Infrastructure for Personal Liberation

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1. What Are Mail Enabled Applications?

Broad definition: Any activities that are conducted in large or small part via email

- There's nothing left to worry about!
- Some such activities work better than others today.
- We give a thing a name to get a handle on a problem.

Practical definition: Any such activities where automation is needed

- Captures the essence of current needs
- Unstable, rolling definition (only "needed" until here)
- Doesn't focus our current efforts

What Are Mail Enabled Applications? (con't)

Conceptual definition: RPC to human beings & vastly distributed services

- This is what *could* be done, but isn't. Good focus.
- RPC + Temporal disconnectedness = mail servers
  - Remote Asynchronous Procedure Call (RAPC)
- RAPC + human interaction = active messaging
  - Interactive Remote Asynchronous Procedure Call (IRAPC)

Goal: shared, standardized IRAPC facilities

- Needed/possible capabilities are becoming clear
- Must reach whole Email World (Internet + X.400 + all else)
- Informed by research & commercial practice, but open.

2. The Promise of Liberation in Space and Time

What is freedom?

A dream we never quite achieve.

Mundane view: doing whatever you want
...but you always want more!

Buddhist view: an end to desire
...but explain that to your kids!

Evolutionary view: doing whatever you used to want
...steady progress towards an imaginary ideal

Email may be the next step!

Work: An Obstacle to Freedom?

Freedom is traditionally constrained by the need to eat.

But some of us love our work, would or do choose it freely.

Primitive people worked hard, had relative control over hours, location, activities. ("Looks like a good day to pick berries.")

Industrial revolution: Work as spatial & temporal prison.

Computer revolution: "house arrest".

Email revolution: "beach arrest" if we do it *right*.

How do we do it right?

3. Examples of Operational Mail-Enabled Technology

Early Systems:

RITA (SRI): Earliest (1976) literature citation? (Never implemented)

R2D2 (Vittal): Insecure, low-level UI

Imail (Hogg): Not distributed, low-level UI

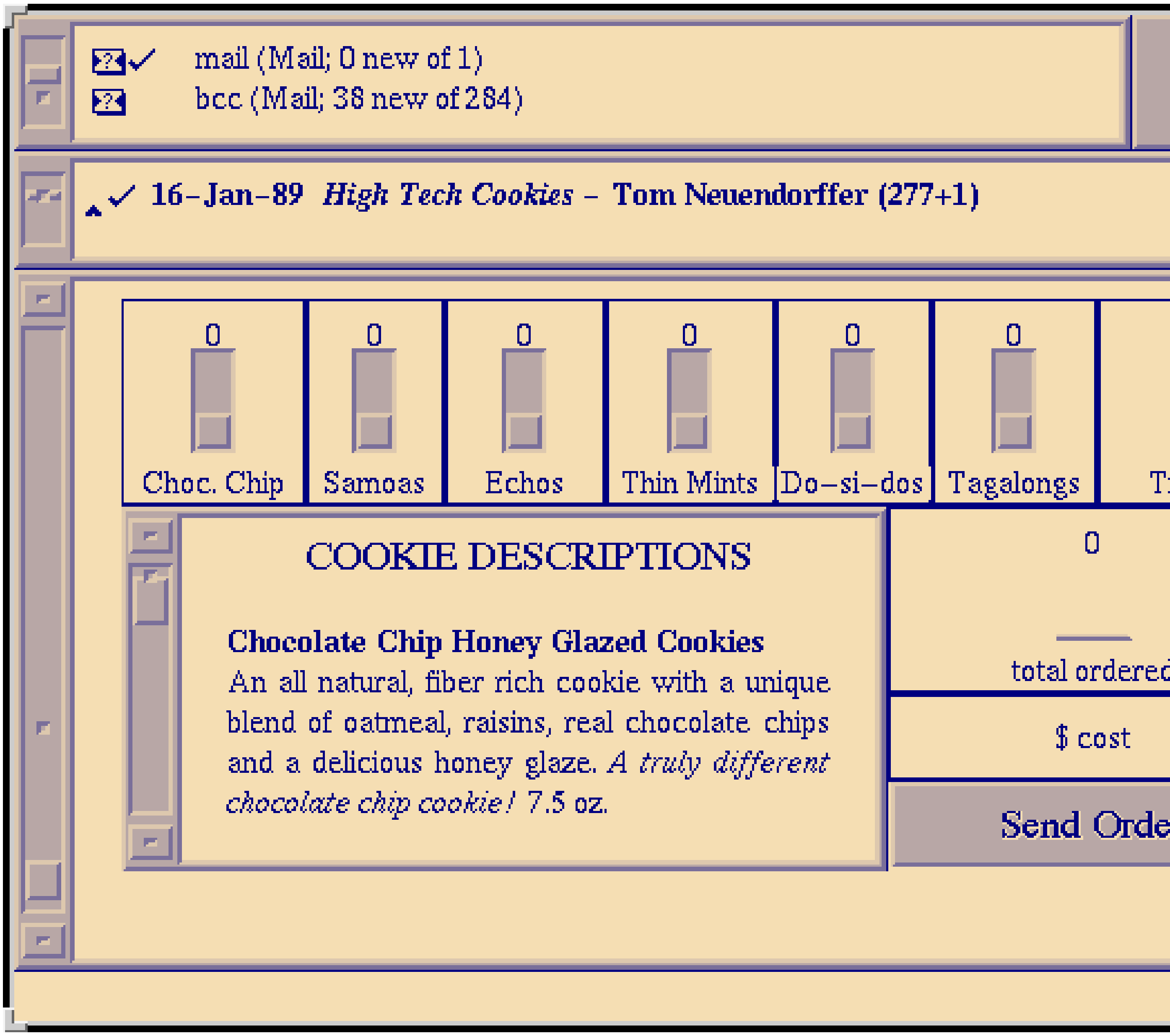
Mail servers (esp BITNET LISTSERV): not generalized

The Andrew Project (CMU)

Sponsored by IBM to build "computing environment of the future"

Andrew Message System had 3 relevant experiments

- Interactive insets (Cookies)
- Ness -- insecure language for multimedia interaction
- Flames -- LISP-like language for automatic mail processing
- Uses: list service, vacation mail, fax gateway, bboard system operation, order processing, more.


mail (Mail; 0 new of 1)
bcc (Mail; 38 new of 284)
16-Jan-89 High Tech Cookies – Tom Neuendorffer (277+1)
0
Choc. Chip
0
Samoas
0
Echos
0
Thin Mints
0
Do-si-dos
0
Tagalongs
COOKIE DESCRIPTIONS
Chocolate Chip Honey Glazed Cookies
An all natural, fiber rich cookie with a unique blend of oatmeal, raisins, real chocolate chips and a delicious honey glaze. A truly different chocolate chip cookie! 7.5 oz.
0
total ordered
$ cost
Send Order

Relevant recent work

ATOMICMAIL -- First with security, abstract portability

ActiveMail (Shapiro talk) -- asynchronous invitations/hookups to somewhat synchronous applications

E-Forms (Bolte talk) & Superforms (Bellcore) -- demonstrate value of specialized email forms language

Various mailserver toolkits

Proprietary environments

Often extraordinarily good in many regards

NeXT Mail -- multimedia support

Lotus Notes -- support for widely distributed writing, filing, etc.

Magicap -- proprietary language for interactive graphical applications

All sought to redefine the world.

All are doomed to fail. (Trust me.)

4. You Ain’t Seen Nothin’ Yet

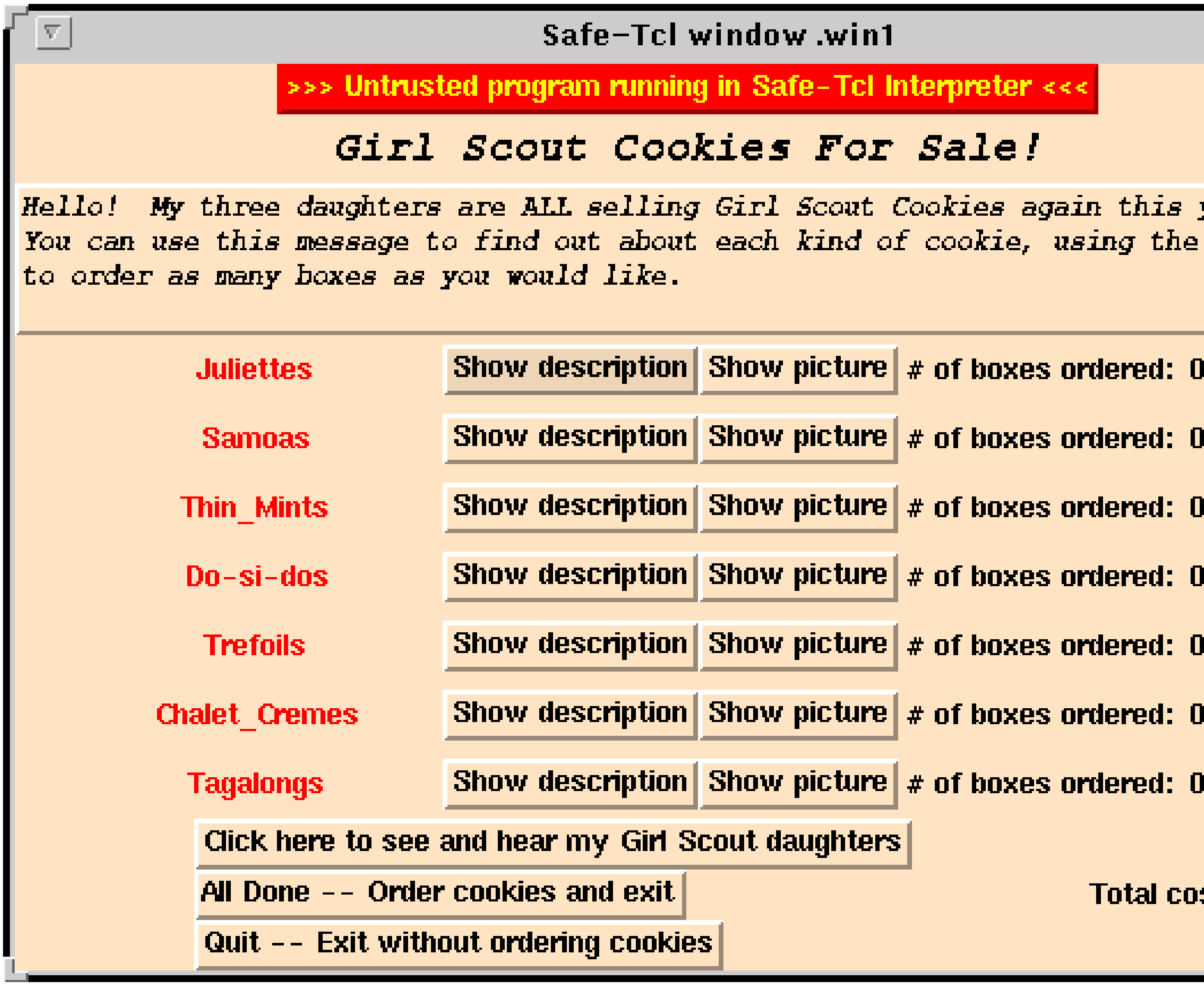
-- We’ve only scratched the surface of mail-enabled applications. To go further requires interoperation, for which the pieces are coming into place.

-- Standard interchange format: MIME

-- Generalized tools for mail severs: ServiceMail

-- Standard format for interactive messages: Safe-Tcl? (Note limitations, contrast to ActiveMail & Notes)

-- Nowhere are "open systems" more important.


Safe-Tcl window .win1
>>> Untrusted program running in Safe-Tcl Interpreter <<<
Girl Scout Cookies For Sale!
Hello! My three daughters are ALL selling Girl Scout Cookies again this
You can use this message to find out about each kind of cookie, using the
to order as many boxes as you would like.
Juliettes
Samoas
Thin_Mints
Do-si-dos
Trefoils
Chalet_Cremes
Tagalongs
Show description
Show picture
# of boxes ordered: 0
Click here to see and hear my Girl Scout daughters
All Done -- Order cookies and exit
Quit -- Exit without ordering cookies
Total co

5. Enabled Email as Infrastructure for Cooperative Work

-- Imagine that *some* interactive message format is standardized. What becomes possible?

-- Whole new kinds of distributed services can be built on the assumption of arbitrary user interaction as needed, with time delays.

-- The Electric Eclectic: How mail-enabled applications can redefine publishing

-- Mr. Wizard: A new approach the problem of Organizational Memory

-- Grander vision: everyone who so desires working on their own time/terms

The Electric Eclectic: A Focus & Testbed for Open Mail-Enabled Applications

(Yesterday) A free, volunteer-based, customizable multimedia metamagazine for the Internet, using MIME & Safe-Tcl

Initial virtual magazines include "Email Universe"
- New magazine about and via email
- Socialization environment for Email People
- Forum for technological experimentation

Vehicle for prototyping:
- Subscription customization
- Reader-feedback
- Advertising & Order fulfillment
- Interoperable mail-enabled applications in general

Mr. Wizard:
A Tool for Distributed Organizational Memory

Organizational Memory. Someone knows X, how do I find out?

Traditional approach: Ask a neighbor.

Netnews: Broadcast query to world

Innovation: Malone & Ackerman’s "Answer Garden" inhibited by software distribution & user buy-in.

Solving the distribution problem *generally* one time (Safe-Tcl?) eliminates it for apps like this.

User buy-in is no problem if mail-enabled.

Organizational Memory: An Interactive email approach

User sends query to "Mr. Wizard" server

Answers sent back to user with interactive email for feedback.

If no good answers, interactive email queries go to experts for answers or names of further experts

Simple queries answered from database

Moderate queries answered by local experts

Hard queries cross oceans to find experts

Status: I’ve got a grad student looking at it.

6. An Agenda for Making it Happen

-- Forge consensus for a single interactive mail language.

-- Eschew proprietary formats.

-- Assume the best about other colleagues & competitors

-- Expect continuous evolution

Forge consensus for a standard language

-- Unify, unify, unify. We must converge on an interactive mail language.

-- If we aren't smart, this could take decades. Standardize a programming language? Remember Ada?

-- There is no better game in town than Safe-Tcl. Credibility aid: I have abandoned all my previous interactive mail languages (Ness, ATK, ATOMICMAIL) for one I did not invent.

-- Safe-Tcl still has flaws. The community must refine & standardize. But it's the best starting point we have. Demand EXTREMELY good reasons for not using it.

Eschew proprietary formats

It is undeniably easiest to make progress in functionality with proprietary formats.

A hard-to-accept truth: In email, proprietary functionality is non-functional.

We’ve all built great systems that only fragment the user community further. (I’m happy to accept some of the blame for the good things in Andrew, but it isn’t *all* my fault.)

Fight especially hard against the *best* proprietary formats, they will slow us down the most.

The worst thing about Lotus Notes is how good it is.

Assume the best about other colleagues & competitors

Assume the other guys are:

smart
well-intentioned
generally on the right track

You'll be wrong occasionally, but that will happen anyway.

Avoid gratutious reinvention.

Avoid gratuitious debates

Get leverage even from your competition.

Expect continuous evolution

Plan all your products for format evolution. That's how the world works.

MIME is open-ended because life is open-ended.

Safe-Tcl will evolve or be superseded.

Better richtext formats and character sets will come.

Digital smell is just around the corner.

Expect a continuing adventure and you won't be disappointed.

Plan your code accordingly.

The Electric Eclectic: How To Participate

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