

Time Utilization Studies at Corporations in UK

Situation

Many large corporations in the UK need to understand how workstations, meeting rooms, and collaborative spaces are used over time. Traditional methods of capturing this information involve manual 'bed-checks', or walk-through studies to check occupancy of specific spaces. This process required a technological solution for passive collection of data. At one of the facilities, there were 1,200 workspaces to be monitored both frequently and simultaneously.

Solution

Spinwave Systems' Energy Management Wireless Occupancy Sensor modules turned out to be the perfect solution for this application. These sensors can be easily installed and removed without disruption to the building aesthetics. The Space Utilization Study consisted of a month-long survey of office workstations and was performed in the early half of 2009. The wireless occupancy sensors were installed during weekends, indicating quick and straightforward wireless network set-up. The project was carried out by Abintra, Space and Facility Consultants in UK.

2: data is collected onsite and transmitted daily to abintra's server.



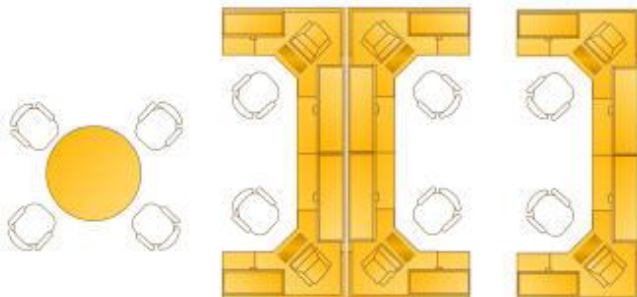
3: database is collated, analysed and rationalised.



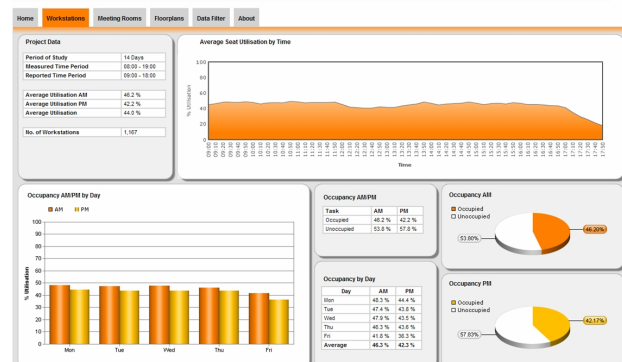
Abintra have developed and integrated the sensor data into a complete, automated data capture and reporting system called 'Wisenet'.

4: finalised data is published to the wisenet interface, which can be accessed from day 1 of the study.

1: sensors are placed at locations around the study area.



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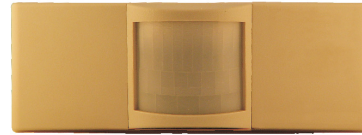
5: wisenet interface can be viewed via secure login over the internet from any location during the study, and after it has finished.



The data from the occupancy sensors indicates whether a workstation is occupied or not, and if it is, for how long - indicating workspace utilization.

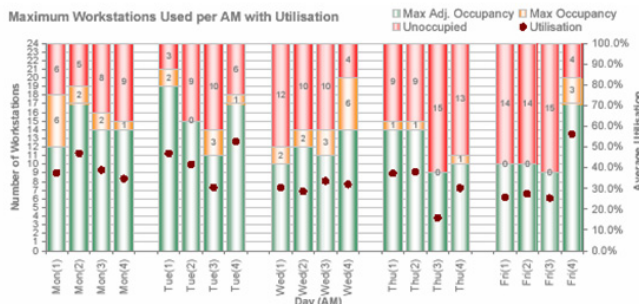
For example, if a workstation is occupied for only one hour in an eight hour workday, the average utilization is 12.5%. This also presents opportunities for cost reduction in terms of space lighting, ventilation, etc.

Spinwave's occupancy sensor is shown below. This device is powered by 2 AAA batteries, and has an open field range of 600 Ft.

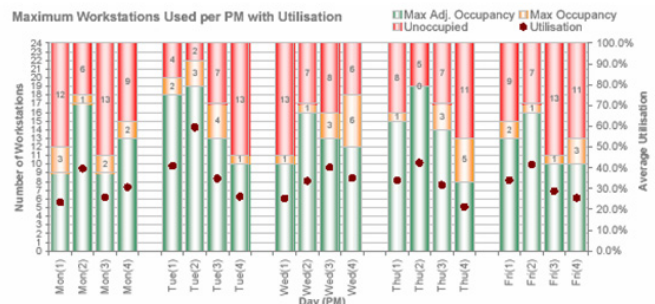


The data from these wireless occupancy sensors is transmitted through routers to the gateway receiver.

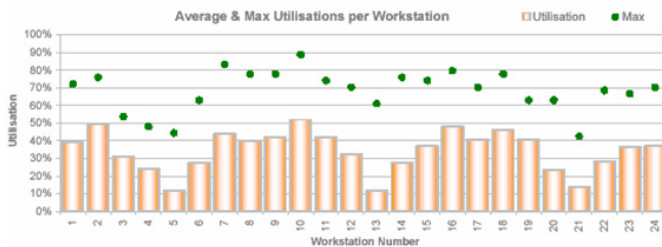
The figures below are taken from Abintra's Wisenet web application and final reports. The figure to the top left indicates the weekly (Monday through Friday for four consecutive weeks) utilization for 24 workstations before noon, and the figure to the top right indicates the utilization in the afternoon. The figure to the bottom left shows the average and maximum utilization for the 24 workstations for all days. The figure to the bottom left shows the numerical data for each of the 24 workstations: its average utilization percentage; maximum utilization; number of whole hours vacant; this figure as a percentage; number of 3-hours vacant occurrences; this figure as a percentage; number of days vacant; and this figure as a percentage.



A graph showing the maximum occupancy and adj. occupancy (see appendix) for the AM period per day against utilisation



A graph showing the maximum occupancy and adj. occupancy (see appendix) for the PM period per day against utilisation



A graph to show the average and maximum utilizations per for individual workstations over all days

Summary

The Finance department is top of the rankings with regards to average utilisation, with an overall figure of **34.4%**. At this level there is scope for the re-planning of the department to remove excess desks and to either dispose of space or add additional support to improve efficiencies. There is also scope to implement a flexible working strategy for most of the individuals within the department.

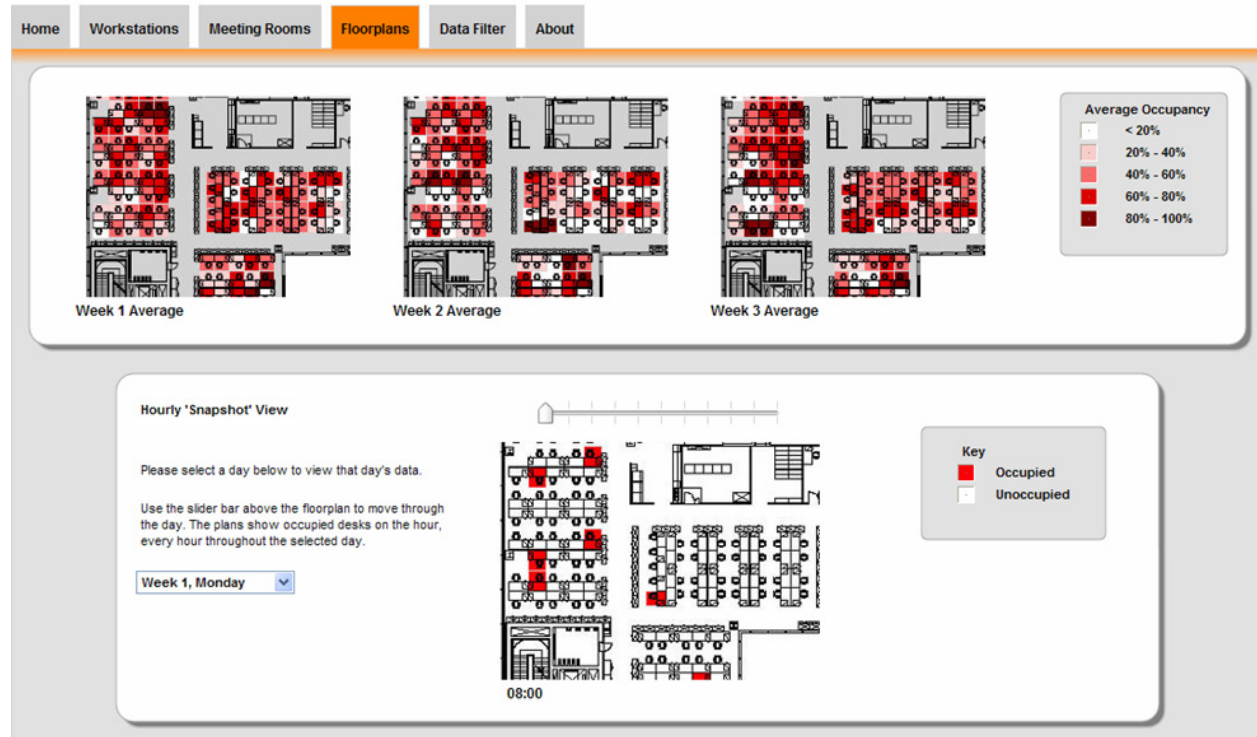
Desk Number	Average Utilisation	Max Utilisation	No. of whole hours vacant	%	No. of 3 hour periods vacant	%	No. of vacant days	%
1	39.4%	72.2%	72	40.0%	7	3.9%		
2	49.6%	75.9%	53	29.4%	2	1.1%		
3	30.5%	53.7%	87	48.3%	10	5.6%		
4	24.3%	48.1%	108	58.9%	19	10.6%		
5	11.9%	44.4%	148	82.2%	41	22.8%	8	40.0%
6	27.5%	63.0%	96	53.3%	18	10.0%		
7	43.9%	83.3%	63	35.0%	6	3.3%		
8	40.3%	77.8%	62	34.4%	7	3.9%		
9	42.2%	77.8%	66	36.7%	9	5.0%	2	10.0%
10	52.0%	88.9%	52	28.0%	4	2.2%		
11	41.9%	74.1%	67	37.2%	7	3.9%		
12	32.1%	70.4%	92	51.1%	20	11.1%	1	5.0%
13	11.5%	61.1%	145	80.6%	39	21.7%	10	50.0%
14	27.4%	75.9%	109	60.6%	23	12.8%	3	15.0%
15	37.0%	74.1%	84	46.7%	12	6.7%		
16	48.1%	79.6%	61	33.0%	6	3.3%		
17	40.6%	70.4%	78	43.3%	14	7.8%	1	5.0%
18	46.0%	77.8%	57	31.7%	1	0.6%		
19	40.5%	63.0%	71	39.4%	10	5.6%		
20	23.2%	63.0%	115	63.9%	25	13.9%	2	10.0%
21	14.0%	42.6%	141	78.3%	36	20.0%	6	30.0%
22	23.3%	68.5%	97	53.9%	15	8.3%	1	5.0%
23	38.4%	66.7%	84	46.7%	12	6.7%		
24	37.0%	70.4%	85	47.2%	12	6.7%		
TOTALS	34.4%	88.9%	2,091	48.4%	355	24.7%	34	7.1%

A table showing breakdown of results per workstation

With this data, the corporations measured their average utilization to be **34.4%**, suggesting room for cost reduction.

The figure below (top figure) shows the Weekly Average Occupancy for the workstations. Dark red color indicates high occupancy, and white color indicates very low occupancy.

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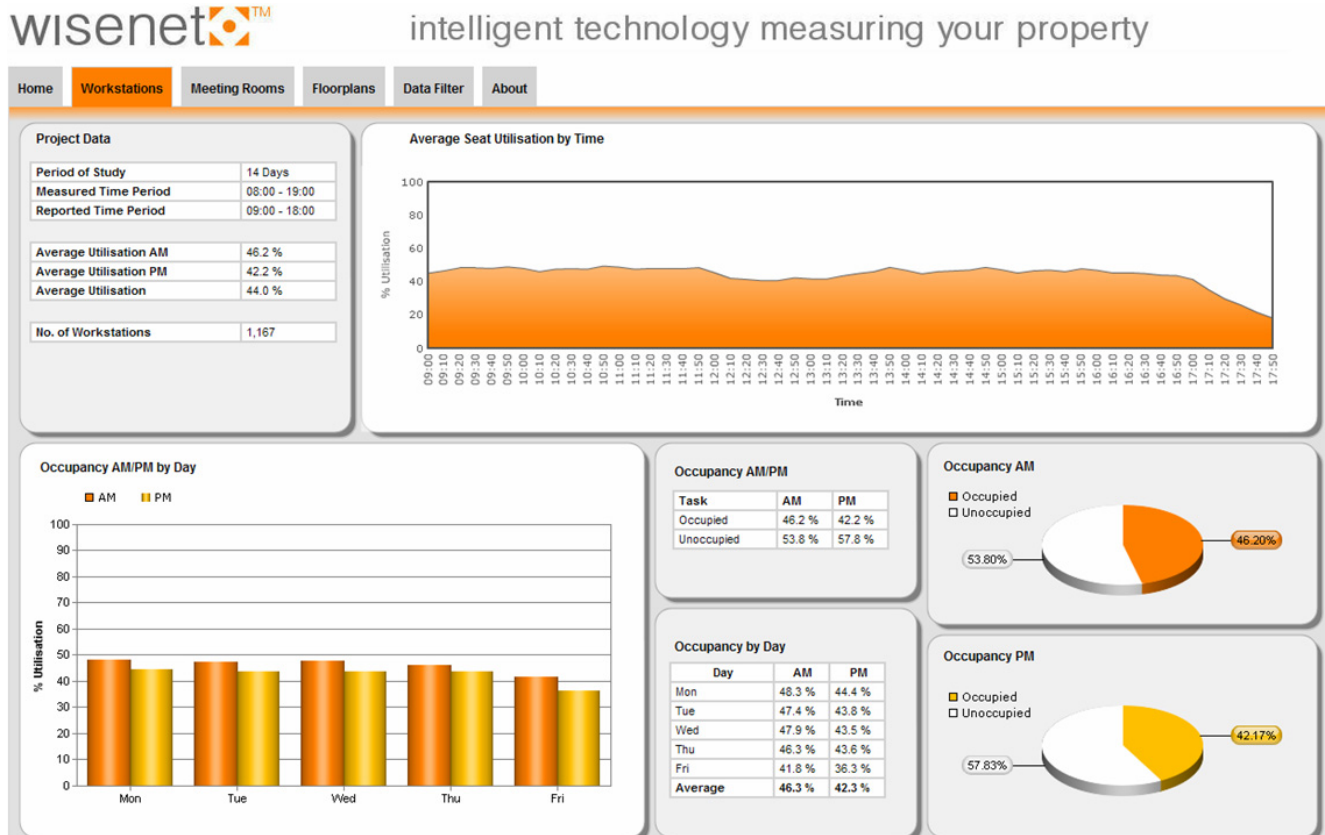


The bottom figure shows the daily occupancy at 8:00 AM on the Monday of Week 1 monitoring. Red indicates occupied and white indicates unoccupied.

This granularity in data is possible only through continuous monitoring and data logging of workstations using the Occupancy sensors.

The figure below shows a graphical view of the average seat utilization over time, from 9:00AM to 6:00 PM.

The sub-plots further show the occupancy by day (before noon, and after noon), and percentage utilization.



Summary:

With Spinwave's Energy Management Wireless solutions, integrated with Abintra's Wisenet application, various corporations in UK have been able to achieve numerous benefits:

- ⇒ Wireless sensors allow passive collection of utilization data – no longer relying on inaccurate manual studies
- ⇒ Studies can be carried out for longer periods of time due to unobtrusive nature of sensors
- ⇒ Permanent installations are possible
- ⇒ Installation is quick and straightforward
- ⇒ The wireless sensors provide granular data; not just average utilization but also utilization per workstation every hour, etc.
- ⇒ Maximum and minimum occupancy levels at any time throughout the day are available for the first time ever
- ⇒ With this wireless sensor system, corporations are able to accomplish typically 22% savings (based on an average of several studies)
- ⇒ Knowledge about the facilities' average, maximum and minimum utilization empowers Facilities and Estates teams to implement cost reduction strategies.