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Test Automation at the user interface level

T est *



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Research center for Software Production Methods (PROS)
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¿What is T^{*}est?





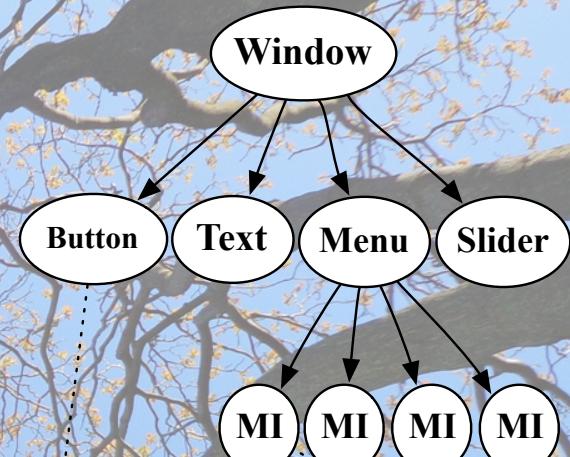
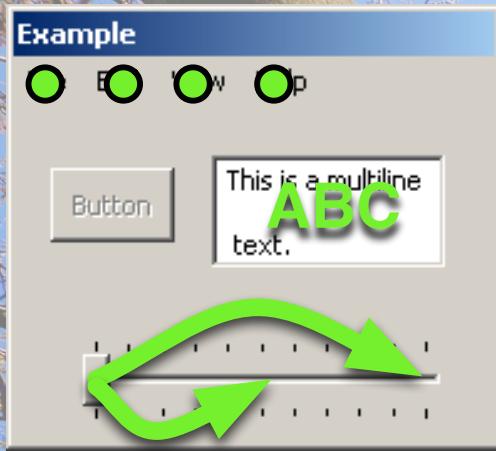
Why is Test* usefull?

- Automated testing at the user interface level
- UI is where everything comes together
- From a user's perspective
- Almost all software has a user interface

¿What **Test*** is not ?

- It is not capture/replay
- It is not visual testing
- It does not generate scripts

What is T*?

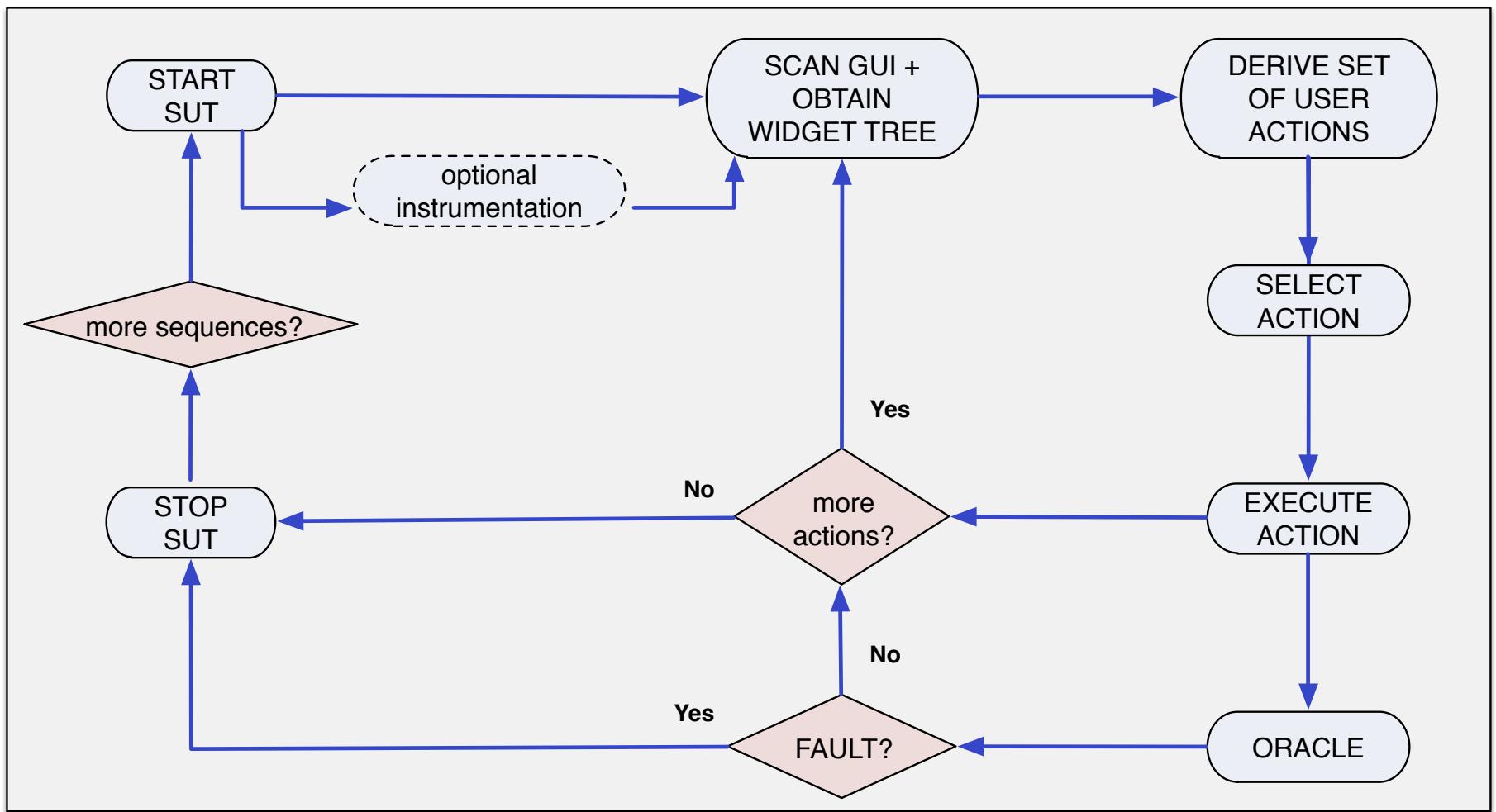
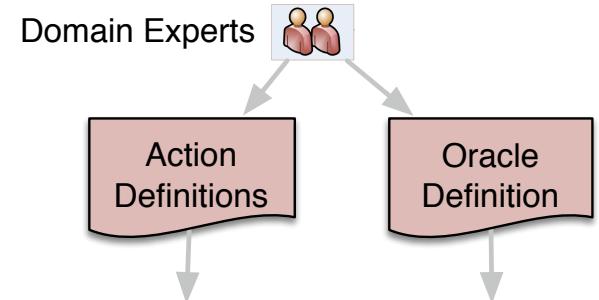


```
type: TButton  
title: "Button"  
enabled: false  
hasFocus: true  
rect: [15, 25, 65, 55]  
...
```

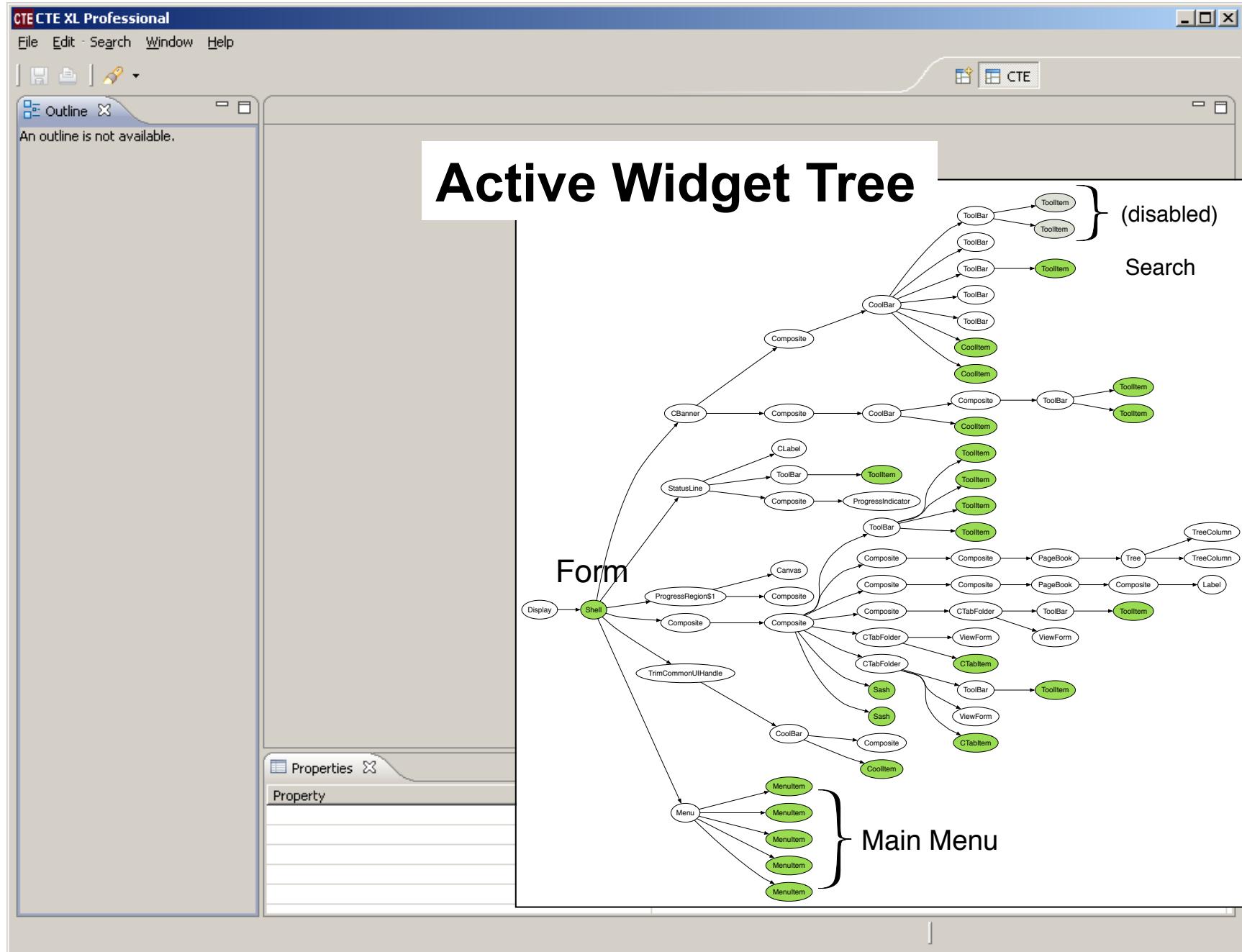
```
type: TMenuItem  
title: "File"  
...
```

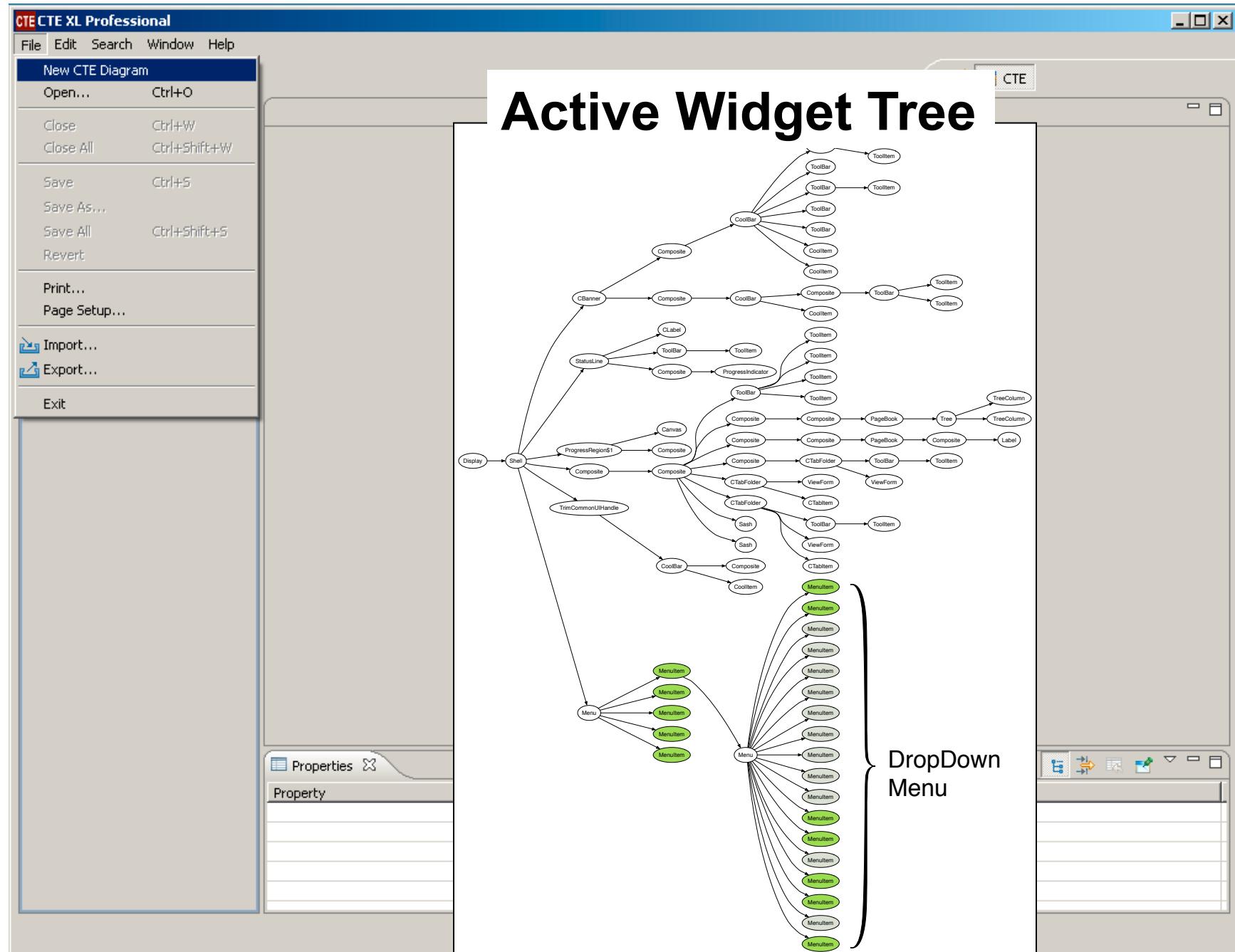
- It infers a model
- Model = widget tree
- Generate sequences of test

How does Test* work?

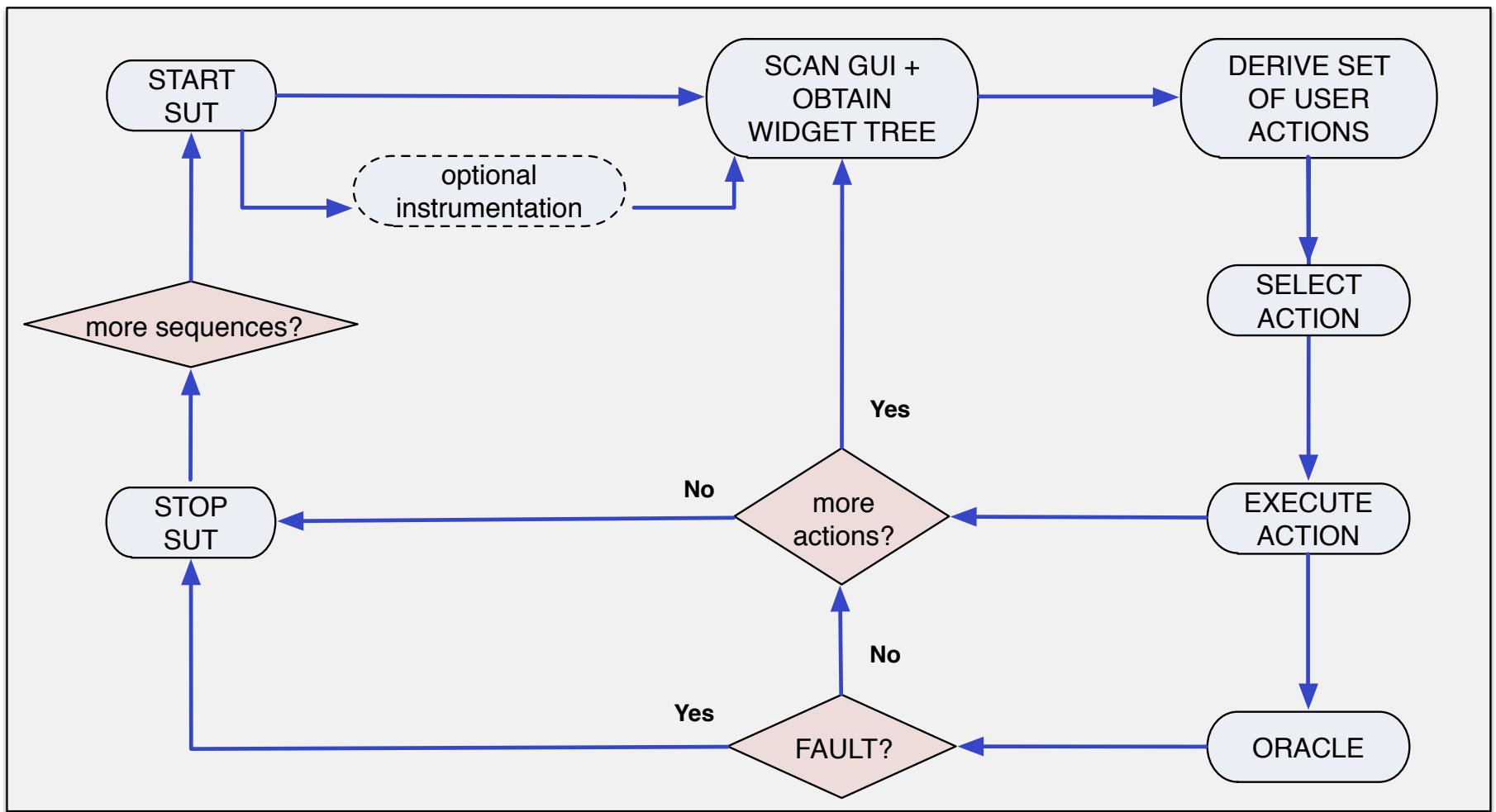
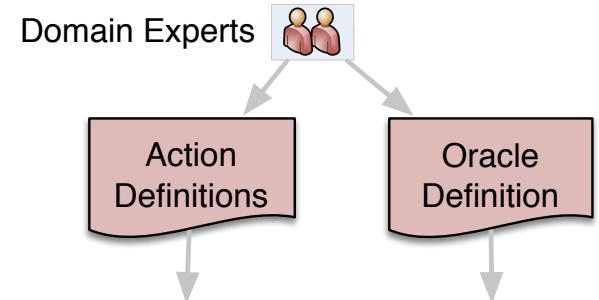


Replayable Erroneous Sequences



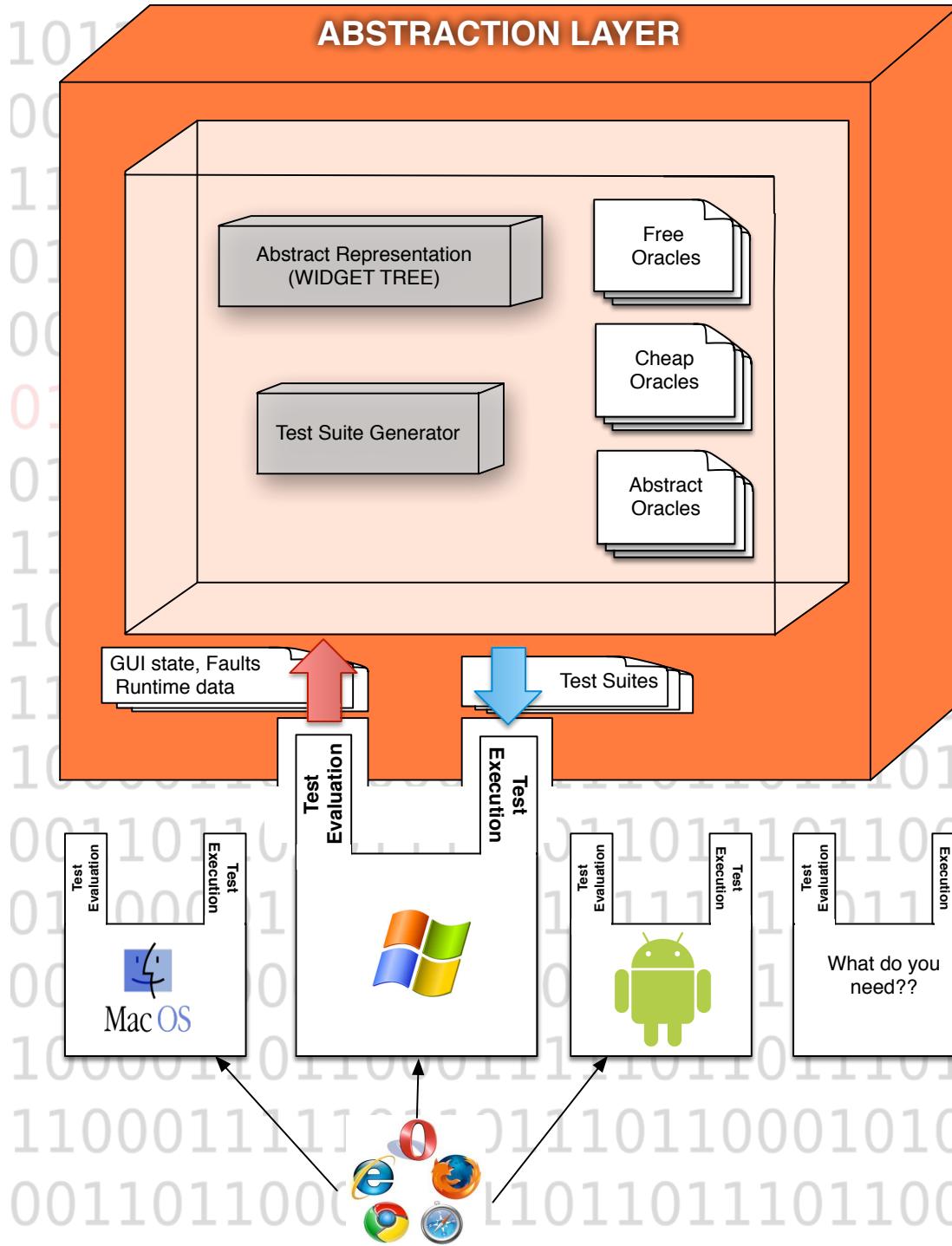


How does Test* work?

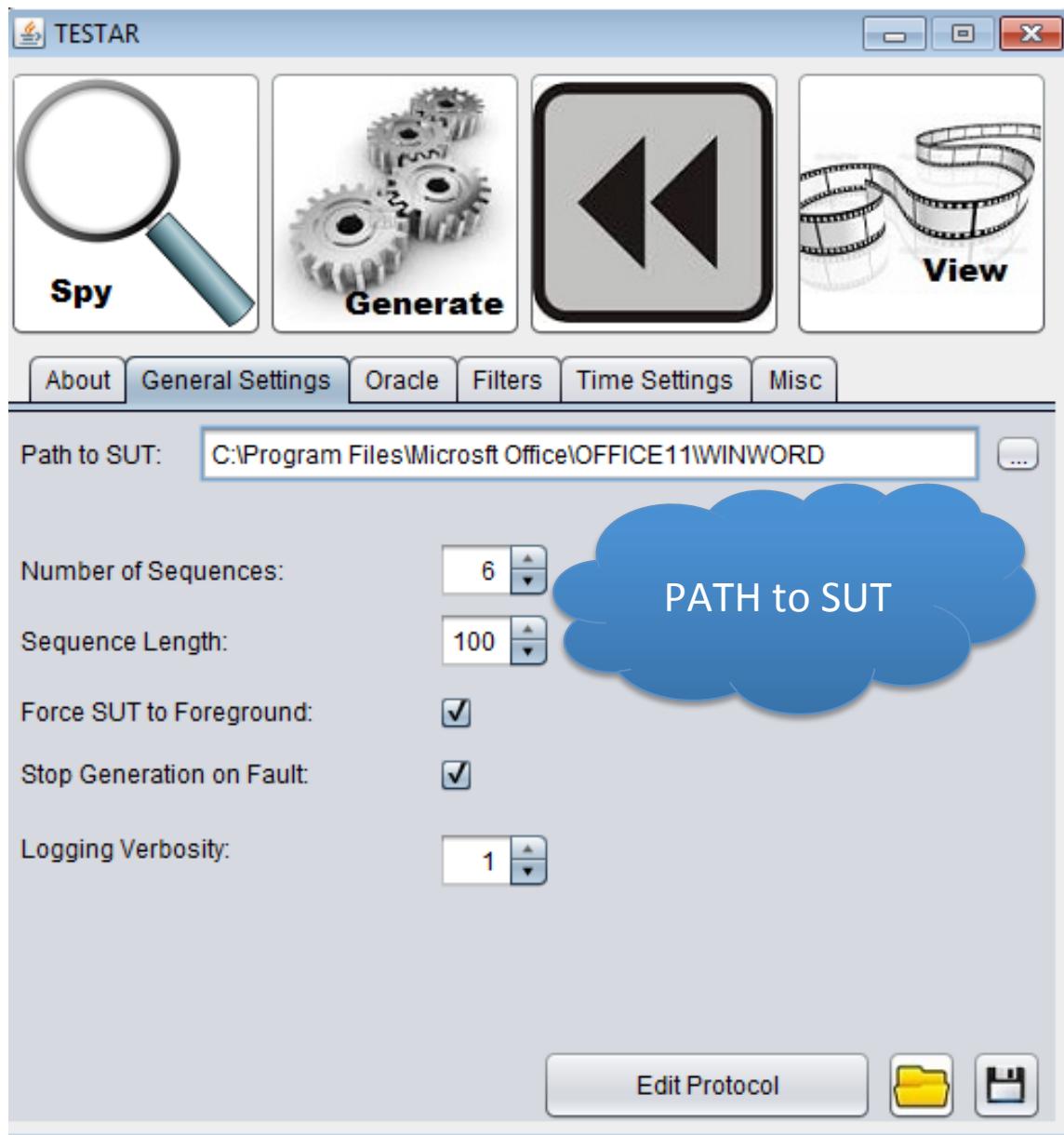


Replayable Erroneous Sequences

Test*
works for
all kinds of
software!



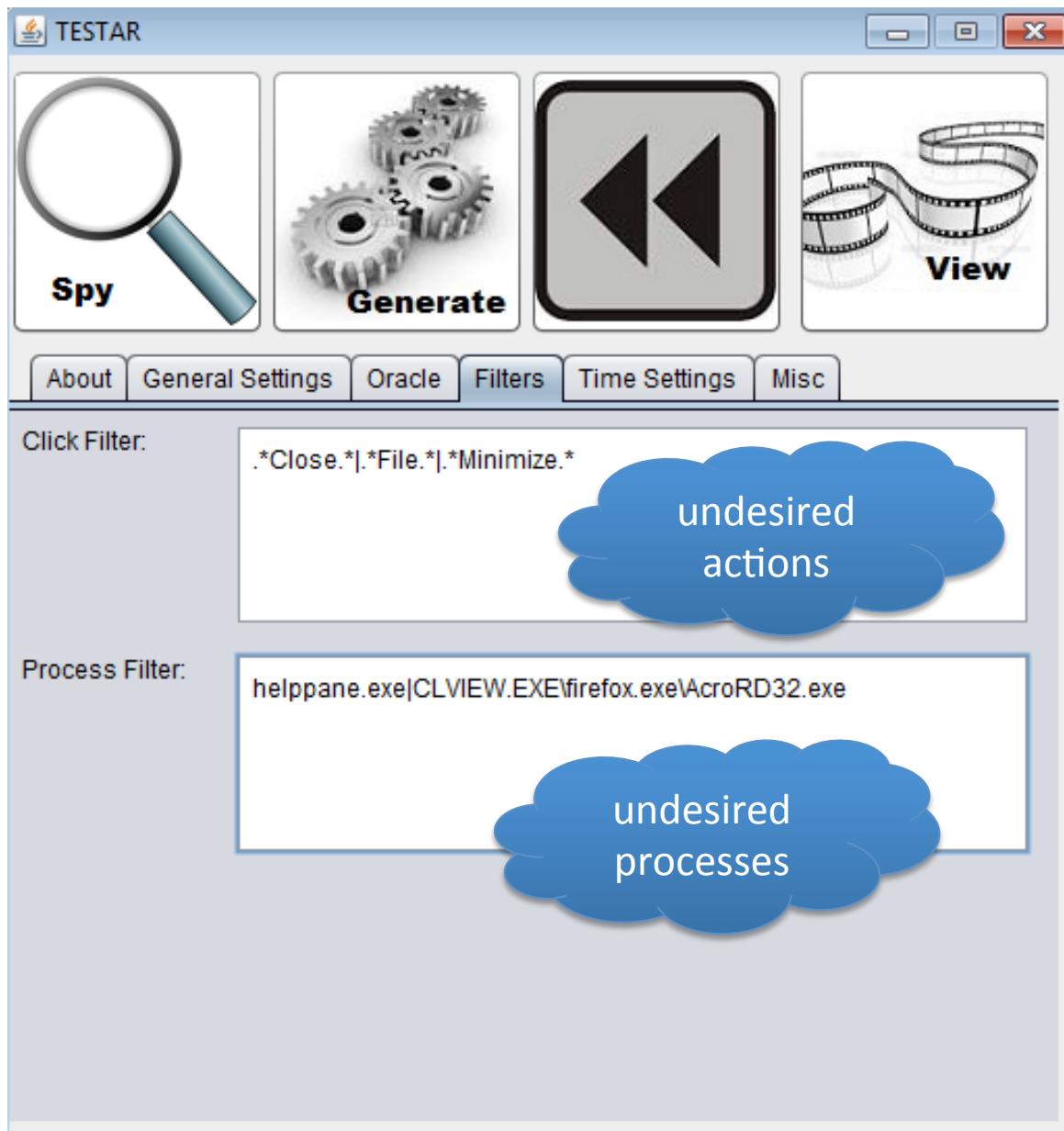
READY



Test*



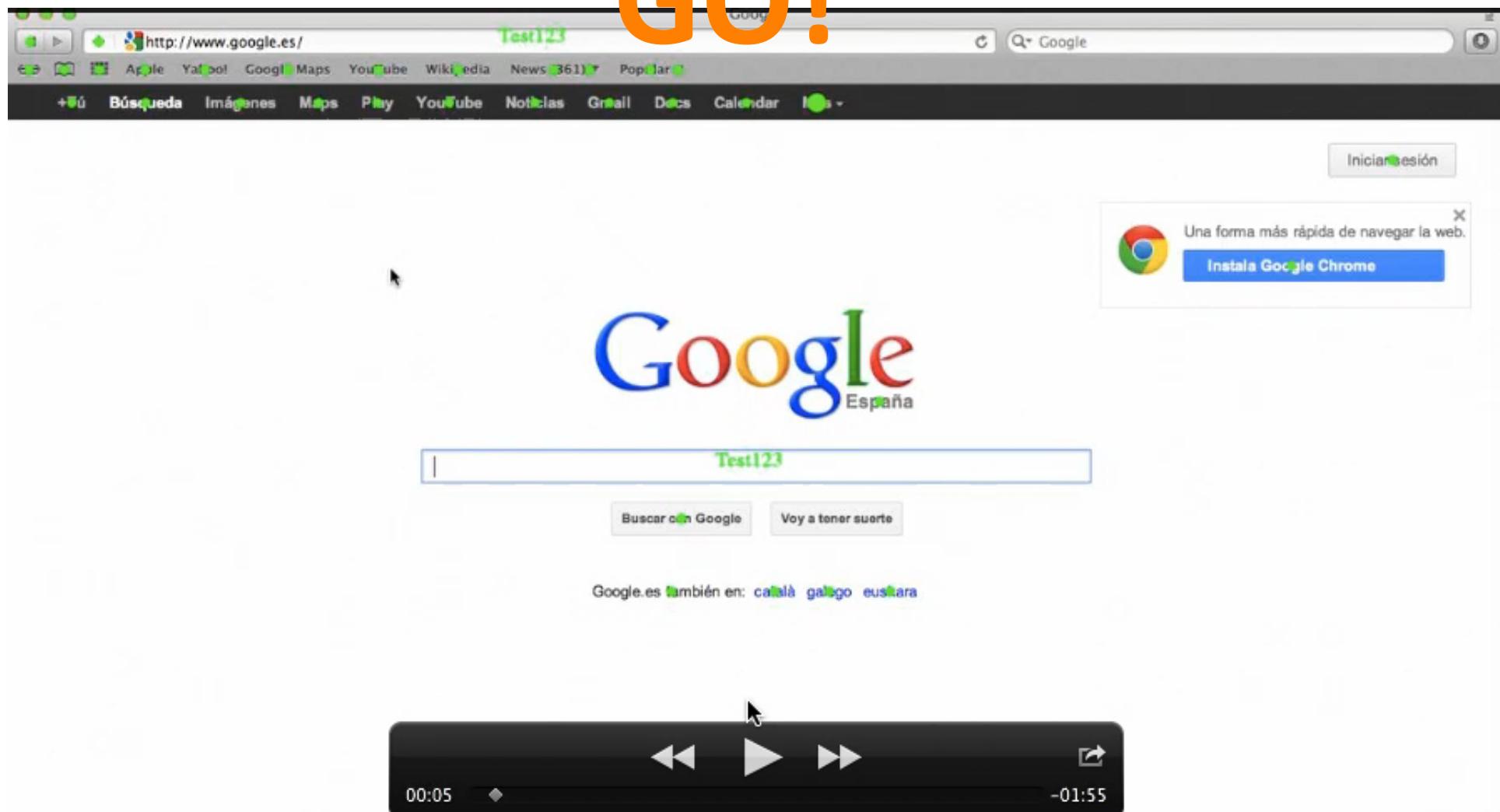
SET



Test*



GO!



iGoogle

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Oracles give verdicts about each state of the GUI

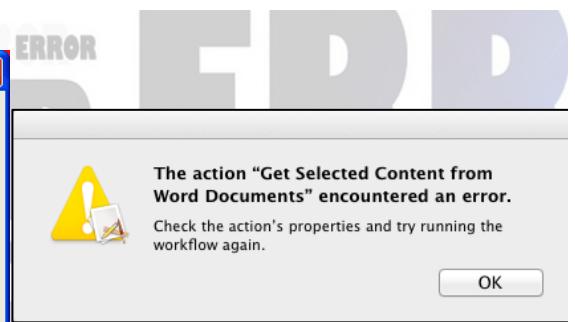
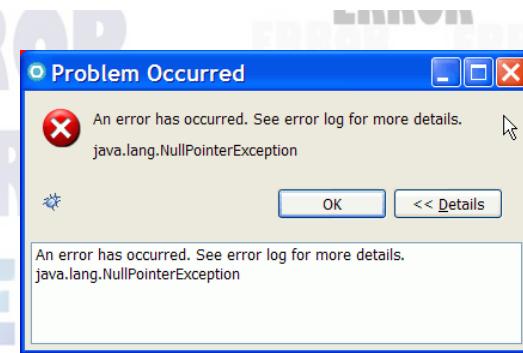
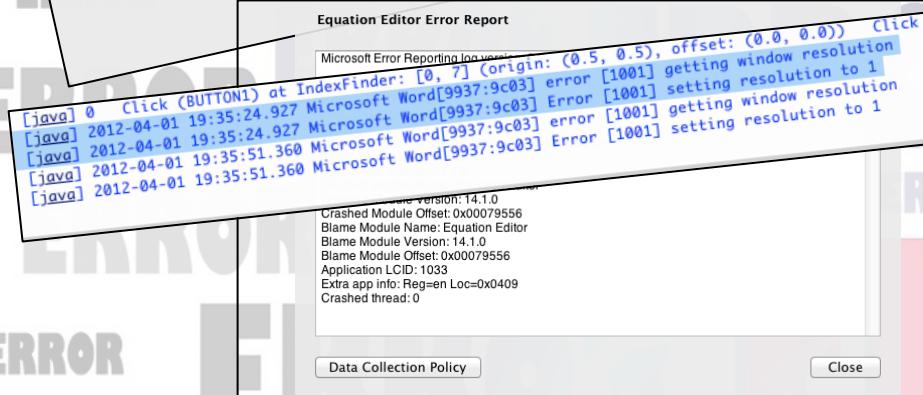
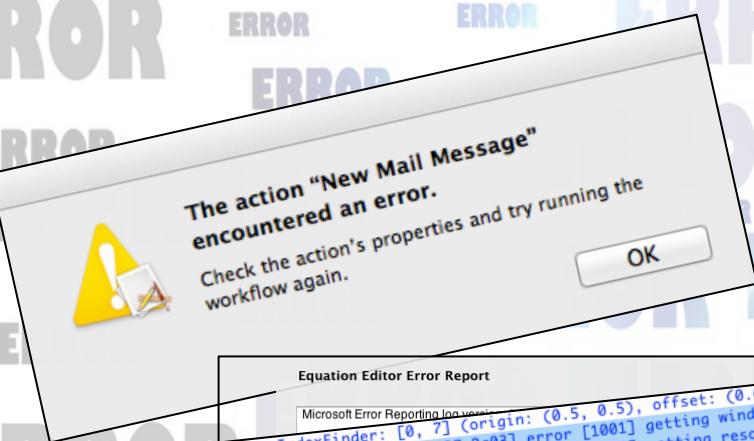


100% Automated oracles

```
Verdict oracle_Crash (State state){  
    if(!state.get(IsRunning, false))  
        return new Verdict("System crashed!");  
}
```

```
Verdict oracle_Responsiveness (State state){  
    if(state.get(NotResponding, true))  
        return new Verdict("System not responding!");  
}
```

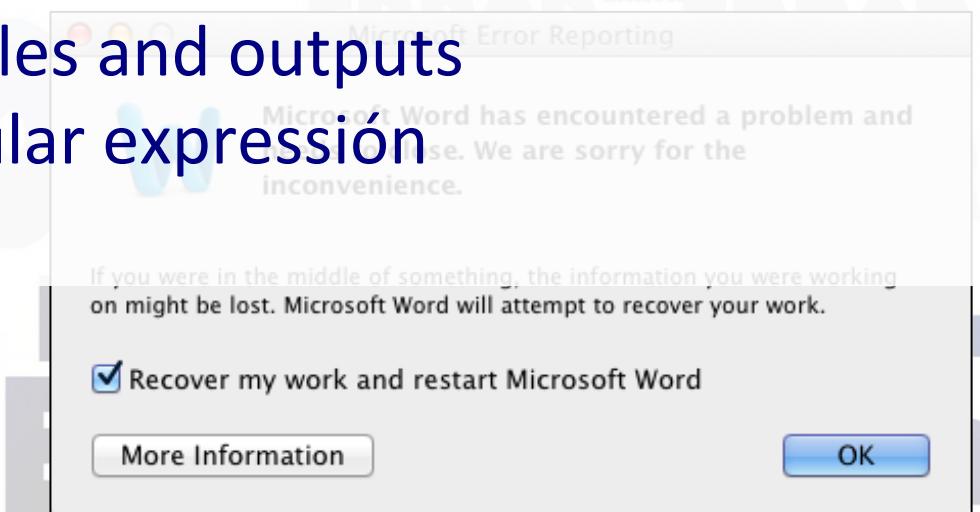
- Crashes
- Hangs



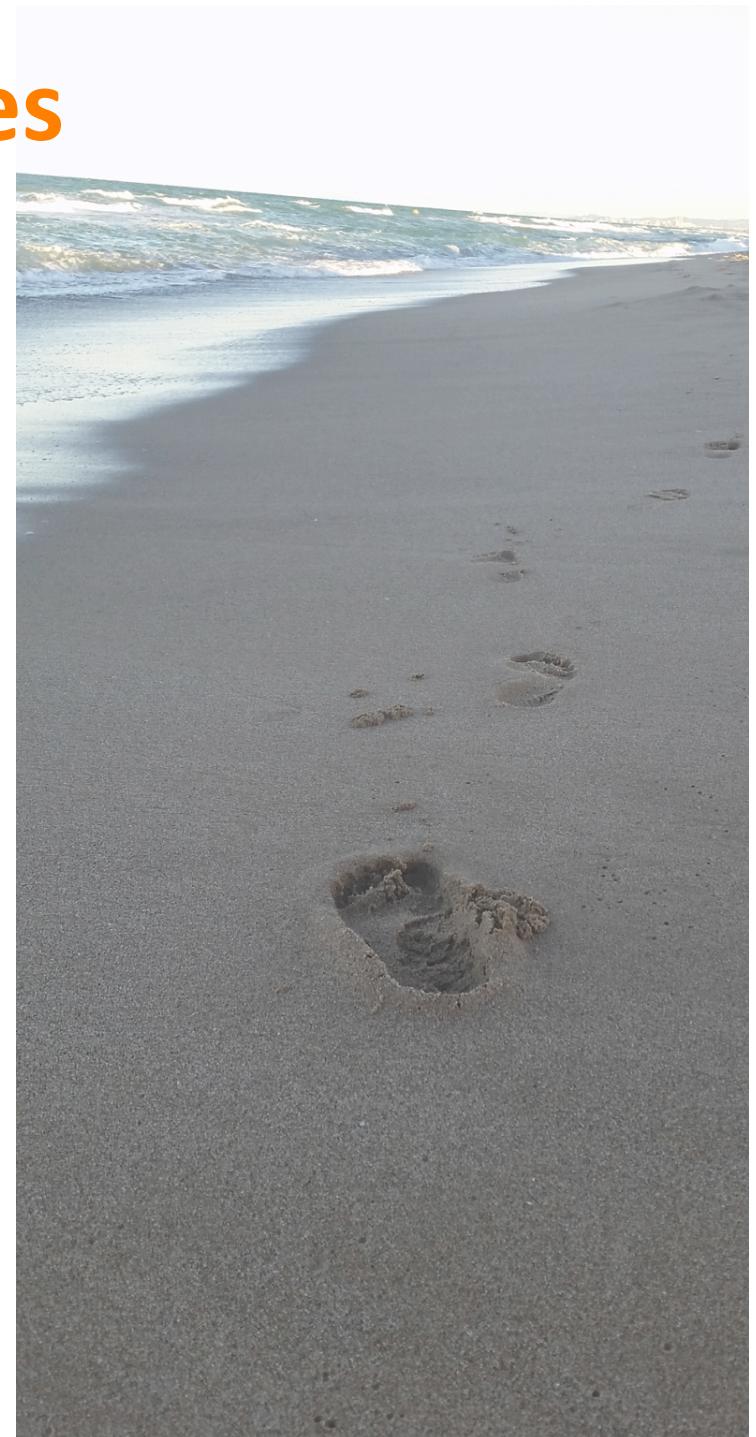
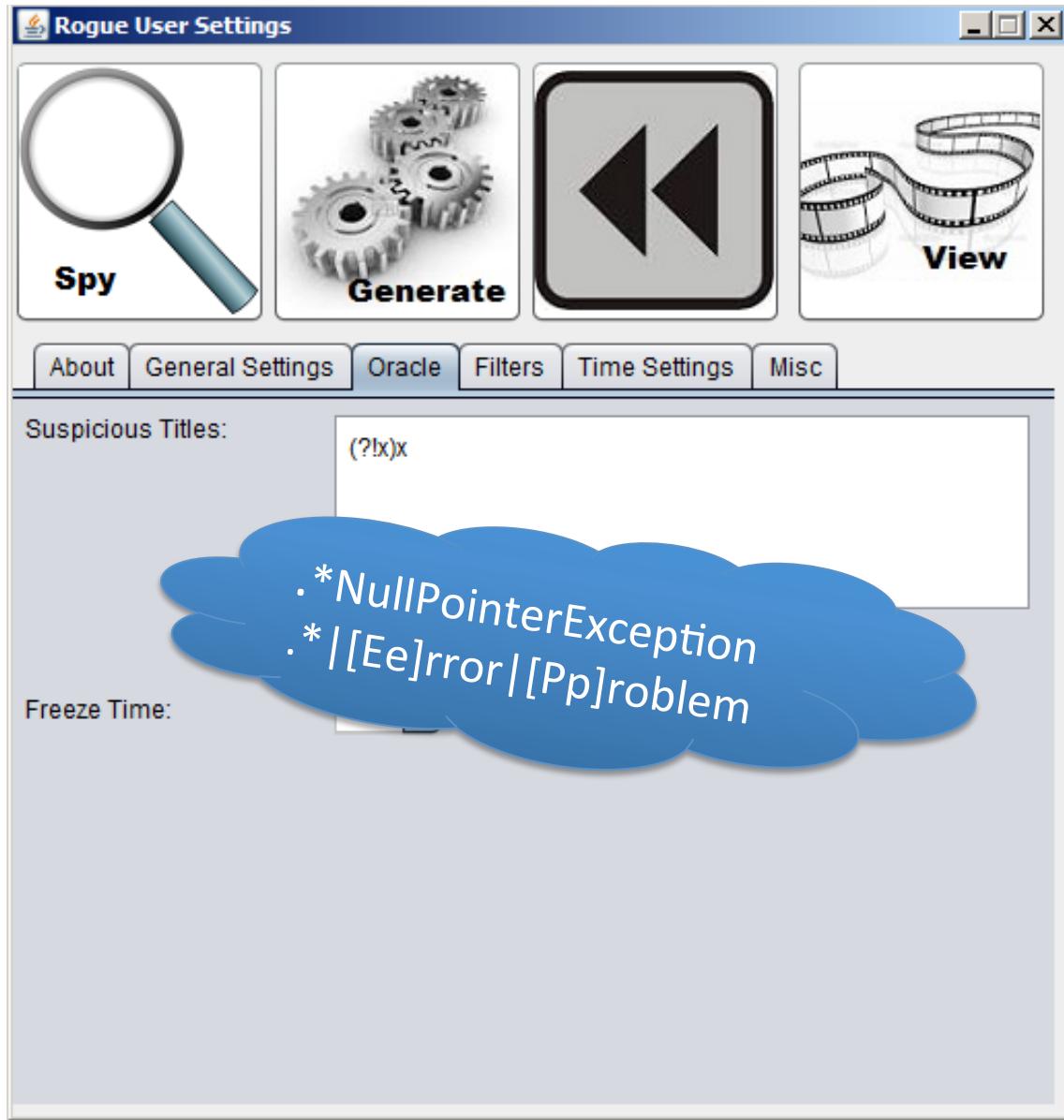
There is insufficient memory. Save the document now.

OK

- Oracles for suspicious titles and outputs
- Specify them with a regular expression



Oracle – Suspicious titles



```
Verdicts oracle_SuspiciousTitles(State state){  
    verdicts = new Verdicts();  
    String regEx = settings().get(SuspiciousTitles);  
  
    // search all widgets for suspicious titles  
    for(Widget w : state){  
        String title = w.getTitle, "";  
        if(title.matches(regEx)){  
            verdicts.add(new Verdict("suspicious title.."));  
        }  
    }  
    return verdicts;  
}
```

Oracle – Suspicious titles (under the hood)

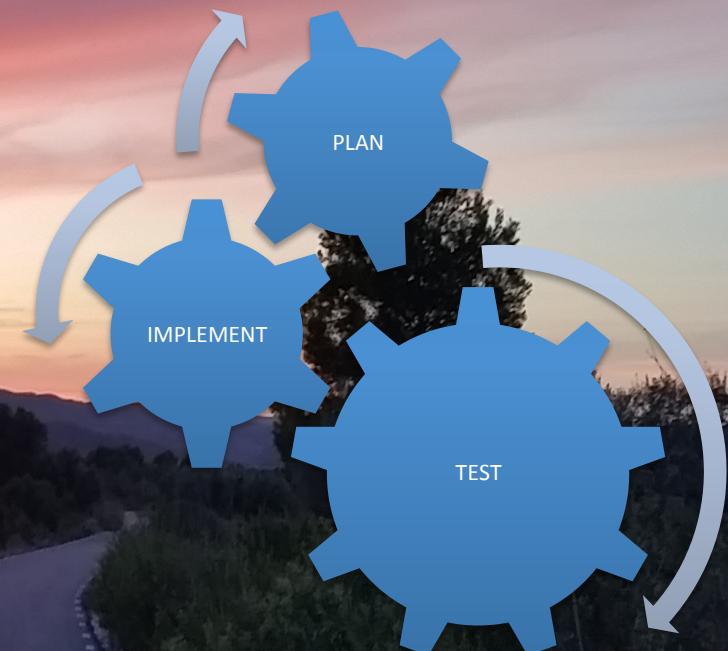
```
Verdicts oracle_ImagesWAI(State state) {  
    verdicts = new Verdicts();  
    for(Widget w : state){  
        Role role = w.get(Tags.Role);  
        if (role.equals("UIAImage") && title.isEmpty())  
            verdicts.add(new Verdict("Not all images have an  
                alternate textual description"));  
    }  
    return verdicts;  
}
```

Add any oracle by additional programming

Test*

How to deploy **Test*** ?

- Plan
- Implement
- Test



How was **Test*** used?

Test

- Microsoft office
- Test the test tool TESTONA (eclipse based)
- ERP desktop
- Aplicaciones web



CONTACT US



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