

**THE IMPACT OF NEW TECHNOLOGIES ON SPACE,
OPERATIONS AND REVENUES**

**A LOOK AT
THE APARTMENT INDUSTRY AND REAL ESTATE
INVESTMENT TRUSTS**

Prepared by

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INTRODUCTION

The introduction of new technologies by landlords and residents has revolutionized the source of real estate revenues and uses of space. This article looks at technology issues affecting the apartment industry and Real Estate Investment Trusts (REITs). New hardware and software technologies, along with the E-Commerce and the Internet, are altering the way corporations and individuals utilize space. The real estate industry, and particularly apartment owners, have not been known to embrace rapid changes in technology. However, major public and private apartment owners are now committing large sums of capital for new technology integration. These technologies will significantly change the real estate industry, and in particular, the way apartment owners manage their properties.

REIT Industry

Congress created REITs in 1960 to enable small investors to make investments in large-scale, income-producing real estate, similar to that of a mutual fund. REITs allow investors to investment in significant commercial properties through pooling arrangements and securitization. Congress designed REITs to pool capital from many investors into a single entity. This entity is organized to develop and manage income streams through commercial real estate ownership and finance (NAREIT).

REITs are dedicated to owning and operating income-producing real estate, such as apartments, shopping centers, offices and warehouses. REITs are also engaged in financing real estate. To be a REIT a company is legally required to pay virtually all of its taxable income (95 percent) to its shareholders every year, have at least 100 investors, generate over 70% of its revenues from rent and not sell properties within 4 years of purchase.

The main benefit to REITs is one level of taxation (corporate); therefore, more income is paid out as dividends, increasing dividend yields, and making the stocks attractive to income oriented investors.

For REITs to grow, capital must be raised in the equity and debt markets as well as money generated internally. REITs are carefully watched by institutional and individual investors and the SEC. REITs have independent directors, independent auditors, and are monitored closely by the business and financial media.

THE MF REIT Properties, Inc.

THE MF REIT Properties, Inc. is a Real Estate Investment Trust (REIT) focusing on the development, acquisition and management of apartment communities located near business, transportation and equipment centers that are essential to its customers. As of June 30, 1999 THE MF REIT's multifamily portfolio included 84 owned and operated apartment communities, totaling 22,062 units in California, Arizona, Washington, Oregon, Nevada, New Mexico, Utah and Colorado. The company currently has six additional properties in various states of development, totaling 1,722 apartment units.

THE MF REIT Properties, Inc. is currently employing leading-edge, top-rank technology – information systems (IS), residential high-speed Internet access, an Intranet, an Extranet and an Internet and Extranet web site – to produce internal growth and increase the revenue of its existing assets. Over the past three years, the company has made a strategic decision to establish itself as the technology leader in the multifamily industry. The company has allocated considerable resources to the IS/IT function. The technology introduced focuses on streamlining operations, and improving the quality level of communications and services to existing residents.

The mission of the IT program is to exploit innovative technologies and return the benefits to the residents, shareholders and employees.

REAL ESTATE INDUSTRY

Over the last five years the introduction of new technologies and service delivery systems have revolutionized the real estate industry. For an industry that was once looked upon as a slow moving and technologically unsophisticated, it is now emerging as one of the market segments that will significantly change the way it delivers services based on these new technologies.

The introduction of search-engine portals, the Internet, e-mail, laptop computers, cell phones, and faxes have all contributed to the revolution in real estate. The real estate and real estate markets can now be monitored in real-time, and real-time decisions can be made to take advantage of market opportunities or risk management strategies.

In 1998, with the collapse of the real estate capital markets, real estate firms have had to find alternative methods of growing net operating income, either through entering new lines of business or focusing on streamlining cost structures (ULI).

The next generation of real estate investments will be particularly influenced by:

- Modern technology and information systems moderating demand for office, industrial and retail space.

- Massive population migration flows back into the urban core, creating 24-hour cities.
- Public capital markets providing more information regarding real estate markets, companies and operations.

E-retailing and mobile work environments appear to be altering tenant usage and dampening growth in commercial space. Industrial corporations are now increasing their technology budgets at the expense of their real estate budget. Tenants are using less space.

The Impact of Technologies on the Utilization of Space

Office

The concept of the modern office building no longer holds true, technology has altered the economics of office buildings. There are five important areas where technology has impacted offices: the design process, energy saving devices and systems, internal and external environmental quality control, new processes and revenue streams, and maintenance and recycling.

Computer-Assisted-Design (CAD) has improved design aspects, fuel cells have produced energy savings, Heating, Ventilation and Air-Conditioning (HVAC) systems have provided better environmental controls, e-commerce and the Internet have provided new revenue sources, and trash compactors and shredders have improved the efficiencies of recycling (Peiser).

The office market is being overtaken by mobile telecommunications and electronics. Technology such as laptops, fax machines, cellular phones and the Internet are shifting corporate users to telecommuting, hoteling and teleconferencing to reduce space costs (Metz).

Industrial

Warehouse and distribution space has been impacted significantly by the virtual world. Just-In-Time (JIT) inventory control systems have eliminated the need to carry inventory; therefore, less industrial space is required. Inventory-to-sales ratios have steadily declined since JIT systems were introduced in the 1980s. There has been a 20% efficiency gain in the use of inventories over the last ten years, distributors now need less space (ULI).

The introduction of e-commerce is expected to accelerate the attractiveness of big-box industrial distribution centers at the expense of more traditional, lower-ceiling storage facilities, particularly as premiums are placed on moving merchandise quickly to market.

Some observers see JIT and e-commerce removing links in the distribution-warehouse chain between the manufacturer and consumer, reducing the amount of retail and warehouse space in the process.

Affects of E-Commerce and the Internet on the Utilization of Space

Industrial

E-commerce will have a material impact on retail real estate, weakening regional malls and power center locations. Depending on where the real estate is in the supply and value chain will determine future real estate product and firm success. R&D properties will benefit from the new technology due to rapidly growing high-tech, bio-tech and information related firms (ULI).

Multifamily

Multifamily residential real estate will be impacted by tenant demand for high-speed Internet access for their home computers. Apartment owners are going after the high-tech employee market due to their high propensity to rent, use of the Internet and disposable income.

The majority of high-tech renters are young and single, or married with dual incomes and no children. They want access to the Internet and do their apartment search and purchases on-line. Due to high mobility rates, 80% of the high-tech workforce is renter by choice. The average age of these renters are 33 years old and are very technology literate, 71% have access to the Internet (Walsh).

Since high-tech employees work long hours, they value close proximity to the company. Some multifamily REITs have adopted acquisition and development strategies to target projects in close proximity to high-tech corridors; and target projects in close proximity to major employers such as AT&T, Chevron, Oracle, Cisco Systems, HP, Microsoft, Pacific Bell, and PeopleSoft.

The high value living space will be configured to meet home office demands, centering around computer and telecommunication requirements. Apartment units will need to be adequately wired and retrofitted to meet market demand (Walsh). Owners will be required to provide reliable, high-quality, high-speed Internet service, or loose residents. At some point, high-speed Internet access will be a “fundamental apartment amenity.”

Most apartment owners will be providing their tenants high-speed Internet access via a Digital Subscriber Line (DSL), although wireless technology may be the only options in some locations. Wireless eliminates the need to fund wiring to each individual apartment, and provides a non-disruptive approach to Internet access. Multifamily developers have four alternatives for wireless communications: satellite, radio, antenna/dish, campus-based wireless network or consumer-based wireless technologies. A combined approach may be the best solution – running a T1 to the building then

installing a wireless LAN and connected via the WAN to the Internet. The wireless technology is still too new for broad based implementation (Schwartz).

Companies are now advertising on websites such as SpringStreet.com, apartments.com and Rent.net. Owners are also becoming creative by developing electronic brochures that can be e-mailed as an attachment, including site photos, prices, features and floor plans. An Internet business plan is critical for apartment owners and managers to attract high-tech employees.

Retail

Based on a recent real estate survey, 80% of the respondents predicted that e-retailing will decrease demand for shopping centers over the next ten years. New technologies and systems will improve the speed and convenience of Web shopping. Web access is projected to grow from 34 million people in 1999 to an estimated 53 million people by 2003. Within a generation, most homes will be web-linked and most people will be Web literate (PriceWaterhouse).

The threat to traditional freestanding shopping malls comes from the emergence of the Cybermall. Now retailers do not have to stock as many goods on their shelves. In the future, tenants in retail shopping centers may introduce “concept” stores, a place to show goods then computerized orders in the store or from a personal computer over the Internet (London).

The Cybermall will eliminate proximity as a determiner to where a consumer may purchase certain products. The traditional measurement of consumer demand by geographical market area is being irretrievably altered by the Internet. Not only will traditional stores be downsized, but actual purchases will be made outside the shopping center, eliminating the ability of the landlord to collect percentage rents on sales volumes (London). Higher supply and lower rental income will result in lower returns for retail properties in the future.

REIT INDUSTRY

REIT industry investment and integration of new technologies will continue to increase but will be limited due to current capital market conditions. Some REITs are investing in software and hardware to gain access to new markets and help in understanding their operations and bottom line. They are using technology to control costs through better inventory management system and improve oversight of portfolio assets. The majority of REITs are working with obsolete and nonintegrated systems. In the past, REITs have not emphasized information technology or management systems (PriceWaterhouseCoopers).

The Impact of Management Information Systems

Systems integration will be the main focus for REITs over the new three years. Most companies use disparate property management, accounting and tax systems, requiring costly maintenance, support and backup. There are huge cost savings associated with increased financial and operating control and integration. The ability to access multiple databases and systems will provide management with tools to recognized changing affects on net operating income, and plan property and portfolio level strategies.

The merger and acquisitions between traditional REITs, or technology firms, will necessitate better technology integration. Systems and technology integration account for 50% to 75% if total merger costs. Existing information system departments are ill equipped financially and technically to handle systems integration, and may need to reduce or eliminate current IT staff, or go to outside consultants to make the transition.

REITs are using new technologies (LAN/WAN/Intranet/Extranet) to understand their competitive positions in the industry and the competitive position of their assets in the real estate market. The availability of detailed leasing information, including lease roll over, heightens the competition for tenants. REITs that can afford to invest in technological innovations are expected to outperform others in the industry. Sophisticated internal financial and operations reporting systems can be combined to assess the portfolio and individual asset performance, increasing the value of the stock price in the process.

Because REITs are capital constrained, they may be able to upgrade their building maintenance and reporting systems if tenants help finance it. REITs have a depreciation tax advantage when making capital investments, an advantage the tenant does not have. By signing long-term leases with tenants, REITs can capitalize investments in technological infrastructure. This will allow REITs to raise funds in the public and private capital markets for technology improvements, and allow tenants to depreciate the increased charges as rental expenses, maximizing net operating income for the REIT and reducing tax burdens for the tenant.

The Impact of the Internet

The Internet will significantly affect retail, hotel, warehouse and distribution, office and apartment REITs. Industrial REITs with tenants in warehouse and distribution facilities will be distributing higher levels of consumer goods: books, jewelry, and electronics; while retail REITs in power center facilities will be selling lower levels of consumer goods. Higher demand for industrial space will provide REITs with revenue growth opportunities through rental increases, expansion and rehabilitation, and new construction. Lower demand for power center space will lower REIT revenue growth through falling occupancies and rents. Well-located regional malls will faced less competition. Successful retail operations will embrace Internet technology, using it to enhance physical space amenities. Office REITs are working to provide high-speed

Internet and e-commerce infrastructure to its tenants; and residential REITs are working to provide high-speed Internet access to its residents.

The introduction, integration and implementation of the Internet and e-commerce into the REIT business model are completely new for the real estate industry. Most REITs are at least four years behind the Internet and e-commerce technology market. For REITs to make the transition to the new economy, a new business model must be developed. Business models that develop and implement new strategies rapidly and effectively enhances competitiveness and profitability.

There must be clear lines of communication between the functional lines, the technology component and the marketplace. As the Internet is integrated into business operations, greater efficiencies and productivity will be achieved. Developing real-time internal control systems via the Internet will allow for quick identification of unnecessary expenses or taxes, and allow for faster management response times. In the future, REITs will need to reshape their business models to align themselves with the market. The quicker a REIT can integrate new technologies into their operations, the more competitive and profitable they will become.

CORPORATE CASE STUDY: THE MF REIT PROPERTIES TECHNOLOGY SYSTEMS

THE MF REIT Properties, Inc. has made strategic and organizational changes to become the leader in new technology applications within the REIT format. Over the past three years, the company has taken advantage of information technologies to improve its business operations and meet rapidly changing resident demands (THE MF REIT).

THE MF REIT Properties, Inc. has an integrated management information system that combines data from the accounting, operations, property, development, investor relations and research functions. Table #1 illustrates THE MF REIT Properties technologies and users.

Corporate Financial and Property Management Information Systems

Expanding corporate information resources is a priority for THE MF REIT Properties. Corporate Information Systems (CIS) expanded and developed over the past three years have been:

- Developed an Internet website to communicate investors, associates and interested parties.

Each quarter, the company holds an analyst conference call that is broadcast live via the Internet.

- Developed wide-area and local-area networks to communicate with each property.

The company's regional office are connected to the San Francisco corporate headquarters through a WAN, providing data sharing, e-mail and voice capabilities. THE MF REIT has virtually eliminated long distance telephone charges between regional offices.

- Developed relational database management systems to share data between property management, accounting and office applications.
- Developed an Intranet and Extranet to serve as a central repository of financial, operating, and market research information; and provide resources to 1,000 THE MF REIT employees.

The Intranet provides information from six different functions: Human Resources, Asset Management, Finance, Marketing and Training, Research and Regional Contact data.

The corporate financial management system uses a base financial accounting system called **Solomon** and **AMSI/GEAC**. These systems are currently Windows based but will eventually be integrated using the Internet, SQL and data warehouse capabilities using **Sbase**. Using the Windows based Salomon, SQL and data warehouse systems, in conjunction with the internet, will allow management to improve reporting standards through automation, reducing reporting costs in the process.

Currently, THE MF REIT Properties is using a software system called **Guide+**. **Guide+** is an operation-reporting tool not an analytic tool. The application is installed on personal desktops and is limited to key executives. The program uses "true" data originated from property management software. The advantages to this software is that it provides faster availability of reporting due to the elimination of manual spreadsheets, it addresses the challenges of working with associates in different locations, and it integrates the customer service and accounting departments (Guide).

Guide+ will allow the firm to access property level information from source data in **AMSI**. E-mails with operating data are forwarded from the property to the corporate system. **SQL**, the data warehouse, and **Guide+** provide access to massive amounts of data and report capabilities. **Guide+** is not an analysis tool but a way of accessing the data collected for the various databases on the data platform that is connected to the **SQL** server. **Guide+** has three layers: on top, printable screens; behind, **Crystal** style reports; and the ability to bring data into Excel for analysis.

Investor Relations

THE MF REIT's web site provides shareholders a business summary, strategic plan, progress updates, quarterly earning releases and supplemental data, a management Q&A, SEC filings, current and archived news releases, historical financial data, and shareholder service information. Shareholders can subscribe to THE MF REITinfo, an e-mail notification system, which informs them of any new information posted to the company's web site. Shareholders receive information via telephone conference calls, facsimile, and live Internet webcasts of THE MF REIT's quarterly earnings conference calls.

Residents

VelocityHSI is THE MF REIT's high-speed Internet access product, and provides residents with 24-hour-a-day dedicated T1 access. This connection is up to 50 times faster than the average 56K dial-up modem.

VelocityHSI uses a patented new "data-over-voice" technology from Tut Systems, allowing voice and data signals to share the same phone line, making it possible to receive continuous high-speed Internet service over existing phone lines simultaneously with phone service. The resident can use the phone and be on-line at the same time without adding a second phone line.

This always-on service permits access to the Internet and e-mail without dialing or busy signals. Through a static Internet protocol (IP) address, residents can access office LANs and other Internet related sites, making telecommuting from the property easier.

CoolCast is a provider of live audio and video that will feed via satellite to Velocity subscribers, allowing them to have television and radio at their computers. CoolCast provides the media programming. **E-Homesquare** is an e-commerce portal allowing Velocity subscribers to access goods and services over the web. This portal will allow for purchases of books, electronics, music, drugs, etc. on a national basis; and allow for purchases of security and moving services, dry cleaning, grocery, maintenance, housing cleaning, etc. on a local basis. The difficulty in this system is the ability to build and maintain multiple mediums: portal, kiosks and marketing.

Table #1

THE MF REIT Properties Technology

Management Tools	User
Guide +	Accounting
BCL Import Process	Accounting
Intranet	Company
Extranet	Company
Deloitte & Touche ATLAS tax web-based	Accounting
Essbase	Accounting
Web Services	
E-Home Square	Resident
CoolCast	Resident
Velocity HIS	MIS/Resident
Hardware and Software Systems	
Cisco Systems	Resident
Microsoft	Resident
Dell	Resident
GEAC	Resident
TUT	Resident
In House	
Help Desk	MIS

IMPACT OF TECHNOLOGIES

Corporate Financial and Property Management Information Systems

The impact of the technologies is important not only to improve the operations and performance of the company, but it provides an additional and effective means of communicating between the company and its shareholders, residents and employees.

Investor Relations

The impact of the technologies is important due to the fiduciary responsibility the firm has to shareholders. As a publicly traded company, management is responsible for maximizing the resources, technological or human, to increase shareholder value. Internets, Intranets and Extranets provide the best channels for disclosure, along with added operating efficiencies.

Residents

The eventual impact on the resident will be the delivery of technology services. Multifamily apartment owners will eventually move to bundle Internet services with cable television and phone services as part of a menu of technology services for apartment renters (Newman).

FUTURE TECHNOLOGIES IN THE REIT INDUSTRY

New Regulations

The Real Estate Investment Trust Modernization Act of 1999 (H.R. 1616) is currently in the budget process. If this legislation is passed, it would allow REITs to generate additional revenues from other sources (subscribers and subsidiaries) than just rents, still retain its tax preferential status (NAREIT). The REIT Modernization Act would permit REITs to create taxable subsidiaries beginning January 1, 2001.

E-Commerce

The future of the real estate industry and REITs in particular will be dependent on their ability to accept the web portal business model. If firms cannot develop the technology in house partnerships and other lines of business will need to be developed:

- Online Content and Media
- Enabling Technology
- Electronic commerce
- Internet Access/Online Service Provision
- Interactive Services
- Multiple Operations

The key to operating success is in the distribution of services and critical mass, the ability to have access to Broadband infrastructure, and proprietary distribution networks. These factors will be critical in creating and maintaining the value of commerce and community.

CONCLUSION

Real estate companies will have to become technologically savvy in the E-commerce environment and sensitive to the forces surrounding and redefining corporate real estate strategies to survive (Metz).

THE MF REIT is one of the first multifamily REITs to put together a technology strategy and e-strategy. THE MF REIT is in a good position to be the first REIT to enter and finish the technology race, developing and delivering technology solutions more advanced than its competitors.

While other REITs are exploring e-strategies as added revenue sources, THE MF REITs approach to technology is more comprehensive and overreaching. The company is positioning itself and developing internally the technical staff and arraigning exclusive alliances with hardware and software providers, and content providers, to achieve a sustainable competitive advantage in the multifamily REIT industry.

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