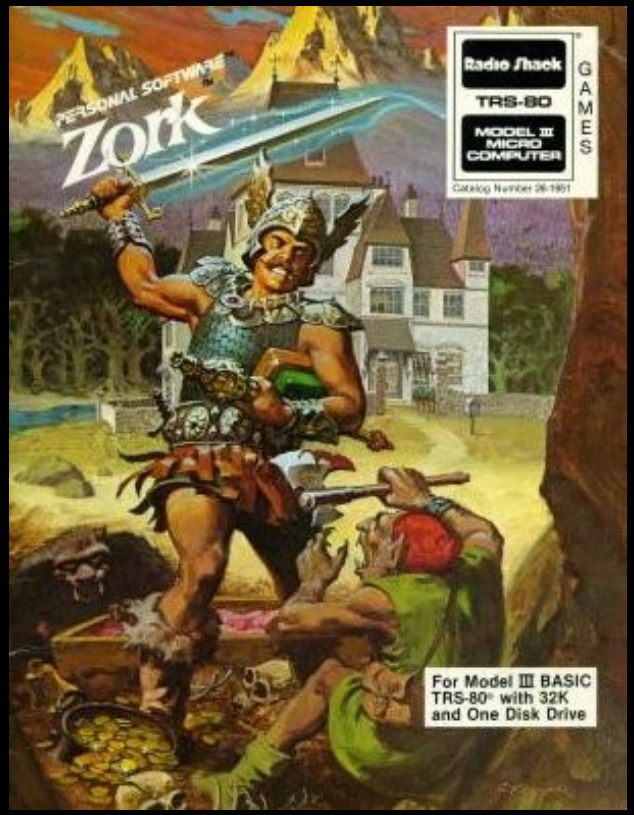
What you didn't know your phone could do...

Simon P. Ditner / TAUG
Clod Patry / AMUG

Getting from A to Z

Adventure games for your PBX




```
West of House                                    0/0
ZORK I: The Great Underground Empire
Infocom interactive fiction - a fantasy
story
Copyright (c) 1981, 1982, 1983, 1984,
1985, 1986 Infocom, Inc.
All rights reserved.
ZORK is a registered trademark of
Infocom, Inc.
Release 52 / Serial number 871125 /
Interpreter 8 Version J

West of House
You are standing in an open field west
of a white house, with a boarded front
door.
There is a small mailbox here.

>_
```

About Me

Simon Ditner

From Toronto

Organizer for TAUG

We're at booth 405

What I Do

Write software

Leverage open source

Linux

Apache

MySQL

PostgreSQL

Asterisk

Interested in HCI
(human computer interaction)

Particularly


/usr
src
lib
src
share
local
X11
bin
doc
gtk
lib
drivers
net
arch
scsi
fs
linux-2.4.18
qt-3.1.1
fonts
75dpi
100dpi
html
bin
bin
man
adm
info
locale
sbin
include
jre
glib
pango
video
dia-0.86
UML
po
docs
XFree86-4.1.0
qt-2.3.1
Xvfb
Xnest
themes
wine
ssl
gimp
audacity
OpenOffice 1.0.1

Novel ways of viewing

and accessing information

Today's Theme

Things previously not feasible

- Due to cost
- Lack of access to technology
- Disconnect between I.T. and Telecom
- Preconceptions about what can be done

The future is here

Everything is obvious

And relatively trivial

Only surprising

Due to limited options in past


ABC
DEF
3
GHI
4
JKL
5
MNO
6
PRS
7
TUV
8
WXY
9
OPER.
0

Recent

(in telco terms)

Changes

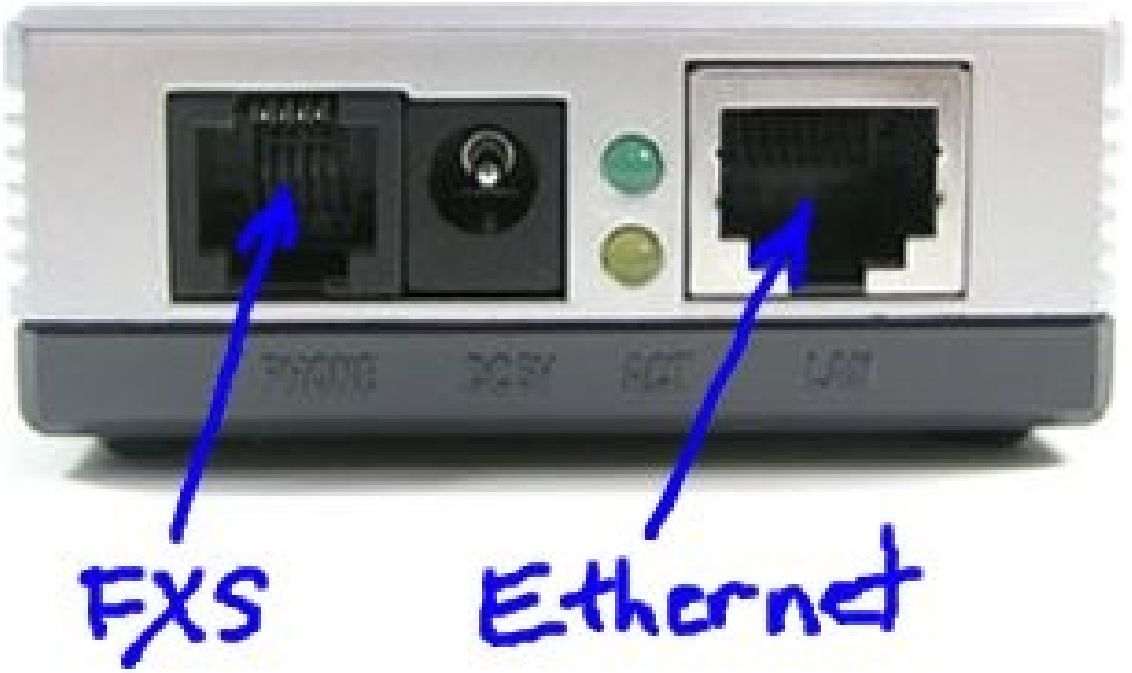
Insane amounts of bandwidth

VoIP standards like SIP, H.323, IAX2 taking hold

Commoditization of telephony hardware

Packetization of voice

Voice processed & routed like data


FXS
Ethernet

Fog around VoIP has lifted

VoIP apps no longer vapour

Can be used for real work

Open Source making it easier

Applications we'll explore

- Playing text adventures over the phone
- Altering your voice on the fly
- Conference call manager

Budget for these projects:

$0.00

My goal...

Play Zork over the telephone

Zork

- Text-based game from the late 1970's
- Before graphical computer games
- Similar to choose-your-own adventure books
- Runs on the Z-Machine

Z-Machine

- Byte code interpreter
- Write once, run anywhere
- Similar concept to Java

An sample dialogue

The door reluctantly opens to reveal a rickety staircase descending into darkness.

```
>go down
```

You have moved into a dark place.

The trap door crashes shut, and you hear someone barring it.

It is pitch black.
You are likely to
be eaten by a grue.

>turn on lantern

The brass lantern is now on.

Cellar

You are in a dark and damp cellar with a narrow passageway leading north, and a crawlway to the south.

On the west is the bottom of a steep metal ramp which is unclimbable.

>go north

The Troll Room

This is a small room with passages to the east & south. Bloodstains & deep scratches mar the walls.

A nasty-looking troll, brandishing a bloody axe, blocks all passages out of the room.

The axe gets you right in the side. Ouch!

My toolbox

- Asterisk (:-)
- Z-Machine (bytecode interpreter)
- Sphinx2 (speech recognition)
- Festival (text to speech)
- Perl (scripting language)

Briefly

Asterisk is 3 things

- An IVR
  - Interactive Voice Response
- A PBX
  - Private Branch Exchange
- A Media Gateway
  - Convert calls from different formats and protocols (G.711, G.729; SIP, IAX2, SCCP)

Asterisk is extensible

- AGI
  - Asterisk Gateway Interface
- Manager API
  - A socket based event and control channel
- C Modules
  - Embedding your software into Asterisk

What I'm using out of this

- IVR (Interactive Voice Response)
- AGI (Asterisk Gateway Interface)

How does AGI make it extensible?

- Launches any external program
- Provides command path over STDIN/STDOUT
- Audio available over file descriptor 3 (EAGI only)

getting from A to Z

increments

built simple applications

retrieve weather & read back

“Today, cloudy with a high of 21…”

simple DTMF

“you pressed 1, 2, 3”

Chose a Z-Machine

- Found Rezrov, written in perl
- Open source
- I/O is abstracted from the actual Z-machine

Capture Output

- Collect text that would have been printed to the screen
- Pipe through Festival
- Tell asterisk to play the file using the command path

Capture Input

- Collect DTMF digits
- Translate numbers to words
- Send to Z-Machine over command path

Experiment with Sphinx2

- Capture audio in Asterisk
- Wait for pause in speaking
- Send audio to Sphinx2
- Collect recognized text
- Type it in to Zork as if from keyboard

Capture Output

- Collect text that would have been printed to the screen
- Pipe through Festival
- Tell asterisk to play the file using the command path

[Demo]

Time invested:

48 hours

Taking it further...

Open source developers are accessible

Ran into Kevin Lenzo at Astricon

Developer for Festival

And Sphinx2

Details on building better grammars

Contacted author of Rezrov

Details on extracting vocab and grammar from Zork

Vast improvements

Minimal effort

Began implementing an AJAX interface

Can track location on web

Became less about Asterisk

More about my application

Limit is my imagination

Play now!

416-548-7557