

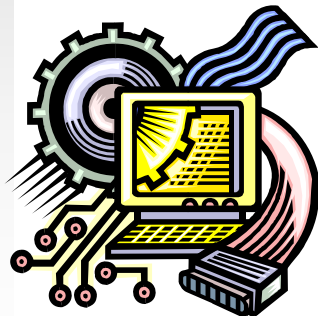


THE STATE OF THE SCIENCE: EXERCISE AND RECREATIONAL TECHNOLOGIES FOR PEOPLE WITH DISABILITIES

WELCOMING REMARKS

David Braddock, Ph.D.

**Associate Vice President, University of Colorado System &
Executive Director, Coleman Institute for Cognitive Disabilities**



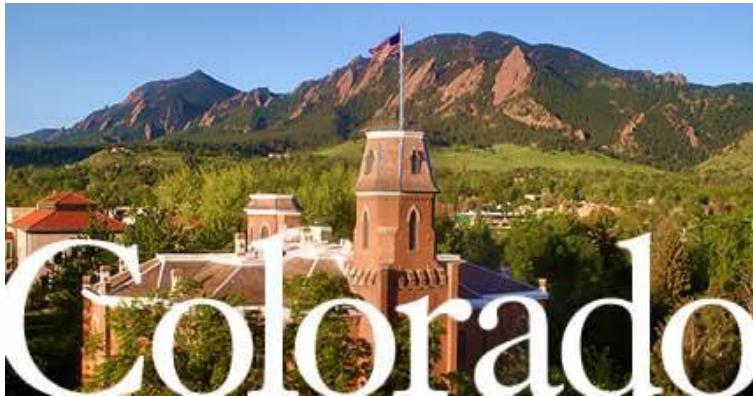
**Hyatt Regency Denver at
Colorado Convention Center**

May 30, 2006

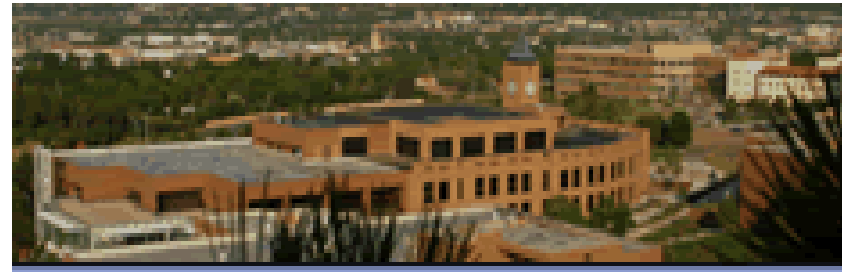
PRESENTATION OUTLINE

- I. Welcome to Denver on behalf of the University of Colorado System**
- II. Coleman Institute for Cognitive Disabilities**
- III. The disability “Market”: An international perspective**
- IV. Technology, disability and fitness/recreation: Implications**

UNIVERSITY OF COLORADO CAMPUSES



Boulder



Colorado Springs



Denver & Health Sciences

- **4 Nobel prize winners in molecular biology and physics**
- **31 faculty in National Academies of Sciences**
- **19 Rhodes Scholars, 15 astronauts**
- **1st liver transplant**
- **Developed international classification system for human chromosomes**
- **CU-Boulder is the top public university in NASA funding and 3rd in NSF funding**
- **Pioneering advances in immunology research**
- **First in the world to create 3-D images of the human body**

II. COLEMAN INSTITUTE FOR COGNITIVE DISABILITIES: MISSION



The Institute's mission is to catalyze and integrate advances in science, engineering and technology to promote the quality of life and independent living of people with cognitive disabilities.

www.ColemanInstitute.org

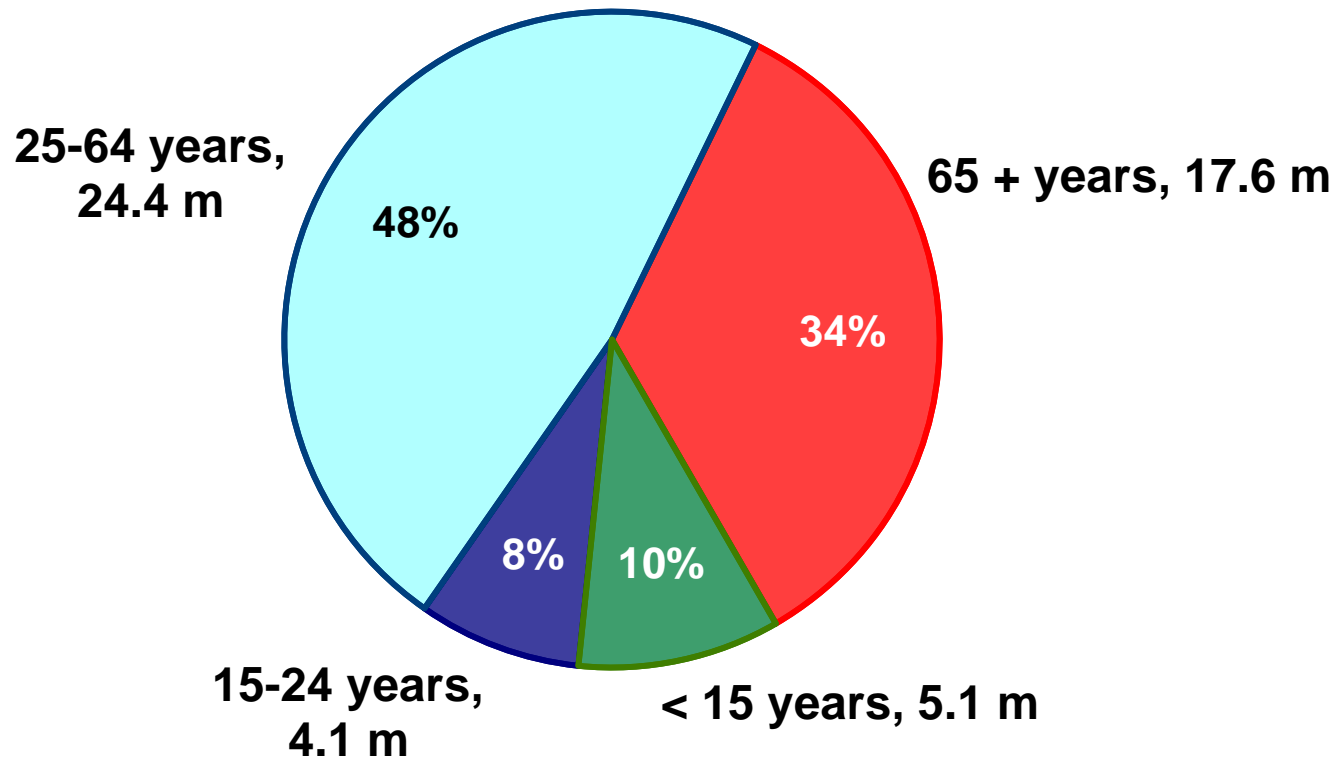
- **Research grants to CU faculty in applied technology and graduate research assistantships**
 - **Since 2001, Institute has funded 63 projects involving involving 36 faculty**
- **Annual Coleman Institute Conference + additional conference sponsorship**

Cognitive Disability and Technology

Oct. 24, 2006 – Broomfield, CO

- **Alice Elliot**, Academy Award nominee, sneak previews new film “Diana and Kathy” a documentary about community living, friendship & technology
- **Temple Grandin, Ph.D.**, Professor, Animal Science, Colorado State University, NY Times best-selling author of “Animals in Translation” and “Thinking in Pictures and Other Reports from My Life with Autism”
- **John Horgan**, Internationally renowned author of “The Undiscovered Mind” and “The End of Science”
- **John Kemp, Esq.**, noted disability rights advocate and former CEO, United Cerebral Palsy Associations
- **Ramesh Rao, Ph.D.**, Professor, Electrical and Computer Engineering, Director, California Institute for Telecommunications and Information Technology at UCSD
- **Michael Wehmeyer, Ph.D.**, Professor, Special Education, University of Kansas

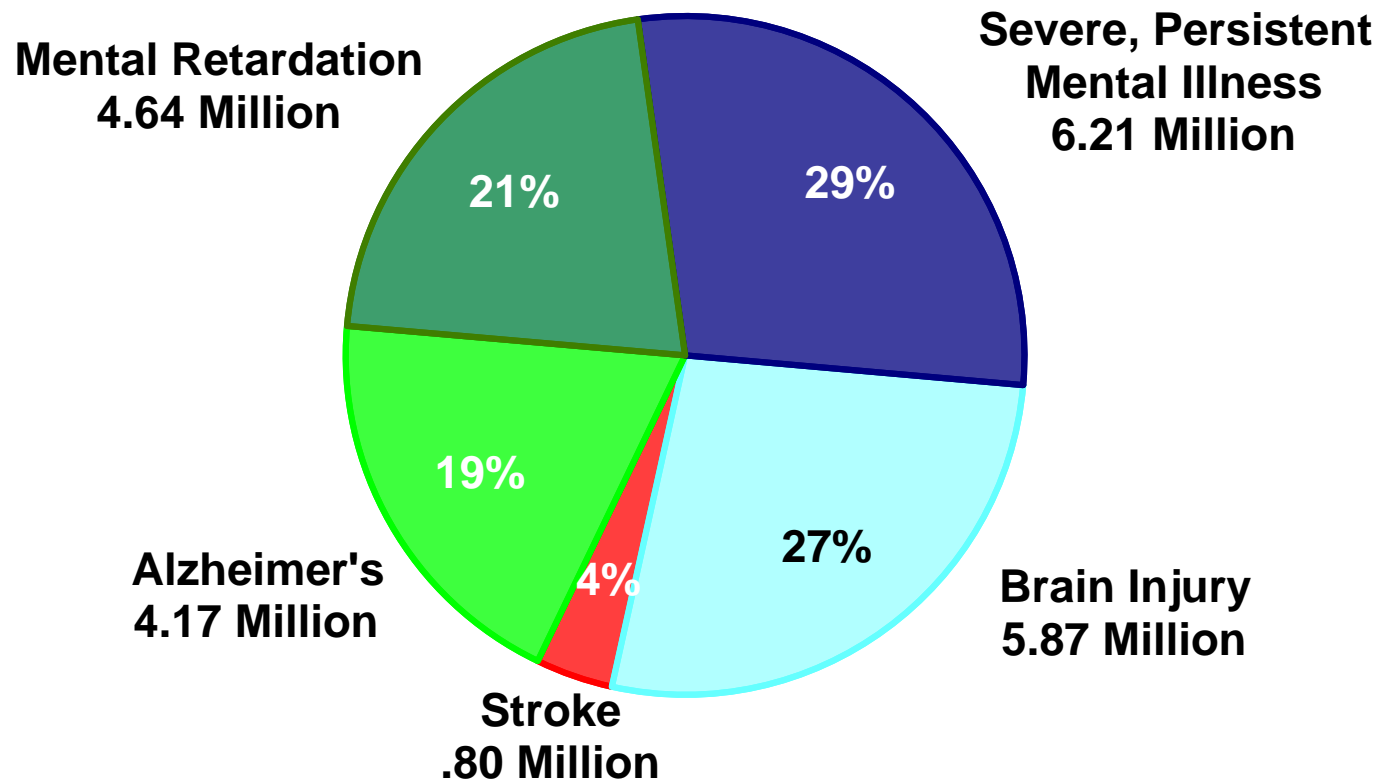
PERSONS WITH DISABILITIES BY AGE GROUP IN THE U.S., 2002



Total: 51.235 Million Persons

Source: E. Steinmetz (May 2006). *Americans with disabilities: 2002*, Current Population Reports, P70-107 (based on 2001 Survey of Income and Program Participation-SIPP data), U.S. Census Bureau, Washington, DC.

COGNITIVE DISABILITY IN THE U.S., 2004



Total: 21.70 Million Persons

Source: Braddock, D., Coleman Institute, University of Colorado, 2006.

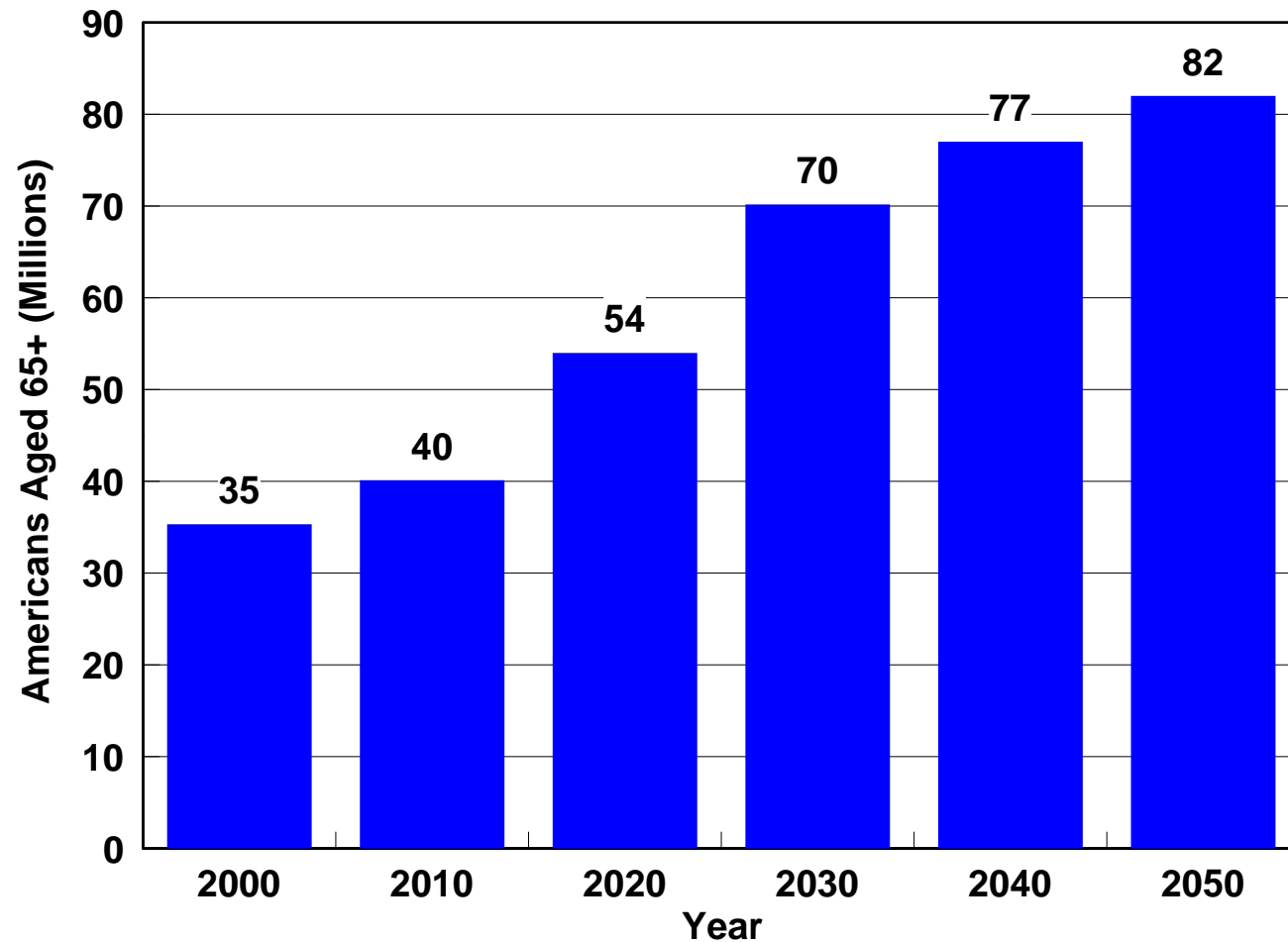
COMMON CONSEQUENCES OF DISABILITY

- ◆ **Unemployment and poverty**
- ◆ **Stigma and discrimination**
- ◆ **Difficulty communicating**
- ◆ **Social isolation and emotional problems**
- ◆ **Lack of support for families**
- ◆ **Institutionalization**
- ◆ **A growing “Digital Divide”**

AN INTERNATIONAL PERSPECTIVE

- **Developed nations’ populations are aging rapidly**
- **Most population growth is in developing nations**

GROWING NUMBERS OF AMERICANS AGED 65+ YEARS: 2000-2050



Source: U.S. Bureau of the Census, 2002.

WORLD ESTIMATES OF PEOPLE WITH DISABILITIES (In Millions)

	LOW	HIGH
64 Developed Nations	124	124
111 Developing Nations	111	425
WORLD	235	549

Source: R.L. Metts, The
World Bank, 2000

MOST POPULATION GROWTH IS IN DEVELOPING NATIONS

- **Six nations dominate with 44% of the World's growth through 2025:**
 - **India (17%)**
 - **China (11%)**
 - **Pakistan (6%)**
 - **Nigeria (4%)**
 - **Bangladesh (3%) and**
 - **Indonesia (3%)**

IV. TECHNOLOGY, DISABILITY AND RECREATION/FITNESS: IMPLICATIONS

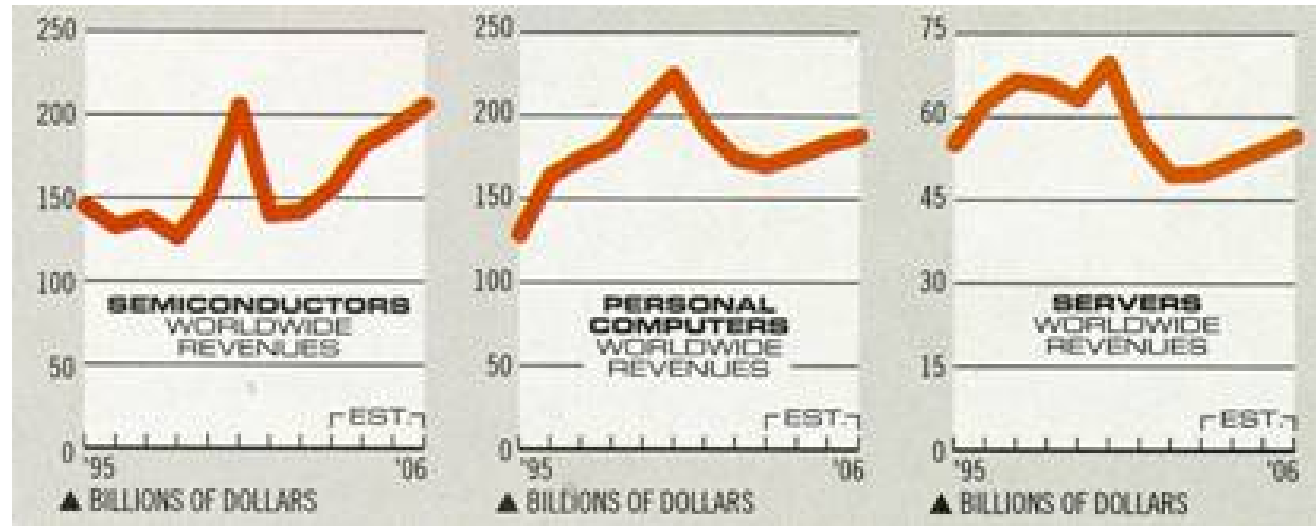
- ***Development and deployment of technology for people with disabilities requires affirmative action***
- ***A new generation of technologies is emerging***

- ❑ Dramatic (22 X over the past 36 years) increase in price-performance of computing technology;
- ❑ Advances in **wireless** technology, **GPS**, **broadband**, and **web-based services**;
- ❑ Improved **access** to computers & the Internet including voice recognition systems;
- ❑ Easier to use **Personal Digital Assistants (PDA's)** with “prompting capabilities” and “context-awareness.”

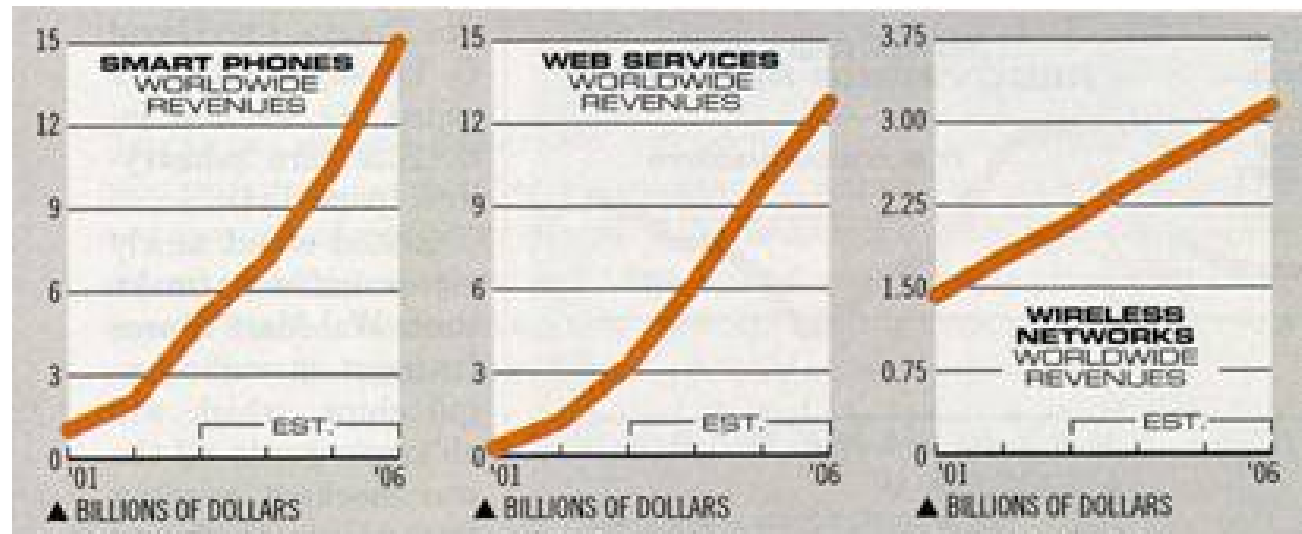
Source: D. Braddock, State of the Science Conference, Denver, 2006.

A NEW GENERATION OF TECHNOLOGIES

**AS SOME
MARKETS
MATURE...**



**NEW HIGH-
GROWTH
MARKETS
EMERGE...**



Sources: Adapted from *Business Week*, August 25, 2003.

“I think we can do a ‘virtual nursing home’ with technology” ...

**Andy Grove
Co-Founder, Intel Corp.
In *USA Today*, 2006**

IF so, we can also provide individualized virtual fitness/recreation experiences and other technology supports in multiple residential settings.

WHY USE TECHNOLOGY IN MR/DD RESIDENTIAL CARE?

- **Technology can monitor and support persons with MR/DD in recreational, health promotion, and other activities of daily living.**
- **U.S. demand will grow from 500,000 persons currently in residential services – to 700,000 persons in 10 years.**
- **Meanwhile, turnover in community living settings averages 50-70% nationally;**
- **Emerging residential technologies can address projected demand for long-term care services and reduce somewhat the need for tens of thousands of additional staff.**

Source: D. Braddock, State of the Science Conference, Denver, 2006.

REST ASSURED PROGRAM – TECH SUPPORT



Staff person monitors several apartments simultaneously at the Arc – Wabash Center, in Indiana

Rest Assured, LLC - Lafayette, Indiana:

- **Used primarily for third-shift support**
- **Serves consumers with ID/DD**
- **14 apartments with 27 consumers served**
- **Developed in collaboration with EPICS (Engineering Projects In Community Service) at Purdue University**
- **Focus on non-invasive technology**
- **Uses PTZ (Pan, Tilt, Zoom) cameras for monitoring in high risk areas like the kitchen**

Source: Jeff Darling, Executive Director, Rest Assured, LLC.

- **Motion, temperature, carbon monoxide, and door brake sensors used in other areas, in addition to a Personal Emergency Response System**
- **Remote supervision via two-way audio/video communication with caregiver**
- **Consumers report increased independence since caregiver is not a constant physical presence in the house**
- **Reduced overall cost of care**
- **Amenable to the introduction of in-home interactive fitness activities across multiple sites**

Source: Jeff Darling, Executive Director, Rest Assured, LLC.



Welcome to the Coleman Institute Website

The Coleman Institute's mission is to catalyze and integrate advances in science, engineering and technology to promote the quality of life and independent living of people with cognitive disabilities.

What's New?

- Save the date: Oct. 24, 2006 for the [sixth annual Coleman Institute Conference](#)
- Attend the [Exercise and Recreational Technologies for People with Disabilities State of the Science Conference](#)
- Search our [Assistive Technology Literature Database](#)
- Learn about CU's [Rehabilitation Engineering Research Center on Cognitive Technologies](#)
- Participate in a [research study on virtual reality and exercise](#)
- Coleman Institute Scientist in Residence Clayton Lewis has been [awarded a grant from Google](#)



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Navigation

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