12-2010

Innovative Entrepreneurs' Workbook: A guide for innovators and entrepreneurs

Arcot Desai NARASIMHALU
Singapore Management University, Institute of Innovation and Entrepreneurship, desai@smu.edu.sg

SMU
SINGAPORE MANAGEMENT UNIVERSITY

Institute of Innovation & Entrepreneurship

Innovative Entrepreneurs' Work book

"A GUIDE FOR INNOVATORS AND ENTREPRENEURS"

Professor Desai Arcot Narasimhalu
Institute of Innovation and Entrepreneurship
Singapore Management University

Preface

This is a workbook for individuals who have decided to start their long winding entrepreneurial journey. It is organized into four parts.

The first part introduces the aspiring entrepreneur to the process of identifying an innovation opportunity and refining for market readiness.

The second part provides insights into a product or service development.

The third part lays out the key steps involved in building a new company. This part includes IP strategy for a startups, a topic rarely discussed in many text books or workbooks.

The last part will discuss the art of securing the early deals.

This book was written by Professor Arcot Desai Narasimhalu, the founding Director of Singapore Management University's Institute of Innovation and Entrepreneurship. Aspiring entrepreneurs are strongly encouraged to use this book page by page in order to start from an idea and end with the blue print for building a company that has a reasonable chance of making a difference to this world.

Just a caution for the budding entrepreneurs - Companies that were created to better the lives of human and other living beings have been more successful than those that were built merely for making money. We hope that this is clearly understood before you start your entrepreneurial journey.

This is a work book. Hence you will find plenty of white space for you to make notes, scribble, sketch or draw. Feel free to use the white spaces to record your thoughts as you step through the pages of this book.

* This work was supported by Singapore Management University & Spring Singapore

Table of Content

IDENTIFYING THE INNOVATION

We will introduce the following four methods for identifying innovation opportunities.

1. QaDIM TM – Quick and Dirty Innovation Method
2. Value Chain Analysis (VCA)
3. Innovation Rules
4. Service Innovation

QaDIM should be used for identifying incremental product and service innovations. Value Chain Analysis is a generalized version of the Business Utility Matrix defined in the Blue Ocean Strategy[1] and is useful in identifying innovations that are not necessarily triggered by novel technologies. Innovation Rules is derived from Innovation Cube[2] that leverages both market and technology changes to identify innovation opportunities. Service Innovation is gaining increased attention and hence it is given a special treatment based on Service Innovation Opportunity Identification method[3].

[1] Blue Ocean Strategy : How to Create Uncontested Market Space and Make the Competition Irrelevant, W. Chan Kim and Renee Mauborgne, Harvard Business School Press, 2005, ISBN 1-59139-619-0

[2] Innovation Cube – Triggers, Drivers and Enablers of Successful Innovations, Annual Conference of the International Society of Pro-fessional Innovation Management, Porto, 2005

[3] Service Innovation Opportunity Identification, Annual Conference of the International Society of Professional Innovation

Let us understand the key characteristics of successful innovations. These characteristics can be used as a litmus test whenever we identify an innovation. We list seven characteristics:

1. Successful innovations addressed the pain of a group of (potential) customers.[4]
2. Successful innovations catered to (potential) customers demand for enhanced experience (pleasure).
3. Successful innovations were created when the markets were ready.
4. Successful innovations were created when the technology was available.
5. Successful innovations were priced right for the value they delivered.
6. Successful innovations were delivered to the market to meet most if not all of the demand.
7. Successful innovations did not violate any ethical, ethnic, moral, religious, social and such other norms.

Axiom 1:
Successful innovations were the solution for a pain or the demands for a pleasure of a group of customers.

Axiom 2:
Successful innovations were created when both the markets and the technology were ready.

Axiom 3:
Successful innovations were priced right and fulfilled the market demand before its substitutes.

[4] A solution to a pain is equated a pill to cure a disease, while the solution to a demand for pleasure is equated to a vitamin that enhances your health.

Value Of An Innovation

Observation:
The value of an innovation that is a solution to a pain is directly proportional to the product of the acuteness of the pain and the number of people suffering from the pain.

Lesson:
Look for innovation opportunities that address acute pains for a large enough community of customers. Ignore innovation opportunities addressing shallow pain for a small group of potential customers.

Observation:
The solution for a demand for enhanced experience is most likely fulfilled by the market leader unless it is a first of a kind product or solution. For example, when there was a demand for colour televisions with larger screens it was mostly the market leaders who were able to respond to the market need.

Lesson:
It is best to leave alone innovation opportunities that respond to demands for enhanced experience if they are not the first of their kind.

Observation:
Markets will respond very favourably to an innovation that addresses a **NEED** than to an innovation that addresses a **WANT**.

Lesson:
Focus on the needs since they will need lesser marketing effort. Give lower priority to the wants.

List the pains that are suffered by a large number of potential customers.

List the demands for pleasure by a large number of potential customers.

List the top three pains and the top three pleasures. These are good candidates for you to consider commercializing. Ensure that the pleasures are the first of their kind. Be your own harshest critic in making these selections.

Understanding The Difference Between Innovation And Creativity

We define (business) innovation as a novel product, service or process that meets the needs of a community of customers and is available at a price that customer base can afford. Let us use the following for our discussions.



We have asked several groups of people on how many of them would buy the three objects shown above.

The object on the left is a creative door knob. Most people said they like the creativity but will not buy it. This is an example that not all creative objects can be innovations.

The object in the middle reduces the pain of eating dark toasted bread. More than 60 % of those who viewed it said they will buy it if it is affordable given that they can control the extent of browning of the bread. This was a clear winner as an example of a creation that can be labeled as an innovation.

The object in the right reduces of the pain of having to hold a plate of cookies (biscuits) in one hand and a cup of coffee on the other hand. Notice that the left-handers will have a hard time using it since the cookies will fall when they try to sip or drink their beverage. This is an innovation that is targeted at a market segment made up of right-handers.

QADIM

At the heart of QaDIM is that anyone and everyone can identify incremental innovation opportunities using the following simple matrix.

Complementary functions	**Add a feature**	**Embed**
Combine two products	**Existing Product**	**Separate into two products**
Substitute components materials	**Remove a feature**	**Reduce components/ size**

You can take an existing product and apply eight different operators to identify incremental innovation opportunities.

The Eight QaDim operators are:

1. **Add** a feature to the product
2. **Remove** an unnecessary or rarely used feature from the product
3. Either **embed** this product into another product or vice versa
4. **Reduce** the size of the product
5. **Substitute** the components in the product for products that are greener, lighter, etc.
6. **Combine** the product with another to deliver higher value
7. **Separate** the product into two different products
8. Develop **complementary** product e.g. flash for a camera

It is important to note that it may not be possible to apply all the eight operators to every single product you consider resulting in eight incremental innovations. However, it should always be possible to identify at least one incremental innovation for every product using this methodology.

QADIM and Product Innovation

Let us consider Mobile phone as the product that we will use to identify incremental innovation opportunities. Application of the eight QaDIM operators will result in the following incremental innovation opportunities.

1. **Add** a GIS (map) capability.
2. **Remove** clumsy SIM card socket. Move it elsewhere.
3. **Embed** a Flashlight into the phone.
4. **Reduce** the length by adopting a clam shell design
5. **Substitute** the metal casing with hard light plastic
6. **Combine** the phone with MP3 player
7. **Separate** the memory (card) from the phone
8. **Complementary** product could be an organizer

Organizer	Touch Screen	Flashlight
Phone + MP3 player	Mobile Phone	Phone and Memory card
Plastic casing	Bulky antenna	Clam Shell

QADIM and Service Innovation

Often time one wonders whether QaDIM can be used for identifying incremental service innovations. Let us discuss this using airline service as an example.

1. **Add** large screens for entertainment as a feature.
2. **Remove** smoking areas.
3. **Embed** air travel as a part of a tour package.
4. **Reduce** the costs by launching budget airlines.
5. **Substitute** metal knives with plastic knives to address in flight terrorism.
6. **Combine** purchase of air tickets with renting cars.
7. **Separate** the fee for a seat on the plane from the cost of food and beverages.
8. **Complementary** booking of hotels are special prices

Hotel stays	Large screens for entertainment	Tour package
Airline ticket + rental car	Airlines	Seat, F&B
Plastic knives	No smoking	Budget air lines

Now pick a product and apply the eight QaDIM operators to identify incremental innovation opportunities.

1. **Add** a feature.
2. **Remove** a feature.
3. **Embed** into a product or a product into this product.
4. **Reduce** the weight or cost.
5. **Substitute** material.
6. **Combine** with other products.
7. **Separate** into two products.
8. **Complementary** functions.

Now pick a service and apply the eight QaDIM operators to identify incremental service innovations.

1. **Add** a feature.
2. **Remove** a feature.
3. **Embed** into a product or a product into this product.
4. **Reduce** the weight or cost.
5. **Substitute** material.
6. **Combine** with other products.
7. **Separate** into two products.
8. **Complementary** functions.

Value Chain Analysis

We come across value chains in our everyday life. Each value chain consists of stages or links. Listed below are three typical value chains. These are sample representations and may not be comprehensive.

1. Buyer's Value Chain :
Search for product – Buy Product – Take Delivery – Use – Buy consumables – repair – dispose

2. Seller's Value Chain:
Identify demand – Source Vendor – Negotiate terms – Acquire Stocks – Train sales people – Sell

3. Product / Service Developer's Value Chain:
Identify Innovation – Design - Build prototype – Test - Test Market - Build a Bill of Material – Source Suppliers – Source contract manufacturers - Negotiate Terms – Acquire material – Manage Inventory – Assure Quality – Deliver to distributors and dealers – register customers – provide after sales service

In all these three cases there are some common values. Some examples of values are given below.

Convenience	Cheaper	Shapes
Emotional Well Being	Faster / Slower	Higher / lower
Environmental friendliness	Higher Quality	Lighter
Managing risk	Robustness	Smaller / Bigger
Productivity	Ease of Use	
Simplicity	Colours	

A Sample Value Chain Analysis

Consider a simple value chain consisting of the links Buying, Delivery, Use and three values Cheaper, Simplicity and Managing risk. Let us take a clothes washer as an example. The three links and the three values are represented in the Value Chain Analysis Matrix pre-sented below.

Value Chain →	Buying	Delivery	Use
Value			
Cheaper	1	2	3
Simplicity	4	5	6
Managing Risk	7	8	9

Every empty cell in the matrix should be examined to determine whether it offers an opportunity for innovation. The following are the potential innovation opportunities in this instance as listed below.

1. Cheaper washing machine – Cost of the machine to be lower than the current rates.
2. Cheaper delivery service – Ability to engage delivery service at low rates.
3. Low energy consuming washing machine – Green machines that consume less electricity.
4. Simpler (on credit) purchasing option – number of installments and the sum personalized.
5. Simpler (personalized) delivery service – time and day of delivery determined by customer.
6. Easy to use programs and dials on the washing machine.
7. Freedom to exchange if the machine is faulty
8. Insurance for potential damage during delivery process.
9. A maintenance plan for repair service if the machine breaks down.

Notice not all of them are product innovations. In fact a number of them are service or business model innovations.

Use the following pages to apply the Value Chain Analysis.

Value Chain links:

Values selected:

Value chain → value	value chain link 1	value chain link 2	value chain link 3	value chain link 4	value chain link 5	value chain link 6	value chain link 7	value chain link 8	value chain link 9
value 1									
value 2									
value 3									
value 4									
value 5									
value 6									
value 7									
value 8									

List of Innovation Opportunities.

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

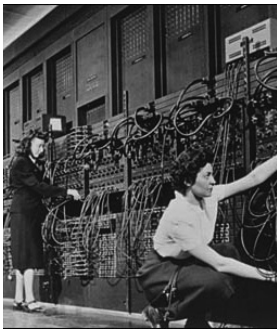
Innovation Rules

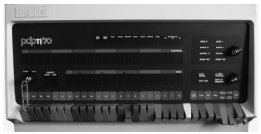
Twenty five innovation rules are listed in Annexe 1. Each rule is an observation on how certain innovations evolved over time. We will define some other approaches to identifying innovation opportunities using some of the rules. This section discusses the basic philosophy behind Innovation Rules.

When we see an innovation we want to identify what new innovations can follow that innovation. Some of these are based on market demands and others are based on technology pushes. For example, let us go back in time to when main frame computers were deployed for corporate accounting and other management purposes. This surely denied the departments of an enterprise, access to computing. When the demand for department level computing gets very real then it is time to create a computing innovation. This happened to be called minicomputers. If the market demand is clearly identified and relevant technology is available, then you can proceed to create the computing innovation for departments. You will need to invest in creating the relevant technology if it is not readily available.

Innovation Diffusion

The following diagram shows the evolution of computers over time. Computers as an innovation diffused from corporate to departments to desktops to laptops and at present to pocket devices. You can find that many other electronic gadgets such as fax machines and printers evolved along similar lines.

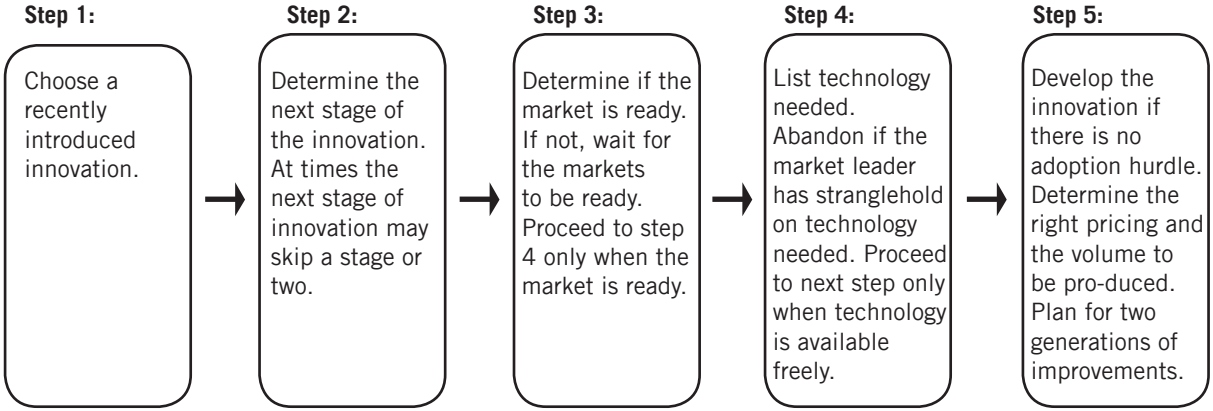





Niche/ Special Purpose	Enterprise	Departmental	Personal	Mobile	Pocket
Eniac	IBM 370	PDP 11	IBM PC	Toshiba	Iphone
Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6

Time

Innovation Opportunity Arising From Diffusion Of Innovations



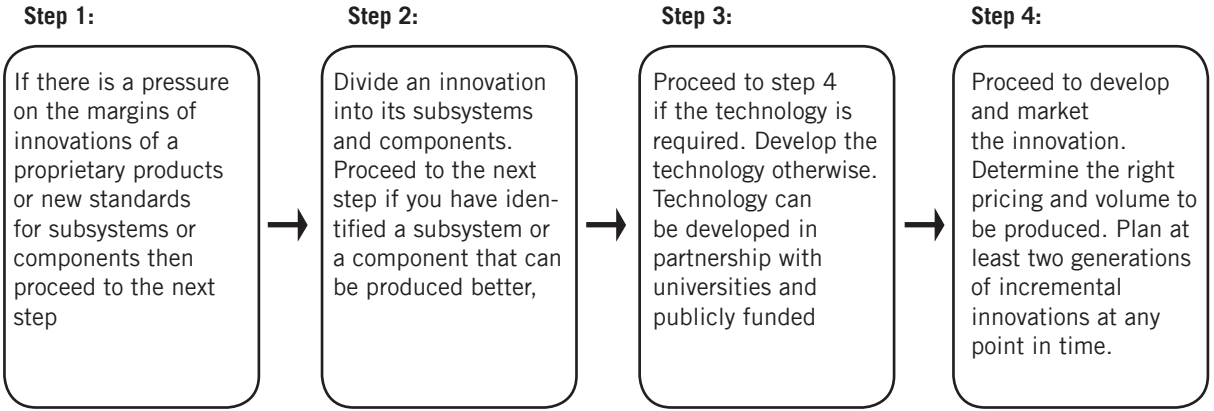
When we use the word "Innovation" we refer to business innovation – innovation for which market is willing to pay a price.

Determining whether market is ready first before creating the relevant technology leads to optimal use of investments in technology innovation. Technologies developed without this consideration have generally found to have no impact.

It is best to source for technology first before setting out to create it. This is a desirable strategy from "Time to Market" perspective and to actively manage "Not Invented Here" behavior.

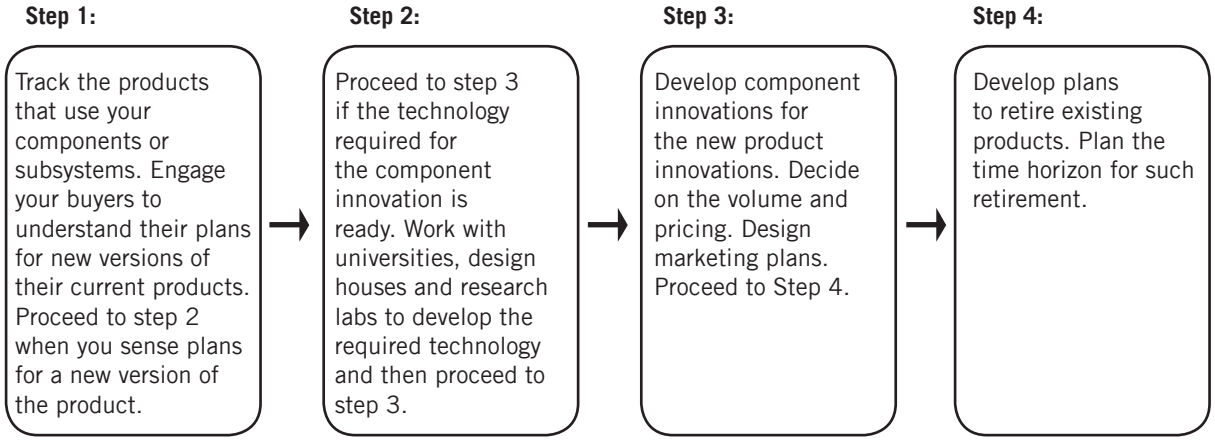
Innovations Opportunity Arising From Demand For Modularity

Opportunity for modularizing an innovation presents themselves when new standards emerge or when the margins for products become razor thin. An example in the television industry is the emergence of flat panel displays and LCD components. The following process captures the process of identifying modularity based innovation opportunities.



Component Innovation

The previous example showed how you can identify innovations by dividing a product into subsystems or components. However, the main product is bound to continue on its innovation path, whether incremental or disruptive. The components manufacturer has to track these oncoming changes and ensure that the component innovations stay lock step with the product innovation.



Technology Triggered Innovations

You should be aware that every time a new technology is introduced a number of innovations follow. For ex-ample, there were a number of innovative applications when a camera phone was introduced. The introduction of i-phone also gave rise to a number of innovations. You should be aware that there are many bright minds waiting to create innovations around every new technology. Hence, it is important that you focus on identifying the innovation opportunities around the latest technologies. Every technology innovation offers a new value. For example a camera phone allows the combination of image capture and transmission.

So, every time a new technology is introduced you should try to understand its value proposition. You should then list the pains and pleasures that can be addressed using the value proposition of the new technology. The following table lists a sample set of technology innovations and the corresponding value propositions and innovation opportunities. You can use similar table listed in the next page for identifying innovation opportunities arising out of recent technology innovations.

Technology Innovation	Value Proposition	Innovation Opportunity
Camera Phone	Image capture and transmissions	Remote consultations in construction industry
i-phone	Ease of use	Apps for laymen
Multi-touch	Concurrent interactions	Team oriented applications

You can now list recent technology innovations, their values and the resulting innovation opportunities using the table below.

Technology Innovation	Value Proposition	Innovation Opportunity

Market Triggered Innovations

From time to time you will find that markets evolve due to regulations or otherwise. You should watch for the market shifts and evaluate the innovation opportunities. The following are examples of broad market shifts.

1. **New regulations** - SOX compliance imposed by SEC in the USA
2. **Deregulations** – Freeing of broadcast frequency spectrums in mid 1980s
3. **User maturity with respect to new skills** – Use of computers for communication purposes
4. **User familiarity with new technologies** – Short Messaging System (SMS)
5. **New residential and commercial geographies** – Evolution of towns into cities
6. **New user preferences** – easy to use and colourful hand phones

Innovations From Reuse Of Obsolete Technologies

You will find that technology progresses over time. For example, computers initially used 4 bit and 8 bit CPUs (Central Processing Units) and over time Intel and other chip makers started to make 16 bit, 32 bit and 64 bit CPUs. When technology progresses forward, system developers tend to stay lock step with new technology and create new products. For example, PC and Laptop makers were creating even more powerful computers every time the chip makers provided them with better CPUs. When chip makers focus on 64 bit CPU chips, they pretty much consider the earlier CPUs obsolete. History shows us that clever entrepreneurs have made use of the small bit length CPUs to develop a range of product lines such as calculators, toys and other gizmos.

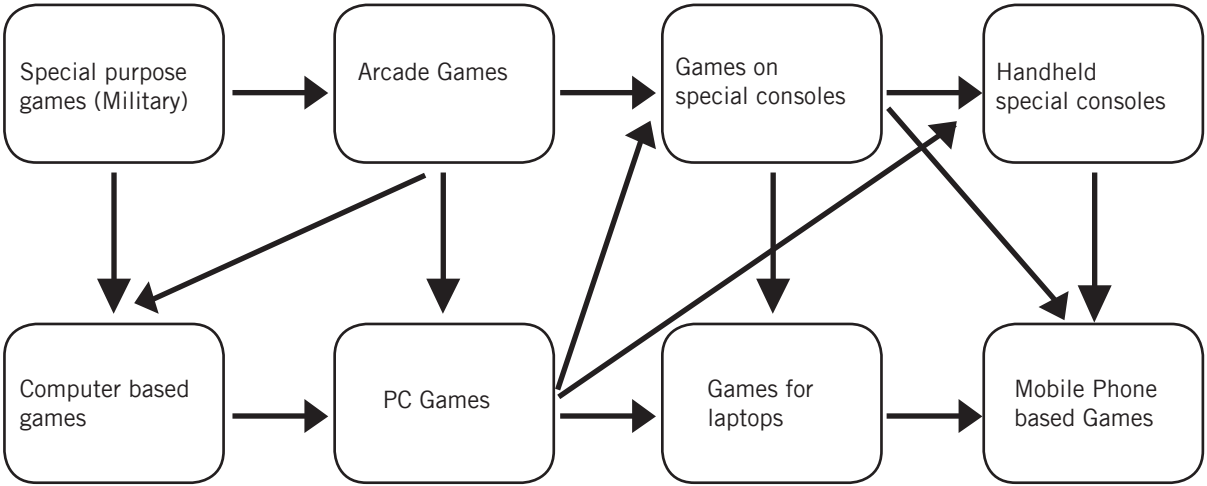
List the end of life technologies:

1.
2.
3.
4.
5.

Do any of them offer new product opportunities? Can you think of some novel products and services using them?

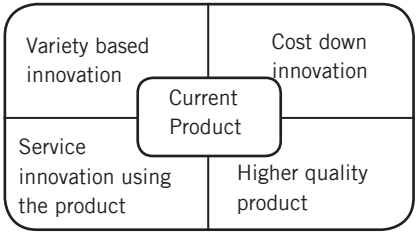
Evolution Of Innovation In Games

Several games were initially developed for special purposes such as military, then went on to be made into arcade games and were later developed for play at home. The games for homes were initially released on special consoles and later released for play on computers. These have since evolved into handheld games, initially to be played on specialized devices and later on to be played on generic devices such as the hand phones. You can examine at what stage of evolution a game is and create innovations for the next level.



Innovation Lines

The first introduction of innovation almost always focuses entirely on the function. For example, when the car was invented the attempt was to get a vehicle that is self propelling. There was no intention to focus on robustness, colour, shape, lowering the cost or offering a service using the car. When Ford focused on producing Model T, General Motors took the market leadership by producing different colours and shapes of cars. The Japanese focused on fuel efficiency and lower manufacturing costs. There are situations when a customer needs a car for one of several reasons such as when they are in a foreign land, when they need a car only some-times or when they cannot afford a car. It is opportune to consider starting a TAXI service under such circumstance. Collectively we call them innovation lines. The following matrix represents the different types of innovation opportunities that can be created around a current product using four operators.

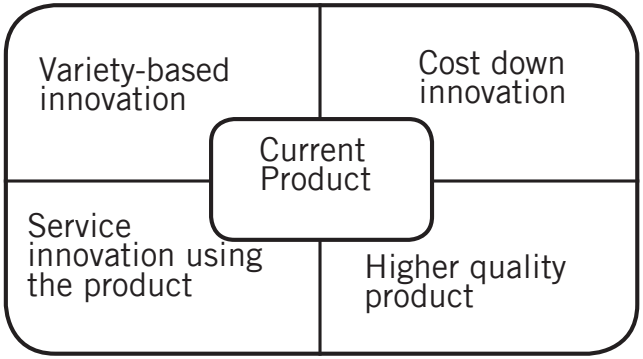


You can apply the following four operators

1. Create Varieties – Shape, Colour, etc.
2. Create a lower cost product
3. Create a higher quality product
4. Create a service innovation using the product.

Innovation Lines Exercise

List the innovation opportunities for the current product using each of the four Innovation Line operators.



Product:

1. Variety based innovations –
2. Cost down innovations –
3. Higher Quality products –
4. Service innovation opportunities -

Service Innovation

Service Innovation can be of two kinds – those visible to the customers and those not visible. In either case, the lifecycle of service innovation is often very short. The visible service innovations are copied very quickly while those invisible take a slightly longer time to copy. Let us take the case of a food outlet that creates a new combo plate. Any competitor looking at this combo plate can replicate the same combo within days. Take the example of McDonalds hamburgers. However much they guarded the recipe and the process, Burger King and a host of others replicated their service model. It is therefore important to understand that service innovations have short life cycles.

Service Innovations are often addressed at the time a service is offered to a customer. However it would be important to address innovations before and after the service is offered as well. The following table gives an example of services offered to movie goers before, during and after viewing a movie.

Value addressed	Before	During	After
Pains	Ticket purchase, choice of seats, directions to the movie house, …	Preventing the use of mobile phones, excessive chatter from those around.	F&B requirements
Pleasures	Valet Parking, Baby-sitting, …	Better audio visual expe-rience	Fine dining

Once the pains and pleasures (demands for enhanced experience) are identify you can design solutions for them. You can use a similar matrix to identify the pains and pleasures that could be the basis for innovations for a service.

Exercise:

Name of service considered for innovation:

Value addressed	Before	During	After
Pains	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.
Pleasures	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.

Product Based Service Innovation

Introduction of an innovative product into the market place may offer opportunities for creating service innova-tions. Some products are either too expensive for some customers to own or they are not needed all the time by some customers. In both cases there is an opportunity for creative service innovations. Two examples are cars and planes. Some customers cannot afford to buy a car and would use Taxi as a service innovation. Many of us do not need to own a plane and would be most willing to use airlines as a service innovation. There is another kind of service innovation that takes care of the maintenance of a product when the owner has no capability to self-maintain the product.

The first type of service is rental or for-hire service. The second type of service is maintenance. The following table captures the parameters that can be used to identify service innovation opportunities.

Parameter Comments	Value	Is there a service innovation opportunity	Comments
Affordability	High	No	
	Low	Yes	Pay Per Use Model
Usage Frequency	High	No	
	Low	Yes	Pay Per Use Model
Maintainability	Easy	No	
	Difficult	Yes	Pay Per Use Model

ENSURING THERE ARE NO OBVIOUS ADOPTION HURDLES

Adoption Hurdles

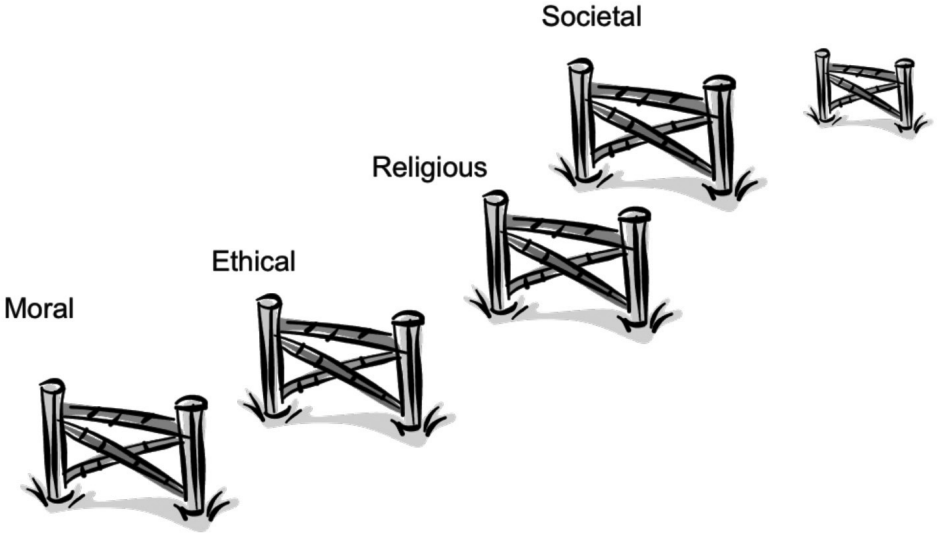
By now you should have identified several innovations using one or more of the above methodologies. The next step would be to remove those innovations that have obvious adoption hurdles. The following are a limited set of adoption hurdles. You should add other adoption hurdles to this list when you come across them.

1. **Economic Hurdles** – Drop all innovations that would require unreasonable investments.
2. **Environmental hurdles** – Drop all innovations that cause environmental harm for the target markets.
3. **Ethical hurdles** – Drop all innovations that violate the ethical norms of the target markets.
4. **Ethnic hurdles** – Drop all innovations that violate ethnic sensitivities of the target markets.
5. **Market hurdles** – Flag all innovations for which the markets are not ready.
6. **Moral hurdles** – Drop all innovations that violate the moral norms of the target markets.
7. **Political hurdles** – Drop all innovations that violate the political sensitivities of the target markets.
8. **Religious hurdles** – Drop all innovations that violate the religious sensitivities of the target markets.
9. **Social hurdles** – Drop all innovations that violate the social norms of the target markets.
10. **Technology hurdles** – Flag all innovations whose technology requirements are not ready.

You should ignore all innovation opportunities that have obvious Economic, Environmental, Ethical, Ethnic, Moral, Political, Religious and Social hurdles.

You should wait for the markets to be ready if you sense a market hurdle for the innovation opportunity you have identified.

You should either develop the required technology or find a technology partner when you encounter a technology hurdle for the innovation opportunity you have identified.



Adoption hurdles will derail even the best of innovations. Please ensure that the innovations that you have selected will not face any obvious adoption hurdles.

It is important to understand the role of regulators. Sometimes they could be the hurdle between you and your customers yet at other times they could be the bridge between you and your customers.

VALIDATING THE INNOVATION OPPORTUNITY

You may feel compelled to hold your innovative ideas close to your chest lest others steal them and benefit by them. The general observation about successful entrepreneurs is that they freely discussed their ideas with several people in order to refine it before starting up their company. The real challenge in building a company is in the execution and not in the idea. Hence it is very important that you should seek out trusted and experienced serial entrepreneurs or business mentors to get your ideas refined. The following are some means of validating an innovation opportunity.

1. Consult a business mentor or an investor
2. Observe/talk to potential customers on whether they need the innovation and on how much they will pay for it.
3. Attend trade shows to confirm that there is still room for the innovation and talk to potential business partners on how to market it.
4. Find proxies in the market as a means of confirming the innovation opportunity.

You can find truthful answers to the following questions to validate the innovation opportunity. These are given below.

1. Why would anyone buy your product / service / solution? And why from you?
2. How much will they pay and how often will they pay?
3. How many will pay and from which geographies?

The first question helps establish the market need, the second helps establish the value and the third helps establish the market size.

Be your own harshest critique and try to list out the reasons why the markets may not embrace your innovation. You should find an honest means of addressing every one of the reasons in the list.

IP Intelligence

Once you have chosen an innovation to commercialize, you should immediately pursue an intellectual property search – often a patent search. You should check to see whether someone has already claimed that innovation through a patent. You should take the next steps only after determining that you have the freedom to monetize the innovation that you have chosen.

Patent Search can be done using several tools. For those in Singapore you could use SurfIP (www.surfip.gov.sg). You have to be aware that patents are territorial, in the sense you need to obtain a patent in every country that you intend to market your innovation. So, even when your innovation may be protected in certain markets, there may be other markets where you could sell your innovation. You could continue developing your innovation if the markets available to you is significant.

You will normally use key words to use patent search. However, you should try to use a combination of specific terms and their generalizations in order to ensure that your search is exhaustive. See examples below.

Search Word	Synonyms to use
Disk	Recording medium, storage device, a means of capturing and retaining information/ data
Defect	Imperfection, aberration, abnormality, impurity , …

It is important to ensure that you do a thorough patent search in countries of interest to you, ensure that you have the freedom to market your innovation in those markets before you take the next step.

Technology Intelligence

Technology intelligence has two parts. The first part is for you to ensure that you have the technology required to realize the innovation that you have identified. The second part is to make sure that there are no equivalent technologies that might be more attractive than the one that you have chosen to use for realizing your innovation. I would like to give you an example from my own experience.

I had a group develop face recognition technology. They had come up with the best face recognition technology in the world. It is important that you realize that face recognition is only one of many ways of validating the identity of a person. So, it easily satisfied the first part.

Face recognition belongs to a family of solutions for identifying a person referred to as biometrics. Finger print recognition, Retina recognition and hand contour recognition are some examples of other biometric solutions. Finger print recognition was recognized as a mature technology for biometric applications.

Further, early enthusiasts of face recognition technology promised 90 % accuracy and delivered 20 % accuracy. The markets had lost confidence in face recognition's ability to provide a robust biometric solution. Thus, part 2 of the technology intelligence was not satisfied.

Moreover, biometrics was often part of a more comprehensive solution. Hence, those offering biometric solutions alone ended up at the mercy of the prime contractors who delivered whole solutions.

Despite all the enthusiasm, the face recognition solution did not succeed as well as expected. This was a lesson learnt the hard way. It is important that you ensure that you have chosen the right technology before you take the next step.

Market Intelligence

Once you have identified an innovation for commercialization and you have ensured that you have chosen the best technology to realize the innovation and have determined that you have the freedom to operate in the markets of your choice, you are now ready to conduct market intelligence.

Market Intelligence has two parts – Determining the market priorities and potential competition.

You should first list the number of customers in each of the countries that you would like to market your innovation. This certainly gives you a sense of the size of the market. You should next list the relative ease with which you can enter the markets in each of the countries. For example, in a number of cases US is considered to be the primary market and one which embraces innovations rather willingly. On the other hand, Singapore is a much more conservative market that accepts only proven innovations that have been successful elsewhere. You should then combine these two pieces of information to derive a prioritized list of countries where you in-tend to market your innovation.

Next, you should also list potential competitors in the markets of interest to you. These may be companies already in a similar space or who could very quickly move in as a competitor to your innovation. It is then important to assess how prepared they may be and what kind of risks they might pose as a disruptor. You should finalize the prioritized list of countries you wish to market your innovation based on this information.

An aspect of Market Intelligence is whether there is a need to get regulatory approval in some of the proposed markets. It is important that the time taken to get such approvals is indeed factored into your plans.

You should also determine whether the some of the proposed markets are ready for your innovation.

SUMMARY OF VALIDATION

Please list out your findings against the three columns.

IP Intelligence - Circle the finding

1. Freedom to operate ----------	0 Yes	0 No
2. IP protection ----------	0 Feasible	0 Not feasible
3. IP Strategy ----------	0 Required	0 Not required

Technology Intelligence

Technologies considered 1. 2. 3.

Technology chosen _____

Reasons for choice _____

Market Intelligence

Countries considered	1 _____	2 _____	3 _____	4 _____
Countries chosen	1 _____	2 _____	3 _____	4 _____
Market Size	1 _____	2 _____	3 _____	4 _____
Expected Revenue	1 _____	2 _____	3 _____	4 _____

BUSINESS MODELS

Components Of A Business Model

It is important that you identify the business model for your innovation at the earliest possible opportunity. The business model will allow you to determine whether an innovation was worth pursuing. The following are three key components of a business model.

Concept: Defines the market opportunity, outlines the competitive dynamics, determines the strategy for capturing a dominant position in the defined market and enumerates the options for evolving the business.

Capability: Lists the strengths and weaknesses of the founding team and advisors, the preferred business partners, organization and culture, operating model, Marketing and sales models, management model, business development model and the business architecture including the infrastructure.

Value: Measures the benefit to the customers, returns and profits for the start up, target market share, brand building and expected financial performance.

A Business Model should essentially consider costs, revenues and ensuing profits for your innovation. Costs should include capital expenditure and operating expenditure. Given the speed with which technology changes it is best to consider leasing equipment as opposed to buying them. You should also consider outsourcing noncore functions such as accounting, legal, tax filings etc.

The following popular business models will be discussed in detail in the following pages.
- Producer
- Distributor
- Aggregator

Distribution As A Business Model

Distributors can either focus on a vertical, or on an infrastructure product and solution or a horizontal. The four popular types of distributors are listed below along with the revenue and cost factors. The retailers, market-places and exchanges may have to provide for inventory of physical and cyber goods and could augment their physical presence with cyber presence. One of the recent models is the emergence of on-line long tail retailers.

Type	Revenue possibilities	Typical Costs
Retailer	Product Sales, Service fees	Rental of physical or cyber facilities, inventory, customer service, Advertising and Marketing, IT infrastructure, payment gateways.
Marketplaces	Transaction fees, service fees, commissions	IT infrastructure, Rental of physical and cyber facilities, payment gateways, Advertising and marketing.
Aggregator/ Infomediary	Referral fees, Advertising and Marketing fees	IT infrastructure, Rental of physical and cyber facilities, payment gate-ways, Advertising and marketing.
Exchange	Model dependent	IT infrastructure, Rental of physical and cyber facilities, payment gate-ways, Advertising and marketing.

Portals As A Business Model

Sabre, America Online, CompuServe are some examples of successful portals. Portals act as gateways between customers and producers. Portals succeed when they can attract a large number of loyal customers. Portals should make an effort to understand customers' needs and offer access to their needs and wants. This might result in some research spend in understanding the demands of the customers.

Type	Revenue possibilities	Typical Costs
Horizontal portals	Advertising, subscription, affiliation and slot-ting fee. Could include access fees as well.	Rental of physical or cyber facilities, inventory, content / information asset management, Advertising and Marketing, IT infrastructure, payment gateways.
Vertical portals	Transaction fees, commissions, advertising fees, affiliation fees, slot-ting fees	Same as above plus cost of integration with legacy systems to support transactions
Affinity Portals	Referral fees, Advertising and Marketing fees, affiliation fees, slotting fees.	Same as in the first row.

Producer Business Models

Producers design, make and sell (either directly or through channels) products and services.

Type	Revenue possibilities	Typical Costs
Advisors	Subscription fees, commission, transaction fee and service fee	Information extraction costs, information summarization costs, infrastructure costs, Marketing and advertising costs.
Educators	Enrolment or registration fees, event fees, subscription fees, hosting fees	Content generation, content delivery, infrastructure, advertising and marketing costs
Information and News services	Subscription fees, commission, transaction fee and service fee	Content acquisition / production costs, content delivery costs, infra-structure costs, advertising and marketing costs.
Manufacturers	Product Sales and after sales service fees	Design, development, testing, manufacturing, infrastructure, advertising and marketing costs.
Service Providers	Commission, service and transaction fees	Training costs, service quality management costs, infrastructure costs, service asset generation costs, marketing and advertisement costs.

Sample Revenue Models

Product sales – Licensing or selling of a product.

Commission, Service or Transaction fee – Can be set as a % of the price of a product

Registration fees – An examples is conference fees.

Subscription fees – An example is newspaper or newsfeed subscriptions.

Advertising fees – Cost of placing an advertisement in the most effective locations and situations.

Slotting fees – Fees for a partnership. Location in a supermarket shelf is an example.

Referral fees – Fees for referring potential customers / clients. Sometimes called finder's fee.

Membership fees – Fee for belonging to an exclusive club.

Installation fees – charges for installing a product or service. Example set top box installation.

Integration fees – charges for linking two systems together. Example, computer and network.

Maintenance fees – charges for maintaining / upgrading software, hardware or system.

Hosting fee – charges for hosting data, application or system

Access fee – charges for gaining access to a service. Examples are Mobile phone and internet services.

Sample Cost Elements

Human Capital costs – costs for hiring manpower

Marketing and Sales cost – This is costs in addition to the marketing and sales people

Advertising costs – costs for the design and placement of advertisements

Business Development costs – costs for acquiring and managing business partnerships such as channels

Bill of Material costs – costs for acquiring materials used in the making of products and services

Capital costs – costs of acquiring infrastructure and equipment

Research and Development costs – Cost for designing and developing products and services

Infrastructure costs – costs for leasing physical and cyber facilities

Intellectual capital costs – costs for securing intellectual property

Consulting costs – charges for consultants for specialized tasks

Outsourcing costs – charges for a range of activities such as accounting, tax filing and manufacturing.

Sample Assets

You should be ready to recognize some items that you could claim to be assets of the company. These include:

Financials – Accounts receivable, grants, cash and convertible notes if any.

Equipment – Depreciated value of the equipment that your company will own.

Inventory – Materials and goods that can be resold.

Intellectual Property – Patents, trademarks and copyrights.

Goodwill – Customer base and other good will.

Brand equity – Value of Brand Architecture.

Business partnerships – value of exclusive agreements that prevent or delay competition.

PLANNING THE DEVELOPMENT

Entering The Market

The most important step in planning the development is to decide how and when to enter the different markets. It is important to plan the globalization strategy from day one.

It is important that you study each of the markets of interest to you and find out the best means of staging an entry. Remember that it may be prudent at times to engage partners in local geographies for the initial years of your operation.

Several companies have taken the approach that they will focus on one market for the first few years and then expand into other markets. This might work for innovations with very strong intellectual property strategy.

Some innovations may easily be copied or modified or reverse engineered. For such innovations, it may be best to start planning multiple market entries within a shorter space of time. For such innovations it might be worthwhile to work with incubators or accelerators in the preferred geographies so that you can launch the innovation in those markets within a few months of time. Such directed multiple market entry is the best solution to stave off the possibility of losing some critical markets to copy cats and reverse engineers.

Such an approach might require you to create subsidiaries in the different markets that are financed by local investors and manned by local management. The revenue and profit share arrangements in such instances are likely to be much lower than if you were to do it alone. However, doing it alone would require sequenced market entry and that in turn might result in loss of markets. Hence, you should be less greedy and share a good percentage of the revenues and profits with local investors and management to ensure that your innovation reaches these markets without any opportunity costs.

Remember, if you fail to plan your globalization strategy from day one you are really planning to fail in globalizing your technology. And an important market to enter first would be the primary market for your innovation. And the primary market may not be your own local market.

Modularized Development

You should realize that it might be best to break down the development of your innovation into small modules. Smaller modules are easier to develop and much more manageable. However, when breaking down your innovation into smaller modules you should also take great care in ensuring that the flow of control and data between the different modules are well designed and verified for completeness.

Breaking down your innovation into modules allows for different teams to focus on developing those parts of the innovation that match their strength. In the case of software innovations it is almost always possible to divide the development into user interface, application or middleware and backend. The backend takes of communication and data management while the application or middleware captures the key innovation and the front end or user interface should address ease of use for the customers. Designers often make the mistake of failing to develop a platform or middleware. Often times it is important to take a step back and ask yourself whether the application is an instantiation of a middleware of the software platform. It is best to take a Software Development Kit (SDK) approach to developing the application or platform so that the application can be embedded within other applications. This also allows you to open up the platform to third party developers and benefit from the transactions generated by them. A good example is the Appstore that Apple opened up on its iPhone.

The approach is much more straightforward in the case of hardware innovation. You need to identify the modules that can be bought from the existing products and identify that central unit that is your innovation and ensure that all the subunits have the right hardware interfaces and the data and control flows that will permit the entire unit to work as a whole. You should further identify how you might offer an interface to your entire system from other systems that wish to utilize your innovation. This would ensure that your innovation is able to produce multiple revenue channels – sold as a stand-alone unit and also as a subsystem to a larger system.

Parallelizing The Development.

Once you have modularized the development of your innovation, the next step is to determine whether any of the developments can be carried out in parallel.

Parallelizing the innovation development has its advantages and pitfalls. The major advantage is the ability to reduce the development time. The time taken to develop the innovation can be significantly reduced if all the components can be developed in parallel. This seldom is the case. As an innovative entrepreneur you should plan to maximally parallelize the development of the innovation.

Such parallelized development's biggest pitfall is that the different modules do not work with each other after the completion of the individual modules. You should therefore spend sufficient time on the design phase of the innovation development to ensure that you have defined the required flow of information (data and control signals) across the different units as well as the correct software and physical interfaces for hardware innovations.

Do spend sufficient time on identifying the parallelizing opportunities given that the time for innovation development is fast shrinking resulting in the imperative of compressing development time through managing a development project that is optimally parallelized.

Managing Innovation Development

Managing innovation development is not very different from managing any other project. Your team should have a sponsor who signs off on the parameters of the project – scope, budget, timeline and quality. You should use Critical Path Method to identify the critical parts of your innovation development. You should also have key milestones identified. You should also have regular reviews. You should use tools such as GANTT charts to keep track of the progress of the innovation development.

There are many free project management software that are available on the web. Some of them are desk top software and some others are web based. You should download a desktop based project management software given that much of what you would do should remain confidential. The following link will lead you to the website that offers free project management software.

http://www.softwareprojects.org/free-project-management-software.htm

Make sure that you do not end up tracking tasks at a very fine level of granularity. That will make your project management charts very cluttered and clumsy. Finding the right level of module, component or task granularity is critical. It should be a balance between the number of items that can be tracked effectively and the level of detail to which a component development ought to be tracked. The balance often comes with experience. It is therefore best that you talk to someone with significant project management experience to help you strike that balance. The person that you will talk to should be someone worthy of your trust – a business mentor, an investor or an academic advisor, who will not compromise your interest even by accident.

You should remember the saying “If you fail to plan, you are planning to fail.” Be wise, use project management tools to plan your innovation development process. And, provide for handling exceptions using a table similar to the one below.

Handling Exceptions In Innovation Development

You should use a table similar to the one to handle exceptions.

Task	Exception handling trigger	Mitigation Strategy	Plan B	Plan C	Worst case plan
Task -1					
Task-2					
...					
...					
Task-last					

Exception Trigger – this is an event or a status of a task that will trigger the exception handling process. For example, an exception handling can be triggered when a task the rate of consumption of resources or time exceeds 20 % of those forecasts.

Mitigation Strategy – The strategy devised for handling the exceptional situation.

Plan B, Plan C – are strategies for handling the exception.

Worst case plan – is the strategy when the situation for a task is very dire.

Normally start ups do not have such plans. That is also the reason why many start ups fail. The time spent in listing the likely exceptions and the mitigating strategies is an investment that would contribute greatly to the success of an innovation development projects

Distribute The Development

Once you have divided your innovation into modules and identified the potential for parallelization of at least some of the parts of the development, the development transitions into a project management exercise. You should quickly use PERT (Project Evaluation and Review Technique), CPM (Critical Path Method) and GANTT charts to set up the distributed development plan.

You can distribute the development if the core innovation development team does not have some key skills. Or you can distribute the development if you have limited resources and do not think it is prudent to hire more human capital into your team. You can also distribute the development if you find that some parts of the development could be developed at lower costs elsewhere in the world.

In all these cases you need to identify the owner of each of the components of the innovation. The owner of the component of the innovation is responsible to ensure that the module is developed in time and at or below costs. This does not require that the owner develop the innovation. The development team can be outside the core team. However, the component or module owner is responsible for the development, testing and integration of the module into the entire innovation.

You may want to develop a table listing the components of the innovation, the owner, contact details of the owner and the external developer if one such exists. You may wish to use a table that is similar to the one provided in the next page.

Distributed Development Management Table

Module / Component	Owner (core team)	Contact Details of owner	External Developer	Contact Details of external developer	Scheduled completion date	Status	Criticality
M-1							
M-2							
M-3							
...							
...							
M-last							

Modules – Once your team switches to the project management mode, development of every component becomes a task. You could use the terms task or module or component interchangeably.

Contact Details – Phone, Fax, Email, Linkedin and any other contact channel

Status – You could set up a colour code for temporal dimension. Red – more than 10% delay, Orange – Less than 10 % delay, green – On schedule, light green – More than 5 % ahead of schedule. You could also set up a similar colour code for use of funds.

Criticality – You should identify all tasks considered to be on the critical path. The tasks on the critical path should be owned by the strongest members of your team. If your team is made of a small number of people, you then may have to distribute the ownership of the critical modules evenly. The founding CEO should keep a close eye on those modules that are assigned to the weaker members of the core team.

Never Lose Control Of The Integration

You will find that it is sometimes prudent to outsource the prototyping or manufacturing of your innovation. You need to make sure that you do not outsource the entire manufacturing to one vendor. Given that you would have already decomposed the innovation into modules and parallelized the different modules of components you should now be clever in engaging different vendors to develop different components so that you minimize if not avoid the possibility of reverse engineering which is pervasive in some countries. In the case of critical components or modules, you may wish to outsource their development to vendors in countries that have good IP protection regimental though they may be marginally more expensive.

You must make sure that the final integration of the modules or components are entirely within your supervision and control. This is one way to ensure that the intellectual property does not take flight from under you own nose without your knowledge.

If the components or modules can be compared to the ingredients of a dish then the integration process can be compared to the recipe. The integration process can be maintained as a “trade secret” for the purposes of your innovation. There are other examples of how expert designed plant unnecessary components in an innovation to mislead the reverse engineering squads.

The motto you can follow diligently should be “never reveal the recipe”.

Design Module / Component, Subsystem And System Level Tests

You should develop testing procedures for every module of the innovation. These tests should address both the functional aspects of a module and its interface to the other modules of the innovation. This is called unit or module or component level testing.

You should then test connecting modules or components one pair at a time. Such testing will ensure that the two modules will work together as per design. After testing them one pair at a time you would want to bring together all the modules in a subsystem and test them as a subsystem. You can plan a system level test once all the subsystems have been individually tested.

You should draw up test plans for each of the tests. Each test plan should have a set of tests clearly outlined. Each test should have the inputs (data or signals) to the module and the expected outputs (data or signals) and criteria for assuring that the module has passed the tests.

You could use a table similar to the one listed in the next page for managing the test plans for your innovation. Although planning for tests may appear arduous, the time invested will prove to be more than worth its while in the final analysis

Test Plans Management Table

Module / Component	Test Plan	Inputs	Outputs	Acceptance Criteria
Module - 1				
Module - 2				
Module - 3				
...				
Module - last				
Subsystem - 1				
Subsystem - 2				
...				
Subsystem - last				
System				

Test For All Necessary Bugs

You should not fall into the trap of testing for the sake of testing. Take sufficient time to design the tests that are a must to ensure that your innovation is marketable. It is important that you develop the core funcationality of the system first and hence the first suite of tests will target these core funcationalities.

If you had architected the system well, then it should be easy to add bells and whistles to your system as the competition creeps in and the innovation hits the main street. You will have to design the test plans for the added features when you decide to implement them.

The first version of the product should almost always focus on the core functions and hence the test plans should address the likely bugs in the core functions.

IP Strategy

It is very rare that an innovation is built around a single intellectual property, be it copyright, trademark, trade secret or patent. You should work with an experience IP strategy expert in the domain in which the innovation is being created to decide on the following aspects of your innovation.

1. Should you use copyright, patent, trademark, or trade secret as IP for your innovation?
2. Should you seek IP using more than one of the above categories?
3. Does your IP position give you the right to operate?
4. Is your IP position likely to expose you to your competition?
5. What additional IP does the innovation need to ensure that you have a robust IP position?
6. Is the additional IP to be licensed or created?
7. If the additional IP is to be licensed, who are the potential licensors?
8. What should be the licensing terms – exclusive, non exclusive, time and geography limited?
9. Can your IP be easily made irrelevant by your competition?
10. Are there possible counter measures to protect your IP position from your competition?

INTELLECTUAL PROPERTY STRATEGY FOR START-UPS

IP Strategy for start-ups

Start-ups should begin considering IP strategy as early in their existence as possible. While acquiring some IP rights do cost money, designing the IP strategy does not require significant investments.

Major categories of IP

1. **Copyright** – protects original works including artistic and literary works, software, architecture etc. See www.copyright.gov for more information.
2. **Patents** – generally protect the idea or innovation. See www.uspto.gov/patents/index.jsp
3. **Trademarks** – identifies the source of products and services, often considered as a visual representation of a brand. Word, slogan, symbol, design, color, sound or a combination of these. See http://www.uspto.gov/trademarks/basics/ for more information
4. **Trade secrets** – Ensures that recipes and other rights are not disclosed to the world.

Other types of rights, important to a start-up

1. **Geographic mark** – These marks are used extensively in produces such as wines. Example is Bordeaux wine.
2. **Process mark** – Some processes have been claimed to be exclusive such as making of champagne.
3. **Domain names** – these are the web addresses of a company
4. **Business names** – This is the name of the business and needs to be registered locally.

Start-ups need to address all the above rights collectively and be very clear about crafting an intelligent IP strategy that does not require revision in the near term.

Step 1: Business Name
Please list the mission and vision of your start-up. Pick a business name that either reflects the mission of the company or something that does not restrict your future growth. If you are developing a product and call your company "XYZ" Projects then anyone reading the name of your company will assume that you are a project oriented company and hence will not show interest in your company. Take the example Muvee Technologies. While this is a great name if all you wish to develop are technologies related to movies, it could be restricting if you want to expand your product offerings. Disney is a great name for a company since it did not restrict the business from expanding its scope. So, please choose the business name of your company wisely.

Step 2: Domain Name
Pick a domain name that includes your business name. Obtain all versions of the domain name. For example .com, .org, .net … You could do this if you manage to choose a unique name (however long) for your business.

Step 3: Geography Name
Explore whether you have an opportunity to obtain a geography name as well. Some popular examples of geography names are Bordeaux, Navarra and Mendoza valley. If you get a chance you should obtain a geography name or mark as it is sometimes called.

Step 4: Process Name
Explore whether you have an opportunity to obtain a process name. For example Bellota refers to hams from black pigs in Spain that are fed entirely on acorns. Another example is champagne that refers to a unique process used to make bubbly in the Champagne region of France. Obtain a process name if the process your company uses is unique. Create a process name if there is not already such a name for your unique process.

Step 5: Copyright

If what you are creating is either software or any other original piece of literary work or art then you automatically derive copyright for your work unless you have assigned it to your employer as a part of employment contract. If you feel that your software or other creative work is likely to be infringed then you should register your copyright. There are some advantages if you have your copyright registered. Refer to www.copyright.gov for typical advantages when you register a copyright. Please evaluate whether the cost of registering the copyright is justifiable. The link mentioned above also lists on-line and paper registration fees.

Step 6: Trade Secret

You will need to decide whether the invention or recipe for your product or the product itself is very important to you and that it is very difficult to reverse engineer it. If it is both important and difficult to copy then you may wish to keep it as a trade secret. Be very aware although copycats may not know the exact formula you use they can easily find close enough substitutes and hence take a chunk of your market away from you. Examples are how Pepsi Cola created something close to Coca Cola and the dozens of companies that have found substitutes for Kentucky Fried Chicken. Think very hard about when you wish to keep your invention a trade secret.

Step 7: Trade Marks

You need to file an application for your trademark with your local patent and trademark office. You may engage a IP firm for such filing if you are not confident of filing it yourself. The trademark office will search for pre-existing trademarks and then come back to you with their position on whether or not to award the trademark you had requested for. It is important to take note that a domain name or a business name can be trade marked as well.

Step 8: Patents

Patents are expensive, costing as much as US$ 250,000 for the life of a patent across five to seven key markets including the translation, drafting, filing, office actions and other costs. Most ICT patents are easily substitutable. Hence be very clear filing for a patent only makes sense to give your company the right to operate. There are some rare cases where a patent is so central to a third party's business that they will license it from you. But this is rare.

Given the cost of a patent you need to decide on the timing for filing the patent. If it is too late someone else might get the priority. If it is too early your actual product or invention may be different from your patent. It is therefore generally suggested that you file for a patent only when you are close to finalizing a product. Services are not generally patented since they are easily copied by the time a patent is granted. You should however consider filing a patent immediately if is very fundamental and the invention is so simple that any delay may jeopardize your opportunity to get the rights.

Remember whatever you say in your patent is visible to the entire world and hence they will be able to use your invention once the patent expires. Typically most patents make money for their owner in the second decade of their life. Hence, you need to be very careful on whether you wish to keep some details confidential and not disclose in the patents. A good patent attorney can provide you wish the right advise on what to disclose and what not to disclose in a patent. This is critical and hence do not write a patent yourself unless you have several years of experience in the patent world.

IP Strategy addresses the following questions:

1. **What should you protect?**
2. **When should you protect whatever you wish protect?**
3. **Where should you protect your rights?**
4. **How should you protect your rights?**
5. **What is the recourse if someone violates your rights?**

The following table provides some suggestions for the above questions.

What to protect	When to protect	Where to protect	How to protect	Who can help you?	Recourse
Business Name	As soon as you are ready to register a company	Local Business Registry. ACRA is the Singapore company registry	File for a business name. State the nature of the business, mention the proposed capitalization and also provide names of at least two directors	Most lawyers and some accountants can provide you advise on the nature of company you should set up. Given a start up has a relatively high risk if failure We recommend that you do not use partnership as a vehicle for registering your company.	ACRA will examine whether everything is in order including the proposed business name. You need not worry once they approve your registration.

Domain Name	As soon as you have validated your business model. Obtain all related domain names	IBCN???	You need to pay a registration fee plus an annual fee to the company with whom you registered the domain name(s)	You can do it yourself. However, IDA can be contacted if you have some doubts or you need some help.	A good litigation lawyer is your best recourse if some one is using your domain name illegally. Most of the time a show cause notice should do.
Process Name	Only if your process is recognized to be unique by a regional chamber of commerce	You need to apply to "Appellation Controller" or the equivalent.	You will have to meet the conditions laid out by the controlling body.	The representatives of the trade body or society	Appeal to the chamber of commerce or the trade body.
Geography name	Only if your business is part of an officially recognized geography, for example Bordeaux or Burgundy.	With the local Chamber of commerce.	Register your business with the local trade association.	Members of the chamber of commerce or equivalent bodies or trade associations.	The representatives of the relevant body.

Copyright Did you know that your tag line is copyright able?	In most cases you Inherit copyright when you create an inventive piece of work.	You may wish to Register with the local copyright office or Intellectual Property Office. Registering a copyright able piece of work normally yields higher damages when you win a copyright violation case.	File a copyright Registration form	An IP lawyer can Help you.	A good IP litigation Lawyer would be the right person. Such a person should have a successful record of winning similar cases.
Trade secret	Once you decide to keep your rights a secret.	A safe place with a secure vault. You may wish to split the recipe into multiple parts and keep each of them in a different place.	Invest in a secure vault in every place you plan to keep part of the secret.	Reliable partners who can be trusted to keep parts of the secret, really secret.	Nothing can be done if the secret is leaked out since you chose not to protect it.

Trademark	As soon as you have registered a business. You could register multiple trademarks for the same business or product. One could be a word mark, a second could be a graphic mark, a third could be an audio mark and a fourth could be a set of composite mark with the basic marks as components.	Apply to you patent and trademark office or intellectual property office.	Get the trademark office to issue your company the trademarks that you desire.	IP lawyer. Most IP lawyers have experience dealing with trademarks.	Get a good litigation lawyer.
Patent	Only when you are sure about your product or process. Filing too early has proven to be futile since the product or service often changes between the time it was conceived and the time it was launched.	Patent office or intellectual property office.	You need to engage a patent attorney to draft the patent especially the claims	Patent Attorneys. Not all IP lawyers are trained to be patent attorneys. Ask around from others who had gone through experiences.	Get a good patent litigation lawyer in the specific space and a good track record of winning the law suits.

Every startup should do an IP strategy as soon as they are clear on their innovation offering and draw up suitable timelines and provide sufficient budget for protecting their rights.

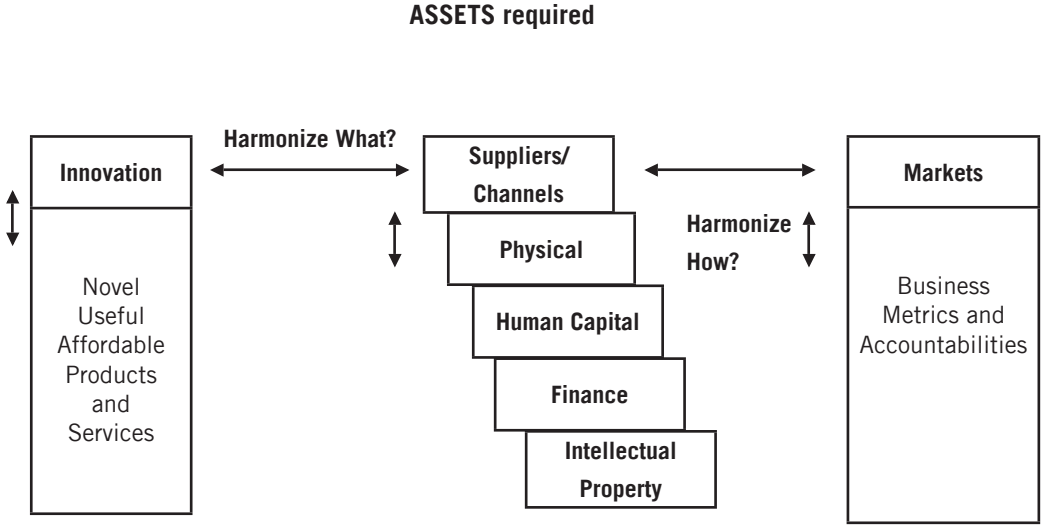
Litigation

Litigation is expensive and diverts a lot of startups energy in less than desired direction. Therefore litigation should be considered as a last resort in most countries. Some lawyers in certain countries tend to work on a contingency business model where by they take a certain percentage of the winning damages. Even when there are plenty of such lawyers are available it is best to devote all the energies in the early part of a start up on innovation development and launch. This would be the desire of the investors of the company. Even when someone violates the IP rights of your company it may be wise for you to let them become very profitable before you initiate legal action. Poor people cannot pay damages what ever the amount might be. They may instead choose to file for bankruptcy.

BUILDING STARTUPS

Assets Required To Build A Startup

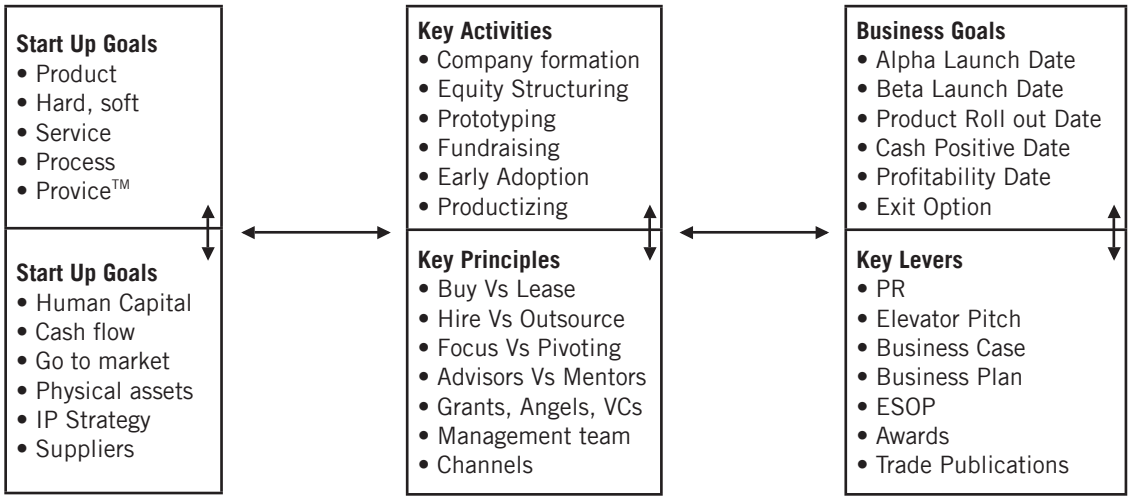
The following represents the framework for building innovative start ups. The process of building a company that offers innovative products and services reduces to understanding the markets that the innovation can serve and the assets required to build such a company.



Start Up Governance

You may think this section is an oxymoron given that startups are rarely associated with governance. Several start ups have failed to execute well because of poor governance and hence this section merits its place.

The diagram below captures the different aspects that you need to consider in building a company. You begin with the innovation, set business goals and define the key activities that will help you realize your business goals. In the process you need to understand the key decisions you need to make based on some important principles and also understand the key levers that you could use to achieve the business goals.



Key Startup Related Questions

• Which innovation?
You might have considered several innovation opportunities. You should select the most impactful amongst them for building a company. You should also consider a product or a service line and not just the first product. Of course, in the early days your focus should be entirely on the first product.

• What is the business architecture?
This is a key question, especially if you wish to scale globally. You want to understand whether to enter the different geographies by yourself or whether you wish to identify local channels or joint venture partners. These decisions will decide the organization of your company.

• What are the resources required to build the business?
You need to determine the capital, know-how, people, processes and other relevant resources needed to build your business.

• What is the startup Strategy?
You need to identify the lead adopter(s) and your champions within the lead adopter organizations.

• What is the growth strategy?
You also need to be clear about the order in which you will grow into different geographies as well as the second, third and later products or services you wish to offer. This should include timelines for assembling the team to design and develop the later products and services.

Entrepreneurship Decisions

<table>
<tr><td colspan="3">Innovation (Iv)
Decision On Which Innovation To Pursue</td></tr>
<tr><td rowspan="2">Business ArchitecTure (Ba)
Decisions On How To Organize The Company</td><td>Start Up StratEgy (Ss)
Decisions On Fund Raising, Innovation Development And Early Adopters</td><td rowspan="2">Growth Strategy (Gs)
Decisions About How To Grow The Company.</td></tr>
<tr><td>Resources Required (Rr)
Decisions About The Resources Required To Build The Start Up</td></tr>
</table>

Innovations Decisions

Decisions Regarding The Innovation To Pursue		
• Dates	• Market Knowledge	• Be Ready to Change

Evaluating Innovation Decisions

You should consider each of the above areas very carefully and arrive at your numbers and selections as honestly and truthfully as possible.

1. Have you chosen the best innovation for development and building a company?
2. Have you validated the need for your innovation?
3. Have you honestly derived the market size for your innovation?
4. Have you defined the right business model for your innovation and company?
5. Have you identified the right entry barriers that you will erect in order to prevent / delay competition?
6. Have you acquired all the competencies, including know-how required to develop the innovation?
7. Have you identified resource persons who are well grounded in the markets that you plan to address?

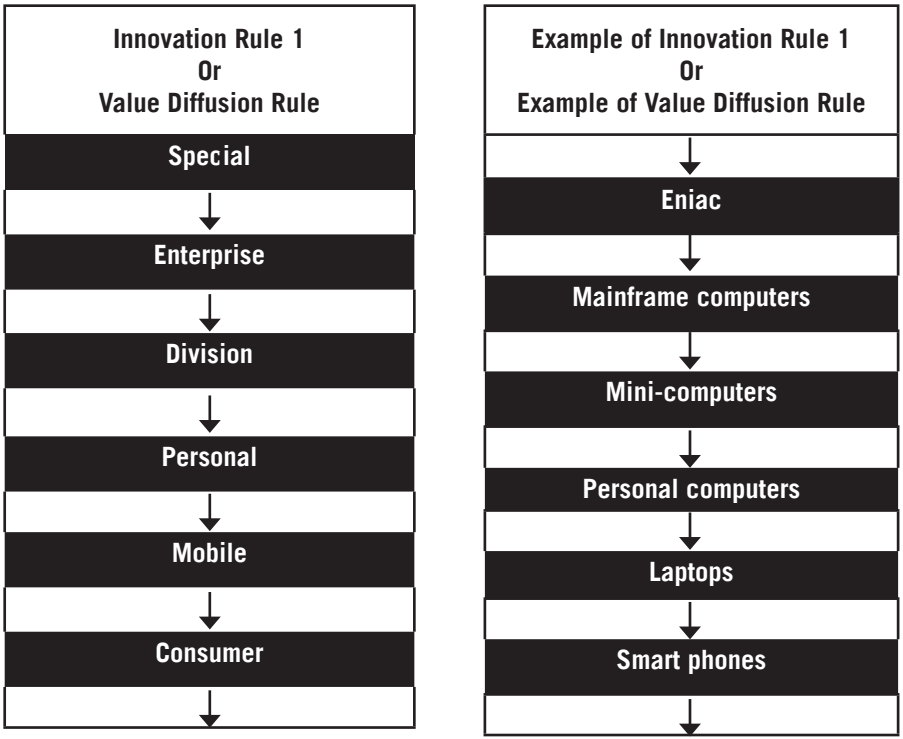
Innovations Decisions

Decisions Regarding The Organization of the Company		
• Name	• Independent Directors	• Previous experience

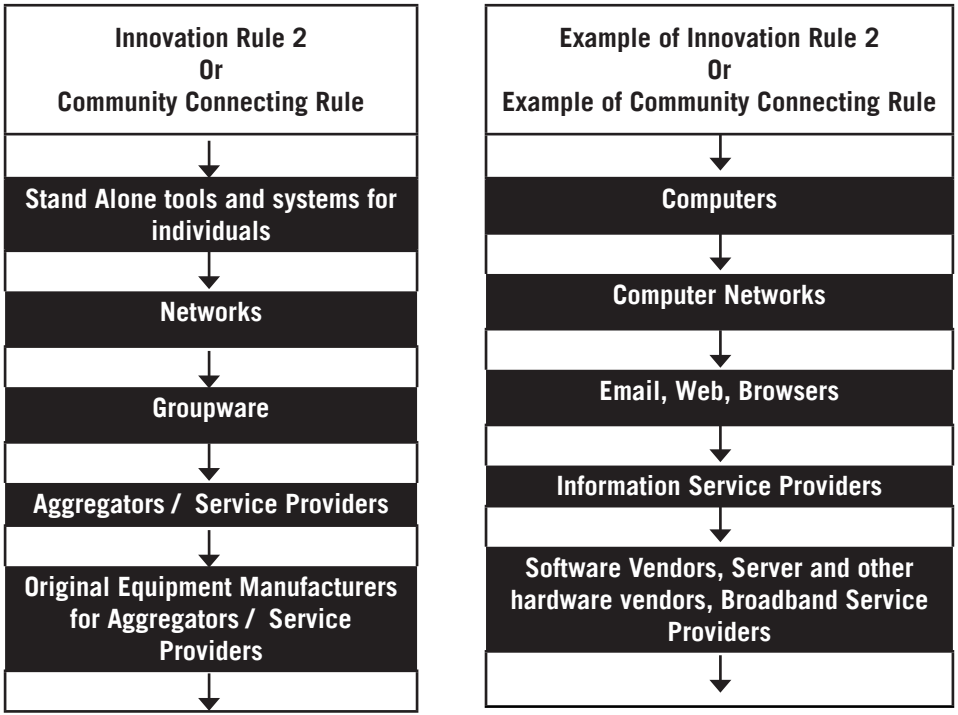
ANNEX 1
INNOVATION RULES

Innovation Rules capture innovation evolution paths from the past
These paths can be used to identify innovation opportunities

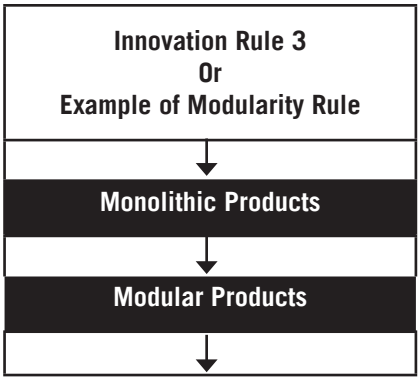
Evolution of value diffusion innovations using computers as an example:

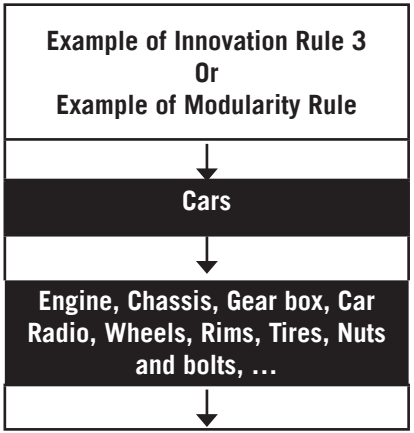


Evolution of community connecting innovations using computers as an example:

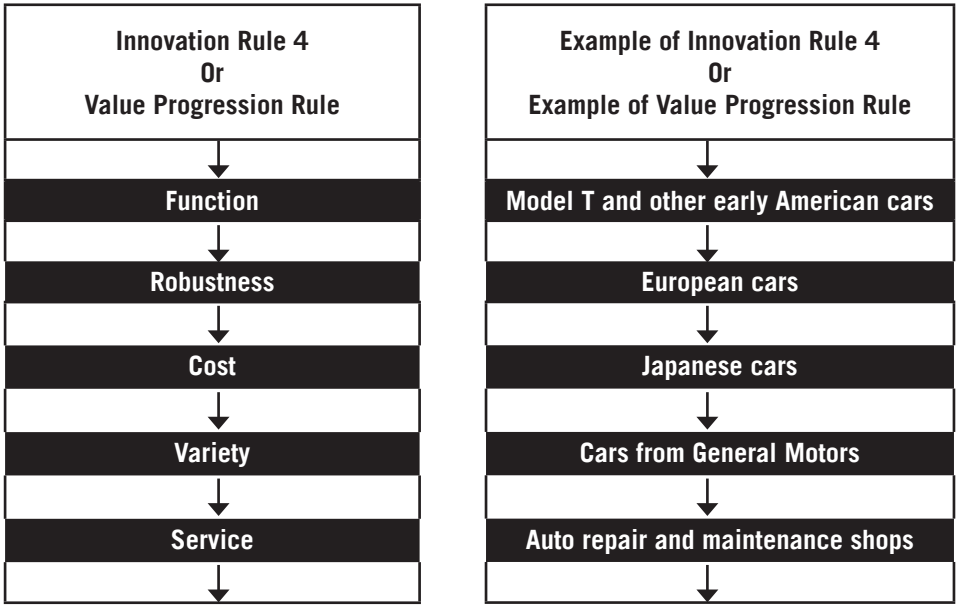


Evolution of modular innovations using cars as an example:

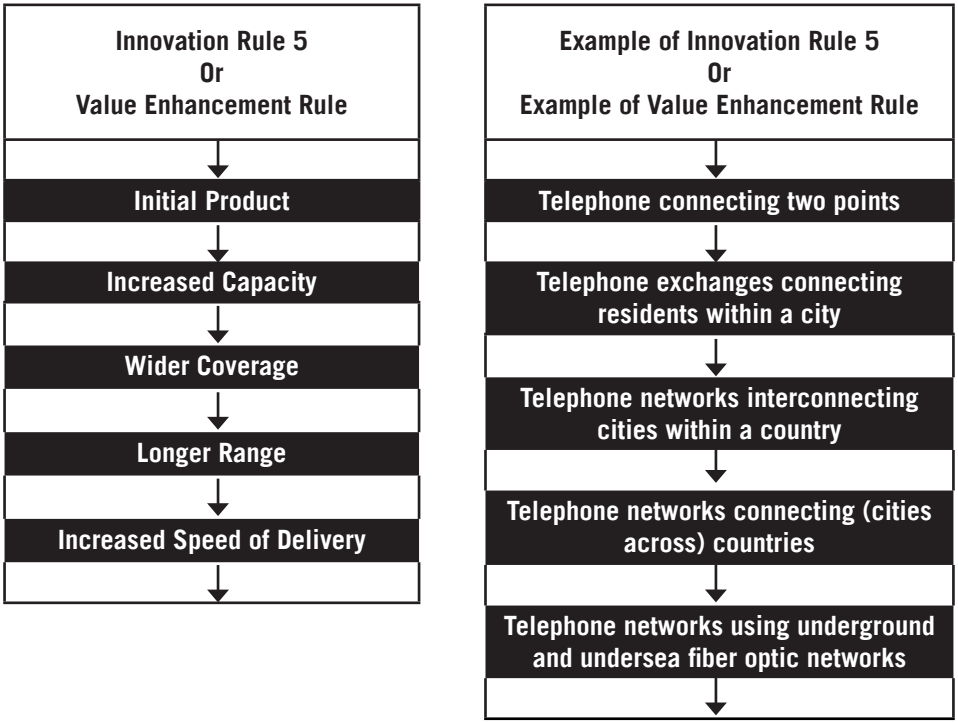




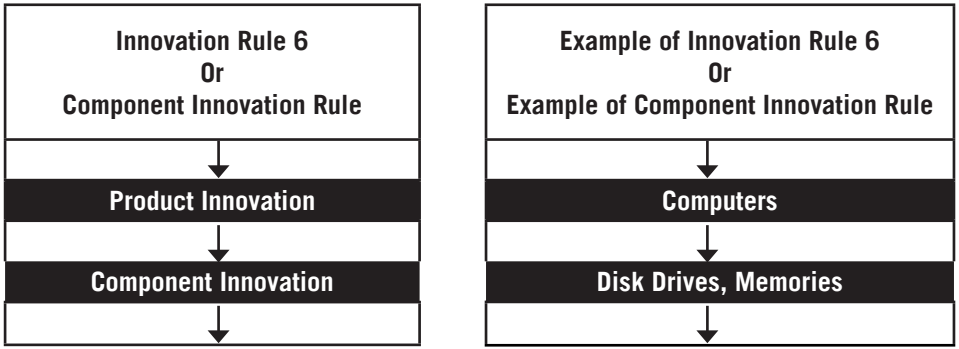
Evolution of Value Progression innovations using cars as an example:

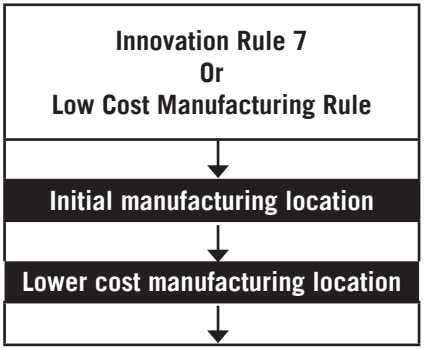


Evolution of value enhancing innovations using telephone networks as an example

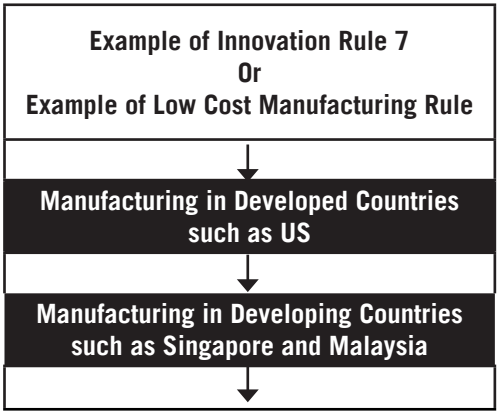


Evolution of component innovations using computers as an example:

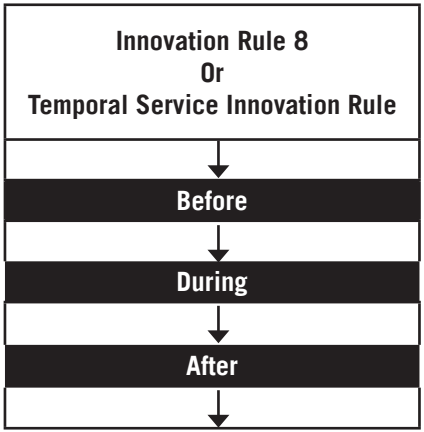


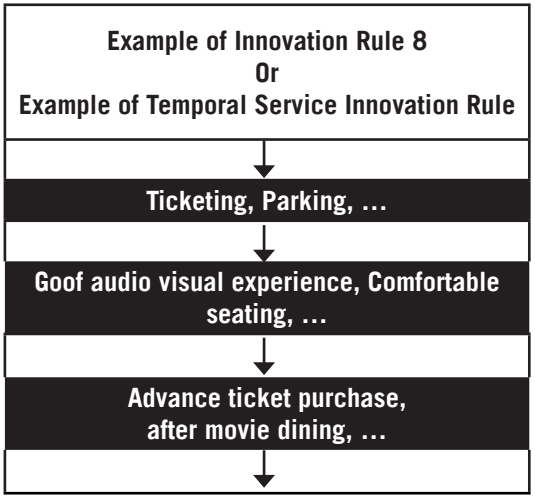


Evolution of Low Cost Manufacturing innovation for Electronics

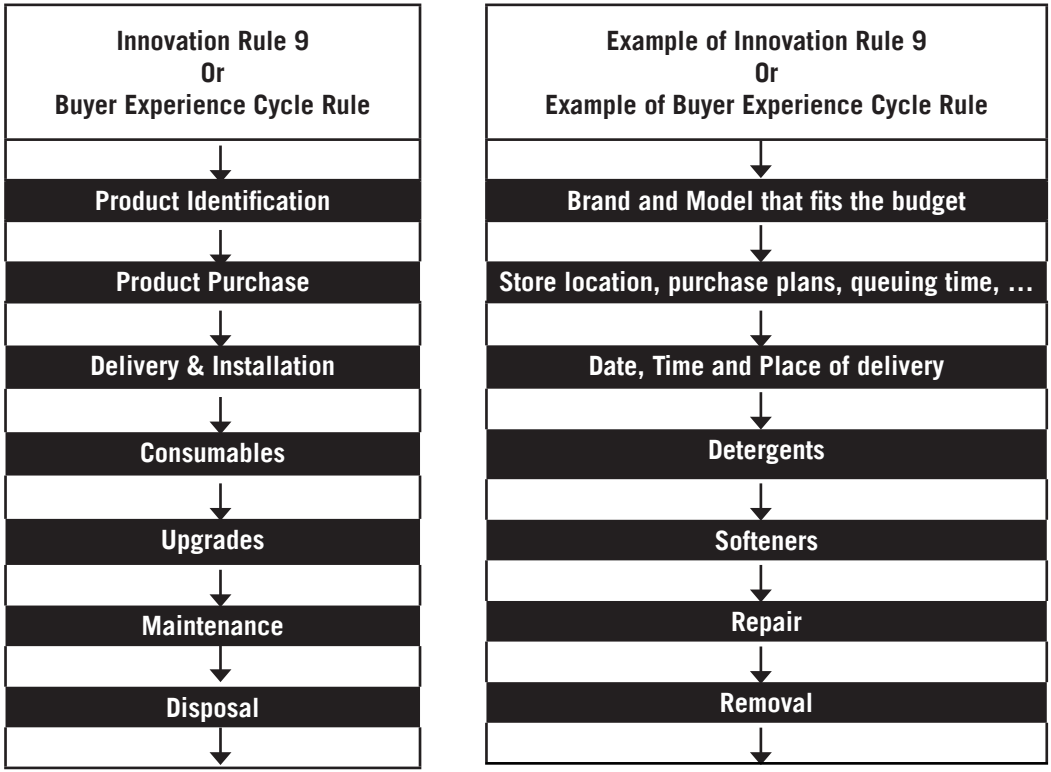


Temporal Service innovations using cinema as an example:

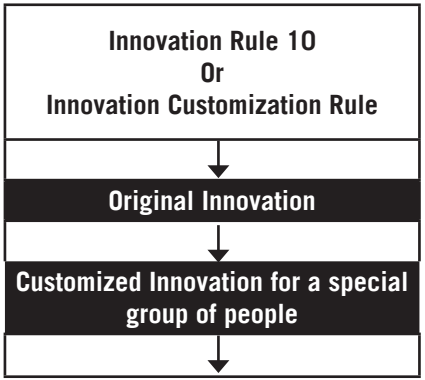


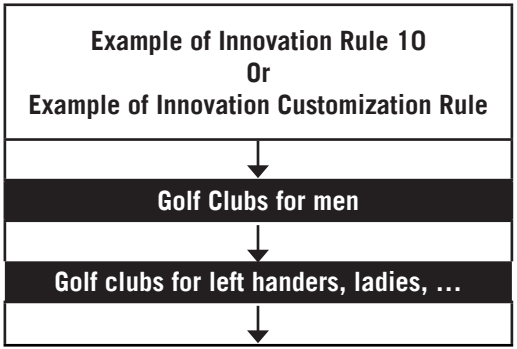


Innovations using clothes washer as an example

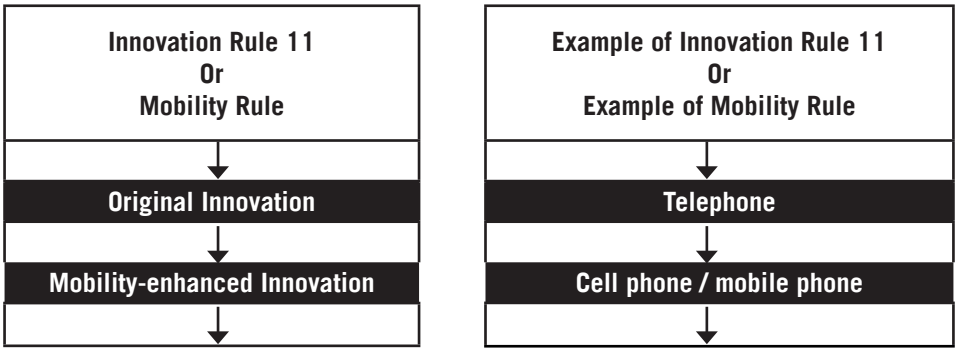


Customization of innovations using Golf as an example:

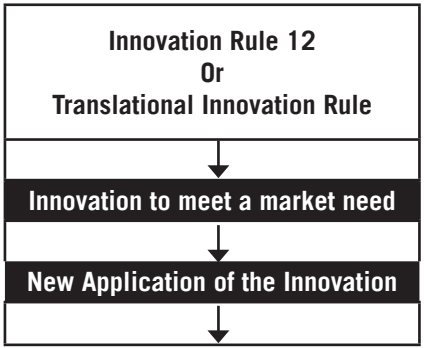


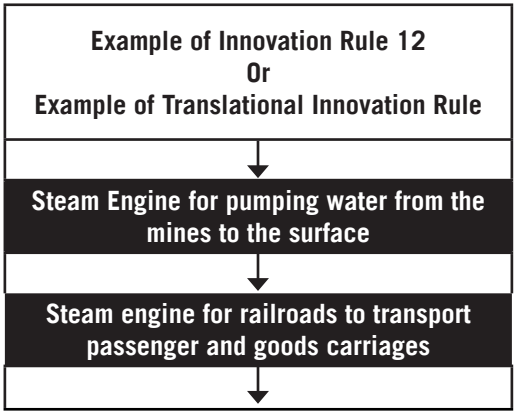


Evolution of Mobile Innovations using Telephone as an example:

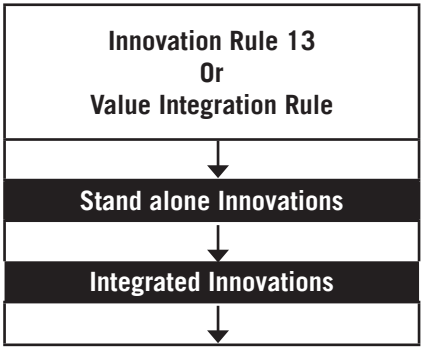


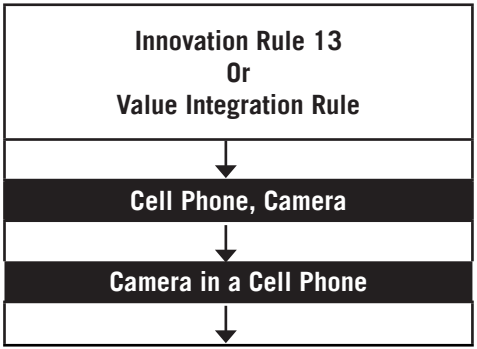
Evolution of translational innovations using Steam Engine as an example:



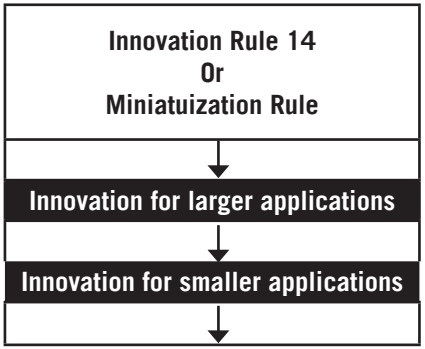


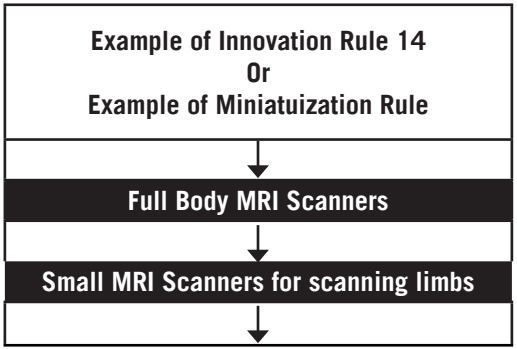
Evolution of Value Integrating innovations using Cell phone and Camera as an example:



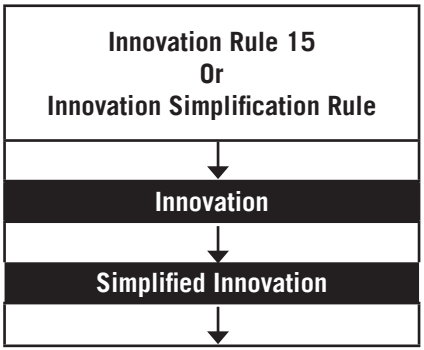


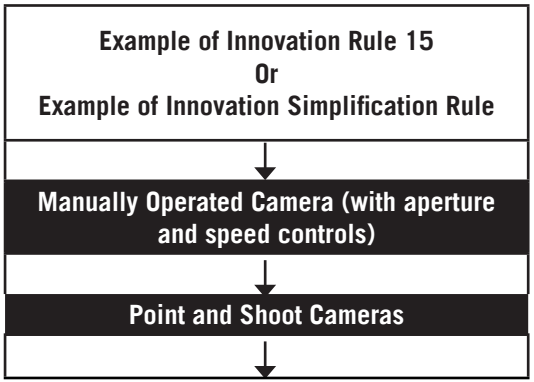
Evolution of miniaturized innovations using Magnetic Resonance Imaging (MRI) as an example:



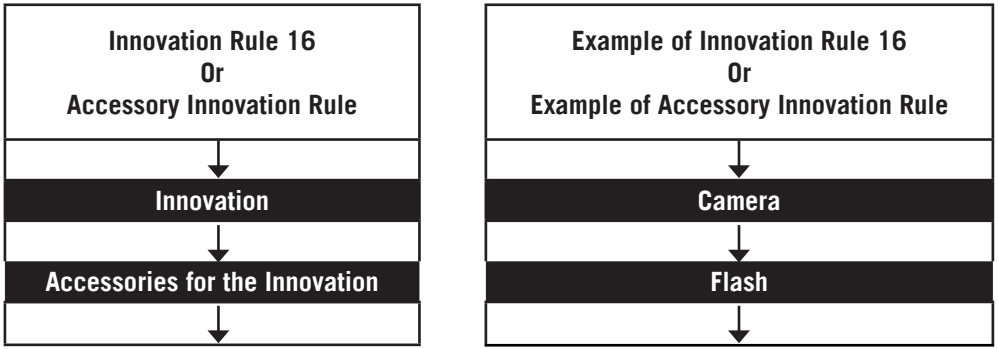


Evolution of Simplified innovations using Camera as an example:

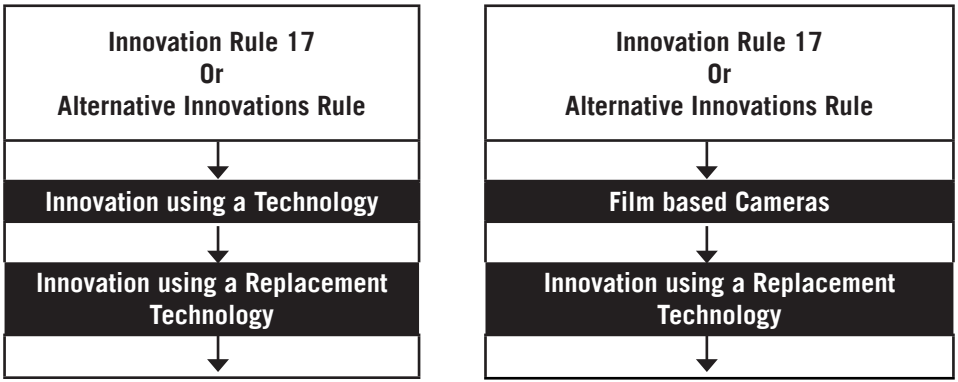


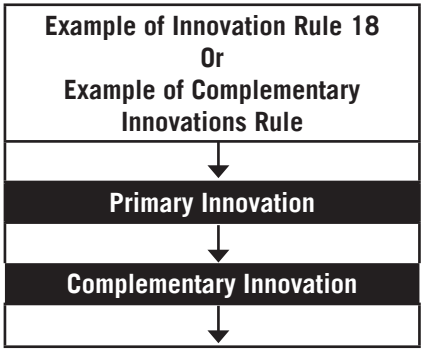


Evolution of accessory innovations using Camera as an example:

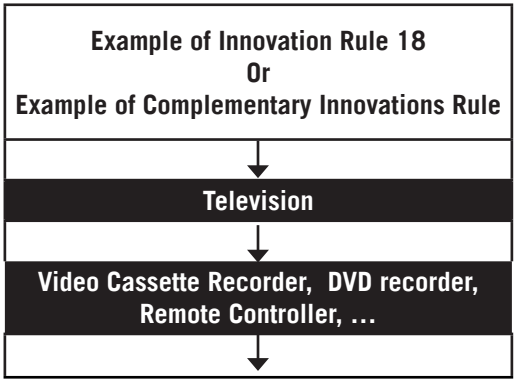


Evolution of Alternative Innovations using Camera as an example:

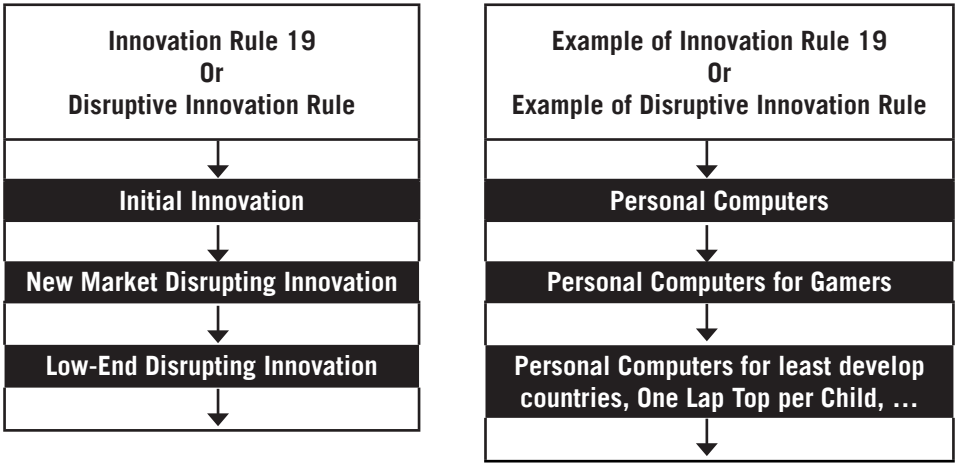




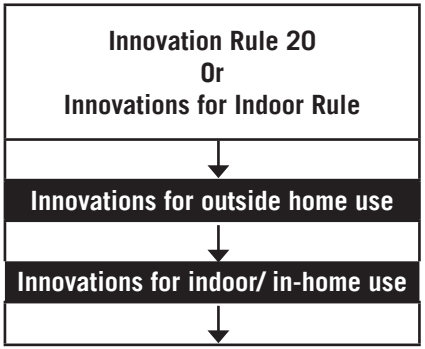
Evolution of complementary innovations using television as an example:

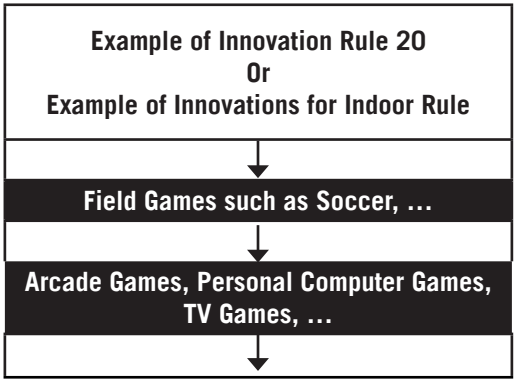


Evolution of Disruptive Innovations using Personal Computers as an example:

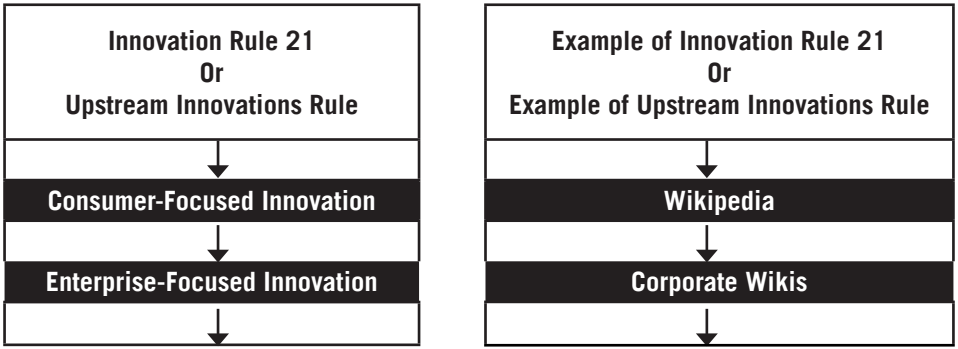


Evolution of Indoor Innovations using Games as an example:

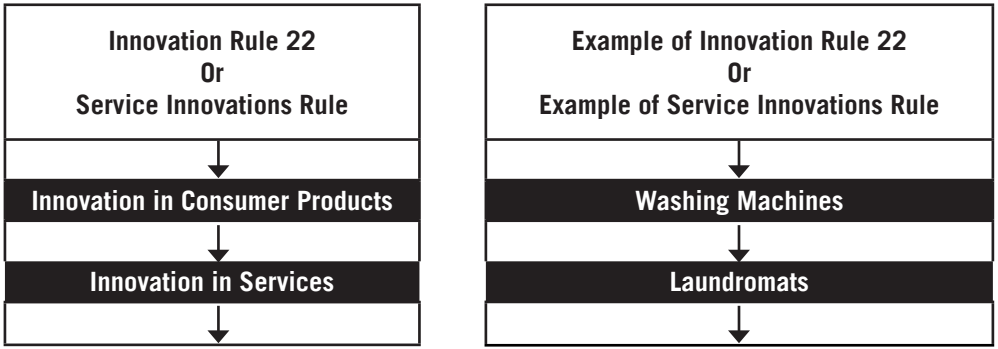




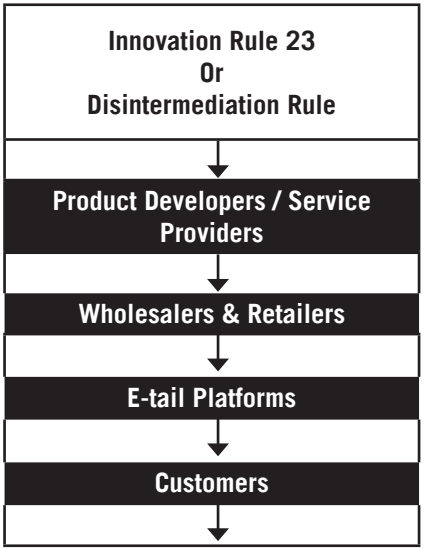
Evolution of Enterprise innovations from consumer innovations using Wiki as an example:

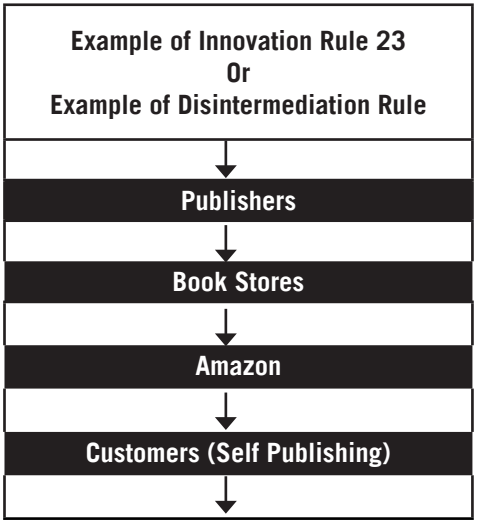


Evolution of Service Innovations using
Washing Machines as an example

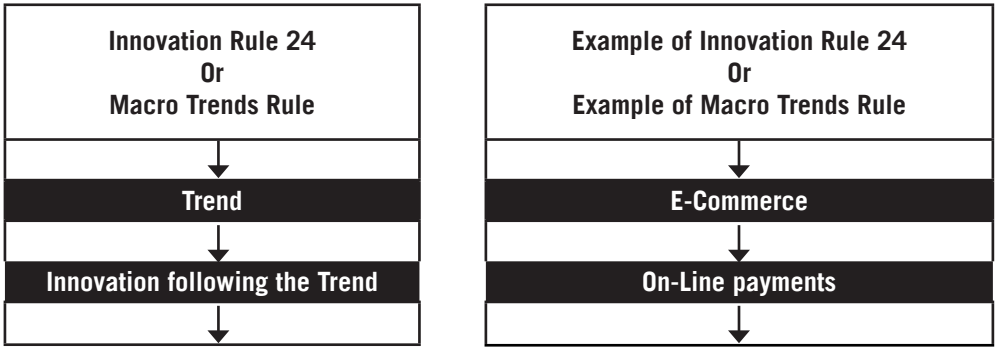


Evolution of Disintermediated Innovations using Books as an example:

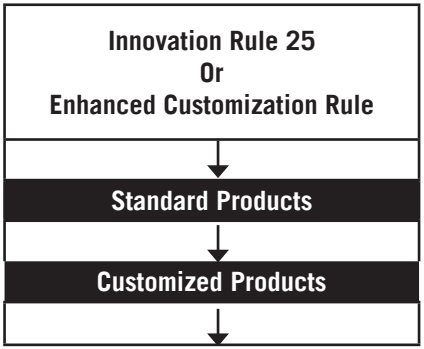


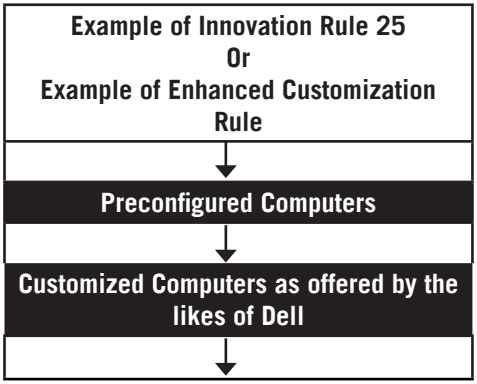


E-commerce as an example:



Evolution of Customization as an innovation using Computers as an example:





"I am using this Innovative Entrepreneurs' workbook in the course "Creativity and Ideas" which I am teaching at the Vienna University of Technology. The book provides a well-founded introduction to innovation. Its many examples make it easy to understand how innovation works - both in product and service innovation. Most importantly, the book provides easy-to-use templates to facilitate one's own idea creation and innovation.

The students in my course use the templates in their own exercises with great enthusiasm and creativity."

Erich
Vienna University of Technology

ABOUT THE AUTHOR

Prof Desai Arcot Narasimhalu
Director, Institute of Innovation and Entrepreneurship

Prof Desai has more than thirty five years of innovation and innovation management experience. During this period, he has personally created or directed the creation of several innovations that have been commercialized.

He is the Director of the Institute of Innovation and Entrepreneurship of the Singapore Management University (SMU) and concurrently a Practice Professor of Information Systems at SMU's School of Information Systems.

He has worked in Singapore with Kent Ridge Digital Laboratory and Institute of System Science in Senior Management roles.

He is an advisor to several start ups outside of SMU and is a member of the International Scientific Board of the Information Retrieval Facility based in Vienna, Austria. He is a member of the editorial boards of several scientific journals and is a member of the Board of Advisors of the International Society for Professional Innovation Management.

Institute of Innovation &
Entrepreneurship

IIE thanks Singapore Management University and SPRING Singapore
for their support towards producing this workbook.

• Email: iie@smu.edu.sg • Tel: +65 6828 1991 • www.iie.smu.edu.sg

Our Vision

To be the preferred partner for research and practice of innovation and entrepreneurship.

Our Mission

Nurture and Grow an innovation culture and entrepreneurial community in SMU and beyond.

Our Approach

We encourage our community to Explore, Experiment and Enrich themselves and the world at large.

Our DNA

Our DNA is defined by:

ASPIIRE

Our Contact

Contact us at iie@smu.edu.sg for enquiries.