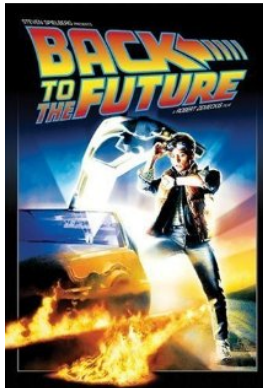


Introducing the Rappture Toolkit

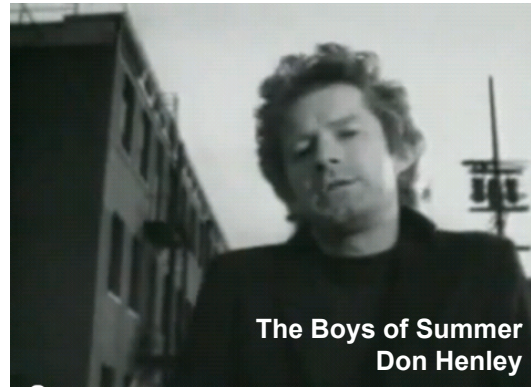
Michael McLennan

*HUBzero® Platform for Scientific Collaboration
Purdue University*

Take a trip back to 1985...



Copyright Universal Pictures picture from imdb.com



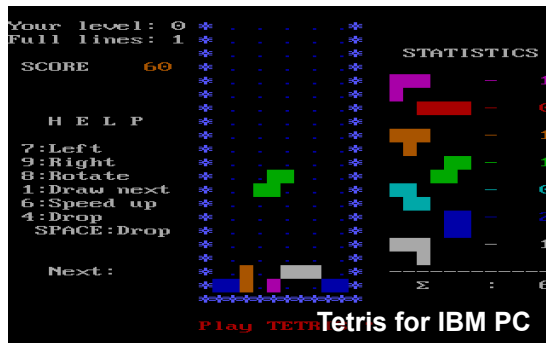
The Boys of Summer
Don Henley

Video still from YouTube.com



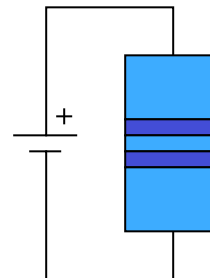
Superbowl XIX: 49ers vs Miami

Video still from Hulu.com



Screen shot from Wikipedia.org

Semiconductor Electrostatics QUantum AnaLysis SEQUAL 2.1 - 7862 lines of Fortran 77



Resonant
Tunneling
Diode

```

----- XXXX XXXX XXXX XX XX XXXX XX -----
XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX SEQUAL 2.1
XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX Purdue University
-- XXXX XXXX XXXX XX XXXX XX XX XXXXXX August 1988

SEQUAL: input deck

title equal the hard way
* input file has units in angstroms
scale cm=1.0e8
input file=rd.dat format=ascii
device temp=300.0 area=1.0 bias=0.0
output show=graph input=rd.o state=prop
print tcoeff=to-1 format=+ format2=+ verbose=true
output file=rd.dat

(Executing a total of 1 calculation(s).) page 2
SEQUAL 2.1 calculation 1 of 1 Summary of input information

equal the hard way

left contact -----
* Multi object: 0.1800000E+08 /cm=1
* effective mass: 0.0700000E-01 m0
* EF - EC: 0.2500000E+00 eV

Nodes -----
switch: -----
* 0.0 Angstrom
* 1 1 1 temperature: 300.0000 K
* 1 1 1 cross-sectional area: 1.0000000E+02 cm=2
* 1 1 1 bias applied to structure: 0.0000000E+00 V
* 1 1 1 propagating electron flux: 1.0000000E+01 m0
* 1 1 1 intrinsic carrier conc.: 0.1700000E+01 /cm=3
* 1 1 1 electronic status are: propagating
* 1 1 1
* 1 1 1
* 1 1 1 430.0 Angstrom
29) -----
right contact -----
* Multi object: 0.1800000E+08 /cm=1
* effective mass: 0.0700000E-01 m0
* EF - EC: 0.2500000E+00 eV
    
```



Now back to the present...



Magnetic Tape: \$10

```
----- XXXX XXXXX XXXX XX XX XXXX XX -----
      XX XX XX XX XX XX XX XX XX
----- XXX XXXX XX XX XX XX XXXXXX XX -----
      XX XX XX X XX XX XX XX XX XX
-- XXXX XXXXX XXX X XXXXX XX XX XXXXXX -----

SEQUAL 2.1
Purdue University
August 1988

SEQUAL: input deck

title sequal the hard way
# input file has units in angstroms
scale cm=1.0e8
input file=rtd.dat format=zeudmk
device temp=300.0 area=1.0 bias=0.0
solve itmax=0 prec=3 inject=r-to-1 states=prop
print tcoeff=r-to-1 format1=* format2=* verbose=true
output file=rtd data=t

Executing a total of 1 calculation(s).
1SEQUAL 2.1
calculation 1 of 1
```

Fortran
F77



```
0.10000000E+20 /cm**3
0.67000002E-01 m0
0.25040463 eU

erature: 300.0000 K
al area: 1.0000000 cm**2
ructure: 0.0000000 U
tron Et: 1.0000000 Kb T
r conc.: 0.17900000E+07 /cm**3

tes are: propagating
```



Live Tool: Priceless

Device: 2-barrier device [Simulate] About this tool Questions?

Ambient temperature: 300K
Applied bias: -1.0V

Result: Transmission Coefficient

Thickness B1: 5nm
Thickness W: 5nm
Thickness B2: 5nm

10.0 RANKING

Intermediate-Advanced

1185 user(s), detailed usage

2 questions (Ask a question)

2 review(s) (Review this)

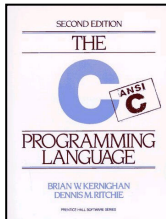
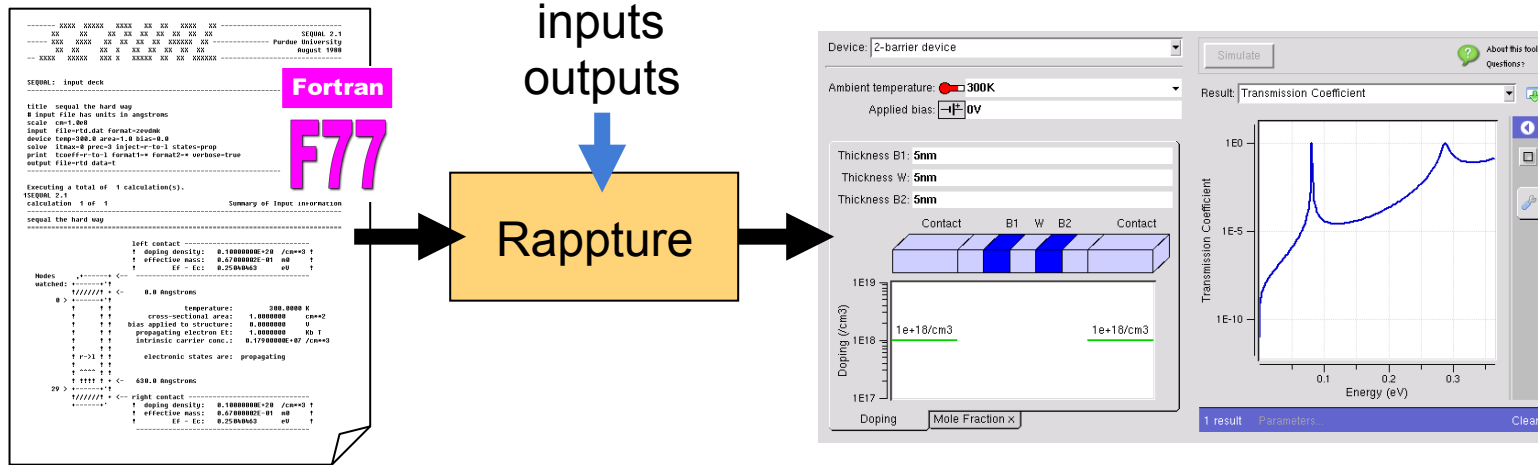
0 wish(es) (Add a new wish)

4 Citation(s)

Add to your favorites!

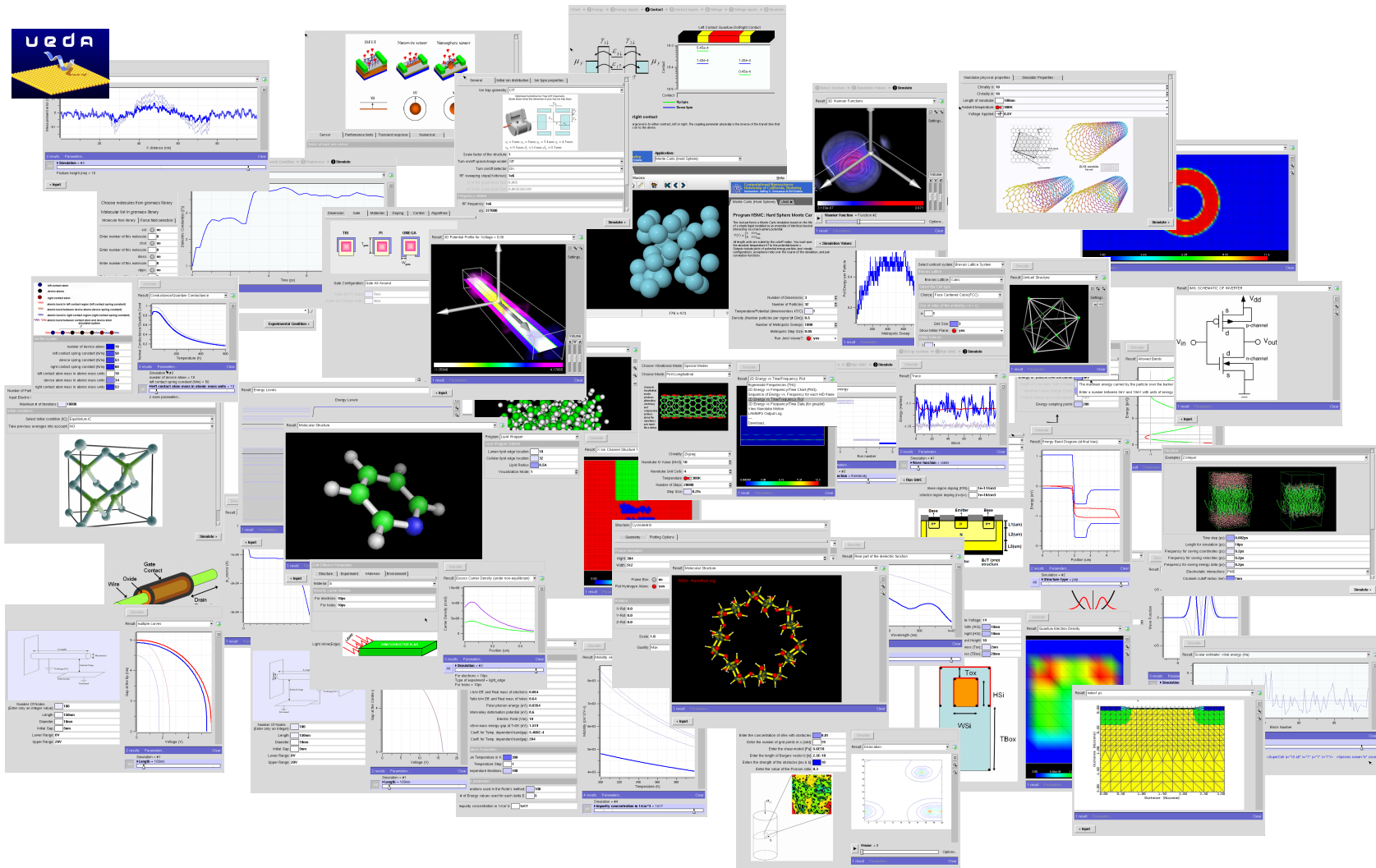
Share: [Facebook] [Twitter] [Google+] ...

Introducing: The Rappture Toolkit



- Rapid Application Infrastructure
- Released in May 2005
- Open Source (rappture.org)
- Create standard desktop apps
- Works with your favorite programming language

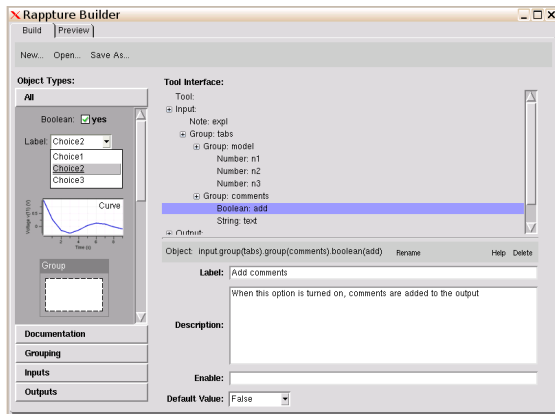
Used to deploy hundreds of tools



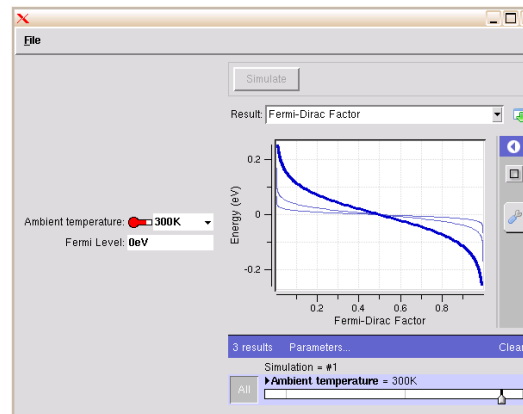
Three parts



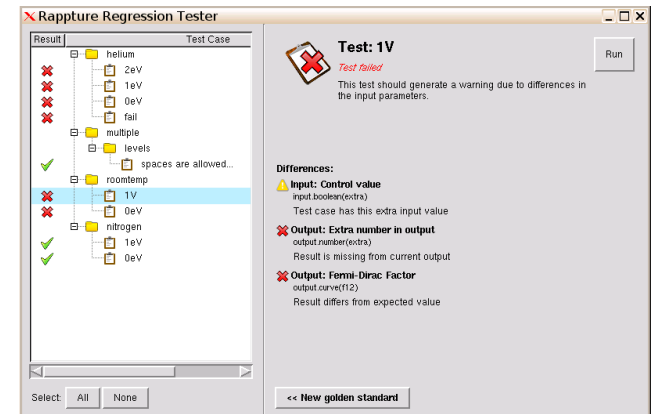
Builder



Runner



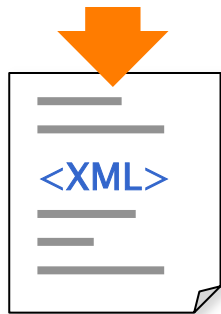
Tester



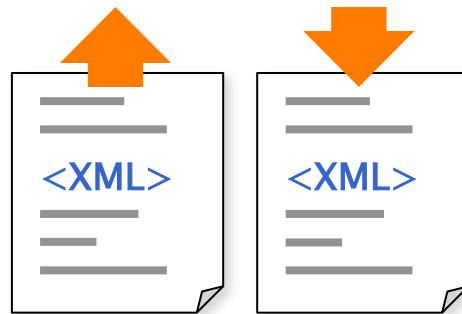
rappture -builder

rappture
rappture -run

rappture -tester

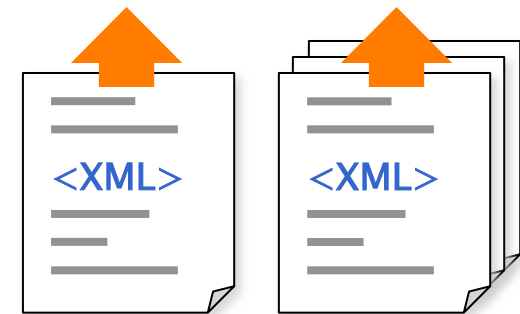


tool.xml



tool.xml

run.xml



tool.xml

tests

Generates tool description

Reads tool description
Generates simulation results

Reads tool description
Runs tests and compares results

Rappture Builder



3

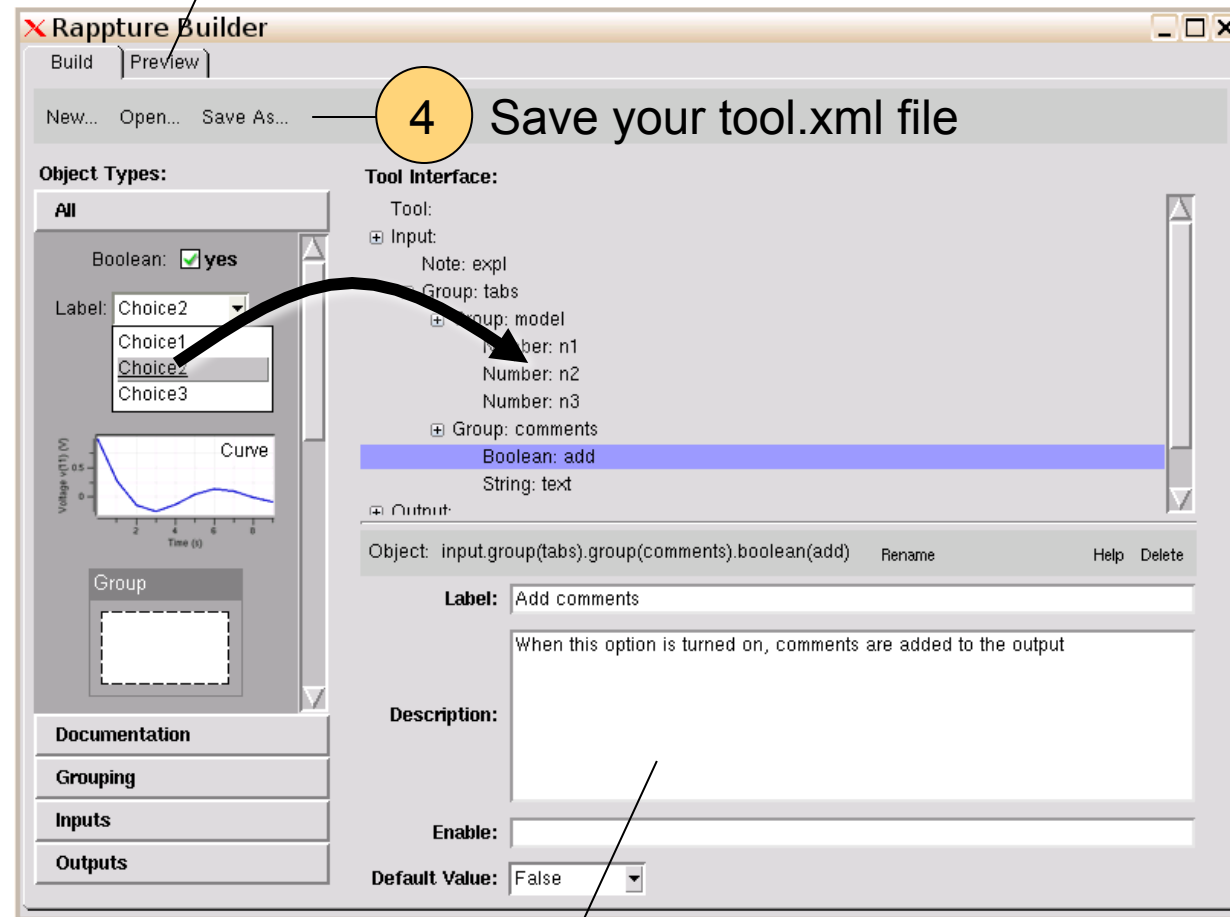
Click on the "Preview" tab to preview your tool

4

Save your tool.xml file

1

Drag controls from the palette and drop in inputs/outputs



2

Click on a control and edit its parameters

Demo: Hello, World!



- Takes a name and an “enthusiasm” level
- Enthusiasm adds an exclamation point
- Produces a “hello, world” string

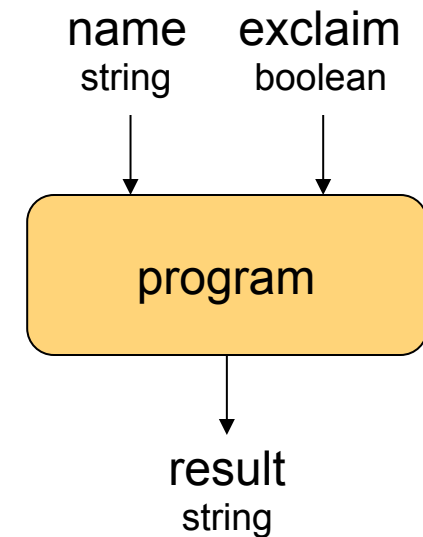
Build two ways:



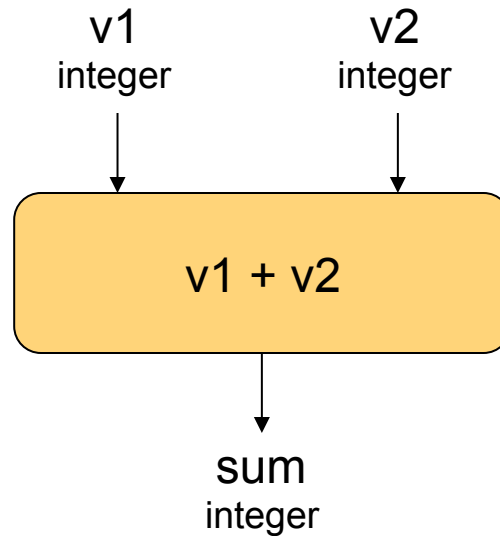
string

boolean

string



Assignment #1: Simple Addition tool



Pick your favorite language:

