Digital Signage at Canadian Pacific Railway:

A tool for knowledge management

By

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DISCLAIMER

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ABSTRACT

Field-worker environments, such as the one at Canadian Pacific Railway, have information chasms, where safety policies and procedures restrict daily interaction with communication technologies. Such restrictions create knowledge management issues for organizations, where demands for competitive knowledge suffer against limited opportunities to capture employee attention. Flat screens that host a variety of dynamic, image-intense content called Digital Signage (DS) are a relatively new communication technology for field-worker organizational environments that have the potential to fill some gaps in accessibility by strategic placement in employee muster areas. Findings suggest this technology is significant from a knowledge management perspective if knowledge matches individual demands relevant to role, capacities and culture. Short, low-context headlines are found to illuminate new or existing concepts, create knowledge redundancy and trigger employees to seek further knowledge socialization through other communication technologies or social networks. While not useful as a primary communication technology for critical, high-context information, it is effective as a knowledge-trigger mechanism to direct individuals to explicit resources or local social capital.

Keywords: Digital signage, knowledge management, mobile employees, task-based workers, railway workers, social network theory, metrics and performance.

INTRODUCTION

Opposed to white collar office workers who frequently interact with technology to absorb information required to perform job tasks, Canadian Pacific (CP) Engineers, Conductors and mechanical employees that work in rail yards have limited opportunities to absorb corporate communications due to the safety-sensitive and task-based nature of their roles. As 75% of CP's employees make up this field worker population, corporate communicators struggle to reach these employees with information that is perceived as real, authentic and informative as if the information had been socialized in person from direct management to produce the outcome of intentional knowledge generation. Information access issues cause knowledge management issues in organizations. This knowledge management problem exists across all large functional organizations that depend primarily on field-based task workers. Knowledge management is important not only for organizations to remain competitive, but on the individual level to positively affect job performance to fulfill outcomes of enhanced job satisfaction, organizational loyalty, work pressure, motivation, and team cohesion. With the ubiquitous spread of the "networked organization" (Castells, 2000), communication technologies can facilitate an increase in the delivery of information and attempt to fill knowledge gaps.

Communication technologies each come with their own set of benefits and challenges in transforming static information into intended individual knowledge. One such technology, that is the focus of this paper, is Digital Signage (DS). Found mostly in public muster or passerby areas like shopping malls, airports and transit stations, a common application is to fill segments of the screen with live feeds such as weather, time, stock tickers and photo and text scrolling slideshows. More recently, DS has moved

into corporate environments, offering a potential technical solution to connect workers with a copious stream of visual and text-based information from head office and locations across the CP network. For corporate communicators in particular, DS would appear to present opportunities to deliver both high-level and local-level corporate and strategic information with few barriers to the passerby worker.

With the advent of newer communication technologies, most literature tends to focus on the application and capabilities of the technology, as well as surface level benefits. A relatively limited amount of information exists on the impact to organizational knowledge with DS, particularly in the industrial setting. Introducing and repurposing information on a novel medium challenges employees to judge the value of the technology and any impact to personal knowledge. Therefore this study questions: Is DS technology an appropriate knowledge solution for increasing access to information to serve the purpose of filling individual knowledge gaps?

The challenge of CP communications with regard to field workers

Canadian Pacific (CP) is a North American Class-1 freight railroad with 14,000 miles of track spanning Canada and the U.S. Approximately 75% of the organization's 15,000 employees are unionized field workers, with trade-based duties ranging from local and regionalized locomotive repairs and track maintenance, to the locomotive engineers and conductors who drive trains across their regions on every shift. Unionized employees represent 77% of the workforce and are represented by 39 bargaining units (CP, 2014). The geographical footprint of these employees is vast, and it's an organizational priority to ensure worker time is spent on task as much as possible to enhance the efficient

movement of trains. This priority dictates that trade-based workers have limited opportunities to spend time in local office areas to absorb information that may or may not be pertinent to their task-based role.

The most critical information field worker employees consume applies to job-performance, changes in the environment, safety and efficiency. Such information is delivered in daily face-to-face safety and job briefings, training sessions and is also printed on daily bulletins placed in binders. Employees are legally mandated to read this critical information at the start of each shift to ensure they are aware of any changes or impacts to local operations and goals. All other knowledge-gathering processes are completely voluntary and to be done on employee personal time.

A summary of different lines of communications, knowledge types, method of delivery, and requirements to receive knowledge can be presented in tables. From the management perspective, this is helpful in identifying the various channels available to deliver messaging to employees, and what lines task-critical versus non-task critical information should fall between. As the most critical, mandatory task-based information is most often delivered face-to-face to reduce the risk of knowledge being ignored and capitalize on opportunities for knowledge socialization. Less critical information is to be consumed on a voluntary basis through channels employees can access outside of work hours. These channels identify to the individual that some knowledge is to be valued over others. Due to limited time during work hours, and various knowledge values, employee motivation to consume content across channels will vary. These motivations are

Table 1 – Lines of existing communication

important to understand in deploying DS, as the introduction of an additional voluntary channel may come with preconceived opinions and expectations towards the consumption of knowledge on DS.

Source	Type of knowledge	Method of delivery	Mandatory/Voluntary
Daily job briefings	Task-based	Face-to-face	Mandatory
Safety or operating bulletins	Task-based	Printed in binders	Mandatory
Training	Task-based	Face-to-face	Mandatory
Strategic corporate news	Non-task based	Corporate Intranet, Employee magazine	Voluntary
Performance metrics	Task-based	Corporate Intranet	Voluntary
Organizational rewards	Non-task based	Corporate Intranet, Employee magazine, posters on bulletin boards	Voluntary

In addition to communication delivered through CP channels, employees are also confronted and influenced by knowledge through several sources and channels outside of CP's control, as shown in Table 2. All field workers, aside from a select few management workers at each site, enroll in a trade-based union. Unions are active organizations that issue a variety of communications regarding employee safety and employment contracts. With Web 2.0 and the ability to connect immediately, field employees, bonded by their role and union, are turning more frequently to social media and online newspaper

comment sections to spread news, personal stories and theories in order to engage in

employee community discussions about change and operations. Employees have many

channels available to discuss CP, and most often use these alternative channels to voice

dissatisfaction. Experience working in CP communications reveals observations that in

work environments with unambiguous, routine, and methodologically invariant roles,

employees frequently interact with each other, leading to local close-knit groups. The

draw to strong group membership based on homophily factors where 'birds of the same

feather fly together', is further reinforced by union membership. Strong ties that are

supported by a union agenda that is often unaligned with CP's, fosters the potential for

Source	Typical information	Type of knowledge	Method of delivery
Union	Employment news; Health and safety; contract negotiations	Task and non-task based	Traditional and social media, mail, bulletin boards, local health and safety meetings
Employees	Discussions on corporate change and effects on employment	Task and non-task based	Traditional and social media, online news comment section, rail and union web forums, other.
Media	Corporate news: Financial, safety, operational	Task and non-task based	Television, print, online newspaper, social media.

misinformation or rumours to spread more than in individualized white-collar

professions. With accessibility to alternative communication channels, this can create a

frenzy of speculative conversations in the public domain about CP that cannot only drive

away prospective employees, but attract unwanted attention from media and government.

Table 2 - External employee communication sources

Further, in the field environment, a large deal of trust is placed on management to reinforce goals, values, strategies, tactics, rules of engagement, internal cultural codes and more. Local management relies on head office to establish and convey this information for use in day-to-day coaching of staff. Authenticity of information is paramount to engage employees in ongoing conversations, even when they are unidirectional. When confronted with the awareness that employees are engaging in two-way dialogue on external web or social media forums, this justifies an inquiry to determine if a one-way communication conduit will speak to employees on a cognitive level or further drive them to dialogue outside organizational boundaries.

THE RESEARCH QUESTION

Collard, J., (Jan 28, 2010) questions "How do you build a communication conduit that provides staff with the information they need on a timely basis and empowers them to take action that raises the organizations standard?" This study adapts this question through the lens of personal knowledge management and asks:

> Can DS be used effectively to deliver an appropriate amount of dynamic
> information that can lead to informational awareness, information-based actions,
> new knowledge and new understandings of the organization such that change is
> carried out at the individual level?

THE OBJECTIVES OF THIS STUDY WERE TO:

> 1) Identify opportunities or improve ways for field workers to access information
> required to perform their job safely and in accordance with organizational goals.

> 2) Investigate if DS can be used as a tool to enhance feelings of community

within a field environment through display of non-task based information.

3) Determine if DS can be an authoritative internal communications tool in environments with knowledge gaps and influential external news sources to increase awareness, understanding and personal capacity for change.

A New Canadian Pacific

At its height in the 1970s, Canadian Pacific (CP) was a transportation and accommodation conglomerate operating several non-railway businesses: CP hotels, CP airline, and CP ships. In 1971, these businesses were split off into the separate company Canadian Pacific Limited, and in 2001, that company was further split into five companies that no longer bear the CP trademark. The 1970's also signified the end of CP's passenger service, with the creation of the government-owned VIA Rail, born out of a need to subsidize unprofitable passenger service after CP privatization. Since 2001, CP has been a freight-only rail service, transporting mostly grain, potash, coal and intermodal goods. It had also been the poorest performer out of all North American Class Is railways for the past decade.

In 2011 American activist investor William Ackman waged an aggressive and public proxy battle against CP that ultimately resulted in the dismissal of CEO Fred Green and the majority of his board and senior leadership. Replacement CEO Hunter Harrison came with a much storied reputation, one that excited the investment community but concerned many employees. Considered the architect of "scheduled" and "precision" railroading, these strategies foreshadowed rapid change and a much leaner organization, with 4,500 jobs cut within his first year, a more-than-30-per-cent reduction

of the company's fleet, yard closings and potential asset sales. (Progressive Railroading, June 29, 2012). Painful as they were, these changes have led to consistent best-ever quarterly results and a rapid rise in stock prices.

At a time when some employees may question Harrison's rapid cuts, public scrutiny was gradually building over the safety of North American railways. Increased shipments of crude by rail brought heightened attention to any derailment involving the product. With public tensions around crude already heightened, the unbelievably tragic Lac-Megantic disaster occurred in Quebec, when a train was left without properly applied brakes on a steep grade, rolling down the hill into the town centre, creating an inferno that took 47 lives. While the Transportation Safety Board acknowledges that, "The majority of railways maintain a culture of safety and security, as shown by the notable decline in derailments and train accidents over the past few years," (July 23, 2013, TSB) the media has helped to overemphasize personal risk to citizens and oversimplify the possibility of anyone living close to a rail line to experience a Lac-Megantic.

Public scrutiny across the railway industry and corporate downsizing at CP created the perfect formula for employees upset with change to publicly claim on employee blogs, Facebook groups, online newspaper comment sections and union articles in the media that derailments and downsizing have a causal relationship. While the majority of job cuts were felt in operations across the network, a dramatic head office move from downtown Calgary to a rail yard in the industrial southeast of the city also forced management employees to feel the impact of Harrison's large cultural change. To create a new CP, every corporate practice, from mailroom deliveries to internal communications was stripped down to the core to get rid of the 'mud' and build efficient processes from

the ground up. Weekly email newsletters came to a halt and internal stories on the corporate intranet were replaced with matter of fact announcements on massive restructuring.

In the midst of rapid change, an overall lack of change communications was unavoidable as new corporate values and vision were being built at the top of the house. Even if change communications were employed, they can often generate confusion, as information can quickly become invalid or insufficient. The majority of communications on change were directed to the investor/shareholder audience as each quarter Harrison proved to doubters how rapidly his leadership could impact the bottom line. In addition to those laid off, Harrison's changes also created a voluntary exodus of employees from all departments who chose to walk away from CP and their pensions, determined not to work for an organization they didn't recognize anymore and for a leader they didn't understand. Now, after several years, a new normal is emerging at CP, allowing corporate communicators to once again use existing and new communication technologies to provide employees with a more cohesive set of knowledge about what it means to be a CP railroader.

The medium under study in this paper

Given the radical changes detailed above, along with the ability for any employee to be an unofficial CP spokesperson to their cohort or external networks through internal and external social networks, internal communications are now more important than ever. As internal communication tools, Digital Signage (DS) has proven effective in providing a dynamic, visually engaging means to communicate on a daily basis to a transient

workforce. Ryanair, a low-cost Irish airline found that after installing DS in 44 of their air terminals, the organizations' core objectives, values and developments became much more apparent to staff by providing their growing workforce increased access to internal communications (Cremins, J., 2011). By producing a monthly magazine-style news show each month, they were able to attract their employee audience by presenting employee news and activities in a fun and entertaining format. Lockheed Martin, an aeronautics company, found similar success using DS to communicate to that company's task-based workforce. After implementation, nearly 50% of employees reported feeling more informed about the company's community and volunteer efforts and nearly 60% felt more informed about company news and milestones (Johnson, M., Miles, S., 2010).

Organizations that have environments with high passerby traffic have also used DS effectively. Malls, hospitals, schools, transportation and manufacturing organizations have all used this form of "telepresence" effectively and find that the more diverse and entertaining the content is, the more attention received by the audience (Cremins, J., 2014; Cremins, J., 2011; Johnson, M. & Miles, S., 2010). Steuer (1992) defines *telepresence* as "The experience of presence in an environment by means of a communication medium" (in Mollen, A., Wilson, H., 2010). In studies on consumer behaviour, it was found that increasing telepresence leads consumers to perceive that they are more informed about a product, therefore feel more positively about it, have strong beliefs and intensity towards attitude (Suh & Chang, 2006, Klein, 2003, in Mollen, A., Wilson, H., 2010).

Still, a "relatively limited needs analysis," exists to date with the application of Digital Signage says Byron Tarry, Director of Strategic Business for Sharps Audiovisual

(in Hall, C., May 3, 2013). To achieve success with this medium that appeals to digital natives, it is critical for organizations to invest time in, "Doing the footwork to determine a core strategy and a core group of stakeholders and to understand whom the targeted audience is," (Byron Tarry, in Hall, C., May 3, 2013).

Marshall McLuhan's (1964) famous pronouncement that "The medium is the message," reminds us that communicators of the digital age must acknowledge that how our senses are reconfigured by a technology is the ultimate message of that medium. This appears to hold for DS as well: moreso than static email or intranet news, visual screens are more demanding and require fresh, dynamic content that is updated on a consistent basis. Cauberghe & De Pelsmacker (2010) found that when ads on interactive digital television were run that had low levels of complexity, information and interactivity, viewers were quickly bored. Strand (2009) found that "the challenge is to present information about your community that is attractive and informative and fits into the sophisticated media mix that they have become accustomed to, through habitual television viewing". When it comes to DS, user demands would appear to present a continual challenge to 'feed the beast' and meet audience expectations, thereby validating McLuhan's insight regarding media engagement.

From a knowledge management perspective, Davenport & Prusak (2000) argue in opposition of McLuhan that while there are some affects, the medium is not the message. Rather, "The thing delivered is more important than the delivery vehicle" (Davenport, T., Prusak, L., 2000). As opposed to a public advertising application intended for mass ambitious audiences, in an organizational environment the content strategy should be remarkably different as context is high, audiences are better understood and messaging is

mapped to knowledge creation goals. In order to attain such knowledge creation goals, it is pertinent to understand knowledge management, knowledge creation, organizational structure and internal social networks to construct a framework for delivery of meaningful information at the local level. It is this tension between sophisticated media that mimics entertainment television versus more static media mapped suited to organization goals that this study begs to tease out. It was asked: Does the organization shape the messaging, or will the medium ultimately dictate viewer preferences? Our findings suggest that when communication technologies are placed within organizational bounds, function wins over form.

LITERATURE REVIEW

Knowledge Management

To understand how knowledge is attained, there must be an understanding of both delivery and reception of a message. The history of communications has historically been dominated by cybernetics that has value in explaining the transmission of noise through a channel (Nonaka et al. date missing, p. 22). The downfall of the simple model is that it doesn't tease out if meaning is truly received at the other end. Wolfe (2010) points out that the reliance on this simple model supported the emergence of functional units in organizations that over-emphasized automated transactional-based tasks to the extent that it removed the social/biological paradigm so crucial to the negotiation of personal meaning in an organization (p.72). Emphasis on the metaphor of *organization as machine* assumes that the completion of transmission implies that some sort of linear change occurs as a result. Following this thought, the more rapid the transfer of information

occurs, the more it would appear that the quantity of answers being absorbed increases.

Organizations should consistently strive to create new knowledge amongst employees to be competitive in the marketplace. With increased access to information through communication technology, innovation becomes paramount for an organization to remain competitive. Particularly in the rail industry with standard industry-wide operating practices, competition occurs on a knowledge advantage, where practices that increase quality, creativity and efficiency generate increasing returns and continuing advantages (Davenport, T., Prusak, L., 2000). How organizations tap into, synthesize and distribute information impacts this knowledge advantage which first starts with individual knowledge generation.

How organizations continually reshape, discard and generate knowledge are the core processes that knowledge management theory explores. Full of pragmatic decision-makers, "An organization is not a mere information-processing machine, but an entity that creates knowledge through action and interaction" (Nonaka, 1994, p. 492). Regardless of the existence of a corporate communications department, knowledge is dynamically and continually generated. Corporate communicators have important roles as they can shape the type of knowledge generated by creating digital knowledge environments that facilitate the space for creation and generation. The demand for knowledge spaces increases with organizational change as there is a higher demand for answers and guidance. Particularly when high-level priorities adjust every day problem-solving activities, the demand for deep understanding of change is created and can be shaped in accordance with the organization or not, depending on many factors that occur at the level of personal knowledge.

The steps required for individuals to absorb new information from their environment and transfer it into knowledge are critical in understanding knowledge management on the individual and collective level. Knowledge is not always created as a result of new information, although the terms 'information' and 'knowledge' are often used interchangeably (Nonaka, 1994, p. 492). Information is meant to create new knowledge and, "Change the way the receiver perceives something, to have an impact on his judgment and behaviour" (Davenport, T., Prusak, L. 2000). Information becomes explicit knowledge when it can be easily captured, codified, transmitted and stored. Such visible knowledge can then undergo processes where it is accepted, combined or rejected with existing individual tacit knowledge. Tacit knowledge is the most valuable form as it experiential and context-based, allowing the individual to quickly make ideal decisions based on their large body of intangible, subjective and highly personal knowledge. Tacit knowledge builds with experience and age. This type of knowledge is valued in organizations as it is built up through years of carefully guided "action, procedures, routines, commitment, ideals, values and emotions" (Cohen & Bacdayan, 1994, Schon, 1983, Winter, 1994 in Nonaka, 1994). Studies have shown that the most highly skilled task-based workers are those who develop a large body of tacit knowledge to enhance their ability to understand non-routine events and take proper actions (Nakano, D., Muniz Jr., J., Batista Jr., E., 2013). The length of time typically required for individuals to gain a large body of tacit knowledge is detrimental to organizations, as it frequently escapes as individuals leave and retire.

CP knowledge needs

Technology allows corporate communicators to create educational interferences in

the knowledge conversion process so that knowledge grows in a consistent manner that builds organizational cohesion and collective understanding. While a certain level of redundancy can "be instrumental in speeding up concept creation" (Nonaka, 1994, p. 28), it is important to clarify that quantitative measures do not accurately reflect the cognitive impact on individual knowledge. Only by using qualitative measures does one determine the informativeness and usefulness of a transaction based on instances of new insight and problem-solving tactics (Davenport, T., Prusak, L. 2000). Current employee morale and the knowledge-sharing culture are also major factors that influence concept creation as, "although top management believes that information technology enables knowledge sharing practices; the truth is the willingness and attitudes of individuals is the key factor" (Yang, 2008 in Almahamid, McAdams & Kalaldeh, 2010).

While existing knowledge management literature illuminates how knowledge is created, the literature naturally focuses on those defined as 'knowledge workers' who frequently interact with communication technologies: students, project teams and knowledge-intensive collaborative work (Nakano, D., Muniz Jr., J., Batista Jr., E., 2013). White collar workers are trained by their profession to actively seek knowledge by consulting with their colleagues, receive and provide advice and share knowledge. Knowledge audits occur organically in daily knowledge-seeking interactions. In contrast, blue-collar geographically disparate field workers who don't frequently interact with communication technologies have few opportunities to access a large quantity of information. Field workers have less formal education and are not guided by professional norms to collaborate with peers and as most of their knowledge is tacit, individualized, high in context and not easily shared. In a task-based field setting, knowledge is also

difficult to detect and therefore not easily distributed, as it is primarily tacit and un-codified due to the need for new knowledge to be distributed only on an unstructured, ad-hoc, need-to-know basis.

The nature of task-based work limits the amount of information field workers require to be efficient and productive as their post-certification employment assumes that they already embody required knowledge to perform routine tasks. Therefore, information needs of these workers most often are concerned with abnormal or changing environmental conditions that will trigger changes in decision-making with routine tasks. This is not to say that field workers do not require a learning environment where employees are consistently triggered to discuss, analyze and contribute to problem-solving processes for personal growth and organizational innovation. When knowledge most often lives in individuals, actions, relationships, and everyday activities as opposed to stored documentation, there will always be a certain amount of useful knowledge that remains unshared between individuals and across intra-organizational boundaries (Tsoukas, 1996; Orlikowski, 2002, in Nakano, D., Muniz Jr., J., Batista Jr., E., 2013). As field workers are not set up to seek out information as white collar workers are, all attempts to connect these workers with knowledge sources should be explored as there will always be unrealized potential to equip task-based workers with broader knowledge.

Role of Communications Technology: CP TV

Communication technologies afford the ability to promote, enhance or replace knowledge transfer processes by disseminating information that attempts to answer questions that would be asked through each of Nonaka's (1994) four modes of

knowledge conversion.

> (a) socialization (from tacit knowledge to tacit knowledge) (b) externalization (from tacit knowledge to explicit knowledge) (c) combination (from explicit knowledge to explicit knowledge) and (d) internalization (from explicit knowledge to tacit knowledge).

Communication technologies can remove the one-to-one transmission with these traditional modes and make them more accessible to many, with a one-to-many transmission. The scalability of these modes is effective when communicating broadly across the organization and competes against knowledge generation grown from resources and knowledge outside of the organizations control. Use of technology to supplant Nonaka's four modes of knowledge conversions is not done in an attempt to diminish the quantity or frequency of these organic knowledge processes, but by a recognition that in most organizations, ideal levels of socialization require unattainable time commitments, knowledge owners often do not have the time to codify tacit knowledge, resources and broad social networks required to combine knowledge may be out of reach to many and explicit knowledge is often not applied until absolutely required.

Nakano et al (2013) recommend that a combination of organizational practices and communication tools can set up task-based workers in a proper environment for knowledge sharing when buttressed by open communication, supportive social networks, active engagement, shared concerns about efficiency amongst workers and supervisors with a healthy level of trust (p. 292). The usefulness of CP TV as a communication tool to create or stimulate virtual and mental places where knowledge can be carried out, defined by Nonaka by the Japanese term *ba* (p.499), or an 'engaging environment'

(Nakona et al, 2013), is unclear in the CP field environment and thus demands further inquiry.

CP management model, corporate communications and knowledge management

Investigation into the makeup of CP's management provides an understanding not only on how information is created, combined and dissipated, but also how knowledge is created with high power distance. Divided into large yet distinct functional groups responsible for key areas of the operations, train and engine, mechanical, engineering, network, and regulatory and operating practice departments are supported by a smaller corporate divisions of office employees in legal, IT, corporate affairs, strategic planning, finance and risk that report up to the C Suite. CP's intra-organizations consolidate in-depth expertise to meet distinct organizational goals. Vertical hierarchy within functional groups helps maintain control and coordination, putatively to promote efficiency (Daft, R., Armstrong, A., 2012, p. 98). The paradox emerges in the slow nature of the structure when responding to environmental change, where coordination across departments inevitably causes decisions to pile at the top of the authority chain. When most effective, corporate communicators aid the flow of information by eliciting tacit knowledge from senior leadership, combine it with explicit knowledge from other departments, and disseminate this integrated information in a way accessible to all employees. How applicable this information is to each individual will determine success of knowledge internalization. In an organization as large and geographically disparate as CP, corporate communicators are challenged to continually reinforce the knowledge vision from the top of the hierarchy, yet come across as trusting and authentic as if the information had been socialized in person from direct management. When communication does not result in

mutual interpretation, "One is confronted with the alternatives of switching to strategic action, breaking off communication altogether, or recommencing action oriented toward reaching understanding at a different level, the level of argumentative speech" (Habermas, 1976, p. 24).

Factors enhancing organizational knowledge

In order to create conditions where corporate communications enhance organizational knowledge, Nonaka et al (1995) and Von Krogh et al (2000) recommend exploring factors of strategic intent, autonomy, fluctuation and creative chaos, redundancy and requisite variety at the individual level. When applying motivating knowledge management factors in a field setting with task-based workers, such factors may actually create unnecessary obstacles. When challenging field employees with higher work requirements, a lack of capability to perform at the recommended level may exist due to limited education and training. Self-control or autonomy, while desirable at the onset, may cause employees to disrupt well-structured work-processes, decreasing productivity and efficiency (Yan, M., Peng, K., Francesco, A.M., 2011). Therefore, it is worthwhile exploring types of information that can enrich jobs and motivate employees in a positive manner and those that may cause unintended disruptions.

The capacity for employees to perceive the purpose and intent of information as honest and authentic will determine if a new communication technology can foster a learning environment. Nonaka (1994) asserts that, "Man cannot grasp the meaning of information about his environment without some frame of value judgment" (p.17). If the

strategic intent of information is suspect, employees may outright reject it. In the midst of lay-offs, an article about a departmental reorganization or operational efficiencies may be inferred as a sign of more lay-offs to come, with a veil of propaganda over the actual intent of the message to calm anxieties about employment securities. Employees who have witnessed lay-offs and accompanying communications may always be suspect that change communications symbolize bad news to come. The more employees trust that knowledge is shared to benefit employee learning and flexibility, the more it will be absorbed and socialized on the local level. As employment stabilizes at CP and operational changes prove their value, reinstatement of trust in the strategic intent of messaging should occur so long as information comes across as honest and authentic.

The next factor assessed by receivers of information is autonomy. If employees believe that they have decision-making powers that can be exercised based on the stock of new information received, this is a motivating reason to form new knowledge. "A sense of purpose and autonomy becomes important as an organizational context. Purpose serves as the basis of conceptualization. Autonomy gives individuals freedom to absorb knowledge" (Nonoka, 1994, p.17). With a strong understanding of job duties, responsibilities, room for career growth and trust in organizational direction, employees can become motivated to make decisions in their ever-changing environments. On the other hand, low autonomy reduces the ability for employees to feel empowered to make decisions on their own, discouraging the desire to gain new knowledge if the potential of exercising such knowledge is restricted. Therefore, lack of autonomy may create a sense of unnecessary exertion of control and pressure from management (Menguc, B., Auh, S., Fisher, M., Haddad, A., 2013).

Metrics and performance

Productivity is a critical metric in a skilled-trade focused organization, where the quantity of turnout per man-hours scores the effectiveness of the unit. There are many layers beyond physical presence in a work environment that contribute to the productivity factor. Training around work tasks, safety, organizational metrics and goals support the individual worker in knowing how to make decisions during their day. If one purports that happy and healthy workers are productive workers, displaying non-task performance information such as employee benefits and culture can also create positive impact on performance. Higgins et al (2013) found that the subjective likelihood of some event in the future influences strength of engagement in the present, which in turn influences the value of something in the present. Following this thought, displaying real time performance metrics can create a motivating factor to influence behavior change in the present. Live performance metrics help employees react to what they see in real time, rather than relying on trailing indicators such as static reports of last week's performance (Collard, Jan 28, 2010). This allows employees to feel more empowered about their effect on the organization, increasing the value and motivating potential of work (Yan, M., Peng, K., Francesco, A.M., 2011). When certain changes in work practices are reflected in the numbers, this also enhances the legitimacy and expertise with management, therefore increasing their influence. However if tasks required to achieve goals are thought to be too difficult or unrealistic, "people may actively bolster or undermine the value of certain goal states in order to influence their motivation toward and away from these states" (Scholer, A., Higgins, E., 2009). Additionally, if metrics are perceived as symbols of competition across yards and regions, this can influence the motivating factor

as it relates to job vulnerability.

Social network theory

Again, to follow on McLuhan's notion above that a medium inevitable and ultimately shapes its users, we need to be cognizant that installation of communications systems is never just a technical issue. More gently, Castells (2000) has argued that as new networks emerge, they cause our society to morph and modify the way it reacts to production, experience, power and culture. Information technology extends the traditional social network reach and in doing so, "The power of flows takes precedence over the flow of power" (Castells, 2000, p.500). Power plays an important role in any network, and the power of networked communication channels should not be downplayed as controlling the material basis built into networks "earmarks dominant social processes, thereby shaping social structure itself" (p.502). The type of content distributed over a wide-reaching communication network has the power to link the lowest level employee with senior leadership knowledge. While providing new access to information from the top source of power in the network, this can also be interpreted as an assertion of dominance.

Communication technologies shorten physical distances but do not necessarily shorten social, economic, political, cultural or power distance. Although all employees are included in an organizations network, there are many other social networks that are exclusionary based on a variety of occupational and personal factors such as education, department, location, etc. Such networks have become more evident at the lower end of CP's organization due to social networking tools that identify and collect members that

are interested in discussion that challenges centralized information. The fragmentation of distinct sub-organizational cultures shows that diverse employee groups recognize the dominant social structure yet seek to relate to others across commonalities such as role, location, tenure or any other characteristic not recognized by the dominant paradigm.

In its organic form, networks are defined as:

> …Appropriate instruments for a capitalist economy based on innovation, globalization, and decentralized concentration; for work, workers, and firms based on flexibility and adaptability; for a culture of endless deconstruction and reconstruction; for a polity geared towards instant processing of new values and public moods; and for a social organization aiming at the supersession of space and the annihilation of time (Castells, 2000, p. 502.).

As access to distribute information through CP TV is limited to few individuals endorsed by upper management, the network itself does not parallel the open nature of CP's organic social networks. While recognizing the fluidity of existing organic social structures, CP TV is designed to reinforce knowledge from existing functional power structures. This is done with the intent of decentralizing centralized knowledge for employees so they can act flexibly and adapt to change in accordance with the guiding vision, quickly adopt new norms and values and have the organizational network grow in a manner that reinforces departmental network ties. To subvert the impression of knowledge dominance from the top-down, local managers are encouraged to publish context-specific local information to their employees alongside corporate messaging. Contribution of local knowledge impacts the perception of knowledge and power as it demonstrates a decentralizing authority or flattening of top-down communication networks, as in divisional, matrix and horizontal structures. The visual representation of a decentralized communication network encourages flexibility among teams as it

acknowledges the importance of smaller units or teams and loosely structured knowledge networks in a particular context (Daft & Armstrong, 2011; Thomas, Kellog & Erickson, 2001).

As highlighted in the introduction, employees have access to and seek information from many communication channels outside of CP's control. Preference to use alternative channels on the surface level would appear to be trust-based, stemming from employee disagreement with change and subsequent explanatory communications. Giddens (1990, in Wolfe, 2010) defines that trust is based on confidence "in the reliability of the person or system," that managers instill in employees. The less an employee trusts persons of authority or systems, the more motivated employees are to do their own assessment and research when new information is presented, especially with the wealth of concurrent information outside the work environment in social and mainstream media. Kadushin (p. 60, 2012) finds that trust is best developed in social networks with the existence of high density and visibility. Homophily factors, particularly gender homophily, strongly manifest when seeking social information (Xu, Y., Kim, H., Kankanhalli, A., 2011). Close interactions create cohesion and social support, which promotes trust in knowledge exchanges. Therefore social networks amongst field workers may be the strongest among those within close physical proximity to the same yards and similar demographical traits.

On the other hand, studies on information-seeking behaviour indicate that regardless of social ties, relevance of information to task remains the most significant factor when choosing to subscribe to a communication channel (Xu, Y., Kim, H., Kankanhalli, A., 2011). Information from physically distant sources may be preferred due to interesting, relevant and novel content, with information in the physical proximity

being more important when looking to carry out new behavior and actions based on new information. Tenure also has a strong effect on limiting the need to source information socially, as those who hold the most tactic, experiential knowledge require more new, explicit knowledge to grow. Such variety in the literature on subscription to natural, local social networks vs artificial social networks that attempt to break organizational power distance demands inquiry amongst field worker information-seekers to understand current knowledge creation and align information delivery to enhance knowledge generation.

METHODOLOGY

Due to multiple external and internal sources of information, employees are continually challenged to judge information and assess the value to personal knowledge. Under the hypothesis that an increase quantity of strategic information can create new knowledge in a field setting, a variety of information was displayed to field employees on DS for a 3-month pilot. Both job-task and non-job task information was provided in order to stimulate individual assessment on the usefulness of information. Employees were given the opportunity to complete a questionnaire designed to elicit user responses to three primary factors: general awareness and impressions; effectiveness of delivery and preference of content based on factors of usefulness and behavioural outcomes. A combination of Likert-style, check box questions and qualitative questions were used to gather interpretive data from a variety of participants to help accumulate a rich understanding of multiple realities.

The questionnaire compromised 41 questions was issued to over 300 employees at

yards in Golden, Moose Jaw and Regina who had access to view CP TV in their work environment for a period of three months (See Appendix A). All employees at the three yards, Golden, Moose Jaw and Regina, were targeted based on their field worker setting. Targeted yards were selected due to distance from head office and high population of field workers. Distance from head office was important as this research sought to assess the importance of local, distinct cultures along with the impact to knowledge management.

A paper questionnaire was employed due to the lack of internet access on site and so it could be taken home to complete. Due to limited participation from a recent internal safety survey conducted by CP, it was thought that an additional gift card incentive would motivate more completed questionnaires and genuine responses. Therefore, a $10 coffee gift card was rewarded by an on-site administrator upon the handing in of completed questionnaires.

Questionnaire

Questionnaires were divided into five distinct sections and subsections as follows:

Section 1: Demographic

- Tenure
- Position
- Gender

Section 2: General awareness and impressions of CP TV

- Familiarity
- Location and placement
- Readership behaviour and preferences

Section 3: Usefulness of operational metrics

- Visibility to overall, regional and local performance metrics

- Behavioural change

Section 4: Change and CP's guiding foundations

- Asset optimization

- Providing service

- Control costs

- Develop people

- Operate safely

Section 5: Effectiveness of delivery and preference of current and potential content based on factors of usefulness.

- Sources of communication

- CP news: Industry, stock, customers

- Weather and behaviour

- Training

- Content categories * See Appendix A

- Content categories and behavioural change * See Appendix A

Ordering of questions was designed to distinguish field worker perception along lines of access to information vs value of information. Likert-style questions were all measured on a semantic differential scale where respondents responded to statements on a scale of 1-5, with '1' being "not at all" and '5' being "a great deal". Content categories that workers were asked to score in section 5 were mapped to values on: change communications, local community, task-based work, non-task based work, metrics and information not related to CP.

FINDINGS

In total, 55 questionnaires were attempted, with one eliminated due to sarcastic and unrelated responses to the study, resulting in 54 completed and a response rate of 17%. No questionnaires were returned from Regina due to a turnover in staff and the subsequent loss of a site administrator.

Demographics

Tenure – Of 54 employees completing the questionnaire, 23% had been with CP for 26 years or more, 9% 16-25 years, 37% 6-15 years, 23% 3-5 years, 6% 1-2 years and 6% under one year.

Position - Most employees worked in the running trades as Engineers or Conductors (74%), with 23% working in mechanical, 4% in Engineering and 2% in an administrative role. See Table 3.

Gender - An overwhelming 90% of respondents were male, with only 6 respondents being female. This falls in line with the natural male/female gender split at CP of 90/10 (Annual Report, 2014). See Table 4.
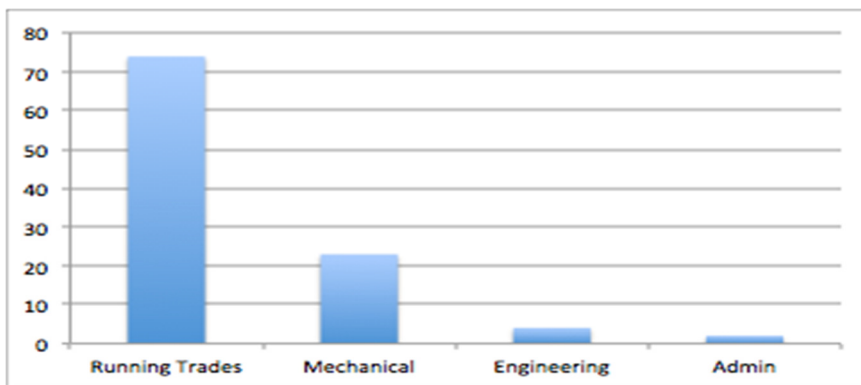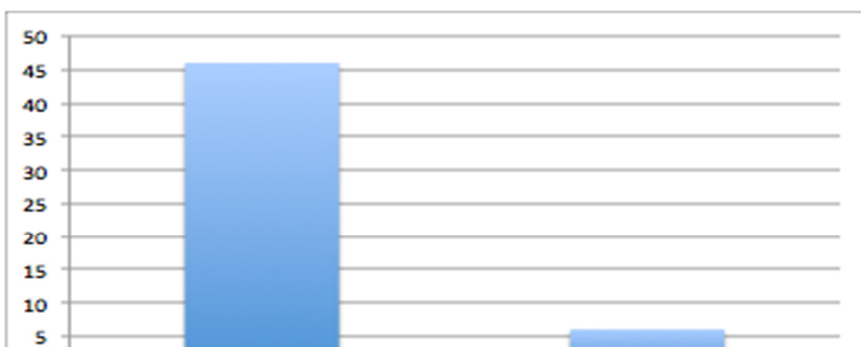

Table 3 – Employee positions

Table 4 – Employee gender

CP TV familiarity - When asked if employees were familiar with CP TV, 72% reported they were not at all familiar to somewhat familiar. As there was no formal introduction to CP TV's objectives, employees were asked to come to their own conclusions about the intention of the project. Again, the majority reported that they were 'not at all' to only 'somewhat' able to decipher intentions of CP TV. When asked if they thought the project was a good idea, opinions were more evenly scattered, indicating a loose correlation with familiarity and positive support for the communication technology.

Location/placement – Most respondents (83%) agreed their TV was placed in a good location. Those who disagreed, suggested they be mounted in employee lunch rooms. When asked if employees had enough time to view content that loops in a three-minute cycle, 31% felt they needed more time. Those who felt they needed more time expressed that content should be scheduled for employees to watch over the course of two shifts (15%), three shifts (10%), four shifts (10%) or five shifts (6%).

Understanding at a glance – On readership preferences, 60% of employees reported they prefer headlines that are either easy to understand in one glance, while 40% prefer headlines that catch your attention but don't provide the whole story. This was reinforced by 56% preferring headlines that provide all the information you required to understand a story as opposed to those that motivate one to seek out more information on RailCity (17%) or may or may not provide you with all the information you need (21%).

Usefulness of operational metrics

Visibility to overall, regional and local performance metrics - Employees were asked if prior to seeing CP TV, if they had ever been exposed to metrics that reflect the overall workload of the company, reflected in train speed, train miles and train dwell, to which 46% reported 'no', 27% reported 'seldom', and 10% reported 'yes'.

Behavioural change – In response to the statement:

> "CP measures aspects of performance by using number-based "metrics" to track changes and fluctuations in operations. Metrics may help employees see how their daily work contributes to company performance. One way to measure how effective CP TV is for employees is to compare awareness of company activity and performance prior to installation of the system" and subsequent question, **"**Does visibility of local or regional metrics motivate you to work towards performance targets?"

44% reported that yes, this information would be helpful, while 29% said 'no', 12% seldom and 15% weren't sure. As most yards have several buildings where employees conduct different work activities, it was asked how interested employees are in knowing how different departments in the yard are performing: 21% were very interested, 37% somewhat interested and 42% were not interested.

CP Guiding Foundations

Employees were asked to score their understanding of CP's five Guiding Foundations (asset optimization, provide service, control costs, develop people and operate safely) and if they understood the relation to local operational decisions.

Asset Optimization - For asset optimization, employees were asked if they were

aware of the significant reduction in railcar and locomotive assets over the last year. Awareness of this was high, with a 73% rating on the high end of the Likert scale.

Better Service - When employees were asked to score awareness of CP providing overall better service, using an example of a recent efficiency drive through a reduction of assets, opinions were reversed, with a 66% rating on the low end of the scale. This statement was later recognized to be leading and likely skewed results as it encourages respondents to be skeptical and cynical about the vague concept 'service'.

Cost Control - Employee awareness of local cost control measures was varied evenly across the scale from 'not at all' to 'there is plenty'.

Develop People – Awareness on how to embody a leadership role or be led by leaders was also varied evenly from 'not at all' to 'there is plenty'.

Operate Safely - As safety is a multi-faceted practice, employees scored the amount of safety-related information they receive across categories of people, customer goods, communities and environment. Results detailed in Table 5 highlight that safety information related to people is the most robust, while information related to communities and the environment is the most lacking.

Operate safely and 'don't get anyone hurt' is CP's most important foundation. In general, do you feel you receive enough safety related information about people, customer goods, communities and the environment? Response rate: 100%	Not at all	Don't know or no opinion	Somewhat enough	About enough	There is plenty
People	9	8	9	14	14
Customer goods	11	15	10	11	7
Communities	16	12	9	11	6
Environment	21	8	9	9	7

Table 5 – Operate Safely

Sources of communication – A series of questions was posed to assess how employees currently receive their information and what sources they prefer. Of all the available options, it was reported that other employees were not only the best source of information (33%), but also the most trusted (32%), with the company intranet (best: 21%, trusted: 22%), managers (best: 20%, trust: 17%), and union leaders falling closely behind (best: 11%, trust: 22%). Even as a new communications technology, there exists some enthusiasm for CP TV, as it was preferred by some employees as much as others preferred union leaders or CP Magazine. However similar to the '0' score CP Magazine received on the trust factor, as a head office communication channel, it has far to go in terms of building content trust.

Sources of communication Response rate**: 100%**	Other employees	RailCity Intranet	Managers	Union leaders	CP Magazine	CP TV	Other
Preferred source	28	18	17	3	4	3	5
Most trusted	19	13	10	13	0	1	4

Table 6 – Preferred and trusted sources of communication

CP news – Industry - Most employees reported that they never (27%) or rarely (29%) accessed curated 'CP and Industry news' on RailCity (see Table 7), but expressed that if scrolling news headlines were available on CP TV that this would motivate them to read industry articles later (46%). Of those who reported they wouldn't seek out articles later, 38% visibility to headlines would still make them feel more informed. To determine employee trust of CP-curated news articles, employees were asked if they felt headlines accurately reflect how CP stands in relation to other railways. To this 33% felt they could make a fair assessment based on information provided but 42% felt they could not.

RailCity has a 'CP and Industry News' section on the homepage that links to daily industry news. How often do you read this news?
Response rate: 98%

Never	Rarely	Sometimes	Often	Weekly
14	15	17	6	1

Table 7 – CP and Industry news readership

CP and Industry news opportunities and trust Response rate: 98%	Yes	No	Not interested
If 'CP and Industry News' were available on CP TV as scrolling news headlines similar to all news channels like CNN that use a 'ticker-tape' method of scrolling news headlines, would this motivate you to read the articles later on RailCity, or from the original source (eg. The Globe and Mail)?	24	20	9
If you read 'CP and Industry News' on RailCity, do you feel the headlines accurately reflect how CP stands in relation to other railways?	17	22	14

Table 8 – CP and Industry news opportunities and trust

CP news – Stock price - Of the 63% of employees that follow the company stock, 33% reference RailCity to check the stock price, 28% use a smartphone app and 8% had come to depend on CP TV for this information.

CP news – Customers - When asked how informed employees felt about business relationships with large customers, results indicated this knowledge was very low. Interest in more exposure to this knowledge was scattered.

Weather and behaviour - When asked if the presence of weather on CP TV motivates employees to check the weather more frequently throughout the day, answers were scored evenly across yes, maybe and no. This scoring was also found when asked to agree with the statement 'Increased visibility to the local weather report allows me to make faster decisions about how I plan my day'.

Training - Respondents were asked to rank their agreement with the statement: "CP TV could be a suitable tool to show imagery to teach certain safety techniques". Responses were blended across the scale, aside from a rating of '4'

which was double than the rest (see Table 9). An open-ended question asked for other suggestions on how CP TV could be used as a visual training tool for hands-on training. Of the 67% that responded, 57% responded with negative sentiment and 25% responded positively. Many of the comments related to negative sentiment were against the idea of CP TV being used as an educational replacement to a manager. This question was later found to contain an assumption that the tool could be used as a training replacement, and not a supplemental tool as was intended to be expressed. A lack of permission to watch CP TV under current management was reported to be a possible barrier to tool success. However those who responded positively provided a good variety of examples for how this medium could be used for safety training i.e. entraining/detraining, proper way to throw a switch etc.

CP TV can be used to feature imagery showing proper safety techniques. For example, demonstrating the proper and improper use of wearing a harness. How effective do you feel these visuals can be in teaching safety techniques? Response rate: 98%	
1 (not at all)	9
2	9
3	7
4	18
5 (a great deal)	9

Table 9 – CP TV as training tool

Potential employee communications

In this section employees were asked to score on a variety of content styles and information types to assess current and future communications. When employees were asked how important they felt visuals are in communicating CP's culture, scores were evenly distributed across the mean. Strong support was expressed for CP TV to be used to display local events (80%), anniversaries (40%), employee recognition (65%) and local and entertainment headlines (30%).

An identical laundry list of 33 information categories was listed across two questions (See Appendix A for full listing). The first question asked employees to check of types of information they would like to see, while the second question asked employees to check off types of information they feel they could get from CP TV rather than having to seek from their manager. Types of information were coded into categories of change communications, task-based, non-task based, local community, metrics and not CP-related. Responses as detailed in Table 10 and 11 were categorized into 3 buckets of high preference, mean preference and low preference.

Information preference					
High preference (21+)		Mean preference (11-20)		Low preference (1-10)	
Local weather	35	CP in the news	20	Regional yard performance metrics	10
Safety news	29	Current local projects	20	Employee fundraising/volunteering	10
Company stock-ticker	26	Company-wide safety statistics	20	Letter from the President	10
Local safety statistics	25	Local yard performance metrics	19	Changes to local service design	10
Employee discounts	25	Wellness news	18	Customer news	9
CP Holiday Train	24	Senior leadership position changes	18	Industry news	9
Employee bulletins	23	HR news	17	Community investment	9
Emergency broadcasts	23	Employee spotlights	14	Company wide operational metrics	8
Local job openings	23	Stories from the archives	13	Spike-driving competition	7
Local events	23	Changes to departmental structures	11	IT news	6
Sports headlines	22			Rail fan hobbies	3
Changes to policies and procedures	22				

Table 10 – Information preferences

When respondents were asked if access to information categories would reduce the need

to consult with management to gain knowledge, the overall response rate was 39% lower compared to the previous question.

Information to gather from CP TV instead of manager					
High preference (21+)		**Mean preference (11-20)**		**Low preference (1-10)**	
Employee bulletins	26	Senior leadership position changes	15	CP in the news	10
Safety news	22	Changes to departmental structures	16	Changes to local service design	10
Local weather	19	Local job openings	16	Regional yard performance metrics	8
		HR news	15	Company-wide safety statistics	7
		Local yard performance metrics	14	Wellness news	7
		Current local projects	14	Company stock ticker	6
		Changes to policies and procedures	14	Customer news	6
		Local events	13	Letter from the President	5
		Emergency broadcasts	13	Company-wide operational metrics	5
		Holiday Train	12	Employee spotlights	5
		Local safety statistics	12	Industry news	5
		Sports headlines	12	IT news	5
		Employee discounts	11	Community investment	5
				Spike driving competition	5
				Stories from the archives	5
				Rail fan hobbies	3
				Employee fundraising/volunteering	2

Table 11- Information from CP TV instead of manager

To finish the questionnaire, respondents were asked three open-ended questions to solicit general opinions on CP TV. See findings in the following three tables.

Are there any areas of information we could do better at displaying on RailCity? Response rate: 83%	
No	30
HR news and benefits	3
Removal of technical barriers to accessing communications	3
Style and general content	2
Safety	4
Not interested in RailCity or CP TV	3

Table 12 – RailCity feedback

How might we improve at informing employees? Response rate: 58%	
Greater investment in communication technologies (RailCity, email, CP TV)	12
Increased quantity of communication from local management and quality, with two-way dialogue and transparency	6
More safety news	3
Compelling and easy to understand headlines	2
Introduce communication technologies not currently used (apps, text messaging)	2

Table 13 – Communications feedback

Do you have any suggestions for CP TV content? Response rate: 66%	
No	17
More safety news and bulletins	6
More local news	5
Sports headlines and non-CP content	2

Job openings	2
Enjoy current content	2
More CEO messages	2
Not a good investment	2
Local performance metrics	2

Table 14 – CP TV suggestions

DISCUSSION

CP TV familiarity

There was no introduction to the participant group regarding the purpose of CP TV, as the organization was piloting the technology to determine if it could serve as a suitable communication technology in this environment. Ongoing assessment of the workload required to produce and execute information also informed the decision not to introduce the tool as future use was indeterminate. This lack of introduction was perhaps serendipitous, as it forced employees to come to their own opinions on CP TV purpose. However, while this provided the benefit of unbiased assessments, it also created some uncertainty regarding purpose and intended interactions. Scattered responses regarding *familiarity* indicate that spatial presence alone does not create a cognitive association with the tool. Nonetheless, higher rates of support for the technology as a general communications project indicate that telepresence has the ability to strengthen the emotional, psychological or physical connection individuals have with CP's marketed communications.

Communication technologies come with a choice, where users determine if they

will participate and on what levels of engagement. Shirky (2008) reminds us that for groups to interact with dynamic communication tools, there needs to be a clear understanding of, "a plausible promise, an effective tool, and an acceptable bargain with the users" (p. 260). If CP TV can provide a clear promise to employees regarding the type and frequency of information issued, the bargain that comes into play is that content should be consumed, even if it may not always suit all individual needs. As some employees reported needing more time to view the content, questions remain as to how the medium can live up to a promise of information accessibility with viewer time constraints.

At the same time, strong employee support for lunch room placement may reflect management concerns that employees prefer placement in break areas as they can use information consumption as a reason to extend timed breaks. However these concerns should be reassessed following management telepresence with CP TV, as they were based on assumptions rooted from previous employee behavior in years past when entertainment television was available in break rooms, and not readjusted with CP TV's unique, reading-focused telepresence in mind. Some managers also expressed that break rooms should be preserved as quiet spaces, away from "the corporate propaganda machine". However employee suggestions on placement indicate that employees do not feel the need for mental quiet space or perceive CP TV as a cognitive invasion.

CP field worker readership preferences for brief, easy to read headlines conflicts with Strand's (2009) notion that, as with interactive digital television, high levels of complexity are required to keep audiences engaged. Because CP TV content is high in context, low levels of complexity in headlines enable employees to internalize

knowledge, one message at a time. The ability to insert codified points of interest through the display of brief headlines supports a knowledge-in-practice (KIP) perspective where codified knowledge that does not naturally align well with the nature of work can be discussed through later tacit work practices (McIver, D., Leggnick-Hall, C., Leggnick-Hall, M., Ramachadran, I., 2013).

Interest in seeing performance metrics

As previously noted in the literature review, the *organization as machine* metaphor, for its overpromise of linear change as a result of information transmission, suggests all employees should work toward the same overall goals, broken down by functional specialty. One of the most important goals of organizational productivity, as expressed throughout CP's five guiding foundations, is poorly expressed to the field worker population. A lack of exposure to performance metrics with this employee population suggests that the operational goals of CP are not tightly mapped to individual knowledge creation goals. High interest expressed in seeing metrics, particularly local and regional, indicates that employees want to increase knowledge regarding how individual, yard and regional productivity relates to overall company output and performance.

Interest in seeing more metrics, particularly local safety and operational metrics, also supports the desire for employees to have access to knowledge that informs their daily work practices. This falls in line with Nakano's (2013) suggestion that the sharing of metric-based knowledge helps employees not only make sense of what is going on in their own yard, but helps create personal meaning regarding individual role and purpose in the organization:

"Blue-collar workers may not need to be involved in the concerns of a firm's top management, but efforts to communicate company goals and results appropriately and to ensure that all of a firm's workers are well informed are typically regarded as indications of care and trust; these sentiments promote committed behaviours from employees……Higher-order issues, such as knowledge-sharing and operations improvement, can only be addressed after basic needs have been fulfilled." *(Nakano et al, 2013, pp. 300)*

The value of employee interest in key company information should not be undervalued. Increasing access to this knowledge empowers employees to determine their own motivations towards productivity, enhances feelings of membership and allows the individual to take part in the continual re-generation of organizational knowledge.

Even though CP's task-based workers have limited decision-making power, high interest in seeing performance metrics indicates this information is desired more on the basis of assessing individual placement and purpose in the organization and less on the goal-creation/behaviour level. This is supported by low interest in performance information from other departments in the same yard, reflecting an internal focus within organizational functions.

Although there is limited interest in operational performance metrics, employees are still tied to the company story, as shown in reports of following the company stock. As opposed to operational metrics that are tightly wound with CP's narratives of the five guiding foundations through corporate communications, statistical stock data forces followers to come to their own assessment of company performance and shareholder value. This indicates that individual reflections on company performance are frequent, causing repeated assessments on personal meaning and purpose. Such assessments of undetermined iteration, while malleable and possibly sub-conscious, influence employees

to re-conceive motivations and commitment to the organization and have a significant effect on job satisfaction and individual performance (Susanty, A., Miradipta, R., 2013). Further inquiry is required to determine if followers express interest due to shareholder membership or general interest, and the impact to notions of employment membership.

Guiding Foundations at CP

Knowledge related to the guiding foundations or goals of the organization is critical in achieving employee buy-in to company justifications on business decisions. Variance with knowledge of CP's five foundations as illustrated through examples of business decisions is based on individual experience with such decisions.

Asset Optimization: High awareness to the large reduction in fleet can be attributed to individual witness to the removal of assets from yards and resultant impacts on task-based work.

Provide Service: Low scores on the statement "CP provided better service, even with a large reduction in assets," may not indicate low knowledge, but reflects a disbelief in the explicit statement. This ordering of questions presented a methodological error in question ordering as it was leading and vague in terms of the reference to 'service'. Explicit statements like this will be rejected when experiential tacit knowledge informs differently, illustrated by comments such as: "Trains are constantly underpowered and DIE ON HILLS ON OUR SUBS" (MJ5), "Power is junk" (MJ13).

Control Costs: Even distribution of responses on this measure indicates that cost control measures, while very apparent to some, are invisible to others. With more information regarding cost control initiatives and potential impact to the bottom

line, this can enhance personal meaning on changes that appear to some as wayward.

Develop People: Various ranking on this foundation indicates that only some employees within the mostly homogenous pool of positions see themselves as leaders or feel they are led by managers that they identify to have strong leadership attributes.

Operate Safely: Positive expressions on safety communications related to people indicate that CP's safety culture is the strongest in terms of employee safety. This is a strong indication that leadership in the field succeeds on the personal safety front. As internal communications have not paralleled external media communications on Lac-Megantic, it is not surprising that external safety information related to communities and environment is the most lacking,

Varying agreement on statements related to the above guiding foundations illustrates that local knowledge does not always support business decisions made at the top of the organization. When narratives on guiding foundations are found to be contrary to tacit knowledge, the strategic intent of information provided by management and corporate communicators comes in to question, resulting in distrust of organizational decisions. This is a critical risk to knowledge management and measures should be sought to make narratives plausible across all levels of the organization to increase trust and absorption of information.

Safety

The creation of a proper knowledge environment is difficult in a task-based environment but nonetheless is desired by employees, particularly to learn about non-routine events and how to safely handle them. In a knowledge environment where hands-on training for personal safety techniques is most effective, yet the most limited due to

task-based roles, CP TV can incorporate Nonaka's (1994) four modes of knowledge

conversion to increase deliver and reception of messages. Examples provided by

employees stressed the importance of increased access to safety communications, and can

be supplanted with Nonaka's modes:

- *Externalization* (tacit knowledge to explicit knowledge): Post minutes from health and safety committee meetings.

- *Combination* (explicit to explicit): Integrate new safety rules with local context

- *Internalization* (explicit to tacit): Information on hands-on safety courses.

- *Socialization* (tacit to tacit): By nature remains face-to-face, but such interactions can be stimulated by explicit knowledge.

These aforementioned examples not only increase access and conversion of knowledge,

but also refer to the further development of a *ba*, or *engaging environment* for ideal

knowledge sharing (Nonaka et al, 2013).

Current employee communications

Tacit knowledge and 'other employees' - Employees ranking 'other
employees' as the most trusted source of information resonates with the notion of
tacit knowledge described above and suggests seniority is highly valued due to
larger accumulation of experiential knowledge. While tacit knowledge is the most
valued in an organization, this trusted preference is a concern to knowledge
management as intentional goal-based explicit knowledge from management and
corporate communicators may be translated into an unintended knowledge context,
thereby increasing the possibility of unaligned knowledge diasporas. When senior
employees are change communicators to their cohort, they are known to be the
most resistant to change due to a larger threat to autonomy and preferred set

routines established from many years built up on the seniority scheduling-based system (Xu, Y., Kim, H., Kankanhalli, A., 2011). Therefore, this preference illustrates that change communications are often socialized under suspicion of unjust strategic intent.

Preference to seek knowledge from other employees also indicates that employees prefer to share knowledge within distinct employee social networks on the local level where they can relate to each other across common homophily features such as role and location. While field workers don't connect to each other the way 'knowledge workers' do, this does not mean they are not social – the tendency to seek information socially may indicate a rejection of centralized communications as reflective of the dominant organizational paradigm. Particularly for Engineers and Conductors who spend their entire shifts with one another, their work environment fosters a significant camaraderie and distinct information subculture. However factors behind selection on preferred and trusted sources requires further investigation to determine if this selection is molded over time due to pure availability compared to other limited management and technology-based sources.

RailCity – The ranking of RailCity as the second best source of trusted information is a positive indicator for a growth in trust with CP TV as content is mostly derived from the same corporate communications source. Both RailCity and CP TV are part of a one-way communication network that is not set-up to handle dialogical communications between field employees and corporate communicators. This limitation reduces the ability for communication to be validated on factual, intentional and ethical dimensions as information receivers can't challenge claims, engage and discuss through the medium (Wolfe, 2010). Greater power distance from content creators also prevents the ability to challenge claims and receive feedback with the source, which ultimately limits the potential for knowledge conversion. It is only natural then that other employees are the best and most trusted source due to the ability to socialize knowledge locally within a cohort of peers.

Managers - The ranking of managers as a third most trusted source could indicate that managers either have limited time, poor availability to communicate, or that employees generally distrust their knowledge. Further research is required to determine why managers as a knowledge source are ranked low as these leaders should be primary to instill verifiable and goal-driven guided knowledge. If distrust is a primary driver for choice of knowledge source, this indicates there are low levels of trust amongst persons of authority. Low levels of trust point employees to other sources that can challenge 'dominant' knowledge and creates a divisive 'us and them' knowledge environment.

Union leaders - Preferred and trusted fourth, union leaders primarily communicate about employment protection and health and safety, indicating a desire amongst some employees for more of this knowledge to be presented in a transparent method from other sources.

Readership preferences of CP news - Visibility to scrolling headlines creates a motivating knowledge factor. If curated CP and industry news headlines are reproduced from RailCity to CP TV as scrolling headlines, responses indicate that readership could increase by 50%. Even for those who do not seek out additional context by reading the full story at a later time, the intent of others to do so supports a knowledge-centric social network where a portion of its members seeks to internalize explicit knowledge that can then socialize their findings amongst members. As scrolling headlines create a certain level of content redundancy, this can also help stimulate the creation of new concepts (Nonaka, 1994).

Training - Although clearly stated that CP TV can in no way replace hands-on training, several comments indicate that the suggestion to use this technology to supplement critical training is insulting to employees who believe safety training always needs to be delivered face-to-face. However, many agreed CP TV is a good forum to remind employees of how to practice routine safety techniques with new techniques being reserved for face-to-face management communication. CP TV has

clear limits as a training tool as managers can't queue visual aids during presentations due to the scrolling slide presentation. Scrolling content also presents limitations as if only a portion of a technique or story is viewed, the lack of full context can produce unintentional and incorrect knowledge.

Potential employee communications

When switching the tone from 'CP TV as training tool' to 'CP TV as information tool', employees were more receptive to using CP TV to access critical task-based non-routine information. The preference for tasked-based information indicates personal interest in knowledge that can maintain or improve job performance. In repetitive work environments, information that refers to non-routine events in safety news, employee bulletins and emergency broadcasts are the most valued as they instruct employees on any mandatory or urgent behaviour changes that are critical to performing tasks correctly and safely. The importance of changes to safety and operational routines is further highlighted in the fact that these types of content already have structured mechanisms for delivery wherein employees are required to read this information in printed bulletin books at the start of every shift. This may indicate that existing bulletin communication processes are unreliable, outdated or require more redundancy to develop tacit knowledge, all of which would require further investigation.

High interest on non-task based information related to employment contracts such as HR news, employee discounts and job openings express that employees desire more knowledge related to the psychological contract they have with the organization. This is supported by findings showing job satisfaction as tied directly to attitudes about job characteristics, compensation and benefits, status, social security, advancement

opportunities, technological challenges and respect (Tella et al., 2007, in Susanty, A., Miradipta, R., 2013). Interest in local events, employee anniversaries and employee recognition indicates an interest in the sharing of explicit knowledge that can benefit local culture and social networking.

When asked to value types of information based on the potential to route around managers for knowledge, it was initially hypothesized that popular types of information requested from CP TV would expose information deemed to be lacking from managers. However the significantly low response rate, along with manager's being rated as a third best and trusted source for information, indicates that possibilities for improvement with manager communications are thought to be limited and other open and accessible communication methods should be explored.

Open-ended questions

Positive support for current communications on RailCity from head office demonstrates that as a tool, it houses a sufficient amount of employee information, albeit HR and employment news could be easier to find. The desire for non-routine information and safety news indicates that a communications gap exists between RailCity and local needs: "Making sure employees know of changes. Far too often we run into changes we were not informed of"(MJ5), "Local safety issues and changes" (M23), "Would like to see some safety bulletins and a rule of the week" (G13). These knowledge gaps come as no surprise, as RailCity speaks to CP's entire employee audience and therefore does not perform well when local context is required.

Other comments that RailCity and/or CP TV is not used or watched due to a lack of

interest, need or time limitations indicate that certain employees have a low knowledge value for *all* organizational communications. This may be indicative of high tacit knowledge due to seniority, i.e. knowing how to work the CP employment system eliminates the need to reference resource information, or a low sense of purpose or autonomy that discourages the point of gaining new knowledge.

A final notable trend in commentary from open-ended questions spoke to concerns over management practices that fail to foster dialogical communication. Limited managerial availability for discussion of information is a concern to knowledge management as it creates distrust and discourages the generation of knowledge through the practice of questioning until mutual consensus is reached. This may be due to limited time and access to facilitate such dialogical conversations, especially for employees who work on a 24-hour rotation.

CONCLUSIONS AND RECOMMENDATIONS

CP TV as a knowledge-trigger mechanism

Traditional knowledge management literature paints a dichotomy between knowledge/white-collar vs. task-based/blue-collar workers that has created assumptions that the later population cannot perform individual critical assessments on new knowledge like the former. Rather, awareness of limited abilities to absorb the wealth of explicit information knowledge workers are privy to has created a unique mindset amongst task-workers where they strongly emphasize knowledge priorities, as demonstrated in study results. As opposed to vast media-rich content demanded by commercial DS audiences, it is more important to deliver the right message to this

employee audience in short headlines. Visibility to a scrolling series of headlines with internal and external news creates a motivating knowledge factor that should be exploited over this medium. To ensure the maximum transference of knowledge, style guidelines that enforce consistent short impactful statements should be utilized to promote further socialization of knowledge amongst local employees. Even for those who do not seek out additional context by seeking out full stories at a later time, expressed intent to seek with some employees supports a knowledge-centric social network where a portion of its members seek to internalize explicit knowledge who can then socialize their findings amongst members. As scrolling headlines create a certain level of content redundancy, this can also help stimulate the creation of new concepts from existing knowledge.

As a knowledge-trigger mechanism, CP TV can also be used to marry other communication sources together, such as pointing to resources on the corporate intranet, external news sources and endorsed social media channels. While communication that pushes employees to recommended channels may not win over all employee populations due to low levels of trust and suspect strategic intent, continued interaction with DS can increase positive cognitive associations and create more outcomes of trust with DS knowledge.

Let us now revisit how results relate to objectives set out in this study.

Identify opportunities or improve ways for field workers to access information required to perform their job safely and in accordance with strategic goals of the organization.

Safety

CP TV should not be a primary source for knowledge related to training of non-routine tasks and new critical safety practices as this knowledge is high in context and demands dialogical communication to ensure knowledge reaches the point of socialization. This does not mean that high-context information should be outright excluded from CP TV, but rather recognized by employees as a trigger to motivate employees to seek out primary sources of high context information via existing communication channels that extend knowledge generation through dialogical communication. To create such recognition, high-context knowledge headlines should allude to other mandatory knowledge-gathering processes of printed bulletins and/or face-to-face communications.

The strength DS provides to safety knowledge resides in the ability to create redundancy. Safety communications that speak to day-to-day hazards are no less important than non-routine communications, but are prone to be ignored as repetition of the same message creates a perception of common-sense old knowledge to be ignored. The highly visual nature of CP TV provides an opportunity to repurpose and draw attention to brief and routine safety reminders through eye-catching media. For example, a stagnant reminder that winter conditions are coming can be brought to light by a visual of snow up to the height of a locomotive in a mountain subdivision. In this example, the visual draws the reader in, who will absorb the explicit message as a secondary result. Such visual persuasions stimulate knowledge consumption to the point of absorption, supporting the need for a communications investment to combine explicit routine safety knowledge with compelling visuals and examples to capture the attention of new audiences to 'old knowledge' and cycle the same message in a redundant, yet entertaining

manner. This fits the definition of one of McLuhan's 'cool mediums', wherein low definition media is effective due to an audience that is familiar with the genre conventions, and can thus fill in context gaps (McLuhan, M., 1964).

A high rate of requests for safety news and local bulletins throughout the study indicates that there is great potential for CP TV to fill this knowledge gap. Redundancy with safety communications not only increases awareness to hazards and best practices, but helps to expose the existing safety *ba,* or engaging safety knowledge environment that exists in other forums outside of task-based knowledge. Investment in information on how to access other modes of safety knowledge conversion that occurs in health and safety meetings, environmental and community emergency response training and activities could reinforce the importance of employee membership in CP's safety *ba* and the organization's commitment to this type of knowledge.

The importance of education to employees on safety practices that are impactful beyond organizational boundaries cannot be stressed enough, as employees are front-line ambassadors that spread individual knowledge to customers, their community, social networks and media. It is evident in feedback that there exists a lack of information beyond safety measures and response concerning environment and community, and is likely due to heightened attention to dangerous goods and train derailments in the media. Further distribution of knowledge on this topic is recommended to increase conversations for employees to advocate internally and externally on positive work in this area and/or challenge practices that may illuminate possible shortcomings that could affect employee, community and environmental safety.

Disagreement with stories on CP's foundations illustrate that local realities differ across the network. Not all yards or regions may feel posed to celebrate success when dictated from head office due to regional variances in operations and cut backs. As local reality is found to be imperative when using CP's foundations to justify organizational decision-making, this supports a recommendation for an investment in local storytelling over CP TV that can relate to change and local, regional and overall operational metrics. This would enable a local yard to celebrate successes that meet organizational foundations as they arise, increasing trust in decision-makers, strategic intent and increasing personal meaning to changes in operational metrics. Brief snippets of stories from local management can also increase feelings of accessibility to information and foster connections across local social networks. Local storytelling is also a mechanism to reaffirm management social capital and enhance feelings of trust, therefore subverting other employees as a primary source of information.

Determine if DS can be an authoritative internal communications tool in environments with knowledge gaps and influential external news sources.

Knowledge gaps

CP TV can only partially fill a knowledge accessibility hole with task-based workers as the inherent makeup of daily routines greatly limits allotted time to access communication technologies. As employees may not catch an entire story when viewing DS's due to the cycling nature of content display, this prevents the medium from being relied on to communicate explicit knowledge from start to finish. Due to the potential for

information absorption to be cut-off mid-cycle, the tool cannot become an authoritative source for priority, high context task-based information. This renders DS's as a secondary communication channel that's purpose is to draw attention to knowledge that exists in other communication channels. However the impact of supplementary communications should not be downplayed in environments where knowledge gaps are vast as it amplifies opportunities to stimulate knowledge generation. Therefore, further deployment of CP TV to all major CP yards is recommended to increase the potential for knowledge interactions.

CP and the media

On a personal level, media coverage on the railway triggers employees to assess if external reports reflect the personal experience. Visibility to scrolling headlines of curated CP and industry news headlines can have a substantial impact on employee knowledge and organizational competitiveness as employees reported their readership could increase by 50% from this trigger. In order to gain employee advocacy, it is recommended that local and national news reports on CP are included in CP TV scrolling headlines as well as CP and industry news so employees feel they are fed a balanced and objective story. To maintain such balance but optimize employees as ambassadors, when media reports are unaligned with organizational opinion, messaging from CP's media team on the organizational position can also be issued to provide additional buttressing for employees to arrive at their own knowledge assessment. This transparency of information may not always align employees to the organizational position, but when it does, the potential for employees to spread their knowledge on what is being done properly inside corporate walls over online and offline social networks has an impactful

reach. Such transparency recognizes that knowledge is personal and shouldn't be dictated, and also posits employees as experts and valuable participants in ongoing industry debates.

Social capital

As social context is found to be high in this environment due to preference of seeking information from other employees, more research should be conducted to better understand employees' social and relational needs in information seeking. While online employee social networking is known to occur outside of organizational boundaries, it is not recommended that such conversations be encouraged over mediums outside of CP's control as the potential is high for misinterpretations of strategic intent. It is suggested that if management can identify employees that have high social capital, they be recognized as peer mentors by inviting them to expand their capability to socialize knowledge to their network by assigning them as local CP TV content authors. More investigation is required to determine the feasibility of such a program, with careful attention paid to incentives, governance, moderation and union communications.

Investigate if DS can be used as a tool to enhance feelings of community within a field environment through display of non-task based information.

Investment in increased access to non-task knowledge communicates to employees how the organization is working for them, which can enhance feelings of trust, loyalty and in general improve employee welfare due to increased access to services inside and outside the organization. It is clear that employees are interested in gaining more knowledge on their psychological employment contract. As HR news and benefits

changes across Canada and the U.S. and union and non-union populations, customized

content related to employment contracts catered to audiences can assist with access to

services. The use of storytelling can help surface this kind of knowledge out of codified

policies so employees can absorb HR knowledge in the context of real applications, such

as use of benefits.

As preference to community information was scattered, this demonstrates that

employees identify strongly with only some CP community identifiers, such as the

Holiday Train program, yet have limited interest in others. Further investment to produce

knowledge around the strongest community identifiers is recommended to enhance

existing symbolic meaning to employee membership. The amplification of peer influence

over CP TV can also create a digital forum to communicate about local employee events,

therefore making employee social networks appear more inclusionary and fostering

feelings of community.

As opposed to standing-room-only areas, seating in lunchrooms allows employees

to be more stationary to focus their vision more on text-based information. Being

stationary in a communal seating area also encourages conversation more than passerby

areas, and thus more socialization of knowledge amongst peers. Therefore it is

recommended that future placement of CP TV's occur in lunchrooms.

Technology and resource support

CP TV was found to receive information across a large geographically

decentralized network of employees with seldom and minor technical issues. The web

platform Signage Live© was chosen due to low hardware cost, easy online interface and

ease to issue information locally, regionally or across the entire network (SignageLive.com). Deployment and installation to various sites required careful coordination with local management and progressed slowly due to consideration of placement, resourcing and hiring external contractors. At the time of completion of this paper, eight more CP TV's were installed at an additional four yards. It is recommended that access to local technical support should be a requirement for CP TV to ensure content is always present on the screen and it can be trusted as a reliable source to seek content.

To increase relevance, trust and authenticity, thereby furthering the potential for knowledge to reach the point of socialization, it is recommended that local knowledge owners contribute their knowledge to CP TV. Training of local support staff to publish local content occurred only with one site and was largely dependent on local interest in using the new communication medium. As operational goals are always a priority in yards, to increase local content publication it is recommended that executive sponsorship be sought to endorse time allocations to select staff for creation and publishing of local content. Such sponsorship will help the resourcing paradox that those who have the most social capital, deal with the most pressing time demands. Guidelines on ownership of content can also provide clarity on when local management have license to rewrite corporate knowledge to local context and when explicit content from head office needs to remain untouched to avoid misinterpretation of information. To ensure ongoing support for DS, the corporate communications department should continue to own the medium for issuing company-wide information, providing guidance on communication governance and connecting users to technical support. Further inquiry into automation of

feeds from other communication technologies like RailCity should also occur to assist with resource support needs and increase reliability of updates.

Other communication technology

While field workers have limited access to communication technology due to the nature of task-based work, this does not mean that this population can't be reached through personally owned technology like smartphones and personal computers. The increasing ability for smartphones to perform just like a personal computer has increased preference for information to be accessible on mobile devices. Findings that back this up indicate that half of these workers who follow company stock use a smartphone app, and suggestions that CP communicates using smartphone applications or text messaging. Further investigation into communication technologies that can facilitate dialogical management practices is also recommended to support further socialization of high-context knowledge and trust in management communications.

LIMITATIONS

In Moose Jaw, two of the CP TV's were down for a duration of three weeks during the three-month pilot due to a network issue. This limited the ability for employees to provide feedback on the technology and may have altered perceptions on why CP would invest in technology that didn't appear to function.

FINAL CONCLUSION

In today's knowledge economy, it is challenging to capture employee attention and manage rapidly changing knowledge. As a communication technology, DS's partially fill

a knowledge gap in field worker environments thanks to the highly visual platform. While attention can be captured from short headlines, the potential for explicit knowledge of this type to become internalized within individuals to the point of tacit socialization will be limited due to highly contextual knowledge across locations and functions in the organization. However as a knowledge trigger, the medium is successful as a conversation starter and an improvement in corporate communications to this mobile audience.

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APPENDIX A

Demographic:

1. How many years have you worked at CP?
   - o 1-2 years
   - o 3-5 years
   - o 6-15 years
   - o 16-25 years
   - o 26 years +

2. What department do you work in?
   - o Mechanical
   - o Running trades
   - o Engineering
   - o Administration
   - o Yard Planning (trainmaster terminal/yard, dispatch etc.)
   - o Other_____

3. Gender
   - o Male
   - o Female

Digital signage or 'CP TV' is a new initiative being brought in to improve communication with CP employees. There has been a digital sign posted in your local office for a brief period of time. Please let me know your initial thoughts on the project.

4. On a scale of 1-5, with '1' being 'Not at All' and '5' being 'A great deal', how would you respond to the following statements:

a) I am familiar with CP TV:

1	2	3	4	5

b) The objectives of the CP TV project are clear to me:

1	2	3	4	5

c) I think the CP TV project is a good idea:

1	2	3	4	5

5. How much time would you estimate you spend watching CP TV each day?
   - o 0 minutes
   - o 1-2 minutes
   - o 3-5 minutes
   - o 5-10 minutes
   - o More than 10 minutes

6. Do you feel the TV in your yard is placed in a good location?

   - ○ Yes
   - ○ No

   6.a. If no, where would you suggest it be placed? Please detail the building name and area in your suggestion (eg. In the car shop, it should be moved to the left corner)

7. Content on CP TV loops every three minutes. Do you feel that you have time during a shift to view the content?

   - ○ Yes
   - ○ No

   7a. If you said 'No', how many shifts do you think the same content should be displayed for you to see it. If you said 'Yes', please skip to the next question.

   - ○ 2 shifts
   - ○ 3 shifts
   - ○ 4 shifts
   - ○ 5+ shifts

8. CP TV is intended to display limited amounts of text to be readable from a distance. Do you feel that headlines:

   - ○ Are easy to understand in one glance
   - ○ Are interesting and catch your attention but allude to a larger story

9. If you had to choose, would you prefer headlines with company and employee news that:

   - ○ Motivate you to seek out more content on RailCity
   - ○ Provide you with all the information you need
   - ○ May or may not motivate you to seek out more content on RailCity
   - ○ Don't know what RailCity is

CP measures aspects of performance by using number-based "metrics" to track changes and fluctuations in operations. Metrics may help employees see how their daily work contributes to company performance. One way to measure how effective CP TV is for employees is to compare awareness of company activity and performance prior to installation of the system. Answering the following questions will give us feedback on the usefulness of certain metrics to employees.

10. Prior to CP TV being deployed in your local yard, had you ever seen the Association of American Railroads (AAR) metrics that reflect the **overall** operational performance of the company (eg. total weekly carloads, average train speed, average terminal dwell time, active cars online)?

    - ○ Yes
    - ○ No
    - ○ Seldom
    - ○ Not sure

11. Prior to CP TV being deployed in your local yard, had you ever seen metrics related to the local or regional performance of the yard or region (eg. local car dwell, bad order car repair, inbound/outbound volumes)?

- o Yes
- o No
- o Seldom
- o Not sure

12. Most yards have several buildings where employees conduct different work activities. How interested are you in knowing how other employees in different departments in your yard are performing according to local metrics?
- o Very interested
- o Somewhat interested
- o Not interested

13. Does visibility of local or regional metrics motivate you to work towards performance targets?
- o Yes
- o No
- o Seldom
- o Not sure

14. Do you feel **local or regional** performance targets are clear?

- o Yes
- o No
- o Somewhat

15. Does the visibility of overall operational performance metrics motivate you to work towards your performance targets?
- o Yes
- o No
- o Seldom
- o Not sure

16. Do you feel **overall operational performance** targets are clear?

- o Yes
- o No
- o Somewhat

Each of the five Canadian Pacific Foundations is a guide post. They provide a standard for you to base your daily activities on. Answering the following questions will let us know how well CP informs employees about the foundations and how they relate to company initiatives.

17.   Reducing terminal dwell of cars is one major goal in achieving asset optimization. On a scale of 1-5, with '1' being 'Not at All' and '5' being 'A great deal', does visibility to your **local terminal dwell metric** help you make this connection?

1	2	3	4	5

18.   On-time train performance is an integral part of providing service. On a scale of 1-5, with '1' being 'Not at All' and '5' being 'A great deal', does visibility to your **local on-time train performance** help you make this connection?

1	2	3	4	5

19. CP is always looking to control costs by doing the same things faster, better and less expensively. Improvements have been made in this space recently by providing faster service through simplified transits. On a scale of 1-5, with '1' being 'Not at All' and '5' being 'A great deal', have you noticed any of these service changes?

1	2	3	4	5

20. One of CP's goals is to **develop people** and be an organization of leaders. If you lead people your role is to coach them every day to be better than the day before. If you don't lead people, then lead by example. Whether leading or being coached, on a scale of 1-5, with '1' being 'Not at All' and '5' being 'A great deal', how confident are you in knowing that your actions reflect this direction?

1	2	3	4	5

21. Operate safely and "Don't get anyone hurt" is CP's most important motto. In general, do you feel you receive enough safety-related information about people, customer goods, communities and the environment? Place a check in your decision below.

Operate safely and 'dont get anyone hurt' is CP's most important foundation. In general, do you feel you receive enough safety related information about people, customer goods, communities and the environment? Response rate: 100%	Not at all	Don't know or no opinion	Somewhat enough	About enough	There is plenty
People					
Customer goods					
Communities					
Environment					

Surveying employees about company information and communication covers a wide range of topics. The remainder of the questions ask you to think about communications in a number of different ways. Please read the instruction carefully for each question.

22. How do you currently find out about high-level changes from senior management that may affect you? (Check all that apply)
- o Manager
- o Other employees
- o RailCity
- o Union leaders/union communications
- o Canadian Pacific Magazine
- o CP TV
- o Other _____

23. In the list below, which is the most trusted source? (Check one)

- o Manager
- o Other employees
- o RailCity
- o Union leaders/union communications
- o Canadian Pacific Magazine
- o CP TV
- o Other _____

24. Do you follow the company stock price?
- o Yes

o   No

25. If you do follow the company stock price, what source do you use? (Please indicate source and how you access it: newspaper, computer, tablet, etc.)
   o   RailCity
   o   Newspaper
   o   Television
   o   Smartphone app
   o   CP TV
   o   Other (indicate)_____

26. RailCity has a "CP and Industry news" section on the homepage that is updated weekly. How often do you read this news?

1	2	3	4	5

27. If "CP and Industry news" were available on CP TV as scrolling news headlines, similar to all news channels on TV like CNN that use a "ticker-tape" method of scrolling through news headlines, would this motivate you to read the articles later on RailCity, or from the original online source (eg. The Globe and Mail)?

   o   Yes, it would motivate me to read industry related articles later
   o   No, but I feel more informed by reading the headlines
   o   No, I am not interested in reading headlines or articles on CP and the industry

28. If you read "CP and Industry news" on RailCity, do you feel the headlines accurately reflect how CP stands in relation to other railways?
   o   Yes, I can make a fair assessment based on information provided
   o   No, I can't make a fair assessment
   o   I don't read "CP and Industry news"

29. Large customers drive CP's business and their business can affect the movement of freight. On a scale of 1-5, '1' being 'not at all aware' and '5' being 'very aware', how informed are you about CP's business relationships with large customers?

1	2	3	4	5

30. One a scale of 1-5, with '1' being 'not interested' and '5' being 'very interested', would you be interested in learning more about CP's business relationships with large customers?

1	2	3	4	5

31. Does the presence of the local weather on CP TV motivate you to check the temperature more often throughout your day?

- o Yes
- o No
- o Don't know

32. On a scale of 1-5, with 5 being 'strongly agree', to what extent to you agree with this statement: Increased visibility to the local weather report allows me to make faster decisions about how I plan my day?

1	2	3	4	5

33. CP TV can be used feature imagery showing proper safety techniques. For example, demonstrating the proper and improper use of wearing a harness. On a scale of 1-5 with 5 being the highest, how effective do you feel these visuals can be in teaching safety techniques?

1	2	3	4	5

34. Can you think of any other hands-on training that could be reinforced by photos or video on CP TV?

35. In a recent employee survey on the new Canadian Pacific Magazine, respondents expressed that they most liked the 'overall look and feel' and 'photos'. On a scale of 1-5 with 5 being the highest, how important do you feel visuals are in communicating CP's culture?

1	2	3	4	5

36. CP TV has the potential to report on community or local events. Please check any items below that you would like to see on CP TV:
- o Local events
- o Employee anniversaries
- o Employee recognition
- o Local and entertainment news headlines
- o Other _____

37. What type of headlines would you like to see on CP TV? Please check all that apply:
- o Senior leadership position changes
- o Changes to the departmental structure of the company
- o Letter from the President
- o Safety news
- o Company-wide safety statistics
- o Local safety statistics
- o Employee bulletins
- o Sports headlines
- o Local weather
- o Company stock ticker
- o Company-wide operational metrics
- o Local yard performance metrics
- o Regional yard performance metrics
- o Changes to local service design
- o Employee discounts
- o HR news
- o Wellness news
- o Local events
- o Employee spotlights
- o Customer news
- o CP in the news
- o Industry news
- o Information Technology news
- o Changes to policies and procedures
- o Emergency broadcasts
- o Local job openings
- o Rail fan hobbies
- o Employee fundraising/volunteering
- o Community investment
- o Holiday Train
- o Spike driving competition
- o Stories from the archives
- o Current local projects

38. While CP TV can in no way replace the manager-employee relationship, it could support it by providing information to help employees navigate and better understand their work environment. If the below types of information were available on CP TV, which of the following could reduce the need to consult with your manager for information?

- o Senior leadership position changes
- o Changes to the departmental structure of the company
- o Letter from the President on RailCity
- o Safety news
- o Company-wide safety statistics
- o Local safety statistics
- o Employee bulletins
- o Sports headlines
- o Local weather
- o Company stock ticker
- o Company-wide operational metrics
- o Local yard performance metrics
- o Regional yard performance metrics
- o Changes to local service design
- o Employee discounts
- o HR news
- o Wellness news
- o Local events
- o Employee spotlights
- o Customer news
- o CP in the news
- o Industry news
- o Information Technology news
- o Changes to policies and procedures
- o Emergency broadcasts
- o Local job openings
- o Rail fan hobbies
- o Employee fundraising/volunteering
- o Community investment
- o Holiday Train
- o Spike driving competition
- o Stories from the archives
- o Current local projects

You have almost completed your questionnaire. Based on your impression of current communications and the potential for improvement, please answer these open-ended

questions. Please write as much or as little as you want, using the blank sheet of paper attached if more room is required.

39. Overall, are there any areas of information that you find hidden on RailCity that we could do a better job in displaying, either on CP TV or RailCity?

40. In general, how might we improve on informing employees?

41. Do you have any suggestions for information you would like to see on CP TV?

Thank you very much for participating in this survey. Your feedback is valued and will be considered for future versions of CP TV!