

Idea to App Store

Paul Solt - Professional Student

Who Am I?

Who Am I?

- 7th year BS/MS Graduate Computer Science Graduate Student
- Department of Defense, Apple, and Microsoft
- Passionate about technology
- Detail oriented
- Artist

Ideas

Ideas

- Nature
- People
- Products

Save Your Ideas!

- Notebook
- Notepad
- iPad
- Hand
- Napkin

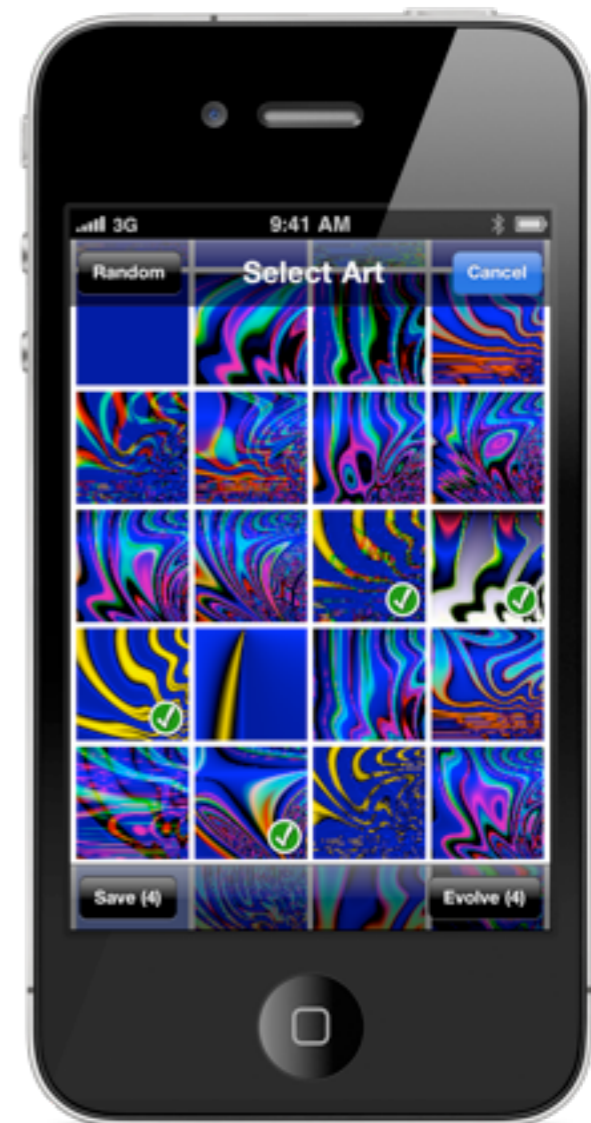
Evolve Ideas!

- Share ideas
- Get feedback
- Revise your ideas
- Brainstorming is very important and FUN!

Notebook

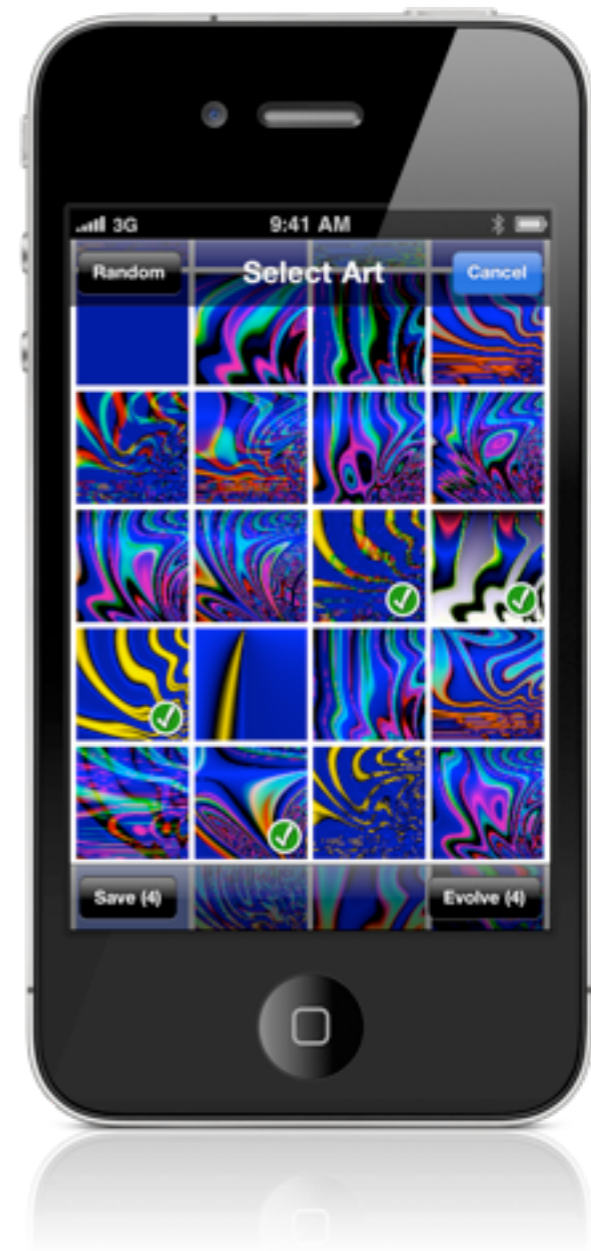


ARTWORK EVOLUTION



ARTWORK EVOLUTION

- Genetic Algorithms Program
 - Create abstract art
 - Create more abstract art
 - Breed both previous art together

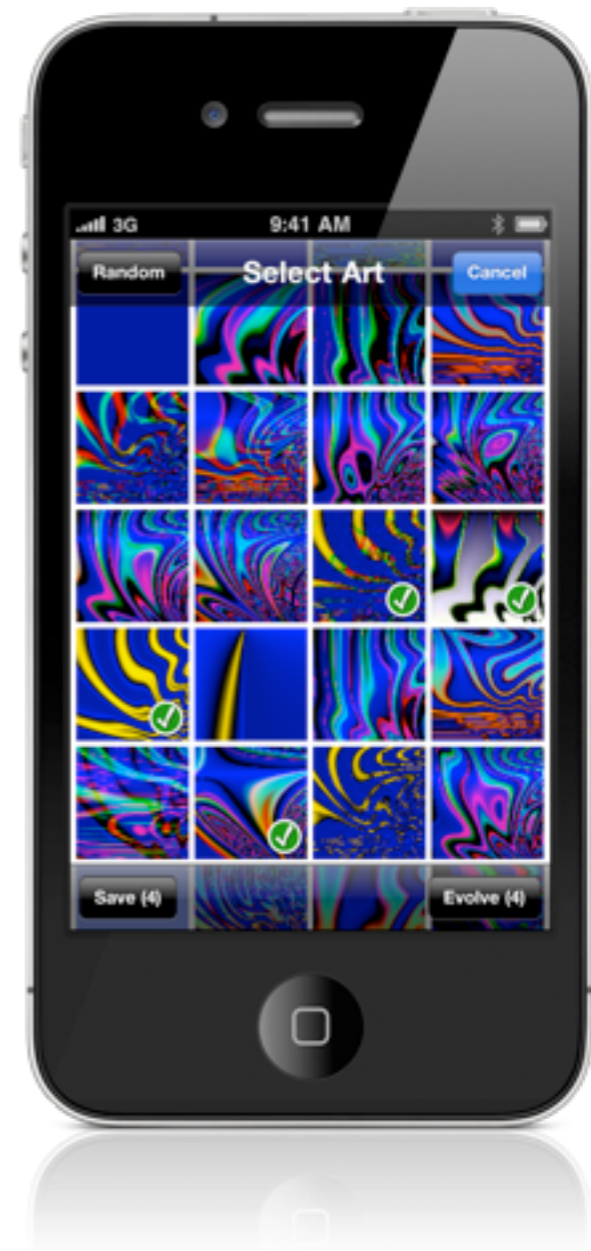


Demo

Idea for Artwork Evolution

Idea for Artwork Evolution

- Create Images
 - Karl Sims - Genetic Images
 - Procedural Textures
 - Ray Tracer



Crazy Notes at 2am

2-9-10 - Tablets (initially) - phone / tablet / tablet

• multi-app (no, park / feature) final total?

• free (archive image, scrub, initial wallpaper use)

• in-app purchase (image sets or access)

• built-in archive image sets + free & full wallpaper

• in-app purchase (operations -> (10))

• to help (scale, rotate, position, zoom, crop + pad)

• in-app purchase

• App generates images

1. Initial screen

image
scrub



press to open (2)

Displays images that are
Twitter or "best of"

options
edit
rotate
delete
share

leaf/web view to "store" evolved
maps via the web
(local favorites, highest rank, etc)
photo library

2. Image Scrub View

image scrub
view



Displays a generated "Image Scrub"

options
rotate
scrub
share
erase
undo
redo

effect (some)

edit (3)

2-4-10

Future Idea

3D view of functions

3. Edit

(Preview image quality)



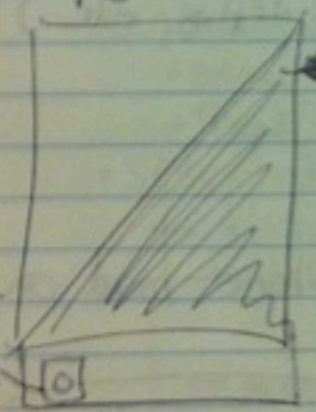
- Scale (Zoom In/Out)
- Translate (shift up/down/left/right)
- Color change color mapping of image (Blue → Yellow)

monochrome vs. color bar toggle

- Rotate (3D space) + z translate
- Tunable (abstract) parameter sliders → mini active: scale tools only

prototype includes new bounds

4. Render

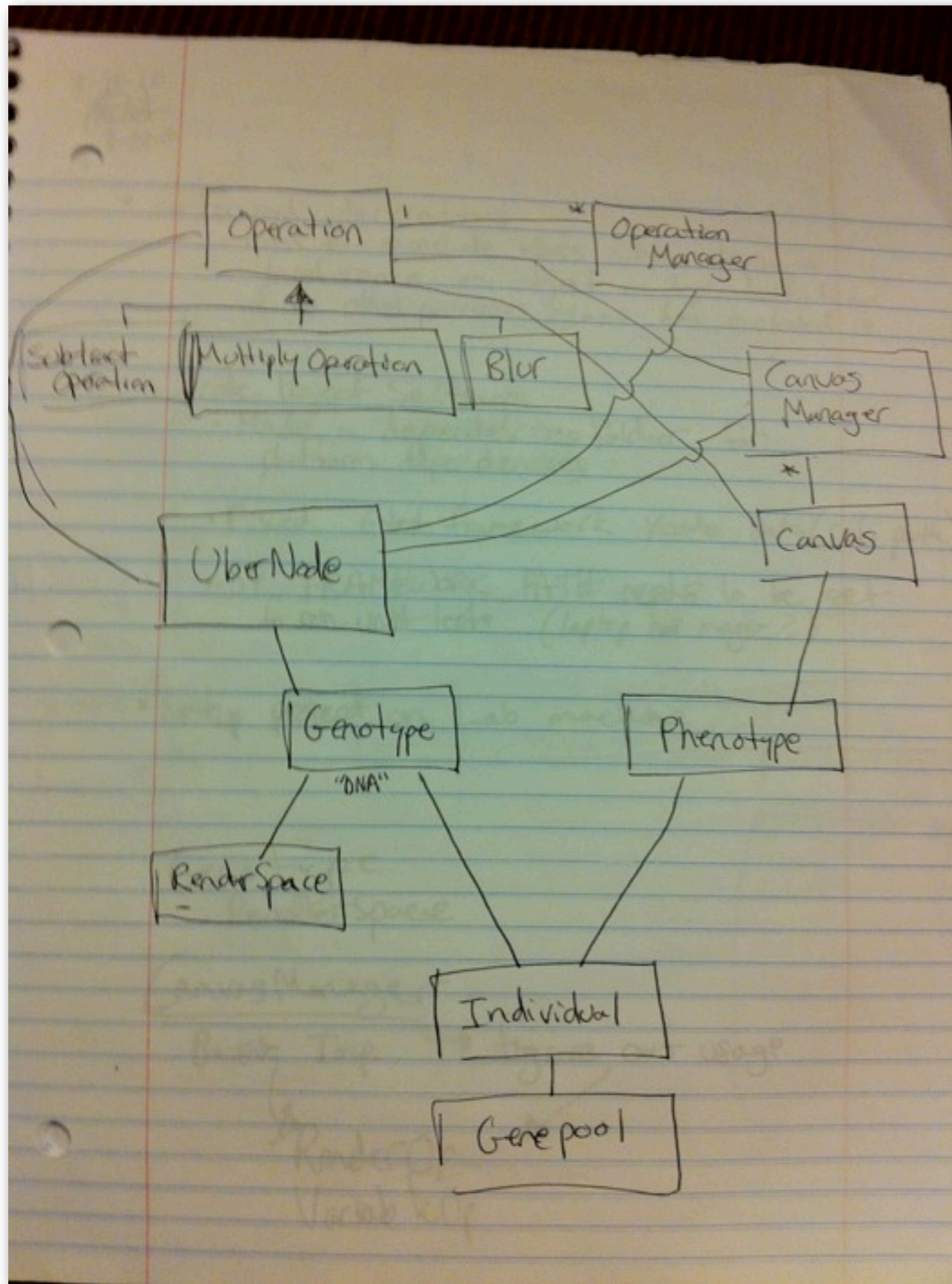


high resolution / multisampling to improve image quality

trans here generate view

3. Server Web Service

- Store/update image seeds
- User accounts (easy setup on first save action)



Whiteboard



Time Line

Time Line

- Genetic Algorithms - Fall 2009 (3 months)
 - Created Texture Evolution
- Fluid Dynamics - Winter 2009 (3 months)
 - Played with Texture Evolution
- Artwork Evolution Spring 2009 (9 months)

Draft, Revise, Repeat

- Texture Evolution (Monochrome)
- Artwork Evolution (Color)
- Artwork Evolution (iPad)
- Artwork Evolution (Complexity)
- Artwork Evolution (UI Update)

Project and Time Management

Google SpreadSheets

	A	B	C	D	E	F	G	H	I
1	Task	Explanation	Type	Priority	Difficulty	Status	Date Opened	Date Closed	Comments
17	12/13/10 to 12/19/10								
18	Memory Leaks								
19	Zoom Bounds	Large view isn't very zoomable							
20	Slow Evolve	More images rendered = slower time to evolve next generation...	Investigate slowness	3	25	1	1/26/2011		Removed Synchroni statements
21	Clear the cache, it's leaking resources somewhere...		Memory Bug	4	25	1	1/26/2011		
22									
23	After Email Vctor view switches to first index After low memory	The index is being reset, if a memory warning is thrown, don't reset the index on loadView. Need to fix this issue completely	UI Bug	5	40	2	1/13/2011		Workaroun the image offset initial
24	Thumbnail view doesn't restart after large view	The rendering is canceled, not sure what's canceling the small images from processing again. Happens if you tap a large image and then go back to thumbs	render UI bug	1	10	3	12/24/2010	1/13/2011	Fixed by re the request enter foreground may need in other pl Slow on o devices
25	Numbers don't display correctly in PhotoView on flick "5 of 100"	Flicking the images doesn't update numbers correctly, readd functionality that was removed from the "scrolled" callback	UI Bug	6	10	1	1/5/2011		
26	Render when idle	Idle render small images - Timer based		6	25	1	12/22/2010		
27	Disable large renders for slow devices	User setting to turn off large renders on iphone 3g etc.		8	20	1	12/22/2010		
28	Add wait logic to medium render	Render 500x500 after a few seconds of pausing	Design Change	5	15	1	12/19/2010		
29	Update renderoperation with correct sizes for devices	Need to figure out sizes for renders		3	5	1	12/17/2010		
30	Delete Button	Add delete support		3	10	1	12/17/2010		
31									

Slim Timer

Task by Time Report

11/27/2010 - 12/24/2010

Task	Wk 47 11/21	Wk 48 11/28	Wk 49 12/5	Wk 50 12/12
Added clearCanvas to EvolutionLib				4.1
Artwork Bug Fixing				3.1
Artwork Evolution Test Deployment				1.0
Artwork Interface				33.5
Blog Writing		0.8		0.6
CIS Work		5.9	8.7	11.9
CS Work		18.8		
Cleaning	0.4	1.2	0.3	
Coffee				0.3
Dishes			0.4	
Email	0.2	4.9	1.6	0.3
Evolution ObjC			23.6	0.1
Evolution.h/GenePool Design	2.3	22.5	0.1	
Exercise		2.8	1.7	0.7
Food		7.5	5.6	3.3
Food Shopping		2.0	1.0	1.2
Hygiene	0.5	1.9	3.1	2.5
Laundry			0.5	
Movies		2.3	0.9	0.9
Nap		0.6	2.0	
People Time		6.3	8.0	1.7
Resource Management Objc			9.1	10.9
Shopping				
TV				4.0
TexEvolves GoogleDoc				0.7

App Store

App Store

- Release paid App first
- Charge more than \$0.99
- Update App using feedback
- Release free App 1-2 months after

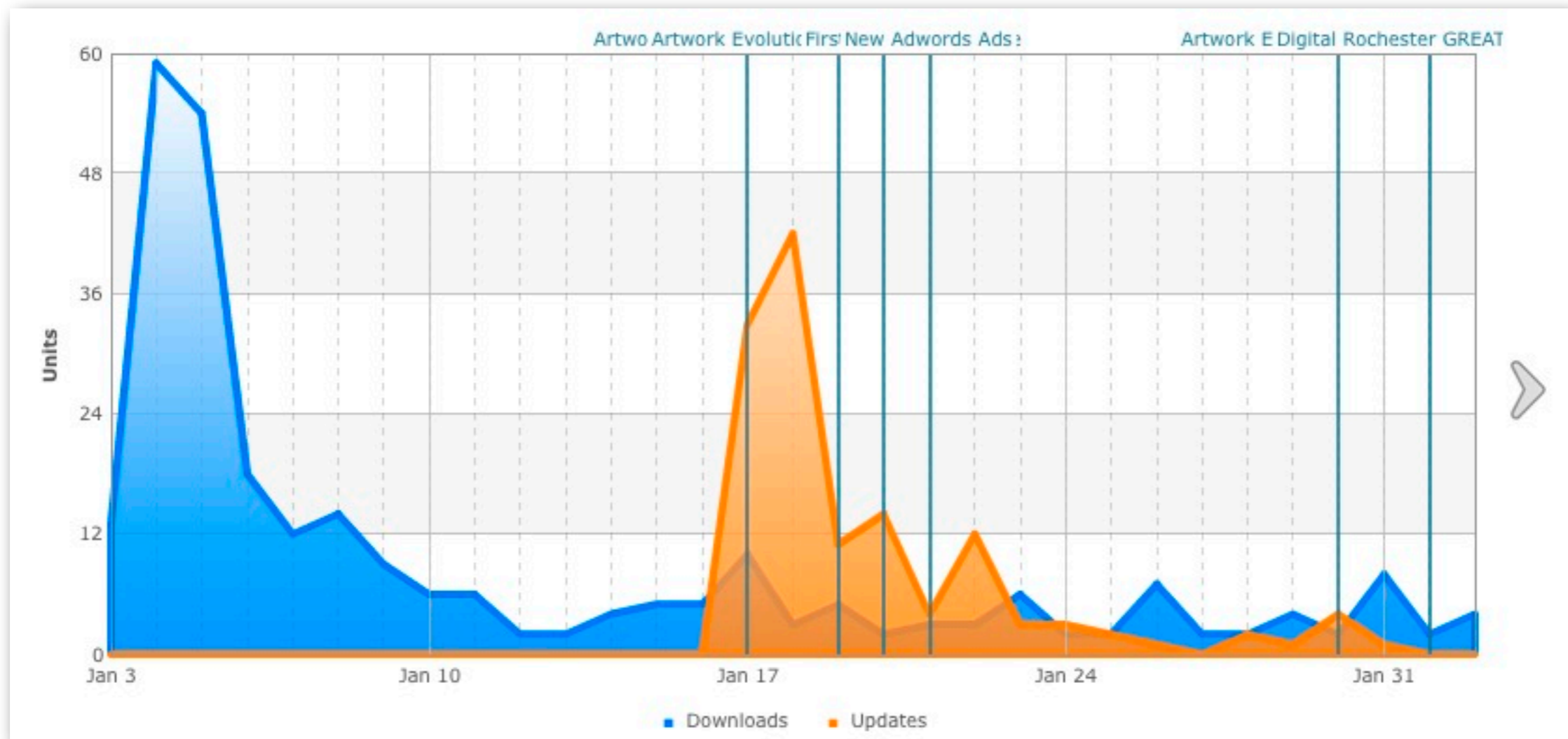
App Store

- Featured in “New Releases”
 - \$75+ day at \$2.99
 - \$300 in 4 days
- Not featured in “New Releases”
 - \$9 day afterwards
 - \$245 in 27 days

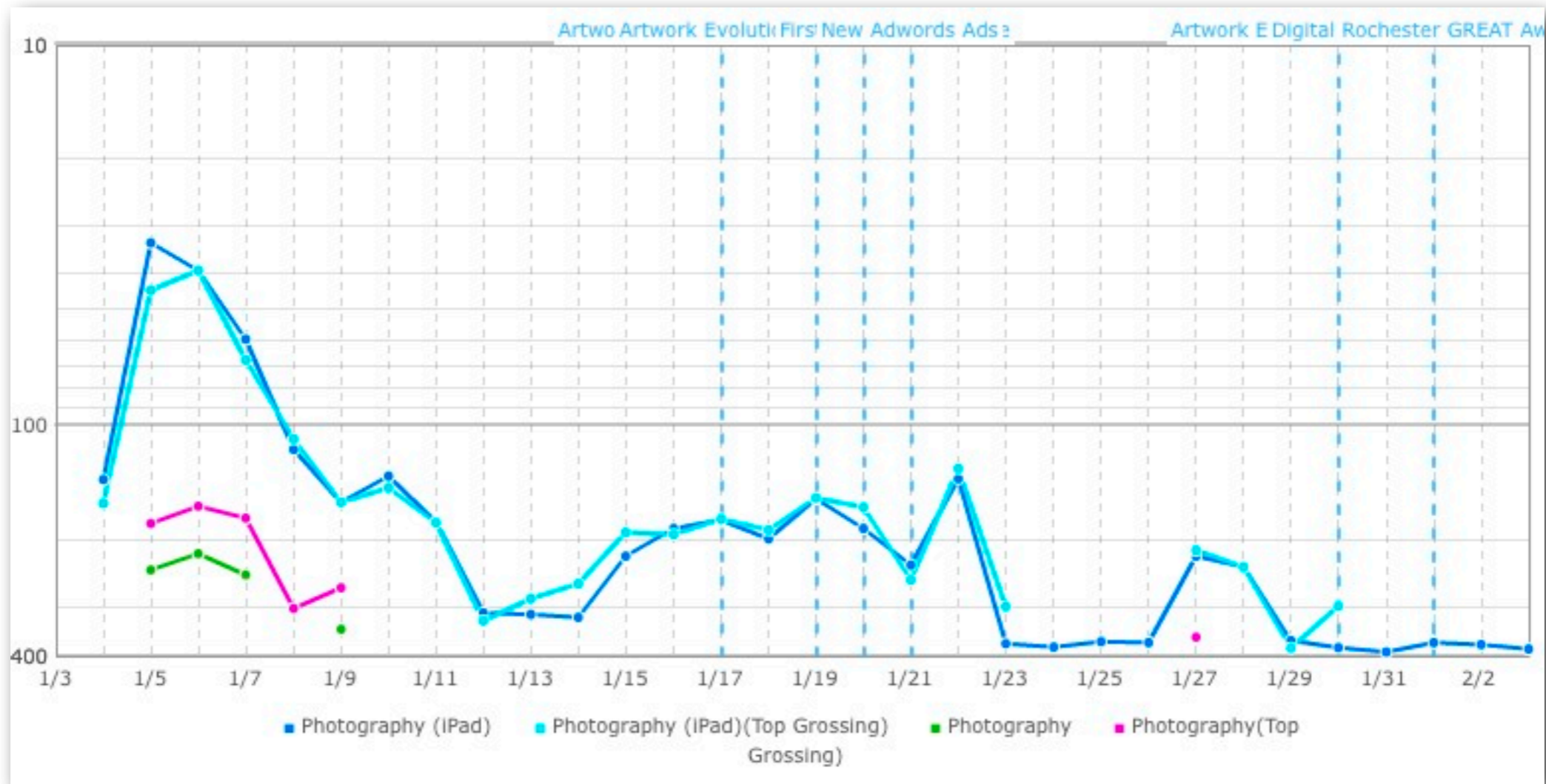
App Store

- Less one hit wonders
- Cross sell applications
- Advertise applications
- Sell compelling experiences
- Be prepared to update and release new Apps

App Store Sales



App Store Rankings



App Metrics

- Flurry Analytics
 - Track paths
 - Track errors
 - Track usage
- Identify problem areas

Artwork Evolution

- 25,000+ lines of code
 - 10,000 lines Objective-C UI code
 - 5,000 lines test code
 - 10,000 lines C++ Evolution Code
- Core is C++
- UI is Objective-C

Testing

- Testing
 - GHUnit - Objective-C
 - GoogleTest - C++
- Device/Simulator Testing
 - Simulator Performance != Device Performance

Links

- Apple Dev Center: <http://developer.apple.com/ios>
- C++ Google Test: <http://code.google.com/p/googletest/>
- Obj-C GHUNIT: <http://gabriel.github.com/gh-unit/>
- AppFigures: <https://www.appfigures.com/>
- Flurry Analytics: <http://www.flurry.com/>

ARTWORK EVOLUTION

- Discussion and Questions
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