

BENEFITS OF IoT IN AN OFFICE BUILDING ENVIRONMENT

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The table below outlines in a direct manner how, from an FM perspective, the latest digital technologies combined with Internet-of-Things (IoT) can benefit the main stakeholders of a typical office building.

However, these are in no way exhaustive. The potential and application of IoT is only limited by our imagination!

		APPLICABLE IoT TECHNOLOGY	HOW IT CONTRIBUTES TO BETTER SERVICE/BENEFIT TO USERS, CLIENTS	HOW IT CONTRIBUTES TO COST SAVINGS, ENHANCED REVENUE AND/OR SUSTAINABILITY
1	WASHROOM CLEANLINESS	Connected, smart water meters	<ul style="list-style-type: none"> • Deployment of cleaners only after specified amount of water has been used (indicating that the toilet needs attention). This is as opposed to time-based cleaning/fixed frequency • Better user experience 	Optimisation of manpower and work results in optimisation of cost (right-costing)
		Video analytics, i.e. people counting	<ul style="list-style-type: none"> • Deployment of cleaners only after specified number of people have entered the toilet (indicating that the toilet needs attention) • Better user experience 	
		User rating terminal, user provides direct real time feedback	<ul style="list-style-type: none"> • Deployment of cleaners only after specified number of bad feedbacks received (indicating that the toilet needs attention) • Better user experience. 	

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2	HVAC	Temperature sensors at user spaces that actively modulates for the right temperature	<ul style="list-style-type: none"> • Better occupant comfort. • Better response when something is awry due to better control and awareness by the FM team 	<ul style="list-style-type: none"> • Better energy efficiency and impact to the environment • Optimised maintenance cost
		Presence sensor - Auto switching (on/off) of the service/system	Enhanced user convenience	<ul style="list-style-type: none"> • Energy saving • Increases system/component life
		Cloud communications between each HVAC unit/component and the FM team at the control room	Better comfort from better management of the system	<ul style="list-style-type: none"> • Real time data and monitoring of what each unit is doing and its performance • Better and faster equipment information allows much improved management, monitoring and control resulting in reduced wastages • Pre-cooling of building based on weather forecast saves electricity cost
3	LIGHTING	Presence sensors that auto switches the lights on/off	User convenience at not having to operate the system	<ul style="list-style-type: none"> • Energy saving • Increases system/component life.

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4	POWER CONSUMPTION	Smart metering by zones, floors and systems (lights, sockets, HVAC, ICT, etc.)	Quicker detection and FM team response to abnormal situations and user needs	<ul style="list-style-type: none"> • By knowing where and what is consuming energy, power consumption can be better managed and reduced • Connected power meters removes need to walk to each meter to read the consumption • Real time consumption data means better control of consumption
5	LIFTS	<ul style="list-style-type: none"> • Smart lifts that know who you are, where you are going and directs you the nearest lift to get you to your desired floor. • Infotainment display while in lift. 	Quicker travel, more pleasing experience.	<ul style="list-style-type: none"> • Reduction in lift trips reduces wear and tear and energy use. • Potential revenue from advertising
6	ROADS AND CAR PARK	Real-time availability of car parks space and guide to where they are.	<ul style="list-style-type: none"> • Reduced searching/driving time • Up to 20% more cars can be parked. 	Less pollution, fuel consumption and pavement maintenance cost
		Video analytics can alert of abnormal traffic conditions, long queue times and crowd-related situations	Proactive and/or quicker response from the facility management team to resolve issues	<ul style="list-style-type: none"> • A well-managed building is desirable. • This can be an extension of an organisation's brand and image

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7	SAFETY	Smart and connected digital signages that adapt and interfaces with other building systems such as lift, fire, BMS, CCTV	<ul style="list-style-type: none"> • Informs users of work/inaccessible areas for the day or any planned works • Can be connected to fire/evacuation situations where the smart digital displays provide guidance to nearest exit • Informs users on air quality and internal/external conditions or any hazardous areas 	<ul style="list-style-type: none"> • Safe building can command higher rental rates • Wellness of the occupants contribute to organisational efficiency, reduced absenteeism and improved health costs • Improved risk management
8	PEOPLE HEAT MAP	Sensor profiles/network in a building shows where people spend their time. Motion trails show their movement	<ul style="list-style-type: none"> • Better service and user experience. • Actionable feedback received allows the right level of service to be provided 	The info allows for better location for advertising, higher rental zones
9	USER FEEDBACK	<ul style="list-style-type: none"> • Feedback kiosks, feedback apps via user smartphones 	<ul style="list-style-type: none"> • Simpler, quicker way for client/users to communicate with service provider. • More info via pictures etc. can be sent to the FM team for clearer reporting and reduction of ambiguity 	Delighted customers/end users have direct contribution to revenue

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10	EQUIPMENT MAINTENANCE	Self monitoring and diagnosing equipment	<ul style="list-style-type: none"> Increased MTBF (Mean Time Between Failures), better comfort, faster response Reduced disruption as maintenance can be planned at the right time Quicker troubleshooting as data shows immediately what is wrong and where 	<ul style="list-style-type: none"> Optimised maintenance means optimised cost. Reduced manual inspections reduces personnel count on site Reduced maintenance cost as abnormalities are detected early before it becomes costly and/or causes breakdowns (very costly)
11	SECURITY	Video analytics identifies left baggage, people crowding, faster than normal people movements, face recognition	<ul style="list-style-type: none"> Faster emergency response Better law enforcement by identifying wanted persons or identifying crime in progress/felony Better sense of security, peace of mind and comfort for the users 	A safer facility can command higher rent
12	FACILITY MONITORING & CONTROL	Single command centre for remote monitoring and control of all systems in a building	<ul style="list-style-type: none"> Quicker response. Enhanced proactiveness by service provider Overall better quality of services. Better security as facility is better monitored 	Reduced manpower, quicker first response (such as by remote)

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13	SPACE EFFICIENCY	Sensor presence, power consumption, people counter	<ul style="list-style-type: none"> • More data on how space within a facility is used. This can help strategise for space monetisation • Better organisational set up 	Contributes to energy efficiency
14	RECEPTION & ACCESS	Interface and connectivity between smartphone, access card systems, smart lifts, room, etc, room booking system, queue management, smart signages, visitor registration system	Seamless visiting or entrance experience. As you walk in, the reception recognises you, performs registration and provides means of access, allocates lift. Digital smart signages guide you to your meeting/appointment venue.	Adds to organisational branding and image.