call

Turtle Class

call

*Contains mutable   
state*

Client

Client

Turtle Functions

state

new state

*Uses immutable   
state*

state

new state

Turtle Class

*Contains mutable   
state*

call

call

call

call

API

Client

Client

API

Turtle Functions

state

new state

*Contains mutable   
state*

api call

result

Turtle Agent

Client

API

command

msg processing loop

api call

result

queue

Turtle Functions

Turtle Workflow  
(state monad)

Client

state

new state

command

command

command

run

Turtle Functions

Batch  
Runner

[command,  
command,  
command,  
command]

Client

state

new state

*List.Fold*

run

Turtle Functions

Actor

command

Client

state

new state

msg processing loop

queue

Turtle Functions

Command  
Handler

command

Client

state

new state

Recreate state

Event Store

Generate events

write  
new events

read previous events

Stream processor

Stream processor

Command  
Handler

commands

event   
stream

new events

Select, Filter Transform

event stream

event stream

event stream

other event streams

Stream processor

new events

other event streams

Event Store

Stream processor

Command  
Handler

command

Event Store

write  
new events

read previous events

event stream

Filters/transformations

action

Stream processor

Filters/transformations

action

new events generated?

`

Input

Turtle  
function

Input

Turtle  
function

State< >

TurtleState

Turtle  
function

new TurtleState

Input

Output

TurtleState

input

new TurtleState

Output

TurtleState

Turtle  
function

new TurtleState

TurtleState

Turtle  
function

Success (new TurtleState)

Input

Failure (error message)

**mapR**

Result World

Normal World

a

b

Result World

Normal World

Result<a>

Result<b>

A function in the world of Results

A function in the world of normal things

A function in the world of Results

**lift2R**

Result World

Normal World

move

dist

Result World

state

Normal World

**returnR**

Result World

Normal World

a

Result World

Normal World

Result<a>

A value in the world of normal things

A value in the world of Results

Result<move>

Result<dist>

Result<state>

A function in the world of normal things

Program

response

Command

Turtle Function  
(to be supplied)

params

response

Command

Turtle Function  
(to be supplied)

params

Interpretation

Command

Turtle Function

Command/Response

Command

Turtle Function

Command

Turtle Function

Command/Response

Command/Response

(stop)

List Item

List

List Item

List Item

List Item

(end)

List

List