Workforce Planning in a Digital World

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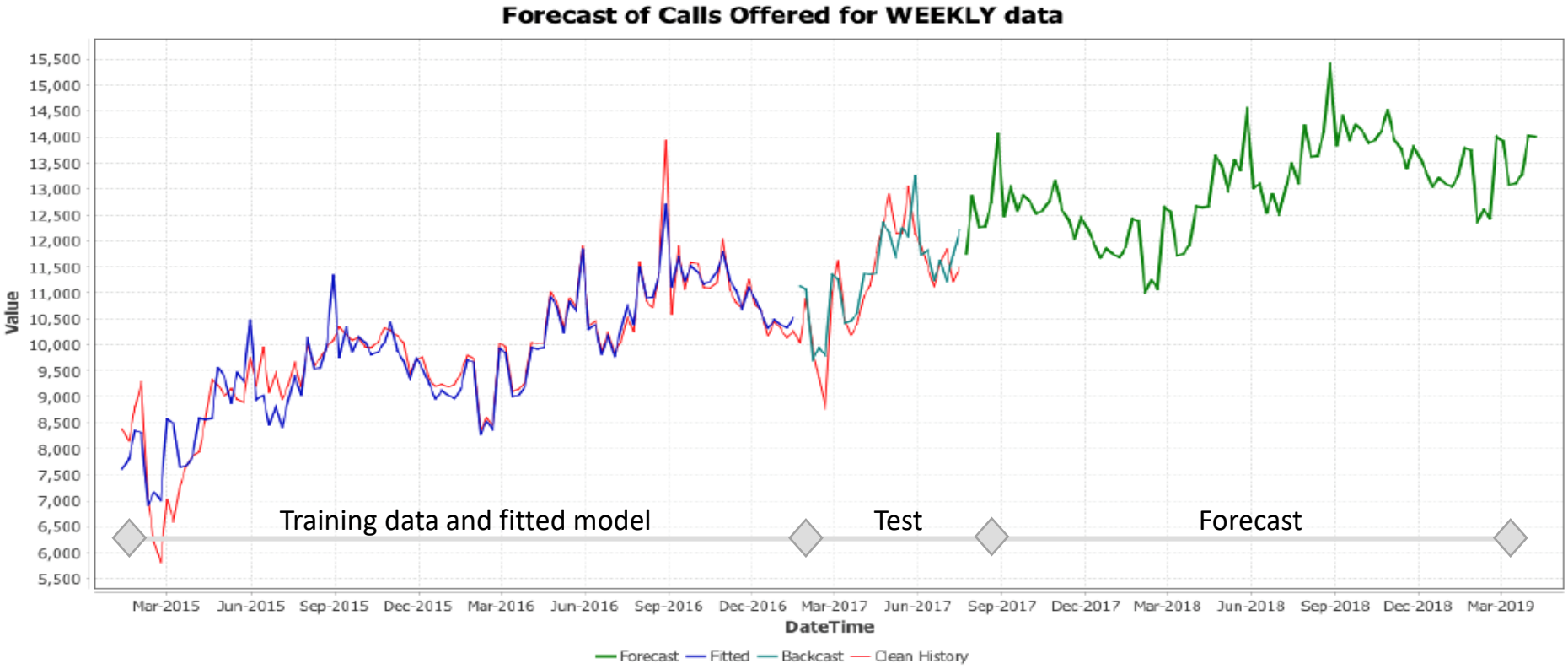
GENESYS

Today we'll discuss

- How do we (mechanically) put together a multi-channel plan?
  - Data gathering
  - What to forecast
  - Important metrics
  - Math techniques to analyze these more complex problems
- Should we cross utilize our different workgroups?

In the last episode…

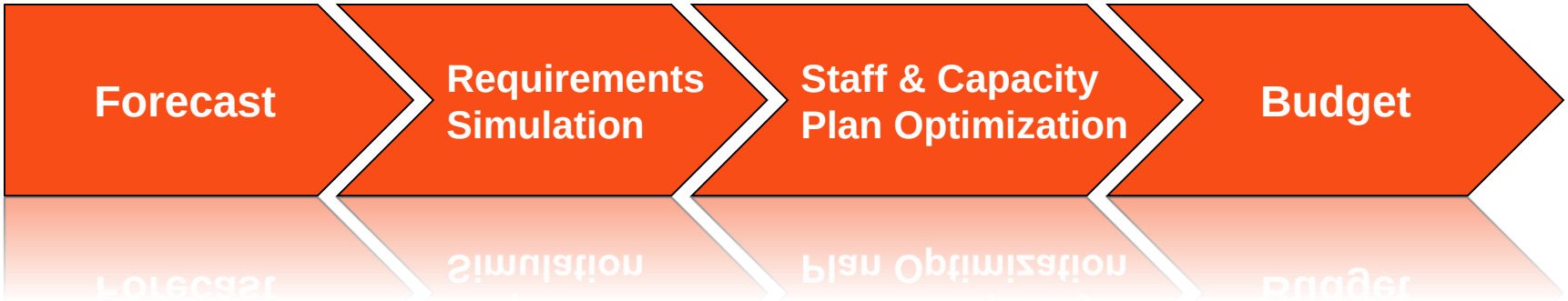


What is Workforce Management and Planning?

- The art of getting the *right number* of people at the *right time* to achieve service goals
- In order to do this well, we must accurately:
  1. Predict the number of contacts (forecasting)
  2. Determine how many people are needed (modeling)
  3. Schedule *and hire* them efficiently (optimization)

What do (WFM and) strategic planning systems/processes do?

Strategic planning systems provide four basic functions. They help to:



Determine the center resource plan and budget that maintains the (appropriately) best service standard at the most efficient cost *over time*.

Strategic planning is *big picture*

- It includes determining what types of contacts to service
- *It includes matching business functions and channels to segments of customers*
- *It includes staffing each channel appropriately*
- It includes determining what service standards are right for each of your contact types
- It includes planning where (which centers and staff types) and when (which weeks) to hire your phone agents
- It includes determining a long term hiring versus overtime policy
- It includes determining how many centers are optimal for your network
- It includes determining annual or multi-year budgets *and budget priorities*

Your strategic planning process is your best big-picture, decision-making device

Our (Analytic) Life is Getting Harder…

On an Inbound Call

Answering Emails

Arranging an Appointment at a Branch Office

In Three Chat Sessions

Processing Fax Reports

Making an Outbound Call

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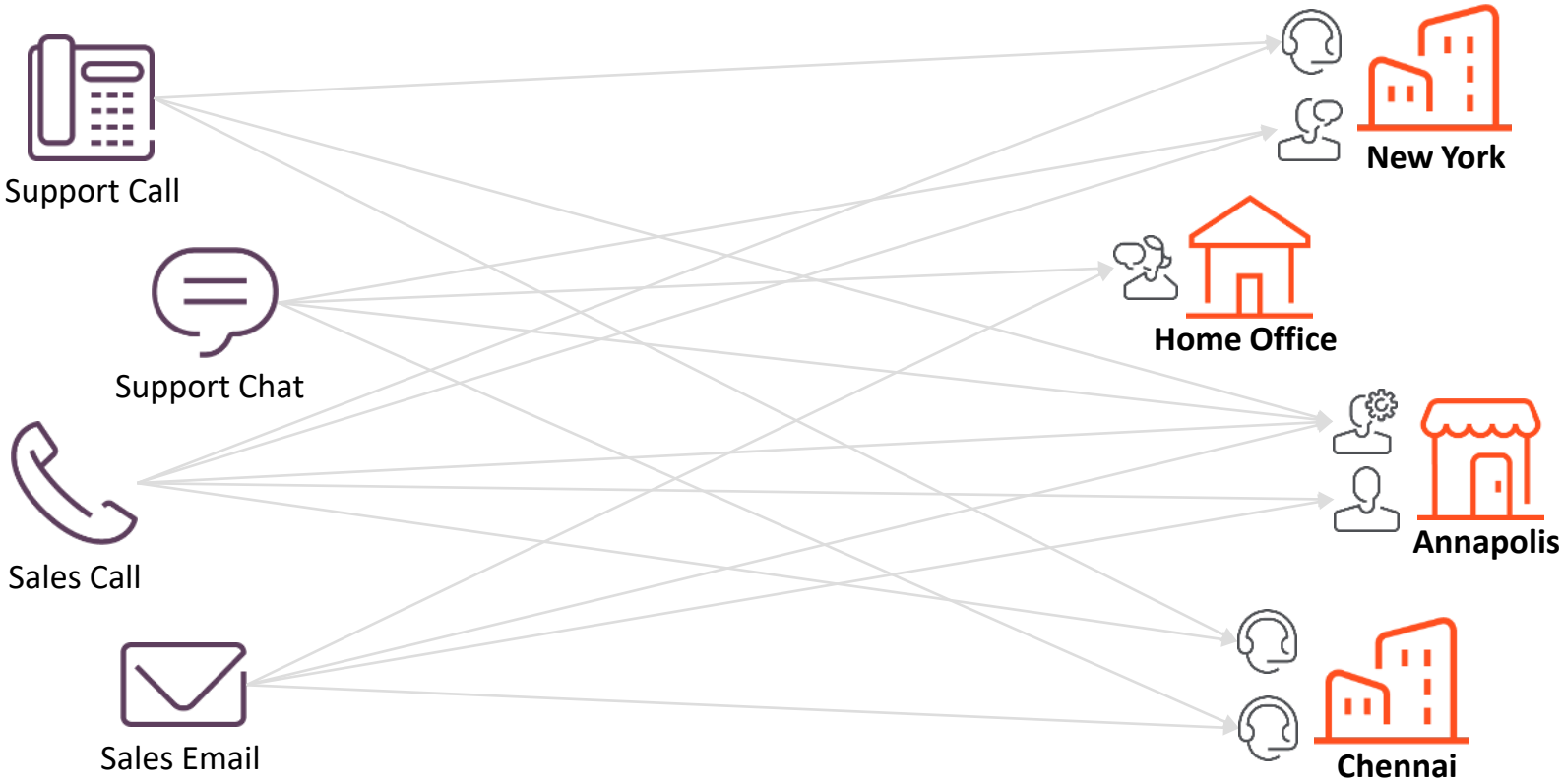
Call Centers Are Complex



Basic things we need to figure out in this more complex environment

1. How do we (mechanically) put together a multi-channel plan?
    - How do we gather reliable data? In the absence of data, what do we do?
    - What should we forecast?
    - What service standards should we use?
    - What math/methods do we use (both single skill and multi-channel/skill) to determine the capacity plans?
2. Does it really make sense to cross utilize our different workgroups?

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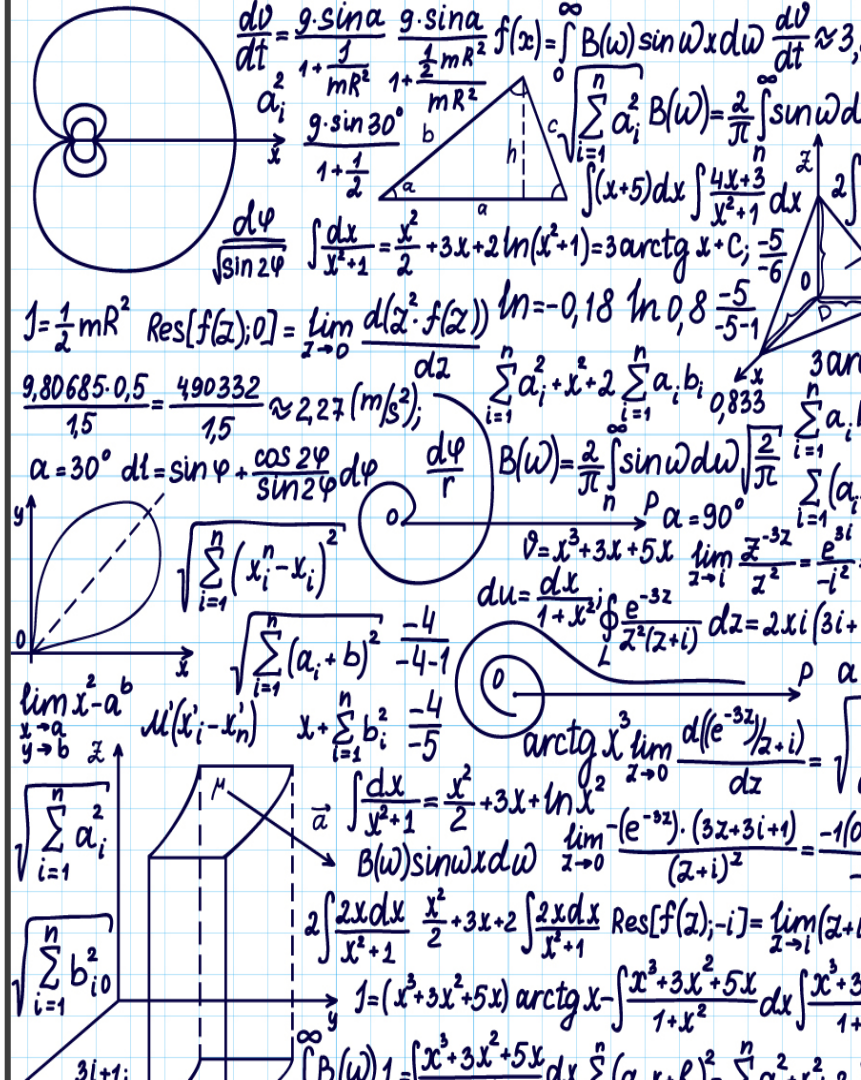


Gathering Data

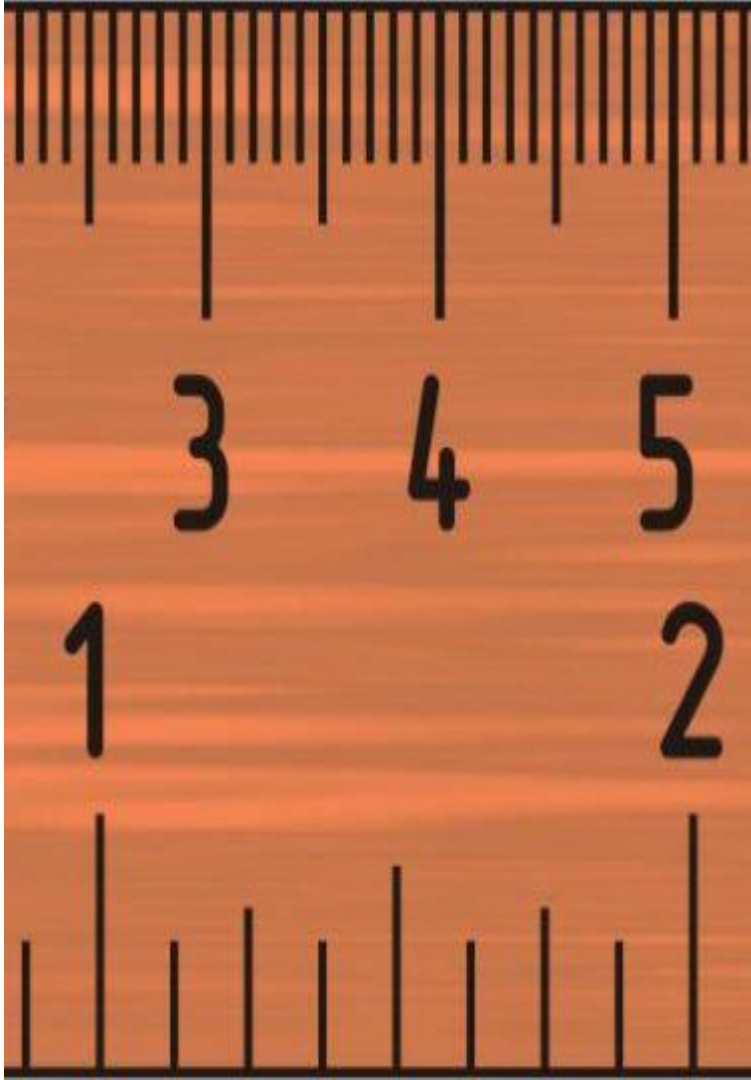
- Automatic is ideal
  - Ideal, but not pain free (understanding your ACD handle time data even requires investigative work!)
  - Systems for gathering data for chat/email/IM are available- our experience is that data gathering with these systems are hit and miss
  - Case management systems have inherent data issues (elapsed time of casework is not as relevant as individual handle times)
- In the absence of automatic data- using work study data developed into a work standard is OK
  - Work standards can be “negotiated” with the operation and agreed upon
  - Work standards can be checked (with many boring studies… hire college kids)
  - Work standard approach will tend to overstaff (standards tend to move toward “worst case” since they are often negotiated after the fact)

Common metrics for all contact types

Data to gather, regardless of the contact type

- Wage rates and financials
- Each shrinkage category (sick time, FMLA, training, AWOP, …)
- Attrition
- All components of AHT

… at the appropriate level of detail (usually by staff type and location)



Important metrics for immediate work (phone, chat)

- Inbound (phone) contacts
  - Calls offered (staffing determines calls handled)
  - Average handle time (and components)
  - Average handle time while learning (“learning curve”)
- Inbound Chat/IM
  - Contacts offered
  - AHT associated with the number of concurrent sessions (relationship between concurrent chats and handle times)
- Staffing Goal: ASA, Service Level, Abandon Rate, Agent Occupancy, Max Concurrency

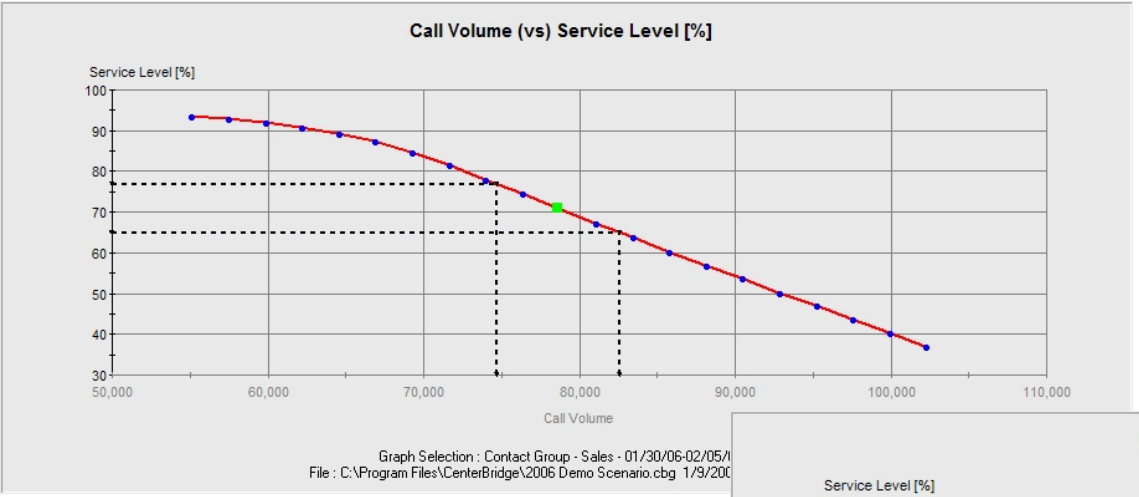
Important metrics for deferred work (email, back office)

- Email
  - Contacts offered
  - Handle time
- Back Office Processing
  - Work items to be processed (new flows at various stages in the process- complete demand mapping)
  - Workflows and expected flow distributions
  - Handle times and their distribution at each step in the process
- Staffing Goal: ASA, Service Level, Backlog, Agent Occupancy, Throughput

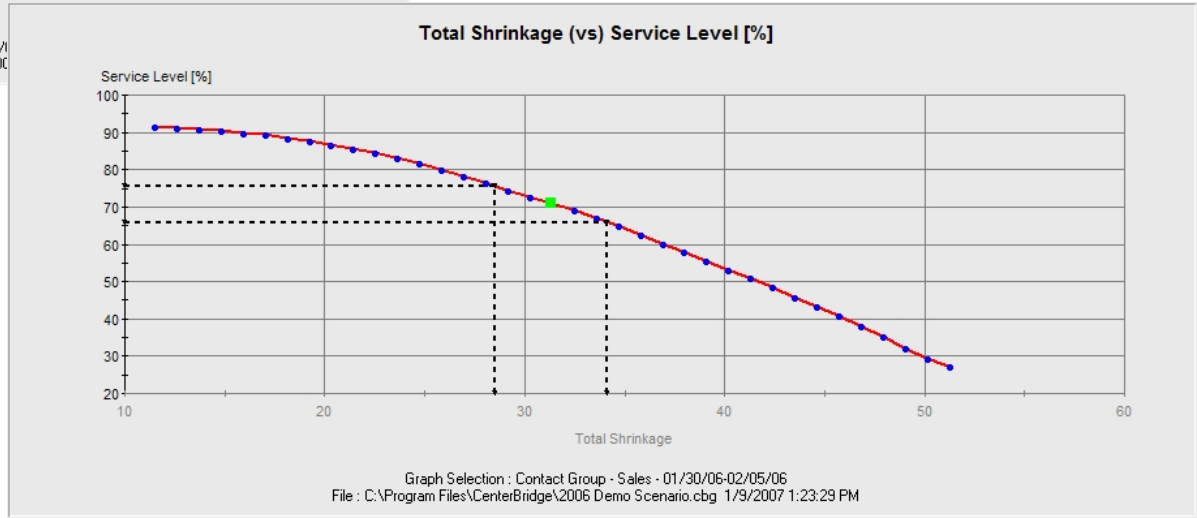
Important metrics for flexible work (outbound)

- Outbound Contact Center
  - List size
  - P(Right Party Contact, Wrong Party Contact, Left Message | Attempt) – by time of day per list queue
  - P(Contact, Attempt 1, … Attempt N) – diminishing returns to calling
  - AHT RPC, AHT WPC, AHT LM
- Staffing Goal: Number of contacts, Sales/Collections, Intensity (calls per hour)

Regardless of the contact type: forecast everything!



Here, an error rate of 5% on call volume is ***equal*** to an error rate of 7% on shrinkage!



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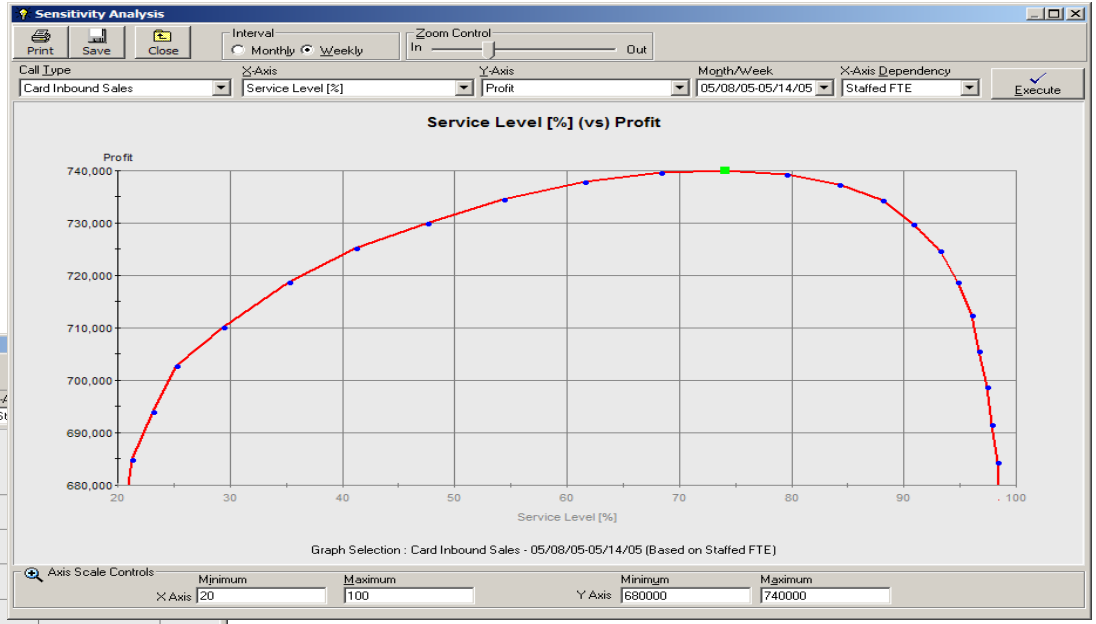
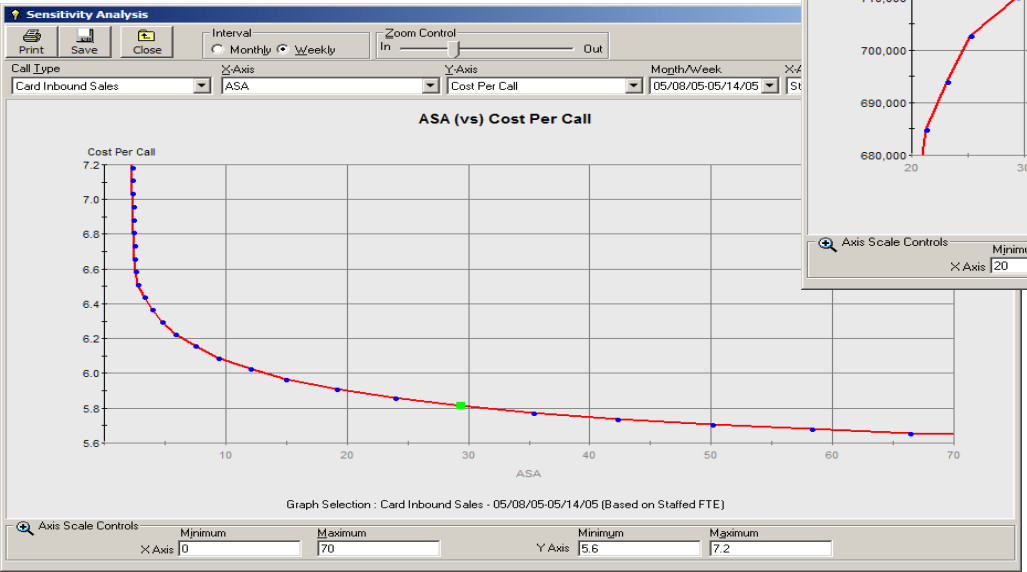
Service goals… how should we pick them?

- “Standard” service goals are evolving for each channel and contact type
- We strongly feel that this should be rigorously analyzed for each company and each contact type
- Don’t rely on consensus



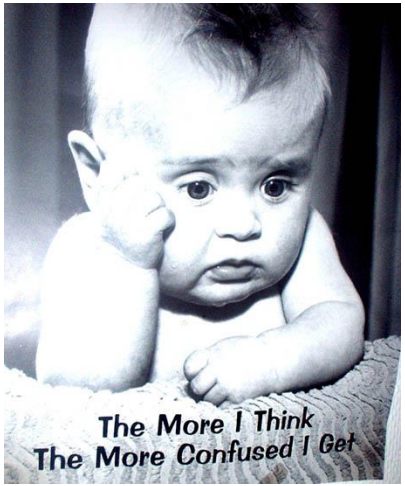


Two Types of Capacity Models are Required for Each Channel Type

- Descriptive (Simulation) Modeling
  - Serves to determine “requirements”
  - Serves to evaluate different what-if scenarios
  - Serves to determine the relationship between demand (e.g. emails offered, outbound list size, claims to be processed, handle times), staff, and performance (e.g. abandons, service level, right party contacts,
- Staff Optimization Modeling
  - Serves to determine when, where, and which staff group to hire
  - Automates the evaluation of new scenarios and enables “instant budgeting”

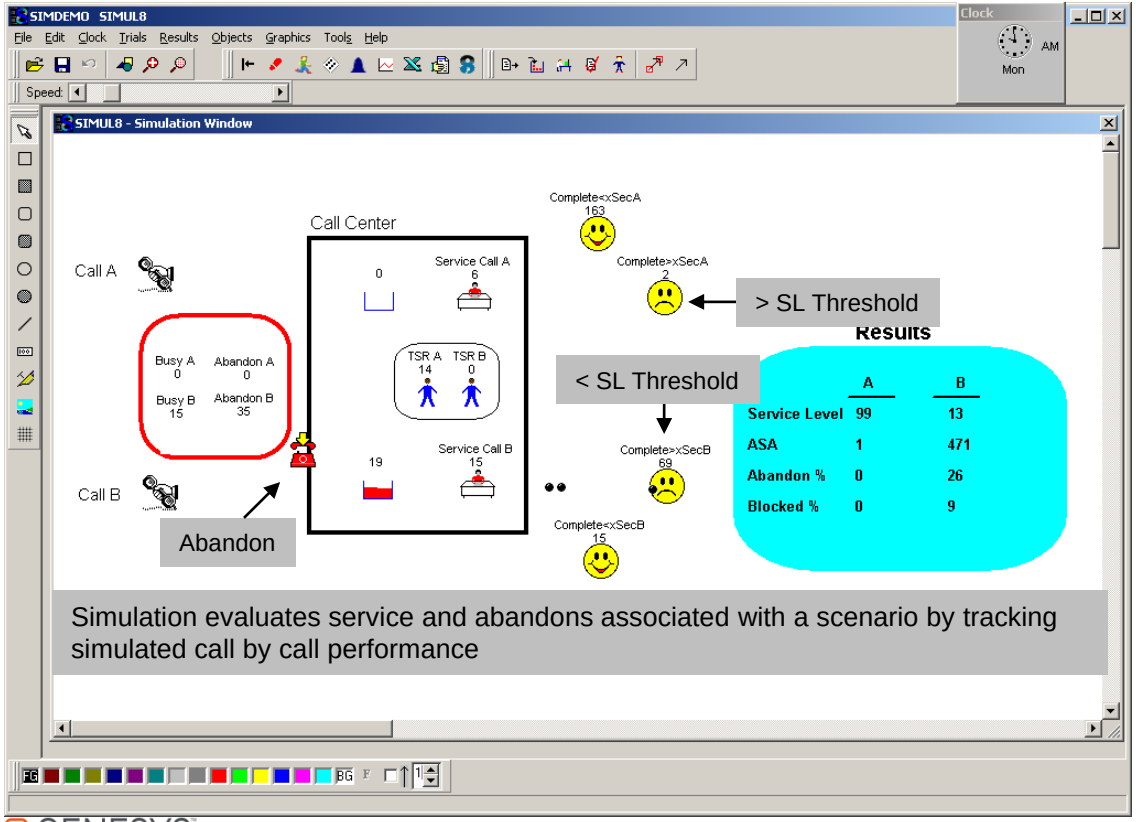
Notes on the new center capacity planning paradigm

- The problem has shifted so much, the old ways of analyzing a center (while were already outdated) simply have no application
- The “new math” has not been settled! This is a new problem and the R&D has not been finished yet!
- Multi-Channel Complicates the Picture
  - As the degrees of freedom increase, so does the complexity of the planning problem
  - Our standard capacity modeling approach does not apply anymore



It is the infancy of multi-channel analytics….

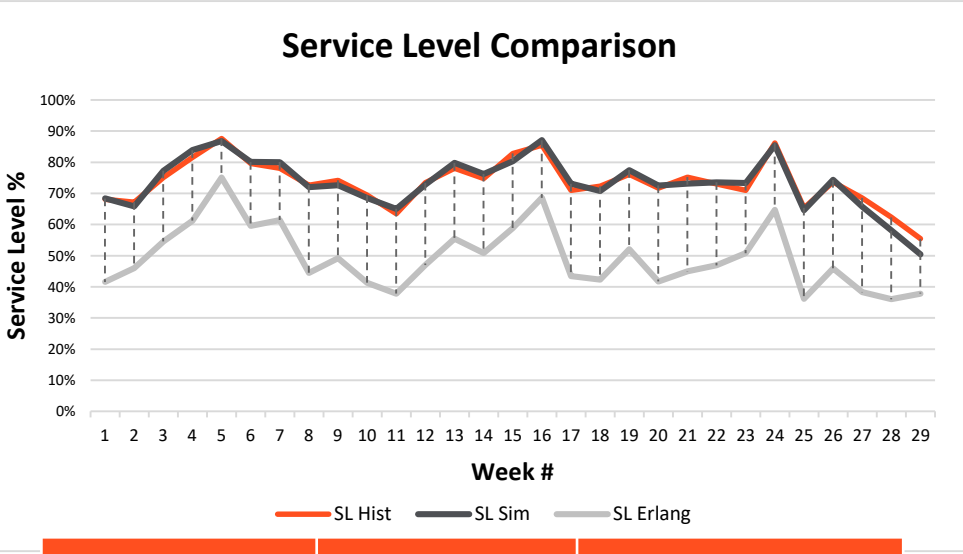
Inbound (Chat or Call) Simulation



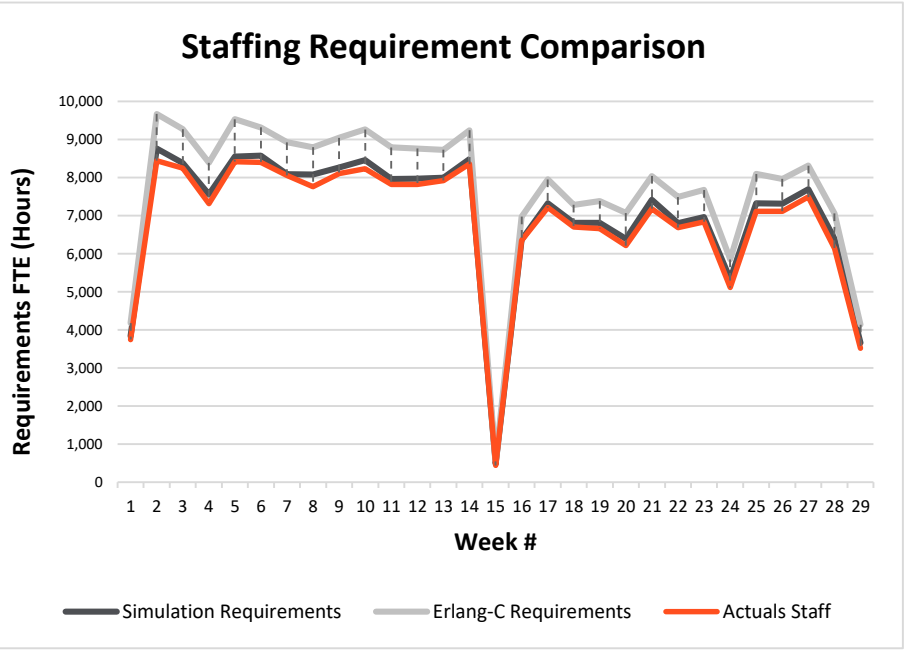
The models determine the amount of staff required to hit service

- Erlang C is problematic for inbound calls (not accurate)
- Erlang A, in general, only works on small areas of the demand curve
- Recent research in using multiple models (several Erlang A's plus an Erlang C, for instance) and solving the ensemble model shows promise
- Custom "Erlang" models with patience drawn from ACD data is very accurate
- Discrete-event simulation models (left) are very accurate, but slow

Validated Predictions Models vs. Erlang vs. Actuals



Call Type	Avg. Error Sim	Avg. Error Erlang
Loans	0.01%	27.34%
Member Services	-1.02%	30.91%
Preferred Services	2.69%	21.14%
Retail	-0.09%	-0.93%
Credit Card	-4.31%	5.92%
Auto Insurance	-1.90%	0.31%
Summary	**-0.77%**	**14.12%**



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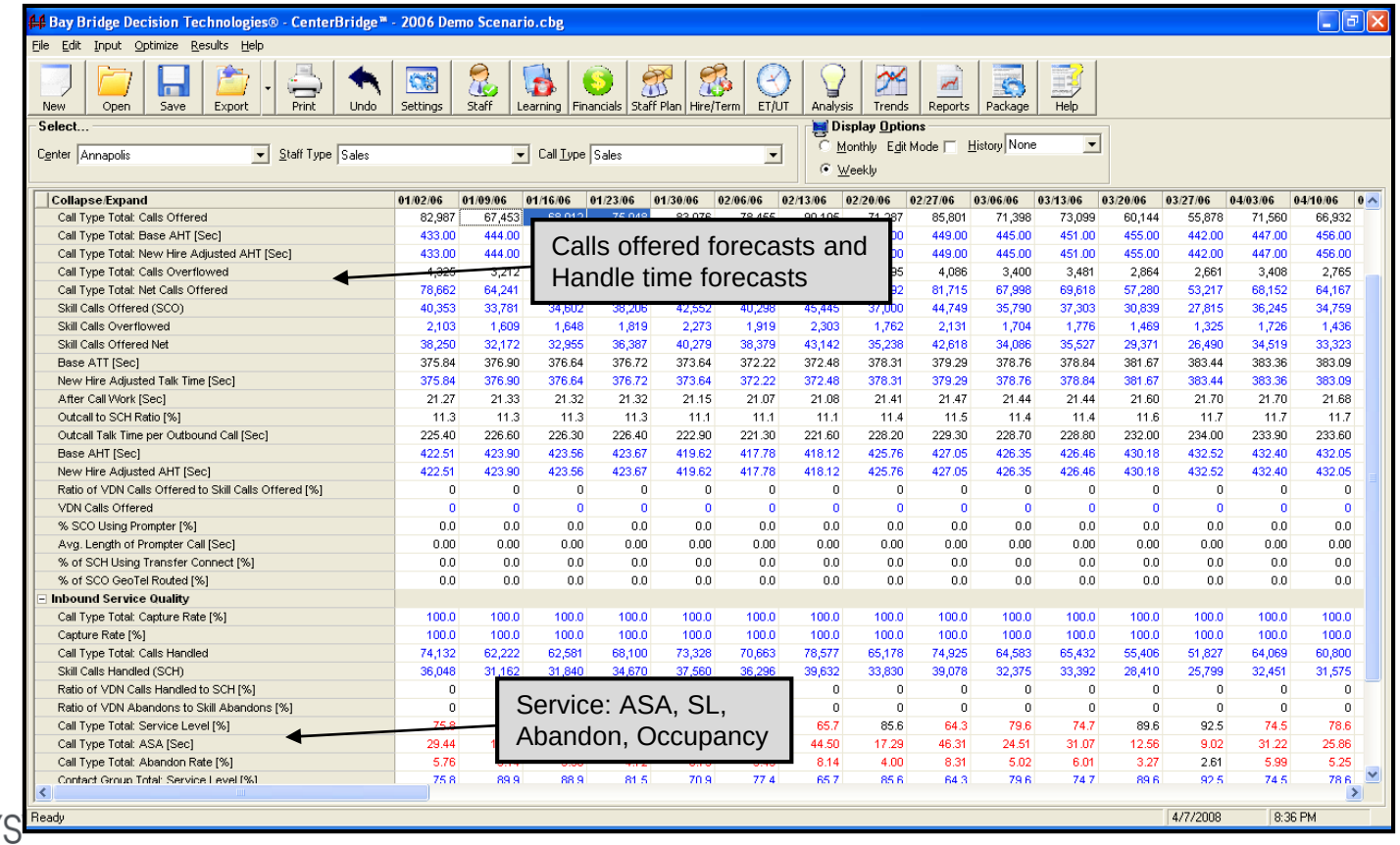
Common outputs metrics for all contact types

Data to determine, regardless of the contact type

- Agent occupancy (or busy-ness)
- Contacts (completed) per week, per day
- Concurrency expected
- AHT
  - For contact types with concurrency (chat) or diminishing effectiveness (outbound) this is variable
  - For centers with a lot of new hires, AHT's will increase!
- Sales expected, costs, cost per contact

… at the appropriate level of detail (usually by staff type and location)

Inbound Capacity Model



Collapse/Expand	01/02/06	01/09/06	01/16/06	01/23/06	01/30/06	02/06/06	02/13/06	02/20/06	02/27/06	03/06/06	03/13/06	03/20/06	03/27/06	04/03/06	04/10/06
Call Type Total: Calls Offered	82,987	67,453							85,801	71,398	73,099	60,144	55,878	71,560	66,932
Call Type Total: Base AHT [Sec]	433.00	444.00							449.00	445.00	451.00	455.00	442.00	447.00	456.00
Call Type Total: New Hire Adjusted AHT [Sec]	433.00	444.00							449.00	445.00	451.00	455.00	442.00	447.00	456.00
Call Type Total: Calls Overflowed	4,325	3,212							4,086	3,400	3,481	2,864	2,661	3,408	2,765
Call Type Total: Net Calls Offered	78,662	64,241							81,715	67,998	69,618	57,280	53,217	68,152	64,167
Skill Calls Offered (SCO)	40,353	33,781	34,602	38,206	42,552	40,298	45,445	37,000	44,749	35,790	37,303	30,839	27,815	36,245	34,759
Skill Calls Overflowed	2,103	1,609	1,648	1,819	2,273	1,919	2,303	1,762	2,131	1,704	1,776	1,469	1,325	1,726	1,436
Skill Calls Offered Net	38,250	32,172	32,955	36,387	40,279	38,379	43,142	35,238	42,618	34,086	35,527	29,371	26,490	34,519	33,323
Base ATT [Sec]	375.84	376.90	376.64	376.72	373.64	372.22	372.48	378.31	379.29	378.76	378.84	381.67	383.44	383.36	383.09
New Hire Adjusted Talk Time [Sec]	375.84	376.90	376.64	376.72	373.64	372.22	372.48	378.31	379.29	378.76	378.84	381.67	383.44	383.36	383.09
After Call Work [Sec]	21.27	21.33	21.32	21.32	21.15	21.07	21.08	21.41	21.47	21.44	21.44	21.60	21.70	21.70	21.68
Outcall to SCH Ratio [%]	11.3	11.3	11.3	11.3	11.1	11.1	11.1	11.4	11.5	11.4	11.4	11.6	11.7	11.7	11.7
Outcall Talk Time per Outbound Call [Sec]	225.40	226.60	226.30	226.40	222.90	221.30	221.60	228.20	229.30	228.70	228.80	232.00	234.00	233.90	233.60
Base AHT [Sec]	422.51	423.90	423.56	423.67	419.62	417.78	418.12	425.76	427.05	426.35	426.46	430.18	432.52	432.40	432.05
New Hire Adjusted AHT [Sec]	422.51	423.90	423.56	423.67	419.62	417.78	418.12	425.76	427.05	426.35	426.46	430.18	432.52	432.40	432.05
Ratio of VDN Calls Offered to Skill Calls Offered [%]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VDN Calls Offered	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% SCO Using Prompter [%]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Avg. Length of Prompter Call [Sec]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% of SCH Using Transfer Connect [%]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% of SCO GeoTel Routed [%]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Inbound Service Quality															
Call Type Total: Capture Rate [%]	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	100.0
Capture Rate [%]	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	100.0
Call Type Total: Calls Handled	74,132	62,222	62,581	68,100	73,328	70,663	78,577	65,178	74,925	64,583	65,432	55,406	51,827	64,069	60,800
Skill Calls Handled (SCH)	36,048	31,162	31,840	34,670	37,560	36,296	39,632	33,830	39,078	32,375	33,392	28,410	25,799	32,451	31,575
Ratio of VDN Calls Handled to SCH [%]	0						0	0	0	0	0	0	0	0	0
Ratio of VDN Abandons to Skill Abandons [%]	0						0	0	0	0	0	0	0	0	0
Call Type Total: Service Level [%]	75.8						65.7	85.6	64.3	79.6	74.7	89.6	92.5	74.5	78.6
Call Type Total: ASA [Sec]	29.44	1					44.50	17.29	46.31	24.51	31.07	12.56	9.02	31.22	25.86
Call Type Total: Abandon Rate [%]	5.76						8.14	4.00	8.31	5.02	6.01	3.27	2.61	5.99	5.25
Contact Group Total: Service Level [%]	75.8	89.9	88.9	81.5	70.9	77.4	65.7	85.6	64.3	79.6	74.7	89.6	92.5	74.5	78.6

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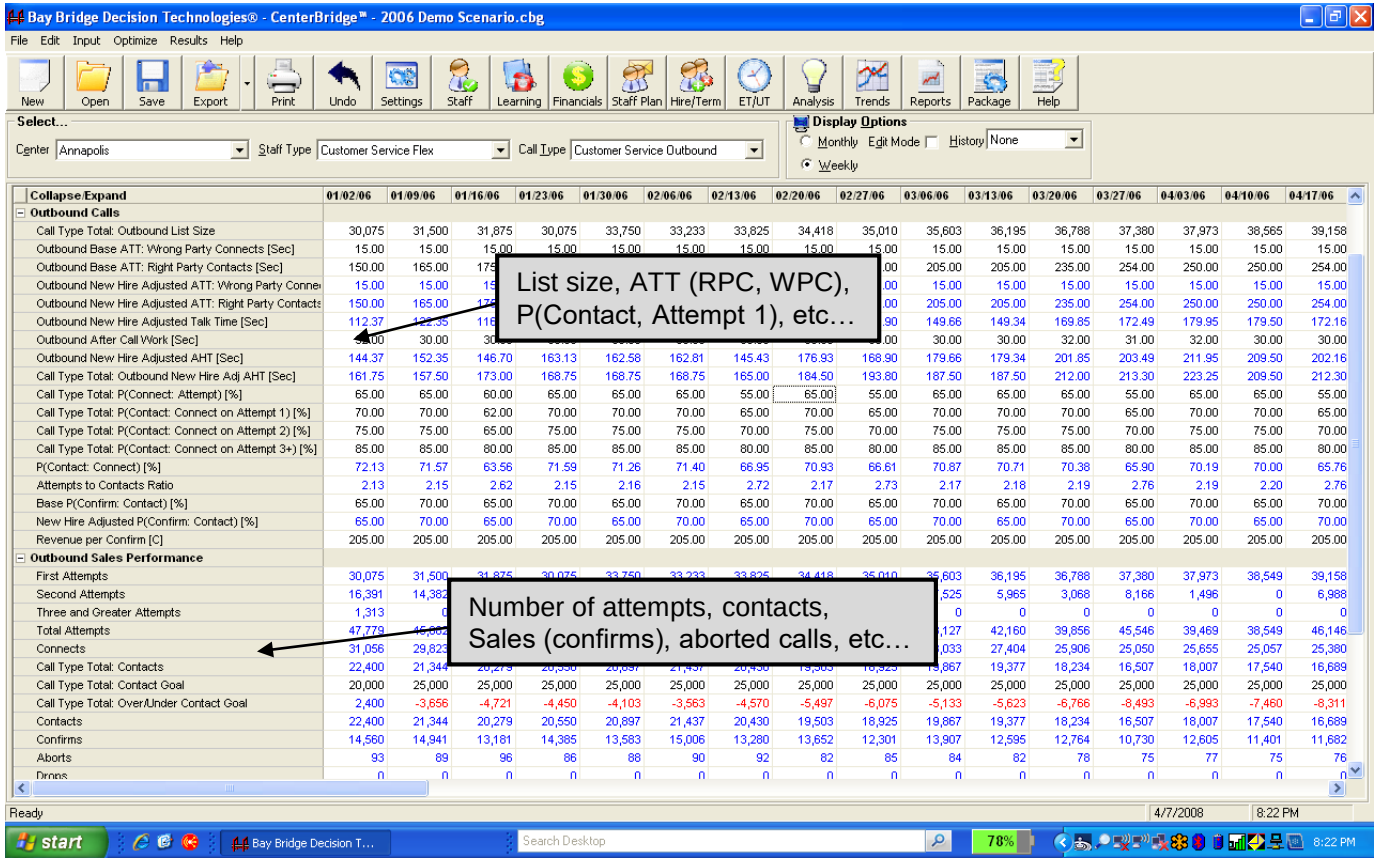
Outbound Capacity Model



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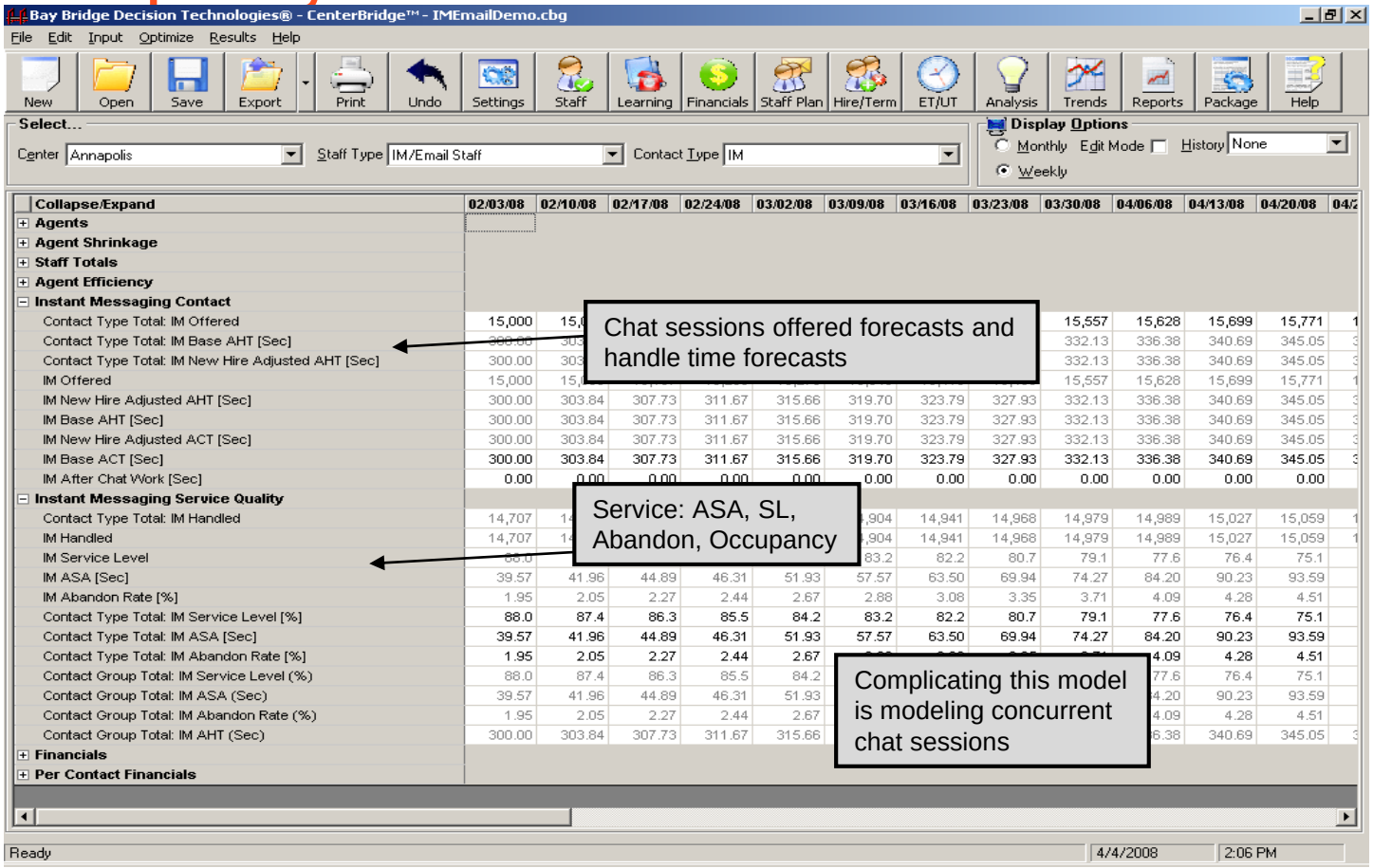
IM/Chat Capacity Model



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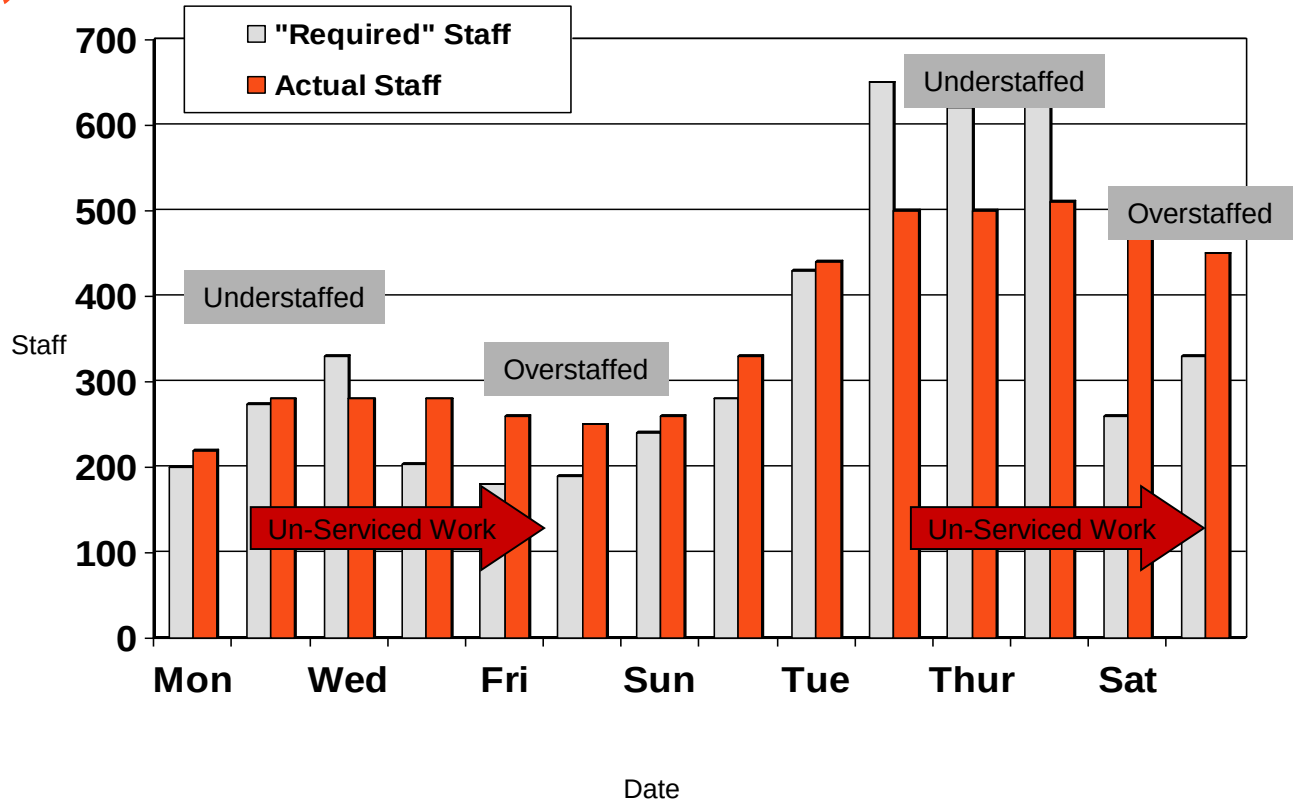
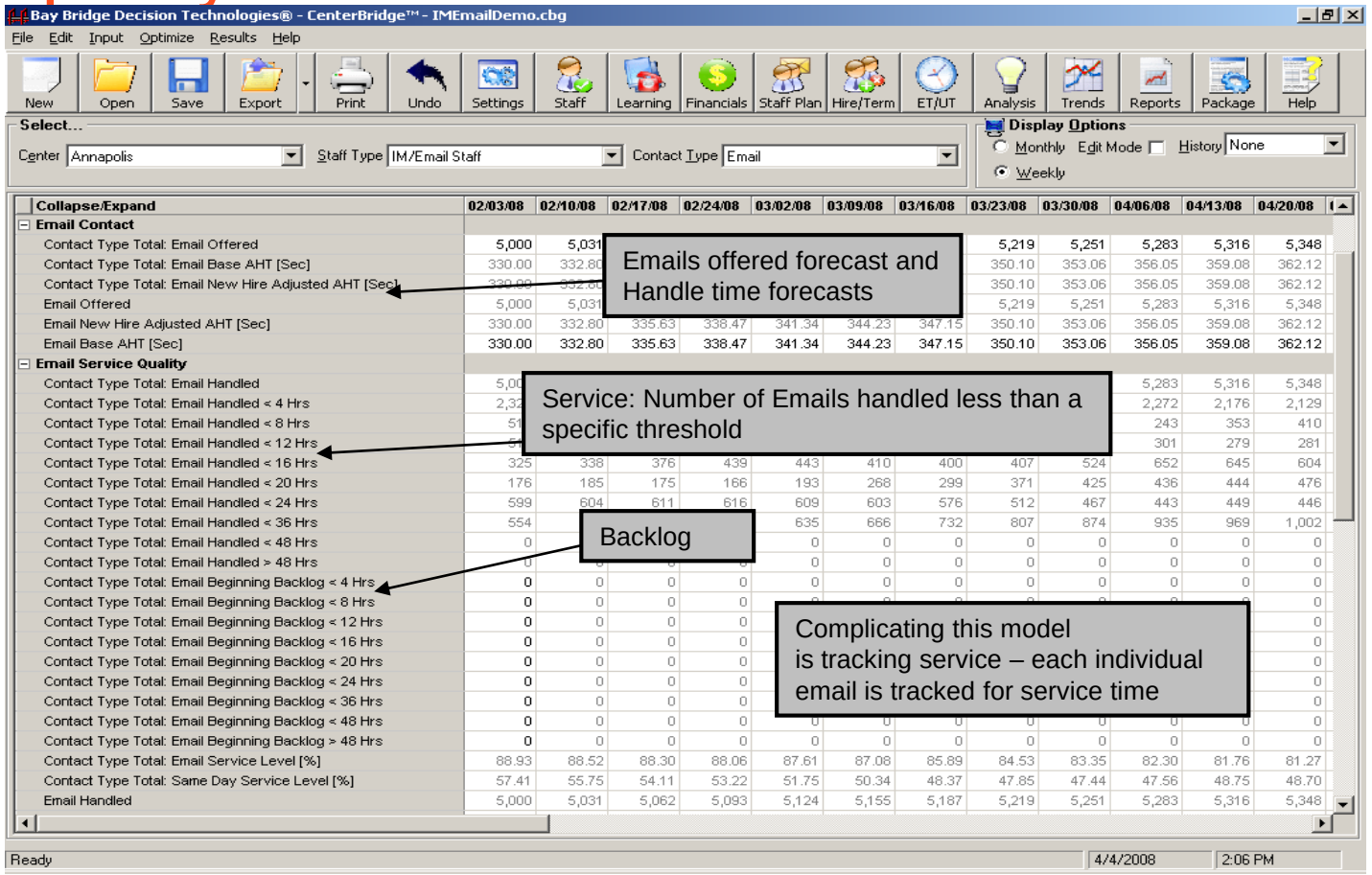
Lets discuss email and processing (work that can be deferred)



Email Capacity Model



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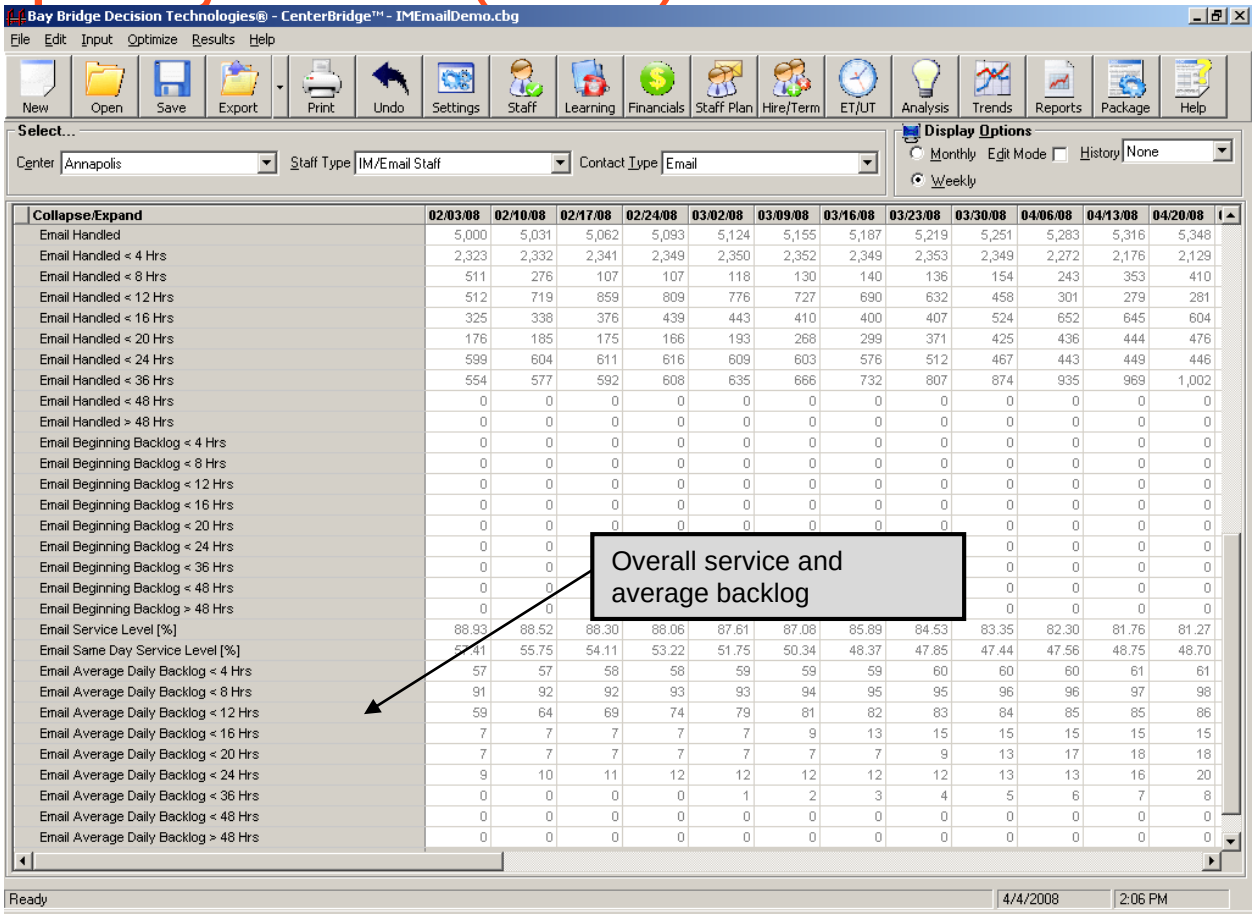
Email Capacity Model (cont.)



Collapse/Expand	02/03/08	02/10/08	02/17/08	02/24/08	03/02/08	03/09/08	03/16/08	03/23/08	03/30/08	04/06/08	04/13/08	04/20/08
Email Handled	5,000	5,031	5,062	5,093	5,124	5,155	5,187	5,219	5,251	5,283	5,316	5,348
Email Handled < 4 Hrs	2,323	2,332	2,341	2,349	2,350	2,352	2,349	2,353	2,349	2,272	2,176	2,129
Email Handled < 8 Hrs	511	276	107	107	118	130	140	136	154	243	353	410
Email Handled < 12 Hrs	512	719	859	809	776	727	690	632	458	301	279	281
Email Handled < 16 Hrs	325	338	376	439	443	410	400	407	524	652	645	604
Email Handled < 20 Hrs	176	185	175	166	193	268	299	371	425	436	444	476
Email Handled < 24 Hrs	599	604	611	616	609	603	576	512	467	443	449	446
Email Handled < 36 Hrs	554	577	592	608	635	666	732	807	874	935	969	1,002
Email Handled < 48 Hrs	0	0	0	0	0	0	0	0	0	0	0	0
Email Handled > 48 Hrs	0	0	0	0	0	0	0	0	0	0	0	0
Email Beginning Backlog < 4 Hrs	0	0	0	0	0	0	0	0	0	0	0	0
Email Beginning Backlog < 8 Hrs	0	0	0	0	0	0	0	0	0	0	0	0
Email Beginning Backlog < 12 Hrs	0	0	0	0	0	0	0	0	0	0	0	0
Email Beginning Backlog < 16 Hrs	0	0	0	0	0	0	0	0	0	0	0	0
Email Beginning Backlog < 20 Hrs	0	0	0	0	0	0	0	0	0	0	0	0
Email Beginning Backlog < 24 Hrs	0	0							0	0	0	0
Email Beginning Backlog < 36 Hrs	0	0							0	0	0	0
Email Beginning Backlog < 48 Hrs	0	0							0	0	0	0
Email Beginning Backlog > 48 Hrs	0	0							0	0	0	0
Email Service Level [%]	88.93	88.52	88.30	88.06	87.61	87.08	85.89	84.53	83.35	82.30	81.76	81.27
Email Same Day Service Level [%]	57.41	55.75	54.11	53.22	51.75	50.34	48.37	47.85	47.44	47.56	48.75	48.70
Email Average Daily Backlog < 4 Hrs	57	57	58	58	59	59	59	60	60	60	61	61
Email Average Daily Backlog < 8 Hrs	91	92	92	93	93	94	95	95	96	96	97	98
Email Average Daily Backlog < 12 Hrs	59	64	69	74	79	81	82	83	84	85	85	86
Email Average Daily Backlog < 16 Hrs	7	7	7	7	7	9	13	15	15	15	15	15
Email Average Daily Backlog < 20 Hrs	7	7	7	7	7	7	7	9	13	17	18	18
Email Average Daily Backlog < 24 Hrs	9	10	11	12	12	12	12	12	13	13	16	20
Email Average Daily Backlog < 36 Hrs	0	0	0	0	1	2	3	4	5	6	7	8
Email Average Daily Backlog < 48 Hrs	0	0	0	0	0	0	0	0	0	0	0	0
Email Average Daily Backlog > 48 Hrs	0	0	0	0	0	0	0	0	0	0	0	0

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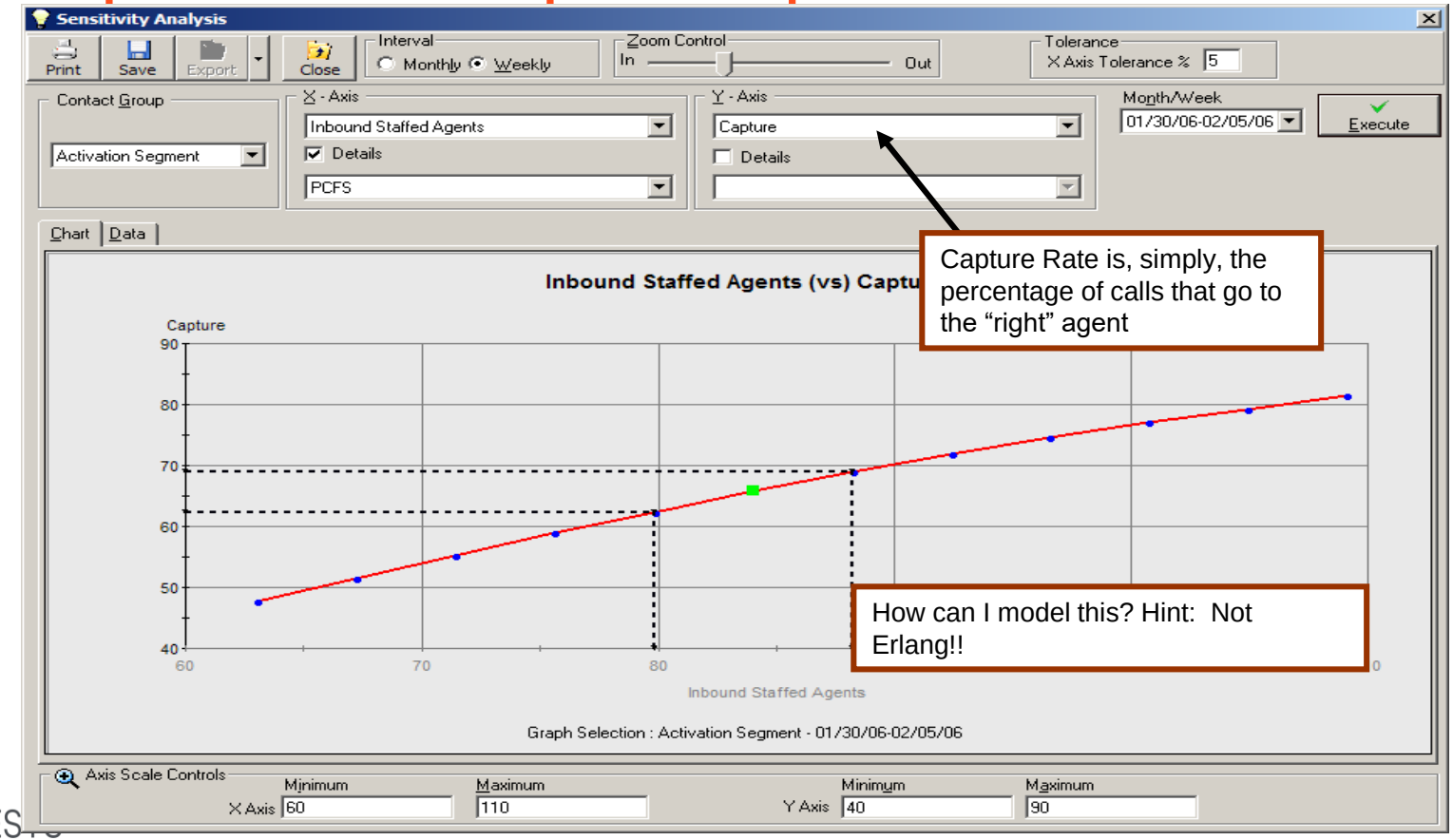
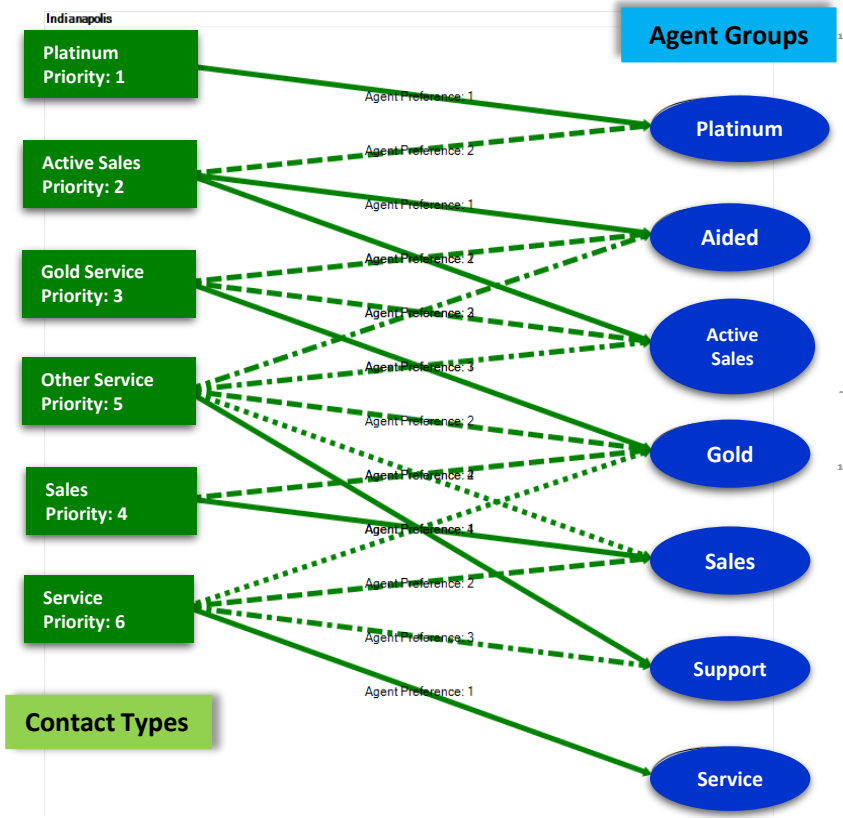
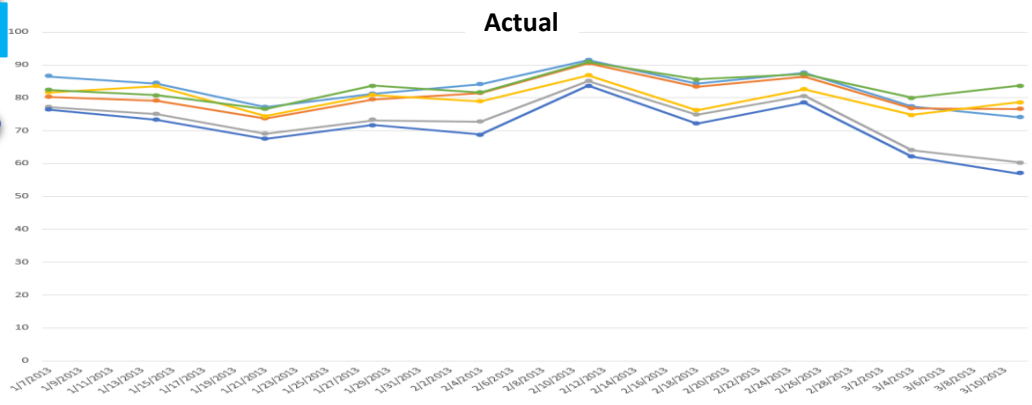
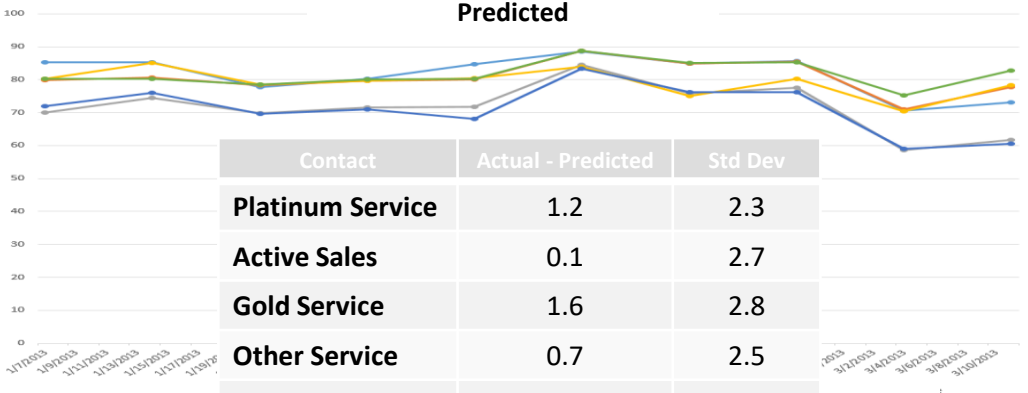
The Important Concept of Capture Rate



Multi-Skill validations using integer programming models







Contact	Actual - Predicted	Std Dev
Platinum Service	1.2	2.3
Active Sales	0.1	2.7
Gold Service	1.6	2.8
Other Service	0.7	2.5
Sales	-0.1	2.9
Service	1.6	1.8

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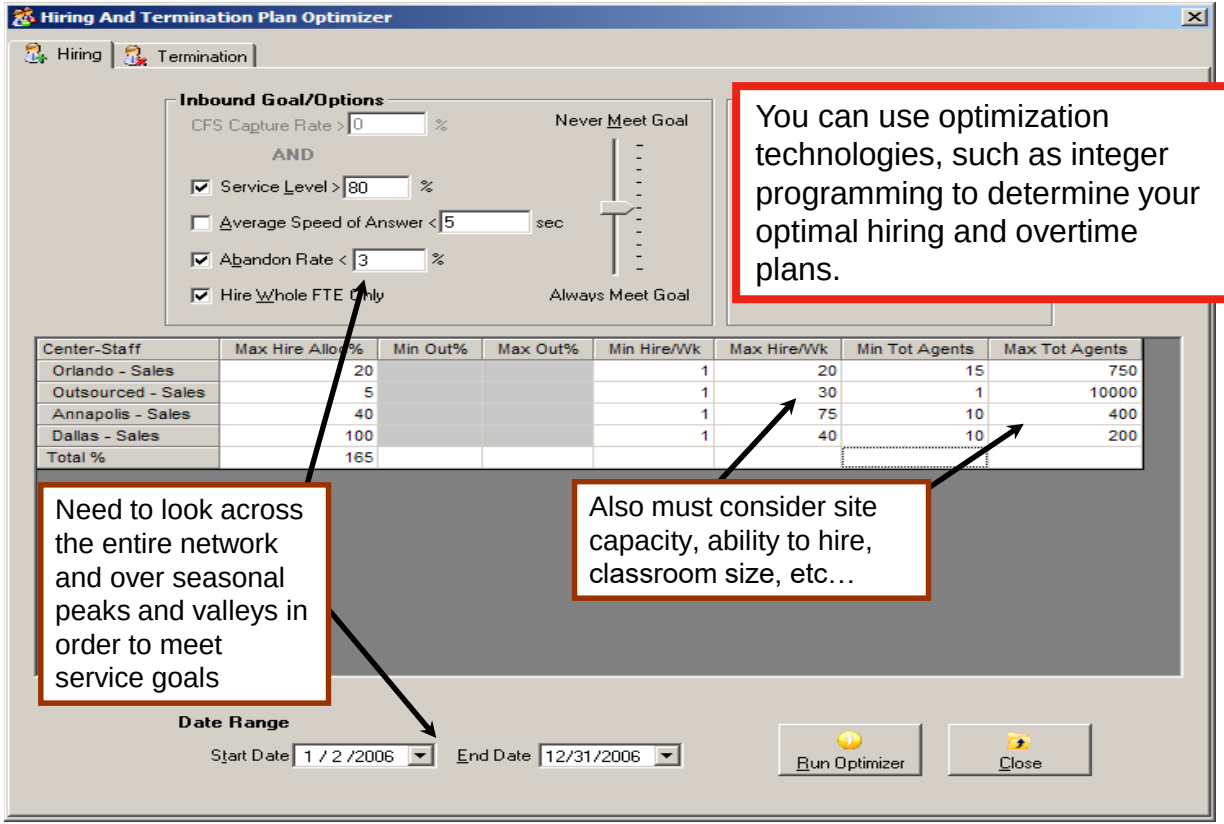
Determining hiring, overtime, and capacity plans



You can use optimization technologies, such as integer programming to determine your optimal hiring and overtime plans.

Need to look across the entire network and over seasonal peaks and valleys in order to meet service goals

Also must consider site capacity, ability to hire, classroom size, etc…

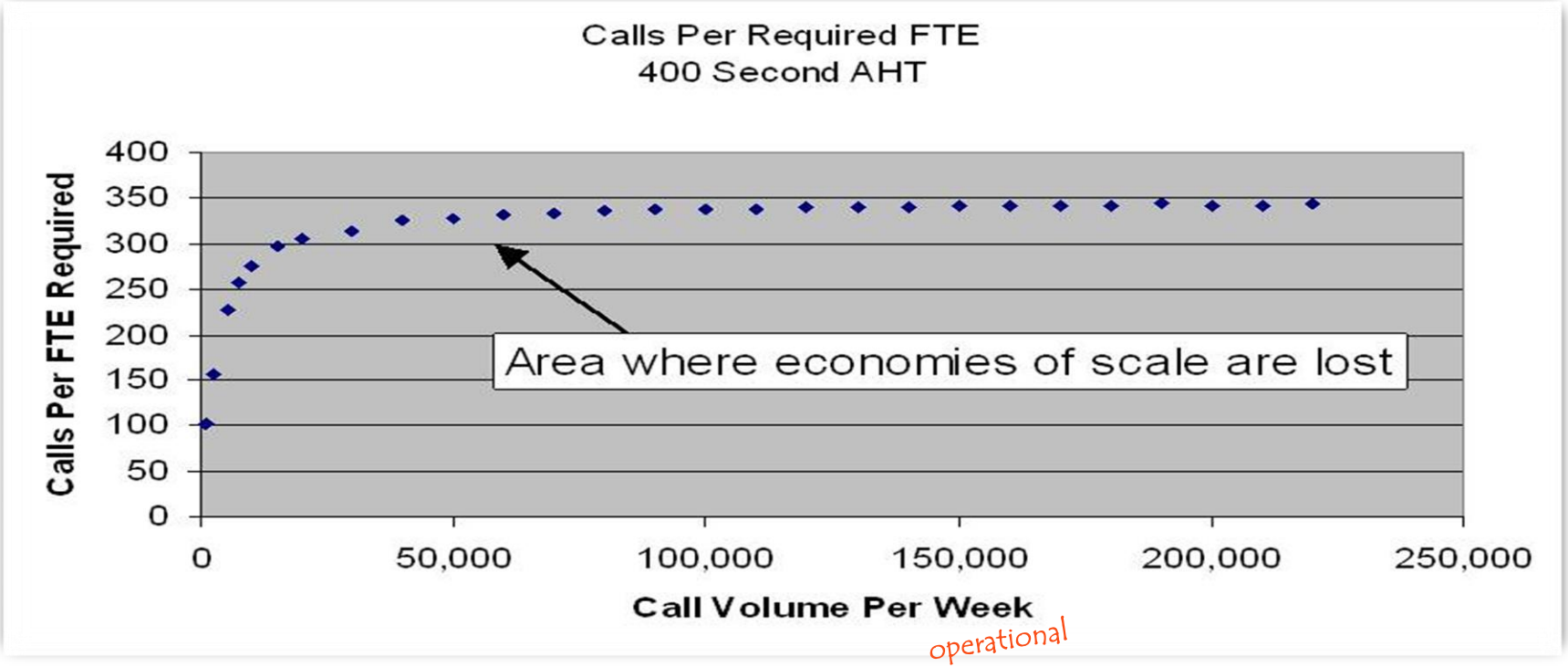
GENESYS

Blended Multi-Channel

- First, we are not seeing as many real applications of true blended multi-channel agents (many of our customers are still segmenting agents by channels)
- Blending your various channels may not have the benefits we might expect
  - Agents good at calls may not be great at email and vice versa
  - The number of permutations are so great that- even though the possibility of improvement is there- the possibility of finding a better solution is much worse
  - You may run out of your economies of scale much faster than you think (and think of the operational headaches you'll add)

(Ric's Blender)

To combine or not to combine… an example



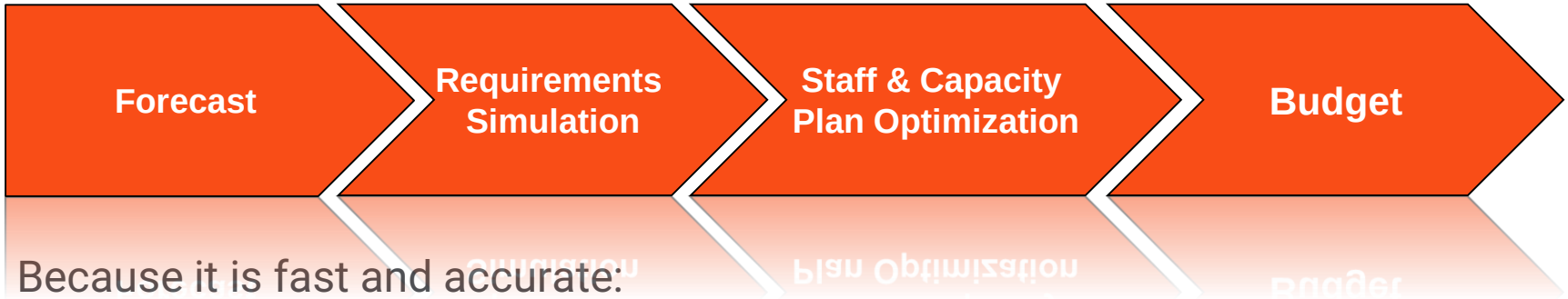
Once I get over ~75,000 calls, I am out of economies of scale!

Final Thoughts

- *Your strategic plan is critical:* Tactical service failures can often be laid at the feet of strategic planning failures. Strategic mistakes are expensive mistakes. Recovery from a strategic mistake is painfully slow.
- *Planning and forecasting is about decision-making.*
- *Erlang is Dead! Long Live Simulation :* Mathematical modeling techniques like integer programming and simulation may look difficult, but our multi-channel plans require more sophisticated analyses
- *Interesting times for contact center pioneers:* The industry has not come to a consensus on service standards or metrics or methods – this is good time to be a center analyst! Let's have fun!

What is Decisions?

- Decisions is a long-term contact center strategic planning and what-if analysis system.



- Because it is fast and accurate:
  - Perform risk and sensitivity analysis of your contact center
  - Evaluate center what-ifs: investments, consolidation, and growth opportunities
- Decisions complements traditional workforce management software by focusing on strategic decision making and long-term planning

Questions? Email me! LinkedIn?

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