EXAMINING DRIVERS OF NON-TERRITORIAL WORKSPACE IN CORPORATE APPLICATIONS

A THESIS SUBMITTED TO THE FACULTY OF THE UNIVERSITY OF MINNESOTA BY

ANNE FARNIOK

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

Adviser: Richard Strong, Senior Lecturer, School of Architecture, College of Design,
University of Minnesota

October 2019

University of Minnesota
Copyright Anne Farniok, 2019.
ACKNOWLEDGEMENT

I would like to first acknowledge my committee for their assistance in the completion of this thesis. I’d like to thank my committee chair Richard Strong for his guidance, patience, and encouragement during this long arduous journey. My journey as a practitioner and educator has followed Dr. Caren Martin, and I appreciate the inspiration and insight you’ve given me over the past few decades. I would also like to thank Blaine Brownell for his advisement at the beginning and the end of my graduate journey.

I would also like to recognize the interviewees for giving of their time and my acquaintances for putting me in contact with them. In addition, I would also like to acknowledge my many industry colleagues and friends who put their faith in me and cheered me along the way.
DEDICATION

This thesis is dedicated to my family for their steadfast love, support, and patience during this quest. My parents gave me the foundation to begin the study, my husband the support to endure and my children are the reason to complete and achieve my work.
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS .........................................................................................i

LIST OF TABLES ................................................................................................ iv

LIST OF FIGURES ................................................................................................. v

ABSTRACT ........................................................................................................... vii

CHAPTER 1 OVERVIEW ....................................................................................... 1

CHAPTER 2 REVIEW OF LITERATURE ................................................................. 5

CHAPTER 3 METHODS ......................................................................................... 32

CHAPTER 4 FINDINGS and DISCUSSION ............................................................ 45

CHAPTER 5 SUMMARY and CONCLUSION ......................................................... 121

BIBLIOGRAPHY ................................................................................................. 130

APPENDIX A. COMPANY QUESTIONNAIRE ...................................................... 138

APPENDIX B. INITIAL EXPLORATORY SUBJECT-MATTER EXPERT INTERVIEWS 143

APPENDIX C. LETTER FROM IRB, UNIVERSITY OF MINNESOTA ................... 163

APPENDIX D. DEFINITION OF KEY TERMS ....................................................... 164
LIST OF TABLES

Table 1. Motivating Factors A.................................................................13
Table 2. Motivating Factors B...............................................................14
Table 3. NTWS Drawbacks and Benefits.................................................22
Table 4. Company Information.............................................................37
Table 5. Minnesota Office .................................................................37
Table 6. Interviewee .................................................................38
Table 7. Drivers .................................................................113
Table 8. Implementation of NTWS Across All Companies .................115
Table 9. Utilization of NTWS Across All Companies ......................116
Table 10. Space Allotment for Workstations of NTWS Across All Companies ..........117
Table 11. Change in Workstation Sizes of NTWS Across All Companies ........119
Table 12. Employee Acceptance Challenges of NTWS Across All Companies ........120
Table 13. Employee Acceptance Positives of NTWS Across All Companies ........121
Table 14. Cost Impact of NTWS Across All Companies .......................122
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Maslow's Hierarchy of Needs</td>
<td>2</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Proxemic Distances</td>
<td>9</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Johnson Wax Building Open Office</td>
<td>15</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Cube Farm</td>
<td>16</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Chiat Day Early ‘Open’ Office</td>
<td>17</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Office Timeline</td>
<td>19</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Biophilic Design</td>
<td>20</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Work Choice</td>
<td>22</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Pre- and Post ABW Floorplans</td>
<td>51</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Collaborative Area</td>
<td>56</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Innovation</td>
<td>66</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Collaborative Strategy Room</td>
<td>77</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Open and Private Collaboration</td>
<td>80</td>
</tr>
<tr>
<td>Figure 14</td>
<td>Previous Workstation floorplate</td>
<td>77</td>
</tr>
<tr>
<td>Figure 15</td>
<td>Current Workstation floorplate</td>
<td>77</td>
</tr>
<tr>
<td>Figure 16</td>
<td>Transit Area</td>
<td>80</td>
</tr>
</tbody>
</table>
Figure 17. Focus Area ...........................................................................................................81
Figure 18. Collaborative Area ...............................................................................................99
Figure 19. Collaborative Area ..............................................................................................100
Figure 20. Workspace Variety ..............................................................................................105
Figure 21. Activity-based Work Zones ................................................................................106
Figure 22. Open Work Area. ...............................................................................................107
Figure 23. Teaming Area .....................................................................................................109
ABSTRACT

The purpose of this exploratory study was to gain an understanding of the drivers of a radical shift happening within space planning of office interiors. We are at a pivotal point in the design of the office. The cubicle farms or Dilbertvilles of the past are no longer the accepted norm in workplace environments (Miller, 2014). Gone are the days of providing the standard 8’ x 8’ workstation with a behemoth personal computer where a worker was tethered to where and how they worked.

Designers of today are being asked to create interior environments that respond to a variety of requests that are beneficial to the company as well as the employee. The designer is challenged with creating an experience that attracts and retains knowledge-based workers while also fulfilling the company’s needs to being cost effective and efficient (Miller, 2014). There are a multitude of drivers that play into the creation of the ultimate workspace. This thesis asks the question: What are the drivers for companies to move to a non-territorial workspace strategy (NTWS)?

NTWS gained strength during the global financial crisis (2008) as a way to save money by reducing space usage (Katrina, 2013). NTWS is a strategy that focuses on current workplace trends of mobility and flexibility. Statistically, occupancy rates of traditional workspace, range from 50-80% (Office, 2018). To minimize real estate and the associated costs that are encumbered with increased space usage, NTWS or free address strategy uses unassigned workspace (i.e., no longer dedicated to a specific person), but allows employees to choose or reserve a workspace on their arrival. The NTWS uses data from occupancy surveys to show a building’s space usage. These
occupancy surveys show that on any given day (in a territorial workspace), approximately 70% of your workstations or offices would be filled (Office, 2018). Non-territorial workspace strategy has many different pseudonyms: free address, hoteling, agile work, mobile work, and activity-based work. NTWS is the practice of not assigning an office employee a permanent workstation or office.

The researcher used two forms of research. Initial informal exploratory subject-matter expert interviews followed by seven case studies of multinational fortune 500 companies in the Minneapolis-Saint Paul, Minnesota area that analyzed the drivers for companies, along with the differences and similarities in their approaches to NTWS.

The NTWS strategy is in conflict with established environmental psychology constructs and the theory of motivating factors that identifies place attachment and territoriality as a key component in people’s comfort with their surroundings.

The research showed that each company selected NTWS as a means to solve needs to reduce costs and as a method to work differently in response to a changing work culture.

This paper will explore the concepts that are used in non-territorial workspaces and outcomes observed through the research.
CHAPTER 1. OVERVIEW

Introduction

Chapter one describes the controversy surrounding NTWS and the importance of this study. The researcher also introduces the history of office design, workplace trends, and an empirical overview of NTWS. This is followed by an exploration of the separate concepts of autonomy and territoriality. The chapter concludes with a review of several environmental psychology concepts that relate to the study.

NTWS is a concept that been primarily adopted in the past decade. It is used in space planning office interiors (Hoteling, n.d.). It is the concept of unassigned and reduced workspace for employees. Space planning concepts that address NTWS provide varied spaces for employees to do one’s conduct their work that include open and private areas along with the ability to provide for a focused and collaborative working environment. NTWS is a departure from traditional office space planning that provided a designated space for each employee. The shift is one that has saved companies substantial amounts of money (Patel, 2016), and has also provided for a more flexible, mobile workstyle. NTWS however also has limitations. Numerous complaints of inability to locate desks and coworkers and a lack of sense of belonging (Kim, 2016).

One aspect that may be affected by NTWS adoption is a human’s well-being. Several factors play into a humans’ well-being. Maslow’s hierarchy of needs outlines that
once basic needs are met, other psychological needs follow (Kopek, 2018). Thus once we are safe and have food, water, and shelter the need for belonging follows.

![Maslow's hierarchy of needs](https://www.simplypsychology.org/maslow.png)

*Figure 1. Maslow’s hierarchy of needs From “Maslow’s Hierarchy of Needs” by McLeod, S. (2018, May 21). Retrieved from https://www.simplypsychology.org/maslow.html*

The theory would imply that the **non-territorial workplace strategy** (NTWS) is in direct conflict with the human’s innate needs for territoriality which falls somewhere between basic and psychological needs (Kopek, 2018). Although there is significant media published both pro and con for this strategy there’s little empirical literature examining the impact of territoriality and NTWS on employees.

The strategy gained popularity during the global financial crisis that began in 2008 (Miller, 2014). During this time and what followed, companies and individuals were working hard to meet the basic financial needs of survival (Shatonka, 2015). However, the climate today is much different than when the strategy began to take hold. Unemployment is at an all-time low and companies scrambling for workers. In relation
to Maslow’s needs theory, industry has shifted from financial survival to self-actualization. Leading the researcher to ask how and why are companies using a workplace strategy that opposes an innate human characteristic?

**Rationale of the Study**

The move to NTWS was a reactive approach during difficult economic times. The trajectory of the strategy provided companies with significant financial benefits and thus became an industry trend. NTWS is a strategy used in the planning of office interiors that has gained momentum with minimal research on the effects it is having on the employee.

The researcher is a student of sustainable architecture, an interior design practitioner, educator, and Leadership in Energy, and Design Accredited Professional (LEED AP). This background prompted the study of the practice of NTWS.

**Purpose and the Research Question**

The practice of using NTWS within office spaces has caused a disruption to the status quo of how people have worked in office based settings for many years. Disruptors are known both to cause turmoil, but also known to spark innovation. This recent practice of unassigned desks in an office sparks many questions about the practice. Research in this topic area is minimal and media stories are conflicted. This study will help to provide a further understanding of why companies are choosing NTWS for their workplace design.

Design professionals are asked to create spaces that impact the lives of the occupants in a positive manner (A.S.I.D., n.d.). The designer should use an evidence-
based approach to design these spaces effectively. NTWS is a strategy that has had minimal research as to its effectiveness and outcomes on the employee. This prompted the researcher to inquire about the practice and want to understand why companies are using a strategy that belies the innate human need for territoriality. By surveying several companies who implement this strategy the researcher would contribute to the body of knowledge on the study of NTWS.

Through the interviews of several design professionals in the facility sector, the researcher gained initial insights on NTWS and its implications. The purpose of the study is to evaluate how and why companies are using the NTWS in today's design of workspaces.
CHAPTER 2. REVIEW OF LITERATURE

Introduction

This chapter describes the controversy surrounding NTWS. The researcher also introduces the history of office design, workplace trends and an empirical overview of NTWS. This is followed by an exploration of the separate concepts of autonomy and territoriality. The chapter concludes with a review of several environmental psychology concepts that relate to the study.

The outcome of the literature research showed several factors affecting companies’ adoption of NTWS. The discussion that follows will cover essential causes, methods and implications of NTWS.

To gain understanding of the concept of NTWS, it is important to realize that NTWS is both a business and real estate strategy.

The real estate side of the strategy focuses on space reduction. Space is reduced through strategic and effective space planning (Patel, 2016). The arrangement of space and types of space that are provided is necessary to support the employee with the area they need to carry out their work in an effective and productive manner.

The business side of NTWS incorporates several factors including the employee. The literature review identified NTWS affects an employees’ well-being (Kim, 2016). This is significant as the single most important asset and cost of a company is its’ employees. Labor may be as high as 70% of a company’s costs (Labor, 2019).
Implications of NTWS that presented during the literature study included unexpected consequences and oppositional literature. One recent study showing that open workspaces actually decrease face to face interactions among co-workers (Bernstein, 2018). The most extensive opposition in the literature research came through periodicals. Many trade journals have a negative view on NTWS. The premier business periodical Forbes ran an article in June of 2019 that stated “If you hate your company, its employees and the shareholders then go ahead and introduce the latest management fad: Hot-desking (Constable, 2019).” Hot-desking is another term used to describe NTWS. The polarity of this office design strategy and its popularity of use calls for further research.

Over the last century the design of the workplace has responded to industrial changes in mechanization, efficiency, and collaboration. These include the move from the type-writer to computer as well as the request to lower workstation walls and provide more open space to foster interaction. (History, 2018). The most recent trend in non-territorial workspace is one of the largest shifts as it uses a strategy which dismisses many of environmental psychology theories of place and territoriality. The discussion that follows outlines the history of the modern workplace and looks at place, territoriality, and motivating factors.

**Behavioral Concepts- Environmental Psychology**

Understanding of the implications of NTWS and its effects on employees requires a basic understanding of environmental psychology. Environmental psychology as a field has been studied by place scientists for the last 50 years. (Augustin, 2009) This field of study focuses on how places affect you mentally, and physically, and what changes are
needed to make a person more comfortable and productive in their space. Human factors that influence the way an individual’s comfort in space include: personality, locus of control, religion, evolution, and gender, personal space, territoriality, and crowding, and density (Kopek, 2018). For the purposes of this paper we will focus on four subject areas highly affected by NTWS. These include personal space, territoriality, crowding, and density and place.

**Personal space.**

Personal space is an interpersonal phenomena and doesn’t exist without interaction with others (Kopec, 2018). The amount of space we place between ourselves and others affects our behaviors. We need less space when we feel comfortable and more space when we do not. Social learning theory states that personal space is acquired over time and is a learned behavior (Hall, 1992).

Culture and a person’s history affect their preference for personal space. Personal space is an important part of design as if effects an individual’s comfort within a space. In western culture personal space is related to proximity while in eastern cultures it is about social rules such as eye contact and visual invasion. "Within western cultures personal space is so important that when we are too close or too far from another person, our personal comfort levels are adversely affected” (Kopec, 2018). Edward Hall wrote about proxemics in regards to human’s use of space. Spatial bubbles include four different spatial zones in which most people interact these include intimate (less than 18”), personal (18-48”), social (4-12’), and public beyond 12 feet.
Violation of one’s personal space can happen in a variety of ways. These could be represent physical, olfactory, acoustic or visual invasions.

**Territoriality.**

Territoriality is a characteristic that is innate in all animal species (Kopec, 2018). It relates to an individual’s belongings, and to assumed rights, and privileges (Deasy, 1985). The territories we claim give us a sense of control. If our territory is invaded without permission, we feel loss and anger. People value privacy and their personal territory (Proxemics, 2010).

Consider yourself when you’re going to a concert or sports activity with unassigned seating. Most individuals will mark it with a personal item conveying to other spectators that the seat is taken. These behaviors of defining territories help to organize human behavior and reduce aggression. According to Hall, one of the most important
functions of territoriality is spacing (Hall, 1992). Other functions of territoriality include preservation of the species, and the environment, personal, and social functions and status.

Territories can further be segmented into primary, secondary, and public. Primary is typically owned and controlled on a somewhat permanent basis by an individual. Secondary territories are less important, likely to change, and offer only moderate significance. Public territories are open to anyone and an occupant cannot expect to have much control (Kopec, 2018).

Territorial infringement causes conflict and aggression. Defensible Space Theory suggests that territories can be determined by design (Kopek, 2018). The theory developed by Oscar Newman outlined buildings with high crime rates as not having enough space to encourage territoriality. Lack of a sense of ownership in these spaces led to occupants not defending the space. “Territoriality is a strong sentiment in most societies and is not likely to disappear in the foreseeable future” (Deasy, 1985).

The research also identified that humans in the absence of rules of behavior will make their own. Clique forming and territoriality can happen and that could lead to resentment. When people don’t feel safe this may lead to employee turnover (Pochepan, 2018)
Crowding and density.

NTWS is a densification of space. Densification can lead to crowding. Crowding and density are triggers for stress in humans (Kopek, 2018). There are many studies done with humans and animals that highlight and explain how these issues cause stress. Most of us have experienced the anxiety that can be caused by a space where you feel trapped whether it is a traffic jam during rush hour or a mass of people leaving a concert or sports venue. These feelings have been studied by scientists.

The ethologist (scientist studying animal behavior) John Calhoun did a fourteen year study on Norway rats in 1958 that provided important information in regards to animal behavior crowding and density (Hall, 1992). What Calhoun observed is at a certain density disruptions were apparent. These included disruptions to nest building, courting, sex behavior, reproduction, social organization, and physiological effects. Calhoun’s studies along with studies of other species showed that animals regulate their own density as a function of self-preservation. The results in Hall’s book showed that when crowding becomes too great, interactions intensify leading to greater and greater stress (Hall, 1992).

Place.

Place is a notion of where we belong in the world. It is broken up into place identity, place meaning, and place attachment. Place Attachment is formed when a person has a connection to an environment. This attachment is more likely to occur when personal items are used within a space (Kopec, 2018). It is also a concept that designers of workspaces try to achieve as it is synonymous with commitment and loyalty
(Kopec, 2018). Place identity can cause positive or negative feelings based on the happenings associated with that place. Research supports that forming place attachments fulfills emotional needs (Gifford, 2014).

**Motivating factors for occupants of space.**

Motivating factors are guidelines used to educate designers. When designers create spaces they must concern themselves with the human dimension, and understand what provides a person comfort, and what causes them angst. Motivating factor guidelines are a culmination of various scientists work including Leighton and Maslow (Deasy, 1985). The factors that affect humans’ response to their environment include: friendship formation, group membership, personal space, personal status, territoriality, communications, cue searching, and personal safety. Highlighted in the Table 1 below are the key factors to consider in spatial arrangement of an office the first column represents open office unless called out as enclosed space.
<table>
<thead>
<tr>
<th>Personal space</th>
<th>Identify an individual’s workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Provide lockable personal storage</td>
</tr>
<tr>
<td></td>
<td>Face oncoming traffic</td>
</tr>
<tr>
<td></td>
<td>Avoid traffic concentration</td>
</tr>
<tr>
<td></td>
<td>Provide local control of light and heat</td>
</tr>
<tr>
<td></td>
<td>Provide window views</td>
</tr>
<tr>
<td></td>
<td>Provide flexible furnishings</td>
</tr>
<tr>
<td></td>
<td>Provide for personalization</td>
</tr>
<tr>
<td></td>
<td>Provide for ease of cleaning</td>
</tr>
<tr>
<td>Enclosed room</td>
<td>Ensure visual privacy</td>
</tr>
<tr>
<td>Enclosed room</td>
<td>Ensure acoustic privacy</td>
</tr>
<tr>
<td></td>
<td>Involve people in the design process</td>
</tr>
<tr>
<td></td>
<td>Appearance is important</td>
</tr>
<tr>
<td></td>
<td>Distribute amenities fairly</td>
</tr>
<tr>
<td></td>
<td>Stay within the norms of the field</td>
</tr>
</tbody>
</table>

*Table 1. Motivating Factors - A*
### Territoriality

| Establish Clear Boundaries |

### Group Membership

| Establish clear boundaries for working groups |
| Keep working groups small |
| Concentrate entering traffic in group area |
| Provide a focal point for the group |
| Allow space for the group to assemble |
| Provide access to daylight |
| Provide acoustic separation |
| Provide local control of mechanical and electrical |

**Table 2. Motivating Factors B**

These factors aid in assessing NTWS for its advantages and shortcomings. Many of these factors are used within the practice of NTWS. The items that are in contradiction with the practice of NTWS follows: personal space approach calls for both personalization and defining an individual’s workplace. Territoriality calls for the establishment of clear boundaries. Boundaries may be a bit unclear in NTWS unless strict guidelines are adhered to by employees. The previous highlights a few of the challenges posed by a transition to NTWS.

**Workplace Design History Overview**

One of the first open offices in the 20th century was designed by Frank Lloyd Wright. The Johnson Wax building in Racine, Wisconsin opened in 1939 (Figure 2) and is still operational today. Designed with custom furnishings, the focus was on making the workplace more productive (Designed, 2019). After World War II, the office landscape
was born. This was originally a German concept that spread throughout the world (History, 2017). The focus of this approach was on meeting needs of the workforce that provided an open space with teams grouped together with natural plants introduced as partitions between large open workspaces.

Figure 3. Johnson Wax Building Open Office From “Designed to Inspire: SC Johnson’s Frank Lloyd Wright-designed Administration Building.” By https://www.scjohnson.com

The next evolution, around 1960, was referred to as the action office, and provided flexibility, and privacy focused on matching the space with the task (History, 2017). More conferencing rooms were added and partitions became higher. Heights varied from 48”-72” tall. They eventually evolved into standard 60” high panels and the autonomy to personalize their space. The transformation that happened during the 80’s was known as the cubicle farm (see Figure 4). The office was densified and panels were high creating seas of dull monotony filled with repetitive shapes similar to a flatland farm in the Midwest. These created both physical and visual isolation of employees (Stahl,
Robert Prost, one of the developers of the Action Office is quoted as saying “not all organizations are intelligent and progressive. Lots are run by crass people who can take the same kind of equipment and create hellholes. They make little bitty cubicles and stuff people in them. Barren, rat-hole places” (History, 2017).

This cubicle farm phase lasted for over two decades, before the onset of agile, and activity-based working except for an outlier during this phase of the cubicle farm was the design for Chiat Day.

In 1991, Chiat Day an advertising firm in New York, in conjunction with the Italian designer Gaetano Pesce created the first “open” office (Open, 2018). Pesce’s charge was to create a more collaborative workspace. What they dubbed a “virtual office” was a workplace experiment (Figure 5). The final design at that time related more to the NTWS rather than the out of office mobility connotation that it has today. Employees would begin their day by leaving personal belongings in a locker, checking out a laptop, and then finding a place to work within the office. Seating options included unassigned
desks, the café or an open sofa. The interior was colorful and futuristic. During the implementation of this strategy employees complained about not being able to focus and Chiat Day eventually moved back to a traditional office layout.

Figure 5. Early Open Office pilot Chiat Day “virtual” office modeled after a living room From “Episode 704: Open Office” by Planet Money. www.npr.org

Chiat day became the forerunner for what is seen today as the ‘open’ office. The open office, in this context, refers to an office with low or no panels in lieu of workstations with higher panels that allow for privacy. The open office is considered one of the elements of the NTWS.

Pesce’s forward thinking became reality a few decades later when technological changes allowed for true flexibility. Thus the mobile worker was born (Chiat Day, n.d.).
The mobile worker.

NTWS evolved due to the advances in technological ability and employees’ desire to be mobile (2014, November 18). Technological advances included wireless data and phone capabilities that allowed someone to connect to the internet almost anywhere. These technological advances allowed for increased mobility and the advent of the mobile worker. An individual now had the choice to work at a café, coffee shop or from home as well as in the office.

As office design embraced NTWS employee’s presence at the office diminished (Sargent, 2013). This lower presence gave way to companies studying their space utilization and realizing that occupancy rates were no longer close to 100% (Dukes, 2018). Desks sat empty, signaling fiscal waste. As a method to maximize space “hot-desking” was born. Hot desking is defined as where a worker was no longer assigned a workstation, but shows up, and chooses an open space to work. Through the use of hot-desking square footage is diminished creating more efficiency in spatial utilization (Dukes, 2018).

The graphic in Figure 6 shows graphically the eighty years of office development described earlier in the paper. The timeline begins with Frank Lloyd Wright’s design for Johnson Wax (Figure 3), spans the cube farm years, and finishes with the alternative workplace strategies that are discussed in this research paper.
Workplace trends.

The modern workplace of today has many factors influencing its’ design. According to Workplace Design Magazine the top five factors in 2019 included: well-being (see Figure 7), co-working, technology-alternative intelligence, metrics, and the open office debate. These trends are described in further detail in the subsequent paragraphs. Another literature source in workplace trends put a large focus on the open office. The terms density, efficiency, and utilization, assigned versus unassigned, modular systems, and workplaces (Horwitz, 2014) all were listed as a descriptive part of the current office trend. Within the office trend there is a lot of focus on the millennial and the upcoming Generation Z, and what their desires, and expectations are for work environments (Horwitz, 2014). These include collaborative and unconventional work environments that provide a variety of options that allow for flexibility in how and where they will work (Horwitz, 2014).
Workspace.

A collective theme in the literature and the findings is that the office is no longer focused on individual workstations but communal workspace. Design firms are focused on creating an experience that entices and retains top talent. These experience based workplaces are focused on activity-based work (ABW) areas that allow employees to choose the space that best supports the work they need to accomplish (Appel-Meulenbroek, 2011). Open areas are provided for collaboration, enclosed areas for privacy and quiet areas for heads down work are a few of the strategies. Well-being is another trend that designers are including such as access to daylight, healthy food options, and a workplace that encourages movement (Arundell, 2018).

In addition to the above approaches on space planning, there are also office design concepts that greatly influence the aesthetics of the office and also have a significant impact on workers. Biophilia (see Figure 7) and “resimmercial” are two of
those concepts: A) “resimmercial” was born from the desire of people to have a comfortable, casual feel similar to home (Apage, 2019). B) Biophilic taken from Benyus (2019) is a design approach is incorporating nature into the space.

The design world can be cyclical and evolutionary as we see in the development of workspace in the last 80 years. The “open” concept used by Frank Lloyd Wright in the Johnson Wax building, creating an open day lit experience is also a concept we see in office designs of today. The Chiat Day office experiment of 1990 that failed during its inception is widely embraced today with the on vent of NTWS.

**Further Exploration of Non-Territorial Workspace Strategy (NTWS)**

There is limited empirical study about the current trend to use NTWS in office space and drivers, and effect of that strategy. However, we see literature from individual firm’s personal research (see Table 3). A presentation given by the Australian organizational psychologist George Mylonas at the Industrial and Organizational Psychology Conference outlined both the benefits and drawbacks of NTWS (Table 3). These benefits include mobility, collaboration, and a variety of spaces to support work functions. The drawbacks are deprivation of personal space and crowding. Following is a summary of what was found in the literature.
Table 3. Summary of NTWS Benefits and Drawbacks from Mylonas presentation Henricksconsulting.com

The information that was reviewed is similar to the table above and includes both positive, and negative attributes of this strategy. The researcher will explore the drivers, evolution, and autonomy, and territoriality within NTWS below.

Drivers

Drivers discussed in the literature research varied. The following list identifies various diverse factors located throughout the literature:

- Space reduction (Meyer, 2014)
- Space maximization (Weinbrenn, 2016)
- Technology (Philip, 2012)
- Employee Engagement and Retention (Appel-Meulenbrook, 2011)
- Mobility (Keeling, 2015)
- Support of Activity-based work (Meyer, 2014)
- Autonomy/Flexibility (Weinbrenn, 2016)
- Organizational productivity (Elsbach, 2007)
- Collaboration (Philip, 2012)
Space reduction as a means to cost savings was prevalent throughout the literature search. In one particular case it was a measure to minimize a layoff (Meyer, 2014). Related was space maximization that focused on being efficient and conservative with the amount of space used (Weinbrenn, 2016).

Technology was also listed as a driver in creating a scenario that allowed for NTWS to be an option (Philip, 2012). The advent of this flexible technology gave way to the possibility of choice for the employee. For companies to attract and retain employees they needed to respond to the flexibility provided by wireless and cloud-based technology (Appel-Meulenbrook, 2011). The reality of mobility allowed for activity-based work (ABW), and supporting, and engaging employees by embracing autonomy, and flexibility (Weinbrenn. 2016).

The final driver to present in the literature was the need to increase organizational productivity (Elsbach, 2007). Collaboration was closely linked to this driving factor.

**Evolution of NTWS.**

According to the literature, work has changed due to factors in technology, transportation, an increase in urbanism, sustainability, demography, and culture (Ross, 2012). Technology and cloud based infrastructure has lessened the need for buildings, yet offices provide the necessary environment for innovation and collaboration. The concept of non-territorial working is accepted as a way to improve occupational space
efficiency (Kim, 2016). The culmination of these factors has provided the atmosphere for the continued trajectory of NTWS.

**Outcomes of NTWS.**

Due to the dramatic shift NTWS has created in organization of the office there are both positive and negative outcomes. The literature showed drawbacks including a lack of personalization leading to a feeling of diminished privacy, difficulty enforcing a clear desk policy, time encumbered due to daily set up of workspace, cross contamination of germs due to shared surfaces and finally cultural resistance to a shared desking situation (Kim, 2016). Personalization refers to an employee adding personal effects such as photos and decorations to their space. Other complaints included an insufficient supply of desks, difficulties in locating colleagues (Kim, 2016).

Further implications that were noted about the evolution of NTWS focused on interactions. A recent study of a move to an open space with lower panels uncovered that there were significant (70%) less face-to-face meetings when the employee moved to the open workspace (Bernstein, 2018). Also residents (employees with a desk assignment) advantaged team identity over organizational identity in contrast with the non-resident unassigned desk (Millward, n.d.).

**Activity-based work.**

One of the other significant outcomes of the literature research was the knowledge that activity-based work (ABW) is embedded in most NTWS spaces. ABW space supports the task at hand, and allows for variety in a worker’s daily routine. Noted as one of the innovators in ABW and NTWS is the office interior of Interpolis. Interpolis is
a European early adopter of NTWS. The spaces were focused on creating an experiential space and provided several unique features including artist inspired spaces and a layout that mimics a city plan with squares and neighborhoods (Ross, 2012).

**Flexibility and trust Drivers- autonomy.**

According to Kopec (2018) “Autonomy is associated with positive emotions, higher self-esteem, greater intrinsic motivation, greater interest, better conceptual learning, more cognitive flexibility, greater persistence of behavior change, more trust, and better physical, and psychological health”. These benefits are widely acknowledged in today’s world.

In terms of autonomy, flexibility, and trust are highly valued in our culture. The modern office is influenced by mobile technology and has allowed time and place worked to be independent. The literature garnered several examples of autonomy at work in NTWS. Changes in office design are said to produce the activity-based workplace (ABW). A new working philosophy emerged from this change with three core principles of trust, responsibility, and performance (Appel-Meulenbrok, 2011).

As noted earlier Interpolis, an insurance company in Netherlands that has a company philosophy based on trust. Facing a major layoff of company employees and a space utilization study that realized only 70% of desking was being used, Interpolis chose space reduction as a way to decrease costs. This coupled with a corporate culture built on trust and the desire to have the built environment reflect modern management theories they revolutionized modern workspace design.
They began by following guidelines established in *The Enlightened Manager’s Guidebook* (Seglin, 1998). The guidelines were derived from Maslow’s assumptions about human behavior. A few of the highlighted items include: People desire to work and work is as natural as play or rest; People like to feel important, respected, and proud, and connected to the group, and enjoy teamwork, belongingness, and even group love (Seglin, 1998).

Following these and other guidelines, Interpolis implemented what they call the Flexible Office Concept (FOC). For every 10 employees there are only 7 desks provided at the office. The office space is devoted to multi-purpose uses. The philosophy at Interpol has resulted in an organization that the company states is more fun, more productive and better at serving the customer.

ABW is touted as a way to increase productivity by encouraging interaction, and communication. It also supports retention, employee satisfaction, and reducing facility cost (Appel-Meulenbroek, 2011). NTWS has been used as a way to adapt to changes in the organization. According to the researcher Kim, other possible benefits include: improved teamwork, cross-departmental collaboration, and increased productivity due to activity-based working (Kim, 2016).

**Choice as a driver.**

Furthermore, data and insights uncovered by the Gensler Research Institute (2019) show that people get their best work done when they have a variety of spaces that they can choose from during the day. Gensler’s study states choice leads to a feeling of empowerment, which boosts individual performance (Brink, 2019). Gensler’s
2019 U.S. Workplace Survey (U.S. WPS) found that a majority (79%) of people in workplaces that offer a variety of settings reported a great experience and 71% of people with choice in where to work reported the same. Another paper cited the recent upsurge in shared co-working spaces shows that people want to work where they want and when they want (Weinbrenn, 2016).

![Figure 9. Global workforce showing choice in work location is related to employee satisfaction From “Gensler 2019 Workplace Survey”](image)

Also, results from an occupant survey by Kim (2016) demonstrated that it is possible to provide quality indoor workspace environments at high occupancy densities through flexi-desk arrangements. The ability for occupants to select their workstations enables them to exercise a certain degree of personal control over indoor environmental conditions. A study of two primarily NTWS spaces conducted by Patel (2016) concluded that these spaces enhanced interaction, collaboration, and social activity along with challenging the hierarchical structure of the workplace. The study also showed flexibility, opportunity for learning and creation of a culture of trust as additional positive outcomes (Patel, 2016).

Overall, the literature provides many examples of the positives of an autonomous workplace. Physical activity also showed marginal improvement. An ABW designed
workplace may improve the amount of time employees spend moving around in their workplace (Arundel, 2018).

**Territoriality within NTWS.**

Personalization and privacy are two aspects of territoriality. NTWS at its’ foundation is at odds with personalization. Personalization is a way of creating control and developing a territory, moreover personal space is needed to express identity (Brunia, 2009). Workers value symbolic territorial items such as photos and plants, and the loss of personalization due to a NTWS causes them to feel threatened by the lack of individuality (Elsbach, 2007). It is known that personalization can help to mitigate the adverse effect of low levels of privacy on emotional exhaustion in the workplace (Kim, 2016).

Personal space is another aspect related to territoriality, and beyond physical space, includes olfactory, and auditory space. An overload due to excessive noise, and its interaction with information, and decision making can lead to stress, and cause withdrawal of workers (Keeling, 2015). In contrast habits may also be aligned with territoriality. Habitualizations are known to create stability, and open up the possibility of innovation (Hirst, 2011).

There is limited research on NTWS that relates to workers privacy, crowding, and satisfaction. Some noteworthy NTWS problems causing privacy and crowding issues include environmental noise, lack of white noise to mask, noise from adjacent areas, forms of communication within the office (e.g. phone, yelling across office), acoustical barriers (e.g. sound batting), lack of spaces for private conversation, co-location of work
activities, and size of desks (Keeling, 2015). Outcomes of a recent survey of two design firms identified NTWS drawbacks as a lack of visual and auditory privacy, a lack of personalization, and a lost sense of belonging (Patel, 2016).

Chiat Day case study showed that their alternative office (NTWS) caused executives and employees to leave the firm due to the conflict of ownership of workspace. The employees of Chiat Day noted it was difficult to adapt to space upon arrival (Elsbach, 2007). Referring to finding an adequate workspace and getting settled.

A periphery effect of territoriality in NTWS is the lack of presence of a mobile worker. An article by Elsbach (2007) on leveraged office design provided rich insight into the importance of employees being available, locatable, and on site. Office design is tied to employees’ attitudes and behaviors towards their employers. Spaces designed can facilitate or constrain social interactions and promote place attachment (Elsbach, 2007). The research has proven that networks of colleagues that aid in collaboration and mentoring all are important aspects of being on site (Elsbach, 2007). Hot-desking research also identifies that this strategy resulted in less informal social interactions and a potential feeling of isolation (Hirst, 2011).

1. Humans are social creatures and in the absence of specified rules of behavior--such as going to a specific desk every day--we will form our own rules. Watch out for clique-forming and territoriality. People who thrive on routines will naturally gravitate to the same spaces and if someone encroaches on what they've begun to think of as "theirs" even without desk assignments, it can build resentment. (Pochepan, 2018)
This identifies that even if not given dedicated space an employee will stake out a space as innate human nature. This takes place even with nomads.

A nomad is a member of a group having no permanent abode and who travel from place to place. One study (Hirst 2011) argued that NTWS is not composed of employees functioning as nomads, but more aligned with vagrants. The author of this study related nomads to owning property whereas a vagrant would not own property. Further, the author showed where property wasn’t defined workers, would stake their own territory with an undefined space. The study also showed that individuals created their own “departmental” neighborhoods (Hirst, 2011).

Hirst’s 2011 article characterized the first group as settlers. While not an authorized behavior, these individuals typically arrived at work early and were able to secure their same “ideal” spot on a daily basis. Those “settlers” identified that their behavior speeded up their work, as there was no need to spend time searching for space or unpacking their items. Employees that arrived later were truly forced into hot-desking. This behavior claimed an area and discouraged other hot-desker’s to use the workspace as intended. This settling behavior caused tension between the settlers and mobile workers (Hirst, 2011).

Expanding the concept of territoriality, during an average day 70% of employees do not change their workspace. Approximately one-third of the employees claim a space by personal affects and the same amount avoid a space as it is typically occupied by another employee (Hirst, 2011).
Summary

The literature research highlighted the evolution of the workplace over the past century. Further identified were environmental psychology factors that affect how people respond to a space. The information related to NTWS provided both positive and negative attributes of the strategy. The drivers from the recent literature for the adoption of NTWS workplace strategies were identified as space reduction, collaboration, technology and a changing workforce. Therefore, we begin to answer the thesis question defining the drivers for companies to move to NTWS.
CHAPTER 3. METHODS

Overview of Methodology

Two methods of research.

Due to a lack of empirical information in regards to NTWS exploratory subject-matter expert interviews were done initially. These were followed by the case studies.

Informal research.

The informal research consisted of exploratory subject-matter expert, informal, open-ended interviews conducted with subject matter experts to help identify the case study method as the approach. These initial interviews began in October of 2016 and the last interview was in June of 2019. The interviews in their totality can be found in Appendix B.

Prior to beginning the study the researcher conducted several exploratory subject-matter expert interviews, including five fortune 500 companies in the Minneapolis-Saint Paul (MSP) area. The researcher knew three of the interviewees professionally and approached the others through connections in the design industry.

The interviews were informal in nature, the researcher came only with the inquiry of wanting to learn about NTWS as this was the topic of focus for the researcher’s thesis.

Exploratory subject-matter expert interviews were primarily done for two reasons. The first reason was to assist in shaping the questionnaire for the case studies. The second reason was due to the limited amount of empirical material on the topic. One
of the interviews was done simultaneously with the formal research case studies to continue knowledge building of NTWS.

These interviews worked to gain a general understanding of the strategy and how the design industry was using or not using NTWS. The interviewee’s were selected based on their knowledge and experience with non-territorial workspace. The researcher had personal connections with three of the interviewees. The remaining interviewees were suggested to the researcher by industry colleagues.

There was no planned or vetted list of questions given to these interviewees. They were all given the information that the researcher was researching non-territorial workspace for her thesis and would like to gain more knowledge about the topic, and how they were using the strategy within their company.

These exploratory subject-matter expert interviews were essential in understanding the topic matter, how companies were using NTWS internally, and developing the questionnaire. The exploration brought out as aforementioned considerations with mobility, choice, work-types, density, the activity-based work methodology, and trade-offs that were used to gain acceptance.
Key findings in these exploratory subject-matter expert interviews helped to shape and direct the questionnaire used for the case study research. Information uncovered included the drivers, resistance, feedback, and general trends as they related to NTWS. The overarching themes uncovered are listed below.

- Real Estate Reduction
- Flexibility and Collaboration
- Technology
- Employee Demographics
- Change Management

These findings remained consistent within the case study findings and are discussed in totality in the final section of this chapter.

**Employment of the case study method as a research tool.**

Case studies were employed to investigate the purpose of NTWS drivers in large companies.

The case study method allows for collection of qualitative and quantitative data from a wide variety of sources where quantitative data for the type of data for this study is not readily available (McLeod, 2015).

The case study methods is one of the quickest and most reliable manner to collect data about their characteristic of the subject companies and discovery of their different reasons for the employment of NTWS (McLeod, 2015).

The case study method contains some bias in the collection of data through the interview process. During the survey process, the same series of questions in the same
order are asked of each interviewee. The type of answers from the interviewees can vary from company to company leaving gaps or inconsistency in the data sets. The case study method allows for clarification from the interviewees however, the consistency of the data is subject to the policy of the company as well as the knowledge of the interviewees however. The researcher allowed for additional time for the interviewee at the end of the survey questions to add additional comments as they saw relevant.

**Questionnaire writing.**

The questionnaire writing was completed in March of 2019. Questions were created based on the initial thesis question and the exploratory subject-matter expert interviews. Once created, the questions were reviewed and edited by several industry experts and members of the thesis committee. The final step before conducting the interviews was an analysis by the institutional review board.

**Sample/subjects of the case studies.**

The selection of just fortune 500 companies (see Table 3) within the Minneapolis/St Paul area allowed for some similarity in their employment, global reach, and methods of conducting business (see Table 4). It was also assumed that these companies would have similar corporate structures, demographics of workers and were experiencing similar transitions in workplace issues. To insure consistency in view point, the company's interviewees were all within the real estate or facilities department (see Table 5). The interviewee's contacts at the companies were obtained through the researchers' previous connections in the design industry.
Seven fortune 500 companies were used in the research. All were headquartered or had a significant presence in the Minneapolis area. All of these companies had used NTWS locally or were in the process of incorporating. Four of these companies also participated in the exploratory subject-matter expert interviews. The final interviews were completed over a two and a half month period beginning in April and concluding in June of 2019.

The interviewee was selected based on their intimate knowledge and experience of the implementation of the strategy. These personnel were located in the facilities/real-estate sector of their businesses (Table 5).
### TABLE 3. COMPANY INFORMATION

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>HEADQUARTERS IN MINNEAPOLIS</th>
<th>GLOBAL EMPLOYEES</th>
<th>LOCATIONS</th>
<th>COMPANY FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td>40,000</td>
<td>27 COUNTRIES</td>
<td>FOOD INDUSTRY</td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td>155,000</td>
<td>70 COUNTRIES</td>
<td>FOOD INDUSTRY</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>60,000</td>
<td>2 COUNTRIES</td>
<td>FOOD INDUSTRY</td>
</tr>
<tr>
<td>D</td>
<td>X</td>
<td>16,000</td>
<td>68 COUNTRIES</td>
<td>LOGISTICS</td>
</tr>
<tr>
<td>E</td>
<td>X</td>
<td>10,000</td>
<td>50 COUNTRIES</td>
<td>FOOD INDUSTRY</td>
</tr>
<tr>
<td>F</td>
<td>X</td>
<td>285,000</td>
<td>34 COUNTRIES</td>
<td>HEALTH</td>
</tr>
<tr>
<td>G</td>
<td></td>
<td>26,000</td>
<td>90 COUNTRIES</td>
<td>PRINTING and PUBLISHING</td>
</tr>
<tr>
<td>H</td>
<td></td>
<td>100,000</td>
<td>55 COUNTRIES</td>
<td>MEDICAL</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td>32,000</td>
<td>14 COUNTRIES</td>
<td>MEDICAL</td>
</tr>
</tbody>
</table>

*Company’s H and I participated in exploratory subject-matter expert interviews prior to the start of the study.*

### TABLE 4. MINNESOTA OFFICE INFORMATION OF NTWS ACROSS ALL COMPANIES

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>MN EMPLOYEES</th>
<th>MN OFFICE EMPLOYEES</th>
<th>EMPLOYEES USING NTWS</th>
<th>YEAR NTWS WAS ADOPTED</th>
<th>BRANDED STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4000</td>
<td>4000</td>
<td>44%</td>
<td>2007</td>
<td>X</td>
</tr>
<tr>
<td>B</td>
<td>3200</td>
<td>3200</td>
<td>20%</td>
<td>2014</td>
<td>“Office”</td>
</tr>
<tr>
<td>C</td>
<td>1500</td>
<td>1500</td>
<td>85%</td>
<td>2010/2012</td>
<td>Workplace</td>
</tr>
<tr>
<td>D</td>
<td>2500</td>
<td>2500</td>
<td>2% local</td>
<td>2018</td>
<td>N/A</td>
</tr>
<tr>
<td>E</td>
<td>3000</td>
<td>3000</td>
<td>85%</td>
<td>2016</td>
<td>NONE</td>
</tr>
<tr>
<td>F</td>
<td>10,000</td>
<td>10,000</td>
<td>10% global</td>
<td>2014</td>
<td>Workplace</td>
</tr>
<tr>
<td>G</td>
<td>6500</td>
<td>6000</td>
<td>10% global</td>
<td>2013/2022 MPLS</td>
<td>Workplace</td>
</tr>
</tbody>
</table>
Table 5. Interviewee Information

<table>
<thead>
<tr>
<th>Position Within Company</th>
<th>Education Background</th>
<th>Years in Facilities</th>
<th>Years with Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>A MANAGER WORKPLACE STRATEGY</td>
<td>INTERIOR DESIGN</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>B PROJECTS PORTFOLIO MANAGER</td>
<td>INTERIOR DESIGN</td>
<td>20 (30 CAREER)</td>
<td>11</td>
</tr>
<tr>
<td>C VICE PRESIDENT REAL ESTATE and DEVELOPMENT</td>
<td>ARCHITECTURAL DESIGN</td>
<td>12 (25 CAREER)</td>
<td>9</td>
</tr>
<tr>
<td>D MANAGER OF REAL ESTATE and PROCUREMENT</td>
<td>ACCOUNTING/TECHNICAL EDUCATION</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>E WORKPLACE MANAGER</td>
<td>INTERIOR DESIGN/BUSINESS</td>
<td>27</td>
<td>4 1/2</td>
</tr>
<tr>
<td>F DIRECTOR WORKPLACE STRATEGY</td>
<td>INTERIOR DESIGN DEGREE</td>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td>G GLOBAL HEAD OF CAPITAL PLANNING and OPERATIONS</td>
<td>MECHANICAL ENGINEER and MBA</td>
<td>30</td>
<td>19</td>
</tr>
</tbody>
</table>

**Interview process used for the case studies.**

The case study interviews were conducted in a two month period (April-June of 2019). The oral interviews took between 60-120 minutes to complete. The interviewees were given the questions in advance. The format allowed for a conversational approach that would garner information above what was outlined in the questionnaire.

Five of the companies were interviewed on site with designated personnel in the facilities/real-estate sector of their businesses. The remaining two were interviewed via phone and web-ex conferencing. The interviewee’s position within their companies provided a natural bias as all were involved in the management or implementation of NTWS.
The case study oral interview provided a better understanding and overview of the strategy, and the similarities, and differences of the companies. While this worked well for a synopsis, later studies would benefit from a quantitative questionnaire delivered to the employees.

**Analysis of Data**

The data analysis began with an initial overall understanding of the NTWS methodology. This was accomplished through the open exploratory subject-matter expert interviews. The data collected from these interviews provided the basis for the questionnaire that was distributed and used during the case study exploratory interviews.

As aforementioned, the type of answers from the interviewees can vary from company to company leaving gaps or inconsistency in the data sets. Although the case study method allows for clarification for the interviewees, the consistency of the data is subject to the policy of the company as well as the knowledge of the interviewees. In addition, the researcher allowed for additional time for the interviewee at the end of the survey questions to add additional comments as they saw relevant.

Bias on behalf of the interviewee may also be present due to the position of the interviewee within the company and their adoption.

The data collected from the case study compares key findings extrapolated from the interview. Content analysis was done by making lists of the different companies and searching for common themes in the case study. These were reviewed several times and both the recurring theme and anomalies were noted. The companies are compared
in the following categories: company overview, Minneapolis location overview, drivers, utilization, implementation, spatial changes, and considerations, employee feedback, and a cost savings review.

The drivers offered were primarily similar to what was uncovered in the informal research. These included:

- Reduction of real estate costs
- Space reduction
- Attraction and retention of talent
- Collaborative work areas
- Optimal work environment

All of the companies were driven to conserve space resulting in reduced real estate costs. The next overarching driver was attracting and retaining a talented workforce through the provision of a supportive, collaborative, and optimal work environment. The optimal work environment included an aesthetically attractive and innovative workspace. Comparisons of the data are shown following the individual interview summaries.

**Summary**

To gain a more in depth understanding of the subject matter informal research exploratory subject-matter expert interviews were conducted. These exploratory subject-matter expert interviews had no vetted questionnaire. They were conducted with design, workplace, and change management professionals that were contacted through the researchers’ connections in the design industry. The outcomes of these interviews are in
Appendix B. The informal research was crucial in establishing the vetted questionnaire that was delivered during the case study.

As aforementioned, the chosen research method for this study was case studies. The case study method allowed for collection of qualitative and quantitative data from a wide variety of fortune 500 companies (both private and public) sources where quantitative data for the type of data for this study is not relatively available.

Comparison charts provide a simplified analysis of the data obtained. Main drivers for the companies were cost reduction of real estate, and provision of a supportive, optimal environment that attracts, and retains employees.
CHAPTER 4. FINDINGS and DISCUSSION

Results of Interviews

Following are the findings from the case studies. The case studies were completed via informal interview and an open-ended questionnaire. There are a total of seven companies that will be reviewed. Each review begins with a company overview followed by their process and history and concluding with the outcomes. Table comparisons are made beginning with Table 3 in chapter 3 and concluding with Table 14. Excerpts from these tables are shown within the company information as applicable.

Company A

Overview Company.

Company A is headquartered in Minneapolis focused on the food industry. The Minneapolis location has approximately 4,000 employees. The majority of these employees are considered office workers. The interviewee is a senior manager in workplace strategy and has been working in the design industry for 25 years with twenty of those years focused in facilities and at company A.

COMPANY INFORMATION EXCERPT FROM TABLE 3.

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>HEADQUARTERS IN MINNEAPOLIS</th>
<th>GLOBAL EMPLOYEES</th>
<th>LOCATIONS</th>
<th>COMPANY FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td>40,000</td>
<td>27 COUNTRIES</td>
<td>FOOD INDUSTRY</td>
</tr>
</tbody>
</table>
MINNESOTA OFFICE INFORMATION EXCERPT FROM TABLE 4.

<table>
<thead>
<tr>
<th>COMPANY A</th>
<th>MN EMPLOYEES</th>
<th>MN OFFICE EMPLOYEES</th>
<th>EMPLOYEES USING NTWS</th>
<th>YEAR NTWS WAS ADOPTED</th>
<th>BRANDED STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000</td>
<td>4000</td>
<td>44%</td>
<td>2007</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

INTERVIEWEE INFORMATION EXCERPT FROM TABLE 5

<table>
<thead>
<tr>
<th></th>
<th>POSITION WITHIN COMPANY</th>
<th>EDUCATION BACKGROUND</th>
<th>YEARS IN FACILITIES</th>
<th>YEARS WITH COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>MANAGER WORKPLACE STRATEGY</td>
<td>INTERIOR DESIGN</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Alternative work space choice, influencing factors and process.

Company A has the longest experience with NTWS of the company's interviewed with initial use of NTWS, beginning in 2007. Company A described their version of NTWS as a type of Activity-based work (ABW). They define ABW and NTWS as a flexible employee shared environment. They share space as an entire team. A group sharing space is referred to as a neighborhood within NTWS. These teams may vary in size from 30-400 people. Forty-four percent of the office in Minneapolis is considered NTWS. Within their facilities, 35% of the main building and 75% of their research and development (R & D) staff are in NTWS. Other global locations using NTWS include offices in Australia and Switzerland.

Company A began benchmarking NTWS in 2005 in an effort to avoid brick and mortar expansion. Brick and mortar expansion is an industry term used to describe the addition of buildings to meet a companies' needs. The initial exploration was a
partnership between facilities and human resources. Beyond the desire to avoid building costs, HR viewed this as an opportunity to increase employee retention by adding flexibility for the employees. The 2007 pilot was targeted at a team of largely female scientists who had struggled with retention and flexibility. The initial pilot was successful in achieving greater retention and flexibility, and included not only NTWS but AWS that allowed for flexibility of working off campus. The success of this pilot created the NTWS initiative and began a gradual roll out of the strategy. The initiative happened floor by floor, and as remodeling projects became necessary.

As noted in the literature, space reduction has been a main driver in the implementation of NTWS. At company A, they have gained between 30-40% efficiency in spatial usage. The company’s key metrics for the transition away from traditional office space layouts were collaboration, flexibility, and decision speed. Decision speed relates to the pace at which an employee determines a course of action in their daily work. The outcome of adaptation of NTWS also provided the benefit of agility. Unassigned workspace allowed for quick responses to organizational changes.

Company A’s process for transition to NTWS utilized change management techniques. The training protocol followed the procedure outlined below:

1. Ensure leadership is committed to making the change through a survey

2. Employee enrollment
   a. Baseline survey- gauges peoples thoughts and concerns
   b. Create a cross-functional sub-team- composed of 5-6 individuals that are closely involved and provide guidance on the floor planning.
c. Communication happens with all employees during the process.

d. Informational videos are shown to all employees

e. Establish rules, The sub-team lays the ground rules for the new space.

f. E-learning is provided giving employees the information needed to work efficiently in the AWS.

g. Guidance is given in down-sizing and cleaning out the previous workspace.

h. Orientation is provided on both the use of technology and the space. An open house is provided with both a technology resource and ergonomist available.

The drivers of Company A’s move to NTWS and the implementation of this process are outlined in the excerpts from Table 5 and 6 below.

**DRIVERS EXCERPT FROM TABLE 6**

<table>
<thead>
<tr>
<th>A</th>
<th>SPACE REDUCTION</th>
<th>COLLABORATE</th>
<th>EMPLOYEE ENGAGEMENT</th>
<th>FLEXIBLE WORK REQUESTS</th>
<th>BUDGET</th>
<th>OTHER</th>
</tr>
</thead>
</table>

**IMPLEMENTATION EXCERPT FROM TABLE 7**

<table>
<thead>
<tr>
<th>COMPANY A</th>
<th>NTWS IMPLEMENTED</th>
<th>FIRM</th>
<th>EXTERNAL CHANGE MANAGEMENT</th>
<th>INTERNAL CHANGE MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY A</td>
<td>2007</td>
<td>Internal</td>
<td></td>
<td>YES</td>
</tr>
</tbody>
</table>
Outcomes.

The initial expectations were that space reduction, flexibility and autonomy would be provided to the employees. The end results met the anticipated expectations with additional benefits. Benefits included collaboration, decision speed, employee satisfaction, and cost savings due to fewer needs for reconfigurations.

The process of moving to NTWS was primarily completed by internal staff. Architectural services were used only if it was a major construction project. Change management was conducted through a partnership of facilities, and human resources.

Utilization studies are an analysis method that looks at how often a space is being used. (Office, n.d.). These were done internally and included before and after a project was complete. Studies were initially done to show metrics and influence decision makers. The post move study happens 3-4 months after employee move-in. This was done to ensure that there’s enough space to handle more staff. The study was done by an hourly walk-thru for a one week period. Although the target was for a 60-70% utilization rate, the study average was 35%. Utilization rate in enclosed spaces was
higher. The utilization rate was similar to pre-NTWS, but the square footage has been reduced by 30%.

In regards to costs, the interviewee stated that there was a cost to implement the change to NTWS. If a renovation was already planned however, the cost differential was minimal. Both technology and cleaning costs have also increased. The interviewee felt that in general there were not cost savings, but rather a reduction in real estate footprints.

COST IMPACT EXCERPT FROM TABLE 9

<table>
<thead>
<tr>
<th></th>
<th>REDUCTION</th>
<th>INCREASE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY A</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Implementation of the NTWS was determined by group not individual employee. The determination typically revolves around business objectives, floor renovation, and the space or business type. The interviewee did not feel that there were typical work types that were better suited to acceptance. They did find a correlation between acceptance and the leadership modeling the use of NTWS. The interviewee’s observation also noted generational differences did not seem to play in employee’s approval. They did believe the acceptance was related to an individual being change averse.

Within Company A’s implementation of NTWS initially an employee was allowed to choose resident or non-resident. They were educated about the NTWS, and then asked to make their decision. This practice proved to be stressful. Currently, everyone
will be initially a mobile non-resident, but can convert back to being a resident after a three to four month trial period. After the interim period, 90% of the employees choose mobile.

The square footage allowed for an individual employee has decreased from a 150 square foot (sf) planning factor to a 110 square foot planning factor, a reduction of 40 square feet. The configuration of work areas include both open and enclosed space. The open areas include 30" wide (w) x 60" long (l) benching, 6’ wide x 6’ long L-shape workstation, 48” long sit to stand desks. Enclosed areas include 10’ w x 10’ l office, 5’w x 10’ l enclave, and team rooms that are 10’ wide x 15’ long. An enclave is a private enclosed space that can be used for focused work. Additionally they do have focus zones where no phone usage is allowed, and there is a workstation inclusive of a sit-stand desk. These workstation configurations are shown in Table 10.
Figure 9 Left image shows space pre-ABW adoption, Right image post-ABW – image courtesy Company A

Locker or individual employee storage is available in the following sizes: 24" wide (w) x 24" deep (d) x 72" high (h), 18" wide x 18" deep x 72" high or an 18" wide x18" deep x48 high”. The last version is the newer standard, and includes a file shelf and coat storage. Residents in company A have slightly larger workspaces than the non-residents. Professional status warrants a 6’ wide x 8’ long. Managers warrant a 6’ wide x 8’ long plus a meeting table, and directors and up receive a 10’ wide x10’ long. This
sizing has decreased in the past ten years. The current space planning allows for 120% occupancy and includes all forms of ABW spaces allowing for all employees if they were present on a given day.

SPACE ALLOTMENT WORKSTATION SIZING EXCERPT FROM TABLE 10.

<table>
<thead>
<tr>
<th>A</th>
<th>SQ. FTG FOR EMPLOYEE</th>
<th>BENCHING</th>
<th>SIT-STAND</th>
<th>SIZE</th>
<th>LOCKER STORAGE QTY</th>
<th>LOCKER AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>30” x 60”</td>
<td>30” w x48” l</td>
<td>30”x48”,30” x 60”, 6’ x 6’</td>
<td>Tower</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CHANGE IN WORKSTATION SIZING EXCERPT FROM TABLE 11.

<table>
<thead>
<tr>
<th>A</th>
<th>1-5 YEAR CHANGE</th>
<th>6-10 YEAR CHANGE</th>
<th>STANDARD SIZING TODAY</th>
<th>RATIO OF WORK AREAS TO EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>8’ x 8’</td>
<td>6’ x 6’ -110 sq. ft.</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional workplace initiatives.**

Sustainability is a focus with company A especially within their manufacturing. They are aware of some of LEED, and other sustainability standards, and incorporate the strategies into their designs. They do not however focus on obtaining accreditation of the building. Light emitting diode (LED) lighting is one of their energy conservation initiatives. The WELL building standard is not something they are currently using as a design and construction guideline, different health and wellness initiatives and waste reduction practices are in place. The waste reduction includes compostables in the cafeteria and centralized trash collection. One of the unique design characteristics that company a uses in their space is a corporate art collection.
Post-occupancy feedback was conducted internally as a subjective questionnaire. The questionnaire was delivered at 3- and 9-months. The employees noted that they found it easier to use the internet, to collaborate, and make quick decisions. They preferred the increased flexibility and improved technology. The technology changes included dual and larger monitors. The following represents some of the positive data collected:

- 80% would choose to stay with Company A’s AWS
- 43% felt their decision speed had increased
- 51% felt they were more productive
- 57% felt they were more collaborative
- 72% preferred the flexibility that the AWS offered.

Some dissatisfaction was also noted, including not enough monitors or sit-to-stand desks, and a difficulty in connecting technology due to cord management. Finally, the complaint after NTWS adoption was the inability to find people. Company A is incorporating this feedback into future projects, as well as providing universal docking stations. The future of AWS at company A is anticipated to evolve going forward.
EMPLOYEE ACCEPTANCE CHALLENGES EXCERPT FROM TABLE 12.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>LACK SENSE OF BELONGING</th>
<th>DIFFICULTY LOCATING COLLEAGUE</th>
<th>NEED FOR PARKING</th>
<th>LACK OF APPROPRIATE FURNISHINGS</th>
<th>LACK OF PERSONALIZATION</th>
<th>SET UP TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>A YES</td>
<td>X</td>
<td></td>
<td></td>
<td>A YES</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

EMPLOYEE ACCEPTANCE POSITIVES EXCERPT FROM TABLE 13.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>PRODUCTIVITY INCREASE</th>
<th>COLLABORATION</th>
<th>DECISION SPEED</th>
<th>SITE</th>
<th>FLEXIBILITY</th>
<th>AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A YES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Closing remarks noted by the interviewee included the following. A cross-function team must be established from the start and include not only the affected department/team but IT, HR, Facilities, and Real Estate. The adoption of NTWS hugely impacts culture and technology. Leadership alignment is a key success factor in NTWS adoption. Leadership changes during the evolution can prove to be dysfunctional if the space isn't used as intended.

The data presented regarding company A is discussed in comparison later in this chapter, including tables that show the relationship between these findings with the other companies.
Company B

Company overview.

Company B is a global company headquartered in Minneapolis. The median age of the employee is 48. Only 30% of current staff is using NTWS. NTWS has not been adopted as a global standard.

COMPANY INFORMATION EXCERPT FROM TABLE 4

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>HEADQUARTERS IN MINNEAPOLIS</th>
<th>GLOBAL EMPLOYEES</th>
<th>LOCATIONS</th>
<th>COMPANY FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>X</td>
<td>155,000</td>
<td>70 COUNTRIES</td>
<td>FOOD INDUSTRY</td>
</tr>
</tbody>
</table>

MINNESOTA OFFICE INFORMATION EXCERPT FROM TABLE 5

<table>
<thead>
<tr>
<th>COMPANY B</th>
<th>MN EMPLOYEES</th>
<th>MN OFFICE EMPLOYEES</th>
<th>EMPLOYEES USING NTWS</th>
<th>YEAR NTWS WAS ADOPTED</th>
<th>BRANDED STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3200</td>
<td>3200</td>
<td>20%</td>
<td>2014</td>
<td>..Office</td>
</tr>
</tbody>
</table>

INTERVIEWEE INFORMATION EXCERPT FROM TABLE 6

<table>
<thead>
<tr>
<th>POSITION WITHIN COMPANY</th>
<th>EDUCATION BACKGROUND</th>
<th>YEARS IN FACILITIES</th>
<th>YEARS WITH COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>PROJECTS PORTFOLIO MANAGER</td>
<td>20 (30 CAREER)</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>INTERIOR DESIGN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alternative work space- choice, influencing factors, and process.

The vision of company B in implementing NTWS was to improve connections and energize the workplace while reducing real estate costs. Figure 10 shows an implemented collaborative workspace. Helping stakeholders to thrive in NTWS was carried out with the intention of giving employees freedom to do what they do, and decide where and how to work. This philosophy aligns with their HR strategy around
safety. That approach is one that emphasizes employees should arrive and go home safely.

The initial decision to move to NTWS was based on the need to consolidate, and reduce their overall real estate footprint. They had piloted the program prior to adopting the strategy, and the results were a slower than anticipated adaptation.

They did several pilots of NTWS before bringing it to the company headquarters. The consensus was people wanted more collaborative space and less of the 8’ x 8’ workstation standard. Their method for change was to have champions pilot, and allow for testing. The initial impetus was to consolidate buildings and reduce the workforce.
The drivers for the transition to partial NTWS were space reduction, collaboration, employee engagement. One of the ramifications that has transpired from the densification on site is a lack of adequate parking. Company B is in the planning stages of adding a structure to handle the additional need. Public transportation is not a viable alternative due to limitations of their location.

DRIVERS EXCERPT FROM TABLE 7

<table>
<thead>
<tr>
<th></th>
<th>SPACE REDUCTION</th>
<th>COLLABORATE</th>
<th>EMPLOYEE ENGAGEMENT</th>
<th>FLEXIBLE WORK REQUESTS</th>
<th>BUDGET</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY B</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Company B has three different work types within their AWS. They are resident, flex and mobile. The resident is assigned a dedicated workstation and expected to be on site. A flex employee is one that may be at their desk only two hours per day. The flex employee will have a dedicated space as well, but it may be shared. Mobile is given the flexibility to work on or off campus.

IMPLEMENTATION EXCERPT FROM TABLE 8

<table>
<thead>
<tr>
<th></th>
<th>AWPS IMPLEMENTED</th>
<th>FIRM</th>
<th>EXTERNAL CHANGE MANAGEMENT</th>
<th>INTERNAL CHANGE MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY B</td>
<td>2015</td>
<td>Kathy McLane</td>
<td>COMMUNICATION</td>
<td>YES</td>
</tr>
</tbody>
</table>

Managers will decide which of the three categories their employees will be designated. There is no reservation system for their workstation system. They are predominantly resident with 75%-85% assigned. They are slowly shifting to less resident
assigned space. The company’s belief is that there should be choice in the workplace.
The shared spaces are a maximum ratio of 1:2, and are assigned to promote cleanliness issues of a free-address space. They are currently making tweaks to improve their NTWS, and are aiming for continued innovation.

The interviewee noted that technology is at the cusp of making NTWS possible and the technology is still evolving. Company B is on their third generation of NTWS. They believe that their consolidation project happened at the best possible time. Technology was available and the global economic crisis challenged companies with doing business differently.

A space utilization study was conducted by in-house staff for a length of one and a half years. The results were that people had more space than needed. They were not as aggressive with their space reduction in response to the reluctance of an older workforce.

<table>
<thead>
<tr>
<th>UTILIZATION EXCERPT FROM TABLE 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRM</td>
</tr>
<tr>
<td>COMPANY B</td>
</tr>
</tbody>
</table>

Outcomes.

Expected results for company B were to eliminate and terminate leases leading to cost reduction, gain building efficiencies, and accelerate innovation. The end results
were primarily exceeded. The new workspace vibe has employees wanting to be on campus. They were also able to repurpose the parts and pieces of their existing system. The company went from 1600 people to 2500 people served on the campus.

The work began at the headquarters in 2015 and finished in 2017. The remodel focused on adding more collaborative space, conferencing, and amenities. On site amenities included banking, employee shipping, and other conveniences. They were able to reduce typical square footage allowance for employees from 178 to 127 square feet. The workstation types included 2 manager prototypes and 4 other types for non-managerial employees. The only private office is for the CEO they have followed the ABW model and have incorporated shared enclaves and private enclosed work areas for heads down work.

The approach that guided the remodel began by replacing and upgrading infrastructure. This portion took over two years. Focus was on creating an intelligent building that allowed for flexibility. The original building is of an unusual shape and has many energy conservation features.

Change management happened internally with the support of a communication company. The internal staff that managed the process had over 30 years of experience.

The operational efficiencies have significantly reduced water, electrical, and heating ventilating, and air conditioning (HVAC) costs. Rental costs have also been reduced and are now charged back to the individual business units. The overall rental costs over a five year period have been reduced by twenty million. The interviewee was unable to provide a percentage figure in the cost reduction.
COST IMPACT EXCERPT FROM TABLE 9

<table>
<thead>
<tr>
<th></th>
<th>REDUCTION</th>
<th>INCREASE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY B</td>
<td>35%</td>
<td>Technology and furnishings</td>
<td>(new and reconfigured)</td>
</tr>
</tbody>
</table>

The selection process for moving to NTWS is a collaboration between facilities and the leaders of the individual business units. When a reconfiguration becomes necessary they decide on if NTWS will be incorporated. The initial step is completing a utilization study. The study is monitored on a monthly basis for an undisclosed period. The facilities group informs the business unit leaders about how the employees are using their existing workspace. The decision is not related to specific job functions. There is a focus on making sure people feel that they have a place.

The management decides on which employees will be resident. Company B has found departmental areas that are a better fit for resident base and these include HR, Finance, Tax, and Law. There tend to be confidentiality and accessibility issues with these groups. The successful business units are embracing NTWS for the increase in innovation speed. They found that segmentation was hindering the speed prior to the move to NTWS.

Observations of the interviewee include the following examples. Personality types tend to be drawn to different areas of the ABW environment. Introverts need more shielding and the ability to isolate help their cognitive juices flow. Extraversion enjoy the collaborative spaces and the spontaneity that it provides. As it relates to generational differences the war for status doesn’t go away depending on age. There is a need to
have enough choices. Requests have been made for additional enclaves for people that make the decisions. This notion is being questioned internally for necessity.

The standards for work areas include both open and closed areas. The open work areas include workstations, radial benching, and collaborative teaming areas. The enclosed spaces include enclaves and conference rooms. Workstation sizes include 3’ wide x 6’ long, 6’ wide x 6’ long, 6’ wide x 8’ long, 9’ wide x 9’ long, and 9’ wide x 10’ long. The current density on site would allow for all employees to have a seat if they were on campus during a given day, but would include using collaborative areas.

**SPACE ALLOTTMENT WORKSTATION SIZING EXCERPT FROM TABLE 10.**

<table>
<thead>
<tr>
<th></th>
<th>SQ. FTG FOR EMPLOYEE</th>
<th>BENCHING</th>
<th>SIT-STAND</th>
<th>SIZE</th>
<th>LOCKER STORAGE QTY</th>
<th>LOCKER AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>127/100 NTWS</td>
<td>30” x 48”</td>
<td>X</td>
<td>30” x 48”, 3’ x 6’, 6’ x 6’, 6’ x 8’</td>
<td>Tower</td>
<td>Individual or shared</td>
</tr>
</tbody>
</table>

**CHANGE IN WORKSTATION SIZING EXCERPT FROM TABLE 11.**

<table>
<thead>
<tr>
<th></th>
<th>1-5 YEAR CHANGE</th>
<th>6-10 YEAR CHANGE</th>
<th>STANDARD SIZING TODAY</th>
<th>RATIO OF WORK AREAS TO EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>N/A</td>
<td>6’ x 8’, 6’ x 6’, 3’ x 6’</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

The executive area is also open to allow for a freedom of idea exchange and to lead by example. Leadership is currently on board with keeping space open and lessening the need for additional buildings. The interviewee also noted that baby boomers tend to have a lot of baggage with workplace entitlement and the millennials tend to be more adaptive and prefer a collaborative space where they can solve issues.
together. The younger workforce tends to like the space. Some employees have difficulty within NTWS and management is aware that they lose people that are unwilling to accept the change.

Company B’s sustainability focus includes all factors of reduce, reuse, and recycle. Consumption is reduced by consolidating buildings. Reuse includes the existing structure built during the energy crisis of the mid-70’s. Recycle includes repurposed doors, recycled carpet, and recycled waste. All partitions are movable allowing reuse and reduction of waste from gypsum board.

Company B does not have a registered Well building or LEED project, but is familiar with these standards and has worked to incorporate them into their buildings. Mobility as an aspect of well-being has been engineered into the project. The sit-stand desks require a physical adjustment. The many methods that have been incorporated to encourage movement include open stairwells, outdoor walking trails, bicycle storage as well as a treadmill desk.

No formal post-occupancy study has been done, but the interviewee noted that they are measuring success by the amount of people that are on campus. Positives that have been sited include the desire to be at the office. Negatives of NTWS is the lack of parking on campus. The interviewee does see a continuation of NTWS with generational changes. The interviewee believes that there is always more that can be done, but it comes down to the finances needed to obtain results.
EMPLOYEE ACCEPTANCE CHALLENGES EXCERPT FROM TABLE 12.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>LACK SENSE OF BELONGING</th>
<th>DIFFICULTY LOCATING COLLEAGUE</th>
<th>NEED FOR PARKING</th>
<th>LACK OF APPROPRIATE FURNISHINGS</th>
<th>LACK OF PERSONALIZATION</th>
<th>SET UP TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>NO</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EMPLOYEE ACCEPTANCE POSITIVES EXCERPT FROM TABLE 13.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>PRODUCTIVITY INCREASE</th>
<th>COLLABORATION</th>
<th>DECISION SPEED</th>
<th>SITE</th>
<th>FLEXIBILITY</th>
<th>AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>NO</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data presented regarding company B is discussed in comparison later in this chapter, including tables that show the relationship between these findings with the other companies.

Company C

Company Overview.

Company C serves the food industry. Company C’s workforce age is higher than the national average and when data was achieved it was in the upper 40’s. Minneapolis is no longer the headquarters due to a recent buyout. The headquarters is located on the east coast. Other smaller office facilities are located in U.S. and Canada.

COMPANY INFORMATION EXCERPT FROM TABLE 4

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>HEADQUARTERS IN MINNEAPOLIS</th>
<th>GLOBAL EMPLOYEES</th>
<th>LOCATIONS</th>
<th>COMPANY FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td>60,000</td>
<td>2 COUNTRIES</td>
<td>FOOD INDUSTRY</td>
</tr>
</tbody>
</table>
Alternative work space- choice, influencing factors, and process

As one of the early adopters of NTWS in 2010 the CEO “was trying to pull the company out of a dark place”. Workstation size was dictated by rank and became an ongoing facilities issue. Serious change management was needed for this catapult that reinvented the company standards. The company is now under the leadership of the fifth CEO in ten years and is beginning the process of change again.

The current CEO does not embrace NTWS and is passionate about having everyone in a place to call their own. Therefore, the company will be implementing traditional resident workspace beginning in June-September of this year. The current leadership at the headquarters office on the east coast had minimal experience with NTWS. Exposure was limited to a few hot desks at the east coast headquarters prior to the purchase of the Minneapolis office.

When NTWS was initially launched in Minneapolis it received very positive feedback. The design direction was to create a space where employees were drawn.
Figure 11 shows one of the colorful spaces they created with open casual collaborative areas and interesting pendant lighting. The NTWS at that time was complete free-address with no assigned space or neighborhoods. Many groups embraced the strategy as it allowed them flexibility. The ability to work from home and around the company’s campus created an affable workplace.

Over time issues began to arise with NTWS. These included nesters, the inability to find available space to work and difficulty finding people. There was no active management on the non-territorial system. Employees were mobile but could either work on site or at home, but complained of “no place to work”.

Figure 11 Innovation Center courtesy hga.com
The initial implementation of NTWS was meant to address several issues. The first issue was the amount of real estate. The second issue was the amount of reconfigures done to meet the existing space standards. A reconfigure is the movement of furnishings and people due to support an organizational change. This practice was proving inefficient and unsustainable. The third issue had to do with employee attraction and retention. There had been workforce turnover both from a layoff and attrition. The company was also having difficulty attracting employees and wanted their workplace to be seen as a benefit.

**IMPLEMENTATION EXCERPT FROM TABLE 7**

<table>
<thead>
<tr>
<th>COMPANY C</th>
<th>AWPS IMPLEMENTED</th>
<th>FIRM</th>
<th>EXTERNAL CHANGE MANAGEMENT</th>
<th>INTERNAL CHANGE MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>GENSLER</td>
<td>THE LANGLEE GROUP</td>
<td>YES</td>
</tr>
</tbody>
</table>

The drivers focused primarily on space reduction, employee engagement, and addressing a constrained budget. By incorporating NTWS they were able to condense from four buildings to two. There new space promoted improved engagement and increased productivity with less resources. They saw improved morale and their ability to attract, and retain employees increased. The paper consumption dropped and they had to increase the recycling budget with the change to general recycling.

**DRIVERS EXCERPT FROM TABLE 8**

<table>
<thead>
<tr>
<th></th>
<th>SPACE REDUCTION</th>
<th>COLLABORATE</th>
<th>EMPLOYEE ENGAGEMENT</th>
<th>FLEXIBLE WORK REQUESTS</th>
<th>BUDGET</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Outcomes.

The expected results of reducing the operating footprint, increasing morale, and productivity, and the ability to attract employees were all achieved. The results of a survey after occupancy changed a typical employee engagement rate of 1-2% to an increase of over 12%.

The Langlee Group, and Gensler assisted company C with their transition to NTWS. The conversion happened in phases with groups of 300 that were given 90 days of preparation and training prior to the move. There was also a dedicated internal team that helped with the move.

The space utilization was studied over a one year period with badge swipe data and when space became too tight another utilization study was done. The occupancy rate was 82% prior to the move to NTWS. The occupancy study in 2014 showed occupancy at 65%. The rate went down due to the flexibility to work offsite. The ultimate goal was to employ NTWS 100%. The marketing department was the pilot with a new space arrangement and the ability to work off-site. Employees were initially resistant, but over time desired the flexibility. Design was personalized to meet the needs of each group.

UTILIZATION EXCERPT FROM TABLE 9

<table>
<thead>
<tr>
<th>FIRM</th>
<th>DURATION</th>
<th>IMPLEMENTATION</th>
<th>PRE-NTWS OCCUPANCY RATE</th>
<th>POST-NTWS OCCUPANCY RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY C</td>
<td>1 year</td>
<td></td>
<td>82%</td>
<td>65%</td>
</tr>
</tbody>
</table>
The original thought was that the older portion of the workforce would be resistant, but they didn’t find that to be true. The flexibility was an appealing benefit of NTWS at Company C. Many of the workforce in their 60’s became champions of NTWS. It offered huge benefits during weather constraints in Minnesota. They did notice differences in acceptance with introverts versus extraverts. The extraverts enjoyed the open more collaborative space while the introverts preferred a separate and delineated space.

Initially employees were given choice if you wanted flexibility you had to go non-territorial, currently the medical group is the only group that has dedicated workspace. The philosophy is resident by exception. Meaning that in rare cases an employee would be given an assigned workstation. These employees are typically support employees or another job function that requires them to be readily acceptable to other employees.

Density was initially 3 employees to each workstation, it has now changed to a 2:1 ration. The workstations are a standard 6’ x 6’ and offices are 10’ x 12’. Departments do have a designated area or neighborhood. The real estate department has a project bar that allows work to be spread out. None of the private areas are to be reserved and none of the workstations can be reserved. Each employee has an 18” x 30” pedestal

Cost reductions have been significant. There was massive reduction in real estate. Operational costs were cut by 50%. The initial technology costs were up due to removing desktop computers, and replacing with a universal docking station that four times as expensive, due to the variety in existing laptops held by employees. The redesign created a central area for waste and recycling. The garbage costs decreased but recycling increased.
COST IMPACT EXCERPT FROM TABLE 14.

<table>
<thead>
<tr>
<th></th>
<th>REDUCTION</th>
<th>INCREASE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY C</td>
<td>50%</td>
<td>Technology and recycling</td>
<td></td>
</tr>
</tbody>
</table>

The facilities groups’ costs prior to NTWS were 600,000 to 700,000 per year after the implementation to NTWS it has changed to 40,000 per year. A director was formerly in a 12’ wide x 16’ long space there space is now roughly 8’ wide x 8‘ long. Besides the standard 6’ wide x 6’ long workstation, there are small conference rooms, offices, phone rooms, and work booths. The current space is designed to accommodate 100% of employees, but using all variety of spaces. With the increased density, employee parking becomes an issue.

SPACE ALLOTTMENT WORKSTATION SIZING EXCERPT FROM TABLE 10.

<table>
<thead>
<tr>
<th></th>
<th>SQ. FTG FOR EMPLOYEE</th>
<th>BENCHING</th>
<th>SIT-STAND</th>
<th>SIZE</th>
<th>LOCKER STORAGE QTY</th>
<th>LOCKER AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>6’ x 6’</td>
<td>yes</td>
<td>18” x 30”</td>
<td>X (file)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CHANGE IN WORKSTATION SIZING EXCERPT FROM TABLE 11.

<table>
<thead>
<tr>
<th></th>
<th>1-5 YEAR CHANGE</th>
<th>6-10 YEAR CHANGE</th>
<th>STANDARD SIZING TODAY</th>
<th>RATIO OF WORK AREAS TO EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>280 sq. ft.</td>
<td>110 sq. ft.</td>
<td>1:3 (initial) now 1:2</td>
<td></td>
</tr>
</tbody>
</table>
Company C has a focus on sustainability and achieved LEED gold on one of their project. The interviewee was unfamiliar with the WELL building standard. The interviewee stated the basis of their business in the food industry.

Incorporation of NTWS eight years ago was cutting edge, but now is mainstream. The end result was a clutter free environment that maintained a standard footprint. Their initial phase was a 90 day trial period where they tested working in a NTWS. Existing workstations were used but stripped down. Because people are prone to nesting, this situation- has been a struggle within NTWS. People tend to default to order and structure.

A post-occupancy survey was conducted internally with survey monkey 90 days after the space had been occupied. Employees felt that there had been an increase in productivity, an increase in on-site collaboration, and decision-making speed. They lacked a sense of belonging, found it difficult to establish rapport with new co-workers and diminished efficiency with having to set up a new workspace daily.

EMPLOYEE ACCEPTANCE CHALLENGES EXCERPT FROM TABLE 12.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>LACK SENSE OF BELONGING</th>
<th>DIFFICULTY LOCATING COLLEAGUE</th>
<th>NEED FOR PARKING</th>
<th>LACK OF APPROPRIATE FURNISHINGS</th>
<th>LACK OF PERSONALIZATION</th>
<th>SET UP TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>YES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

EMPLOYEE ACCEPTANCE POSITIVES EXCERPT FROM TABLE 13.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>PRODUCTIVITY INCREASE</th>
<th>COLLABORATION</th>
<th>DECISION SPEED</th>
<th>SITE</th>
<th>FLEXIBILITY</th>
<th>AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>YES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Company C as aforementioned will be returning to traditional workspace over the next few months. All employees will have a resident 6’x6’ workstation. There flexibility in work from home (or offsite) will decrease from two days per week to one.

Final reflections by the interviewee involved the space visual and management of NTWS. The space transition was originally constrained to a $28.00/sq. ft. model. The interviewee believed the adjustment to NTWS was more difficult with the original staff because the workstations didn’t look different. The management of NTWS needs to be carried throughout the team with active management. The lack of management caused the real estate group to be blindsided by crazy growth and placed in a crisis mode. Conclusively management and evaluation is needed to address how NTWS is supporting the business.

The data presented regarding company C is discussed in comparison later in this chapter, including tables that show the relationship between these findings with the other companies.

**Company D**

**Overview company.**

Company D is a global company headquartered in Minneapolis, but also has offices in every major city across the country. The median age of their employee is 30. The interviewee is the manager of real estate and procurement and described their job as a mixture between real estate and finance. Although the interviewee has 23 years of experience with the company only four years have been in the facilities/real estate capacity.
Company D currently occupies 3 buildings housing 2500 people. Their business is largely IT focused. They are currently at 95% capacity of workspace and are outgrowing the campus.

Figure 12 Company D Collaborative strategy room Courtesy of Popearch.com
COMPANY INFORMATION EXCERPT FROM TABLE 4.

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>HEADQUARTERS IN MINNEAPOLIS</th>
<th>GLOBAL EMPLOYEES</th>
<th>LOCATIONS</th>
<th>COMPANY FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>X</td>
<td>16,000</td>
<td>68 COUNTRIES</td>
<td>LOGISTICS</td>
</tr>
</tbody>
</table>

MINNESOTA OFFICE INFORMATION EXCERPT FROM TABLE 5.

<table>
<thead>
<tr>
<th>COMPANY D</th>
<th>MN EMPLOYEES</th>
<th>MN OFFICE EMPLOYEES</th>
<th>EMPLOYEES USING NTWS</th>
<th>YEAR NTWS WAS ADOPTED</th>
<th>BRAND STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2500</td>
<td>2500</td>
<td>2% local</td>
<td>2018</td>
<td>N/A</td>
</tr>
</tbody>
</table>

INTERVIEWEE INFORMATION EXCERPT FROM TABLE 6.

<table>
<thead>
<tr>
<th>POSITION WITHIN COMPANY</th>
<th>EDUCATION BACKGROUND</th>
<th>YEARS IN FACILITIES</th>
<th>YEARS WITH COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>MANAGER OF REAL ESTATE and PROCUREMENT</td>
<td>ACCOUNTING/TECHNICAL EDUCATION</td>
<td>4</td>
</tr>
</tbody>
</table>

Alternative work space- choice, influencing factors, and process.
The interviewee is in the process of strategic planning to determine what the company would like to do long term. Currently they are in an exploration phase of studying various workplace strategies. Their aim is to be more collaborative. The question for the leadership team along with real estate and facilities is deciding whether to build another building or densify in the current location? One of the factors in deciding their real estate plan moving forward is the age of their workforce. The average age of the employee tends to be in their 30's.

Company D has had minimal experience with non-territorial workspace. They have only one department using this at their company headquarters. Their human resource group made the decision to implement NTWS so that their department could stay together in the same location on campus. The thought was also that the by using an agile work strategy, additional collaboration would be fore coming. A portion of the offices that were previously occupied by one employee have now become collaboration rooms. 10-15% of their space is now collaborative space.

<table>
<thead>
<tr>
<th></th>
<th>SPACE REDUCTION</th>
<th>COLLABORATE</th>
<th>EMPLOYEE ENGAGEMENT</th>
<th>FLEXIBLE WORK REQUESTS</th>
<th>BUDGET</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
IMPLEMENTATION EXCERPT FROM TABLE 8.

<table>
<thead>
<tr>
<th></th>
<th>AWPS IMPLEMENTED</th>
<th>FIRM</th>
<th>EXTERNAL CHANGE MANAGEMENT</th>
<th>INTERNAL CHANGE MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY D</td>
<td>2018</td>
<td>Internal</td>
<td></td>
<td>YES</td>
</tr>
</tbody>
</table>

UTILIZATION EXCERPT FROM TABLE 9.

<table>
<thead>
<tr>
<th></th>
<th>FIRM</th>
<th>DURATION</th>
<th>IMPLEMENTATION</th>
<th>PRE-NTWS OCCUPANCY RATE</th>
<th>POST- NTWS OCCUPANCY RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY D</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The standard size of current workstations was implemented in 2016 and is a 6’ wide x 6’ long. During the transition in 2016 they moved many people out of offices and added sit-stand desks. Private offices are still in use and office distribution is decided by the company leadership.

SPACE ALLOTMENT WORKSTATION SIZING EXCERPT FROM TABLE 11.

<table>
<thead>
<tr>
<th></th>
<th>SQ. FTG FOR EMPLOYEE</th>
<th>BENCHING</th>
<th>SIT-STAND</th>
<th>SIZE</th>
<th>LOCKER STORAGE QTY</th>
<th>LOCKER AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>N/A</td>
<td>30” x 70”</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CHANGE IN WORKSTATION SIZING EXCERPT FROM TABLE 12.

<table>
<thead>
<tr>
<th></th>
<th>1-5 YEAR CHANGE</th>
<th>6-10 YEAR CHANGE</th>
<th>STANDARD SIZING TODAY</th>
<th>RATIO OF WORK AREAS TO EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>6’ x 6’</td>
<td></td>
<td>30 sq. ft. (workstation only)</td>
<td>1:2</td>
</tr>
</tbody>
</table>
Below are two floorplan diagrams provided by company D. Figure 14 shows the floor plan layout with 8’ wide x 8’ long workstation that was used prior to 2014. Figure 15 shows an example of the current reduction of workspace size moving from a u shaped workstation to benching. These support the general trend in office design of space reduction in workstations.

Figure 14. Previous workstation floor plate – courtesy Company D
When the newest building opened in 2014, the initial plan was to implement use of hoteling design, but the company backed out at the last minute. The new building was devoted to IT and the thought was originally that they could do their job from anywhere. The reason they backed away from hoteling was the agile methodology as it relates to IT needed the team to sit together for ease in collaboration for the duration of the project. This current space has desk on wheels and tends to be a chaotic environment in relation to space planning. These ad hoc space allocations require frequent visits from facilities to ensure that egress is in compliance with building codes.

The only space at company D to use the NTWS is the HR group. The strategy was implemented in 2018. The decision was made departmentally to implement NTWS based on the limitation of space available and their occupancy rates. Occupancy rates are low in their HR department due to frequent travel. A large portion of the HR staff’s job is learning and development, thus much of their work is done remotely working at hotels or the branch offices.

The work from home philosophy is granted at a managers’ discretion. Although there are departments with shared workspace, (the Human resource department that has implemented NTWS and their call center where the same workspace is shared through three different shifts.) the majority of their employees have an assigned workspace.
Outcomes.

NTWS was implemented at company D to specifically address a need for space. The HR department was at capacity, and was posed with two options. Those options included splitting the department into two separate locations or sharing the space. The casual results that have been reported state that it is not a big change. The main feedback was that there is a lack of personalization.

EMPLOYEE ACCEPTANCE CHALLENGES EXCERPT FROM TABLE 12.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>LACK SENSE OF BELONGING</th>
<th>DIFFICULTY LOCATING COLLEAGUE</th>
<th>NEED FOR PARKING</th>
<th>LACK OF APPROPRIATE FURNISHINGS</th>
<th>LACK OF PERSONALIZATION</th>
<th>SET UP TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>NO</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EMPLOYEE ACCEPTANCE POSITIVES EXCERPT FROM TABLE 13.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>PRODUCTIVITY INCREASE</th>
<th>COLLABORATION</th>
<th>DECISION SPEED</th>
<th>SITE</th>
<th>FLEXIBILITY</th>
<th>AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>NO</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cost impact tended to be minimal, and was mostly related to not purchasing additional workstations. The determination of who would use NTWS was an internal evaluation conducted by HR themselves.
Company D does not see NTWS as working for all departments and wants to explore all options before moving forward. They don't want to “talk employees into using NTWS”. Company D has found that the younger generation tends to be more flexible as it relates to workspace. Generation X and Boomers tended to note more issues with noise in the open workspace.

Company D’s direction is to work towards a more collaborative, agile workspace. They will continue to explore different workplace strategies especially with the younger generation.

The data presented regarding company D is discussed in comparison later in this chapter, including tables that show the relationship between these findings with the other companies.
Company E

Figure 16. Transit area courtesy perkinswill.com

Figure 17. Transit and Focus areas courtesy perkinswill.com
Company Overview.

Company E, serves the food industry and is headquartered in Minneapolis. There are 500 locations in total including sites in China and Africa. The interviewee is a workplace manager with an educational background in interior design and business.

COMPANY INFORMATION EXCERPT FROM TABLE 4.

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>HEADQUARTERS IN MINNEAPOLIS</th>
<th>GLOBAL EMPLOYEES</th>
<th>LOCATIONS</th>
<th>COMPANY FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>X</td>
<td>10,000</td>
<td>50 COUNTRIES</td>
<td>FOOD INDUSTRY</td>
</tr>
</tbody>
</table>

MINNESOTA OFFICE INFORMATION EXCERPT FROM TABLE 5.

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>MN EMPLOYEES</th>
<th>MN OFFICE EMPLOYEES</th>
<th>EMPLOYEES USING NTWS</th>
<th>YEAR NTWS WAS ADOPTED</th>
<th>BRANDED STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY E</td>
<td>3000</td>
<td>3000</td>
<td>85%</td>
<td>2016</td>
<td>NONE</td>
</tr>
</tbody>
</table>

INTERVIEWEE INFORMATION EXCERPT FROM TABLE 6.

<table>
<thead>
<tr>
<th>POSITION WITHIN COMPANY</th>
<th>EDUCATION BACKGROUND</th>
<th>YEARS IN FACILITIES</th>
<th>YEARS WITH COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>WORKPLACE MANAGER</td>
<td>INTERIOR DESIGN/BUSINESS</td>
<td>27</td>
</tr>
</tbody>
</table>

Alternative work space- choice, influencing factors and process.

In 2015 Company E was faced with a decision on the company’s spatial needs. The leadership was looking at options of buying or building. They approached their real estate strategy as operational and not simply real estate. The focus was on what was needed to support the business. The facilities and real estate team charged leadership with answering the question what does the business need rather than what are the
space and building requirements. They were asked to talk about the business and not the space, allowing the design professionals to translate the business needs into the space solution.

The leaders responded with the drivers and objectives were to simplify the way they were working, increase profitability while strengthening their financial health and double the company’s growth. The thought was the team needed to understand what was going right before implementing changes. The company took 9 months in 2015 for data collection. The focus was on understanding the space utilization, and where, and how their employees were working.

DRIVERS EXCERPT FROM TABLE 7.

<table>
<thead>
<tr>
<th></th>
<th>SPACE REDUCTION</th>
<th>COLLABORATE</th>
<th>EMPLOYEE ENGAGEMENT</th>
<th>FLEXIBLE WORK REQUESTS</th>
<th>BUDGET</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Their process consisted of set the vision, collect the data, and form solutions. Techniques used to understand the company’s spatial, and workflow needs included on site observation, space utilization studies, and focus groups. Outcomes of their study included an understanding of the need for smaller team spaces. The data collectors had observed small groups of people meeting in a workstation to work on team projects. Other results of the study showed the usage of Desktop versus laptop and the company had a heavy use of paper. They also looked at current human resource policies on alternative work strategies. They wanted to ensure that they took the time to understand.
Space standards, prior to 2015, allowed for any employee with a position of director or above to have an office. The workstation sizes varied from a 6’ X 8’ to an 8’ x 10’. Offices ranged from 150-225 square feet. This became a facilities issue each time a person was promoted. This self-proclaimed shuffling effect was an inflexible approach.

The conclusion was that their workplace strategy needed to be a shift in how they worked. The company wanted to attract and retain top talent and needed a catalyst for that change. Solution possibilities included relocation, buying leased space, buying land, and building as well as keeping the footprint the same. Their final solution was to keep their leasable square footage the same but relocate an offsite building to onsite and build a new building. The decision was formed by many observations including empty offices. This helped to deduct that they could use smaller workstations, but needed more meeting spaces. Additional conclusions, drawn from the pre-occupancy surveys, was that there was no notable hierarchy in work functions. All employees had task and collaborative work that needed to be done.

In the pilot stage of the decision the vice president of communication gave up their office to test the newly adopted NTWS which they described as alternative workplace strategy (AWPS). This VP discovered that their email was cut in half because the team was more accessible and not every question needed a formal email. Although the email decreased the VP found it difficult to accomplish heads down work.

Company E decided after their lengthy decision process to adopt AWPS. Once the mandate went out leaders did have issues with losing their office. The senior leadership, at decision time of adopting AWPS, gave the directive that that the decision was not open for debate and if an employee wasn’t aligned they should go elsewhere. This
senior executive leadership of nine did maintain offices in a separate suite which contradicted the design and facilities team initial research.

Employee’s concerns prior to the move focused on territoriality and place attachment. Concerns included: lack of a sense of belonging, where would their things be stored, ergonomic adjustment, access to special equipment and access to administrative support staff. The AWPS solution responded by providing all workstations with a sit-stand work surface to allow for extended height adjustability. Assigning 7% of the newly reduced and standardized 6’ x 6’ workstation to support staff. Each employee had one drawer of a 36” lateral file for storage.

The change was rolled out as a business strategy not a real estate initiative. The process involved mandatory change management. Company E had a self-proclaimed “opt out of mentality”. Change management involved lunch and learns, videos, and pre, and post tours.

Workplace strategy.

Company E classifies workspaces as assigned or unassigned. They do not have a work from home policy. Working remote is something that is arranged with an employee’s manager. Company E does have other locations outside of the headquarters in Minneapolis that uses AWPS, but it is not as formal. The workplace strategy was implemented as both a space saving and a shift in how work gets done as aforementioned. The AWPS is leveraged and implemented in any new projects.
The company began using NTWS in 2016 with a pilot and in 2018 it was rolled out to the entire headquarters site. Using the ABW philosophy there is one flexible office provided for every 20 workstations. There are currently 1.2 employees per each workspace the plan is that will densify up to 1.65 as they grow.

The initial driver for implementing NTWS included space reduction and the reluctance to add space. Additionally they were looking to find a catalyst to change the way they did business along with the need for cross-company collaboration. This
solution was not a response to employees request for flexible work arrangements, but in contrast they wanted their employees to be on site. The utilization is 65-75%.

The results expected from incorporating NTWS was better collaboration, faster decision making, a simplification of work, a variety of workplace types, and the ability to attract and retain employees while growing the company.

The real results included a growth from a 7.5 billion dollar company in 2015 to a 15-billion-dollar company in 2019. There’s been less paper and less workflow. People are using technology to access people and panels have become low.

Company E used Perkins and Will for design and change management of their space. Internal change management was conducted first with human resources (HR) and Information Technology (IT). Perkins and Will was also used for the space utilization studies that they were conducted over a 4-6 week period. Occupancy rates were at 65-70% before, and are similar today after the change to AWPS.

<table>
<thead>
<tr>
<th>FIRM</th>
<th>DURATION</th>
<th>IMPLEMENTATION</th>
<th>PRE-NTWS OCCUPANCY RATE</th>
<th>POST- NTWS OCCUPANCY RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY E</td>
<td>4-6 weeks</td>
<td>65-70%</td>
<td>65-70%</td>
<td></td>
</tr>
</tbody>
</table>

**Outcomes.**

There has been a significant reduction in costs. Their buildings were not previously located on the same campus so a transportation shuttle was used. This shuttle cost of $700,000 has been eliminated. Reconfigures have been cut in half. Down
from 1,000,000. Requests for customization of workstation has been cut by 70%.
Ergonomic requests were reduced from 150 in 2017 to 23 in 2019. Energy costs have been reduced through the addition and retrofit of LED lighting. Employee costs have been reduced through an addition of on-site childcare, wellness center, and credit union.

COST IMPACT EXCERPT FROM TABLE 14.

<table>
<thead>
<tr>
<th>COMPANY E</th>
<th>REDUCTION</th>
<th>INCREASE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>Design and Construction, FF&amp;E</td>
<td>Company doubled profits in 4 years</td>
<td></td>
</tr>
</tbody>
</table>

All employees were part of the NTWS with the exception of designated support staff and executive leadership. The interviewee has not found a typical work type better suited to the strategy. They have launched a program called “continuing the journey” to help employees adapt to the NTWS. The program focuses on how to be a good neighbor, certain protocols, and develops profiles for work types. The program also addresses how to best achieve heads down work.

They have not noticed a generational acceptance or disapproval of NTWS. The observations have been that compliance has more to do with previous exposure and change adaptation then age.

The NTWS includes both open and enclosed space and relies on the employee to be accountable for where they need to be to get their work done. All employees could be accommodated on site if needed with the variety of workspaces provided.
Company E does have a sustainability focus and achieved LEED platinum on the new building recently added to their campus. The project used items such as solar panels and cisterns as part of their energy conservation. In regards to the WELL standard, they used aspects of the standard such as increased daylighting and provided an on-site fitness center, but did not undergo certification. Other methods they used were to look at air-quality and provide motion sensor LED lighting. They have also provided outdoor walking trails and an outdoor patio with wireless connections as another option for employees to accomplish heads down work. The cafeteria also has a focus on nutritional offerings.

The post-occupancy feedback was conducted after 90 days and was done internally using a qualtrics survey. Some of the feedback they received were in regards to a sense of belonging and place attachment. They were no longer able to personalize with a family photo and didn’t feel the connection with their team. Finding people proved difficult making it hard to collaborate. Some of the positive feedback received was a reduction in email, better access to leaders, flexibility, more meeting space, access to natural light and on-site amenities. They have since adopted a way-finding app to make it easier to locate people.

EMPLOYEE ACCEPTANCE CHALLENGES EXCERPT FROM TABLE 12.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>LACK SENSE OF BELONGING</th>
<th>DIFFICULTY LOCATING COLLEAGUE</th>
<th>NEED FOR PARKING</th>
<th>LACK OF APPROPRIATE FURNISHINGS</th>
<th>LACK OF PERSONALIZATION</th>
<th>SETUP TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>YES</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

EMPLOYEE ACCEPTANCE POSITIVES EXCERPT FROM TABLE 13.
Other changes since project inception include a change in communication strategies. Phones were not originally installed in the new and remodeled buildings, but now have been added. Employees use a login feature once they have selected their workstation for that day.

As the company grows, the sharing of space will become more aggressive and they do not anticipate going back to assigned space. According to the interviewee, AWS strategy needs to be a business strategy not simply a workplace strategy. To be successful a facilities/real-estate/design team needs to be informed about what’s right for their company. The interviewee stated that the NTWS is not a one-size fits all. What's right for one company may not be right for the next. The design and facilities team needs to ask the question “what things are needed to support you in your work?” Company E’s approach relied on technology and asked “what do you really need to do your work?”

The data presented regarding company E is discussed in comparison later in this chapter, including tables that show the relationship between these findings with the other companies.
Company F

Company overview.

Company F a medical industry company is headquartered in Minneapolis and has multiple buildings throughout the metro area. The company has 20 million square feet of real estate globally with a large percentage being in the United States.

COMPANY INFORMATION EXCERPT FROM TABLE 4.

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>HEADQUARTERS IN MINNEAPOLIS</th>
<th>GLOBAL EMPLOYEES</th>
<th>LOCATIONS</th>
<th>COMPANY FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>X</td>
<td>285,000</td>
<td>34 COUNTRIES</td>
<td>HEALTH</td>
</tr>
</tbody>
</table>

MINNESOTA OFFICE INFORMATION EXCERPT FROM TABLE 5.

<table>
<thead>
<tr>
<th>COMPANY F</th>
<th>MN EMPLOYEES</th>
<th>MN OFFICE EMPLOYEES</th>
<th>EMPLOYEES USING NTWS</th>
<th>YEAR NTWS WAS ADOPTED</th>
<th>BRANDED STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10,000</td>
<td>10,000</td>
<td>10% global</td>
<td>2014</td>
<td>Workplace</td>
</tr>
</tbody>
</table>

The interviewee has an extensive background in facilities and real estate and has worked with occupancy planning, various business strategies, several AWPS, and change management.

INTERVIEWEE INFORMATION EXCERPT FROM TABLE 6.

<table>
<thead>
<tr>
<th>POSITION WITHIN COMPANY</th>
<th>EDUCATION BACKGROUND</th>
<th>YEARS IN FACILITIES</th>
<th>YEARS WITH COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>DIRECTOR WORKPLACE STRATEGY</td>
<td>INTERIOR DESIGN DEGREE</td>
<td>22</td>
</tr>
</tbody>
</table>

Alternative work space-choice, influencing factors, and process.
There are only three groups within Minneapolis that are using NTWS, but more outside the region. The change to NTWS usually begins with the company’s need to make changes in their product software, requiring the use of the agile work methodology. The agile methodology requires people to work together in a team based area for short segments of a project. This prompts the need for a space change. The design methodology is non-territorial with department neighborhoods. The company’s strategy is that all new space will have some level of mobility. They see a need for both assigned and unassigned work areas.

Prior to implementation NTWS was piloted with specific groups. They were driven by the need to meet the bottom line in costs. There studies showed that on any given day, only 60% of employees were badging into the office. The software development group is 100% unassigned. The NTWS strategy is one that the real-estate and facilities team “sold to business leaders” as a solution to business and space delivery. The strategy was not a work at home program. Focus has been on “how do we create space and what do people want in order to come into the office.” Over the past three years the NTWS has become more highly visible and it’s becoming the norm. The interviewee stated that “they still have to sell and convince people” to adopt NTWS. The process is pilot, test, and finally full delivery.
The top drivers for the change to NTWS were cost reduction and employee engagement. The interviewee stated “absolutely cost reduction and employee experience” as it related to the decision to implement NTWS. The employee experience was key as they now have attendance rates of 70-80% compared with the previous 60% prior to the change. The reason the interviewee saw for the shift had to do with employees expectations changing. The employee needs technology that's fast and this is provided on site. Other reasons for the increase in attendance were the amenities and choice available. The interviewee spoke of space as a consumer commodity and the need to provide space that entices people.

DRIVERS EXCERPT FROM TABLE 7.

<table>
<thead>
<tr>
<th></th>
<th>SPACE REDUCTION</th>
<th>COLLABORATE</th>
<th>EMPLOYEE ENGAGEMENT</th>
<th>FLEXIBLE WORK REQUESTS</th>
<th>BUDGET</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IMPLEMENTATION EXCERPT FROM TABLE 8.

<table>
<thead>
<tr>
<th></th>
<th>AWPS IMPLEMENTED</th>
<th>FIRM</th>
<th>EXTERNAL CHANGE MANAGEMENT</th>
<th>INTERNAL CHANGE MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY F</td>
<td>2014</td>
<td>RSP Architects</td>
<td>Jones, Lang, LaSalle</td>
<td></td>
</tr>
</tbody>
</table>
The expectation for the change was cost savings or cost avoidance. By incorporating NTWS company F was able to reduce the square footage needed for the lease and support the same amount of people in a smaller space. The focus was on how to achieve better utilization with an increase in satisfaction levels. They are in the process of obtaining data on the results but noted that it is difficult to measure productivity, when the question does the NTWS space allow an employee to work more?

The employees’ feedback in the NTWS and ABW workspace has been that they like the variety of space. Besides the 6’ long benching and 6’ wide x6’ long workstation there are also huddle rooms, and conference rooms for heads down focus work.

SPACE ALLOTTMENT WORKSTATION SIZING EXCERPT FROM TABLE 10.

<table>
<thead>
<tr>
<th></th>
<th>SQ. FTG FOR EMPLOYEE</th>
<th>BENCHING</th>
<th>SIT-STAND</th>
<th>SIZE</th>
<th>LOCKER STORAGE QTY</th>
<th>LOCKER AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>135-150</td>
<td>6’ long</td>
<td>N/A</td>
<td>6’ x 6’; 10 x 12’ huddle room</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CHANGE IN WORKSTATION SIZING EXCERPT FROM TABLE 11.

<table>
<thead>
<tr>
<th></th>
<th>1-5 YEAR CHANGE</th>
<th>6-10 YEAR CHANGE</th>
<th>STANDARD SIZING TODAY</th>
<th>RATIO OF WORK AREAS TO EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>17%</td>
<td>17%</td>
<td>6’ x 6’</td>
<td>1.3:1</td>
</tr>
</tbody>
</table>

Company F uses largely local firm RSP architecture along with Jones Lang LaSalle for their office projects. RSP work on the design while Jones Lang La Salle provides change management. The interviewee stated “change management can make
or break the program”. The internal change is handled with their IT team and human capital partners.

Company F has used forward-thinking technology to better understand how their space is utilized. These include sensors in buildings that provide a heat map of where and when an area is used. They also have the ability through a puck located under a conference room table to understand the number of people using the conference room and the duration. The data is dynamic and helps understand the team size or if used as an individual employee’s heads down focused NTWS. Observation of company F is that there are never enough small conference rooms. They use their badge swipe data to see when employees are using particular spaces. Company F would like to study this more internally, but is encumbered by the size of the company and the amount of space being used.

The results of the walk-thru study showed available seats even when the perception is that no seats there were seats that were available. The company also realized the need for more change management precipitated and changed the current NTWS from completely non-territorial to a neighborhood pattern. They also reduced open collaborative spaces and provided more small enclosed spaces for groups and individuals to work. Observations due to the badge swipe data has shown that in the NTWS space the utilization of younger demographic of employees has increased.
Outcomes

Company F has seen their overall costs decrease because of square footage being down. Cost increases however are the need for additional parking spots and cleaning costs. The cleaning cost increases have been mostly nullified through the use of centralized trash and recycling. Other increases include the additional costs for technology and the “fit and finish” of the space. Fit and finish refers to the aesthetics of the furnishings and materials within the space. The overall construction and of space is at a higher level with more media and collaborative furnishings added.

COST IMPACT EXCERPT FROM TABLE 14.

<table>
<thead>
<tr>
<th>COMPANY F</th>
<th>REDUCTION</th>
<th>INCREASE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>yes</td>
<td>Technology, FF&amp;E, parking</td>
<td></td>
</tr>
</tbody>
</table>

Company F has only 10% of their workforce using the NTWS. The criteria for deciding which groups adapt the strategy uses the badge swipe data tool to find patterns. The process then requires initial focus groups along with conversations with business leaders. The example was given of a call center function. These employees would not be a good candidate for NTWS, but could use the AWS of work from home.

Company F has found that any function that deals with external customers adapts well to NTWS. Examples given were sales, marketing and some software development. Examples of job functions that didn’t work well for NTWS were Finance. They also found that adaptation was harder with the boomer age group due to attachment with the office and the preceding culture. The younger generation tended to
adapt to the space more easily. The interviewee did mention that it had more to do with
the stage of life than a generational difference.

Once a business leader has made the decision to transition to NTWS an
employee does not have a choice on using NTWS. The leaders are choosing what they
feel works best for the team. In general, the leadership perception is “people need their
space”. The real estate and facilities group is challenged to push business leaders to
think about what they really need. The company is seeing that whether a space is
assigned or unassigned it has the same space utilization.

The space provisions used by company F are a comprehensive 135-150 square
feet per person. This is slightly higher 10-15’ than other companies that were able to
provide that information. Their work areas include a 6’x6’ workstation, 6’ benching, 10’
x12’ huddle room, 180’-360’ larger meeting room, and offices between 120-240 square
feet. Depending on the level there are also project rooms, an 80 sq. ft. enclave, training
facilities, multi-purpose rooms that vary from 25-60 square feet and a town hall space.
There are also library, and focus rooms. These are 240 square feet, and 120 square feet
respectively. All NTWS employees receive a half-size locker. Some will use and some
do not.

Company F is currently using a 125-130 square foot factor to plan for employees
in the space this has decreased twice from originally 180-200 square feet then down to
130-150.

Company F plans to support 70-75% of staff with non-territorial workstations but
could support all employees by using auxiliary seating. They are currently at a density of
1.2-1.3 per each workstation provided. They could go denser, but have noticed degradation at a density of 1.4-1.5. A challenge is the need to scale the design and create community neighborhoods that provide for easier departmental interaction.

Company F does have a sustainability focus on the facilities side with products, furniture, finishes, recycling, and energy programs. They are currently considering a smart building with light sensors, etc. One of their buildings is certified LEED. They are familiar with the guidelines of WELL but are incorporating strategies without seeking certification.

Company F has been challenged to receive feedback other than the badge swipe data as the Human Resources are concerned with survey fatigue. The reactions of employees have been primarily observed through request for adjustments and generically an electronic feedback method. The electronic feedback back method are dispersed stations that allow an employee to press a button stating their general state of well-being. These are called happy or not terminals. The interviewee stated that their philosophy isn’t to complete and then walk away. Other unique things that are being done by company F include Bluetooth access for visitors.

### EMPLOYEE ACCEPTANCE CHALLENGES EXCERPT FROM TABLE 12.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>LACK SENSE OF BELONGING</th>
<th>DIFFICULTY LOCATING COLLEAGUE</th>
<th>NEED FOR PARKING</th>
<th>LACK OF APPROPRIATE FURNISHINGS</th>
<th>LACK OF PERSONALIZATION</th>
<th>SET UP TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>NO</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>F</td>
</tr>
</tbody>
</table>
EMPLOYEE ACCEPTANCE POSITIVES EXCERPT FROM TABLE 13.

<table>
<thead>
<tr>
<th></th>
<th>POST OCCUPANCY SURVEY</th>
<th>PRODUCTIVITY INCREASE</th>
<th>COLLABORATION</th>
<th>DECISION SPEED</th>
<th>SITE</th>
<th>FLEXIBILITY</th>
<th>AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>NO</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

“Change Management is King” was the closing quote given by the interviewee. Final feedback included that the notion of employee has transitioned to a consumer perspective. Company F is asking how do you entice people to embrace the culture, how do we create an experience and how do we use data to understand people’s needs and how they work. The interviewee also noted that there is a lot of controversy now surrounded by the Harvard Business Study on collaboration. The study aforementioned in the literature review of this paper showed that people in open benching work areas collaborate less than when in a previous paneled workstation. The lack of collaboration was due to a changed work methodology. The more open space prompted employees to work more quietly and use electronic communication methods and headphones, thus creating an environment less conducive to interaction.

The data presented regarding company F is discussed in comparison later in this chapter, including tables that show the relationship between these findings with the other companies.
Figure 18 Collaborative areas Courtesy of metrostate.edu

Figure 19 Collaborative areas Courtesy of metrostate.edu
**Company G**

**Company overview.**

Company G is a technology oriented company specializing in information services. Minneapolis is their largest office, but not the company’s headquarters. The global portfolio includes 130 locations in total.

**COMPANY INFORMATION EXCERPT FROM TABLE 4.**

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>HEADQUARTERS IN MINNEAPOLIS</th>
<th>GLOBAL EMPLOYEES</th>
<th>LOCATIONS</th>
<th>COMPANY FOCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td></td>
<td>26,000</td>
<td>90 COUNTRIES</td>
<td>PRINTING and PUBLISHING</td>
</tr>
</tbody>
</table>

**MINNESOTA OFFICE INFORMATION EXCERPT FROM TABLE 5.**

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>MN EMPLOYEES</th>
<th>MN OFFICE EMPLOYEES</th>
<th>EMPLOYEES USING NTWS</th>
<th>YEAR NTWS WAS ADOPTED</th>
<th>BRANDED STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY G</td>
<td>6500</td>
<td>6000</td>
<td>10% global</td>
<td>2013/2022 MPLS</td>
<td>Workplace</td>
</tr>
</tbody>
</table>

The mix of staff includes 4000 journalists reporting on news with a fact-based focus. This information is fed into their technology system and used as a resource for their global customer. They are considered a pillar in the tax industry compliance division.

The personnel I interviewed for the research has an educational background in engineering and oversees global design standards, global design, and construction as well as operations and capital plan management. Their career focus has been in facilities and they have 19 years working with Company G.
Alternative work space- choice, influencing factors, and process.

The reason for the transition into non-territorial workspace is two-fold. A changing workforce and space optimization. Thirty to Forty percent of their workforce is out of the office on a given day. Work from home is a formal policy interdependent of NTWS. The interviewee distinguished the terms as being different around the globe. Agile is the term used in the United States, Hoteling in the Asian-Pacific sector, and Free Address in Europe all used to explain the NTWS.

Company G has not used NTWS within their Minneapolis based office, but has them slated for a transition to this strategy in 2022. The interviewee has used the NTWS strategy globally. A recent location to adopt NTWS was London in 2015. An office accommodating 1000 employees reduced their work-seats to 650. They were able to lease one and a half less floors therefore resulting in a reduction of costs including energy and waste. The strategy was to reduce waste by 33 percent. The strategy has been incorporated in San Francisco and is in the planning stages for Manila, Singapore, Toronto and the Minneapolis. The 2020 opening of their Toronto office NTWS will allow for flexibility and easy reorganization of teams.
COST IMPACT EXCERPT FROM TABLE 14.

<table>
<thead>
<tr>
<th></th>
<th>REDUCTION</th>
<th>INCREASE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY G</td>
<td>33 %</td>
<td>Technology and support</td>
<td></td>
</tr>
</tbody>
</table>

Company G's initial rollout of NTWS was complete in 2013, followed by the London site in 2015. With several projects now completed they are on Generation 3 of the implementation. Their first location –Generation 1 was implemented in New York City and had limited success. The New York was a recent acquisition and the leadership was not favorable to the transition from traditional office space to NTWS.

IMPLEMENTATION EXCERPT FROM TABLE 8.

<table>
<thead>
<tr>
<th></th>
<th>AWPS IMPLEMENTED</th>
<th>FIRM</th>
<th>EXTERNAL CHANGE MANAGEMENT</th>
<th>INTERNAL CHANGE MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY G</td>
<td>2013; 2022 (MN)</td>
<td>Perkins and Will, Gensler</td>
<td>Perkins and Will Scott Brownrigg</td>
<td></td>
</tr>
</tbody>
</table>

The drivers for the transition to NTWS was for the financial benefits along with the employee experience. The cost benefits derive from space reduction thus impacting rental costs and energy consumption. The Activity-based Work (ABW) that is implemented aligns more closely with today’s worker. The company ideology is that NTWS contributes to an energized and engaged workforce, and accommodates a variety of workstyles.
The process used for the planning, design, and move to NTWS used firms Perkins and Will, Gensler, and Scott Brownrigg (a London based firm). Both Perkins and Will and Scotts Brownrigg implemented initial space utilization studies for Company G. An example was given of their San Francisco office of only 50% space utilization prior to the move to NTWS.

### UTILIZATION EXCERPT FROM TABLE 9.

<table>
<thead>
<tr>
<th>FIRM</th>
<th>DURATION</th>
<th>IMPLEMENTATION</th>
<th>PRE-NTWS OCCUPANCY RATE</th>
<th>POST-NTWS OCCUPANCY RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY G</td>
<td>Gensler</td>
<td>ongoing</td>
<td>internal</td>
<td>50-60%</td>
</tr>
</tbody>
</table>

### Outcomes.

The real results for the London office were mixed. Post-occupancy discovery outlined the need for a variety of workspaces, and work settings both open and closed workspaces deemed necessary. Pre-occupancy, the design firm set expectations of employees’ engagement and acceptance to follow the Pareto principle or 80/20 rule. The results of the post-occupancy aligned with this presumption and a 20% attrition rate. 20% like the change, 20 % disliked the change and 60% were indifferent. The post-
occupancy evaluation was done externally by both Scotts Brownrigg and Perkins and Will.

The interviewee noted that their London site was built for a purpose and employee feedback was more positive than what they saw in a transitional site in Toronto incorporating NTWS. The interviewee also noted that the employees who do not embrace the transition from territorial to non-territorial tend to be change averse. Personality style of introversion versus extraversion were not seen as a deterrent to embracing NTWS as long as there were a variety of areas to accommodate an individuals' workstyles. An example was given such as a designated head downs quiet workspace versus a livelier community area.
The current generation of NTWS has the space organized into five distinct areas allowing for activity-based work. The areas are focus, collaboration, community, client and support. The feedback post-occupancy, of the London office, and now being incorporated into the Toronto office was a need for more community and collaboration space. The overall space planning strategy keeps departments in designated
neighborhoods.

**Activity Based Zones**

**Level 3**

Typical zoning diagram for office floors. Zoning encourages quiet focus work at plan East and West with collaborative and community spaces centralized on the floor.

---

**Typical Office Brick I Levels 2-5**

Test Fit - Level 3

Levels 2-5 are designed to support workplace environments for 176 employees with exposed original brick building characteristics and variety of support spaces.

---

*Figure 21 Activity-based work zones- courtesy Company G*
The interviewee stated that for NTWS to be successful there needs to be the right leadership at the site and employees that are adaptable to change. They have not noted a correlation with acceptance of the strategy and generational differences noting that a Generation Z employee that’s change averse will struggle with the change to NTWS similar to a change averse boomer. They also noted that two work types that tend not to be flexible in their workstation flexibility are inside sales and editorial departments where focused, heads down work is needed. The interviewee also stated that these employees tend to have a predisposition to introversion.
EMPLOYEE ACCEPTANCE CHALLENGES EXCERPT FROM TABLE 12.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>LACK SENSE OF BELONGING</th>
<th>DIFFICULTY LOCATING COLLEAGUE</th>
<th>NEED FOR PARKING</th>
<th>LACK OF APPROPRIATE FURNISHINGS</th>
<th>LACK OF PERSONALIZATION</th>
<th>SET UP TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>YES - EXTERNAL</td>
<td>NOT PROVIDED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EMPLOYEE ACCEPTANCE POSITIVES EXCERPT FROM TABLE 13.

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>PRODUCTIVITY INCREASE</th>
<th>COLLABORATION</th>
<th>DECISION SPEED</th>
<th>SITE</th>
<th>FLEXIBILITY</th>
<th>AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>YES - EXTERNAL</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When Company G has adopted NTWS in other locations it is 100%. In the Toronto office there will be some fixed traditional resident assigned workspace, but it will be under 10%. The workstation type is 100% uniform and linear bench desking of a size 30” wide x 60” long. All NTWS employees have a locker that is accessed with a security badge. The reservation system for the desking is accessed via using a puck installed on the desk.
Sizing of work stations have been reduced in the past 5-10 years from 300 square feet to 100 square feet. The London office could accommodate all employees at a given time if all workspace types were used. Eighty square feet per employee was considered too dense.

SPACE ALLOTTMENT WORKSTATION SIZING EXCERPT FROM TABLE 10.

<table>
<thead>
<tr>
<th></th>
<th>SQ. FTG FOR EMPLOYEE</th>
<th>BENCHING</th>
<th>SIT-STAND</th>
<th>SIZE</th>
<th>LOCKER STORAGE QTY</th>
<th>LOCKER AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>100-120</td>
<td>X</td>
<td>20%</td>
<td>60” X 30”</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

CHANGE IN WORKSTATION SIZING EXCERPT FROM TABLE 11.

<table>
<thead>
<tr>
<th></th>
<th>1-5 YEAR CHANGE</th>
<th>6-10 YEAR CHANGE</th>
<th>STANDARD SIZING TODAY</th>
<th>RATIO OF WORK AREAS TO EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>300</td>
<td></td>
<td>100-120 sq. ft.</td>
<td>1:1</td>
</tr>
</tbody>
</table>
Sustainability/Well-being- Company G has a strong focus on sustainability and this is managed by the CEO. The components of LEED and WELL are incorporated into the global design standards. Due to cost implications the projects are not typically registered. The upcoming Toronto office however, will be registering their project, and looking to achieve a level in both standards. One of the big efforts they have been striving for in their designs is the “right to light” referring to actual daylight implementation. Which is a strategy used within LEED and WELL.

Company G intends to continue to implement and adjust the NTWS and Agile work philosophy. Keys to success are a strong and engaged leadership team that is a true partner along with open direct communication with the employees that highlights both the good and bad of the change from traditional to non-territorial. The interviewee noted that these strategies will help their company recruit the best and brightest talent.

The data presented regarding company A is discussed in comparison later in this chapter, including tables that show the relationship between these findings with the other companies.

**Cross Company Findings**

The forthcoming information provided compares the seven companies that provided case study and material. Comparisons are made in regard to the drivers, then follows with interactions that relate specifically to NTWS. The list includes the drivers, utilization, implementation, spatial changes, employee acceptance, and the cost savings to the company’s.
Drivers

The researcher’s initial thoughts about this topic was that the primary driver for companies to use NTWS was cost reduction focused. Although this is primarily true the answer was much more complex with its implications. One of the interviewees stated that the driver was the “global economic crisis which challenged companies to do business differently.” A constrained budget, space reduction, and meeting the bottom line were other responses related to cost reduction.

Space reduction was a major driver for companies collectively but for different reasons. A few of the early adopters needed to reduce space to save costs so that the companies could survive in difficult economic times. Later adopters focus on reducing space was to meet the needs of the departments and minimize the need for space expansion.

Collaboration was addressed by most of the companies although not all interviewee’s listed it as a driver. Many companies used the request and implementation of collaborative space as a tradeoff in the implementation of NTWS. Meaning that if a department wanted a re-designed space that provided interactive casual spaces that fostered collaboration the department would be required to adopt NTWS. By decreasing the area for assigned individual workstations there was room to provide these auxiliary spaces while decreasing square footage.

Over one-half of the respondents stated employee engagement as a driver for the move to NTWS (Table 7). Most of the NTWS visited or researched were spaces that provided choice and a more aesthetically pleasing interior. Newly designed experiential
workplace offered the choice of where and how to work which aided in providing increased autonomy and flexibility. These factors could aid in breaking up a monotonous work day. All of the companies gained increased access to daylight known to affect an employee’s well-being (Court, 2010).

Flexible work requests were listed by only a few companies. The early adopters also used this desire as a tradeoff to gain acceptance by employees. The majority of the other companies stated that this was a separate HR issue and had no connection with NTWS adoption.

Budget was also noted as a driver by a few companies. This ties in closely with space reduction and may be the reason that only a few of the interviewees noted this as a driver towards NTWS adoption.

Two additional drivers that were not posed to the interviewees in the questionnaire presented in the findings. The first was a departments desire to maintain cohesion by staying in the same footprint even with growing numbers of employees. The second was a company’s desire to work differently with the goal of fostering innovation and increasing profitability. The reported results were that the NTWS space with a completely new or remodeled space accomplished this task.
TABLE 7: DRIVERS OF NTWS ACROSS ALL COMPANIES

<table>
<thead>
<tr>
<th></th>
<th>SPACE REDUCTION</th>
<th>COLLABORATE</th>
<th>EMPLOYEE ENGAGEMENT</th>
<th>FLEXIBLE WORK REQUESTS</th>
<th>BUDGET</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Implementation.

Implementation of the strategy varied between companies starting with Company A which began using NTWS in 2007 (See Table 8). Implementation has spanned over a decade there, whereas with Company G, while currently using NTWS globally, will not implement it in Minneapolis until 2022. Change management was noted by all interviewees however there were only five of the seven case studies that used an external change management resource.
Utilization study.

The utilization studies done prior and post NTWS varied drastically. Pre-NTWS, the occupancy rate varied from 35-82% across all companies (Table 9). Post occupancy there were also mixed results, including stagnant occupancy rates, the anticipated increase in occupancy rates, and an unintended consequence of lower occupancy rates.

The methods used to gather data on occupancy were also diverse. From the simple end of the spectrum badge swipe data was used and moved to the more complex technological approach of occupancy sensors in a workstation or conferencing area.

The goal of most companies was to increase the occupancy rate post NTWS which would show that space was being used more efficiently. The findings prove interesting with two of the companies remaining consistent, two provided the expected increased occupancy and one reduced their occupancy. The anomaly of the reduced
occupancy post NTWS adoption was related to the flexible work strategies allowing employees to work from home two days per week.

**TABLE 9. UTILIZATION OF NTWS ACROSS ALL COMPANIES**

<table>
<thead>
<tr>
<th></th>
<th>DESIGN FIRM USED</th>
<th>DURATION</th>
<th>IMPLEMENTATION</th>
<th>PRE-NTWS OCCUPANCY RATE</th>
<th>POST-NTWS OCCUPANCY RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPANY A</td>
<td>Internal</td>
<td></td>
<td></td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>COMPANY B</td>
<td>Internal</td>
<td></td>
<td></td>
<td>82%</td>
<td>N/A</td>
</tr>
<tr>
<td>COMPANY C</td>
<td>1 year</td>
<td></td>
<td></td>
<td>82%</td>
<td>65%</td>
</tr>
<tr>
<td>COMPANY D</td>
<td>N/A</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>COMPANY E</td>
<td>4-6 weeks</td>
<td></td>
<td></td>
<td>65-70%</td>
<td>65-70%</td>
</tr>
<tr>
<td>COMPANY F</td>
<td>2 weeks; ongoing with badge</td>
<td></td>
<td></td>
<td>60%</td>
<td>70-80%</td>
</tr>
<tr>
<td>COMPANY G</td>
<td>Gensler</td>
<td>ongoing</td>
<td>internal</td>
<td>50-60%</td>
<td>90%</td>
</tr>
</tbody>
</table>

**Workspace differences.**

Findings related to the data that was collected in regards to sizing (i.e. square footage allowed per employee) could not be compared due to varied methods used by the companies to determine square footage. All companies however offered some variation in their workstation choices, along with a general reduction in size from before the switch NTWS. These differences are noted in Table 10.

In many cases there was shown a 50% or greater reduction in the allocated individual workspace. Further reductions were noted in the space considering that the workstations were no longer assigned.
### TABLE 10. SPACE ALLOTMENT CURRENT WORKSTATION SIZING OF NTWS ACROSS ALL COMPANIES

<table>
<thead>
<tr>
<th></th>
<th>SQ. FTG FOR EMPLOYEE</th>
<th>BENCHING</th>
<th>SIT-STAND</th>
<th>SIZE</th>
<th>LOCKER STORAGE QTY</th>
<th>LOCKER AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>110</td>
<td>30” x 60”</td>
<td>30” x 48”</td>
<td>30”x 48”, 30” x 60”, 6’ x6’</td>
<td>Tower</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>127/ 100 NTWS</td>
<td>30” x 48”</td>
<td>X</td>
<td>30” x 48”, 3’ x 6’, 6’ x 6’, 6’ x 8’</td>
<td>Tower</td>
<td>Individual or shared</td>
</tr>
<tr>
<td>C</td>
<td>6’ x 6’</td>
<td>yes</td>
<td></td>
<td>18 x 30</td>
<td></td>
<td>X (file)</td>
</tr>
<tr>
<td>D</td>
<td>N/A</td>
<td>30” x 70”</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>N/A</td>
<td>100%</td>
<td>6’ x 6’</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>135-150</td>
<td>6’</td>
<td>N/A</td>
<td>6’ x6’; 10 x12’ huddle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>100-120</td>
<td>X</td>
<td>20%</td>
<td>60” X 30”</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

### TABLE 11. CHANGE IN WORKSTATION SIZING OF NTWS ACROSS ALL COMPANIES

<table>
<thead>
<tr>
<th></th>
<th>1-5 YEAR CHANGE</th>
<th>6-10 YEAR CHANGE</th>
<th>STANDARD SIZING TODAY</th>
<th>RATIO OF WORK AREAS TO EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8’ x 8’</td>
<td>6’ x 6’-110 sq. ft.</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>N/A</td>
<td>6’ x 8’, 6’ x 6’, 3’ x 6’</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>280 sq. ft.</td>
<td>110 sq. ft.</td>
<td>1:3 (initial) now 1:2</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>6’ x 6’</td>
<td>30 sq. ft. (workstation only)</td>
<td>1:2</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Sq. ftg. Variance 48,80, 150,225</td>
<td>36 sq. ft. (workstation only)</td>
<td>1.2 with plan to densify up to 1.65</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>17%</td>
<td>17%</td>
<td>6’ x 6’</td>
<td>1.3:1</td>
</tr>
<tr>
<td>G</td>
<td>300 sq. ft.</td>
<td>100-120 sq. ft.</td>
<td>1:1</td>
<td></td>
</tr>
</tbody>
</table>
**NTWS Benefits**

Through the use of NTWS, companies reported a reduction in real estate and related costs (see Table 14). Company E noted company growth and increased profit. There was also a general consensus that the newly designed spaces that offered choice and flexibility helped to attract and retain employees (Table 13).

**NTWS Drawbacks**

The issues that were uncovered during the research process were operational and human factors in nature.

Operational drawbacks included additional cleaning costs and requests for furnishings and technology (Table 12). Space requests for more community and collaboration space. Company C, an early adopter, noted a lack of space availability. Company C also had a density ratio of 1 desk to 3 employees that was later deemed too dense.

The human factors issues presented were more extensive and began with employees being initially resistant to the change. The feedback post NTWS adoption included issues with locating coworkers, a lack of sense of belonging, difficulty building rapport with new teams or new employees, diminished efficiency with set up time and a lack of personalization (Table 12).

Responses to the aforementioned issues were nesting and territory marking. Nesting is a worker continually using the same workspace and marking it with personal belongings. Territory marking was a strategy employees used to have a coworker save them a seat.
TABLE 12. EMPLOYEE ACCEPTANCE CHALLENGES OF NTWS ACROSS ALL COMPANIES

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>LACK SENSE OF BELONGING</th>
<th>DIFFICULTY LOCATING COLLEAGUE</th>
<th>NEED FOR AUTO PARKING</th>
<th>LACK OF APPROPRIATE FURNISHINGS</th>
<th>LACK OF PERSONALIZATION</th>
<th>SET UP TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>YES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>NO</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>YES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>D</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>YES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>NO</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>YES - EXTERNAL</td>
<td>NOT PROVIDED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Strategies for Successful Implementation of NTWS Strategies

Strategies used in the process that helped companies with the transition included a streamlined process. All of the interviewees underlined the importance of change management. Process items included integration of a cross-functional team, benchmarking, data collection, heat map sensors that tracked utilization, focus groups, piloting projects with NTWS champions and providing a support group for the transitions.

Other approaches that aided with the transition to NTWS included providing employees choice, requiring employees that wanted flexibility to be non-resident. Spatial design methods that allowed for options using ABW, private storage, and providing on-site amenities also assisted in the changeover.
Unintended Results of Implementing a NTWS Strategy

The interviewees noted unintended positive, negative, and neutral consequences of the change to NTWS. The positives included a reduction in cost due to minimal spatial reorganizations, reductions in paper consumption, and a clutter-free environment. The reduction in paper consumption was attributed to employees doing business differently and keeping needed documents in an electronic format. Private spaces tend to have a higher utilization rate and personality styles tend to affect people’s choices. Introverts tend to choose more shielded spaces, while extraverts gravitate toward the more open, collaborative spaces.

Ramifications included lack of parking with the increased density at sites (Companies B and C), nesting, and loss of employees. One of the companies is currently in the process of adding a parking structure. The reality of people staking a place to call their own and adding personalization (nesting) needed an unplanned for management strategy to curtail the employees actions. These personalization efforts included leaving materials at the end of the work day both personal and business in nature. The loss of employees was considered an accepted part of the change to NTWS.

Positive Outcomes of Implementing a NTWS Strategy

Cost reduction, employee engagement, and organizational wins highlighted the change to NTWS. Costs were reduced in real estate, operations, space reconfigurations, and in one case transportation costs of a shuttle. Organizational success included adding neighborhoods, and providing more meeting, and collaboration space.
Employees were drawn to new more dynamic offices, and both increased decision speed and employee satisfaction increased in surveys.

**TABLE 13. EMPLOYEE ACCEPTANCE POSITIVES**

<table>
<thead>
<tr>
<th>POST OCCUPANCY SURVEY</th>
<th>PRODUCTIVITY INCREASE</th>
<th>COLLABORATION</th>
<th>DECISION SPEED</th>
<th>LOCATION</th>
<th>FLEXIBILITY</th>
<th>AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>YES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>NO</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>YES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>YES - EXTERNAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N/A indicates not available.
### TABLE 14. COST IMPACT OF NTWS ACROSS ALL COMPANIES

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>COST REDUCED</th>
<th>COSTS INCREASED</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>35%</td>
<td>Technology and furnishings</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(new and reconfigured)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>50%</td>
<td>Technology and recycling</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Cost of furniture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>30%</td>
<td>Design and Construction, FF&amp;E</td>
<td>Company doubled profits in 4 years</td>
</tr>
<tr>
<td>F</td>
<td>yes</td>
<td>Technology, FF&amp;E, parking</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>33 %</td>
<td>Technology and support</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 5. SUMMARY AND CONCLUSION

The case study method produced the following findings. The primary driver for all companies focused on real estate cost reduction and maximization. These were accomplished through space reduction and effective space utilization. The secondary drivers uncovered were flexibility and collaboration. The flexibility surfaced in both the AWS spaces created within the companies and policies that allowed employees to work remotely. Other drivers that presented included: following industry trends, aligning with global standards and providing a diverse work environment.

The process of adopting NTWS followed the drivers and was typically implemented with the need for renovating or providing new space for departments. Change management was listed as a key component in adoption of NTWS. Resistance included unengaged leaders and change averse employees. Further exploration highlighted the following explanations to resistance: a hierarchical organization who saw space as an entitlement and made it difficult to relinquish dedicated space, older project managers, employees who already had flexibility and mobility and middle managers sensing loss of control not being able to view employees at work. A synopsis statement given by an interviewee was, “Today’s talented workforce is accustomed to their own territory”.

Tradeoffs that companies used toward gaining employee acceptance included flexibility and collaboration. One of the interviewees stated that “new amenities were added to mitigate employees’ resistance to the change.” Another analogy given was a “give to get scenario”. Departments wanted more variety and collaboration in their
workspace, so by lessening individual spaces the collective community spaces could be increased.

Components that were integral to NTWS included technology as well as a variety of furnishings and workspaces. Individuals all received laptops and locker storage. Spaces consisted of open and enclosed spaces and followed the ABW methodology. These spaces were further broken into private or group spaces and furnished with a variety of furnishings. Another key component was acoustical management. Management was inclusive of white noise, pink noise, and interior landscaping.

These interviews also shed light on how NTWS aligned with employee types. A few of the Companies also evaluated work style and function for suitability. Human Resources (HR) and Engineering were considered not ideal for the strategy. Mention of acceptance by the younger generation in the workforce was noted.

The choice to use NTWS was either an individual or department decision. Often the decision was department lead not real estate led. One company asked for volunteers to work within NTWS or agilely. Flexible work arrangement were both dependent and independent of NTWS. Further feedback included “Architecture, and Design (A&D) are doing a disservice to their customer if they only offer NTWS as a solution.”

General trends were collected through the exploratory subject-matter expert interviews. In relation to size the following was discovered: the global space standard is decreasing, workstation sizes are being reduced to delay adoption and there is a tipping point of spaces becoming too dense.
Mobility findings produced the following. Work from home is the smallest category of flexible work. There’s a site in Netherlands with 100% mobility and no assigned space. Companies that forced mobility are now reversing decision and calling employees back to campus. Adoption of mobile ABW keeps employees off site and it is the propensity of human nature to return to the same place. To gain acceptance senior leaders must be on board. Conclusively it is not a “one size fits all” and there is a need to provide space with the right vibe to attract and retain talent. One interviewee stated “place still matters”.

The feedback given post-adoption was both positive and negative. Positive aspects included better daylighting, better space utilization, and a decrease in the need for reconfigurations of space, and increased flexibility, and collaboration. Negative comments were a difficulty in finding people for face to face interaction and the need for increased enclosed space.

The move to NTWS is one with complexities and strategies that move beyond simply unassigned space. Companies are working to solve several issues with the move to NTWS. The drivers go beyond the researchers’ initial thoughts focused solely on cost reduction. Although some may argue that technology is a driver, the researcher would argue that technology would be more attuned with enabling, not driving NTWS.

Table 15 shows a comparison of the drivers that were uncovered in the findings of the literature, exploratory subject-matter expert interviews, and case studies. Although the terminology was slightly different the two overarching pieces to arise are cost savings and employee engagement. Cost savings were identified as cost reduction,
space reduction, and space maximization. Employee engagement covering mobility, autonomy, support of ABW, and innovation.

**TABLE 6. DRIVER COMPARISONS**

<table>
<thead>
<tr>
<th></th>
<th>LITERATURE REVIEW</th>
<th>EXPLORATORY SUBJECT-MATTER EXPERT INTERVIEWS</th>
<th>CASE STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>COST REDUCTION</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SPACE REDUCTION</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>SPACE MAXIMIZATION</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>TECHNOLOGY</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>EMPLOYEE ENGAGEMENT</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MOBILITY</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>SUPPORT OF ABW</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AUTONOMY/FLEXIBILITY</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>INNOVATION FOR PROFITABILITY</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>MAINTAIN DEPARTMENT LOCATION</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Expansion on these drivers include attracting and retaining talent, responding to a changing workforce, creating experiential office spaces, and increasing productivity. These drivers presented in the informal interviews, case studies as well as the literature research.

Design planning must meet both company and employee needs. In a dynamic changing world employees desire a work environment that allows choice. The planner must provide an experientially designed environment that’s responsive to the employees’
needs. Following the activity-based work methodology variety is important in the types of space created. Both open and closed areas are needed. More small enclosed meeting areas are requested. Establishing neighborhoods is necessary to provide a sense of community and lessen complaints in regards to belonging and not finding people.

As one interviewee stated “it’s not a one size fits all approach” companies need to evaluate what’s right for their businesses and their employees. There are certain groups not suited to NTWS. One early adopter is currently in the process of returning to a traditional office, resident based system where employees can find their co-workers, regain their sense of belonging and show their territoriality by personalizing their workspace.

**Relationship of the Findings to the Workplace Design Research**

The researchers’ original thoughts related the drivers of NTWS adoption to be cost savings for companies. The thought proved to be true, but included more complexities and additional drivers that weren’t considered the early adopters of NTWS were both cost reduction driven and flexibility driven. The late adopters cited a more holistic business driven approach as their reason for NTWS adoption.

NTWS is impacting companies real estate budgets by saving 30-50% (see Table 8). However the result from the pre-interview research saw only four of the seven companies interviewed completed post-occupancy surveys and only one of these was completed by an external independent source (see Table 3). A post-occupancy survey gives the company feedback from the employee on their reactions to a recent space change.
The pre-interview research disclosed that companies are providing trade-offs for the relinquishment of former private designated space. These tradeoffs may include mobile/work-from-home, activity-based work (ABW), collaborative/living room work areas, or a newly designed interior with access to daylight and amenities. Activity-based work is integrated within most NTWS and is the practice of creating a variety of different spaces to support the different tasks a worker does throughout the day. Are the trade-offs adequate or do they exceed the humans needs in a work environment?

The findings of the study paralleled the workplace design research found in the literature. There are both positive and negative attributes that come from the use of NTWS. The negatives or complaints originate with factors related to territoriality and place attachment. Employees miss the lack of personalization, they also find it difficult to find team-members and connect and lack a sense of belonging. Employees would also prefer more private spaces. All of these issues play into a person’s sense of well-being. The positives relate to autonomy, the choice and flexibility of working in different areas and a “destination” interior that is daylit, and provides opportunity for collaboration.

Initially, space reduction was connected with the global economic crisis. Companies were searching for different methods of cost savings. Minimizing real estate provided for a significant amount of savings. More recent adopters are constrained by building with workstation standards that do not allow for the growing workforce.
Spatial Considerations

Study of the various companies adopting NTWS showed challenges and benefits. The case study’s experience with NTWS spanned a period of 12 years which aided in the understanding of its evolution.

Density is a factor and failures were noted at 80 square feet and a 1:3 workstation to employee ratio. The square footage factor per employee varied between 100-150 square feet. Different spaces are needed for different tasks including collaboration, focus, and community areas. Adopting a neighborhood strategy where teams or departments are housed in a particular area has been followed over time. The area then becomes a groups’ territory versus the traditional individual territory of a workstation. This provides some degree of ownership to a space and the findings show gains greater acceptance from employees.

The request for additional small private rooms, huddle rooms or enclaves continue to be requested for heads-down works or small team meetings. Workstation sizes are averaging 6’ x 6’.

Limitations of the Study

The informal exploratory subject-matter expert interview limitations would include innate bias in the interviewees due to their position in leading or managing the changes to NTWS. Three of the interviews were not associated with a facilities groups. These consisted of two independent management change consultants and a workplace consultant within a manufacturer. Their feedback may have less bias as they are
implementing a variety of changes for companies and aren't focusing solely on NTWS. These interviews can be found in Appendix B.

The study was conducted in a format with a single facilities/real estate staff within the company. The interviewee was also a strategic player in the implementation of NTWS, thus may have innate bias towards the benefits of NTWS. Although the questions were presented in the same manner, across all interviews, the feedback given was not always something that could easily be compared. Other limitations are the convenience sample method which was used for subject selection for both the informal research and case study interviews.

The researcher is an interior design practitioner, educator, and LEED AP which also may affect results. Additionally, while interviews were conducted within Fortune 500 companies in the same metropolitan area, their business focus varied which could also have impacted the findings.
**Future Direction**

There has been limited research conducted on the effects of NTWS and office employees. The strategy has continued to gain momentum due to the cost savings for companies and the choice allowed the employee.

There have been many adaptations in recent years to better fit the needs of the user. Examples are more sit-to-stand desks, quiet zones, additional private space etc. Due to cost savings and the flexibility given the employee the researcher believes that this strategy will continue to gain momentum.

Continued research is needed to gain a continued understanding of how and where companies should incorporate the strategy while being mindful of its limitations. Shortly after the researcher presented this thesis she came in contact with an employee of one of the early adopter companies through an uber ride. He was a Company A employee. He stated that although he was a NTWS designated employee, he always sat in the same place. Showing the reality that employees as humans are territorial.

Further research that examines individual employee responses and adaptation to the space as well as follow up to early adopters would prove beneficial. The strategy is clearly one that can benefit companies. The caution for companies is to remember “it’s not a one size fits all” and to ensure it is also benefiting the employee.
# Envision2030: 17 goals to transform the world for persons with disabilities Enable.
(n.d.). Retrieved July 16, 2019, from

http://newworker.co/mag/brief-history-shared-workspace/


doi: 10.1108/14630011111136830

Arundell, L., Sudholz, B., Teychenne, M., Salmon, J., Hayward, B., Healy, G., &
Timperio, A. (2018). The Impact of Activity-based Working (ABW) on Workplace
Activity, Eating Behaviors, Productivity, and Satisfaction. International Journal of
Environmental Research, and Public Health, 15(5), 1005. doi:
10.3390/ijerph15051005


APPENDIX A – COMPANY QUESTIONNAIRE

MINNEAPOLIS-SAINT PAUL FORTUNE 500 NON-TERRITORIAL WORKSPACE COMPANY QUESTIONNAIRE

Introduction:
The following survey will be administered through personal interview. The duration of each
interview is expected to be 60-90 minutes. The purpose of this survey is to understand the
following as it pertains to the use of non-territorial/free address workplace strategy:
1. Describe the mission, and vision, and work flow of your company?
2. How does this translate into choosing non-territorial workplace strategy?
3. What strategies did your company use?
4. Why did your company decide to make these changes?
5. What were the expected results?
6. What were the real results?
7. What method did you use to determine your results?

The study is looking at office workspace of fortune 500 companies in the Minneapolis area. The
identity of all individual participants, and companies will remain anonymous.

Company Information
1. Where are your office(s)/site(s) located in Minnesota?
2. Which of your office/site in Minnesota your company headquarters?
3. If you have other locations outside MN, where are your other locations?
4. What is the industry focus of your business?
5. How many people/FTE are employed by your company in total?
6. How many people/FTE are employed by your office in Minnesota?
7. How many of those employees are office employees, and where are they employed (at the
   headquarters or other sites)?
8. What is the median age of your employees?

Personal Information
9. What is your position within the company?
10. What is your education, and experience?
11. How long have you been in the design industry?
12. How long have you been working in the facilities sector?

13. How long have you been with this company?

**Workplace Strategy General Information—WHAT DID YOU DO?**

14. Describe your familiarity with non-territorial workspaces? Such as
   a. Example- hoteling
   b. Example- free address
   c. Example- work from home
   d. Example- agile workspace

15. Do you use non-territorial workspace with your office staff at the headquarters site?

16. Do your other locations use non-territorial workspace?

17. Explain what you did in implementing this workplace strategy

18. If your other locations use non-territorial workspace, how many of your locations use this strategy?

19. How long has your company been using this workplace strategy?

20. Do you have a name for your mobile workplace strategy?

21. What percentage of your employees are using non-territorial workspace at your headquarters office/site? Other locations?

**Drivers—WHY DID YOU IMPLEMENT THIS WORKPLACE STRATEGY?**

22. What have been the reasons/drivers/intended outcomes in implementing this strategy?
   a. Space reduction
   b. Collaboration
   c. Employee engagement
   d. Employees request for flexible work arrangements?
   e. Other?

**Results—**

23. What were the expected results?

24. What were the real results?
**Process**

25. Did you use an independent company (architecture or design firm) to help implement a change to non-territorial?

26. If yes, what was the name of the company?

27. Have you used external or internal change management training with the move to non-territorial?

28. If external who was the company?

29. Was the change implemented with in-house staff?

**Space Utilization**

30. Have you or an external company conducted a utilization study?

31. If so, what was the duration of the study?

32. What were the results of the study?

33. What were your typical occupancy rates prior to implementing this strategy?

34. Has your occupancy rate changed?

**Costs**

35. How has this effected overall costs?

36. How has this effected rent costs?

37. How has this effected energy costs?

38. Have there been additional costs implemented in switching to this workplace strategy? If so what do the costs cover?

**Workplace Strategy Implementation**

39. How do you determine which employees will use this strategy?

40. Have you found that typical work-types are better suited to this strategy?
41. Have you found that there’s a correlation with generation/age group, and the acceptance of this work scenario?

42. Do the employees have a choice to choose a fixed workstation or a flexible work strategy?

43. What is the average square footage allowed for an employee in your non-territorial workspace?

44. What are the different sizes, and configurations of work areas?

45. Do you have designated storage for non-territorial employees? What is the size of this storage?

46. What is the average square footage used for a resident or person with a permanent workspace?

47. Has this square footage decreased in the past 1-5 years?

48. Has this square footage decreased in the past 6-10 years?

49. What are the types of workspace provided within the non-territorial strategy, and the size of that space?
   a. Workstation
   b. Benching
   c. Enclosed space
   d. Teaming or communal area
   e. Other

50. What is the percentage of flexible work areas to accommodate all employees if they were all to work within the office/site on a given date?

Sustainability/Well-Being

51. Does your company have a sustainability emphasis?

52. Are you using USGBC’s LEED, WELL or other guidelines?

53. Do you implement aspects of the Well-Building standard?

54. If so, how is the sustainability, and/or Well-being emphasis implemented?

55. Are there any other unique design characteristics that your company is using in its’ workplace design?

Post-Ocupancy feedback-WHAT WERE THE REAL RESULTS?

56. What were the real results?
57. What method did you use to determine your results?

58. Are you using an internal or external post-occupancy evaluation?

59. Are you able to provide a copy of the questionnaire?

60. How long after an employee is in the non-territorial workspace are they given the questionnaire?

61. What are the positives that employees have cited?

62. What are the negatives that employees have cited?

63. How are you using this concept to affect future changes?

64. Will you continue to employ this concept for the same reasons?

65. Where do you see the future of your companies workplace strategy headed?

66. Is there any other general information in regards to the drivers, implementation, and outcomes of using this workplace strategy, that we haven’t addressed, and you feel may be beneficial to this study?

Could you provide the following information?

1. Floorplan example, and photos of previous floor plan
2. Floorplan example, and photos of non-territorial floorplan
3. Example of previous workstation typical
4. Example of current, and or non-territorial workstation typical
5. Copy, and or summary of post-occupancy workplace evaluation
Appendix B – Initial Exploratory subject-matter expert subject-matter expert interviews

Interview 1-

10.4.16 Global Workplace Strategy Leader Lisa Pool – Perkins, and Will discussion of downsizing, and relocation of their office

Perkins, and Will in Minneapolis relocated to a prime location in the IDS Center. The move resulted in a 50% reduction in space and a 400% increase in the access to daylight. The interior aesthetic of the space has a self-proclaimed rough, raw vibe appropriate for a design studio.

Human Health and Wellness is a focus of Perkins and Will. There workspace in Minneapolis is tracking for LEED Platinum and the Living Building Challenge focusing on the Materials petal. Only 5 finishes were used in the raw space. A focus was on local sourcing, reused materials, and minimal drywall (due to embodied energy) except where required for fire rating. No paint was used in the space. The five materials used were: glass, aspen plywood, modular carpet (acoustics in an enclosed space), homasote (acoustical and tackable) steel marker board. The concrete floor was cleaned, the shelving was reused Aspen. Aspen is considered the world’s longest living organism. The wood was finished where needed with a light, water-based finish. Acoustics are working well naturally. An evaluation of the project was completed via an internal post-occupancy survey. The survey was not shared with the researcher.

Spatial allowances for employees in this free address space include individual lockers/cubby and file storage. The non-territorial space provides for less clutter. Red
line sets are eliminated. The work process requires more discipline, but is thought to be more freeing and helping with the reduction of stress and anxiety.

The Minneapolis office is the first in the company to implement free-address. The new workplace eliminates the position of receptionist and the duty to greet visitors is shared by all employees. 13% of the office use their same space daily. These job functions included H.R., and Accounting. An evaluation of the project was completed via an internal post-occupancy survey.

The space has 70 employees, but only 52 ergonomic seats. There is a 40% utilization of desking. Perkins, and Will is known for their work in workplace strategy, and with the push within the industry for Real Estate reduction they decided to “walk the talk’ with their own workplace. Flexibility is one of the greatest assets of the free address workplace strategy.

**Interview 2:**

12/19/16 Manager Workplace Strategy (facilities) Company A

Free Address was started in 2005 with the focus on saving real estate costs through square footage reduction. The HR team came to the facilities team to ask for implementation of the strategy. HR, and IT became the benchmarking for the strategy at Company A. Company A learned about the strategy through a case study at Capital One.

The next group to implement this strategy was a department that had 35-40 scientists in research and development. They were a group of highly educated mostly women desiring flexibility in their workspace.
In 2007, a flexible mobile work environment began that measured metrics that allowed for its’ continuation. In 2008 the facilities group desiring collaboration and connectivity while undergoing a structural reorganization became a pilot test environment for this new workplace strategy.

In 2016, roughly one third of the main office is using the AWS. The strategy has been implemented slowly and in conjunction with the need for a department or space renovation. Options were given to employees if they would like to have an assigned desk or take advantage of the flexibility that accompanied AWS with the reality of NO assigned desk. An employee that selected to have an assigned desk had their workstation footprint reduced from an 8x8 to a 6x8. Company A believes in the philosophy of choosing what works for the individual employee. 15-20% of the employees in AWS have elected an assigned desk. This group of residents is considered those that are averse to change. There is some division among the groups seemingly stemmed by leaders that aren’t fully embracing the AWS strategy.

The interviewee noted an education process within work teams to gain understanding of the difference between a resident or mobile employee. Questions are now stemming around would removing the choice of what type of worker you will be help to lower anxiety?

Company A has completed a SELF-STUDY with a Pre-AWS survey, a training introduction, a 3 month, and 9 month follow-up survey.

The employees choosing to not have an assigned desk seem to be the ones willing to accept change. The facilities group haven’t noted these choices to be age-
related. For some employees there is a space association with the hierarchy of the organization and considered an entitlement factor.

AWS assigns a space to a team to be shared for those not tele-commuting.

Global Workplace Solutions is a group of 60 people. Each team has a locker. There is minimal archival space. The workflow would be print, reuse, recycle. Everyone in this group is provided a laptop. There is no ownership with the shared space. There are enclosed spaces with phones that are on a first come basis.

The interviewee’s personal work strategy allows for her to work from home one day per week and the other days work mobile somewhere on Company A’s campus. The organization is a culture with high meetings. Provided within the workspace is both enclosed quiet spaces along with open collaborative areas. There are areas considered focus zones that you can go to for work requiring concentration. The initial issue when moving groups to the AWS strategy has been finding people when face to face interaction is needed.

Company A worked with HGA initially on implementation of some of these strategies. The theory behind the AWS strategy is to “work and be productive anywhere”.

Outcomes have been better daylighting and 30-40% better space utilization. Company A provides more workspaces than there are people. The workspaces consist of stand up desks, private offices, along with the typical workstation. There is one enclosed space per 4 mobile workers. No executives are incorporating AWS into their personal work strategy. At times there are issues with not enough enclosed space.
Because of the mobility and flexibility that is built-in there are less needs for reconfiguration within an AWS space. Implementation has been successful when there is successful change management which includes educating the employees about the changes.

*Interview 3-

2.15.17 Projects and Planning Manager Facilities- Company B

Company B had five projects underway incorporating free-address during the initial interview. Project one is a 40 year old building built in 1975. The building is being repurposed. The primary focus has been investing heavily on infrastructure. Designed in conjunction with Kling Architects.

The building’s history included an addition or 2nd phase in 1985. In the 1980’s the building began to degrade. The 1985 addition added an additional 125,000 square feet to the original 500,000 square foot building bringing it to its present day size of 625,000 square feet. The design in 1975 consisted of 100 offices in the building and all offices were off the exterior window wall. In 2016 there were 475 offices in the building creating an office environment starved of daylighting. Opening the space allowed for the atrium to bring in panoramic daylight.

The building represented issues with codes and the atrium due to smoke purge. The system infrastructure was a heat pump system designed as a heat recovery system.
that didn’t work. Currently the building is using a condensing boiler system. Three of the four boilers were removed and new chillers were brought in.

The current building originally housed 1300, but could fit 1900 employees. Space reduction bumped the amount of employees accommodated to 2500, but allowed for 2900 to be seated. The building has a 5’ grid ceiling so offices were 15 x15 or 10 x15 now being reduced to a 10 x 12. Workstations were 8 x 8, 8 x10 or 8 x 12 now they have been reduced to 48 square feet or 36 square feet for purely mobile employees.

Benchmarking, prior to adoption of NTWS, has been done with United Health Group, Best Buy, Medtronic, and Thomson Reuters. With circulation currently 127 square feet is allowed per person. With the remodel a 20% reduction per person was obtained.

Current work environments incorporating non-territorial workspace have all offices internal with the exception of the corners off the glass to allow for better daylighting. Offices use a demountable wall system. Which allows for flexibility and reduction in waste from gypsum board. The variety of workspace now present includes phone enclaves, private meeting spaces, offices, and workstations that are 6 x 6, 6 x 8, and 3’ lineal benching. There are a total of 10 types of worksettings.

Company B as a company has 45 independent business units. 15 of these business units are bigger than most fortune 500 companies. 36 of the 45 units reside in Minnesota. With these diverse workgroups Company A has struggled with creating standards. There is a desire, due to a cultural shift, for consistency, and standardization. One of the buildings that was vacated used the Herman Miller Ethospace system. The
furniture was repurposed and made into booths following current workplace trends for a variety of seating and collaboration options. The previous systems furniture used in this facility was Steelcase 9000.

Free Address began in one of their local sites with a desire to "work differently" From 2011-2014 was a beta test done that was tested on the Function and Business group. The facilities group started a Living Lab to test the strategy. One of the schemes used was to bring in pink noise. Pink noise is sound mitigating. It adds pitch to mitigate tones. No documented complaints. The sound transmission coefficient (STC) which was formerly 89 now was at 62 STC. A typical office STC is between 50-60 (Understanding) The environment also added interior landscaping to deal with acoustics.

Early versions of free address began with collaborative groups in project areas. Real estate research had shown that an energized employee is innovative and this drives for more mobility. The test group showed 15% daily absenteeism. Some of the employees also worked from home. The company is becoming more and more mobile. A lot of change is currently happening at company B. Business units that have built in mobility tend to have the most success with the free address workplace strategy. The job functions that find free address more challenging include Human Resources.

The philosophy with this workplace strategy is that the “workplace is a tool” for an employee to be productive in their work. The major implementation of free address at company B was happening during this initial exploratory subject-matter expert subject-matter expert interview. Due to this fact the company was not at a point to evaluate the effects of the workplace strategy.
Prior to employees being moved into free address town halls were done with leadership and a change management group. The initial feedback showed only 12-15% of employees actively resisting the change. New amenities were added to help mitigate employees’ resistance to the change.

Interview 4:

2.23.17 Interior Design Director-Julie Robertson, HDR Minneapolis Design Firm B

In January of 2016 HDR, a commercial design and architecture firm moved from the US Bank tower in downtown Saint Paul to a newly renovated Free Address space in downtown Minneapolis. The company did an internal re-brand in 2015 and wanted to emulate workplace strategies that were being recommended to their clients. They reduced their space from 13,000 square feet to 7400 square feet. The initial space accommodated 46 people while the new space accommodated a maximum of 44.

The new space incorporated a kitchen space upfront that doubles as a gathering space. There are 36 seats to sit and work. The workstations have height adjustable worksurfaces, which eliminates special ergonomic requests and 2 monitors. The resource library was minimized by incorporating high work surfaces with storage underneath throughout the workspace. Within the space there are four private spaces which include two offices that seat 3-4 people. One space is a large conference room capable of holding 15-16 people.

Flexible furniture arrangements following in the current resimmercial trend are used in the space including Steelcase Brody and Coalesse Lagonitas. White noise is also used.
The company currently has 32 employees. Both a shower and mother’s room are part of the space. Everyone has a laptop with the availability to remotely connect to the server. Trays are used for client presentations. This methodology of presenting materials to clients also allows for less materials in the space and allows reuse of the tray.

HDR does internal research on pre and post-occupancy. The home base for HDR is in Omaha. They have 20 architectural offices and 60 engineering offices. The company focuses on healthcare design, but is breaking into the corporate arena.

The feedback they have received from employees has been positive with the older project managers initially being resistant to this change. There creative and collaborative atmosphere has become a showcase for them, “putting them on the design map”. Their location on the Minneapolis skyway helps give them added exposure. Employees have complete flexibility for working remotely.

*Interview 5.*

3/31/17 **Organization Effectiveness Consultant (Independent) Change Management for Company C**

The interviewee worked in conjunction with Gensler on a conversion of Company C’s headquarters in Minneapolis to free address. In 2012 a pilot program (the 1st group) was started that was referred to as mobile. Mobile was described as either an on or off site strategy. The group had no choice. Everyone was mobile within 6 months. The second group 20% chose residency while 80% chose mobility. Administration made clear that mobility was not a license for any less productivity. The 3rd group needed to be
onsite due to the size of the program. 98% of these workers chose the flexibility of mobile despite the need to work together and be on site.

The design group found the most success with allowing the employees to choose their preferred method of working, either mobile or dedicated workspace.

The facilities group studied the effects of this new mode of working and found that there was reduced printing. Recycling was weighed to determine the reduction in printing. Surveys and Focus Groups were done. Company C found the move to mobile workspace to be a huge space savings.

Technology is considered one of the main drivers in allowing the free address workplace to be successful. They did find that coming from a “culture of entitlement” it was difficult for many to give up a dedicated workspace.

Company C’s building consolidation was due to financial reasons, with the added benefit of more flexibility and collaboration in their newly designed space.

The interviewee’s experience included working with the 1st group at Cargill, General Mills, Upsher-Smith, Kimberly Clark, and Mayo’s Fund-Raising Development Group. The interviewee’s previous experience was as a VP of Store Design with Target. Her work focuses on pre and post surveys, focus groups, and space utilization.

The interviewee gave the example of the Siebens Building at Mayo. This project allowed isolation of free address from the open work environment. There was flexibility in the space created by the free address strategy. Drivers for this project included space reduction, innovation, collaboration, and productivity.
Upsher-Smith had too much space and reduced this by going 90% mobile with their employees. The interviewee mentioned that in her work with these various companies that there is a value proposition and if an employee already has the flexibility it’s harder to switch them to a mobile strategy with no dedicated workspace.

Interview 6:

4/27/16 Company H Director - Workplace Strategies, Global Real Estate

The interviewee works in the workplace strategies group for Company H and started with the company as a project manager within the facilities group. Their non-territorial workplace strategy is branded as flexible workplace. Company H has found that change management is crucial for this programs success. They are in a consortium with other major companies (including Microsoft) to learn and determine best practices within the free-address workplace strategy.

Company H is a company of 90,000 people and currently there are only 5500 people using the flexible workplace. The program began in 2010. They have found that the strategy is most successfully implanted in leased space as a method to reduce square footage used. Their campus in the twin cities consists of all owned buildings. In a typical hierarchical scenario anyone who’s a director or above is eligible for a dedicated office. Individuals are able to negotiate flexible work arrangements separate from NTWS.

The current global space standard is decreasing. Whereas previously an average standard workstation size was 8 x 8 it is now being downsized to a 6 x 8 or a 6 x 6 in Asia. Free address is used frequently in Europe. In the US moving to benching has been a big change.
Examples include an IT group that moved from an 8 x 8 to Benching with a sit-stand capability. The screen is attached to the tabletop and the staff do have a dedicated space, but with much reduction of square footage. They did not want to have a mobility program.

Another example given was a Sales group in Asia. They are using hot-desking and free address for their sales group with a ratio of 1:5 (desks to salespeople).

In evaluating the worker for a flexible workplace Company H looks at work style and function. Work from home is the smallest percentage of the flexible workplace and requires minimal physical change to the space.

In Netherlands they have Activity-based Working with 100% mobility and no assigned space. Space is provided for quiet work and team work, but not by departments. This strategy is really free range and the thought of collaboration is more ad-hoc. The downside is if there’s a desire to sit with a team.

The internal move towards this strategy has come from a wide breadth including everywhere from a progressive vice president to a desire for flexible work.

IBM is an example of a company that did complete real estate slashing and forced employees into a mobile workplace. They are now reversing their methodology and bringing people back into the work environment.

The interviewee described that there were several drivers influencing workgroups wanting to move to FWP including a request for collaborative space and more effective space utilization. There typical occupancy is 40%. 37% is the average occupancy of a
dedication workstation and 14% is temporary occupancy. The interviewee also stated that “PLACE STILL MATTERS”.

At Company H they do not use a one-size fits all strategy and believe that FWP does not work for every job function. She described the need for a combination of workplace strategies. There is a need for strategies that address residents (traditional) and on campus mobile. Other factors include the type of work that an employees is doing and the need for visual privacy. Personality styles can also play into finding the best fit for the employee and its workgroup.

Company H categorizes their employees into 3 different sectors: home, resident and mobile. Home workers work from home at least 3 days per week. A resident has a permanent location and is typically seen as an employee that has a high need for visitability or employees coming to them. Mobile is an on or off-campus worker. The on campus mobile workers do have dedicated assigned storage. A typical off-campus mobile worker would be a sales representative or an employee who’s often at client sites.

There are currently 15 sites where MWP is implemented and these sites range from 100 to 1000 in size. At company H it is typically the departments that are requesting the change. They have found that when there is high acceptance from senior leaders the employees are more accepting of the strategy. There tends to be most resistance from middle-management and a resistance about not being able to effectively manage their employees when they’re not easily visible.
Company H does a post-occupancy survey three months after the strategy has been implemented. The timing tends to be critical in evaluating adaptation versus reaction. By this time all employees should be familiar with the new operating norms.

The facilities group at Company H has found the most amount of success through effective change management by providing FWP change training. The training includes webex delivery, and has a lot of FAQs question, and answer sheets. The training schedule begins with an introductory session, followed by a people managers training, and concluding with a session for all employees affected.

Before a group moves forward with FWP they must first go through an initial survey that is answered by all employees and focuses on work patterns. Many of the groups are looking for a more diverse work environment that allows for collaborative workspace as well as independent focused rooms. As in many situations it’s a give to get scenario. If you’re looking for these added benefits to a space it can be done, but not at a premium to the company. The interviewee closed with mentioning the website: GLOBAL WORKPLACE ANALYTICS.COM They are a company focused on bringing agile solutions to companies.

Interview 7-

3/22/18 Eric Johnson Senior Workplace Advisor, Allsteel Commercial Furniture

Eric works within Allsteel’s workplace advisory group is one of a five person team. They focus on helping their company to understand what’s changing in the
workplace. They are working on both change management and mobility strategies. There are layers of knowledge in understanding the benefits.

Eric believes that success within free address strategies are definitely aligned with job types. An example Eric gave was working with Hewlett Packard. The engineers in this organization are not using free address while the software team is more agile and adaptable to a free address workspace.

In addressing human characteristics and worker types that are more naturally aligned with free address workspace Eric sited recent research that is focused on social aspects and human centric design. This theory stems back to the cultural anthropologist Edward Hall and his work cited in the Hidden Dimension. Jacobs Engineering was a case study focusing on “How Dense can you go”. Edward Hall studied this in animal populations and the detrimental effects when an area got “too populated”.

Sally Augustin is a Behavioral Psychologist who has focused on work design research. There are two different types on non-territorial workspace. Free-Address is considered unassigned and is available on a first come first serve basis. Hoteling is a reservable non-territorial workspace. Deloitte and Touche provided a case study that primarily uses hoteling. Hoteling is considered better by Eric as there tends to be more tools to know where people are sitting that day. Eric also mentioned the propensity of human nature to return to the same place.

Other examples of free address is Microsoft in Netherlands. The technologies now allow for location notification of an individual. Companies are using augmented
intelligence to help people find their way. Facilities are using the data to help determine occupancy. There is a need to establish the best approach for user experience.

Eric’s group is finding a link with the acceptance of non-territorial spaces and generational differences. Millennials and Generation Z get the technology and are open to the idea but have concerns for safety and privacy.

Eric shared two videos created by ING about agile workspace. 360° Agile way of working by ING (ENG) https://www.youtube.com/watch?v=cxGXQxsapY8

The videos are created by ING a banking company and highlight there change in workplace strategy since 2015, ING cited working scenarios at Spotify, Google, and Netflix as a change to the classical work mode. The videos show the Business and IT departments that are now arranged in small autonomous multi-disciplinary squads. There new workplace strategy focuses on multifunctional working in order to deliver solutions to their clients more quickly.

The office space is touted as an environment that connects, motivates, and inspires. This is accomplished through each floor having a central public area for group interaction and each squad having their own area set up in the typical benching format. The design is meant to give the employee an “at home” feeling with spaces that are designed and decorated differently. Public spaces include a yoga and workshop area along with a gaming area.

Eric also mentioned a group within IFMA know as the workplace evolutionaries. They are a group that is focused on the people not solely the place. AJ Paron Wilde and Liz Beaudry are two local people focused on this group.
Company I’s global design guidelines are not standard. Each site determines the amount of agile workspace. In the location the researcher visited they currently use hoteling, which is an early predecessor of NTWS. Their brand for NTWS is referred to as agile. There were three buildings on the site that were visited, one that had undergone renovation and building two that was in the process of a renovation. Building two was given the charge to be 25% agile (NTWS). They will be the pioneers in using this strategy. The catalysts for the change were: meeting capacity, aligning with global standards, and following industry trends. The interviewee cited “it was being implemented to maximize real estate”.

Company I did a utilization study to dictate workplace strategy. A utilization study is done to see how people are currently using their space. Their study showed that workers sat at their assigned desk 33% of the time.

Space reduction has been a recent implementation. The standard workstation size for thirty years was an 8 x 8. A remodel of building three in 2015 reduced this size to 6 x 6. Building two is currently moving to a module of 6 x 5 in an effort to delay a larger percentage of the workspace moving to agile. The real estate mandate for this company is that all buildings need to be remodeled to meet the global design guidelines prior to a new building or addition to an existing building.

Company I does have established guidelines as aforementioned. Their planning guidelines include the functions of community, individual, collaboration and support. The
community area is composed of a town-square consisting of kitchen/break functions as well as open collaboration areas. Individual areas consist of workstations, benching and private offices. Collaboration consists of a huddle room, team/conference room and a studio. The support function is made up of phone rooms, mother rooms, prayer rooms and storage.

Company I does have a global facilities workplace strategy team. They used Gensler to create their global design guidelines. Their NTWS is defined as agile. The worker is allowed to do their job without an assigned workstation. These workers all have laptops and the unassigned workstations available for the agile workers also have desktop computers. Company I’s site that was visited asked for volunteers to work agile. Another strategy that is used is known as flex work and it is a work from home scenario, but not preferred. The number one reason for choosing either of these workplace strategies is the buildings are out of space.

Space constraints are one of the drivers for the remodel of existing spaces as well as maximizing the give back spaces consisting of community, support, and collaboration. Sit-stand desks are provided in all remodeled spaces.

Interview 9-

Kathy Kacher 6/15/19 Workforce Solutions Specialist Life Alliance Services

The interviewee is a workforce solutions specialist with over 30 years of experience. She has a background in human resources and has transitioned to facilities and is active in International Facilities Management Association’s (IFMA) Workplace Evolutionaries. Her consulting work is primarily in Canada, Chicago, and New York City.
There are many factors currently affecting the office place of today. A recent example was given of a global company based in the twin cities in which the company had to find a separate warehouse type space with a vibe far different from their corporate office in order to attract and retain the needed talent.

The interviewee spoke about her consulting in activity-based work (ABW), and stressed that there is a lot of change management needed with a move into ABW. Activity-based work according to https://www.iofficecorp.com/blog/does-activity-based-working-actually-work-the-surprising-data is where “employees choose between a variety of different workspaces, each designed for a specific activity. Employees don’t have a single dedicated workstation, but they can work in the kind of space that best supports the type of work they are doing on any given day.”

She stated that Minneapolis is a progressive location whose companies are implementing this type of change. The findings are that once the implementation is happening to ABW nobody comes into the office. The culture of the office therefore becomes different and workers are finding ways to connect exploring others virtual vibe.

The interviewee noted that there needs to be a “middle-ground” between mobility, ABW, and traditional office space. A “change over time” was recommended. Issues found with NTWS and ABW is that today’s “talented workforce is accustomed to their own territory” and it is not successful to “pull the rug out from under this workforce”. Also mentioned that in the interviewee’s opinion is that the Architecture and Design (A&D) firms are doing a dis-service to their clients to offer only NTWS as a solution.
The interviewee also identified creative work strategies that have gone wrong. Best Buy, another fortune 500 Minneapolis company, used a workplace strategy called Results Only Work Experience (ROWE) it was essentially a management scheme that let workers do whatever they want as long as they got things done. The practice was abandoned with the arrival of a new CEO and less than optimum results (Stevenson).
NOT HUMAN RESEARCH

March 27, 2019

Anne Faniok
fp0001@umn.edu

Dear Anne Faniok:

On 3/27/2019, the IRB reviewed the following submission:

<table>
<thead>
<tr>
<th>Type of Review</th>
<th>Initial Study</th>
<th>Non-terrestrial Workplace Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigator</td>
<td>Anne Faniok</td>
<td></td>
</tr>
<tr>
<td>IRB ID</td>
<td>FUM20000000005</td>
<td></td>
</tr>
<tr>
<td>Sponsored Funding</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Protocol ID</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Grant ID</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Internal UNV Funding</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Fund Management</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Outside University</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>PHS, DOE, or OAR</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Document Reviewed with this Submission: Company Questionnaire.doc, Category: Other; Non-terrestrial Workplace Evaluation, Category: IRB Protocol:

At the data collected are focused on practices procedures and not the individuals themselves personal, the IRB determined that the proposed activity is not research involving human subjects as defined by DHHS and FDA regulations. To arrive at this determination, the IRB used "WORKSHEET: Human Research (SRP-310)." If you have any questions about this determination, please review that Worksheet in the IRB Toolkit Library and contact the IRB office if needed.

Ongoing IRB review and approval for this activity is not required; however, this determination applies to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether IRB review is required, please submit a Modification to the IRB for a determination.

Sincerely,

Driven to Discover™

Jeffrey P. Pekay, CIP, MLS
IRB Analyst

We value feedback from the research community and would like to hear about your experience. The link below will take you to a brief survey that will take a minute or two to complete. The questions are basic, but your responses will help us better understand what we are doing well and areas that may require improvement. Thank you in advance for completing the survey.

Even if you have provided feedback in the past, we want and welcome your evaluation:

https://umn.zoominics.com/S2%2F3D7e5V_5jBIYnpP0M7tP0S58t

161
APPENDIX D. Definition of Key Terms

Activity-based Work (ABW)
An approach to designed workspaces that provides a variety of work settings to support the various activities an employee needs during the workday.

Agile workspace or office
A way of using a work area more efficiently maximizing utilization. An unassigned seating model is used to promote collaboration and minimize space usage. This is similar to activity-based work.

Alternative Work Environments
Use of non-traditional work practices, settings and locations that supplement or replace traditional offices. These could include mobility, work from home and free address or hot desking.

Assigned
The traditional practice of designating an office or workstation to an individual employee.

Enclave
A short term retreat space within an office typically enclosed.

Free Address
A non-territorial workplace strategy that promotes flexibility and efficiency by sharing workstations. It differs from hoteling as it is typically non-reservable.

Hot Desk
The practice of an organization allowing multiple workers to use a workstation during different time periods. Also referred to as non-reservation based hoteling.

Hoteling
Temporary provision of a workspace or office to a mobile or temporary worker that is typically reservable.
Huddle room
A small conference room equipped with teleconferencing and seating 3-6 people

Mobile
Reference to a type of work or worker that through technology has the ability to work anytime or anywhere and isn’t limited to working on-site in a resident based workstation

Neighborhood
A concept used in office planning where departments or teams are located in the same area and although they may not have the same desk daily they are working in the same area as their team or department

Nesting
An undesirable habit used in any non-territorial space where a worker uses the same desk continually and personalizes with their own items not observing the clean desk policy.

Non-territorial
A form of alternative officing where an employee is not assigned a workstation such as in a traditional office, but shows up daily and either reserves or finds an open place to work. The term encompasses hoteling, hot-desking, free address, and agile workspace.

Occupancy planning
A term used in office design that requires the use of space planning, data mining/analysis, reporting, and interpretation to provide recommendation for a company’s habitation needs

Open
A term used to refer to office planning where the open work areas no longer have partitions between them.

Pedestal
File storage within a work station it is typically 15-18” wide and consists of either file drawers or a combination of a file and box drawer

Resident
A term used in office spaces to define an employee with an assigned desk or office

Town hall
A business meeting where employees are given an opportunity to ask questions to business leaders in an open forum format.

**Unassigned**
An open work area available to all employees to use may be reserved or on a first come first serve basis

**Work from Home**
Typically a human resource policy that allows an employee the ability to do their work at home or out of the office

**Workstation**
A work area most often separated with a panel system and provided for one individual to use at a time. Also referred to as a cubicle.