

Conference Room Management Optimization

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Abstract — A formula is used to determine the optimum distribution of conference rooms for Infotech Aerospace Services, an engineering services company with 1,000 employees. Final recommendation is 8 tiny rooms (up to 2 people), 23 small rooms (up to 7 people), 17 medium rooms (up to 15 people), and at least 2 large rooms (more than 40 people). Simultaneously, work instructions are defined for the booking process, taking into account their specific circumstances and detailing the responsibilities of the people requesting conference rooms, the people in charge of booking the meetings, and their supervisors. Based on the company facilities and size, the optimum solution is to have a single person in charge of all booking of conference rooms. As this presents a significant risk whenever they are absent, the supervisor instructions include training backups to try to minimize the risk.

Key Terms — Booking, Headcount, Formula, Reservation.

INTRODUCTION

Engineering companies, as well as many others, have a need for conference rooms. They need them to interact with their customers, bringing in new work and strengthening their relationships. They need them for team events, to optimize the effectiveness of the people working in a project. And they also need them to handle the everyday teambuilding activities that turn a group of people into a team.

The engineering services company Infotech Aerospace Services is in the process of moving out from their current facilities. This presents the opportunity to implement lessons learned from their experiences in their current facilities. One of the feedbacks they have received is that their current

facilities do not have sufficient conference rooms. It is also worth mentioning that, throughout their time at their current location, this company has used different schemes for the reservation process for these conference rooms.

These circumstances delineate the objectives defined for this project:

- Identify the best practices that may be used to calculate the conference room needs for an engineering services company.
- Identify the most optimum method to handle conference room reservations.

This paper is divided into six sections. After this Introduction, the following section describes the results of the literature review used to gather best practices regarding the project objectives. This includes the pros and cons of the various reservation schemes. This is followed by a section where the conference room formulas described in the literature review are evaluated. The next section analyzes the results obtained from the formulas, and covers some optimization options. This is followed by a section detailing a final recommendation for the number of conference room needed, as well as the work instructions for conference room reservations. The final section is the conclusions, summarizing the proposed number of conference rooms and reservation methodology, as well as recommending some further research into the topic that may be worth pursuing.

LITERATURE REVIEW

At first glance, most of the research into the floor plan needs of a company focuses in the surface area needed. A good example of this is [1], which recommends that 17% of the total floor plan area for

a financial institution be dedicated to collaboration areas.

Other sources, however, focus instead on a company’s headcount and culture to determine conference room needs. The “Conference Room Ratio” is based on a company’s tendency to have private offices. The more private offices a company has, the less need for conference rooms there is, presumably due to office owners using their space to hold team meetings [2]. For floorplan layouts based on an open environment, as many as 1 conference room per 10 employees may be required. By contrast, if a company has sufficient offices, 1 conference room per 20 employees is sufficient.

Reference [3] takes the most rigorous approach. These guidelines take into consideration the size of the teams that make up a company. For each team size, recommendations are made to best suit their expected conference room needs as summarized in Table 1.

Table 1
Recommended Conference Rooms per Group Size

Conference Room Size (Maximum Number of People)	Employees per Team			
	1-10	11-20	21-40	40+
2	0	0	1	2
7	1	0	2	2
15	0	1	2	1
40+	0	0	0	1

Conference Room Reservation

When it comes to booking conference rooms, 3 alternatives are apparent:

- Allow any employee to book any conference room. There may be limits imposed on the employee, for example, by some sort of software that optimizes the choice for them, or a first-come-first-serve rule
- Similar to above, give certain employees / teams priority for certain conference rooms.
- Only allow one person / position to control all reservations. Employees must go through this person in order to book conference rooms.

Each of these alternatives has strengths, as well as weaknesses. While the first option provides all

employees with the greatest amount of power, it also can end up being exploited. One may find in the literature, for example, stories of employees who have reserved conference rooms for long terms to use as mini-offices [4].

The second option is particularly useful for companies with a spread-out infrastructure. If a company has facilities in separate locations, it makes sense to limit a person’s ability to book conference rooms to their location. However, in the case of Infotech Aerospace Services, this is not necessary. In fact, this strength also becomes this option’s weakness: if the priority location for an employee is already booked, they will be forced to look for booking with multiple different teams in order to book alternate rooms, which makes this method inefficient in this particular case.

The final option also comes with some risks. If for some reason the person in charge of conference room booking is unavailable, all rooms become unavailable. Proper risk management can handle this kind of risk: the position’s supervisor can ensure that a backup exists and is properly trained to handle both planned and unexpected absences.

A final caution must be made: conference room usage is not always consistent. Throughout the year, needs may peak and dip. Conference rooms may sit unused as much as 39% of the time [5]. Therefore, any attempt at identifying the number of conference rooms an organization needs ought to take this downtime into account.

CONFERENCE ROOM CALCULATION

As the first two conference room formulas presented are best described as rules of thumb, they are best used for the verification of the third formula obtained [3]. This formula uses as its independent variable the distribution of teams in a company. For this calculation, it is assumed that Infotech Aerospace Services has achieved its desired company growth with 1,000 employees. These employees may be divided into teams in two ways.

The first method of breaking down the company headcount is shown in Figure 1. Here, the company

is split on department size. This breakdown is possible because the methodology described in [3] assumes that a group will not always require a meeting of the whole team. Instead, Table 1 shows that big teams need both large and small conference rooms at different times.

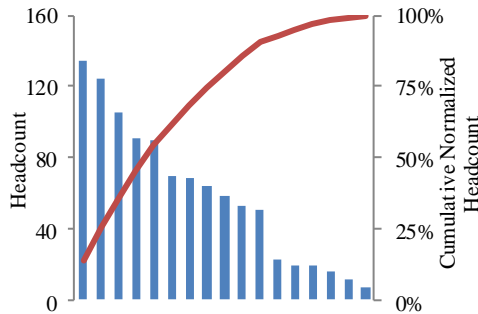


Figure 1
Pareto Chart of Department Headcount

The second method of breaking down a company headcount is shown in Figure 2. Here, the company is split into project teams instead. By using these two distributions, the distribution of conference rooms recommended by [3] can be calculated, as shown in Table 2.

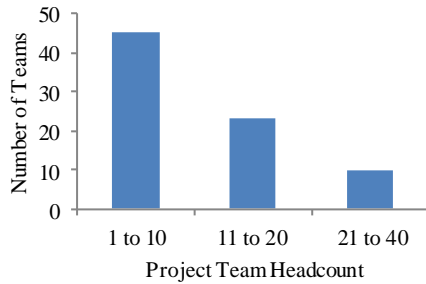


Figure 2
Distribution of Project Teams by Headcount

Table 2
Recommended Number of Conference Rooms of Each Size

Conference Room Size (Maximum Number of People)	Distribution Method	
	By Department Headcount	By Team Headcount
2	23	2
7	25	49
15	17	27
40+	11	0
Total	76	78

ANALYSIS OF RESULTS

When looking at the results for the two distribution methods, it becomes clear that they produce a very similar total number of conference rooms. These results also align very well with the Conference Room Ratio rule of thumb presented by [2]: this rule of thumb suggests that a company with 1,000 employees will need from 50 to 100 conference rooms. These values are almost exactly in the middle of that range.

However, when one compares these results to the current facilities used by Infotech Aerospace Services, they appear to be excessive: the company, with a given headcount greater than 800 employees, has less than 20 conference rooms. This is half of the lower limit recommended by the Conference Room Ratio. The reason for this is that Infotech Aerospace Services is using three best practices to supplement their current facilities. These are: (1) modular meeting spaces, (2) temporary meeting facilities and (3) virtual meeting spaces.

Modular Meeting Spaces

The current facilities include a large meeting area that can, under optimum conditions, seat roughly 400 employees facing a stage. This area is most commonly used as a lunch facility. It can also be rearranged into more than a dozen separate smaller conference areas, each capable of seating up to 8 employees.

Temporary Meeting Facilities

Infotech Aerospace Services has taken advantage of multiple alternative facilities, or made temporary meeting spaces when necessary. Two particularly memorable examples are:

- Renting trailers separated into small offices to be used during end-of-year employee evaluations
- Renting out a nearby movie theater for a meeting of the whole company.

Virtual Meeting Spaces

As a general rule, this company's customers reside and work in the continental United States. Therefore, most customer meetings take place through teleconferencing. In fact, there are certain instances when it is more advantageous for a team to use virtual meeting spaces, particularly when multiple persons are meant to be manipulating data in close succession.

RECOMMENDATIONS

Number of Conference Rooms

There is no reason why Infotech Aerospace Services should stop using the best practices described in the previous section. In accordance with [5], these techniques can be used to reduce the recommended number of conference rooms as follows:

- Tiny Rooms (up to 2 employees): 8. This represents roughly 1 per every 2 departments.
- Small Rooms (up to 7 employees): 23. In both employee distributions calculated, the total number of tiny and small rooms added together was roughly 50. Multiplying this number by the factor found in [5] (61%) and subtracting the selected amount of Tiny Rooms leaves 23 Small Rooms.
- Medium Rooms (up to 15 employees): 17. This translates to 1 for every department.
- Large Rooms: at least 2. This doubles the number when compared to the current facility,

and brings our total number of conference rooms to 50.

Conference Room Work Instructions

Of the alternatives discussed in the Literature Review section, the one that best fits Infotech Aerospace Services is to have a single position in control of all conference rooms. This way, the company will still have control of them, while at the same time making sure that employees seeking to book a room don't need to contact multiple people to do so. Work instructions should describe the responsibilities of the person wanting to book a room, the person in control of the rooms, and the supervisor of the person in control of the rooms.

The person wishing to book a conference room shall send his request electronically. This message will be sent to a distribution list, so that multiple people receive it simultaneously (the person or persons currently responsible for booking, their backup or backups, and their supervisor). The booking request must include the Title of the meeting, a brief description of the meeting purpose, the number of people who will be present, and the meeting room needs (telephone, whiteboard, projector, computer, etc.). If the requestor has a preferred meeting, they should mention it. Should the meeting be cancelled, this should be conveyed to the distribution list as quickly as possible.

The person who receives the meeting request shall verify the meeting request. If everything is in order, they will book the meeting and send a reservation record to the same distribution list electronically. If there are any issues preventing the booking, they shall contact the requestor and offer alternatives that meet their requirements until a solution is found. Should the person become unavailable, they shall notify their supervisor promptly so that the backup may be activated.

The supervisor is responsible for the training of the person in charge of the conference rooms, as well as the backup(s). They shall also be responsible of keeping the distribution list up to date. They will track the effectiveness of the process and the people performing it by looking at the turnaround time

between the sending of the booking request and the sending of the reservation record. They should also gage the company's conference room culture by auditing received booking requests for completeness, and by going over periodically and confirming that the booked meetings are happening.

CONCLUSIONS AND FURTHER STUDIES

The distribution of conference room types (8 tiny rooms, 23 small rooms, 17 large rooms, and at least 8 large rooms) is based on the formula described in [3]. The recommended total number of conference rooms (50) is aligned with the Conference Room Ratio suggested by [2], and comes from applying the 61% utilization rate found in [5] to the results calculated from [3]. Even this total is more than twice the number of conference rooms at Infotech Aerospace Services' current facilities. The original recommended total was more than 3 times the current number of conferences. Ideally, the reduction to a total of 50 conference rooms will lower the risk of management not accepting these recommendations.

Instructions have been detailed for the process of booking conference rooms. These establish the responsibilities of the person requesting the booking, the person making the booking, and the supervisor of the person making the booking. Each of the project's objectives has been met, and they offer at least one area of further study.

One of the disadvantages of modular design is that features available for modular rooms, by need of being mobile, tend to be less robust than those of non-modular rooms. However, that does not mean that they cannot serve the same needs of permanent rooms. As an example, if one considers a large room, it usually only needs on computer and one projector to be permanently installed. However, Wi-Fi and mobile screens allows the room to be broken up into smaller rooms, each with the same capability.

Regarding the instructions, as they are currently written they are necessarily vague as to the platform used to send electronic messages. Some of the described tasks, particularly those of the supervisor,

are beyond those usually performed through e-mail alone. There are opportunities for automating these processes, to make tracking the quality of the instructions more efficient.

Both aspects of this project have been enhanced as a result of technology, and may be further enhanced by it as well. Ultimately, however, as these all serve to improve the use of conference rooms, they are aimed at helping Infotech Aerospace Services to increase their teamwork, which is the greatest enhancer of all.

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