

Peer to Peer: Ray's New Groove

UserSphere, Oxford, October 2001



Introductions & agenda

- Groove Networks
 - More info later
- Hugh Pyle
 - CEO, Cabezal Ltd
- Changing Assumptions
- Peer-to-Peer
- Groove

Changing Assumptions



Assumptions (1)

- Processing power, storage and bandwidth all keep growing
 - Moore's Law
 - Storage grows even faster
 - Bandwidth grows, but in big leaps (capital expense)
- Connectivity
 - Dialup, ISDN, DSL, Cable, 802.11b, T1, T3, STS-3, OC-12, ...
 - At least 3 orders of magnitude difference in regular use
 - Previously "mostly disconnected"
 - Now "mostly connected"
 - Offline capability is still important
- But extreme interactivity will always be difficult
 - The latency problem remains



Latency: the universal constant

```
>ping rtfm.mit.edu
```

(1991)

Pinging 18.181.0.29 with 32 bytes of data:

Reply from 18.181.0.29: bytes=32 time=120ms TTL=230

Reply from 18.181.0.29: bytes=32 time=120ms TTL=230

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(2001)

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Assumptions (2)

- Firewalls are here to stay, but they get in the way of real work
- The network is fundamentally broken
 - My IP address changes daily
 - Your IP address changes daily
 - I can't ping you, or vice versa
 - Proxies even change the network protocol on the way through
 - WAP, 3G, walled gardens
- This was not always the case
- IPv6 won't fix it any time soon
- Napster fixed parts of it, though
 - Another addressing scheme, not DNS
 - Cross-firewall traffic
 - Client = Server

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Assumptions (3)

- Centralised systems are capital expenditure
 - Change is slow
 - Change is expensive
- Personal systems (at the “edge” of the network) are not
 - Cheaper
 - More disposable
 - Therefore more “churn”
 - = more innovation, flexibility, growth
- Multiple users per device; multiple devices per user

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Assumptions (4)

- Network “option value”
 - Broadcast
 - How many potential receivers? (“Sarnoff’s Law”)
 - **$O(N)$**
 - Point-to-Point
 - How many potential 1-on-1 conversations? (“Metcalfe’s Law”)
 - **$O(N^2)$**
 - Grouping
 - How many potential groups? (“Reed’s Law”)
 - **$O(2^N)$**
- Of course not all these options are exercised
 - But the network value = the option value
- Group-forming-networks become the dominant value form with increasing numbers N

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Implications for long-term platforms

- Latency and network unpredictability
 - Asynchronous comms (message queues) not synchronous (RPCs)
- Offline use
 - Local data, distributed databases, synchronisation
- Evolvability
 - Component architectures not layered architectures
- Asymmetry
 - Universal resource identifiers, protocol flexibility, public rendezvous points
- Friction vs. Option Value
 - Open standards, low “connectivity friction”

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Groove

- Groove Networks Inc
 - 1997: Ray Ozzie & others. Beverly, MA
 - Private and VC funding
 - Intel \$10m
 - Microsoft \$51m
 - 200+ employees
 - International office (Borehamwood, UK)

- Business model
 - Preview software \$0
 - Enterprise software license \$49 + \$96/year
 - Enterprise “bot server” license \$xxxx
 - SME licensing to be announced very soon



Other opinions

Ray has a history of building breakthrough applications. With Groove, he and his team have built a deep and innovative application that is a great example of where the Internet is going.

Bill Gates



As the first major application platform to aggressively exploit the possibilities of peer-to-peer networking, Groove... is a potentially revolutionary technology.

Tom Austin, Gartner Group

Groove is important not because its success is assured, but because it marks an inflection point in the collaboration market evolution.

Matt Cain, Meta Group





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Groove Transceiver

- Transceiver = “send and receive”
 - This is not (primarily) a broadcast mechanism
- Contacts
 - Awareness
 - Instant messaging
- Shared Spaces
 - Activities
 - Tools
 - (Roles and permissions)
- Ubiquitous synchronisation – contacts, spaces
- Very consistent

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Security

- Personal trust model
- X-509 identities from corporate structure
- “Directory” is not in the security model
- Extremely strong encryption
 - On disk
 - On the wire

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Tools

- Out of the box
 - Chat
 - Voice
 - Discussion
 - Outliner
 - Sketchpad
 - Calendar
 - Files
 - (etc etc)

- Custom tools
 - Ground-up development (XML, script, C++, VB, etc)
 - Wrap around existing ActiveX controls (Flash, etc)

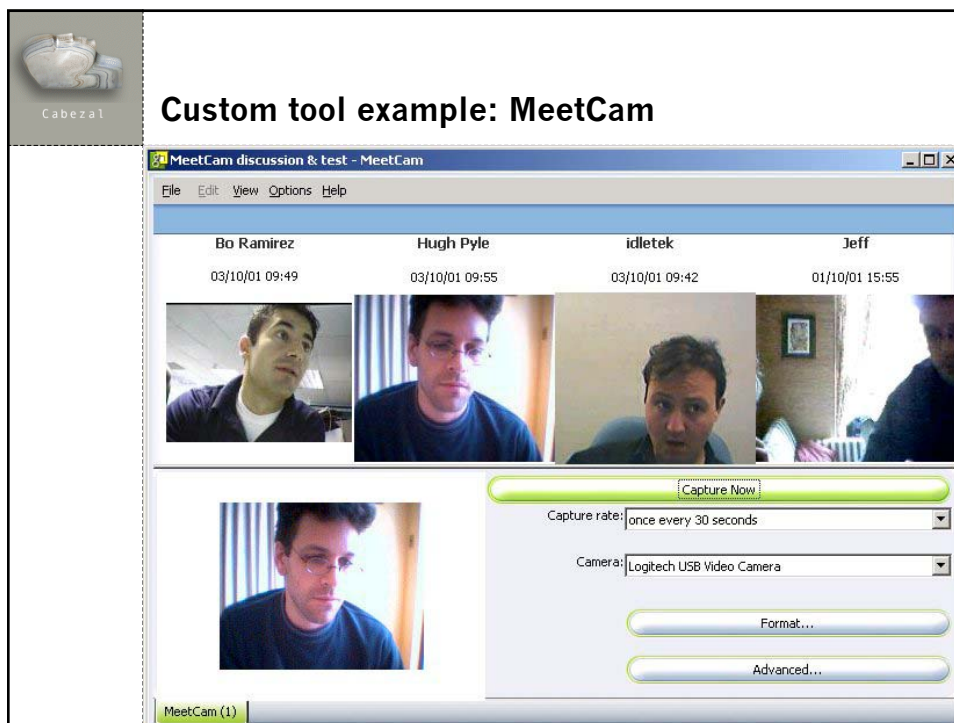
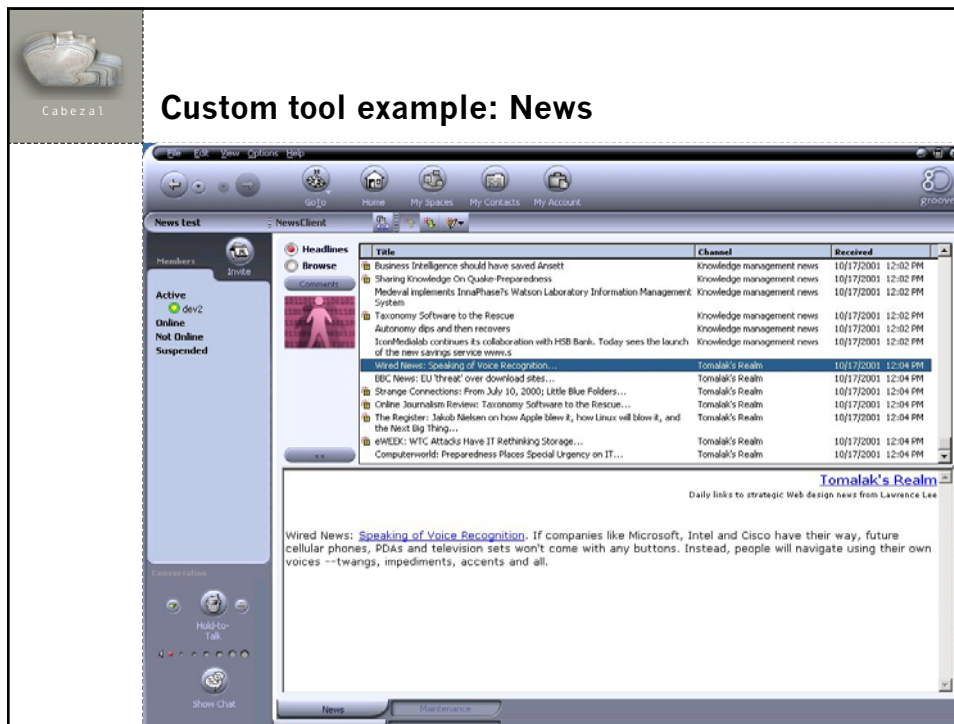
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Custom tool example: Brainstorm

The screenshot displays the 'Brainstorm' application interface. On the left is a vertical toolbar with buttons for 'go to', 'Agora MindMap...', 'invite', 'new', 'edit', 'delete', 'color', 'load', and 'save'. Below the toolbar is a list of users including Hugh Pyle, Rooster, abbot, Andrew Falciari, David Glenn, Jill, Kevin Leeson, Kurt Haeuser..., Paul McCormack, rgesick, Thomas Ljung..., ses, Charley, and Clive Davies. A 'Chat (1)' window is visible at the bottom left. The main area shows a mind map with a central node 'Portal' connected to several other nodes: 'Agora MindMap', 'Experimental Discussion', 'v5.1', 'hmm', 'Portal', 'Pictures', 'Chat_Pane', 'Discussion', 'Gravy Test Discussion Space', and 'groove-a-lot'. A red note 'How cool is this?' is attached to the 'Portal' node, with a green note 'Very useful' pointing to it. On the right, a 'Title' list contains various items, with 'How cool is this?' highlighted in red. At the bottom, a chat window shows the text 'Measure it on the Richter scale, please.' and a toolbar with buttons for 'Discussion', 'hmm', 'still broke', 'v5.1 (1)', 'Pictures', 'Brainstorm', 'Portal (1)', and 'Add Tool'.

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Custom tool example: PinBoard

Team Delta - PinBoard - Groove

File Edit View Options Help

GoTo Team Delta PinBoard Hugh Pyle (Manager)

Back New Note

Invite

Active
Hugh Pyle

Online
Me
You

Not Online
Suspended

Conversation

Hold-to-Talk

Show Chat

Navigate Together

Budget presentation

BudgetSept.ppt
Save All...

SMASH MOUTH
ASTRO LOUNGE

Agenda for Thursday:

- Introduce new members
- Review last meeting actions
- Q2 budget planning

in the [Discussion](#) by Weds 3pm

Poll in progress
1 Superb

PinBoard (1) Discussion Add Tool

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Custom tool example: Monster Trucking

tester - Groove

File Edit View Options Help

GoTo tester dev2 (Manager)

Back

Invite

Active
dev2

Online

Not Online
PhiTest

Suspended

Conversation

Hold-to-Talk

Show Chat

tester

dev2 (Manager)

10 20 30 40 50 60 70 80 90 100 110



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Bots and Integration

- Integration from each endpoint
 - Local integration (Palm synch, etc)
 - Central integration: Web services (HTTP, XML, SOAP)
- Integration from a single endpoint
 - “Deep” integration possible
 - Bot Server = scalable platform for dedicated integration endpoints
- Technologies: XML, HTTP, SOAP, COM, ODBC, (etc etc)
- Capabilities: complete Groove transaction access
 - Eg. catch any transaction → search center → return results
 - Eg. synchronise Groove discussion with Notes/Domino
 - Eg. publish from Groove to Web server

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Applications

- Coordination between tools, central systems, business processes
- Design point 1: get together to do stuff
 - Low-friction collaboration
 - Intensive work
 - Out-of-the-box tools
- Design point 2: extend process across traditional boundaries
 - The richness of a portal (and more), but as accessible as phone or email
 - Start with out-of-the-box tools
 - Integrate into process: “bootstrap” or “bot”
- Low risk infrastructure: little IT impact, positive benefits to integration

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Application examples

- Partner relationship management
- HR performance review
- Competitive intelligence response

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"so far, a head"

