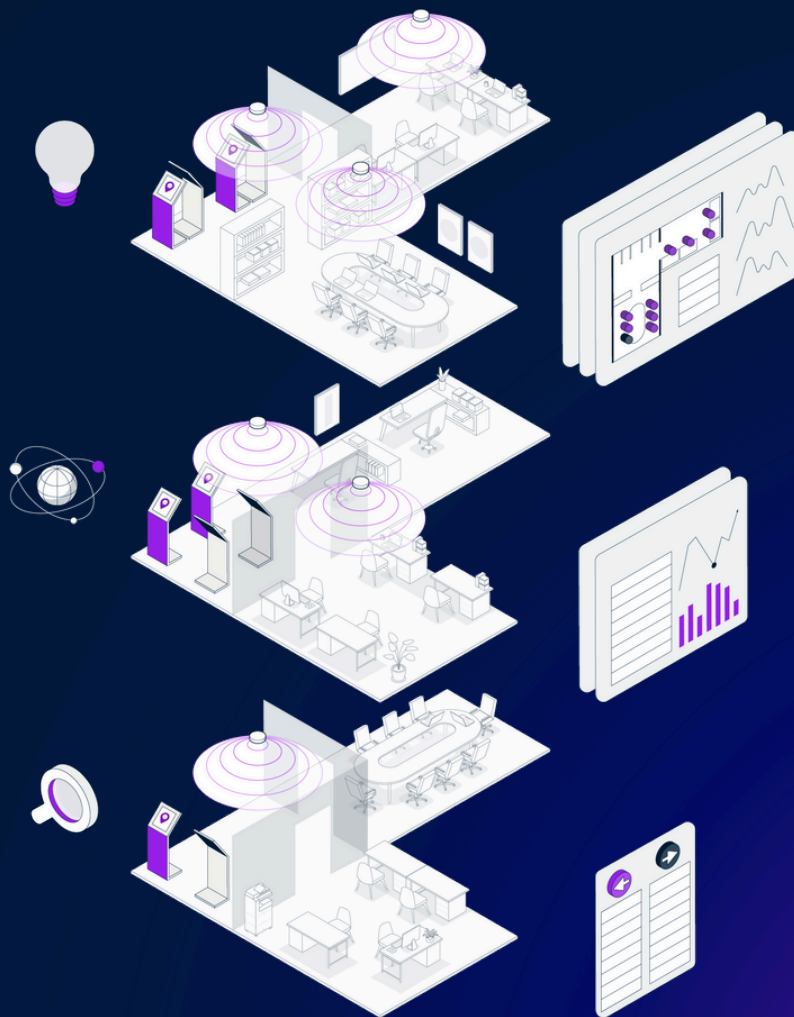# TANGO

The Occupancy Tracking Maturity Model: How to Get More from Occupancy Data

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Introduction

Every office-based organization wants to maximize the value their physical space provides. Real estate is a huge investment, so employers want to use their workplaces in ways that best align with their business goals. But even the world's largest, most successful enterprises struggle to optimize their space. Many are still paying for a significant amount of underutilized space. And their space allocations and office configurations are inhibiting, rather than supporting, their hybrid work initiatives and return-to-office mandates.

Physical space has always represented one of an organization's greatest expenses. But in recent years, new work models, norms, and technologies have enabled some employers to dramatically reduce their real estate costs and carbon footprints without impacting productivity, performance, or satisfaction. They're leaner and more agile than competitors that are still anchored to underutilized space—because their space and people are aligned.

These opportunities only present themselves when companies understand how people use their space. Some of the greatest opportunities to reduce costs and increase efficiency are rooted in optimizing office space based on occupant usage. And in that regard, most organizations still have a long way to go.

At the end of 2024, Tango conducted a study to learn how leading enterprises are using occupancy tracking in the workplace. We surveyed directors of real estate, HR, facilities management, and other roles that had significant control over investments in workplace technology at enterprises with at least $1 billion in annual revenue. Some of these companies had several layers of occupancy tracking technology—badge scanning systems, desk booking software, occupancy sensors, and BMS software—but most had at least two. When asked to estimate their organization's maturity in regard to occupancy tracking, **not a single respondent felt their company was "very mature."**

They were all just scratching the surface of what's possible with occupancy tracking.

As a leading provider of IWMS software, including space management and occupancy analytics solutions, Tango has always taken a technology-agnostic approach to workplace optimization that meets organizations where they're at. But we also recognize how this lack of occupancy tracking maturity is holding enterprises back, and what they'd gain with better data collection, greater analytics capabilities, and more realized value.

Using the findings from our Enterprise Occupancy Tracking Report and decades of experience building integrated workplace management systems, we developed a model for measuring and understanding an organization's occupancy tracking maturity.
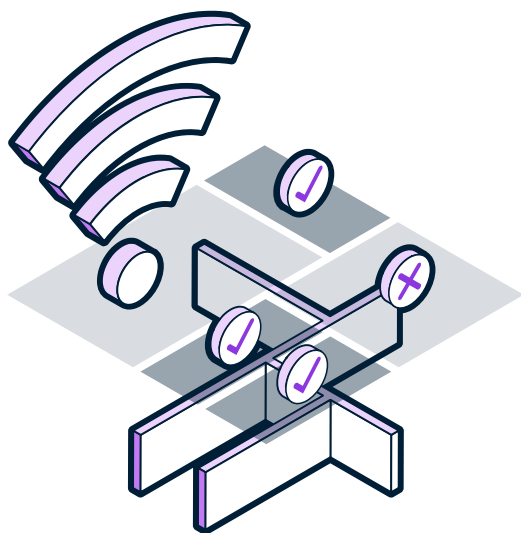
How to use this resource

Whatever your level of investment in occupancy tracking technology, and whatever use cases you've applied it to, this model will help you recognize how your organization can get more from occupancy data—and why aligning your space with the way people use it is key to maximizing the value your real estate provides.

This is a two-part resource:

1. A guide to the components of occupancy tracking maturity and examining how those components govern the value an organization can extract from occupancy data.
2. A scorecard for evaluating your organization's occupancy tracking maturity based on the specific criteria of this model.

We recommend reading the guide first, then using the scorecard. The scorecard is intuitive enough that you can use it separately, but note that this guide is also intended to help generate and support conversations about what your organization wants to get from occupancy data, and what it'll take to achieve those outcomes.

Occupancy tracking maturity						
Factor	**Sub-Item**	**Immature (1)**	**Intermediate (2)**	**Fairly Mature (3)**	**Mature (4)**	**Score**
Data Collection	Data coverage	Significant gaps in coverage of relevant buildings and spaces	Some coverage of necessary facilities and spaces	Significant coverage of relevant buildings across portfolio (75% or more)	Full coverage of relevant buildings across portfolio	_ / 4
	Data granularity	Infrequent data collection	Frequent data collection, mostly sees building-level data	Frequent data collection, granular data in some locations	Real-time desk-level data, occupant count in a room	_ / 4
	Data accuracy	Badge data only	Primarily relies on badge data but with controls for accuracy, reservations with the "was it used" components	Network-based monitoring, some sensors	Robust sensor systems and multiple layers of occupancy tech	_ / 4
Data Analysis	Data sophistication	Extremely limited ability to segment occupancy data	Only analyzes average occupancy level or peak occupancy level	Analyzes average occupancy level and peak occupancy level, segments data into many dimensions	Segments data by physical and personal dimensions for numerous metrics	_ / 4
	Data transformation	Data stays in a spreadsheet, may convert it to graphs	Doesn't visualize or integrate data in any meaningful way	Has some data visualization and integration capabilities	AI modeling and predictive analytics, visualizes and integrates data in many ways	_ / 4
	Analysis interval	Almost never analyzes occupancy data (once per year at most)	Rarely analyzes occupancy data (once or twice a year)	Analyzes data at infrequent intervals (quarterly)	Analyzes data at frequent regular intervals and as needed	_ / 4
Results	Data-driven decision making	Lack the technical capabilities for data-driven decisions	Relies on manual calculations, not utilization patterns	Data-driven decisions at a macro level	Data-driven decisions at a micro level	_ / 4
	Organizational alignment	No interest or trust in occupancy data usage across the business	Little, if any, alignment on data usage and trust across the business	Partial alignment of data usage and trust across lines of business	Strong alignment of data usage and trust across lines of business	_ / 4
	Use case breadth	Doesn't use occupancy data at all	Only uses occupancy data for high-level real estate planning	Uses occupancy data for space optimization, real estate planning	Wide variety of occupancy tracking use cases including sustainability	_ / 4
Total						_ / 36

The three components of
occupancy tracking maturity

Growing in occupancy tracking maturity isn't a matter of simply investing in more advanced technology. There are three distinct elements that contribute to maturity:

1. **Collection:** The occupancy data you have
2. **Analysis:** What you do with occupancy data
3. **Results:** The value your occupancy data provides

Factor 1: Collection

You can only optimize what you can measure. To some degree, your ability to use and benefit from occupancy tracking will always be limited by the types of data you collect and how you collect it. Your maturity in this area depends on three criteria:

1. **Data coverage**
2. **Data granularity**
3. **Data accuracy**

Data coverage

Office-based organizations don't need occupancy tracking in every building they have. In fact, our study found that *most* enterprises had significant coverage gaps in their portfolios. While some of these gaps were certainly due to lack of organizational maturity, there are valid reasons not to track occupancy in specific building types. A major enterprise, for example, may have a wide range of building types that aren't traditional office buildings, like field offices, warehouses, or manufacturing facilities.

So in this regard, "data coverage" is specifically about your coverage of relevant buildings. An organization with a very mature approach to data coverage has a clear understanding of which buildings are relevant, and it collects occupancy data from all that are, using appropriate data collection methods for each building.
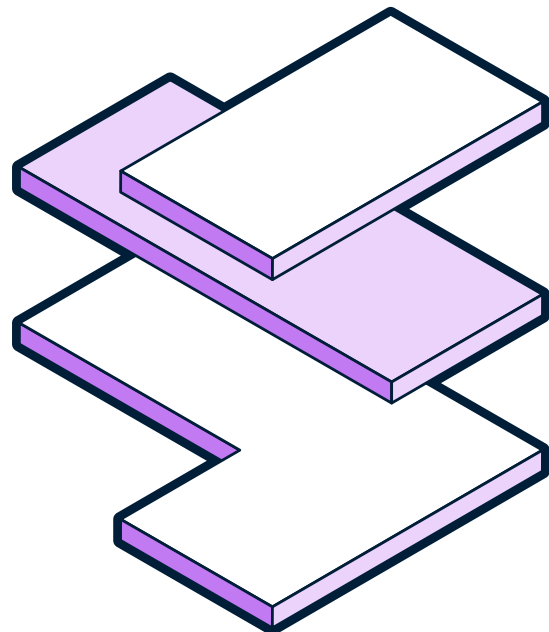
Data granularity

Any occupancy data can be useful. *Badge scanning data can be enough* to generally indicate underutilized space and reduce real estate costs. But to take advantage of more advanced opportunities—like identifying precisely which spaces are underutilized—you need more granular data.

Different data sources measure occupancy with different levels of specificity at different frequencies. Some solutions were built for other purposes (like access control) which limits what they can actually track and where. Others were purpose-built to deliver more precise insights, tracking occupancy in a wider range of spaces and contexts, and with greater frequency.

- **Badge scanning systems** provide the most basic building-level data showing the number of people who have passed an access point.
- **Desk booking software** provides room-and-desk level data for your reservable spaces, showing when a space is reserved and presumably occupied.
- **Manual walkthroughs** provide precise counts of the people in a space or occupied and unoccupied desks, but there are typically significant gaps in the intervals between walkthroughs.
- Network-based occupancy monitoring gives an approximate position of every person who is connected to your network infrastructure.
- Space utilization sensors can provide precise positioning data for every occupant in a space, whether it's a floor, room, or individual workstation.

The most mature organizations have the technology and processes in place to collect real-time data that shows exactly where people are in the office. And they'll typically use data from a variety of sources, depending on how granular it needs to be for a given use case.

In our study, data granularity was an area where some of the enterprises we surveyed would be considered very mature—36% had the ability to track real-time data, and about one-third had occupancy sensors—but they were held back by how they actually used their data and the value they were able to extract from it.

Data accuracy

Organizations with high occupancy tracking maturity have data they can trust to inform decisions about individual spaces within a workplace. Less accurate data sources are good enough for basic use cases like real estate, but more accurate data increases the value of these use cases and opens the door to new opportunities.

Badge scanning data can have several accuracy issues:

- Some systems allow multiple occupants to enter or exit at a time with a single badge swipe.
- Badges can malfunction and require someone to be let in without a scan.
- Not all systems track exits, making it difficult to know how many people are in the building (especially if employees engage in "coffee badging").

Desk booking software can have issues as well: someone can reserve a space and then not show up, so the space appears to be occupied when it's vacant. (Tango Reserve has a feature for addressing "no-show cancellations" like this, but it's not the norm for this category of solutions.)

Network-based occupancy monitoring uses signal strength to triangulate a network user's position, or the location of an ethernet port they're connected to. Some systems may not be sophisticated enough to recognize "duplicate" users when a single occupant is connected with multiple devices (Tango Occupancy de-duplicates this data), but more importantly, signal strength can only provide an approximate location. It works well for tracking large spaces or specific workstations, but may not always recognize when occupants move into rooms that are connected to larger spaces.

Occupancy sensors generally provide the greatest accuracy, but it depends on the specific types and models of sensors that you use, as the underlying technology uses different methods to detect and track an occupant's presence.

With greater data accuracy, an organization may find that their average or peak occupancy rates for reservable spaces are lower than what their reservation data suggested, due to no-show cancellations. Or they may find that their occupancy levels in a building are much higher than their badge data shows, as employees regularly hold the door for colleagues, or the prevalence of badge malfunctions makes the data less reliable. These accuracy issues can cause employers with an immature implementation of occupancy tracking to believe they've optimized their workplace around their people, only to discover new problems, which make them hesitant to trust and utilize occupancy data in the future.
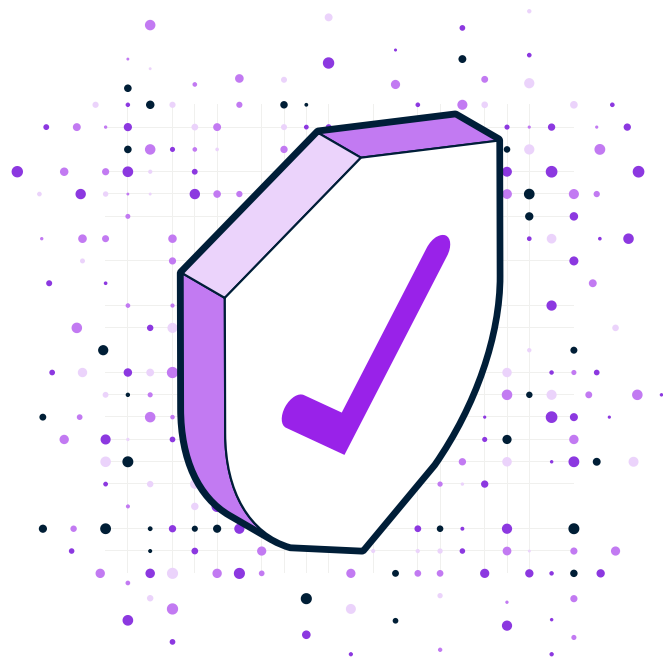
Factor 2: Analysis

Collecting occupancy data can only take you so far. In order to use it and reap the benefits, organizations need to perform regular analysis. An organization's maturity when it comes to occupancy data analysis is based on their performance in three key areas:

1. **Data sophistication**
2. **Data transformation**
3. **Intervals of analysis**

Data sophistication

On some level, your occupancy data sophistication is limited by your sources. There are only so many ways to analyze badge data. But your *occupancy analytics* system should enable you to segment and explore your raw data in multiple dimensions and convert it into meaningful metrics, too.

Depending on what insights you're trying to uncover, you may want to segment your data by department, team, space type, role, or other space allocation categories. Ideally, with a mature occupancy analytics system, you should be able to combine these dimensions to evaluate, for example, how many workstations a given department may actually need, or how well they've utilized dedicated meeting rooms. Or, perhaps you want to know which days and times a department is most or least active.

Organizations with mature occupancy tracking solutions and practices will also use the same underlying data to analyze a range of space utilization metrics, such as average and peak occupancy levels—even average peak levels—to develop a more comprehensive understanding of how typical operations and abnormal conditions affect the workplace.

Mature organizations will also leverage predictive analytics to forecast future demand for space and test the impact of various scenarios, such as new office configurations or changes in their hybrid work policy.

AI is now playing a greater role in occupancy data analysis as well. Whether analyzing utilization patterns, investigating the cause of changes in demand, or even determining which utilization metrics to explore, AI is bolstering the analytics capabilities of more mature organizations.

Data transformation

Occupancy tracking data is useful even if you only ever analyze it in spreadsheets. But it becomes immensely more valuable when you have the ability to integrate and reformat occupancy data in more meaningful ways.

Space management processes like stack planning, scenario planning, and move management (moves, adds, and changes) can all incorporate this data to improve analysis and discover new opportunities. As you visually organize your allocated space into blocks to consider high-level options for your portfolio, individual buildings, and specific floors, occupancy data allows you to block out underutilized space and analyze alternative possibilities.

Some occupancy analytics or space management solutions also enable you to visualize occupancy data directly on a floor plan, augmenting your CAD files with information about how well each space is being used. If your data is collected in real time, you can even create live floor plans to identify issues that are arising right now. This is especially valuable when rolling out major policy changes or overseeing special events that may fall outside typical utilization patterns.

Data transformation is an aspect of occupancy tracking that most organizations aren't very mature in. Even if they have the data coverage and granularity they need, they lack the capabilities they need to act on the information their technology collects. Data transformation is a key component of operationalizing occupancy data—moving from insight to action—and ultimately realizing value.

Intervals of analysis

Companies that aren't mature in their understanding and use of occupancy tracking don't analyze this data often—because for their purposes, they don't need to. They're not using it to refine workplace policies or optimize operations. It's just a real estate planning tool. As they consider lease renewals and evaluate whether to close or consolidate offices, occupancy analytics point them to underutilized locations and potential cost savings.

More mature organizations analyze occupancy data more frequently because they recognize it as a signal of workplace efficiency which they can affect through changes in policies and processes.

For example, a company that wants to optimize their hybrid work schedule may use occupancy analytics to coordinate which groups should be in the office on which days, fine-tuning their policies to keep peak occupancy levels and average occupancy levels from inhibiting employee productivity and satisfaction. With every policy shift that could impact the workplace, organizations with a mature understanding of occupancy tracking will measure the impact, examining how the policy increased, decreased, or redistributed occupancy levels, using new patterns as markers of how people are responding to the change.

Or, a company may use occupancy data to pinpoint opportunities to close floors or wings of a building on days where occupancy is low, generating energy cost savings and making their operations more sustainable.

Occupancy tracking maturity should lead organizations to analyze data at regular intervals—whether that's quarterly or monthly—to search for new opportunities, as well as on demand to investigate emerging challenges and anomalous usage. Mature organizations recognize occupancy data and space utilization metrics as an important indicator of workplace health. They know that it's an essential part of diagnosing issues in the workplace and determining how employees are responding to changes.
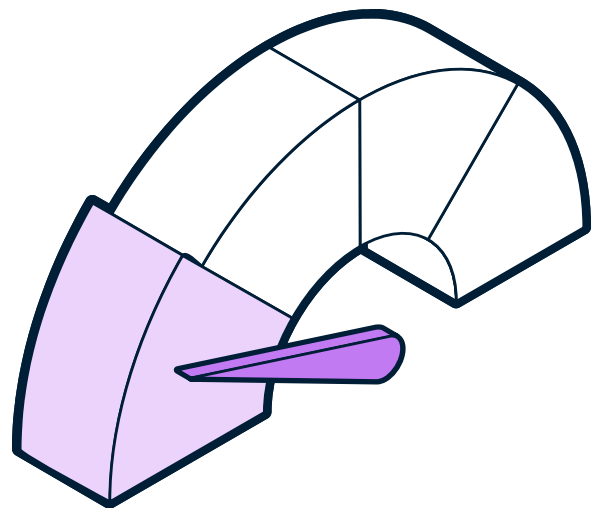
Factor 3: Results

Technological capabilities and organizational processes govern the value an organization can glean from occupancy tracking. But as organizations mature in their implementation and understanding of occupancy tracking, they grow in their ability to capture value and obtain results from this process. Here's what that comes down to:

1. **Data-driven decision making**
2. **Organizational alignment**
3. **Breadth of use cases**

Data-driven decision making

Workplace decisions about how to optimize space are often rooted in assumptions, opinions, personal experience, and subjective feedback. But as organizations grow in occupancy tracking maturity, they recognize and trust occupancy data as a solid foundation for making workplace decisions and designing their desired outcomes. It becomes the basis for major decisions and minor adjustments alike, with models predicting likely outcomes as the organization tests and validates ideas.

With lower occupancy tracking maturity, organizations may have manual processes for extracting value from occupancy data and incorporating it into workplace decisions. But they're still reliant on guesswork, predicting outcomes without proof, and making adjustments without the clarity occupancy tracking can provide.

Organizational alignment

When an enterprise has low occupancy tracking maturity, there may still be individuals, teams, or departments that recognize its value and attempt to harness the benefits. But the organization as a whole isn't there. Stakeholders aren't all familiar with the technology, what the data means, or how to use it. They don't trust it.

This lack of alignment prevents businesses from leveraging occupancy tracking to its full potential and recognizing the range of value and benefits it can provide. It creates friction against greater investments in the technology and processes needed to collect and make use of more granular data. The organization can't justify frequent analysis, and doesn't see the point in real-time analytics.

Organizations with strong internal alignment about occupancy tracking create a cycle of value generation: since they understand how it drives results, they rely on it more, make greater investments in it, and incorporate it in more applications. And thus they see more and better results.
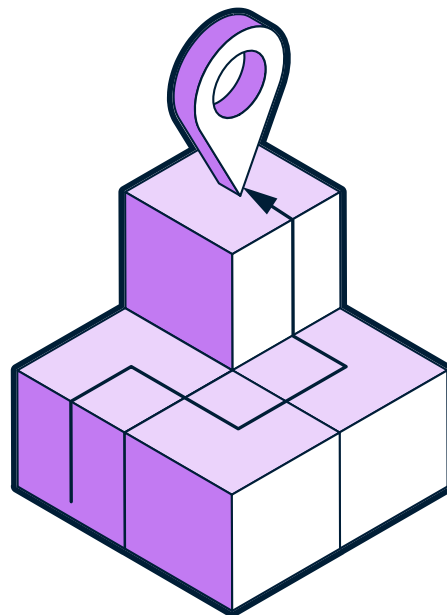
Use case breadth

In our occupancy tracking study, we asked enterprises to indicate how strongly 11 different occupancy tracking use cases aligned with their business needs. Every use case on our list had moderate, significant, or high alignment with at least two thirds of respondents. But another survey question revealed that none of the major enterprises we surveyed were using occupancy tracking for more advanced use cases—they were all, at most, using it for space optimization.

Many of these organizations considered themselves "fairly mature" when it came to occupancy tracking, but they weren't using it to:

- Optimize hybrid work or RTO initiatives
- Support building security
- Increase sustainability
- Lower maintenance costs
- Improve the employee experience
- Adjust strategic goals

And given that nearly a third (29%) of these organizations had occupancy sensors, and most (56%) had at least two sources of occupancy data, it would seem that the problem isn't necessarily a lack of data, but rather, an inability to act on that data. They may be held back by analytics capabilities or practices, or perhaps organizational buy-in. But in any case, enterprises want what occupancy tracking can provide, but don't know how to get those results.

As organizations perform more sophisticated and frequent analysis, transform their occupancy data into new formats, and trust it to serve as a foundation for decision-making, they'll recognize more mature use cases. Alternatively, the benefits of advanced occupancy tracking use cases can fuel the necessary growth to support them.

Now let's put it all together into a model you can use to evaluate your own organization's occupancy tracking maturity.

The occupancy tracking
maturity model

Your organization won't neatly fit into one particular maturity level across the board. Even when we group our occupancy tracking maturity criteria under the three categories of Collection, Analysis, and Results, your organization will likely meet some of the more mature criteria and some immature criteria within each category.

For example, you may have full (or substantial) tracking coverage for relevant buildings, but low accuracy, little granularity, or infrequent collection intervals. You'll also likely be more mature in some categories of maturity than others—like many of the enterprises we surveyed, which had significant data collection capabilities (including the ability to collect occupancy data in real-time), but didn't perform regular analysis and only used their data for space optimization.

To capture the multifaceted nature of occupancy tracking maturity, we've developed a model that lets you self-score your organization using a wide range of criteria. You can use your average score across these criteria to reflect your overall occupancy tracking maturity level. Crucially, this maturity framework can help you identify lagging areas. As we've seen, the interconnected nature of these factors means that one immature area can have cascading effects impacting all the others. Identifying and addressing weak areas is key to unlocking transformational value.

How to score your
occupancy tracking maturity

Within each category of maturity (Collection, Analysis, Results), there are three criteria at each tier (tiers being very mature, fairly mature,

intermediate, and immature). The criteria is worth 1–4 points, with "very mature" criteria being worth 4 points, and "immature" criteria being worth 1 point. For each category, your organization can score up to 12 points. You can divide your total score in each category by 3 to get your maturity in an individual category, or just divide your total score across all three categories by 9 to get your maturity score.

For each subcategory, select the three criteria that best fit your understanding of your organization's occupancy capabilities and practices. Fill in your answers in the data sheet on the next page.

So, how mature is your organization when it comes to occupancy tracking? How'd you score? Divide your total score by 9 to get your average, and see where you fall on the occupancy tracking maturity scale below.

Maturity Tier	Score
Very Mature	3.5–4.0
Fairly Mature	2.75–3.49
Intermediate	2.0–2.74
Immature	1.0–1.9

Occupancy tracking maturity

Factor	Sub-Item	Immature (1)	Intermediate (2)	Fairly Mature (3)	Mature (4)	Score
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	Data granularity	Infrequent data collection	Frequent data collection, mostly sees building-level data	Frequent data collection, granular data in some locations	Real-time desk-level data, occupant count in a room	__ / 4
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Total						__ / 36

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Tango is a leading provider of Integrated Workplace Management Systems (IWMS) software. Major global enterprises trust Tango's tools to empower their space management, lease administration and accounting, site selection, facilities maintenance, and construction project management processes.

With hybrid work emerging as a dominant workplace model, Tango's office reservation, space utilization, and visitor management solutions have become an integral part of modern workplaces.

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