Beginner's Guide to UI Design

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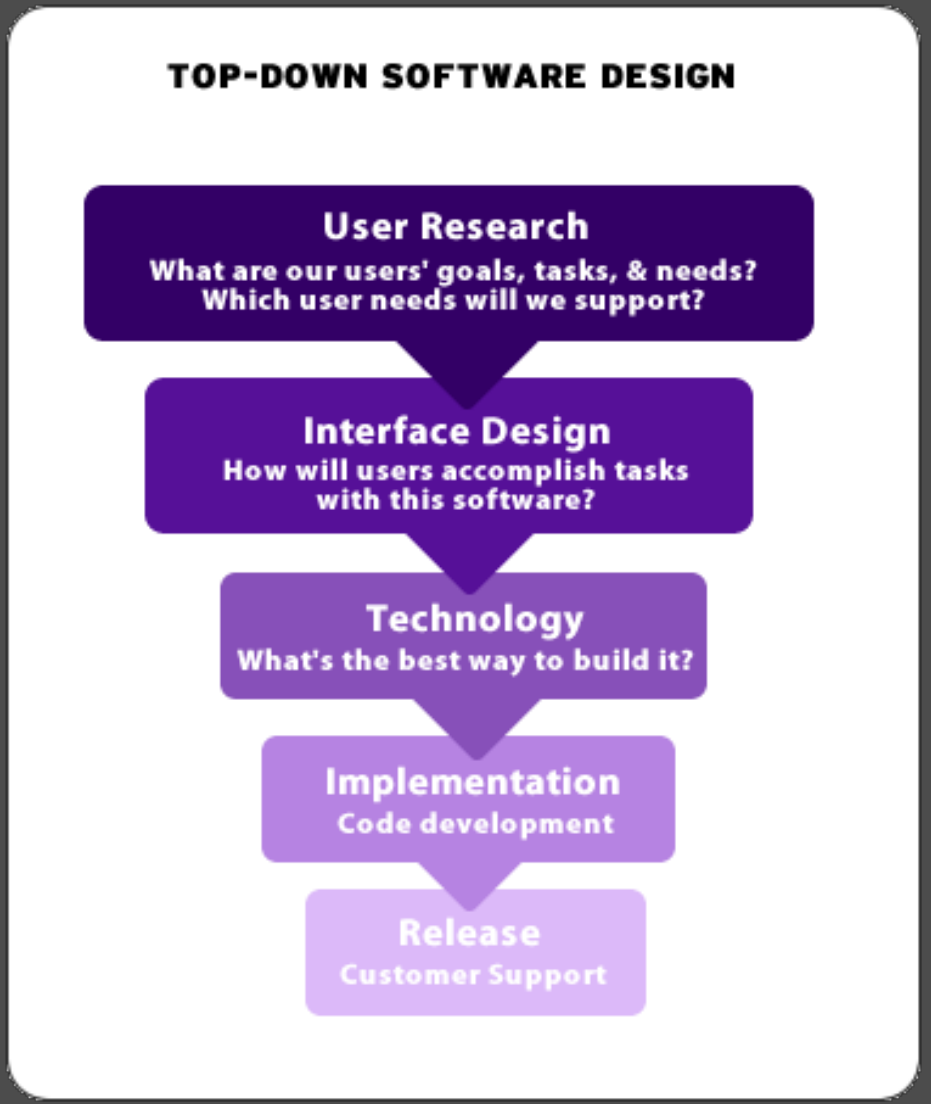
Overview


BOTTOM-UP SOFTWARE DESIGN
Release
Customer Support
Interface Design
Ad-hoc UI design
Implementation
Code development
Feature Planning
Feature planning and prioritization
Technology
What technology do we want to use for this product?


TOP-DOWN SOFTWARE DESIGN
User Research
What are our users' goals, tasks, & needs?
Which user needs will we support?
Interface Design
How will users accomplish tasks with this software?
Technology
What's the best way to build it?
Implementation
Code development
Release
Customer Support

Overview

- Research goals, users, tasks, technology
- Sketch screen flow, screen design, widget choices
- Test 5 minute usability studies, document shortcomings
- Finalize Design final mockups and specification

- Resources where to go for more details & guidance

Research Project Definition

- What is it that I am building?
- What is it that I am **not** building?
- Why am I building it?

Research Project Definition

How do you answer these questions?

- In the professional world: market research, product manager
- In the FLOSS world: your interests and motivations

Research Users

- Who will use this application?
  - Basic/Intermediate/Expert?
  - Environment?
  - Languages/Culture?
- What goals do they have?
  - Why will they use this app in the first place?
- What tasks will they need to perform?
  - How frequently will users perform them?
  - How many users will perform them?
  - Prioritization

Research Users

How do you answer these questions?

- Market research & product manager
- Interviews with target users (on-site or phone)
- Shadowing target users
- Surveys
- Any user data you may have (bugzilla, mailing lists, rt, etc.)

Research Knowledge Domain

- What domain of knowledge does this application fit into?
- How do folks get their jobs done in this domain today?
- What other current applications are there in this same domain ('competitive analysis')
- How do people use those applications today?

Research Knowledge Domain

How do you answer these questions?

- Interviews, shadowing, surveys
- Read through the most popular books on the topic (ask what they are!)
- Mailing lists / forums / IRC channels where professionals in the domain hang out
- Try out the existing tools for yourself

Sketch Screen Flow

- Where will users begin?
- Per task, what path can users follow to complete the task?
- Define needed screens and dialogs

Sketch Screen Design

Per screen on flow diagram:

- What are users trying to do here?
- What data/context will help them better make a decision / complete their task?
- How might that best be arranged here? (consult GNOME HIG)

- Name of Machine
- Maximum amount of RAM to use.
- Disk space → • physical space
  → • logical volume
  → • file ← filename/location/size ? } showing what they are called additions
- Installed from location

could add another file as disk

- DOM ID ← if shut off doesn't have can't change
- CPU # ← change number of virtual CPUs might want
- ip address ←
- path to disk image

xim

- change mem ← show mem →
- add/remove disks → 16 disks, changable
- add/remove network interface
  - ↑ add interface
  - 8 limit
- name
- show ID? how useful
- state

xm list

Name	ID	MEM	VCPUs	State	Time
	u#	how much allocated not how much	# of CPUs	↓ r running c crashed w waiting b-blocking	

xentop
- we didn't build
- let's you see what the others

- start
- stop
- freeze/pause

CPU sec
# of secs run

- percentage mem
- max mem

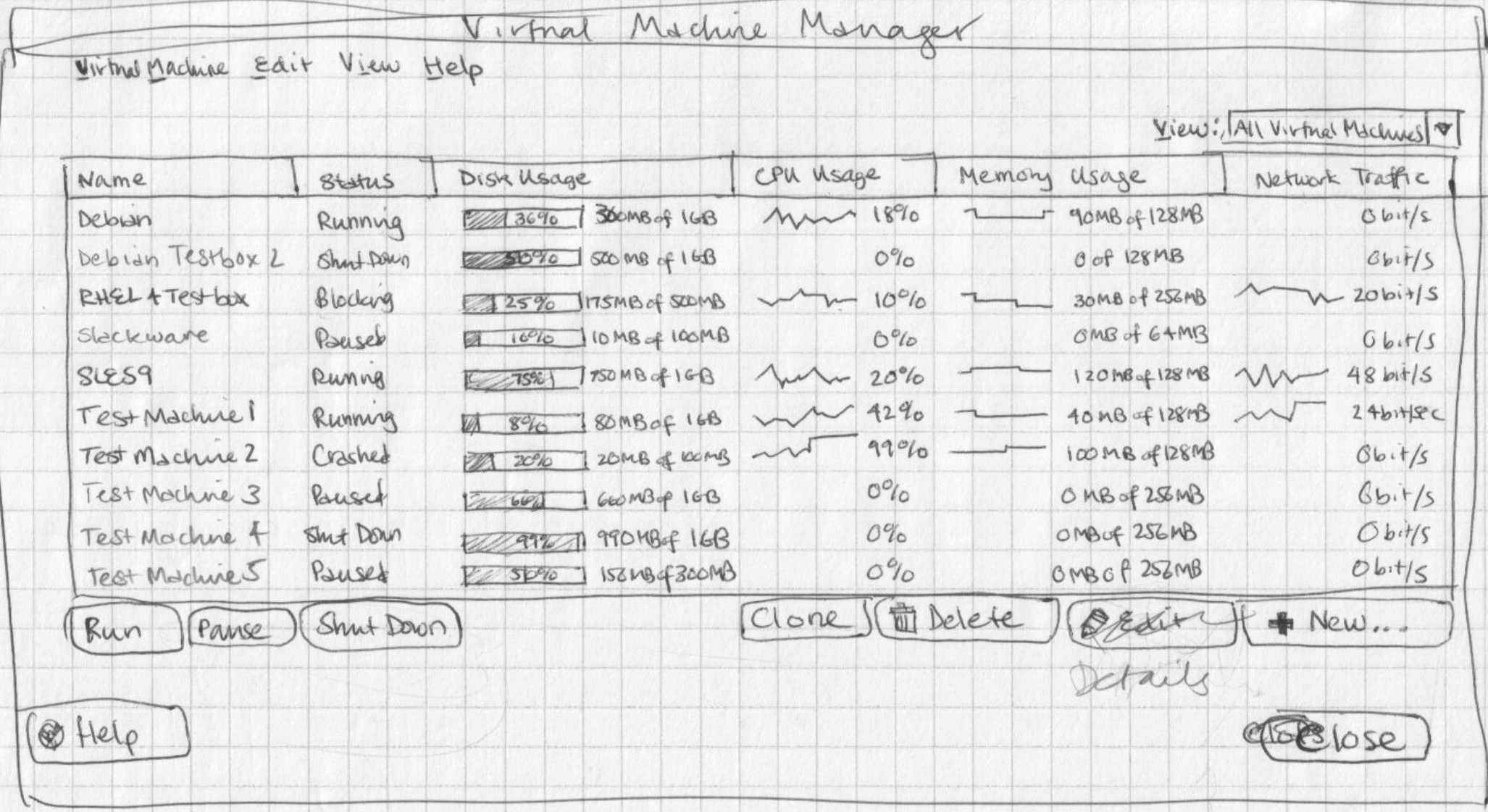
limit of VMs
theoretical
practical → 4 per CPU

RAM - at least 256M for RHEL

let them shoot themselves in the foot

performance hit don't know hard limit

NETs - number of networks can have


Virtual Machine Manager
Virtual Machine Edit View Help
View: All Virtual Machines
Name
Status
Disk Usage
CPU Usage
Memory Usage
Network Traffic
Debian
Running
36%
360MB of 1GB
18%
90MB of 128MB
0 bit/s
Debian Testbox 2
Shut Down
50%
500MB of 1GB
0%
0 of 128MB
0 bit/s
RHEL 4 Test box
Blocking
25%
175MB of 500MB
10%
30MB of 256MB
20 bit/s
Slackware
Paused
10%
10MB of 100MB
0%
0MB of 64MB
0 bit/s
SLES9
Running
75%
750MB of 1GB
20%
120MB of 128MB
48 bit/s
Test Machine 1
Running
8%
80MB of 1GB
42%
40MB of 128MB
24 bit/sec
Test Machine 2
Crashed
20%
20MB of 100MB
99%
100MB of 128MB
0 bit/s
Test Machine 3
Paused
66%
660MB of 1GB
0%
0MB of 256MB
0 bit/s
Test Machine 4
Shut Down
99%
990MB of 1GB
0%
0MB of 256MB
0 bit/s
Test Machine 5
Paused
51%
153MB of 300MB
0%
0MB of 256MB
0 bit/s
Run
Pause
Shut Down
Clone
Delete
Edit
Details
New...
Help
Close

Applications Actions Nov 23 2005 3:23pm

Virtual Machines

RHEL 4 AS	Running
SLES 9	Paused
Fedora Rawhide	
FC4	

Create New Virtual Machine...
Load ~~Existing~~ Virtual Machine...

States

- running
- shut down
- paused
- blocked
- crashed

destroy → kill
vs. shutdown

save
restore

pause
unpause

clone
export

memory size

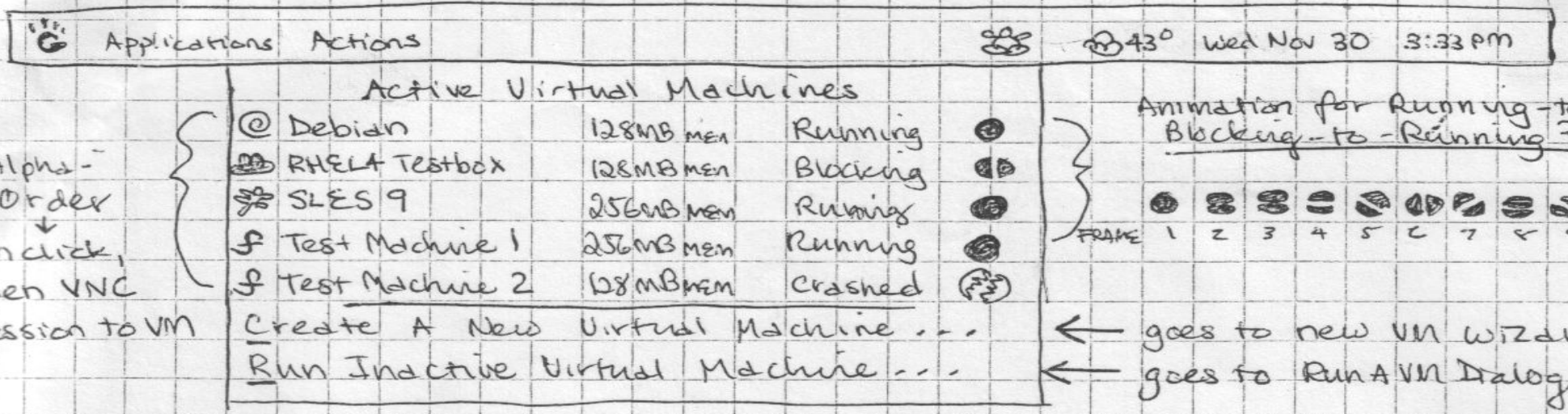
- pause xm save
- ~~load~~ restore xm restore
- xm set-mem
  max-mem
  - info ← what info do you get
  - create new
  - destroy / kill
  - shutdown
  - save / restore
  - pause / unpause

- rrobin timeslice

Blocked
- waiting on the hypervisor

Running
- only when domain has something ready to run, vcpu ready to run or running

Blocked
- waiting something to happen
  - interrupt
    - network packet
    - disk IO



Xen GUI mocks
4/29/05

TO DO:

- ~~menu items for right-click menu on Xen applet~~
- ~~list of 3 most-recently used machines that are~~

RIGHT CLICK MENU

Open Virtual Machine Manager...
Run an Inactive Virtual Machine...
Create A New Virtual Machine
Help
About
Remove From Panel

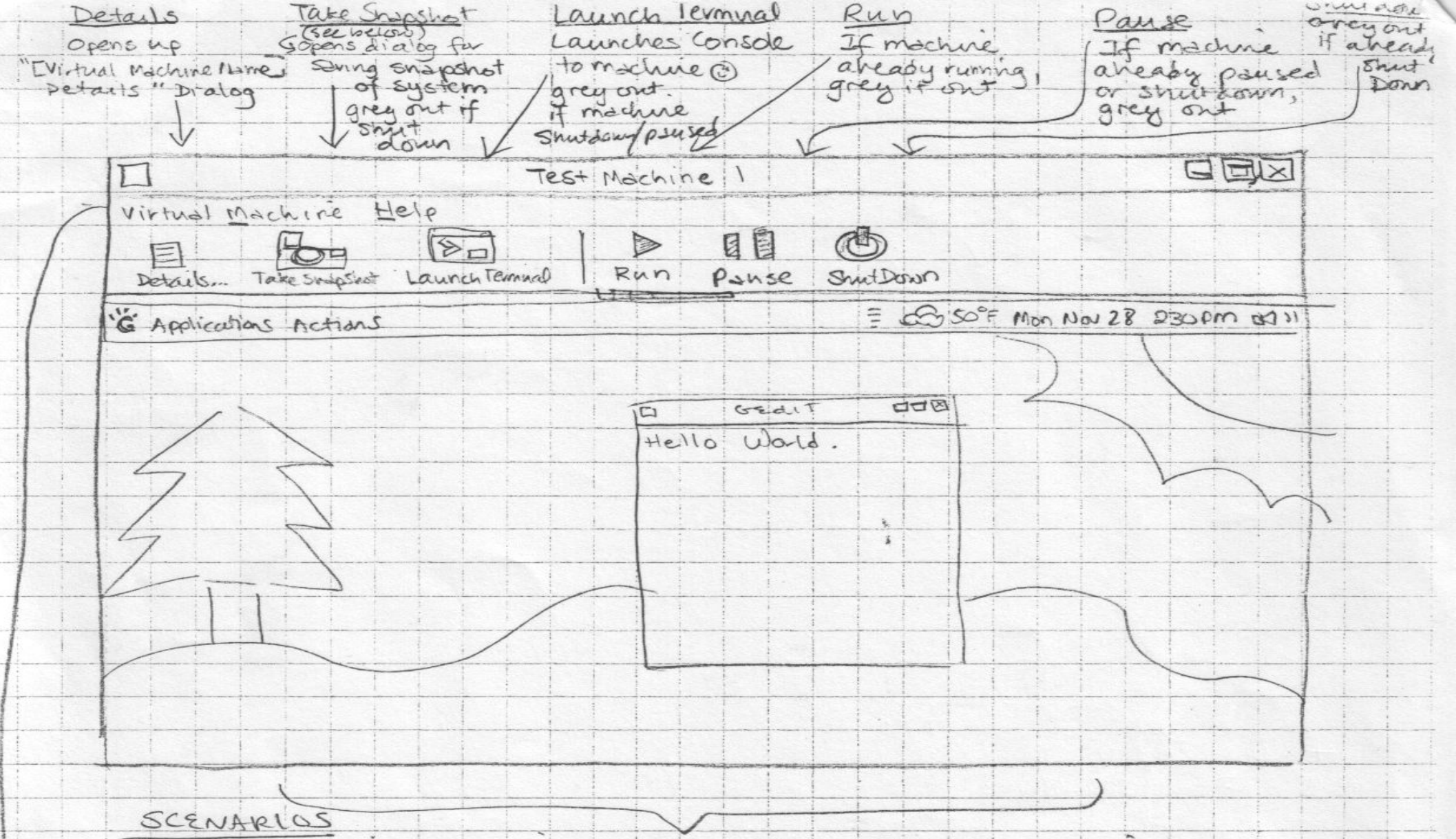
Increasing disk space after the fact

- if partition, increase via physical host tools + increase ext3 filesys
- if file, can increase (can't decrease)
- remaked storage tools + increase to size → ext3 will let you decrease

Creating System

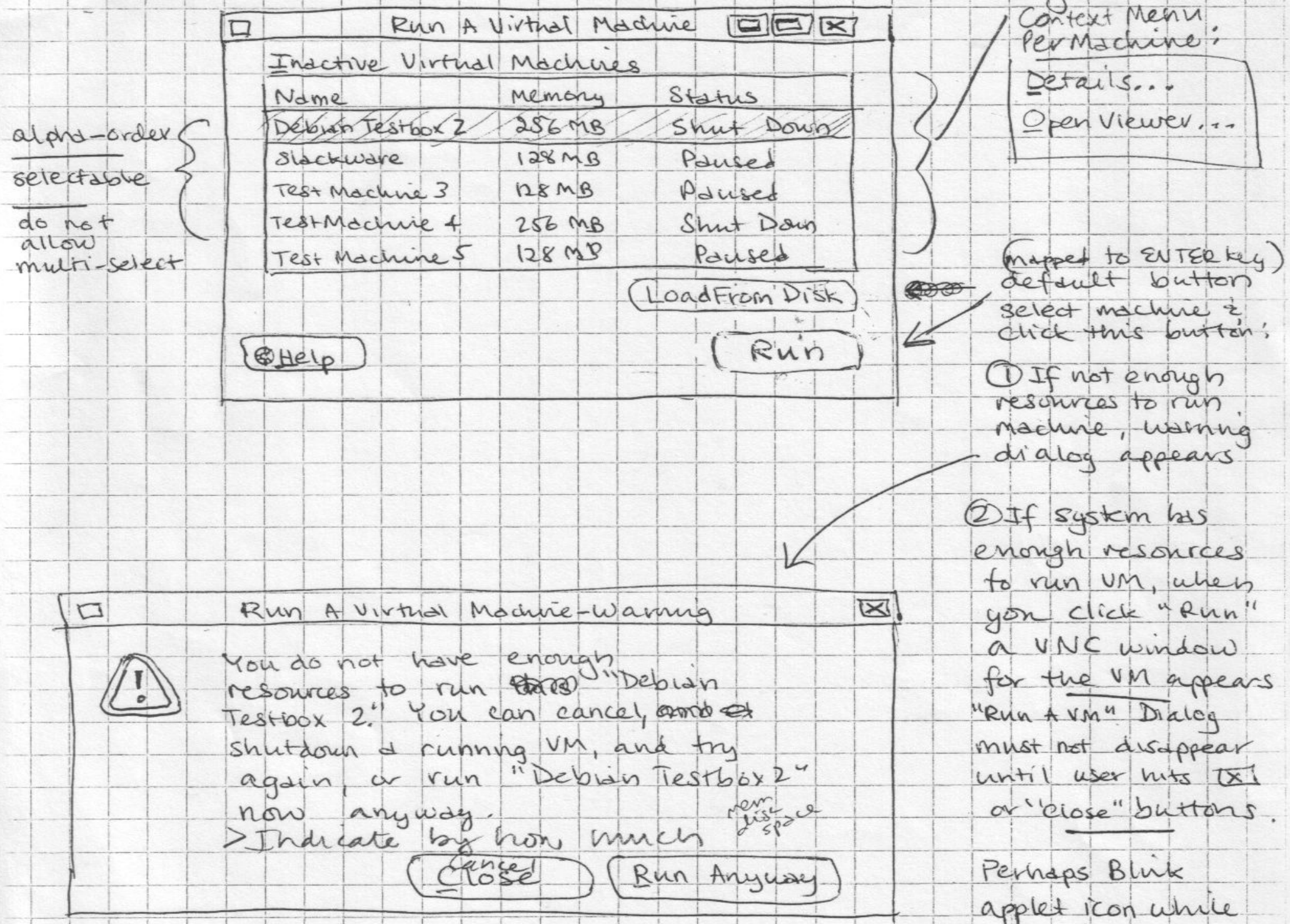
- could specify UUID or MAC address

- Currently use script + ques:
  1. Name for Domain ← will fail if dupe
  2. Fully virt or para-virt ← CPU must have capability
  3.
  4.
  5.
  6.
  7.
  8.
  9.
  10.



SCENARIOS

- If machine running, VNC window into machine is displayed.
- If machine is paused, a faded screenshot of how the machine looked before it was paused with "-PAUSED-" text over top. (Think of a paused playstation game. ☺)
- If machine is shut down, this area is dark grey


Run A Virtual Machine
Inactive Virtual Machines
Name
Memory
Status
Debian Testbox 2
256 MB
Shut Down
Slackware
128 MB
Paused
Test Machine 3
128 MB
Paused
Test Machine 4
256 MB
Shut Down
Test Machine 5
128 MB
Paused
alpha-order
selectable
do not allow multi-select
Load From Disk
Help
Run
Right-Click Context Menu Per Machine:
Details...
Open Viewer...
(mapped to ENTER key) default button select machine & click this button;
① If not enough resources to run machine, warning dialog appears
② If system has enough resources to run VM, when you click "Run" a VNC window for the VM appears "Run a VM" Dialog must not disappear until user hits [X] or "close" buttons.
Perhaps Blink applet icon while
Run A Virtual Machine-Warning
You do not have enough resources to run "Debian Testbox 2." You can cancel, shutdown a running VM, and try again, or run "Debian Testbox 2" now anyway.
>Indicate by how much mem disk space
Cancel
Close
Run Anyway

Test 5-Minute Usability Test

- Short – only a couple of tasks
- Provide mockup ('fake screenshot')
- Ask how user would complete task given provided mockup (watch them demonstrate)

Test 5-Minute Usability Test

5-Minute Usability Test

Thank you for participating in this test of my interface design. It should only take five minutes of your time. Please fill out the questions below based on the screen mockup provided below:

1. How would you create a new virtual system? What menu item or button would you press?

Finalize Design Demo

Resources Research

- *Contextual Design* Hugh Beyer and Karen Holtzblatt
- *About Face 3* Alan Cooper
- *User and Task Analysis for Interface Design* Joann Hackos & Janice Redish
- *Observing the User Experience* Mike Kuniavsky

Resources Sketch

- *Designing From Both Sides of the Screen* Ellen Isaacs and Alan Walendowski
- *Designing Interfaces* Jenifer Tidwell

Resources Test

- *Usability Engineering* Jakob Nielsen
- *Don't Make Me Think* Steve Krug

Resources General UI Design

- *The Design of Everyday Things* Don Norman
- *The Inmates are Running the Asylum* Alan Cooper

Questions? Comments?

- Email me, duffy@redhat.com
- Find these slides at: http://people.redhat.com/duffy/guadec/
- Stop by the usability clinic at 5 PM today (in the Recital hall)
- usability-list@gnome.org