

Games: The Killer App. for Pen Computing?

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Vision of Pen Computing

Computers that respond intelligently to what we write, draw, and gesture.

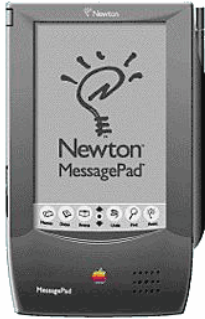
- handwriting recognition
- diagram and drawing recognition
- gesture recognition
- interactivity
- direct manipulation simulations
- direct manipulation visualization

enabling
technology

Outline

- Pen computing hardware and software
- Platform adoption
- Games
- Criteria
- Game properties and concepts
- (Inadequate) proposals
- Game-Changing Technologies

Pen Computing Hardware



Apple
Newton



Modern PDA



The unistroke alphabet.



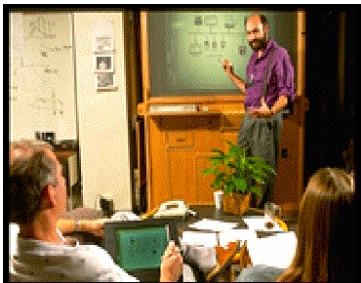
Momena



Tablet PC

80 MHz processor
4 MB RAM
40 MB Hard Drive
Built-in Fax / Data Modem
\$5000

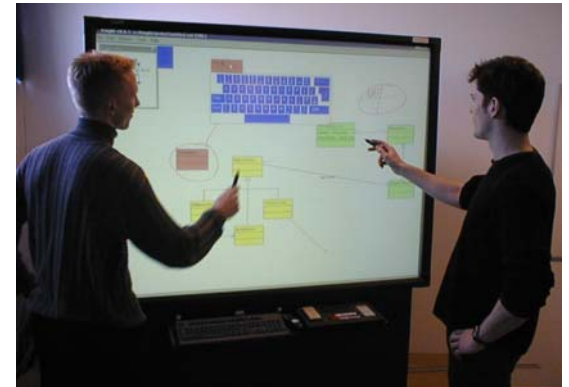
1.6 GHz processor
1 GB RAM
40 GB Hard Drive
\$2000



Xerox LiveBoard



SmartBoard



Is Pen Computing Successful?



"pen computing" Search

Web Results 1 - 10 of about **164,000** for **"pen computing"**. (0.18 seconds)



Are Tablet PC sales growing? Yes!



Robert Williams, Director of Mobile Platforms Division Business Development, showed a Tablet PC sales growth chart. Looks like things are moving up!

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Tablet PC Blogs

Building the Community One Blog at a Time.

- Home
- Blogs**
- Forums
- Photos
- Tableteers
- Little Tableteers

Top 10 Tablet PCs
Ranked by popularity and
awards (see how The Grand
Compare Here!

Touch Screen Laptops
Rugged & Portable Windows
PCs with Touchscreen from
Panasonic.

Dell™ Laptops
Dell™ Power 5599 Microsoft
® 4420 Core2 Duo Processor
Details Here!

Toshiba
Official 80
Euron G
to 30% off

Building a community ... one blog at a time.

A Brief History of Tablet PCs

A Brief History of Tablet PCs is a fun read for everyone interested in Tablet PCs. The part about members of the press being enthusiastic than critical was worth a chuckle.

Pen computers, as envisioned in the 1980s, were built around handwriting recognition. In the early 1980s, handwriting recognition was seen as an important future technology. Nobel prize winner Dr. Charles Elbaum started Nestor and developed the NestorWriter handwriting recognizer. Communication

LESZYNSKI Group
TABLET PC
Overview

about us services solutions contact us tablet pc

The Market Leader in Tablet PC Solutions

Microsoft® Surface™ is the most powerful and expressive hybrid tablet available with built-in Windows™ 8.1 operating system. It can be used as a tablet or as a laptop. The device is designed for business and professional use. It features a high-resolution display, a full QWERTY keyboard, and a trackpoint. The device is also available in a rugged configuration for industrial and military use.

xTHINK

Home Products Downloads Shop Support Company

An Interactive Journal for Math

xThink has released MathJournal version 1.1, an interactive program for the Tablet PC that provides a natural and intuitive environment.

agilix making learning mobile

Solutions Products Clients & Partners

Mobile Learning Higher Education Distance Learning

Agilix delivers superior solutions for e-learning

VisionObjects handwriting recognition technology

About us Handwriting Recognition Markets Products Partners News & Media

MyScript Handwriting Recognition for:

- FORM PROCESSING
- NOTE TAKING
- MOBILE MESSAGING
- EDUTAINMENT

OUT NOW!

Vision Objects®: providing the industry standard in handwriting recognition

NEWS
August 2
Vision Obj
Technolog
delivers inn
electronic
reading ...
May 16th
Vision Obj
handwritin

Is Pen Computing Successful?

Google

Search

Web

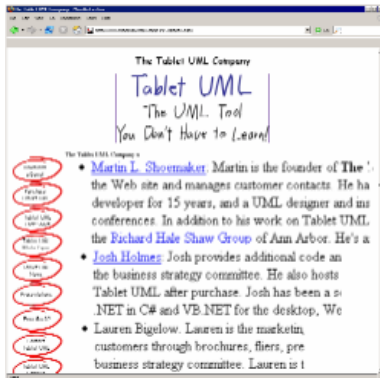
Results 11 - 20 of :

Tablet UML: The UML tool you don't have to learn!

Tablet UML is a UML tool for the Tablet PC. It combines the ease-of-use of ... And you can browse the menu bar on the left for our **consulting** and training ...

www.tabletuml.com/home.aspx - 16k - Aug 25, 2006 - [Cached](#) - [Similar pages](#) - [Note this](#)

[[More results from www.tabletuml.com](#)]



Are Tablet PC sales growing? Yes!



Robert Williams, Director of Tablet Platform Division Business Development, showed a Tablet PC sales growth chart. Looks like things are moving up!

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What is the other scale, have sales gone from 20 to 55 units?



Don't Give Up on Pen Computing

Michael Gartenberg [Today's Top Stories](#) » or [Other Hardware Stories](#) »

September 12, 2005 (Computerworld) -- When it comes to futuristic concepts, few ideas have captured the imagination like pen-based computing. The idea of doing away with a cumbersome keyboard for navigating and entering information has long been a Holy Grail, but it has met with little success. Microsoft's Tablet PC operating

Pen computing isn't dead, but it is stagnant.



Desktops & Notebooks



By David Coursey
August 29, 2005

Tablet PC Is Stronger Than Predictions Suggest

TALKBACK
Comment on this article
8 comments posted

Tablet PCs obviously aren't setting the world afire



[Click here to read why it's taking so long for tablet PCs to catch on with users.](#)

Is Pen Computing Successful?

Software Sophistication

Level 3: pen integrated

- UI designed for a pen.
- WYPIWYG (What You *Perceive* Is What You Get) graphics recognition.
- Handwriting entry and editing integral to the application.

Level 2: basic pen input

- Single-stroke shape and gesture recognition.
- Handwriting in application goes to text entry widget.

Level 1: pen is just a mouse

- Pen tap is like mouse click.
- Drawing is unparsed, raw digital ink.
- Enter text by bringing up a handwriting text entry widget.

Is Pen Computing Successful?

Existing Software Applications

	Level 1: pen is just a mouse	Level 2: basic pen input	Level 3: pen integrated
notetaking	Google Notes	Journal, OneNote, EverNote	}
spreadsheet	Excel		
design & illustration	Adobe Illustrator, Photoshop; Corel Draw, Paint.	Corel Grafigo	
presentation	PowerPoint		
creativity	MindJet	SMART Ideas	
forms	(verticals)		

Search for the Killer App.

This brings on the natural question— how do you make a Tablet PC a "no-brainer" purchase decision? I've been giving this some thought and while my needs may very well be different than other users I know what would do it for me. A killer app. You see that mentioned a lot, that there is no killer app for the Tablet PC that would push prospective consumers over the edge.

http://jkontherun.blogs.com/jkontherun/2005/08/tablet_pc_a_nob.html

The Tablet PC Killer App conversation

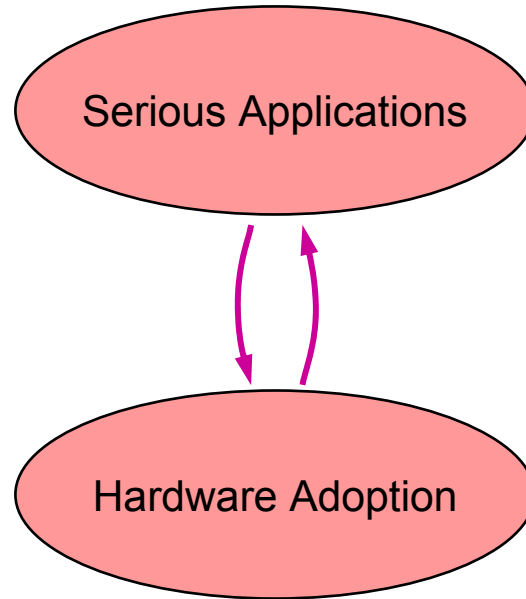
Posted 11/7/2005 by [James Kendrick](#) (Mobile Tech Expert)

Comments (0) | Trackbacks (0)

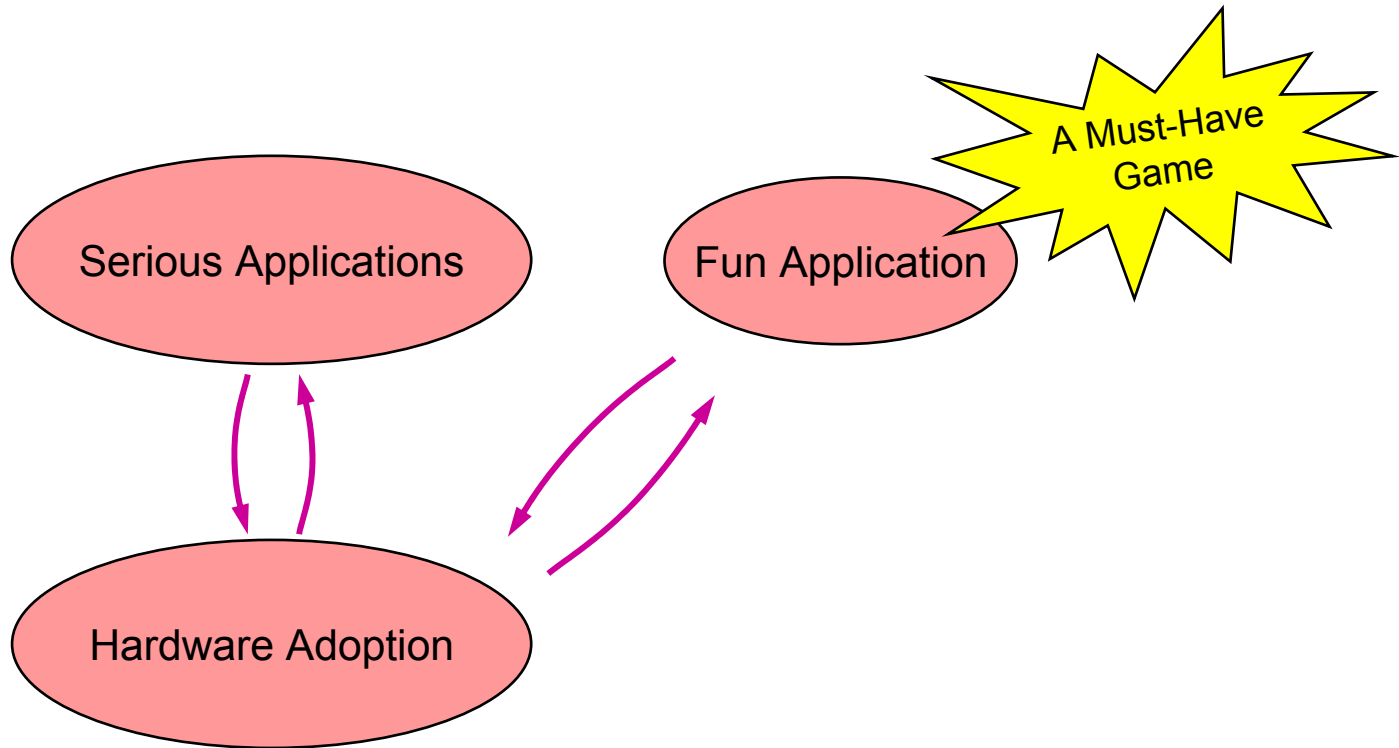
The search for the "killer app" for the Tablet PC always generates a lot of conversation and the current one [started by Lora of whatisnew](#) is a good one. The theory is that once ...

<http://blogs.ittoolbox.com/wireless/ontherun/archives/the-tablet-pc-killer-app-conversation-6428>

A Chicken-and-Egg Problem



Hypothesis



Games are Compelling



Wikipedia: **Senet** is believed to be the oldest board game.

Chess
Checkers
Go
Backgammon
Bridge
Poker
Blackjack
Scrabble
TicTacToe
Monopoly
Trivial Pursuit
RoShamBo
Dungeons & Dragons
Magic
Pokemon
Tetris
Settlers of Catan
Diplomacy
Risk
Rubik's Cube
Pictionary
Pong
The Sims
Suduko

InkBall

WIRED NEWS

The Quest to End Game Addiction

<http://www.wired.com/news/holidays/0,1882,48479,00.html>

Computer Games

The Computer Game Industry



Half-Life



Starcraft



The Sims



Quake



Madden NFL Football



Everquest



Halo



Grand Auto Theft



Animal Crossing

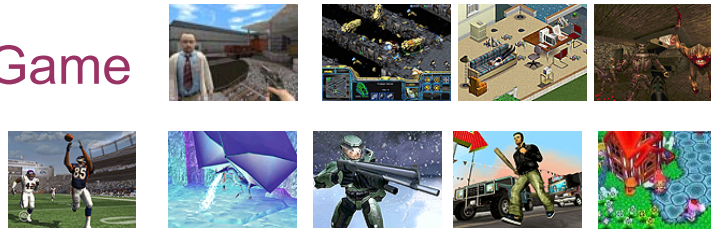
Nintendo DS

- 2 x 256x192 screens
- stylus input



Computer Games

The Computer Game Industry



Folk Games

The screenshot shows the Addicting Games website interface. At the top, there's a navigation bar with the site name and search options. Below, a grid of game thumbnails is displayed, each with a title and a brief description. A sidebar on the right contains an advertisement for 'ADDICTING CLIPS' and a 'BEST DRESSED' promotion. At the bottom, there are category tabs for 'Sports & Skill Games', 'Action Games', and 'Recent Games'.

ADDICTING GAMES All Games Tell A Friend Addicting Clips Search powered by Google

Updated August 25

ADDICTING CLIPS™
clip of the day: Me
Get Cash for Your Clips!

Street Shooter
This is one mean street!

More Beer
Keep the beer guzzlers happy!

Madness Baseball
America's favorite bloody pastime.

I Love My Computer
Who doesn't love their computer?

Turbo Spirit XT
Outrageous motorcycle racing!

Tradewinds Legends
Fight and barter your way through exotic lands.

Castle Attack 2
Enough arrows. Let's try boiling oil!

Meal or No Meal?
At last...play for the ultimate meal!

Leech
Help a leech drink delicious blood!

Dead Chickens

Getrich Jump 3

Scribble
42:26 Level 1

Game Information
Author: lmtb02.com
Description: Think you can connect the dots?

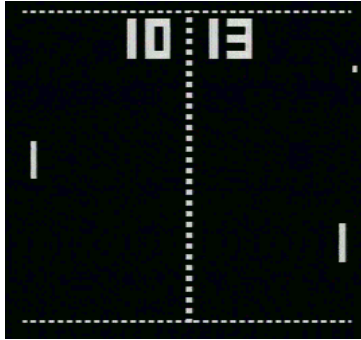
Looking for a real travel deal?
SHERMAN'S TOP 25
This Week's Deals:

WIN \$1000
Back to School Shopping Spree!
Personal Shopper.com

Sports & Skill Games Action Games Recent Games

<http://www.addictinggames.com/scribble.html>

Wanted: A Fad Folk Game for Pen Computing



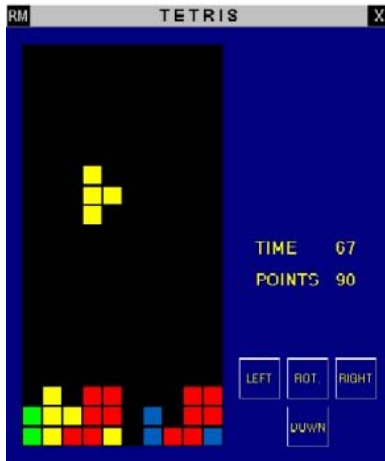
Pong



Rubik's Cube



Tomogatchi



Tetris



Online Poker

	9		1		7				2
3	2			9					1
4		7		3		5			
2									4
			5		7		9		
8									1
			2		1		8		5
	8				6			2	3
7				4		8		6	

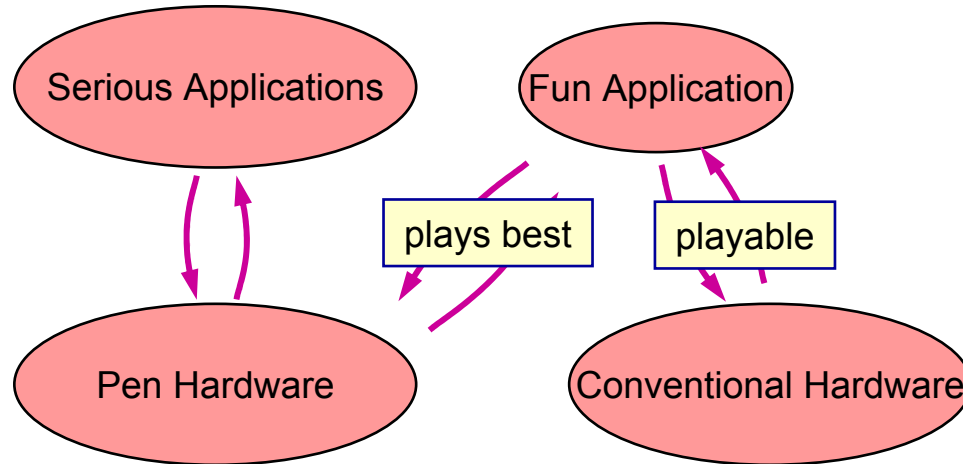
Sudoku

Brainstorming

- • Seven criteria.
- A ton of concepts.
- Five game ideas.
- Eight technology enablers.

Criteria

1. Playable on all hardware, privileged on Pen computers.

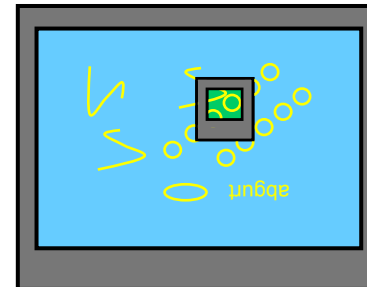


Take advantage of pen input:

1. Fine control of position and shape.
2. Mixed drawing and writing.
3. Simultaneous positioning and entry of content (no cursor needed).

Take advantage of a large format screen:

4. Large playing field.



Criteria

2. Simple concept, easy rules.



A fad casual game must be quickly accessible---not mystifying---
to an over-the-shoulder observer.

Criteria

3. Time scale: A few minutes.

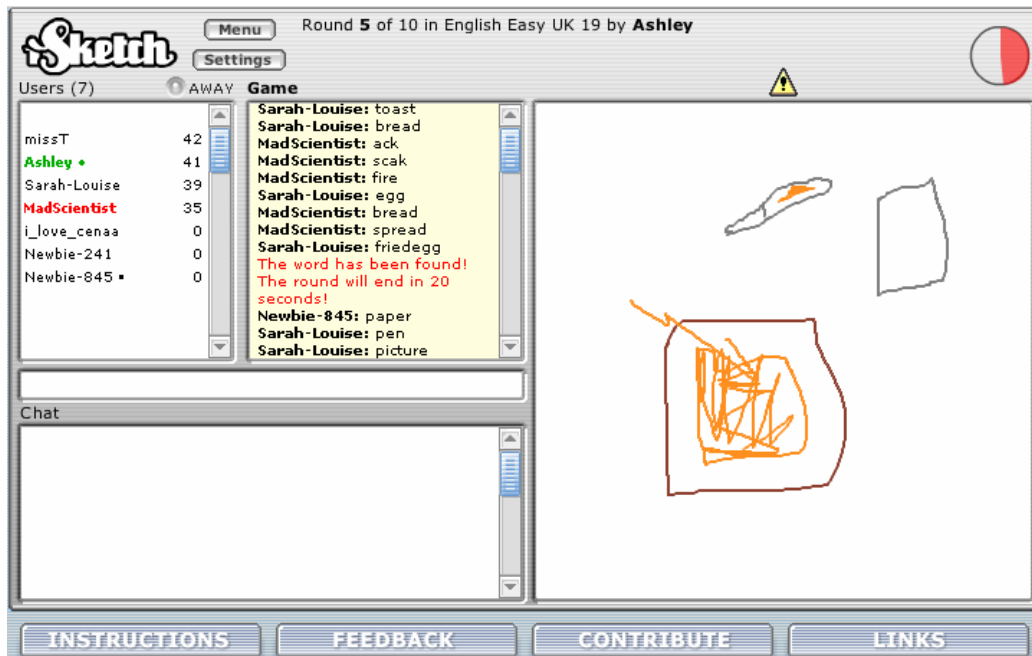
- a “down-time” game to fill gaps in schedules but can absorb hours if desired



- repeated short rounds
- little cost for stopping on short notice

4. Solitaire and Competitive.

- single player version for lightweight entry to play, desire for down time from others
- competitive version for social engagement & human drama
- enabled by ubiquitous networking

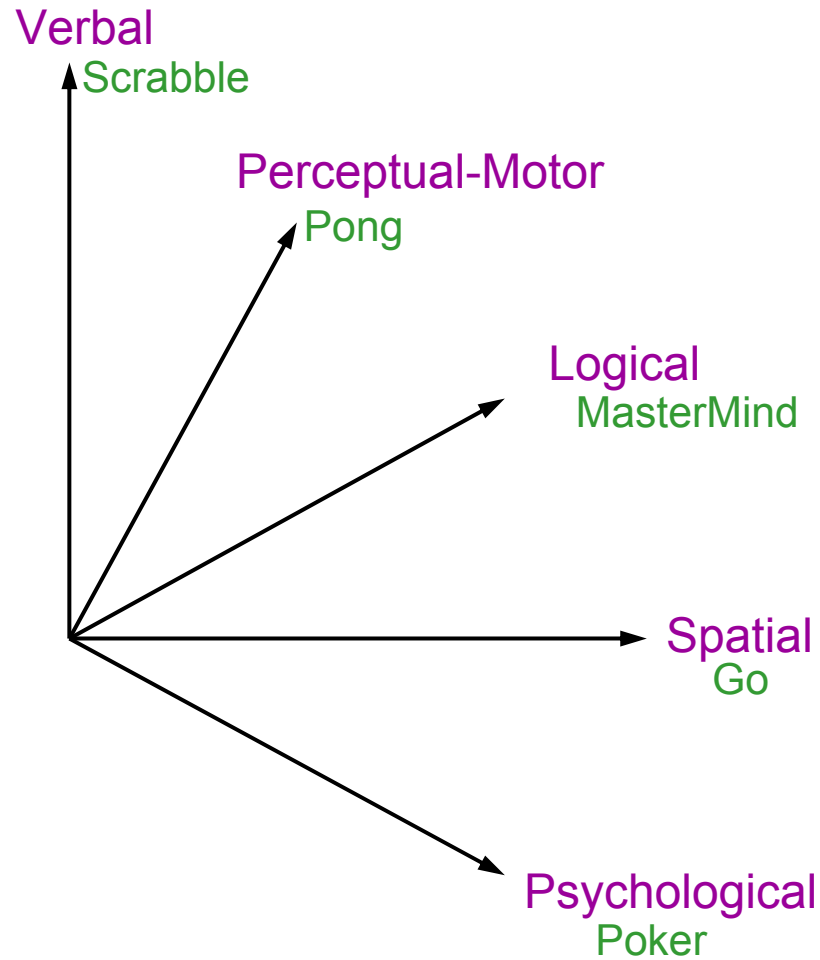


Networked folk game example: isketch
<http://www.isketch.net>

also, the ESP Game
<http://www.espgame.org/>

Criteria

5. Mixed of skill components.



Criteria

6. Handicappable.

- accessible to players at all levels:
“grandparent vs. grandchild”

7. Cool music.



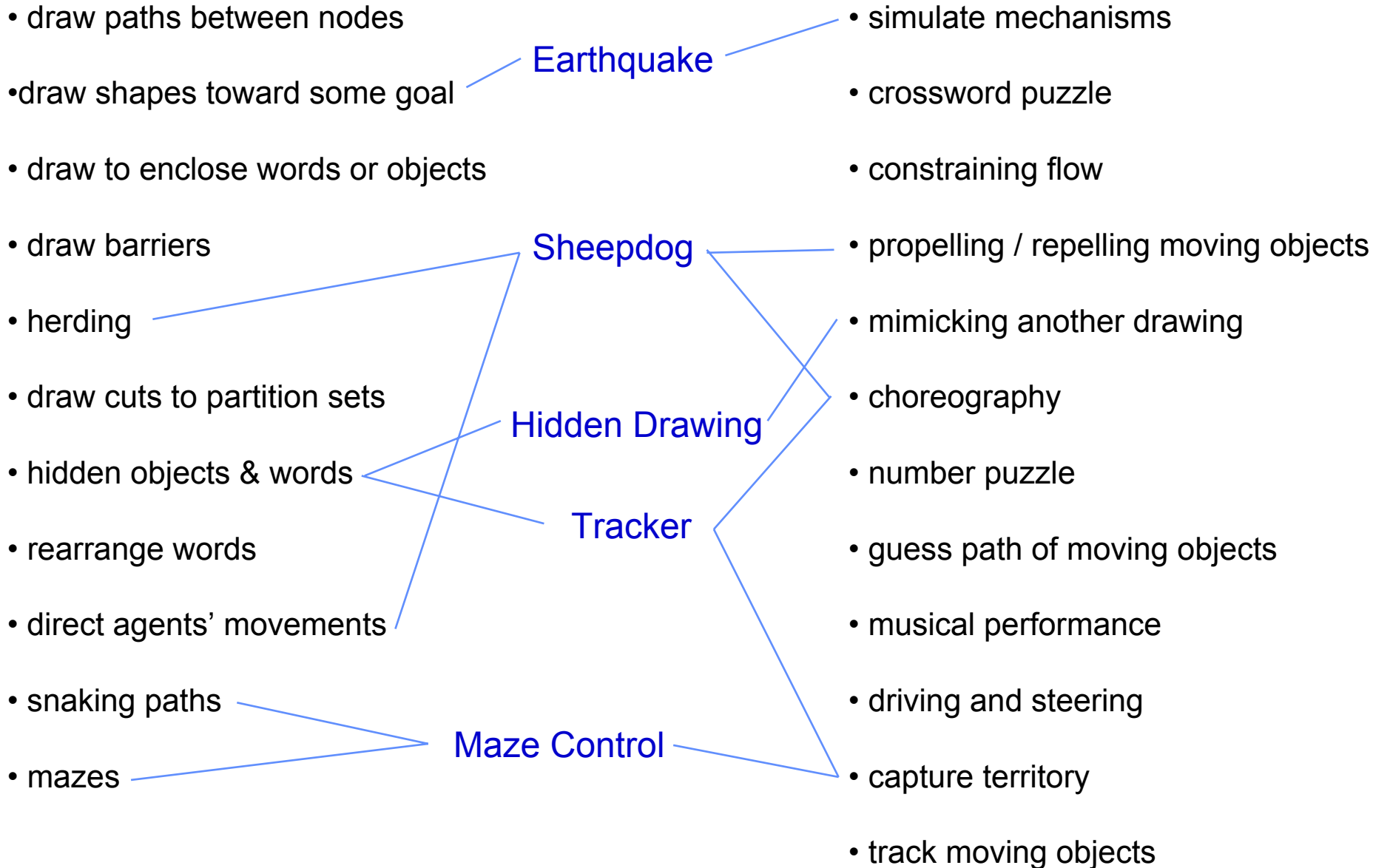
floats

<http://www.ferryhalim.com/orisinal/g3/floats.htm>

Brainstorming

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Game Concepts and Components

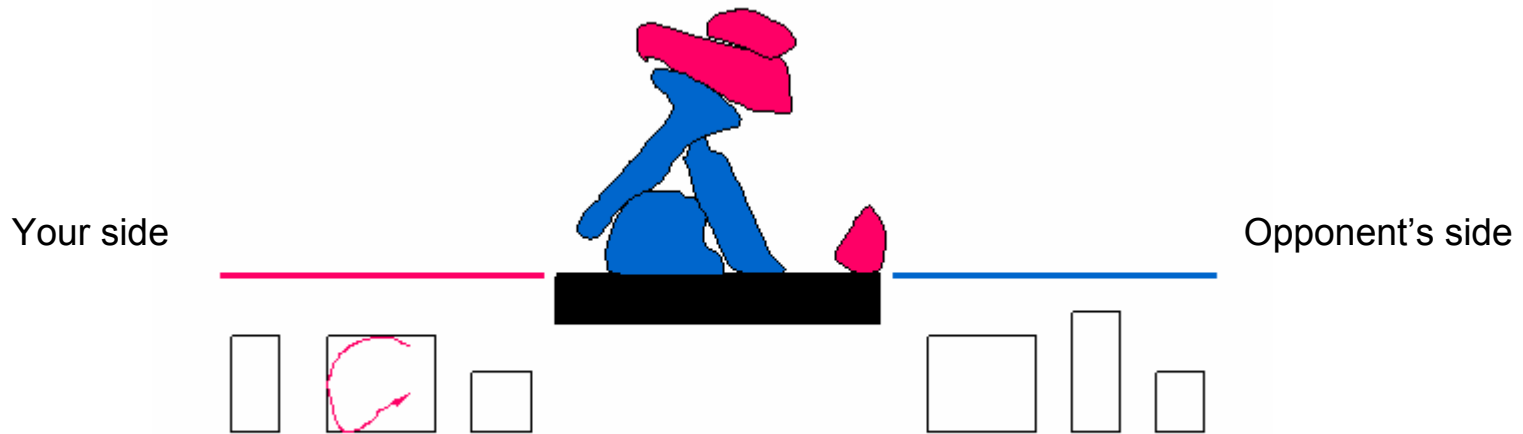


Brainstorming

- Seven criteria.
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- Eight technology enablers.

Earthquake

Object: Draw rocks so when the earthquake happens more rocks fall on your opponent's side.



The blue rocks are likely to fall on the red side, the red rocks are likely to fall on the blue side.

Sheepdog

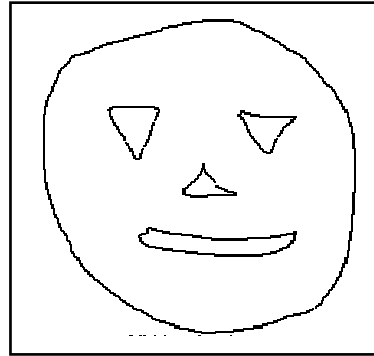
Object: Direct the sheepdogs to herd the sheep into the pens.



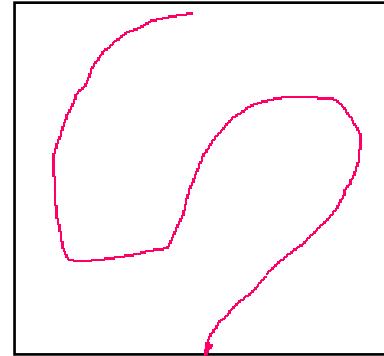
<http://www.saund.org/sheepdog.html>

Hidden Drawing

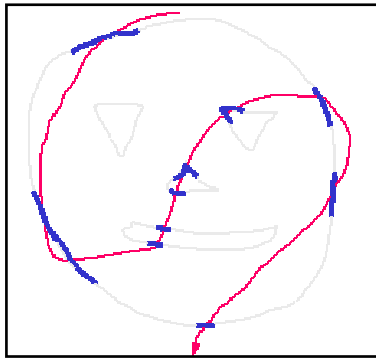
Object: Reveal a hidden drawing by tracing it based on partial information.



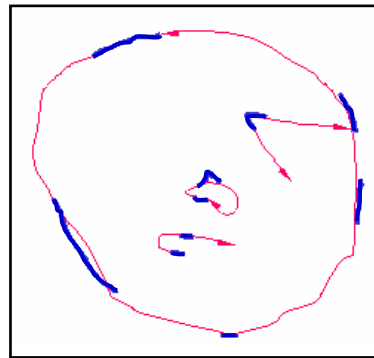
1. Hidden drawing.



2. Player's first guess (red).



3. Drawing revealed by player's first guess (blue).



4. Player's second guess (red).



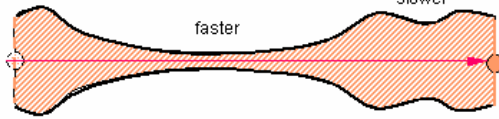
5. Drawing revealed by player's second guess (blue).

Tracker

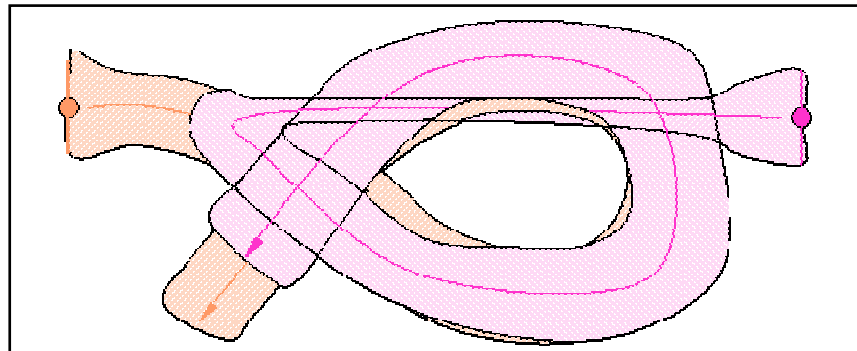
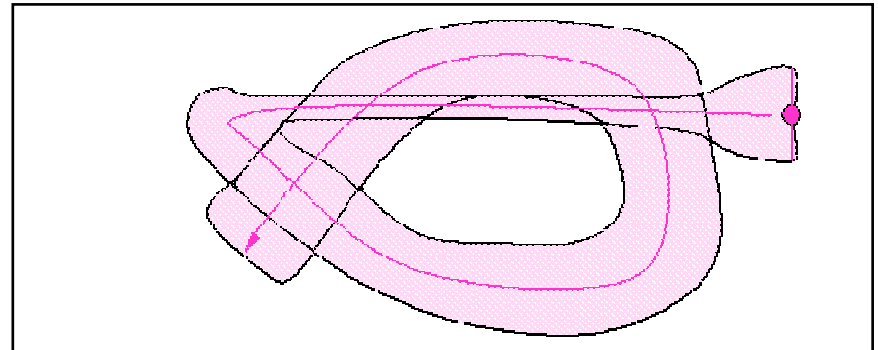
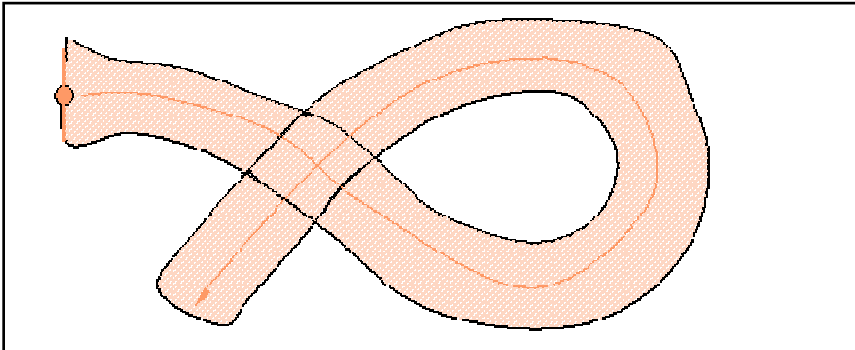
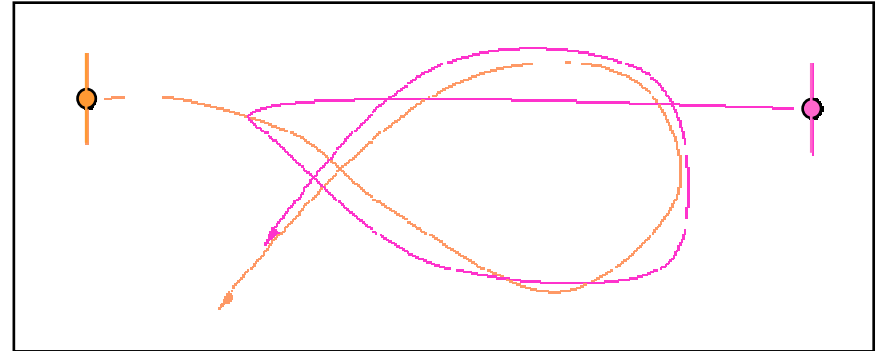
Object: Capture territory by dragging your boom over ground *later* than your opponent does.



Player's token and its boom that claims a swath of territory as the token moves..



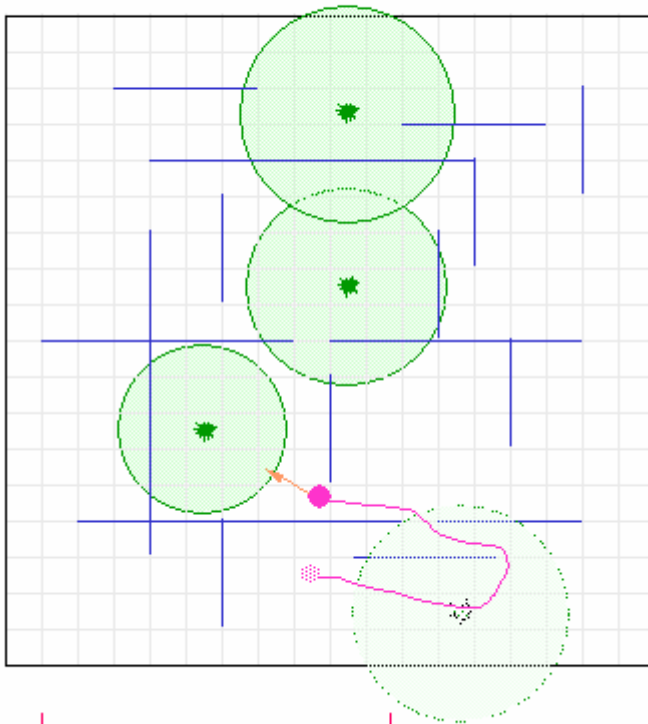
Territory claimed by a straight-line move that speeds up then slows down for a while near the end.



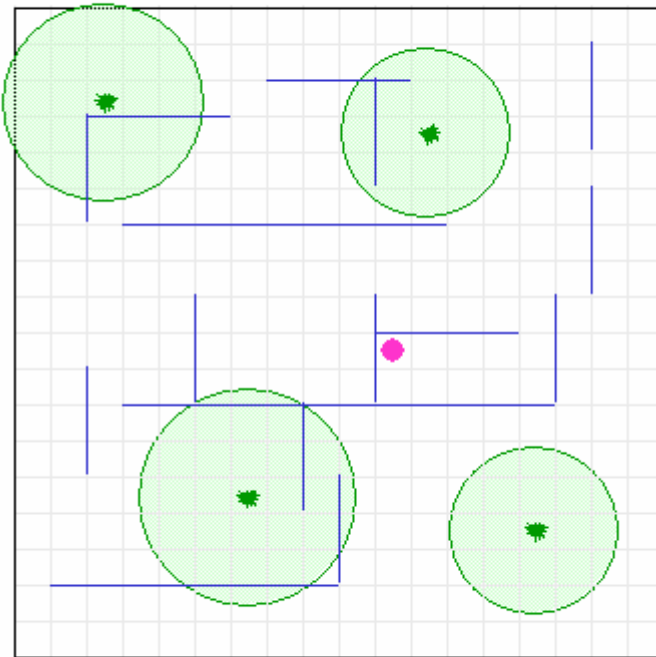
Maze Control

Object: Cover your opponent's territory with trees.

Your territory



Opponent's territory



Brainstorming

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But where's the vision?:

Computers that respond intelligently to what we write, draw, and gesture.



- Eight technology enablers.

Technology Enablers for New Game Concepts

What cutting-edge software technologies could be exploited in a game for pen computing?

- Ability to either write text or draw, without switching modes or devices.

Inferred Mode Protocol

- Excellent handwriting recognition.

- Use of covert recognition.



- Gesture recognition.

- Recognition of graphics with respect to existing markings and objects (e.g. enclosures, linkages).



- Linguistic processing.

boy hit the ball vs. ball hit the boy

- Networking.

- Machine Learning. e.g. adaptation to the user.

A Fun Challenge for All of Us

Opportunity: Turn your own research in sketch, gesture, and handwriting recognition into the killer app. game for pen computing.

Eric Saund
saund@parc.com

falling sand game