

# Atelier\_Copier/Coller



+Unix  
+Reseau

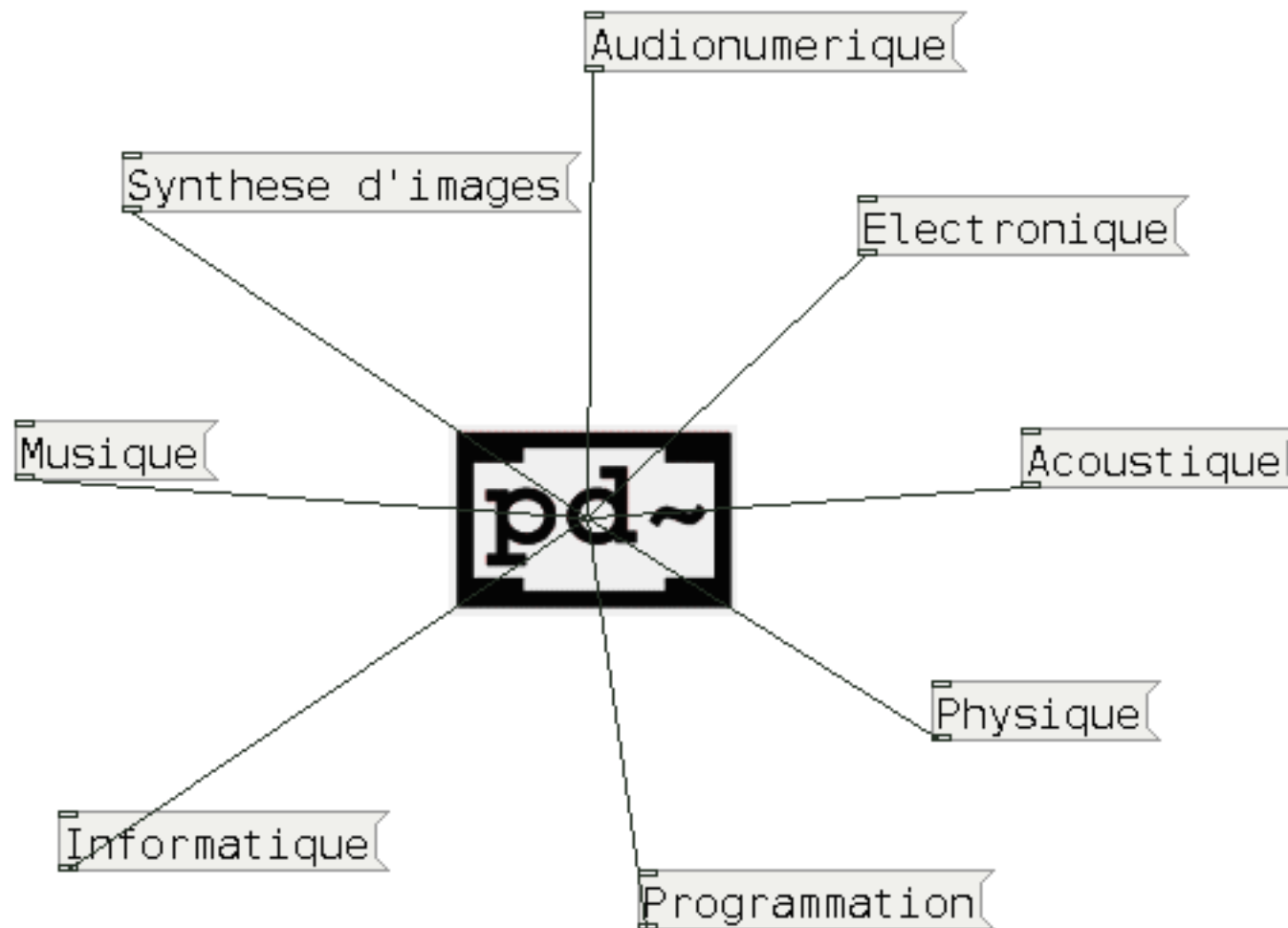
Jerome Abel

Goto10

ESSI, Poitiers

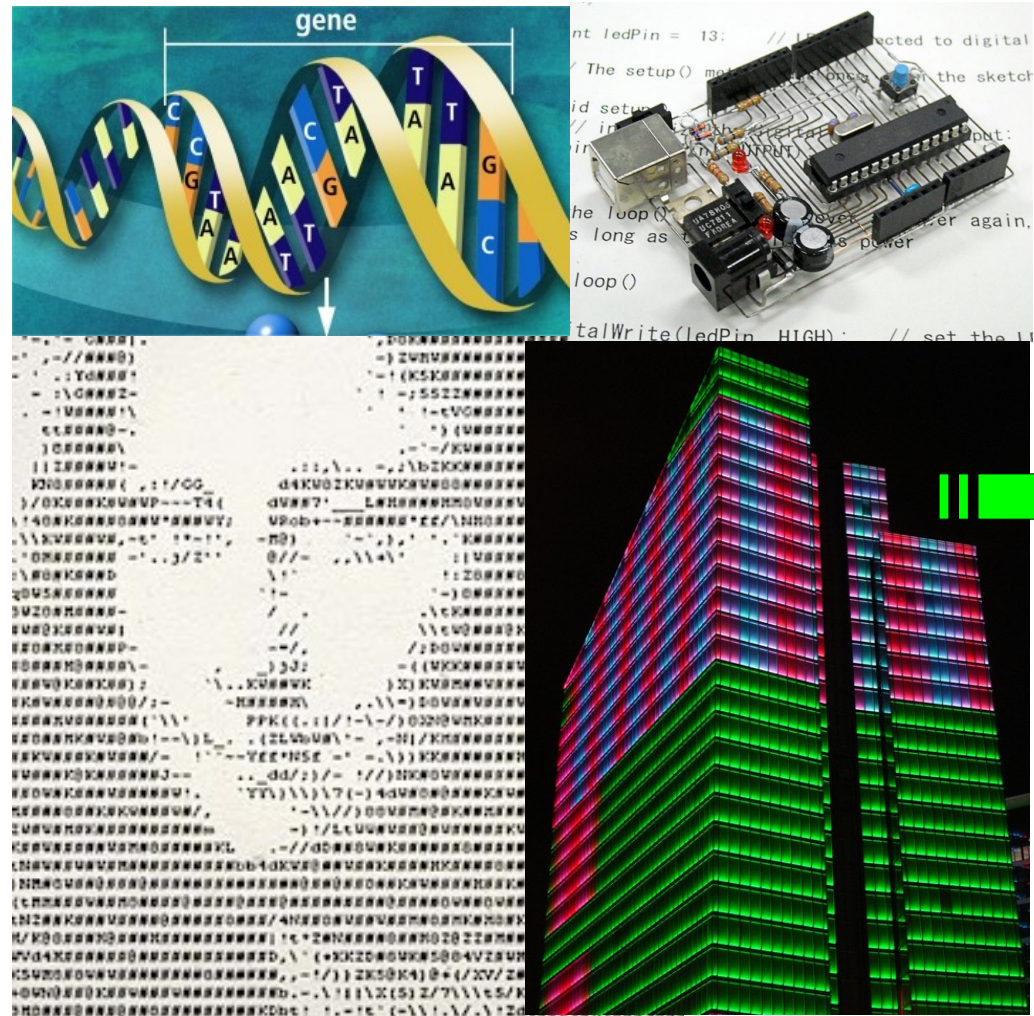
les 25, 26 et 27 novembre 2010

# Autour de Pd



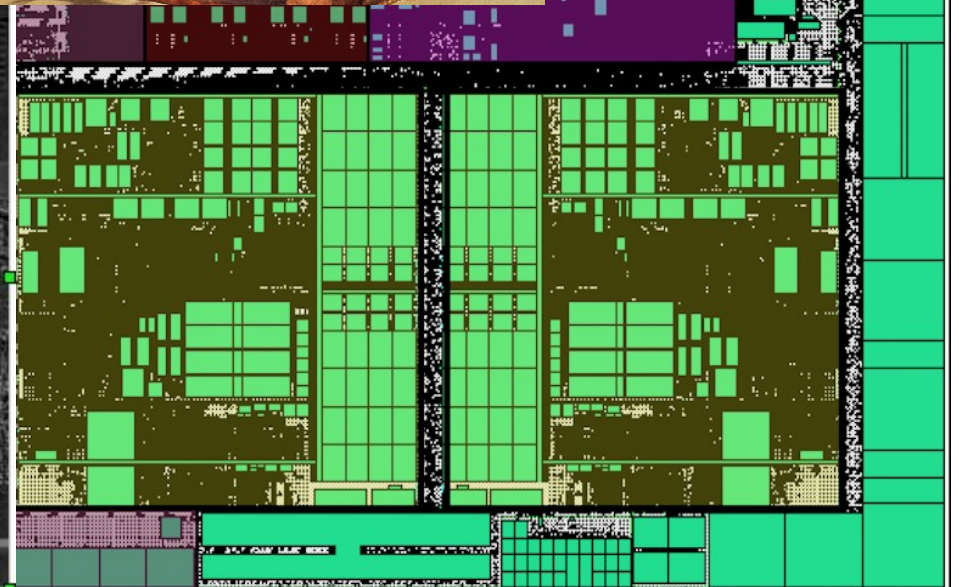
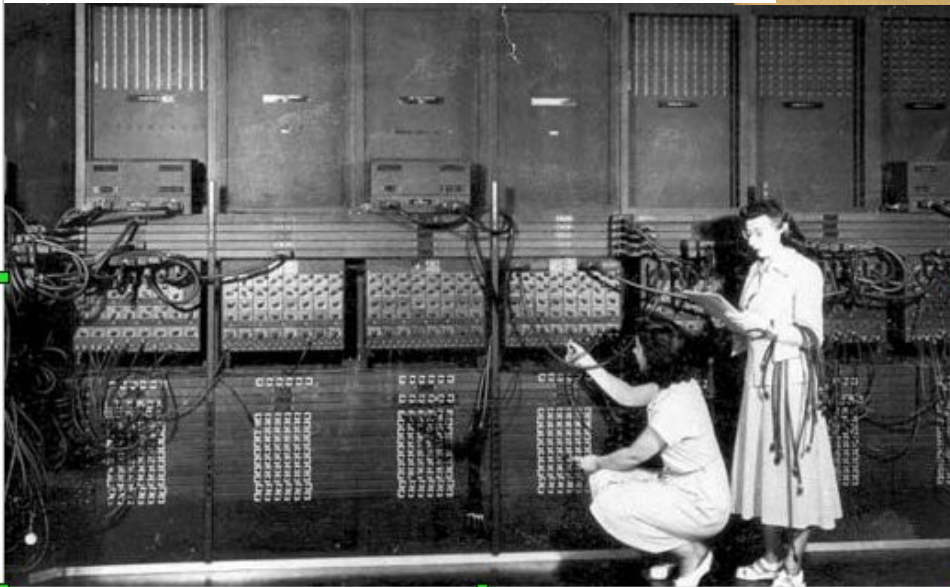
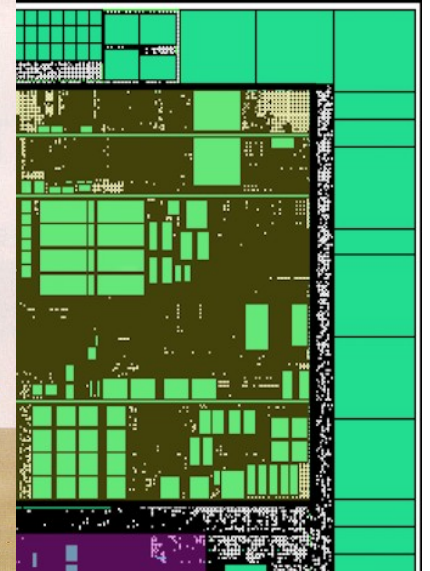
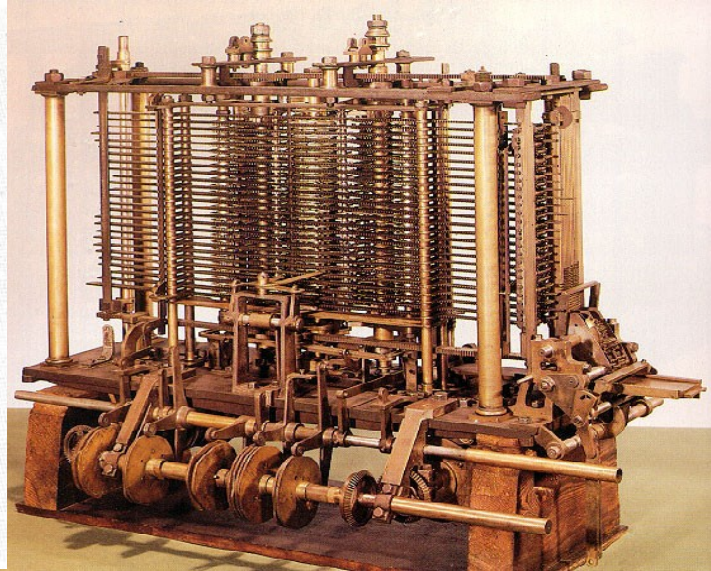
# Artistes / matière numérique

- Gènes
- Electrons
- Bits
- Samples
- Pixel
- Caractères
- Mots
- Code, etc.



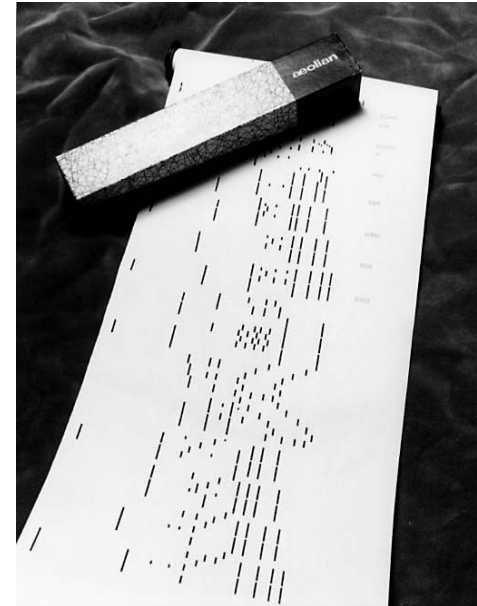


# Machine à calculer



# Codage

- Notes de musique
- Fumée
- Morse
- Métier Jacquard
- Rouleau pour piano
- Carte perforée
- Tube à vide
- ...



A	—
B	— • • •
C	— — — •
D	— • • •
E	•
F	• • — •
G	— — • •
H	• • • •
I	• •
J	• — — —
K	— • • —
L	• — • •
M	— — —
N	— •
O	— — — —
P	• — — • •
Q	— — • • —
R	• • •
S	• • •
T	—

U	• • —
V	• • • —
W	• — —
X	— • • —
Y	— • — —
Z	— — • •

1	• — — — —
2	• • — — —
3	• • • — —
4	• • • • —
5	• • • • •
6	— • • • •
7	— — • • •
8	— — — • •
9	— — — — •
0	— — — — —

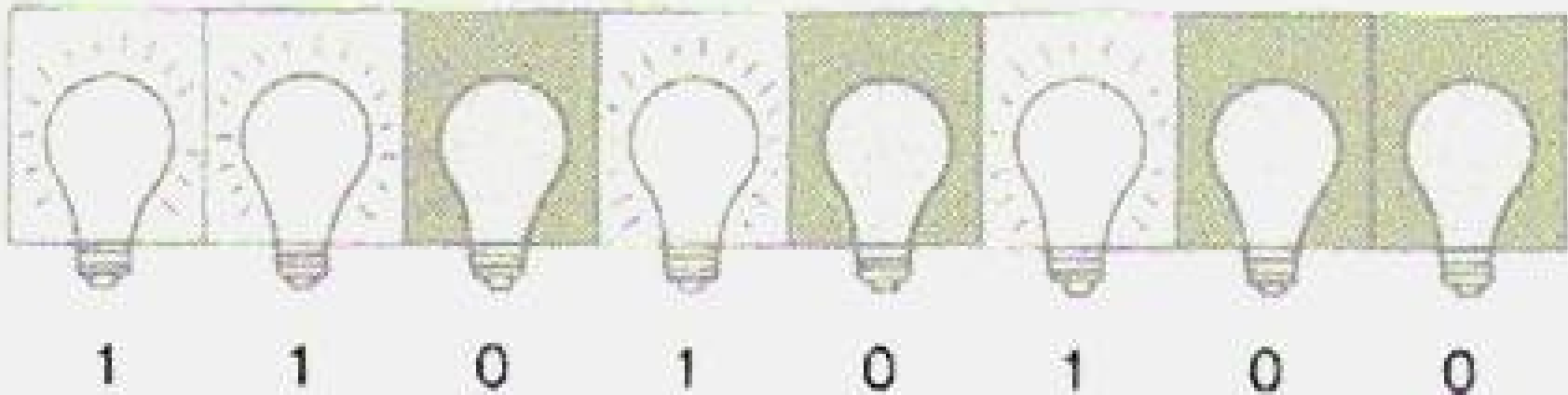
# Relais

Binaire : oui / non, vrai / faux, ouvert / fermé

Algèbre de Boole + interrupteurs électriques

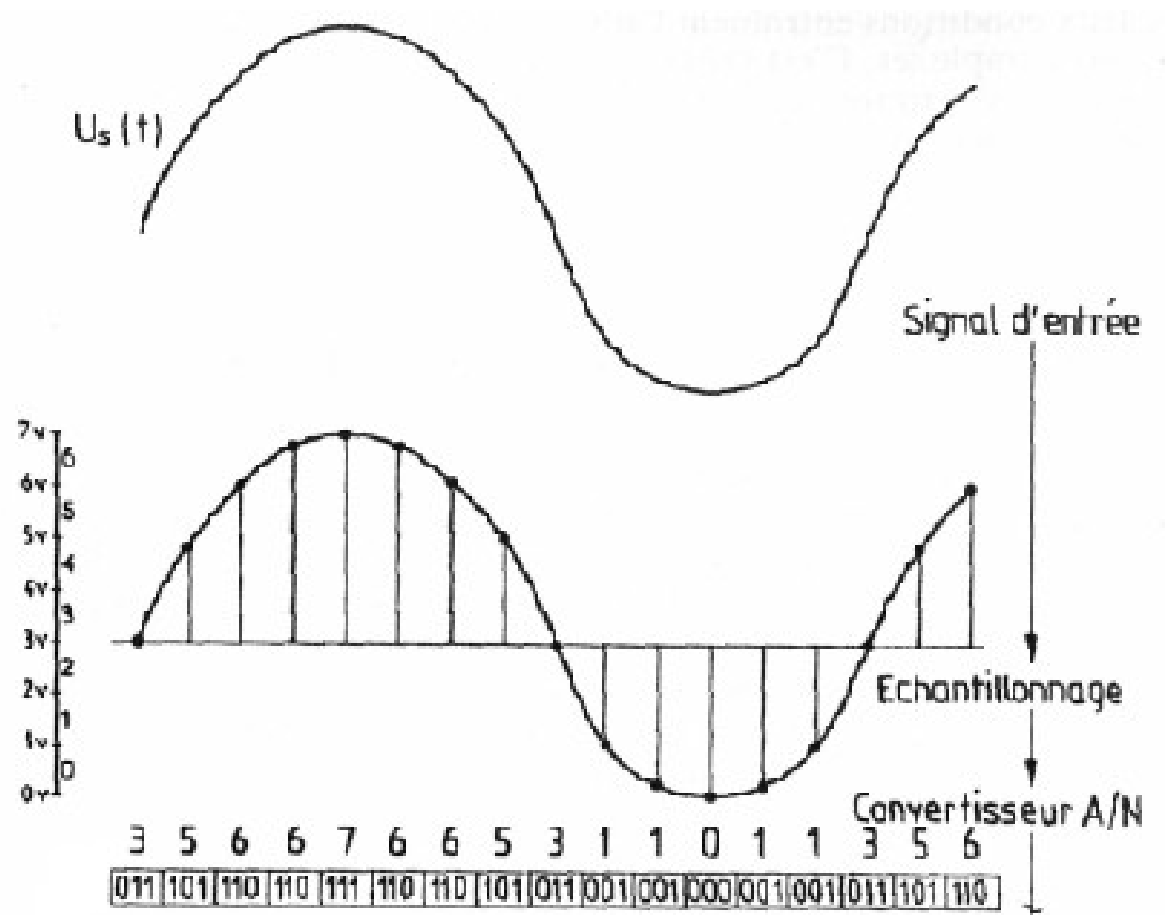
*Figure 4-5. Huit bits dans un octet*

Octet



# Analogique/numérique

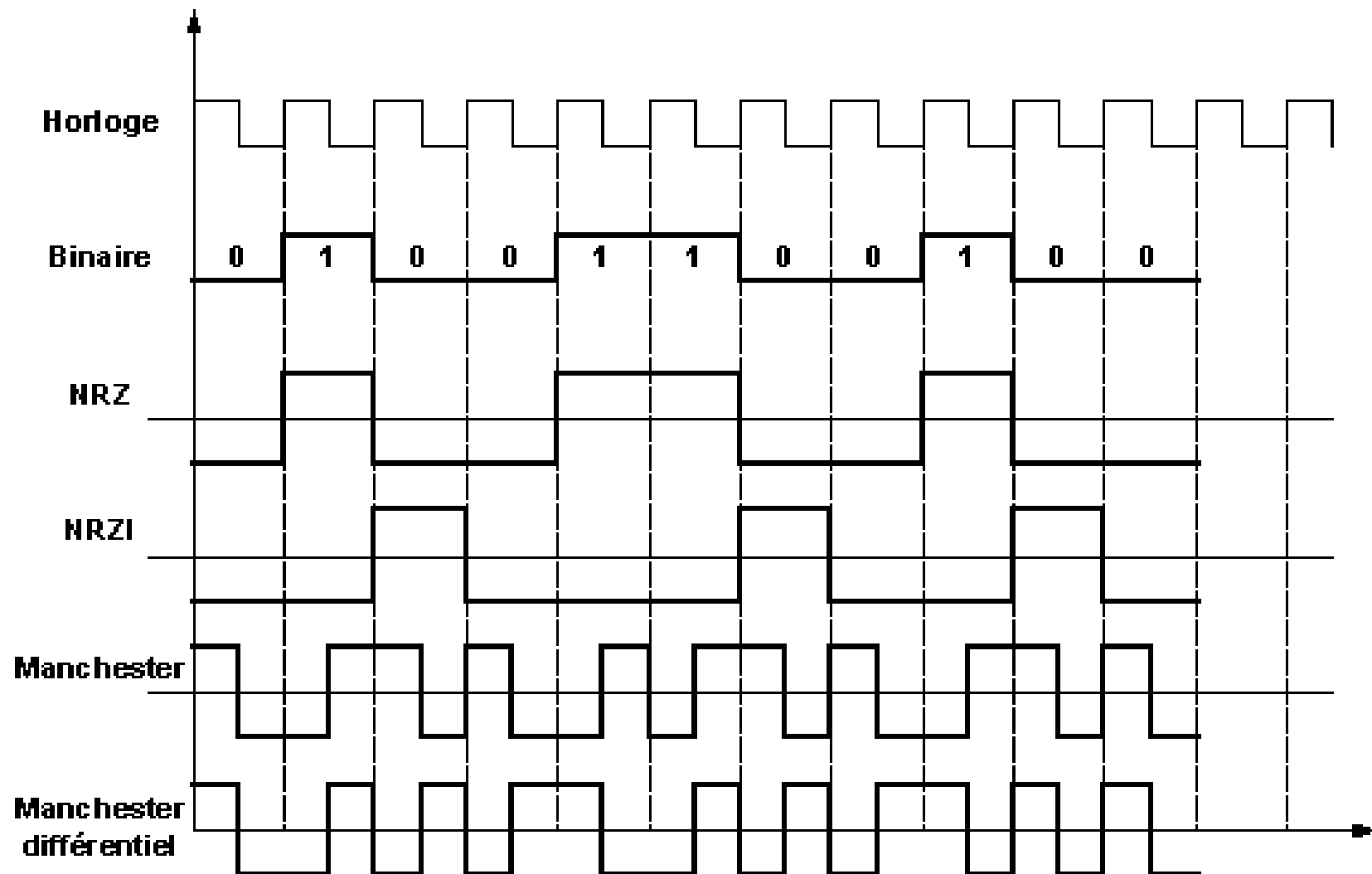
continu/discret



- Fréquence d'échantillonnage (Hz)
- Quantification (Bits)

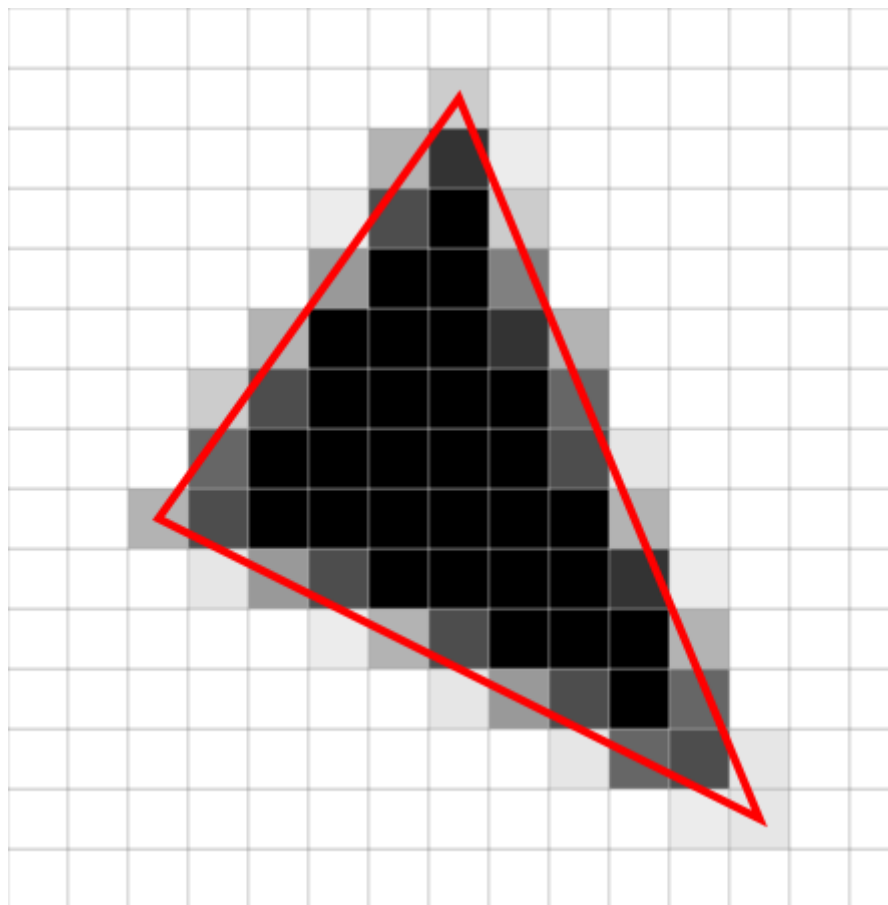
# Codage

## Transmission de données

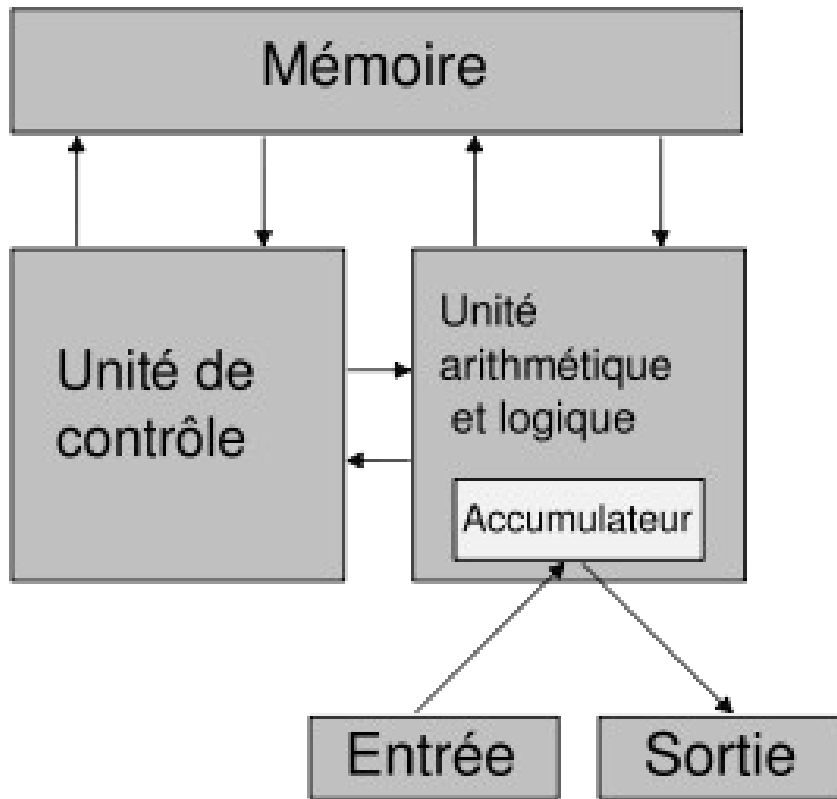




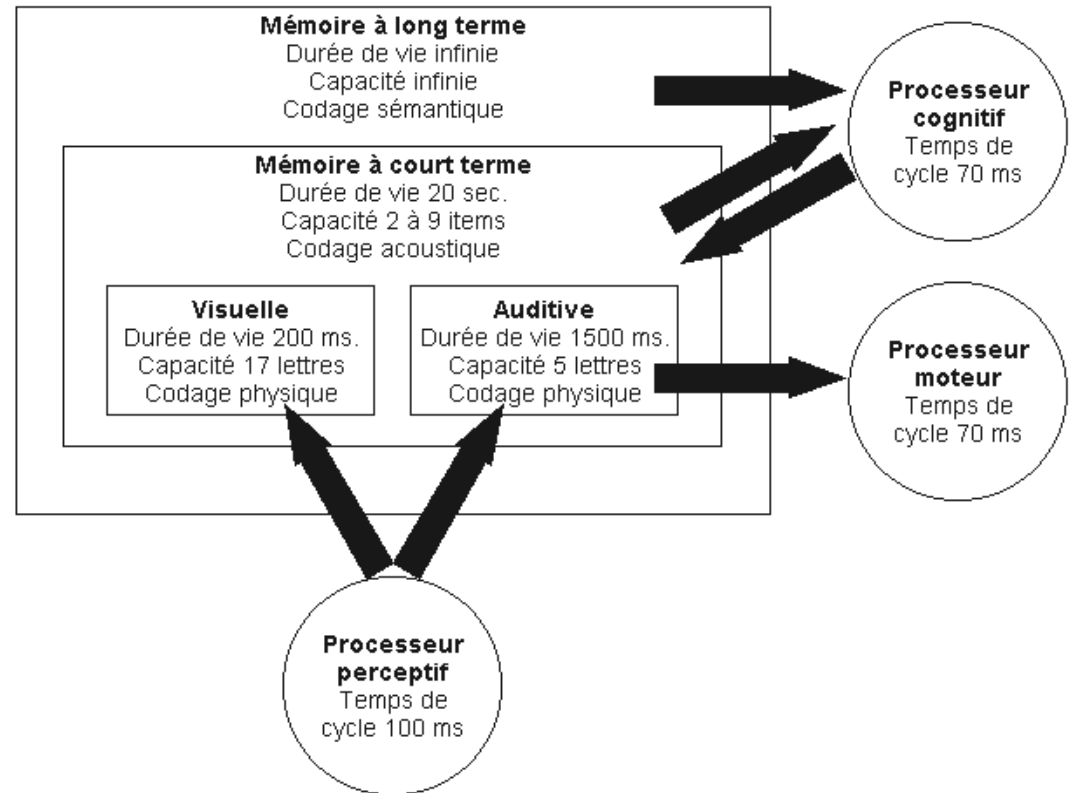
# Image numérique



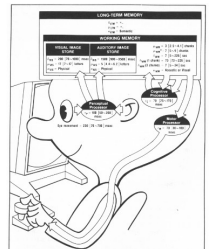
# Architecture des ordinateurs



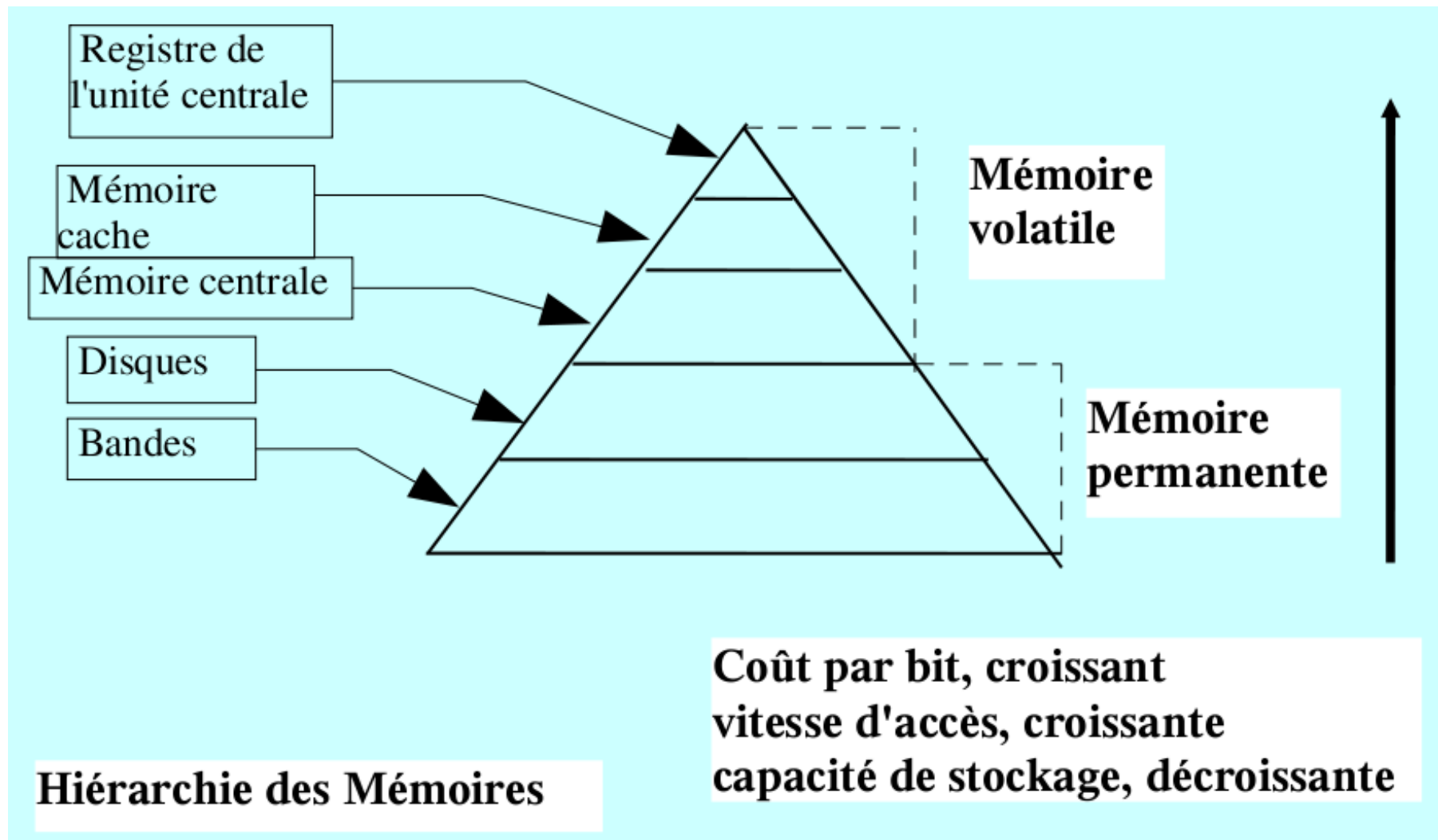
Architecture de Von Neumann



Modèle de processeur humain de Card, Moran, Newell

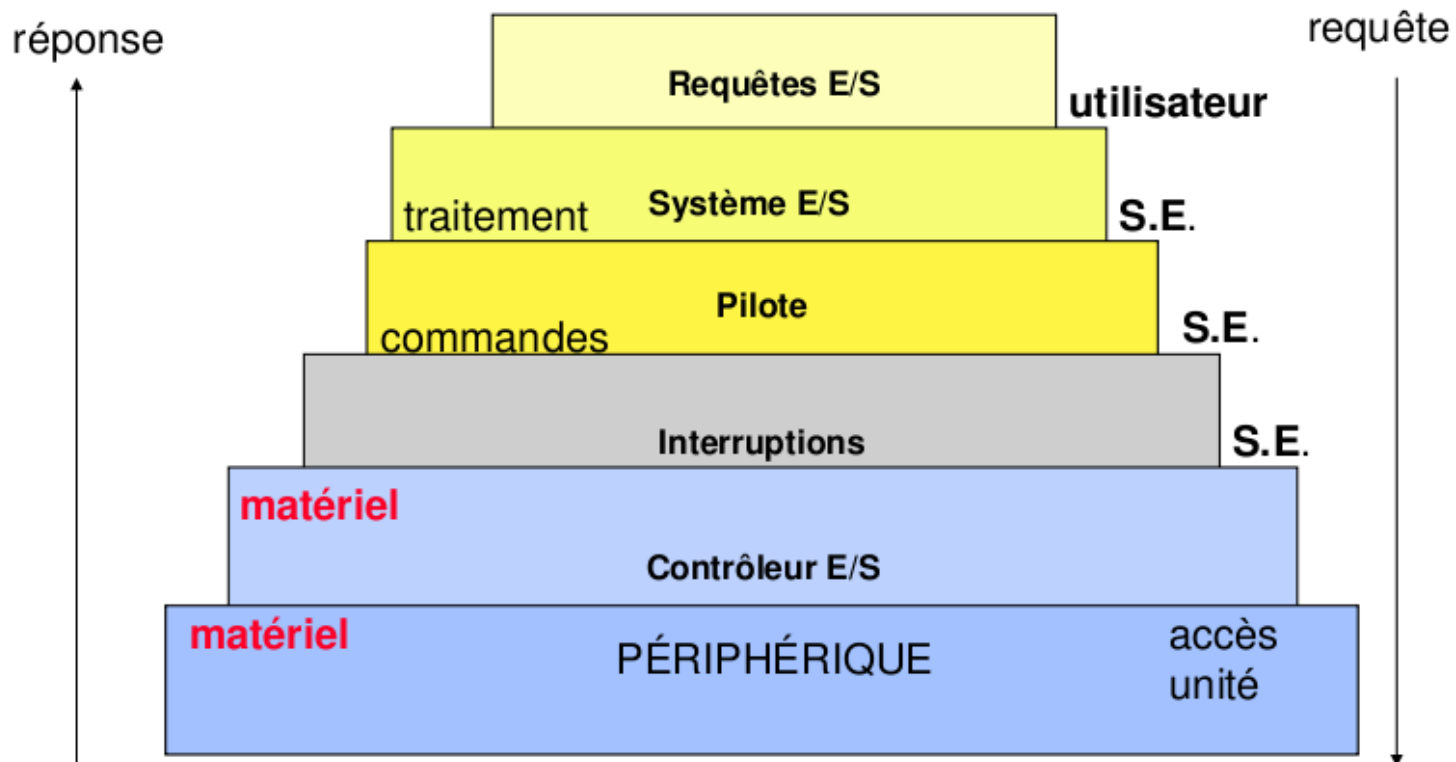


# Mémoires

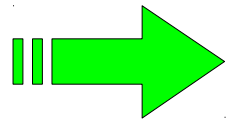


# Couches

## Les couches logicielles



# Interfaces



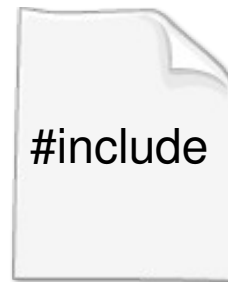


# Mother Tongues

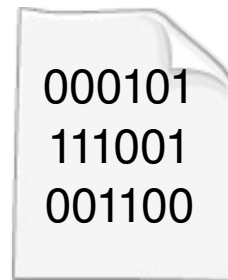
Sources: Paul Boutin; Brent Hailpern, associate director of computer science at IBM Research; The Retrocomputing Museum; Todd Proebsting, senior researcher at Microsoft; Gio Wiederhold, computer scientist, Stanford University

# Programmation

Fichier texte « compréhensible » **Source**



Édition de liens, compilation, assemblage, ...



Fichier binaire exécutable

**Programme**

# Programmation

## Langages de programmation

Types : Bas/haut niveau, impératif, objets, composants, services, ...

Assembleur, Pascal, C, C++, Java, Python, ...

## IDE (Integrated Development Environment)

Eclipse, NetBeans, Code::Blocks, Processing ...

## Programmation textuelle/graphique

Patcher family :

Pd, Max, vvvv, Isadora, Reaktor, ...

# Programmation graphique / textuelle

**+ - performant**

**+ facile** osc.c

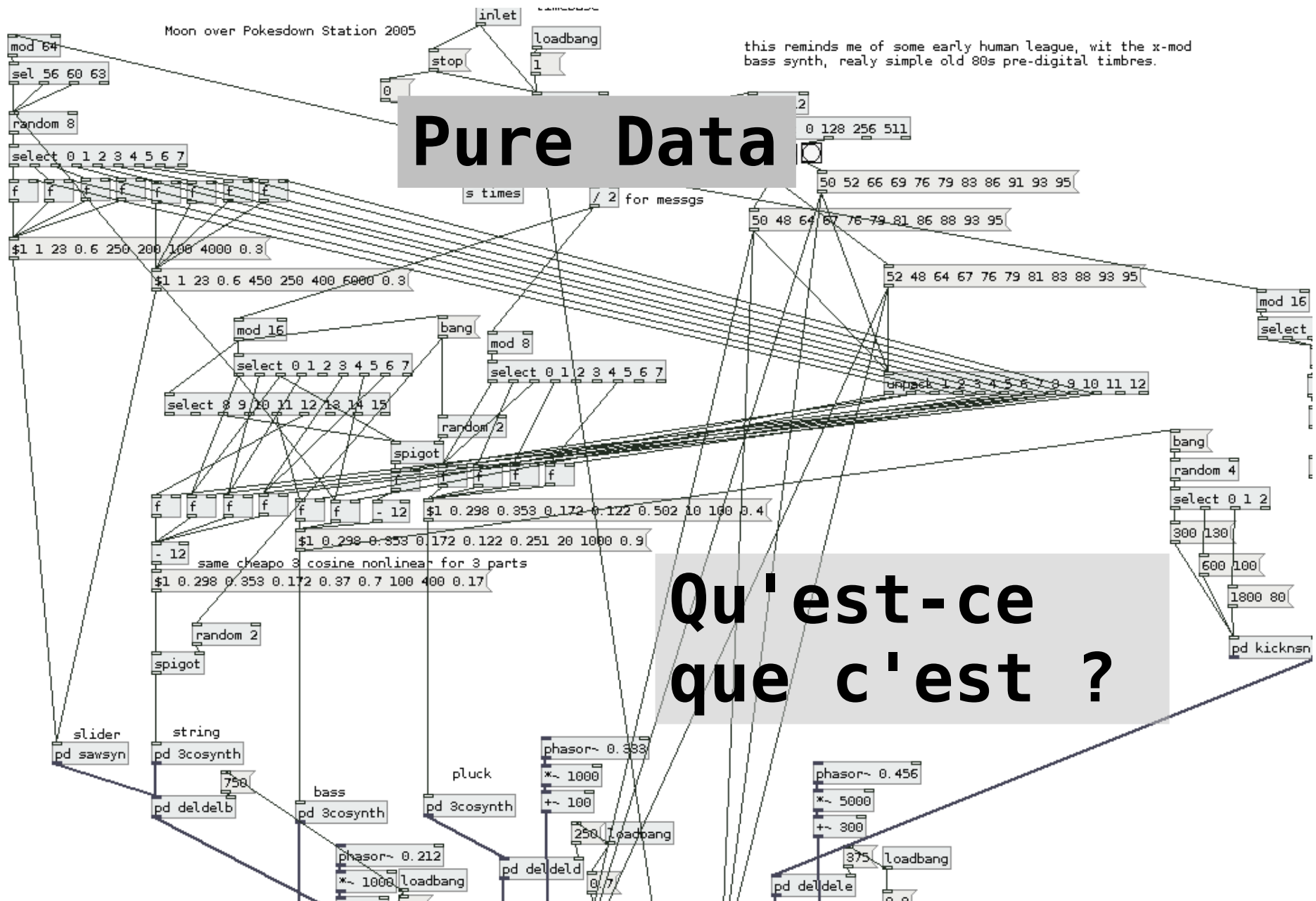
**+ - lisible**

Boucle.java

**+ - pratique**

**Du texte aussi**

Bonjour.pd

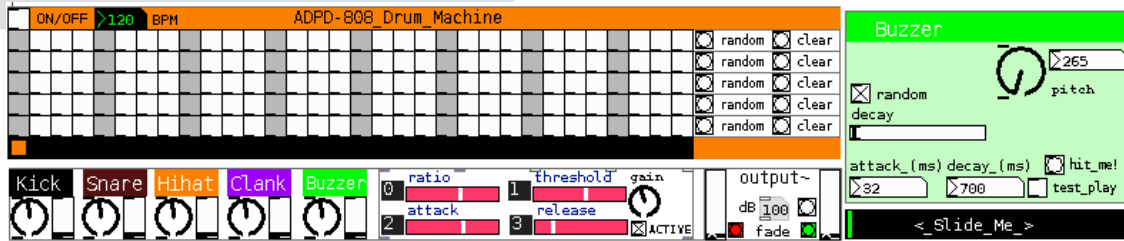




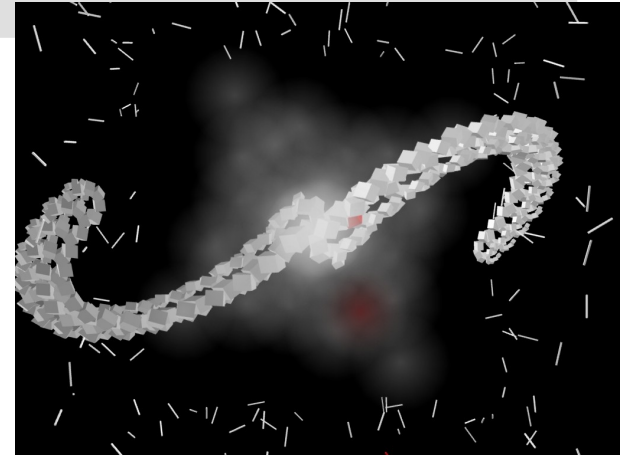


# Examples

## Instruments



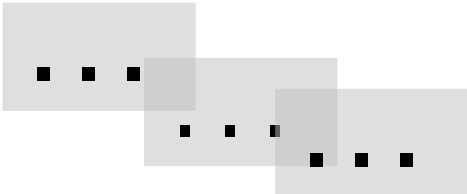
## Performances



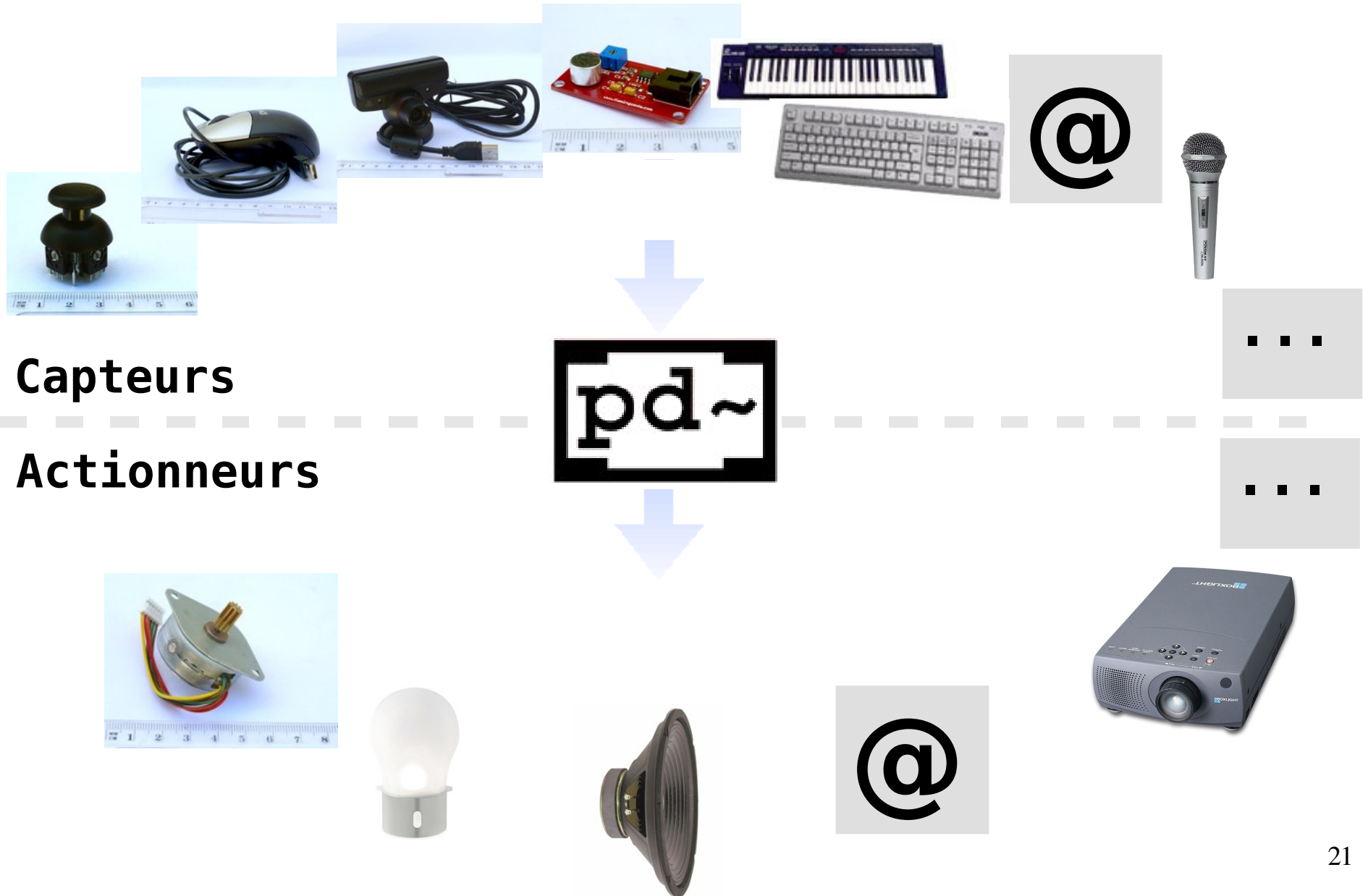
## Installations



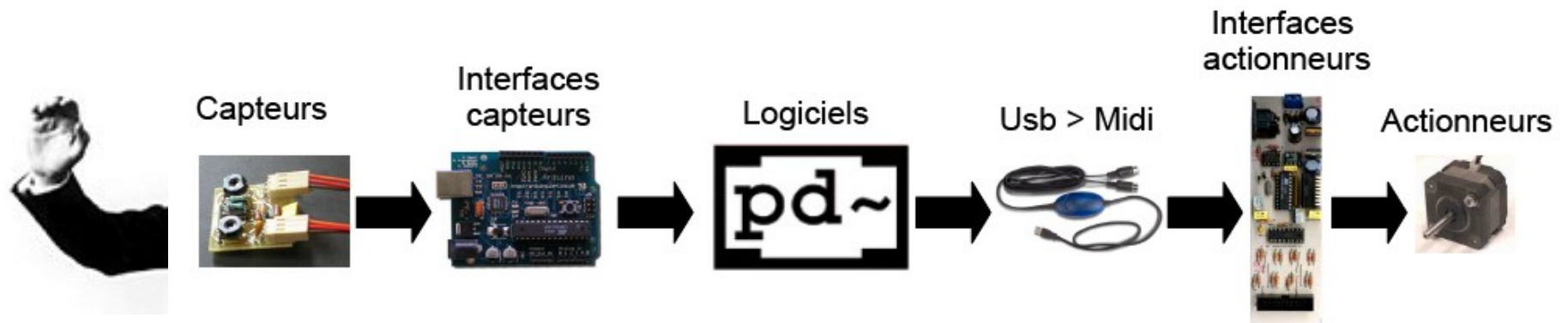
## Apprentissage



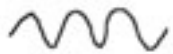
# Entrées / Sorties



# Chaîne interactive



**Physique**



Infra-rouge

**Analogique**



Voltage

**Numérique**



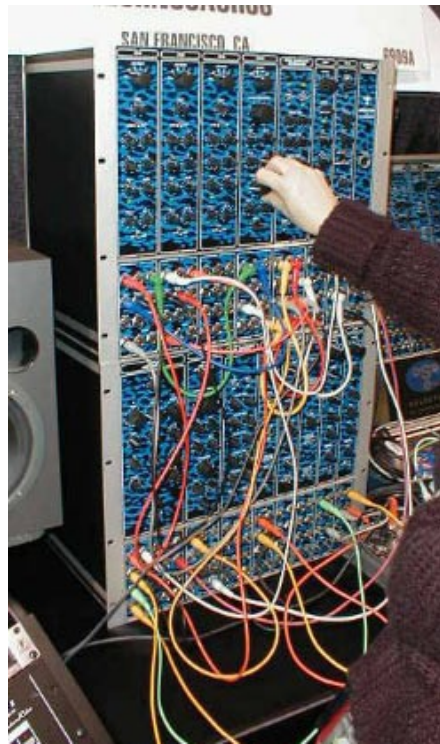
Binary numbers

**Analogique**



Voltage

# Historique



Max Mathews 1950-1960

Synthétiseurs analogiques - Moog et Buchla

IRCAM

Patcher 1986-1988

MaxISPW

IRCAM

MaxFTS 1990

jMax 1998

Miller\_Puckette/PureData.org

Pd 1996

David\_Zicarelli/Cycling74

MaxOpcode 1990

MaxMSP 1997





# Ressources

## **Interne** (Menu help)

- `./doc/1.manual/index.html`
- `./doc/manual/`
- `./doc/2.control.examples/`
- `./doc/5.reference/all_about*`

## **Externe**

Puredata.org (listes, ...)

Flossmanual

CodeLab.fr

Puredata.hurlleur.com

> Ateliers, festivals, ...

> Livres, papiers : Conventions,

Miller Puckette, Andy Farnell, Robert Rowe

# Pure Data

**Gratuit**

**Open-source**

**Multi-  
plateforme**

**Miller Puckette**

**Dataflow**

**Communauté**

**Patch**

**Temps-réel**

**Prototypage**

**Objet**

**Interaction**

**Multimédia**

**Modulaire**

**Programmation graphique**

# C'est aussi ça !

