

CALL FOR PAPERS

Special Issue of Journal of Technology Transfer

Discontinuous Technology Innovations with Disruptive Market Potential: Perspectives and Roles of Federal, Academic and Corporate Laboratories and Implications for Policy and Practice

Guest Editors

Elias G. Carayannis (caraye@gwu.edu) and Suleiman Kassicieh (sul@unm.edu)

The current Technology Transfer Journal Special Issue aims to focus on conceptual and empirical studies that analyze perspectives and roles of federal, academic and corporate laboratories as sources, triggers and catalysts of discontinuous technology innovations with disruptive market potential.

- Innovation is a word derived from the Latin meaning to introduce something new to the existing realm and order of things. In this sense, innovation is endowed with a faculty of discontinuity and possibly disruptiveness in the form of a continuum of discontinuities reflected by a simple analogy to the way we walk. From a business perspective, an innovation is perceived as the happy ending of the commercialization journey of an invention, when that journey is indeed successful and leads to the creation of a sustainable and flourishing market niche or new market. Not all innovations are discontinuous and not all discontinuous innovations prove to be disruptive. This is determined by the scope, timing, and impact of the innovation under consideration (Carayannis et al, Elsevier Handbook of Innovation, Chapter 8, 2003; Carayannis et al, Knowledge Creation, Diffusion and Use, Praeger, 2005; Carayannis et al, Public-Private R&D Collaborations, MacMillan, 2006).
- **Disruptive (vs. sustaining) technologies (DT)** have first been identified by Schumpeter in his “destructive creation” of new economic entities and have since been researched by a number of scholars (Christensen et al). Disruptive technologies emanate from scientific discoveries that break through the usual product/technology capabilities performance envelop and provide a basis for a new market / technological paradigm. Disruptive technologies can be described as inflection points, emergent technologies, earthquakes, or typhoons. The nomenclature is not important but the phenomena have become increasingly important to firms. These technologies replace current products with new technological capabilities or by new technologies with a new manufacturing base for products and industries that do not yet exist. They initiate the development of new firm-based competencies and are the wellspring of future sustaining technologies - (Kassicieh et al, Special Issue of IEEE TEM, November 2002).
- **Discontinuous innovations (DI)** are products/processes/services that provide exponential improvements in the value received by the customer and disrupt the product/customer relationship of old. As discussed above, not all discontinuous innovations may have a disruptive effect (instead they may have a sustaining effect on existing or emerging markets) and not all disruptive technologies need to be affiliated with discontinuous innovations (Carayannis et al, ibid). Discontinuous innovations have been called radical, architectural, generational and revolutionary among many others. They are often based on disruptive technologies but can also be the product of current sustaining technologies that produce higher value propositions. They provide major improvements to current product market paradigms and produce the physical and/or service products that initiate new industries or markets that define a new and differing product platform from which incremental innovations are generated.

- Carayannis et al (ibid) have tabulated innovations in terms of their continuity/discontinuity and their disruptive/sustaining nature thus:

Process	Content	Context	Impact
Evolutionary innovation	Incremental innovation	Continuous Innovation	Non-disruptive or Disruptive innovation
	Generational innovation	Continuous innovation	
Revolutionary innovation	Radical innovation	Discontinuous innovation	Non-disruptive or Disruptive innovation
	Architectural innovation	Discontinuous innovation	

- Technology transfer processes used in moving incremental improvements might not be appropriate for disruptive technologies. It is, therefore, important for the field to define new methods and assess their efficacy. Disruptive technologies play an essential role in firms' competitiveness and in national and international economies and that is of importance to managers, scientists, economists and policy makers. The commercialization techniques applied to untested and unverifiable markets could present the world with the new products that transform whole industries as seen in transistors, cell phones or personal computers.

Submissions to the Special Issue may be *theoretical, conceptual, or empirical*. They should relate to: I) *methods used to commercialize DT/DI from federal laboratories and universities?* II) *management of R&D for change in this area* III) *market issues* IV) *policy implications of DT/DI on transfer and commercialization of technologies.* V) *What is the role of entrepreneurship in the commercialization of disruptive technologies?*

The topics may include but are not limited to:

- Diffusion of DT/DI and transfer of ideas from one area of application to another.
- Theories, models and applications of DT/DI commercialization and technology transfer
- Inventions, patents, intellectual property, licensing and other implications of technology transfer in DT/DI
- Studies of public-private partnerships for innovation (PPP4I) involving federal laboratories, universities and R&D organizations on DT/DI
- Research methods in DT/DI technology transfer/commercialization
- Cross-cultural issues in DT/DI technology transfer/commercialization
- Empirical analysis of successes and failures in DT/DI commercialization/technology transfer activities
- Organizational, managerial, economic, and environmental issues in commercialization of DT/DI

Papers submitted to this special issue will be reviewed in accordance with the Journal's editorial policy and should be emailed in MS Word format to: Professor Elias G. Carayannis at caraye@gwu.edu or Professor Sul Kassicieh at sul@unm.edu

DEADLINE FOR SUBMISSIONS: October 31, 2006