

ABSTRACT

Title of Document: CONVERGENCE: THE AIRPORT
TERMINAL AS THE GLOBAL MAIN
STREET

**Charishma Hunjan, Master of Architecture
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World conflicts largely stem from a lack of understanding among people. Ignorance between cultures often breeds separation and, at times, hostility. In response to this lack of interaction between people, this thesis explores the potential that exists at nodes of convergence. The international airport provides a lens for this exploration. At its core, the airport terminal is a mechanism for movement. Its purpose has traditionally been to capture, filter, and organize people as they progress towards their destination. This thesis takes advantage of the condition of the airport to promote an agenda of fostering human interaction. The design will focus on the journey of the individual as a means of enhancing the collective experience.

CONVERGENCE: THE AIRPORT TERMINAL AS THE GLOBAL MAIN STREET

By

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Introduction

This thesis focuses on the design of a place that can foster human interaction at the global scale. I have chosen the program of an international airport terminal and a terminal hotel as the vehicle for this exploration. This document will evaluate the needs of the individual as well as the requirements of an international airport terminal and define a set of principles for merging these two concepts. A thorough precedent analysis of existing international airports will highlight the shortcomings and areas of opportunity for enhancing the travel experience. By extracting principles from select case studies and deploying them in the design of the airport promenade, I will formulate a new approach to the travel experience. The goal is to investigate how a place can shape the way that people interact in the hopes of generating a new model for the design of global hubs.

Chapter 1: The Problem

The Importance of Human Interaction

Empathy

Humans naturally categorize each other. We group by culture, religion, socio-economic status, education level, technological advancement, zeal, modernity, athleticism, upbringing, gender, sexual orientation, ideology, location, form of expression, sophistication, literacy, and architecture. This grouping, though natural, can give rise to negative interactions among people.

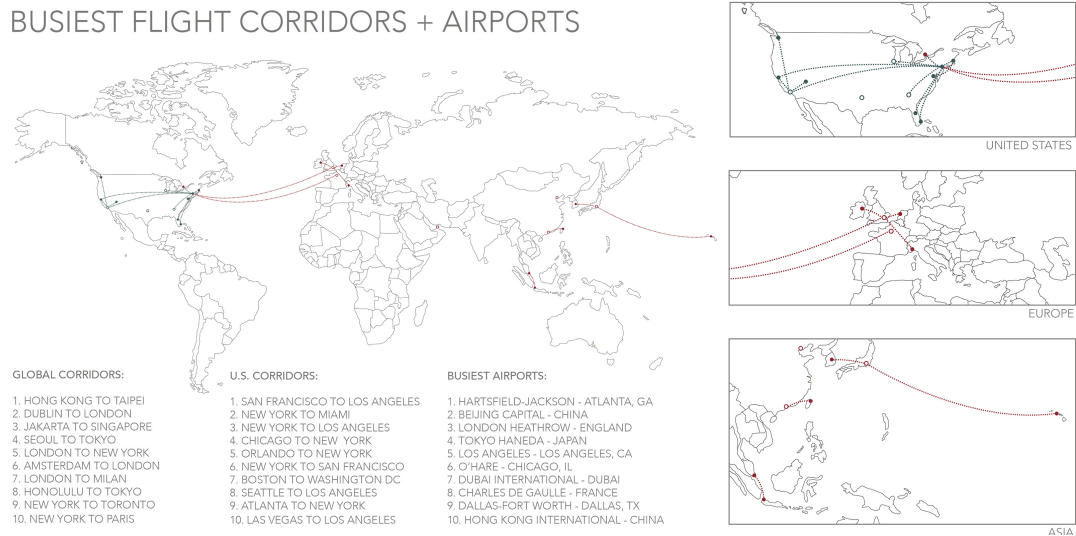
Empathy starts with the understanding that we are all humans. We share similar if not the same instincts and motivations regardless of which group we fall into. It is impossible to force empathy into people. However, it is possible to create places that foster human interaction. One way to create understanding is through shared experience. People bond over shared experiences. Whether it is sharing of stories or sharing of physical experience, this experiential overlap allows people to relate to one another. Human interaction gives rise to understanding and understanding is the foundation of empathy.

Culture

Throughout history, world events have led to changes in the way that people perceive others. These perceptions have led to misconceptions that have created prejudice among people. In the past, events that happened around the globe were isolated to specific groups of people in specific places. Word of events traveled slowly and was often misinterpreted in the process.

Today, word travels quickly. Technology has placed the news at our fingertips. Everyday people can learn about events that are happening thousands of miles away within minutes of the event occurring. Though this technology has given people more access to the world and a greater understanding of what's happening, it has also accelerated the time between perception, misconception and prejudice.

Figure 1: Diagram of most frequented flight paths worldwide



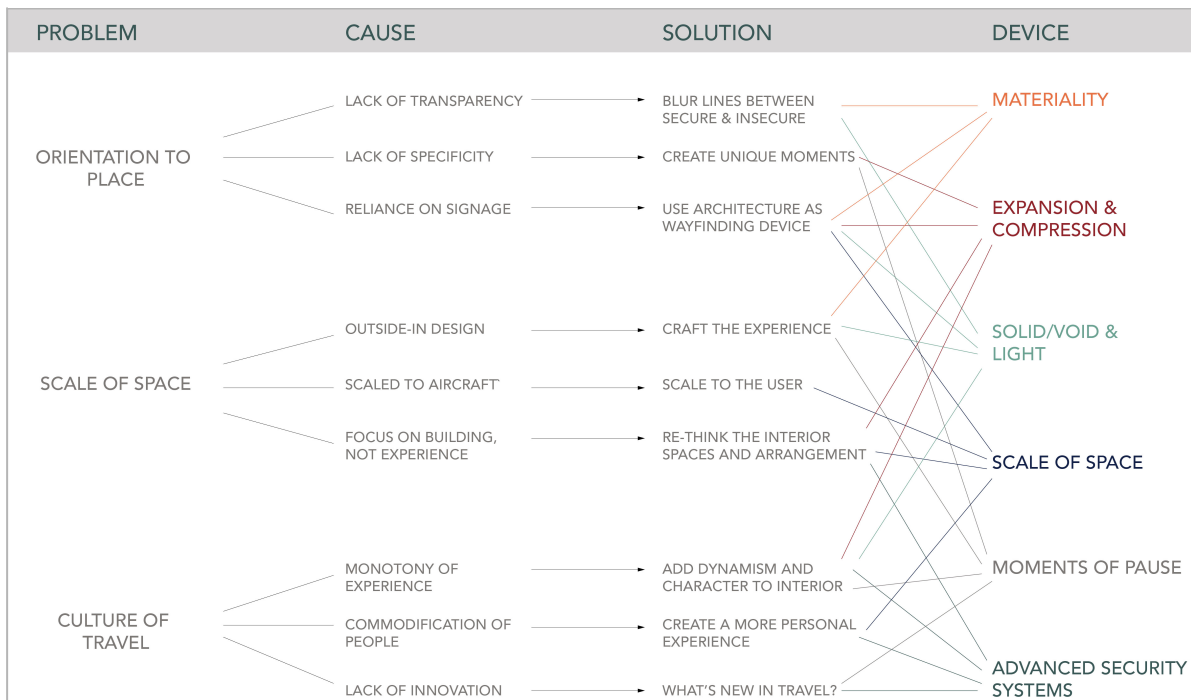
Travel & the Airport

Humans are traveling more now than ever. With the advancement of technology and the globalization of the economy, there is an increase in travel each year. A short flight no longer poses an obstacle to humans who are motivated by the need for work or the desire to preserve relationships.

Airports represent a node where humans from all over the world converge and share an experience. Rather than imagining a new building type that could foster global interactions, we should take advantage of this existing international hub. Rather than filling airports solely with shopping and restaurants, what types of spaces could supplement these uses? How can we take advantage of airports as international gathering places and use these hubs as a way to create global interaction?

The shared experience of travel has the potential to create the understanding that generates empathy. How can we take advantage of the positive and negative associations with travel and use them as a way to create a true international gathering space.

Figure 2: Diagram outlining the Problem of Airports



The Airport

Scale of Space

Today's airport is seemingly designed at the building scale as a mechanism for moving people. There is no apparent attention being paid to the nuances of how people move at a smaller scale. Airports today have demonstrated an understanding for creating spaces that are large enough to accommodate the large number of people using the space. With this foundation, how can architects start to break up these spaces so that they become more personal? How can airports begin to address the human scale?

Much of the stress that occurs at airports is out of the control of the passenger. Is it possible for the spaces in an airport to be designed in a way that prepares for these stresses? This could come in the form of a place to rest during a delayed flight, or a long line that has something of interest to distract the passenger from the long wait. These are examples of how the process of travel can be eased at the human scale. There must be a way to create moments that soften the process of travel without compromising its efficiency. These moments must be designed at the human scale in order to affect the whole.

The delay is one of the biggest causes of stress for travelers. A delayed flight means missing a connecting flight, missing an important event, needing to find a

place to stay overnight, or even cancelling a trip all together. Again, these delays trickle down to the individual because it causes stress and anger. When a group of people shares stress and anxiety, conflict can occur. What does this mean for designers?

According to Ty Osbaugh, Principal and Director of Aviation at Gensler, these delays result from crowded runways, system glitches, and fortuitous events such as weather. Many of these problems can be alleviated by the expansion of airports to accommodate the demand for that particular hub. This need for expansion is encourage many airports worldwide to expand and add additional facilities. As these facilities grow, designers need to be innovative about the disposition and character of the spaces. What program can be added that will calm passengers or are experiencing flight delays? How do these spaces relate to the whole?

Orientation to Place

A traveler should have a sense of orientation within the airport. How can the building relate to the site? How can the airport acknowledge the city it serves and orient the traveler? The parameters of each particular site play a huge role in the development of the facilities. The runways and apron size establish the footprint of the building. Often airports are isolated objects in the landscape located in close proximity to a major town or city. How can the airport conceptually reach out and

grab the city it is related to? How does existing infrastructure affect movement to and from the airport?

Culture of Travel

“...the essential modern moment – when technology seems perfectly in tune with human aspiration, before hijackings and air rage, before jumbo jets, before deregulation...” – Alastair Gordon.

“As travelers, we remove ourselves from the experience by thinking about something else, but we are never altogether comfortable with the airport process. Instead of being thrilled...we are more often than not horrified or bored by the reality...We are both repelled and attracted at the same time. Some react with air rage, incensed by the impersonal nature of the setting...Most of us just want to reach our destination as quickly and safely as possible.” – Alastair Gordon

Chapter 2: The Opportunity

The Airport as a Node of Convergence

Airports have established themselves as global economic hubs for the transfer of good and people around the world. As tourism and economic reliance on air travel increase, more and more people will be traveling each year. The human interactions that occur in airports can have a greater social impact. Architecture can play a role in the design of spaces within the airport that foster more meaningful human interaction and awareness.

How can architects harness the largely underutilized potential of the international airport terminal to enable human connection among everyday citizens of the world?

Seattle-Tacoma International Airport

International Terminal

The United States is in the process of rethinking its international airports. These hubs serve as gateways into the country for people traveling from all over the world. Despite this, the typical international airport terminal in the United States leaves much to be desired.

Sea-Tac is an international transit hub. This site serves as a node for travelers from all over the world and is equidistant via flight to Asia and Europe. As of 2015, Sea-Tac provides twenty-one (21) non-stop international routes and seventy-seven (77) non-stop domestic routes. The non-stop international routes carry fliers to major cities in Asia such as Beijing, Hong Kong and Shanghai, China; Taipei, Taiwan; Seoul, South Korea; and Tokyo Japan. Direct flights to major cities in Europe include Paris, Frankfurt, Amsterdam, London, and Reykjavik. These European destinations represent some of the most highly frequented tourist destinations in the world. The remaining of the 21 non-stop international destinations consist of cities throughout Mexico, Canada and the city of Dubai in the United Arab Emirates. Figure 1 below highlights the 2015 projections for international travelers flying through Seattle-Tacoma International Airport.

Industry

Seattle-Tacoma International Airport (Sea-Tac) ranks 19th in air cargo volume in North America as of 2013, and is the third largest airport for international cargo on the West Coast of the United States. Seattle's location in the northwest corner of the United States makes it an air gateway for cargo from Asia and Europe to North America. This hub provides non-stop international cargo routes to thirteen (13) different cities throughout Asia and Europe.

Airport Terminal Hotel

In 2013, 452 million people traveled for business in the United States alone (www.ustravel.org). Major international airports, specifically those located on the edges of the country, are getting more passenger traffic as a result of the globalization of the economy. Rather than venturing into the city, what if these business meetings occurred at the airport? That way international visitors could fly in for the meeting and immediately catch a flight back to their country.

Meanwhile, for the average person traveling for non-business reasons, the same delays are occurring at the airport. Everyday people experience flight delays. Some choose to sleep at the gate, others pay for a nearby hotel, and some stay up all night out of fear of missing their flight.

An airport hotel could serve the dual purpose of providing a location for international business meetings to take place, as well as a place to stay overnight. Travelers who are subject to unexpected flight delays will have somewhere within the airport where they can stay overnight.

I am interested to explore the other design possibilities of an airport. For example, could there be a mix of units that serve different purposes? There would be the standard overnight hotel room, a luxury option for high-profile business leaders, and potentially a room that is only rented out for a few hours at a time. This short-

term option would be for travelers who do not need a room for the entire night, but just for a few hours.

According to HVS, an airport terminal hotel will be successful in an international airport that features the following: (1) a high volume of direct flights; (2) a high volume of corporate travelers; (3) inconvenient ground transportation outside the airport; (4) inconvenient or expensive parking; (5) an expensive rental car market; (6) and harsh winter weather conditions.

Public Benefits

The SeaTac City Council approves development on a case-by-case basis for land in certain zoning jurisdictions. The city council approves development based on certain criteria that reflects the overall vision for the city. This vision for SeaTac is based on the following goals. (1) Develop and implement programs and projects that help position SeaTac as a healthy community and enhance the quality of life. (2) Pursue economic development opportunities that will attract and retain businesses and jobs. (3) Plan and construct infrastructure improvements that increase the viability of

commercial development. (4) Continue to pursue development opportunities that incorporate input from SeaTac residents and adjacent businesses, as well as the development community.¹

The reason for being for SeaTac, Washington is Seattle-Tacoma International Airport (Sea-Tac). Sea-Tac was dedicated as a commercial airport in 1949 and triggered the growth of a small city. Today, the airport sits within a community that consists of hotels, small businesses, large corporations, public parks, schools, and private residences (<Land-use map>). Although the City of SeaTac is 15 miles south of downtown Seattle, many residents still take advantage of the opportunities offered in the downtown. It is vital that any new development in SeaTac will benefit the local community as well as the larger Seattle-Tacoma-Bellevue Metropolitan Statistical Area (Seattle MSA).

The benefits of the subject development on the local SeaTac community will also be reflected in the larger Seattle-Tacoma-Bellevue Metropolitan Statistical Area (MSA). The proposed development will provide more jobs and a major economic

¹ “City Council.” City of SeaTac. N.p., n.d. Web. 31 Aug. 2015.<<http://www.ci.seatac.wa.us/index.aspx?page=81>>.

boost to the City of SeaTac. The proposal will also help to create a sense of place and new attraction for the City.

As of 2013, Seattle-Tacoma International Airport (Sea-Tac) has provided 109,924 direct jobs per year.² Direct jobs are defined as jobs that would be dislocated if the airport were to close. As a result of the future expansion of Sea-Tac, many more jobs will be created and the proposed terminal hotel will add to that pool.

The success of the terminal hotel and therefore its impact on the local economy is dependent on the success of Sea-Tac and the Port of Seattle. As previously mentioned, the airport terminal hotel is the first hotel that travelers consider when stranded at an airport due to cancellations or overbooking.³ Additionally, the airport terminal hotel is often used as a hub for corporate meetings involving visitors from all different locations because they reduce the cost and complication involved in hosting such meetings in the downtown. The 20-year

2 Martin Associates, comp. "The 2013 Economic Impact of the Port of Seattle." (n.d.): n. pag. Port of Seattle. Web. 31 Aug. 2015. <https://www.portseattle.org/Supporting-Our-Community/Economic-Development/Documents/2014_economic_impact_report_martin.pdf>.

3 Rosszell, Monique. "RevPAR Penetration at Airport Terminal Hotels." HVS Global Hospitality Services, n.d. Web. 10 July 2015. <<http://www.hvs.com/article/3266/revpar-penetration-at-airport-terminal-hotels/>>.

projections for travel through Sea-Tac indicate that the demand for a terminal hotel will increase. The success of the hotel will feed into the tourism industry, local SeaTac economy, and the Seattle MSA economy as a whole.

A goal for the proposed terminal hotel is for it to be designed in a way that helps to create a sense of place near the airport. The new international terminal is proposed to present a new way of approaching airport terminals. The design seeks to blur the lines between the secure and insecure zones of the airport in a way that makes the experience of travel more enjoyable for the traveler. The proposed development will be connected to this new terminal and has the potential to create a visual anchor and enhance the sense of place that the terminal seeks to create.









Developer Benefits

The subject development will create a long-term, stable opportunity to any developer interested in working with the Port of Seattle in the City of SeaTac. The main developer benefit is the long-term property interest that comes with a terminal hotel development. The developer will have a prime, secure business located on land owned by the Port of Seattle for up to 75 years, as well as amortization of any capital investments put into the deal.

Chapter 3: Methodology

Precedent Analysis

Figure 3: Diagram summarizing precedent analysis methodology

AIRPORT	TYPE	CONTEXT	STATUS	PASSENGERS PER YEAR	IMAGE
PITTSBURGH INTERNATIONAL (PIT) PENNSYLVANIA	INTERNATIONAL	OUTSKIRTS OF CITY 	OPERATING MOSTLY LAYOVERS NO LONGER A HUB UNDERUTILIZED	8,041,357 (2012)	
JOHN F. KENNEDY (JFK) NEW YORK	INTERNATIONAL	EDGE OF CITY 	OPERATING DESTINATION INTERNATIONAL HUB HIGHLY FREQUENTED	40,176,735 (2014)	
SEOUL INCHEON INTERNATIONAL (ICN) SOUTH KOREA	INTERNATIONAL AEROTROPOLIS	CENTER OF CITY 	OPERATING INTERNATIONAL HUB BUSINESS HUB HIGHLY FREQUENTED	33,988,710 (2014)	
KING ABDULAZIZ INTERNATIONAL (JED) SAUDI ARABIA	INTERNATIONAL	EDGE OF CITY 	OPERATING DESTINATION INTERNATIONAL HUB RELIGIOUS HUB SEASONAL	27,111,000 (2012)	

Convergence

The title of this thesis is “Convergence: The Airport Terminal as the Global Main Street.” Before beginning the design process, it was necessary to define the

term “Convergence,” and the different ways that it can occur spatially. The three ways that convergence can occur are physically, visually and mentally.

Physically: “The coming together of objects from different directions so as to eventually meet.”⁴

Visually: “A coordinated turning of the eyes to bear upon a near point.”⁵

Mentally: To come together and unite in a common interest, focus or goal.⁶

These definitions helped to guide the selection of specific case studies to research and eventually, the design itself.

Case Studies - Introduction

A series of twelve (12) case studies were selected to study for this thesis. Each case study represented a space where people converge in some form and fell into the category of one of four terms: meditation, circulation, participation, and exchange. These four terms were chosen to represent different forms of convergence. Following the analysis of each case study, a set of design principles was extrapolated that seek to

⁴ Dictionary.com. Dictionary.com, n.d. Web. 1 Dec. 2015.

⁵ Dictionary.com. Dictionary.com, n.d. Web. 1 Dec. 2015.

⁶ Merriam-Webster. Merriam-Webster, n.d. Web. 1 Dec. 2015.

identify the architectural and spatial devices used to create the space. The diagrammatic analysis of these case studies can be seen in Figure 4.

Figure 4: Case Study Analysis Matrix

MEDITATION	<p>POSSIBLE PROGRAM</p> <p>Chapel Religious space Rock Garden Zen Garden Yoga Studio Library Technology</p> <p>Case Studies: Kempner Chapel, Madison, Indiana, KCT Architects Ltd. Madison Library, University of Wisconsin Zen Rock Garden, Ryūkyū, Japan, Hoshinaka Museum</p>		<p>DESIGN PRINCIPLES</p> <ul style="list-style-type: none"> Enclosure / bounded space Isolation of the event Activity as meditation One point of entry Unified Space Unobstructed views Clear geometry
CIRCULATION	<p>POSSIBLE PROGRAM</p> <p>Spanish Steps, Rome, Italy Wangchuan Museum of Art, Steps, Nanjing City, China, HOK, Richard Morris/Hoare BBC Scotland Building, Glasgow, Scotland, OMA and Doppelwerk Architects</p>		<p>DESIGN PRINCIPLES</p> <ul style="list-style-type: none"> Steps as seating Sense of enclosure Landing as place of rest Circulation as a moment of pause / place for interaction Destinations views parallel to person's line of site
PARTICIPATION	<p>POSSIBLE PROGRAM</p> <p>Park Playground Museum Coffee Shop Gallery Art Studio Convention Installation Internet / Social Media Bar / Restaurant Lounge</p> <p>Case Studies: 3100-32 Play SMP Museum, Seattle, Washington, Timpson & Jurek Cabinet, Site, Haskins & English Chikyo Garden & Glass Museum, Osaka, Japan, Kuroki Architects Sartorio, Bari, Concept/Design</p>		<p>DESIGN PRINCIPLES</p> <ul style="list-style-type: none"> Multiple levels of activity (passive, active, withdrawn) Orienting object Floor pattern as winding device Passive spaces flank active spaces Withdrawn spaces on periphery of passive spaces Use of furniture to facilitate or hinder interaction
EXCHANGE	<p>POSSIBLE PROGRAM</p> <p>Outdoor Market Indoor Market Market Street Shopping Mall Social Media Internet United Nations Conference Room</p> <p>Case Studies: Green Garden Market, London, England, Charles Foster Lindendell Market, East Knutsford, England, Simpson Jones Card Factory, Mersin, Turkey</p>		<p>DESIGN PRINCIPLES</p> <ul style="list-style-type: none"> Natural light from above Buffer / movement zone between gathering and exchange Infiltration of exchange into movement zone Sense of enclosure Expansion and compression of space reflects program

Case Studies – Meditative Spaces

Meditation as a form of mental convergence. In meditative spaces, people can gain reprieve either through a moment of personal isolation, or through the joining of others in a secluded space. A moment of peace along the path of travel could help to

calm a person down. Through peace of mind, a person could mentally be more open to the people and situations around them. The goal of researching meditative spaces for the airport terminal was to create these moments of rest that will open up the mind to other possibilities. The following case studies were analyzed as meditative spaces: the Kamppi Chapel of Silence, meditation labyrinths, and the Zen rock garden of Ryon-ji.

The Kamppi Chapel of Silence

The Kamppi Chapel of Silence is a non-denominational chapel located in Helsinki, Finland and designed by K2S Architects. According to the architects, the chapel offers a place to quiet down and compose oneself in one of Finland's most lively urban spaces. The chapel's gently shaped interior space embraces visitors and shields them from the bustling city life outside.⁷ In this space, much of the feeling of calm and peace arises from the use of material and the glow of light that enters the space. A ring of light enters through the roof and casts an even glow the space as it

⁷ "Kamppi Chapel / K2S Architects" 24 Sep 2012. ArchDaily. Accessed 31 Oct 2015.
<<http://www.archdaily.com/252040/kamppi-chapel-k2s-architects/>>

travels across the curved inner surfaces. The use of a warm wood material to line the interior walls helps to elevate the calming effect of the space.

Meditation Labyrinth

Meditation labyrinths are commonly found in parks, gardens and playground. These meditation spaces are often confused with mazes because of the series of concentric circles and paths. However, the key difference between mazes and meditation labyrinths is that the labyrinths only offer one path. As a person enters, he or she does not need to make a decision to move left or right, the decision is already made for him or her. The goal of this forced path is to allow one's mind to focus on the journey rather than all of the complications in his or her own life.

According to Neal Harris, a psychotherapist from Relax4Life, the rhythmic and automatic pacing creates a deep calm that slows a person's breathing and lowers their blood pressure. Not only is the circulation of the labyrinth similar to that of pacing back and forth to achieve calm, it also represents a spiritual journey of

traveling to the center and back. This can allow people who participate in the labyrinth to find answers to their problems.⁸

Zen Rock Garden, Ryoan-ji

The Zen Rock Garden at Ryoan-ji in Japan is one of the most famous Rock Gardens in the world. The garden is composed of a rectangle that is twenty-five meters by ten meters. Within the rectangle, there are fifteen stones of different sizes that have been carefully composed into five groups. There is one group of five stones, two groups of three stones, and two groups of two stones. Each day, monks carefully rake the white gravel that surrounds the stones as viewers watch from steps along the perimeter of the garden. The garden is meant to be viewed from a seated position and the rocks are composed so that the entire compositions cannot be seen at once. Only fourteen stones are visible at any one time because, according to Japanese history, one can only see the fifteenth stone when he or she achieves enlightenment.⁹

8 Patterson, Susan. "Relax And Reflect By Making A Labyrinth." Natural Health. Off The Grid News, n.d. Web. 18 Sept. 2015. <<http://www.offthegridnews.com/alternative-health/relax-and-reflect-by-making-a-labyrinth/>>.

9 Nitschke, Le Jardin Japonais, pg. 90.

People typically gather on the steps each day to watch the monks rake the gravel and to focus their minds on something else. Watching the rhythmic raking of the monks calms the minds of those watching. By forcing a seated position, Zen Rock Gardens are creating a particular vantage point from which viewers can engage in the experience.

Design Principles

The following themes were extracted from the set of meditation spaces that were analyzed.

1. Enclosure / bounded space
2. Isolation of the event
3. Activity as meditation
4. One point of entry
5. Unified space
6. Unobstructed views
7. Clear geometry

Case Studies – Circulation Spaces

Circulation space is inevitable in the design of any space that will be occupied by people. Rather than designing circulation as a result of other spaces, how can circulation double as gathering space? The set of case studies analyzed in this section

blur the lines between spaces of movement and spaces of gathering. The circulation case studies include: the Spanish Steps, the Metropolitan Museum of Art steps, and the BBC Building in Scotland.

Spanish Steps

The Piazza di Spagna in Rome is the home of the Spanish Steps, one of the most frequented tourist attractions and gathering spaces in Rome. This dramatic staircase consists of 137 steps in twelve flights that connect the Trinità dei Monti church at the top of the steps to the public square at the base. Due to the beauty and vastness of these steps, they have evolved from a dramatic mode of circulation, to a gathering place for residents and tourists.

Steps at the Metropolitan Museum of Art in New York City

The vast granite steps that lead up to the main entrance of the Metropolitan Museum of Art in New York City serve as more of a seating arena than a means of egress. Everyday residents of the city and tourists alike gather on the steps to either eat lunch, socialize, meet another person, or simply take a break from the city.

According to the architectural critic Paul Goldberger, “There are some stairs in the city – like those in front of the Metropolitan Museum of Art – that are arguably more important urban events than the buildings to which they lead.”¹⁰ Not only do people gather near the steps, but also food trucks, concession stands and artists who wish to sell to passersby.

BBC Scotland Building

The BBC Headquarters building is located in Glasgow, Scotland and was designed by David Chipperfield Architects. According to the architects’ website, the building needed to assert its own sense of place and satisfy the brief of the BBC for a contained yet publicly accessible building through the design. Located alongside Glasgow’s former docks, the BBC Scotland building sits on an exposed plot of land dominated by the river Clyde. Faced with this open landscape, the building needed to assert its own sense of place and satisfy the brief of the BBC for a contained yet

10 Goldberger, Paul. "CAVORTING ON THE GREAT URBAN STAIRCASES." *The New York Times*. The New York Times, 06 Aug. 1987. Web. 18 Sept. 2015.
<<http://www.nytimes.com/1987/08/07/arts/new-york-city-out-of-doors-cavorting-on-the-great-urban-staircases.html?pagewanted=all>>.

publicly accessible building.¹¹ The interior of the building is characterized by a giant set up steps that fills the atrium space and connects all levels of the building. Rather than leaving this space open with a simple staircase in the center, the architects decided to dedicate the space to a mix of circulation and gathering. “Circulation and communication through the building and between office floors is facilitate by this promenade, which not only offers the informal meeting areas, but also encourages movement between spaces, giving visual representation to the public aspect of the building.”¹²

Design Principles

The following set of principles were extracted from the set of circulation spaces that were analyzed:

1. Steps as seating
 2. Sense of enclosure
-

11 "David Chipperfield Architects – BBC Scotland at Pacific Quay." David Chipperfield Architects – BBC Scotland at Pacific Quay. N.p., n.d. Web. 18 Sept. 2015.

<http://www.davidchipperfield.co.uk/project/bbc_scotland_at_pacific_quay>.

12 "David Chipperfield Architects – BBC Scotland at Pacific Quay." David Chipperfield Architects – BBC Scotland at Pacific Quay. N.p., n.d. Web. 18 Sept. 2015.

<http://www.davidchipperfield.co.uk/project/bbc_scotland_at_pacific_quay>.

3. Landing as a place of rest
4. Circulation as a moment of pause or place for interaction
5. Destination and/or views run parallel to person's line of site while seated on steps.

Case Studies – Participation Spaces

Participation can be classified as active or passive. Active participation occurs when one is physically engaging with others; while passive participation occurs when one joins others in a moment of observation without engaging in physical contact. There are different types of spaces that encourage different forms of participation. Three such spaces include: The Artists-at-Play exhibition at the EMP Museum, the Chihuly Garden and Glass Museum, and Starbucks.

Artists-At-Play Installation, EMP Museum

The Artists-at-Play Installation at the Experience Project Museum (EMP) in Seattle, Washington is an imaginative playground created by artists. This playground represents an appropriate case study to analyze for participation because it represents a form of active participation for both children and adults. While children play together on the climbing tower, labyrinth, carousel and playing mounds; their parents are able to engage with each other while overlooking their children. This particular program provides multiple modes of active participation – through play, through

listening in the various musical stations and through thinking via the creative games offered.

Chihuly Garden & Glass Museum

In 2012 the Chihuly Garden and Glass Museum, designed by Owen Richards Architects, opened in Seattle, Washington next to the famous Space Needle. The museum contains the work of Dale Chihuly, a Seattle native who pioneered innovative strategies for glass blowing. The museum takes the visitor through a series of spaces where they are increasingly amazed by the work of Chihuly and his studio. With each subsequent room, the complexity of the work increasing, leading to the final space, a large glass atrium building with a dramatic floral sculpture suspended from the ceiling. Every visitor who passes through this space stops to stare up at the ceiling in awe of the intricate work hanging above their heads. I was able to sit in this atrium space for over thirty minutes, watching each person have the same reaction as they entered this space. In this moment, a form of passive convergence occurs where people join each other in awe of the skills of a fellow human being.

Starbucks

Starbucks represents the epitome of people-watching. On any given day, hundreds of people through pass through one Starbucks location and while some are just passing through, other sit and watch the myriad of people that come through. This

represents a form of passive communication because most of the time customers do not interact with each other, but they do observe one another. Starbucks has recognized this and made it the center of the brand. Starbucks Coffee Houses are not designed with a variety of seating arrangements that all allow for different types of interactions. There are community tables, where strangers can sit next to each other; single tables where one person or a couple can be secluded; and larger arm chairs arranged around tables so that people can choose whether or not they would like to interact with the person sitting across from them. The Starbucks brand is based on created a welcoming, inviting and familiar place for people to connect.¹³

Design Principles

The following set of principles were extracted from the set of circulation spaces that were analyzed:

1. Multiple levels of activity (passive, active, withdrawn)
 2. Orienting object
 3. Floor pattern as wayfinding device
-

¹³ "Store Design." Starbucks Coffee Company. N.p., n.d. Web. 18 Sept. 2015.

4. Passive spaces flank active spaces
5. Withdrawn spaces on periphery of passive spaces
6. Use of furniture to facilitate or hinder interaction

Case Studies – Spaces for Exchange

Exchange is another form of participation where people converge through the exchange of goods or ideas. Some of the most representative spaces of exchange occur in the famous marketplaces and market streets throughout the world. There are several examples of spaces of exchange that also foster interaction between people. These examples include: Covent Garden Market in London, Leadenhall Market in London and the Grand Bazaar in Istanbul. Another example that was looked at but not included as part of this analysis was Pikes Public Market in downtown Seattle, Washington.

Covent Garden Market & Leadenhall Market

Covent Garden Market and Leadenhall Market are two famous places of exchange in London, England. Both are historic markets, dating back to the 1800s, and have evolved into a cross between market and social gathering place.

Covent Garden is a series of courtyard buildings with shops around the edges and places for entertainment and socializing at the center. Leadenhall Market is one of the famous alleys of London that has been covered and converted into a shopping

street with seating at the center. Both settings are pedestrian only and are enclosed with natural light entering from above. The repetitive shop fronts create an edge condition that encloses the public space at the center, encouraging people to linger.

Grand Bazaar in Istanbul, Turkey

The Grand Bazaar in Istanbul, Turkey is one of the most famous public markets in the world. Tourists from all over the world travel to participate in this unique experience of exchange. The Grand Bazaar occurs in an enclosed structure in the heart of Istanbul. Visitors walk in and are instantly surrounded by stalls of goods pouring into the aisles. Merchants compete with each other to engage customers and persuade them to purchase the goods that he or she offers. This stimulating experience immediately engages the participant and forces them to communicate with others in the hopes of reaching an agreement. Though there are not many places to stop and rest in this shopping experience, the participant often feels the desire to keep moving.

Pikes Public Market in Seattle, Washington

Pike's Market is one of the most famous markets in the United States. In addition to the unique experience provided by events such as the daily fish toss, Pike's Market also has a unique spatial condition that makes visiting the market an active experience. The first level of the market is outdoors and visitors move through

tight aisles of fresh goods such as fish and fresh flowers. Then, after descending down a ramp or stair case, visitors are brought into the interior of the market where there are more souvenir shops. The interior and exterior experiences are extremely different. On the interior, you are surrounded on all sides by activity – the street and shops to one side, and the water front to the other. On the interior, the market is dedicated to shopping only – there are no places to inviting places to gather or pause.

Design Principles

The following set of principles were extracted from the set of circulation spaces that were analyzed:

1. Natural light from above
2. A buffer or movement zone always occurs between places to gather and places to exchange
3. Infiltration of exchange into movement zone increases activity
4. Sense of enclosure
5. Expansion and compression of space reflects program

Case Studies – Conclusions

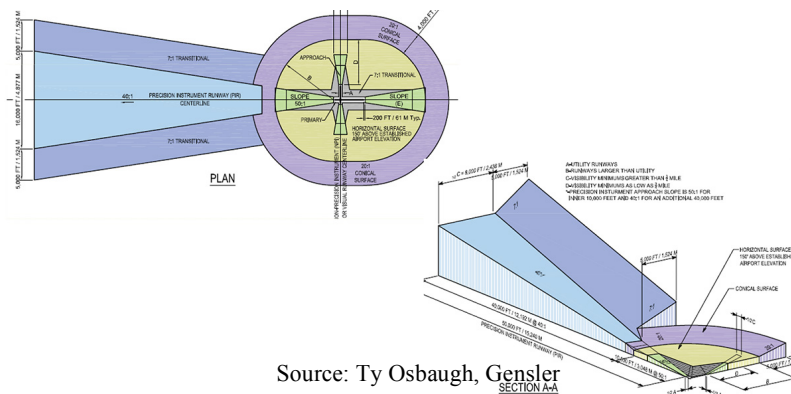
The goal of this case study analysis was to understand the spatial and architectural characteristics that create the selected spaces of convergence. By

deploying these same techniques of space-making, the design of the international airport terminal could feature a myriad of spaces that allow for convergence in different forms. This study also introduces a set of program types that could be incorporated into the main concourse of the terminal, such as a chapel, meditation labyrinth, market street, or playground area.

Understanding the Airport

Planning

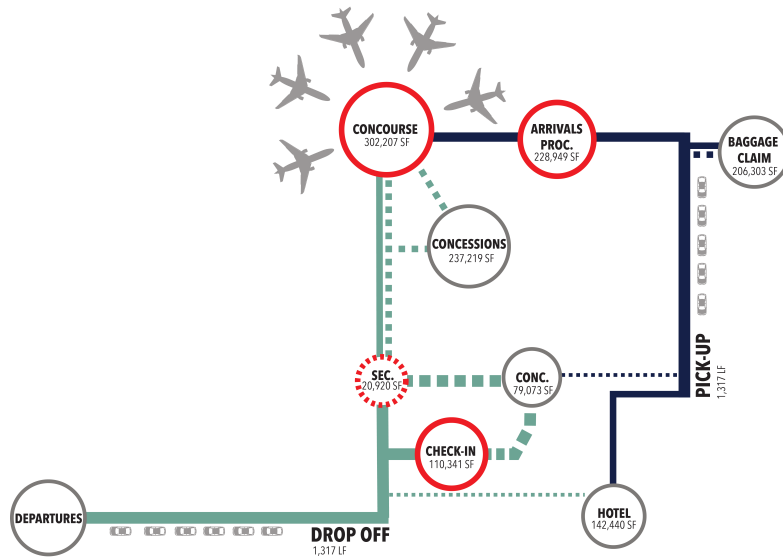
Figure 5: Diagram Depicting Build-to Heights near Airports



Source: Ty Osbaugh, Gensler

Adjacencies

Figure 6: Diagram emphasizing program adjacencies and people flows



Site Selection

Existing International Airport

For this thesis, I chose to identify an existing airport that would benefit from a new international airport facility. There are currently 162 international airports in the United States. Rather than proposing a new site, it will be more beneficial to look at existing airports and create a model for expansion. The number of travelers is increasing each year and airports worldwide are making plans to expand. How can architects approach this expansion in a new way?

Relationship to a Cosmopolitan City

One of the main goals of this thesis is to capture the potential of the international airport as a global gathering place. In order to truly capture this potential, I identified American international airports that generate a high volume of international passenger traffic. These high volumes will create a unique mix of passengers that will allow for true cross-cultural interaction.

Need for an International Terminal

There are more people flying today than ever before. As a result, airports throughout the world are seeking to expand. Choosing a site within an existing terminal that has already identified a need for expansion will add a level of feasibility and creditability to this thesis.

Market for a Hotel

A crucial component of this program is an airport hotel. For my real estate development capstone, I will be financing this airport hotel and relating it conceptually to the rest of the thesis. Many airports already contain successful hotels, so it was crucial to choose an airport that demonstrated a need. The purpose of the capstone is to sell a development project to potential investors and therefore demonstrating a market need will be crucial to the success of this project.

An International Hub

The conception of an international gathering place relies on the presence of an international population. The airports with the highest level of international traffic are located at the edges of the United States, causing the associated cities themselves to be more culturally diverse. Choosing a site located at the edges of the country that is associated with a cosmopolitan city will encourage the level of cross-cultural interaction that can occur at this hub.

Chapter 4: Site Analysis

History

Seattle-Tacoma International Airport (Sea-Tac), was developed as a direct response to the Japanese attack on Pearl Harbor on December 7, 1941. Military needs limited civilian access to existing airports, and the federal Civilian Aviation Authority sought a local government to undertake development of a new regional airport. The Port of Seattle accepted the challenge on March 2, 1942. After rejecting creation of a seaplane base on Lake Sammamish, the Port chose Bow Lake in southwest King County for the new airfield. Initial construction was completed in October 1944, but full civilian operation did not commence until dedication of a modern terminal building on July 9, 1949.

Prior to World War I, open fields or calm bodies of water served as informal airports throughout Seattle, Washington. In 1916, William E. Boeing and his partner, Navy Captain Conrad Westervelt, formed the Pacific Aero Club. On the site of Lake Union in Seattle, Washington, Boeing and Westervelt built their first aircraft, a pair of float planes dubbed the B&W. In 1917, when America entered World War I, the Navy ordered an advanced version of the B&W as a trainer and thereby launched the Boeing Airplane Company. Following the November 11, 1918 Armistice that ended

World War I, the military's interest in aviation lessened, leaving the Boeing Company almost bankrupt. Today the Boeing Airplane Company remains one of the largest and most successful industries in Seattle.

In response to defense concerns during World War I, the Navy began scouting Puget Sound for a suitable site on which to establish an airfield. During this time, Army pilots landed at Seattle's Jefferson Park municipal golf course. In 1925, Boeing's luck changed when Congress passed the "Kelly Act," authorizing the Post Office to contract with private companies to carry airmail and paying passengers on fixed routes. This was the beginning of the modern airline industry, and Boeing's Chicago-San Francisco airmail franchise was the basis of both its own future airliner development and United Air Lines.

The Navy's acquisition of Sand Point in 1926 created a new headache by displacing Boeing and other civilian pilots. When the Navy acquired Sand Point airfield in 1926, Boeing and other civilian pilots were displaced. As a result, William Boeing threatened to move his company, already the city's largest civilian employer, unless the County built a new airport that he could use. Seattle Mayor Bertha K. Landes called development of a public airfield one of the city's "most urgent and important problems."

In August 1927, the Seattle Chamber of Commerce recommended development of land south of Georgetown along the Duwamish, including the former

Meadows Race Track where Seattleites had seen their first airplane. Charles Lindbergh visited soon after and endorsed development of the 147-acre tract, which was mostly owned by King County. County Commissioner Frank Paul balked at the use of public property for private industrial use, but he was overruled and Boeing Field (aka King County International Airport) was dedicated by its eponym on July 26, 1928. William Boeing, who had already begun building his adjacent Plant 2, said, “This is just about the happiest day of my life.”

Before the attack on Pearl Harbor on December 7, 1941, Boeing field was overrun by the construction of B-17 bombers. Following the attack, the military took control of Boeing Field and as a result the region needed a new airport to serve the greater Seattle area.

On January 6, 1942, the federal Civil Aviation Authority offered \$1 million to any local government that would undertake the task of building a new regional airport and the Port of Seattle rose to the challenge.

The winning candidate for the new airport’s location was a tract of rough scrubland at Bow Lake, approximately midway between Seattle and Tacoma on Highway 99. It was the site of a small private airfield, developed by Dean Spencer and George Wolf in 1940. Planners thought it would be relatively fog-free -- despite public warnings from the community that it was one of the foggiest places in the state.

The Port of Seattle approved the Bow Lake site on March 30, 1942. Planners surveyed 906.9 acres roughly bounded by South 188th Street on the south, Des Moines Memorial Way on the west, South 160th Street on the north, and Highway 99 on the east. The Port spent \$637,019 to acquire the site from 264 individual owners.

Dignitaries including Governor Arthur Langlie, Congressman Warren G. Magnuson, Seattle Port Commission President Horace Chapman, and Tacoma Port Commission President Fred Marvin broke ground on January 2, 1943. Actual construction proved much harder than turning the ceremonial shovels of earth and ultimately required the excavation of 6.5 million cubic yards of earth to establish a level plateau. When this was finally done, the workers laid 14 miles of pipes and six miles of electrical cable, and Seattle's Fiorito Brothers poured 450,000 cubic yards of concrete for the runways.

Costs had risen to \$4,235,000 by the time the new Seattle-Tacoma Airport was dedicated with ceremonial landing by United Air Lines DC-3 on October 31, 1944.

On May 31, 1945, a Northwest Airlines DC-3 inaugurated transcontinental service when it departed Sea-Tac for New York City. On July 17, Pan Am signed the first lease to build an airline terminal and hangar at Sea-Tac, however this development was halted when the Army Air Force took control of the new Seattle-

Tacoma Airport for transshipment of B-29 bombers, two of which would drop the atomic bombs that ended World War II in August 1945.

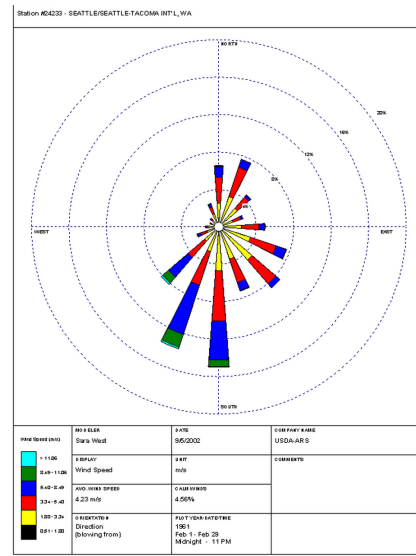
Significant commercial use did not begin until 1946, and passengers had to use Quonset hut, called “The Pantry,” heated by a single potbellied stove. Port planners recognized that such primitive accommodations would have to be replaced quickly to meet the anticipated post-war surge in air travel. On October 1, 1947 Colonel Earle S. Bigler, a native Kansan who had headed the Chamber of Commerce’s aviation efforts during World War II, took command of Sea-Tac for the Port. Bigler coordinated design of the new administration building by Herman A. Moldenhour (1880-1976) and Port of Seattle architects. Upon completion, the gleaming white building and its soaring control tower and airy, glass-walled concourses were hailed as the state of the art for airport design. Thirty thousand attended the terminal’s dedication on July 9, 1949, dubbed “Conqueror’s Day.”

Sea-Tac officially became the Seattle-Tacoma International Airport on that day. The federal government, Port of Seattle, and airlines had by then invested \$11 million in the facility, which remains Puget Sound’s aviation gateway to the world.¹⁴

Climate

Wind

Figure 7: Wind Rose of Seattle-Tacoma



14 Crowley, Walt. “Sea-Tac International Airport: Part 1 -- Founding.”HistoryLink.org- the Free Online Encyclopedia of Washington State History. History Link, 02 Apr. 1999. Web. 04 Aug. 2015.

Seattle-Tacoma International Airport is situated on a low ridge between the Puget Sound (west) and the Green River Valley (east). The area surrounding Seattle-Tacoma International Airport is composed of 61 percent forests, 17 percent built-up areas, 17 percent oceans and seas and 4 percent croplands.¹⁵ The terrain slopes towards the shores of the Puget Sound, from which the Olympic Mountains rise about 50 miles northwest of the airport. The Cascade Mountains rise about 15 miles to the east of SeaTac and modify the mild temperatures by shielding the city from the cold-dry air during the winter and hot-dry air during the summer.¹⁶ The prevailing winds in

15 "WeatherSpark Beta." Average Weather For Seattle, Washington, USA. N.p., n.d. Web. 24 Sept. 2015. <<https://weatherspark.com/averages/31576/Seattle-Washington-United-States>>.

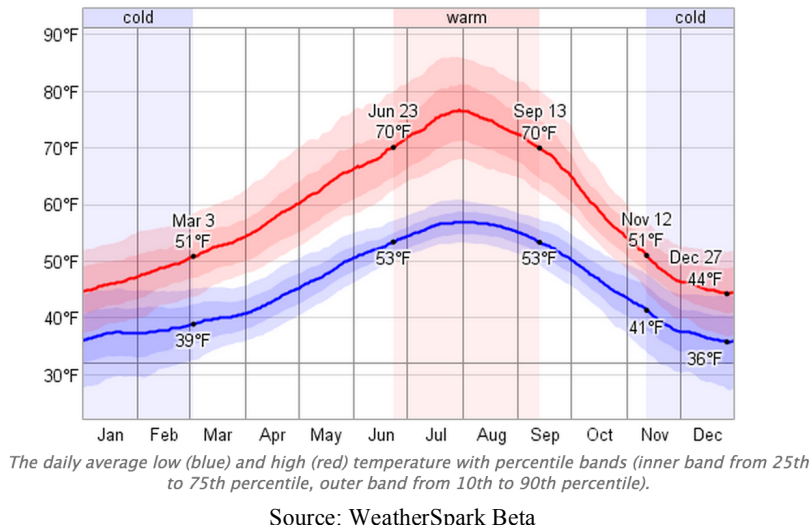
16 Rep. N.p.: National Oceanic and Atmospheric Administration, n.d. Local Climatological Data Annual Summary with Comparative Data. Department of Commerce. Web.

Seattle-Tacoma are from the southeast with occasional strong northerly winds during the winter.

Temperature

The online database WeatherSpark offers weather and climate data for cities throughout the world. This data is often based off the closest airport and therefore provides an accurate representation of the climate conditions at Seattle-Tacoma

Figure 8: Daily High and Low Temperature Averages



International Airport. Seattle, Washington is considered to have a Mediterranean climate with dry, warm summers and mild winters. Figure 4 below highlights the typical yearly temperatures in Seattle. Overall, the area around Sea-Tac has very mild temperatures that vary between 36 and 77 degrees Fahrenheit.¹⁷

Cloud Cover and Precipitation

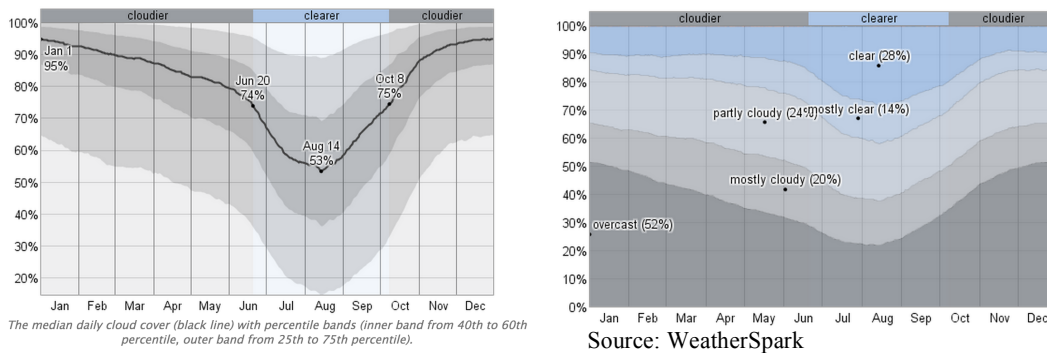
A high level of cloud cover throughout the year as well as frequent precipitation characterizes Seattle's climate condition. The median cloud cover is shown in the graph below and demonstrates that even on the clearest day of the year (August 14th) there is only a 10 percent chance of the sky being completely clear. Furthermore, it is overcast for 52 percent of the year.¹⁸

17 WeatherSpark Beta." Average Weather For Seattle, Washington, USA. N.p., n.d. Web. 24 Sept. 2015. <<https://weatherspark.com/averages/31576/Seattle-Washington-United-States>>.

18 WeatherSpark Beta." Average Weather For Seattle, Washington, USA. N.p., n.d. Web. 24 Sept. 2015. <<https://weatherspark.com/averages/31576/Seattle-Washington-United-States>>.

Washington State is known for its high levels of precipitation. Figure X below illustrates the probability that precipitation will occur throughout the year. The graph demonstrates that there is a high probability that there will be light year throughout the majority of the year. Precipitation is most likely in mid-December, occurring in 66 percent of days. Conversely, precipitation is least likely at the beginning of August, when precipitation only occurs on 23 percent of days.¹⁹ There is a very low

Figure 9: Median Cloud Cover



Source: WeatherSpark

19 WeatherSpark Beta." Average Weather For Seattle, Washington, USA. N.p., n.d. Web. 24 Sept. 2015. <<https://weatherspark.com/averages/31576/Seattle-Washington-United-States>>.

probability of more severe forms of precipitation throughout the year. For example, there is only a 5 percent chance of snow and 3 percent chance of thunderstorms throughout the year (Figure 6).

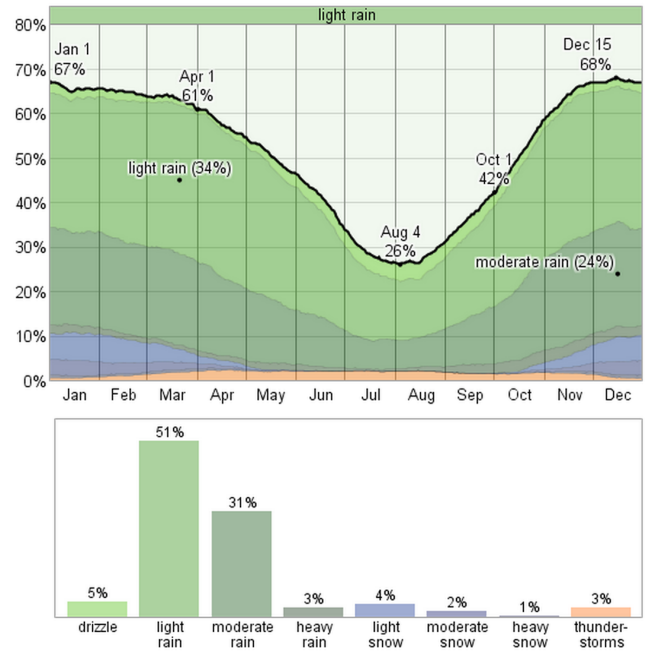
Market Analysis

Introduction

The proposed international terminal and terminal hotel will be adjacent to the existing Seattle-

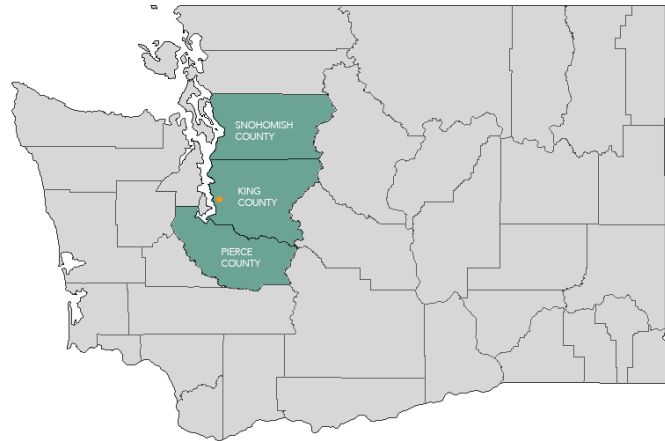
Tacoma International Airport in Washington State. The following market analysis discusses the economic and social factors affecting the development of this hotel. Various sources provided the data necessary to assess the environmental, economic and demographic factors in which this development will operate. Sources include various city and county agencies, as well as sources within the private sector. The purpose of this data analysis is to provide a method for measuring the economic climate in the market area.

Figure 10: Annual Probability of Precipitation



Source: WeatherSpark Beta

Figure 11: Counties that Comprise the Seattle-Tacoma-Bellevue MSA



For the financial feasibility and analysis of an airport terminal hotel, the project earnings stream is influenced by several factors. These factors fall into the categories of social, economic, governmental, and environmental. In order to grasp the feasibility of an airport terminal hotel, it is necessary to evaluate these factors within the given market.

Social

International tourist arrivals reached 1,138,000,000 in 2014, a 4.7% increase over 2013, according to the latest UNWTO World Tourism Barometer.²⁰

Figure 12: Contribution of Tourism to the Global Economy



Economic

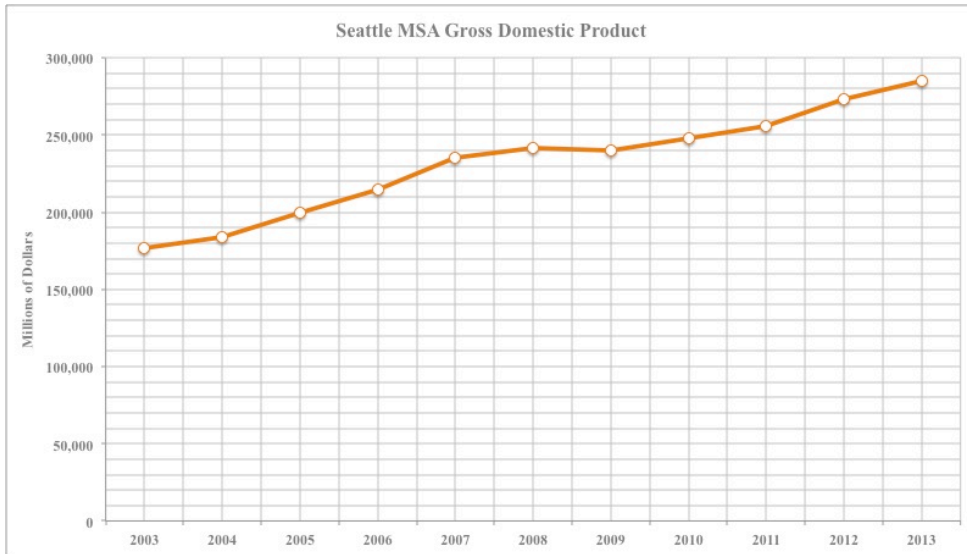
A mix of industries drives Seattle's economy and contributes to Seattle's ranking as the eleventh largest metropolitan economy in the United States. Older industrial companies, such as The Boeing Company, combine with "new economy"

20 "World Tourism Organization UNWTO." Over 1.1 Billion Tourists Travelled Abroad in 2014. N.p., n.d. Web. 18 Oct. 2015. <<http://media.unwto.org/press-release/2015-01-27/over-11-billion-tourists-travelled-abroad-2014>>.

Internet and technology businesses, service, design, and clean technology companies. Figure 9 below shows the Gross Domestic Product (GDP) in the Seattle-Tacoma-Bellevue MSA between 2003 and 2013. Over this ten year periods, the GDP has consistently grown and is projected to continue on this upward trajectory. In 2010, this metropolitan statistical area of over \$176 billion grew to almost \$285 billion in 2013. (<http://www.bea.gov/iTable/iTable>).

The Port of Seattle operates Seattle-Tacoma International Airport, which represents a major gateway for trade with Asia. The Port of Seattle is also the eighth largest port in the United States in terms of container capacity. During the 2008 recession, Seattle's role as a port city allowed it to retain a strong economy relative to other cities throughout the United States.

Figure 13: Increasing GDP in Seattle-Tacoma-Bellevue MSA (2003-13)



Source: United States Census Bureau

Additionally, its increasing role as a start-up and clean technology hub has bolstered Seattle’s economy.²¹ Though the Great Recession affected it, Seattle has retained a strong economy, and remains a breeding ground for start-up businesses, especially in green building and clean technologies. Seattle was recently ranked as the United States’ number one “smarter city” based on its advanced government policies and green economy that focus on creating a sustainable city. In February of 2010,

²¹ “Council Wants City to Go Carbon Neutral in 20 Years”. Publicola.net. February 22, 2010. Archived from the original on August 22, 2010. Retrieved October 13, 2013.

Seattle's government committed Seattle to becoming North America's first climate-neutral city, with the goal of reaching a zero net per capita greenhouse gas emissions by 2030.¹¹

Commercial Office Market

According to CB Richard Ellis' (CBRE) Global Investor Intentions Survey 2015, Seattle is emerging as a major global destination. In the top ten list of global cities for commercial real estate, Seattle is ranked number nine. Other U.S. West Coast cities to rank within the top ten include San Francisco and Los Angeles at three and eight, respectively.²²

In a press release by CBRE on May 5, 2015, Kevin Shannon, Vice Chairman of CBRE's Institutional Group, stated, "Seattle is emerging as a true global city. It's clearly one of the top six coastal gateway cities – and one of the top four in terms of market fundamentals. More and more foreign capital is going to Seattle, and more domestic buyers are adding Seattle to their shopping list for their core mandates

22 CB Richard Ellis. Seattle Emerges as a Top Ten Global Market for Real Estate Investors, According to New CBRE Survey. CBRE United States. CBRE, 5 May 2015. Web. 20 Aug. 2015. <www.cbre.us/o/seattle>.

as well...Seattle also has well-above average job growth in many industry sectors besides technology which continues to drive strong office absorption.”

According to the Research and Forecast Report for office space for the Puget Sound Region published by Colliers International, the Seattle/Puget Sound office market shows positive signs in the second quarter of 2015. The region has exhibited improvements in both vacancy rates and net absorption since 2014. The region recorded 179,735 square feet of positive net absorption in the second quarter of 2015 and a regional vacancy rate of 10.1 percent.²³ Primarily technology tenants who are leasing large blocks of space drive regional demand.

There are 8.7 million square feet of office space currently under construction, 4.4 million square feet of which is in downtown Seattle. Rental rates of the local office market have increased notably and currently average \$37.94 per square foot per year for Class A office space, and \$30.87 for Class B office space.²⁴

23 Research & Forecast Report - Puget Sound Region | Q2 2015 | Office. Publication. Colliers International, n.d. Web. 20 Aug. 2015.<http://www.colliers.com/media/Files/United%20States/MARKETS/Seattle_Puget%20Sound/Office_Q2_2015.ashx>.

24 Research & Forecast Report - Puget Sound Region | Q2 2015 | Office. Publication. Colliers International, n.d. Web. 20 Aug. 2015.<http://www.colliers.com/media/Files/United%20States/MARKETS/Seattle_Puget%20Sound/Office_Q2_2015.ashx>.

Governmental

The SeaTac City Council approves developments that not only directly enhance the quality of life of SeaTac residents, but that also benefit the local economy and infrastructure of the city.

The subject site is located adjacent to Seattle-Tacoma International Airport (Sea-Tac). The available land surrounding the airport falls in one of two zones: the Aviation Operations (AVO) zone, or the Aviation Commercial (AVC) zone.

The goal of the AVO zoning designation is to provide for safe and efficient commercial aviation operations and support. This means allowing for security, access, and convenience for the traveling public and the handling of cargo.²⁵

The purpose of the AVC zoning designation is to allow for development that provides support to the operations of the airport, the traveling public, and air cargo. Other development that provides economic benefit to the airport and the City of SeaTac while maintaining compatibility with airport operations and activities, is allow permitted in this zone. Both the AVO and AVC zones reside in Port of Seattle

25 "SeaTac Municipal Code." SeaTac Municipal Code. City of SeaTac, n.d. Web. 30 Aug. 2015. <<http://www.codepublishing.com/wa/seatac/>>.

owned property in SeaTac. These zones are only for Port of Seattle Property within the City.

Section 15.25.070 of the Zoning Code for SeaTac provides a Zone Classification Use Chart that lists the uses that are permitted within the AVO and AVC zones (Table X). According to this chart, Hotel Facilities, Convention and Conference Facilities are permitted in both zones. In the AVO zone, developments of this type are limited to hotel facilities that are immediately adjacent to and provide direct physical access to passenger terminal facilities. Hotel Facilities, Convention and Conference Facilities are only permitted in the AVC zone if they are first approved by the City Council.²⁶

Under the terms of the 2005 Interlocal Agreement (ILA-2) when the Port of Seattle purchases property within SeaTac, they follow the City's process. In order to rezone a property in SeaTac, the developer must make a request to alter the comprehensive plan. According to Albert Torrico, Jr., a Senior Planner in the Community & Economic Development Planning Division of SeaTac, the city used to

26 "SeaTac Municipal Code." SeaTac Municipal Code. City of SeaTac, n.d. Web. 30 Aug. 2015. <<http://www.codepublishing.com/wa/seatac/>>.

process change to the comprehensive plan every year. Now, changes are made every other year. The process of making a change to the comprehensive plan begins with several briefings to the Planning Commission, followed by a public hearing. Following the public hearing, the Planning Commission makes a recommendation on the change. This recommendation then moves onto the City Council for a study session and action on the request by the City Council. A rezoning proposal cannot be finalized until the City Council has approved the comprehensive plan map changes. Following this approval, the Hearing Examiner who makes the final decision hears any zoning changes.

The Hospitality Market

There are ten hotels within approximately ten (10) miles of Seattle-Tacoma International Airport (Figure 10). These nearby hotels range in class from Economy and Midscale to Upper and Upper Upscale (Table 1). Recent trends in the hospitality industry indicate that the high demand for airport terminal hotels has resulted in these facilities outperforming their respective airport lodging markets. HVS Global Hospitality Services defines an airport terminal hotel

Figure 14: Locations of Ten Comparable Hotel Properties



as a lodging facility that is physically attached to an airport. This facility can either be integrated into the terminal or connected via a walkway that allows guests to walk between the airport and the hotel without having to use alternate transportation.

Figure 15: Hotels within 10 miles of Seattle-Tacoma International Airport

SeaTac Airport Hotels		Class	Number of Rooms	Year Opened	Distance to Airport (mi.)
1	SeaTac Crest Inn	Economy	51	1981	3.1
2	Red Lion Hotel Seattle Airport	Midscale	144	1969	2.4
3	Radisson Seattle Airport	Upscale	204	1988	2.3
4	Hampton Inn & Suites Seattle Airport 28th Avenue	Upper Midscale	218	2012	3.3
5	Coast Gateway Hotel	Upscale	143	1990	3.0
6	Marriott Seattle Airport	Upper Upscale	459	1981	1.5
7	Clarion Hotel Seattle Airport	Upper Midscale	214	1983	1.1
8	La Quinta Inns & Suites Seattle SeaTac Airport	Midscale	143	1986	6.4
9	Hilton Seattle Airport & Conference Center	Upper Upscale	396	1961	1.1
10	Doubletree Seattle Airport	Upscale	850	1969	2.7

Source: STR Global

A study conducted by Smith Travel Research compares the performance of ten different U.S. airport terminal hotels to all standard and full-service hotels located adjacent to the airport. The results of this study indicate the following. In 2011, airport terminal hotels achieved a 5 percent occupancy premium over adjacent full-service airport hotels. The Average Daily Rate (ADR) of connected airport terminal hotels as well as the Revenue per Available Room (RevPAR) both commanded a \$27 premium over adjacent hotels in 2011. A second study by Smith Travel Research further emphasizes the high performance airport terminal hotels by comparing 14 terminal hotels, 10 in the United States and 4 in Canada, to their aggregate competitors over a ten-year period (Table X). Though the occupancy rate of all

airport hotels continue to grow steadily, the results of these studies demonstrate that airport terminal hotels financially outperform all adjacent hotels.

There are currently thirteen (13) operating airport terminal hotels in the United States (Table 2). The superior performance of these facilities is due in part to their inherent convenience. Though major airports throughout the United States often have a range of nearby hotels and inns, they all require additional effort by the traveler. Each of the ten airports that are within 5 miles of Seattle-Tacoma International Airport require public transportation, a private shuttle service or a taxi service to get back to the airport. Though the hotel often provides these services, they add an extra step and inconvenience for the customer. Airport terminal hotels are

Figure 16: Current United States Airport Terminal Hotels

Property	Adjacent Airport	2011 Enplanements at Airport	Number of Rooms	Meeting Space SF
Hilton Chicago O'Hare Airport	Chicago O'Hare	31,892,301	860	21,500
Grand Hyatt Dallas Fort Worth Airport	Dallas/Fort Worth	27,518,358	298	34,000
Houston Airport Marriott	George Bush Intercontinental/Houston	19,306,660	565	30,000
Hyatt Regency Orlando Airport	Orlando International	17,250,415	445	42,000
Miami International Airport Hotel	Miami International	18,342,158	259	2,776
Westin Airport Detroit	Detroit Metropolitan	15,716,865	404	26,000
Philadelphia Airport Marriott	Philadelphia International	14,883,180	414	12,600
Hilton Boston Logan Airport	General Edward Lawrence Logan International	14,180,730	599	30,000
Tampa Airport Marriott	Tampa International	8,174,194	298	18,000
Hyatt Regency Pittsburg Airport	Pittsburgh International	4,070,614	336	20,000
Sheraton Hartford Hotel at Bradley Airport	Bradley International	2,772,315	237	13,538
Hilton Knoxville Airport	McGhee Tyson	841,237	236	13,064
Four Points by Sheraton Huntsville Airport	Huntsville International	614,601	146	6,000

Source: STR Global

designed so that the customer can avoid the intermediate step and simply walk from the hotel to the airport terminal itself. According to HVS, the airport terminal hotel is the first hotel that travelers consider when stranded at an airport due to cancellations

or overbooking.²⁷ Additionally, the airport terminal hotel is often used as a hub for corporate meetings involving visitors from all different locations because they reduce the cost and complication involved in hosting such meetings in the downtown.

The Site

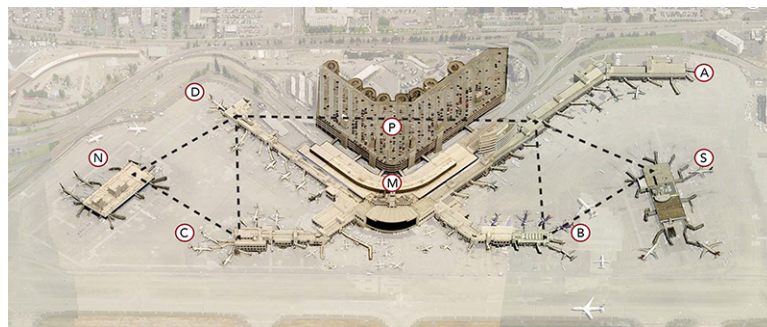
27 Rosszell, Monique. "RevPAR Penetration at Airport Terminal Hotels." HVS Global Hospitality Services, n.d. Web. 10 July 2015. <<http://www.hvs.com/article/3266/revpar-penetration-at-airport-terminal-hotels/>>.

Figure 17: Diagram highlighting major statistics for Sea-Tac



Existing Terminal Conditions

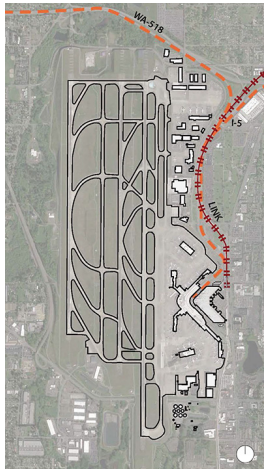
Figure 18: The Current Facilities at Sea-Tac



Site Access

Interstates I-5 and I-99 primarily serve Seattle. I-99 is a transcontinental interstate highway that connects Seattle, Washington to Boston Massachusetts. I-90 is the only highway in Washington that connects the state's two largest cities, Spokane and Seattle. I-5 runs north south and extends from the Oregon border up to Washington's border with Canada. I-5 is the only interstate that traverses the entire

Figure 19: Vehicular Movement around Sea-Tac



north-south length of Washington and it is approximately 275 miles in length.²⁸

Mass transportation throughout the Seattle-Bellevue metropolitan area is managed and coordinated by King County Metro Transit. This transit system provides service to an area of more than 2,000 square miles and to 2 million residents. King County currently operates more than 214 bus, trolley and Demand Area Response Transit (DART) routes that serve destinations across the county.²⁹

A component of King County's transit system is a line of RapidRide buses that seek to streamline the transportation process. These buses act like a train system that follows the exact same route daily, and have a large number of fixed stops in the busiest parts of the region. Metro planners are using the RapidRide system in conjunction with roadway and traffic signal improvements to create a safer and more efficient transportation in this growing city under the Bridging the Gap Initiative.³⁰

28 Official State Highway Map (PDF) (Map) (2008-2009 ed.). 1:842,000. Official State Highway Maps. Cartography by U.S. Geological Survey. Olympia, Washington: Washington State Department of Transportation. 2008. Retrieved 2008-08-07.

29 Official State Highway Map (PDF) (Map) (2008-2009 ed.). 1:842,000. Official State Highway Maps. Cartography by U.S. Geological Survey. Olympia, Washington: Washington State Department of Transportation. 2008. Retrieved 2008-08-07.

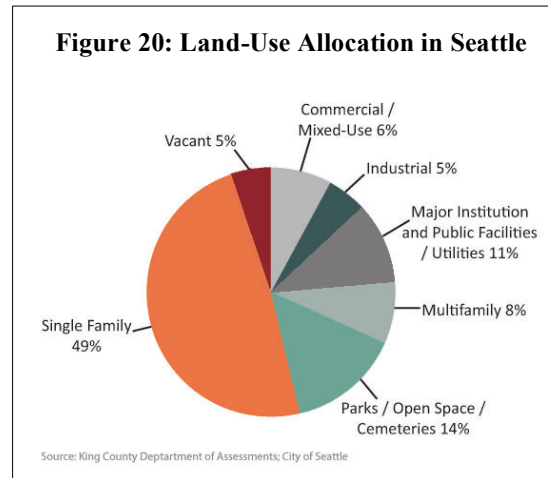
30 Research & Forecast Report - Puget Sound Region | Q2 2015 | Office. Publication. Colliers International, n.d. Web. 20 Aug.

Other major mass transportation systems in the Seattle region include a water taxi service, light rail, bike share, and rideshare programs that seek to connect commuters with common routes.

Land-Use

The city of Seattle, Washington is approximately 53,113 acres (83 square miles) in size. Though this metropolitan city is a global tourist destination, much of the city is dedicated to residential development.

According to the City of Seattle, almost 50 percent of the land is dedicated to single-family development (Figure 13). Of the residential development, the majority exists with the urban center or in urban villages developed in relation to the downtown (Figure 17).



Zoning

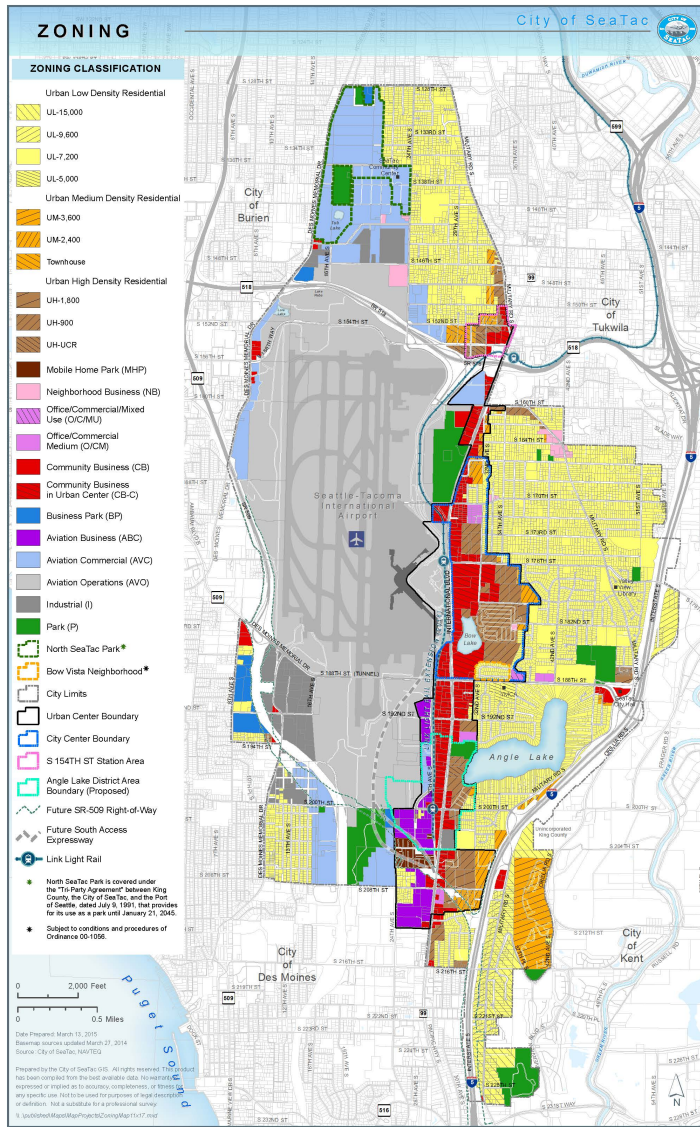
According to the City of SeaTac Washington Municipal Code, the site is currently zoned Aviation Commercial (AVC). The AVC zone is designated for development that provides support to operations of Seattle-Tacoma International Airport (the Airport), the traveling public, air cargo, and for other development that provides an economic benefit to the airport and community. Development in the AVC zone must maintain compatibility with airport operations and activities. The existing Seattle-Tacoma International Airport terminal sits within the Aviation Operations zone (AVO) (Figure 14). The Comprehensive Plan for the City of SeaTac unites the AVC and AVO under one “Airport” zone (Figure 15). All properties owned or to be owned by the Port of Seattle under the 1996 Airport Master Plan, will fall into this single destination “Airport” zone.

Amenities

The subject site sits within the grounds of Seattle-Tacoma International Airport (Sea-Tac) in the SeaTac community. The largest amenity of this site is the airport itself, which, in addition to the Port of Seattle, provides jobs to thousands of Seattle’s residents. Figure 16 shows the local amenities surrounding Sea-Tac. These amenities include a series of public parks, botanical gardens, lakes, schools, and community centers.

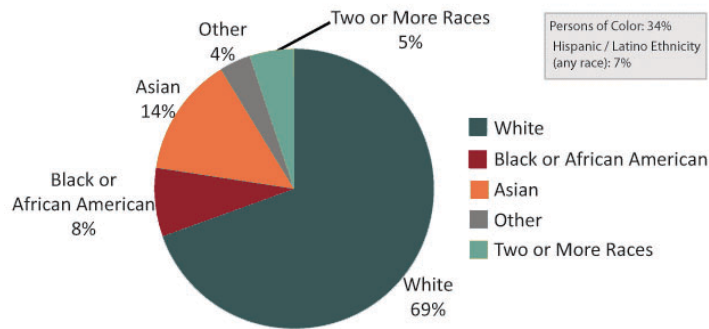
The site is located only 15 miles south of downtown Seattle, Washington and is connected to the city via Interstate-5 and the Link light rail system. Travelers who visit Seattle can easily access the downtown from the airport via car or public transportation.

Figure 21: Current Zoning in the City of Sea-Tac



Source: The City of Sea-Tac

Figure 23: Diversity in Seattle, Washington (2010)



Sources: 2010 Census, U.S. Census Bureau

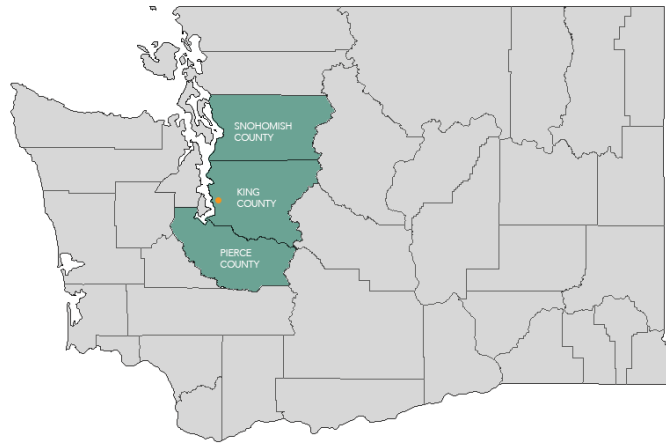
Demographics

Seattle, Washington attracts residents from all over the world. According to the U.S. Census Bureau, the population of Seattle in 2010 was 608,660 and has risen to an estimated 662,400 people in 2015.³¹ Seattle is the 23rd most populous city in the United States and has exhibited steady growth over the past decade (Figure 18). Seattle continues to be one of the most ethnically diverse cities in the United States

31 “About Seattle.” Population and Demographics. Department of Planning and Development, n.d. Web. 01 Aug. 2015. <<http://www.seattle.gov/dPd/cityplanning/populationdemographics/aboutseattle/population/default.htm>>.

due to its location in the Northwest corner of the United States. The location of the city in relation to Asia has resulted in over 14 percent of the population being Asian in race (Figure 17).

Figure 24: Counties that Comprise the Seattle-Tacoma-Bellevue MSA



Population

Seattle-Tacoma International Airport is located within the Seattle-Tacoma-Bellevue, WA Metropolitan Statistical Area (MSA) is located in Washington State

and includes King County, Snohomish County and Pierce County (Figure 24). These three counties are part of the Puget Sound region. According to the U.S. Census Bureau, the total estimated population for these three counties combined is 3,610,105 residents – more than half of Washington State’s 2013 population of 6.97 million.³²

Between 2012 and 2013, Seattle grew faster than any other major city in the U.S with an increase in over 18,000 residents or 2.8 percent. According to the U.S. Census Bureau, the City of Seattle had a population of approximately 668,342 residents in 2014. This represents a 2.3 percent increase over the population in 2013.³³ These statistics also indicate that the Seattle-Tacoma-Bellevue MSA added 57,000 residents, making it the nation’s 15th-largest metropolitan area with a total population of 3,610,105.²³

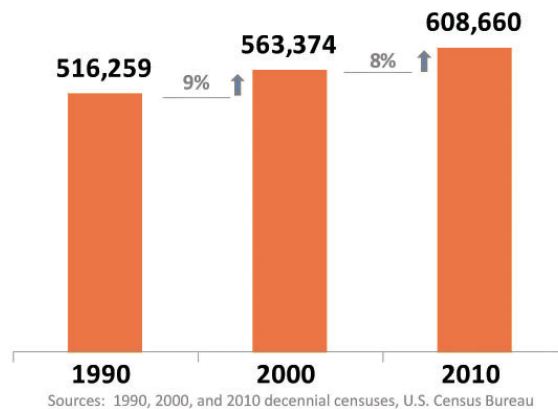
32 "Your Geography Selections." American FactFinder. United States Census Bureau, n.d. Web. 18 Dec. 2015.

33 "Annual Estimate of Resident Population Change 2013-2014." American FactFinder. U.S. Census Bureau, Mar. 2014. Web.
<<http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>>.

This rapid population growth led to Seattle’s ranking as the 21st biggest city by population in the United States in 2014.³⁴ Seattle’s Office of Economic Development attributes this rapid population growth to the city’s healthy economy. Between 2012 and 2013, Seattle added approximately 15,000 jobs to the market.

The subject site will be part of the city of Seattle, Washington, but is more

Figure 25: Population Growth in Seattle (1990 - 2010)



specifically located in the small community of SeaTac. SeaTac is a diverse community located fifteen (15) miles south of Downtown Seattle, Washington. More

34 Balk, Gene. “Census: Seattle Is the Fastest-growing Big City in the U.S.” The Seattle Times. N.p., 22 May 2014. Web. 12 Aug. 2015. <<http://blogs.seattletimes.com/fyi-guy/2014/05/22/census-seattle-is-the-fastest-growing-big-city-in-the-u-s/>>.

than 37,000 people work in SeaTac and the community has a population of approximately 25,000 people. SeaTac has emerged as an international gateway for immigrants and refugees from all over the world due to its proximity to Seattle-Tacoma International Airport (Sea-Tac). An abundance of quality affordable housing also draws in a large number of residents. Approximately 42 percent of SeaTac's population is non-Caucasian and more than 80 nationalities are reprinted in this diverse city.³⁵

Employment

Seattle, Washington is emerging as a world industry and trade leader. Seattle has one of the largest aerospace industries in the world and is home to Boeing Commercial Airplanes and over 800 other aerospace firms. Seventeen percent of all aerospace workers in the United States are employed in Seattle. Additionally, as the home to 3,000 information and communication technology companies (ICTs), which include Microsoft, Amazon and Expedia, Seattle has emerged as a leading center in

35 "Demographics." Community. City of SeaTac, n.d. Web. 01 Aug. 2015.
<<http://webrequest.ci.seatac.wa.us/everywherespossible/Community/Demographics/tabid/93/Default.aspx>>

the ICT industry.³⁶ According to the Seattle Trade Alliance, the city ranks fourth in the world as a global startup hub and is number one in the United States for energy efficient efforts. The leading industry in Seattle is international trade and is the principal trade, distribution, financial, and services center for the Northwest United States.³⁷ Table 3 presents a list of the top 10 employers in Seattle as of 2015.

36 “Our Industries.” Trade Development Alliance of Greater Seattle. N.p., n.d. Web. 01 Aug. 2015. <<http://www.seattletradealliance.com/economy/our-industries>>.

37 “Seattle: Economy.” Major Industries and Commercial Activity. City-Data, n.d. Web. 01 Aug. 2015. <<http://www.city-data.com/us-cities/The-West/Seattle-Economy.html>>.

Figure 26: Major Employers in Seattle, Washington

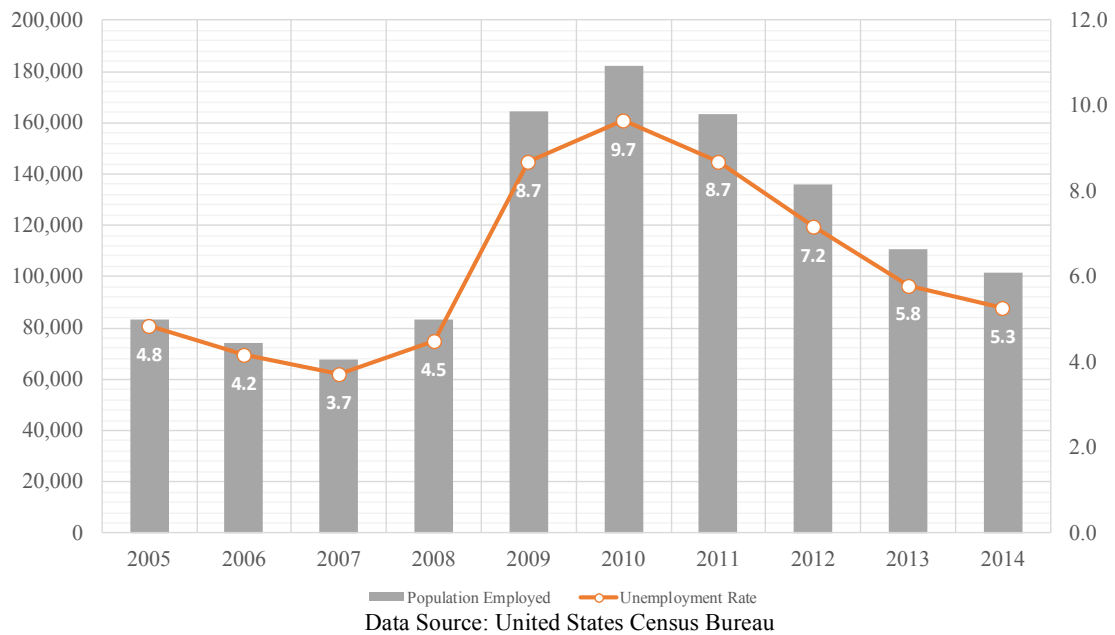
Employer	Industry	Number of Employees
Boeing	Aviation	70,000
Microsoft	Technology	40,000
University of Washington	Education	25,000
Amazon	Commercial	15,000
Weyerhaeuser	Logging	10,000
Group Health Cooperative	Healthcare	9,000
Fred Meyer	Commercial	8,700
Bank of America	Financial	7,300
Qwest Communications	Telecommunications	7,000
Nordstrom	Commercial	6,000

source: seattle.about.com

The Boeing Company was borne out of Seattle and continues to be the leading industry and largest employer in the city. The second largest employer, Microsoft, represents the pervasiveness of the technology industry in the city. The average employment rates for the Seattle MSA are portrayed in Table X below. Following the 2008 economic recession, the average employment and unemployment rates in major cities throughout the United States exhibited an inverse relationship: employment decreased as unemployment increased. Conversely, in the Seattle MSA, employment and unemployment rates exhibited a parallel relationship: as employment increased, unemployment also increased. In 2007, employment was at its lowest with an average of 67,431 people employed. During the same year, the unemployment rate was also at its lowest with 3.7 percent of the population unemployed (Figure 27).

Beginning in 2008, employment and unemployment rates began to increase, reaching a peak of 182,292 employed and 9.7 percent unemployed in 2010. Since 2010, both employment and unemployment rates have been steadily declining (Figure 19).

Figure 27: Seattle MSA Average Employment Rates (2005 - 2014)



Chapter 5: The Design

Design Speculation

What role will security play as airports evolve?

1. What if the physical presence of security is eliminated due to the increasing sophistication of government surveillance?
2. What if security becomes the generator of the experience rather than the obstacle?
3. How can security create the possibility for a shared experience between the local and the international?
4. Is security the key to returning airports to their formal public and civic nature?

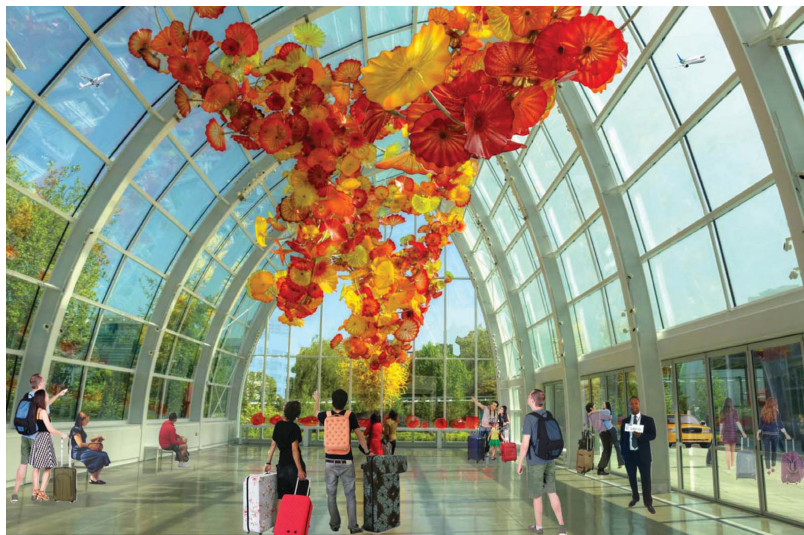
If Apple designed an airport, what would it look like?

1. How can we design the path through airport terminals so that it is truly intuitive?
2. What are the spatial bare essentials in the travel experience?
3. Is it possible to design using spatial and form-making techniques that any human from any background can understand?
4. Should the inner workings of the airport be concealed or exposed? Accessible or inaccessible?

What is the role of architecture in the increasingly transient nature of the human experience?

1. How can the travel experience be adapted to suit the heightened level of travel that is occurring today?
2. How does the experience of a seasoned traveler differ than that of a first-time traveler?
3. How does the arrival experience differ from the departure experience?

Figure 28: Exploration Collaging Travelers into the Chihuly Garden



4. What role does the relationship of the airport to the city play?

How can the space of travel be designed to promote cross-cultural interaction among travelers? Locals?

1. In a goal-driven environment, how can you get people to stop?

2. What types of spaces sponsor interaction?
3. Is it possible to generate empathy through the shared experience of travel?

Figure 29: Exploration Collaging the Highline in New York into the airport



The International Terminal

In order to deploy the strategies learned during the case study analysis into the design, it was important to first identify where these moments of convergence would exist within the terminal. I decided to focus on the main walls of the terminal as a position for these spaces. These walls represent the boundaries that are created in an airport out of necessity but that, by nature, separate us as people. The two clearest boundaries in an international airport terminal are the boundary between pre-security and post-security; and the boundary between those who are departing and those who

are arriving. Both of these walls rose out of a need for security. I decided to merge these walls into one moment of convergence known in the title of this thesis as the Global Main Street (Figure X).

Figure 30: Aerial View of the new International Terminal, looking Southeast



Figure 31: Level One Plan

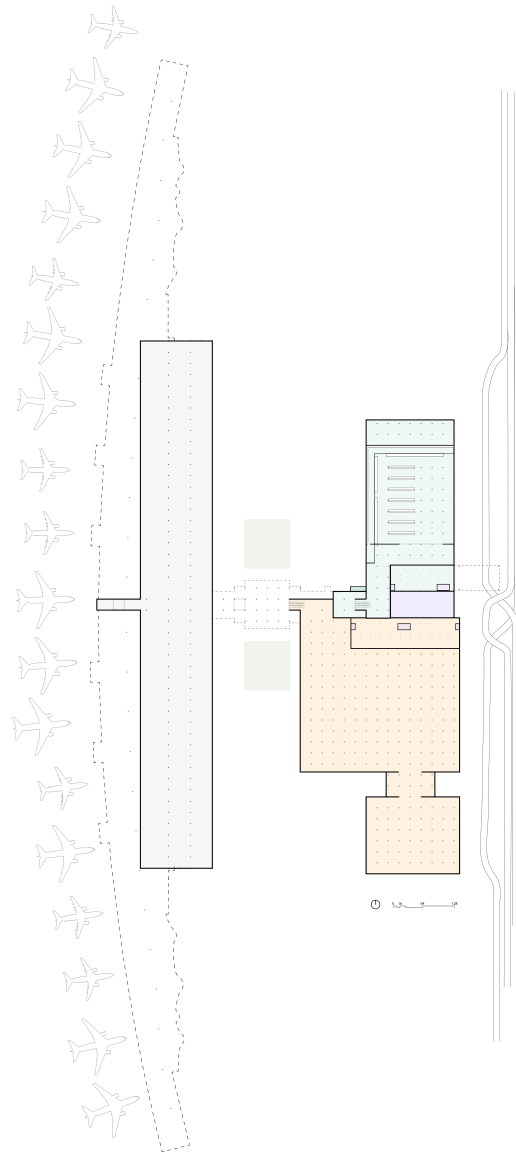


Figure 32: Level Two Plan

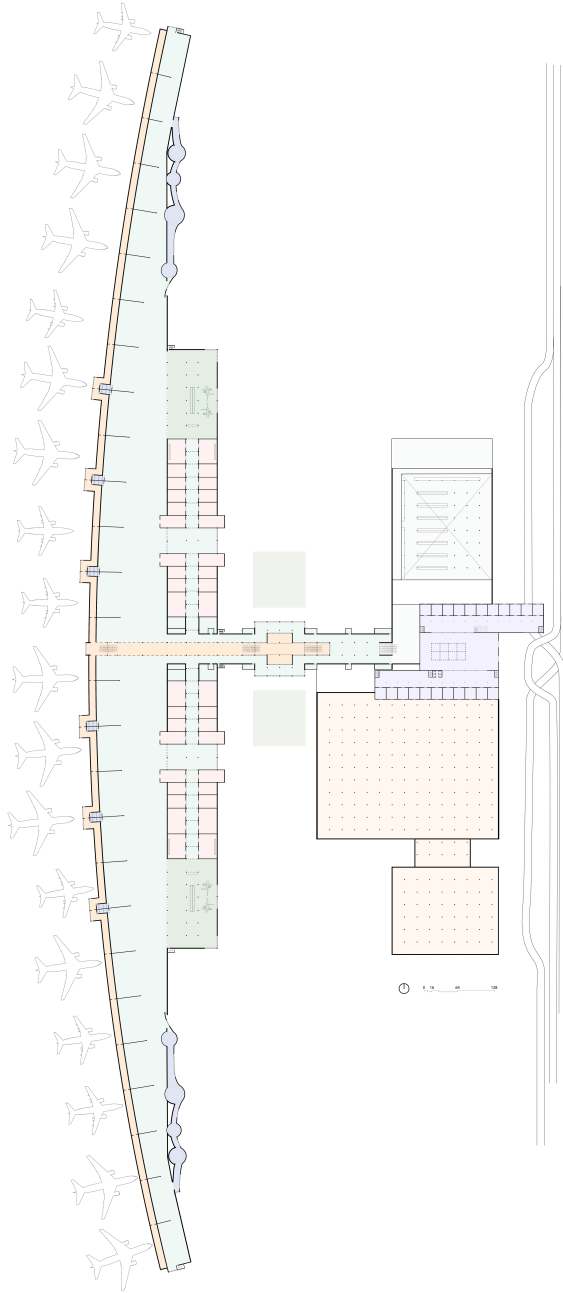


Figure 33: Level Three Plan

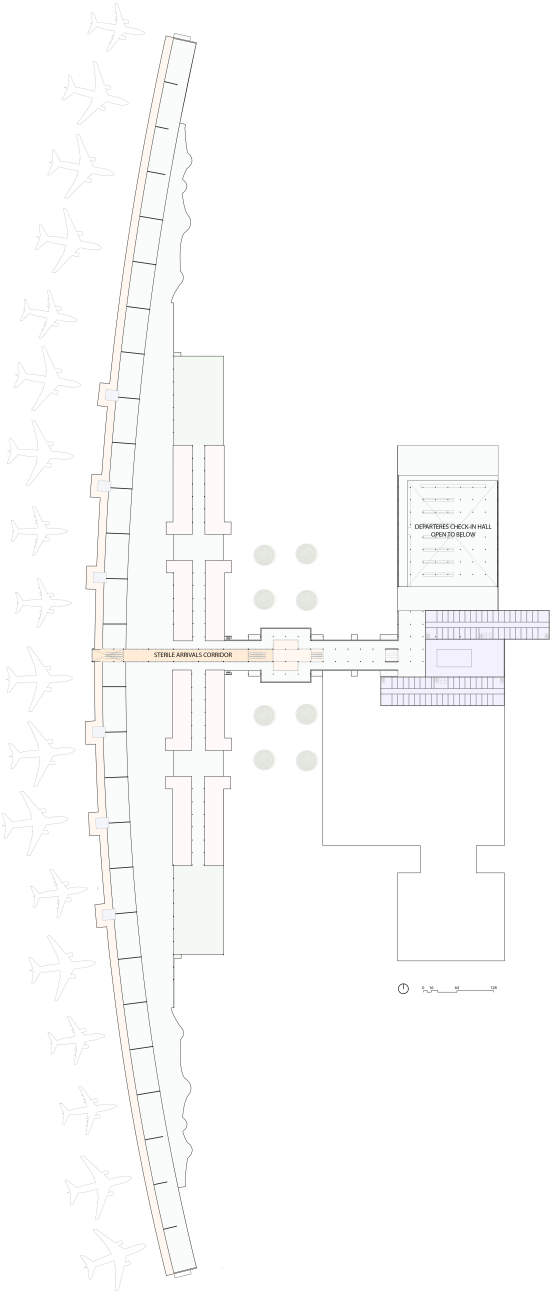
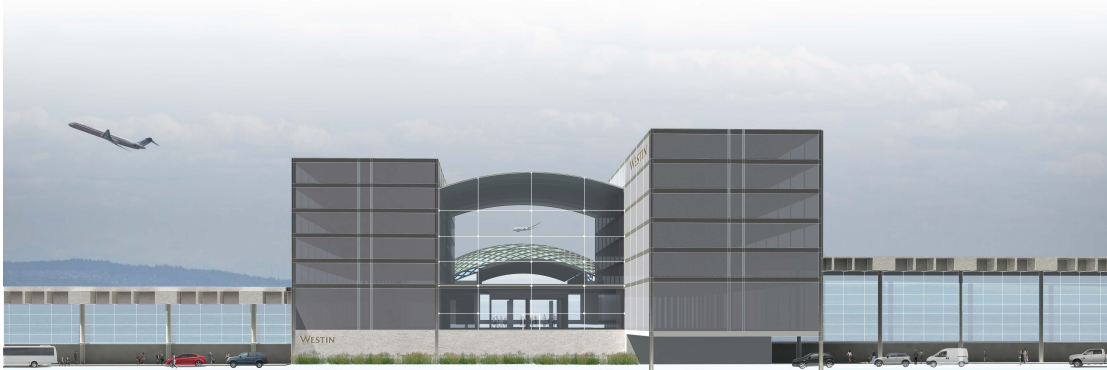


Figure 34: Renderings showing spaces of convergence located along the main departures concourse



Terminal Hotel

Figure 35: Rendering of the Terminal Hotel with airport drop-off and pick-up to either side



Introduction

This section elaborates on the design of the new terminal hotel at Seattle-Tacoma International Airport. The following sections describe the overall design goals, the established program, and the design specifics of the terminal hotel.

Design Goals

After examining existing airport terminal hotels throughout the United States and evaluating the research gathered throughout this process, specific design goals were established that will manifest in the terminal hotel design. The 6 design goals are listed below with a brief description of the desired outcome of these goals.

1. Integrate the hotel with the airport — Create a cohesive design that connects the hotel to the new international airport terminal.

2. Provide a safe and comfortable environment — Design spaces to create an environment that calms distressed passengers and provides the necessary security.

3. Utilize surrounding natural landscapes — Form connections to the natural environment and landscape of Seattle-Tacoma to enhance comfort of visitors.

4. Promote meeting and gathering — Incorporate meeting rooms and conference rooms to attract business leaders from around the world who are traveling through the city

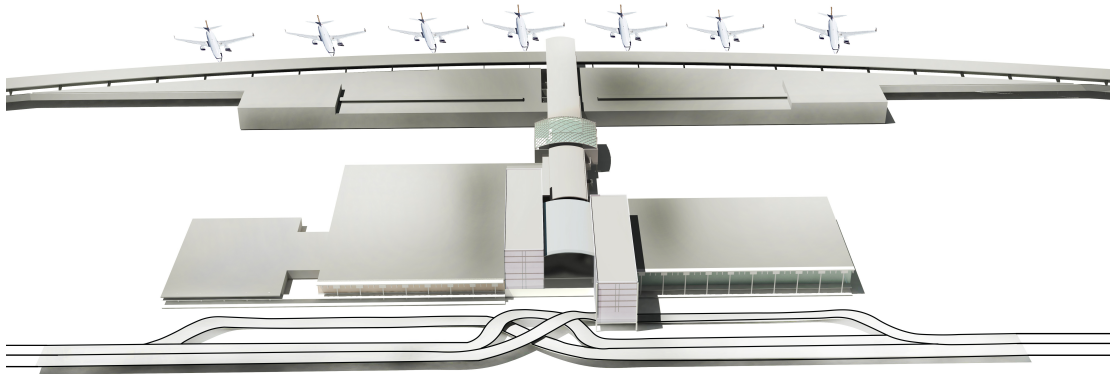
5. Provide a variety of options — Include hotel rooms that meet the needs of a medley of client-types ranging from families and students to corporate travelers.

6. Enrich the airport experience - Select a hotel brand and management company that provides a unique experience for travelers and visitors.

The Form

The proposed terminal hotel will be connected to proposed international terminal at SeaTac and therefore the form will be related to the form of the airport terminal. Visitors will be able to easily recognize the hotel from the both the interior

Figure 36: Aerial view of terminal looking west



and exterior of the airport. The hotel will be located in the non-sterile zone of the airport, allowing visitors to have easy access to the terminal and to their flights. This location will also provide a connection to the airport for international arrivals who are using the terminal hotel's meeting spaces.

The Brand

The proposed airport terminal hotel will be an extension of Westin Hotels & Resorts (Westin). Westin is part of the ownership and Management Company, Starwood Hotels and Resorts Worldwide, Inc. (Starwood). Starwood is one of the leading hotel and leisure companies in the world with more than 1,200 properties in

about different 100 countries. Starwood is a fully integrated owner, operator and franchisor of hotels, resorts and residences under the brands: St. Regis®, The Luxury Collection®, W®, Westin®, Le Méridien®, Sheraton®, Four Points® by Sheraton, Aloft®, Element®, and the recently introduced Tribute Portfolio™.³⁸

The proposed airport terminal hotel will be an extension of W Hotels Worldwide brand (W Hotels). W Hotels is part of the ownership and Management Company, Starwood Hotels and Resorts Worldwide, Inc. (Starwood). Starwood is one of the leading hotel and leisure companies in the world with more than 1,200 properties in about different 100 countries. Starwood is a fully integrated owner, operator and franchisor of hotels, resorts and residences under the brands: St. Regis®, The Luxury Collection®, W®, Westin®, Le Méridien®, Sheraton®, Four Points® by Sheraton, Aloft®, Element®, and the recently introduced Tribute Portfolio™.³⁹

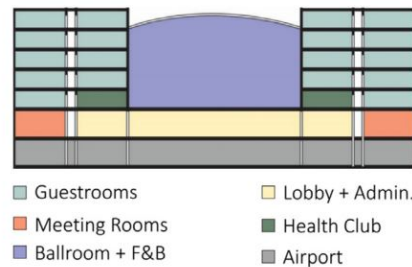
³⁸ “Starwood Hotels & Resorts.” Starwood Hotels & Resorts. N.p., n.d. Web. 20 Sept. 2015.

³⁹ “Starwood Hotels & Resorts.” Starwood Hotels & Resorts. N.p., n.d. Web. 20 Sept. 2015. <<http://www.starwoodhotels.com/corporate/about/index.html>>.

Of the Starwood brands, the Westin was chosen for this development because of its unique niche in the hospitality industry. The brand defines its model as providing everything to help a person feel his or her best. In 2015, Westin introduced the Westin Well-Being Movement, which is a global initiative dedicated to helping its guests discover new approaches to wellbeing. This movement will feature new partnerships and programs across Westin’s six pillars of well-being: Sleep Well, Eat Well, Move Well, Feel Well, Work Well, and Play Well.⁴⁰ This modern brand is also known for adapting its brand to each of its unique locations. This adaptability will create a sense of place for the Westin Hotel at Seattle-Tacoma International airport that will be

Figure 37: Breakdown of Hotel Rooms and Program

Room Distribution & Rate by Type			
Type	# of Rooms	Average SF	% of Total
Standard King	220	650	55.0%
Standard Double	50	325	12.5%
Standard Queen Double	120	450	30.0%
Executive Suite	10	912	2.5%



⁴⁰ "Westin Well-Being Movement." Westin Well-Being Movement. Westin Hotels & Resorts, n.d. Web. 26 Oct. 2015. .

distinct and unique to this location and provide all of the services that distressed travelers and other visitors may need.

The 2015 International Arrivals Forecast put out by the Port of Seattle projects that in this year, over 7.7 million travelers will be arriving from Asian countries (Figure 13). Among these countries are Japan, China and Korea. The Westin brand is becoming increasingly popular on the Asian continent. There are currently 23 Westin Hotels throughout Asia, and between 2016 and 2019, twenty new Westin locations are set to open throughout the continent. Given the popularity of this brand throughout Asia and the rest of the world, it is an appropriate brand to incorporate into Seattle-Tacoma International Airport.

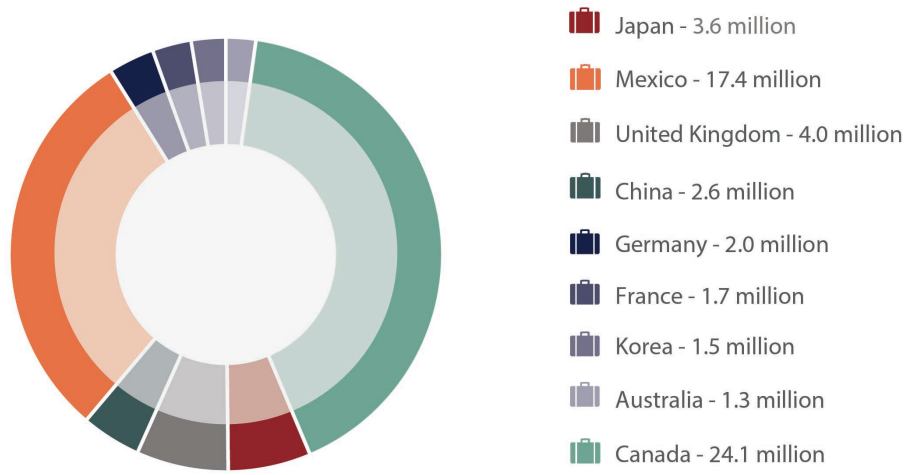
Program

The Westin at Sea-Tac comprises a total development area of 256,318 square feet on six floors. The hotel takes the form of two bars that are joined by a triple-height atrium space that serves as the hotel lobby and banquet hall. The two identical bar buildings each include 10 meeting rooms that together total 20,860 square feet and 10,000 square feet of food and beverage outlets on the first level. The second level of the subject hotel features the 6,000 square foot health club as well as 41,720 square feet in guest rooms and the 10,000 banquet hall. The remainder of the guest rooms are spread equally between the two bar buildings on levels three through six.

“Airport hotels offer excellent facilities for the travelers who need to work, including in-room Wi-Fi, meeting rooms, business and conference facilities, and ambient lobbies. Travelers working for multinational companies can meet face-to-face with peers or clients based in the city where they are transiting, away from the hustle of the airport terminal.”⁴¹ The program of the terminal hotel will consist of a main lobby, guest rooms that vary in size, small meeting rooms, a larger conference room, a restaurant/lounge, and all the associated spaces needed for the employees and hotel functionality. The terminal hotel will offer a variety of room sizes and types including a Standard King, Standard Double, Standard Queen Double, and a King Suite. Figure 37 details the distribution, average cost and average square footage of the rooms. A sophisticated set of meeting rooms and conference space will allow corporate travelers to book their meetings at the airport itself. These meeting rooms will be equipped with state-of-the art technology that will allow for the ease of meetings.

⁴¹ “Transit to Another World. Rise of the Airport Hotel.” Global. FCM Travel Solutions, n.d. Web. 25 Oct. 2015. .

Figure 38: 2015 International Air Arrivals Forecast



Conclusions

During the final thesis defense, the main takeaway I noted was to not lose sight of the goals of the thesis and to efficiently manage scope. I began this process with the goal of creating a design that took peoples' human instincts into account and that challenged the idea of private versus public in an airport setting. Additionally, my true passion for architecture lies within the details: the tectonic relationships and materiality that add to the experience. As I moved through the analysis and design portions of this project, many of those goals were lost. It was very easy to get wrapped up in the technical and functional details of the airport and to accept those aspects as final rather than challenging them.

I am pleased with my final product. I believe that it accomplishes my goal of creating spaces that allow for greater human interaction and convergence at the airport. Even though I did not get to the detail level with materials and tectonics, through my renderings I tried to introduce tactility and ambiance through the use of color and texture. Moving forward, the next step in this process would be to analyze the pieces I have designed and dissect them into parts that I could then reinterpret so as to add a more human scale and touch to the project.

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