The New Face of Graduate Education

Northeastern Association of Graduate Schools
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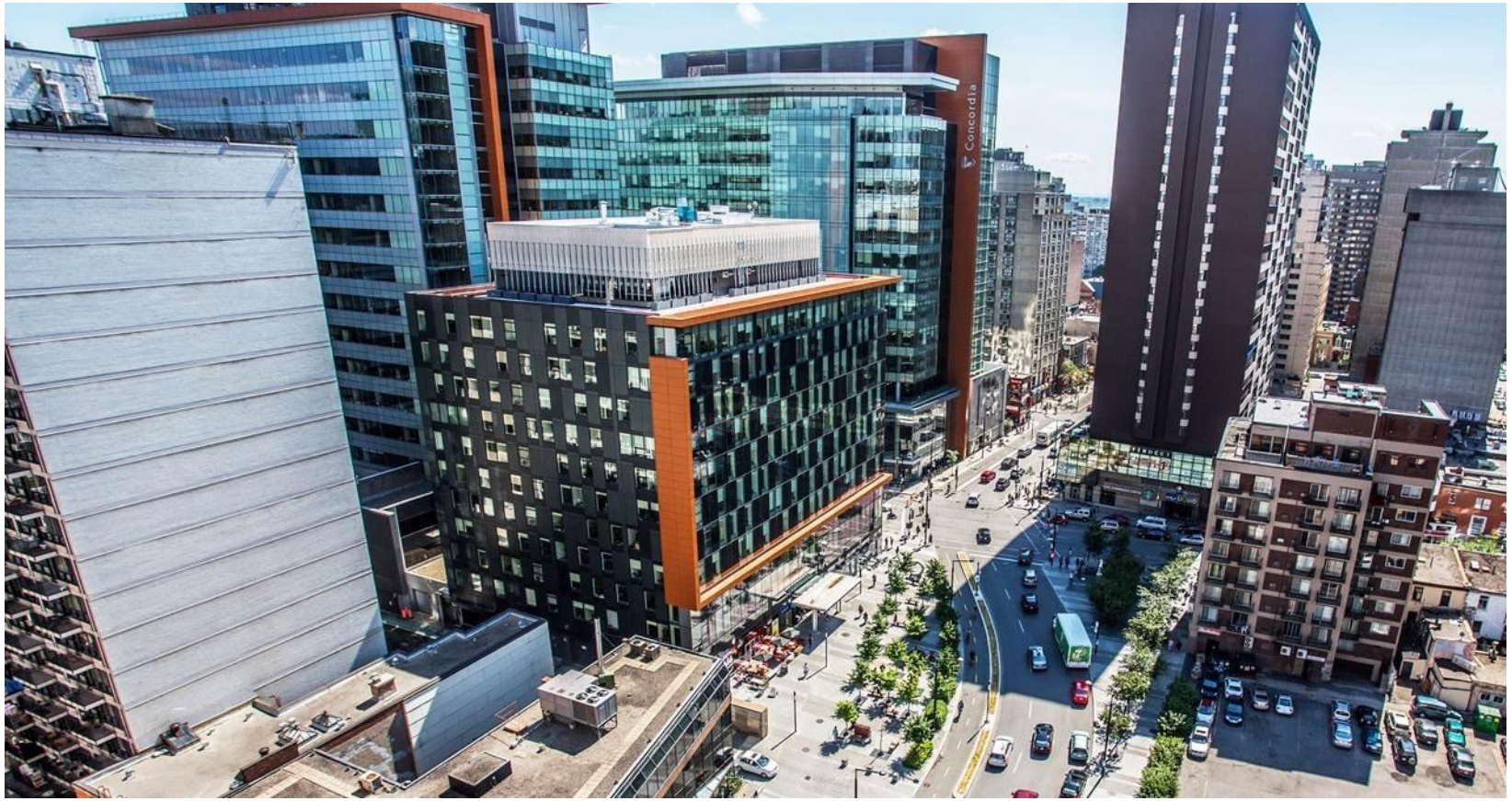
Urban,'Next Generation' Universities: Montreal + Boston



Rethinking Graduate Education: Four Drivers of Change

- Demographics of graduate education
- Globalization and technology
- Employment pathways for highly qualified personnel
- Changing nature of research

- World Economic Forum, *Outlook on the Global Agenda*, 2015

Graduate Student Demographics

- Degree types
- 73% of US grad students: Masters + Certificates
- Masters cohorts increasing (2%: 2013 vs 2012)
- PhD cohorts shrinking (<4%: 2013 vs 2012)

- Country of origin
- US-based student enrollment <0.9% (2013 vs 2012)
- International 1st time enrollment > 8% (2013 vs 2012)

Young adults as a subpopulation

- Understanding the target recruitment pool: 18-26
- ‘the world has changed in ways that place greater demands on young adults and provide less latitude for failure’
- Source: National Research Council, *Investing in the Health and Well-being of Young Adults* (2015)

Changing ‘landscape of risk and opportunity’

- “the average amount of time that people spend in jobs is going down, the number of career transitions is going up, unemployment is on the rise globally and the waves of disruption hitting every industry are accelerating.”

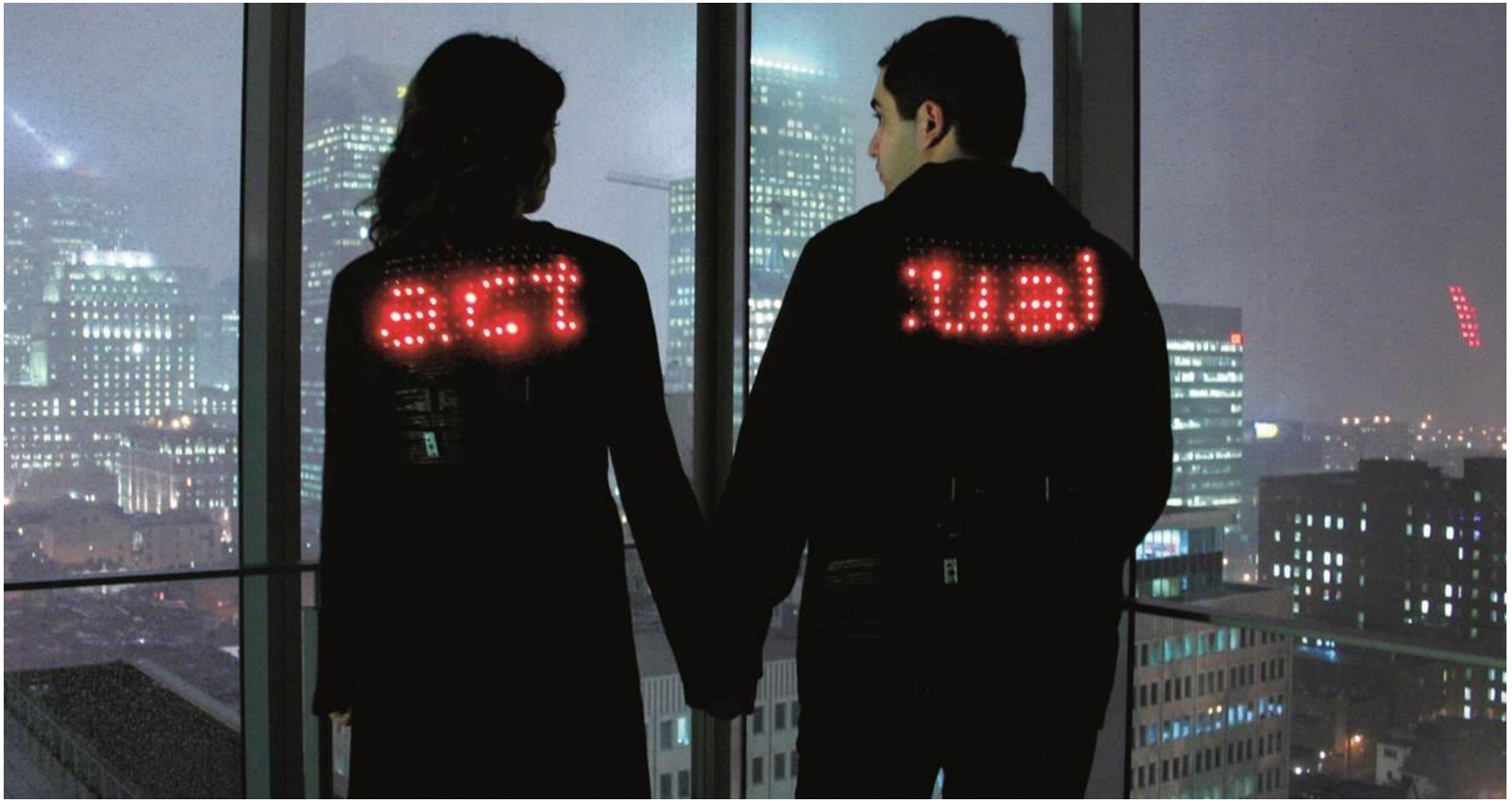
- Source: Andrew McAfee, Co-director, *Institute on the Digital Economy*, MIT (2014)

Footnotes on the Future

- Vulnerable populations
- US (2011) 45% of children younger than age 5 come from minority communities
- Canada: First nations demographics

- Life-long learning
- graduate accreditation and adult populations

World of technology and entrepreneurship



Are students' expectations changing?

- Wireless world; 3D printing; Internet of things
- 2020: 26 billion devices on the internet
- living online

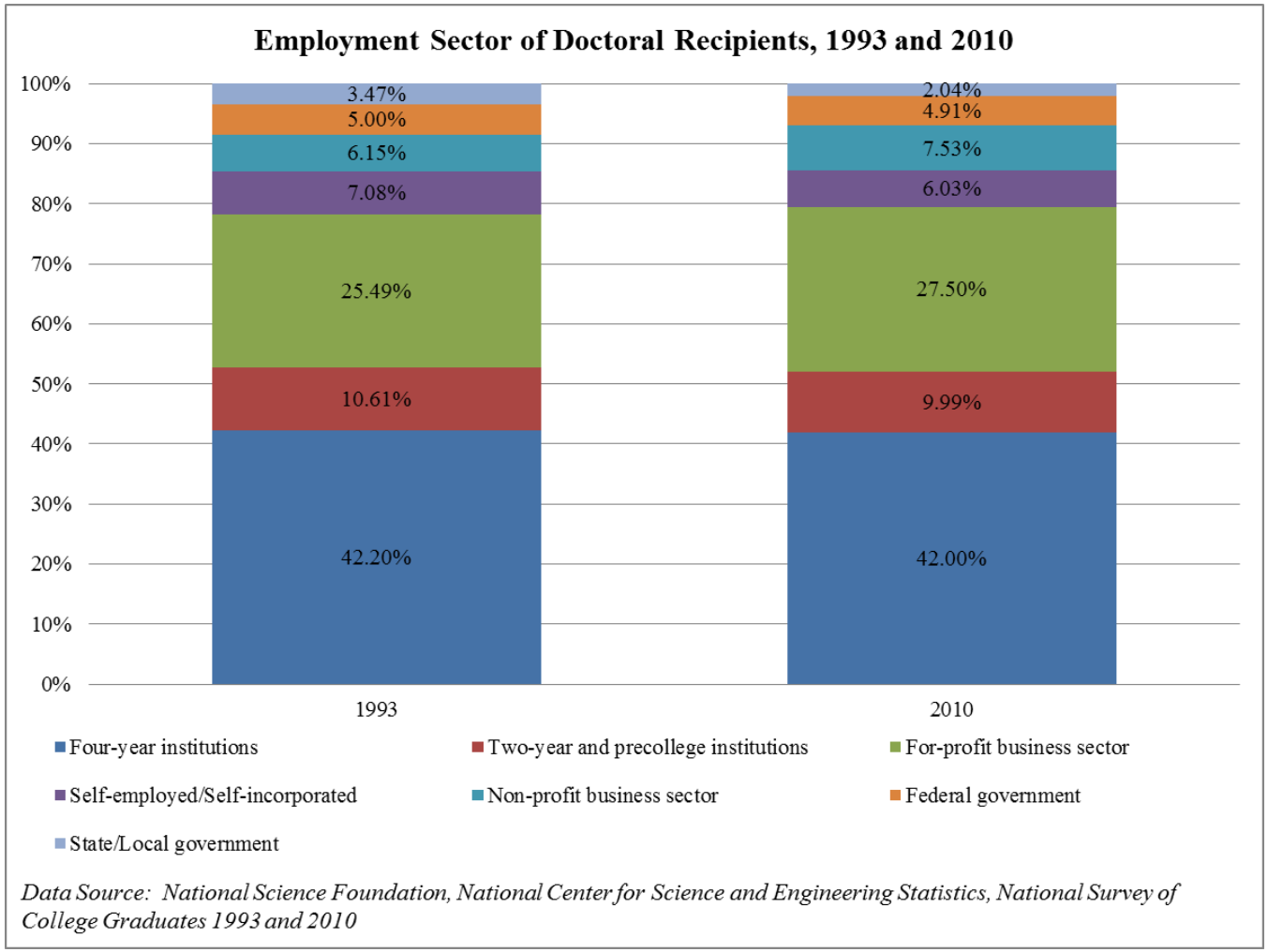
- Start-up culture; Maker culture
- You-Tube entrepreneurs

- Keywords: experiential, online, open, mass, flexible

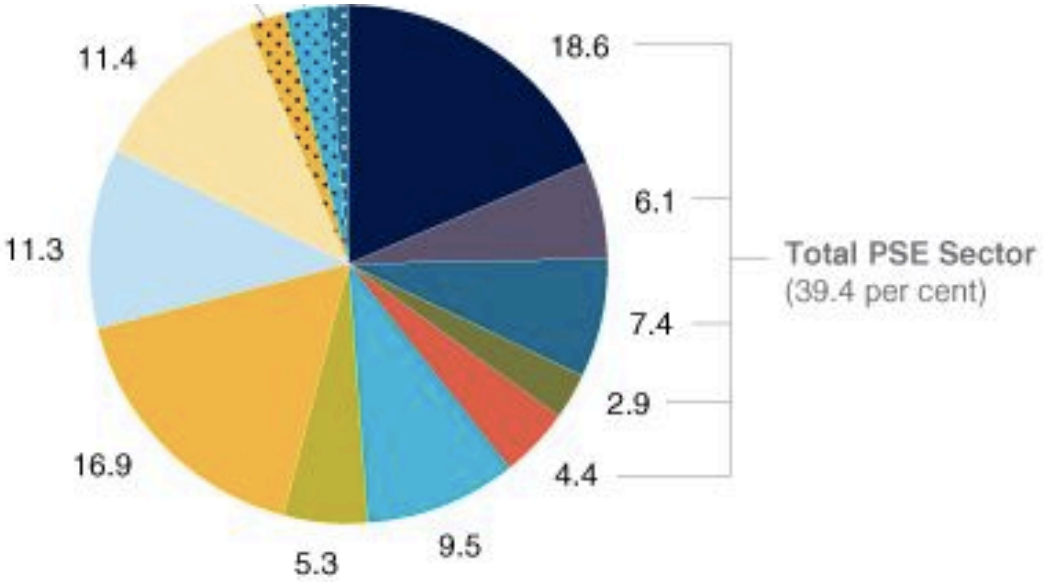
Graduate School Outcomes: is this what 'success' looks like?

- patterns of post-PhD employment by field almost unchanged in past 10 years
- 2013: 62.7% of earned PhDs have job or PDF offer (lowest % in 12 years)
- 2013: STEM PhD completion rate = 54%
- broken postdoc pipeline: NIH, *Biomedical Workforce Working Group Report* (2012)

Training Mismatch?
Patterns of PhD Placement



Data Source: National Science Foundation, National Center for Science and Engineering Statistics, National Survey of College Graduates 1993 and 2010



PSE Sector

- Full-time university professor
- Part-time university professor
- PSE research and teaching assistant
- Full- or part-time college instructor
- Postdoctoral scholars

Non-PSE Sectors

- Management occupations
- Business, finance, and administration
- Natural and applied sciences
- Health
- Education; law; social, community, government services (not PSE)
- Art, culture, recreation, sport
- Sales and service

The Knowledge Economy: New Pathways to Opportunity?

- Are postgraduate degrees ‘the new social mobility frontier’? (David Willetts, former-UK Minister for Universities and Science)

- Re-thinking graduate education as a ‘passport’ to multiple opportunities

- Nadia Jaber, (PhD, SUNY, Stony Brook), 2014 Tedx

Globalizing the Talent Competition

- The rise of ‘the rest’
- ‘Top 100 under 50’ ranking: *Times Educational Supplement* (2014)
- US universities (8); Canada (5)

- Europe 2020: ‘become the world’s most competitive, science-based economy’
- 2011: EU graduated 118,000 PhDs vs 73,000 in US
- 2011: EU 1.7% aged 25-34 hold PhD vs 1.8% in US

European Research Area (ERA)

- ‘support researchers’ careers and mobility and further facilitate the entry and stay of 3rd country researchers’
- Develop entrepreneurial, creative and innovative skills in all disciplines
- European Commission, DG Research and Innovation, Deloitte Consulting, *Researchers’ Report, 2014*

Changing Nature of Research

- Problems and systems-based research inquiry
- Grand challenges
- Re-organization of research enterprise
- Diversification, integration + clustering of knowledge

- Joseph M. DeSimone, et al., *Convergence: Facilitating Transdisciplinary Integration of Life Sciences, Physical Sciences, Engineering and Beyond* (National Academies Press, 2014)

Core Facilities and Core Programs: overcoming asymmetry

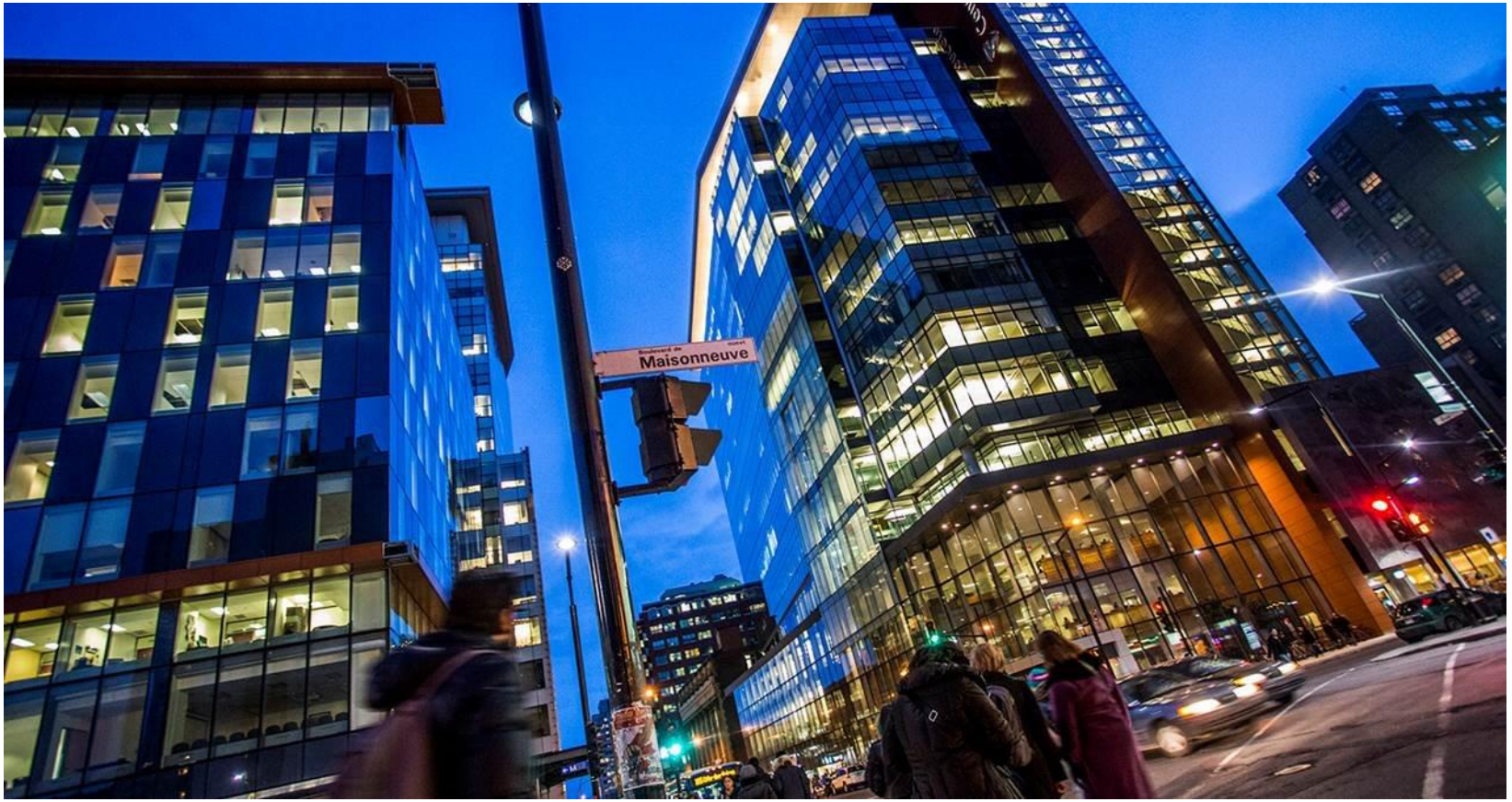
- Rise of the new research institutes; inter-sectoral; co-creation of knowledge

- Implications of new research models for existing Programs, Departments and Faculties?

- Wyss Institute for Biologically Inspired Engineering, Harvard (2009)
- Institute for Molecular Engineering, U of Chicago, (2011)

New Graduate Training Models

- Flexibility; short courses; training gaps
- Online teaching: inter-institutional collaboration
- Distance collaboration + cultural mobility
- Experiential, cross-sectoral opportunities
- Professional skills development
- Open spaces; maker spaces
- Rethinking undergraduate education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