Domotique

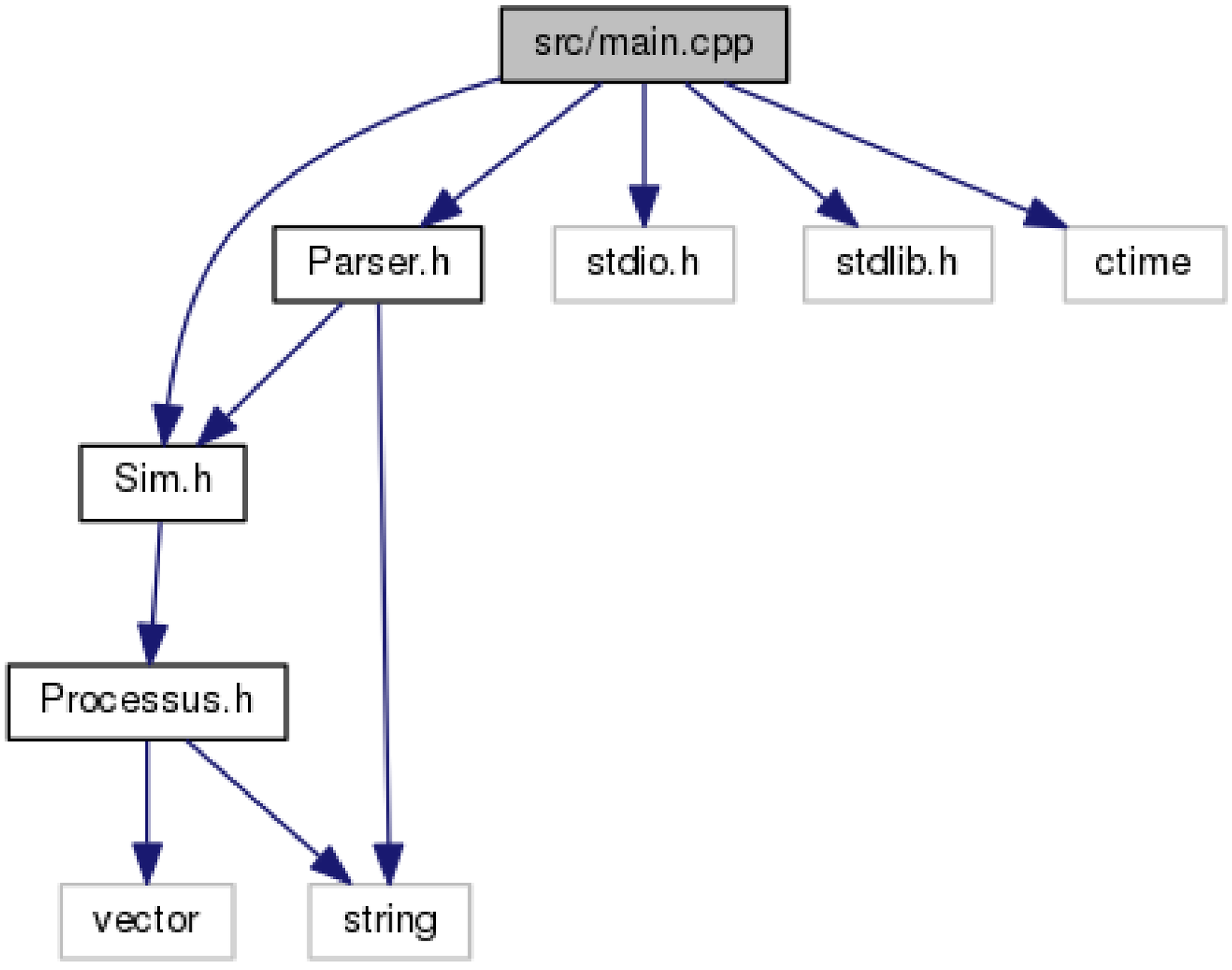
Projet de programmation OO

Groupe 9
Vassili Cruchet
Jordan Metz

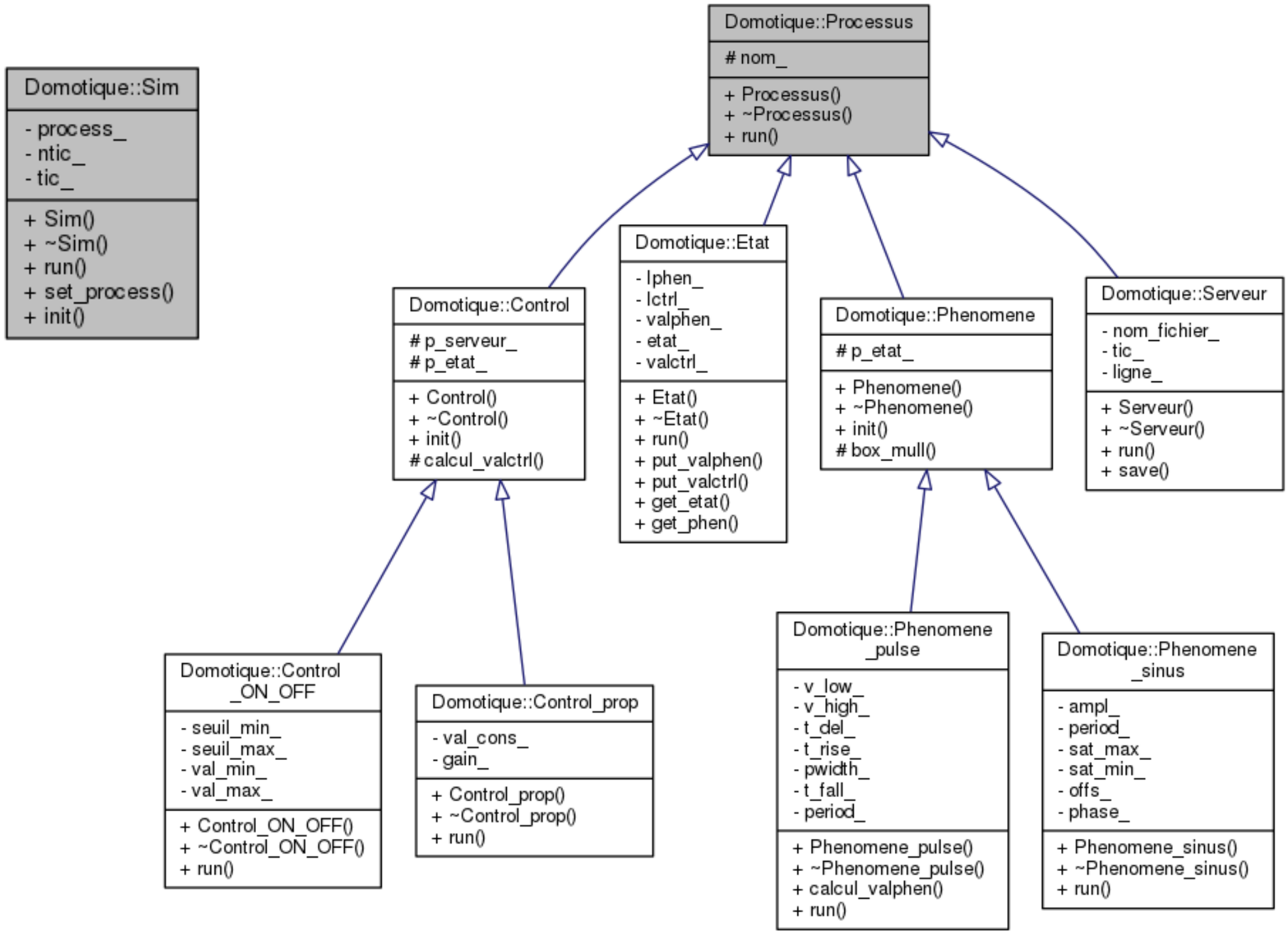
Cahier des charges

- Simulation simple de gestion de phénomènes:
  - température d’une pièce
  - pH d’un milieu
- Enregistrement des données et post-traitement graphique avec gnuplot

Architecture de l’application



Architecture de classes



Organisation des processus

Parseur

new Serveur

new Processus

Processus->init()

Simulateur->set_process()

Serveur ajouté à la fin

Vecteur de processus

Phénomène

Control

Etat

…

Serveur

Création des processus

XML:

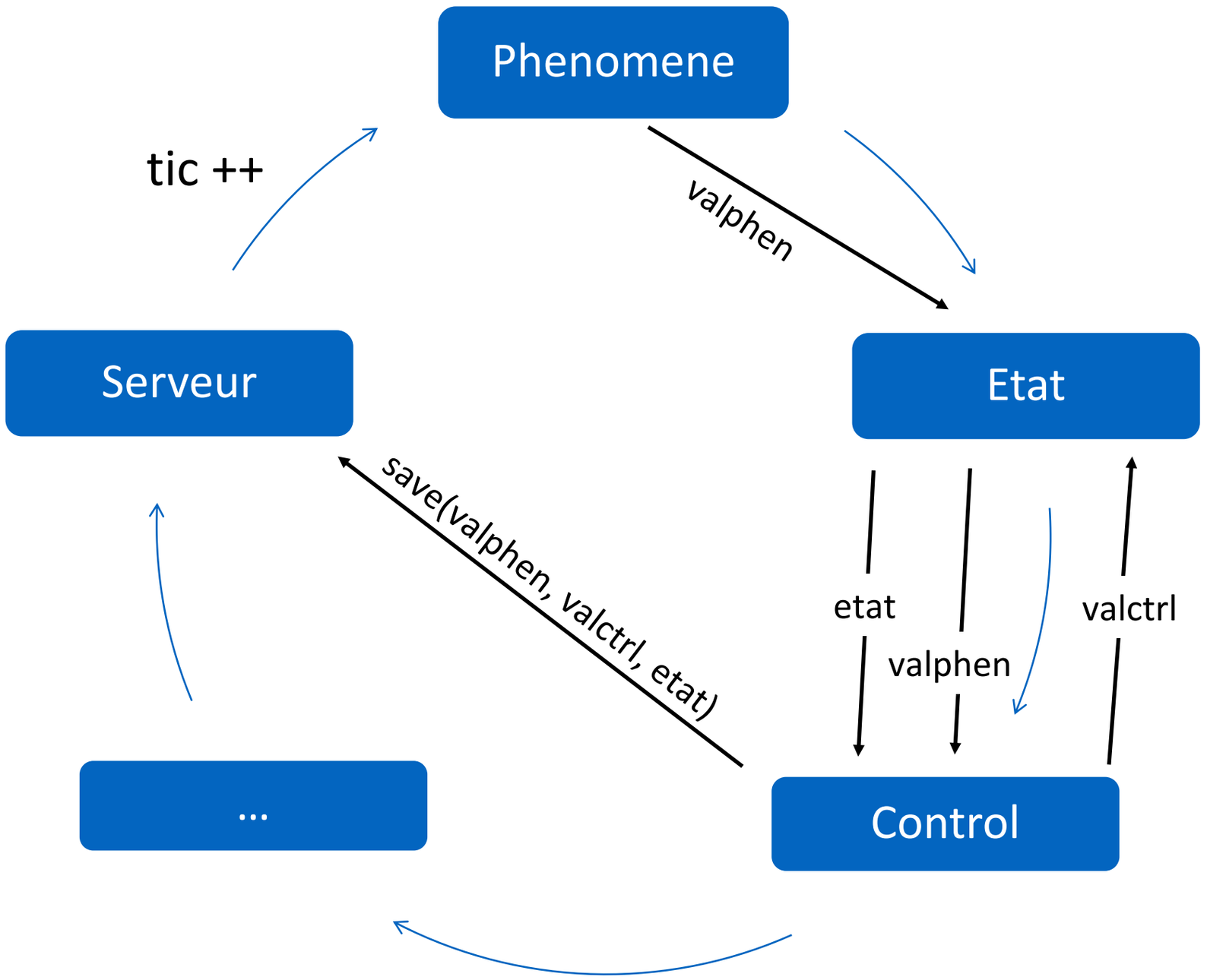
```
3  <!--  Description du paysage de simulation -->
4  <application >
5     <paysage >
6        <zone nom="Chambre" ID="0">
7           <phenomene nom="temperature_externe" mode="sinus" >
8              <parametres offset="10" amplitude="5" phase ="0" period="1440"/>
9           </phenomene>
10          <control nom="ctrl_temp" mode="on_off" >..
13          <etat nom="etat_chambre" etat_initial="20" Iphen="0.1" Ictrl="0.05" />
14       </zone>
15          <zone nom="Aquarium" ID="1">..
24       </paysage>
25       <simulation nb_tic="2880"/>
26 </application>
```

Parser.cpp:

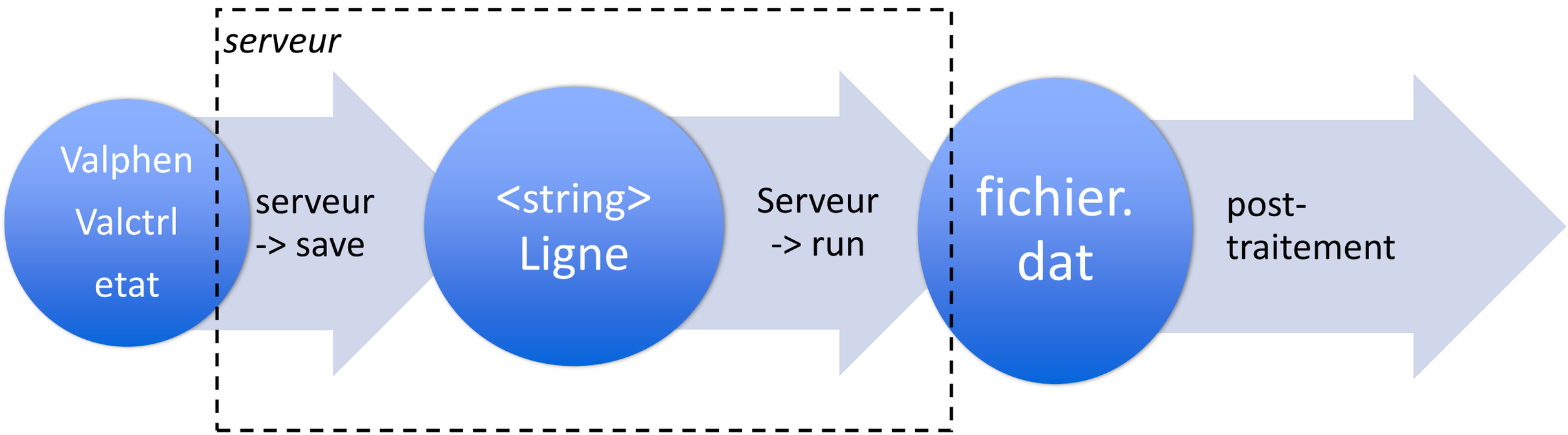
```
if(strcmp(phenomene->Attribute("mode"),"sinus")==0) {
    TiXmlElement* parametres = phenomene->FirstChild("parametres")->ToElement();

    double offset =      get_attr_dbl(parametres,"offset", false, 0);
    double ampl =        get_attr_dbl(parametres,"amplitude", true);
    double sat_max =     get_attr_dbl(parametres,"sat_max", false, std::numeric_limits<double>::infinity());
    double sat_min =     get_attr_dbl(parametres,"sat_min", false, -std::numeric_limits<double>::infinity());
    long int phase =     get_attr_int(parametres,"phase", false, 0);
    long int period =    get_attr_int(parametres,"period", true);
    phen = new Phenomene_sinus(nom_phen, ampl, period, sat_max, sat_min, offset, phase);
    simulateur->set_process(phen);
}
[...]
phen->init(etat)
```

Simulation


Phenomene
tic ++
valphen
Serveur
Etat
save(valphen, valctrl, etat)
etat
valphen
valctrl
...
Control

Serveur et résultats



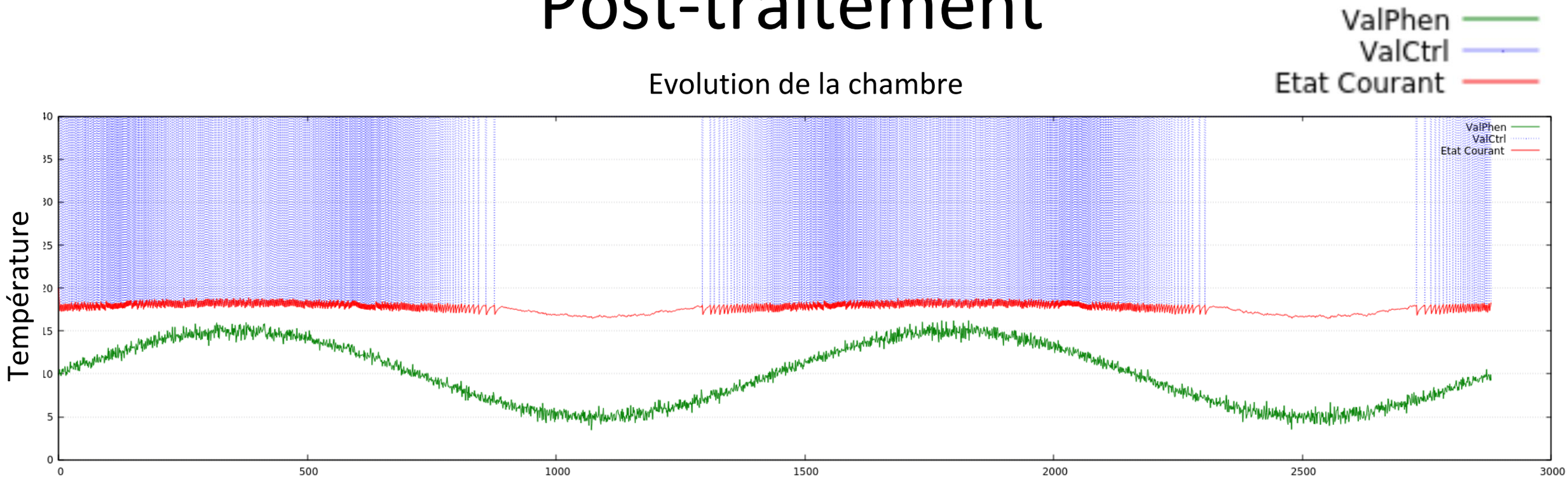
Fichier data_serveur.dat

# Ordre:	tic	VALPHEN	VALCTRL	ETAT	COURANT	
0	0.161	5	20	1.0163	7	7
1	2.406	40	16.516	0.6862	9.393	6.401
2	4.805	40	17.453	0.7816	9.286	6.428
3	7.075	40	18.443	6.9326	9.258	6.435

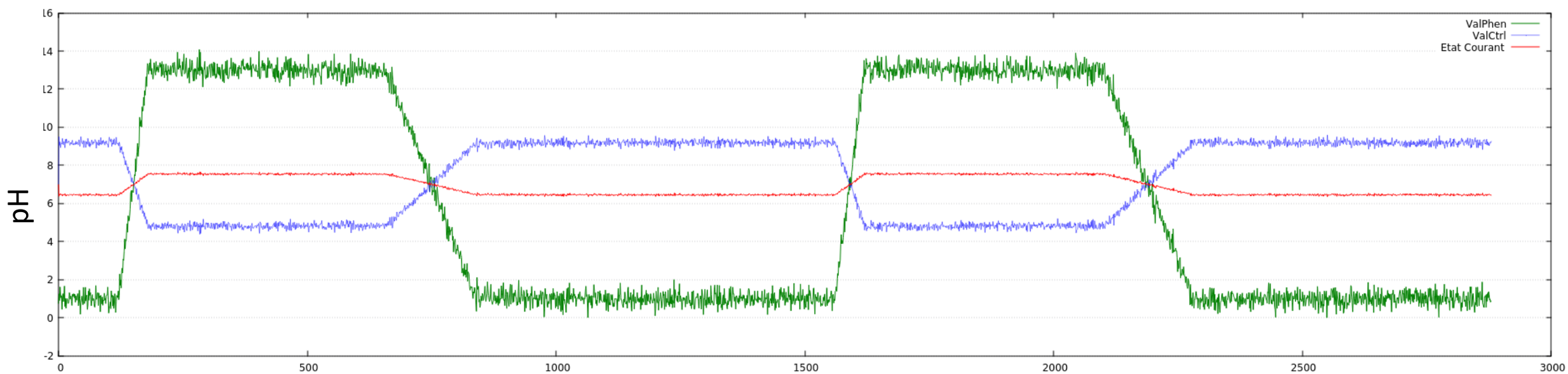
Chambre *Aquarium*

Post-traitement

Evolution de la chambre



Evolution de l’aquarium



Bilan

- Avantages de la POO
- Egit / Github
- Gnuplot / Doxygene
- Phase n°1 re-conceptualisée
- Bonne coopération