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Modeling in Corporate Real Estate

by Fred J. Klammt, principal
Aptek Associates
www.aptek.net
fredk@jps.net

Summary
Corporate real estate (CRE) and facility professionals are constantly searching for better ways to predict future operational and financial performance. Simulation tools can help overcome challenges in planning and managing complex business processes. This paper explores some of the metrics and business processes common to CRE and how simulation modeling is starting to be used in this industry.

Like many internal service providers, corporate real estate (CRE) managers concern themselves with two things: the bottom line and customers' needs. Optimizing these two is where real estate offers some unique challenges.

Real estate starts at site acquisition, master planning and works its way through daily operational issues until the building has reached the end of its useful life and real estate professionals reside over the disposal of the property. In between there are daily routines consisting of operations and maintenance (O+M), move management (churn), tenant improvements, conference room scheduling, etc. With the current trend toward more leasing and outsourcing of facilities, CRE managers must operate in an increasingly uncertain future. New competitors, changing markets, acquisitions and mergers, and more demanding customers put pressures on CRE to do more accurate planning and forecasting.

This is where modeling can add value. If CRE managers had better tools to analyze the complexities of all their customers' needs, market conditions, and leasing complexities, they could focus more on leveraging the real estate assets as a competitive weapon. In the hi-tech and telecommunications industries constant re-organizations and moves put huge pressures on CRE managers to keep optimize building occupancy while at the same time provide seamless moves quickly.

Variability surrounds CRE services just like other internal shared services. The dollars at stake though represent the second largest operating costs (after labor) to any business enterprise.

Many people are familiar with Sim City – the popular software package that embodies many real estate management concepts such budget balancing, maintaining reliable utility capacity, providing public services and education and training needs along with keeping all the citizens happy. CRE has similar complexities. The complex world of real estate management can use help from the continuous simulation and modeling world.

Available data

In most CRE departments there are already mounds of data waiting to be used – it usually resides in the CAFM (Computer-aided Facility Management) or CRE databases. The current trend is in document management and integration. Some companies are into data mining. Most companies have not used their existing CAFM databases to look into the future.

Performance measures in CRE

Key performance indicators (Kpi) in CRE include metrics such as Cost per sq.ft., Customer satisfaction indices, occupancy/vacancy rate, churn (#moves per year/occupants), churn, cost per move, etc.
The most important CRE financial performance metric is RONA – return on net assets. It is generally viewed as the improvement of how physical assets are being utilized. This metric has a direct impact on an organization's bottom line.

Decision Variables

Each day CRE and facility managers are faced with multiple problems and opportunities to contribute significantly to their organization's core mission. As an example, electric reliability and indoor air quality are two areas that directly impact productivity of all workers. It is the CRE manager's job to assure continual and seamless operation of these systems amidst all the moves, lease negotiations and projects they are responsible for. Although these efforts go unnoticed they are important for the continued well-being of the organization, Here is a partial list of some of the decision variables that CRE managers deal with:

Number of suppliers, brokers	Space standards
Customer schedules	Multiple on-going projects
Customer mix	Churn
Customer work volume	Charge-back rates
Space allocations	Facility capacity

Current CRE (Corporate Real Estate) forecasting methods are limited to two-dimensional spreadsheet analyses. They neglect the dynamics of complex business processes that require continual tracking of multiple variables over many dynamic markets and service areas. Spreadsheet analyses are static in nature (*no matter how complex the macros*) and do not take into account changing dynamics of work and market environments. Results from these spreadsheet analyses forecasts are flawed. The concept of a 'moving time clock' cannot be done by spreadsheet analyses - hence the need for a better CRE analytical tools such as simulation modeling.

CRE modeling tools

FmSim™ and ReSim™ are new software tools using system dynamics and simulation technologies which combine the user friendliness of spreadsheets, the methodology of flow diagrams and business process mapping, along with the visual benefits of a CAFM/CIFM system. These models utilize the Powersim modeling software platform. The models allow CRE professionals to view how their business processes will perform in various future scenarios. Simulation advances the time clock to fast-forward enabling decision makers to see future performances of their current or proposed operations. Without simulation, CRE decision makers are left to predicting the future based on past results - which is like **driving your car looking out the rear window.**

FmSim™ and **ReSim™** models can add value to these CRE issues:

1. Owning vs. leasing properties
2. Maximize, forecast space utilization
3. Optimize space planning
4. Proper charge back rates
5. Move management responsiveness
6. Outsourcing optimal balance, scope
7. Supplier evaluations, tracking
8. Occupancy demand/supply forecasting
9. Occupancy and churn optimization
10. Optimize asset life
11. Churn cost control
12. Preventive vs. Corrective maintenance
13. Control maintenance resources

A CRE simulation model using **FmSim™** and **ReSim™** tools provides the means to anticipate problems and contain future risks. After a new facility, new project, or new service process is started; there are significant problems compromising the ability of CRE organizations to meet their business objectives - resulting in increased operating costs. By simulating the project or process **before** it is implemented, problems can be resolved and corrective actions taken without affecting the physical environment, the customer, or the business operation.

We currently have ten generic **FmSim™** and **ReSim™** industry models established:

1. Buy or lease
2. Asset management
3. Pay now of more later (preventive maintenance)
4. Total space costs
5. Total moving costs
6. Chargeback costs
7. Occupancy rate optimization
8. Outsourcing balance
9. Supplier management
10. LCC – repair or replace

Some of these models will presented at the conference. For more information on these tools visit www.aptek.net

Other Fortune 500 companies are now starting to use simulation modeling to help forecast and predict long term risk potential and CRE and facility management issues. Here is an example of how one such company used Powersim software to address its space requirements:

CASE STUDY:

Nippon Telephone (NTT DATA) based in Tokyo, Japan was one of the first companies to apply this system dynamics modeling to its space and lease management needs. By applying modeling simulation techniques, NTT was able to decide what the optimal space standard should be in relation to profits, employee satisfaction, time to lease, etc. This observation resulted in the conclusion that when space standards are increased, profits were optimized while other conditions stayed the same. This model helped NTT set a new space standard without having to run pilot studies and disrupt physical environments.

One of these models is shown here: