EXPANDING EMPLOYMENT AND CAREER OPTIONS FOR INDIVIDUALS ON THE AUTISM SPECTRUM IN 21ST CENTURY DIGITAL MEDIA AND COMMUNICATIONS TECHNOLOGY

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SUMMARY:

As we begin the second decade of the twenty-first century, we recognize that digital media and communication technology permeate every level of our rapidly changing global society. We also celebrate the 20th anniversary of the Americans with Disabilities Act, the 35th anniversary of the Individuals with Disabilities Education Act, the 38th anniversaries of the Rehabilitation Act of 1972 and the creation of Supplemental Security Income, together with the 40th anniversary of the Developmental Disabilities Assistance and Bill of Rights Act, the 45th anniversaries of Medicare and Medicaid and the 75th anniversary of the Social Security Act.

In spite of these significant and landmark laws which were enacted to advance the financial status, health status, education, employment and legal and civil rights of individuals living with disabilities, as well as the investment of billions of dollars of federal funding to promote the American dream for all, the promise of increased opportunities for integrated employment and career advancement for individuals with all types of disabilities has not been realized. In the U.S., 65 percent of people experiencing long term poverty (greater than one year) are individuals with disabilities (Fernstad, 2009). The 2010 Kessler/NOD Survey of Americans with Disabilities, conducted by Harris Interactive, reveals no substantial gains on 10 key indicators since 1990.

The congruence of the reauthorization of the Developmental Disabilities Assistance and Bill of Rights Act, the Elementary and Secondary Education Act, the Rehabilitation Act, the Workforce Investment Act, the Medicaid Infrastructure Grants and Work Incentives Planning and Assistance projects, the sunset and need for reauthorization of the 2006 Combating Autism Act, and the Fiscal Year 2012 appropriations process expected in the first session of the 112th Congress, provide an exciting opportunity to advance the employment and career agenda for individuals on the autism spectrum, based upon each person’s unique strengths, gifts and preferences into the rapidly emerging needs of the digital media and communication technology industries. This paper presents the background for these issues and recommends a number of policy recommendations to advance the agenda.

*This policy paper, and the opinions expressed and recommendations presented, do not necessarily reflect the position or policy of Minnesota Department of Employment and Economic Development or the Minnesota Department of Administration.
THE EXPLOSION OF THE DIGITAL ECONOMY:

We are in the process of a paradigm shift to universal digital expansion that is beyond the comprehension of most adults over the age of 21. They see the current explosion primarily as fads and addictions, rather than a transformative process that will continue at an increasing rate. The bulk of the new workforce development is occurring in India, China, South Korea, Singapore, Japan, Ireland, France and England and it is imperative that the United States rapidly adapt its education and workforce development policies and funding to emerge in a leadership role.

A new study by PricewaterhouseCoopers, Global Entertainment and Media Outlook for 2010-2014, affirms what most observers have long seen happen: “Digital technology is expected to progressively increase its impact and access every entertainment and media segment; text-based content, games, music and video. U.S. market digital media share will reach $134 billion of an estimated $517 billion market in 2014, a 26 percent share, up from $81 billion of a $428 billion market in 2009 or a 19 percent share.” The simple translation is: jobs, jobs, and more jobs!

While our education and workforce development are lagging in recognition of this major shift, the shift in job titles also is slow. The United States Department of Labor did not establish “Animator” as a job title in the Dictionary of Occupational Titles until 2010. This situation of officially unaccredited or undefined jobs exists on a massive scale. This is understandable when one counts all of the digital media workers in the legal and medical professions, in the food and style industries, architecture and construction, retail sales, non-profit service organization sector, telecommunications, in fact, all modern businesses- people and careers that are hidden in the midst of their ordinary industries or contractually sought from outside to produce the visual and audio products essential to today’s across the board market and skill building needs.

Our children have grown up with computer, wireless mobile technologies as an ordinary phenomenon compared to those of us who thought the original word processors of the 1980s were miraculous inventions to succeed the electric typewriter. The global shift to digital technology is described in Thomas Friedman’s “The World is Flat.” Friedman tells us that “Digitalism” is a world in which nontangible, electronic/virtual communications, become the fundamental basis of all value, exchange, wealth, influence, and cultural life. It is a world in which universal digital creation and intercommunication will form the framework of “currency,” productivity and shared social tenets for our civilization. The following information confirms that the future is here and we are rapidly approaching the “new normal.”

According to a recent survey by the Pew Research Center for People and the Press (September 12, 2010), nearly half (46 percent) of the public
reported that they get news online three or more days a week. This is up from 29 percent in 2004 and 37 percent in 2008. About a third (32 percent) gets news online every day, which is double the percentage that reported going online for news daily in 2006.

According to Nielsen Company, the average teen sends or receives 3,339 text messages a month.

Facebook had 148.0 million visitors in August 2010 (ComScore). Customers spent 119 billion minutes on Facebook, Yahoo and Google in August 2010, more than double the 59 billion minutes in 2008 (ComScore).

The Discovery Channel’s Education unit is promoting a new digital science program developed with $140,000 of federal grant funds. “It’s not about textbooks anymore. If you want to be relevant in education, you need to use technology for kids to understand, to bring it alive,” said Philippe Cousteau, grandson of famed oceanographer Jacques-Yves Cousteau. He believes the online elementary school science curriculum, with its videos, labs and interactive activities will give classrooms the technology needed to inspire a love of science in all students that can improve the 2006 international survey that ranked the United States 29th in literacy in science and math.

EMPLOYMENT AND INDIVIDUALS WITH AUTISM SPECTRUM DISORDER (ASD):

Autism is a neurobiological condition. Individuals with ASD see the world in ways that are unique, different and interesting. Individuals with ASD think “outside the box,” which can sometimes lead to creative and innovative problem solving. Many people with ASD often have excellent rote and long-term memories. Many pay attention to detail, are task-oriented and have high professional standards. Many work well with routines and repetitive tasks. Not all people are affected in the same way. And, just like everyone else, people with ASD are individuals with their own personalities and abilities.

Employment and career paths need to be chosen that take advantage of and make use of the strengths of people with ASD. According to a 1999 article by Temple Grandin, Ph.D., herself a person with autism and an assistant professor at Colorado State University, “Computer science is a good choice because it is very likely that many of

the best programmers have either Asperger’s syndrome or some of its traits. Other good majors are: accounting, engineering, library science and areas with an emphasis on commercial art and drafting.” These career paths are consistent with the emerging career paths in digital media and communications technology.

THE NEEDS OF EMPLOYERS IN THE 21ST CENTURY:

Employers have challenges and genuine needs for securing viable, committed labor. The future workforce will be more diverse, but employees with disabilities continue to remain outside the purview of most employers.

Ironically, there currently exists a highly valuable workforce of capable individuals living with disability from ASD in the United States that have untapped strengths and capacities in the world of digital media and communications technology that are and can be invaluable to employers of the 21st century. To achieve universal access to the digital technology and communication media labor market and workforce, the education and workforce development systems must be significantly revamped to meet the needs of the economy, employers and the available labor pool, including individuals with ASD.

Although only an indirect measure of curriculum adequacy for digital media and communications technology, the Organization for Economic Cooperation and Development (2010, U.S. National Center for Education Statistics) recently reported that 15-year-old students in the United States rank 21st in science and 25th in math compared with our international counterparts. The suggested solutions from the Administration were to extend the school year and to eliminate incompetent teachers. No references were made to transforming the curriculum and making use of smart phones and laptop computers in all classes for all students; a project that is underway in some schools around the country where administrators have realized “if you can’t beat them, then you need to join them” and allow the appropriate use of smart phones and laptop computers to obtain information in real time in and out of the classroom.

Many individuals with ASD also have personal qualities that employers appreciate. Through a discovery process, individuals reveal qualities such as dependability
and dedication. Many individuals with ASD demonstrate that they value integrity, kindness, and honesty. The best employers for individuals with ASD are:

- flexible and open to new ways of completing a task;
- supportive of its employees;
- organized and able to explain exactly what the job requires; and,
- direct and interested in helping the employee succeed.

Managers that look for high-quality, detail-oriented results will find the upfront effort of hiring, training and accommodating individuals with ASD worthwhile, personally and economically.

**IMPLICATIONS OF THE DIGITAL ECONOMY FOR INDIVIDUALS WITH AUTISM SPECTRUM DISORDER:**

The implications of the digital economy for individuals with all types of disabilities are huge. What is possible with these technological advancements requires only a person’s ability to see and/or hear imagery and intentionally respond through any reproducible signal, not necessarily articulate language, to exercise human will, preferences, needs and affective expression. This technology holds the key to the exercise of personal power and the tools that hold the potential to improve individual quality of life, socialization and communication and the contributions of individuals with disabilities.

The digital economy also holds the key to many employment and career opportunities for individuals on the Autism Spectrum based upon a very good job match between the gifts, strengths and competencies and interests of individuals with ASD and the needs of the manufacturing and service industries that are the foundation of the digital economy.

**CAREER OPPORTUNITIES IN THE COMPUTER AND DIGITAL ECONOMY:**

U.S. News and World Report’s list of 50 best careers for 2010 contains 23 careers that involve computer or digital technology:

- Computer software engineer
- Systems analyst
- Network architect
- Biomedical engineer
- Environmental science technician
- Hydrologist
- Environmental engineering technician
- Civil engineer
- Meteorologist
- X-ray technician
- Lab technician
- Urban planner
- Actuary
- Market researcher
- Financial analyst
- Accountant
- Logician
- Cost estimator
- Technical writer
- Landscape architect
- Film and video editor
- Multimedia artist
- Gaming developer

**CRITICAL SKILLS IN THE DIGITAL ECONOMY:**

Working in the digital economy requires a new set of skills related to the ability to understand and use technology to solve problems. There are two key aspects: digital literacy and media literacy.

**Digital literacy**

Digital literacy includes:

- The ability to use technology as a tool to research, organize, evaluate, and communicate information.

- The ability to use digital technologies (computers, PDAs, media players, GPS, etc.) communication/networking tools and social
networks appropriately to access, manage, integrate, evaluate and create information in a knowledge economy

- A fundamental understanding of the ethical/legal issues related to accessing and using information technologies.

Media literacy

Media literacy is another aspect of Information and Communication Technology (ICT) literacy. Media literacy includes the ability to:

Analyze Media

- Understand how media messages are constructed and what purpose they serve.
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media influences beliefs and behaviors.
- Understand the ethical and legal issues surrounding the access and use of media.

Create Media

- Understand and use media creation tools
- Understand and effectively use media to communicate in diverse, multi-cultural environments.

CURRENT VALUED OUTCOMES ESTABLISHED IN FEDERAL POLICY:

1. The Americans with Disabilities Act of 1990 established four goals to remedy the history of segregation, dependency and isolation of individuals with disabilities in our country: equality of opportunity; independent living; economic self-sufficiency; and full participation;

2. The 2004 transition amendments to the Individuals with Disabilities Education Act state that “transition services” are “designed to be within a results oriented process, that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child’s movement from school to post-school activities, including postsecondary education, vocational education, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation…”

3. The 1999 U.S. Supreme Court decision in L.W. and E.C. v. Olmstead affirmed the mandate for “most integrated setting” under Title II of the ADA regarding the provision of state and local government funded/sponsored services to individuals with disabilities.
CURRENT DATA ON EMPLOYMENT/UNEMPLOYMENT OF INDIVIDUALS WITH DISABILITIES:

1. The U.S. Department of Labor’s Bureau of Labor Statistics now provides data sets on the rates of employment by individuals with and without disabilities. The most recent data state that
   - Seven of every ten individuals with disabilities who want to work remain unemployed and out of the workforce.
   - In September 2010, only 21.6 percent of individuals with disabilities were participating in the workforce compared with 69.9 percent of people without disabilities.
   - Of this subset of people with disabilities who were participating in the workforce, 14.8 percent were unemployed (as compared with 12.9 percent in 2009) in contrast to the national unemployment rate of 9.0 percent.

2. The 2010 Kessler/NOD Survey of Americans with Disabilities, conducted by Harris Interactive, found data compatible with federal government sponsored data sets:
   - Employment remains the largest gap between adults with and without disabilities. Of all working age people with disabilities, only 21 percent say that they are employed compared to 59 percent of people without disabilities – a gap of 38 percentage points.
   - People with disabilities are still much more likely to be living in poverty.
   - The second-largest gap between people with and without disabilities is regarding Internet access. Some 85 percent of adults without disabilities access the Internet, whereas only 54 percent of adults with disabilities report the same – a gap of 31 percentage points.

3. The Coleman Center provides data sets on state services and expenditures for individuals with developmental disabilities. For 2010, it reports that 80 percent of all day services and supports in the states are in segregated settings and only 20 percent for supports for integrated community employment.
The Aspiritech Initiative: Frustrated by the lack of appropriate support from public and private agencies for their son to retain employment after obtaining a college degree, Moshe and Brenda Weitzberg decided to change the outcome for their 31-year-old son with ASD and other individuals with ASD based upon their strengths.

Dr. Weitzberg, a medical chemist, took early retirement from his position and devoted a year to learning all he could about software testing. He also benefited from some conversations with Thorkil Sonne, in Copenhagen, Denmark, the father of a son with Asperger’s Syndrome, who owns a for profit software company, Specialisterne, that primarily employs adults with ASD.

► With the leadership of his wife, Brenda, a tenured CEO of a non-profit community agency and the assistance of a team of graduate students at the Kellogg School of Management at Northwestern University, Aspiritech was incorporated in December 2008 as a 501 (c) 3 nonprofit corporation. The small firm began its pilot project in the Weitzberg’s basement with three trainees with ASD. In January 2010, Aspiritech opened its first office in Highland Park, Ill., a Chicago suburb. Today the company has trained and now employs twelve adults with ASD as software testers with a strong record of quality and timely results with several U.S. and Canadian firms. All workers are paid minimum wage or above, but their hours are limited in order to protect their benefits.

► No different from the early work of families of adults with intellectual disabilities, cerebral palsy and other disabilities, other families are contacting the Weitzbergs to learn about Aspiritech and how to replicate it in their communities. The competency of the workers of Aspiritech can be used as a springboard for the education of the digital media and communication technology industries to recruit, employ, train and provide career paths for individuals with ASD to meet their vast needs for competent workers in the 21st century.

RECOMMENDATIONS FOR PUBLIC POLICY:

In spite of the declarations of federal policy and its emphasis on valued outcomes stressing integrated employment, independent living and community inclusion, the data and results for the vast majority of individuals with ASD are at great dissonance with the platitudes. Changes must be made today to “suit the actions to the words,” improve the return on investment to the taxpayer, to reduce dependency and to reduce the hollow promises that have been made during the past 20 years to individuals with ASD and their families and to society at large.

The recommendations have been divided into three areas: regulatory within the executive branch under current legislation; appropriations and report language under current law; and, statutory changes for further definition and or strategic actions. Each recommendation in each section is defined by department or statute. They apply to the U.S. Departments of Commerce, Education, Health and Human Services, and Labor.

Executive Order:

Encourage the President to establish an interagency council on digital media and communication technology made up of representatives from the U.S. Departments of Labor, Education, Commerce and Health and Human Services with representatives from industry leaders and disability self advocacy groups. The purpose of the council is to continue to gather data on trends in these industries and to provide guidance to the President, the agencies and the Congress on strategies to position individuals with ASD and other disabilities to receive the necessary education and skills and work experience to pursue employment and careers in these continuing growth industries.
Aaron Erdman

Aaron Erdman, an individual with autism spectrum disorder, had a busy summer by any standard. During this time he took an eight-week, condensed, online course from his community college and held an internship with the Minnesota Supercomputer Institute (MSI) on the University of Minnesota’s, Minneapolis campus.

Erdman assisted the support staff of MSI. His work involved a variety of tasks, including benchmarking newly installed software. His research allowed MSI to recommend the best applications for each software version.

He had access to two of MSI’s three dramatic visualization screens. He worked most closely with the Lab for Computational Science and Engineering, Minnesota Supercomputer Institute, Visualization Laboratory (LMVL) a floor to ceiling computer screen that provides a mammoth display for graphics and visuals for the purpose of training and research.

Erdman’s years of determination made him the perfect candidate for this opportunity.

Regulatory:

1. Within IDEA, expand the definition of technology to include smart phones/PDA’s, laptop computers, MP3’s, GPS devices, etc.

2. Within IDEA, identify the employment and career possibilities in the digital media and communications technology industries as priority areas for instruction and consideration during transition for all students, with particular reference to the potential of students with ASD.

3. Within IDEA, both the IEP and the transition plan should include a new section on the use of digital media and communication technology, including, but not limited to PDA’s, laptop computers, digital cameras, MP3 audios and selected video games. Schools should be encouraged to establish training opportunities in these areas and to establish a list of employment experiences within the school and its administrative offices (computers, document imaging, data entry, etc., rather than food service and janitorial work) for such career exploration. Skills in these areas should be seen as, and defined as, strengths in developing the student’s annual goals and IEP.

4. Expand the technology component of the five components within the Universal Design for Learning (UDL) established within the IDEA amendments of 2004 to include education on and experience with digital media and communication technology in the school curriculum for all students with disabilities.

5. Within IDEA, a new area of emphasis on digital media and communication technology should be added in personnel preparation.

6. Within Medicaid and Medicare, the definition of instrumental activities of daily living should be modified to include the use of digital communication and training in this modality comparable to the current use of Smart Phones and PDA’s for the applications of Dialectical Behavior Therapy content for individuals with behavioral/mental health needs.
Congressional Hearings:

1. The Senate HELP Committee and the House Committee on Education and Labor, both having jurisdiction over IDEA, ESEA, the Assistive Technology Act, VR, and WIA should be encouraged to convene at least one joint hearing on the transformative impact of digital media and communications technology on education, special education and workforce development. At least one panel should address the implications for individuals with ASD, including an invitation to representatives of the Autistic Self Advocacy Network, the Autism Society of America and Dr. Temple Grandin, the subject of an HBO film that won seven Emmy awards.

Statutory:

1. Amend the findings section of the Elementary and Secondary Education Act, the Individuals with Disabilities Education Act, the Rehabilitation Act, the Workforce Investment Act and the Assistive Technology Act to include data on the rapid explosion of the digital media and communication technology industries and the implications and need for transformation of education and workforce development strategies for all.

2. Amend the IDEA by creating a new title on instruction in digital media and communication technology and its specific applicability to individuals with ASD.

3. Amend the IDEA by creating a new area of emphasis for personnel preparation in the area of digital media and communications technology.

4. Amend the Rehabilitation Act by creating a new requirement for the education and continuing education of rehabilitation counselors to become proficient in the employment and career opportunities in digital media and communication technologies, with a focus on the applicability to individuals with ASD and the recognition that these jobs and careers often are compatible with working at the person’s home.

5. Amend the Carl Perkins Act to establish a new career cluster on digital media and communication technology within the Career and Technical Education programs in order to align the academic and technical curricula.

6. Amend the Workforce Investment Act and the Rehabilitation Act to require the development and establishment of a permanent state council, including individuals with ASD, to engage employers in discussions of current and emerging needs in digital media and communication technologies for career planning and instructional needs in secondary and postsecondary instructional programs and job development, placement and accommodations.

7. Amend the successor legislation to the Combating Autism Act of 2006 by adding a title on the implications of digital media and communication technology on the education, employment and career paths for individuals with ASD with interagency responsibilities within the U.S. Departments of Education, Labor, Health and Human Services and Commerce.
Appropriations:

1. Provide the Office of Personnel Management with $5 million over three years to develop a recruitment and training program for interested individuals living with ASD, using the Schedule A process, to help fill the critical gap of 40,000 new positions during the next five years within the Homeland Security Agency and its contractors for cyber security. Skills required are: certification and accreditation; security architecture and models; applications and systems development security; and, operations security.

2. Provide the Small Business Administration with $5 million for developing competitive grants to fund up to five establishment and/or demonstration projects within either for profit or not-for profit corporations over three years to recruit, train and employ individuals with ASD in integrated employment at prevailing wages within the areas of digital media and communications technology. These grants should provide preferential awards to small businesses owned by individuals with ASD as entrepreneurs in this process with secondary preference to small businesses owned by family members of individuals with ASD.

3. Through the use of Report Language, provide the U.S. Departments of Labor, Bureau of Labor Statistics and Office of Disability Employment Policy with directions to develop classifications and to collect data on employment of people with and without disabilities within the digital media and communications technologies industry with a report back to the Congress by December 31, 2013.

4. Provide $1 million to the Rehabilitation Services Administration to develop, field test and finalize a training curriculum for rehabilitation counselors on the careers within the digital media and communications technology industries and the relevant range of accommodations that may apply, being sure to include individuals with disabilities with an emphasis on individuals living with ASD as part of this project. The final curriculum will be required of all rehabilitation counselor training and certification programs.

5. Provide $5 million to the Office of Disability Employment Policy within the U.S. Department of Labor for the expansion of High School-High Tech programs to establish five new programs focused on skill development for careers in digital media and communication technology.

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