The Increasing Importance of the Graphical User Interface (GUI) in the Digital Age

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Definition of Graphical User Interface

► “Graphical user interface (GUI) is a computer program that enables a person to communicate with a computer through the use of symbols, visual metaphors, and pointing devices.”
Components of the Graphical User Interface (GUI)

Graphical User Interface (Xerox Star / 1981)

Windows
Network
Printer
Email
Directory
Trash
Folder

Input Device
Mouse
Direct Manipulation
Gesture vs. Text

Keyboard
GUI History (Critical Introductions and Design Patent Events)

- Englebart’s On-Line System (NLS) Dec. 1968 The Mother of All Demos
- Xerox Alto
- Xerox Star
- Apple Lisa
- Macintosh 128K
- MS Window
- Apple Newton
- iPhone Gen 1
- Google Glass

Timeline:
- 1960s
- 1973
- 1981
- 1983
- 1984
- 1985
- 1993
- 2007
- 2013
- 2018

Key Events:
- Xerox Star Patents for Icons and Screens
- Apple v. Microsoft ruling related to protection of GUI
- USPTO ruling allowing GUI design patents
- Apple v. Samsung
Number of Devices Employing GUI Design Concepts

Inflection Point: What accounts for the dramatic increase in GUI-based Interfaces?

Based on estimated total number of MS Windows, Apple and Android OS devices covering desktop, tablet and smartphone products.
Connectedness / The Internet of Things

Devices that can be networked over the next 10 years

- Pallets / cases
- Home appliances
- Machinery
- Vehicles
- Hand held devices
- Computer clients
- Consumer products

Non-computer devices will be responsible for the vast majority of networked devices. The market for such devices is enormous.

Source: MIT and Forrester Research (The Internet of Things)
What Happened To The GUI In The Internet of Things?

Cloud

Hardware Interfaces

GUI Soft Interfaces

SDK/GUI API App Store
Example: Philips HUE Light Bulb
Device control is now vastly broader and subjectively personalized by GUI

Philips HUE Light Bulb: The Information Domain + 3 D’s

Router IP Address

Smart Product IP Address

HUE App IP Address

Device Cloud IP Address

Philips.Com
Apple.Com
Google.Com
iOS developers
Android developers

Data Cloud IP Address

DOE
Public utilities
Research orgs.
Security firms
Maintenance firms
Number of Devices Employing GUI Design

One product/device will have multiple GUI control interfaces from different sources.

Based on estimated total number of MS Windows and Apple OS devices covering desktop, tablet and smartphone products.
Why So Many New GUI Designs?

► OS GUI based on manufacturer’s API
  ► Apple iOS
  ► Android OS
  ► Microsoft OS
  ► Other protocols and networks (ZigBee…etc.)

Example: Apple iPhone camera feature
• 146 GUI solutions on the Apps Store
• 85 GUI major photo manipulation APPS
• 10 GUI major social media APPS

• Protecting GUI solutions will be a major problem and opportunity for USPTO and the legal community.
Behavior Of Modern GUI v. Problems With IP Protection

- Utility Patents
- Design Patents

Copyright
- Software Code
- Line 1...Line X
- FUNCTIONS
- FEATURES
- DATA
- ALGO

Computer Hardware and Communications Network
- GESTURES
- NAVIGATION

User Experience (UX)

Trade Dress

- Copyright
- Utility Patents
- Design Patents
Critical Differences Between Product Design and GUI Design

Overall product is described in orthographic projections. *(Real-world 3D product)*

Overall Product (GUI) can only be described through series of transitional descriptions. *(Virtually-presented interactive experience)*
Apple vs. Samsung (What was Apple trying to protect?)

- Apple initially accused Samsung of infringing:
  - ‘381 patent: touchscreen interactions
  - ‘915 patent: using an API to scroll through documents
  - ‘163 patent: tap-to-zoom
  - ‘677 patent: general outline and ornamental design
  - ‘087 patent: general outline and ornamental design
  - ‘889 patent: ornamental design
  - ‘305 patent: GUI for a display screen

- Samsung countersued, accusing Apple of infringing:
  - ‘914 patent: mobile phone 3G capabilities
  - ‘516 patent: mobile phone 3G capabilities
  - ‘711 patent: MP3 playback on a mobile device
  - ‘460 patent: device that functions as a phone and a camera
  - ‘893 patent: method for remembering user’s place in a gallery

Source: http://www.wired.com/gadgetlab/2012/07/apple-v-samsung-explained/
“For the innovators of the 21st century, design has moved onto a much larger stage. It is where high function meets high style. And the traditional disciplines of IP — patents, trademarks and copyrights — are no longer ends unto themselves but are now viewed as component parts of a larger whole.”
Thank you