SEATTLE'S CONTENT TECHNOLOGY INITIATIVE

A REPORT AND CLUSTER MAP INVESTIGATING CREATIVE ASSET CONVERGENCE

SUBMITTED TO:

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SUBMITTED BY:

COMMUNITY ATTRIBUTES INTERNATIONAL

AND

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INTRODUCTION

Background and Purpose

In 2010, Living Cities awarded to the City of Seattle Office of Film + Music (OF+M) a grant to cultivate and advance the Content Technology Initiative, a new economic development strategy to connect artists, content creators and entrepreneurs in interrelated media industries. The Content Technology Initiative strives to connect local creative assets with technology leaders to position Seattle as the global innovator in digital media creation and distribution.

In partnership with Living Cities, the Seattle Office of Film + Music established a policy development approach which includes planning, research and development of a report, presentation and follow-up. They identified Community Attributes International and AdvisArts Consulting as the consulting team to work with OF+M. The research and development phase worked with cluster leaders to refine the definition of the Content Technology economic cluster. Cluster definition included identification of core and supporting industries and inter-industry connections. An advisory group provided direction for development of a cluster map to graphically illustrate the economic sectors and their inter-relationships.

The Content Technology Initiative aims to:

o   Define Content Technology and identify industries and occupations that form the economic cluster
o   Identify connections and gaps between participating industries
o   Create a framework to support formal measurement and progress assessment
o   Foster discussions between public and private stakeholders about opportunities to grow and support the cluster
o   Identify areas for strategic action that will strengthen the economic benefits of the Content Technology cluster for the Seattle region

Methods

City of Seattle's Office of Film + Music, a division within the City's Office of Economic Development, identified and conceptually defined the emerging Content Technology cluster for further research. The project included guidance from three Principal Partners and an Advisory Group to help define and map the Content Technology cluster.

The Principal Partners were leaders from the Washington Interactive Network (WIN), Washington Filmworks and Pacific Northwest Chapter of the Recording Academy, who provided guidance to the consultant team on cluster key issues and how to engage the Advisory Group. The Advisory Group

included broader industry representation, with 23 industry leaders attending a series of meetings. (Appendix B.)

Data and findings in this report come from a variety of sources. Quantitative data summarized here come from a combination of existing studies and custom data queries conducted expressly for this study. Occupational Employment Statistics data from the Bureau of Labor Statistics provided definitions and estimates of the number of related occupations.

Advisory Group feedback improved cluster definition and study design. This group of sector experts responded to and supplemented quantitative data and visual information as mapped. A total of three Advisory group meetings were held between June and September, 2010. The first meeting focused on defining Content technology as an economic cluster and identifying regional strengths, unrealized potentials and weaknesses. The second meeting provided input on an initial iteration of a Content Technology cluster map and refining the themes that were emerging as key to the sector. The third and final meeting of the Advisory Group examined the final iteration of the cluster map and engaged in a work session to identify opportunities, next steps and strategies suggested by the sequences of three meetings.

Organization of the Report

The report includes the following sections:

- o **Cluster Overview.** A description of the cluster economic structure and relationships among sectors.
- o **Core Sector Employment.** Data summaries of employment within the core sectors that define the cluster.
- o **Talent and Occupations.** Descriptions and data summaries of the occupations that drive Content Technology.
- o **Characteristics of the Content Technology Sector.** Five characteristics of the sector in Seattle.
- o **The Content Technology Cluster Map.** A graphic representation of the sector and the relationship between subsectors.
- o **Strategic Themes.** Three key themes identified by the Advisory Group for strategic direction of the cluster.
- o **Opportunities: Supporting and Instigating Content Technology Convergence.** Four areas of opportunity identified by this initiative.
- o **Recommendations and Next Steps.** Areas of action to advance the sector in the region.
- o **Appendices**

Cluster Overview

Seattle's Content Technology Cluster comprises eleven core sectors including Software, Games, Social Media, Mobile, Music, Theater, Film, Visual Arts, Literary Arts, Advertising and Education. Each core sector is described in the following section.

The cluster is represented graphically by Seattle's Content Technology cluster map, included in this report. On the map, the Content Technology Cluster operates within a universe that graphically represents the market and the economy in general. The core sectors are each represented by a celestial body, varying by size according to the number of jobs in each respective cluster. The core clusters swirl within a galaxy of inter-related economic opportunities. Subsectors orbit around core sectors, demonstrating nuances and niches in each core sector, which independently and collectively contribute to Seattle's Content Technology Cluster. The universe of creative thinking converges into Digital Content Delivery, an emerging core sector that leverages tools and content from the other core sectors.

Content Creators drive the Content Technology Cluster. They appear graphically on rays of light that connect the core sector and emerge from the Content Technology labor pool, symbolized by the star in the center of the map. The rays of light are sized relatively and approximately based on the number of people working in this region in each occupation group shown.

Core Sectors

The Content Technology Cluster comprises eleven core industry sectors. The sectors reflect industry groups as typically defined by economic data (generally consistent with the U.S. Census Bureau's North American Industrial Classification System or NAICS). Content Technology core sectors are defined as follows:

- o **Software** includes subsectors based on types and functions of software including systems, programming, application and simulation.
- o **Games** includes subsectors formed around video game genres including core, serious, casual and MMORPG (massive multiplayer online role-playing games).
- o **Social Media** includes subsectors such as social networks, blogs, collaborative content and virtual worlds.
- o **Mobile Technology** includes the mobile applications subsector and demonstrates many cluster connections between Games, Music, Software, Social Media and Digital Content delivery.
- o **Music** includes live performance venues, festivals, studios, record labels, recording and radio.

- Theater and Dance includes venues and artists that produce and deliver performing arts, excluding music.
- Film includes production, screen-writing, video and animation subsectors.
- Visual Arts includes painters, sculptures, photographers and more.
- Literary Arts and Storytelling includes journalism, print and screenwriting subsectors.
- Advertising creates and distributes original content from any sector in the economy to all consumer and business markets.
- Education is both a technology and a talent producer that delivers content and supports other core sectors. Education includes university, vocational, community college, K-12 and DIY (do-it-yourself) opportunities.
- Digital Distribution is the convergence of the Content Technology cluster and includes inventory, distribution, publishing and licensing subsectors. This sector distributes content created from core sectors to consumers across the globe.

Content Technology core sectors are supported by professional services, including Venture Capital, other forms of Financing, Legal and Intellectual Property Services and Managerial support. The map presents these support services as satellites poised to cut across the cluster to support activity anywhere in the universe.

The cluster map relates the economic data of jobs and occupations by firm and across the regional economy. Scaling the components based on jobs and occupations provides one indicator of how the cluster supports people making a living in related activity. However, as a measure, jobs understate the amount of activity in the region in many of the sectors, and thereby jobs significantly underestimate the importance of some activities to the region.

Paid jobs, for example, do not reflect the number of people taking classes in the Education sector or volunteering their time for community workshops and arts events. For each of the arts-based sectors, in fact, economic data such as jobs, wages and revenues would be expected to exclude most amateur, education, community and youth activities. Therefore, the magnitude of activity in the region is far greater than what can be captured by readily available data. This is significant in this sector, as major events and projects evolve from such community-based efforts that elude systems in place that capture economic activity data.

CORE SECTOR EMPLOYMENT

The Content Technology cluster employs more than 100,000 jobs throughout the central Puget Sound region (**Exhibit 1**). Employment estimates are based on existing studies published by the Seattle Office of Economic Development, enterpriseSeattle, ArtsFund and the Puget Sound Regional Council.

Exhibit 1
Content Technology Cluster Employment

Sector	Jobs	Year	Geography	Source
Software	72,800	2002	Seattle-Bellevue-Everett MSA	Seattle OED. *Seattle's Information and Communications Technologies Cluster*
Gaming	15,000	2008	Selected regional companies	enterpriseSeattle. *Interactive Media Competitiveness Study*
Music	11,160	2008	City of Seattle	Seattle OED. *Economic Impact of Music in Seattle and King County*
Theater/Performance	5,310	2003	King County	Arts Fund. *An Economic Impact Study of Arts and Cultural Organizations in King County*
Film	2,270	2003		Seattle OED. *Economic Impacts of Film & Video Productions on Seattle*
Visual Arts	4,200	2010	City of Seattle	Arts Fund. *An Economic Impact Study of Arts and Cultural Organizations in King County*
Advertising	6,030	2009	Puget Sound 4-County Region	Puget Sound Regional Council, Community Attributes
Total Jobs	**116,770**			

CONTENT TECHNOLOGY TALENT

Exhibit 2 presents Content Technology occupational employment published by the Bureau of Labor Statistics Occupational Employment Statistics for the Seattle-Bellevue-Tacoma MSA in 2009. The matrix illustrates occupations employed within Content Technology core sectors and demonstrates the order of magnitude of connections between core sectors. The list of occupations and connections focuses on the creators of talent and technology that lead businesses in the cluster. As such, the exhibit omits administrative and support occupations that assist Content Technology businesses.

Occupations in the exhibit are ranked from highest in number to lowest in number. As shown in the exhibit, Information Technology (IT) related occupations rank highest in number within the cluster, which is not surprising given the region's strengths in IT. Many of the artistic occupations appear lower in the table as they rank fewer in number of paid positions. The icons indicate the sectors in which one is likely to find a corresponding occupation, but this is not a comprehensive alignment of occupations and industries. Many of these occupations exist across all industry sectors, including those not associated with the Content Technology cluster.

Exhibit 2
Content Technology Occupations and Industry Connections

Occupation	Jobs, 2009	Software	Gaming	Social Media	Mobile	Music	Theater	Film	Visual Arts	Literary Arts	Advertising	Dig. Distribution
Computer Software Engineers Applications	22,040	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Computer Software Engineers Systems Software	15,710	✓	✓	✓	✓	✓		✓				✓
Computer Systems Analysts	10,770	✓	✓	✓	✓							✓
Computer Programmers	9,490	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Computer Support Specialists	8,670	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Network and Computer Systems Administrators	7,980	✓	✓	✓	✓							✓
Network Systems and Data Communications Analysts	7,380	✓	✓	✓	✓						✓	✓
Computer and Information Systems Managers	6,820	✓	✓	✓								✓
Computer Specialists All Other	6,540	✓	✓	✓	✓							✓
Marketing Managers	3,650	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Graphic Designers	3,040	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Database Administrators	2,060	✓	✓	✓	✓						✓	✓
Editors	1,530	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Technical Writers	1,400							✓		✓	✓	
Multi-Media Artists and Animators	1,340	✓	✓				✓	✓	✓		✓	
Media and Communication Workers (Other)	1,290	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Computer and Information Scientists Research	1,280	✓	✓	✓	✓							✓
Art Drama and Music Teachers Postsecondary	1,020					✓	✓	✓	✓	✓		
Producers and Directors (stage, video, music)	1,020					✓	✓	✓	✓		✓	
Photographers	1,010			✓		✓	✓	✓	✓	✓	✓	
Computer Hardware Engineers	990	✓	✓	✓	✓	✓		✓				
Writers and Authors	860		✓	✓		✓	✓	✓		✓	✓	
Art Directors	570		✓			✓	✓	✓	✓		✓	
Actors	550						✓	✓			✓	
Audio and Video Equipment Technicians	550	✓	✓	✓	✓	✓	✓			✓	✓	
Media and Communication Equipment Workers (Other)	340					✓	✓	✓	✓		✓	
Camera Operators	310						✓	✓	✓		✓	
Radio and Television Announcers	280					✓		✓			✓	
Sound Engineering Technicians	260	✓	✓		✓	✓	✓					
Dancers	200					✓	✓	✓				
Film and Video Editors	200		✓	✓		✓	✓	✓	✓		✓	
Music Directors and Composers	70		✓			✓	✓					
Fine Artists Including Painters Sculptors and Illustrators	n/a						✓		✓	✓		
Musicians and Singers	n/a		✓	✓		✓	✓					
Total	119,220											

Source: Community Attributes, Bureau of Labor Statistics (2010)

CHARACTERISTIC OF THE CONTENT TECHNOLOGY SECTOR

Characteristics and potentials of the sector emerged through an iterative process between the development of the cluster map and the discussions of the Content Technology Initiative Advisory Group. Five key characteristics reflect the sector, specifically in the Seattle region.

1. The culture of the region: cooperative and collegiate but little critical thinking

There is a tension in the Seattle region between cooperation and meaningful criticism. Criticism often spurs innovative competition, but there is almost no critical writing and few opportunities to push up against conflicting ideas in the arts, entertainment and technology.

The benefits of collegiality and cooperation can be seen in the sharing of ideas and knowledge, fluid relationships and the talent pool mix. These are important assets. There is interest in building intentional bridges between the silos of each sub-genre of work. The overwhelming attendance at monthly Music, Film and Digital Media Happy Hour jointly hosted by OF+M, NW Recording Academy, WIN and Washington Filmworks (the four principal partners of this Content Technology Initiative) reflects interest in such connectivity. The evolution of such opportunities could be catalytic.

"Seattle nice" may be limiting the capacity of the region to meet full potential. There is a pioneering culture in the region, but without the element of criticism the competitive sphere is less driven by risk taking and boundary pushing. In part, it is hard to criticize in a relatively small universe of peers and in a place that values cooperation and collegial relations.

2. Scale of creative endeavors: innovation happens at the edges

Smaller scale endeavors – whether in creating a new app, assembling a new band, a film project or a tech start-up – have benefits that appear increasingly important. Small efforts involving from 1 to about 35 people can be formed more quickly and remain more nimble than carefully developed but larger-scaled efforts. "Tiny tech teams" may be the place where most innovative wild ideas and intense collaboration can, and will, occur. This might be 2-5 people working together on a single idea in an informal structure that may, or may not, then lead to building out more infrastructure. This scale is very common in the artistic and entertainment field, especially for cutting edge work. Small, "micro" efforts may be right-sized for true creative thinking and risk taking. Such scale is well suited to younger, scrappier and more untamed thinking, which is where much dynamic exploration and innovation occurs. Some companies are making strategic decisions to stay small. The increasing ability for entrepreneurs to directly access distribution systems has evened the playing field and made small and mid-sized tech, arts and entertainment endeavors able to compete in reaching consumers, audiences and markets.

The role of venture capital in this realm could be catalytic. The Seattle area has a strong history of venture capital in technology, but it is based on established patterns for corporate start-ups and has not been refreshed in ways that reflect changes in the environment and may impede innovative convergence between arts, entertainment and technology. There is a stronger understanding of investment in technology than in other creative or artistic arenas. And there are few models for supporting cross pollination or for investment models in the arts other than a few emerging in film and music.

Metrics for success currently do not adequately capture issues of experience, engagement or social benefit. Measurement tools are poorly suited to working with more varied (shorter or long term) timeframes for return.

3. Regional identity is an underutilized asset

The Seattle region prides itself on its "quality of life." This is what draws, and keeps, many talented people. There is a greater work/life balance among those who work in tech sector here than in many other places, or at least a hope of achieving that kind of balance. The extraordinary natural environment of the Northwest and the abundant cultural life is a powerful draw for many educated and creative individuals who choose to make their homes here— and many months of rain make it easy to stay inside. Many feel the region also provides important assets for raising a family while having a meaningful and challenging work environment and peer group. There is pride in the depth and range of the tech and creative pool here, but individual and regional identity is not necessarily strongly tied to those pools.

Ambivalence about compromising quality of life may have an impact on competitiveness. While Silicon Valley has fully embraced its identity as an intense hotbed of tech innovation, the Seattle area has yet to fully identify as the "Silicon Forest." The Seattle moniker or brand has not been adequately tapped by the regional tech and arts communities and remains an underdeveloped asset.

4. Talent today and an appetite for talent incubation for tomorrow

The Seattle region has drawn excellent talent from around the country and the globe. It has been much less adept at generating – or identifying and nurturing – homegrown talent. In the arts there is some strong work being done that helps to grow the next generation of artists (The Vera Project, ArtsCorps and others), but there is an acknowledged need to build on the important but still small efforts underway related to technology and its intersection with content (such as WIN's Educational Alliance work with schools or Digipen's outreach to high schools). Cornish College of the Arts, Seattle Art Institute, high schools, community colleges, vocational schools and the University of Washington all have untapped potential to link effectively with industry, although there are many acknowledged challenges. Currently, there is a problematic disconnect and gap between higher education and the content technology sector. Many programs focus students in ways that narrowly define allegiance to a particular creative discipline and which does not reflect the opportunities in the field. Currently there is no continuum: A pathway is needed that can train, activate and inspire from childhood through advanced training. Providing points of entry at each age and stage – and then leveraging emerging creative ideas and interest – would yield a more robust framework for talent incubation.

There is need for both formal academic avenues (schools) and programs beyond the classroom (such as YMCAs, etc) for younger students to develop skills and to harness their unfettered imagination and wild ideas. Work force development could be better aligned in a variety of ways and could yield a trained pool of certified individuals. The region needs to create a Petri dish environment for content tech innovation that starts with the young right here. Creating and implementing a dynamic educational model could be one of the most critical contributions to the future of the regional economy.

5. Loyalty and community are active but poorly understood links between digital and analog transactions and experiences

There are untapped and poorly understood dimensions relating to the transactions and experiences between audiences and the providers of content technology. This is the case at the regional level and in a global sphere. What lies beyond consumption in the realm of trust, loyalty and sense of community engendered by such divergent things as KEXP listenership or Amazon reviewership? KEXP has led in creating a global stakeholders community in addition to its powerful local presence and allegiance, based on a convergence of content and technology. What is the potential of building local-global communities around content and technology? The Seattle region is well positioned to lead this exploration.

The difference between online audiences and in person audiences is only now receiving significant study in the arts. The intersection of, and the synergy between, digital experiences, live experiences, talent development and consumer behavior is still murky but may hold key economic "sweet spots." There remains much to understand about such relationships and the power of community beyond a consumption experience. Content technology innovation may be able to fulfill the needs of these emerging communities. There is also a danger in overanalyzing: The results of extensive consumer analysis can be a sterile product which is exactly the opposite of new and boundary pushing creativity that can lead to new horizons.

Exhibit 3. Seattle's Content Technology Cluster Map
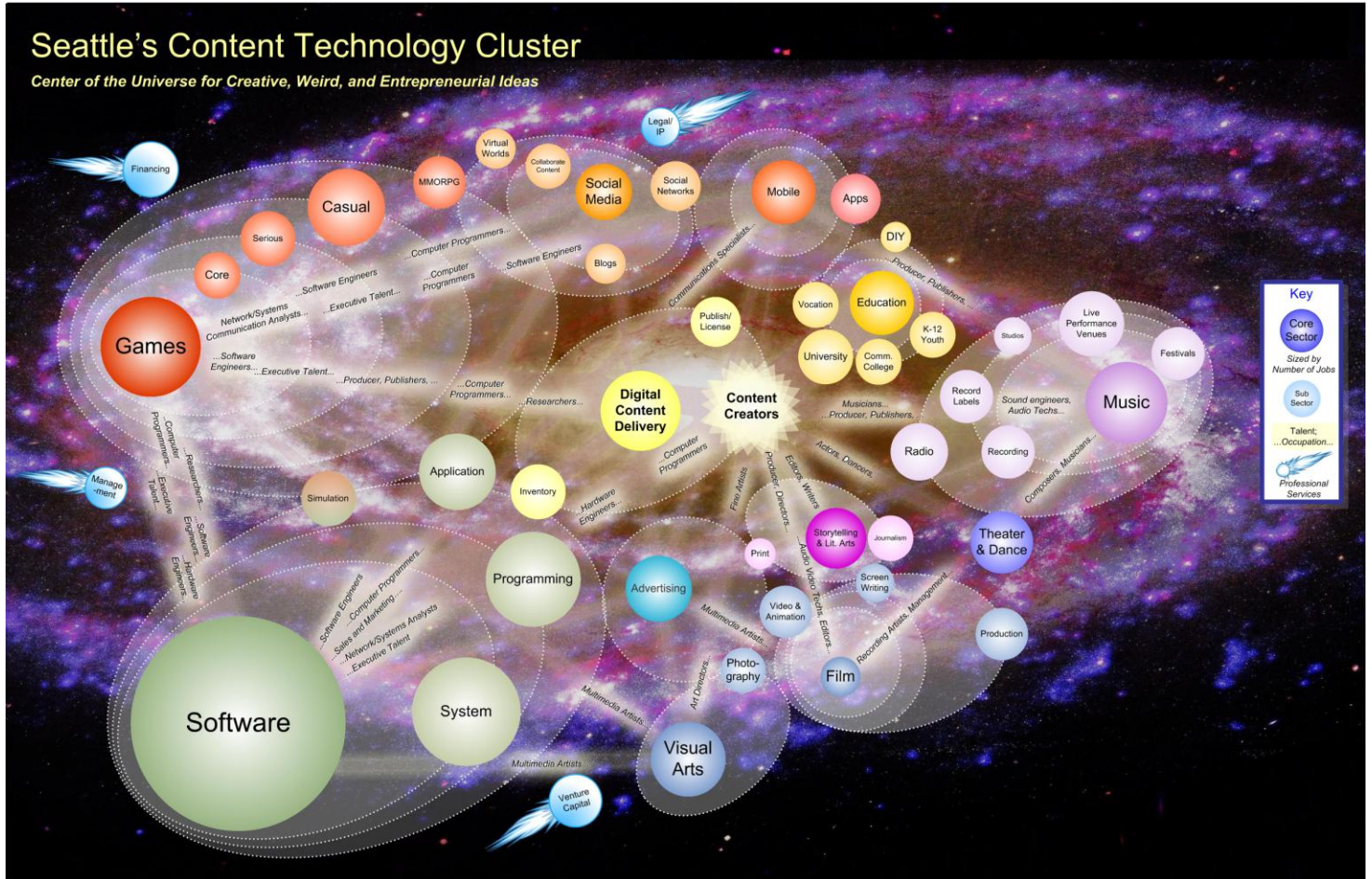
To view the cluster map online go to www.communityattributes.com/contenttechnology

A Map for Exploring Economic Opportunities

Seattle's Content Technology Cluster defines the economic nexus of art, technology and innovation. This graphic maps the economic linkages among the creative industries and talent that compose the cluster. The map presents a framework to build relationships and bridges across sectors, identify and fill gaps, and explore new economic opportunities and ideas (**Exhibit 3**).

The Content Technology Initiative

The City of Seattle Office of Film + Music, in collaboration with Washington Interactive Network and Washington Filmworks, and the Northwest Recording Academy, leads economic development efforts to grow the region's Content Technology Cluster. Producing and presenting the cluster map is one phase of the initiative funded by Living Cities. Community Attributes, a Seattle-based economics firm, along with AdvisArts, a Seattle-based arts consultancy and the Seattle Office of Film + Music, developed the cluster map with participation of leaders from Seattle's creative economy.

Keys to the Universe

Seattle's Content Technology Cluster comprises eleven core sectors including software, games, social media, mobile, music, theater, film, visual arts, literary arts, advertising and education in which more than 100,000 people work within the Puget Sound region. Tens of thousands more facilitate and support the cluster indirectly. The core sectors, each represented by a celestial body sized according to the number of jobs in their respective cluster, swirl within a galaxy of inter-related economic opportunities. Subsectors orbit around core sectors, demonstrating nuances and niches in each core sector, that independently and collectively contribute to Seattle's Content Technology Cluster.

The Next Frontier

In 2010, this universe of creative and weird thinking converges rapidly on an emerging sector called Digital Content Delivery. This sector distributes content created from the far reaches of the creative universe to consumers and other economic clusters across the global economy.

A Starburst of Talent

Content Creators burst forth to drive the Content Technology Cluster. This network of world-class talent cross-pollinates ideas to inspire boundless economic potential from within the cluster. Content technology artisans and professionals are rays of light that connect the core sectors in the graphic, sized relatively on the number of people working in this region for each occupation.

STRATEGIC THEMES

Three key themes were identified as shaping the landscape for the future of content technology in general and for the sector in Seattle in particular. These themes build on the characteristics identified above. They are fundamental to plotting a strategic approach to the sector. The three themes are:

1. The roles of advertising and marketing in the shifting boundaries of content
The surge in digital media formats and usage has changed the landscape related to marketing and advertising. While marketing is a critical function of each and every sector mapped for this project, it is not the driver of these sectors' work. Marketing is a connector that helps to link the sector components to each other and to audiences. These audiences may be local or be broadly dispersed across the globe. It is a vital element of content technology sectors.

Advertising is emerging as a more pervasive and yet elusive element in many parts of the content technology sector. Advertising has "shape shifted" as traditional avenues have become obsolete or ineffective. Direct communication with consumers has opened new doors and closed others.

The boundary between advertising content and creative artistic content is becoming blurred in some industries. Many creators are less concerned with the source of content and increasingly engaged with development of artistically sophisticated content, whether the driver is a self-generated project, a company wanting to promote its products, or an artistic endeavor that ties a product to sponsorship for financial support. Television shows, films or apps that are connected to a product or service are becoming more common. The relationships can appear ambiguous or even indistinguishable to audiences – and sometimes such relationships can be far in the background to the creators as well. This can be seen through very different lenses as either a time of convergence to be applauded or an ominous moment where economic motives have subverted or overshadowed the creative and artistic zone.

2. New frontiers in investment and monetization
Money is both an engine for and an outcome from content technology. Without adequate funding, good ideas – on both the artistic and the tech side – often are not optimized. Forms of venture capital that have evolved over the last few decades may not be well suited to the wilder, smaller and less infrastructured ways that content tech is moving. There may be ways to encourage better "artist and geek hybrids" that could open avenues to new horizons. There is a need to gain an understanding of the activities and structures that are already out ahead of investors: things that are happening organically and producing next generation content technology. The task is then to re-imagine ways that investment can be catalytic at the front end, and to be able to continue to keep pace with change as it occurs.

Simultaneously, there is a need to examine how dollars will flow back into the economy through evolving content technology. Current approaches of monetization seem to be too limited to create significant opportunities to turn investment into earnings. Without this flow there is diminished likelihood that investment can justify continuing to feed the cycle. Advertising, subscriptions and other forms of common monetization do not appear to have the breadth of vision needed, but alternative ideas are scarce.

There is a modest future and minimal economic impact for great content tech ideas if there is no money at the front end and little ability to capture dollars in the marketplace. The multiplicity of markets now accessible has changed the playing field, but ultimately these are critical elements in understanding and building content technology as an economic sector.

3. Measuring success and potential: What metrics will advance our thinking?
Currently metrics are focused on revenues, almost exclusively. This impacts financial as well as human resource investments. Content technology as a sector may be a useful arena for exploring additional metrics. One area relates to audiences and consumption. This arena is still primarily investigated in ways that do not capture issues of loyalty, trust, community and how those may translate in a new economy. There also is limited understanding of how live (analog) experiences support and relate to digital technology financial metrics. The relationship between audiences for live entertainment and their related digital consumption may hold useful information. Individuals are the glue that binds human engagement (and spending) to content technology, and hence the economy.

There are also metrics related to jobs and occupations that warrant reexamination. Many ways of tracking employment are not suited to the content technology sector. Education and training, gaining competencies and skills is a long term continuum. Short term metrics do not capture the larger picture, especially where work may be accomplished outside of traditional job classifications.

OPPORTUNITIES FOR SUPPORTING AND INSTIGATING CONTENT TECHNOLOGY CONVERGENCE

The characteristics of the sector in the Seattle region and the identified strategic themes are the basis for the articulation of opportunities and needs for advancing content technology convergence. Four main areas of opportunity were identified. These areas are the foundation for taking action that can aggregate and stimulate sector energy and success. All four areas must take advantage of existing sector strengths in the region to maximize their potential.

1. A dynamic continuum of learning and training
A robust continuum of learning and training opportunities is central to building sustainable Content Technology sector strength. This is the pool of talent that feeds all the sector components. Action in this arena has the potential to distinguish the region as a unique environment that fosters, nurtures and advances the Content Technology economic engine. By envisioning all the residents of the region as "creators" with the potential to contribute to the future of Content Technology there is an exponential growth and capacity for innovation and unexpected outcomes. Components of such learning and training include:

o *Formal Academic Education* – A commitment to building creative and technology learning opportunities into the public educational system, from preschool through college, is critical. This will be most successful, especially in these times of significant budget constraints, if the business community is able to work more effectively to create long term and sustainable

ways to contribute, and benefit, from this. Access to excellence in arts and technology in schools can powerfully fuel the sector in both the short and long term.

- o *Formal Workforce Training and Professional Development* – Workers who have completed their basic schooling are a vital part of the sector. Fluency in new technologies requires ongoing access to learning to expand skills and knowledge but also to stimulate innovative thinking that can give an edge to both workers and employers. Such programs include vocational training in academic institutions, in the workplace, and beyond. Conferences, competitions, inter-sector training programs and other approaches can provide ways to activate such learning and create opportunities that bridge between the classroom and the workplace.

- o *Informal learning for youth, young adults and for life-long learning* – There has been resurgence in self-directed learning in the United States, and do-it-yourself (DIY) culture is particularly active in the arts and technology and in Seattle. Providing opportunities for individuals to build on their self-directed learning can yield innovation for the content technology sector. Informal learning through nonprofit organizations, community groups and independent or loosely affiliated entities can be as viable as formal learning avenues. Supporting such opportunities is important, as is finding ways to channel and connect emerging ideas and talent to the sector.

2. Multiple simultaneous research and development activities
To create a nexus of content technology in the Seattle region it will be important to "plant a thousand seeds." There is a need to be intentional in providing "compost and soil" that encourages a variety of simultaneous activities so that ideas and new approaches feed off of each other and multiply. This kind of environment must take advantage of existing regional strengths and assets. Areas of potential opportunity to be explored and expanded on include:

- o The region's strength in cloud computing.
- o The creation of the Content Technology sector map for this initiative and the potential for creating a related Seattle Content Technology "brand."
- o The existing projects and opportunities to examine and promote regional technology leadership (such as the 4Peaks project at the University of Washington and the Washington Interactive Network).
- o The density of arts and entertainment activity in the region that make the Seattle area one of the most arts-rich areas of the country and the related pool of artists of all ages working in all artistic disciplines and genres.
- o The possibilities for supporting the creation of an array of "micro start up" ventures.

3. Powerful networks within and across the sector
The Seattle region is fortunate to have a foundation of networks – formal and informal – of relevance to Content Technology. The ability to share information, resources and to be mutually supportive is a regional characteristic that could be optimized in support of greater economic vitality across the interrelated arts, entertainment and technology fields. This includes such elements as:

- o Key business leadership networks.

- The various relevant networks of activity and information connected to University of Washington including academic activity, research and business development.
- The potential for an event, such as 4Peaks, to serve as an "annual report" network on regional content technology.
- The continuing success of the Music, Film and Digital Media Happy Hour events and the opportunity to enrich the value of those monthly gatherings in new ways.
- The potential for creating new networking opportunities as an outgrowth of this Content Technology Initiative.

4. Access to expertise and funding

Building the economic potential of Content Technology will require an intentional effort to harness and maximize knowledge, ideas and ways to fund new ventures. The region is fortunate to have a pool of individuals with extraordinary expertise in all the cluster elements identified by this initiative. These individuals are also connected to networks of important thinkers, creators and models beyond the Northwest. A critical, and currently weak, link is the lack of methods for supporting a far-reaching, targeted Content Technology initiative: one that can provide access to essential financial support, connected to appropriate expertise at all stages from concept to distribution and growth. The relationship between Content Technology and monetization is complex, risky and potentially very rewarding. Components that may move this forward include:

- Incentive programs that focus on new approaches that are shaped to reflect this initiative's mapping of the Content Technology sector.
- Debt-based funding as a tool for investment.
- The allocation of a percentage of certain state, county or city funds to specifically support Content Technology projects.
- Opportunities to develop new Venture Capital initiatives focused on regional Content Technology.
- Increasing opportunities and developing clear access to expert knowledge for new and emerging ventures, including small and more informal entities.

RECOMMENDATIONS AND NEXT STEPS

There is strong indication that the relationships between the arts, entertainment and digital technologies warrant the designation of an interrelated economic cluster: the Content Technology cluster. These creative and economic relationships are strong and are likely to continue to yield new and important connections for the Seattle region. Short term and long term strategies are needed to activate this potential and assert the region's leadership in this sector. The following seven recommendations are based on the many ideas generated by this initiative as well as the opinion of the consultants.

Recommendation 1.
Convene roundtables on key topics identified by this process. These roundtables should bring together sector leaders and creative thinkers to advance the potential for each topic to bolster Content Technology in the region. They should also seek to identify how public policy and/or private investment can impact (and benefit) from new ways of looking at Content Technology as a sector, as related to each topic. Topics should include:

   a. Defining ways in which **Venture Capital, incentives or other funding mechanisms** can support convergence activity in the sector.
   b. Creating a coordinated approach for a **continuum of learning** related to Content Technology in the region. Existing education systems, at all levels, as well as professional development, workforce training and informal or recreation learning program leadership should be part of the conversation.
   c. Exploration of ways to expand **regional leadership in cloud computing** and other emerging technologies as related to Content Technology convergence and trans-platform development.
   d. Defining **new approaches to metrics** that go beyond the standard measurement of jobs, wages, productivity and revenue to better measure creative combustion as well as engagement and community outcomes.

For each of these topics it will be valuable to bring outside expertise and knowledge into the roundtable process. This might include experts from around the globe as roundtable participants, or as sources of information or feedback.

Recommendation 2.
Maximize existing networking and knowledge sharing in the region and create new opportunities. This initiative and the Content Technology map have shown the powerful ties that bind the sector: between sub sectors and within an entire ecosystem. These ties are not necessarily well linked at this time and new opportunities are needed to bridge between them. This should include exploration of how existing projects, such as those at the University of Washington (4Peaks), Puget Sound Regional Council (PSRC), WIN and the Seattle Office of Film +

Music can lead in ongoing sector networking and perhaps identify a home for a forum to serve as an annual "state of the sector" gathering.

Recommendation 3.
Inform policymakers at the city, county and state level. The work of this initiative should be shared with key decision makers so that they have an understanding of the potential of the Content Technology sector on the region's economy. Organizations and businesses that stand to benefit from policies and laws informed by a greater understanding of this sector should participate in presentations of this information to city, county and Washington State legislators and other decision makers.

Recommendation 4.
Commit to global leadership in Content Technology. This initiative, along with other simultaneous activity in the region, provides an opportunity to put a stake in the ground and build a strong economic and cultural identity around Content Technology. This can occur at many levels but will be most powerful if aggregated. There is a need to identify this within the sector (and subsectors) in the region, but also a need to bring that message to a national and global audience.

Recommendation 5.
Provide technical assistance to connect content creators. Engage local business leadership with each other across core sectors within the Content Technology cluster. This might include, for example, exploring options on how to build a collaborative web-based system to connect content creators with project opportunities. Cluster leaders should continue to identify technologies and resources that content creators use to interact and tools that could be applied in new ways to other sectors or occupations. Economic development leaders must customize policies and resources to foster collaborative interactions.

Recommendation 6.
Develop a three to five year effort to serve as a "convergence activity instigator" for the Seattle region. A mechanism is needed to accomplish all the recommendations outlined here. While there are many active players in each segment of the Content Technology sector, there is no entity currently charged (nor funded) to advance these recommendations in a comprehensive manner. Individual recommendations may be pursued by various entities, but the most effective approach will be to coordinate these activities for the immediate future and to maximize cross fertilization and sector development.

The work of a "convergence activity instigator" should be grounded in the goals of economic development but be inclusive beyond the usual players in such efforts. It should be managed by a neutral party with the intent that the work and intent of the effort would eventually be imbedded in the larger community. This effort would serve to stimulate, coordinate and communicate between the various entities engaged in this work. This effort would serve to

frame the ecology of this sector and seek to identify tools and "recipes" for advancing its effectiveness to provide economic benefit to the region. The Seattle Office of Film + Music, as well as the other principal partners in the current effort, are integral and likely leaders for this new endeavor.

Recommendation 7.

Continue to measure economic activity and impact of the cluster. Stemming from dialogue referenced in Recommendation 1, economic development leaders will want to maintain data and measures on the cluster's reach and impact. In addition, over time the cluster map will evolve further. Economic development leaders should continue to work with the map to help identify connections where investments and economic development initiatives can help core sectors interact and businesses grow.

Next Steps

The conclusion of this initial initiative is the beginning of a larger set of opportunities related to Content Technology and the convergence of the arts, entertainment and technology in the Seattle region. Next steps include:

- o Presenting this completed report to the members of the Advisory Group as well as sharing it with the related stakeholder community. A presentation is planned for December 14, 2010.
- o The map and key information from this process lends itself to compelling graphic treatment, suitable to digital distribution. Living Cities and the Principal Partners should identify the means and methods to develop and broadly disseminate a version of this information.
- o The Seattle Office of Film + Music, in coordination with other interested parties, should develop a proposal to Living Cities and other sources, to support advancement of one or more of the recommendations above. A commitment to Recommendation 6 is likely to ensure continued activity at the most significant level.

At the final Advisory Group meeting, Jayson White of Living Cities offered attendees the challenge to each create a list of 10 things they would ask of the Mayor, county or state government to do *now* to support Content Technology. Creation and synthesis of such lists is a modest but meaningful way to link the work done to date with efforts yet to come around Content Technology in the region.

Conclusion

Leaders in technology, culture and creative endeavors in the Seattle region came together in recognition of an emerging Content Technology economic cluster. They recognize and see the future of their activities, which historically have been understood and measured in isolation but are increasingly converging and blurring the lines between what has been previously thought of as separate fields and industries.

The Seattle region is well positioned to lead nationally and internationally in Content Technology. The next three to five years will be pivotal if the region is to take on this leadership position. The most dynamic roads to the economic future may come from unexpected quarters. Openness and encouragement of this kind of opportunity must be coupled with structured frameworks that support innovation and excellence. The Seattle Content Technology sector must be deliberate, strategic and inclusive to take advantage of its existing assets and to fulfill its potential.

APPENDICES

Appendix A
Data Limits

Employment estimates are based on industry definitions defined within each study, and vary by time and geography. Existing industry economic codes defined by the North American Industrial Classification System do not adequately describe or measure emerging industries within the cluster. For example, there is no economic code for "video game development" or "social media." Also, economic codes can create overlap, for instance video game and software jobs at Microsoft are both classified as the same industry.

Economic data also do not readily capture the thousands of musicians and artists that perform independently (are not employed as musicians or artists) and contribute to the vibrancy of the sector. However, past studies such as the Economic Impact of Music in Seattle and King County established methods and benchmarks to measure employment and economic contributions of musicians.

The Content Technology cluster map creates a framework of sector definitions and a measurement framework to overcome data limitations. The cluster map can be used to define businesses and industries and support custom data requests to measure employment and other economic impacts. A next step is to leverage the cluster map to support a formal economic impact analysis of the Content Technology cluster.

Appendix B
Advisory Group Members

The following is a list of Advisory Group members and their respective professional affiliations. Bolded names are Principle Partners and other project leads.

Name	Professional Affiliation
Shawn Brixey	Center for Digital Arts and Experimental Media, University of Washington
Heidi Dahmen	HD TV
John B. Davis	Center for New Cinema
Tony Fulgham	World Famous
Enrique Godreau	Voyager Capital
Lucas Hilbert	Amazon
Hanson Hosein	Master of Communication in Digital Media, University of Washington
Kristina Hudson	Washington Interactive Network
Chase Jarvis	Chase Jarvis Photography
Steve Johnson	Seattle Office of Economic Development
Richard Karpen	School of Music, University of Washington
James Keblas	Seattle Office of Film + Music
Amy Lillard	Washington Filmworks
Ben London	Pacific Northwest Chapter of The Recording Academy
Gary Luke	Sasquatch Books
Scott Macklin	College of Education, University of Washington
Tom Mara	KEXP
Fidelma McGinn	ArtistTrust
David Sabee	Seattle Music Inc.
John Sangiovanni	Zumobi
Jordan Weisman	Fido Management
Jayson White	Living Cities
Sarah Wilke	On the Boards