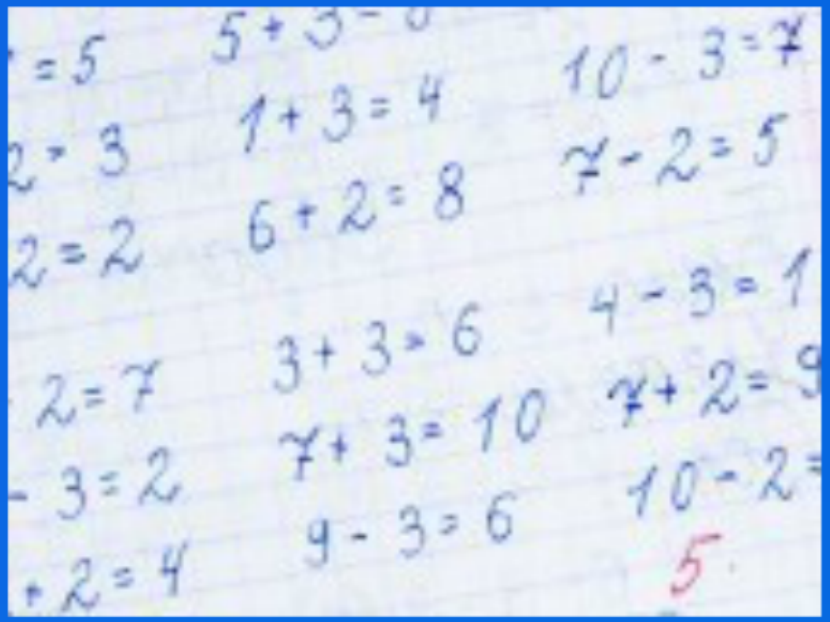
Théorie des Ensembles



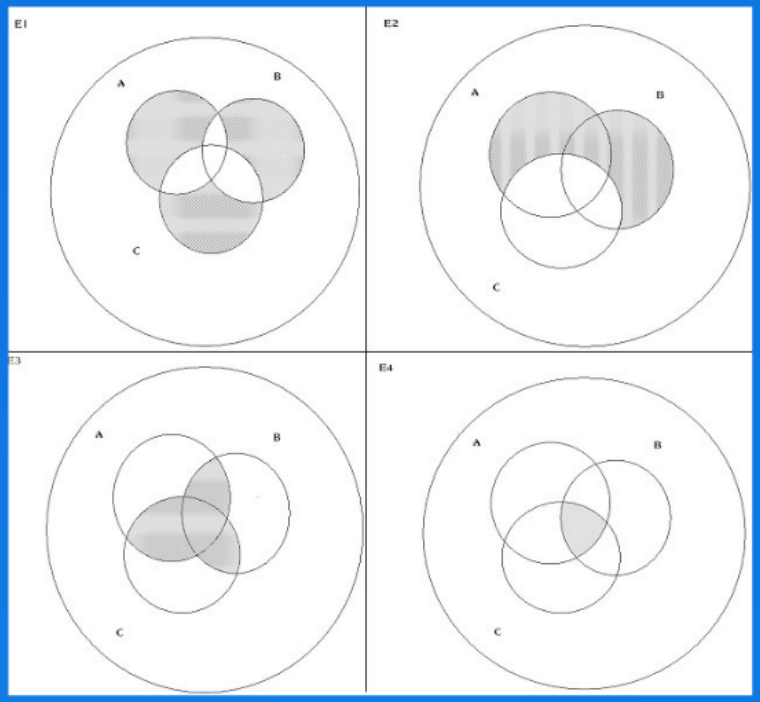
Langage formel

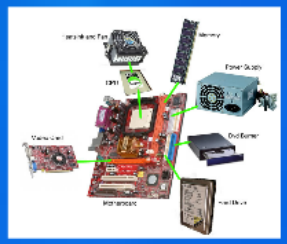


Arithmétique

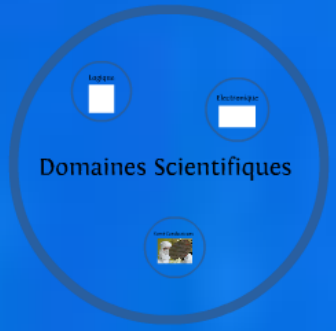


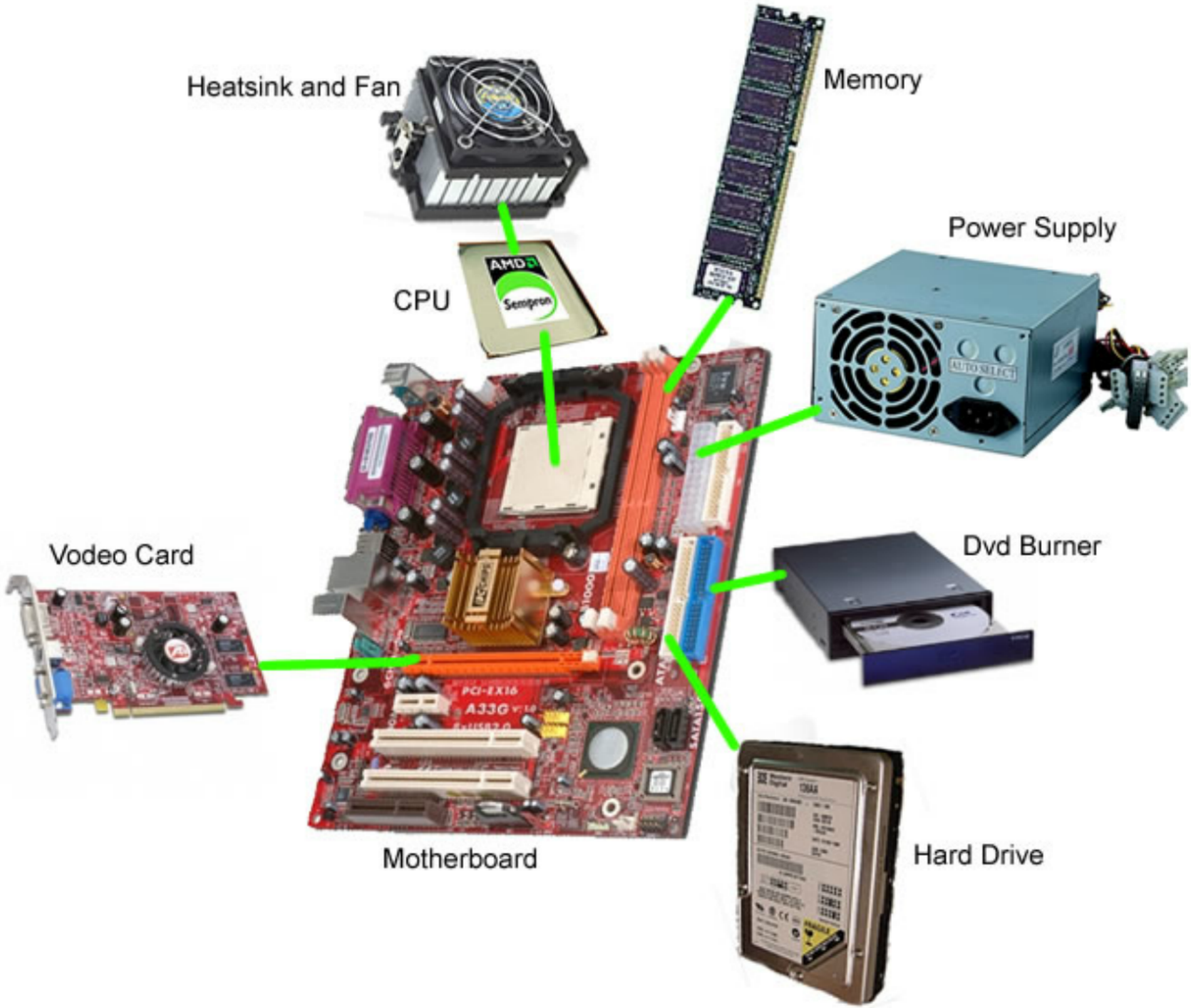
Théorie des Ensembles





Hardware




Heatsink and Fan
Memory
Power Supply
CPU
AMD
Sempron
Vodeo Card
Dvd Burner
PCI-EX16
A33G
Motherboard
Hard Drive

Histoire, toujours...

Métier Jaquard (1801, France)

Apple - II (1977, USA)

Xerox Alto (1973, USA)

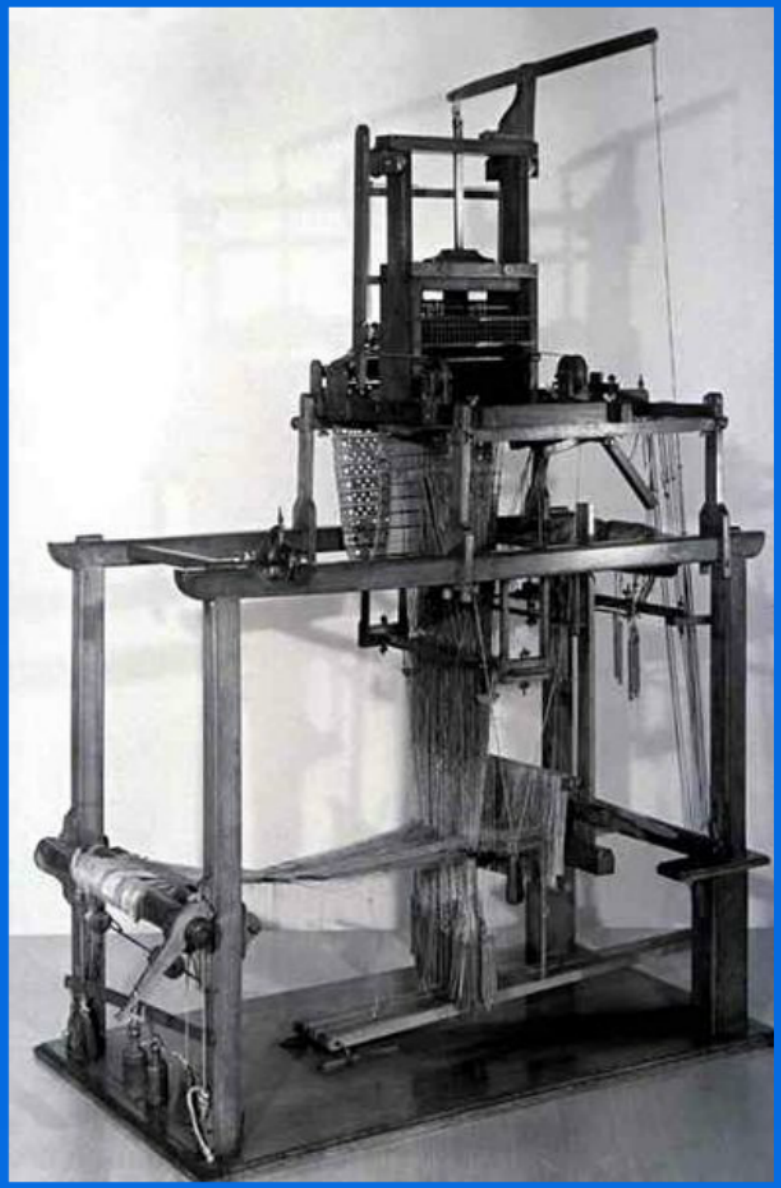
Zuze Z3 (1941, Allemagne)

Kenbak-1 (1970, USA)

ENIAC (1946, USA)

EDSAC (1949, Angleterre)

IBM 610 (1957, USA)



Métier Jaquard (1801, France)

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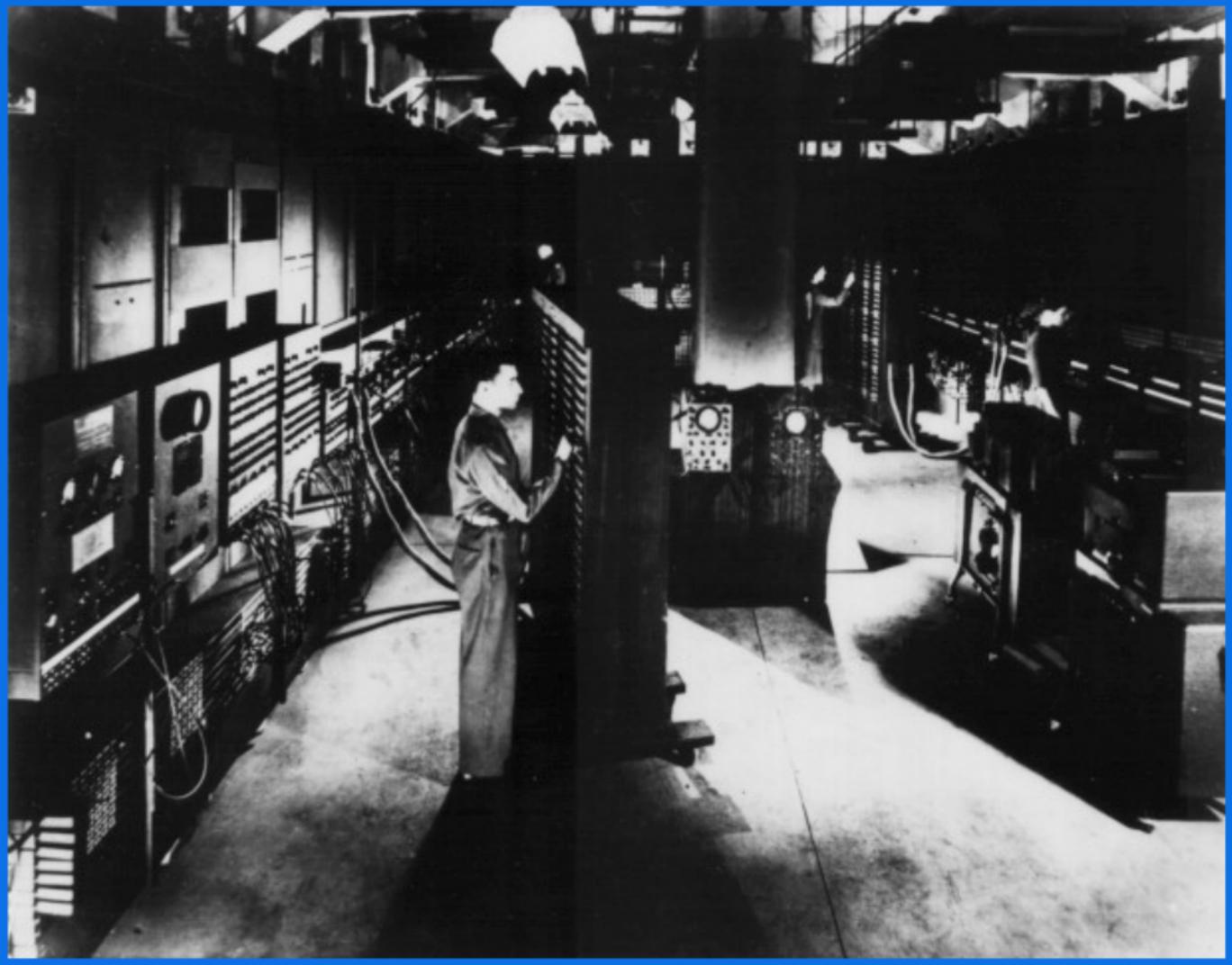

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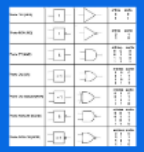
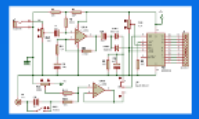
Apple - II (1977, USA)

Domaines Scientifiques

Logique

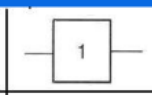
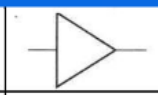
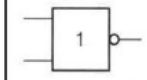
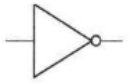
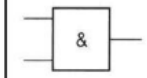
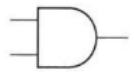
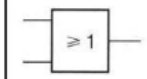
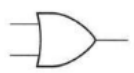
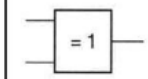
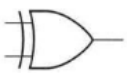
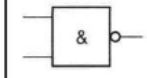
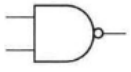
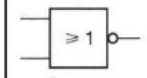
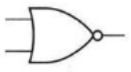


Electronique

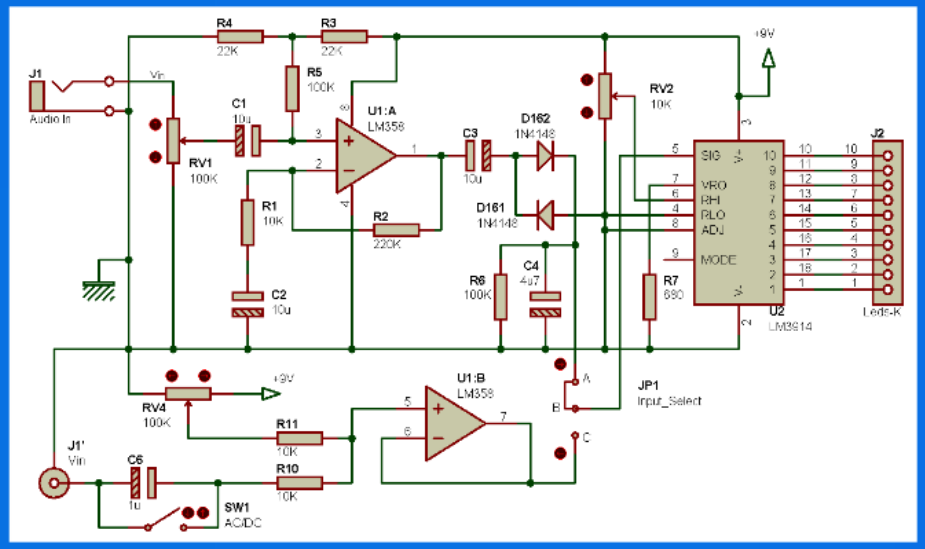


Semi-Conducteurs

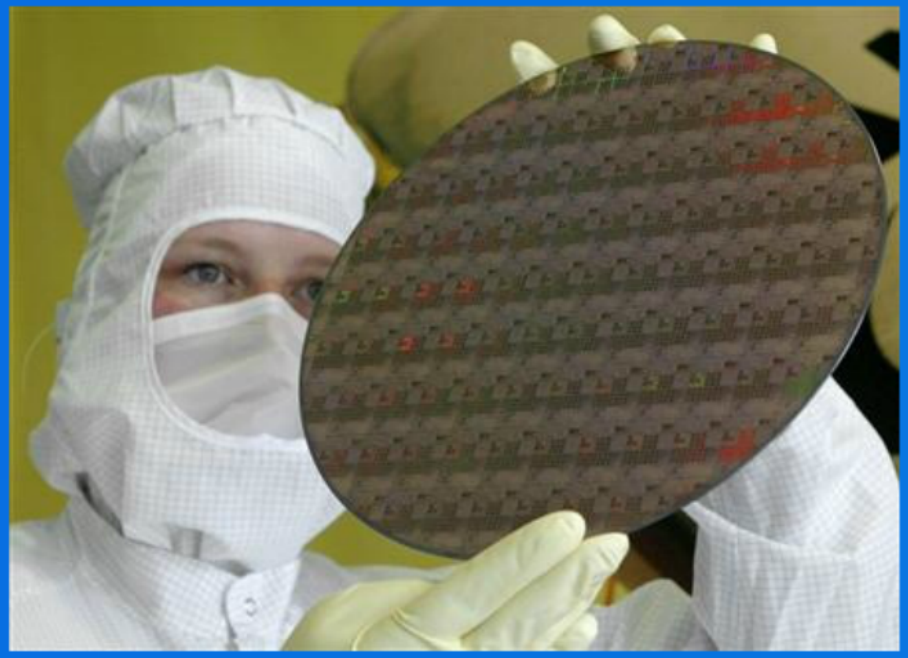
Logique

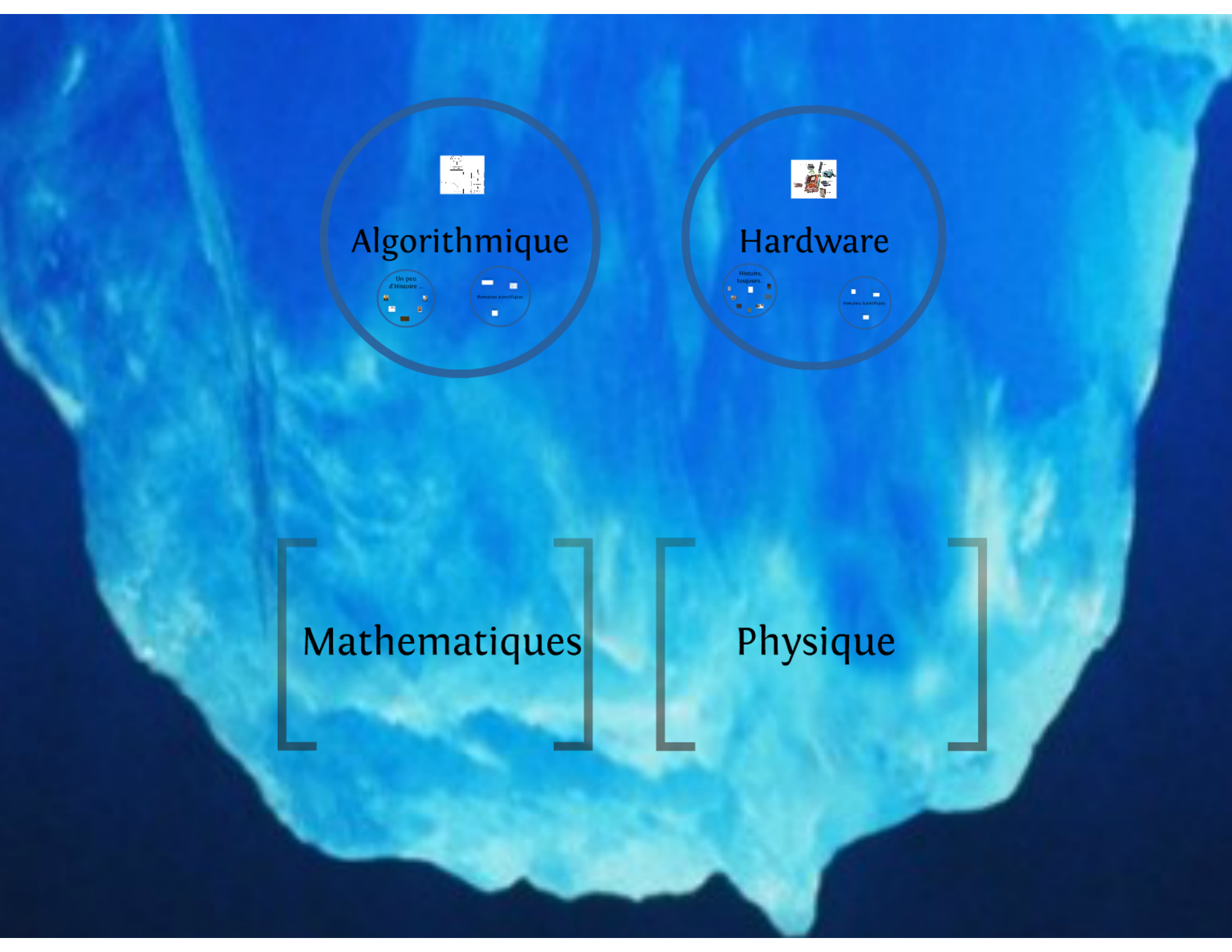
Porte OUI (YES)			entrée sortie 0 0 1 1
Porte NON (NO)			entrée sortie 0 1 1 0
Porte ET (AND)			entrées sortie 0 0 0 0 1 0 1 0 0 1 1 1
Porte OU (OR)			entrées sortie 0 0 0 0 1 1 1 0 1 1 1 1
Porte OU exclusif (XOR)			entrées sortie 0 0 0 0 1 1 1 0 1 1 1 0
Porte NON-ET (NAND)			entrées sortie 0 0 1 0 1 1 1 0 1 1 1 0
Porte NON-OU (NOR)			entrées sortie 0 0 0 0 1 1 1 0 1 1 1 0

Electronique



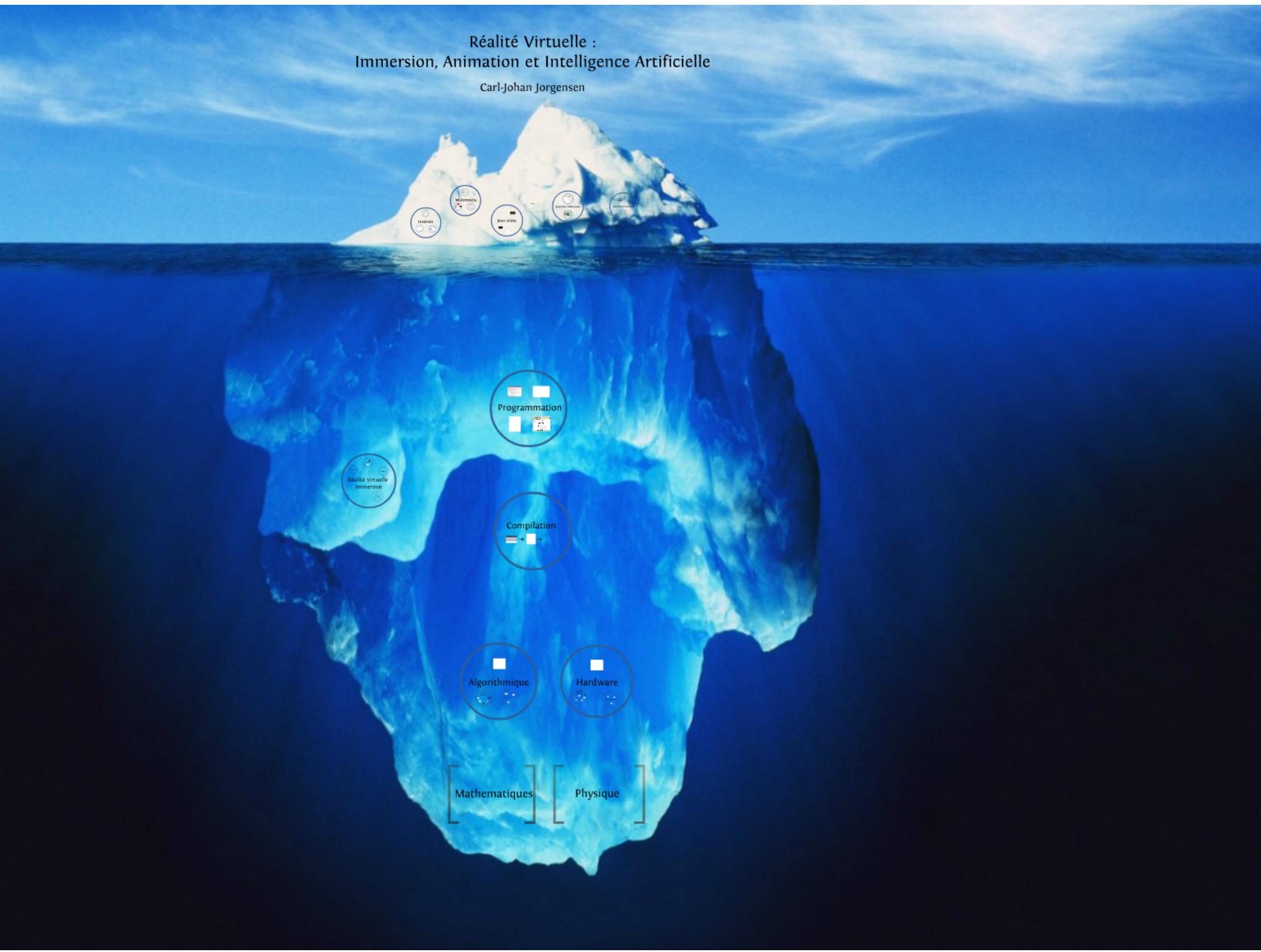
Semi-Conducteurs




Algorithmique
Un peu d'Histoire ...
Domaines scientifiques
Hardware
Histoire, toujours...
Domaines scientifiques
Mathematiques
Physique

Réalité Virtuelle :
Immersion, Animation et Intelligence Artificielle

Carl-Johan Jorgensen



Réalité virtuelle Immersive

Animation

Interfaces Immersives

Applications

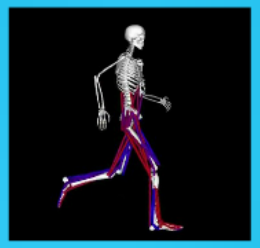
Applications

Peuplement

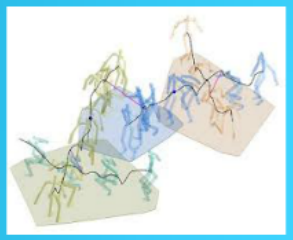
Approches Microscopiques

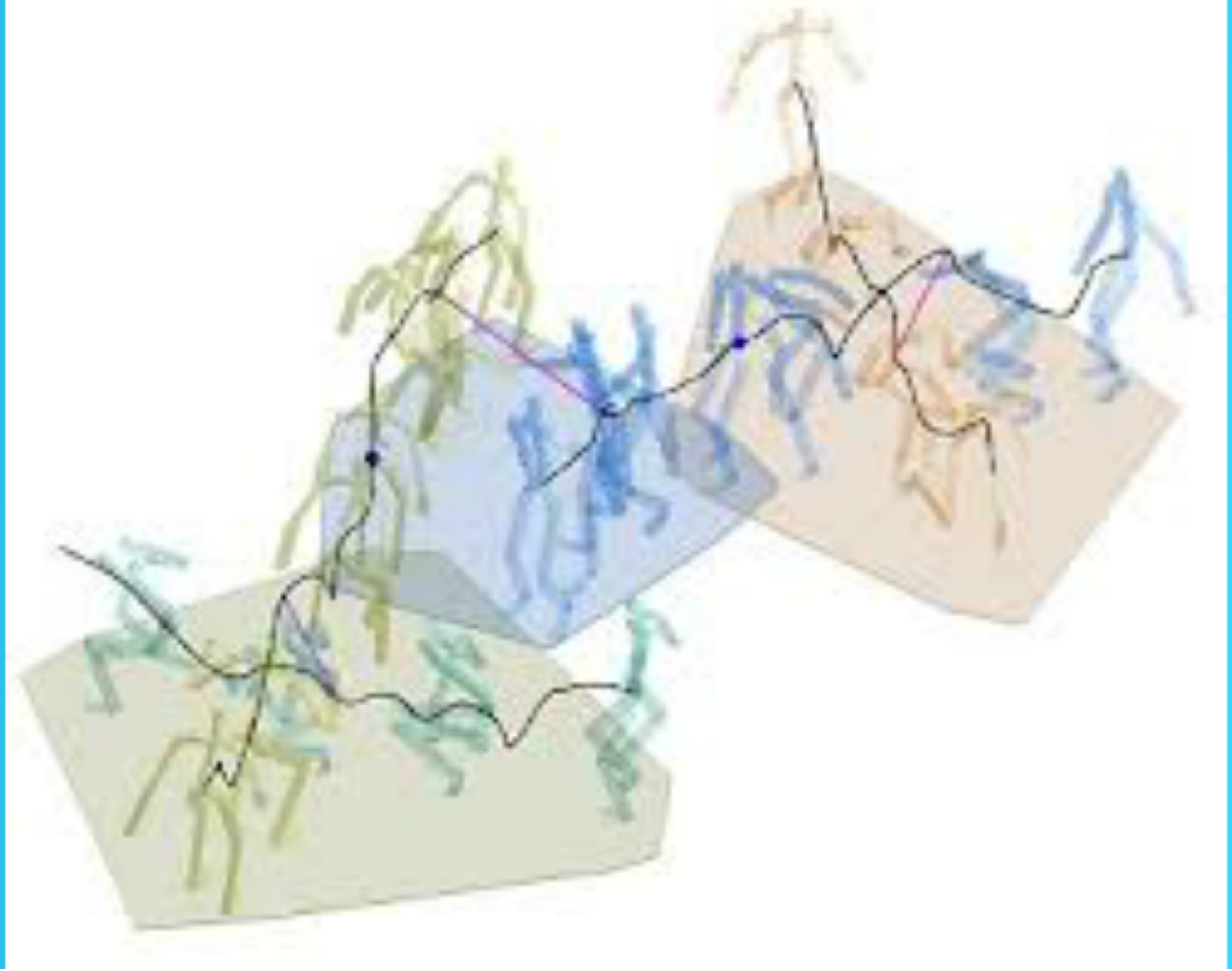
Approches Microscopiques

Interfaces Immersives



Animation





Applications

Applications

Peuplement

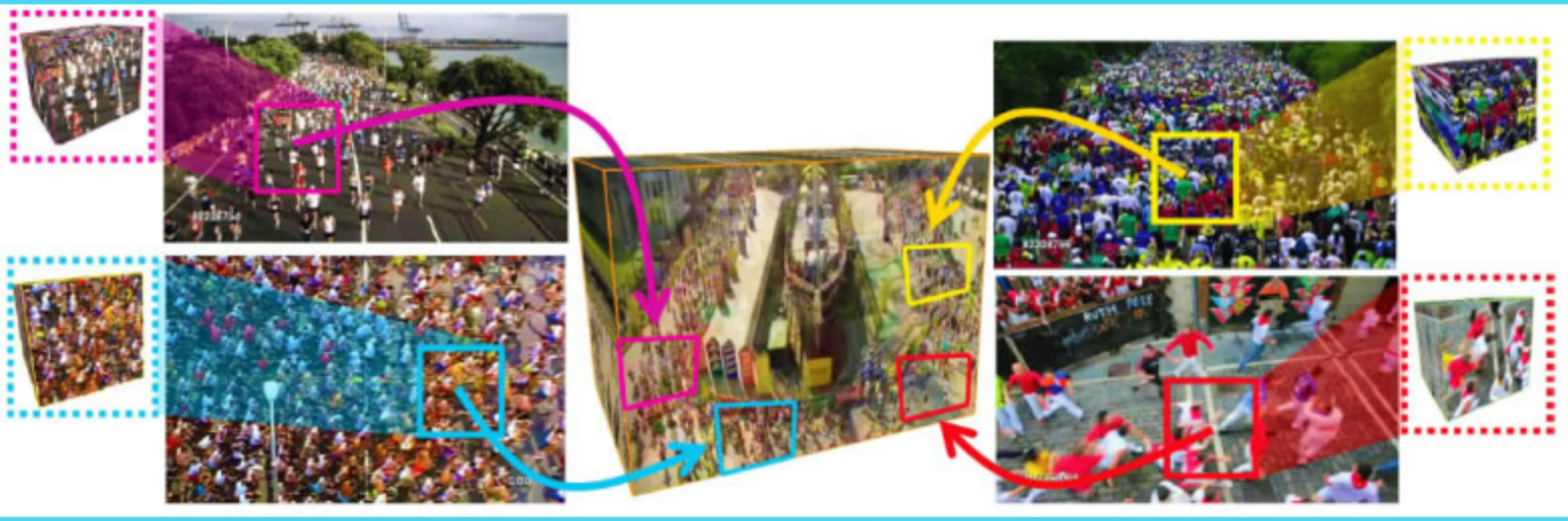
Approches Macroscopiques

Approches Microscopiques

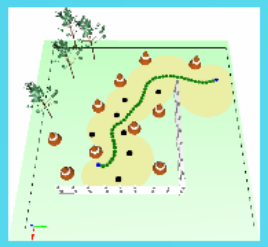
Applications

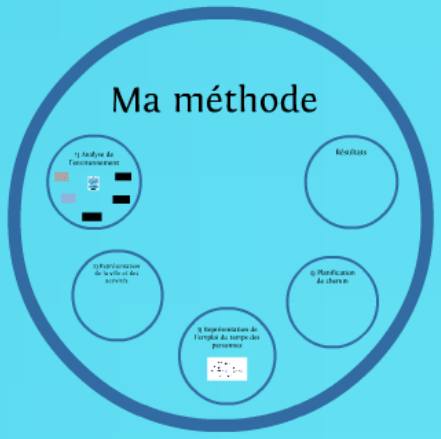

QUE
PHOTO

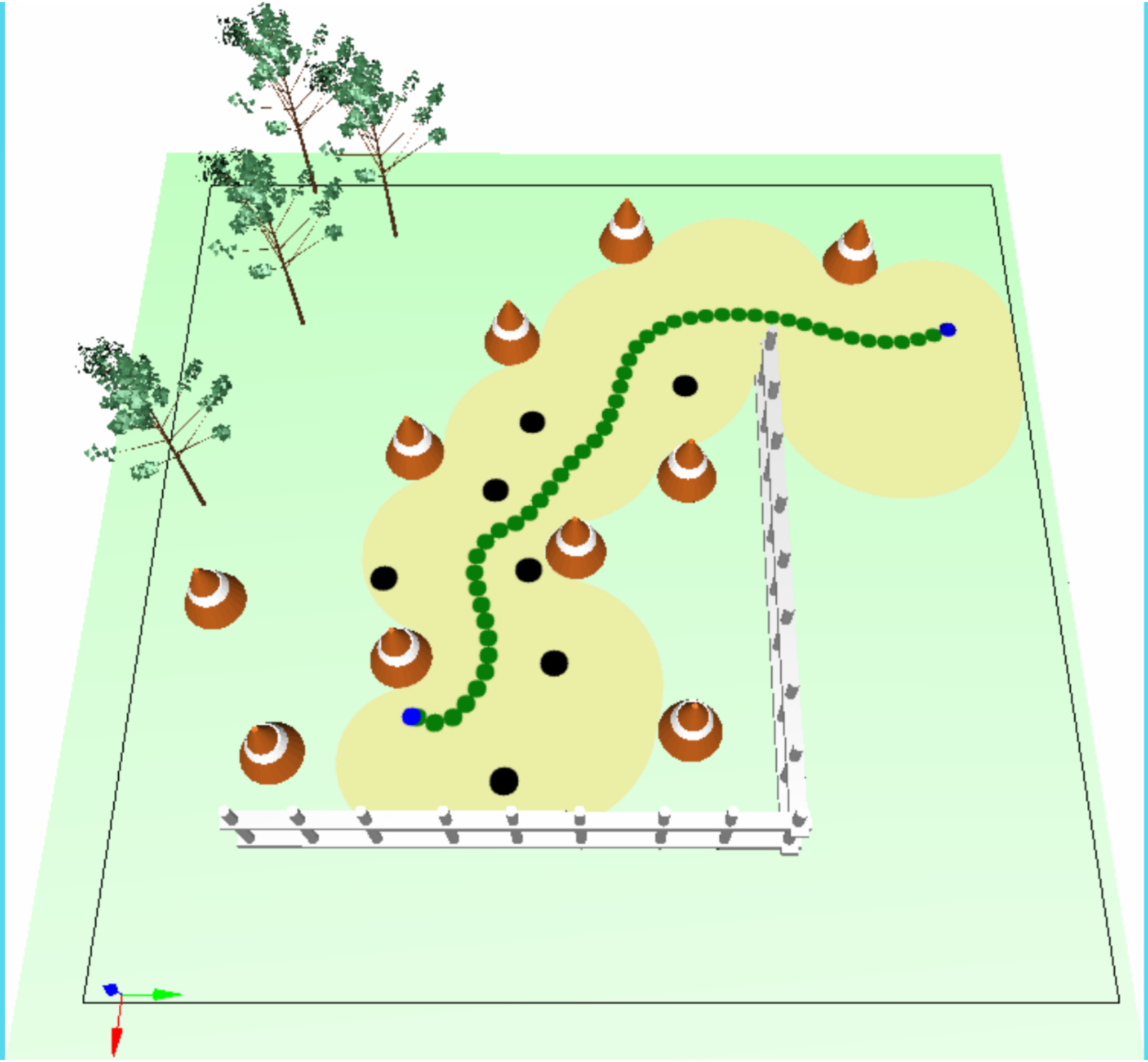
Approches Macroscopiques



Approches Microscopiques

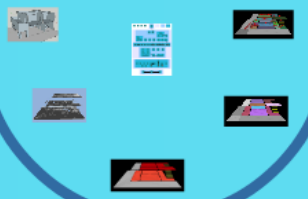






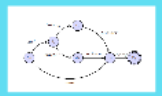
Ma méthode

1) Analyse de l'environnement



2) Représentation de la ville et des activités

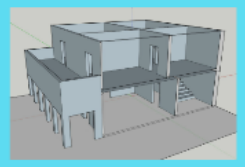
3) Représentation de l'emploi du temps des personnes

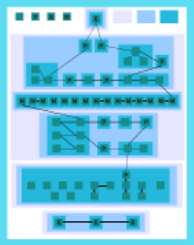


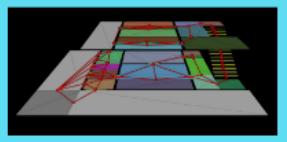
4) Planification de chemin

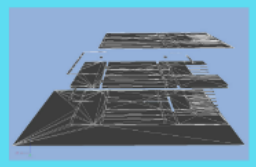
Résultats

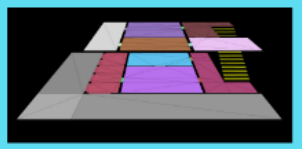
1) Analyse de l'environnement

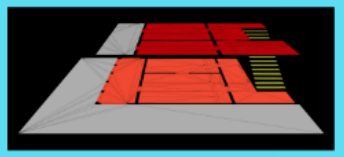


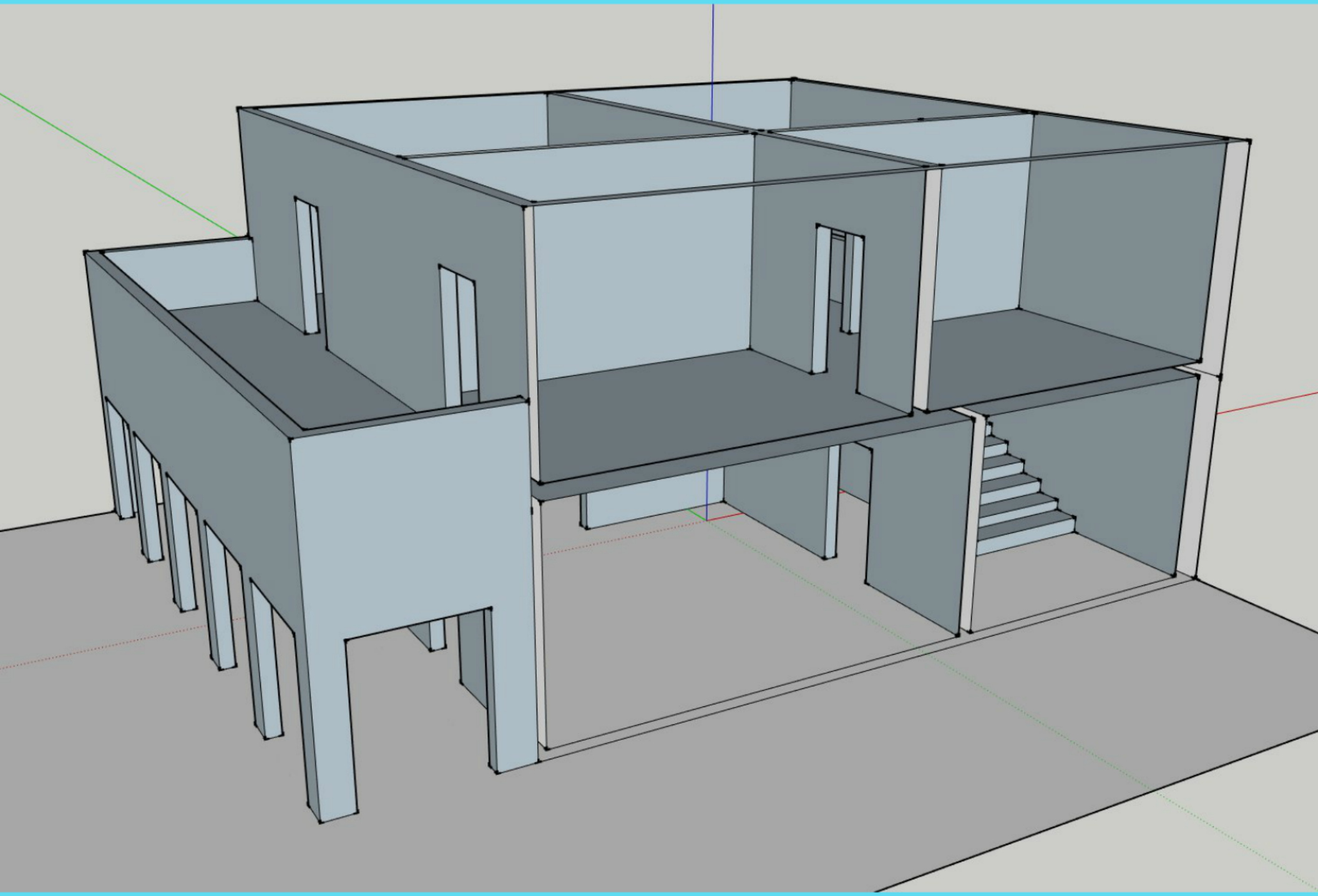


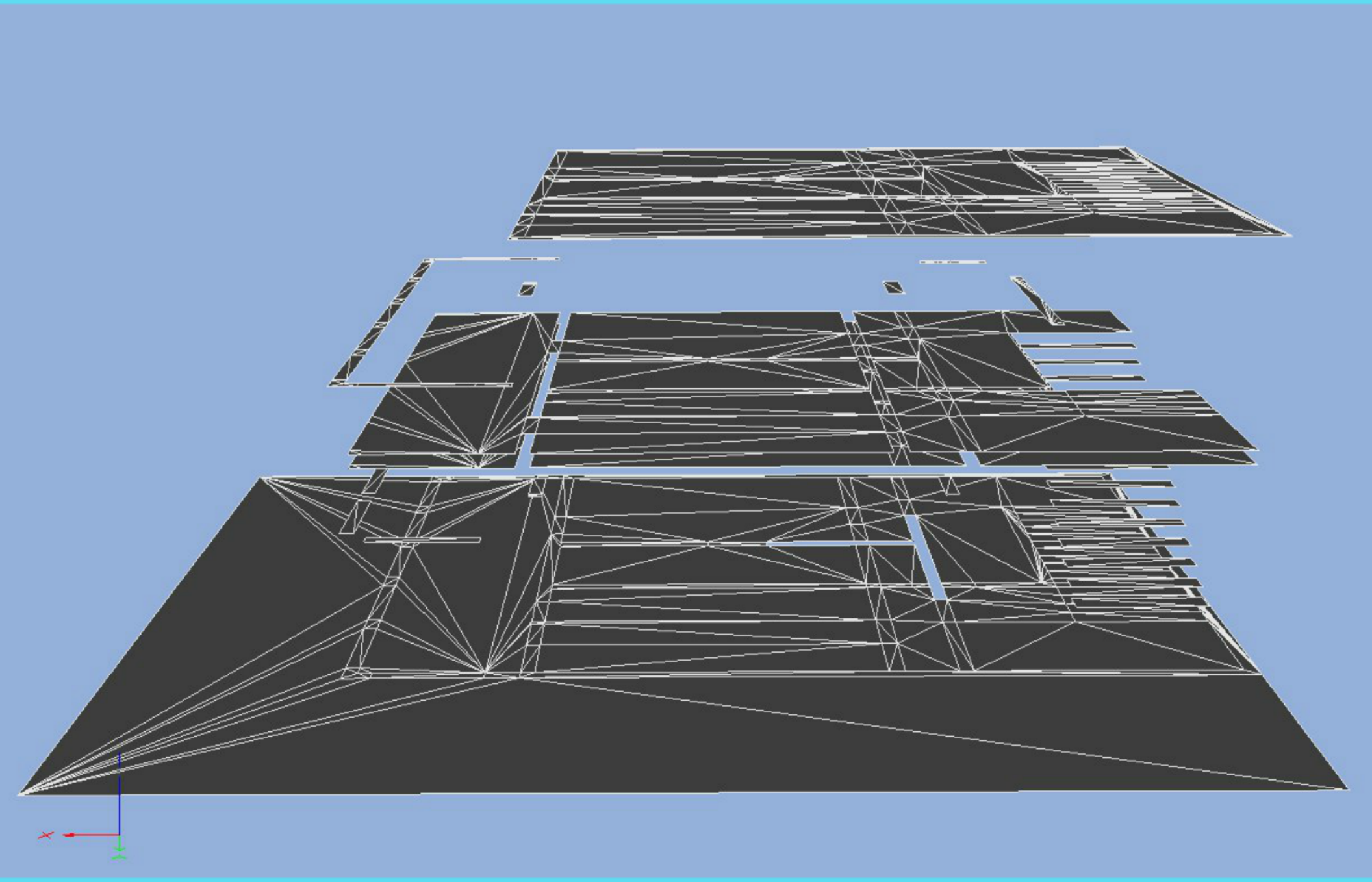


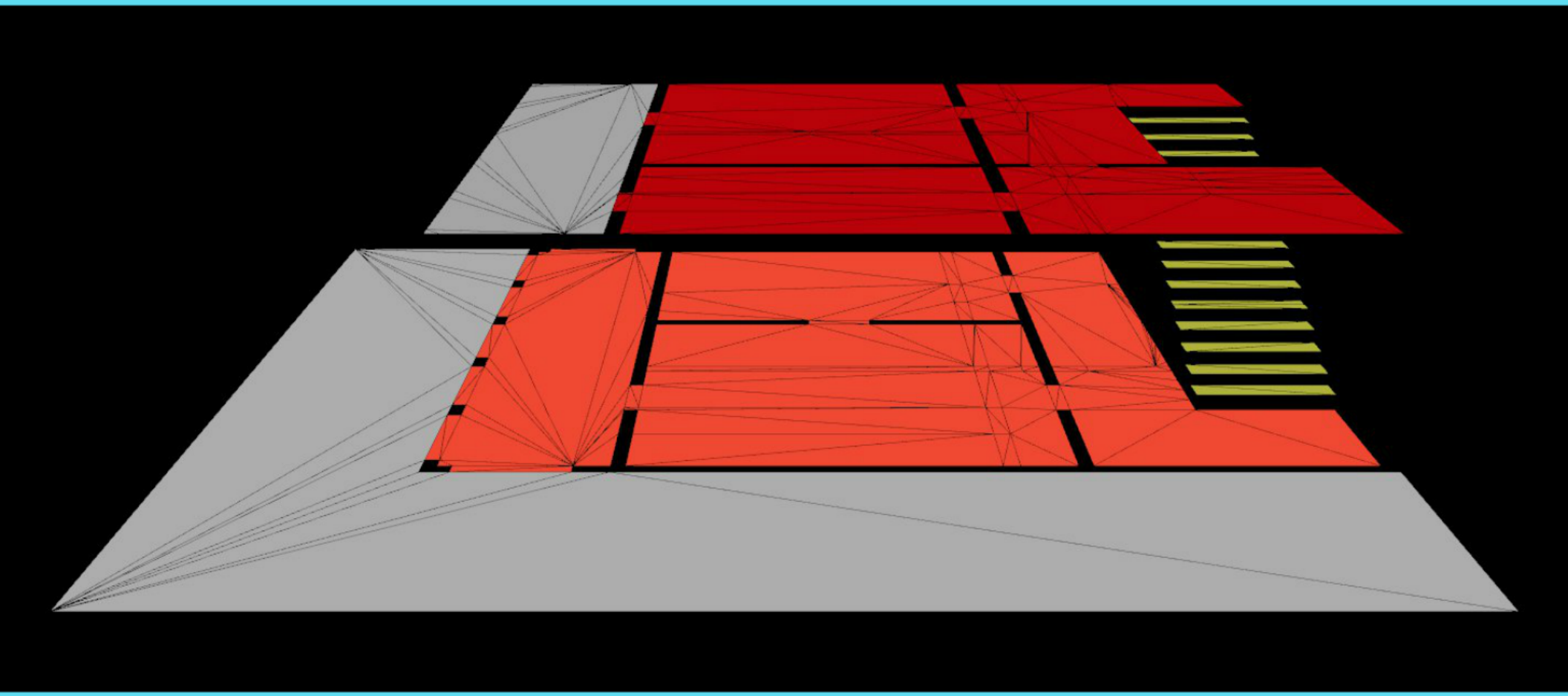


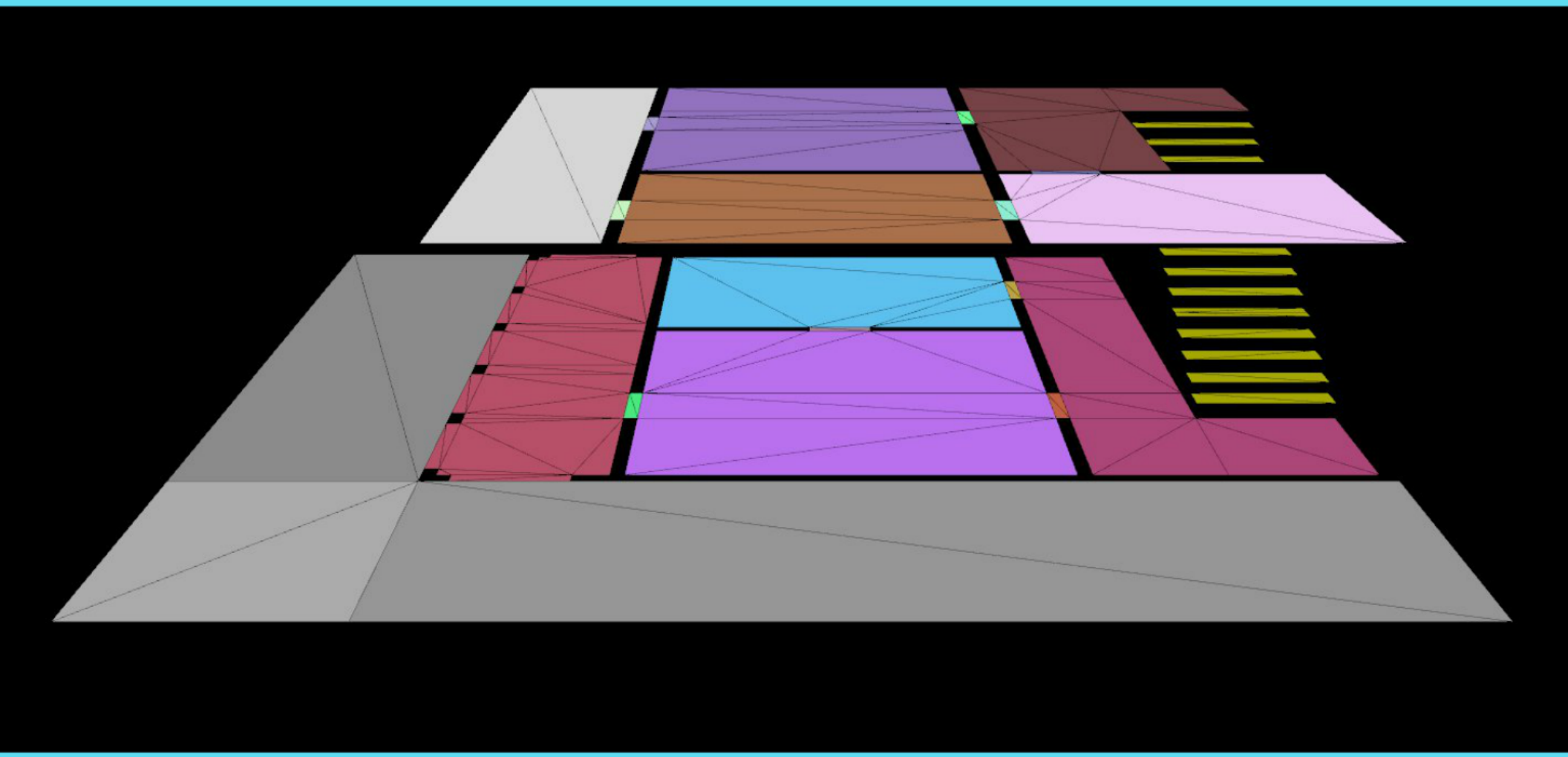


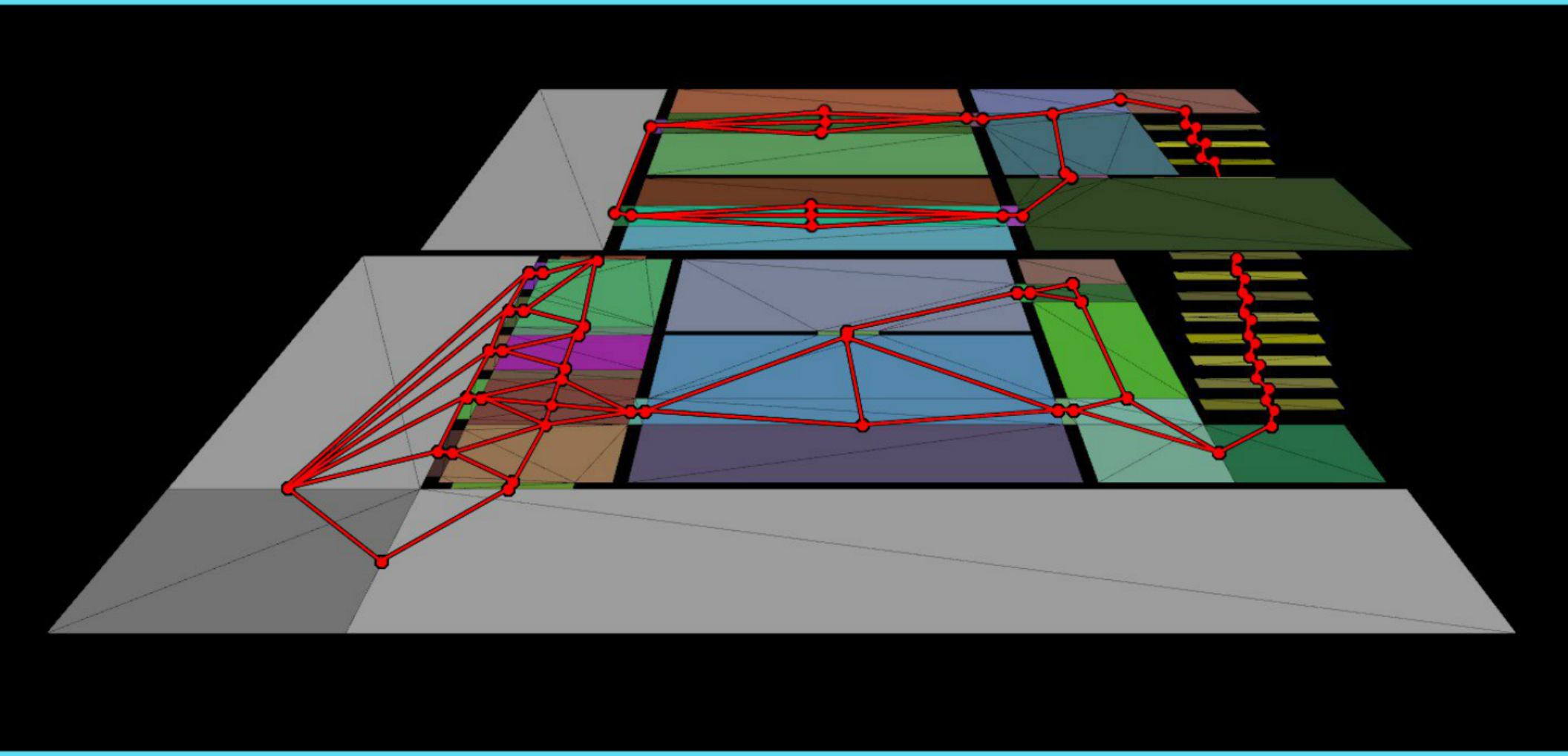


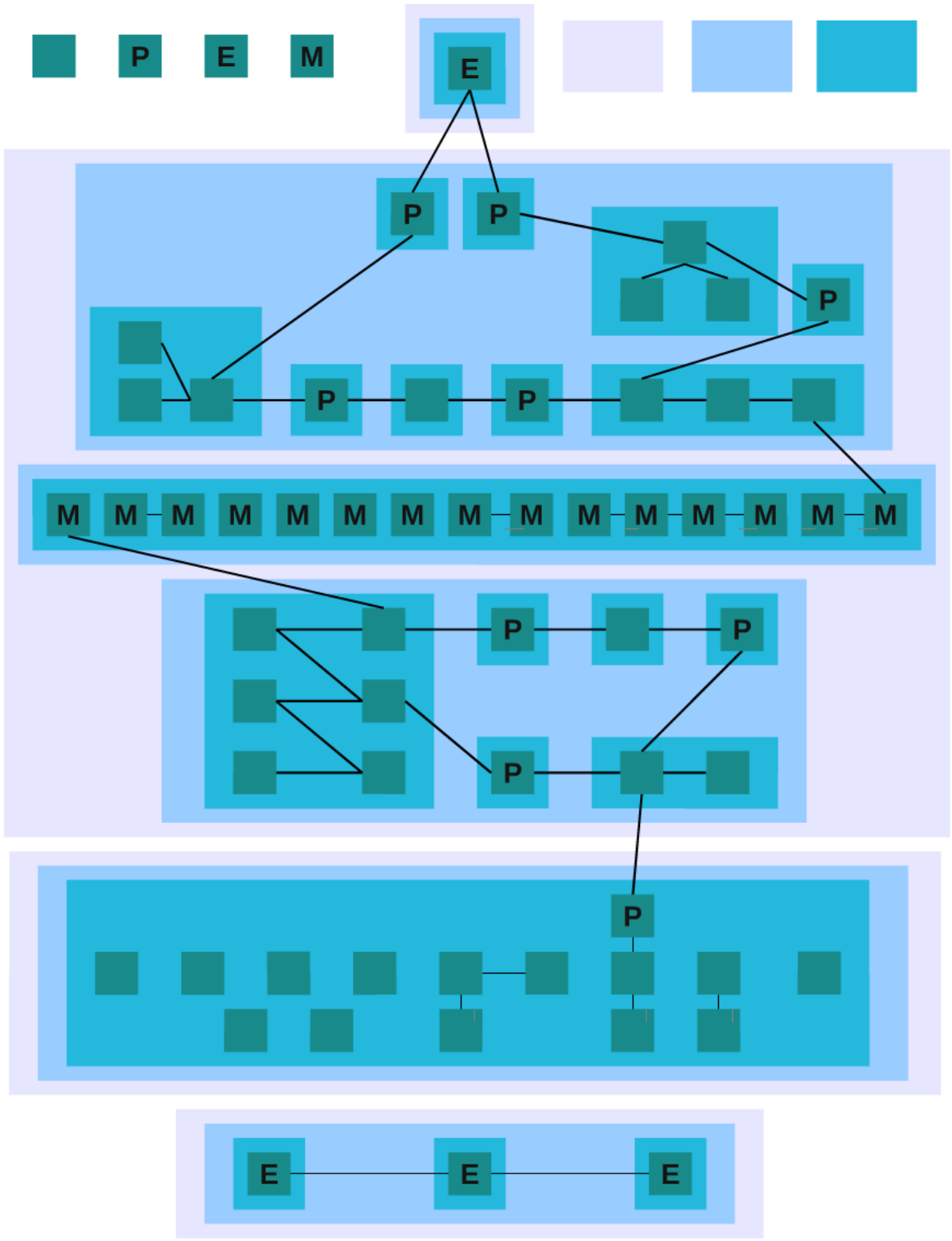








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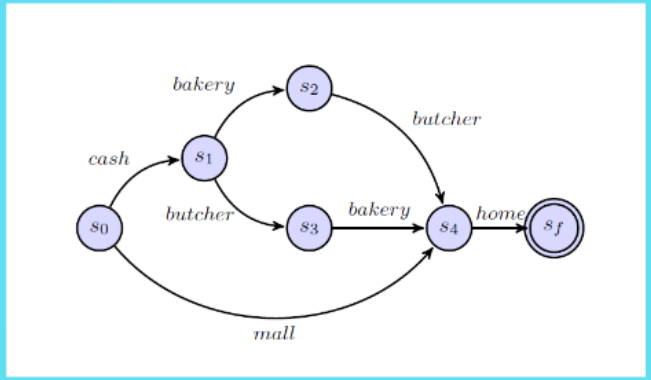
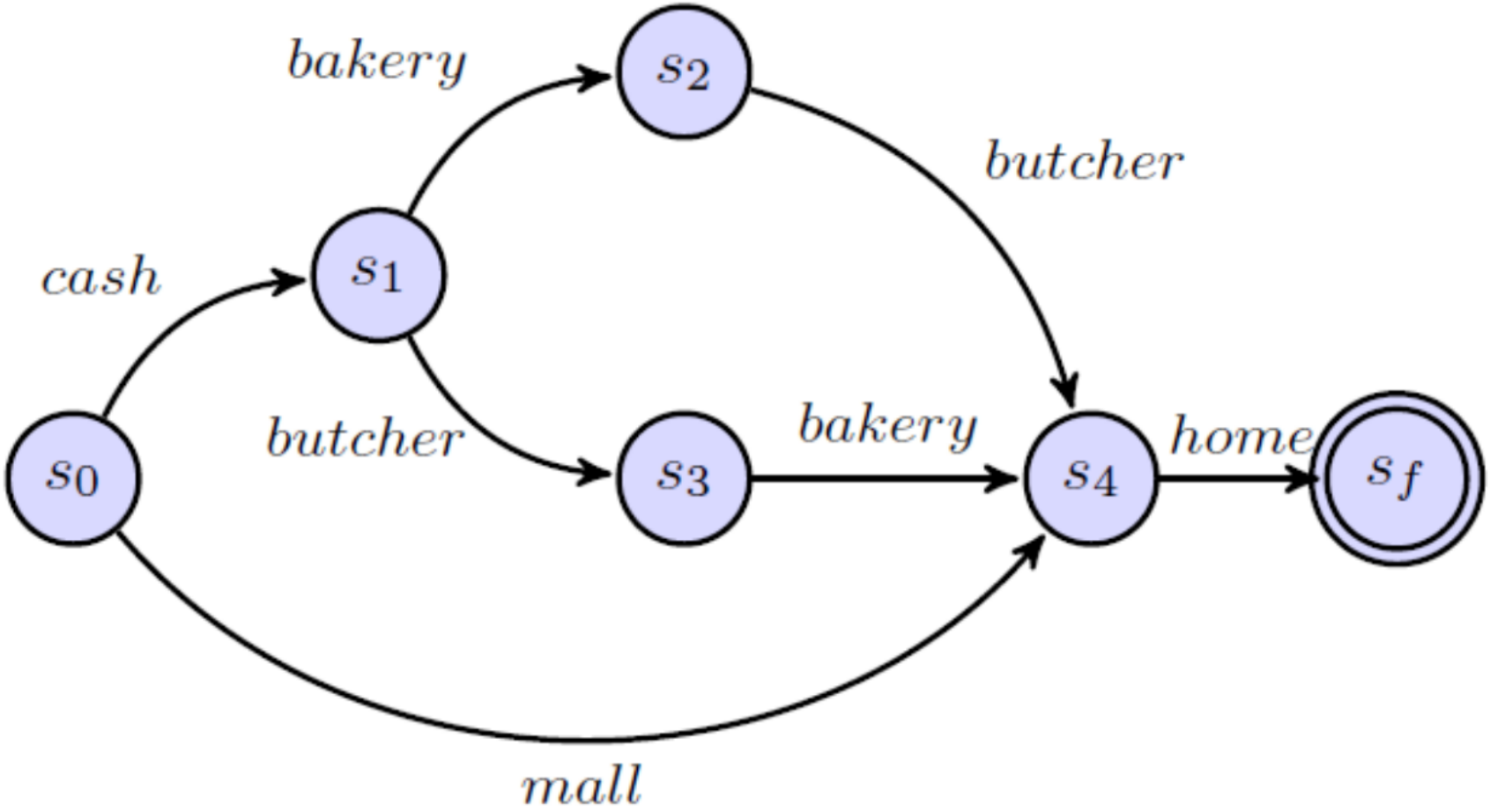
2) Représentation de la ville et des activités

3) Représentation de l'emploi du temps des personnes

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butcher
cash
s_1
butcher
s_3
bakery
s_4
home
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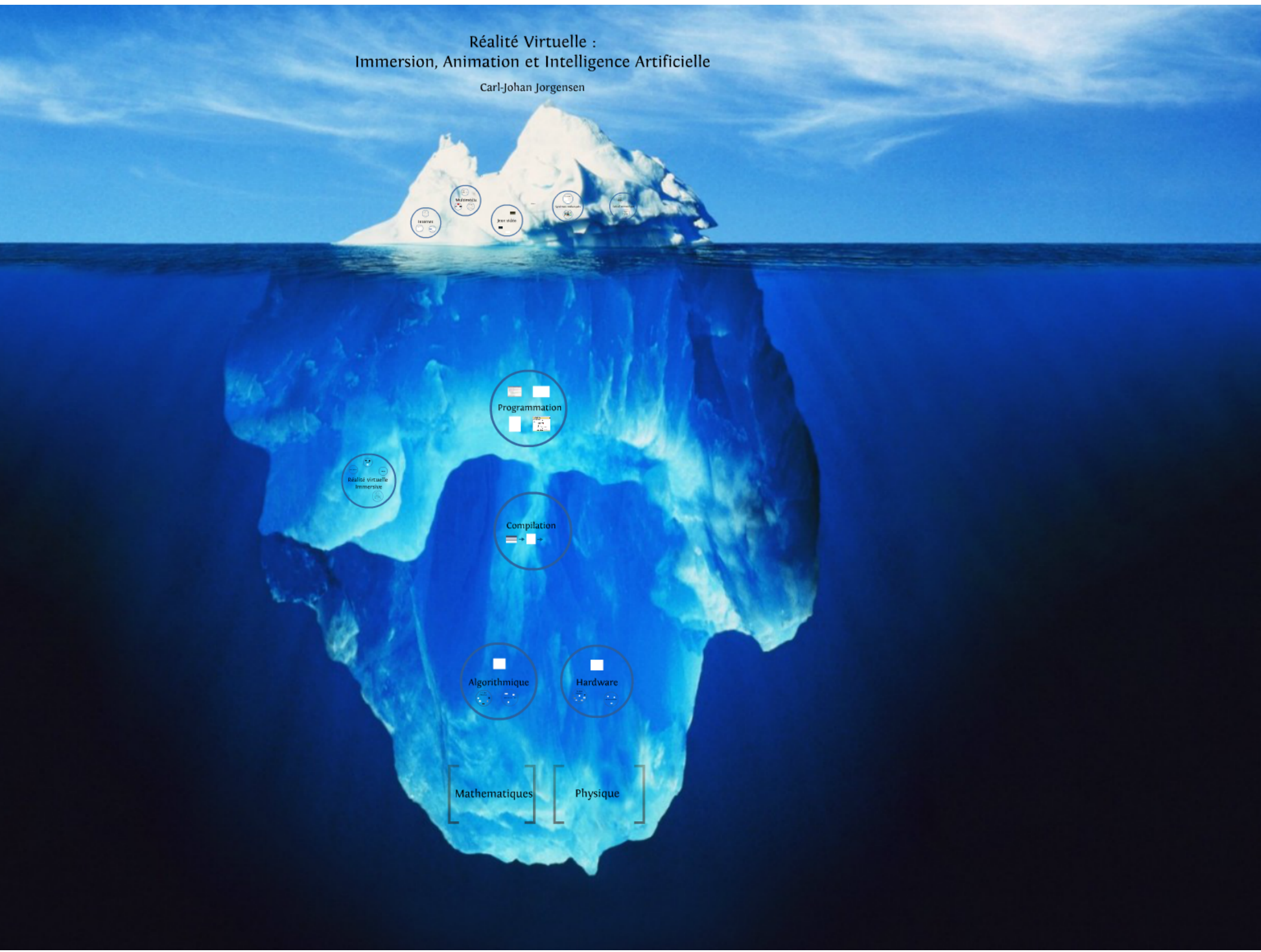
s_0
mall

4) Planification de chemin

Résultats

Réalité Virtuelle :
Immersion, Animation et Intelligence Artificielle

Carl-Johan Jorgensen



Merci de votre attention.

Des questions ?