The Smart Investment

WiredScore

WiredScore have conducted a study to provide indicative costs associated with implementing a smart building. The intention of this study is to provide you with a high-level insight into the potential surplus development spend when you undertake your smart building project.

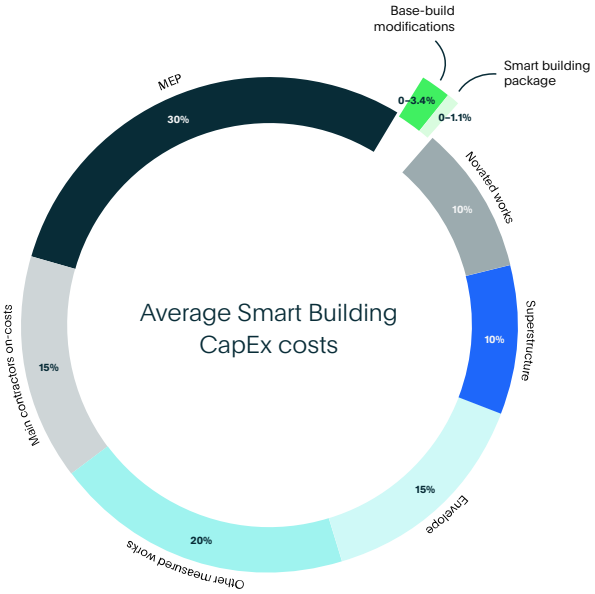
Expected takeaways

1. The construction CapEx for a smart vs. non-smart building
2. The price associated with a smart building package and base-build modifications
3. The price of the various smart building systems needed to deliver smart building functionality
4. The cost ranges for smart bulding with different levels of functionality as per the SmartScore framework

Development of a smart building

To implement a smart building, additional CapEX is required in two areas:

1. Smart base-build modifications costing between **0%–3.4%** of total construction costs (as part of your MEP package). For example, increased integration between base build systems. If a premium MEP package is already scoped, it is unlikely any additional base-build modifications need to be implemented.
2. A smart building package costing between **0%–1.1%** of total construction costs. For example, including analytics software.



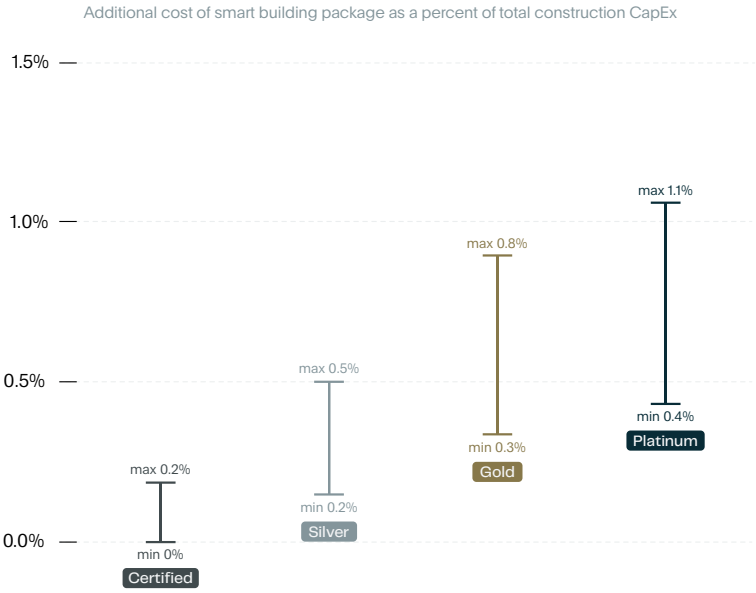
	Base-build package	Smart building package
Non-smart	Standard building base-build MEP functionality. (e.g. BMS, HVAC, lighting, fire, lifts etc)	N/A
Smart	As above, plus any modifications requaired to base-build MEP packages to enable functionality, such as historical data analysis, system integrations, two-way contol, provision of a central data environment, and IoT systems such as occupancy and/or air quality sensors.	Software to enable analysis, dashboarding and control via integration across MEP systems.

Investment required in technology CapEx

The following graphs indicate the uplift in CapEx required for a smart building package and potential base-build modifications. Building sizes between 200,000 Sq. Ft. - 500,000 Sq. Ft. and building costs ranging between $350-$400 price per Sq. Ft. have been used to calculate the min and max range in the graphs. As shown, a smaller buildings with a lower cost per square foot will be at the higher end, and a larger building with a higher cost per square foot will be at the lower end of relative price uplift.

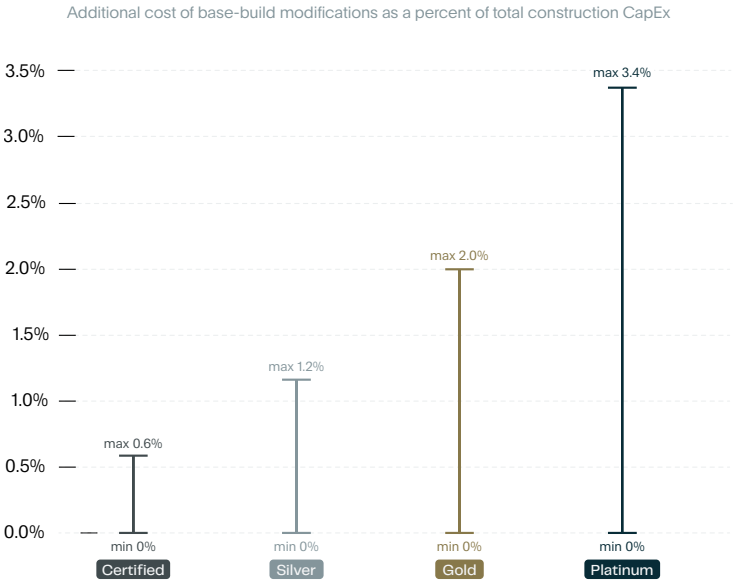
Smart Building Package

To implement a smart building, a development would need to invest between 0%-1.1% of its construction CapEx on a smart software package, depending on the type, size and desired functionality of the building. In the graph, different levels of functionality are defined by differences in the SmartScore certification levels.



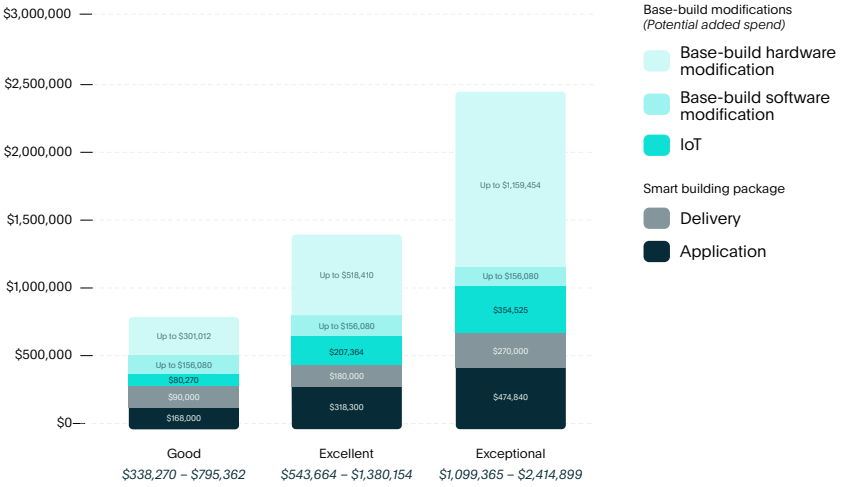
Base-build modifications

A development may need to enhance the base-build design to accommodate the proposed smart functionality, this may result in a need to invest between 0%-3.4% of construction costs on base-build modifications.



Worked example

The graph indicates the prices across the different categories if targeting all user functionality at good, excellent and exceptional as per functionality levels within the SmartScore framework.



Pricing notes

- Based on 200,000 Sq. Ft. commercial office, with 10 storeys
- Costs are based on the second quarter of 2022 and are GIA US$
- Base-build costs include Main Contractor On-costs (overhead expenses)
- Smart Software costs are based on direct appointment, i.e. not construction costs
- All costs are CapEx and assumes an industry typical contract structure of OpEx vs CapEx with the ongoing OpEx costs excluded from this assessment
- Network infrastructure is assumed to be part of basic MEP package and is excluded from figures above.
- The specification is based on typical design adopted in a central location in major city, such as New York or London.
- The low end of the range assumes a very high specification MEP package and the high end of the range assumes a low specification MEP package

System pricing

Smart software package

The following costs were used in the worked example:

	Cost ($) **Good**	Cost ($) **Excellent**	Cost ($) **Exceptional**
Delivery layer			
Enterprise portal	30,000	60,000	90,000
Operations portal	30,000	60,000	90,000
Tenant portal (app)	30,000	60,000	90,000
Delivery layer total	**90,000**	**180,000**	**270,000**
Application layer			
Access control	11,700	21,000	31,500
Amenity booking	5,700	8,850	13,500
Asset information model	9,600	13,200	17,400
Delivery management	2,100	3,000	4,500
Digital signage	3,000	12,000	18,000
Document management system	8,400	12,000	21,000
Elevator analytics	-	-	6,000
Health & Wellbeing analytics	14,400	19,200	24,000
Maintenance & Operations analytics	23,400	40,800	58,200
Occupancy analytics	6,300	11,400	16,500
Operations portal	2,400	3,000	3,600
Real-time location software	3,600	4,800	6,000
Survey / feedback	6,000	12,000	18,000
Sustainability analytics – Energy	15,150	24,300	34,500

	Cost ($) **Good**	Cost ($) **Excellent**	Cost ($) **Exceptional**
Sustainability analytics – Waste	8,400	12,000	17,400
Sustainability analytics – Water	3,900	6,000	8,400
Tenant portal (app)	4,500	9,000	13,500
Video analytics	3,000	6,000	9,000
Visitor management	3,000	6,000	9,000
Work order management	6,000	12,000	18,000
Maintenance & Operations analytics – Lift analytics	7,800	12,000	16,200
Maintenance & Operations analytics – Comfort optimization	3,000	6,000	9,000
Maintenance & Operations analytics – Energy analytics	3,000	6,000	9,000
Maintenance & Operations analytics – Delivery management	2,100	3,000	4,500
Maintenance & Operations analytics – Cleaning optimization	4,200	6,000	9,000
Maintenance & Operations analytics – Alarms	1,800	2,100	2,640
Maintenance & Operations analytics – FDD	-	24,000	36,000
Maintenance & Operations analytics – PM	-	12,000	24,000
Application layer total	**162,450**	**307,650**	**458,340**
Grand total	**252,450**	**487,650**	**728,340**

Base-build modifications

	Cost ($) **Good**	Cost ($) **Excellent**	Cost ($) **Exceptional**
Base-build hardware modification			
Access control hardware	33,446	100,337	234,121
Access hardware	16,723	16,723	33,446
CCTV	-	-	89,189
Digital kiosk	-	8,919	8,919
E-mobility charging system	5,574	25,084	50,169
Elevator control system	-	-	89,189
Fire alarm system	-	-	22,297
Fire alarm system / core building system	-	22,297	44,594
HVAC control system – control	-	-	44,594
HVAC control system – measurement	89,189	89,189	89,189
HVAC control system – reporting & analytics	-	44,594	44,594
Lighting control system – control	-	-	44,594
Lighting control system – measurement	44,594	44,594	44,594
Metering system	-	66,892	133,783
Metering system – reporting & analytics	44,594	44,594	44,594
Room controller	-	22,297	35,676

	Cost ($) **Good**	Cost ($) **Excellent**	Cost ($) **Exceptional**
Shading control system – measurement	44,594	44,594	44,594
Base-build hardware modification total	**278,715**	**552,413**	**1,218,524**
Software			
Amenity booking	11,149	33,446	44,594
Content management system	22,297	44,594	89,189
HVAC control system – reporting & analytics	-	-	44,594
Maintenance & Operations analytics	-	111,486	267,566
Metering system – reporting & analytics	-	-	44,594
Occupancy analytics	-	89,189	156,080
Real-time location software – carbon	-	-	44,594
Survey / feedback system	-	22,297	44,594
Visitor management system	66,892	66,892	66,892
Work order management	22,297	44,594	111,486
Software total	**122,635**	**412,498**	**914,185**
IoT			
Air quality sensing	-	17,838	35,676
Environmental comfort sensing – Co2	-	17,838	35,676
Environmental comfort sensing – daylight	-	22,297	35,676

	Cost ($) **Good**	Cost ($) **Excellent**	Cost ($) **Exceptional**
Environmental comfort sensing – noise	13,378	26,757	40,135
Occupancy sensing	-	22,297	33,446
Real-time location hardware	12,297	33,446	44,595
Smart lockers	-	-	22,297
Smart waste sensing	44,594	66,892	107,027
IoT total	**80,270**	**207,364**	**354,525**
Grand total	**481,620**	**1,172,275**	**2,487,253**

Where next?

If you are interested in understanding how WiredScore could help you understand the costs behind the model, please contact your Client Success representative.

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