



SAIIE Annual Conference 2008

Analysing the Business Process Footprint

October 2008

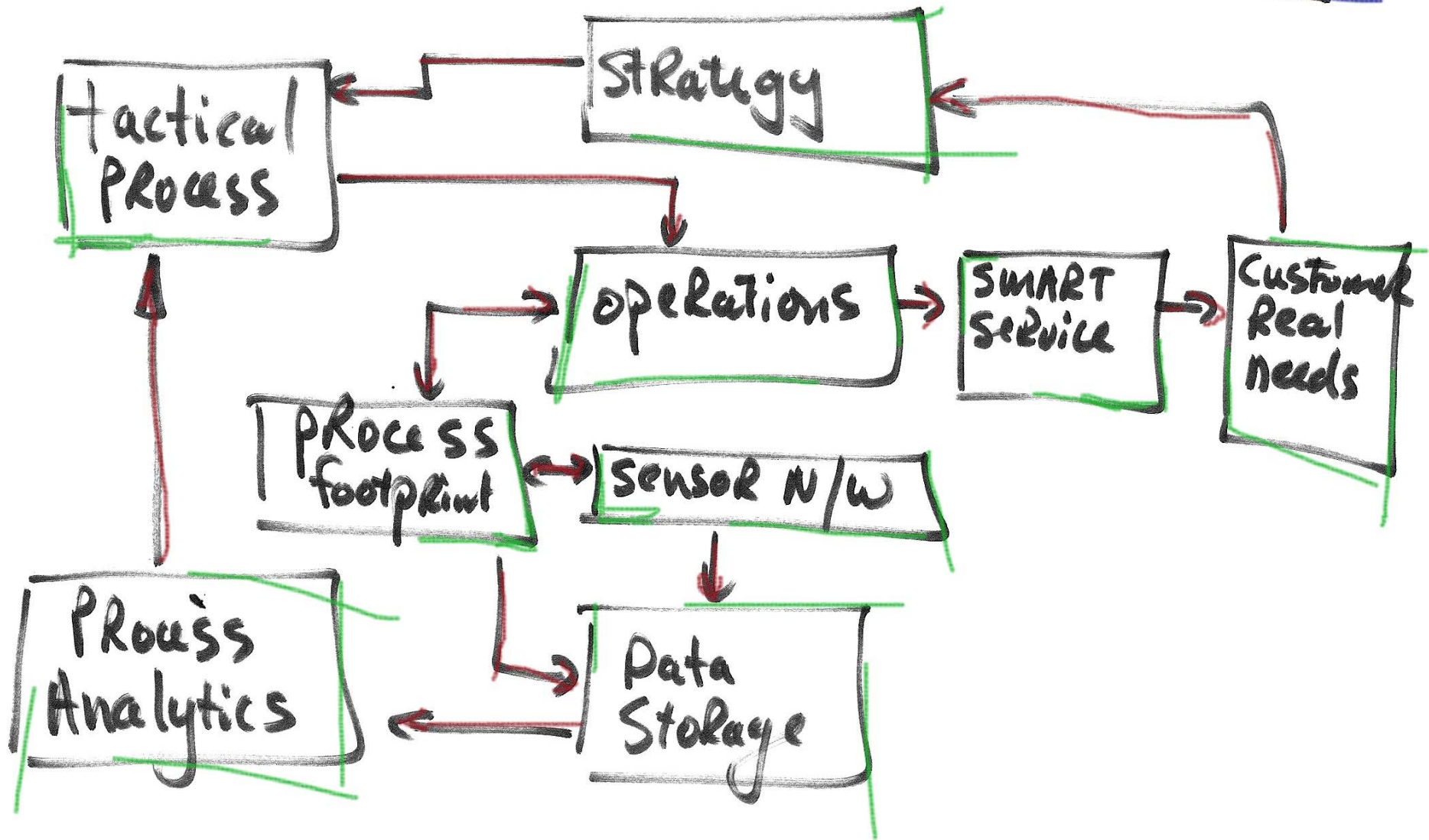
Business Process Management

Siyaka

Prepared by: Dr A van Rensburg

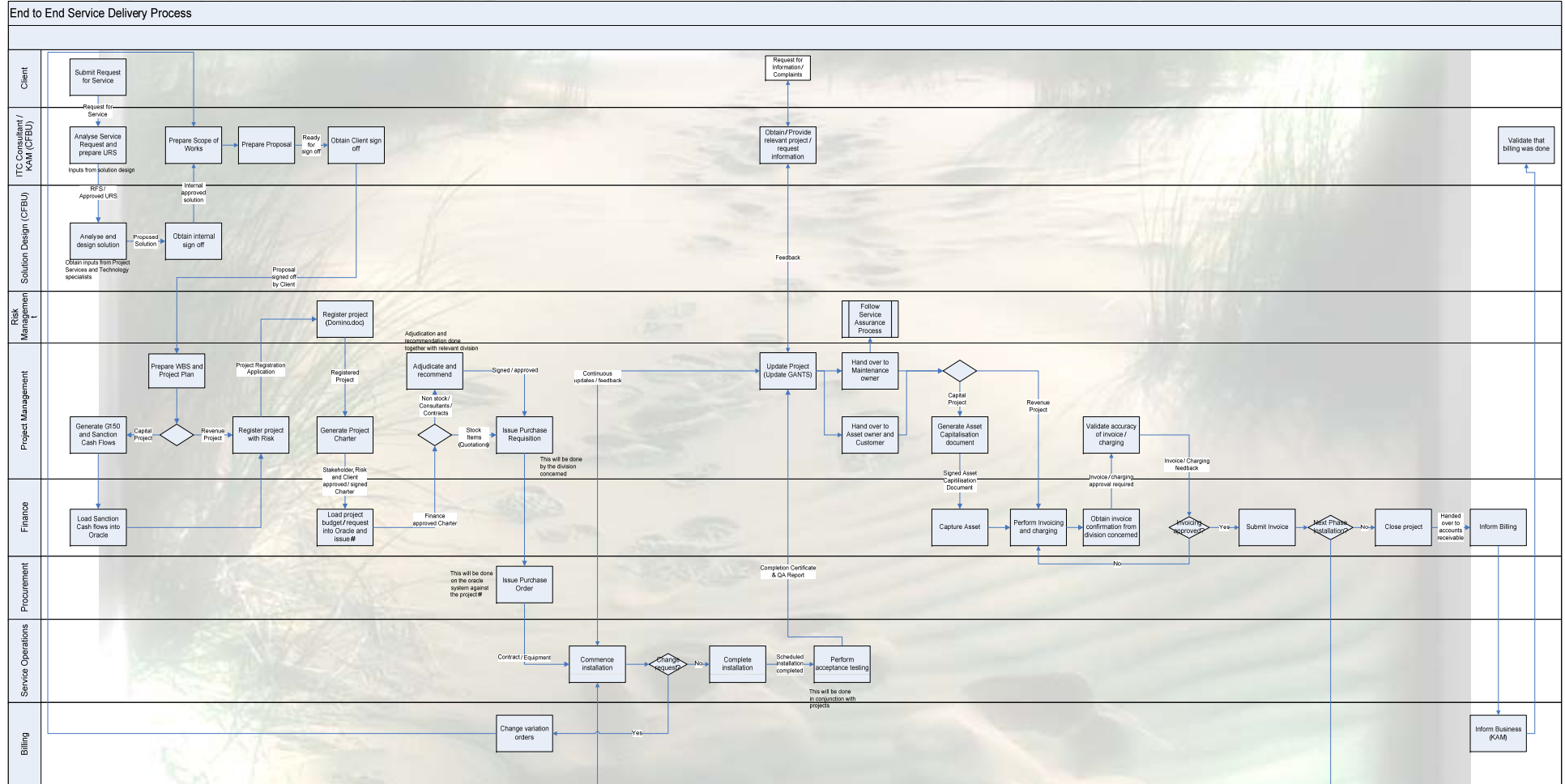
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Creating Smart Business Processes





What we are not going to discuss.....

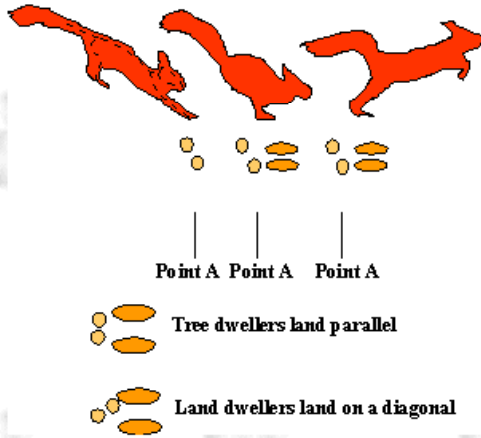




Animals and humans
leave tracks as they go about
in nature.....



Gallop Walk Pattern



CAT FAMILY	Shows - 4 toes front, 4 toes rear, claws (rarely)
General Shape Round	Normal Pace Gait: Diagonal Walker Direct Register Front feet 1/2 larger than rear No claws (95% of time) - sometimes out during a hunt. Zero straddle Zero pitch Feral Cat - 4 toes equal size
	 Cat

Using some basic techniques , the track can be identified. Implicitly the story can be told of the animal which left the track....



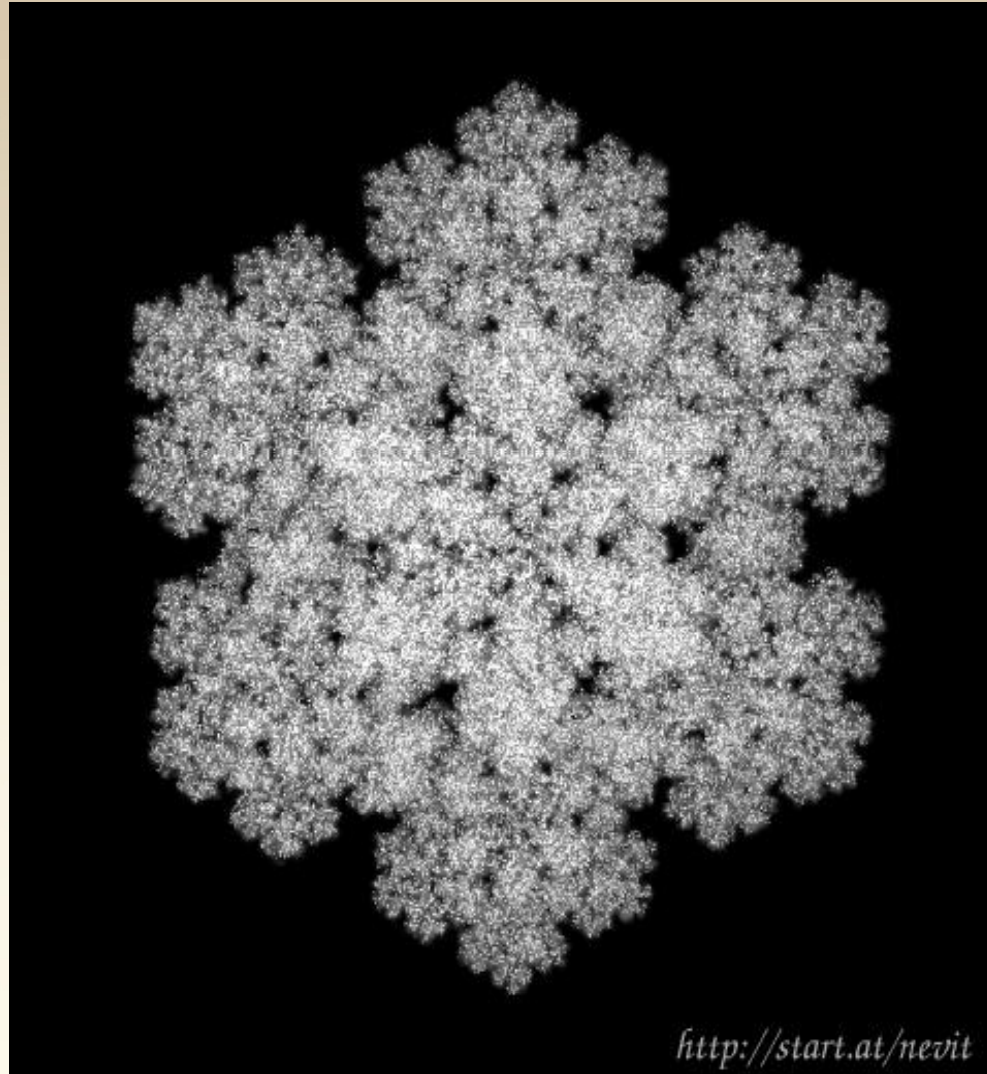
GAIT PATTERNS	
Pacer	
Diagonal Walker	
Bounder	
Galloper	

DOG FAMILY	Shows - 4 toes front, 4 toes rear, claws
General Shape Egg Shaped	Normal Pace Gait: Diagonal Walker Indirect Register Front feet 1/3 larger than rear. Dog inner toes larger Fox - 4 toes equal size, direct register, zero straddle, zero pitch, shows ridge on heel pad Wolf - 4 toes equal size Coyote - outer toes larger
	 Dog





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<http://start.at/nevit>

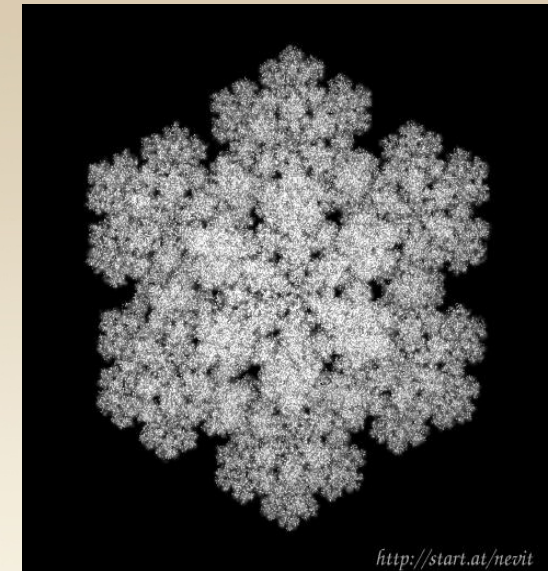
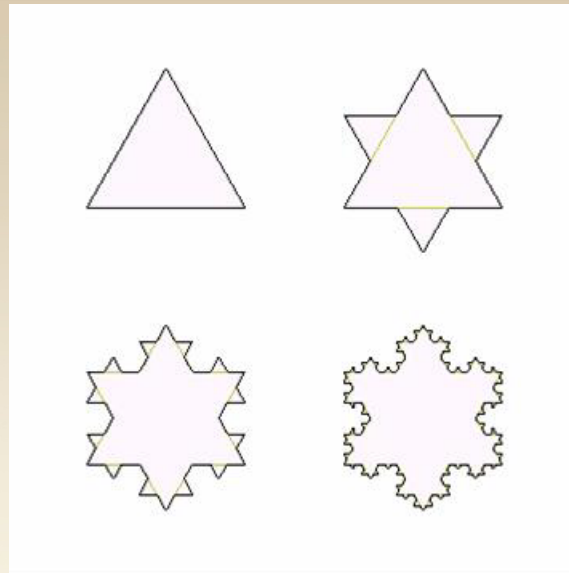


Building the fractal: Koch's Snowflake

Initiator

... Triangle

Generator

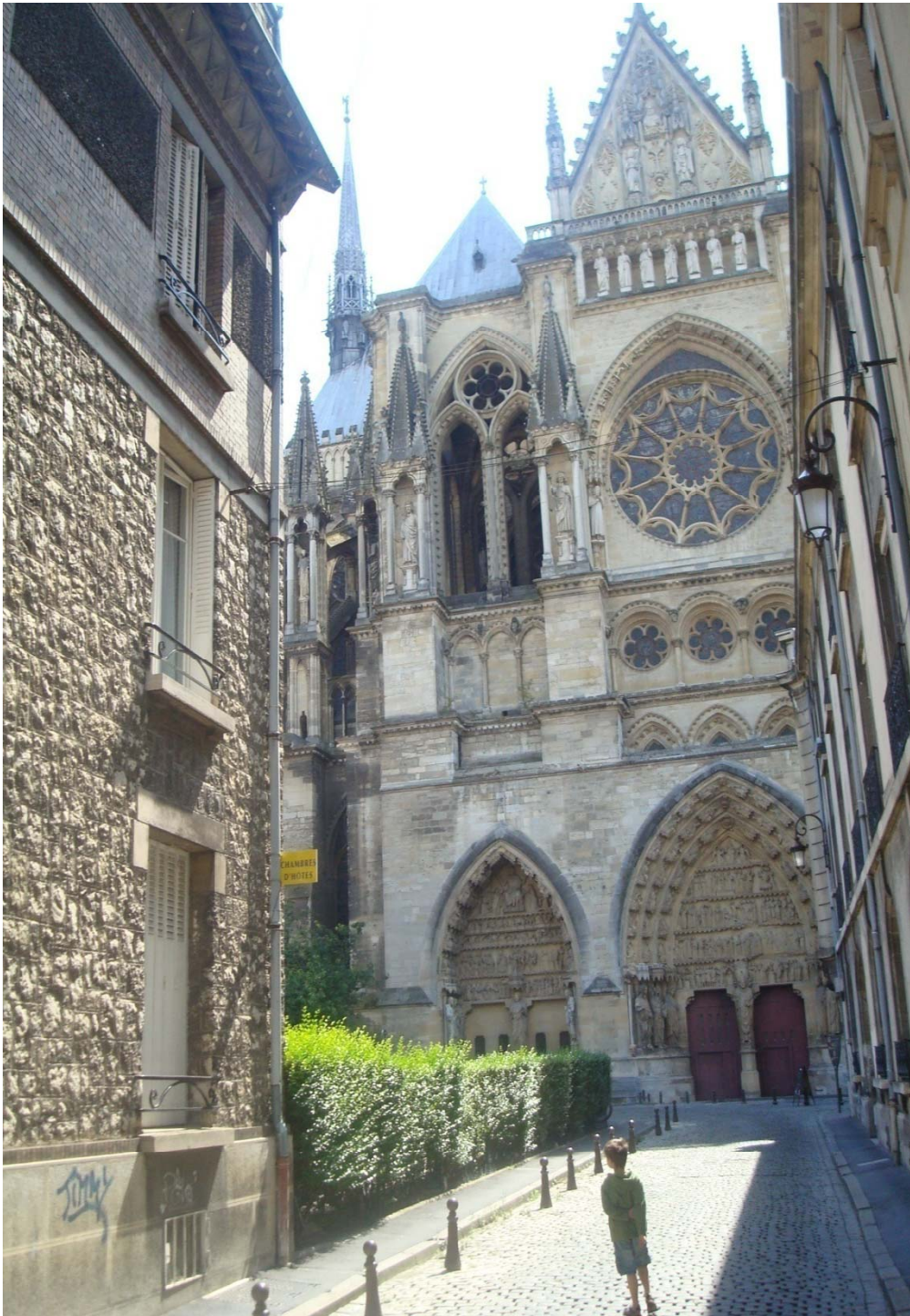


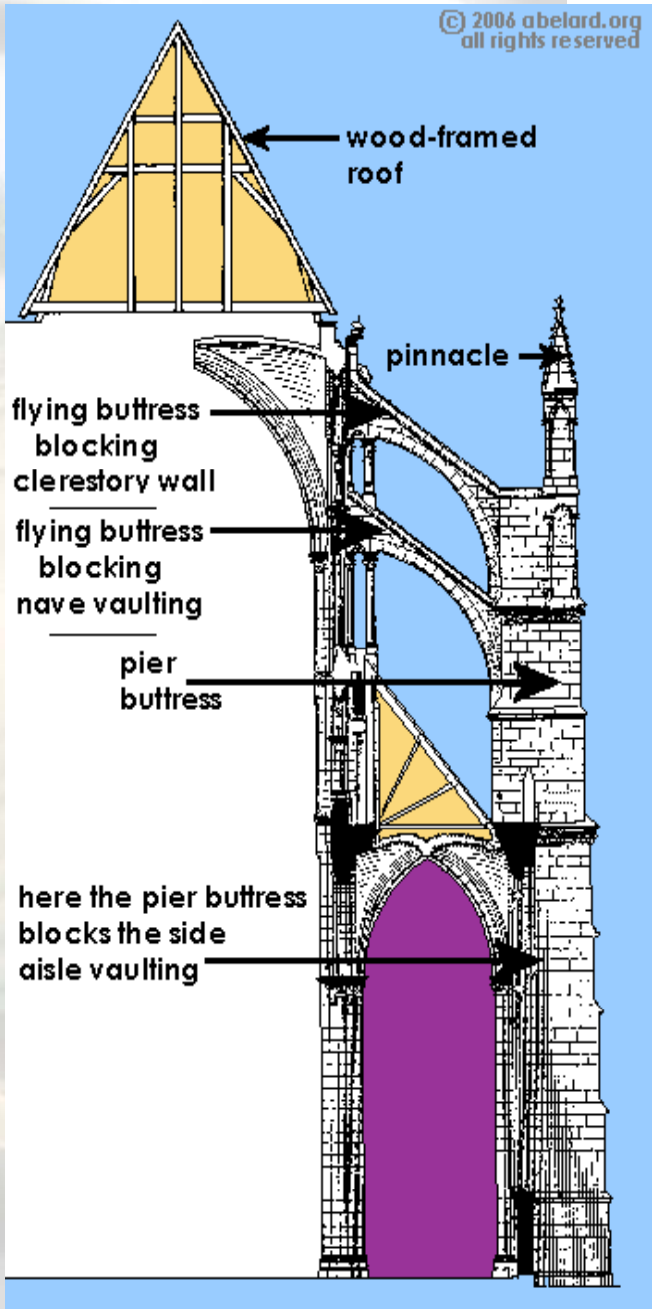
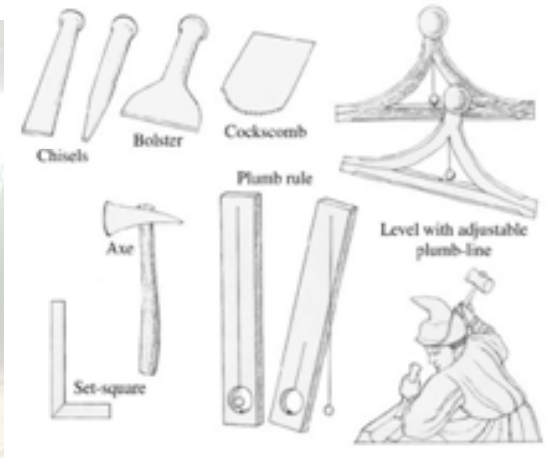
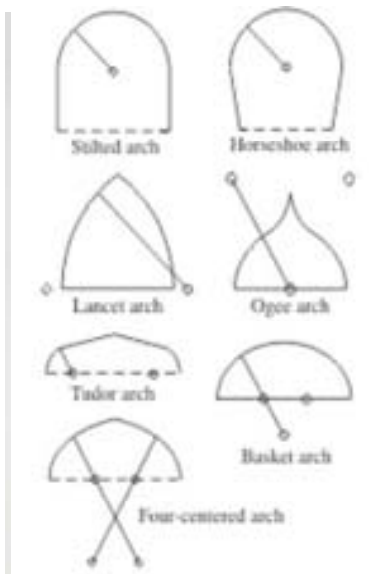
<http://start.at/nevit>

- Divide the line segment into three segments of equal length.
- Draw an equilateral triangle that has the middle segment from step a as its base.
- Remove the line segment that is the base of the triangle from step b

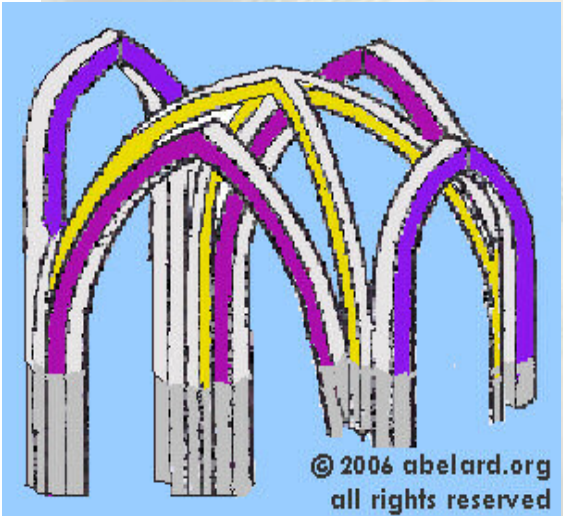
Recursion

The recursive process replaces every line segment with the generator and repeats this process.





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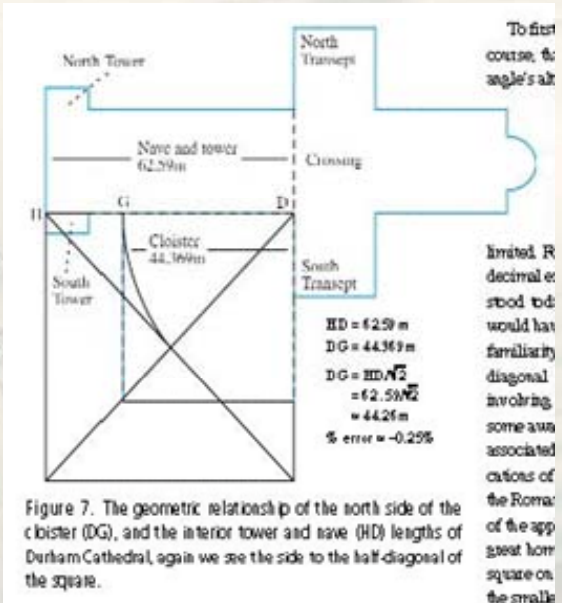
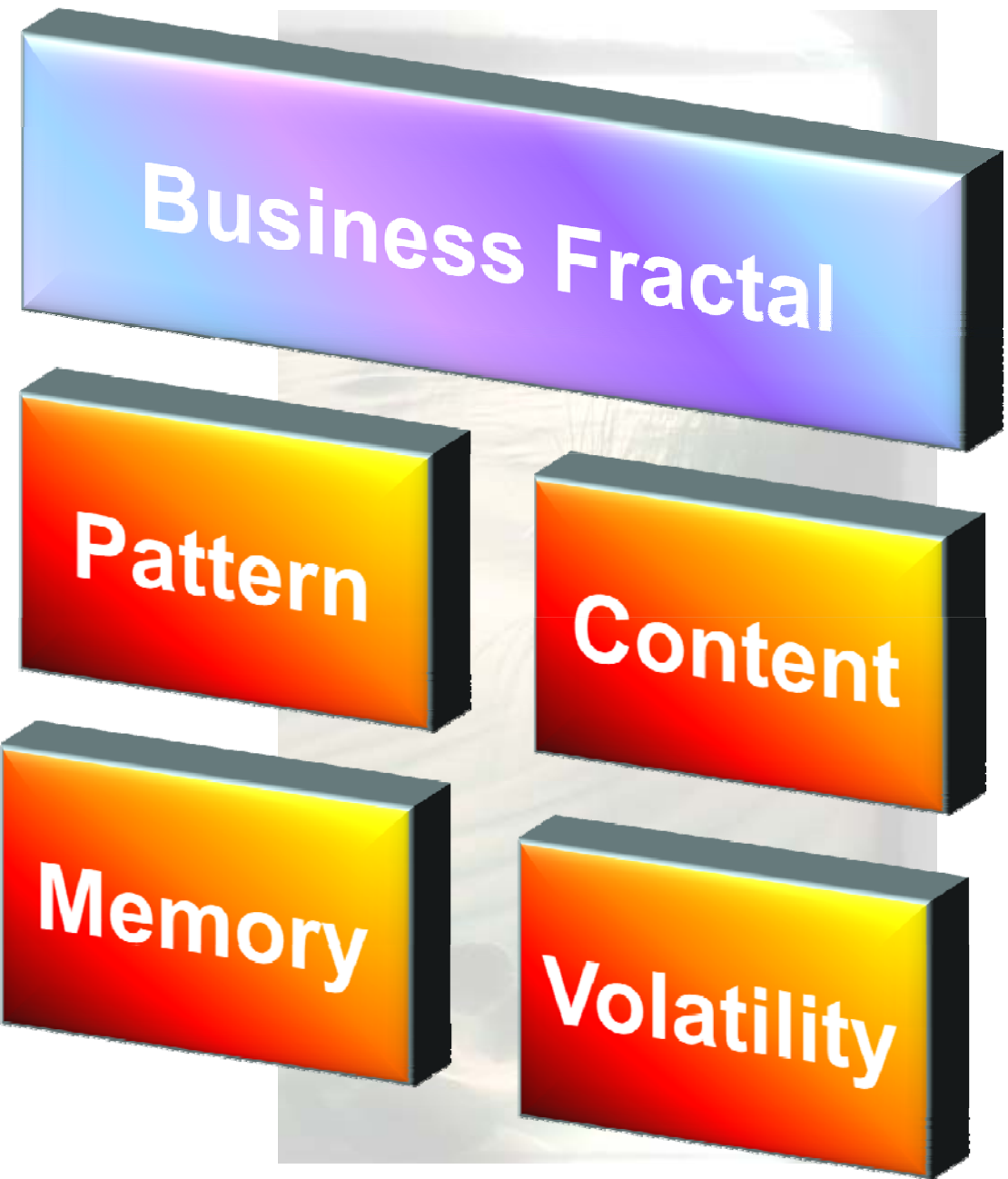
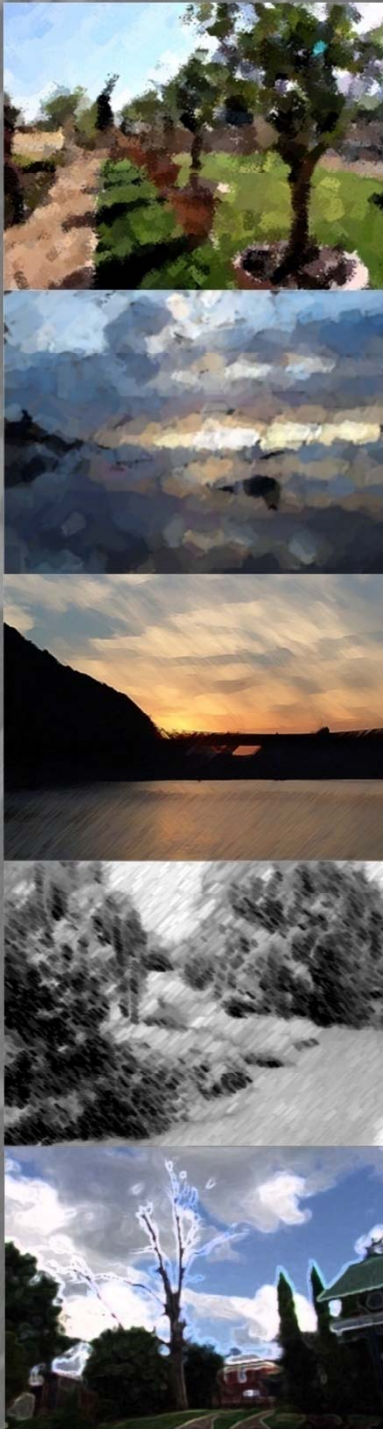


Figure 7. The geometric relationship of the north side of the cloister (DG), and the interior tower and nave (HD) lengths of Durham Cathedral, again we see the side to the half-diagonal of the square.

“A master mason could adeptly and repeatedly apply a few simple geometric operations and tools, such as the mason’s large compass, to produce a myriad of sophisticated designs.”

- H. McCague

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CA_DEV Extract : Database (Access 2002 - 2003 file format) - Microsoft Access

Table Tools: Home, Create, External Data, Database Tools, Acrobat, Datasheet

Views, Clipboard, Font, Rich Text, Records, Sort & Filter, Find

Tables: Data_Extract_NEW

ref	hist	log	call_req	time_stamp	customer	type	description	action_desc	analyst
727	409227	cr:400671		2008/06/24 08:20:15 AM	Transnet Rail Engineeri	I	sla expired.event '6hr cr resolution violation	log an event occurrence	System
803	409228	cr:400747		2008/06/24 08:21:10 AM	Transnet Freight Rail	I	this call is related to CA ref 842 and beacons	log a user comment	Khumalo Maxwell
877	409229	cr:400821		2008/06/24 08:21:18 AM	Transnet Freight Rail	I	FIELD='description' OLD='Fault Description:LI	FIELD='description' OLD='Fault Descriptio	Olaleye Ola
738	409230	cr:400682		2008/06/24 08:30:00 AM	Transnet Freight Rail	I	sla expired.event '8hr cr resolution violation	log an event occurrence	System
554	409231	cr:400498		2008/06/24 08:31:42 AM	Transnet Rail Engineeri R		sla expired.event '6hr cr resolution violation	log an event occurrence	System
854	409232	cr:400798		2008/06/24 08:31:48 AM	Transnet Freight Rail	I	FIELD='description' OLD='Fault Description: L	FIELD='description' OLD='Fault Descriptio	Khumalo Maxwell
878	409233	cr:400822		2008/06/24 08:32:01 AM	Transnet Freight Rail	I	Transfer 'assignee' from 'emcSmartsAdapter	Transfer 'assignee' from 'emcSmartsAda	Dube Christian
878	409234	cr:400822		2008/06/24 08:32:01 AM	Transnet Freight Rail	I	FIELD='customer' OLD='ServiceDesk' NEW='T	FIELD='customer' OLD='ServiceDesk' NEW='	Dube Christian
775	409235	cr:400719		2008/06/24 08:34:20 AM	Transnet Freight Rail	I	as per Linda NCCC, the modem is faulty, and	log a user comment	Dube Christian
775	409236	cr:400719		2008/06/24 08:35:11 AM	Transnet Freight Rail	I	Status changed from 'Open' to 'No Site Acces	Status changed from 'Open' to 'No Site A	Dube Christian
775	409237	cr:400719		2008/06/24 08:35:20 AM	Transnet Freight Rail	I	The Service Type(s) on a ticket were delaye	The Service Type(s) on a ticket were del	Dube Christian
805	409238	cr:400749		2008/06/24 08:36:23 AM	Transnet NPA	I	sla expired.event '6hr cr resolution violation	log an event occurrence	System
687	409239	cr:400631		2008/06/24 08:39:58 AM	Transnet Freight Rail	I	sla expired.event '8hr cr resolution violation	log an event occurrence	System
560	409240	cr:400504		2008/06/24 08:45:33 AM	Transnet NPA	R	sla expired.event '6hr cr resolution violation	log an event occurrence	System
239	403876	cr:400183		2008/06/11 09:05:31 PM	Transnet Freight Rail	I	FIELD='category' OLD='Line Fault' NEW='Pow	FIELD='category' OLD='Line Fault' NEW='F	Monyela Matshepo
239	403877	cr:400183		2008/06/11 09:05:38 PM	Transnet Freight Rail	I	Christole from Transmission confirmed that	log a user comment	Monyela Matshepo
241	403878	cr:400185		2008/06/11 09:08:20 PM	Transnet Freight Rail	I	create a new request/incident/problem/che	create a new request/incident/problem,	System
241	403879	cr:400185		2008/06/11 09:11:30 PM	Transnet Freight Rail	I	Transfer 'assignee' from 'emcSmartsAdapter	Transfer 'assignee' from 'emcSmartsAda	Monyela Matshepo
241	403880	cr:400185		2008/06/11 09:11:30 PM	Transnet Freight Rail	I	FIELD='customer' OLD='ServiceDesk' NEW='T	FIELD='customer' OLD='ServiceDesk' NEW='	Monyela Matshepo
239	403881	cr:400183		2008/06/11 10:00:34 PM	Transnet Freight Rail	I	Status changed from 'Open' to 'Closed'	Status changed from 'Open' to 'Closed'	Monyela Matshepo
239	403882	cr:400183		2008/06/11 10:00:34 PM	Transnet Freight Rail	I	FIELD='description' OLD='Fault Description: F	FIELD='description' OLD='Fault Descriptio	Monyela Matshepo
239	403883	cr:400183		2008/06/11 10:00:42 PM	Transnet Freight Rail	I	pry_pvr01_00_ce_00 uptime is 22 minutesSy	log a user comment	Monyela Matshepo
242	403884	cr:400186		2008/06/12 02:28:24 AM	Transnet Freight Rail	I	create a new request/incident/problem/che	create a new request/incident/problem,	System
242	403885	cr:400186		2008/06/12 02:33:01 AM	Transnet Freight Rail	I	Transfer 'assignee' from 'emcSmartsAdapter	Transfer 'assignee' from 'emcSmartsAda	Monyela Matshepo
242	403886	cr:400186		2008/06/12 02:33:01 AM	Transnet Freight Rail	I	FIELD='customer' OLD='ServiceDesk' NEW='T	FIELD='customer' OLD='ServiceDesk' NEW='	Monyela Matshepo
242	403887	cr:400186		2008/06/12 02:33:37 AM	Transnet Freight Rail	I	FIELD='affected_resource' OLD='nlp' NEW='r	FIELD='affected_resource' OLD='nlp' NEW='r	Monyela Matshepo
242	403888	cr:400186		2008/06/12 02:33:45 AM	Transnet Freight Rail	I	Phoned user @ 013 726 5207 to confirm pow	log a user comment	Monyela Matshepo
243	403889	cr:400187		2008/06/12 02:58:35 AM	Transnet Freight Rail	I	create a new request/incident/problem/che	create a new request/incident/problem,	System
243	403890	cr:400187		2008/06/12 03:02:02 AM	Transnet Freight Rail	I	Transfer 'assignee' from 'emcSmartsAdapter	Transfer 'assignee' from 'emcSmartsAda	Monyela Matshepo
243	403891	cr:400187		2008/06/12 03:02:02 AM	Transnet Freight Rail	I	FIELD='customer' OLD='ServiceDesk' NEW='T	FIELD='customer' OLD='ServiceDesk' NEW='	Monyela Matshepo
243	403892	cr:400187		2008/06/12 04:58:02 AM	Transnet Freight Rail	I	ble_weg03_00_ce_00 uptime is 6 weeks, 5 d	log a user comment	Monyela Matshepo
243	403893	cr:400187		2008/06/12 04:58:42 AM	Transnet Freight Rail	I	FIELD='category' OLD='Power Failure' NEW='	FIELD='category' OLD='Power Failure' NEW='	Monyela Matshepo
243	403894	cr:400187		2008/06/12 04:59:01 AM	Transnet Freight Rail	I	Status changed from 'Open' to 'Closed'	Status changed from 'Open' to 'Closed'	Monyela Matshepo
242	403895	cr:400186		2008/06/12 05:00:39 AM	Transnet Freight Rail	I	nlp_mer01_00_ce_00 uptime is 6 days, 15 ho	log a user comment	Monyela Matshepo
242	403896	cr:400186		2008/06/12 05:01:18 AM	Transnet Freight Rail	I	Status changed from 'Open' to 'Closed'	Status changed from 'Open' to 'Closed'	Monyela Matshepo
242	403897	cr:400186		2008/06/12 05:01:18 AM	Transnet Freight Rail	I	FIELD='category' OLD='Power Failure' NEW='	FIELD='category' OLD='Power Failure' NEW='	Monyela Matshepo
233	403898	cr:400177		2008/06/12 06:06:08 AM	Transnet Freight Rail	I	TT_LLA09_02_SW_00 uptime is 6 minutesSys	log a user comment	Monyela Matshepo
233	403899	cr:400177		2008/06/12 06:07:01 AM	Transnet Freight Rail	I	Status changed from 'No Site Access' to 'Clos	Status changed from 'No Site Access' to 'C	Monyela Matshepo
233	403900	cr:400177		2008/06/12 06:07:01 AM	Transnet Freight Rail	I	Transfer 'assignee' from 'emcSmartsAdapter	Transfer 'assignee' from 'emcSmartsAda	Monyela Matshepo
233	403901	cr:400177		2008/06/12 06:07:01 AM	Transnet Freight Rail	I	FIELD='description' OLD='Fault Description:p	FIELD='description' OLD='Fault Descriptio	Monyela Matshepo
238	403902	cr:400182		2008/06/12 06:09:28 AM	Transnet Rail Engineeri	I	Status changed from 'Open' to 'Closed'	Status changed from 'Open' to 'Closed'	Monyela Matshepo

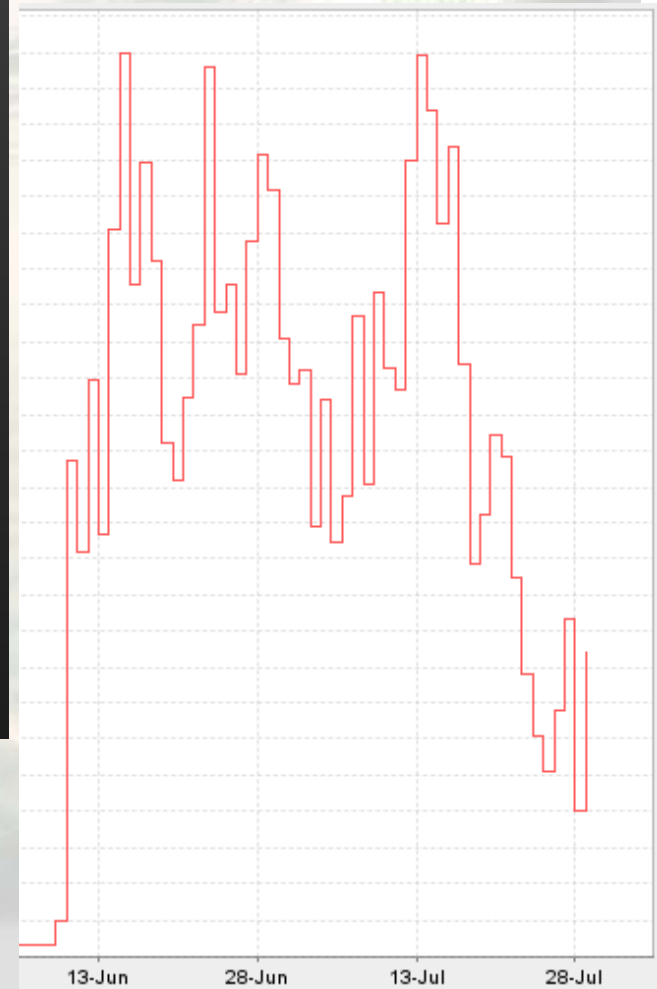
Record: 1 of 24130

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System Tray: 09:12 AM



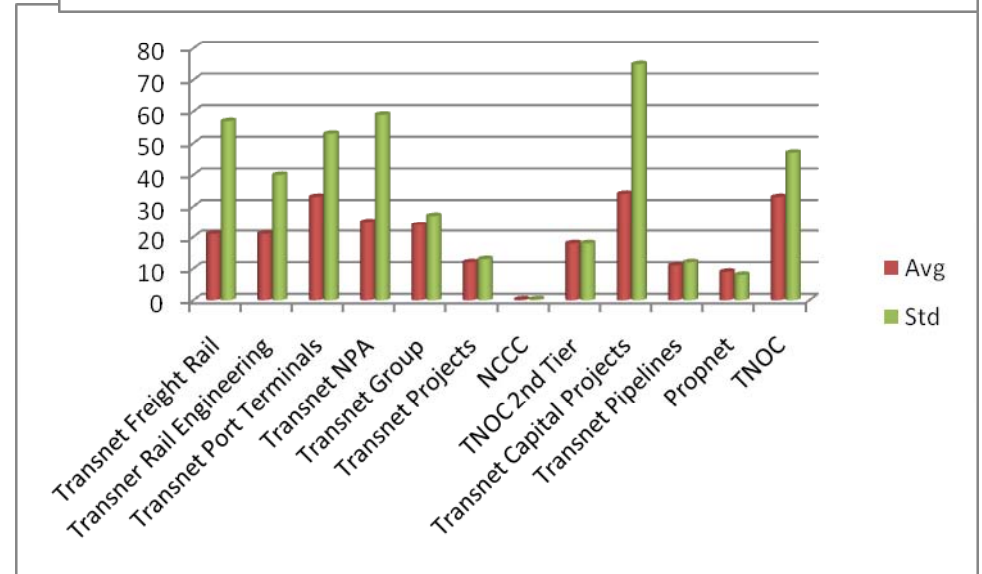
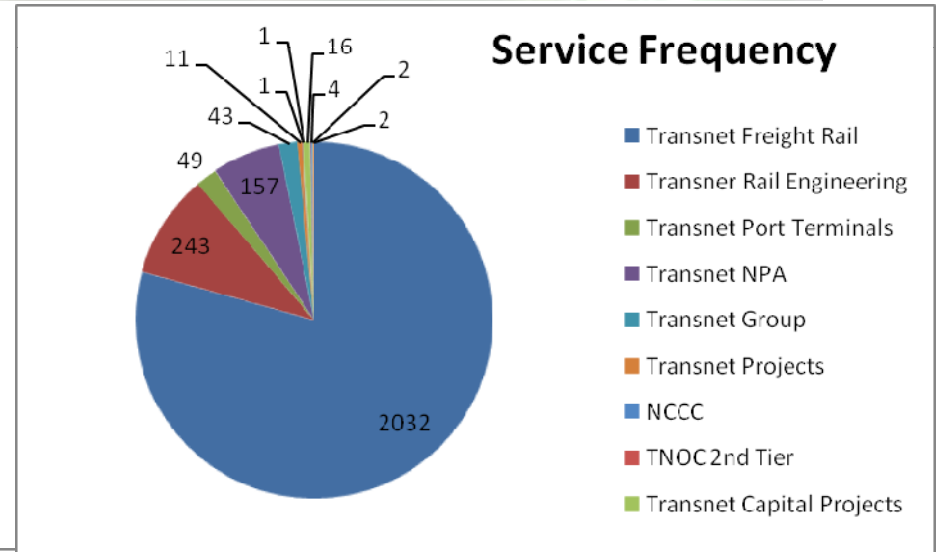
Process Log Data





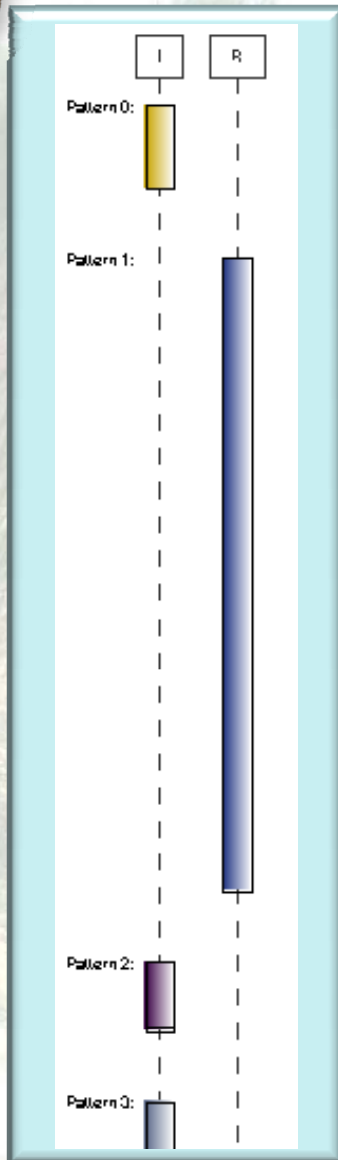
Process Customers

CUSTOMER NAME	Frequency	Throughput(Hours)			
		Avg	Std	Max	6Sigma
Transnet Freight Rail	2032	21	57	842	192
Transnet Rail Engineering	243	21	40	386	141
Transnet Port Terminals	49	33	53	287	192
Transnet NPA	157	25	59	480	202
Transnet Group	43	24	27	123	105
Transnet Projects	11	12	13	43	51
NCCC	1	0.3	0.3	0.3	1.2
TNOC 2nd Tier	1	18	18	18	72
Transnet Capital Projects	16	34	75	309	259
Transnet Pipelines	4	11	12	26	47
Propnet	2	9	8	15	33
TNOC	2	33	47	67	174





Process Products/Services



Two types of faults (I and R)

Type I is the most common with 2540 cases and resolution as follows:

Average time (hours) = 21

Max Time to Resolve = 485

StDev = 52

Cpk = 177 hours

Type R we have identified 26 cases for with resolution as follows:

Average time (hours) = 160

Max Time to Resolve = 1852

StDev = 389

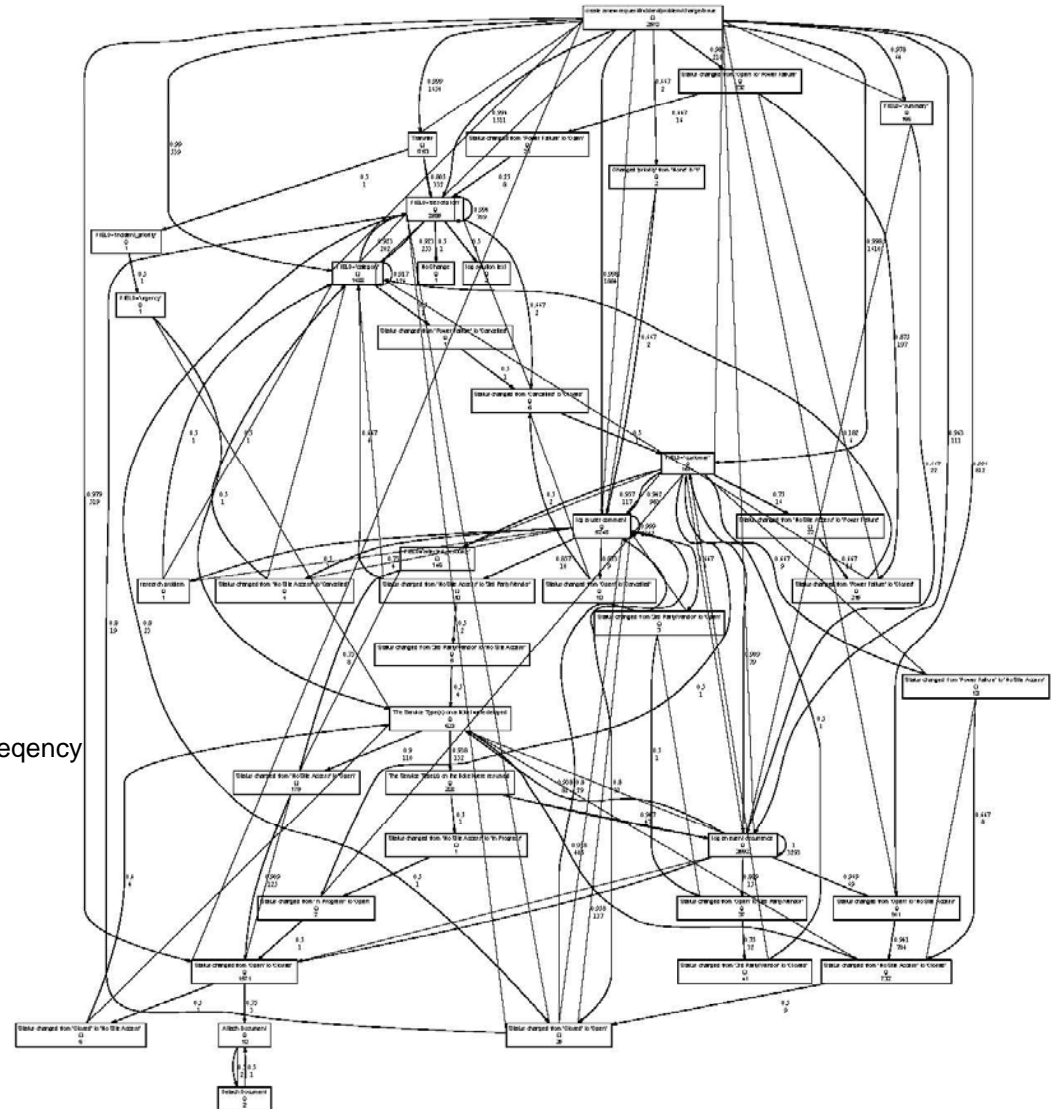
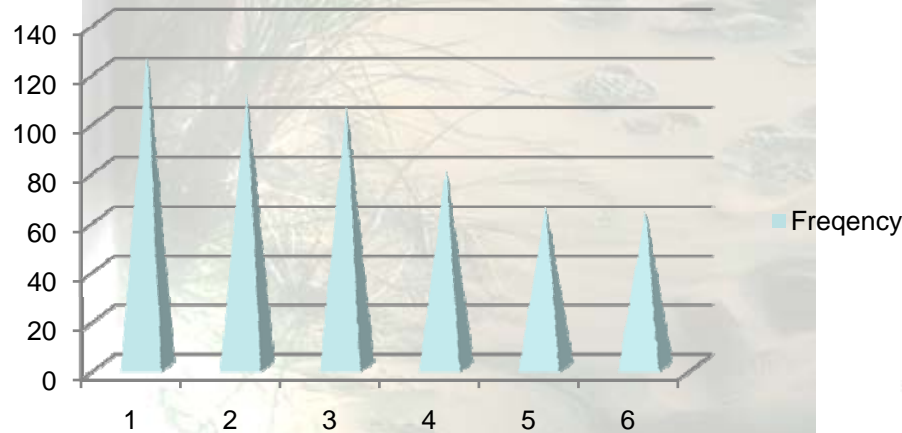
Cpk = 1327 hours



Process Model

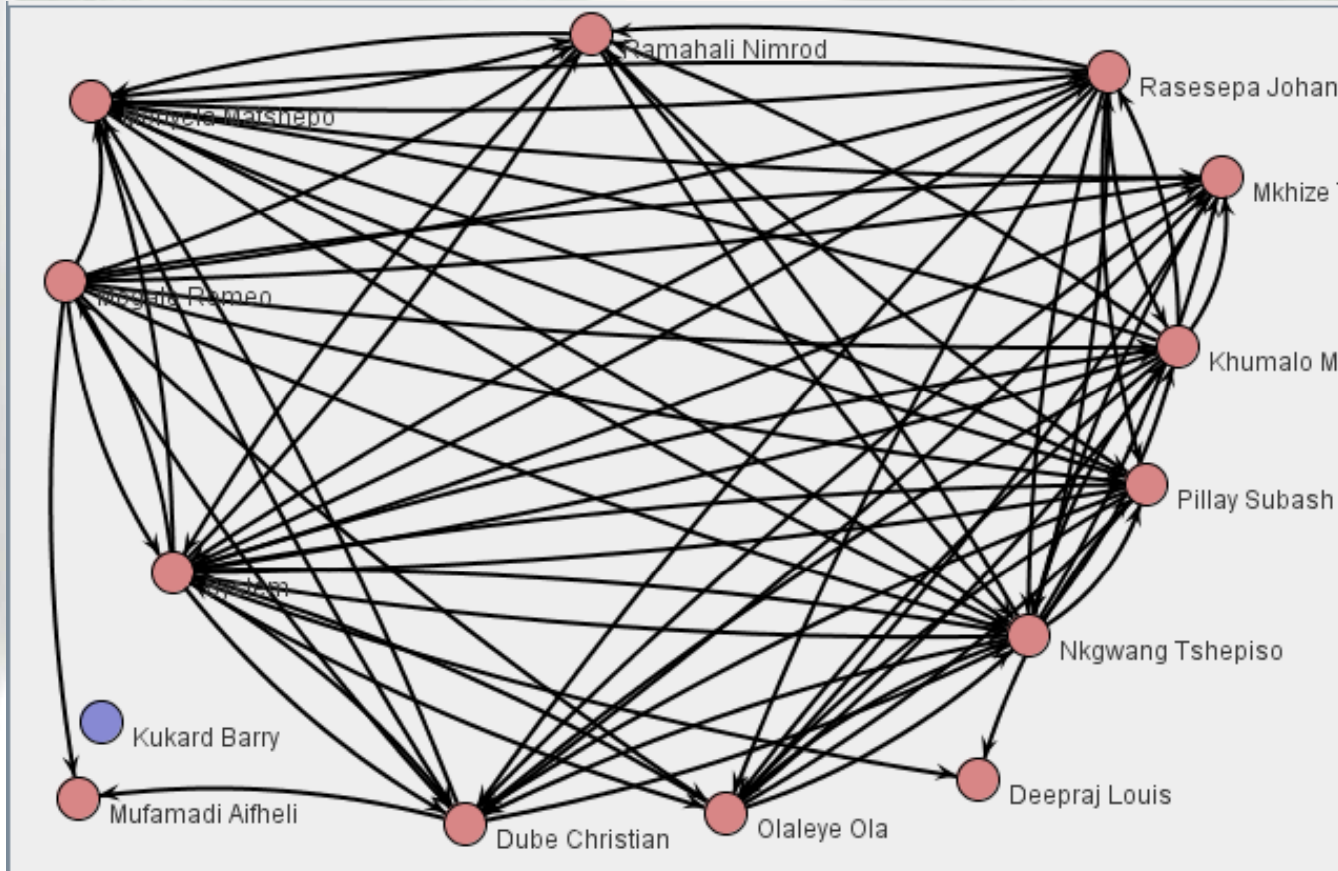
Recorded 1100 different patterns through the process Model.
Pareto's 80

Pareto's 80/20



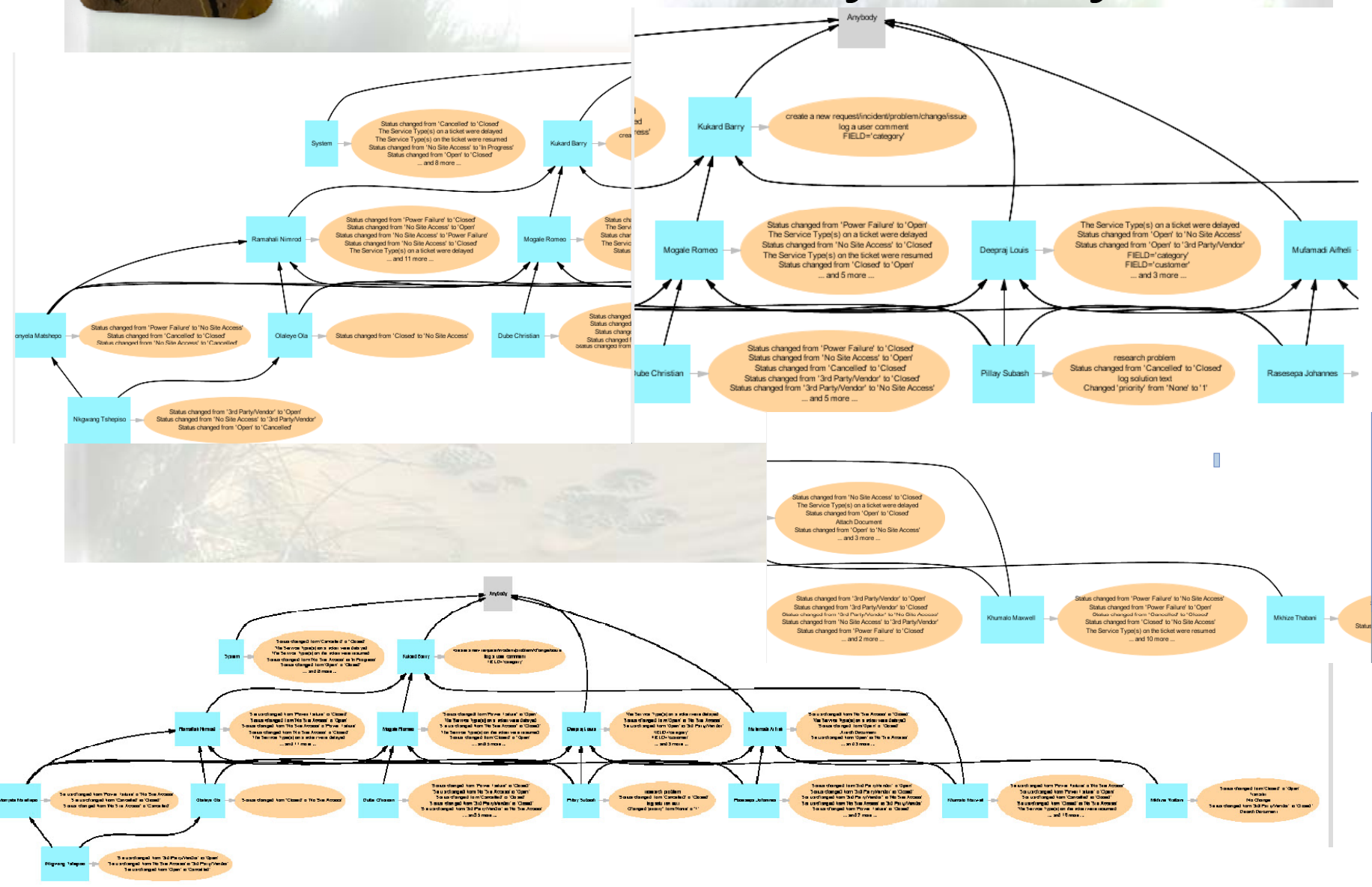


Process Communication





Role Hierarchy Analysis





Performance Analysis

Process information:

Total number selected:

2573 cases

Number fitting:

0 cases

Arrival rate:

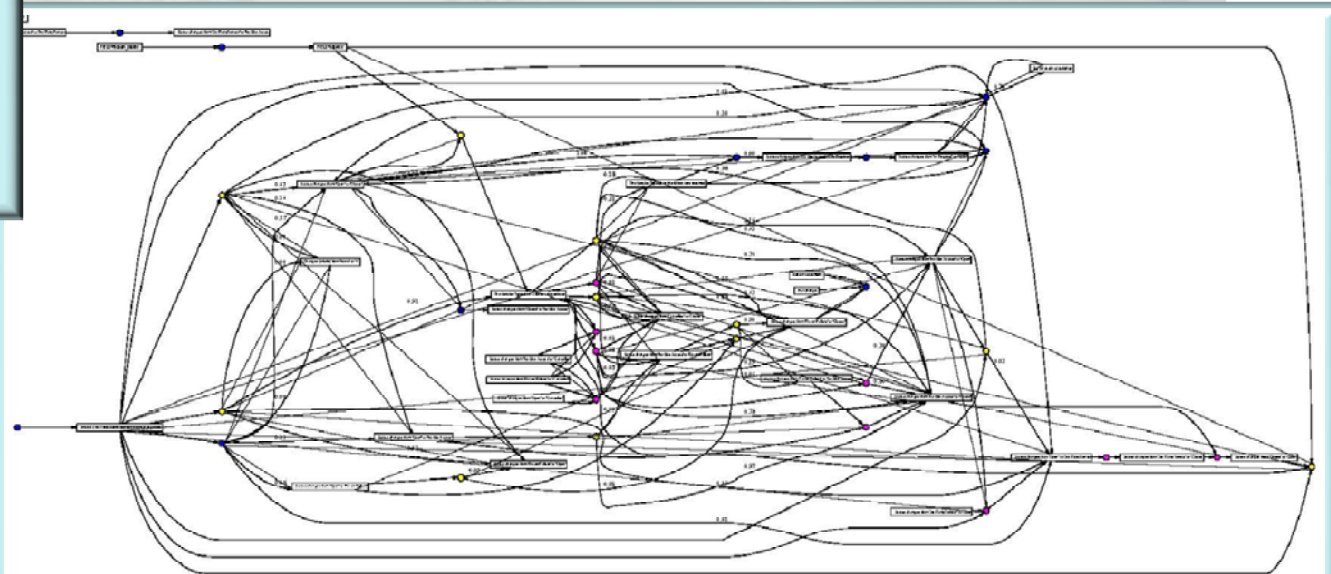
0.84 cases per hour

	Throughput time ...
avg	22.78
min	0.0
max	1852.27
stdev	66.34
fast 25.00% (643)	0.6
slow 25.00%(643)	77.51
normal 50.00%(1287)	6.53

9 Bottlenecks in the overall process where process waiting time can be > 21 hours

11 Bottlenecks in the overall process where process waiting time can be $> 4 < 21$ hours

11 Points in the overall process where process waiting time can be < 4

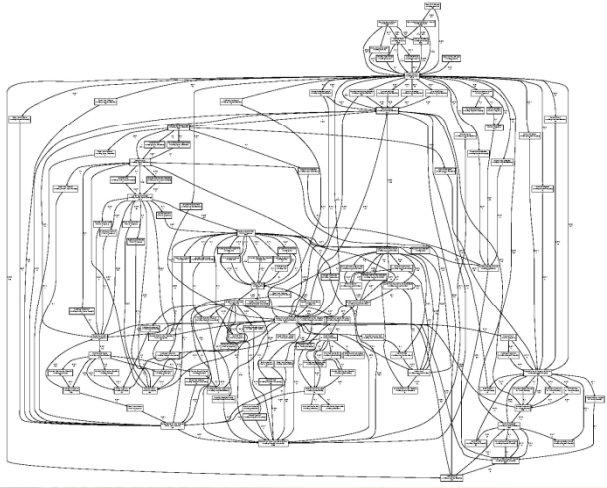




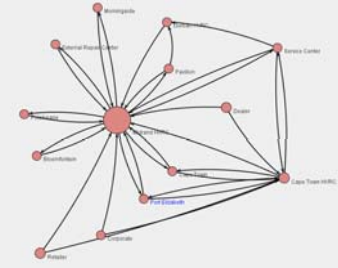
Performance Analysis

- Results for the first level analysis to note:
 - Number of events per case is high (441).
 - The process model shows cases being closed and then re-opened (quality of repairs?)
 - Social network shows that everybody does everything
 - roles and responsibilities might not be clear as continual hand-over takes place.
 - Without knowing context, this process is most probably overstaffed wrt to FTE and volume of cases being dealt with (15 FTE's versus 1 call per hour).

Rather than trying to map a process, we can ask the questions of..



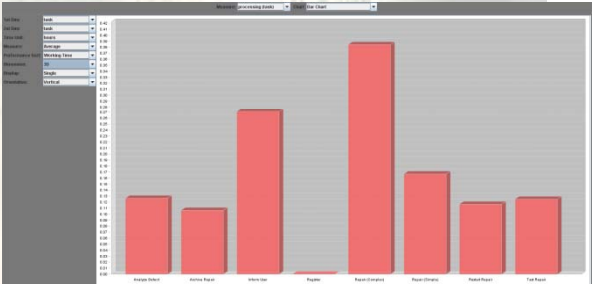
What does the process flows look like ?



Who is responsible for what work ?

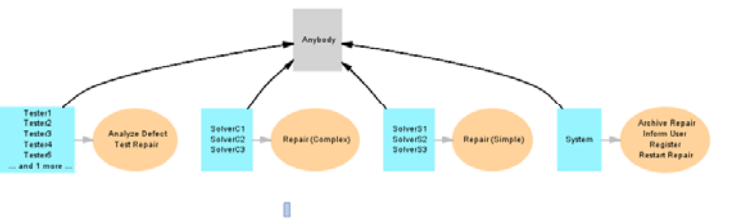
What communication flows make the process work ?

Do people follow the standard process – what are the deviations ?

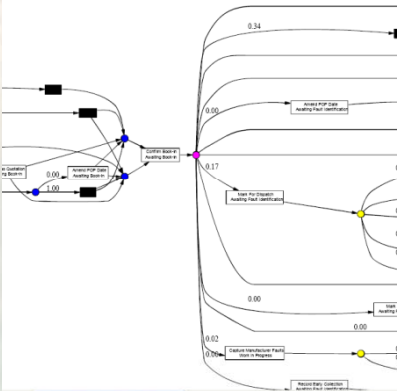


What decision rules are important ?, Are the followed consistently ?

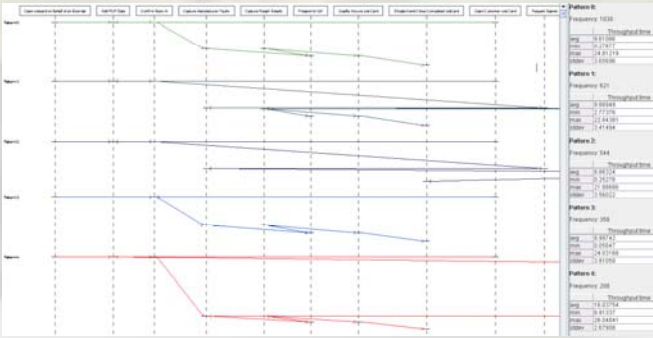
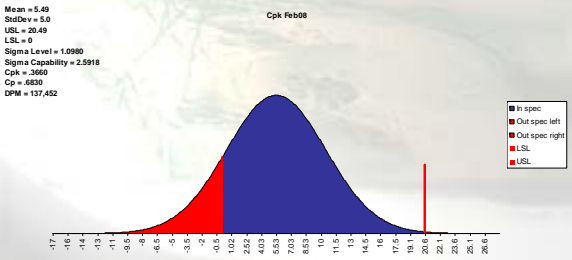
What content is being used ? How does it flow in the process ?



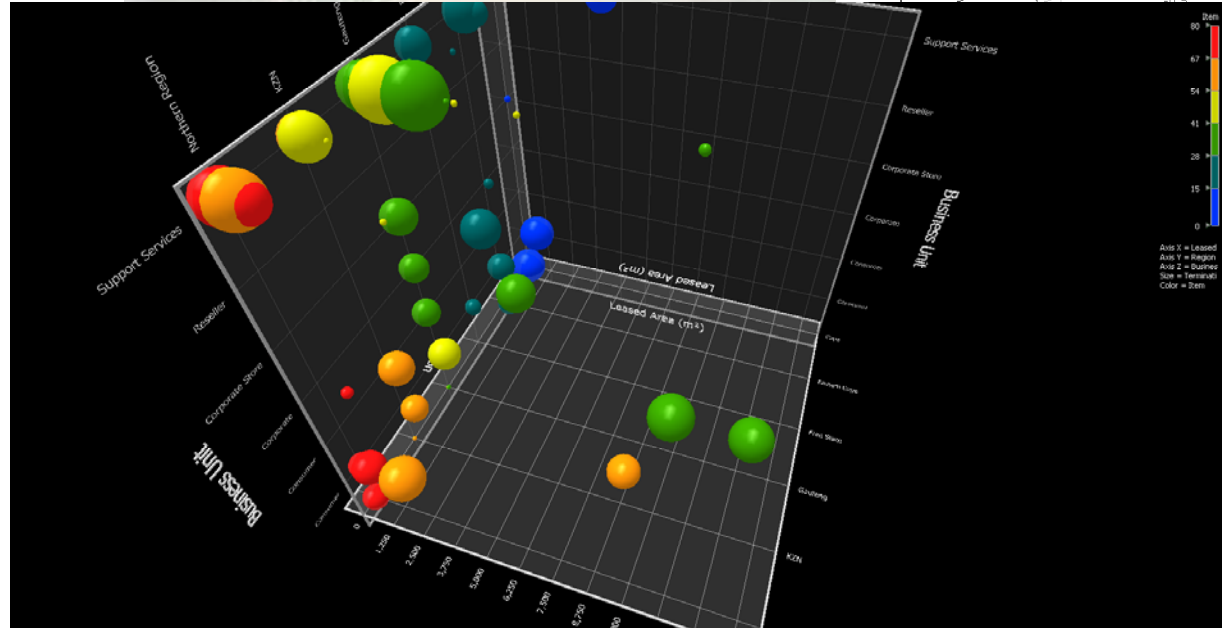
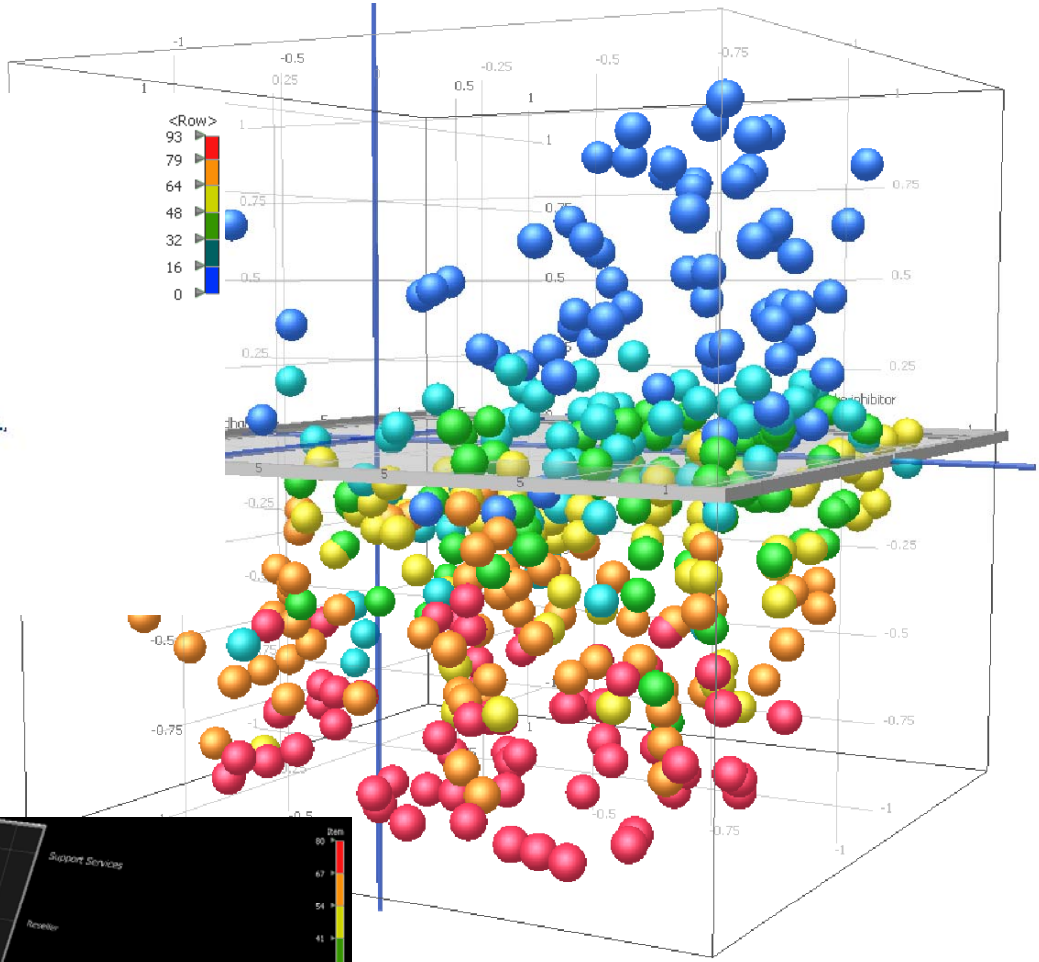
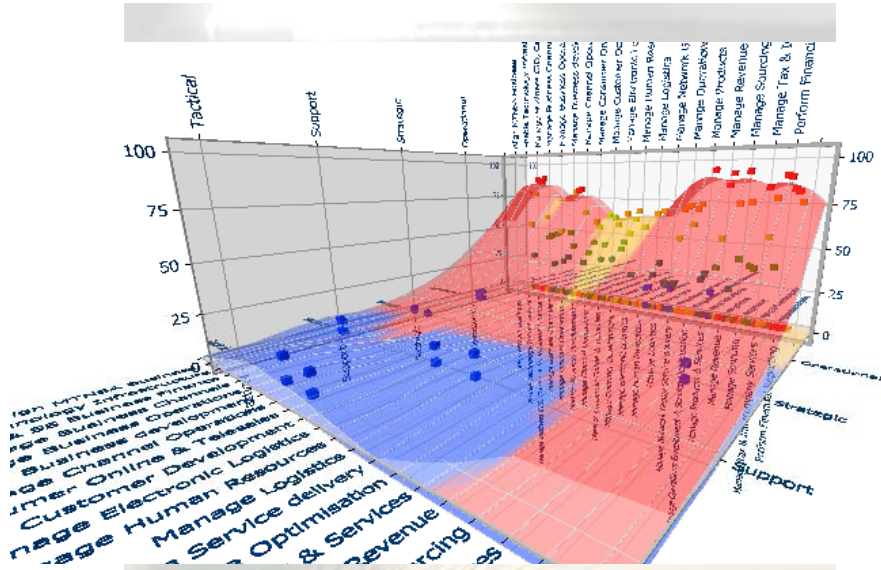
What are the most frequent patterns followed our processes ?



What is the process capability ?



Where are the bottlenecks in the process ?





THANK YOU



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