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Making patents make a difference

ANATOMY OF ASSERTIVE LICENSING PROGRAMS

Presented to

16TH ANNUAL ADVANCED LICENSING INSTITUTE

CONCORD, NH

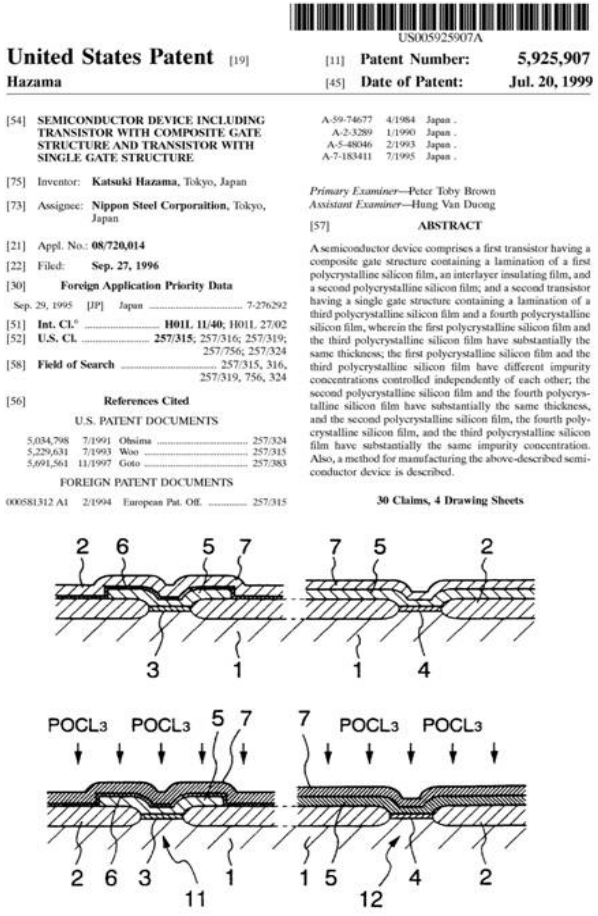
January 8, 2008

Charles R. Neuenschwander

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Why own patents?

1. Forcefully keep others from encroaching on your proprietary technology or your markets
2. Use as a retaliatory weapon if others charge you with infringement
3. Generate hard cash or leverage your business



US005925907A

United States Patent [19]
Hazama

[11] **Patent Number: 5,925,907**
[45] **Date of Patent: Jul. 20, 1999**

[54] **SEMICONDUCTOR DEVICE INCLUDING TRANSISTOR WITH COMPOSITE GATE STRUCTURE AND TRANSISTOR WITH SINGLE GATE STRUCTURE**

[75] Inventor: **Katsuki Hazama**, Tokyo, Japan

[73] Assignee: **Nippon Steel Corporaition**, Tokyo, Japan

[21] Appl. No.: **08/720,014**

[22] Filed: **Sep. 27, 1996**

[30] **Foreign Application Priority Data**

Sep. 29, 1995 [JP] Japan 7-276292

[51] **Int. Cl.**[6] **H01L 11/40**; H01L 27/02

[52] **U.S. Cl.** **257/315**; 257/316; 257/319; 257/756; 257/324

[58] **Field of Search** 257/315, 316, 257/319, 756, 324

[56] **References Cited**

U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

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A-59-74677	4/1984	Japan .	
A-2-3289	1/1990	Japan .	
A-5-48046	2/1993	Japan .	
A-7-183411	7/1995	Japan .	

Primary Examiner—Peter Toby Brown
Assistant Examiner—Hung Van Duong

[57] **ABSTRACT**

A semiconductor device comprises a first transistor having a composite gate structure containing a lamination of a first polycrystalline silicon film, an interlayer insulating film, and a second polycrystalline silicon film; and a second transistor having a single gate structure containing a lamination of a third polycrystalline silicon film and a fourth polycrystalline silicon film, wherein the first polycrystalline silicon film and the third polycrystalline silicon film have substantially the same thickness; the first polycrystalline silicon film and the third polycrystalline silicon film have different impurity concentrations controlled independently of each other; the second polycrystalline silicon film and the fourth polycrystalline silicon film have substantially the same thickness, and the second polycrystalline silicon film, the fourth polycrystalline silicon film, and the third polycrystalline silicon film have substantially the same impurity concentration. Also, a method for manufacturing the above-described semiconductor device is described.

30 Claims, 4 Drawing Sheets

Monetizing patents before 1982



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Monetizing patents in the last 25 years

- Rise of the knowledge based economy
- Rise of patent enforcement
- Dramatically increased patenting around the world
- Monetizing portfolios – sometimes for large amounts of money
  - Return on R&D
  - Competitive weapon ~ cost of doing business
  - Profit enhancement
- Emergence of “trolls”
- Legislative, judicial, procedural reactions

Corporate changes in the last 25 years

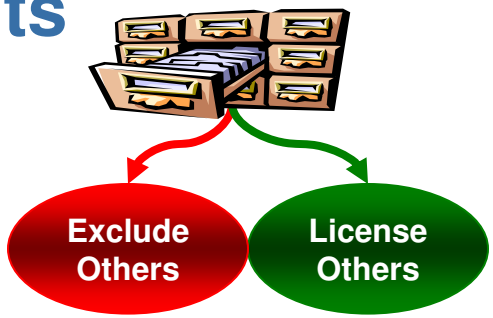
- IP is an asset
- Financial return must now account for
  - Operational results
  - Optimal management of IP
    - Strategic initiatives
    - Monetizing
- Fiduciary responsibilities
  - Address IP issues
  - Approve sound and reasonable IP strategies
  - Fix responsibility and accountability
  - Be proactive: invest executive time and drive the program



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Alternative uses of patents

- The three reasons for owning patents can be captured in two broad categories:
  - **Prevent others from using your technology**
  - **Invite others to use your technology**



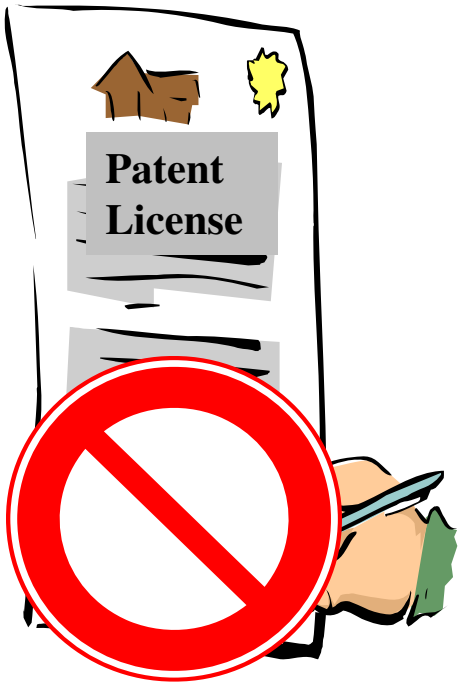
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Playing defense – "Exclude Others"

- Through cease & desist letters
- Formal letters of infringement
- Litigation against third parties

You retain for yourself . . .

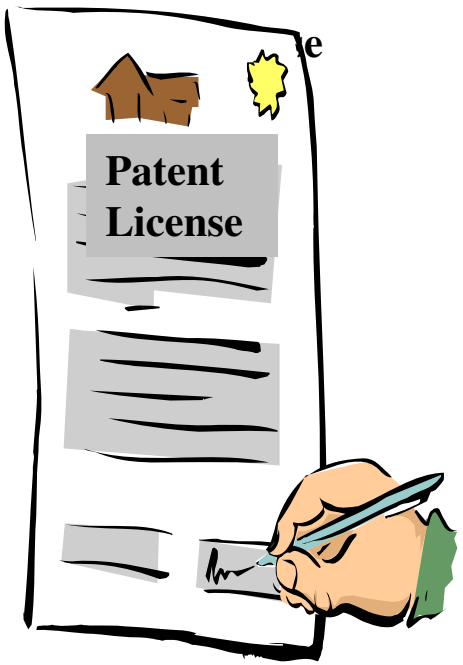
- The better functioning product
- The lower-cost manufacturing method
- The exclusivity of a market



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Playing offense – "License Others"

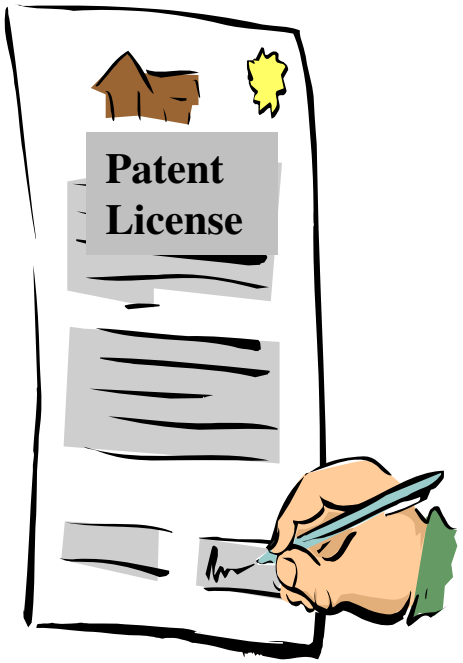
- For many reasons, you may choose to license patents to others
  - Make money
  - Generate a return on R&D
  - Counter-balance another portfolio
  - Business venturing



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Playing offense – "License others"

- However:
  - To say "patent licensing" is not definitive enough
  - There are two types of patent licensing and they have different objectives



Offensive & defensive licensing

- **You hit me first!** Using your patents <u>reactively</u> to counter charges of infringement from others
  - Force them to settle for little or nothing
- **Look at what I have.** Asking others to license your portfolio for something in return

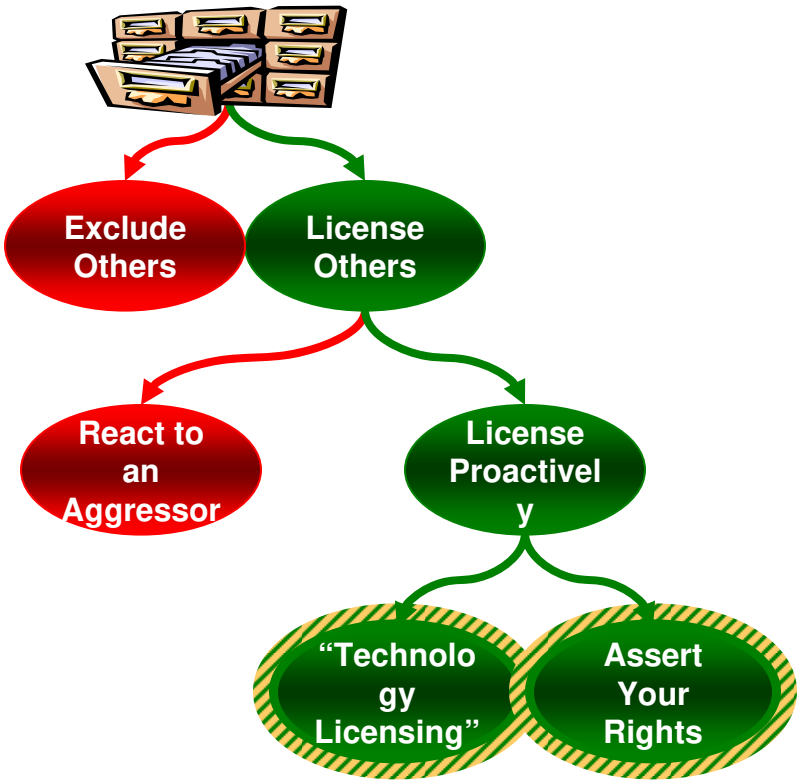


Proactive licensing

- **Don't you want to use this?**

  a.k.a. "Carrot" licensing – you have a new technology of interest to others
- **Hold on! I own that.**

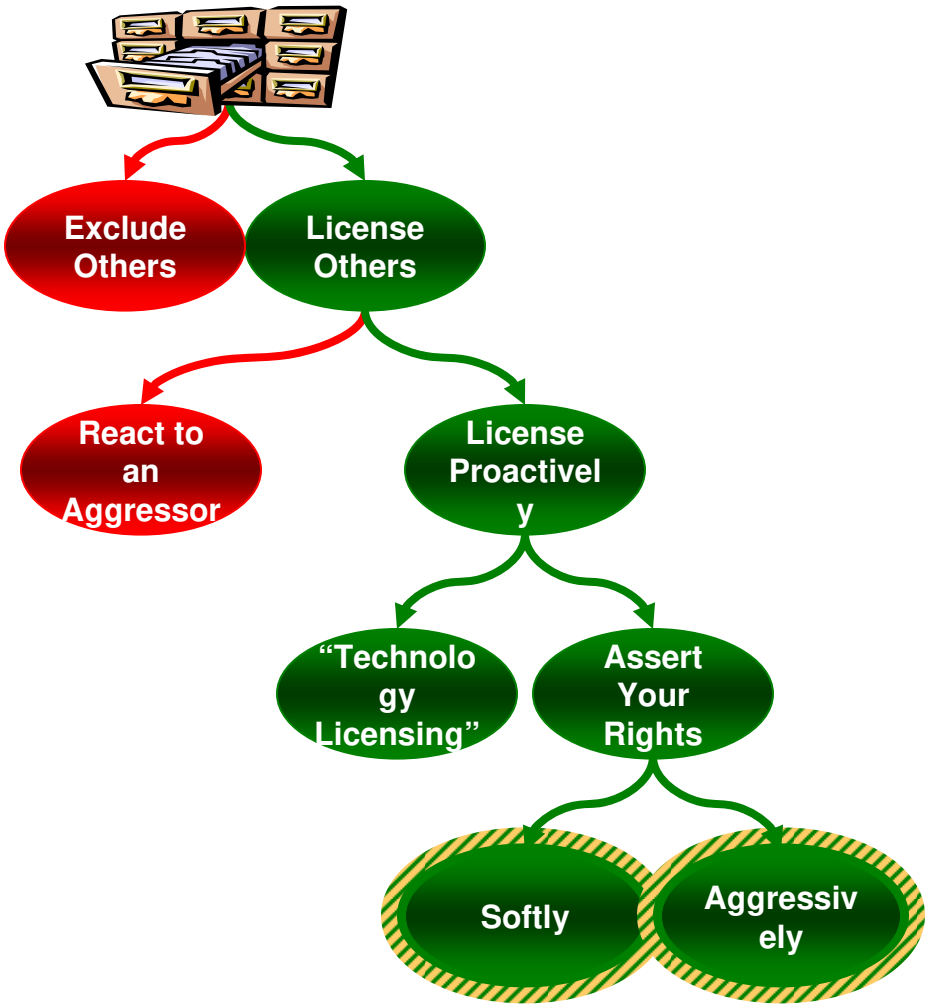
  You know others are already using your technology and you want to "strongly encourage" them to take a license



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Assertive licensing

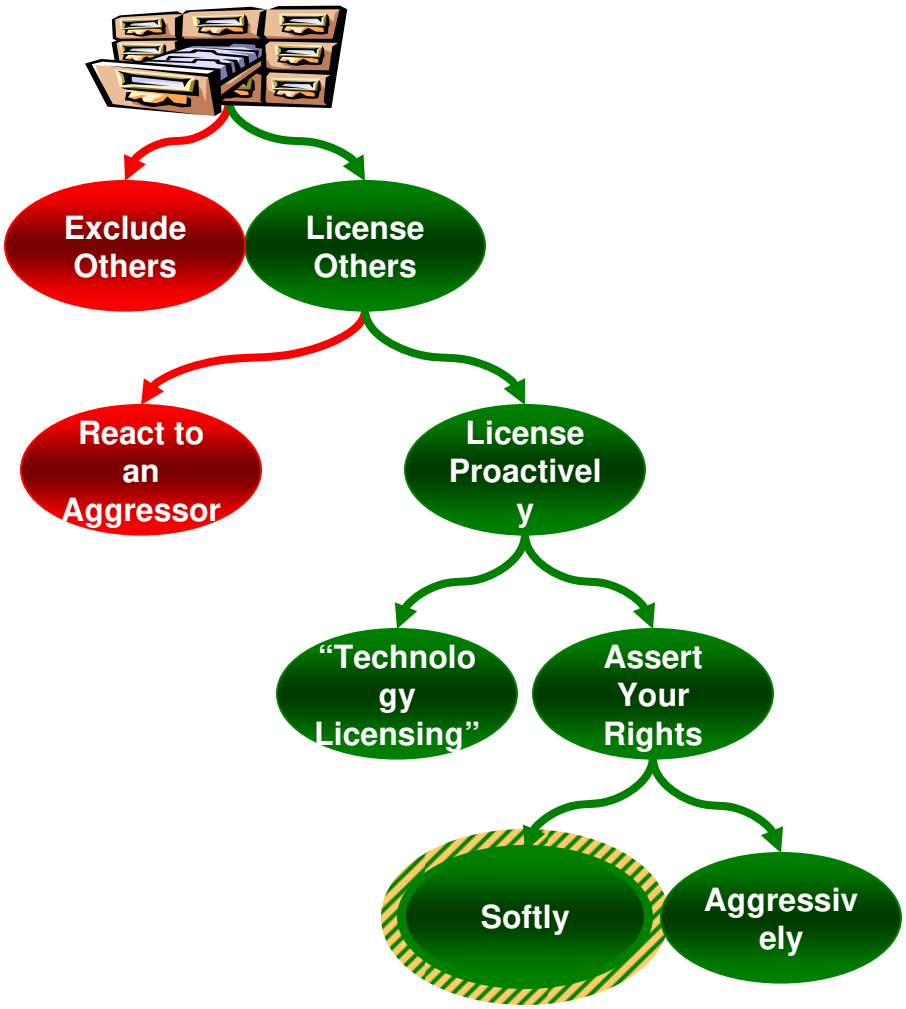
- **I'm sure you will agree . . .** Send a letter suggesting they will want to license your patent
- **Pay me . . . or stop . . . or . . . a.k.a. "Stick" licensing**
  Inform a third party you know they are using your patented technology and a license is necessary



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Soft approach

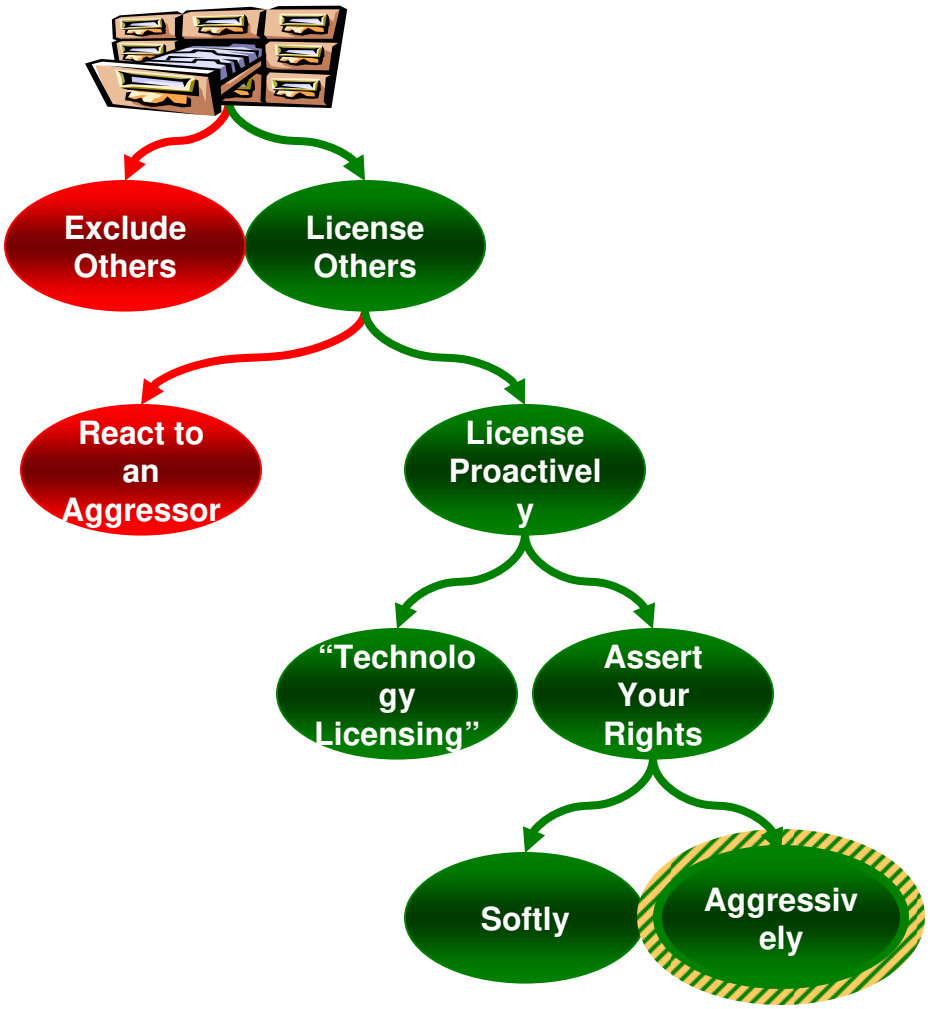
- Companies receive these letters all the time
- They likely ignore the situation as long as possible
- They politely respond (reduce the chance for willfulness / now recklessness) and wait for the licensor's next move
- The Alamo only with infinite food, water and ammunition



Aggressive approach

- You believe your patents are being infringed
- You will defend your patents
- You will prove your position of infringement
  - Claims construction
  - Reverse Engineering
- You will litigate if necessary

Anything less is the "Soft Approach"



Important questions for patent holders

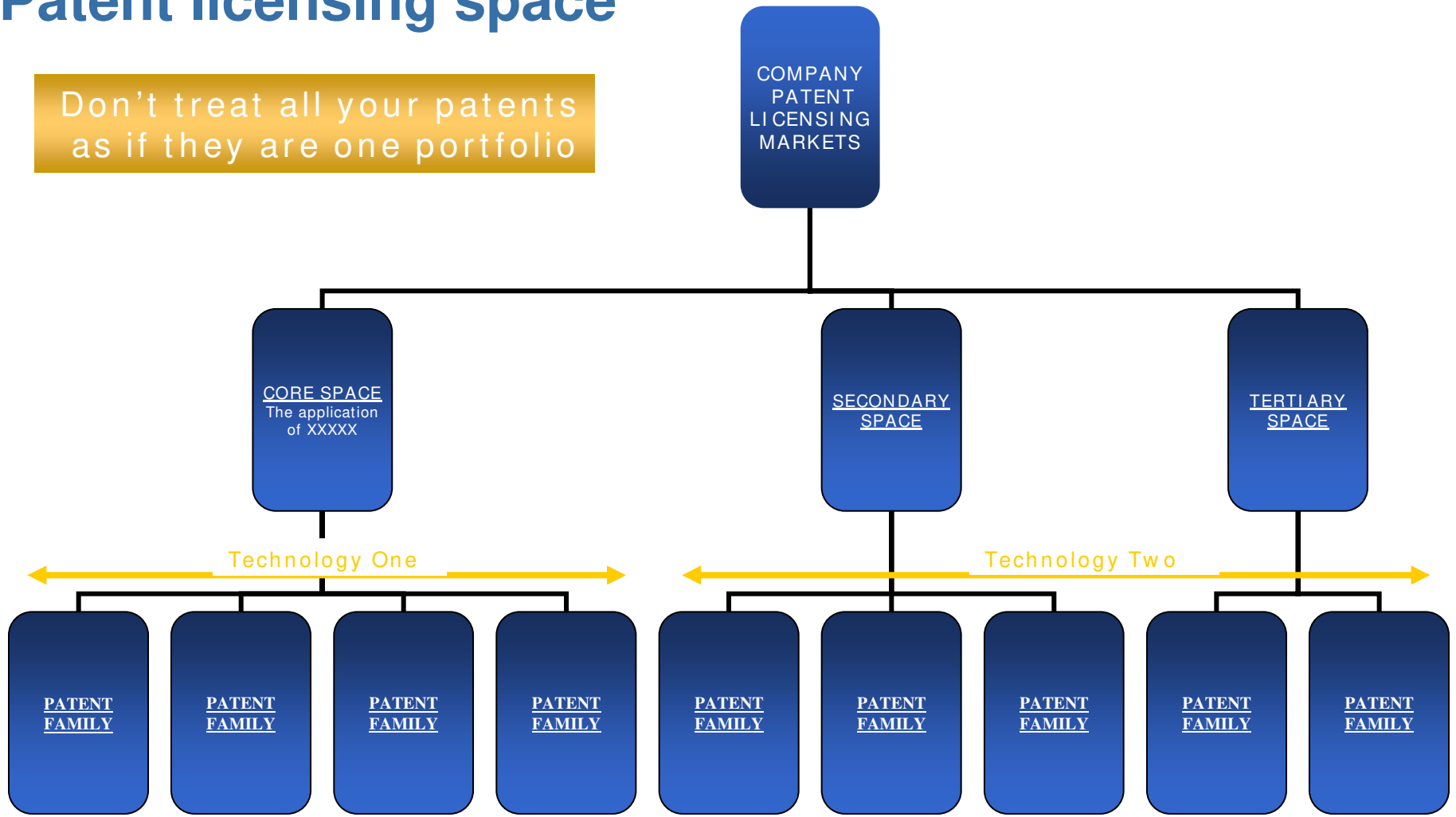
- Is there an IP strategy in place?
  - Other than filing patents to protect your technology.
  - Can you show where it is written or is it just understood?
- Are you doing technology licensing?
  - Are the revenues received adequate? Optimal?
- Are you defending your product and market space?
  - Will you litigate if necessary?
- Are you foregoing revenues from royalties where your technology is already benefiting others?
- Does anyone appreciate your IP position?
  - Are they altering business strategies because of it?
  - Do the analysts understand?

Why are these questions important?

- There should be an operational interest
  - Maximize what opportunities there are in the market
    - Protect the market
    - Grow the market
  - Provide financial flexibility
    - Optimize technology licensing revenue
    - Optimize assertive licensing revenue
    - Fund R&D, product development, capex . . .
- You want others to like you
  - The investment community
  - The entity that might buy you

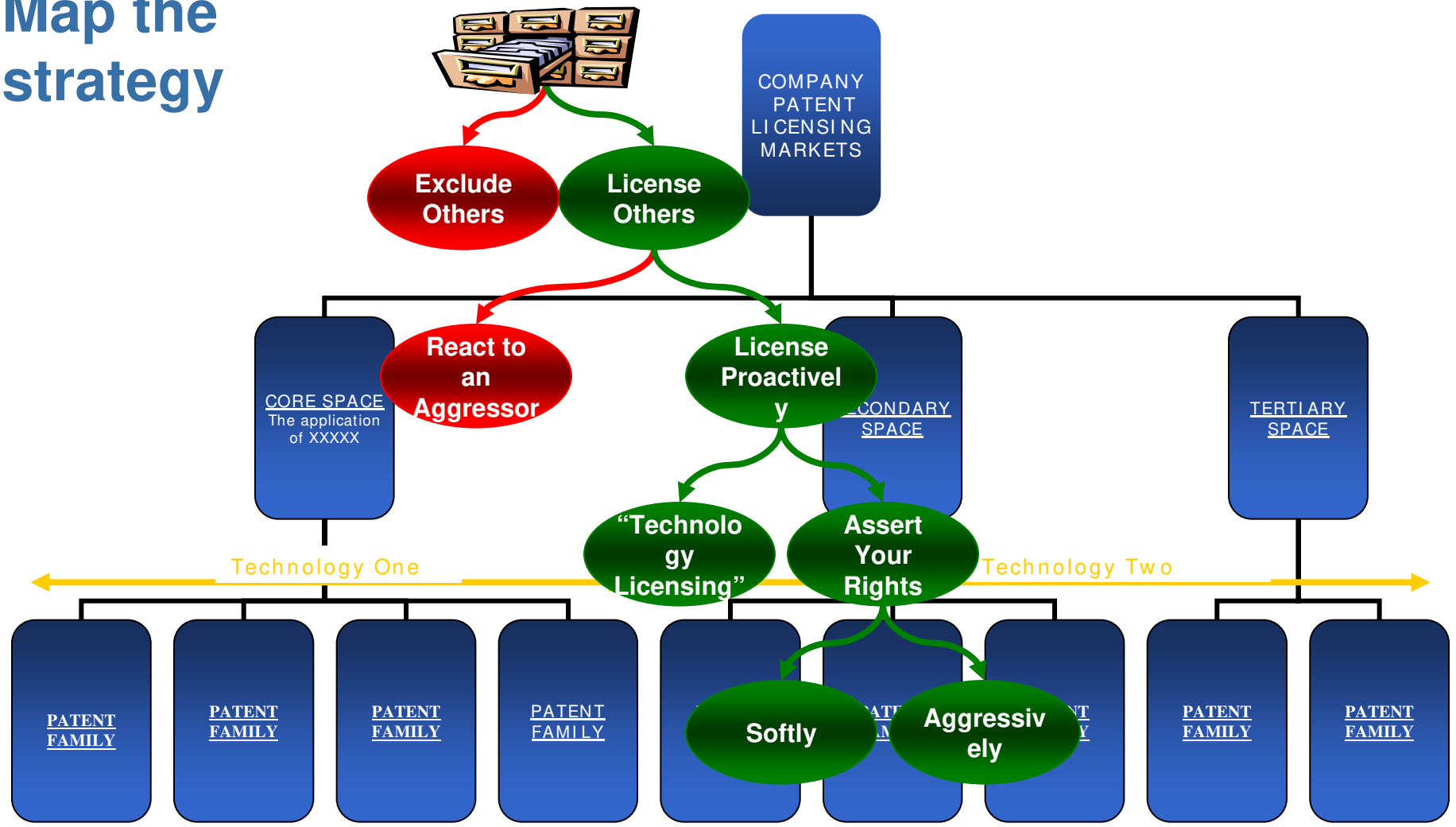
Patent licensing space

Don't treat all your patents as if they are one portfolio



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Map the strategy



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It is not all good news

- **TIME:** Assertive licensing may take a long time
  - Does not fix next quarter's profit issues
  - It's not as too late now as it will be later
- **COST:** While "opportunistic" technology licensing costs little, assertive licensing costs significantly more
  - Staff (maybe)
  - Management / board focus
  - Outside help: licensing, legal
  - Other program expenses like travel
- **RISK:** Litigation
  - You **must be prepared** to litigate
  - Every time you file litigation, you put your patents at risk

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The value of patents to patentee

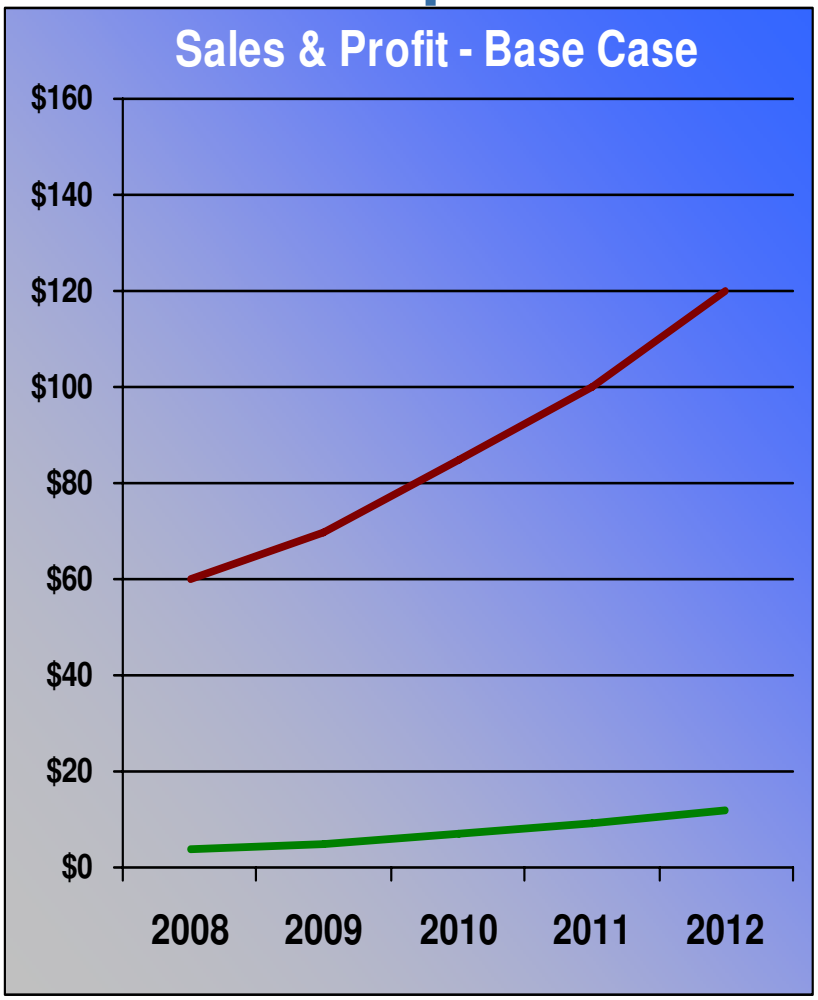
Base Case	
Revenue	100,000
Cost of Revenue	(50,000)
Gross Profit	50,000
Operating Expenses	(50,000)
Operating Income	**(5,000)**

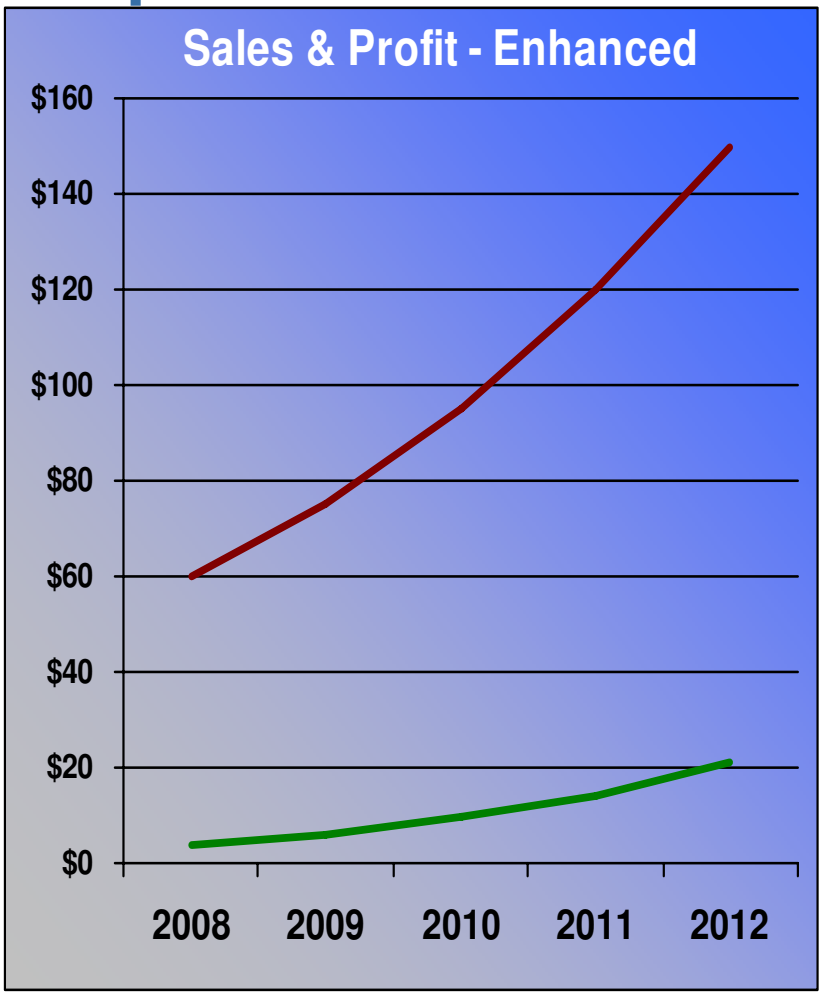
Enhanced Case	
Revenue	100,000
Cost of Revenue	(50,000)
Gross Profit	50,000
Operating Expenses	(50,000)
Net Licensing Royalty	10,000
Operating Income	**5,000**

This is the model everyone understands

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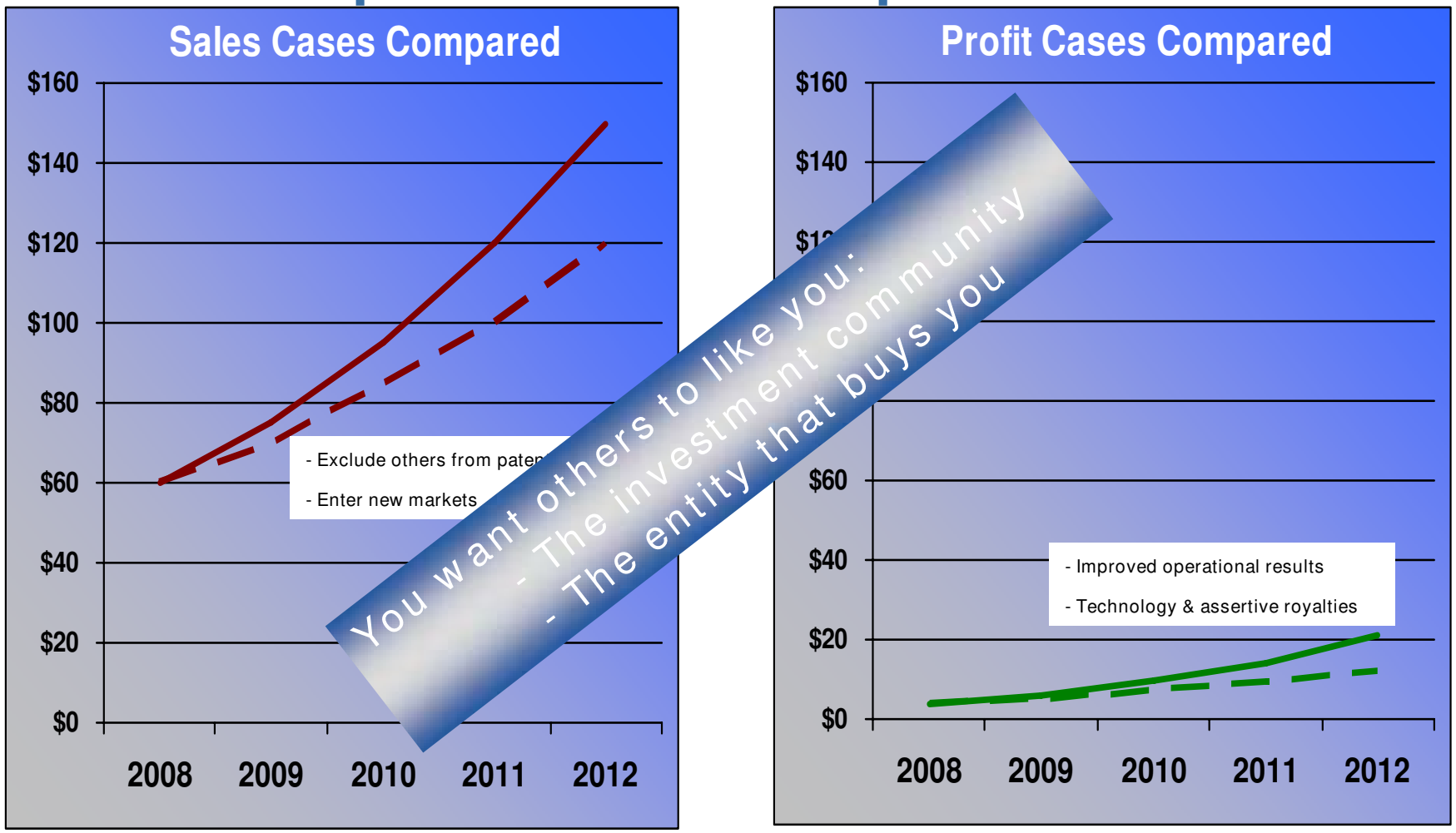
The value of patents – look deeper





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The value of patents – look deeper



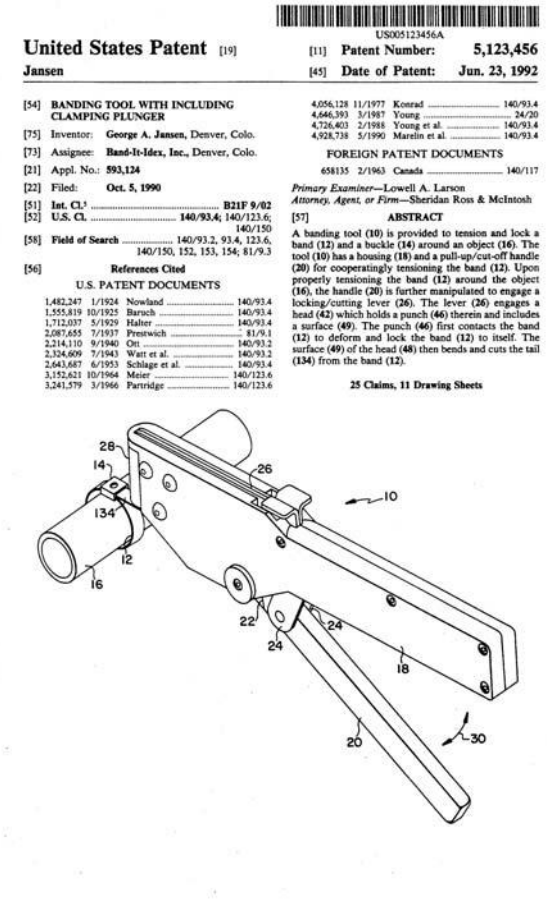
SO, HOW DOES ONE SUCCESSFULLY ASSERT PATENTS AND REALIZE A RETURN?

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What is an assertive licensing program?

The process of evaluating a portfolio of patents to find those that have a strong potential for licensing** and successfully granting one or more third parties a patent license

**"Strong potential for licensing" means there is at least one patent believed to be infringed



US005123456A

United States Patent [19]
Jansen

[11] **Patent Number: 5,123,456**
[45] **Date of Patent: Jun. 23, 1992**

[54] **BANDING TOOL WITH INCLUDING CLAMPING PLUNGER**

[75] Inventor: **George A. Jansen**, Denver, Colo.

[73] Assignee: **Band-It-Idex, Inc.**, Denver, Colo.

[21] Appl. No.: **593,124**

[22] Filed: **Oct. 5, 1990**

[51] **Int. Cl.**[5] **B21F 9/02**

[52] **U.S. Cl.** **140/93.4**; 140/123.6; 140/150

[58] **Field of Search** 140/93.2, 93.4, 123.6, 140/150, 152, 153, 154; 81/9.3

[56] **References Cited**

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1,555,819	10/1925	Baruch	140/93.4
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2,214,110	9/1940	Ott	140/93.2
2,324,609	7/1943	Watt et al.	140/93.2
2,643,687	6/1953	Schlage et al.	140/93.4
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4,056,128	11/1977	Konrad	140/93.4
4,646,393	3/1987	Young	24/20
4,726,403	2/1988	Young et al.	140/93.4
4,928,738	5/1990	Marelin et al.	140/93.4

FOREIGN PATENT DOCUMENTS

658135	2/1963	Canada	140/117

Primary Examiner—Lowell A. Larson
Attorney, Agent, or Firm—Sheridan Ross & McIntosh

[57] **ABSTRACT**

A banding tool (**10**) is provided to tension and lock a band (**12**) and a buckle (**14**) around an object (**16**). The tool (**10**) has a housing (**18**) and a pull-up/cut-off handle (**20**) for cooperatingly tensioning the band (**12**). Upon properly tensioning the band (**12**) around the object (**16**), the handle (**20**) is further manipulated to engage a locking/cutting lever (**26**). The lever (**26**) engages a head (**42**) which holds a punch (**46**) therein and includes a surface (**49**). The punch (**46**) first contacts the band (**12**) to deform and lock the band (**12**) to itself. The surface (**49**) of the head (**48**) then bends and cuts the tail (**134**) from the band (**12**).

25 Claims, 11 Drawing Sheets

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Four principles of assertive licensing

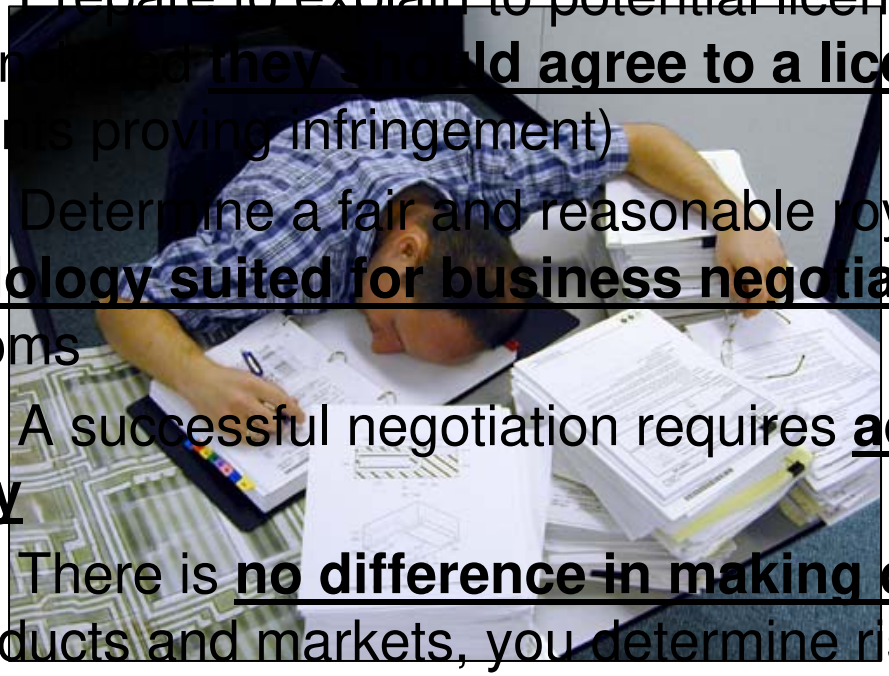
In high-tech, there are so many charges of infringement that companies become numb – it is no longer practical to respond in the same manner to all

Principle 1: Prepare to explain to potential licensees **why** you have co[illegible]ed they **should agree to a license** (including documents proving infringement)

Principle 2: Determine a fair and reasonable royalty with a **methodology suited for business negotiations**, not courtrooms

Principle 3: A successful negotiation requires **advocacy** and **integrity**

Principle 4: There is **no difference in making decisions** – as with products and markets, you determine risk and return



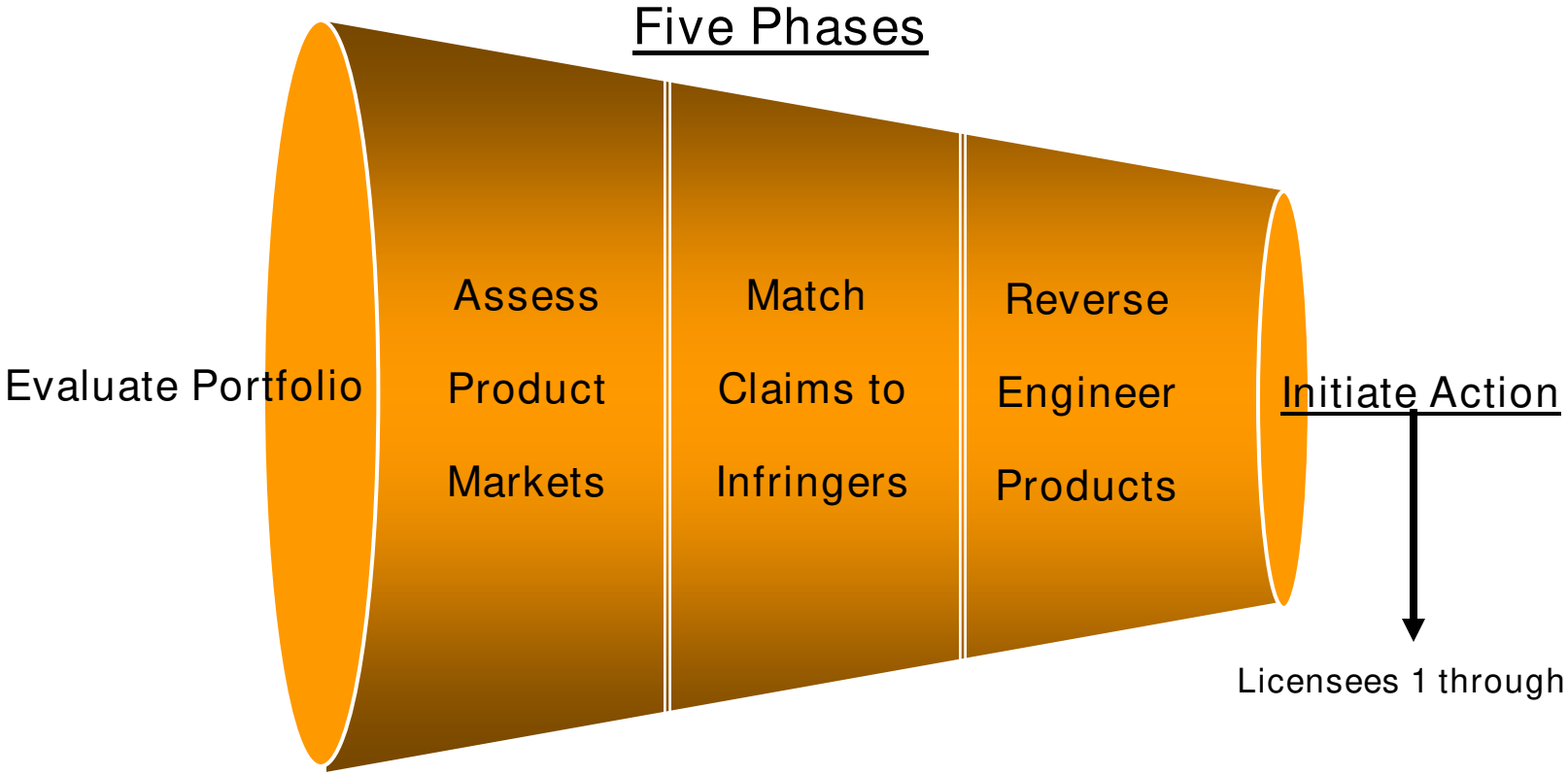
It looks easy and straightforward . . .



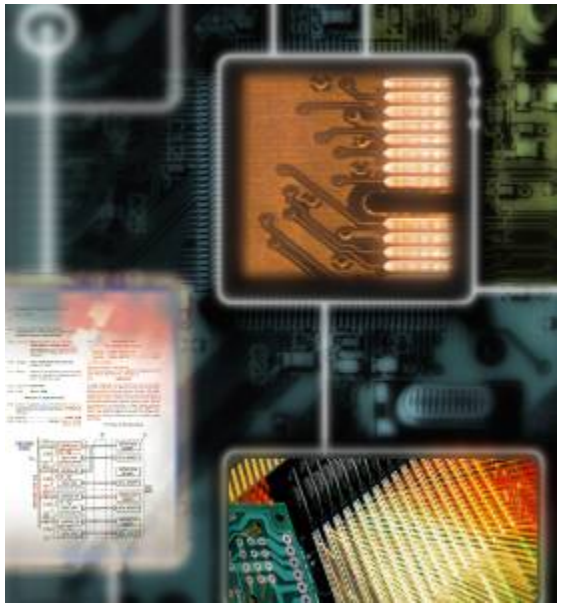
but it can be more complex than expected

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Program methodology – a process of reduction

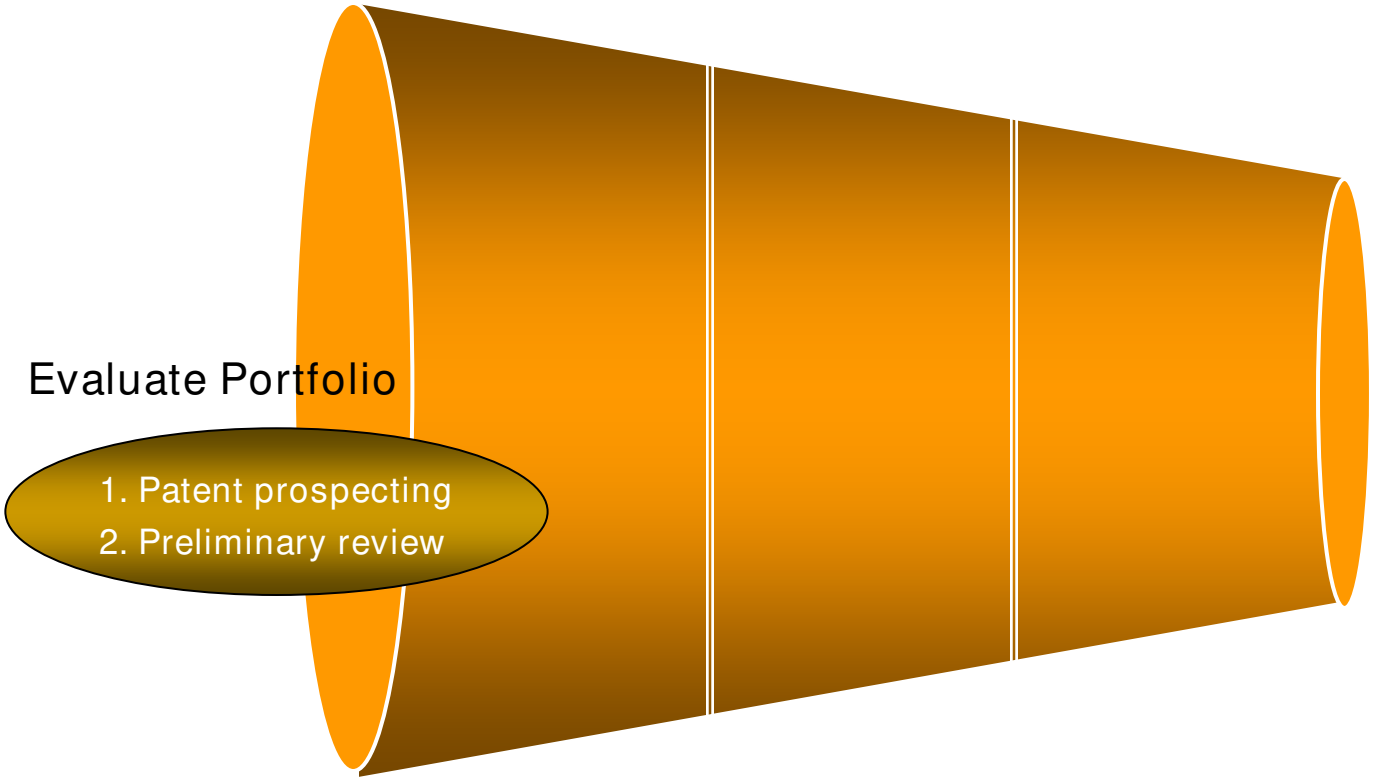


Principle 1: Prepare to explain to potential licensees why you have concluded they should agree to a license (including documents proving infringement)



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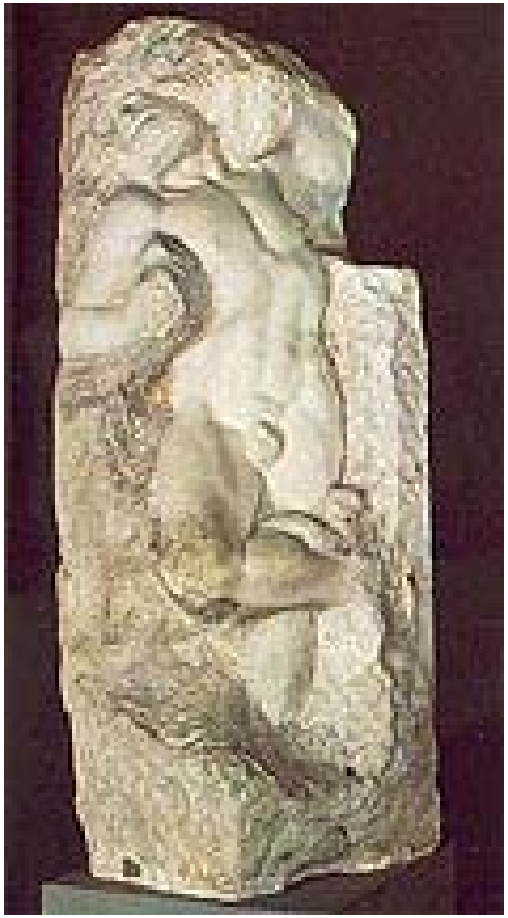
Program methodology – searching for patents



Patent prospecting

Michelangelo is to have stated something to the effect that he did not create a sculpture –

he removed the stone that is not needed so he could see the sculpture within



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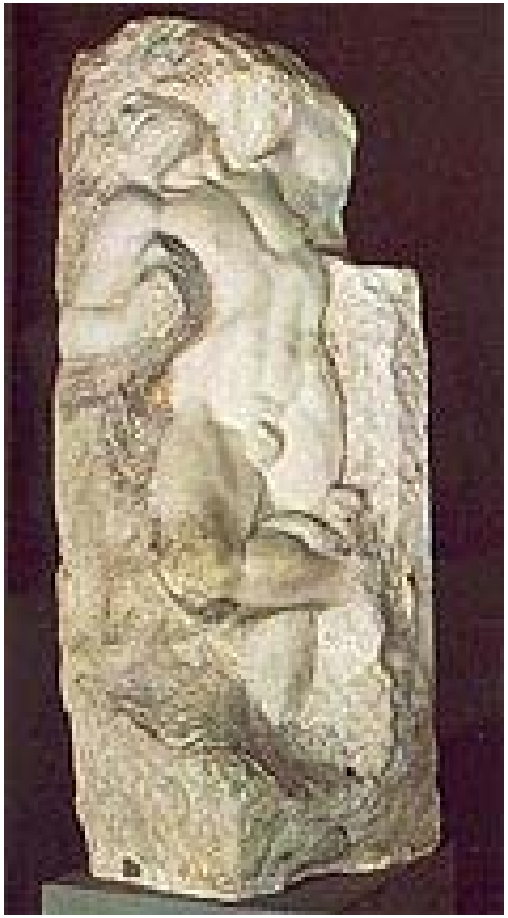
Patent prospecting

It is **NOT** about finding valuable patents

It is about ignoring low value patents

- The goal is to reduce the number of patents for detailed evaluation
- Set aside
  - The trivial
  - The almost obvious
  - The insignificant market

  . . . until patents with potential are visible



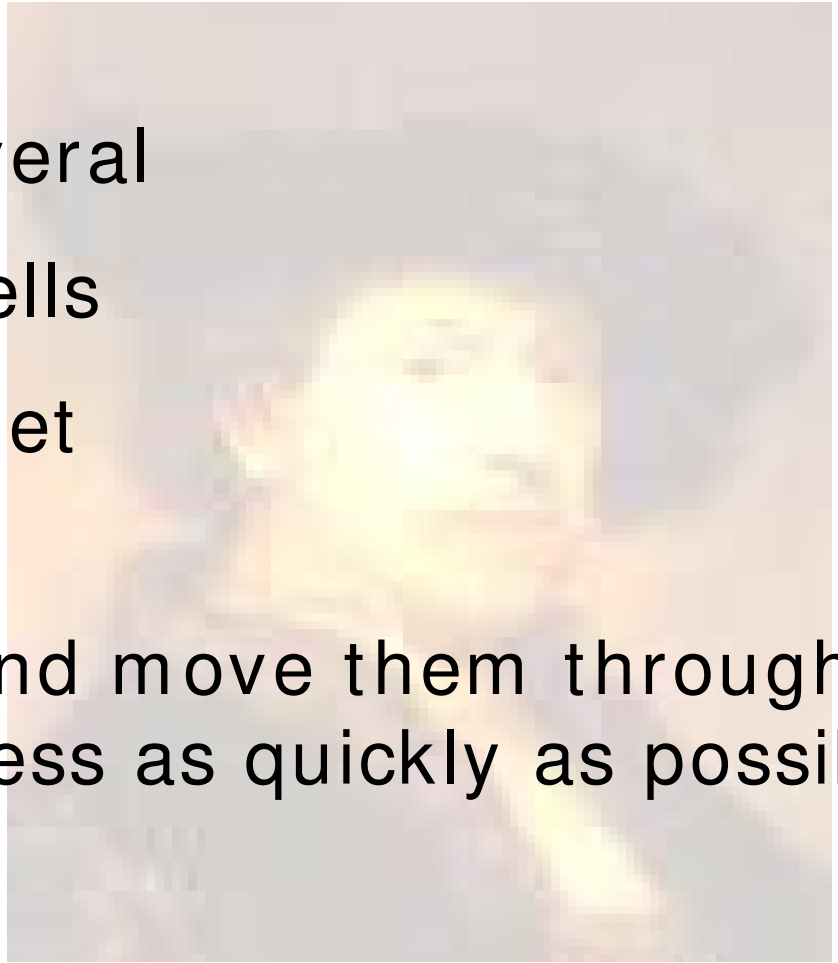
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And, forget "Rembrandt in the Attic"

There may be several

Norman Rockwells

in the file cabinet



Find and move them through the process as quickly as possible

Patent prospecting – the second misconception

You should focus your efforts on non-core patents and protect core patents

- Question: Are you doing the right thing by not investigating whether companies – in your industry and outside your industry – are using your technology and you are not doing what you can to learn this?
- There are better strategies than saving core patents for defensive use only (when someone attacks you)
- Core patents will <u>always</u> be there for defense
  - Licensing them eliminates problems or generates a return
  - If not in your industry, at least consider outside your industry

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Patent prospecting is the start of the process



- Group patents according to similar technologies
- Reduce number of patents
- Organize for assignment to experts

Patent Categorization Example

XXXXX Patent Portfolio Analysis
Patent Categorization

Table 1: Summary of All Patents (sorted by Patent Number)

#	Patent Number	Filing Date	Issue Date	Priority Date	Subject	Patent Type	Rec.	Reason	Comments
1	XXXX297	Jan-25-83	Mar-9-85	Jul-19-80	Device leads made with tabs to increase solderability during circuit board mounting	Packaging	Yes	Method for soldering looks simple, will be easy to find if it is used.	
				il-25-87	PWM Modulator	Circuitry	No	It would also be a challenge to prove	Analysis would be complex and time
5	XXXX906	May-6-92	Sep-19-93		of two sets of read circuits (Sense Amplifiers) and correcting circuit.			detected cells mapping is typically implemented in memory controller CPU software.	presence/absence of parity bits and double read circuit for each word.
6	XXXX594	Apr-20-93	Feb-13-94	Sep-25-90	Ferroelectric capacitor for non-volatile memory device.	Process	Maybe	Probably used by XXXX.	XXXX's FRAM device.

#	Patent Number	Filin	Rec.	Reason	Comments
1	XXXX297	Jan	Yes	Method for soldering looks simple, will be easy to find if it is used.	
2	XXXX847	Jul-	No	It would also be a challenge to prove if a triangular wave generator exists.	Analysis would be comple consuming

CHIPWORKS
www.chipworks.com

Patent Categorization Summary

Statistical Summary of Patents ***Page 1***

Patent Category	Initial Number pf Patents	Patents to Cat,	Patents to Review
Analog	81	61	50
Audio	32	19	18
Digital	39	35	22
Disk Drive	14	7	2
ESD	6	4	1
Power Supply	29	22	15
Video	31	15	8
Layout	16	12	12
LCD	21	5	2
Memory	31	13	3
Packaging	141	56	11
Process	226	87	55
Processors & DSP	7	3	3
System	45	3	2
Total	742	342	204

Summary cross-categorization

Topics		Applications								
		Non-Specific	DRAM	NVM	Other Memory	DSP	Comms	Imaging/ Display	High Power	Misc
	# of Patents	743	520	369	467	106	342	29	98	214
ADC	53	52					1			
Address path	46	1	41	31	34					
ALU	35	1				32				2
Amplifier - Data	28	21	4	4	3		1	1		
Amplifier - Output	44	37	4	1	1		3			
Amplifier - Power	36	14					22		6	1
Amplifier - Comparator	15	14			1					
Memory systems	82	24	13	11	12	23	1			15
Misc	148	55	5	2	3	8	20	4	4	54
Pad Protection	33	20	2				1		9	1
PLL	27	21					4			2
Process	95	39	14	5	7		7		1	33
Redundancy	73		69	61	66					
Reference - Current	28	26		1						
Reference - Voltage	36	28	5	4	5				1	1
RF - Building Blocks	70	2					66		1	2
RF - Demodulator	33						31			2
RF - Modulator	17						17			
Sensing	57	2	34	27	37					3
Signal Processing	116	9				11	26	23		49
Switch	57	16					5		33	3
Testing/Configuration	173	57	93	83	81	7	2		1	7
Voltage - Converters	34	11							23	
Voltage - Regulators	27	15	2	1	1				9	1
Voltage - Supply from RF	9						4			5
Voltage - Supply systems	41	14	11	7	7	3	3		7	1
Number Sorted	2195									

Semiconductor insights[inc]

Preliminary review – the first major milestone



- Each remaining patent is read and understood
- Claims are examined in some detail
- A patent summary is prepared
  - The invention
  - Problem solved
  - Claim limitations
  - Type of patent (apparatus, method)
  - Technology used (CMOS, microcode)
  - Applicable devices (cellular base stations, memory chips)
  - Other patent data (inventor, priority date)

Patent Review Example

Patent Summary

CHIPWORKS Rating: A1+

United States Patent — Patent Number: 3969706

Tombstone Data

Title:	DYNAMIC RANDOM ACCESS MEMORY MISFET INTEGRATED CIRCUIT
Inventors:	Proebsting, Green
Date of Patent:	13-Jul-76
Date of Filing:	08-Oct-74
Priority Date:	08-Oct-74
Assignee(s):	Mostek
Current Owner:	SGS-Thomson
Independent Claims:	1,3,4,5,6,7,8,10,11,12,13,15,16,17,18,23

Scope of Patent

Type: Circuitry

Circuits	Devices	Technologies
Clock Generators	DRAM	NMOS
Clock Timing Circuits	Multi-port RAM	Not Specific
Data Input Path	VRAM	
Decoders, general	Wide-word Memory	
Not Specific		

Analysis of Patent

Subject:	The RAS/CAS patent. A fairly complete description of the Mostek MK4096 most significantly claiming the concept of mutliplexing the row and column addresses through the same pins.
Design Problem:	An improved DRAM. Specifically a design which can use a smaller standard 16 pin package. Also a DRAM with an high speed column access mode (Page mode). Maximizing efficiency while reducing the pin count for a DRAM.
Limitations:	Most of the claims require multiplexed addresses.
Comments:	This patent contains the original proposal to multiplex both row and column addresses over the same set of pins. It from the realization that the column circuitry cannot (usefully) be activated in DRAMs until well after the start of the Furthermore, row addresses need not be static but can instead be latched on-chip at the start of the cycle. The dev of latched, multiplexed addresses continues today with new DRAM interfaces. Most of the circuits for the MK4096 are included in the disclosure. Claims 1 and 3 are the RAS /CAS multiplexed address specification described in detailed patent language. Claims 4 and 5 are the same thing very briefly and broadly described. Claim 6 describes an extended data output hold technique. Claim 23 begins the output control method which builds into page mode operation with the addition of claim 30. Many of the other claims detail pieces of the RAS/CAS specification. Some additional space is given to describing prehistoric versions of Schroeder clocks and DRAM sense amplifier schemes circa 1974. This is one of the most significant DRAM patents ever issued.
Rating:	A -> Probably used by others 1 -> Analysis is straightforward + -> Known prior art is not a concern
Analyzed by:	Terry Ludlow

Devices it might read on

Subject, Design Problem, Limitations, Comments

Overall rating

Use in industry

Complexity in proving infringement

Known prior art concerns

CHIPWORKS www.chipworks.com

Patent Review Example

Patent Summary

CHIPWORKS Rating: [illegible]+

United States Patent — Patent Number: 3969[illegible]6

Tombstone Data

Title: DYNAMIC RANDOM ACCESS MEMORY MISFET INTEGRATED CIRCUIT

Inventors: Proebsting, Green

Date of Patent: 13-Jul-7[illegible]

Date of Filing: [illegible]ct-74

Priority Date: 08-O[illegible]-74

Assignee(s): Mostek

Current Owner: SGS [illegible]ms

Independent Claims: [illegible]3,4,5,[illegible]7,8,1[illegible]11,12,13,15,16,17,18

Scope of Patent

Ty[illegible] Circuitry

Circuits	Devices	Technologies
Clock Generators	DRAM	NMOS
Clock Timing Circuits	Multi-port RAM	Not Specific
Data Input Latch	VRAM	
Decoders: general	Wide Word Memory	
Not Specific		

Analysis of Patent

Subject: The RAS/CAS patent. A [illegible] complete description of the Mostek MK4[illegible] multiplexing scheme by claiming the concept of mutliplexing the row and column addresses through the same pins.

Design Problem: An improved DRAM. Specifically a design which can [illegible] a smaller standard 16 pin package. Also a DRAM with an improved high speed column access mode (Page mode). Maximize efficiency while reducing the pin count for a DRAM.

Limitations: Most other claims require multiplexed addresses.

Comments: This patent contains the original proposal to multiplex both row and column addresses over the same set of pins. It stems from the realization that the column circuitry cannot (usefully) be activated in DRAMs until well after the start of the row cycle. Furthermore, row addresses need not be static but can instead be latched on-chip at the start of the cycle. The development of latched, multiplexed addresses continues today with new DRAM interfaces.

Most of the claims for the MK4096 are included in the disclosure. Claims 1 and 3 are the RAS /CAS multiplexed address specification described in detailed patent [illegible]. Claims 4 and 5 are the same thing very briefly and broadly described.

Claim 6 describes an extended data output hold technique.

Claim 23 begins the output control method which builds into page mode operation with the addition of claim 30.

Most of the other claims detail pieces of the RAS/CAS specification. Some additional space is given to describing prehistoric versions of Schroeder clocks and DRAM sense amplifier schemes circa 1974.

This is one of the most significant DRAM patents ever issued.

Rating: A -> Probably used by others
1 -> Analysis is straightforward
+ -> Known prior art is not a concern

Analyzed by: Terry Ludlow

This is the best way to rate a patent. Trained experts read the patent and rate it on technical merits, not number of times cited or other such statistical techniques.

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Summarize and Report

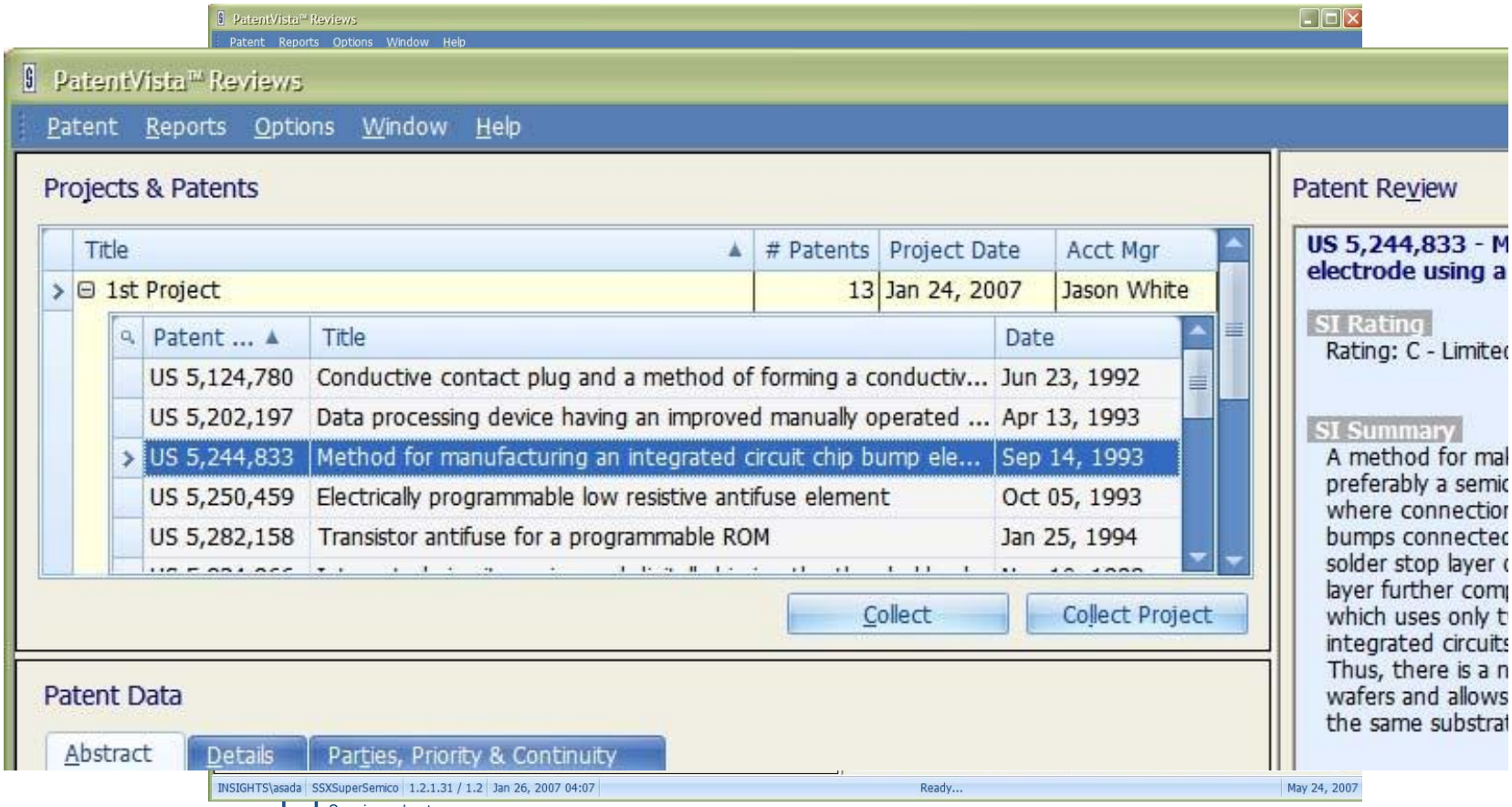
18-Aug-03 — Sorted by: Technologies

Technologies	Patent Number	Assignee(s)	Title	Rating
CMOS				
	4849169		METHOD OF MAKING A MEMORY CELL	C2/

18-Aug-03 — Sorted by: Technologies

Technologies	Patent Number	Assignee(s)	Title	Rating
CMOS				
	4849169		METHOD OF MAKING A MEMORY CELL	C2/
	5011287		PRODUCTION OF AN INTEGRATED CELL	C3/
Contact Formation				
	4624364		PROCESS FOR JUXTAPOSITIONING OF AN INTERCONNECTION LINE ON A CONTACT HOLE OF A CIRCUIT	A1/
Dry Etching				
	4624364		PROCESS FOR JUXTAPOSITIONING OF AN INTERCONNECTION LINE ON A CONTACT HOLE OF A CIRCUIT	A1/
Embedded EPROM				
	5696918		DEVICE HAVING AN ERASABLE NON-VOLATILE MEMORY	B2/
Floating Gates				
	4851065		PROCESS FOR A MEMORY CELL	C3/
	5138173		NON-VOLATILE STORAGE CELL	C1/
Gate Dielectrics				
	5138173		NON-VOLATILE STORAGE CELL	C1/

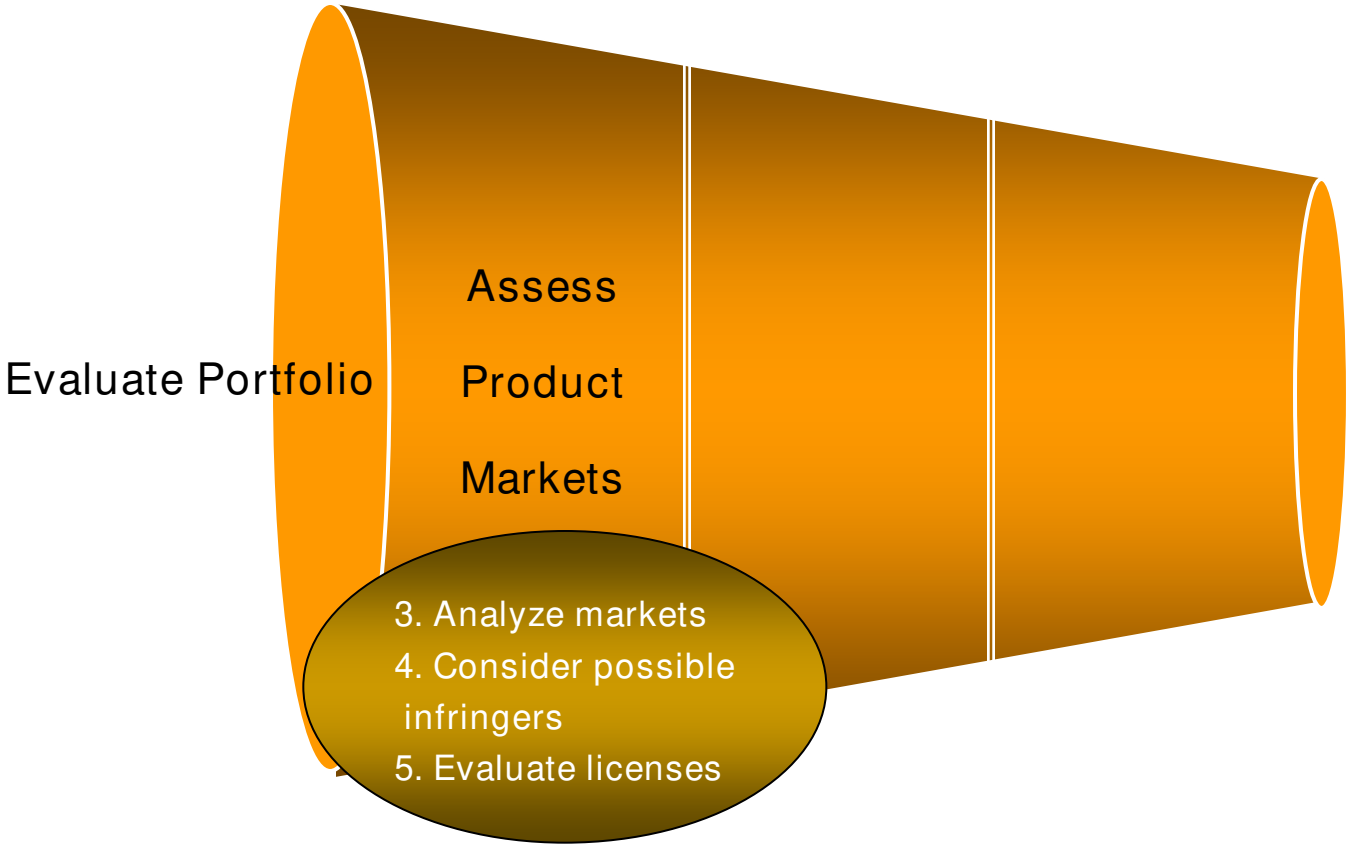
Preliminary Prior Art Research



Semiconductor
insights[inc]

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Program methodology – markets



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Analyze markets – think like a venture capitalist



- Match ***potentially valuable patents*** from the patent review with product markets
- Develop an initial list of potential infringers
- Continue reducing the number of patents
- Determine feasibility of **investing** in this program

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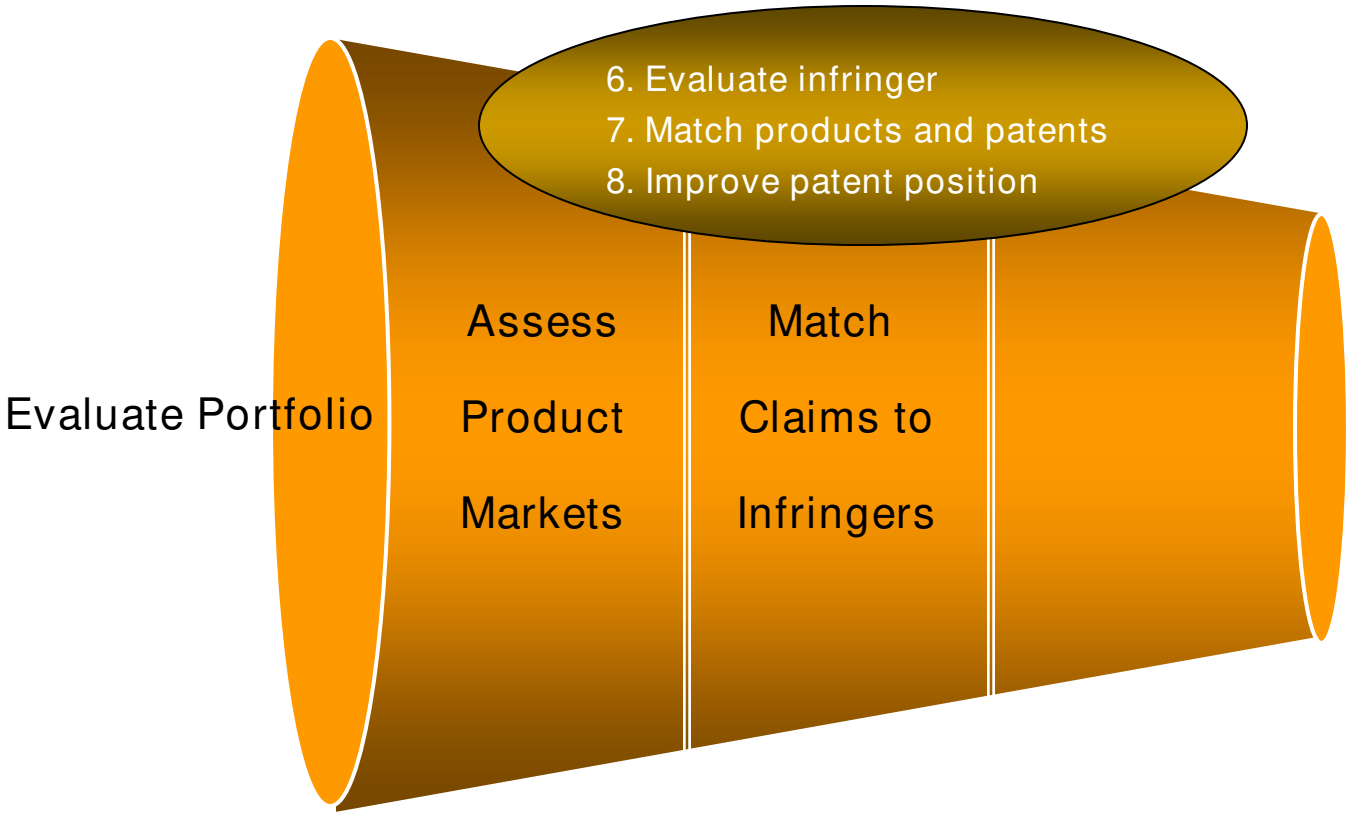
Research potential licensees / analyze existing licenses



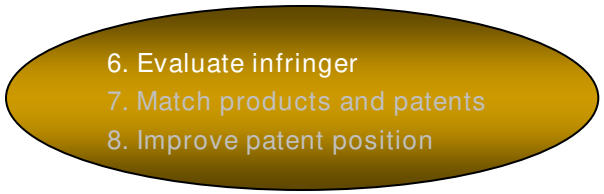
- Refine the list of potential infringers
- Determine any conflicts
  - Joint ventures, suppliers, customers
- Analyze existing licenses – the source of many surprises
  - Who is already licensed

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Program methodology – products



Collect market research on potential infringers



- Collect published market and revenue information
- Review technical publications
- Evaluate patenting activity

Patent-Market Matrix Example

Sample Patent / Market Mapping

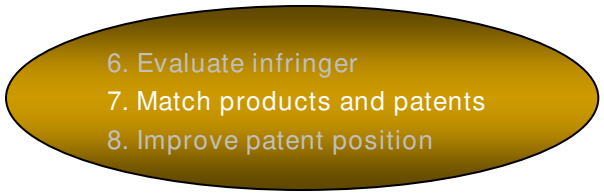
Table - 1: Market Res

Company	Web				
Company A	www.compa				
Company B	www.compa				
Company C	www.compa				
Company D	www.compa				
Company E	www.companyE.com		Listing of major products	Not available.	Small company, approximately 170 employees.

Company	Products	Revenue (U.S. Dollars)
Company A	Listing of major products	1999 Annual Sales 2000 Annual Sales Product family A - $ Product family B - $ Product family C - $
Company B	Listing of major products	1999 Annual Sales 2000 Annual Sales
Company C	Listing of major products	1999 Annual Sales 2000 Annual Sales Product family A - $

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Map patents to products and processes



- Read patent in detail – become an expert
  - What was the novelty of the invention?
  - How are the claims limited?
  - Could there be prior art?
- Map patents against products
- Identify specific products and/or processes for reverse engineering
- Continue the reduction in the number of patents

Patent-Product Matrix Example

XXXX re: XXXXXXXX
Patent Product Matrix
(All Patents Sorted by Patent Number)

Item #	Patent Number	Patent Subject	Patent Sub-category	Priority Date	Rating	Method of Analysis	Device Number and Type			Comments
							Product 1	Product 2	Product 3	
1	X,XXX,415	EEPROM system with bit error detecting function	Digital - Memory	Sep-13-87	A2/	DAW	XXX XXXXX (controller with embedded Flash)	XXX XXXXX (such as the XXX XXXXX mixed signal		Circuitry is fairly easy to find and RE but analysis of the error detection operation may be more complex.
2	X,						XXX (con emb			
3	X					W	XXX (con emb			
4	X					ture, ed by I RE	XXX	XXX XXXXX (controller with embedded Flash)	XXX XXXXX(such as the XXX XXXXX mixed signal microcontroller)	
5	X,XXX,500	Constant-voltage generation circuit	Analog - General	Aug-25-93	B1/	Analysis of CARs, DAW DAW	XXX XXXXX PWM Controller	XXX XXXXX Linear Regulator	XXX XXXXX Battery cell charger	The patent is a very straightforward Voltage Reference circuit. It has been re-rated to B1/ as some XXXX circuit analysis reports were investigated but no applications have been found.

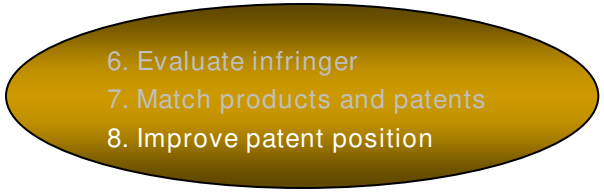
Item #	Patent Number	Patent Subject
1	X,XXX,415	EEPROM system with bit error detecting function
2	X,XXX,543	Control circuit for EEPROM

Device Number and Type		
Product 1	Product 2	Product 3
XXX XXXXX (controller with embedded Flash)	XXX XXXXX (such as the XXX XXXXX mixed signal microcontroller)	
XXX XXXXX (controller with embedded Flash)	XXX XXXXX(such as the XXX XXXXX mixed signal microcontroller)	

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Improve patent position

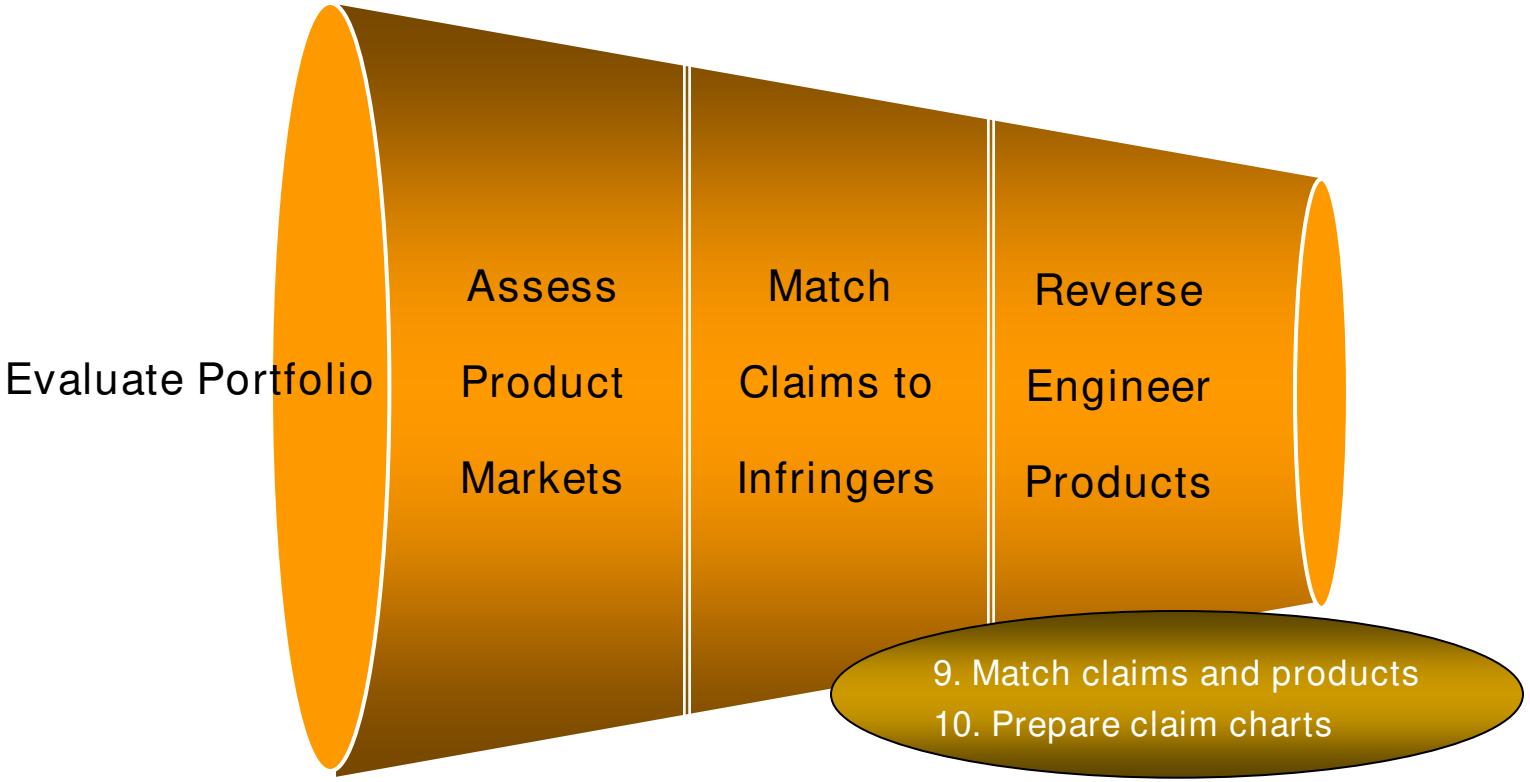
- Identify areas that will benefit from targeted patenting
- Make suggestions for specific claims in continuations and divisionals



This takes time to realize benefits

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Program methodology – look at products

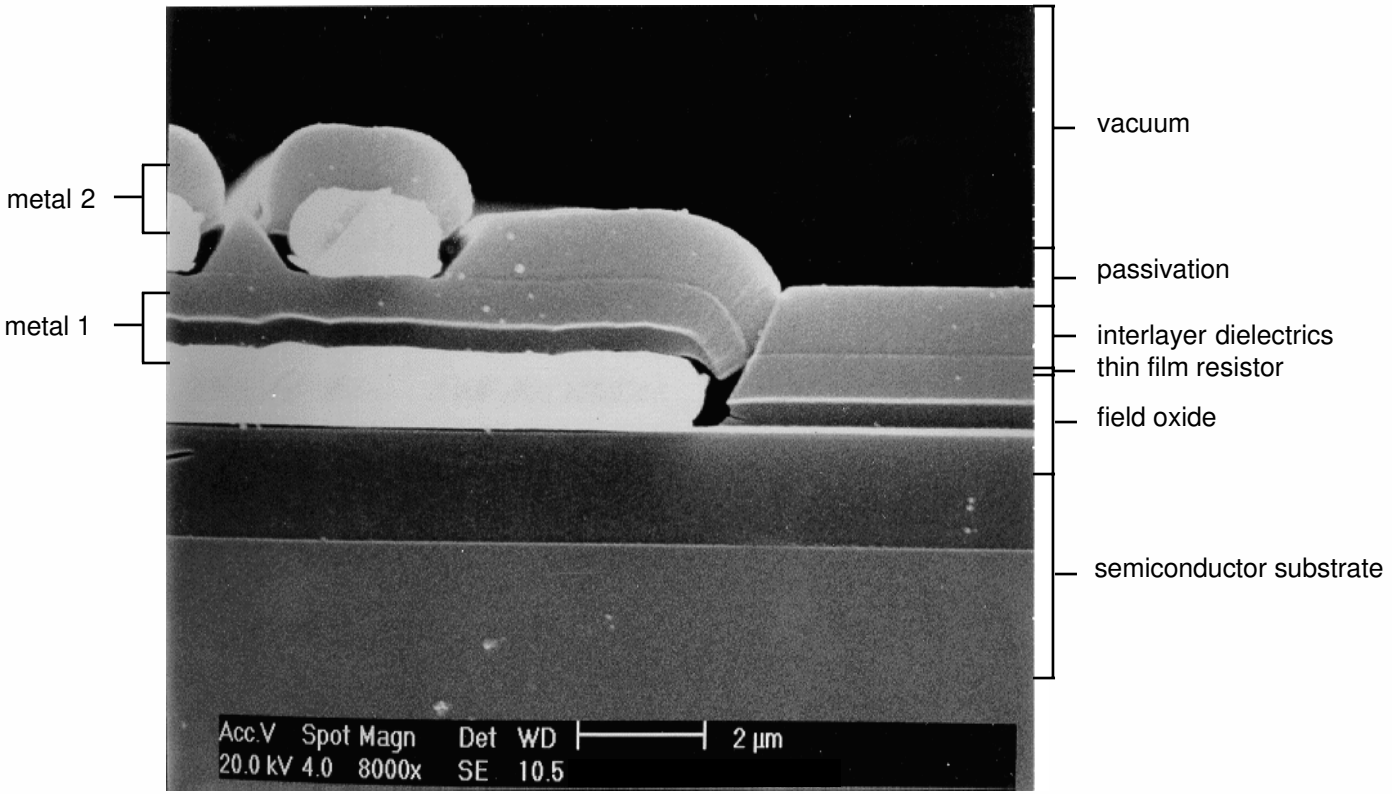


Reverse engineer and analyze products

9. Match claims and products
10. Prepare claim charts

- Take products apart and evaluate them
- Photograph, diagram, document the products
- Extract the apparatus and analyze the method
- Identify **every** element of a claim within the product

Reverse engineering and analysis



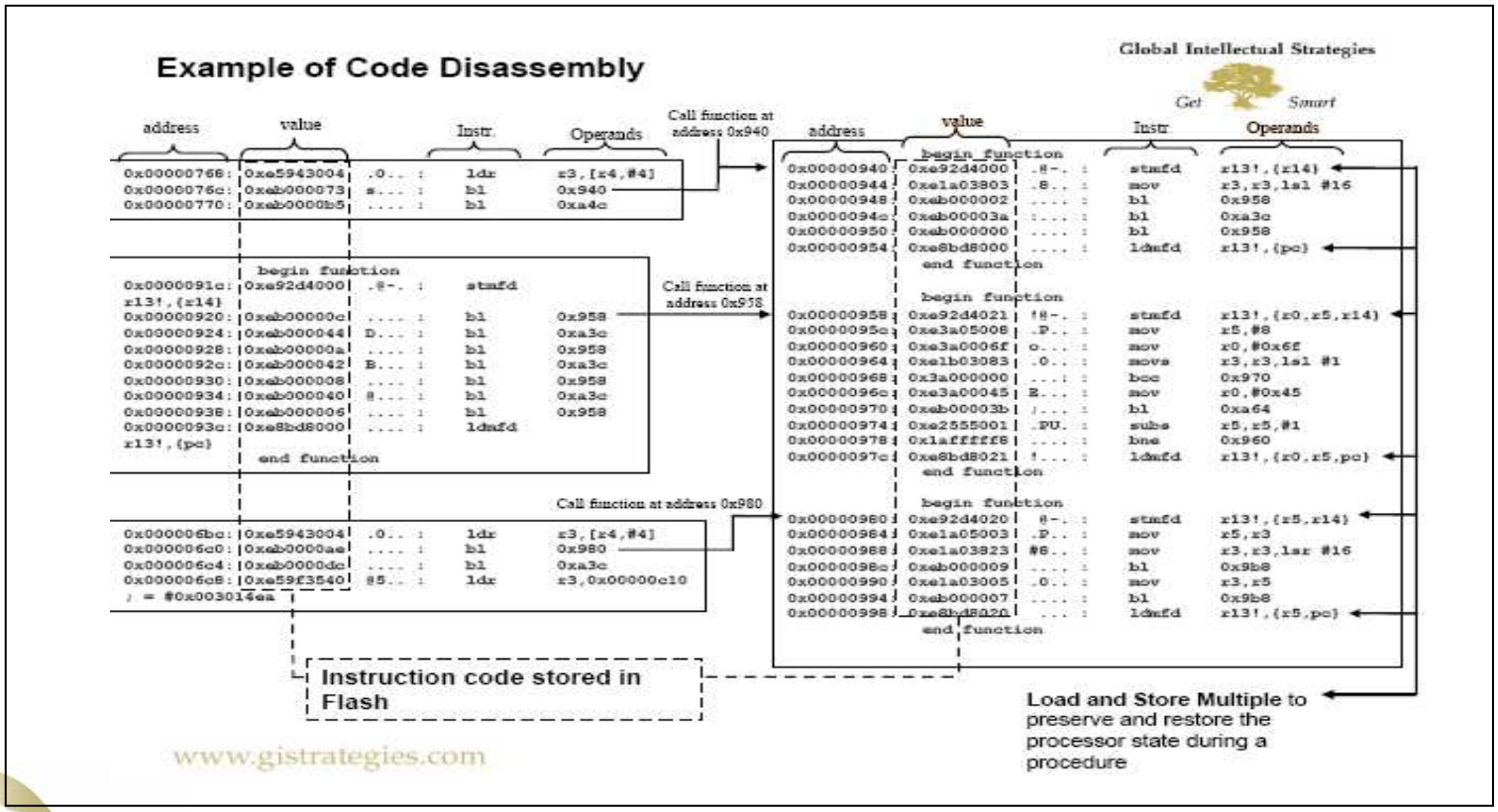
2.1.0 Close-Up SEM Cross-Section of Thin Film Resistor of Device

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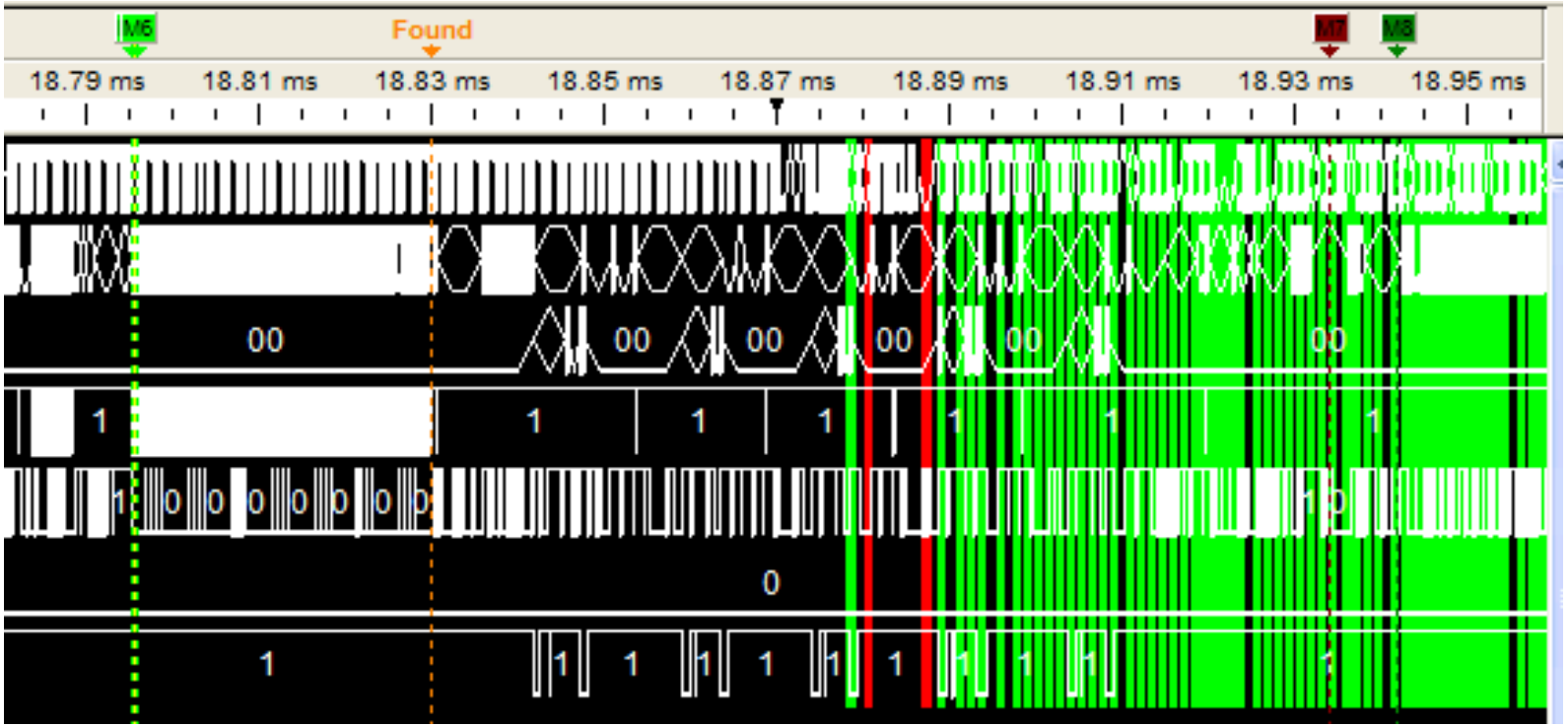
Firmware Code Disassembly

Global Intellectual Strategies

Get Smart



Logic Analyzer Signal Testing



Prepare infringement documents – milestone 2



- Formally document the results of reverse engineering
  - Claims charts
- Even more patents are eliminated at this step
- Form a reasonable basis for informing a third party you know they are infringing
- This is the information most likely to convince the infringer to accept a license
- Patent and engineering experts use this in technical meetings
- Make this litigation / trial quality

Document preparation – claim chart

9. Match claims and products
10. Prepare claim charts

Claim 1

A thin film resistor for an integrated circuit comprising:

substrate means having a top surface;

insulating layer means formed on the top surface of said substrate means, said insulating layer means having a top surface;

resistor layer means formed on and in contact with the top surface of said insulating layer means opposite to the substrate means; and

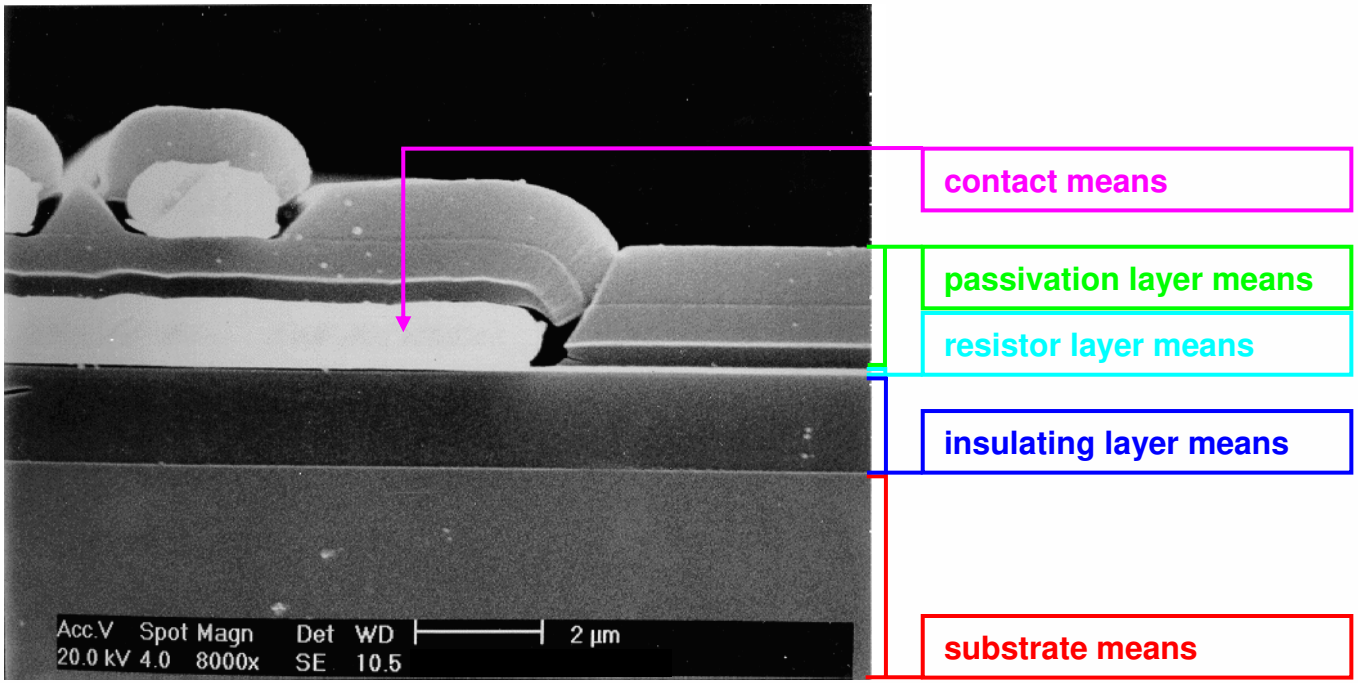
contact means for making electrical contact with said resistor layer means, whereby said insulating layer means between said substrate means and said resistor layer means prevents diffusion of said resistor layer means into said substrate means.

Claim 2

The thin film resistor of claim 1 further comprising a passivation layer means formed on top of said resistor layer means, whereby said passivation layer means passivates said resistor layer means.

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Document preparation – claim chart

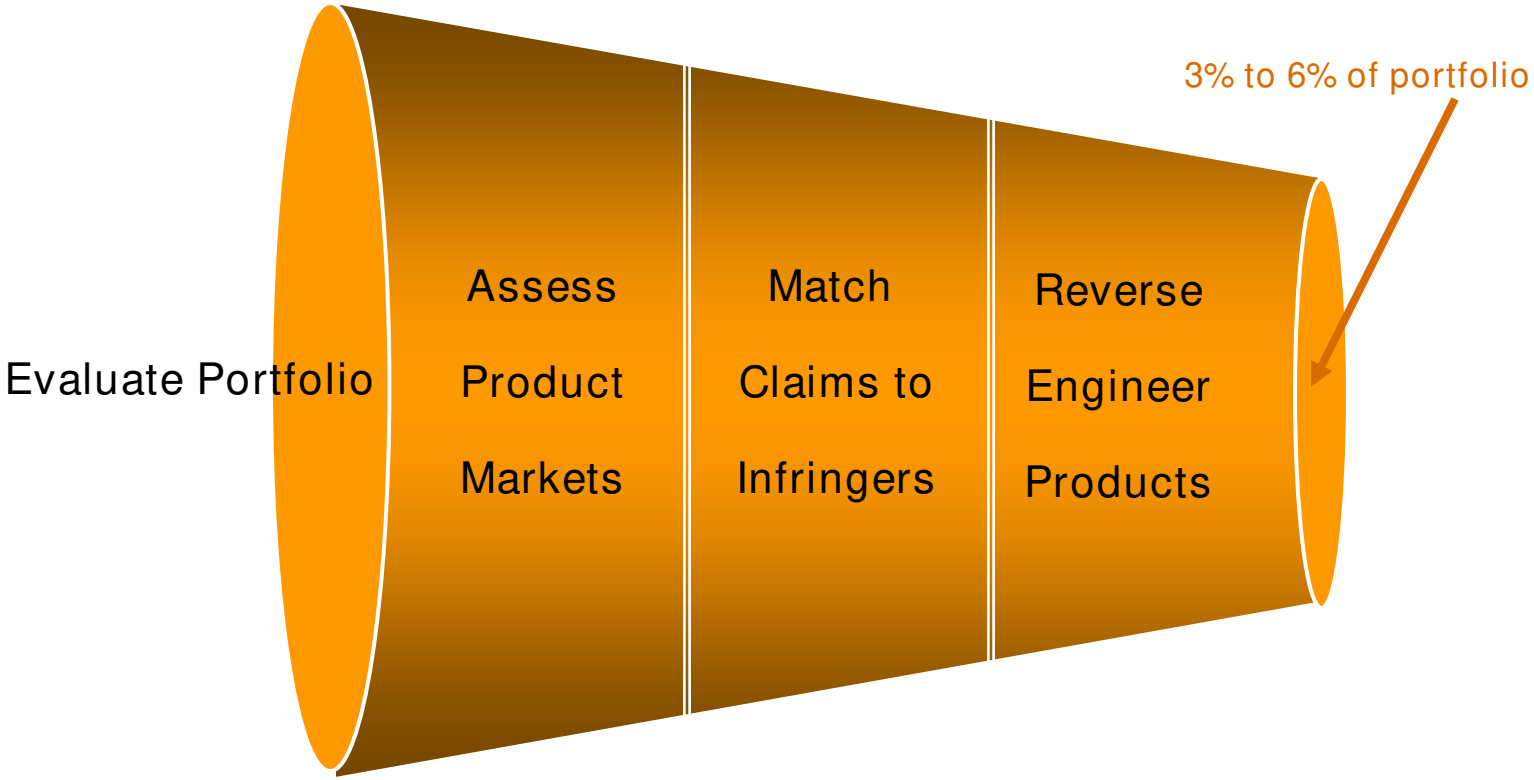


2.0.0 Close-Up SEM Cross-Section of Thin Film Resistor of Device (with Claim Annotation)

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This completes the technical preparation and satisfies the intent of Principle 1



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Principle 2:

Determine a fair and reasonable royalty with a methodology suited for business negotiations, not courtrooms

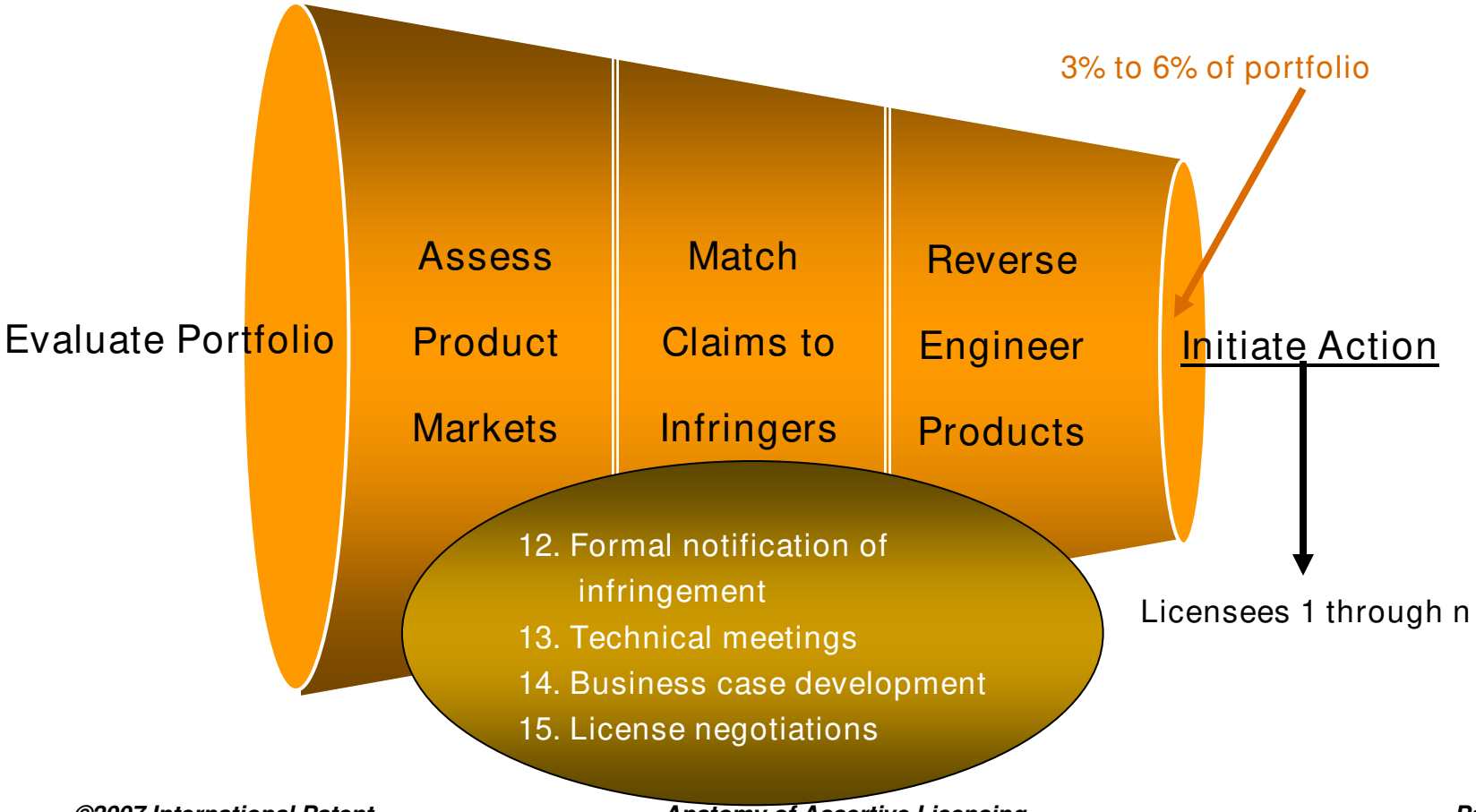
LICENSEE BUSINESS ANALYSIS — 30-May-07

	NOTE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2002-2016
WORLD-WIDE SALES				HISTORY												
In Suit																
X	338		Jun 90	Feb 92	Feb 09											
X	732		Apr 92	Jan 95	Apr 02	Sync & Equal										
	111		Oct 93	Jul 95	Oct 93	Repertory Dialer										
	119		Jul 00	Jun 03	Jul 20	Vector Modulator										
X	666		Sep 00	May 04	Sep 00	Automatic Nam										
SELECTED CURRENCY																
OLDER Cell Phones Sales (Millions $)	(a)	$68.3	$128.2	$506.2	$619.6	$767.3	$786.0	$531.1	$97.0	$48.5	$24.3	$12.2	$6.1	$3.1	$1.6	$3,599.5
Percent Infringe		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
NEWER Cell Phones Sales (Millions $)	(a)	$114.0	$421.0	$803.6	$1,493.3	$3,016.2	$5,717.1	$5,860.0	$5,957.3	6,672.2	7,472.9	8,369.6	9,374.0	10,498.9	11,758.8	77,528.9
Percent Infringe		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
TOTAL Cell Phones Sales (Millions)		$182.3	$549.2	$1,309.8	$2,112.9	$3,783.5	$6,503.1	$6,391.1	$6,054.3	$6,720.7	$7,497.2	$8,381.8	$9,380.1	$10,502.0	$11,760.4	$81,128.4
				CAGR Older (04-07		83.1%						10 Yr.	(08-16)	-49.5%		
				CAGR Newer (04-07)		41.3%							(08-16)	12.0%		
				CAGR TOTAL (04-07)		30.1%							(08-16)	11.7%		
	(b)			Forecasted Growth Rate OLDER			-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	
	(b)			Forecasted Growth Rate NEWER			12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	

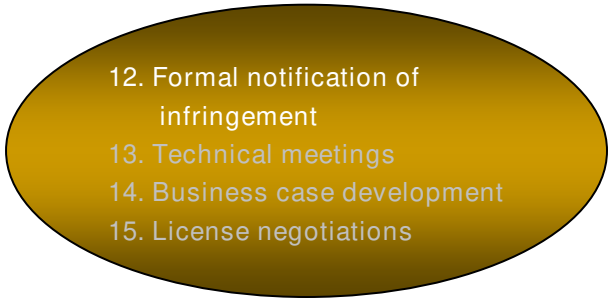
	NOTE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2002-2016
DIRECT IN-COUNTRY SALES																
SELECTED CURRENCY																
OLDER Units (Thousands)	(c)	93	205	883	1,239	1,468	1,429	961	194	112	65	35	18	10	5	6,717
ASP	(d)	$221	$175	$149	$120	$115	$110	$105	$100	$95	$90	$90	$90	$90	$90	
NEWER Units (Thousands)	(c)	27	145	332	815	1,824	3,811	4,288	4,468	5,132	5,900	6,786	7,812	8,999	10,375	60,714
ASP	(d)	$425	$291	$266	$220	$215	$210	$205	$200	$195	$190	$185	$180	$175	$170	
U.S. as a Percent of Total Market (OLDER)	(e)	30.0%	28.0%	26.0%	24.0%	22.0%	20.0%	19.0%	20.0%	22.0%	24.0%	26.0%	27.0%	28.0%	30.0%	22.4%
U.S. as a Percent of Total Market (NEWER)	(e)	10.0%	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	14.7%
U.S. as a Percent of Total Market (TOTAL	(f)	17.5%	14.2%	16.8%	15.5%	14.8%	14.7%	15.3%	15.1%	15.1%	15.0%	15.0%	15.0%	15.0%	15.0%	15.1%
OLDER (Millions)	(g)	$20.5	$35.9	$131.6	$148.7	$168.8	$157.2	$100.9	$19.4	$10.7	$5.8	$3.2	$1.6	$0.9	$0.5	$805.7
NEWER (Millions)	(h)	$11.4	$42.1	$88.4	$179.2	$392.1	$800.4	$879.0	$893.6	$1,000.8	$1,120.9	$1,255.4	$1,406.1	$1,574.8	$1,763.8	$11,408.2
TOTAL (Millions)	(g)	$31.9	$78.0	$220.0	$327.9	$560.9	$957.6	$979.9	$913.0	$1,011.5	$1,126.8	$1,258.6	$1,407.7	$1,575.7	$1,764.3	$12,213.9
				CAGR Older (04-07		-39.9%						10 Yr.	(08-16)	-46.5%		
				CAGR Newer (04-07)		49.4%							(08-16)	12.0%		
				CAGR TOTAL (04-07)		29.2%							(08-16)	11.6%		

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Program methodology



Notify the alleged infringing party



- Notify the infringer by letter
  - How do we write this letter?
- Identify specific patents and specific claims related to the infringing activity
- Notification can begin the damages period
- Avoid retaliation by infringer

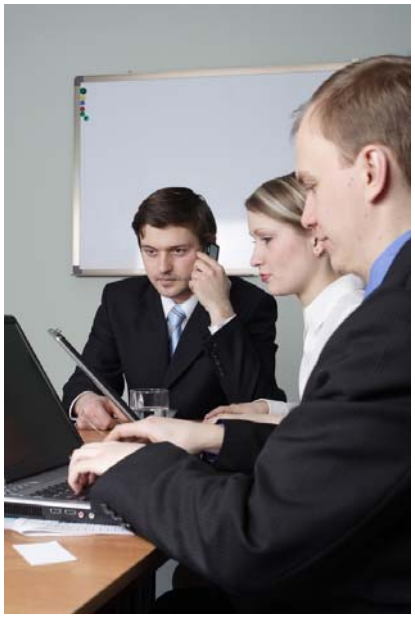
Meet and discuss technical issues

- Do not “hide the ball” or fail to tell them what you believe
  - Present and explain all claim charts
  - Share the rational for claim construction
- Attempt to answer all questions
- Rebut arguments of non-infringement
- Rebut arguments of invalidity
- Parties will agree . . .

  or agree to disagree . . .

  on issues of infringement and validity

12. Formal notification of infringement
13. Technical meetings
14. Business case development
15. License negotiations



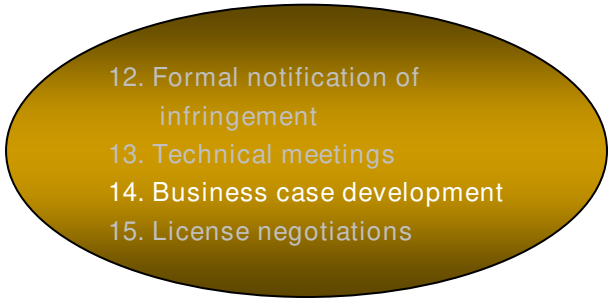
Develop a business case

- Analyze available information on sales of infringing product
- Project market growth in the future
- Estimate infringer's future sales
- Apply multiple royalty rates
- Prepare for negotiating rates or lump sum agreements

12. Formal notification of infringement
13. Technical meetings
14. Business case development
15. License negotiations



Business case development – research



- Public domain
  - Published articles
  - Regulatory agency reports
- Industry forecasts
  - Purchased studies, e.g., Gartner
  - Brokerage firms' industry analyses
- Company published information
  - Executives and marketers cannot help themselves . . . they say very interesting things



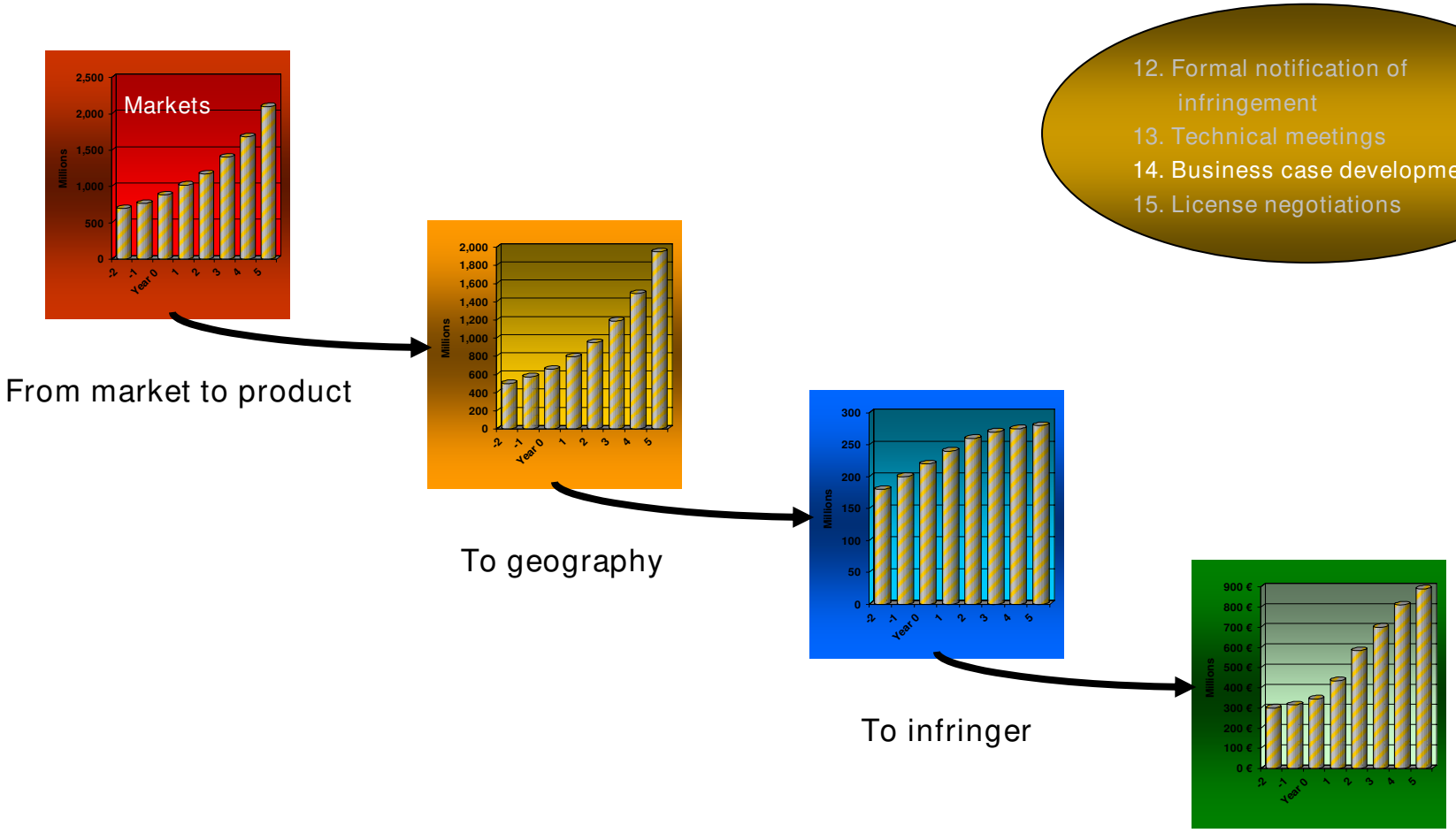
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Business case development – do it right



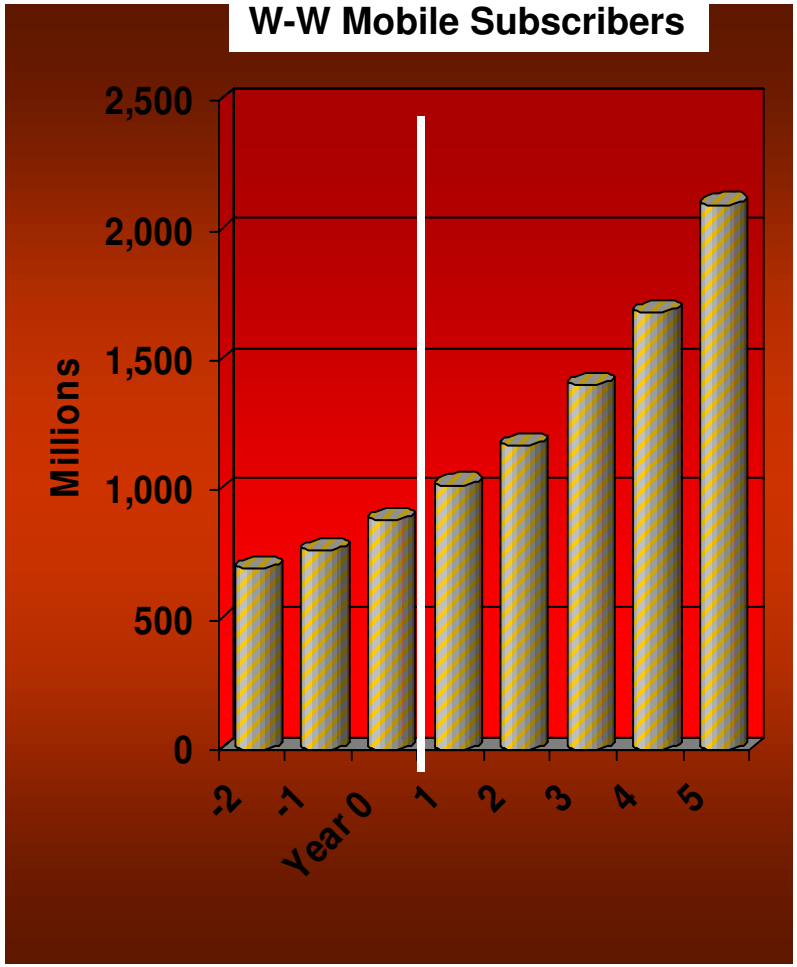
"I think you should be more explicit here in step two."

Begin with market analysis and drill down



Business case development – markets

- Begin with *market demographics* that drive product demand
- Example: The world-wide *subscriber* market for mobile phones will continue steady growth

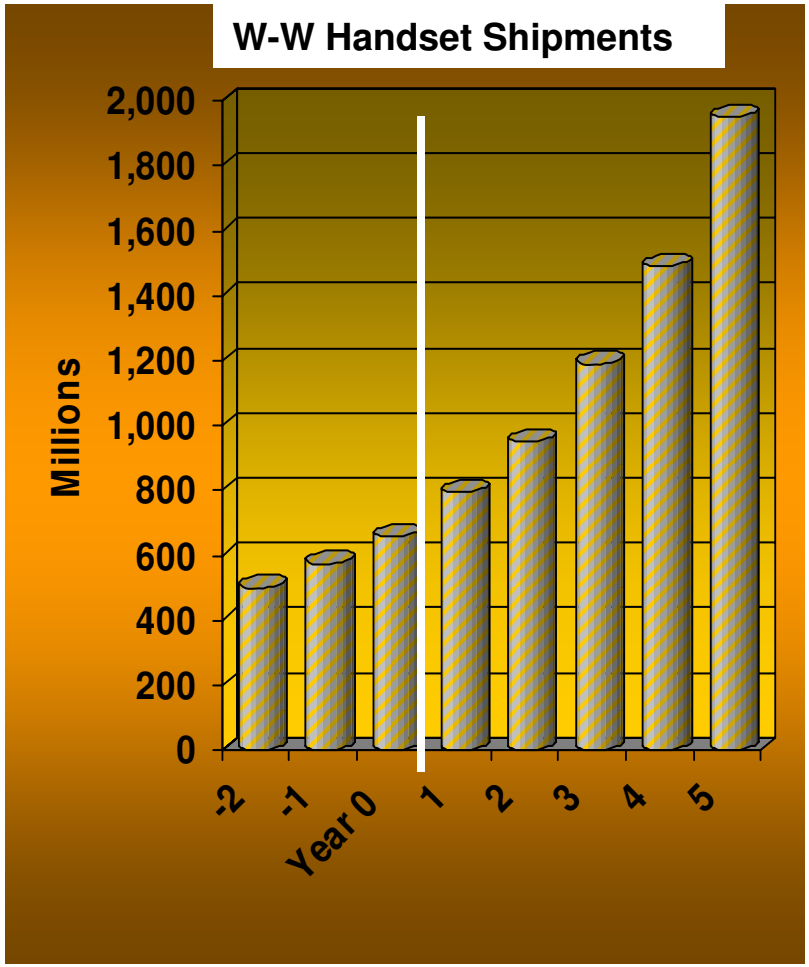


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Business case development – product assessment

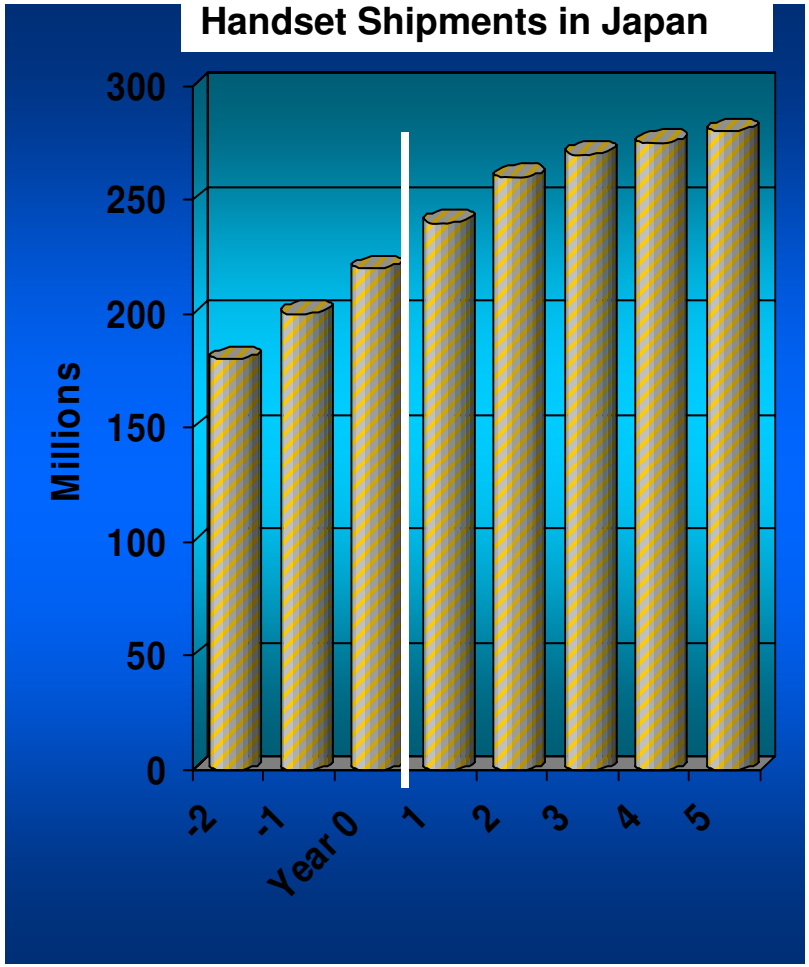
- Tie demographics to *product volumes* to begin the process of assessing the value of a license
- Example: Falling service provider and handset prices *make communicating affordable* to the masses and replacement easier



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Business case development – geographical focus

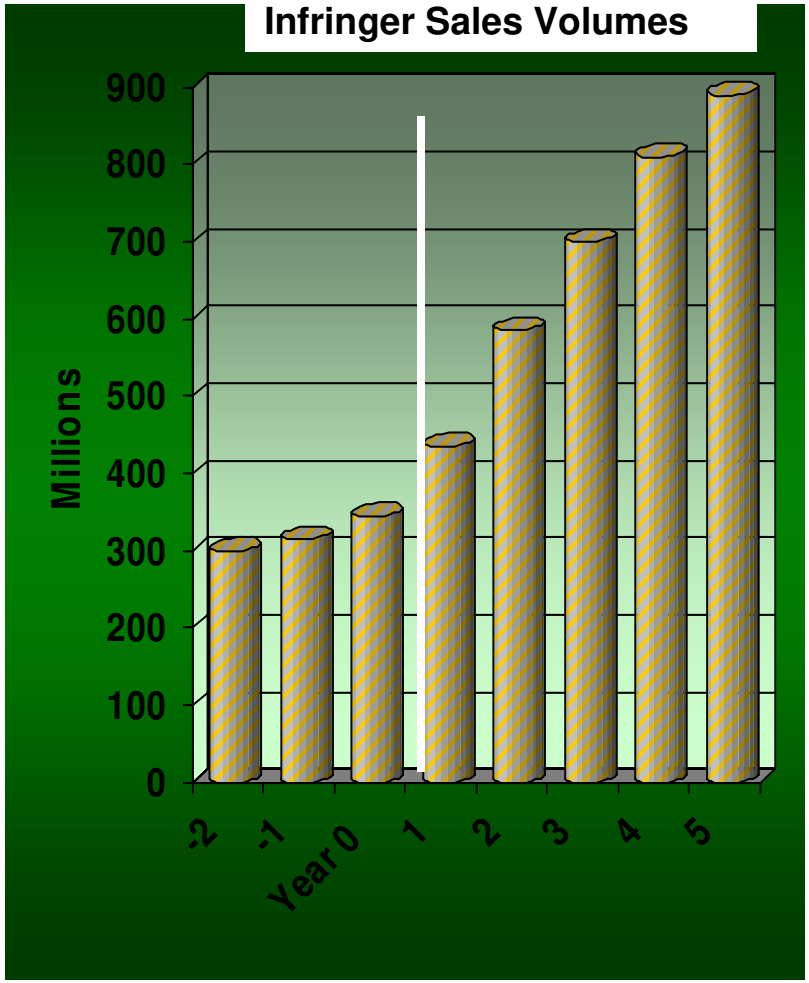
- Tailor your business case to the markets of *patent coverage*
- Example: Growth in *Japan* expected to be limited as handset replacements account for 88% of sales



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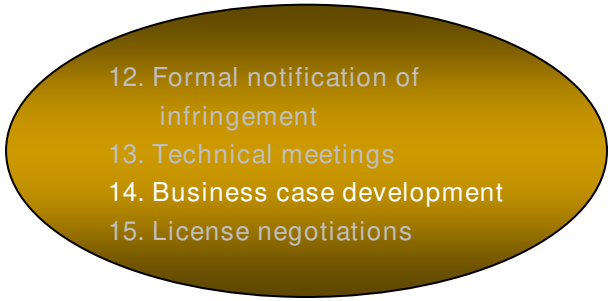
Business case development – the infringer

- Finally, show how you use information to assess sales by the *infringer*
- Example: After years of limits on CapEx, you now have more freedom and a product lineup that supports *increased market share*



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Business case development – soft factors



- The mobile unit is rated highly by reviewers such as . . .
- Credit Suisse is raising its estimate of your . . .
- The Financial Times is reporting statements by your Chief Executive . . .

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Model the past and future in some detail

LICENSEE BUSINESS ANALYSIS

30-May-07

	NOTE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2002-2016
WORLD-WIDE SALES				HISTORY												
	In Suit															
	X	338	Jun 90	Feb 92	Feb 09					This version of the model makes the follow ing changes from the meeting in						
	X	732	Apr 92	Jan 95	Apr 02	Sync & Equal				The '111 patent is gone but older handsets are carried by the '666.						
		111	Oct 93	Jul 95	Oct 93	Repertory Dialer				Handset infringement begins w ith the notification of the '666 -- July 2002.						
		119	Jul 00	Jun 03	Jul 20	Vector Modulator				Base stations also begin July 2002.						
	X	666	Sep 00	May 04	Sep 00	Automatic Nam										
SELECTED CURRENCY																
OLDER Cell Phones Sales (Millions $)	(a)	$68.3	$128.2	$506.2	$619.6	$767.3	$786.0	$531.1	$97.0	$48.5	$24.3	$12.2	$6.1	$3.1	$1.6	$3,599.5
Percent Infringe		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
NEWER Cell Phones Sales (Millions $)	(a)	$114.0	$421.0	$803.6	$1,493.3	$3,016.2	$5,717.1	$5,860.0	$5,957.3	6,672.2	7,472.9	8,369.6	9,374.0	10,498.9	11,758.8	77,528.9
Percent Infringe		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
TOTAL Cell Phones Sales (Millions)		$182.3	$549.2	$1,309.8	$2,112.9	$3,783.5	$6,503.1	$6,391.1	$6,054.3	$6,720.7	$7,497.2	$8,381.8	$9,380.1	$10,502.0	$11,760.4	$81,128.4
				CAGR Older (04-07		83.1%						10 Yr.	(08-16)	-49.5%		
				CAGR Newer (04-07)		41.3%							(08-16)	12.0%		
				CAGR TOTAL (04-07)		30.1%							(08-16)	11.7%		
	(b)			Forecasted Growth Rate OLDER			-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	-50.0%	
	(b)			Forecasted Growth Rate NEWER			12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	
DIRECT IN-COUNTRY SALES	NOTE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2002-2016
SELECTED CURRENCY																
OLDER Units (Thousands)	(c)	93	205	883	1,239	1,468	1,429	961	194	112	65	35	18	10	5	6,717
ASP	(d)	$221	$175	$149	$120	$115	$110	$105	$100	$95	$90	$90	$90	$90	$90	
NEWER Units (Thousands)	(c)	27	145	332	815	1,824	3,811	4,288	4,468	5,132	5,900	6,786	7,812	8,999	10,375	60,714
ASP	(d)	$425	$291	$266	$220	$215	$210	$205	$200	$195	$190	$185	$180	$175	$170	
U.S. as a Percent of Total Market (OLDER)	(e)	30.0%	28.0%	26.0%	24.0%	22.0%	20.0%	19.0%	20.0%	22.0%	24.0%	26.0%	27.0%	28.0%	30.0%	22.4%
U.S. as a Percent of Total Market (NEWER)	(e)	10.0%	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	14.7%
U.S. as a Percent of Total Market (TOTAL)	(f)	17.5%	14.2%	16.8%	15.5%	14.8%	14.7%	15.3%	15.1%	15.1%	15.0%	15.0%	15.0%	15.0%	15.0%	15.1%
OLDER (Millions)	(g)	$20.5	$35.9	$131.6	$148.7	$168.8	$157.2	$100.9	$19.4	$10.7	$5.8	$3.2	$1.6	$0.9	$0.5	$805.7
NEWER (Millions)	(h)	$11.4	$42.1	$88.4	$179.2	$392.1	$800.4	$879.0	$893.6	$1,000.8	$1,120.9	$1,255.4	$1,406.1	$1,574.8	$1,763.8	$11,408.2
TOTAL (Millions)	(g)	$31.9	$78.0	$220.0	$327.9	$560.9	$957.6	$979.9	$913.0	$1,011.5	$1,126.8	$1,258.6	$1,407.7	$1,575.7	$1,764.3	$12,213.9
				CAGR Older (04-07		-39.9%						10 Yr.	(08-16)	-46.0%		
				CAGR Newer (04-07)		49.4%							(08-16)	12.0%		
				CAGR TOTAL (04-07)		29.2%							(08-16)	11.6%		

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Develop alternative royalty scenarios

LICENSEE ROYALTY CALCULATIONS

30-May-07

		NOTE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2002-2016
IN-COUNTRY ROYALTY																	
APPLICABLE OLDER SALES		(a)					$84.4	$157.2	$100.9	$19.4	$10.7	$5.8	$3.2	$1.6	$0.9		$384.1
APPLICABLE NEWER SALES		(a)					$196.1	$800.4	$879.0	$893.6	$1,000.8	$1,120.9	$1,255.4	$1,406.1	$519.7		$8,072.0
APPLICABLE XXX SALES		(b)							$219.1	$793.3	$1,031.4	$1,340.9	$1,743.1	$2,178.8	$862.8		$8,169.4
		Note (a)															
		Note (b)															
All values in Millions U.S. Dollars				→	4,143.4		→	2,042.9		→	10,439.2	TOTAL	→	16,625.5			
OLDER	DISC	NPV															
2.0 PERCENT	7.0%	7.7					1.688	3.144	2.018	0.388	0.213	0.117	0.063	0.033	0.017		7.7
1.5 PERCENT	7.0%	5.7					1.266	2.358	1.514	0.291	0.160	0.087	0.048	0.025	0.013		5.8
1.0 PERCENT	7.0%	3.8					0.844	1.572	1.009	0.194	0.107	0.058	0.032	0.016	0.009		3.8
0.5 PERCENT	7.0%	1.9					0.422	0.786	0.505	0.097	0.053	0.029	0.016	0.008	0.004		1.9
0.2 PERCENT	7.0%	0.8					0.169	0.314	0.202	0.039	0.021	0.012	0.006	0.003	0.002		0.8
0.1 PERCENT	7.0%	0.4					0.084	0.157	0.101	0.019	0.011	0.006	0.003	0.002	0.001		0.4
NEWER	DISC	NPV															
2.0 PERCENT	7.0%	149.2					3.921	16.008	17.580	17.872	20.017	22.419	25.109	28.122	10.394		161.4
1.5 PERCENT	7.0%	111.9					2.941	12.006	13.185	13.404	15.012	16.814	18.832	21.092	7.795		121.1
1.0 PERCENT	7.0%	74.6					1.961	8.004	8.790	8.936	10.008	11.209	12.554	14.061	5.197		80.7
0.5 PERCENT	7.0%	37.3					0.980	4.002	4.395	4.468	5.004	5.605	6.277	7.031	2.598		40.4
0.2 PERCENT	7.0%	14.9					0.392	1.601	1.758	1.787	2.002	2.242	2.511	2.812	1.039		16.1
0.1 PERCENT	7.0%	7.5					0.196	0.800	0.879	0.894	1.001	1.121	1.255	1.406	0.520		8.1
XXXX	DISC	NPV															
2.0 PERCENT	7.0%	145.1							4.383	15.866	20.627	26.818	34.861	43.575	17.256		163.4
1.5 PERCENT	7.0%	108.8							3.287	11.900	15.470	20.114	26.146	32.681	12.942		122.5
1.0 PERCENT	7.0%	72.6							2.191	7.933	10.314	13.409	17.431	21.788	8.628		81.7
0.5 PERCENT	7.0%	36.3							1.096	3.967	5.157	6.705	8.715	10.894	4.314		40.8
0.2 PERCENT	7.0%	14.5							0.438	1.587	2.063	2.682	3.486	4.358	1.726		16.3
0.1 PERCENT	7.0%	7.3							0.219	0.793	1.031	1.341	1.743	2.179	0.863		8.2
TOTAL	DISC	NPV															
2.0 PERCENT	7.0%	301.9					5.609	19.152	23.981	34.126	40.857	49.354	60.033	71.730	27.667		332.5
1.5 PERCENT	7.0%	226.5					4.207	14.364	17.986	25.595	30.642	37.015	45.026	53.798	20.750		249.4
1.0 PERCENT	7.0%	151.0					2.805	9.576	11.990	17.063	20.429	24.676	30.017	35.865	13.834		166.3
0.5 PERCENT	7.0%	75.5					1.402	4.788	5.996	8.532	10.214	12.339	15.008	17.933	6.916		83.1
0.2 PERCENT	7.0%	30.2					0.561	1.915	2.398	3.413	4.086	4.936	6.003	7.173	2.767		33.3
0.1 PERCENT	7.0%	15.1					0.280	0.957	1.199	1.706	2.043	2.468	3.001	3.587	1.384		16.6

															LICENSE		
INTEREST	RATE		2003	2004	2005	2006	2007	TOTAL		**PCT**	**Past Inf**	**Interest**	**Older**	**Newer**	**xxx**	**TOTAL**
2.0 PERCENT	8.0%						3.269	24.7		2.00%	123.7	24.7	0.2	73.8	104.2	326.6
1.5 PERCENT	8.0%						2.451	18.5		1.50%	92.8	18.5	0.2	55.3	78.2	245.0
1.0 PERCENT	8.0%						1.634	12.4		1.00%	61.9	12.4	0.1	36.9	52.1	163.4
0.5 PERCENT	8.0%						0.817	6.2		0.50%	30.9	6.2	0.1	18.4	26.1	81.7
0.2 PERCENT	8.0%						0.327	2.5		0.20%	12.4	2.5		7.4	10.4	32.7
0.1 PERCENT	8.0%						0.163	1.2		0.10%	6.2	1.2		3.7	5.2	16.3

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Principle 3: Negotiate in good faith



- Arrive at an agreement for a license to a patent or portfolio
- Failure at this point forces a decision

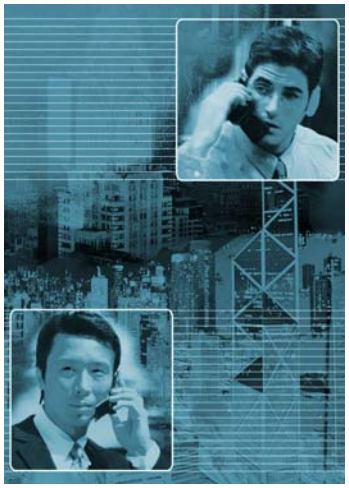
12. Formal notification of infringement
13. Technical meetings
14. Business case development
15. License negotiations

Walk away? Litigate? Not an easy decision!

Litigation is the last thing you want

- All the work and expense you have put in must be weighed against the probability of winning at trial
  - Will the infringer want to settle before trial (when)?
  - Are you putting your patents at greater risk (prior art)?





You can find help



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Consider the following in organizing your program

	Fee based	Contingent – 100%
In-house	Headcount / budget	
Law firm – to license	Yes	Not many do this
Consulting licensor	Yes	There are a few
Law firm – to litigate	Yes	Growing number

EXPENSE	RISK	REWARDS
•Headcount •Reverse engineering •Legal support •Settlement consulting •Travel •Prior art review •Litigation	•Harm your company's reputation •Patents aren't as strong as you think •Cross-complaints •Customer relationships •Personal	•Royalty falls to bottom line •Revenue higher than with "soft approach" •Fastest to closure •Enhance your company's reputation

THERE ARE (AT LEAST) FOUR ISSUES WITH WHAT I HAVE SAID

Issue – Is it better not to know?

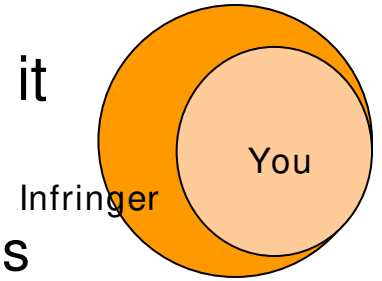
It is reasonable to ask if it is better not to know that your patents are infringed if you are not committed to pursue the matter

- This can become an issue of laches

Rebutal

- For reasons of damage to your business and the lost opportunities to generate revenue – it is better to know
- If you are not committed to pursue the matter, the issue of laches is immaterial

Issue – What happens if they say you infringe their patents (retaliation)?



- Accept the fact that can happen and plan for it
- It is an issue of equity
  - Analyze the sales positions of both companies
  - Choose who to assert against very carefully
- Think carefully before deciding not to begin a licensing program because of this issue
  - There are many high-tech companies successfully doing this and . . . the number is growing

Issue – in light of SanDisk v. ST . . . is assertive licensing possible?

- Good question
- People are already figuring work arounds
- Be prepared for a DJ
- Think about how likely a DJ really is
  - Large firms cannot afford to file a DJ for every letter that arrives
  - Small firms may not be litigation smart
- It is the prediction here that the courts will have to find a better balance of presumed litigation and the ability of companies to successfully license their patents

Issue – Are there other ways to do assertive licensing?

- There is more than one way to approach assertive licensing
- However, ignoring the four principles outlined here severely reduces chances of success and, at minimum, lengthens the time to money

Seven takeaways

1. There is no difference in making decisions – as with products and markets you determine risk and return
2. Focus on eliminating low value patents
3. Do not avoid considering licensing core patents
4. Think like a venture capitalist
5. Work to improve your patent position
6. Make your work high quality and do not “hide the ball”
7. Negotiate in good faith