

II-SDV



Customizing Statistics for Sharper Analysis

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Conceptual Model Of A Patent Based Analysis

1. Understand the Overall Landscape

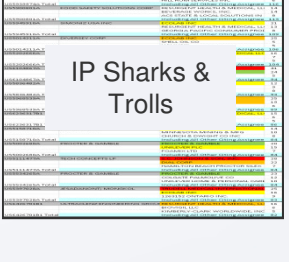
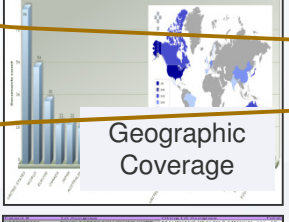
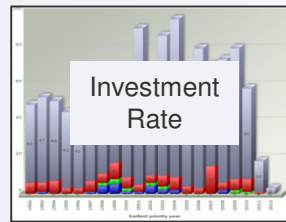
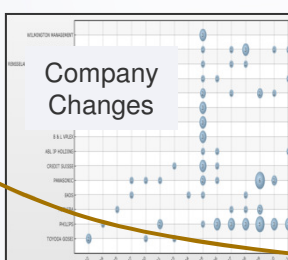
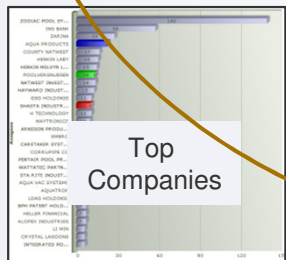
2. Understand Recent Trends

3. Understand Close Art

4. Understand Available Art

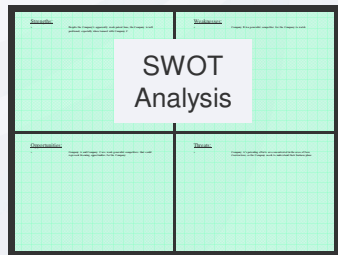
5. Estimate Freedom To Practice

6. Determine Who To Watch And Leverage



Benchmarked Industry Segment Patent Portfolio Metrics	IP ENVIRONMENT	Safety Journeys	Innovating in Packs	Consumer Research & Marketing
	Patent Density	Desert to Forest	Forest	Jungle
Innovation & Patent Growth Rate	Low	Growth -> Flat	Growth -> Flat	Growth -> Flat
Typical Number of IP Holders	2 Tier 1	1 Tier 1	1 Tier 1	1 Tier 1
Cc	Many Present with sharks	Many Present with sharks	Many Present with sharks	Many Present with sharks
Nc	Many Present with sharks	Many Present with sharks	Many Present with sharks	Many Present with sharks
IP Presence	none	none	none	none

Strategic Direction



Data → Information → Knowledge + Experience → Insight

Why Customize Analysis?

- Data quality
- Productivity
- Technical Specific Needs

Why Customize Analysis?

- Data quality
 - Names: normalisation – M&A
bank collaterals
 - Concepts: normalisation
languages

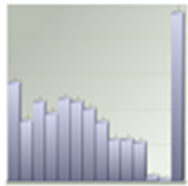
Assignee
EXXONMOBIL RESEARCH ENGINEERING
EXXONMOBIL CHEMICAL PATENTS
EXXONMOBIL PRODUCTION RESEARCH
EXXONMOBIL
EXXONMOBIL OIL
EXXONMOBIL UPSTREAM RESEARCH
INFINEUM
BANK OF AMERICA
CALGON
CITICORP
DATAPRODUCTS
IMAGING SOLUTIONS
NALCO
NALCO CROSSBOW WATER
NALCO ONE SOURCE
ADVANCED ELASTOMER SYSTEMS
EXXON NUCLEAR

Why Customize Analysis?

- Productivity
 - Guideline with predefined set of charts
 - Re-usable templates:
charts, axis, colors, grouping rules (assignees, concepts, classification codes, inventors...), real-time interaction (refining/expanding)

My charts

Documents ▾ Assignees ▾ Inventors ▾ Representative ▾ Technologies ▾ Legal status ▾ Concepts ▾ Citations ▾



S1 S3a Velocity Chart

Delete

Rename



S1 Inventor Location Chart

Delete

Rename



S1 Publication Country Chart

Delete

Rename



S1 S3a Donut Concepts Chart

Delete

Rename



S4 Legal Status

Delete

Rename



S4 US Litigations

Delete

Rename



S1 S3a S5 Assignees Chart

Delete

Rename



S1 Publication Country Map

Delete

Rename

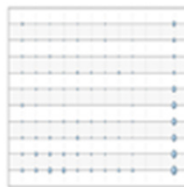
All



S1 S3a Donut IPC Chart

Delete

Rename



S1 S3a IPC vs Assignee Chart

Delete

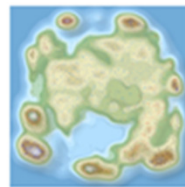
Rename



S1 Key Tech Uses Chart

Delete

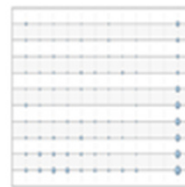
Rename



S1 Landscape Map

Delete

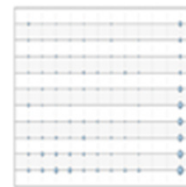
Rename



S2 Inventors vs Year Chart

Delete

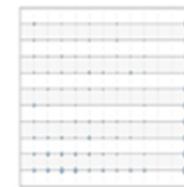
Rename



S2 S3a Assignee vs Year Chart

Delete

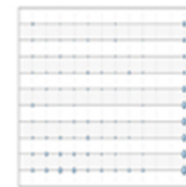
Rename



S2 IPC vs Year Chart

Delete

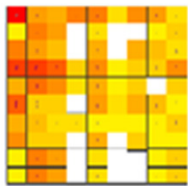
Rename



S2 Concepts vs Year Chart

Delete

Rename



S3a Concept vs Assignee Chart

Delete

Rename



S4a Velocity Chart

Delete

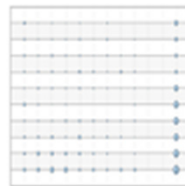
Rename



S4a Concepts Pie Chart

Delete

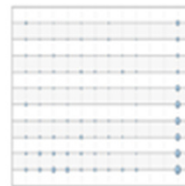
Rename



S5 Institution vs Year Chart

Delete

Rename



S5 Concept vs Assignee Chart

Delete

Rename



S7 Assignee Citation Graph

Delete

Rename



S3 Coassignment Chart

Delete

Rename

Why Customize Analysis?

- Technical Specific Needs
 - Concepts grouping / hiding
 - Classification codes grouping / hiding

Data rules

Filter results Concepts

Name	Occurrences
<input type="checkbox"/> POOL CLEANING (8 Elements)	532
<input type="checkbox"/> DEBRIS CLEANING (226 Elements)	507
<input type="checkbox"/> POOL FLOOR (98 Elements)	467
<input type="checkbox"/> POOL SIDEWALL (72 Elements)	453
<input type="checkbox"/> SWIMMING POOL	369
<input type="checkbox"/> WATER FLOW	150
<input type="checkbox"/> POOL ALGAE CLEANING (155 Elements)	141
<input type="checkbox"/> POOL WATER	
<input type="checkbox"/> SWIMMING POOL WATER	
<input type="checkbox"/> FLUID COMMUNICATION	
<input type="checkbox"/> POOL BACTERIA CLEANING (200 Elements)	
<input type="checkbox"/> POOL SURFACE	

Group

Ungroup

Exclude

Data rules

Filter results CPC codes

Name	Occurrences
<input type="checkbox"/> SUCTION CLEANERS (84 Elements)	59
<input type="checkbox"/> VALVE EVACUATION (30 Elements)	37
<input type="checkbox"/> E04H-004/16/45	33
<input type="checkbox"/> DISINFECTANTS & HERBICIDES (24 Elements)	33
<input type="checkbox"/> A01N-059/16	8
<input type="checkbox"/> A01N-065/00	5
<input type="checkbox"/> A01N-059/00	5
<input type="checkbox"/> A01N-059/20	2
<input type="checkbox"/> A01N-059/12	2
<input type="checkbox"/> A01N-057/18	2
<input type="checkbox"/> A01N-033/12	2
<input type="checkbox"/> A01N-025/34	2

Group

Ungroup

Exclude

Include

Use filter as rule

Why Customize Analysis?

- Problems to solve
 - Grouping Rules: Permanent vs Contextual

Data rules administration					
All		All			
State	Name	Description	Scope	Field	Actions
✓	AQUA PRODUCTS		Analysis scope	Assignee	Deactivate / Delete
✓	DEBRIS CLEANING		Analysis scope	Concepts	Deactivate / Delete
✓	DEBRIS SEPARATION		User scope	CPC codes	Deactivate / Delete

Analysis axis

Axis field: Custom Axis name: TECHNICAL USE

My templates: SWIMPOOL CLEANING TECHNICAL USE

Boolean query	(SUCTION? OR VACUUM??	MECHANICAL SUCTION
Boolean query	WATER 3W (TREAT+ OR C	CHEMICAL TREATMENT
Boolean query	(PLANT? OR ORGANIC TRE	NATURAL ORGANIC TRAE

Analysis axis

Axis field: Custom Axis name: GOALS

My templates: SWIMPOOL CLEANING GOAL

Boolean query	(DEBRIS OR LEA#??) S CLI	DEBRIS CLEANING
Boolean query	ALGAE S (ELIMINAT+ OR C	ALGAE ELIMINATION
Boolean query	BACT+ S (DEST+ OR PURI	BACTERIAL TREATMENT

Why Customize Analysis?

- Conclusion

😊 Powerful and precise

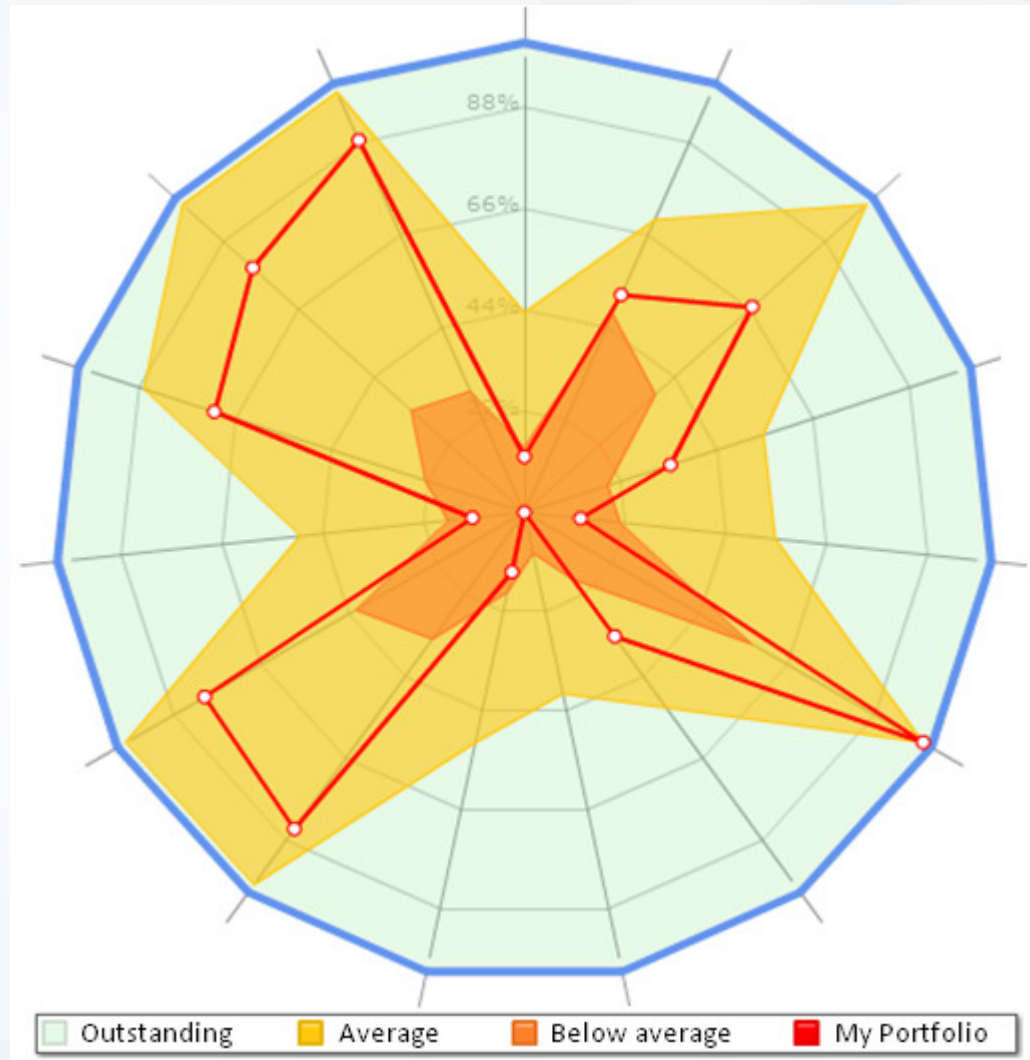
😞 Time consuming (system programming?)

❓ Future...

? Future...

Guided activities

Preconfigured
Analysis Metrics



Case study: building a technology/use matrix

- The goal is to understand which technologies are used to achieve a given goal
- Corpus : Swimming pool cleaners
 - ~ 1100 patents
- Let's explore a few alternatives on how to do it

Concepts after clean up / Data rules

Concepts/ Concepts Crossing

Automatic pool cleaner	212	10	62	14	11	36	24		52	22	19	47	70	97	15	10		16	13	29	59	10	16	18	43	
CIRCULATING WATER	10	45	10			10							13	22					13						12	
Debris	62	10	259	18	20	41	17	21	50	18	14	39	91	104	12	28		21	30	53	45	12	17	27	57	
ELECTRICAL MOTOR	14		18	50								11	10	21									10		12	
FLOATING DEBRIS	11		20		46				14				14	23							23			14	13	
FLUID COMMUNICATION	36	10	41			114			34	14	14	14	40	49	10	14			12	25	19	13		11	40	
FORWARD DIRECTION	24		17			45			18			12	15	19							18		11		10	
HOT TUBS			21				45							11		20										
Hose	52		50		14	34	18		148	12	10	17	52	56	13		13	13	17	31	40		15	19	44	
INLET PORT	22		18			14			12	57	33	14	18	15						11	17		10		20	
OUTLET PORT	19		14			14			10	33	55		23	21						14	20				23	
POOL SURFACE	47		39	11		14	12		17	14			110	50	59	13				11	16	23		10	13	21
Pool Bottom	70	13	91	10	14	40	15		52	18	23	50	267	145	16	10	17	20	31	56	59		23	21	60	
Pool Wall	97	22	104	21	23	49	19	11	56	15	21	59	145	371	31	11	17	37	53	80	71	13	24	34	75	
ROTATION AXIS	15		12			10			13			13	16	31	56						13				13	
SPA	10		28			14		20					10	11		57										
SUBMERGED SURFACE									13				17	17			51				25				21	
SWIMMING POOL SURFACE	16		21						13				20	37				64		14	11			10	14	
SWIMMING POOL WATER	13	13	30			12			17			11	31	53						104	24	16			13	19
Skimmer	29		53		23	25			31	11	14	16	56	80				14	24	141	25	13	14	33	35	
Suction Cleaner	59		45			19	18		40	17	20	23	59	71	13		25	11	16	25	158			13	42	
WATER BODY	10		12			13								13						13		58		12	15	
WATER INLET	16		17	10			11		15	10		10	23	24						14			60	12	18	
WATER SURFACE	18		27		14	11			19			13	21	34				10	13	33	13	12	12	75	20	
Water flow	43	12	57	12	13	40	10		44	20	23	21	60	75	13		21	14	19	35	42	15	18	20	194	
Automatic pool cleaner																										
CIRCULATING WATER																										
Debris																										
ELECTRICAL MOTOR																										
FLOATING DEBRIS																										
FLUID COMMUNICATION																										
FORWARD DIRECTION																										
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SPA																										
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SWIMMING POOL SURFACE																										
SWIMMING POOL WATER																										
Skimmer																										
Suction Cleaner																										
WATER BODY																										
WATER INLET																										
WATER SURFACE																										
Water flow																										

- Getting better, drilling down on each cell very powerful for understanding

We need a better solution

- Clearly this is not enough, we need to separate problem domain concepts from solution concepts
- Solution: custom axis
 - Let's start by manually sorting out concepts
 - One axis for Goals , one axis for Means



The screenshot shows a software interface with a list of concepts on the left and a custom axis configuration panel on the right. The list of concepts includes:

Concept	Count	Value
<input checked="" type="checkbox"/> POLYVINYL CHLORIDE	13	2
<input checked="" type="checkbox"/> CHLORINE CONCENTRATION	10	2
<input checked="" type="checkbox"/> CHLORINATION	9	2
<input checked="" type="checkbox"/> CHLORINATING SWIMMING POOL	8	2
<input type="checkbox"/> CHLORINE GAS	7	
<input checked="" type="checkbox"/> CHLORINE LEVEL	7	2

The custom axis configuration panel on the right has a dropdown menu with the text "Select or create a template." and a list of items including "BRUSH, CLEANING" and "CHLORINE, CHLOR". A yellow oval highlights the "CHLORINE, CHLOR" item.

Goal / mean matrix, concept version

- Simple and clear:
 - Good for communication
- Precision and completeness could be improved

Goal / mean matrix, custom axis

Goals	Filtering water	5	9	2	22	60
	Pool surfaces cleaning	58	29	31	175	144
	Removing Debris	30	15	16	103	119
	Robots	8	3	2	10	17
	Water purification		12		9	17
		Brushes	Chlorine	Oscillating	Suction	filter
		Means				

Slice & Dice through boolean queries

- We need a sharper tool to dissect the corpus
- We already have a sharp tool with the full text search engine: fields, proximity...
- Each value in a custom axis can be a search engine query.
- Example: combining independent claims and CPC
 - ((water 3D (filter??? or purify???))/ICLM or C02F-2103/42/CPC)

Technology crossing from Custom analysis axis

Distribution of search results by Means / Goals

(AUTOMATIC/CLMS 2D CLEANER/CLMS), CLEANER HEAD?, SUCTION CLEANER?	48	9	49	8	27		55
(WATER/CLMS S (FILTER???, PURIFY???,/CLMS)), CO2F-2103/42	206	52	36	117	464	19	172
BACTERI??, ALGA??, MICRO_ORGANISM?, PROLIFERATION, ANTIBACTER , ANTIMICROB	19	8	6	36	40	5	11
DEBRI?, LEAF, LEAVES	157	35	33	26	163	1	143
HOSE?, NOZZLE?, SPOUT	220	60	64	35	148	2	209
ROBOT?, ELECTRONIC??, PROGRAM?ABLE, SOFTWARE, BATTERY POWERED	35	13	15	22	68		48
SKIMMER?, GUT?ER?, (POOL/CLMS S (COVER?, STRUCTURE?, DECK?/CLMS))	114	50	33	37	169	6	134

(WATER, FLUID/CLMS) 2D (FLOW, PRESSURE/CLMS)

BRUSH , SCRUB

ORIN???, OSCIL?ATI???, DISC, CLEANER HEAD?

CHEMICAL?, COMPOUND?, BROMIN???, HALOGEN

FILTER???, FILTRATION, DRAIN BASKET?, STRAINER

MOSS??, SPHAG???, ((BIO, BIOLOGICAL, ECOLOGICAL, NATURAL/CLMS) 3D (POOL, CLEAN??/CLMS))

SUC??TION, VACU?M, ASPIRATION

Another view, using independent claims

Less noise,
some true
white space
emerges

Goal /means using independent claims

IC/ICLM 2D , CLEANER DUCTION LEANER?	35	4	32	4	18		40
ICLM S TER???, C02F- 103/42	100	9	10	64	211	15	75
LGA??, NISM?, ATION, MICROB	7	1	1	12	12	4	2
LEAF, LEAVES	98	11	14	11	97	1	82
HOSE?, NOZZLE?, SPOUT	109	17	23	9	59		113
ROBOT?, ELECTRONIC??, PROGRAM?ABLE, SOFTWARE, BATTERY POWERED	4	3		6	18		12
SKIMMER?, GUT?ER?, (POOL/ICLM S (COVER?, STRUCTURE?, DECK?/ICLM))	68	15	8	11	74	2	60
	WATER, FLUID/ICLM) 2D (FLOW, PRESSURE/ICLM)	BRUSH , SCRUB	OSCIL?ATI????, DISC, CLEANER HEAD?	CHEMICAL?, COMPOUND?, ?????, BROMIN????, HALOGEN	FILTER???, FILTRATION, DRAIN BASKET?, STRAINER	MOSS??, SPHAG???, ((BIO, BIOLOGICAL, ECOLOGICAL, NATURAL/ICLM) 3D (POOL, CLEAN??/ICLM))	IC??TION, VACU?M, ASPIRATION

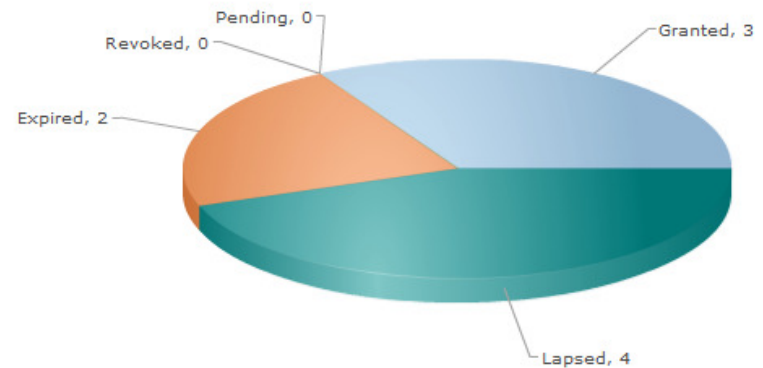
Analyzing white space on technology crossings

- No pending patents
- Most of the art is lapsed or expired
- Dead end?

(AUTOMATIC/CLMS 2D CLEANER/CLMS), CLEANER AD?, SUCTION CLEANER?	48	9	49
(WATER/CLMS S (FILTER???, PURIFY???, CLMS)), CO2F-2103/42	206	52	
BACTERI??, ALGA??, MICRO_ORGANISM?, PROLIFERATION, METABOLISM?	19	8	
BATTERY POWERED			
SKIMMER?, GUT?ER?, (POOL/CLMS S (COVER?, STRUCTURE?, DECK?/CLMS))	114	50	33

Drill down on white space

(WATER, FLUID/CLMS) 2D (FLOW, PRESSURE/CLMS)
 BRUSH+, SCRUB+
 ...AM?, OSCIL?ATI????



Case study wrap up

- Editing data, customizing analysis views and axis let us go beyond simple analysis
- By leveraging the precision of a full featured search engine on all patent text, we were able to build a goals/Mean technology matrix
- Domain expertise still needed, no magic bullet

II-SDV



Thank you

Laurent Hill
Renaud Garat
April 15, 2013