

Disclosure preparation

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2017-12-12

BACKGROUND AND DISCLAIMER

- I am only an engineer, not a patent attorney. My view as an engineer is very different from the attorney. I can elaborate on this at the discussion.
- I have been with my former company's patent review committee for >7 years and understand the approval process for my company only, which may or may not be the same as other companies
- However, there is a generic set of expectations for creating a good patent, no matter where you go.
- My discussion can only cover in the area(s) I am familiar with: technologies related to computers, and associated areas/components, UI, etc. Yet, there are many-many other fields which I don't know. Hope the audience can generalize my sharing and apply to their areas of interest.
- I **invite you to share** your experience also so we all can grow in this area.
- I will try my best to give you correct information (**without guarantee or warranty**). I welcome your input, feedback and corrections.

Last meeting was about idea generation

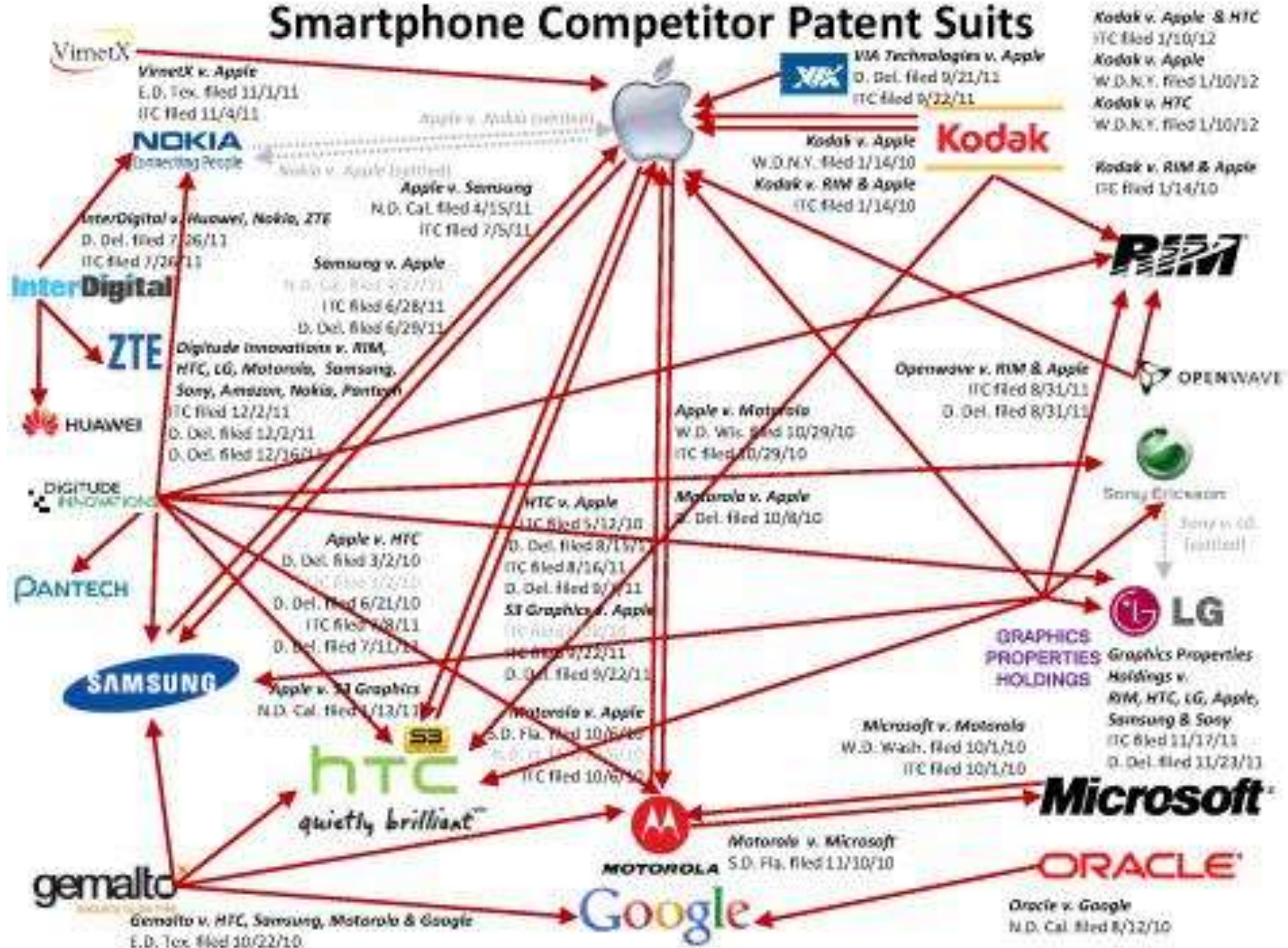
– presentation is at

<http://www.hillsborotech.org/community/>

I want to cover the following topics today

- How do I know if my invention is patentable?
- How long does patent protection last?
- How much does it cost to get a patent?
- Key points in preparing a disclosure for patent filing

Smartphone Competitor Patent Suits



Rank	Organization	2016 Patents	Percent Change From 2015
1	International Business Machines Corp.	8,023	7.8
2	Samsung Electronics Co., Ltd.	5,504	8.8
3	Canon K.K.	3,865	-8.8
4	Intel Corp.	3,414	30.1
5	Google, Inc.	3,267	2.3
6	Qualcomm, Inc.	3,118	-2.8
7	General Electric Co.	2,566	-2.4
8	Microsoft Corp.	2,558	3.5
9	LG Electronics Inc.	2,426	8.3
10	Taiwan Semiconductor Manufacturing Co., Ltd.	2,261	28.6
11	Sony Corp.	2,168	-11.4
12	Apple, Inc.	2,101	8.5
13	Samsung Display Co., Ltd.	2,010	10.1
14	Toshiba Corp.	1,920	-31.3
15	Amazon Technologies, Inc.	1,662	46.3
16	Seiko Epson Corp.	1,644	1.6
17	Dell Technologies	1,628	new
18	Fujitsu Ltd.	1,563	7.4
19	Telefonaktiebolaget LM Ericsson	1,552	10.4
20	Toyota Jidosha K.K.	1,540	-5.9

USPTO in 2016 issued
303,051 patents, up
1.6% from 2015

287	ARM Ltd.	116	-20.5
	HRL Laboratories, LLC	116	new
	Osram GmbH	116	3.6
	Realtek Semiconductor Corp.	116	-15.9
	Yamaha Motor Co., Ltd.	116	-4.1
292	Sandia Corp.	115	6.5
	United States of America, National Aeronautics and Space Administration	115	new
294	L'Oreal S.A.	114	-23.5
	University of South Florida	114	new
296	Arris Enterprises, Inc.	113	new
	Compagnie Generale des Etablissements Michelin	113	0.0
298	Bristol-Myers Squibb Co.	111	new
	Uni-Charm Corp.	111	-13.3
300	Acer Inc.	110	new
	Hamamatsu Photonics K.K.	110	new

Credits to www.ipo.org/top300

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Cost to file and maintain a patent

Patent Application Filing Fee	Fee	Small Entity	20 claims
Basic filing fee - Utility (electronic filing)	280	70	
Each independent claim in excess of three	420	210	3780
Each claim in excess of 20	80	40	
Utility Application Size Fee - for each additional 50 sheets that exceeds 100 sheets	400	200	
Utility Search Fee	600	300	
Utility Examination Fee	720	360	
SUM		4510	
Patent Post Allowance Fees			
Utility issue fee	960	480	
Publication fee for early, voluntary, or normal publication	0	0	
Patent Extension of Time Fees			
Extension for response within first month	200	100	
Extension for response within second month	600	300	
Extension for response within third month	1,400.00	700	
Extension for response within fourth month	2,200.00	1,100.00	
Extension for response within fifth month	3,000.00	1,500.00	
Patent Maintenance Fees			
Due at 3.5 years	1,600.00	800	
Due at 7.5 years	3,600.00	1,800.00	
Due at 11.5 years	7,400.00	3,700.00	

BASIC REQUIREMENT OF A PATENTABLE IDEA

- Novelty
- Not obvious
- You are the first to file: Example: Transistor
- Has value, usefulness
- Can detect infringement and violation

SCOPES FOR THE IDEA

- Product
- Process
- Any field of technology

Watch out for prior art: Do not disclose your idea publicly before filing a patent.

You may have surrendered the patent right to the company you are working for: review your hiring agreement

PERSONAL NOTES

My former company encourages innovation

My motivations to submit and invention disclosure

- I don't prepare the paper if I don't think there is a chance of passing
 - But I made mistakes
- Rewards (\$ and others)

Learning

- *Prepare Invention Disclosure even if it seemed to be trivial to you. The review committee may view that differently.*

Learning

- Our org counts everything
- I spent 16 hr to multiple weeks/meetings in research/preparing an Invention Disclosure
- I spent another 8-10 hours if the paper is accepted for filing
- I spent even more hours if the idea should be in a product
- One idea inspires the next one

WHY MY PAPER NOT BEING ACCEPTED - 1

Most of the time the ideas have been filed, or have already been applied to products in the market.

- Good: you are as smart as the other guy
- Bad: you are a bit late

Learnings

- I have filed Invention Disclosures ahead of the time and got rejected
 - A few years later, some one filed a similar disclosure and was accepted
- If you believe your idea is good, and is passionate about that:
 - Re-submit the disclosure to another review committee (change the positioning of the paper and align that to the new review committee)
 - Talk to the committee chair and ask why it is turned down, and address the reviewers questions/concerns
 - You may have to add expert/inventors to address the questions the reviewers have
 - Escalate to upper management or other team (example: marketing)

WHY MY PAPER NOT BEING ACCEPTED - 2

The idea is at a very high level and the reviewers do not know what your invention is:

Learnings

- Assume you are the reviewer, read your disclosure and ask yourself if are clear on what you want to patent.
- Ask your friend to review the paper and see if they understand your invention.

WHY MY PAPER NOT BEING ACCEPTED - 3

Very often the idea is lacking next level of details

- Example: Say the invention can cool the system:
 - What is the principle behind that claim?
 - Do you have experimental data to support your claim?
- This is especially important if your invention has been covered by many similar IPs
- You may be asked to re-submit

Learning

- Please give more details. The reviewers may not be in your field of expertise and can't guess how your invention works
 - If they miss-interpreted what your invention is, you wasted your time in writing the Invention Disclosure

WHY MY PAPER NOT BEING ACCEPTED - 4

Your paper is too complex, or involve many technical pieces

Learning

- Break the disclosure into multiple ones, and you may consider submitting the disclosures in sequence. This allows the reviewer to digest one concept, then next.

MY PREFERENCE – MAY NOT APPLY TO YOU

Prepare Invention Disclosure on PPT

- Easier to work with illustrations, gfx in powerpoint than in Word
- Share your idea elsewhere without have to recreating the content in PPT

Form a team

- More ideas
- Better Invention Disclosure
- Better financial payout

It is rewarding to see your ideas being implemented into products

Inventorship

Only those who have contributed at least one claim can be the co-inventor

Example 1 (of a disclosure)

Problem statement

Our wallet is thicker than our smart phone, - There are too many cards in our wallet!

We have to deal with all kinds of cards:

- Some are of low security, mainly as an ID
 - Library card, Grocery store award card, hotel membership card Gas Card
- Some requires higher security
 - Credit card with **card security code** (CSC),

This invention, “**Intelligent Multi-personality Card**” (**iCard**) is a single RFID/NFC (contactless) card that can replace multiple Cards in your wallet

This invention is different from Google wallet. This invention is used to store all kinds of Cards, not just Credit or Debit cards, which is the goal of Google wallet.

Claims in this disclosure

- **Intelligent Multi-personality Card**
- User can program the Smart Phone with the “Intelligent Multi-personality Card” without external power
- User can select the “personality” of the **iCard** without external power
 - For example:
 - Library Card
 - Credit Card
 - This will require secure elements in the card. Certification work will be needed to meet the credit card vendors’ requirements. Good thing is industry is converging on the EMV card standard.
 - Alternatively, the design can use NFC supporting Host Card Emulation (HCE).
- User can program the Library Card from an **iCard** and the card will behave like a Library Card for other card types and allow user to check out books at the library.
- The screen function for select card type is displayed on the card – please see illustration in this document
- To prevent some security issues, we can implement a policy that the card can be activated only when the user presses and holds the card on the card. Please see the illustration in the next section.

It is a Wearable/ Pocket-able Device

It can be a generic card, has features and design proposed in this paper



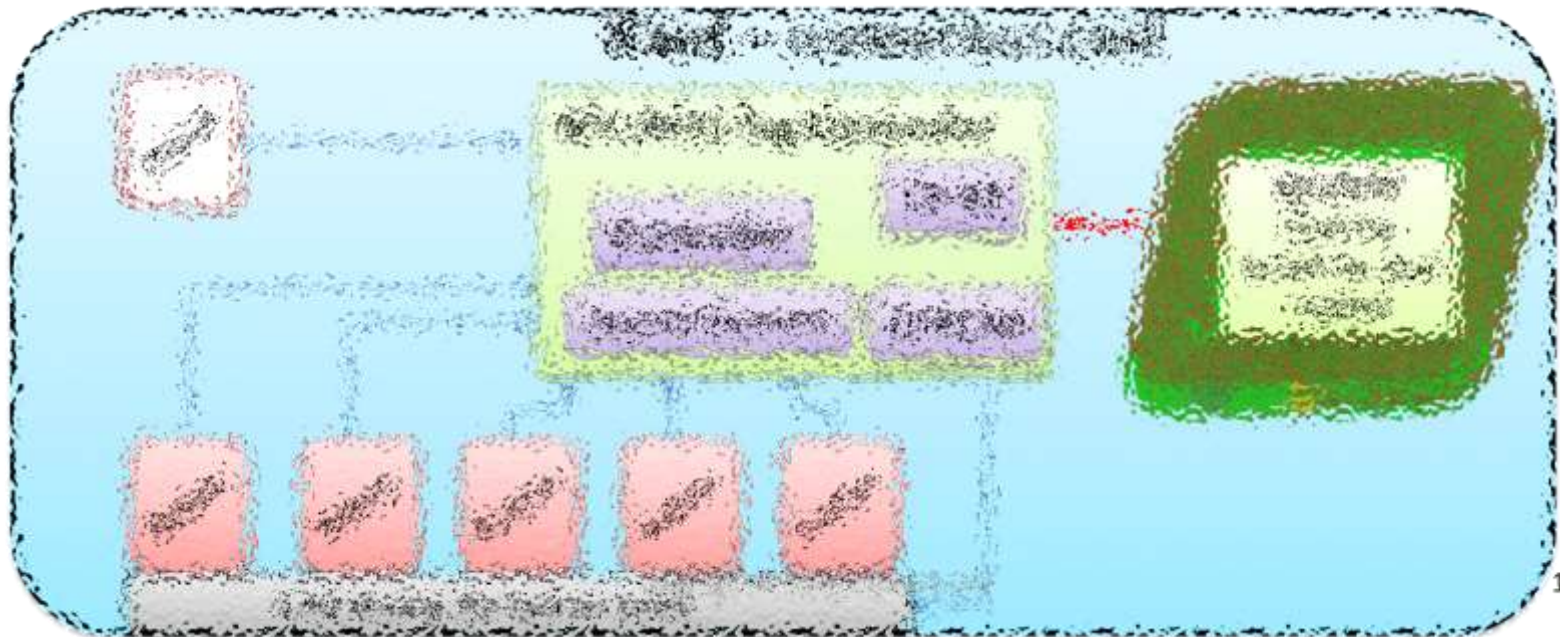
Or it can be an official ID as is (as a driver's license in the illustration below), with features and design proposed in this paper



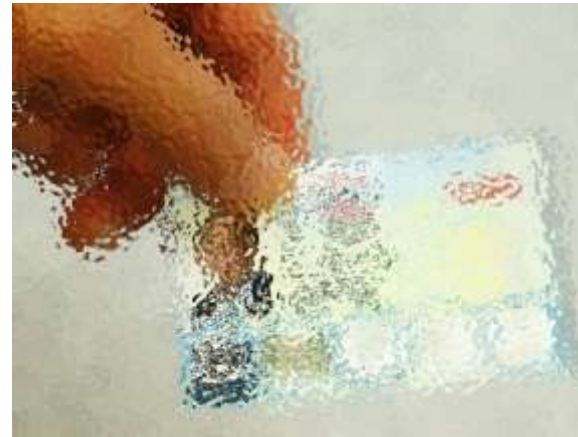
Implementation of “Intelligent Multi-personality Card”

Basic design

1. Mod
 - Can be implemented with Smart Cards/Smartphones, Buttons **programmable** **individually when pushed**, or similar type of low profile buttons
 - These buttons are for selecting different card personalities
2. An U
 - Most built-in and one of the buttons to set the personality of the Card to prevent accidental selection of card type
3. Ante
4. EPRC
5. A per



How to Use the iCard: **Example**



1. Press the **OK** button & the screen will display the **Personality of the iCard** screen.
2. Press the **OK** button & the screen will display the **Personality of the iCard** screen.

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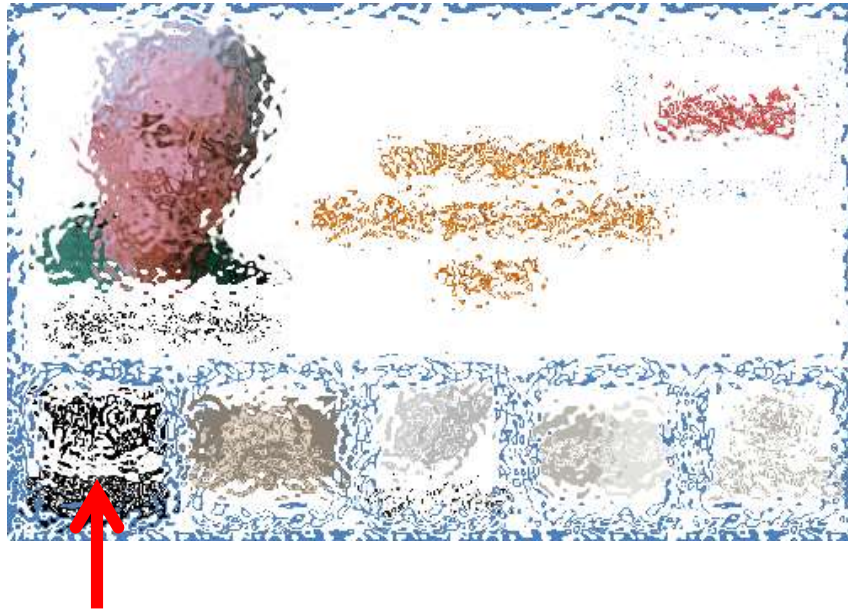
Alternate method to use the iCard

Example

1. Press the **OK** button during transaction.
2. Continue to the **Personality of the iCard** screen which is being processed and activated. The screen will display the **Personality of the iCard** screen.



Example of the iCard



E-ink display showed a high contrast “icon” to indicated the selected personality

If color E-ink display is used, different color can be used to indicate the selection

Programming the “Intelligent Multi-personality Card” (iCard)

1. Place the Card on top of the NFC reader
2. Run the programming app
 1. Enter Card number, expiration date, card type, etc. information in the corresponding space
 2. Hit the “program” button in the UI

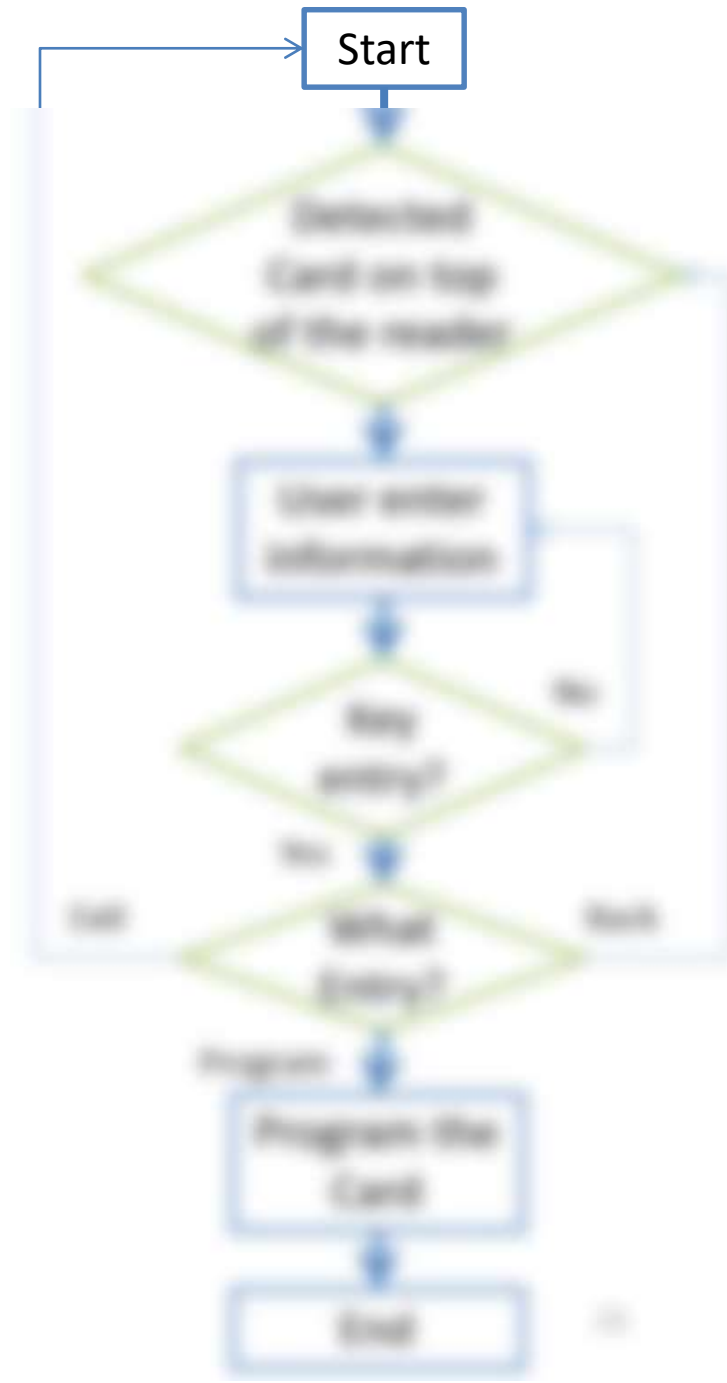
Example: Programming Apps’s UI

The screenshot shows a mobile application interface titled "Input Card Personality". It features a table with columns: Index, Type, Card Number, Expiration, Select Default Logo, and Custom Data. The table contains five rows of sample card data. At the bottom of the screen, there are three buttons: "Exit", "Back", and "Program".

Index	Type	Card Number	Expiration	Select Default Logo	Custom Data
1	Visa	4379 0300 0000 0000	12/16		
2	Liberty	7834 1234	01-01-2020		
3	MasterCard	4379 0300 0000 0000	01/16		
4	Union	4379 0300 0000 0000	01/16		
5	United Airline	4379 0300 0000 0000	01/16		
6					

Note: Card vendor has to provide instruction on what format, information and fields are needed for the specific card

Card Programming Flow Chart



Using the card - two implementations, two “use” approaches:

1. Implementation 1

- When the “push” button is used, upon applying pressure to a button, it will generate electricity to power up a “button register” within the RFID tag. The button press also sets the corresponding “button register” bit in the register.
- When the Card is used and is placed near the RFID reader, the firmware on the RFID controller will be powered up to support the read operation. The RFID controller will read the “button register” to identify the personality, and the corresponding personality will be retrieved from the EPROM and then sent to the reader to complete the transaction.
- Note: to select the personality of the card, user has to push the “button” and the corresponding personality button simultaneously to effect the “personality” selection (to prevent accidental selecting the wrong personality).

2. Implementation 2

- When the “push” mechanical button is used, user will have to press and hold the corresponding button during transaction, i.e. when the selected button is being pushed, it will set the high, say high zero, for the RFID controller's firmware to read and identify the corresponding personality be retrieved from the EPROM and then sent to the reader.

I will add 2 photos to show two cases

**YOU DON'T NEED A WORKING
PROTO-TYPE TO FILE YOUR PATENT.**

Example 2

Refocus the content

Q & A