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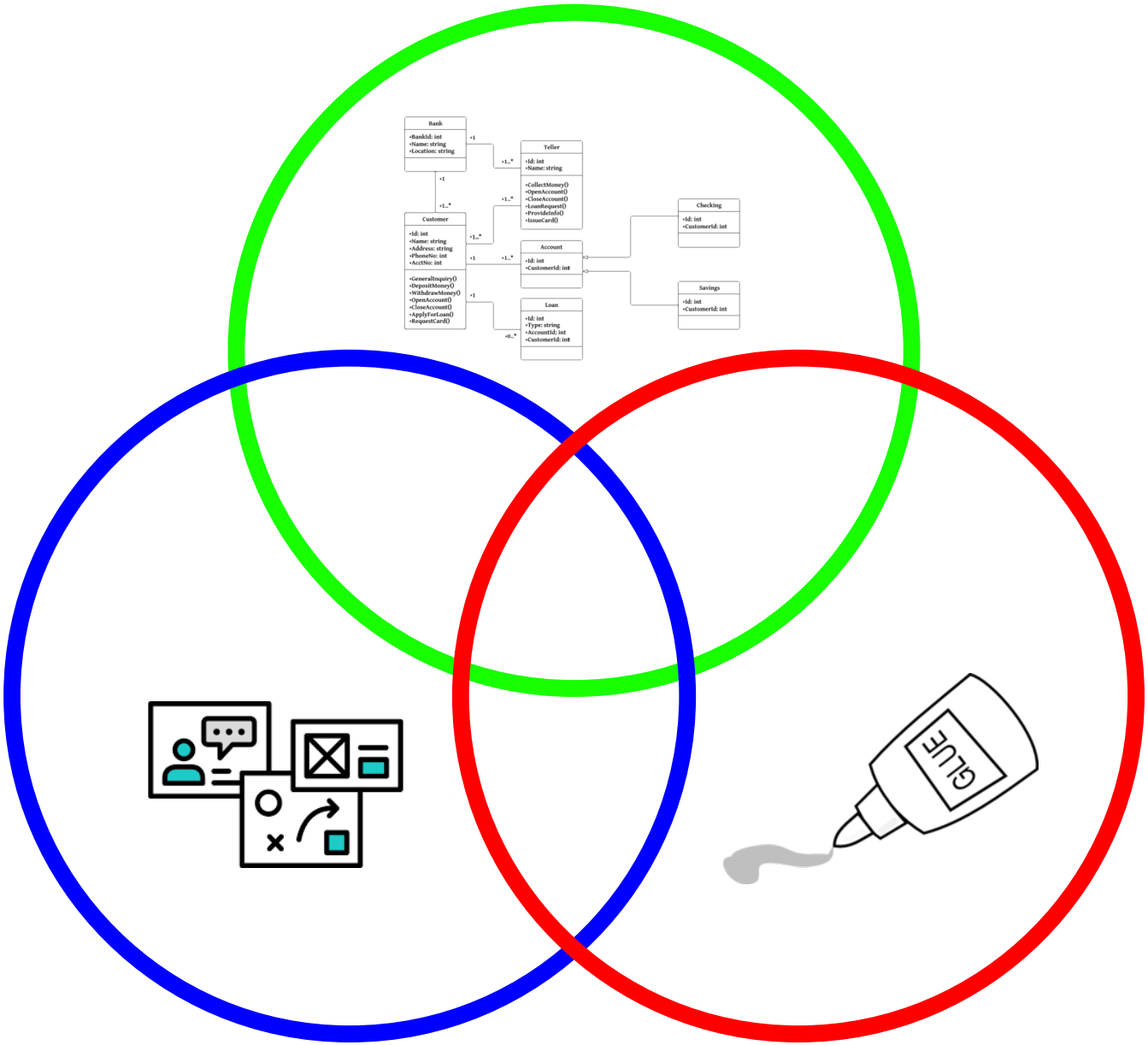
Ingenieurbüro für Bauwesen

apart FRAMEWORK

porting from VisualWorks®

apart FRAMEWORK

- started in late 2016 by Richard Uttner
- support of an existing application
  - per documaps
  - document management
- target:
  - domain-specific solutions
  - database-centric
  - fat clients with platform-specific GUI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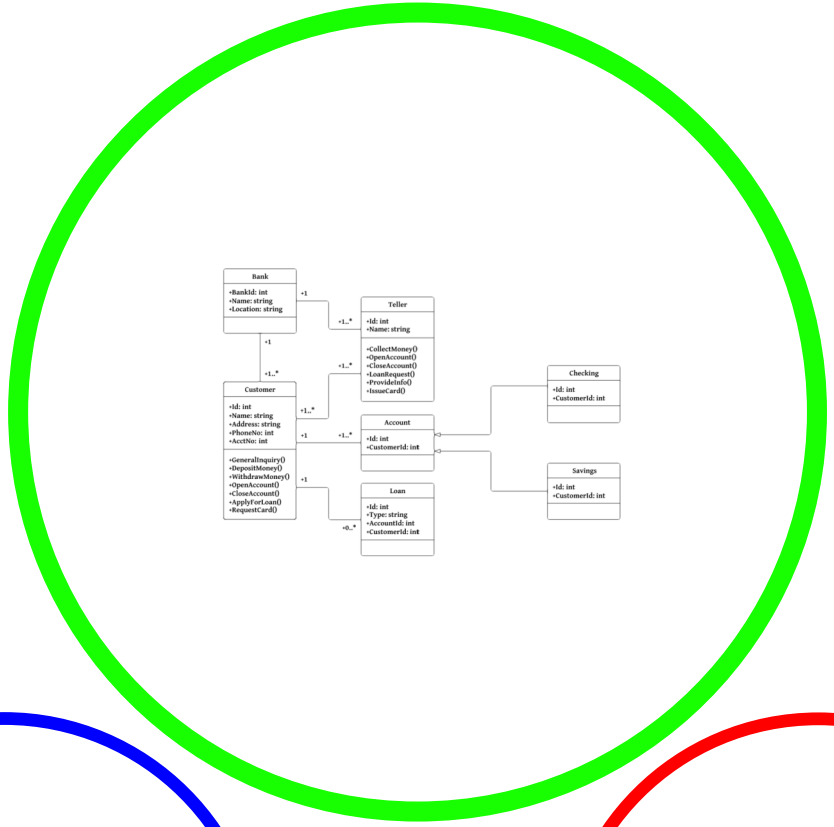
•BankId: int
•Name: string
•Location: string
Teller
•Id: int
•Name: string
•CollectMoney()
•OpenAccount()
•CloseAccount()
•LoanRequest()
•ProvideInfo()
•IssueCard()
Customer
•Id: int
•Name: string
•Address: string
•PhoneNo: int
•AcctNo: int
•GeneralInquiry()
•DepositMoney()
•WithdrawMoney()
•OpenAccount()
•CloseAccount()
•ApplyForLoan()
•RequestCard()
Account
•Id: int
•CustomerId: int
Checking
•Id: int
•CustomerId: int
Savings
•Id: int
•CustomerId: int
Loan
•Id: int
•Type: string
•AccountId: int
•CustomerId: int
GLUE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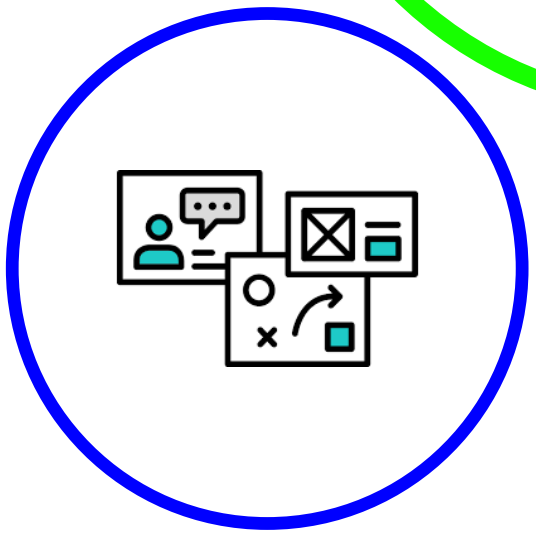
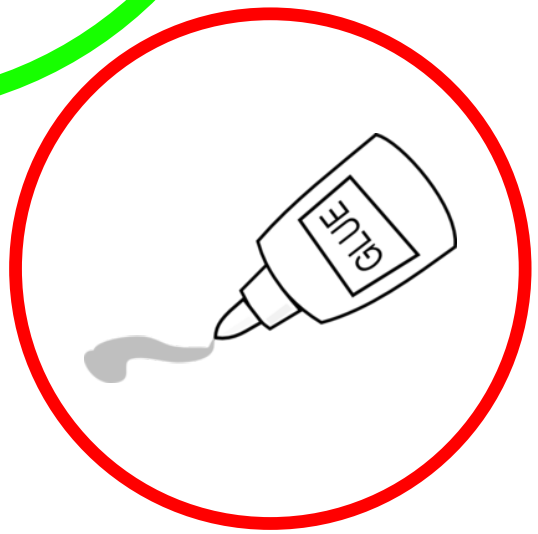



GLUE

goals

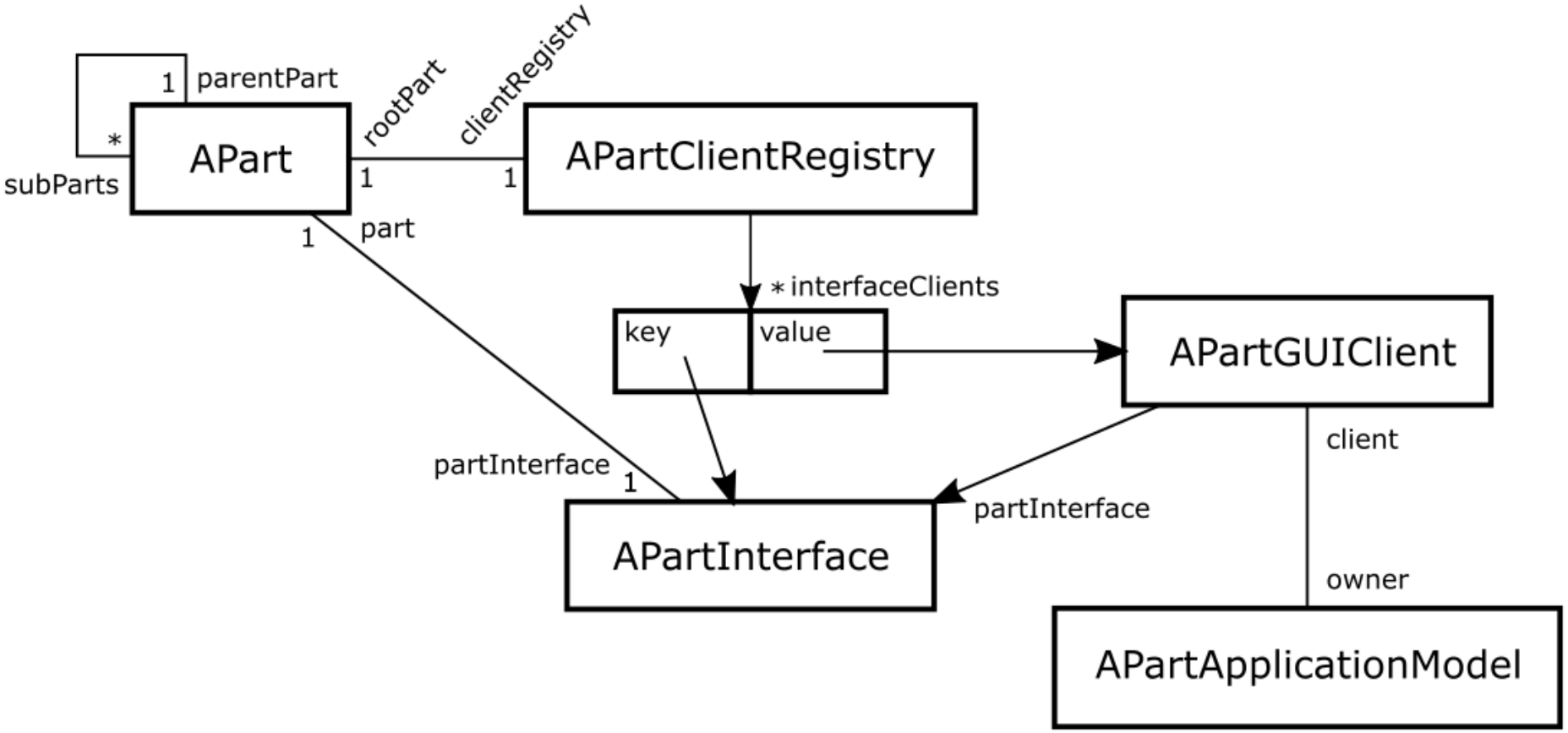
- layers separation
- minimize redundancy, improve re-usability
- minimize work required for the UI and “glue” layers
- improve testability
- support for the common business application patterns
- ...

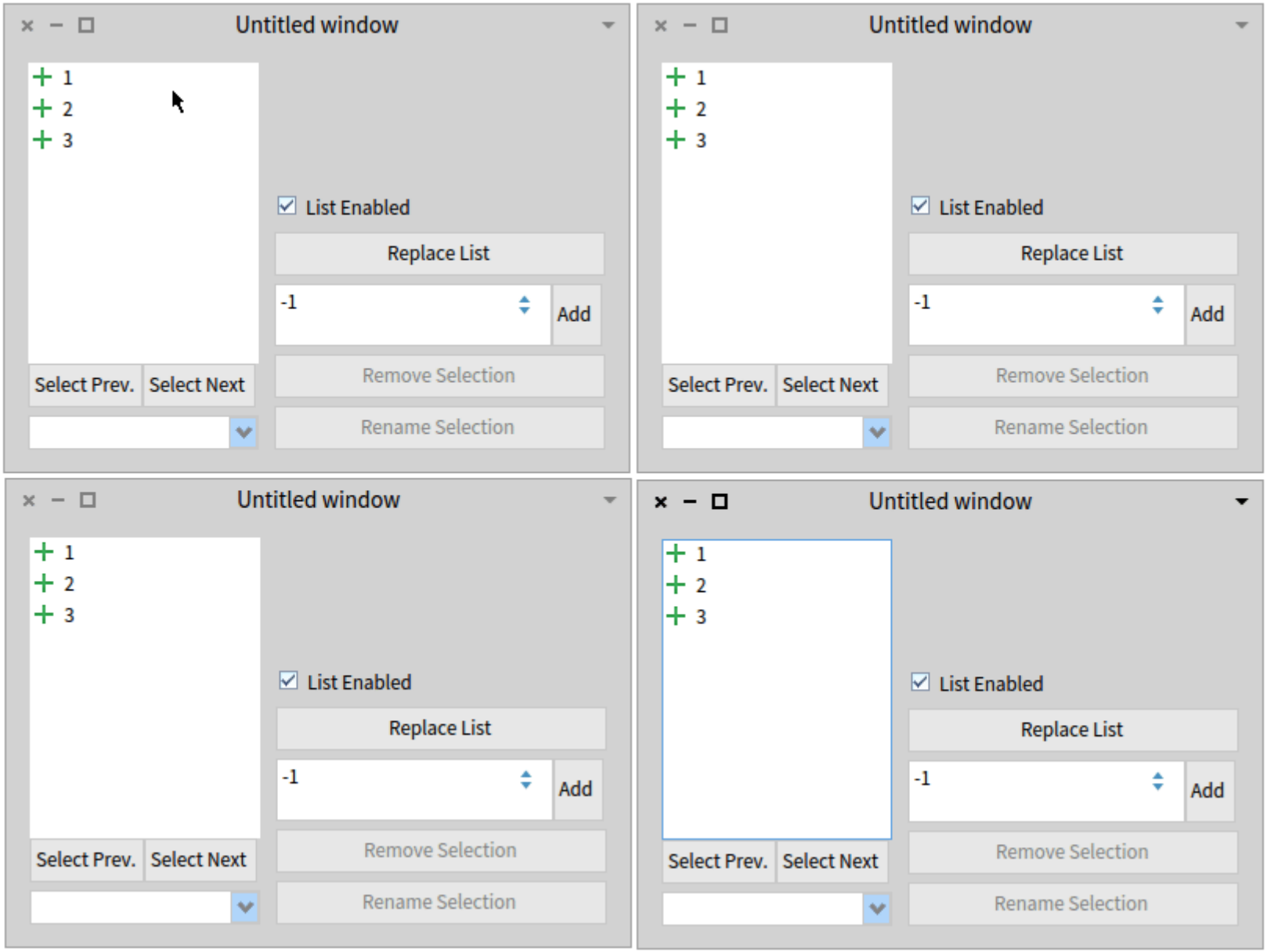
production quality small business application in few days

participants and roles

- modelling level:
  - parts forming the “skeleton” of the application
  - objects exposed by parts (conditions, values, actions)
- UI level:
  - generic GUI clients of the framework
  - application specific objects (widget, models,…)
- “glue” level:
  - arbitrary objects (startup, environment, use cases,...)

Clients separation




Untitled window
1
2
3
List Enabled
Replace List
-1
Add
Remove Selection
Rename Selection
Select Prev.
Select Next
Untitled window
1
2
3
List Enabled
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Replace List
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Remove Selection
Rename Selection
Select Prev.
Select Next

Parts

- data
- aspects (redirections)
- conditions
  - a user can see the reason why something is disabled

```
(APCondition on: [stringField size > 0] ifNot: #StringFieldIsEmpty)
    & self enablementInputEnabled
```

- actions, triggers
- subpatrs

aPart

- predefined parts (for lists, trees...)
- enumerations (combo-boxes, menus...)
- prompts, modal windows
- layouts
- Glorp
- Trachel

use cases

- connected via:
  - their creators (typically parts)
  - framework condition objects
  - part actions
  - callbacks to parts maintaining separation from GUI

- do not reference parts, initialized with objects needed for running
- named callback requests (from the creator)

- workflow editor

clients

- typically just GUI clients
- headless clients, forwarding clients…
- particularly useful for tests
- aPart entities with native support of state changes records
- recording client

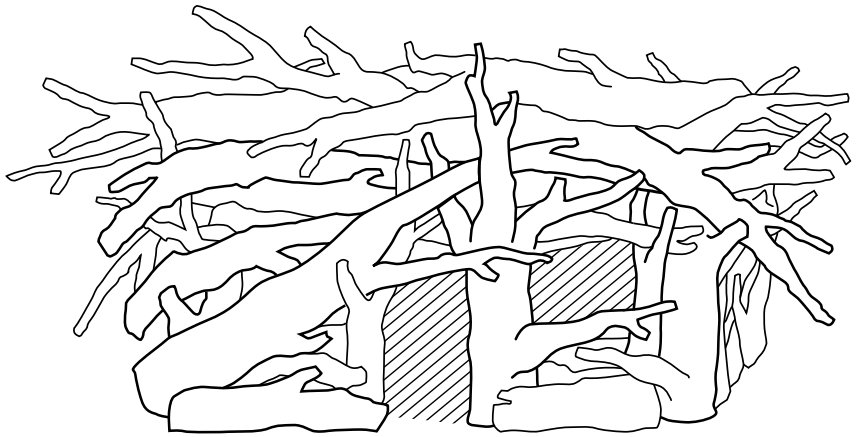
automatic unit tests code generation

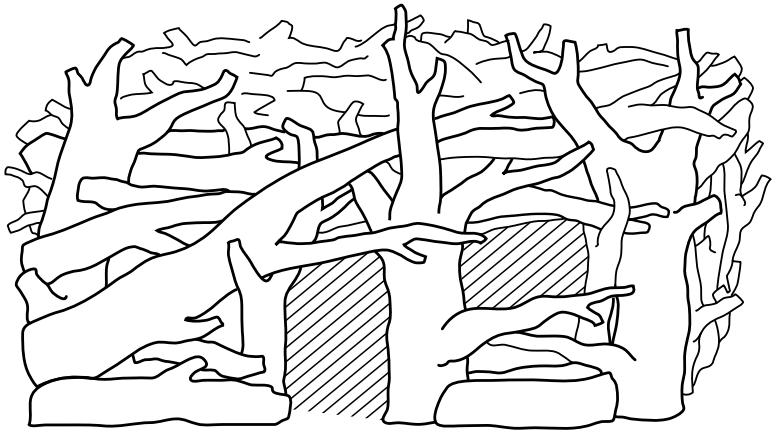
- open recording client on your part with SUTAPInteractionPrinter, manual interaction
- use the generated SUnit test code
- unit tests repeat the interactions, check states
- prompts/multiple windows support

```
self afterDoing: [
        self setAspect: #stringField value: 'foo'. ]
    expectStates: [
        APExpectedStates
            expectAllInactive: #(#clearNumber #confirmNumber #saveData)
            expectAllActive: #(#clearString #confirmString
                #disableInput #intField #stringField) ].
```

framework usage

- developers should prefer the framework
- not always the most straightforward solution





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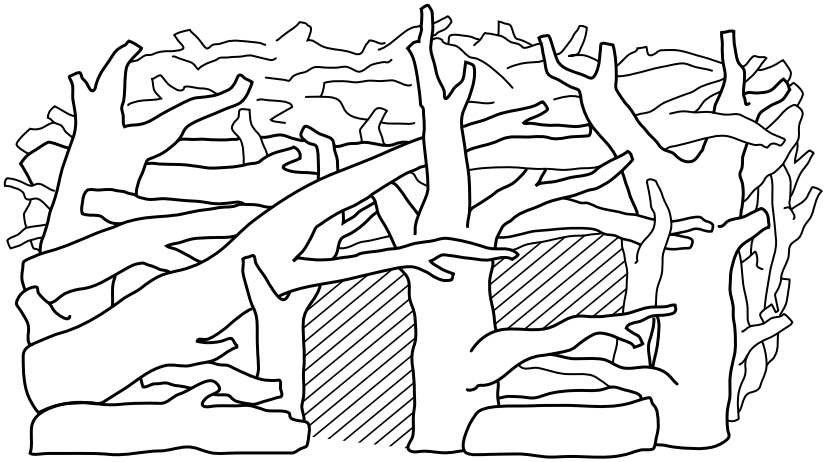
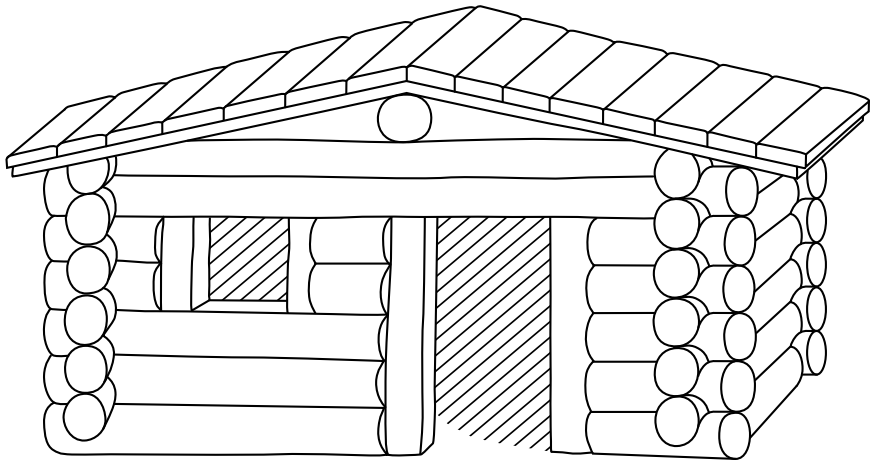
framework usage

- locate functionality?
- dependencies?
- estimations?
- impacts?

- plan
- tools
- additional effort





- from VisualWorks
- part of porting of *per documaps* application
- close collaboration with Pharo Consortium and INRIA (RMoD)

Challenges

- Language differences
  - namespaces

```
Store.Model
UI.Model
```

  - qualified literals

```
#{UI.CheckBoxSpec}
```

  - FFI calls

```
<C:typedef int64_t (*callb_after_send_t)(unsigned char* handlerID,
int PortServerID, unsigned char* inputBuffer, int cbInput)>
```

Challenges

- Semantics differences
  - object initialization (new)
    - inherit from class that behave differently
  - same methods with different behavior (Pragma>>#selector)
  - dependencies mechanism
  - `(#Smalltalk = 'Smalltalk') = false`
  - `'asdf' readStream upToAll: 'd'; upToEnd`
    - 'f' in Pharo, 'df' in VW
  - and many more…

Challenges

- Different code management tools, source formats
  - VW: Store, XML
  - Pharo: Git
- Completely different UI framework
  - UI Painter, different data flow
    - VW: Aspect adaptors
    - Pharo: Value holders

Challenges

- Application strongly Windows oriented
  - first-and-half-class citizen in Pharo
- Application still under active development
  - bi-directional transformation
- Target platform under active development
  - Spec2

Why should you care?

- Most of us will port applications to Pharo

...if you are lucky, from some older Pharo version

Approach

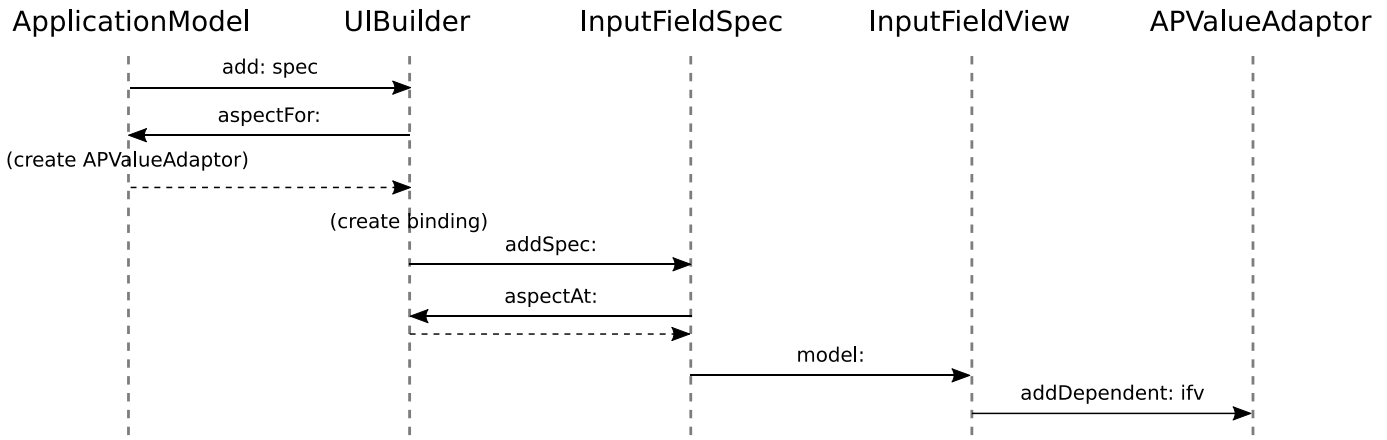
- export code from VW in XML form (*.pst)
  (not stable order, unusable for versioning)
- import into Ring2 model
  - modified scanner & parser
- apply well known code transformations
- store VW metadata (for reverse direction)
- save Ring2 model in Tonel format
- manage with Git
- load into Pharo

Tests!

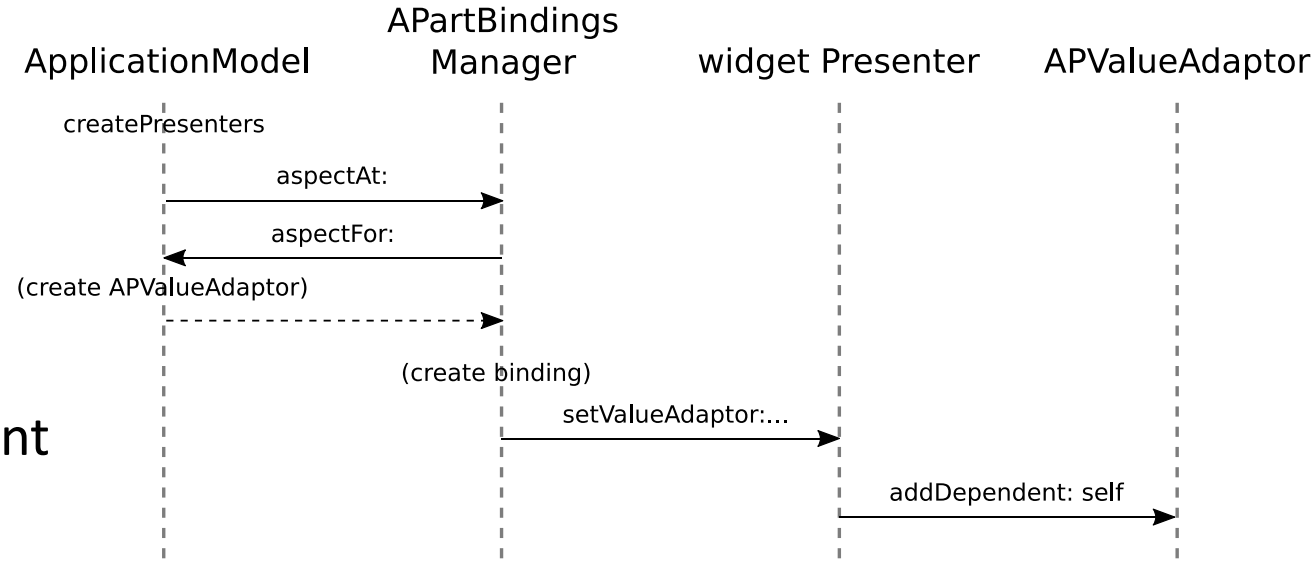
- with so many small hidden incompatibilities, tests are absolutely necessary
- good code coverage, mutation testing, UI tests
- cheap in long term

UI layers adoption

- VisualWorks



- Pharo
  - "compatible" ApplicationModel
  - UIBuilder replacement



Future

- aPart Framework will be open-sourced
- native UI with Spec2 (GTK)
- full-featured reference example including database handling with Glorp
- extended documentation
- workflow editor...

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the side-effect of SCHMIDT, Pharo Consortium and INRIA collaboration