START SWISH!!!!

Night before:

Set presso and swish to autostart

disable skype, workrave, etc.

Distributed SWI-Prolog Development

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Pengines

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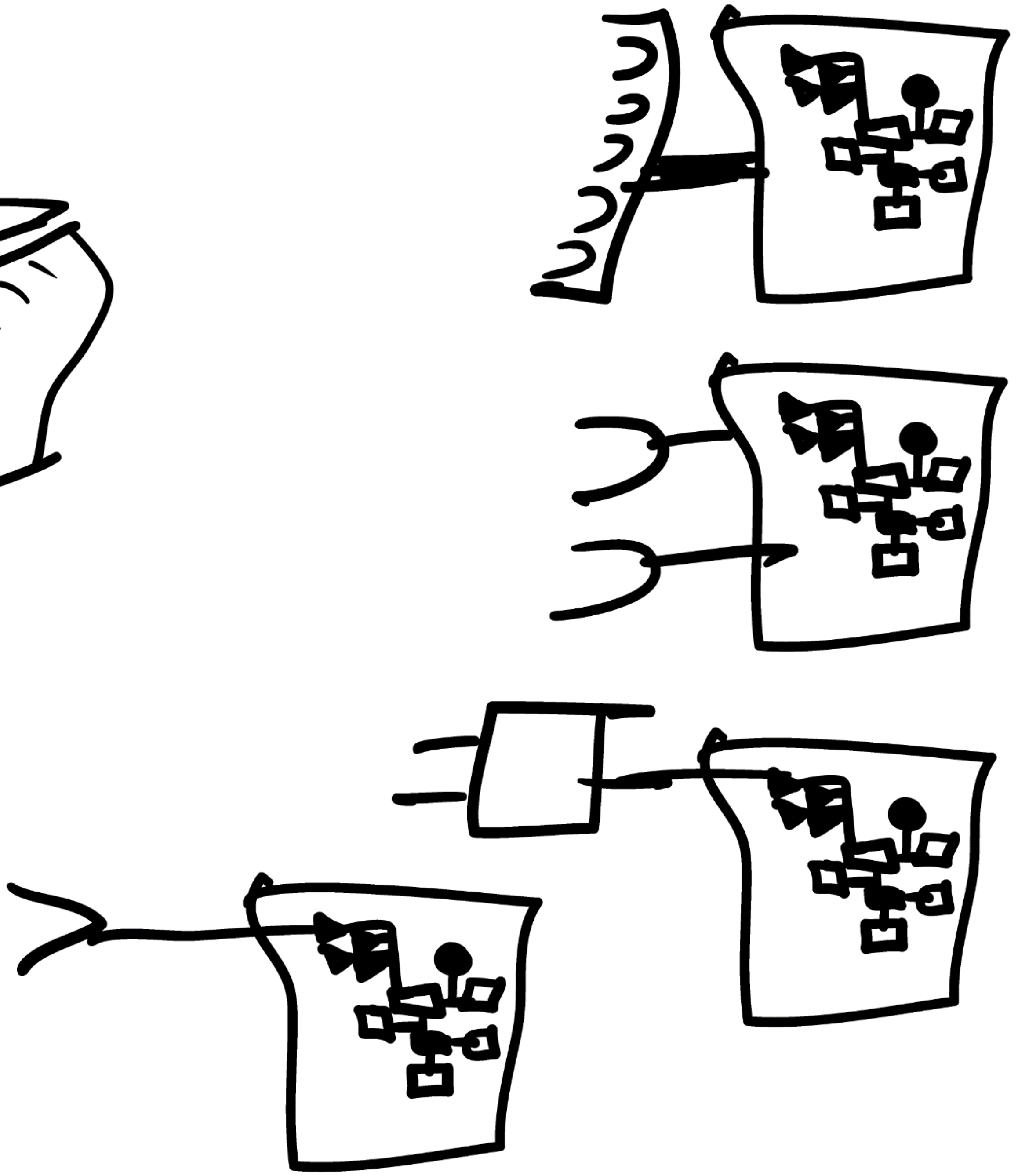
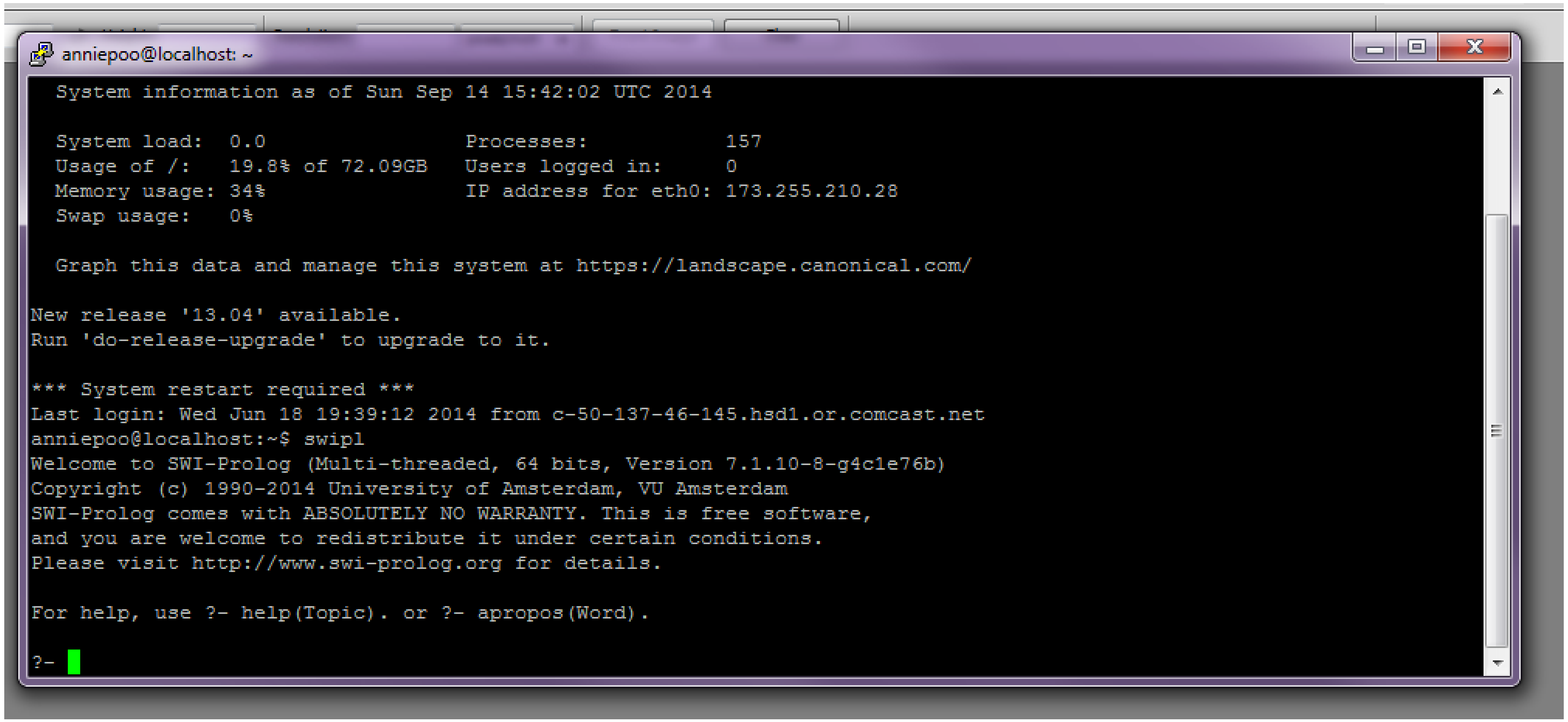
- University of Gothenborg

- Jan Wielemaker
- Free Univ. of the Netherlands

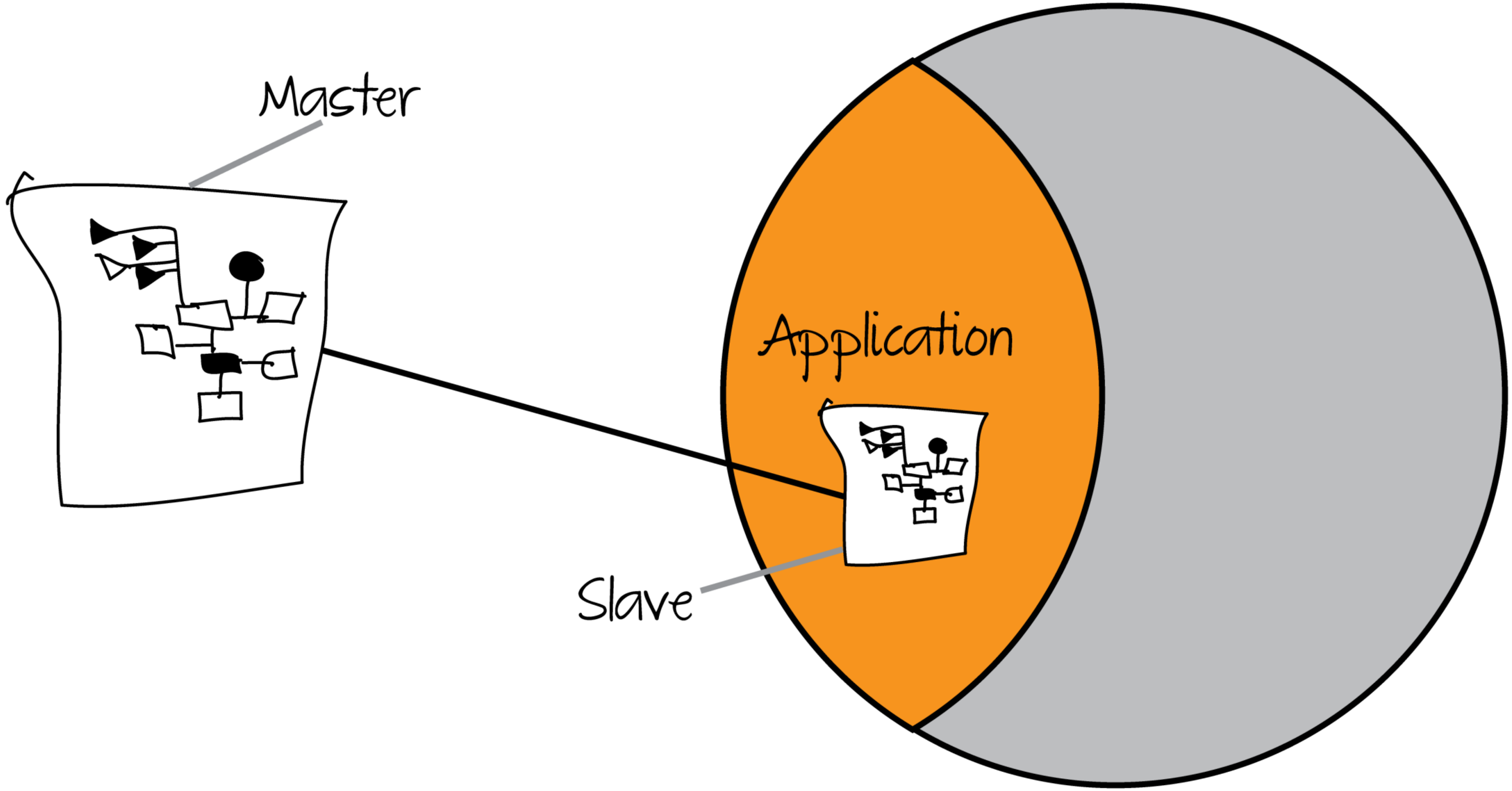
Pengine Roles

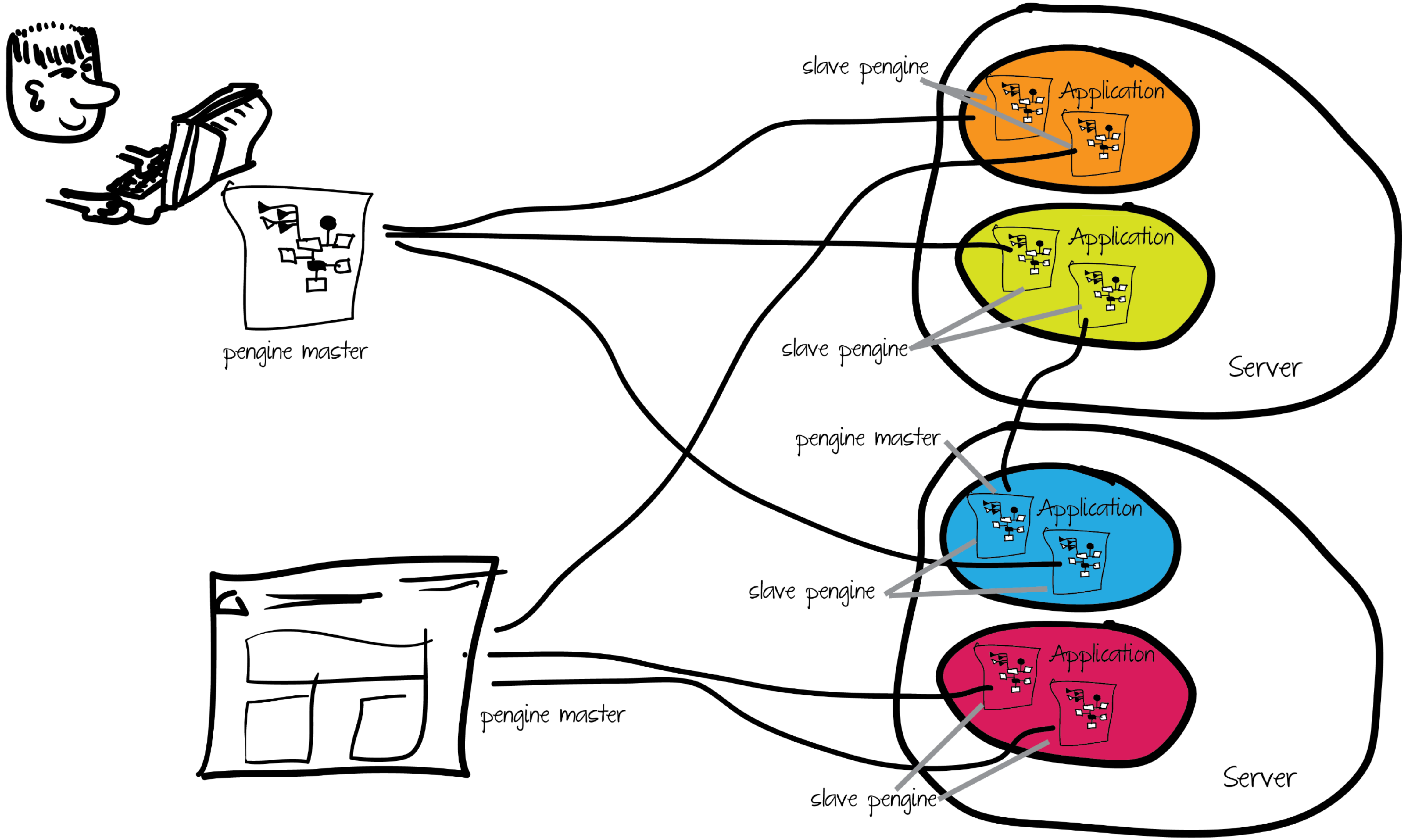




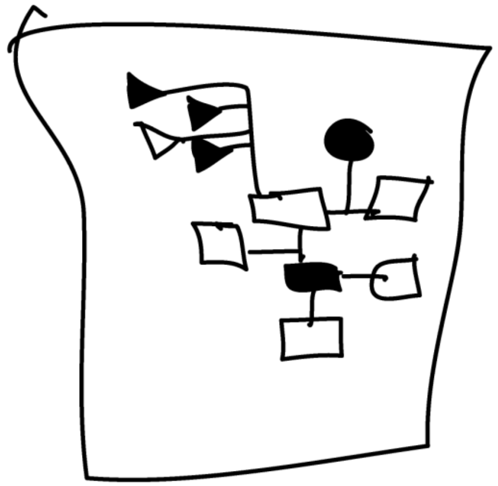
anniepoo@localhost: ~

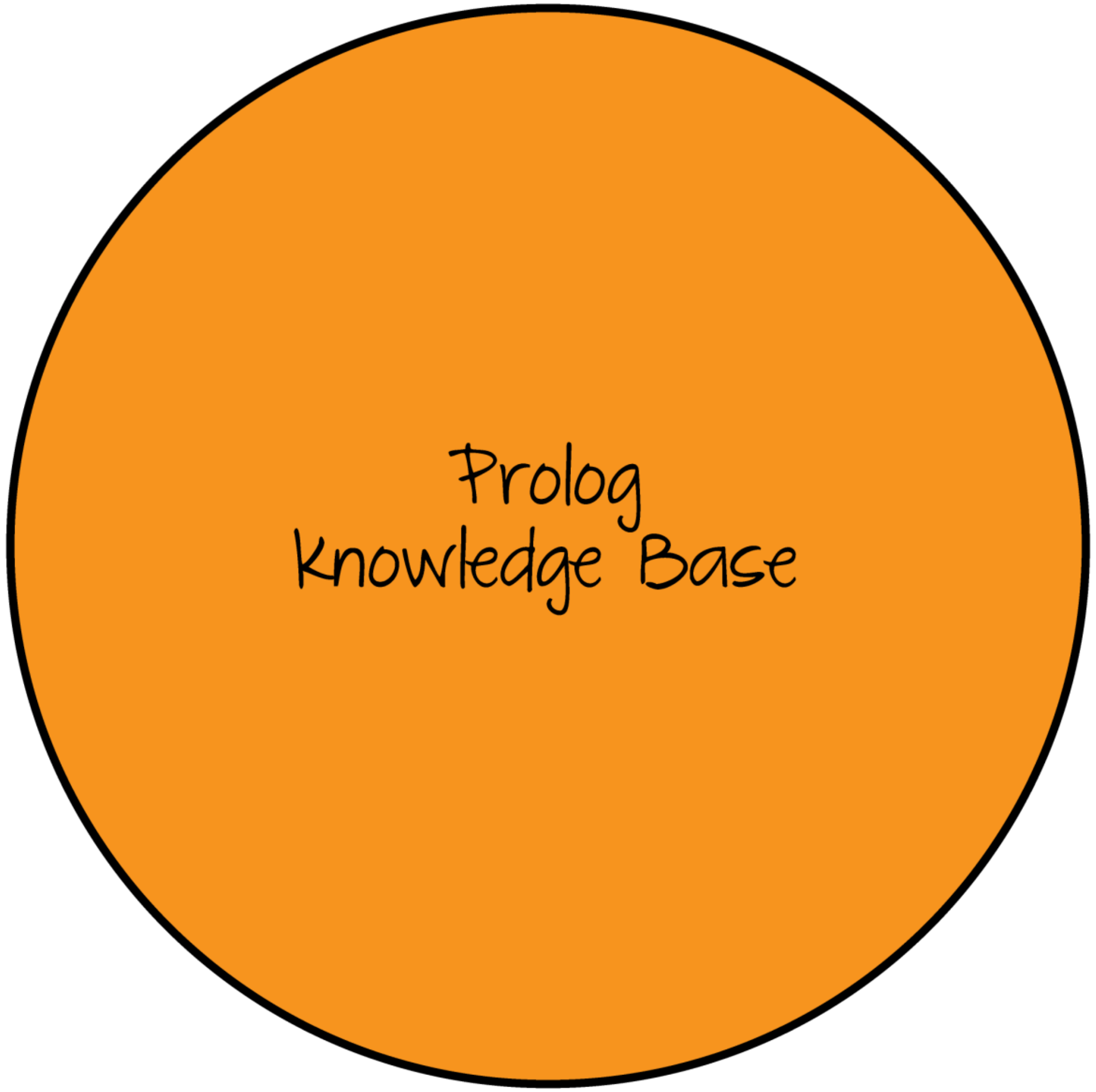
```
  System information as of Sun Sep 14 15:42:02 UTC 2014

  System load:  0.0               Processes:           157
  Usage of /:   19.8% of 72.09GB  Users logged in:     0
  Memory usage: 34%               IP address for eth0: 173.255.210.28
  Swap usage:   0%

  Graph this data and manage this system at https://landscape.canonical.com/

New release '13.04' available.
Run 'do-release-upgrade' to upgrade to it.

*** System restart required ***
Last login: Wed Jun 18 19:39:12 2014 from c-50-137-46-145.hsd1.or.comcast.net
anniepoo@localhost:~$ swipl
Welcome to SWI-Prolog (Multi-threaded, 64 bits, Version 7.1.10-8-g4c1e76b)
Copyright (c) 1990-2014 University of Amsterdam, VU Amsterdam
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software,
and you are welcome to redistribute it under certain conditions.
Please visit http://www.swi-prolog.org for details.

For help, use ?- help(Topic). or ?- apropos(Word).

?- 
```

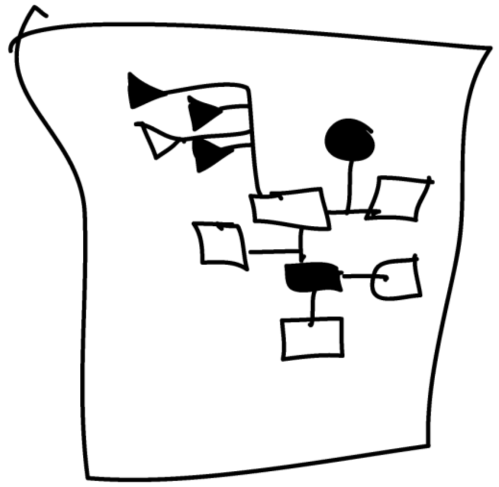

Master
Application
Slave

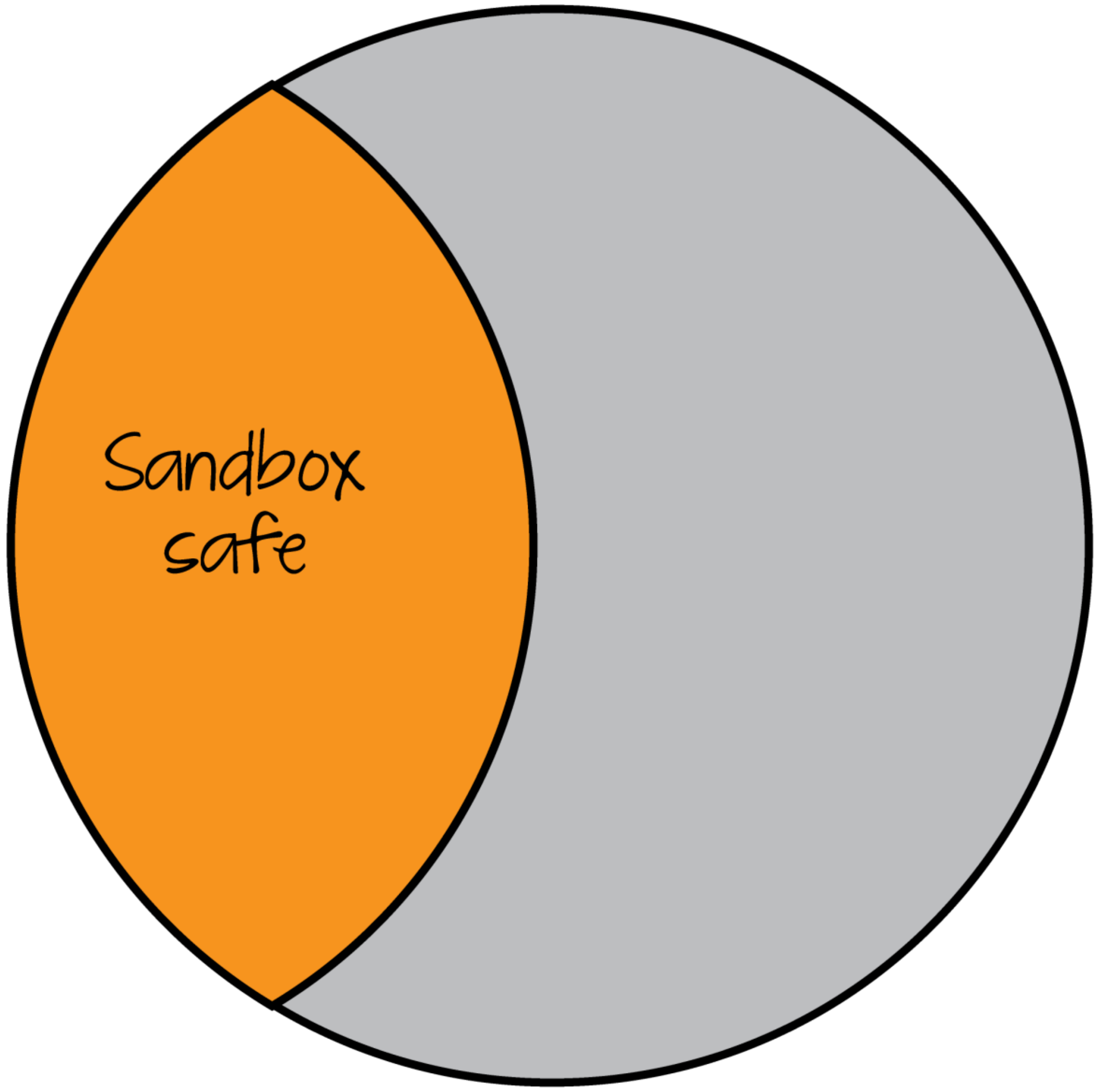

slave pengine
Application
pengine master
Application
slave pengine
Server
pengine master
Application
slave pengine
Application
pengine master
slave pengine
Server

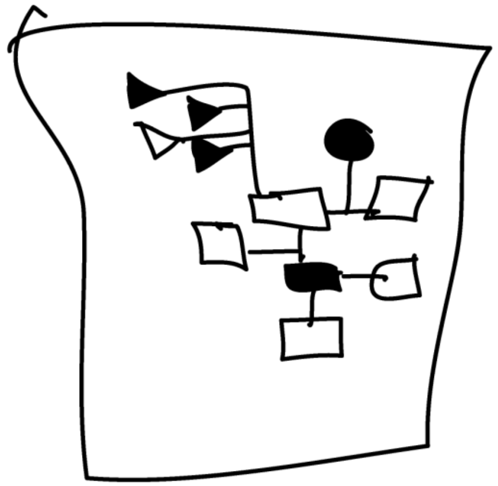
The Pengine Knowledgebase

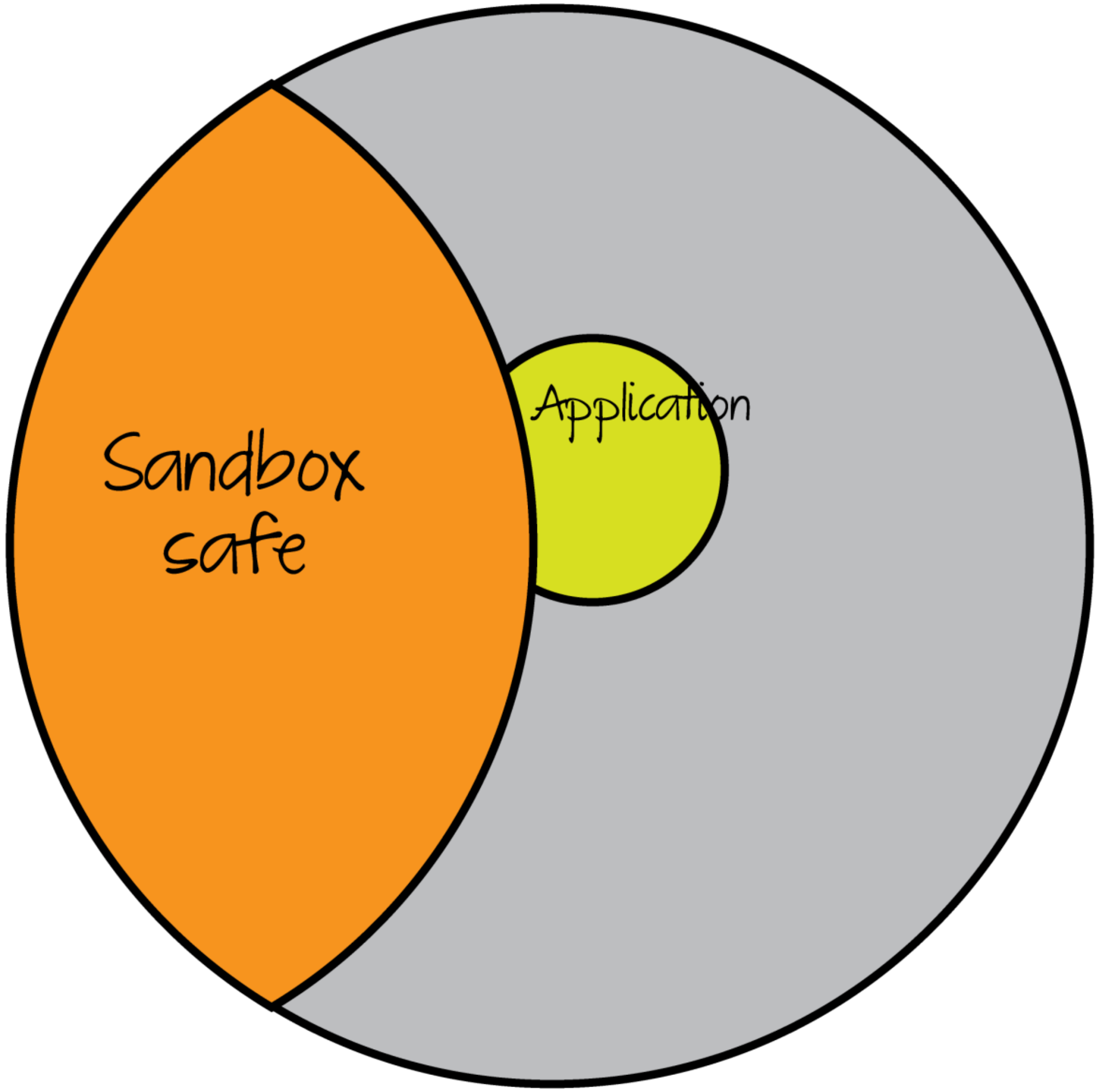


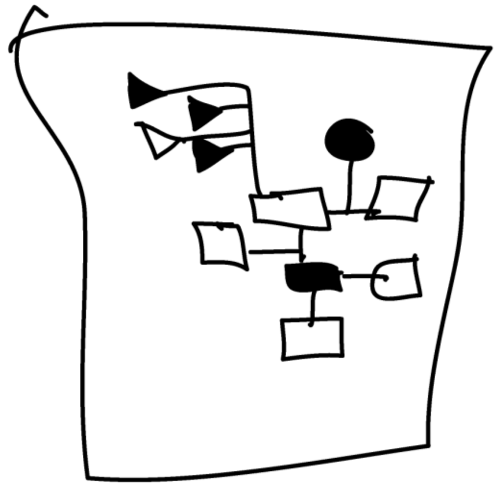

Prolog
Knowledge Base

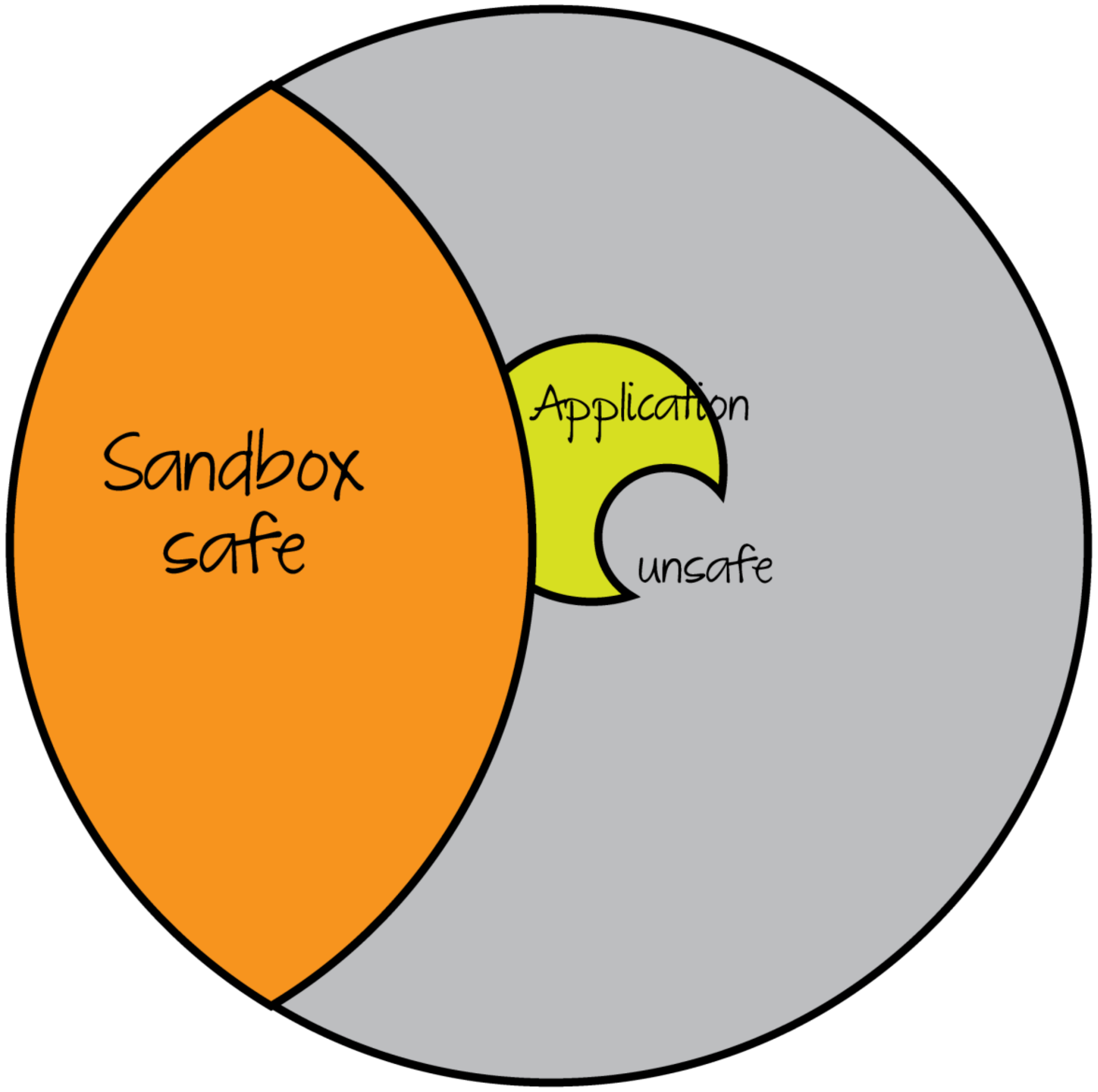


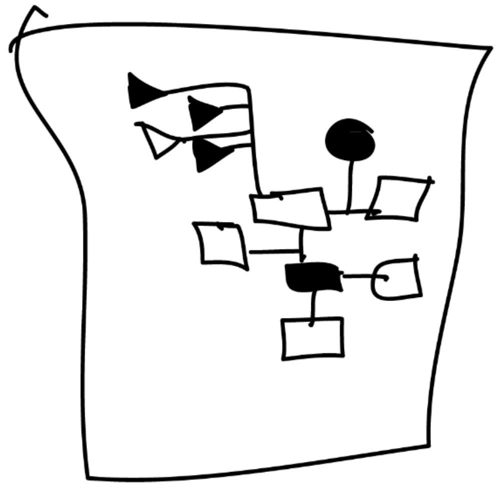

Sandbox
safe

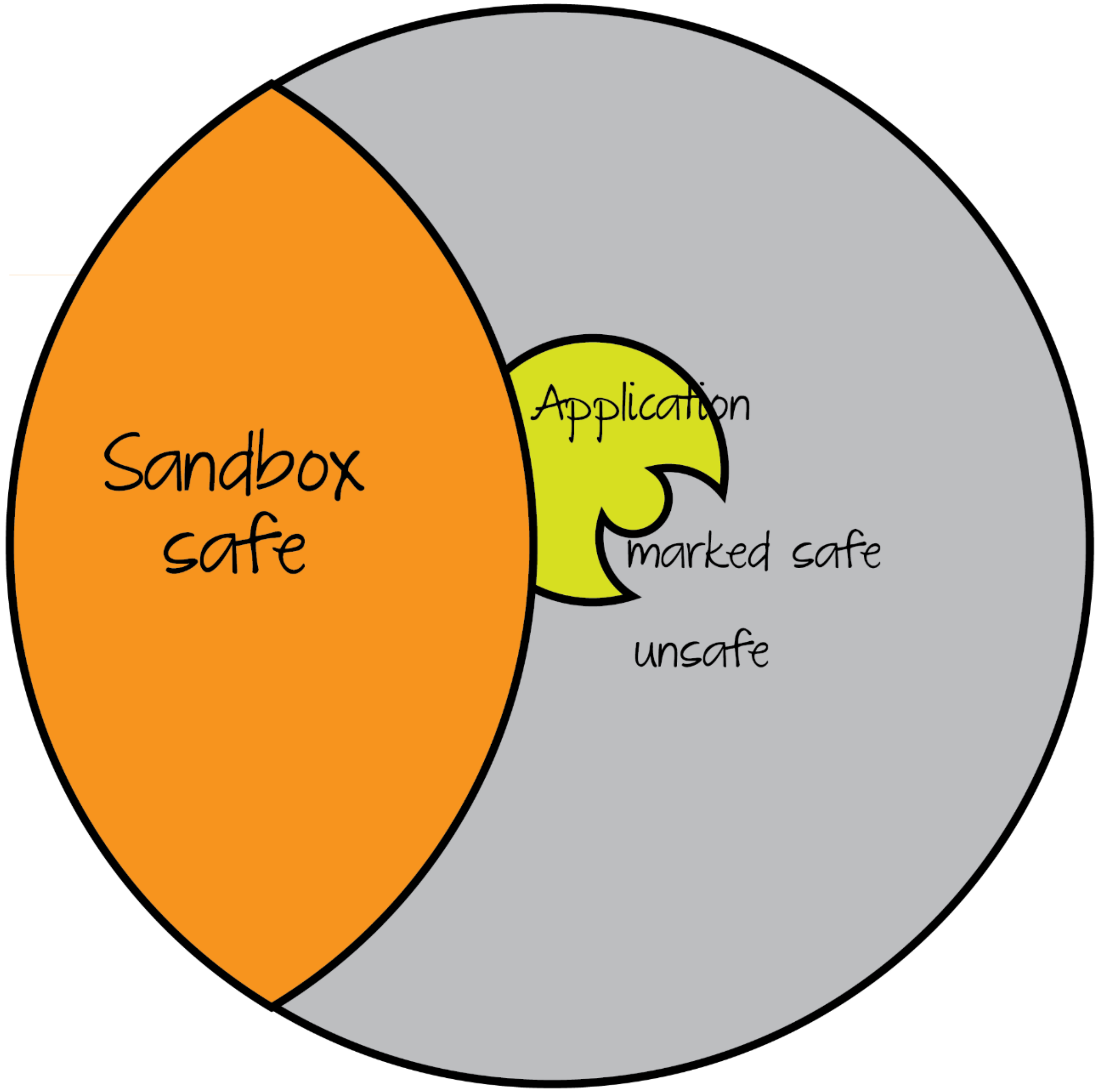


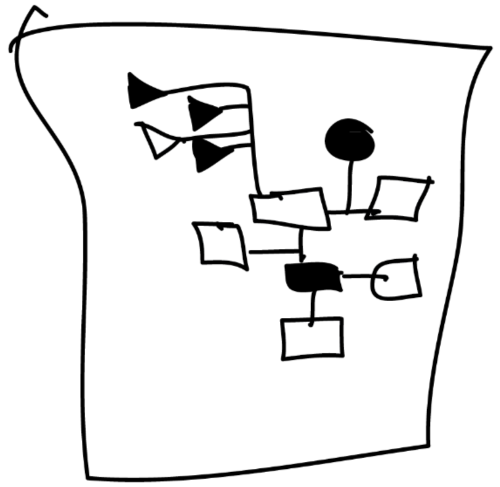

Sandbox safe
Application

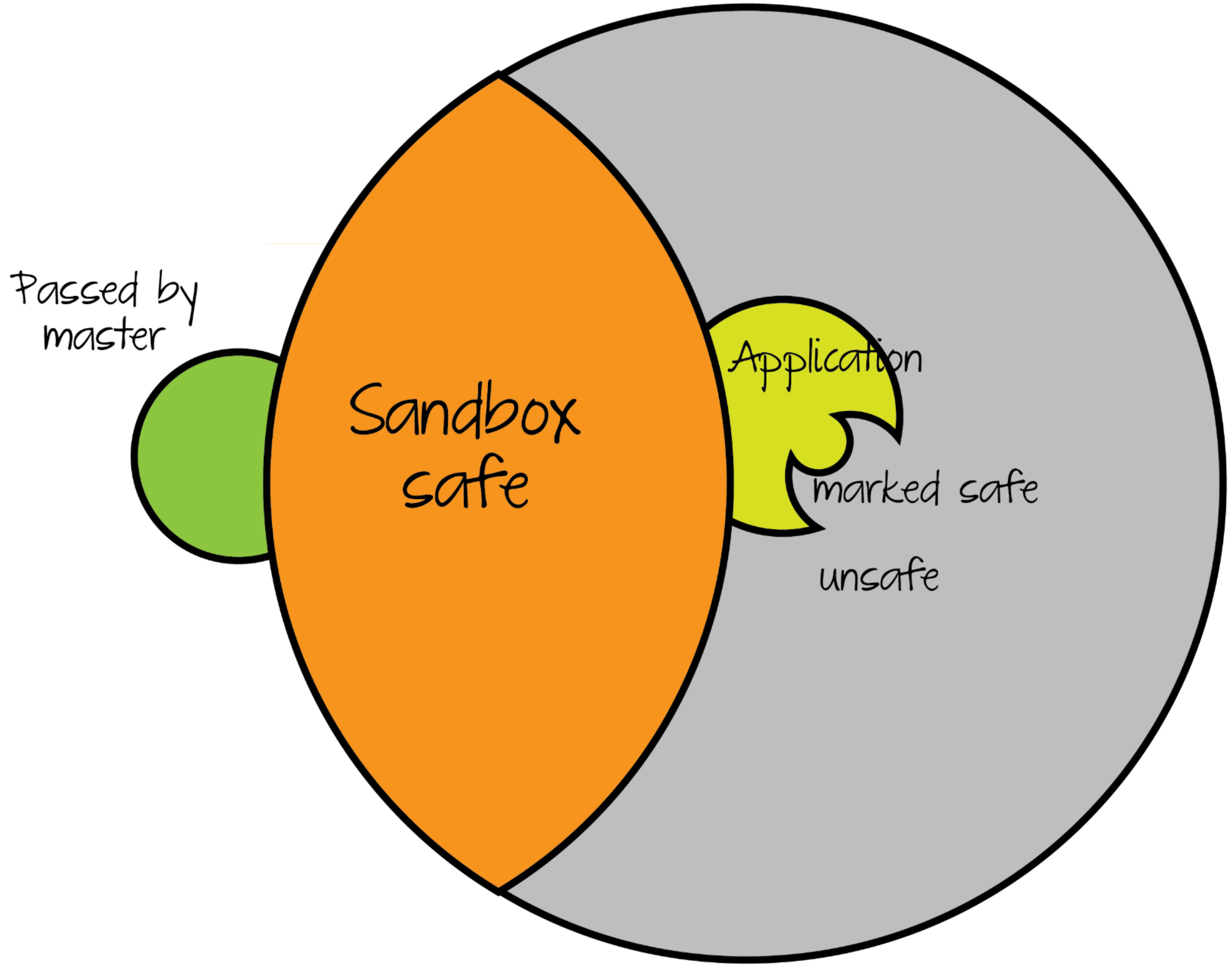


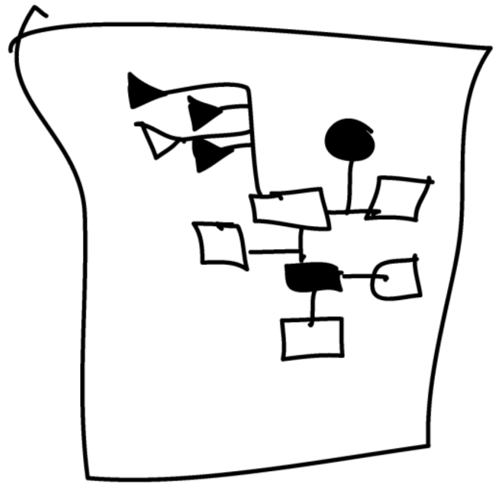

Sandbox
safe
Application
unsafe

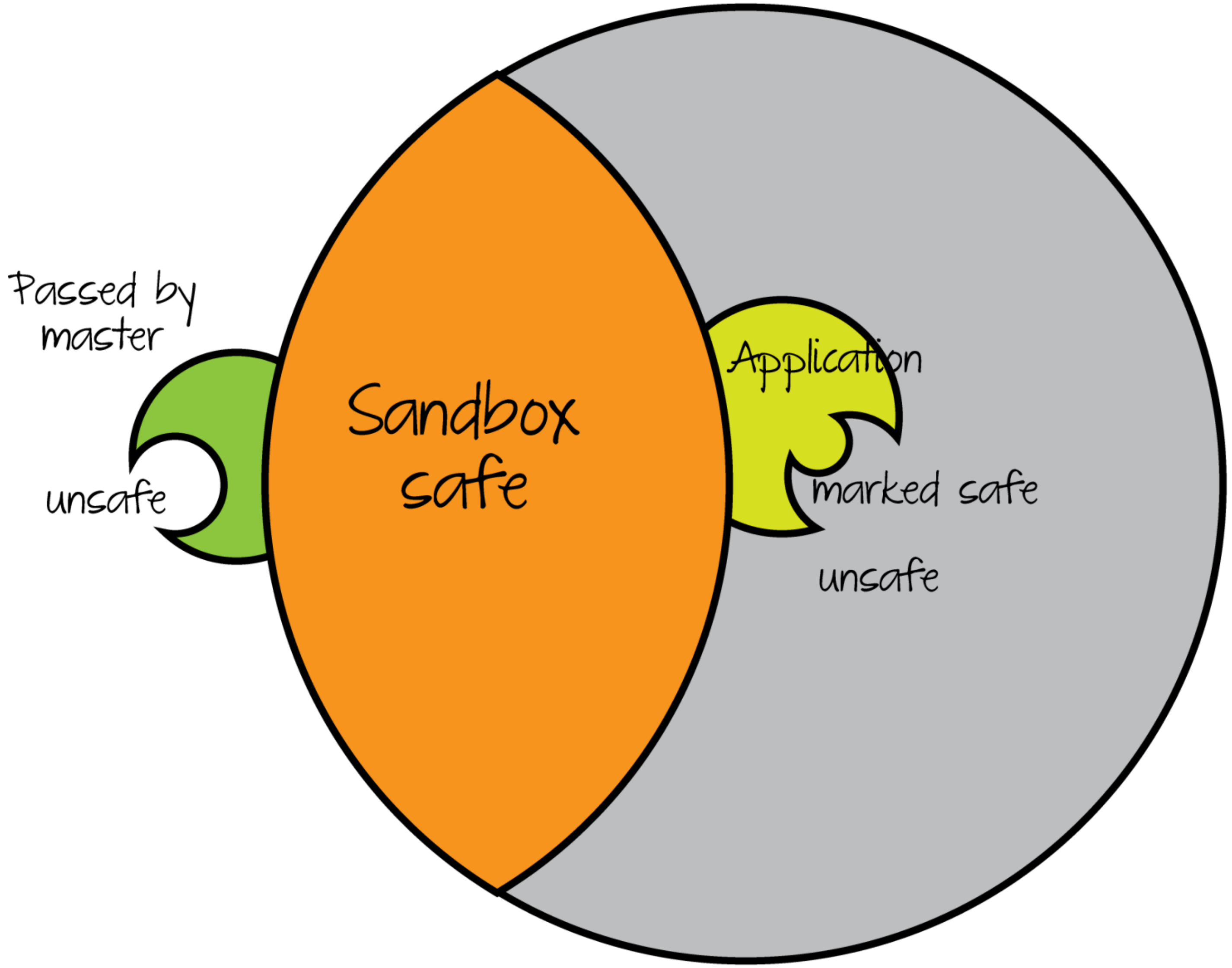


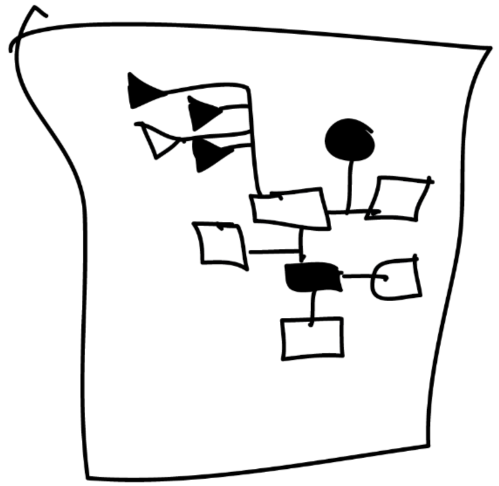

Sandbox safe
Application
marked safe
unsafe

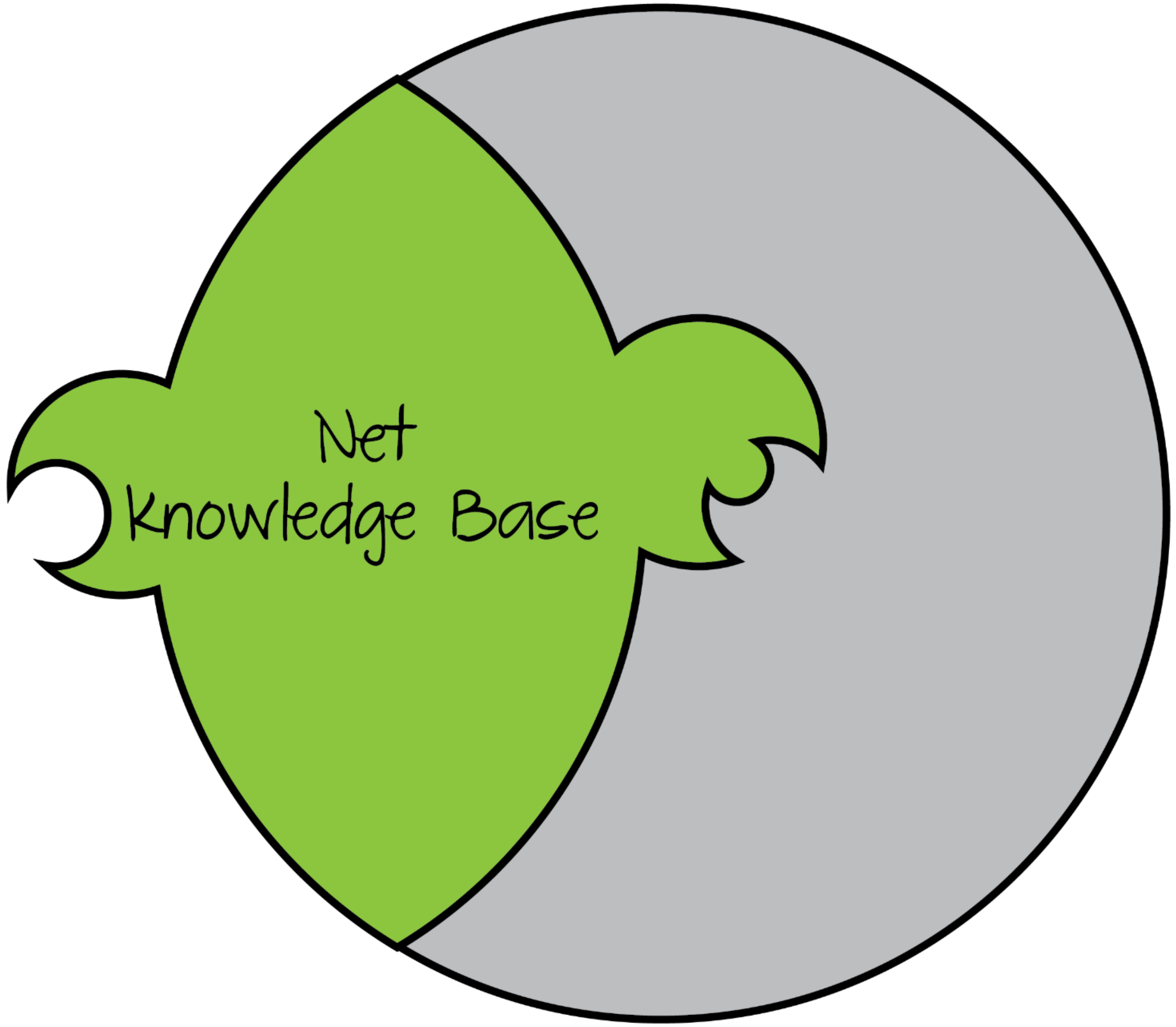



Passed by master
Sandbox safe
Application
marked safe
unsafe




Passed by master
unsafe
Sandbox safe
Application
marked safe
unsafe




Net
Knowledge Base

Querying The Pengine

client.pl

```
pengine_demo(Port) :-
        format(atom(URL),
'http://localhost:~d', [Port]),
        pengine_create(
             [ server(URL),
               src_text("
                 q(X) :- p(X).
                  p(a). p(b). p(c).
               ")
             ]),
        pengine_event_loop(handle,
[]).
```

```
handle(create(ID, _)) :-
        pengine_ask(ID, q(_X), []).
handle(success(ID, X, false)) :- !,
        writeln(X),
        pengine_destroy(ID).
handle(success(ID, X, true)) :-
        writeln(X),
        pengine_next(ID, []).
```

javascript example

```
<script type="text/x-prolog">
q(X) :- p(X).
   p(a).
   p(b).
   p(c).
</script>
```

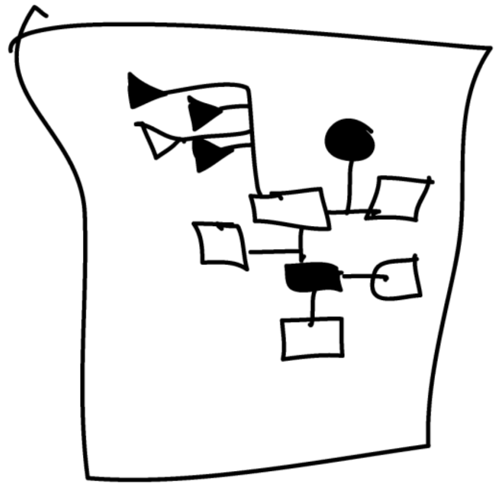
```
<script>
var pengine = new Pengine({
    oncreate: handleCreate,
    onsuccess: handleSuccess,
    onerror: handleSuccess
});
function handleCreate () {
    pengine.ask("q(X)", {
        template:'X'
     });
}
function handleSuccess() {
    $('#out').html(this.data);
    pengine.next();
}
</script>
```

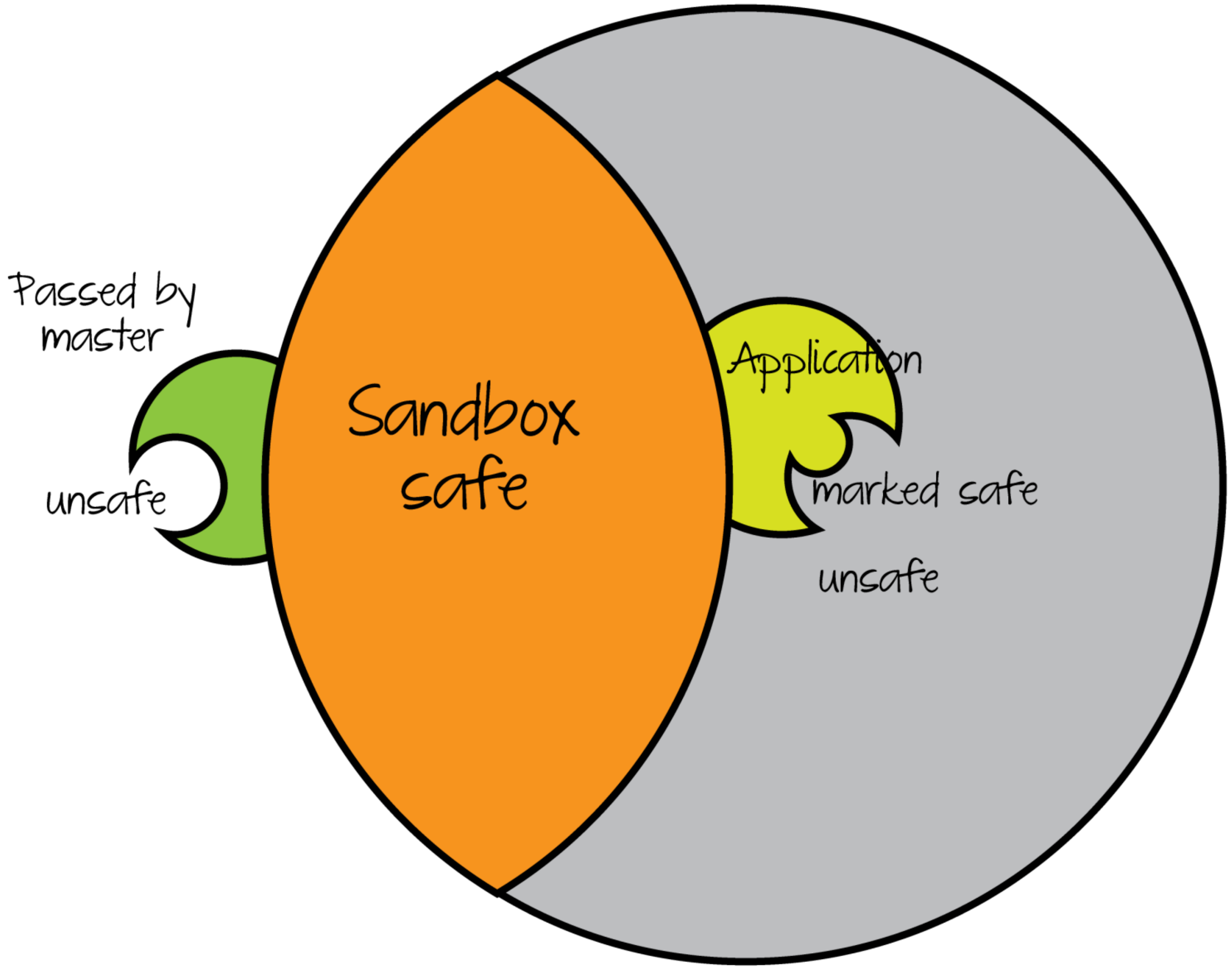
Client using pengine_rpc

```
rpc_demo(Port, X) :-
    pengine_rpc(
      'http://someserver.nl/',
       member(X,
           [aap, noot, mies])).
```

IO

- pengine_input(-Prompt, -Term)
- pengine_output(+Term)




Passed by master
unsafe
Sandbox safe
Application
marked safe
unsafe

main.pl

```
:- use_module(library(pengines)).
:- use_module(library(sandbox)).
:-
use_module(pengine_sandbox:my_apis).
```

my_apis.pl

```
:- module(my_apis, [my_public/1]).

:- use_module(library(dcg/basics)).

my_public(X) :-
        dont_say_walrus(X),
        debug(pengine_example, 'my_public says
~w', [X]).

dont_say_walrus(X) :-
        atom_codes(X, XC),
        phrase(walrus, XC),
        !,fail.
dont_say_walrus(_).
walrus --> string(_) ,  "walrus", string(_).
```

main.pl

```
:- use_module(library(pengines)).
:- use_module(library(sandbox)).
:- use_module(pengine_sandbox:my_apis).
```

my_apis.pl

```
:- module(my_apis, [my_public/1, my_unsafe/1]).

:- use_module(library(dcg/basics)).

my_public(X) :-
        dont_say_walrus(X),
        debug(pengine_example, 'my_public says
~w', [X]).

my_unsafe(X) :-
        atom_length(X, Len),
        Len < 25,
        open('foo.txt', write, Stream),
        format(Stream, 'Hello Out There ~w~n',
[X]),
        close(Stream).

:- multifile sandbox:safe_primitive/1.

sandbox:safe_primitive(my_apis:my_unsafe(_)).
```

Federating Queries

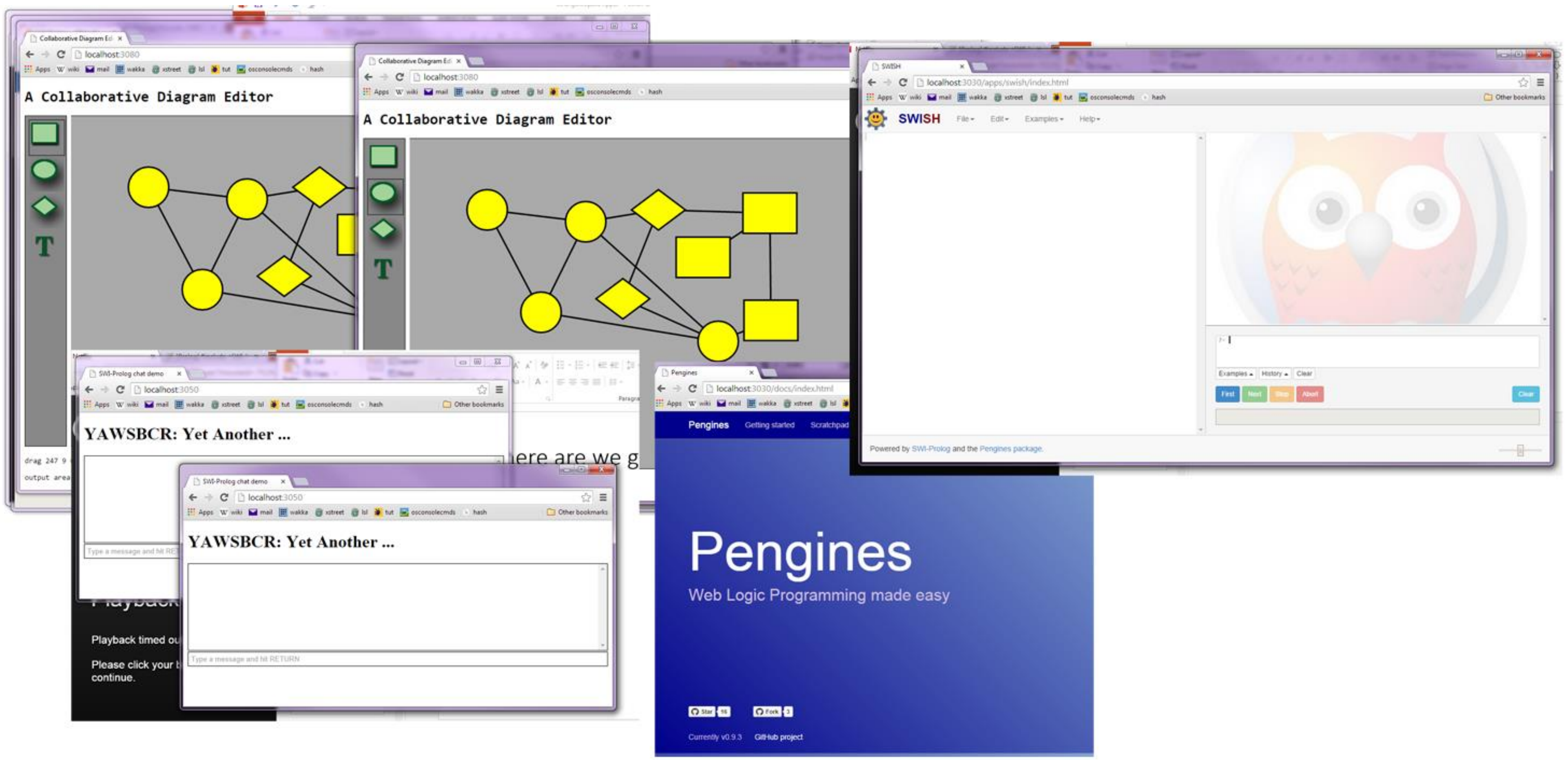
```
from_everywhere(Name, Address) :-
     pengine_rpc('http://someserver.com/',
          rdf(S, rdf:type, foaf:Agent)),
     pengine_rpc('http://someserver.com/',
          rdf(S, foaf:name, Name)),
     pengine_rpc('http://whitepages.com/pengines/',
          rdf(S2, foaf:name, Name)),
     pengine_rpc('http://whitepages.com/pengines/',
          rdf(S2, wp:address, Address)).
```

Cliopatria Whitepaper

Useful paper for understanding the relationship between prolog and RDF

http://cliopatria.swi-prolog.org/help/whitepaper.html

Where Are We Going?


A Collaborative Diagram Editor
localhost:3080
YAWSBCR: Yet Another ...
localhost:3050
Type a message and hit RETURN
SWISH
localhost:3030/apps/swish/index.html
Powered by SWI-Prolog and the Pengines package.
Pengines
Web Logic Programming made easy
localhost:3030/docs/index.html
Getting started
Scratchpad
Currently v0.9.3
GitHub project
Playback timed ou
Please click your
continue.

Resources

slides	https://github.com/Anniepoo/strangeloop2014
Sources/Nightlies	
SWISH 2.0	http://swish.swi-prolog.org
SWISH 1.0	http://pengines.swi-prolog.org
whiteboard	https://github.com/Anniepoo/whiteboard.git
chat	https://github.com/JanWielemaker/swi-chat
Docs	http://pengines.swi-prolog.org/docs/documentation.html