Bank Account

Web 2.0 Application

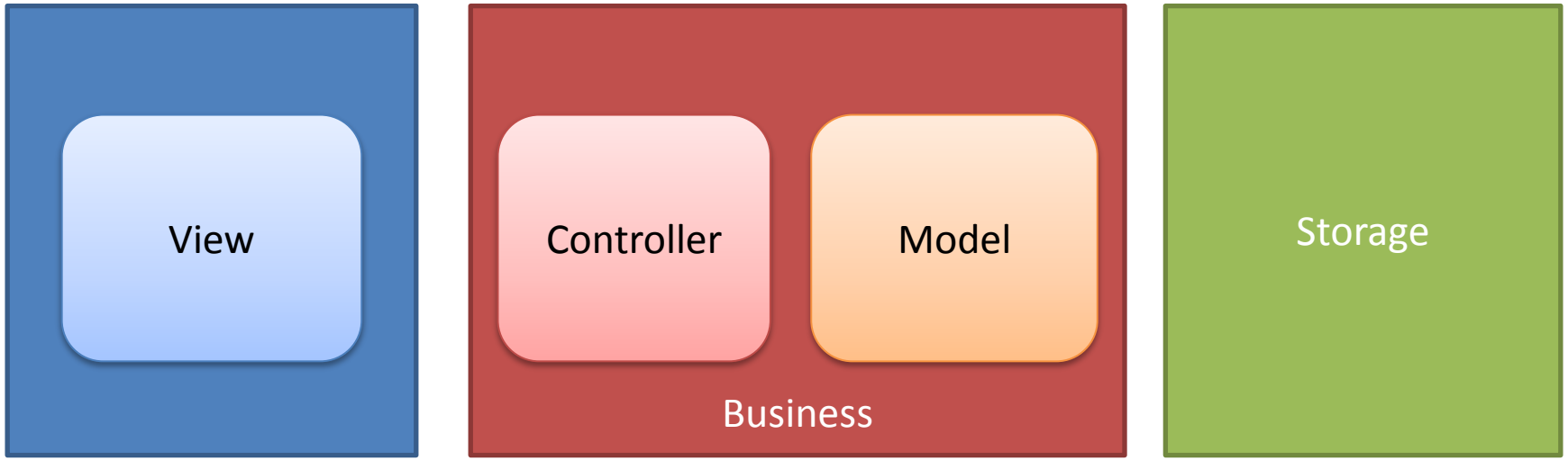
HTML5, Ajax, REST server

Plan

- Architecture
- Specifications
- Some refactoring
  - Extension of BANK_ACCOUNT
- Model, View, Controller and plumbing ...

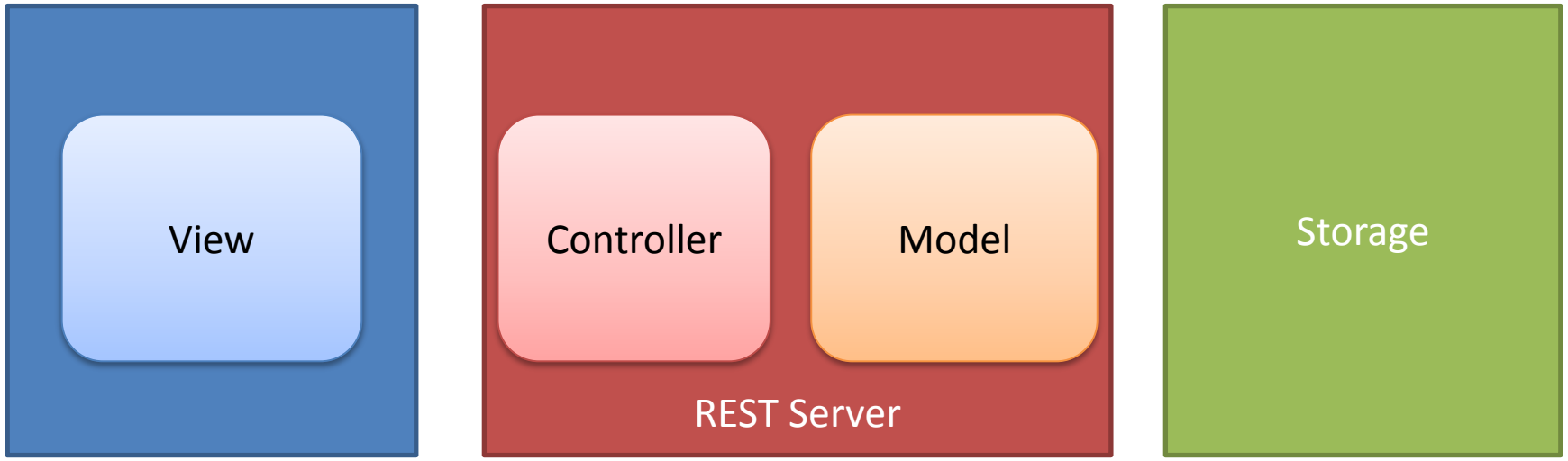
Architecture

Architecture

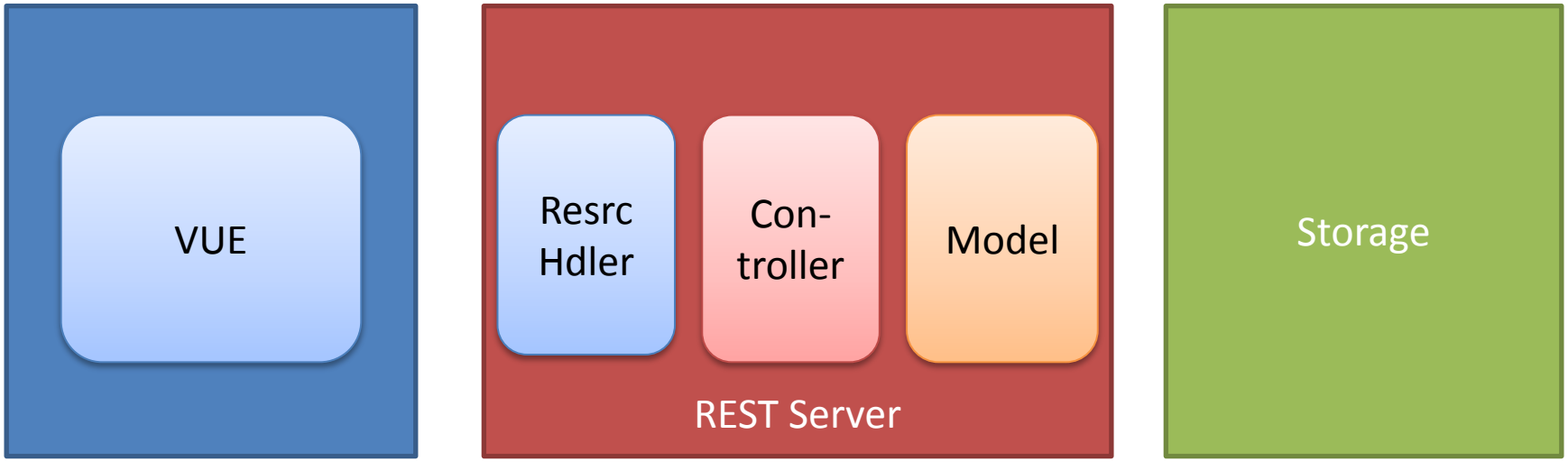


Architecture

Architecture



Architecture



The « resource handler » is a kink of « proxy view».

Specification

- /account/123
  - GET: -> {number: "string"; balance: integer }
    HTTP-status: 200
- /account/123/transactions
  - GET: -> [{transaction}, ...]
    HTTP-status: 200
  - POST: {op} -> {response: {transaction}; error: "string"}
    HTTP-status: 201, 400

transaction =
{date: "date"; time: "time";
operation: "Deposit|Withdraw"; amount: integer; new_balance: integer}

op = {operation: " Deposit|Withdraw "; amount: integer}

Analysis

- What the user wants...
- The system and its environment
- Components and responsibilities
  - Model
  - View
  - Controller

What the user wants…

EAWA - Mozilla Firefox

Fichier Édition Affichage Historique Marque-pages Outils ?

EAWA

file:///C:/User/JavaScript/awesome-web-atm/atm/inde

Google

Welcome to Eiffel's Awesome Web ATM

Account: BE12345678901234

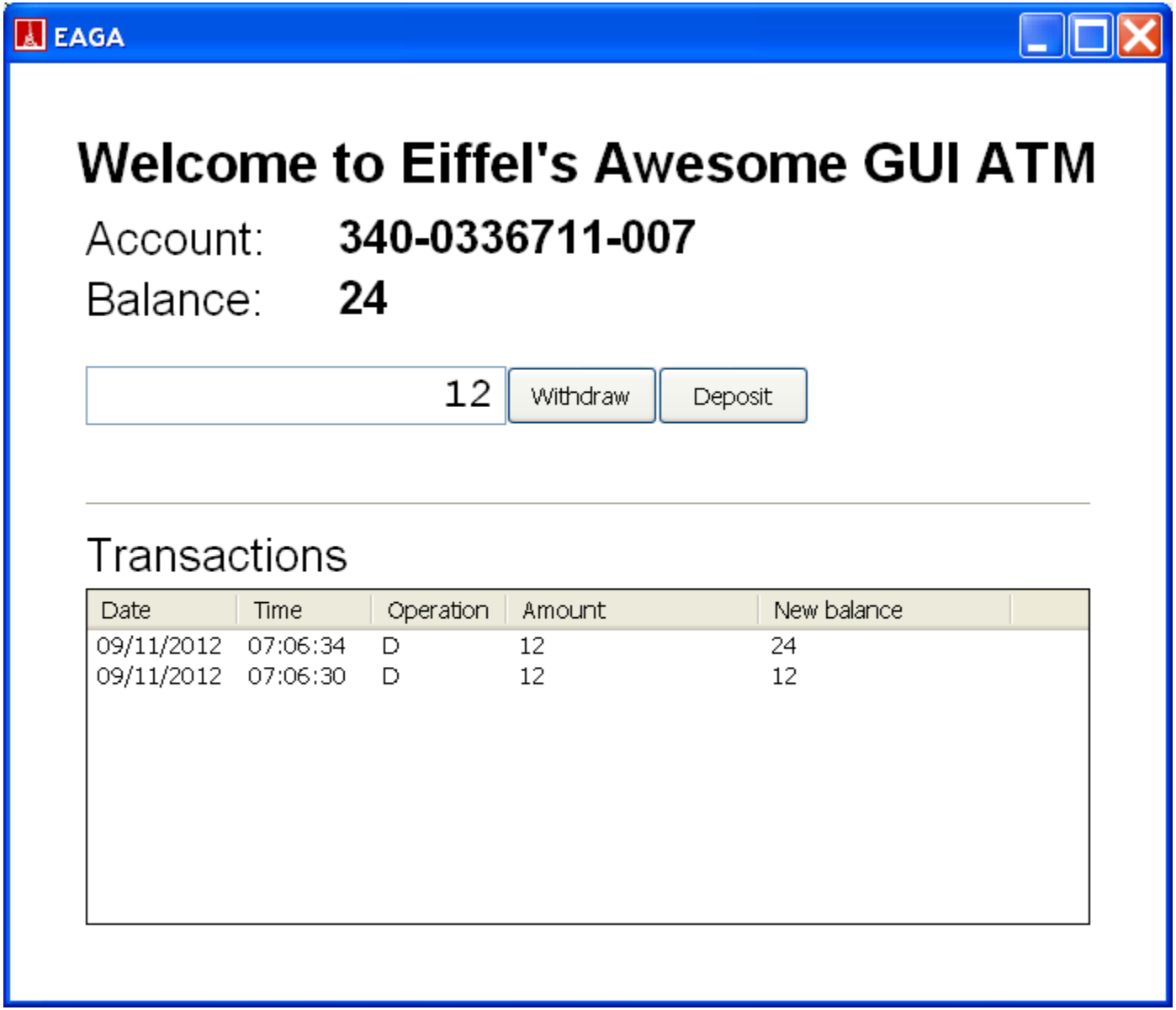
Balance: **24**

12 | Withdraw | Deposit

Transactions

Date	Time	Operation	Amount	New balance
09/11/2012	*08:07:38*	Deposit	12	**24**
09/11/2012	*08:07:33*	Deposit	12	**12**

Or what he also wants …



The system and its environment

- Events table

Type	Event
Incoming	Deposit amount
Incoming	Withdraw amount
Outgoing	Balance modified
Outgoing	Transactions modified
Outgoing	Withdraw error
Outgoing	Deposit error

Components and responsibilities

- Model
  - BANK_ACCOUNT
  - Extension (by inheritance) – TRANSACTIONAL_BANK_ACCOUNT
- View
  - User’s experience
- Controller
  - Handles incoming and outgoing events
  - Incoming : data conversion, data validation, checking preconditions
  - Outgoing: changed model, errors ...

MVC, events and agents

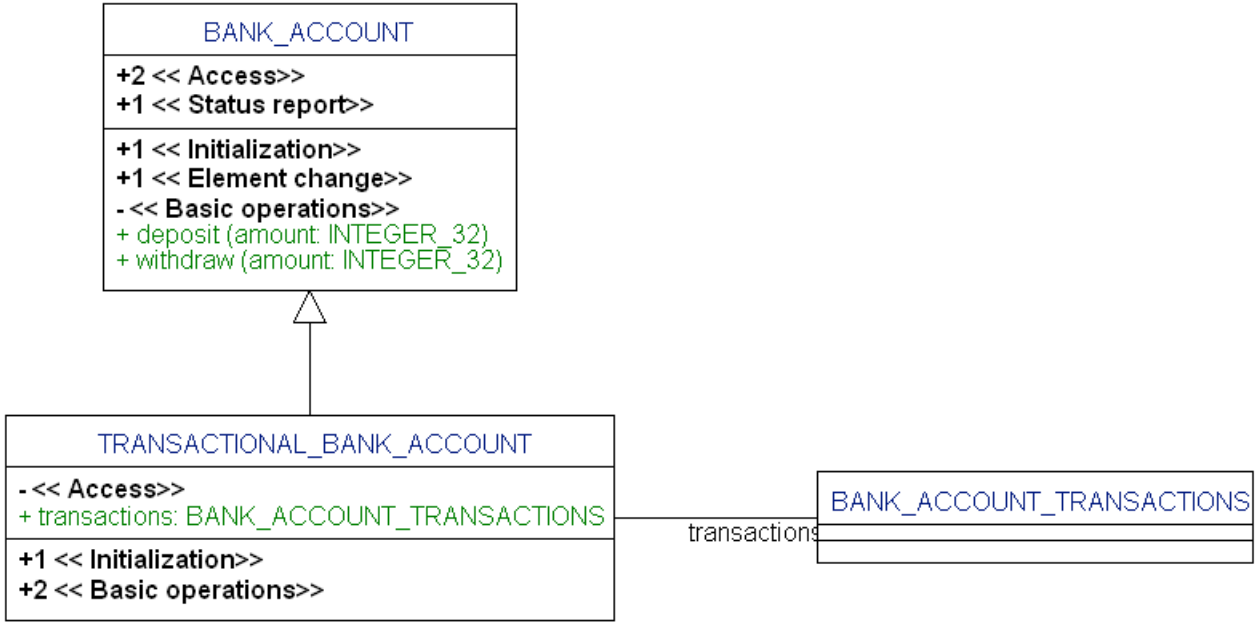
- ACTION_SEQUENCE
  - Objects that represent occurrence of an event
  - They are « activated » when the event occurs
- Example: Vision2

```
focus_in_actions.extend (agent reset_amount)
```

Controller

- Implements the table of events
- Incoming
  - One event = one procedure
- Outgoing
  - One event = one action sequence

Model


BANK_ACCOUNT
+2 << Access>>
+1 << Status report>>
+1 << Initialization>>
+1 << Element change>>
- << Basic operations>>
+ deposit (amount: INTEGER_32)
+ withdraw (amount: INTEGER_32)
TRANSACTIONAL_BANK_ACCOUNT
- << Access>>
+ transactions: BANK_ACCOUNT_TRANSACTIONS
+1 << Initialization>>
+2 << Basic operations>>
transactions
BANK_ACCOUNT_TRANSACTIONS

Exercise 1

- Implement TRANSACTIONAL_BANK_ACCOUNT
- BANK_ACCOUNT_TRANSACTION
  - timestamp
  - action (withdraw, deposit)
  - amount
  - New balance
- BANK_ACCOUNT_TRANSACTION**S**
  - interface

Contrôleur

- BANK_ACCOUNT_CONTROLLER

  Incoming

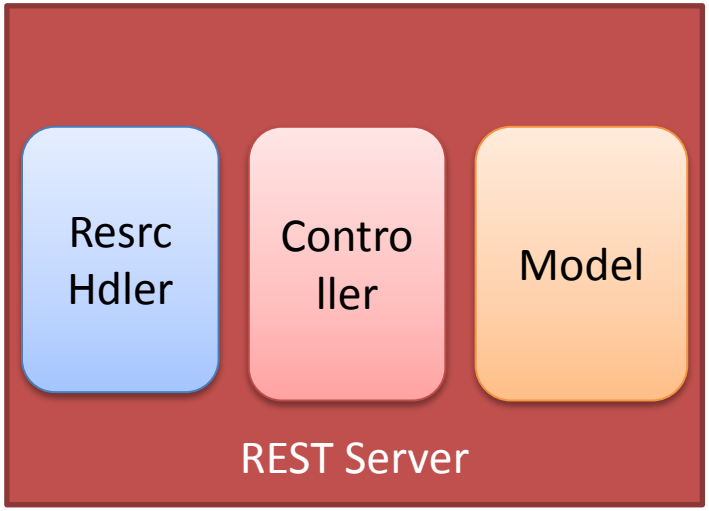
  Outgoing

```
balance_changed_actions:
        ACTION_SEQUENCE [TUPLE [amount: INTEGER_32]]
                -- Actions fired when balance has changed.

invalid_deposit_actions:
        ACTION_SEQUENCE [TUPLE [amount: STRING_8; message: STRING_8]]
                -- Actions fired in case of invalid deposit operation.

invalid_withdraw_actions:
        ACTION_SEQUENCE [TUPLE [amount: STRING_8; message: STRING_8]]
                -- Actions fired in case of invalid withdraw operation.

transactions_changed_actions:
        ACTION_SEQUENCE [TUPLE [new_transaction: BANK_ACCOUNT_TRANSACTION]]
                -- Actions fired when a new transaction has occurred.
```

Controller implementation

- Example : deposit (an_amount: STRING)
- decode an_amount
  1. ERROR : invalid_desposit_actions.call([an_amount, "un message significatif])
  2. OK:
     - Call business service
     - Activate balance change actions
     - Activate new transaction actions with transactions.item

View...



EWF

- $ISE_LIBRARY\
  - contrib**library**\web\framework\ewf
  - contrib***examples***\web\ewf
  - contrib***examples***\tutorial
  - contrib***examples***\web\ewf\restbucksCRUD

Let’s try

- Launch ‘ewf_awesome_atm’ application
- Execute
  awesome-web-atm-js-client\index.html
  with
  - Chrome
  - Firefox