The Travelling New Media Centre

by

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Abstract

In contemporary society, advanced forms of technology and new media artworks are becoming more prevalent in the public realm each year. Nevertheless, many Canadians do not have access to the resources that enable them to critically analyze and interact with these rapidly evolving forms of technology and new media artwork. This practicum intends to address this by creating a unique environment known as The Travelling New Media Centre. The design concept consists of exhibition and education spaces that address topics related to technology and new media in contemporary culture. The Travelling New Media Centre takes place in VIA Rail baggage cars with modified interior architecture. Multiple train cars are used and consist of interactive exhibitions using both a contemporary and historical perspective. The train route and site selection is based on communities that have minimal access to technology and little exposure to contemporary new media works. Therefore, the train travels to the following northern Manitoba communities: Thicket Portage, Pikwitonei, and Ilford. While traveling to each community, the Travelling New Media Centre creates an engaging experience that has a multitude of benefits for the community.
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Important Terms/Definitions

The following section will outline important terms that will reoccur throughout the document. These terms are not common outside the field of art and technology. Therefore, brief definitions will be provided.

New Media:

“new media are the cultural objects which use digital computer technology for distribution and exhibition. Thus, Internet, Web sites, computer multimedia, computer games, CDROMs (Compact Disc Read-Only Memory) and DVD (Digital Versatile Disc), Virtual Reality, and computer-generated special effects all fall under new media. Other cultural objects which use computing for production and storage but not for final distribution -- television programs, feature films, magazines, books and other paper based publications, etc. -- are not new media.” (Manovich 2003, 9)

Visual Literacy:

Visual Literacy will be viewed as a process which involves the following requirements:

1) A visual is seen by a viewer
2) It is interpreted and understood
3) The viewer becomes the creator by creating visuals that can also be interpreted and understood. (Walters 2013, 3)
Chapter 1: Introduction
Project Rationale

North American society has now embraced the concept that technology is a daily part of our lives. Every year we see more affordable technological devices introduced into the consumer market that allows users to interact, create, and disseminate art in new ways that were impossible only a decade ago. These new technologies are more powerful than their past counterparts and come at a fraction of the cost. This recent surge in technology has also allowed us greater access to information and introduced methods of creating art and manipulating digital content. However, due to unreliable telecommunications & information technology as well as a variety of economic, geographic, and infrastructural constraints, many people still lack the opportunity to engage with new technologies and new media (Howard 2010, 112). Therefore, a portion of society lacks the resources to understand the role new technologies play within contemporary society and how important the field of new media has become.

Environments that allow people to become more engaged with technology and learn about new media are becoming more practical as we progress further into this technologically driven era. In many communities, it is evident that there is a lack of resources to create these types of environments. This can is attributed to a variety of reasons which include economic, social, educational, and geographic barriers (Haight 2014, 506). In some cases, it is also because educators are unwilling to adopt contemporary technologies and integrate new and unfamiliar concepts into their curriculum (Prensky 2001b, 5). Furthermore, some educators will not change their teaching methodologies to adapt to how students learn in a contemporary digital setting (Prensky 2005, 64). The Traveling New Media Centre intends to rectify these issues related to technological education and new media exhibition.

In order to accomplish this, The Travelling New Media Centre will offer a variety of interactive and educational experiences that are not available in the current educational sector and will provide a unique learning experience for guests. The intention of The Travelling New Media Centre is to create
an environment that is engaging, interactive and geared toward a general audience that has had minimal exposure to new media artwork and new technologies. Different exhibition and educational areas located inside the train will offer guests a multitude of different experiences that will encourage hands-on interaction. This will include spaces that allow guests to create new media artwork as well as spaces that are dedicated to interactive technologies. These environments will be geared toward teaching guests with minimal or restricted exposure to new technologies. Therefore, site selection will be essential for the success of The Traveling New Media Centre.

Primary site locations of the Travelling New Media Centre will be in the northern regions of Manitoba. Key site locations are Thicket Portage, Pikwitonei, and Ilford. Therefore, having a travelling train car as the interior environment is a crucial component to the success of The Travelling New Media Centre. This will allow for access to communities which regularly would not see this type of content. Discussions at VIA Rail Winnipeg with Regional Services General Manager Michael Woelcke outlined how many of these communities do not have access to public roadways making the train one of their primarily forms of public transportation (Woelcke, Personal Communication January 28, 2016; Canada Transport Commission 1981, 98). Therefore, the train is easily accessible and familiar to residents in the community. There is also pre-existing infrastructure which includes functioning railways, scheduled stops, and train stations. Research conducted by Howard (2010) has shown that many communities currently have minimal funding for arts-related projects and typically have little exposure to new media art exhibitions (113). Therefore, The Traveling New Media Centre will give residents in these regions opportunities they would otherwise not have.

Research has found that areas which have minimal access to new technologies, internet, and other forms of digital resources can lead to “gaps in access, technical knowledge, and content
between urban and rural communities, indigenous and non-indigenous Canadians, high and low income families, Francophone’s and Anglophones, and the young and old” (Howard 2010, 112). Parsons and Hick (2008) agree with this notion and have stated, “The digital divide is accentuating existing gaps of already disenfranchised groups including immigrants, Aboriginals, older workers and the less educated” (3). To counteract this issue, the exhibition will travel to the selected Canadian regions to create a sociological and cultural experience that is enriching from an educational and artistic basis.

Beyond creating a sociological and cultural experience, other benefits from the Travelling New Media Centre will be evident on both an individual and community level. At the community level, introducing guests to the exhibits of The Travelling New Media Centre will allow for increased exposure and interest in the fields of art and technology. Increased exposure to spaces geared toward art exhibitions and education has been known to have a variety of social and cultural benefits to communities. This can include the creation of new social networks, improved community status, increased communal diversity, increased public interest in the arts, and a variety of other benefits to the community (Guetzkow 2002, P. 3). Furthermore, the educational component of The Travelling New Media Centre will assist in increasing the individual skill-sets of guests in a variety of technological applications. In turn, this will assist individual users as well as the community as it will introduce guests to new technologies. This can allow for better job opportunities, increased confidence, increased technological skills, stronger creative abilities, better communications of ideas and increased proficiency in activities that require teamwork (Guetzkow 2002, 3). Research by Parsons and Hick (2008) shows that “employers are now seeking employees who have advanced technological skills and knowledge” (3). However, those who lack these types of skills may encounter a variety of issues which can include, “academic failure, social isolation, increased unemployment, lower productivity and competitiveness and exclusion from social and political spheres” (Parsons 2008, 5). It is evident
from this research that there is a multitude of sociological and cultural benefits from engaging with technologies. However, The Travelling New Media Centre also wants to create a socially engaging and dynamic environment.

The architectural shell of the Travelling New Media Centre is a VIA rail train. Therefore, many sociological connotations are connected with this concept. As outlined later in the theoretical framework, the train plays a significant role in social engagement within the public realm. Creating a dynamic space which pays homage to the socially engaging passenger trains of the past will play a major role in the design methodology of the interior spaces. Other research discussed in the theoretical framework outlines the importance of trains to the Canadian identity. Therefore, using a contemporary train as the architectural shell for The Travelling New Media Centre will also reflect on the roots of Canada and significance it had on Canadian culture. Currently, much of new media artwork is not being exhibited within the Canadian context.

Research conducted by the Canadian Public Arts Funders outlines, “there is an established festival and exhibition circuit for new media in Europe and Asia, which means that Canadian work is frequently shown more outside Canada than at home” (Poole 2011, 19). The Travelling New Media Centre can resolve this issue by exhibiting cutting-edge Canadian content and showing the Canadian public new media and new technologies. While engaging in this type of content may be common on the internet, it is much less common in physical environments within Canada. Canadian based research by Poole (2011) found that there were only a few “facilities to support new media production and exhibition” (20). The Travelling New Media Centre would fill a significant gap within the context of Canadian contemporary art exhibition and technology education. While many websites offer online exhibitions that feature new media art and technology education, a hands-on experience is much more immersive for this type of content. Furthermore, “some feel that experiencing art digitally is anti-social compared to sharing and
participating in offline arts events” (Poole 2011, 49). Hence, using a train car is an excellent environment for creating a unique social experience.

Designing an interior environment that is an engaging cultural and social experience is only one of the many mandates of The Traveling New Media Centre. From the rationale outlined in this chapter, it is clear there is a variety of opportunities for creating this type of environment in a VIA rail train car. This includes increased individual skill-sets, communal benefits and a variety of other opportunities. Additionally, the rationale behind site selection engages a portion of the Canadian population which would not have access to these types of resources. To successfully design The Travelling New Media Centre additional research will be acquired from a multitude of different sources. This research will assist in resolving a variety of the gaps seen in the technological art education and exhibition sector by creating an interior environment that responds to the contemporary guests needs.
Methodology

A variety of different qualitative research methods were used in the creation of this document. Primary information pertaining to the project rationale has been acquired from a multitude of different academic sources as well as other research documents which concern Canadian citizens accessibility to digital resources.

In the Theoretical Framework section, information about the history of passenger trains and the interior design of passenger train cars are primarily sourced from academic journals and other published works. Research from this section will help influence design methodologies as well as assist in understanding the importance of train cars. Additional research regarding visual literacy can also be found in the theoretical framework section. Research from this section is acquired from a variety of academic sources, published works, and contemporary journal articles. This research focuses on how to create the most effective environment to exhibit and educate guests about new media and new technologies. Research from this section will help inform design solutions that will be effective in creating an engaging and educational environment.

In order to enrich the understanding of train travels, field studies which involve riding a passenger train from the VIA rail station in Winnipeg, MB to Portage-La-Prairie, MB will be included. Furthermore, additional research has been conducted by riding trains and bullets trains in foreign countries which include Sweden, Germany, and Japan. Visits to the VIA rail station in Winnipeg and discussions with Regional Services General Manager Michael Woelcke will also help influence site selection and potential design concepts.

Precedent Analysis will also inform design methodologies and will primarily consist of multimedia education/exhibition centres which I have visited. The first being Computerspielemuseum in Berlin, Germany. This compact space outlines the history of computers, video games, and computer technology and will serve as a strong example of an effective technological exhibition space on an international level. Other precedent studies will include Tekniska Museet’s Game Over exhibition in Stockholm Sweden. A third precedent study will


consist of Canadian VIA rail projects that show the potential of a passenger train for creating an engaging and unique environment. This will include previous projects such as Canadian Football League (CFL) Train (2012) and the Coors Silver Bullet Train (2011).
Research Questions

The following research questions will serve as a basis for the design methodology of the Travelling New Media Centre.

1. How can interior design mediate in educating and engaging small communities on the topic of new media artwork and technology?

2. How can the interior environment of a train car be effectively re-designed to allow guests to create and interact with various forms of new media and technology?

3. How can interior design create an experience that uses new technologies, and exhibitions to encourage users to think critically about contemporary new media.
Chapter 2: Theoretical Framework / Literature Review
Chapter 2 outlines the theoretical research that assisted in site selection and design methodologies of The Travelling New Media Centre. This consists of two subsections composed of qualitative research from a variety of sources. This includes books, academic journals, government documents, personal communications, and other credible sources.

The first subsection outlines the historical context of the passenger train. This includes information on both a national and international level as well as the impact train travel had during the 19th century. This portion outlines the importance and relevance of the train system to Canada’s national identity, including information pertaining to economic, geographic, political, and social factors concerning train travel in Canada. This research will enrich the design process and will encourage the integration of large open spaces and furnishings that promote public gathering. Furthermore, understanding the contemporary role of train travel within the Canadian context helps in determining key geographic and demographic factors that are important in site selection and design methodologies. In addition, detailed information about train interiors and utilization of interior space is outlined to allow for a better understanding of the architectural characteristics of passenger trains. This information helps inform potential opportunities for the integration of technology based exhibits into the interior structure of The Travelling New Media Centre. A field study is also conducted to critically analyze the interior environments of a contemporary Canadian passenger train car. The information obtained from this study assists in showing potential opportunities and constraints in relation to train design. Additional personal communications with VIA Rail staff also assisted in site selection, programming, and design concepts. Twenty-first-century train travel, as well as the decline of train usage, is also outlined in this section. To conclude, research about the future of passenger train travel is discussed.

The second subsection of the literature review is on the topic of visual literacy. This portion discusses the relationship between visual literacy
and technology exhibition and education. The research focuses directly on new media and new technologies and how they relate to the field of visual literacy. The importance of visual interaction and visual imagery in contemporary society is also outlined. Additional research which discusses potential environmental attributes that can foster successfully learning are also proposed. Past education methods related to new technologies and new media are also discussed and will help inform effective design solutions that encourage interactivity and learning for the guests. Finally, research which shows the benefits to individuals and communities that engage with visual literacy is also outlined. This assisted in evaluating the potential benefits that are offered by The Travelling New Media Centre.
Development of Train Travel & Train Interiors

Rudimentary versions of railways have existed for many centuries before the popularization of modern rail in the 19th century. As early as the 16th-century railways and vehicles were being utilized to transport coal and charcoal throughout mines in Europe (Matusitz 2009, 452; Wolmar 2010, 4). During this period, railways and locomotives were designed to store and transfer raw goods. It was not until centuries later when trains would take on a more advanced role in society.

The introduction of the passenger train began in the early 19th century. The concept of a locomotive that allowed for passenger travel and had comfortable interior spaces would revolutionize how the railway industry and the world would function. This new type of rail travel would usher many nations into an era of industrialization and allowed for the creation of new large-scale transportation infrastructure. In addition to this, rail travel allowed for strong economic and political benefits to those wanting to trade and network with other cities. A variety of other advantages which included increased labour forces, increased tourism, cultural and social benefits, and more became evident as the 19th century progressed.

Trains played a significant role as they created interiors spaces for the public to converge. Socialization and communal identity were key elements in the cultural impact of train travel. As time progressed, more emphasis was put on the interior details of passenger trains. This allowed users to travel long distances in comfort and created many opportunities for travel across vast land masses. Train interiors would eventually have a variety of different spaces which would serve the needs of the contemporary guest. Modularity and other key factors would play a reoccurring role within the interior design of the passenger train.

However, as we entered the late 20th-century train usage began to decline in North America. This was primarily due to the introduction of other modes of transportation, such as personal automobiles and airplanes. Other factors such as reduced funding and increased infrastructure costs also negatively affected the passenger train industry.
In the 21st century, we should view rail travel as a solution to many of the ecological disadvantages of motor vehicles that became evident in the 19th and 20th centuries. In addition to this, the train’s capacity for more passengers and reduced use of gasoline and fossil fuels makes it a safe and spacious way to commute (Berge 1964, 4). However, the future of rail travel faces many challenges which include increased cost of infrastructure and a variety of geographic restrictions. The result has been a decline in patronage since the 19th century. Nevertheless, for many Manitoban communities the train still plays a crucial role in terms of public transportation.
The 19th century was the most crucial time in the emergence of an efficient railway system. All across the world, different countries were beginning to integrate their models of railway travel.

On September 15, 1830, George Stephenson unveiled his railway which linked British cities Liverpool and Manchester (Gordon 1976, 14). While many other railways had transported people and goods in the past, none had done so using only steam locomotives. When the railway was finally open to the public, there were 23 carriages in total running off the steam engine (Gordon 1976, 14). Each carriage offered a custom interior space that was fitted to the travel needs of passengers. Following its launch, it was determined that the railways lines were a success and investors began financing large-scale railway construction for the next two decades (Gordon 1976, 14). Across the world, many other countries were starting to show interest in the concept of rail travel. One of the more notable countries being Canada.

Railways played an incredibly important role in the creation of the Canadian identity and Canada’s geographical landscape. Due to the geographic size of Canada, goods and passenger transportation was often quite difficult. Therefore, a large-scale rail system would be required if they wanted to increase inter-country travel and trading.

The introduction of railways also had a direct effect on the political status of Canada. In 1867, the construction of the Intercolonial Line began (VIA Rail Canada 1986, 17). This was to link New Brunswick, Nova Scotia, and Quebec. (VIA Rail Canada 1986, 17; Cruikshank 1986, 81). The creation of this railway allowed for the maritime provinces Nova Scotia and New Brunswick to enter into confederation. This new rail line would offer a variety of economic benefits for Canada, and would be advantageous for neighbouring communities near routes (Cruikshank 1986, 80).

Following the political success in annexing Nova Scotia and New Brunswick to confederation, plans for a transcontinental railway were soon under way. Again, political and economic factors played a significant role in the creation of this
railway. After various negotiations, the new transcontinental railway allowed the province of British Columbia to enter into confederation in 1871 (VIA Rail Canada 1986, 41). Following years of rail construction the country, the transcontinental railway also known as the Canadian Pacific Railway (CPR) was complete on November 7th, 1885 (VIA Rail Canada 1986, 45). Many prairie provinces also saw population growth due to the formation of these new rail lines. Winnipeg specifically saw many opportunities during the late 19th century as it was poised to become a transportation hub for central Canada. Research concerning transportation in 19th century Winnipeg by Artibise (1979) outlines some of the benefits from the railway.

“Another vital factor in the City’s growth has been the evolution of transportation facilities. In 1879 the first Railway to enter the Province ran from St. Paul, Minn., to what was then the village of St. Boniface and was connected by ferry across the Red River with Winnipeg. On July 1st, 1886, the first through train from Montreal to Vancouver on the Canadian Pacific passed through the Capital of Manitoba. During the next 20 years and, especially from 1900 up to the present time, all roads seemed to lead to Winnipeg and nearly all the railways of the West had to find a place in the network of lines radiating from that centre.” (270)

This central location allowed Winnipeg to flourish during the early adoption of rail transportation. This also encouraged job growth within the transportation sector. However, as time passed a variety of factors including political and economic issues would affect the success of Winnipeg to become a transportation hub for both Canada and the United States.

The following decades would see the introduction of a variety of new Canadian based railways. As time progressed, many of these railways were purchased or merged with other larger companies. This was until a final merger occurred in December 1918 which would combine a multitude of different railways (VIA Rail Canada 1986, 84). The result would be Canada’s only
transcontinental railway and would be referred to as the Canadian National Railway (CNR) (VIA Rail Canada 1986, 84). The result of this merger was a single rail system that stretched from Canada’s east and west coasts, efficiently allowing Canadian citizens and goods to travel across the entire country.

Following the Second World War, Canada began to encounter many issues regarding their railway system. Frequently these were financial matters. This would include maintenance costs, decreased patronage, and increased competition in the carriage of freight (VIA Rail Canada 1986, 88). Canada was not the only country in the Western Hemisphere involved in large-scale rail travel. America was also early adopters of the railway system which saw similarities to Canada due to its importance in the industrialization of the nation.

The United States saw many benefits from the creation of their railway systems. Some notable examples of this were the expansion of communication, transportation, and technology sectors (Matusitz 2009, 452). America was also able to increase its trade between borders due to the advent of railway travel (Matusitz 2009, 452). This encouraged America to export goods on a national and international scale allowing for a variety of economic and political benefits. Initially, many American railroads only travelled a very short distance. However, over time, railroad companies merged and combined to form larger and more efficient rail systems, similar to what occurred in Canada (Matusitz 2009, 453).

Between the countries which now had functioning railway systems, many commonalities were beginning to surface. Two important ones being the industrialization of nations and the advent of standardized time and scheduling. The railway was paramount towards the industrialization of many nations. The advent of steam locomotives allowed for many countries to change the method in which they transported goods and passengers. Research by Matusitz (2009) describes how, “When the railroad appeared in 1829, it was seen as a product without precedent, as a magic tool that would forever change the economy, society, politics
(Drucker 1999), culture, and psycho-emotional impact of individuals” (455). In addition to this, the railway would symbolize concepts of modernism and helped many nations toward new technological advancements (Matusitz 2009, 452). For example, The creation of large intricate rail systems helped stimulate many different fields of labour within America. The iron and coal industry saw an increase in labourers as well as a rise in resource production due to the need for raw materials (Schivelbusch 1986, 3). The creation of the railways, trains, and train stations created a whole new labour industry, one that is still functioning today. The advent of rail travel also allowed for increased globalisation and encouraged new types of free markets and free trades between nations. Without this form of transportation, it was difficult to trade in large quantities or ship goods within a reasonable time frame. The creation of railways also allowed for an increase in specialized labour, which includes railway mechanics, engineers, conductors, and a multitude of other specialized roles. As rail systems and employee numbers began to grow larger, issues concerning scheduling and timing were starting to arise.

The railway played a seminal role in the advent of efficient transportation scheduling. This was evident in both Britain and America during the late 19th century. In America, time was broken into four separate time zones, which remain in place today (Schivelbusch 1986, 44). These time zones were created in 1883 due to the increased need for a standardized system that was required for efficient train scheduling. (Matusitz 2009, 453). Before this, American train conductors, “relied on some 100 different, but consistent time zones” (Matusitz 2009, 454). By 1884, the entire planet was divided into its delegated time further showing the impact the railway system was having across the globe in relation to time and human mobility (Matusitz 2009, 455).

Both the train and the railway played a crucial role in the concept of mobility and movement. For many, the train was a vessel used to escape. A strong example of this is seen when residents of India used the rail system to flee during
partition times (Aguiar 2011, 2). This escape had a variety of consequences, which include the creation of communal identities that are closely associated with escaping and forced mobility.

In America, many immigrants who had recently arrived in the country were quickly introduced to the railway. As immigrants arrived, they would travel in designated emigrant cars that had different spatial qualities than those travelling in other passenger cars (Historical Society of Pennsylvania 2007, 2). This included, wooden benches and less attention to detail in regard to comfort and aesthetic quality (Historical Society of Pennsylvania 2007, 2). The concept of mobility in relation to immigration played a significant role in the movement of people across America. Additionally, the increase in availability of railways in urban centres allowed for the migration of people already residing within America to other regions.

The train also plays a significant role in human geography. Jonathan Matusitz (2009) states, “Now human beings mastered distance, they had true mobility, and the horizons of ordinary people expanded” (456). Humans now understood the power that this type of mobility allowed them. People were no longer restricted to the region in which they resided. Citizens now had a better understanding of the scale of their country and were finally able to traverse it at their convenience in a comfortable manner. In addition to this, rail systems and train travel fostered a whole new industry of tourism that had not been available in the past. Due to the accessibility of neighbouring countries and cities, people were now able to spend their excess income on travelling. The tourism that railroads created also had drastic effects on the city planning and urbanization of many major European cities like Paris, London, and Berlin (Schivelbusch 1986, 179, 180, 181).

Many countries began to plan their cities accordingly so they would be able to accommodate and integrate rail systems within the larger spatial context. An example of this being Napoleon III’s and Baron Haussmann’s reconstruction project that reconfigured the Parisian streets (Schivelbusch 1986, 181; Fraser 2012, 119). Similar configurations
were seen throughout many European countries, many of which had rail lines leading directly to city centres (Schivelbusch 1986, 180). Rail stations were systematically placed inside cities to allow for increased traffic to commercial spaces while others were placed in working class neighbourhoods to increase ridership for labour forces (Schivelbusch 1986, 179). However, it took many different iterations of locomotives before society was able to reach this level of sophistication regarding urban planning and development.
Early railway travel was typically horse driven during the pre-19th century. This is because steam locomotives were not yet available and horses were a good choice for a variety of reasons (Wolmar 2010, 4). One example being that the cost of horses was much cheaper than employing labourers. Additionally, horses are easy to train and easy to transport compared to heavy machinery or human interaction. As new technologies and the need for efficient transportation systems increased, horses were slowly replaced by newer locomotives which included the steam engine.

The steam engine revolutionized rail travel around the world. During the 19th century, the steam engine became the popular choice of railway transportation due to it being cost effective and requiring minimal animal or human labour. The most notable example of the steam locomotive is most likely “the Rocket” built by George Stephenson in 1829 (Gordon 1976, 14; Wolmar 2010, 8). Soon the steam locomotive would be introduced to the rest of the world, where it “radically remodeled the way products and people travelled” (Matusitz 2009, 453). Passengers and goods were now able to be transported at a reduced cost and would reach their destination faster (Matusitz 2009, 453). However, it would not take long until a new mode of transportation would be introduced.

The electric locomotive was the next railcar that would become standardized. Britain would be the first country to see success in the integration of this type of rail car. The United States would begin integrating electric motor railways in 1895 (Gordon 1976, 137). Electric locomotives have minimal pollution, lower maintenance and reduced energy costs (Gordon 1976, 137). However, infrastructure cost is quite high for electric rail lines due to the requirement of overhead connections, substations, and other transportation technology systems (Gordon 1976, 145). European countries which favour electric locomotives include Switzerland, Belgium, Netherlands, France, Austria, Italy, and many others (Gordon 1976, 149). In addition to this, many mountainous countries favour electric railways due to its ability to be powered by hydro-electricity (Gordon 1976, 148). As a result of
population density and a variety of other factors, it is evident that Europe has utilized the electric rail system more successfully than its North America counterpart. However, America did find a solution to counteract the issues it had with the electric railcar, and that was to create a new hybrid train type which would integrate elements of the electric locomotive as well as the diesel locomotive.

The first diesel locomotives were introduced to America in 1925 and utilized 300 / 600hp engines (Gordon 1976, 138). Following the first diesel trains, research allowed for a more efficient locomotive that used “diesel engines adapted to generate electricity which is then used as the driving force of the locomotive” (Gordon 1976, 138). This new system was referred to as Diesel-Electric and by 1950 accounted for nearly 50% of railway travel in the United States (Gordon 1976, 140). These trains have a variety of advantages over steam locomotives that includes, “rapid acceleration which increase line capacity; less time required for engine upkeep with longer running periods recorded before overhaul is necessary; turntables are rendered obsolete so less room is needed at terminals; less dirt and grime are produced which makes it easier to keep stations clean; and they are generally considered more reliable in operation” (Gordon 1976, 140).

By 1976, diesel-electric accounted for approximately 90% of America’s railway system (Gordon 1976, 148). This form of transportation is still extremely popular in both American and Canada (Gordon 1976, 148).

The integration of diesel and diesel-electric systems in Britain did not occur until the mid 20th century, much later than America (Gordon 1976, 141). There were over 5000 diesel operated locomotives functioning on British tracks by 1965. This new surge of technologies required new types of skilled labourers compared to the steam locomotives of the past (Gordon 1976, 143). As technology progressed in the mid to late 20th century so did our methods of travel. It was during this period that a desire for high-speed locomotives that were geared toward user comfort became popularized.
High-speed Rail is currently the most appealing form of transportation to the modern user. This is primarily due to the reduction of travel time due to its increased speed and urban planning (Thorne 2001, 26). Studies have shown that “if we include travel to and from stations at either end, the train is quicker than the plane or the car; it is also statistically more reliable, more energy-efficient, more comfortable, and in some respects safer” (Thorne 2001, 27). There is only one high-speed rail service currently offered in North America which is the Acela Express built in 2000 (Thorne 2001, 29). It currently serves a densely populated region in America that is located between Boston and Washington D.C. (Thorne 2001, 29). The first country to introduce high-speed rail travel was Japan due to their high population density (Thorne 2001, 30). Europe has also integrated high-speed rail into many of their countries. This includes France, Germany, Spain, Britain, Belgium, and others (Thorne 2001, 34). Many of the interior spaces of these high-speed rails are fitted with the latest technologies and have a keen attention to detail concerning the spatial implications of the user. However, spatial quality of train interiors has undergone a variety of different changes before it was able to reach the level of sophistication and comfort that is found in today’s high-speed rail vehicles.

Using research outlined in this section, concepts of socialization and communal identity in early 19th-century train travel is integrated into the Travelling New Media Centre. This is accomplished by creating environments which are open, and avoid heavy compartmentalization. This allows for individuals from the same community to engage with each other on the Travelling New Media Centre. Research that outlines the role of train travel in the urban context will also play a significant role in site selection. Primary sites that are selected must be efficiently reached by train and have pre-existing rail infrastructure. Furthermore, design concepts are directly influenced by understanding the role of train travel in relation to demographics and human geography. Analyzing which user groups primarily engage with The Travelling New Media centre is
crucial for generating design methodologies. For the selected site criteria, Aboriginal communities will be the primary user. Hence, understanding how Manitoban Aboriginal communities engage with train travel will be necessary for creating a comfortable and inviting environment. Analyzing different types of passenger trains will influence design concepts for The Travelling New Media Centre. As outlined, train design has changed drastically over the years. Past designs were geared toward socialization and public spaces. To contrast, contemporary train design places an emphasis on individual comfort and privacy. The Travelling New Media Centre will integrate concepts of both train typologies by creating a social space that meets that has the technology and comfort seen in modern high-speed rail cars.
Train Interiors and Organization of Space

Early train interiors were created primarily for the purpose of transferring goods instead of guests (Gordon 1976, 174). In rare occasions, an extra railcar would be added to the train to carry important passengers, but the interior was usually "a cleaned-up coal wagon, fitted with a few wooden boards for seats" (Gordon 1976, 174). According to Gordon (1976), George Stephenson was first to introduce the concept of an interior space designed specifically for railway passenger use (Gordon 1976, 174). Stephenson was highly involved in British rail culture and was seen as a key figure in the creation of the Liverpool and Manchester rail line. This line was completed in the 1830’s and is known to be the first rail system in the world to have private passenger carriages (Gordon 1976, 175). The interiors and exteriors of each railcar would vary based on the class in which the guests were seated. However, none of the train cars during this period had any form of interior heating or lighting elements (Gordon 1976, 176). If lighting was required it was accomplished by using oil lamps hung from the ceiling of the train car (Gordon 1976, 176). However, these amenities were typically exclusive to those in first class or of privilege.

The segmenting of guest classes and ticket types on the rail system introduced aspects of classism and social division in relation to the train interior. In contemporary times, this concept is still used to differentiate the ticket cost as well as the quality of service and comfort. During the 19th century, many believe that position within the train had a direct correlation with one’s social and economic status (Historical Society of Pennsylvania 2007, 4). North American culture did not embrace the concept of railway classism to such extreme as the European countries. At first, North Americans would travel in mixed groups and would not adhere to the normal European standard of varying classes (Schivelbusch 1986, 76). In addition to this, America decided to use trains devoid of compartmentalization, instead opting for long open spaces (Schivelbusch 1986, 100). The spatial and socio-cultural implications of using long open spaces helped create an environment in which socialization, and equality
between guests on the train is encouraged. This is important as Matusitz discusses how trains were one of the first spaces that introduced this type of human interaction on such a large scale. Matusitz (2009) states, “it has also changed individual social interactions, the nature of public interaction, and the notion of public spaces (Polly 1998)” (456). Adversely, the compartmentalization of space created social divisions and encouraged users not to engage with the overall spatial qualities of the train. The class system encouraged this form of compartmentalization and would become the standard for many European countries. Britain is the early adopter of this class-based system.

The first class of the 1830’s British locomotives offered a spacious and comfortable interior and strong exterior protection. In total, the first-class railcars would be able to seat approximately 18 guests (Gordon 1976, 175). To contrast, second class railcars had exterior siding which remained opened and could cause difficulties during poor weather (Gordon 1976, 175). Third class travel was not typical during the 1830’s. However, if a rail company did offer this mode of travel, it usually meant the passengers would ride in an open railcar which was undesirable for a variety of reasons (Gordon 1976, 176). During the 1850’s both second and third class rail vehicles modified their exterior shell to allow for better protection from the poor weather (Gordon 1976, 175).

The interior configuration of the railcar stayed fairly similar up to the 1850’s until designers began to create new concepts in response to issues concerning guest discomfort. Early design prototypes proposed rail cars that consisted of four to five compartments which were soon deemed to be highly uncomfortable due to their compact seating and sleeping configurations (Gordon 1976, 176).

The introduction of railcars that effectively utilized sleeping quarters occurred in the 1870’s in Great Britain (Gordon 1976, 176). Each sleeping quarter would have arm chairs with an accompanying handle. When the handle was pulled the back of the arm chair would move forward creating a bed (Gordon 1976, 179). The railcars also
offered comfortable interior spaces that used a variety of unique materials which included ebony wood, velvet, and patterned carpeting (Gordon 1976, 179). It was soon evident that comfort and interior spatial qualities were becoming a critical factor in rail travel. This was primarily due to the availability of new American railway infrastructure that allowed for increased travel distances.

American carriage design was seen as revolutionary regarding its level of comfort and efficiency (Gordon 1976, 179). George Pullman was at the forefront of this change in design. He proposed the reconfiguration of seats to allow them to be reclined down, as well as suggesting appropriate locations for upper beds (Gordon 1976, 176). Additional accommodations for sleeping were included on American railcars which consisted of screening panels, curtains, and pre-provided mattresses and bedding (Gordon 1976, 180).

During this period, a variety of other train car types were beginning to gain popularity. Besides the sleeping car, other spaces such as parlour cars, smoking lounges, drinking cars, and dining cars, became a necessity for those wanting to travel in comfort (Gordon 1976, 180). Parlour car interiors consisted of pivoting chairs which gave an excessive amount of legroom and comfort (Gordon 1976, 180). Smoking carriages would typically have open sides to allow for ventilation and a central table which encouraged socialization (Gordon 1976, 180). Dining cars also became a necessity as rail travel became more popular. The first dining car interior had a kitchen that was compartmentalized from the actual dining area and was built in 1867 by Western Railways of Canada (Gordon 1976, 181). Following technological and architectural advances, other spaces would eventually be introduced to rail travel. These would include salons, shops, libraries, showers, bathrooms, internet compartments, nursing stations, observations cars, church cars, and much more (Gordon 1976, 182). To allow for increased modularity of their passenger trains, Amtrak would typically use the same architectural frame to allow for substantial economic savings. Interiors would then be modified while considering the pre-existing architectural conditions. Some
modifications like larger doors and other considerations would have to be made if large equipment was required inside the train. (Jackson 1977, 160).

In many cases mock-up interiors were created by popular companies like Pullman, which would test human conditions and anthropometrics in relation to the interior environment (Jackson 1977, 160). On multi-level cars, interior fixtures and elements would be planned accordingly with a dining section on the upper level and cooking and storage occurring on the lower level (Jackson 1977, 160). For Amtrak trains, the designers also considered other accommodations like sleeping quarters and bathrooms located on ground level for accessibility (Jackson 1977, 161). Additional consideration was put into automated HVAC systems which could be controlled by train engineers in case of emergency or malfunction (Jackson 1977, 161). Almost all spaces in the Pullman Amtrak trains were built with modularity in mind allowing for a variety of interior modifications to be possible (Jackson 1977, 162).

Upgrades to passenger car interiors were evident in Canada during the 1940’s and 1950’s (VIA Rail Canada 1986, 91). In an attempt to compete with airplanes and cars, they altered the passenger trains to include air conditioning and “interiors were painted bright colors, windows were enlarged, upholstery was renewed, and more comfortable seats were installed” (VIA Rail Canada 1986, 91). In addition to this, custom hand painted murals, plaques, maps, and more adorned interior facades creating a unique journey for those travelling (VIA Rail Canada 1986, 91). Detailing on a variety of panels and partitions also showed the craftsmanship and care that was put into the Canadian passenger cars (VIA Rail Canada 1986, 92). However, the public’s desire for all these amenities would soon become even more prominent with the creation of international high-speed railcars.
High-speed railcar interiors have a variety of new interesting features which were not evident in the locomotives of the past. For example, the ICE 3 train in Germany has redesigned its interior to accommodate the contemporary business traveller (Wessner 2001, 27). To achieve this, “Internal fittings are attuned to the needs of business travelers: there are public telephones, power sockets for laptops, a mailbox, and a fax machine” (Wessner 2001, 27). Additionally, conference rooms with frosted glazing that are equipped with contemporary audio / visual equipment are also offered by the ICE 3 (Wessner 2001, 27). Furthermore, Interior furnishings include “varied upholstery patterns” (Wessner 2001, 28). This creates a strong contrast that engages the guest. In addition to this, Interior finishes giving hierarchy to “high-quality materials and harmonious color” (Wessner 2001, 28). A variety of these spaces are designed to allow technological add-ons which are suited to function for different countries throughout Europe (Wessner 2001, 28). Other examples of new high-speed railcars discuss the graphic continuity and simplicity of the exterior elements. In addition to this, interior materiality usage such as integrating glass and textiles to make the space appear bigger are also discussed (Wessner 2001, 28). Therefore, it is evident that many different factors must be considered during the design development phase.

Today train design goes through a much different process, as the needs of the passenger drastically differ than that of the 19th century. Claudia Wessner (2001) discusses the new design process which is used in the creation of contemporary train cars:

1) Analysis of start position
   This process consists of a variety of different studies which take into account different lifestyle and cultural factors as well as potential ridership for the particular region. (Wessner 2001, 25).

2) Definition of objectives
   The definition of objectives process involves following all “legal, cultural, and technical requirements” (Wessner 2001, 25).

3) Concept Phase
This is an important phase in the design concept. There is where preliminary sketches, drawings, and ideas are put forward. These will typically include “outlines of working sequences, as well as ideas for the external shape of the vehicle, the layout of interior fittings, and the choice of materials” (Wessner 2001, 25). Additionally, it is during this phase where product research occurs, as well as preliminary layouts for lighting and electrical concepts (Wessner 2001, 26).

4) Feasibility Study
5) Finalization of the design
6) Detailing
7) Documentation of design process
8) Design support for subsequent processes

The contemporary train design process outlined by Wessner is important to the design methodologies of The Travelling New Media Centre. The analysis of starting position is essential in determining site selection and programming. An analysis of cultural factors and ridership directly influences the current site selection. Site selection has been determined based on areas which have minimal access to other forms of transportation and have reduced access to new technologies. Therefore, understanding the current socio-cultural attributes in the selected communities is crucial to creating a safe and comfortable environment. The process outlined in the Concept Phase by Wessner is also utilized for the design concept of the Travelling New Media Centre. This includes analyzing the train car sequence for optimal user circulation. In addition, selection of interior fittings, materiality and lighting is also crucial and is tailored toward an education and exhibition setting. Therefore, high light levels and clarity of information are important factors in the design process. Other relevant topics outlined by Wessner include detailing and documentation of the design process. This is also be implemented into the design process of the Travelling New Media Centre. The documentation of design will be crucial in refining and understanding the details and structural elements of The Travelling New Media Centre. As evident from Wessner’s contemporary railcar design process, there are many factors
involved in making critical design decisions. However, one of the most important factors to bear in the mind during the initial analysis is the travel type.
Travel Types & The Decline of Train Use

The primary types of train travel can be categorized into two distinct categories. The first being regional travel. This travel type typically operates between areas of close proximity. This could include other cities and districts that are easily accessible. This type of travel is quite popular within European and Asian countries that have dense populations. In a contemporary setting, this type of travel is atypical within the North American culture due to our low population density and the vast distances between cities and provinces (Burns 2010, 1). The decline of this type of travel is primarily attributed to the popularity of the automobile. (Burns 2010, 1; Berge 1964, 5). For the purpose of this practicum, I engaged in regional travel on the VIA Rail train. For my journey I departed from Winnipeg to Portage La Prairie on March 1st, 2016. My first impressions of the passenger train was that it was indeed very spacious and allowed for a variety of opportunities for creating a new interior environment. The train was broken into three separate areas, The first area is labelled coach. This is where regular seating was and offered a large amount of space and comfort. In comparison to airplane design, there was much more space for both passengers and baggage. This allowed for good circulation within the space and created a less stressful environment. The next space was the dining car. This car was typically the most active environment and had the most social engagement of all the cars. In this area, employees and guests interacted in a relaxed atmosphere. The current configuration consisted of rectangular tables with a mixture of built-in seating and dining chairs. At this point I was able to met the staff members of the train who were willing to show me the interior environments of the train. On a variety of the interior facades, there was material related directly to the heritage of Canada and the Canadian identity. This included photographs, animal insignia, model trains, and much more. As the staff member ushered me through the space I was able to see the sleeping cars, which had a fold out top bunks and was a good utilization of the compact space. Showers and other amenities were also available to guests who were in this area. More private cabins were lined throughout the trains, many of them varying in size to allow for a
multitude of different travel group sizes. The overall aesthetic of the railcars was warm and comforting and displayed efficiency of space planning and use. However, it should be noted that employees had stated that new renovations on some trains were not as efficient. Issues concerning function and over-compartmentalization were discussed. It was determined that some of these renovations seem to be inspired by commercial airplane design.

Overall, the experience was very enlightening and allowed for a better understanding of the culture of Canadian trains as well as the form and function of their interior spaces. This field study has a direct impact on design concepts for The Travelling New Media Centre. Firstly, photographs were made of all train cars and interior typologies. This allows for critical analysis of current details and structural elements in the existing VIA rail passenger trains. This allows for a greater understanding of connection methods, materiality, and restrictions when engaging with this type of interior space. At the time, the train was sold out for all cabin spaces, so it is evident that there is still a demand for this type of travel in certain locations throughout Canada.

The second type of train travel is inter-city travel. These trains travel further distances compared to the regional trains outlined prior. In addition to this, inter-city trains typically offer an increase in the amount of space and comfort for the users. This type of travel is ideal for users who are required to travel a long distance and want a more affordable and comfortable option than air travel.

The most notable inter-city train in Canada would be that operated by VIA Rail Canada. However, due to a variety of reasons, inter-city train travel patronage would soon diminish. This was evident at the start of the 20th century, as there was a substantial decline in passenger train use in North America.

A large decline in passenger service began after 1910 when automobiles and highways were starting to become common (Thompson 1988, 219; Phillips 2001, 44). The main reasons behind this shift in transportation usage were the increased convenience, accessibility, and scheduling that
personal automobiles provided (Burns 2010, 1). In addition to this, they were the latest form of transportation and most of North America was enamoured with the concept of personal luxury. Furthermore, the introduction of road networks between different cities and states caused further trouble for the already struggling rail travel industry (Thompson 1988, 221). An additional strain was put on the railway industry in the 20th century with the advent of airline travel (Pinkerton 2003, 7; Burns 2010, 1). People were able to travel longer distances in shorter time periods. This was beneficial to many business travellers who were finding train travel “too costly in terms of time to take long-distances trip by train” (Pinkerton 2003, 7). While the level of comfort is unquestionably diminished from railway travel, airplane interiors still allow for the storage of luggage and other personal belongings. The price of air travel began to decrease throughout the 20th and 21st century, and more interior amenities were introduced to increase user comfort. The effects were quite drastic on railway travel. However, other external factors also played a role in the decline of passenger train use.

The Transportation Act of 1920 in America increased fares for passengers and started new regulations which drastically affected passenger travel (Thompson 1988, 221). Additional restrictions were put in place during the 1950’s and 1960’s which regulated aspects that concerned fare, services provided, and routes that trains would take. These restrictions made it difficult for the railroad industry to compete with other burgeoning modes of transportation (Pinkerton 2003, 7).

Eventually, there became a demand in America for high-speed trains that connected large cities which were close in proximity (Thompson 1988, 225). However, this type of situation is not common in the United States simply due to the size of the country and the population density. Although, they were able to accommodate this in certain situations like the Acela. In general, this method of rail travel has not been integrated into the United States rail system. By the 1960s, most of the rail lines operating in the North Eastern region of the United States had declared bankruptcy or were financially struggling (Pinkerton...
2003, 7). In addition to this, Canada has also had issues in relation to passenger train services. Canadian rail services have seen a steep decline in the last couple of decades. Jean Dupuis (2011) states that VIA Rail Canada is currently “Under continuous pressure from road transportation on short-haul routes, from air carriers at the long-distance end of the market, the Canadian passenger rail industry progressively lost market share and saw its traffic volume and profitability decline. As a result, the industry underwent successive phases of consolidation and downsizing” (6). Furthermore, research by Dupuis (2011) shows that “Between 1989 and 1990, VIA lost over 45% of its ridership traffic as it abandoned unprofitable corridors and branch lines, focusing instead on corridors with better potential for growth in terms of both ridership volumes and revenue-generating capacity. Since then ridership has stabilized at around 3.5 million to 4.0 million passengers per year, and traffic levels slowly increased throughout the 1990s and 2000s” (6)
Future of Railway Travel

The future of passenger train use in Canada is facing difficulties. A 2011 study showed that most funding is currently being used to repair and refurbish existing infrastructure rather than upgrading passenger service (Dupuis 2011, 9). While usage is still prevalent in many provinces, VIA Rail will not make commercial profits solely based on commuter train service (Dupuis 2011, 9; Woelcke, Personal Communication January 28, 2016). In addition to this, priority is given to other rail companies which do not provide passenger service, making it difficult for VIA Rail to expand its passenger services past its current state (Dupuis 2011, 10). Discussions of Canada adopting high-speed rail have been met with opposition due to economic requirements and the large amount of new infrastructure that would be required to implement the system (Dupuis 2011, 11).

Don Philips discusses the outlook for American rail travel in the future and discusses research from the Federal Transportation Advisory Group that believes transportation demand will increase drastically over the next two decades (Philips 2001, 51). Philips (2001) believes that trains can play a significant role due to this increased demand (51). Intermodal systems which integrate other transportation methods such as airplanes, sea vessels and other forms of transportation is also suggested for the successful future of the passenger train (Philips 2001, 52). Many others are not so optimistic towards the future of rail travel in the United States. This includes a variety of issues such as the cost of new infrastructure, the cost of repair and maintenance, service during bad weather, and other extraneous factors (Philips 2001, 53). The consensus from research conducted by Philips is that long distance travel using passenger trains will decline substantially in use over time (Philips 2001, 54). However, Philips (2001) believes the short distance passenger train will increase in use as new technologies become cheaper, and other modes of transportation become too expensive or crowded (54).

Research conducted by Wood (2012) discusses how high-speed rail has been working well in other countries. The main leaders of this industry being China, Japan and Europe (1). A variety of opportunities is seen from high-speed rail which...
includes reduced travel time, competitive speeds with air travel in some locations, reduction of dangerous pollutions, and a variety of other benefits (Wood 2012, 2). Additionally, the design of many high-speed trains integrates a range of new and innovative technologies which increase user comfort and passenger safety (Wood 2012, 3). However, most of these innovations are restricted to the countries previously stated.

As we move further into the 21st century, the role of the train will undoubtedly change as we progress throughout each decade. It is evident that trains provide a different service for many countries around the world. However, the history and identity of the train will always remain embedded within the concepts of culture, socialization, and modernization. In the context of Manitoba, the train still plays a crucial role to many communities. These communities would be difficult to reach if train service was not provided to them. For many communities the train is their primary form of public transportation and will continue to be for the foreseeable future. Therefore, the train will always remain an important part of Canada’s heritage and would serve as a strong footprint for the design of The Travelling New Media Centre.
### Historical Analysis

<table>
<thead>
<tr>
<th>Train History</th>
<th>Critical Developments</th>
<th>Spatial Manifestations</th>
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</table>
| 19th Century  | - Industrial Revolution  
                - Introduction of passenger trains to the general public | - Utilitarian  
                - Public spaces for socialization  
                - Compartmentalization  
                - Function over form |
| 20th Century  | - Economic development  
                - Labour development  
                - Train technology development  
                - User travel begins to be replaced by cars.  
                - Symbol of Modernity  
                - Connection to national identities  
                - Creation of cultural connections related to train travel | - User comfort  
                - Modularity  
                - Introduction of contemporary organic forms and curvilinear design language  
                - Importance placed on safety  
                - New typologies of car are introduced based on user needs |
| 21st Century  | - Cargo and logistics  
                - Automation reduces need for human employees  
                - Reduced passenger travel for North American countries  
                - Technological advancements | - Slick  
                - Comfortable  
                - New technologies  
                - Spaces require retrofitting to accommodate new passenger needs  
                - Universal design & accessibility |

### Future Predictions

<table>
<thead>
<tr>
<th>Summary</th>
<th>Predicted Contribution to Societal Development</th>
<th>Spatial Implications</th>
</tr>
</thead>
</table>
| Future of Railway Travel | - Additional automation and connection to technology  
                           - Reupurposing and reimagining of the interior spaces  
                           - Decline in travel in geographic regions which are not dense  
                           - Reduction in emissions and pollution | - More privacy  
                           - High-tech spaces  
                           - New spatial typologies  
                           - Increased user comfort |

Table 1: Historical Analysis of Critical Developments, Spatial Manifestations, and Future predictions
## Synthesis of Literature Review

<table>
<thead>
<tr>
<th>Author</th>
<th>Concepts</th>
<th>Spatial Implications</th>
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| Gordon          | - Discusses George Stephenson’s role in the advent of steam locomotives.  
- Discusses the early integration of interior environment in passenger train cars.  
- Outlines the multitude of changes that occurred in passenger train types.  
- Outlines the history of passenger train interiors.  
- Describes the class system used by passenger train cars, this includes differences in interior elements  
- Describes 19th century lighting in train interiors  
- Differentiates interior elements of varying train car classes  
- Discusses sleeping configurations as well spatial qualities of interior environments.  
- Outlines the varying types of cars which became popular.                                                                                                                                                                                                                               | - Avoid class system within interior elements. Do not create different train car interior elements based on price or train car location.  
- Offer a multitude of spaces to increase user engagement. This includes different exhibits and educational trains.                                                                                                                                                                                                                       |
| VIA Rail Canada | - Discusses importance of the Intercolonial line and the effect it had on Canadian politics.  
- Outlines the creation of the transcontinental railway and later the Canadian National Railway.  
- Discusses economic issues with passenger rail service in Canada.  
- Outlines reasons for the decline of passenger train service in Canada.  
- Outlines 1940’s and 1950’s interior renovations including changes to colour and materiality.  
- Discusses the use of craftsmanship and detailing to create an engaging environment.                                                                                                                                                                                                                                             | - Use colour and materiality to represent the goals of the Travelling New Media Centre. This includes contemporary materials and vibrant energetic colours.  
- Attention to detail and craftsmanship is crucial to the Travelling New Media Centre. Ensuring all elements work harmoniously and function properly in the space is portrayed via a multitude of detail drawings and elevations.                                                                                                                                                          |
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<thead>
<tr>
<th>Author</th>
<th>Concepts</th>
<th>Spatial Implications</th>
</tr>
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</table>
| Matusitz | Discusses how the U.S. saw a variety of benefits in the communication, technology and transportation sectors  
- Discusses increase of cross-border trading  
- Railway as a symbol of modernism and new technology  
- Discusses the advent of standardized time due to the rail system  
- Train played a significant role in human geography  
- Discusses the notion of public spaces, socialization, and human interaction on the train. | Design implications must take into account the concept of socialization. Roundtables and large open spaces are integrated to encourage guest interaction.  
- Human geography plays a crucial role in The Travelling New Media Centre. Availability of rail services and accessibility to other forms of transportation is essential in site selection. |
| Schivelbusch | Rail systems stimulated a variety of labour forces  
- Discusses the advent of standardized time due to the rail system  
- Outlines the positive effect railways had on Tourism for major European cities.  
- Discusses how America, at first, did not use the class system of train travel like Europe.  
- Discusses how many American designed cars avoided compartmentalization and preferred long open spaces. | Utilize design techniques seen in the American train cars. This includes long open spaces and minimal compartmentalization.  
- Timing and scheduling will be crucial in the logistics of The Travelling New Media Centre. |
| Jackson  | Discusses required modifications, such as larger doors for certain train cars.  
- Outlines the concept of creating "mock-up" interiors to test human conditions.  
- Discusses how spatial adjacency plays a crucial role in train design.  
- Outlines control procedures for mechanical systems on the passenger train.  
- Discusses how designers consider modularity when creating passenger train cars. | Ensure structural elements of the train can accommodate artwork.  
- Ensure door and opening sizings apply to intended function  
- Ensure proper circulation and user engagement through spatial adjacency. Critical consideration of exhibit placement will be required to ensure user comprehension.  
- Design process should consider modularity when creating interior elements in the Travelling New Media Centre. |
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Wessner</td>
<td>- Outlines current trends in high-speed railcar design.</td>
<td>- Inclusion of audio/video equipment will be critical to the success of The Travelling</td>
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<td></td>
<td>- Discusses the creation of new train types that are geared toward a</td>
<td>New Media Centre.</td>
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<td>business demographic. This includes conference rooms with audio/visual</td>
<td>- Consideration toward video equipment placement regarding both function and aesthetic</td>
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<td>equipment.</td>
<td>will be an important consideration.</td>
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<td>- Outlines design elements which are incorporated to increase user comfort.</td>
<td>- Sound attenuation, as well as noise control, will be critical to ensure the comfort</td>
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<td>- Discusses how modularity for the train is important and how the</td>
<td>of guests.</td>
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<td>integration of new technologies must be expected.</td>
<td>- Careful selection of materiality will help enrich the interior environment of</td>
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<td>- Outlines using glass and textiles to make spaces appear larger to the</td>
<td>The Travelling New Media Centre. This will include using glass, metal, and</td>
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<td>guests.</td>
<td>contemporary textiles.</td>
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<td>- Describes a 8 step system which assists in the design of contemporary</td>
<td>- Wessner’s 8 step system is applied to the design process. This system will assist in</td>
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<td>train cars</td>
<td>creating succinct documentation for The Travelling</td>
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Table 2: Train History - Synthesis of Literature Review
Visual Literacy
**Definition and Scope of Term**

Visual Literacy - Literary Review

The field of visual literacy has had many definitions since its first inception. Some vary in their scope, ranging from “very narrow to very broad explanations, and from practical to theoretical perspectives” (Pettersson 2012, 2). However, for the purpose of this literary review in relation to The Traveling New Media Centre, visual literacy will be viewed as a process which involves the following requirements:

1) A visual is seen by a viewer.
2) It is interpreted and understood.
3) The viewer becomes the creator by creating visuals that can also be interpreted and understood (Walters 2013, 3).

Ron Bleed also goes on to describe a more advanced three point definition of visual literacy that follows the same concepts as outlined by Walters but with additional clarity.

“One definition is the ability to understand and produce visual messages. A second definition is a group of competencies that an individual can develop by seeing and at the same time having and integrating other sensory experiences. A third definition is the ability to interpret messages as well as generate images for communicating ideas and concepts” (Bleed 2005, 5).
Framework for Visual Literacy

Visual literacy has been researched for many decades now, with a variety of influential theorists and educators who have addressed and analyzed the subject matter. The first use of the term was by John Debes who worked with Eastman Kodak during the late 1960’s (Felten 2008, 60; Pettersson 2012, 2; Avgerinou 2003, 1). During this period, Debes and a variety of academics held the first conference that addressed the subject matter of visual literacy (Felten 2008, 60). Since then, a variety of definitions have been created by theorists and educators which have caused confusion in many academic fields. For the purpose of this literature review, the prior sub-section (1.1) has been created to outline the core definition that will be used as a framework for the purpose of The Travelling New Media Centre.

Contemporary literature and academic journals are slowly beginning to utilize this term more often as the concept of visual literacy and technology influence our everyday lives more. Marc Prensky (2001a) outlines this recent surge of technology engagement as a “singularity” or as he describes it “an event which changes things so fundamentally that there is absolutely no going back. This so-called ‘singularity’ is the arrival and rapid dissemination of digital technology in the last decades of the 20th century” (1). Felten also sees this direct correlation between technology and visual literacy as he states “The connection between visual literacy and emerging technologies persists” (Felten 2008, 61). An example of this relationship is evident in the non-profit association EDUCASE, which encourages the use and education of technology and technology information. They have placed a strong emphasis on having visual literacy as a key component of their mandate, due to its implicit connection with new technologies and the education sector (Felten 2008, 61). Many other contemporary educators and theorists have also discussed the importance of technology in relation to current skill-sets and visual literacy, two of the most notable being Avgerinou & Pettersson.
Avgerinou & Pettersson's Theoretical Discourse

Avgerinou and Pettersson are well-known scholars in the field of visual literacy and have produced a variety of academic resources outlining the theoretical framework and core concepts of visual literacy. A key concept outlined by Avgerinou and Pettersson (2012) breaks visual literacy down into five unique categories: “visual language, visual thinking, visual learning, visual communication, and visual perception” (5). Pettersson states that this type of framework can be utilized for the research of different fields related to visual literacy (Pettersson 2012, 3). These categories can be utilized to better understand the spatial implications of the environment that is being created for the Travelling New Media Centre. Concepts such as visual learning, and visual perception are closely related to the spatial environment in which the user resides. Analyzing and understanding the role of visual learning and visual perception and its relationship to the technology and users will allow for the creation of an effective space that communicates the ideologies of The Travelling New Media Centre. Additional research conducted by Avgerinou and Pettersson describes three broad components of their theoretical framework for visual literacy. These are visual literacy abilities, visual literacy competencies, and visual literacy skills (Avgerinou 2011, 9-10; Pettersson 2012, 4). The term visual literacy abilities are summarized as the ability “(a) to read/decode/interpret visual statements, (b) to write/encode/create visual statements, and (c) to think visually.” (Avgerinou 2011, 10; Pettersson 2012, 4). Visual literacy competencies refer to “reading, planning and creating visuals, and combining visuals and verbals for intentional communication” (Avgerinou 2011, 9). Finally, the term Visual Literacy Skills refers to skills that “range from the ability to distinguish light from dark to the ability to read and express a sequence of body language arranged to express a personal emotion” (Avgerinou 2011, 9).

The concept of visual abilities are integrated into the selection of artwork for The Travelling New Media Centre. The artwork consists of touch screen exhibits that require the user to create unique visuals based on a hybrid of text and graphic media. Additional digital artwork will allow users to create visuals on a provided computer
interface. This will require the guests to think visually and make critical visual statements.

Avegerinou & Pettersson’s concept of visual literacy competencies is also integrated into the artwork for The Travelling New Media Centre. This includes an interactive computer exhibition that allows guests to manipulate and combine visuals on a wall-mounted touch screen surface. Additionally, the concept of visual literacy skills is integrated into the interior environment with motion tracking technology. Interactive artwork will track the motion of users in the space using computer sensors. The sensors will generate a multitude of images, and video sequences that the guests can manipulate, edit, and view in real-time. Therefore, it is important that The Travelling New Media Centre integrate the theoretical concept outlined by Avegerinou & Pettersson into the visual technology and artwork selection.
Importance of Visual Literacy

Contemporary society relies heavily on the concept of visuals and technology-based visual interaction. These new technologies and how users interpret and interact with them are somewhat neglected from an educational standpoint. Recently there has been increased attention to visual literacy within contemporary educational settings (Sosa 2009, 55). However, there still lacks an overall experience which is engaging, effective, and helps enhances the students/users abilities (Sosa 2009, 55).

To begin, one must understand the importance we place on visual interaction and visual imagery. Harris (2006), has stated that “The reality of the contemporary information economy is that images are in higher circulation and higher demand than words and print” (213). Within the past decade, there has been a surge of visual media which has interjected itself within the popular visual culture. These new forms of media have a universal appeal and have changed how we interact with environments. Society no longer engages with static text/imagery. Today the media we consume is constantly in motion and interacting with us on multiple sensorial levels. Moving images and interactive environments are becoming more normalized, and the role of visual media and visual literacy is becoming more important each day. To give an idea of how much visual imagery affects our lives, it has been researched by Harris (2006) that the average student will “come in contact with millions of images during the course of their life” (214). Contact of these images is not restricted to certain environments either. Both the exterior and interior spaces of contemporary society have been invaded by new forms of visual media.

Due to the low cost and increased availability of technology in recent years, people are beginning to create new forms of visual media & art that utilize newly available technologies in our pre-existing environments. An example of this being “New, visually rich journalistic forms such as digital photography, audio and video podcasts, and e-documentaries allow novices along with professionals to be content creators without the overhead of major and costly production infrastructure” (Metros 2006, 80). These new forms of technology allow the most basic user to
do a variety of different modifications that decades ago would have been considered expensive, labour intensive tasks that required large amounts of physical space. Additionally, these new forms of technology allow the users to have a variety of control over contemporary new media which benefits individuals by offering them new skill-sets and abilities. Sims (2002) asserts that “Images can be manipulated to change the dimensions, perspectives, colour, contrast, shading, etc. to suit the user” (2). Sims (2002) goes on to suggest that “It could therefore be argued that manipulating these elements is parallel to manipulating words in order to compose a desired message, and that the competencies required for composing and interpreting messages using images efficiently and effectively, that is, where they add value to meaning or provide additional cues, are vital to effective visual communication and are the basis of visual literacy” (2). In this project, creating interactive spaces which utilize the concepts of visual literacy will be crucial, for example, a space which encourages composition and manipulation of new media works will be critical for users to get the desired benefits. This area will require an open space with a variety of workspaces that encourage users to engage with different forms of technology. Circulation which allows staff to engage with guests as well as allowing guests to interact with each other will provide a social environment that is beneficial to everyone experiencing The Traveling New Media Centre. Educational spaces which encourage new media interpretation will require different spatial attributes. These spaces come together in a learning environment that is both interactive and informative and requiring the use of projection screens and a variety of new technologies which could include computer hardware (Ex. 3D printers, Image scanning devices, etc.), computer software (Ex. Image manipulation software, video mapping software, etc), and other items from the technology sector. Consideration toward user visibility within the space will be of the utmost importance to ensure comprehension and engagement from the guests. Real life examples of how technology
informs our daily lives will be outlined helping guests become aware of their personal relationship and how their identity relates directly to contemporary technology.

Many people do not realize how new forms of technology and new media relate to their daily lives, or how analyzing, and understanding those images can help them. Research conducted by Stankiewicz (2003), discusses what achieving visual literacy means to society and how we must work, "toward functional visual literacies that will help them shape and understand the visual cultures in which they live" (322). Presnky reiterates this notion by discussing research conducted by Patricia Marks Greenfield that outlines how various forms of new media and multimedia technologies influence the end user:

"thinking skills enhanced by repeated exposure to computer games and other digital media include reading visual images as representations of three-dimensional space (representational competence), multidimensional visual-spatial skills, mental maps, "mental paper folding" (i.e. picturing the results of various origami-like folds in your mind without actually doing them), “inductive discovery” (i.e. making observations, formulating hypotheses and figuring out the rules governing the behavior of a dynamic representation), “attentional deployment” (such as monitoring multiple locations simultaneously), and responding faster to expected and unexpected stimuli. (Prensky 2001b, 4)

Stankiewicz’s and Greenfield’s research clearly depicts that indeed multimedia technologies play a significant role in the field of visual literacy. The Travelling New Media Centre is designed to have environments that encourage the use of multidimensional visual-spatial skills. An example of this is seen in the phenomological sequencing of the train. One installation within this sequence will remain stationary and inactive until it senses human presence. At this point the installation will light up only in areas which human presence is noticed. This will create a dynamic response to the users and require them to understand how media responds to human interaction and three-dimensional space. These type of exhibits also allow for inductive discovery as guests will have to make
personal observations and determine how they wish to interact with the installation. This will also encourage critical thinking regarding technology and new media. Decades ago the integration of such technologies into a space would have been incredibly difficult and expensive. However, technology has changed drastically over the past few decades and can now be easily integrated into even the most compact spaces. These new technologies have made countless possibilities available to environments and are ubiquitous and independent of context. This allows for endless possibilities and inspirations in relation to the design of interior elements for The Travelling New Media Centre. It is evident that the 21st century has introduced a variety of new opportunities in the fields of technology, visual literacy, and new media.

Some of the most notable advances in technology in the 21st century have been increased availability, cheaper pricing, and the introduction of freely distributed information on the internet within the past decade (Christopherson 1997, 2). Spalter and van Dam (2008) also discuss how these low-cost, functional technologies are slowly being integrated into the educational realm (1). Another example of using low-cost technologies is derived from a recent Interior Design graduate course I was involved in with my peers. This project used a variety of new technologies to create an interactive art installation that utilized supercomputers, motion sensors and functioning motors (Shields 2015). The cost to create this interior installation would have been astronomical had it been done ten years prior. In addition to this, most of the information on the creation of these components were available freely online, allowing us to enhance our skill-sets and abilities by doing research online. The result was the creation of a unique interactive and visual form. These education and research components were crucial in allowing us to have a greater understanding of how technology functions and how we can utilize it in different spatial environments to achieve a variety of unique results. I would argue using education techniques similar to this, which involve educating, creating, and making would be useful to almost any user...
group of any age. Spaces must encourage interactivity from users of all ages groups and skill levels. Creating areas which utilize basic technologies as an introduction would be a beneficial space to create a fun and educational environment. Spaces with more advanced technologies and creation processes will require spaces with open circulation that allows other guests and staff to view and interact. This will encourage socialization and learning between guests and will create a social dynamic within the space. Social activity is a key component of The Travelling New Media Centre. Therefore, being able to share experiences with others has a variety of advantages. Patricia Search describes how,

"In public settings viewers often interact with others through dialog or observation to learn how to use interactive technology. The interaction defines a mediated discourse based on social and cultural traditions that adds layers of socio-cultural meaning to the interpretation of audiovisual designs. Viewers define the meaning of the interactive experience through dialog and interaction with each other rather than relying on their individual perspectives" (Search 2009, 4).

Therefore, a space which allows for multiple users to interact simultaneously would be advantageous from a socio-culture and interactivity standpoint. The creation of socialization spaces outside of interactive spaces could also benefit from the advantages outlined by Patricia Search. Additional advantages from this would be evident in the sharing of skill-sets between guests as they socialize and discuss the technology.

A goal of The Travelling New Media Centre is to give guests the fundamentals of creating and understanding new media works and to increase their technology based skill sets. Sims (2002) outlines how proper planning can assist in creating an overall goal when integrating visual literacy into an educational setting, “in analysing the competencies and desired outcomes a picture of what needs to be taught and learned begins to form and a visual literacy curriculum to emerge. The overall aim of teaching visual literacy should be to acquaint learners with
the principles of visual communication, which can then be put into practice in a variety of settings and subject areas” (3). Therefore, consideration of pre-existing guests skill levels will help develop a unique program of exhibits and artworks for The Traveling New Media Centre. Analyzing the intended users and the communities technological skill level will determine the type of exhibits that will be effective. Exhibits which require advanced technology skill-sets and pre-existing knowledge is not included in the artwork selection. Artwork which is universally accessible to guests of all ages and skill levels is the primary focus of The Travelling New Media Centre’s exhibits. In addition to this, consideration is given to the type of new media which users are creating and manipulating. The scale of these objects and their relationship to human anthropometrics is crucial in determining spatial attributes concerning educational and exhibition components of The Travelling New Media Centre. Additional consideration is made for modularity of the space and how the space will be able to adapt to different situations and different educational processes. Due to the fact a variety of different technology exhibitions will be integrated, a critical analysis of how each space responds to the adjacent areas will be needed to ensure users are engaged and comprehending the activities in a logical sequence throughout the space. Creating a space which offers these types of resources will have a variety of benefits to both individuals and communities.

There is a clear need for these type of spaces as Susan Metros and Kristina Woolsey (2006) have stated that many people “have difficulty locating the professional resources and support services required to produce high-quality visuals” (80). Many contemporary spaces have not adapted to this new method of learning and are still using educational methods of the past due to their familiarity (Metros 2006, 81; Prensky 2001a, 4). This type of educational process does not encourage the enhancement of technology based skill-sets and does not address the critical need for having people become more visually literate in our increasingly visual world. The Travelling New Media
Centre is a space which directly addresses this need. Additionally, the Traveling New Media Centre is able to travel to a multitude of communities to encourage this form of technology education. If the Traveling New Media Centre was a stationary education centre it would not have the same impact on Northern Manitoban Communities. This is because many communities do not have access to the transportation or resources to travel long distances. Therefore, by using the VIA Rail railroads, the Travelling New Media Centre is able to bring education and exhibition spaces to its target demographic.

Creating educational spaces that show guests how technology relates directly to their daily lives, and how they can engage with the technology on a basic level will be essential to the success of The Travelling New Media Centre. The phenomological spaces in the train will allow guests to become familiar with and interact with common technologies on a basic level. Adjacent trains will capitalize on this concept by allowing the user to become the creator using those same technologies. This will allow guests to understand the capabilities of contemporary technologies and forge a deeper connection with individual guests. Additional installations will also address historical aspects of technology so that the guests will understand how we have come to such a visually and technologically driven society today. These spaces will be more object oriented but will still encourage interactivity by utilizing interactive technologies of the past.

Stankiewicz also agrees that we must place a greater emphasis on the education of new multimedia technologies as they closely relate to the experiences of our daily lives. Many people acknowledge that these technologies exist, but do not critically examine the role they play within the cultural and social framework of our daily lives (Stankiewicz 2003, 8). Ron Bleed also agrees that visual literacy needs to be better implemented into our current education system. He discusses three points that address the present need for visual literacy education. They are as follows:

“The first is the changing nature of the younger generation. The second is the tipping point -- the dramatic moment when something unique becomes
common -- in the adoption of technology that supports the 21-century skill-sets. Third, human reaction to the proliferation of technology creates a high-touch reaction that reintroduces the desire to create artistic work, tell stories, and combine human interactions.” (Bleed 2005, 3)

Clearly these concepts of technology and visual literacy play an important role within the framework of our individual lives as well as contemporary society as a whole. However, other scholars within the field have discussed their concerns regarding the recent integration of visual literacy techniques into educational settings.
Contemporary Issues

Aguirree (2004) believes that the education system should be encouraging the “rejection of an art education based merely on production, on instrumental skills or talents, in favour of analysis and interpretation.” (257). Hence, The Travelling New Media Centre is not just a production and creation environment. To create an environment which favours analysis and interpretation, The Travelling New Media Centre encourages guests to critically analyze the work they have been engaging in. All environments will be geared toward the an education typology with a scientific objective and will encourage learning and socialization. These will be well-lit open spaces, with a mixture of seating, exhibition millwork, and wall mounted digital displays.

The Travelling New Media Centre will place emphasis on educational components as well as individual guest skill-set development. To encourage this, all instructors and educators within The Travelling New Media Centre will be trained in the latest technologies and will have an understanding of decoding artworks. Within the context of the public education system, many educators stray away from using these new forms of technology because they are not accustomed to its interface and intricacies. Prensky (2001a) reiterates this notion by stating that educators “who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language.” (2). Prensky (2005), reiterates this notion by outlining how students are becoming frustrated with current teaching methodologies:

“The fact is that even if you are the most engaging old-style teacher in the world, you are not going to capture most of our students’ attention the old way. “Their short attention spans,” as one professor put it, “are [only] for the old ways of learning.” They certainly don’t have the short attention spans for their games, movies, music, or Internet surfing. More and more, they just don’t tolerate the old ways -- and they are enraged we are not doing better by them.” (64)

Furthermore, a variety of the new opportunities available from recent technologies are not utilized from an educational standpoint. Prensky (2001b) states “the many skills that new technologies
have actually enhanced (e.g., parallel processing, graphics awareness, and random access) -- which have profound implications for their learning -- are almost totally ignored by educators” (5). Software is now capable of being graphically aware of the spaces around it. Hence, a technology that does full 3-D scanning of environments will be available in The Travelling New Media Centre. These environments will allow guests to 3-D scan environments and manipulate the data in real time through the use of basic computers and digital screens.

While some users may be accustomed to these new technologies, most do not critically analyze what they create or see when using these technologies. Delacruz (2009) discusses this concept describing how today’s youth use technology to engage in the creation of visual media in new and exciting ways, but they rarely ever consider the endless possibilities of what can be accomplished with this stream of new technologies (1). Creating a space which educates and exhibits the process of creation can help users become visually literate and engaged with the technology of their daily lives. Spaces that are custom designed to portray application creation and hardware construction can give a hands on look at the skill sets and processes involved in new media and technology multimedia creation. These spaces will have audio / visual engagement and will create an exciting learning environment. Debriefing spaces could allow for critical analysis of content the guests have created. Spaces of this nature could enrich socialization and encourage further creation and manipulation of the guests new media works. Previous examples from other educators and researchers have shown that integrating techniques involved with visual literacy into educational settings can have profound effects on user comprehension and individual skill-sets.
Precedent of Visual Literacy Benefits in Education Settings

Research conducted by Herne (2005) is a strong example of the effectiveness of technology and visual literacy in an educational based setting. Derived from Herne’s abstract, the concept of his research was “Based on the production of a postcard featuring an image of personal significance, the children were involved in exploring and constructing their own and others’ identities whilst developing their technology skills in creative ways” (1). The result of Herne’s research determined that

“Reflecting on the process and educational outcomes of the project, it is clear that throughout the children established a relationship with contemporary photographic practice within a fine art context. They developed visual and media literacy and understood that their art production could draw on their own lived experience and explore ideas and feelings of personal significance. They constructed the meanings of their postcards through a combination of image and text, drawing on the shared popular culture conventions of the postcard. They constructed their identities through their visual and textual communications and were able to explore and present their home cultures and lived experience in the social context of their peers, teachers, friends and family “ (Herne 2005,14)

Beyond the scope of Herne’s work, many examples of the success of visual literacy in relation to interactive technology are directly related to the video game industry. For decades, the education sector has attempted to be involved with the interactive video game industry. This is because video games inherently encourage inductive learning and discovery (Greenfield 1984, 111). A successful example of this integration is the Lightspan project undertaken by multimedia company Sony. The Lightspan Achieve Now Project is an interactive video game technology created by Sony for the American education system. The program consisted of CDROM video games that teachers would issue to their students with instructions on how to use the interactive media (Strusinski 2010, iv). The students would then use the technology at home on their Sony Playstation video game consoles (Strusinski 2010, iv). According to studies by Strusinski (2010), the goal was to increase students knowledge as well as their technology and motor skills (iv). Later studies
proved that Lightspan was indeed successful. “A composite analysis of studies shows that, on average, 24 percent more students using Lightspan Achieve Now were successful in reading, and 46 percent more students using the program were successful in mathematics than their peers who did not use the Lightspan Achieve Now curriculum, as measured by performance on standardized tests” (Business Wire 2000, 1). However, it is not only the education sector which uses visual literacy and interactive technology to encourage the growth of individual skill-sets.

The U.S. Military also uses interactive simulations to mimic environments and prepare soldiers for combat. These types of simulations and computer generated environments are key in creating off-field skill-sets and are crucial tools in the military’s educational systems (Prensky 2001b, 6). While there is a variety of other benefits seen by using these simulators a key component to the simulators success is that administrators are constantly updating and creating new technologies to reflect the military’s desired skill-sets.
Relation to Technology

Researched conducted by Spalter and van Dam (2008) discusses new technologies and its relation to visual literacy. A key point which they make is the fact that we are now able to create, manipulate, and disseminate content across the world very easily now, and we must be cognizant of this and be critical in our consumption and production of new media (94). With the popularization and increased access to smartphones, tablets, and other digital devices since 2008, I would argue that this is even more true. Spalter and van Dam reiterate this idea by discussing how computer technologies can represent elements of the real world, but these same technologies can be used to edit and manipulate visuals to create false worlds (Spalter 2008, 95). He then gives an example of an image that was Photo Shopped to create a false sense of reality and discusses the role technology played in creating it (Spalter 2008, 95). Therefore, an educational environment that makes guests aware of falsity in technology is included in The Traveling New Media Centre. This includes an interactive touch screen installation that allows guests to manipulate their own photographs and other pre-provided media. This environment shows guests how technology is used to manipulate different forms of media and the effect this falsity has on contemporary society. Touch screens and interactive displays encourage guests to think critically about how technology and new media artwork are created. Also, educators will be on hand in this space to help users interpret new media artwork. Another significant difference outlined by Spalter and van Dam is the fact that today’s technologies are much more advanced than those only a few decades old. With today’s new software and hardware applications, almost anyone can begin the process of creating, editing, altering, deconstructing, and reconstructing as long as they are willing to set aside the time to engage in the process. Past technologies required extensive scientific knowledge, large spaces, and were not readily available to the general public. Today we can accomplish these tasks in smaller and more intimate spaces which encourage hands-on learning and are universally accessible.

The Traveling New Media Centre intends to embrace the proliferation in availability for digital
technology and dissemination of new media content. Other scholars have discussed how this role of technology is approaching us even faster than we can imagine, and how soon enough we will be looking at whole new forms of technology related to robotics and artificial intelligence. In addition to this, research conducted by Rocco (2004) discusses how new forms of technologies are beginning to be integrated into humans lifestyles. This can include Nanotechnologies, Biotechnologies, Information Technologies, and Cognitive Science (Rocco 2004, vii). Rocco (2004) states that “With proper attention to ethical issues and societal needs, converging technologies could achieve a tremendous improvement in human abilities, societal outcomes, the nation’s productivity, and the quality of life” (ix). Therefore, environments within The Traveling New Media Centre can address these new forms of integrative technologies. This can include demonstrations of new nanotechnologies and biotechnologies. It is clear that technology is indeed becoming essential to our daily lives. Therefore, if technology is essential, we must discuss the benefits that technology education and visual literacy have for those engaging with it.

For the guests of The Travelling New Media Centre, there are a variety of opportunities for self-advancement and increased education. Research has been conducted which outlines some of the advantages to the end user who is engaging with new technologies and gaining new skill-sets. Research on the topic of Visual Literacy by McMaster (2015) describes this concept by stating that “Visual language and communication play an essential part in our cognitive development and can increase our capacity to learn in all subject areas.” (25)

Research conducted In 1978 by Ausburn and Ausburn involved the development of a list that outlined potential benefits that could be evident in individuals participating in the process of visual literacy. According to more recent research conducted by Avegerinou (1997) Ausburn’s list of potential opportunities from developing Visual Literacy are still highly relevant and are as follows:
1. Increase in all kinds of verbal skills.
2. Improved self-expression and ordering of ideas.
3. Increase in student motivation and interest in subjects of all types and at all levels.
4. ‘Reaching’ students not being reached in traditional ways. Students such as the educationally disadvantaged, the truant, the socially underprivileged, the emotionally disturbed, the intellectually handicapped, the ethnic and bilinguals, the dyslexic, the deaf, those with speech pathology problems -- all respond and have been helped in terms of both interest and achievement.
5. Improved image of self and relationship to the world.
6. Improved self-reliance, independence, and confidence. (288)

Avegerinou concludes by stating “Last but not least, the authors wish to emphasise that the development of VL will also result in increasing the ability to better comprehend today’s world” (288-289)

Additional research done by Rezabek reiterates the research conducted by Ausburn and Ausburn and describes the multitude of socio-economic advantages seen from the integration of visual literacy concepts in an educational environment. Rezabek (2005) describes how the 1987 research conducted by L. Lacy is still applicable today and outlines Lacy’s six goals to applying the concept of visual literacy within the context of an educational setting. They are as follows:

1. People will become more creative and critical thinkers by identifying, analyzing, interpreting and evaluating what they see.
2. People will become visual makers themselves, demonstrating the ability to create mental images and to communicate visually with others.
3. People will be more perceptive individuals by recognizing and appreciating aesthetics of visual imagery and by understanding, accepting and valuing personal, cultural and historical differences in image creation.
4. People will become more responsible citizens by
being aware of the roles visuals play in reflecting and influencing a society.
5. People will become more discriminating consumers, understanding the motives, methods and emotional appeal of advertising visuals in a modern society.
6. People will become lifelong learners, with a positive attitude about learning how to learn about visual images.” (19-20)

In addition to this, research conducted by McMaster (2015) showed that people with learning disabilities found many advantages to learning in a visual environment compared to text-based learning (27). Therefore, creating highly visual and engaging spaces within The Travelling New Media Centre could be beneficial to users on a variety of different levels. Universal access is a critical component of The Travelling New Media Centre. Preliminary design decisions will have to take into account a variety of factors related to visual cues, wayfinding, human anthropometrics, and code analysis. Wayfinding devices which guide guests throughout the train cars will be useful in creating a logical circulation and flow throughout The Traveling New Media Centre. Additional care will be taken to ensure universal accessibility for all artwork and technologies on display in the Travelling New Media Centre. This requires an analysis of typical height standards for exhibition display. Additional research into clearances and anthropometrics in relation to train travel is also conducted. This research is to ensure the safety and comfort of all guests on The Travelling New Media Centre.
## Synthesis of Literature Review

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<thead>
<tr>
<th>Author</th>
<th>Concepts</th>
<th>Spatial Implications</th>
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| Avgerinou & Pettersson  | -Five categories of visual literacy (visual language, visual thinking, visual learning, visual communication, and visual perception)  
-Researched three decades of content from various theorists and have defined their points of convergence on the field.  
-Describes visual literacy skills / competencies / abilities  
-States that visual literacy can be used for the development of Architecture  
-A key focus of visual literacy is to have “intentional communication in an instructional context”  
-Visual literacy is multidisciplinary and multidimensional  
-Visual literacy integrates philosophical, psychological, and physiological aspects of learning.  
-Receiver and presenter oriented teaching. | -Education environments must foster visual learning and include observation / analysis, interpretation, and creation/application activities.  
-Spaces which encourage observation/analysis and interpretation will use way-finding and lighting to provide guests with a coherent and aesthetically pleasing experience.  
-Environments which encourage creation/application will provide the latest technologies and will consist of large open spaces which allow guests and staff to socialize.  
-Spaces must provide areas that are primarily educational and encourage users to visually learn how technology works  
-Direct object interaction encourages users to learn more about the subject and fosters additional educational growth  
-Engagement of other senses beyond the visual creates a more immersive and educational experience  
-Anthropometrics in relation to body placement and degree of interaction plays an important role in a users ability to learn with technology. |
| Mark Prensky            | -Discusses concept of screen language  
-Concept of “Digital Immigrant” & “Digital Native”  
-Technology is a singularity  
-Arrival and rapid dissemination of technology  
-Contemporary students are frustrated with current teaching methodologies | -Integration of technology in spaces is crucial for the 21st century  
-Many people are considered “digitally illiterate”. Therefore, spaces must be inviting and welcoming. This can be accomplished by integrating wayfinding systems and carefully selected material & colour selections  
-Space must allow for modifications as technology is in constant change and can have multiple applications. Design consideration for modularity of educational and exhibition spaces is required.  
-Integration of touch screen units, computers, monitors, control units, and audio/video equipment will be essential to ensure the goals of The Travelling New Media Centre are met. |
<table>
<thead>
<tr>
<th>Author</th>
<th>Concepts</th>
<th>Spatial Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ron Bleed</td>
<td>-Visual literacy important tool in 21st century</td>
<td>-Seating and tables encourage group activity, and social interaction. This is achieved by using round tables for social spaces. In addition, modular seating for education environments are used that allows for different configurations for guests.</td>
</tr>
<tr>
<td></td>
<td>-“Proliferation of technology creates a high-touch reaction that reintroduces desire to create artist work, tell stories and combine human interactions”</td>
<td>-Human interaction in conjunction with technology plays a key role to create a space which fosters learning.</td>
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<td></td>
<td>-Ability to understand and engage with technology is a skill-set that is in high demand</td>
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<td>-Changes in todays education system are required</td>
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<tr>
<td>Metros &amp; Woolsey</td>
<td>-Content is now being created without the need for costly infrastructure and technology</td>
<td>-Careful consideration toward the technological needs of each exhibition space.</td>
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<td></td>
<td>-Many places &amp; spaces lack the resources and support services to allow for the creation of new media.</td>
<td>-The design process must critically analyze the role the technology plays within the structural elements of the train. Assessing how each element is installed in relation to preexisting hardware is crucial for a successful design.</td>
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<tr>
<td></td>
<td></td>
<td>-The train is constantly in motion. Therefore consideration must be made toward installation methods and guest safety.</td>
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<tr>
<td>Stankiewicz</td>
<td>-Greater emphasis must be placed on the education of technology in contemporary society.</td>
<td>-Emphasis must be placed on guests gaining new skill-sets and knowledge. Therefore, education and classroom sizes should consist of no more than 12 people at a time.</td>
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<td></td>
<td>-Critical analysis of the role technology and visual literacy play within the cultural and social framework</td>
<td>-Education environments will require additional audio/visual equipment for projection purposes as well as additional lighting.</td>
</tr>
<tr>
<td>Chung &amp; Harris</td>
<td>-New types of media have a universal appeal</td>
<td>-A hybrid of multiple technologies and hands-on learning environments are required to engage with the users.</td>
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<td></td>
<td>-Users no longer engaged with static text or static imagery</td>
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<tr>
<td>Splater and van Dam</td>
<td>-The ability to easily create media instantaneously and send it on the web makes the “interpretation, production, and consumption of our visual world all the more critical.</td>
<td>-Spatial attributes can be manipulated by the users allowing further interactivity and guest amazement.</td>
</tr>
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<td></td>
<td>-Technology “not only represents our world but allow us to interact and manipulate it”</td>
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### Synthesis of Literature Review

<table>
<thead>
<tr>
<th>Author</th>
<th>Concepts</th>
<th>Spatial Implications</th>
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</thead>
<tbody>
<tr>
<td>Ausburn &amp; Ausburn</td>
<td>-How visual literacy helps improve the self</td>
<td>-Education environments which encourage hands-on learning will be emphasized in The Travelling New Media Centre.</td>
</tr>
<tr>
<td></td>
<td>-increase in verbal skills, improved self-expression, increased motivation to learn, improved image of self, improved self-reliance</td>
<td>-This will include open spaces which encourage guests to create new media artwork. This will help guests benefit from their self-expression and self-reliance.</td>
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<td></td>
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<td>-Spaces which allow for modularity are essential for learning environments. This will allow guests to move around the space and interact with staff and other guests.</td>
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<td></td>
<td></td>
<td>-Bright lighting will also emphasize an educational environment.</td>
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<td>-Sound attenuation will be crucial to ensure exterior and interior noises do not interfere with education environments. Materiality will play a crucial role in ensuring increased sound absorption.</td>
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<td>-Consideration toward storage and shelving units for this space will be important to ensure user comfort as well as space efficiency.</td>
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<tr>
<td><strong>Author</strong></td>
<td><strong>Concepts</strong></td>
<td><strong>Spatial Implications</strong></td>
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<tr>
<td>Mark Prensky Aguirre</td>
<td>- Discusses concept of screen language</td>
<td>- Integration of technology in spaces is crucial for the 21st century</td>
</tr>
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<td></td>
<td>- Subject of art is a highly aesthetic experience (high art &amp; popular culture)</td>
<td>- Many people are frustrated with current teaching methodologies</td>
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<tr>
<td></td>
<td>- Technology is a singularity</td>
<td>- Technology is a singularity</td>
</tr>
<tr>
<td></td>
<td>- Relationship of discovery and creation with educational function of art</td>
<td>- Art itself creates a spatial experience</td>
</tr>
<tr>
<td></td>
<td>- Educational function of art to determine its value for social reconstruction</td>
<td>- An integration of wayfinding systems and carefully selected material &amp; colour selections</td>
</tr>
<tr>
<td></td>
<td>- Art forms identity and aesthetic sensibility</td>
<td>- Space must allow for modifications as technology is in constant change and can have multiple applications. Design consideration for modularity of educational and exhibition spaces is required.</td>
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<td></td>
<td>- Art objects have a performing power and ability to connect within the spatial context.</td>
<td>- Integration of touch screen units, computers, monitors, control units, and audio/video equipment will be essential to ensure the goals of The Travelling New Media Centre are met.</td>
</tr>
</tbody>
</table>
### Design Application

<table>
<thead>
<tr>
<th>Spatial Implication</th>
<th>Phenomological Application / Design Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Literacy Competencies - (Avgerinou &amp; Pettersson)</td>
<td>-Manipulate and combine visuals on a wall-mounted touch screen surface. Interactive artwork will track the motion of users in the space using computer sensors.</td>
</tr>
<tr>
<td>Availability of technology</td>
<td>-Allows the most basic user to perform a multitude of tasks and modifications to pre-existing content.</td>
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<td>-Low cost applications available in contemporary society allow for new media artwork to come in a variety of formats.</td>
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<td></td>
<td>-Gives users a sense of control over technology and allows for inductive learning.</td>
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<td>User comprehension (Sims)</td>
<td>-Inclusion of open spaces which allow for collaboration and socialization.</td>
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<td></td>
<td>-Inclusion of many forms of new media and technology. If using the same hardware (e.g., touch display), ensure it has multiple modules and opportunities and is not restrictive to one purpose.</td>
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<td>-User visibility of objects and their function is crucial to encourage active participation and comprehension.</td>
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<td></td>
<td>-Anthropometrics and the scale of new media artwork is important to ensure user accessibility and comprehension.</td>
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<td></td>
<td>-Logical sequencing of educational components must be utilized to ensure attentiveness and excitement within the users.</td>
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<tr>
<td>Effect on the user (Greenfield / Prensky)</td>
<td>-Offer guests new media that enhance thinking skills. Engage users with visual imagery and three-dimensional space.</td>
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<td></td>
<td>-Create new media artwork and technology installations that encourage inductive discovery.</td>
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<td>-Have new media be responsive to the user, encourage interaction between the user and electronics in a symbiotic manner.</td>
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<tr>
<td>Pre-Existing skill level (Sims)</td>
<td>-Exhibits won’t require extensive knowledge and can be utilized by the general public.</td>
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<td></td>
<td>-New media artwork will be universally accessible to all age ranges and user types.</td>
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Table 3: Visual Literacy - Synthesis of Literature Review
Computerspielemuseum (Computer and Games Museum)

Location: Berlin, Germany  
Size: Approx 15,000 SQF.  
Year Of Completion: 1997
Guest interaction plays an important role in the Computerspielemuseum. The museum includes a variety of unique exhibitions which encourage guests to interact. Analyzing the use of these exhibits helped inform user circulation and spatial planning for the Travelling New Media Centre. The museum also does an excellent job of integrating interactive displays throughout the building while allowing other guests to read and view nearby exhibitions without being bothered. Interactive exhibitions found in the museum are utilized in many different manners, with some being wall mounted (ex. touch displays), floor mounted (ex. exercise bike / dancing pad), and others being in their own separate area. The Travelling New Media Centre utilizes many different interaction methods. This gives the site more variety and increases user excitement and comprehension.

Education and historical information is a crucial function of the Computerspielemuseum. These components will also serve as the main ideology for the Travelling New Media Centre. Through online user reviews, it is clear that guests enjoy the museum immensely (TripAdvisor). The use of colour and video displays help users learn about the history of technology in a more exciting manner. Design techniques like these can help inform ways to increase visual literacy and user enjoyment in the Travelling New Media Centre. Additionally, the Computerspielemuseum integrates educational and interactive exhibitions near one and other. This technique can be evaluated to better understand how display placement should be planned for the Travelling New Media Centre.
Tekniskamuseet (Game Over Exhibition)

Location: Stockholm, Sweden
Architects: Ragnar Hjorth
Size: Approx 15,000 SQF.
Year Of Completion: 1936
The Game Over exhibition does a successful job in exhibiting video games and other forms of new media. The use of a variety of strong primary colours creates an engaging and playful space which speaks to the content that is being exhibited. The creation of custom millwork to house the hardware and monitors for these exhibitions is quite relevant to The Travelling New Media Centre. The use of interactive displays and wall projections are also successfully integrated into the interior elements of this space. This is something which The Travelling New Media Centre also integrates.

Furthermore, Game Over is a travelling exhibition and requires thought into the modularity and construction of each of the displays and exhibition pieces. Analyzing the spatial attributes and positive characteristics of these installations can help inform design methodologies. This precedent is also relevant due to the nature of what is being exhibited. This is because the content being exhibited has similarities to what will be exhibited in the Travelling New Media Centre.

Fig. 7: Contrasting geometric forms

Fig. 8: Lighting integrated into millwork
100th Grey Cup: Train Tour

Location: Across Canada (using VIA Rail)
Size: Approx 4+ Train Cars
Year Of Completion: 2012
The 100th Grey Cup Train Tour is very relevant to The Travelling New Media Centre because it is a traveling exhibition space which uses a VIA Rail car. Elements of the interior space include exhibition displays, technological integration, and unique wayfinding techniques. The use of modern materials and a warm colour palette also show the consideration that was put into the design of the space.

The CFL since 2012 has used this concept again showing that it was indeed successful. Therefore, making this project a strong precedent. This is because the CFL train is able to accomplish similar goals to The Travelling New Media Centre. This goal of the CFL train was to outreach to different communities across Canada while exhibiting the Grey Cup and other football memorabilia. This allowed for a multitude of cities and regions to have access to the train and all the exhibitions & displays inside. Had the CFL made a permanent exhibition it would not have had the same impact. Furthermore, due to the type of content which was being provided by the CFL it made sense to create this as a traveling exhibition. The popularity of this precedent also solidifies the desire for these types of spaces in Canada. Other companies have also done similar outreach exhibitions. This includes the CBC holiday train and the Coors Light Silver Bullet Express.
Synthesis of Precedent Review

<table>
<thead>
<tr>
<th>Site</th>
<th>Design Concepts</th>
<th>Design Implications</th>
</tr>
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</table>
| Computerspielemuseum  | - Offers a multitude of different technologies and interactive exhibitions. This includes touch screen displays and tactile hardware.  
                       | - Rectilinear forms and geometric shapes are used for the millwork and casing.  
                       | - Reoccurring design motifs throughout the space. Cubes and rectangular forms are the primary motifs.  
                       | - Vibrant and contemporary colour palette.  
                       | - Bright colours contrasted with white tones  
                       | - Integration of LED lights into exhibition displays. Increase user interest and aesthetic appeal.  
                       | - Strong rhythm and consistent design language throughout.  
                       | - Emphasis and focal points created through colour and labeling  
                       | - Educational components emphasized by integrating text description in conjunction with the exhibitions.  
                       | - Varying colours are used to define different exhibits.  
                       | - Multitude of mounting techniques used to create a sense of variety throughout the space  
                       | - Circulation is accomplished through long narrow hallways.  
                       | - Design emphasizes vertical elements making the space appear larger  
                       | - Subdued material use. Mainly consists of gypsum wall board, laminates, and bright finishes.  | - A variety of different artworks will be exhibited at The Travelling New Media Centre. These will vary in size, scope, and interactivity.  
                       | - Reoccurring design motifs can create a sense of rhythm and harmony in The Travelling New Media Centre.  
                       | - Vibrant colour palette for exhibition spaces will increase guest engagement and interest.  
                       | - Integration of multiple lighting types will allow for greater clarity of the work being exhibited.  
                       | - Emphasis on relevant information can be accomplished through careful choice of finishes, materiality and labelling.  
                       | - Define spatial zones with different colour choices.  
                       | - Careful consideration toward installation method of any wall mounted exhibit or technology. Critically analyze the overall spatial implications in terms of its relationship to structural elements and adjacent environments.  
                       | - Design areas with large circulation; this will also assist in creating a universally accessible space.  
<pre><code>                   | - Emphasize vertical elements in the Travelling New Media Centre. This can make the train interior appear larger.  |
</code></pre>
<table>
<thead>
<tr>
<th>Site</th>
<th>Design Concepts</th>
<th>Design Implications</th>
</tr>
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</table>
| Tekniskamuseet (Game Over Exhibition) | - Clean geometric forms used for exhibition displays which reference back to the material being displayed.  
- Multiple lighting features. This includes general lighting, task lighting, and wall washers. Using multiple forms of lighting adds to the clarity and aesthetic of the exhibits.  
- Modularity of exhibit is a critical consideration as the exhibition travels to a new location every year.  
- Floor decals used for wayfinding purposes  
- Organic forms of seating contrast rectilinear exhibition displays. This creates a dynamic environment.  
- Large open spaces for user circulation  
- Video projections integrated into wall features and exhibits  
- Strong primary colours. This references to the material being exhibited  
- Custom millwork and detailing throughout | - Consider modularity of all artworks and furnishings. Education spaces may require guests to move chairs or other materials, ensure space is provided for these activities.  
- Integrate wayfinding devices on the flooring. This can assist in circulation.  
- Contrast rectilinear forms with organic forms for furnishings. This will encourage socialization and create a dynamic between furnishings and millwork.  
- Consider integration of projections. Ensure use is subtle does not take away from the aesthetic quality of the interior environment.  
- Integrate primary colours in exhibition millwork to emphasize important information to guests. |
| 100th Grey Cup Train | - Warm inviting colour scheme  
- Ceiling mounted display cases  
- Branding throughout interior elements including wayfinding devices  
- Materiality relies heavily on wood  
- Drop ceiling utilized instead of the structural roof.  
- Integration of LED televisions and display units  
- Long narrow corridors with exhibition material on all interior facades  
- Design implements universal access  
- Social spaces use a modified dining car. Circular tables have been integrated to encourage socialization between guests | - Utilize a warm colour scheme accented with bright colours and wayfinding devices.  
- Utilize drop ceiling feature. This will help in the integration of lighting as well as wire and cable management.  
- Integrate circular tables to encourage guest socialization.  
- Ensure all design elements account for universal accessibility. This includes heights of exhibits, door clearances and means of egress. |

Table 4: Synthesis of Precedent Study
Chapter 4: Context & Site
Site Analysis:

Location: Manitoba, Canada
Stops: Approx 15,000 SQF.
Year of Departure: 2017

As outlined earlier in the project rationale, the site selection for The Travelling New Media Centre will consist of a variety of northern Manitoba communities which fall on the Winnipeg--Churchill VIA Rail line. This line has over 80 stops between Winnipeg and Churchill. This will allow for a large number of guests to be able to engage and interact with the Travelling New Media Centre.

For the purpose of this study, three main sites will be used. This will be Thicket Portage, Pikwitonei, and Ilford. These sites were selected due to their minimal access to technology as well as their reduced access to other forms of public transportation.
Primary Stop Analysis

Thicket Portage

Currently has a registered population of one hundred and forty-eight residents. (Statistics Canada 2014) Is it located in Manitoba 256KM NorthEast of The Pas and 48KM South of Thompson (Province of Manitoba 2011b, 1). The current median age is approximately 29 with 75% of the population being over the age of 15. English is the primary language spoken in Thicket Portage. (Statistics Canada 2012c). The primary ethnic background of residents in Thicket Portage is Aboriginal. Thicket Portage “came into existence as a railway siding and way station when the Hudson Bay line was first built. There are four commercial establishments, including retail, restaurant, railway, etc.” (Dillon Consulting 2001c, 2). Regarding accessibility, Thicket Portage “relies on the Hudson Bay Railway (and VIA), non-scheduled air service, a combination Winter Road/Forestry Road access, and small boats for freight and passenger access to and from Thompson”. (Dillon Consulting 2001c, 2) This allows for an excellent opportunity to engage with the community as residents use the train as their primary form of public transportation. Even more so than winter/ service roads (Dillon Consulting 2001c, 8)
Denotes location of existing train station

Fig. 13: Map of Thicket Portage with Railline
Primary Stop Analysis

Pikwitonei

Has a current population of approximately ninety-eight registered residents (Statistics Canada, 2014). It is located in Manitoba 304KM by rail Northeast of The Pas and 48 KM Southeast of Thompson. (Province of Manitoba 2011a,1). The current median age is approximately 45 with 80% of the population being over the age of 15. English is the primary language spoken in Pikwitonei. (Statistics Canada 2012b). The primary ethnic background of residents in Pikwitonei is Aboriginal. In Pikwitonei, there are currently “seven retail, rental, construction, and fuel supply businesses in the community.” (Dillon Consulting 2001b, 2). Pikwitonei is very similar to Thicket Portage regarding the rail system being a primary form of public transportation, with secondary forms being airplane and winter/service roads. (Dillon Consulting 2001b, 9)
Denotes location of existing train station

Fig. 14: Map of Pikwitonei with Railline
Primary Stop Analysis

Ilford

Most recent census data shows that Ilford had an approximate population of one hundred and sixteen residents in 2006. (Province of Manitoba 2003, 1). It is located in Manitoba 144KM north-east of Thompson, and 688KM north of Winnipeg. (Province of Manitoba 2003, 1). The current median age is approximately 29 with 64% of the population being over the age of 15. English is the primary language spoken in Ilford (Statistics Canada 2012a). The primary ethnic background of residents in Ilford is Aboriginal. A 2006 Census report outlines that there was approximately 110 Aboriginal residents and ten non-Aboriginal residents in Ilford (Statistics Canada 2007). 2006 education data also showed that only ten female residents in the community had a University degree or diploma (Statistics Canada 2007). Research has found that “Employment in the community is largely derived in the service industry (health, education, stores, public works, etc.). Fishing and trapping is also conducted largely for subsistence living and sale of furs.” (Dillon 2001a, 2). Again, Ilford is similar to the other locations in that rail serves as a primary form of transportation for the community.
Fig. 15: Map of Ilford with Railline

Denotes location of existing train station
Site History

The Winnipeg -- Churchill line has existed for many decades in Manitoba. Early documents show that on October 27, 1969, Canadian National Railways attempted to terminate train service on the Winnipeg -- Churchill line. The reasoning behind this attempted closure was due to the passenger rail system being considered uneconomic. On April 1st, 1979, VIA Rail Canada took over “full managerial and financial responsibility for these services” (Canadian Transport Commission 1981, 3). VIA Rail has since managed the line which currently runs twice a week from Winnipeg.

Records from October 1979, show that an average of 27 people would board the VIA Rail Winnipeg -- Churchill at Thicket Portage each Sunday, Tuesday, and Thursday. (Canadian Transport Commission 1981, 76). Thicket Portage had an approximate population of 255 residents (Canadian Transport Commission 1981, 94).

Records from October 1979, show that an average of 41 people would board at Pikwitonei each Sunday, Tuesday, and Thursday. (Canadian Transport Commission 1981, 76). Thicket Portage had an approximate population of 202 residents (Canadian Transport Commission 1981, 94).

Records from October 1979, show that an average of 27 people would board the VIA Rail Winnipeg -- Churchill at Ilford each Sunday, Tuesday, and Thursday. (Canadian Transport Commission 1981, 76). Ilford had an approximate population of 199 residents (Canadian Transport Commission 1981, 95).
Primary Stop Analysis

Below outlines all the stops on the Churchill -- Winnipeg VIA Rail line. Highlighted stops are communities used for the primary stop analysis. This information was provided by VIA Rail Canada on February 2016.

Fig. 16: VIA Rail Schedule
Having The Travelling New Media utilize the Winnipeg -- Churchill VIA Rail line allows for a multitude of opportunities. The line currently services over 80 locations in Manitoba. Therefore, with additional logistical planning, a multitude of communities could be reached using the pre-existing infrastructure. In addition to this, many of these communities use the Winnipeg -- Churchill line as their primary form of public transportation. Therefore, it would not be difficult to engage the community as they would already be familiar with the train.

Organization with communities leaders will be necessary to get the word out to smaller communities about the arrival of the Travelling New Media Centre. Therefore, pre-planning that involves members on multiple levels of government and non-profit organizations will be required to ensure the selected sites are utilized to their fullest potential.
Logistics

Due to the unique nature of the Travelling New Media Centre, it will require precise scheduling to ensure to arrives on time and does not disrupt other train travel using the rails. The Grey Cup Train Tour has accomplished a similar task. This train exhibited the CFL Grey Cup and other CFL related memorabilia. It was able to successful negotiate scheduled stops with VIA rail and other users of the tracks. In 2015 for the 103rd Grey Cup VIA Rail allowed the train to stop in Manitoba 11 communities (CTV Winnipeg 2015). Each stop permits guests to get on and tour the interior of the train for an extended period of time. On its return trip it also stopped at some communities for shorter 1 hour periods (CTV Winnipeg 2015). For the purpose of The Travelling New Media Centre, the train will stop in each community for 5 hours before leaving for its next destination. Currently the Winnipeg -- Churchill passenger train runs twice a week. Coordination with the current VIA Rail schedule will be crucial for determining the ideal timing for arrival at each destination. The Travelling New Media Centre will follow this precedent as it has proven to be successful in the past for these type of unique travelling exhibitions. In addition to this, in 2011, Coor’s Brewing Company created the Silver Bullet Express. This passenger train toured across Canada, proving the concept is feasible within the context of the Canadian rail system.
Train Selection & Investigation
Train Selection

All VIA Rail train cars use the same exterior sizing; this includes all types of passenger and baggage cars. The dimensions of these trains are 13’ x 85’ each. Using these dimensions, each train car would equate to being approximately 1150 SQF or 103M2. The Travelling New Media Centre uses baggage cars for all 10 trains. This will allow for additional interior space and less demolition during the construction phase.

Fig. 18: VIA Rail Passenger Car Plan
Configuration for the Travelling New Media Centre will use only the exterior of the train and will gut all interior elements. This will allow for the maximum amount of space possible as a starting point for design concepts. The section pictured below is the coach seating area of the VIA Rail train that I rode. This information was obtained from the train car’s manual provided by VIA Rail staff.

Fig. 19: Section of VIA Rail Train
Train Investigation

For the purpose of this practicum project, I embarked on a VIA Rail train from Winnipeg to Portage La Prairie. The purpose of this excursion was to understand the characteristics and properties of the train. Furthermore, riding the train allowed for a greater understanding of the context of the practicum. This allowed for a deeper understanding of the cultural and social impact of train travel. The trip included a guided tour through the coach, dining, and sleeper trains. During my trip, all the cabins were sold out. This is because large groups of guests were travelling to Churchill from Winnipeg.
I was seated in the coach section for the beginning portion of my travel. This area was the least busy, with only three other patrons beside myself. The coach area was very comfortable and was not as confining as other forms of transportation (ex. airplane, bus). Windows were provided on both sides of the interior facades allowing for a large amount of light to enter into the train, creating a warm and rich environment. Colour schemes used a combination of blue and grey hues which I believe could be updated to create a more vibrant and energetic environment. Therefore, colour selection for The Travelling New Media uses a vibrant colour palette to engage the guests.

Fig. 22: Interior photograph facing North in coach

Fig. 23: Interior photograph facing South in coach
Furnishing arrangement in coach varied. This allowed guests to sit across from each other if they wished. Furthermore, a large amount of space was provided for luggage and other personal belongings. Interior lighting and ceiling details appeared outdated and required renovation. Lighting fixtures, diffusers, and transitions strips were most evident. Further consideration of their application in regard to aesthetics could allow for a more refined looking ceiling and interior space. This is an important consideration for The Traveling New Media Centre to ensure a contemporary and clean aesthetic. Therefore, design consideration is placed into a multitude of lighting schemes.

Once the train had begun its journey toward Churchill, all passengers in coach were able to enter the dining car. The dining car was a public space with rectangular dining tables and movable seating. While this space served as the main area of socialization, I found that the finishes and furnishings could be altered to allow for a stronger design methodology. The placement of the furnishings for the only dining car were very compact and did use the volume of the space to its full extent. Small partitions between seating groups also did not help in creating an open and engaging volumetric space. Additionally, the linearity of the floor and walls contrasted the curvilinear nature of the ceiling and chairs. Additional consideration into the materiality of partition walls, flooring and wall mounted lighting would assist in creating a stronger design methodology.

In this area VIA Rail employees and other patrons were seated and were conversing. It was at this point I was able to speak with one of the VIA Rail employees to receive a tour of the rest of the passenger and sleeper cars. exhibit, task, and general lighting.
Fig. 24: Interior photograph facing North in dining car

Fig. 25: Interior photograph facing South in dining car

Fig. 26: Interior photograph facing South in coach
The staff showed me into some of the non-occupied semi-private spaces. As seen below this included built in bench style seating. Each passenger that is seated in this area also has a large window with adjustable screening features. These spaces served as a more private alternative to coach and came at an increased ticket cost. The bottom image is a private one person cabin.

Employees stated that these are typically used by business people who ride the train overnight. Employees described how many business people like this environment as it is private and is comfortable enough to accomplish a multitude of tasks. In comparison to other forms of travel such as airplanes, these spaces seemed efficient and satisfied their target demographic.

Fig. 27: Interior photograph semi-private built-in seating

Fig. 28: Interior photograph private one person cabin
Fig. 29: Interior photograph facing North in dining car
Train Investigation

After touring the rest of the train, I was able to view the original manual for the VIA Rail locomotive. The manual outlined basic configurations for both the dining and coach cars. Very little has changed in terms of configuration. As evident from the labeling of the two cars, detailing will be an essential element to The Travelling New Media Centre.
Fig. 30: VIA Rail passenger train dining car floorplan with legend

Fig. 31: VIA Rail passenger train coach car floorplan with legend
Train Investigation Summary

The trip from Winnipeg to Portage La Prairie was helpful toward the design process for The Travelling New Media Centre. Firstly, it gave context to the typology of interior environment I have designed. This allowed for a greater understanding of structural elements, materiality, opportunities, constraints and a variety of other factors. Furthermore, it allowed me to discuss with employees some of the current concerns regarding user comfort. In addition, the trip allowed me to have a better understanding of the social aspect of the train. Guests appeared relaxed and comfortable. This was in contrast to recent experiences on airplanes. This reiterates the reasoning behind using a train for the purpose of this project. Other forms of transporation such as buses and airplanes don’t allow for the same flexibility in design and don’t have the same cultural importance to the identity of Canada. Furthermore, documenting the trip with photos and notes allowed me to later analyze the spatial characteristics of the train in relation to my design concepts for The Travelling New Media Centre.
Fig. 32: Image of my Arrival to Portage La Prairie from Winnipeg.
Chapter 5: Programming
The Department of Canadian Heritage is a branch of the Canadian Government and overlooks a variety of programs and regulations in relation to the arts, media, culture, and a multitude of other platforms (Government of Canada 2014). The Department of Canadian Heritage works directly with policies and programming related to travelling exhibitions. They are also associated with the Canadian Museums Assistance Program, which assists in funding for museums concepts that “foster professional knowledge, skills and practices related to key museum function.” (Canada Heritage 2013). Canadian Heritage also works with the Canada Cultural Investment Fund. This fund assists in creating unique Canadian initiatives with an emphasis on new technologies.

This project may require an existing institution as a partner (E.X. Manitoba Children’s Museum) due to Canadian Heritage restrictions for new projects.

Examples of programs approved for funding by the Canada Cultural Investment Fund are:

- Citizen Culture Access Pass - London, Ontario
- Dance Portal - Toronto, Ontario
- Next Gen Arts Leadership V2 (Playhouse Theatre Centre) - Vancouver, British Columbia

(Canada Heritage, 2013)
**Client`s Goals & Mission Statement**

“Our goal is to continue our strong support for Canadian culture while enabling Canada to prosper in the digital economy.” (Canadian Heritage 2013)

“History and heritage are key components of a country’s identity. Knowledge and experience of one’s national history contribute to the active engagement of citizens and their capacity to work together towards common goals” (Canadian Heritage 2013)

“offer a broad range of new and stimulating opportunities for the Canadian creative sector” (Canadian Heritage 2013)

**Client Structure**

Currently, The Department of Canadian Heritage is controlled by the Deputy Minister as well as an Associate Deputy Minister. Each department is made up of four separate sectors with each having their own Assistant Deputy Minister. In addition to this, Canadian Heritage also offers seven corporate services.

“Canadian Heritage has regional offices located in Moncton, Montréal, Toronto, Winnipeg and Vancouver as well as a number of access points across the country, for a total of 21 points of service.” (Canadian Heritage, 2016).
User Profiles

Typical Guest - Age Group

The following is the Age group for Thicket Portage Manitoba and will serve as a general guideline for the age group for the primary stops on The Travelling New Media Centre.

<table>
<thead>
<tr>
<th>Population by Age Groups</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 4 years</td>
<td>15</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>5 to 9 years</td>
<td>15</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>10 to 14 years</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>15 to 19 years</td>
<td>15</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>15 years</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16 years</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>17 years</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>18 years</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>19 years</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20 to 24 years</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>25 to 29 years</td>
<td>15</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>30 to 34 years</td>
<td>10</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>35 to 39 years</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>40 to 44 years</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>45 to 49 years</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>50 to 54 years</td>
<td>20</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>55 to 59 years</td>
<td>10</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>60 to 64 years</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>65 to 69 years</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>70 to 74 years</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>75 to 79 years</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>80 to 84 years</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>85 years and over</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Median age of the population</td>
<td>28.5</td>
<td>28.8</td>
<td>27.8</td>
</tr>
<tr>
<td>% of the population aged 15 and over</td>
<td>74.6</td>
<td>78.5</td>
<td>69.8</td>
</tr>
<tr>
<td></td>
<td>------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>Total</td>
<td>145</td>
<td>75</td>
<td>60</td>
</tr>
</tbody>
</table>

Table 5: Typical Guest - Age Group (Statistics Canada 2012c)
PRIMARY USERS

Typical Guest - Ethnic Background

Sample data obtained from the 2006 census for Ilford.

<table>
<thead>
<tr>
<th>Population by Age Groups</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify as Aboriginal</td>
<td>110</td>
<td>65</td>
<td>50</td>
</tr>
<tr>
<td>Identify as non-Aboriginal</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>75</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 6: Typical Guest - Ethnic Background (Statistics Canada 2007)

Typical Guest - Language Knowledge

2012 Census data for Thicket Portage outlines current language knowledge.

<table>
<thead>
<tr>
<th>Population by Age Groups</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Only</td>
<td>135</td>
<td>80</td>
<td>65</td>
</tr>
<tr>
<td>French Only</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>English &amp; French</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Neither English nor French</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>85</td>
<td>70</td>
</tr>
</tbody>
</table>

Table 7: Typical Guest - Language Knowledge (Statistics Canada 2012c)
Typical Guest - User Profile

The typical guest is considered as any user who visits The Travelling New Media Centre. It should be noted that this user type is usually from a small community that has minimal access to technology and new media works.

<table>
<thead>
<tr>
<th>Values</th>
<th>Activities</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Art</td>
<td>-Engaging with interactive displays</td>
<td>-Want to learn more about technology</td>
</tr>
<tr>
<td>-Communication</td>
<td>-Learning hands on new media creation techniques</td>
<td>-Want to become more engaged in culture within their community</td>
</tr>
<tr>
<td>-Education</td>
<td>-Listening to educational content regarding the work</td>
<td>-Want basic introduction to concepts regarding new media</td>
</tr>
<tr>
<td>-Learning</td>
<td></td>
<td>-Requires accessibility</td>
</tr>
<tr>
<td>-Science</td>
<td></td>
<td>-Requires clear and concise visuals</td>
</tr>
<tr>
<td>-Technology</td>
<td></td>
<td>-Requires objects to interact with</td>
</tr>
<tr>
<td>-Progress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Innovation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8: Typical Guest - User Profile
Volunteers

Volunteers consist of people who have a strong desire to teach and assist others in regard to technology and new media. Volunteers will typically come from the local community that The Travelling New Media Centre is visiting.

<table>
<thead>
<tr>
<th>Values</th>
<th>Activities</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Community</td>
<td>-Community Engagement</td>
<td>-Education and training on contemporary technology</td>
</tr>
<tr>
<td>-Train</td>
<td>-Gaining Education</td>
<td>-Volunteers and skilled works to deliver program services</td>
</tr>
<tr>
<td>-Communication</td>
<td>-Family interaction</td>
<td>-Information on technology and services that are available</td>
</tr>
<tr>
<td>-Progress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Art</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Volunteers - User Profile

Artists

This will consist of people who are exhibiting their work as well as artists who are knowledgeable in the field of technology and new media.

<table>
<thead>
<tr>
<th>Values</th>
<th>Activities</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Art</td>
<td>-Helping explain art works (meanings, methods of creation)</td>
<td>-Designated space to create/make art works</td>
</tr>
<tr>
<td>-Curation</td>
<td>-Creating live art</td>
<td>-Respectful environment to display works</td>
</tr>
<tr>
<td>-Craftsmanship</td>
<td>-Engaging guests with projects</td>
<td>-Technological based equipment to teach guests</td>
</tr>
<tr>
<td>-Making / Creating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Teaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Progress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Innovation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10: Artists - User Profile
Employees

This will consist of people who have specific tasks related to the exhibitions and will be on the train for extended periods of time. All employees will require expertise in the fields of new media and technology.

<table>
<thead>
<tr>
<th>Values</th>
<th>Activities</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Art</td>
<td>-Helping guests on and off the train</td>
<td>-Designated space to relax and eat</td>
</tr>
<tr>
<td>-Curation</td>
<td>-Patrolling the trains to ensure no vandalism</td>
<td>-Designated spaces to store belongings</td>
</tr>
<tr>
<td>-Technology</td>
<td>or damage occurs</td>
<td>-Respectful environment to interact with</td>
</tr>
<tr>
<td>-Teaching</td>
<td>-Engaging with guests to encourage positive</td>
<td>guests and other staff</td>
</tr>
<tr>
<td>-Learning</td>
<td>reaction to new media</td>
<td>-Technological based equipment to teach</td>
</tr>
<tr>
<td>-Progress</td>
<td>-Educating guests on new media and different</td>
<td>guests</td>
</tr>
<tr>
<td>-Innovation</td>
<td>forms of technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Helping explain art works (meanings,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>methods of creation)</td>
<td></td>
</tr>
</tbody>
</table>

Table 11: Employees - User Profile

SECONDARY USERS

Train Staff (Conductors & Engineers)

This user group will consist of employees that drive and maintain the train on a daily basis. These staff members would not typically interact with the guests.

<table>
<thead>
<tr>
<th>Values</th>
<th>Activities</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Punctuality</td>
<td>-Maintaining the train</td>
<td>-Private space away from the public</td>
</tr>
<tr>
<td>-Safety</td>
<td>-Driving the train</td>
<td>-Safe working conditions</td>
</tr>
<tr>
<td>-Efficiency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 12: Secondary Users - User Profile
TERTIARY USERS
Maintenance Staff (Janitorial, Mechanical, Electrical)

This user group consists of employees that tend to janitorial and non-train related maintenance. This would include the maintenance of exhibitions and technology based mediums.

<table>
<thead>
<tr>
<th>Values</th>
<th>Activities</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Hygiene</td>
<td>-Cleaning messes</td>
<td>-Space to store tools</td>
</tr>
<tr>
<td>-Safety</td>
<td>-Addressing electrical issues</td>
<td>-Space to repair displays and exhibitions</td>
</tr>
<tr>
<td>-Functionality</td>
<td>-Addressing mechanical issues</td>
<td>-Intimate knowledge of the detailing and</td>
</tr>
<tr>
<td>-Technology</td>
<td>-Inspecting the train following each exhibition</td>
<td>millwork</td>
</tr>
</tbody>
</table>

Table 13: Secondary Users - User Profile
Spatial Requirements

Seating Areas
Digital Screens
Computers & Monitors
Display cabinets
Work-tables
Projection Screens
Control stations
Audio Speakers & Workstations
Storage
Staff Area
W/C & Universal W/C
Technology Maintenance
Networking
Wiring

Floor Area Requirements

Each railcar = 4000mm x 26000mm = 104 Square Meters per car

Welcome Space = 104
Sound Train = 104
Projection and Light = 104
Touch = 208
Motion = 104
Human Presence = 104
Debriefing = 104
Staff & Mainenance = 104

936 Meters Square total

*Please note these Floor Area requirements include the required storage and W/C spaces in their calculations.*
**Wayfinding**

The Traveling New Media Centre will have trains in a sequential order. Users will enter on the first “Welcome” train and will continue through the space. Signage and staff will assist guests in circulating throughout the space. This will help control the flow of traffic and will assist in educating guests in a relaxed and engaging environment.

Additional signage which assists in educating and orientating users will be provided in large tactile fonts with contrasting colours to the material they are applied on.

All washrooms will be clearly noted and will be available on each train.

**Safety Considerations**

Emergency exits will be provided in the four trains throughout the space to ensure the safety of all users on the train.

Tactile warning surfaces will be integrated outside of each door opening to ensure user safety and slip resistance.

Grab bars and handles will also be provided in bathroom areas.

Visible transition strips will be applied to sudden changes in flooring materials.

Storage areas & washrooms will not open toward exit areas.

Exit doorway width will follow NBCC guidelines and will ensure universal accessibility.
## Spatial Adjacency Matrix

<table>
<thead>
<tr>
<th></th>
<th>Education Space</th>
<th>Exhibition Space</th>
<th>Staff &amp; Main.</th>
<th>Social</th>
<th>Historical Info.</th>
<th>Interactive</th>
<th>W/C</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Space</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Exhibition Space</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Staff &amp; Main.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Social</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Historical Info.</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Interactive</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>W/C</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Storage</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

- ● Primary Adjacency
- ○ Secondary Adjacency

Table 14: Spatial Adjacency Matrix
Pack-Up Requirements

Installations and new media artwork are shut down following the exhibition at each space. Objects which are securely mounted to the walls remain if under 25LB in weight. Large objects are placed into a multitude of storage options.

Round tables can be quickly dissembled by removing the table top from the support leg using basic hand tools. Table tops can be stored in a modular storage device. All chairs that accompany round tables are stacking and have a designed enclosed storage area.

All large round tables have folding legs which inside allow the unit to lay flat or sideways without protruding legs. These are stored in modular storage devices which are readily available on applicable trains.

All audio equipment comes in pre-assembled enclosures which allow for quick and efficient storage.

Tables used for audio equipment are wall mounted and can be folded toward the wall and secured once not in use.

Storage units are provided for free standing display units.

Ipad display units are wall mounted and allow for the display tables to folded inward and recessed flush into the wall segment.

Staff members begin cleanup immediately following the last user groups departure from the first “Welcome Train”.

Pack-up after each exhibition occurs quickly and efficiently to ensure no other train schedules are disrupted.
The Traveling New Media Centre can serve as a basis for introducing technology and New Media to rural communities. While this is currently placed in the Canadian context, I believe further studies could allow for this model to be applied to other geographic locations.

Gaining information pertaining to many of the communities which the Traveling New Media Centre is traveling to is difficult to attain due to low population numbers and minimal documentation. All information derived from government websites and other sources attempts to be as accurate as possible in determining user profile, demographics, and other geographic based data.

In this example the Traveling New Media Centre consists of 10 trains. Additional content and interest could allow for a large scope or project. This could include the addition of more locomotives or the integration of pop-up shops in communities which add additional content to the experience.
<table>
<thead>
<tr>
<th>Title of Installation</th>
<th>Education Component (Visual Literacy)</th>
<th>Exhibition Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphere 9 by Chris Levine</td>
<td>- Shows how mixed media's (light projection, phosphorus, etc.) can be used to create custom objects.</td>
<td>- Creates holographic image within an exhibition display case</td>
</tr>
</tbody>
</table>
| Six-Fourty by Four-Eighty by Zigelbaum + Coelho | - Encourages user interaction, which allows guests to touch multiple LED tiles simultaneously. Touching two LED cubes simultaneously create an electrical impulse which causes the cubes to become the same colour. This educates guests on the effect the human body can have in relation to new media installations and contemporary technology.  
  - The installation is intended to "make people deal with computational data if it were solid material." (Cite) | - Utilizes 220 magnetic LED tiles on a wall facade  
  - Encourages interaction using lights and touch.                                                                                                                     |
| Light Form (Interactive Landscape) by Mathieu Rivier | - Uses projectors and infrared sensors to create a touch screen interaction.  
  - Uses a multitude of software which includes openFrameworks, MadMapper, CCV (Cite)  
  - Colourful touch display engages the guests                                                                                                                                 | - Colourful touch display engages the guests                                                                 |
| Dune 4.0 by Daan Roosegaarde          | - Described by the artist as a “Hybrid of nature of and technology” (Cite). This shows guests the possibilities that technology creates in relation to the natural environment  
  - Interactive interior landscape  
  - Changes based on human interaction / presence.  
  - Engages guests in a multi-sensorial experience. This includes sight, sound, and touch.                         |                                                                                                                                                                |
| Jim Campbell Works                   | - Installations created by Campbell are environment based and react to motion and activity occurring within the space. This teaches guests the role technology plays in relation to humans in the built environment.  
  - Interactive light installations which engage the guest  
  - Multiple applications, which include wall mounted, ceiling mounted, and sculptural installations.               |                                                                                                                                                                |
| Curving Time by Ozzan Turkkan         | - Touch screen installation allows the guests to manipulate colourful imagery using their hands.  
  - Teaches guests how they are able to manipulate technology to create unique art and stories.  
  - Interactive imagery changes form and colour on a touch LED television screen.                                   |                                                                                                                                                                |
**Sphere 9**

Artist: Chris Levine & Beanie Hayward

Fig. 33: Sphere 9 Image 1

Fig. 34: Sphere 9 Image 2
Six-Forty by Four Eighty

Artist: Zigelbaum + Coelho
Lightform

Artist: Mathieu Rivier

Fig. 38: Lightform Image 1

Fig. 39: Lightform Image 2
Dune 4.0

Artist: Daan Roosegaarde

Fig. 40: Dune 4.0 Image 1

Fig. 41: Dune 4.0 Image 2

Fig. 42: Dune 4.0 Image 3
Jim Campbell Works

Artist: Jim Campbell

Fig. 43: Home Movies David

Fig. 44: Church on Fifth Avenue

Fig. 45: The Journey
Curving Time

Artist: Ozzan Turkkan

Fig. 46: Curving Time Image 1

Fig. 47: Curving Time Image 2
Conceptual Work / Pre-Design Phase

The following pages will provide digital images that were created in the conceptual work / pre-design phase of The Travelling New Media Centre. Following the images, a chart is provided which details the creation process, what was learned from the conceptual work and how it is implemented into the design methodology of the travelling new media centre. This section serves as an additional framework for design language and design concepts.
Site Graphing
Medium: Hand Sketch, PhotoShop,
Fig. 48: Four site graphing sketches
Fig. 52: Site Graphing Image 4
**Untitled #1**
Medium: Hand Sketch, PhotoShop

Fig. 53: Untitled #1 - Image 1

Fig. 54: Untitled #1 - Image 2
**Untitled #2**
Medium: Hand Sketch, PhotoShop, Fractalus

---

**Fig. 55: Untitled #2 - Image 1**

**Fig. 56: Untitled #2 - Image 2**
Sound Train
Medium: Soundform of train, Hand Sketch, PhotoShop, Fractalius
**HexValue 1**  
Medium: Hand Sketch, PhotoShop, Fractalius, Adobe Actions, Hexidecimal Editing

Fig. 58: HexValue1 - Conceptual Work
HexValue 2
Medium: Hand Sketch, PhotoShop, Fractalius, Adobe Actions, Hexidecimal Editing

Fig. 59: HexValue2- Conceptual Work
**Map 0**

Medium: Site Map, Hand Sketch, PhotoShop

---

Fig. 60: Map 0
## Conceptual Work Synthesis

<table>
<thead>
<tr>
<th>Name</th>
<th>Origin of work</th>
<th>What was learned</th>
<th>How will it be applied</th>
</tr>
</thead>
</table>
| Site Graphiing| Hand Sketch, PhotoShop. -Initial map showing the Winnipeg - Churchill VIA Rail line was traced  
-Key points were noted as nodes to create a structured graph over top of the existing VIA Rail line tracing  
-Images are superimposed on top of each other with additional graphing occurring at the end of each sequence. | -The relationship of the site to the train is essential in creating a unique journey  
-The train is in constant motion, understand and graphing those motions creates a unique image used to influence design methodologies | -Organic forms juxtaposed geometric forms will help influence design language on the interior facades.  
-Linearity, geometry, and the use of a grid will be employed into the design language.  
-A mixture of organic and man-made forms will be used to create a sense of excitement and contrast.                                                                                                                                                                                                 |
| Untitled 1 & 2 | Hand Sketch, PhotoShop, Fractalius  
-Initial map showing the Winnipeg - Churchill VIA Rail line was traced  
-Materiality was taken from a VIA Rail train interior image and used as a base texture  
-Texture enlarged using computer software and superimposed over the initial image sketch  
-Fractalius software was used to manipulate fracture textures of the superimposed image. | -Communication plays a crucial role in the travelling new media centre | -Organic forms juxtaposed geometric forms will help influence design language on the interior facades.                                                                                                                                                                                                 |
| Sound Train   | Waveform of train motion, Hand Sketch, PhotoShop, Fractalius  
-An audio recording of a train in motion was analyzed using Sound Forge audio software.  
-Using the waveform produced by the train sounds, an image of the train exterior was juxtaposed into the waveform.  
-Hand sketching and digital editing allowed the original image to be further manipulated.  
-Rhythmic patterns and sequences were then superimposed over the waveform recording | -Sound can be reproduced into a graphic image.  
-Sound creates a rhythmic pattern which can be extrapolated into a variety of different images and forms | -The image created a rhythmic pattern that influences the design language. This includes the use of circular lighting, and wayfinding devices as seen in image 2 of Sound Train.  
Additionally rhythmic graphing and pauses seen in image 3 are also integrated into the design language of The Travelling New Media Centre. |
HexValue 1 & HexValue 2

- Sketch from the Sound Train was inserted into Photoshop
- Pronounced features of the image were traced using a brush
- Adobe Actions were used to follow the brush pattern and blur the image to mimic the motion of the train
- Additional editing was done Hex Editor XVI32 to manipulate Hexadecimal values of the digital image.
- This resulted in a new unique image which was based off the primary sketch

Map 0

- Site Maps of the primary stops (Thicket Portage, Pikwitonei, and Ilford) were used
- Prior organic forms utilized in the patterns of sound train were increased in scale
- 3 large circles to frame hand sketches of the primary stops
- Additional image editing is used to manipulate graphic qualities of the image.

<table>
<thead>
<tr>
<th>Name</th>
<th>Origin of work</th>
<th>What was learned</th>
<th>How will it be applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>HexValue 1 &amp; HexValue 2</td>
<td>Hand Sketch, Photoshop, Fractalius, Adobe Actions, Hexadecimal Editing</td>
<td>- Motion and long narrow spaces are important to user interaction</td>
<td>- Parallel information will form an important part of the design language. Using multiple mediums and electronics is a crucial feature. The concept of motion and fluidity of circulation throughout the space is influenced from the final result of the HexEdits</td>
</tr>
<tr>
<td>Map 0</td>
<td>Site Map, Hand Sketch, Photoshop,</td>
<td>- Connectivity to the user and the site plays an important role for The Travelling New Media Centre</td>
<td>- Networking between guests and communities will play an important role in design language. This will include the creation of organic forms that encourage socialization between guests.</td>
</tr>
</tbody>
</table>

- Logistics between each site are crucial to ensure the mandate of The Travelling New Media Centre is met.
- Organic forms and circular shapes will juxtapose grids and other robust forms to create a playful and engaging environment.

Table 16: Conceptual Work Synthesis
Organizational Structure of Train

Bubble diagram outlining the spatial typologies and train sequence

- Exhibition / Information
- Socialization
- Interactive Education
- Interactive New Media Installation
- Staff Area

Train 1 - Welcome Area

Train 2 - Sound Train
Organizational Structure of Train
Bubble diagram outlining the spatial typologies and train sequence

- Exhibition / Information
- Socialization
- Interactive Education
- Interactive New Media Installation
- Staff Area

Train 5 - Touch & Motion Train

Train 6 - Human Presence
Organizational Structure of Train

Bubble diagram outlining the spatial typologies and train sequence

- Exhibition / Information
- Socialization
- Interactive Education
- Interactive New Media Installation
- Staff Area

Train 9 - Staff Train 1

Train 10 - Staff Train 2

Fig. 61: Organizational Structure of Train
Phenomenological Sequencing

Train 1 - Welcome Area

Information Unit (Welcome space program, introduction to technology that will be introduced to the guest)

Touch / Sound / Light Installation

Train 2 - Sound Train

Sound Based Installation

Fig. 62: Phenomenological Sequencing - Train 1 & 2
Fig. 63: Phenomenological Sequencing - Train 3 & 4

Train 3 - Projection and Light Train

- Reactive touch flooring installation
- Ceiling mounted projector and motion sensors

Train 4 - Touch Train

- Touch Screen / Motion Installation
Phenomenological Sequencing

Train 5 - Touch & Motion Train

Touch Screen / Motion Installation

Train 6 - Human Presence

Reactive New Media Installation

Fig. 64: Phenomenological Sequencing - Train 5 & 6
Train 7 - Touch Alternative

Reactive New Media Installation

Train 8 - Debriefing, W/C, Storage

Information Unit

Fig. 65: Phenomenological Sequencing - Train 7 & 8
Phenomenological Sequencing

Train 9 - Staff Train 1

Socialization space for staff

Train 10 - Staff Train 2

Fig. 66: Phenomenological Sequencing - Train 9 & 10
**Primary Circulation Paths**

Guests will be guided through the space in a “group touring” method. Users will enter Train 1 (Welcome Area) in groups of 12 with the assistance of the permanent staff members. This will help control circulation as well as the amount of users engaging with the space.

---

**User / Visitor Circulation**

---

**Staff Circulation**

Train 1 - Welcome Area

Train 2 - Sound Train

Fig. 67: Primary Circulation Paths
Train 3 - Projection and Light Train

Train 4 - Touch Train
Primary Circulation Paths

User / Visitor Circulation

Staff Circulation

Train 5 - Touch & Motion Train

Train 6 - Human Presence

Fig. 67 continued: Primary Circulation Paths
Train 7 - Touch Alternative

Train 8 - Debriefing, W/C, Storage
Primary Circulation Paths

- - - - - - User / Visitor Circulation

- - - - - - Staff Circulation

Train 9 - Staff Train 1

Train 10 - Staff Train 2

Fig. 67 continued: Primary Circulation Paths
Train Sequencing & Design Implications

1. Historical Development of Train Travel & Train Interiors
2. Visual Literacy

---

Train 1 - Welcome Area

1. Round tables that encourage socialization integrated into open space
2. Touch screen interactive displays

Train 2 - Sound Train

1. Open spaces with varying floor textures to create a rich and engaging environment
2. Interactive sound stations which encourage communal learning with contemporary technologies
Train 3 - Light & Projection Train

1 - Storage for application furniture and technology
2 - Interactive visual projector that engages with users.

Train 4 - Touch Train

1 - Comfortable seating to allow inclusivity to all guests
2 - Interactive display units which educate and interact with guests
# Train Sequencing & Design Implications

1. Historical Development of Train Travel & Train Interiors
2. Visual Literacy

---

**Train 5 - Motion Train**

1. Open space for circulation
2. Multitude of dynamic technological installations to create an engaging educational environment

---

**Train 6 - Human Presence**

2. User controlled environment which allows guests to control lights in their surrounding environment. Supported by touch screen educational components
Train 7 - Interaction Train

1 - Open space for guest circulation and comfort
2 - Multitude of dynamic technological installations to create an engaging educational environment

Train 8 - Debriefing Train

1 - Multiple storage options and universally accessible washrooms
2 - Multitude of dynamic technological installations to create an engaging educational environment
Train Sequencing & Design Implications

1. Historical Development of Train Travel & Train Interiors
2. Visual Literacy

Train 9 - Staff Lounge & Sleeping Quarters

1. Lounge space to encourage socialization with permanent staff members of The Travelling New Media Centre

Train 10 - Staff Lounge & Sleeping Quarters

1. Additional room typologies to accommodate the contemporary needs of the Travelling New Media Centre

Fig. 68: Train Sequencing & Design Implications Floorplans
Train Sequencing & Design Implications

1. Historical Development of Train Travel & Train Interiors
2. Visual Literacy
3. Design Language Development

Train 1 - Welcome Area

1. Curvilinear doors (contemporary train design language)
2. Rounded windows inspired by design language development

1. Rounded tables, open spaces which encourage socialization
2. Interactive educational component integrated into display technology
Train 2 - Sound Train

2 - Interactive educational component integrated into display technology
3 - Multitude of display technologies modified by user input

1 - Curvilinear doors (contemporary train design language)
2 - Interactive sound component with communal learning stations
Train Sequencing & Design Implications

1. Historical Development of Train Travel & Train Interiors
2. Visual Literacy
3. Design Language Development

Train 3 - Light & Projection Train

1. Rounded tables, open spaces which encourage socialization
2. Interactive educational component integrated into display technology
3. Dynamic lighting fixtures with design language inspired by “Site Graphing”
1 - Pause spaces with comfortable and contemporary seating
3 - Casework, ceiling and pendant lighting inspired by “Site Graphing Image 1”

1 - Pause spaces with comfortable and contemporary seating
2 - Traditional and contemporary educational components in adjacency to create dynamic environment
3 - Ceiling and pendant lighting inspired by “Site Graphing Images”
Train Sequencing & Design Implications

1. Historical Development of Train Travel & Train Interiors
2. Visual Literacy
3. Design Language Development

Train 5 - Motion Train

- Curvilinear doors & windows (contemporary train design language)
- Wallmounted electronics encourage guests to interact with informational content

- Curvilinear doors (contemporary train design language)
- Multitude of different technology applications for education and interactivity
- Ceiling and pendant lighting inspired by "Site Graphing Images"
Train 6 - Human Presence

1 - Curvilinear doors & windows (contemporary train design language)
2 - Interactive educational component integrated into display technology

2 - Interactive installation encourages inductive learning with guests
Train Sequencing & Design Implications

1. Historical Development of Train Travel & Train Interiors
2. Visual Literacy
3. Design Language Development

Train 7 - Interaction Train

1. Curvilinear doors & windows (contemporary train design language)
2. Interactive installation encourages inductive learning with guests

1. Curvilinear doors & windows (contemporary train design language)
2. User defined new media installation, encourages inductive discovery
3. Interactive light installation mounted onto wall structure.
Train 8 - Debriefing Train

1 - Curvilinear doors (contemporary train design language)
3 - Casework, ceiling and pendant lighting inspired by “Site Graphing Image 1”

2 - Wallmounted casework with integrated technology
3 - Bowed drop ceiling inspired by Site Graphing
Train Sequencing & Design Implications

1. Historical Development of Train Travel & Train Interiors
2. Visual Literacy
3. Design Language Development

Train 9 - Staff Lounge & Sleeping Quarters

1 - Sleeping quarters typology to accommodate permanent staff

1 - Sleeping quarters typology to accommodate permanent staff. Additional lounge seating to encourage socialization
Train 10 - Staff Lounge & Sleeping Quarters

1 - Multiple ammentities to accomodate permanent staff

Fig. 69: Train Sequencing & Design Implications Elevations
Typical Unit Display Types

Fig. 70: Interactive multi touch-screen unit

Fig. 71: Exhibition / Display Unit
Fig. 72: Modified interactive multi touch-screen unit

Fig. 73: Motion activated LED display units
Design Concept
Materials & Finishes

SSM1 - Corian - Du Pont - Anatartica
Location: Touch Screen installation pedestals

SSM2 - 3Form - Chroma Desire R23
Location: Touch screen wall surface

SSM3 - 3Form - Chroma Black Out E03
Location: Touch screen wall surface

SSM3 - 3Form - Chroma White Out W01
Location: Touch screen wall surface
MT1 - Julian Tile - Moda MG105G - Super White Glossy
Location: W/C Backsplash

ACS1 - Armstrong Clean Room VL Uperforated
Location: W/C, Kitchen, Technology Maintenance

ACS2 - Geometrix Wedge GW-3
Location: Train ceiling as specified by RCP
Materials & Finishes

LVT1 - Forbo - Allura Wood - Whitewash Elegant Oak

LVT2 - Tarkett - Eternal Colour

LVT3a - Tarkett - Riot Static Red

LVT3b - Tarkett - Riot Static Red

LVT4 - Forbo Allura Wood - Natural Raw Timber

LVT5 - Forbo Allura Safety - Nero Concrete

VS - Forbo Safestep - R12 Smoke

RB = Johnsonite Burnt Umber
Exterior Application

Exterior design studies that include design development language and recycled materials are integrated into the Travelling New Media Centre. Dark pixled artforms and corten steel juxtapose the prairie skyline, creating a dynamic and energetic exterior design. Exterior logo will vary slightly on each traincar as to not allow for repetitiveness in the design of the traincars.

Additional opportunities for branding on the windows and front and rear trains cars are also a viable option for future applications.
Typical Train - Exterior Elevation
Scale: 1:75

Typical Train (Alternative) - Exterior Elevation
Scale: 1:75
Train 1 - Welcome Area

Train 1 - Floor Plan
Scale: 1:75

Train 1 - South Elevation
Scale: 1:75
Train 1 serves as the welcome train for the Traveling New Media Centre. Within this space, users are introduced to a multitude of interactive touch screen monitors and new media installations. As suggested in the spatial implications section of the historical analysis, this environment is geared toward a slick, comfortable interior, which integrates universal design and new technologies. Additional seating is provided to encourage socialization between guests and creates a comforting and inviting environment. As discussed in the synthesis of the Matusitz’s spatial implications, folding roundtables are utilized to encourage interaction, and large open spaces are used to allow for circulation between the users. Two separate spaces are integrated for storage purposes. The northern corner storage area is a modular unit which allows for tables to be easily stored once the train travels from one destination to another. An additional storage space on the south of the train allows for stackable chairs to be stored during pack up a well.
Train 2 - Sound Train

Train 2 - Floor Plan
Scale: 1:75

Train 2 - North Elevation
Scale: 1:75
Train 2 (Sound Train) is an interactive sound exhibition space that allows users to manipulate and visualize auditory experiences. Wall mounted table surfaces on the south side of the train act as a work surface for guests. Tactile electronic music equipment is then placed on these work surfaces. Users are then able to engage with the equipment to manipulate the sound and visuals that are being produced on the north wall of the train. Additional sound activated LED screens are also integrated into the space, allowing for a multitude of different potential experiences. The wall mounted table surfaces allow for easy pack-up once the train is moving destinations. As outlined in the visual literacy synthesis review, lighting will be used as a wayfinding device to provide guests with a safe path of travel throughout the space. Additional consideration based off the visual literacy spatial implications section will ensure that sound attenuation is accounted for. This will be accomplished by using high NRC/CAC acoustic ceiling tiles and sound absorptive panels.
Train 2 - Sound Train

Spatial Qualities & Attributes

- Unique spaces which allows users to manipulate and visualize auditory experiences
- Wall-mounted table surfaces
- Multiple stations that encourage user interactivity
- Sound activated LED screens in multiple scales
Train 2 - Sound Train

Design Methodology

-Multitude of floor finishes to create an engaging and dynamic space
-Modular wall mounted table surfaces allow for easy disassembly.
-Consideration toward NRC/CAC through use of acoustic ceiling and other applications
Train 3 (Projection and Light) maps user’s movements using a variety of computer sensors. These sensors transmit the collected data into projected imagery. Two projection screens are located on the south wall of the train, and visualize users movements as they enter into the space. Seated areas in this train allow guests to watch the projections as well as socialize and communicate with each other. Staff in this space will explain how the sensors are used to create the live imagery that is seen on the projection screen. This design feature will assist in integrating an educational component in the space, and will encourage guests to think critically about contemporary concepts surrounding new media and technology. Projection and sensor placement is crucial in relation to the anthropometrics of the users, therefore placement of ceiling mounted projectors will be important in this environment. Again, recessed floor lighting is utilized to help guide users throughout the space. Additional storage units are available to store both tables and chairs in this train.
Spatial Qualities & Attributes

- Tracks & maps users movements using a variety of computer sensors.
- Seated areas allow guests to view the projections, socialize, and allows employees to educate users on the installations.
- Geared toward an educational typology
- Universal W/C
- Ceiling recessed projection screens

Design Methodology

- Anthropometrics in relation to motion tracking and projector placement
- Recessed floor lighting utilized as a way-finding device
- Modular & static storage options
- Curvilinear forms mimiced on table & ceiling plane
- Dynamic lighting fixtures inspired by conceptual framework & historic notion of train travel
Train 4 (Touch Train) integrates touch screen display units that allow users to create and manipulate their own new media artworks. Additional non-digital display units show rudimentary technologies used to create new media artwork & installations of the past. These non-digital pedestal display cabinets allow users to have a better understanding of the history of new media artwork and the role that it now plays within our daily lives. This space creates a nice balance between comprehension and production, as it allows users to be educated using pre-recorded videos as well as lets users interact with touch screen applications. An audio/video space in this train provides easy access to technological features for trained staff members. The ceiling plane in this space creates a dynamic contrast which mimics the motion of the moving train. This accent feature helps engage users, and create an interesting juxtaposition from the previous ceiling structure.
Train 4 - Interaction Train

Spatial Qualities & Attributes

-Multitude of touch screen display units allowing guests to create and manipulate their own new media artwork.
-Non-digital display cases display historic information and objects concerning new media production.
-A/V Booth provides staff members easy accessibility to software and technology
-Juxtaposition from previous trains through use of bulkheads and accent ceilings.
-Additional seating provided to guests
Train 4 - Interaction Train

Design Methodology

-Environment encourages a balance between comprehension and production.
-Educational components use pre-recorded video and employee assistance
-Varying ceiling types. Accent ceiling mimics the motion of train movement
Train 5 - Touch and Motion Train

Train 5 - Floor Plan
Scale: 1:75

Train 5 - South Elevation
Scale: 1:75
Train 5 - North Elevation
Scale: 1:75
Train 5 - Touch and Motion Train

Train 5 (Touch & Motion Train) integrates LED screen installations, as well as individual touch screen tablets. LED screens will mimic users movements and create unique LED art based on motions made by the guests. Open spaces are crucial to allow users to feel comfortable engaging with the LED screen technologies. Individual touch screen tablets will also allow users to create images on LED screens allowing guests to create unique artworks. An additional table at the end of the train allows guests to print a copy of one of the LED images they have created. Installations in this space vary in size and scope which is known to help engage users as outlined in the visual literacy portion of this document. The A/V space has clear glazing which allows guests to see the technology that is being used to control the new media installations. This assists in creating additional comprehension for the guests, and creates a transparent aesthetic.
Train 5 - Touch and Motion Train

Spatial Qualities & Attributes
- LED Touch screens and individual tablet stations.
- A/V space has clear glazing which allows guests to see the technology that is being used to control the new media installations.
- Users can create New Media work on touch screen units and received a physical printout at the back table.

Design Methodology
- Open spaces for ease of circulation and increased user engagement.
- Utilization of vertical surfaces. This assists in creating additional comprehension for the guests, and creates a transparent aesthetic.
- Multiple floor types to delinate space and assist in wayfinding.
Train 6 - Human Presence

Train 6 - Floor Plan
Scale: 1:75

Train 6 - North Elevation
Scale: 1:75
Spatial Qualities & Attributes

- Light installation which sense human presence.
- Integration of interactive educational screens which describes the process of the installation and allows users to control light functions

Design Methodology

- Multiple scale installations
- Integration of educational component within interactive installations
Train 7 - Interaction Train 2

Train 7 (Touch Alternative) integrates a multitude of small-scale new media art installations. The primary forms of these installations are backlit touch activated surfaces. The first series of surface installations are mounted on the south wall. Additional installations found in the centre of this train use laser & light to create digital 3d objects & images. On the south eastern side of the train, there is an additional installation which allows guests to move backlit cubes on an interactive surface. The proximity of the cubes from each other creates unique interactions and encourages guests to work together and engage in a cooperative manner. Guests can collaborate to activate the wall, creating a positive and enriching experience for anyone using the installation. A multitude of colours, textures, and surface changes create a contemporary and engaging space.
Train 7 - South Elevation
Scale: 1:75

Train 7 - North Elevation
Scale: 1:75
Spatial Qualities & Attributes

- Multitude of small-scale new media art installations.
- Laser and light utilized to create 3D objects and images.
- A/V Closet used for the creation of laser and light exhibitions
- Storage space for display units
- Rest areas offered within the space
Design Methodology

- User engaged art pieces
- Collaborative new media art installations encourage guests to socialize and problem solve together in a cooperative manner
- Multitude of colours, textures, and surfaces changes
Train 8 - Debriefing Train

Train 8 - Floor Plan
Scale: 1:75

Train 8 - Section 1
Scale: 1:75
Train 8 (Debriefing Train) is the last train for the public portion of the Traveling New Media Centre. This space integrates a small socialization area as well as additional banquet seating. Monitors on the south side of the train show images that were created by guests as they went through the Traveling New Media Centre. This encourages guest comprehension and gives users an additional overview of the multitude of phenomenological experiences that occurred. Universal W/C’s and additional storage for display units, chairs, and electronics are also available on this train.
Spatial Qualities & Attributes

- Final public train
- Fire exit
- Computer screens on south give synopsis of Travelling New Media Centre
- University W/C and additional storage is also available on this train

Design Methodology

- Small socialization areas, and baquet rest seating
- Curvilinear forms, tactile surfaces.
- Integration of contemporary materials (glass, metals)
Train 9 - Staff Lounge & Sleeping Quarters

Train 9 - Floor Plan
Scale: 1:75

Train 9 - North Elevation
Scale: 1:75
Spatial Qualities & Attributes

- Not accessible to the public
- Small sleeping quarters to accommodate staff, Universal sleeping quarter included as well.
- Showeroom with slip resistant flooring.

Design Methodology

- Lounge seating to encourage socialization between employees.
- Bedroom clusters to mitigate noise transference
- Specified staff washrooms to separate public and private amenities
Spatial Qualities & Attributes

Train 9 (Staff Lounge & Sleep Quarters) is not accessible to the general public. This train offers a lounge space which encourages staff to relax in a comfortable environment. The train also offers 8 bedrooms, as well as a shower room and two W/C’s. Universally accessible bedrooms and washrooms are also offered to staff. Slip resistant materials and surfaces are integrated into the W/C and shower areas to ensure staff safety. This also allows for additional durability and decreased maintenance.
Train 10 - Secondary Staff Train

Train 10 - Floor Plan
Scale: 1:75

Design Methodology

- Finishes for kitchen geared toward cleanliness and safety
- Finishes in Technology maintenance geared toward clean room typology
Train 10 - North Elevation
Scale: 1:75

Train 10 - Kitchen Elevation
Scale: 1:75
Spatial Qualities & Attributes

- Seated areas which can allow for dining or socialization (Semi-private)
- Small warming kitchen to serve meals to staff
- Technology maintenance area for repairing large scale technology
Chapter 7: Conclusion
Research Question Summary

1. How can interior design mediate in educating and engaging small communities on the topic of new media artwork and technology?

   The Traveling New Media Centre uses interior environments to create a unique experience that is specifically tailored toward engaging small communities. This is accomplished first by using a familiar architectural framework, which is the train itself. The train currently utilizes pre-existing infrastructure and serves as the primary form of transportation for the example communities outlined in this practicum. Additionally, techniques from the visual literacy portion of the document are integrated into the interior spatial qualities. This includes considerations of materiality, anthropometrics, user demographic, user familiarity, and user comfort. These factors were all considered to create a space which not only engages users with new technologies but fosters the opportunity to educate users on new media artwork and technology.

2. How can the interior environment of a train car be effectively re-designed to allow guests to create and interact with various forms of new media and technology?

   To properly answer this question, I first had to research the history of trains as well as the history and evolution of their interior environments. Additional field research was also conducted, by traveling on a VIA Rail passenger train. The Traveling New Media Centre uses the architectural framework of the contemporary Canadian train and modifies it to allow for the integration of new media installation and new technologies. This is accomplished by initially creating large open spaces which allow guests to interact and engage with technologies. This differs greatly from the confining and compartmentalized nature of the typical passenger train. Consideration toward modularity, and using contemporary building techniques also allows for an effective re-design of the train and can enable the integration of new technology.
3. How can interior design create an experience that uses new technologies, and exhibitions to encourage users to think critically about contemporary new media.

This I found to be the most difficult of the three research questions. It is clear that we can use interior design methodologies to create dynamic and engaging user experiences. However, I would argue that creating a space which makes users think critically about contemporary forms of technology and new media is a more difficult task. The Traveling New Media Centre addresses this question by creating a sequenced phenomenological experience. By guiding the guest in a cohesive and critically planned sequence it allows users to engage in the environment in a controlled and clear manner. Additionally, by having both education and interactive exhibits, it allows guests to not only learn but also apply what they have learned in a contemporary technological setting.
Opportunities

The Travelling New Media offered a variety of opportunities from an Interior Design standpoint. This project took a unique approach by creating ten separate trains each with a different phenomological experience. Furthermore, working within the Canadian context allowed for a greater understanding of the role trains and train travel within past and contemporary culture. The Travelling New Media Centre also included both permanent and rapid changing technology products. This allowed for some interior elements like the touch screen monitors and digital displays to be easily updated if the Travelling New Media Centre required hardware upgrades. Future studies and post-occupancy analysis could allow for a stronger understanding of the direct links between visual literacy and The Travelling New Media Centre. This would allow for a better understanding of how users interact with contemporary new media in a small community setting.

Constraints

A multitude of constraints were encountered during the creation of the Travelling New Media Centre. By creating a space which is constantly in flux, it required different responses to typical interior design problems. Furthermore, understanding the logistics of the train and scheduling created variety of unique issues which required rigorous investigation. Creating an engrossing educational component also proved difficult as the train was required to be dynamic and not static in a classroom sense. The integration of educational components in conjunction with exhibition spaces created a hybrid typology which offered guests an interactive and educational experience.
Summary

The Travelling New Media centre is a unique interior environment that successfully exhibits and educates guests on new technology and new media artwork. Technology driven spaces of this nature are becoming increasingly common, but rarely are they juxtaposed with such a historical icon such as the passenger train. The intergration of multiple theoretical frameworks and design language development created a dynamic and highly engaging space. A direct link between technology and the general public is created through the design of such an enriching and unique environment. Guests are able to interact in a safe and contemporary space while engaging with their community as a whole.
Bibliography


Artibise, Alan F. J., and Manitoba Record Society. Gateway City Documents on the City of Winnipeg, 1873-1913. Manitoba Record Society Publications ; v. 5. Winnipeg, Man: Manitoba Record Society in Association with the University of Manitoba Press, 1979.


Bibliography


Bibliography


Bibliography


Appendices
Train 1- Welcome Area

WELCOME AREA
101

INSTALLATION
A101

STORAGE
102

W/C
103

STORAGE
104

Scale Checked by

Drawn by

Date

Project Number

www.autodesk.com/revit

1:75

2016-11-22 9:33:21 AM

Train 1 (Welcome Area)
Train 1 - Welcome Area
Train 2 - Sound Train
Train 2 - Sound Train
Train 3 - Light & Projection Train
Train 3 - Light & Projection Train

Legend:
- A1: Cooper - Recovery Geometric - Jopus Pendant 78 - 120V
- B1: Cooper - Halo - 152MM recessed pot light LED
- C1: Cooper - Halo - 203MM recessed pot light LED
- D1: Vibia - Slim 0917 Pendant LED
- G1: Vibia - Rhythm - Wave Pendant LED
- G2: Vibia - Rhythm - Chaotic Pendant LED
- G3: Vibia - Rhythm - In X Pendant LED
- G4: Vibia - Rhythm - Sinusoidal Pendant LED
- H1: Vibia - Amoeba Pendant LED
- G5: Armstrong - Serpentina Ceiling Mounted Canopy Varying Lengths
- NEW MEDIA ART INSTALLATION Floor To Ceiling
- GYP. DROP CEILING
- NEW MEDIA ART INSTALLATION Floor To Ceiling
Train 4 - Interaction Train
Train 4 - Interaction Train

A1  COOPER - ROOFY GEOMETRIC - LED

B1  COOPER - HALO - 152MM RECESSED LIGHT LED

C1  COOPER - HALO - 303MM RECESSED LIGHT LED

D1  VIBIA - SLIM 0917 PENDANT LED

G1  VIBIA - RHYTHM - WAVE PENDANT LED

G2  VIBIA - RHYTHM - CHAOTIC PENDANT LED

H1  VIBIA - AMEBA PENDANT LED

G3  VIBIA - RHYTHM IN X PENDANT LED

G4  VIBIA - RHYTHM - SINUSOIDAL PENDANT LED

ARMSTRONG - SERPENTINA CEILINGS MOUNTED CANOPY VARYING LENGTHS

NEW MEDIA ART INSTALLATION FLOOR TO C.L.L.

GYP. DROP CEILING GYP. DROP CEILING 2492MM X 2492MM X 2492MM
Train 5 - Touch & Motion Train
Train 5 - Touch & Motion Train

A1  COOPER - NEORAY - GEOMETRIC - 2SDP
B1  COOPER - HALO - 152MM RECESSED POT-LIGHT LED
C1  COOPER - HALO - 203MM RECESSED POT-LIGHT LED
D1  VIBIA - SLIM 0917 PENDANT LED
G1  VIBIA - RHYTHM - WAVE PENDANT LED
G2  VIBIA - RHYTHM - CHAOTIC PENDANT LED
G3  VIBIA - RHYTHM - IN X PENDANT LED
G4  VIBIA - RHYTHM - SINUSOIDAL PENDANT LED
H1  VIBIA - AMEBA PENDANT LED

ARMSTRONG - SERPENTINA

NEW MEDIA ART INSTALLATION FLOOR TO CLG.

2492MM A.F.F. GYP. DROP CEILING

NEW MEDIA ART INSTALLATION FLOOR TO CLG.
Train 6 - Human Presence
Train 7 - Interaction Train 2
Train 7 - Interaction Train 2
Train 8 - Debriefing Train

No. Description Date
A1 COOPER - RECOVERY GEOMETRIC - LED
B1 COOPER - HALO - 120MM RECESSED POT-LIGHT LED
C1 COOPER - HALO - 300MM RECESSED POT-LIGHT LED
D1 VIBIA - SLIM 0917 PENDANT LED
G1 VIBIA - RHYTHM - WAVE PENDANT LED
G2 VIBIA - RHYTHM - CHAOTIC PENDANT LED
G3 VIBIA - RHYTHM - IN X PENDANT LED
G4 VIBIA - RHYTHM - SINUSOIDAL PENDANT LED
H1 VIBIA - AMEBA PENDANT LED
H2 ARMSTRONG - SERPENTINA CEILING MOUNTED CANOPY VARYING LENGTHS
NEW MEDIA ART INSTALLATION FLOOR TO C.G.L.
GYP. DROP CEILING GYP. DROP CEILING 240X60X6 F.F.
NEW MEDIA ART INSTALLATION FLOOR TO C.G.L.
Train 9 - Staff Lounge & Sleeping Quarters

LOUNGE SPACE 901

BEDROOM 902
BEDROOM 903
UNIVERSAL BEDROOM A109

BEDROOM 906

BEDROOM 907
BEDROOM 908
BEDROOM 909
SHOWER ROOM 910
UNIVERSAL W/C 911

Scale 1:75

Train 9 (Staff)
Project Number
Project Name
Owner
Issue Date
Author
Checker

www.autodesk.com/revit
Train 10 - Secondary Staff Train
Detail Drawings

Recessed Projection Screen Detail
Scale: 1:10

Mounting Options Detail
Scale: 1:10
INSTALL WOOD BLOCKING BETWEEN STUDS ABOVE STEEL PLATE & BETWEEN ADJACENT STUD CAVITIES @ 610mm O.C

HORIZONTAL HSS TO BE FULLY WELDED TO STEEL PLATE.

6mm STEEL PLATE TO EXTEND 610mm ABV TOP OF COUNTER & FASTENED TO WOOD STUDS. INSTALL NEW WOOD STUD TO MATCH EXISTING AT SUPPORT LOCATIONS AS REQUIRED.

PROVIDE 13mm BOLTS FASTENED THROUGH STUD TO ATTACH STEEL PLATE. 225mm O.C MAX. HOLES TO BE PRE-DRILLED

GB WALL FINISH

RB BASE

13mm SOLID SURFACE (SSM1) W/ MITERED CORNERS ON 19mm VENEER CORE PLYWOOD

SOLID SURFACE VALENCE, SSM1

FULLY WELD HORIZONTAL H.S.S. SUPPORTS TO PERPENDICULAR H.S.S. SUPPORTS

Wall Mounted Counter (Typ.)
Scale: 1:10
Wall Mounted Sound Table
Scale: 1:15

Wall Mounted Sound Table (Closed)
Scale: 1:10
## Room Finish Schedule

### ABBREVIATIONS:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<td>EP</td>
<td>Epoxy Paint</td>
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<td>GL</td>
<td>Glazing</td>
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<tr>
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<td>Luxury Vinyl Tile</td>
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<tr>
<td>P</td>
<td>Paint</td>
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<td>RB</td>
<td>Rubber Base</td>
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<td>SC</td>
<td>Self Coved Base</td>
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### NOTES:

- N1: See Paint Distribution Elevations for additional clarity

### Room Finish Schedule

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<th>FLOORING FIN</th>
<th>BASE FIN</th>
<th>NORTH WALL FIN</th>
<th>EAST WALL FIN</th>
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## Room Finish Schedule

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END OF SECTION
# Material Schedule

## 06 61 16 - SOLID SURFACING FABRICATIONS

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<th>Item</th>
<th>Manufacturer &amp; Supplier</th>
<th>Series &amp; Colour</th>
<th>General Application Comments</th>
<th>Material Board</th>
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<tbody>
<tr>
<td>Sold Sufacing Material (SSM)</td>
<td>Corian</td>
<td>DuPont Corian Thickness: 13mm Colour: Antarctica</td>
<td>Touch screen installation pedestals.</td>
<td><img src="image1" alt="Material Board" /></td>
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<tr>
<td>Sold Sufacing Material (SSM2)</td>
<td>3Form</td>
<td>Chroma Desire R23 Gauge: 1&quot;</td>
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<td>Sold Sufacing Material (SSM3)</td>
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<td>Chroma Black Out E03 Gauge: 1&quot;</td>
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<td><img src="image4" alt="Material Board" /></td>
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* General application comments are not fully descriptive or inclusive. Refer to Room Finish Schedule and Drawings for complete and detailed finish application information.
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<th>Manufacturer &amp; Supplier</th>
<th>Series &amp; Colour</th>
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<td>Tactile Floor Tile (TT1)</td>
<td>Elan Tile</td>
<td>Tactile Walking Surface Indicator (TWSI) w/ Wayfinding Bars</td>
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<td>Size: 297mm x 297mm Colour: Vogue Black</td>
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<td>Mosaic Tile (MT1)</td>
<td>Julian Tle</td>
<td>Moda MG105G Super Whitt Glossy</td>
<td>W/C Backsplash</td>
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# Material Schedule

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<td>Armstrong Clean Room VL Unperforated Class 5 #870</td>
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<td>Allura Wood Whitewash Elegant Oak Color: W60064 Size: 100 cm x 15 cm Plank</td>
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<tr>
<th>Item</th>
<th>Manufacturer &amp; Supplier</th>
<th>Series &amp; Colour</th>
<th>General Application Comments</th>
<th>Material Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVT2</td>
<td>Tarkett</td>
<td>Eternal Colour (Orange Gradient) 44752 Rainbow Size: 10m x 195cm Digitally Printed Vinyl</td>
<td>Train 2, Train 6, Train 7</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>LVT3a</td>
<td>Tarkett</td>
<td>Riot Static Red 253710007 Size: 18 x 36 Tile</td>
<td>Train 2, Train 3, Train 5, Train 6, Train 7, Train 8</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>LVT3b</td>
<td>Tarkett</td>
<td>Riot Static Grey 253710007 Size: 18 x 36 Tile</td>
<td>Train 2, Train 3, Train 5, Train 6, Train 7, Train 8</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>LVT4</td>
<td>Forbo</td>
<td>Allura Wood Natural Raw Timber Color: W60153 Size: 100 cm x 15 cm Plank</td>
<td>Train 4, Train 5, Train 6, Train 7</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
</tbody>
</table>

* General application comments are not fully descriptive or inclusive. Refer to Room Finish Schedule and Drawings for complete and detailed finish application information.
## Material Schedule

<table>
<thead>
<tr>
<th>Item</th>
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<tbody>
<tr>
<td>LVT5</td>
<td>Forbo</td>
<td>Allura Safety 74419 Nero Concrete Size: 48cm x 48cm Tile</td>
<td>Train 3, Train 10</td>
<td><img src="image1" alt="LVT5 Material" /></td>
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<tr>
<td>Vinyl Sheet VS</td>
<td>Forbo</td>
<td>Safestep r12 175032 smoke Size: 25m x 200cm Slip Resistant Safety Vinyl</td>
<td>All W/C</td>
<td><img src="image2" alt="Vinyl Sheet VS Material" /></td>
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<tr>
<td>Rubber Base (RB)</td>
<td>Johnsonite</td>
<td>Colour: Burnt Umber</td>
<td>Base as Specified</td>
<td><img src="image3" alt="Rubber Base RB Material" /></td>
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</table>
## 09 90 00 - PAINTING AND COATINGS

<table>
<thead>
<tr>
<th>Item</th>
<th>Manufacturer &amp; Supplier</th>
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<th>General Application Comments</th>
<th>Material Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paint (P1)</td>
<td>Benjamin Moore</td>
<td>CC-40 Cloud White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint (P2)</td>
<td>Benjamin Moore</td>
<td>2002-10 Vermilion</td>
<td></td>
<td></td>
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<tr>
<td>Paint (P3)</td>
<td>Benjamin Moore</td>
<td>Black Beauty 2128-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint (P4)</td>
<td>Benjamin Moore</td>
<td>CC-30 Oxford White LRV 85</td>
<td>GWB Corridor Ceilings and Bulkhead</td>
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<tr>
<td>Paint (P5)</td>
<td>Benjamin Moore</td>
<td>Pelican Gray LRV: 59</td>
<td>Exit doors &amp; Frames</td>
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</tr>
</tbody>
</table>
### Material Schedule

<table>
<thead>
<tr>
<th>Item</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Paint (P6)</td>
<td>Benjamin Moore</td>
<td>Vale Mist</td>
<td>Universal W/C door panels</td>
<td></td>
</tr>
</tbody>
</table>

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Fig. 9: Exterior Graphic Design [Photograph]. Used with permission granted on 22 Nov 2016 from GMR Marketing.
Fig. 12: Exterior Promotional Image [Photograph]. Used with permission granted on 22 Nov 2016 from GMR Marketing.
Fig. 10: LED lighting and large user circulation [Photograph]. Used with permission granted on 22 Nov 2016 from GMR Marketing.

Fig. 11: Modified dining car to encourage socialization and circulation [Photograph]. Used with permission granted on 22 Nov 2016 from GMR Marketing.

Fig. 33: Sphere 9 Image 1 [Photograph]. Used with permission granted on 16 Nov 2016 from Chris Levine [Credit: Fine Art Society 2013]
Fig. 34: Sphere 9 Image 2 [Photograph]. Used with permission granted on 16 Nov 2016 from Chris Levine [Credit: Fine Art Society 2013]
Fig. 35: Six-Forty by Four-Eighty Image 1 [Photograph]. Used with permission granted on 17 Nov 2016 from Marcelo Coelho
Fig. 36: Six-Forty by Four-Eighty Image 2 [Photograph]. Used with permission granted on 17 Nov 2016 from Marcelo Coelho
Fig. 37: Six-Forty by Four-Eighty Image 3 [Photograph]. Used with permission granted on 17 Nov 2016 from Marcelo Coelho

Fig. 38: Lightform Image 1 [Photograph]. Used with permission granted on 16 Nov 2016 from Mathieu Rivier
Fig. 39: Lightform Image 2 [Photograph]. Used with permission granted on 16 Nov 2016 from Mathieu Rivier

Fig. 40: Dune 4.0 Image 1 [Photograph]. Used with permission granted on 17 Nov 2016 from Roosegaarde [www.studioroosegaarde.net]
Fig. 41: Dune 4.0 Image 2 [Photograph]. Used with permission granted on 17 Nov 2016 from Roosegaarde [www.studioroosegaarde.net]
Fig. 42: Dune 4.0 Image 3 [Photograph]. Used with permission granted on 17 Nov 2016 from Roosegaarde [www.studioroosegaarde.net]

Fig. 43: Home Movies David [Photograph]. Used with permission granted on 16 Nov 2016 from Jim Campbell.
Fig. 44: Church of Fifth Avenue [Photograph]. Used with permission granted on 16 Nov 2016 from Jim Campbell.

Fig. 45: The Journey [Photograph]. Used with permission granted on 16 Nov 2016 from Jim Campbell.
Fig. 46: Curving Time Image 1 [Photograph]. Used with permission granted on 17 Nov 2016 from Ozan Türkkan.
Fig. 47: Curving Time Image 2 [Photograph]. Used with permission granted on 17 Nov 2016 from Ozan Türkkan.
**Code Analysis**

### 3.1 GENERAL

**MAJOR OCCUPANCY:**

GROUP “A” DIVISION “2”

(AS PER TABLE 3.1.2.1 & 3.2.2.25)

ASSEMBLY OCCUPANCY (UP TO 2 STOREYS)

- **BUILDING AREA:** 1026 m²
- **MAIN FLOOR AREA:** 1026 m²
- **BUILDING HEIGHT:** 1 STOREY
- **BUILDING PROTECTION:** NON SPRINKLERED
- **BUILDING FACING:** 2 STREET
- **BUILDING CONSTRUCTION:** COMBUSTIBLE OR NON-COMBUSTIBLE CONSTRUCTION
- **FLOOR ASSEMBLIES:** FIRE RESISTANCE RATING NOT LESS THAN 45 MIN
- **WALLS AND COLUMNS:** FIRE RESISTANCE RATING NOT LESS THAN 45 MIN
- **ROOF ASSEMBLIES:** FIRE RESISTANCE RATING NOT LESS THAN 45 MIN

### 3.1.17.1 OCCUPANT LOAD DETERMINATION

**MAIN LEVEL TOTAL OCCUPANT LOAD** = 220 PERSONS (LIMITED BY DESIGN)

**MAIN LEVEL TOTAL OCCUPANT LOAD** = 717 PERSONS (CALCULATED BY AREA BY USE)

#### PRIMARY LEVEL

- **WELCOME AREA**
  - 102 m² / 0.75 m² PER PERSON = 136.0 PERSONS
- **BUILDING SYSTEMS AREA**
  - NOT CONSIDERED
- **CIRCULATION AREA**
  - NOT CONSIDERED
- **STORAGE AREA**
  - NOT CONSIDERED
- **PHENOMOLOGICAL SPACES**
  - NOT CONSIDERED
- **STAFF AREA**
  - 102 m² / 0.75 m² PER PERSON = 136.0 PERSONS
- **MAINTENANCE AREA**
  - 80.4 m² / 4.60 m² PER PERSON = 9.0 PERSONS

BUILDING SYSTEMS AREA REFERS TO ROOMS WHICH CONTAIN EQUIPMENT OR SYSTEMS INTEGRAL TO THE OPERATION OF THE BUILDING WITHOUT HAVING AN IMPACT ON OCCUPANT LOAD. *i.e./* MECHANICAL AND ELECTRICAL ROOMS, JANITORIAL CLOSET, WATER CLOSETS.

CIRCULATION AREA REFERS TO ROOMS WHICH ARE PROVIDED TO MOVE THE OCCUPANT LOAD THROUGH THE SPACE WITHOUT HAVING AN IMPACT ON THE OCCUPANT LOAD. *i.e./* CORRIDORS
3.2 BUILDING FIRE SAFETY

3.2.1.5 FIRE CONTAINMENT IN BASEMENTS:

EXCEPT AS PERMITTED BY SENTENCE (2) AND 3.2.2.15(3), IN A BUILDING IN WHICH AN AUTOMATIC SPRINKLER SYSTEM IS NOT REQUIRED TO BE INSTALLED BY ARTICLE 3.2.2.18, EVERY BASEMENT SHALL:

(A) BE SPRINKLERED THROUGHOUT; OR

(B) BE SUBDIVIDED INTO FIRE COMPARTMENTS NOT MORE THAN 600 m² IN AREA BY A FIRE SEPARATION HAVING A FIRE RESISTANCE RATING NOT LESS THAN 45 MINS

3.3 SAFETY WITHIN FLOOR AREAS

3.3.1.21 JANITOR’S & MAINTENANCE ROOM REQUIRES 45 MIN FSR

3.3.2.7 DOOR HARDWARE TO MEET THE REQUIREMENTS OF THIS SECTION

OTHER CONDITIONS:

CLOSERS TO MEET THE REQUIREMENTS OF 3.1.8.4
TWENTY MINUTE CLOSURES PERMITTED AS PER 3.1.8.10.(1)(b)

3.4 EXITS

3.4.2.1 MINIMUM NUMBER OF EXITS:
EVERY FLOOR AREA INTENDED FOR OCCUPANCY SHALL BE SERVED BY AT LEAST 2 EXITS AS PER 3.4.2.1(1).

3.4.2.3 DISTANCE BETWEEN EXITS:
THE LEAST DISTANCE BETWEEN TWO EXITS FROM A FLOOR AREA SHALL BE ONE HALF THE MAXIMUM DIAGONAL DIMENSION OF THE FLOOR AREA BUT NOT LESS THAN 9m FOR ALL OTHER FLOOR AREAS.

MAXIMUM DIAGONAL DISTANCE= 25.9m TOTAL / 2 = MINIMUM DISTANCE BETWEEN EXITS OF 12.9m

3.4.2.5 LOCATION OF EXITS:
IF MORE THAN ONE EXIT IS REQUIRED FROM A FLOOR AREA, THE EXITS SHALL BE LOCATED SO THAT THE TRAVEL DISTANCE TO AT LEAST ONE EXIT SHALL BE NOT MORE THAN 30m IN A ASSEMBLY OCCUPANCY AS PER 3.4.2.5(b), REFER TO KEY PLAN.
**3.4  EXITS CONTINUED...**

3.4.3.2 EXIT WIDTH:
THE MINIMUM AGGREGATE REQUIRED WIDTH OF EXITS SERVING FLOOR AREAS INTENDED FOR BUSINESS AND PERSONAL SERVICE OCCUPANCIES SHALL BE 6.1mm PER PERSON AND NOT LESS THAN 800mm.

PRIMARY LEVEL

220 PERSONS x 6.1mm PER PERSON = 1342.0mm EXIT WIDTH REQUIRED

20 EXITS x 1900mm = 38000.0mm EXIT WIDTH PROVIDED

3.4.4.4 STORAGE ROOMS, SERVICE ROOMS, WASHROOMS, ETC SHALL NOT OPEN DIRECTLY INTO AN EXIT

3.4.5.1 EXIT SIGNS:

EXIT SIGNAGE SHALL BE REVISED AS REQUIRED TO COMPLY WITH ALL LOCAL CODES.

**3.7  HEALTH REQUIREMENTS**

3.7.2.2 WATER CLOSETS FOR BUSINESS AND PERSONAL SERVICES OCCUPANCY (TABLE 3.7.2.2.A)

TOTAL OCCUPANT LOAD PRIMARY LEVEL:

220 PERSONS = 110 PERSONS EACH SEX

110 MALES = 4 WATER CLOSETS, 2 LAVATORIES REQUIRED
(4 WATER CLOSET, 4 LAVATORY) NEW TO BE PROVIDED UNDER THIS SCOPE

110 FEMALES = 4 WATER CLOSETS, 2 LAVATORIES REQUIRED
(4 WATER CLOSETS, 4 LAVATORY) NEW TO BE PROVIDED UNDER THIS SCOPE

4 NEW UNIVERSAL WC IS BEING PROVIDED UNDER THIS SCOPE
3.8 BARRIER FREE DESIGN

3.8.1.3 BARRIER FREE PATH OF TRAVEL:

THE UNOBSOCTED WIDTH OF A BARRIER FREE PATH OF TRAVEL SHALL BE NOT LESS THAN 1100mm AS PER 3.8.1.3(1)

3.8.2.3 WASHROOM REQUIRED TO BE BARRIER FREE:

A WASHROOM IN A STOREY TO WHICH A BARRIER FREE PATH OF TRAVEL IS REQUIRED SHALL BE BARRIER FREE AS PER 3.8.2.3(1)

IN A BUILDING IN WHICH WATER CLOSETS ARE REQUIRED AT LEAST ONE BARRIER FREE WATER CLOSET SHALL BE PROVIDED IN THE ENTRANCE STOREY AS PER 3.8.2.3(3)

4 BARRIER FREE WC (UNIVERSAL) IS BEING PROVIDED.

3.8 BARRIER FREE DESIGN CONTINUED...

3.8.3.1 ACCESSIBILITY SIGNS:

SIGNS INCORPORATING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY FOR PERSONS WITH PHYSICAL DISABILITIES SHALL BE INSTALLED TO INDICATE THE LOCATION OF A BARRIER FREE ENTRANCE AS PER 3.8.3.1(1)

3.8.3.3 DOORWAYS AND DOORS:

EVERY DOORWAY THAT I LOCATED IN A BARRIER FREE PATH OF TRAVEL SHALL HAVE A CLEAR WIDTH OF NOT LESS THAN 900MM WHEN IN THE OPEN POSITION AS PER 3.8.3.3.(1).

A THRESHOLD FOR A DOORWAY REFERRED TO ABOVE SHALL NOT BE MORE THAN 13MM HIGHER THAN THE FINISHED FLOOR SURFACE AND SHALL BE BEVELED TO FACILITE THE PASSGE OF WHEELCHAIRS AS PER 3.8.3.3(4).

EXCEPT FOR A DOOR WITH A POWER DOOR OPERATOR, A CLOSER FOR A DOOR IN A BARRIER FREE PATH OF TRAVEL SHALL BE DESIGNED TO PERMIT THE DOOR TO OPEN WHEN THE FORCE IS APPLIED TO THE HANDLE, PUSH PLATE OR LATCH RELEASING DEVICE IS NOT MORE THAN 22N IN THE CASE OF AN INTERIOR DOOR AS PER 3.8.3.3(7)

THE DOOR SURFACE ON EACH SIDE OF A DOOR IN A BARRIER FREE PATH OF TRAVEL SHELL BE LEVE WITHIN A RECTANGULAR AREA AS WIDE AS THE DOOR PLUS THE CLEARANCE REQUIRED ON THE LATCH SIDE BY 3.8.3.3(10) AS PER 3.8.3.3(13).