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## **Evolution and Definitions of Innovation Jams**

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### **Abstract**

New models of innovation such as ?innovation jams? are a relatively recent concept that encompasses many practices. This emerging model leads to blurred understanding of the limits to and usefulness of this model of innovation. This paper presents an evolution of innovation jams through a 10-year longitudinal study that provides a definition and foundational characteristics of innovation jams as they evolved from a concept, to a management tool, to a service platform- as IBM learned to engage with a new model of organizing innovation. We conclude with a discussion on the implications of having a definition for theorizing about this new model of organizing innovation.

## Evolution and Definitions of Innovation Jams

### Abstract

New models of innovation such as “innovation jams” are a relatively recent concept that encompasses many practices. This emerging model leads to blurred understanding of the limits to and usefulness of this model of innovation. This paper presents an evolution of innovation jams through a 10-year longitudinal study that provides a definition and foundational characteristics of innovation jams as they evolved from a concept, to a management tool, to a service platform- as IBM learned to engage with a new model of organizing innovation. We conclude with a discussion on the implications of having a definition for theorizing about this new model of organizing innovation.

Key words: open innovation; innovation jams; IBM

## **Introduction**

The study of organizing innovation has been of considerable interest to management science scholars. Researchers have linked an organizations ability to innovate as an axiomatic principle to achieving and sustaining its competitive advantage. Moreover, alternative models of organizing innovation have offered several perspectives to how organizations can learn and adapt to the changing environment, but have left out aspects of how organizations change to incorporate this innovative ability. This paper presents an evolution of innovation jams that provides a definition and foundational characteristics of innovation jams as they evolved from a concept, to a management tool, to a service platform as IBM learned to engage with a new model of organizing innovation. This new model of organizing innovation is a result of IBM's development and use of innovation jams overtime, as IBM engaged with innovation jams by leveraging internally developed technology and its organizational networks knowledge to develop a platform for innovation. Using ten dimensions to understand the patterns of how innovation jams have evolved, changes in organizational actors and technology supported a large-scale collaborative approach to organizing innovation that situates internal and external sources knowledge together for collective problem solving. From this engagement, this new model of innovation occurred less as a result of predefined management plans, or top-down directives but rather from the organizational networks participation in and practice of outside-in and inside-out (coupled) models of open innovation. Moreover, the study of innovation jams provides the prospect for enrichment into the techno-social nature of work and organizing by investigating the interaction between technological systems and organizations (Orlikowski and Barley 2001) through the organizing of innovation.

To date, there is a lack of systematic inquiry into innovation jams, making understanding how they are used, organized and defined difficult to posit them in practice and within a body of literature. Much of the literature on innovation jams tends to focus on the value of using such systems such as managing large-scale collaboration through a practitioner based descriptive analysis (Bjelland and Wood 2008; Dorsett, Fontaine, and O'Driscoll 2002) or through illustrations using social network analysis (Helander, Lawrence, Liu, Perlich, Reddy, and Rosset 2007). In addition, these studies to a large extent have been outdated in their description, due to the rapidly changing technology involved. Though it is important to acknowledge their importance in providing early insight into innovation jams, the shortcomings of such an approach have neglected the mechanisms by which such technologies are adopted, leaving them under theorized and treated as if they are just technologies, receiving no special

attention in facilitating the practice of open innovation. Given this fact and that current research has stressed the need for more research linked to other management areas (Van de Vrande, Vanhaverbeke and Gassmann 2010) using longitudinal perspectives qualitatively focusing on the mechanisms for the adoption of open innovation practices (Lichtenthaler 2011), this study examines the role innovation jams have played at IBM.

### **Open Innovation and Technology**

Research into the practices of open innovation at IBM has been widely cited, and has offered insight into IBM's transformation from a closed system of research and development (R&D) to an open form of innovation. In fact, IBM is one of the keystone cases that the open innovation research stream is founded upon (Chesbrough 2003; 2006). Outlined in at that time IBM's CEO-Lou Gerstner's book, *Who Says Elephants Can't Dance? Inside IBM's Historic Turnaround*, IBM needed to focus on bringing its customers closer to utilize what Gerstner (2002) believed was IBM's unique and unequalled capability to "apply complex technologies to solve business challenges" (Gerstner 2002 pp 125). The open innovation paradigm proposes inflows and outflows of knowledge to accelerate innovation and external markets uses for product innovation (Chesbrough et al. 2006) and open services innovation (Chesbrough 2011). Benefits from open innovation have improved organizational alertness (Salter et al. 2014) and knowledge search (West and Bogers 2014) The open innovation research stream<sup>1</sup> has led researchers to explore how technologies shape and support more open models of innovation practices (Dodgson, Gann, and Salter 2006; Christensen and Maskell 2003; Pavitt 2003), even arguing these technologies have the potential to reshape the way firms organize their innovative activities across the organization (Dodgson, Gann, and Salter 2005). This reshaping of the organizational innovation process impacts both the structure of the internal innovation process but also the cognitive modeling of innovation. Focusing on practices of open innovation, researchers have offered understanding on the role technology can play (Dodgson et al. 2006; Kohler, Matzler, and Fuller 2009; Dogdson and Gann unpublished paper). However, understanding the role of emerging technology such as innovation jams has been largely overlooked. Given that this emerging technology can be harnessed in a variety of capacities, individually or in combination, we consider these technologies as being arranged and embedded in a larger technological system such as innovation jams and can be observed at work at IBM.

### **Relationship of Technology to Organizations**

Since our focus is on innovation jams- a technological platform, it is imperative to discuss the relationship of technology to organizations. Technologies and organizations are undergoing dramatic change in form and function creating new and unprecedented ways of organizing whole structures and processes. Technology and its relationship to organizational structure, processes, and outcomes have been viewed from many perspectives (Woodward 1958: 1965; Aldrich 1972; Gerwin 1981). Researchers have presented several perspectives in examining the role of social context shaping the use of technology (George and King 1991) or how key actants influence technology (Orlikowski and Robey 1991) while implicitly implying that technology impacts the organization. This has led researchers of technology to place technology as a discrete entity within an organization (Aiman-Smith and Green 2002), that posit technology as an independent or moderating variable, or one piece of a mutually dependent ensemble of co-evolving interactions with actors (Majchrzak, Rice, Malhotra, King and Ba 2000; Edmondson, Bohmer and Pisano 2001; Vaast and Walsham 2005). More recently, researchers of technology have shifted towards a focus on agency and a more self-influencing fusion between actors (Boudreau and Robey 2005) and technology (Leonardi 2010) that better represents the ubiquity and materiality technology plays intrinsically in our everyday activities (Zamutto et al. 2007; Orlikowski and Scott 2008). This leaves executives and managers keen to understand the organizational changes that might result from technology's growing influence within their organizations.

Implications of technology can be seen as being technologically grounded within an organization, where an organization's culture can be intertwined with technology, *"... not simply a culture that uses a technology; instead, it is a culture whose image, identity, and relationship to its environment are strongly associated..."* (Leonardi and Jackson 2009 pp 397). This binding between technology and an organizational culture can be seen as a continuum which can change overtime, where an organizational culture develops a self-image around the material, social, and symbolic characteristic of that technology (Leonardi 2007; Leonardi and Jackson 2009). Technology-based changes have traditionally been viewed as a planned or deliberate orchestration of key actors with substantial technological resources that occur gradually. However, researchers have continued to push the boundaries of technology's influence on organizations by challenging this conventional thought (Tyre and Orlikowski 1994; Leonardi and Barley 2008). Similar views have been expressed before, highlighting that explanations for organizational change may be less dramatic than the changes themselves and that change takes place as people do their jobs while being intelligently attentive to their environments (March 1981), invoking social innovation (Barley 1988).

A growing body of literature expands this thought, arguing that organizational change and organizational-wide transformation is grounded in ongoing practices (Orlikowski 1996; Cook and Brown 1999; Orlikowski 2007; Suchman 2007) and in IBM's case, the ongoing practices of opening up its innovation process through technology. This type of organizational transformation emerges out of the deep-rooted experiences actors encounter over time when interacting in practice, in the world, and in their environment through their ongoing interaction with these organizational processes and the technologies that support them (Ciborra 1996).

With this in mind, transformation is less a deliberate shift of predefined plans, technological inevitability, or prearranged directives from top executives and management that invoke new innovative ability, than something that occurs through the active agency of the organizational members in which change occurs (Giddens 1984, Tsoukas and Chia 2002). By taking this view it suggests a struggle between users' contextualized situation and a manager's decontextualized perspective (Leonardi 2008a) making room for the trial and error experimenting of technology implementation (Thomke 1998). From this we begin to see change that is situated, not as a static capacity or stable disposition of technology and organizational actors, but an ongoing social accomplishment, constituted and reconstituted within an organization (Orlikowski 2002) between "the mental sphere to the concrete material world" (Tuomi 2002, pp 20).

Similarly, researchers of technology have begun to investigate organizational implications in the acute context of new and emerging technologies that are increasingly becoming more prevalent in organizations today (Constantinides and Barrett 2006; Leonardi 2008b). This has led to a perspective that shows the changing interaction of actors and their collective capability with these newly introduced technologies as a series of ongoing and situational accommodations, adoptions, and alterations for change to be achieved. With no clear beginning or endpoint available to map organizational change, mechanisms supporting change-enacted overtime are offered and created. These mechanisms, which are insufficiently identified, particularly within the limits of new and emerging technology, rest on the assumption of action, not stability, to spur change within the organization.

As innovation is associated with change within and across organizational boundaries (Tushman, Anderson, and O'Reilly 1997) internally and externally, several approaches from the open innovation literature have supported organizational change processes, particularly in aiding organizations to move from closed to open innovators. These have provided insights into various frameworks to support managerial decision-making (Huizingh 2010) within the innovation process. However, they have left

managers with a lack of knowledge about how to influence innovation. This has left executives and managers engaged in producing organizational growth with little more than a trial and error process, rather than a professionally-managed method in leveraging the benefits of open innovation (Gassmann, Enkel, and Chesbrough 2010) and the technology that supports it. Attention has been given to the anatomy of the organizational change process (Chiaroni, Chiesa, and Frattini 2010), which has stressed the importance of organizational and cultural issues in the adoption of open innovation practices (van de Vrande, de Jong, Vanhaverbeke, and Rochemont 2009; Ili, Albers, and Miller 2010), but more research into new management styles and systems to exploit the benefits of open innovation is needed (West and Gallagher 2006). Thus a research approach that includes elements of process and change is especially relevant here in providing a rich context for research that provides insight into technology's growing influence in organizations as a result of their engagement in implementing open innovation strategies.

## **Method**

Our research was based on a longitudinal study of the IBM innovation jam platform (Table 1) as a context to understand the evolution of innovation jams across ten dimensions. IBM can be seen as a "rare or unique" case, in that it is a revelatory case that presents the opportunity for researchers' to observe and analyze a phenomenon that is understudied or novel, as well as to answer "how" and "why" questions (Yin 1984; Eisenhardt 1989). Since the constitutive relationship between innovation jams and how they have evolved has not been adequately examined in studies of a large organizational innovation process, we used an embedded design for this study. Embedded case designs use multiple levels of analysis to create a rich and reliable account of organizational processes (Yin 1984). This study focuses on IBM from three levels of analysis (1) the technology level (2) organizational level (3) processual level.

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Table 1 about here

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## *Data Sources*

To effectively triangulate important technological and methodological elements represented in the organizational change process at IBM, we combined data collection methods such as archives,

textual analysis, participant observation, and interviews (Eisenhardt 1989). We used three primary and two secondary data sources (Table 1) that include: (1) internal and public reports about IBM innovation jam events, (2) published materials about IBM organizational change and its innovation jam platform, (3) participant observation in innovation jams, (4) interviews and correspondence with the Program Director and the founder of the Jam Program Office and Collaborative Innovation and the Chief Strategist, and (5) jam forum data from three innovation jams. From the collected data found below, reconstruction of past contexts, processes, and decisions were possible in order to discover patterns and find underlying mechanisms over time (Pettigrew 1990) and provided varying distances between the researcher and the phenomenon under study.

*Innovation Jam Reports.* As IBM was a focal company and pillar case study for a larger project, deep engagement with the company ensued from early 2009 to 2011, culminating with the sharing of internal and public reports about each of the IBM Innovation Jam events from 2001-2010. In each of the innovation jam reports collected, we paid close attention to the changes in description of each innovation jam, the technology use, and processes around the implementation, facilitation, and hosting of the innovation jam. Following Cheney and Christensen (2001), these communication reports of internal organizational processes bring to light ideologies about intended change.

*Published materials.* As a result of the novelty of innovation jams and large-scale collaboration, news reports in both daily and trade press publications have been widely circulated. Using archival databases (list), we collected articles about IBM innovation jams that were reported in daily local and international newspapers from February 2001 to February 2011, three months prior to the first innovation jam at IBM and up to the latest innovation jam held. Newspapers included all major national US newspapers from across the country and two major trade newspapers internationally. Articles contained either (1) public discourse about the company and the nature of the innovation jam being held, or (2) reflections on the innovation jam from participants after the innovation jam. In total, we collected nearly 145 news articles about innovation jams. Criteria for including an article was its timeframe of being published and its specifically mentioning the influence of innovation jams at IBM on its innovation process.

Since innovation jams have recently gained a significant amount of attention outside of academia particularly in practitioner journals (Bjelland and Wood 2008) and books (Surowiecki 2004; Howe 2008), to provide further background knowledge that led to better understanding of innovation jams.

*Participant Observation.* Next, invitations to participate in IBM hosted Innovation Jams were extended. The researchers participated in SmartWork Jam 2009, GlobalPulse Jam 2010, and SocialBusiness Jam 2011. From this, over 70 hours of participant observation were recorded and provided real-time insight into the most recent developments of innovation jams. Observations were documented resulting in a total of 100+ pages of field notes. This provided experiential access to the local environment of participating in innovation jams using the technology, posts within the jam forums, and observing other participants. In addition, participation included pre and post innovation jam events.

*Interviews and Correspondence.* Over the two year-project a lengthy dialogue with IBM was maintained. This dialogue, facilitated by the IBM Program Director and the founder of the Jam Program Office and Collaborative Innovation and Chief Strategist, was documented. Before interviewing, background information was gathered by the authors. This helped in identifying detailed questions to how innovation jams have aided IBM in its innovation strategy and how innovation jams have evolved over time. A semi-structured approach to interviewing allowed for opportunities to explore the technical and social aspects of innovation jams, particularly the history, present use, and vision of innovation jams at IBM. Transcripts were made and confirmed for authenticity.

*Jam Forum Data.* Forum data on three innovation jams from 2009-2011 including: posts, participant information (ex. location, age, gender, affiliation, job role, language) and content were collected.

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Table 2 about here

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## Data Analysis

Since our framework suggests innovation jams have facilitated change in shaping IBM's innovation process, we constructed a historical perspective (Table 3). This helped to explain relationships between historical factors pertaining to innovation jams transitional periods of development and IBM's move towards leveraging technology for more open forms of innovation.

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Table 3 about here

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In the preliminary stage we organized our data chronologically based on the order in which each innovation jam was held. This was done by ordering each innovation jam event from the collected data- IBM innovation jam reports, news and trade publications, participant observation field notes, and interview and correspondence transcripts in order to corroborate each innovation jam account over multiple sources. This provided a historical perspective of innovation jams as well as exploring the social context within IBM that innovation jams operate in (Klein and Myers 1999). For this study an iterative approach to coding and analysis was adopted. Thus, to identify the ways in which innovation jams influenced the innovation process, we followed three stages of coding practices outlined by Strauss and Corbin (1998) within and across each innovation jam. We engaged in an open coding strategy within (and across) each innovation jam to categorize the data collected (innovation jam reports, observations field notes, interview transcriptions, and news & trade publications) in order to group like concepts that described what transpired and how it occurred. An inductive approach allowed for insights to emerge from each innovation jam independently.

Next, through our analysis, we grouped these first-order themes by constructing subcategories, and regrouped the data into clusters of similar activities allowing conceptual links to emerge. From this, we combined these provisional first-order categories into fewer, broader and theoretically relevant groupings that addressed more directly the overarching questions driving the investigation (Locke 2001).

After all of the data had been analyzed in this fashion within each innovation jam, we applied a similar process across each innovation jam. Finally, we integrated our analyses from each category into a set of core findings, building on relationships between first order- second order categories and theoretical dimensions. This iteration between data, concepts, and emerging patterns ended when we reached theoretical saturation. Definitions were developed at the different stages for the first and second order codes to help guide our analysis.

To add context to these findings, we constructed a chronological outline of the relationship between innovation jams and the organizational innovation process over the 10-year time frame. This allowed us to concentrate our attention on expounding the important similarities and differences in regards to changes in technology, process, and use across the innovation jams. No prior hypotheses were made as to what took place across the innovation jams. Relationship refinement was made

through revisiting the data in an attempt to find patterns between the innovation jams that could indicate changes.

From this analysis naturally occurring phase changes began to emerge. To avoid arbitrary partitions and to develop a systematic way to identify phase changes, we included circumstances recognized as significant by the organizational actants, changes that differed in innovation jam practices, and the strategic organizational perspective to leverage innovation jams. Partitions signal the end of one phase and the start of another- what are later call critical phase change events. In this step, triangulation of sources (innovation jam reports, interviews, field notes, and news and trade publications) helped us refine and strengthen our analysis in demarcating the phase changes that occurred over time. In the following section we present the interpretative framework that has emerged.

### **Evolution of Innovation Jams: Concept, Tool, and Service**

IBM learned to engage with innovation jams through a series of phases that we turn to illustrate the evolution of this new model of organizing innovation. Each phase built from the previous phase successes, which appear as a process, evolved in each attempt less from planned precisions and more out of continuously challenging the limits from where innovation can come from and the basic assumptions of innovation that IBM had previously held. These phases describe innovation jam evolution from an early conceptual phase that had rudimentary resemblance to today's existing innovation jam platform, to a tool phase- that helped management facilitate IBM's innovation process, and finally to a service phase, where innovation jams success in harnessing innovative activity from the periphery and untapped workforces enabled innovation jams to be provided to IBM's clients and in delivering innovation as a service. Figure 2 maps IBM's innovation jam evolution phases of concept, tool, and service to their degree of platform integration in IBM's innovation strategy, phase complexity, and source of knowledge. It emphasizes how innovation jams have been adopted and integrated into IBM's innovation strategy while complexity has grown in with technology advancements and the addition of new sources of knowledge as they incorporates external participants.

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Figure 1 about here

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While the different phases of evolution for innovation jams have overlapping attributes for innovation, they differ significantly in their enabling assumptions about innovation (Table 4). Here we contrast how the different phases in terms of the locus of innovation evolution, knowledge flows, actants, definition of, technological changes, and the enabling assumptions of the domain boundaries under which they occurred.

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Table 4 about here  
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Concept Phase:

An early form of innovation jams at IBM commenced in 2001 as a result of a companywide self-reflection initiative to drive innovation internally. IBM believed by tapping into its extensive workforce and by bridging people and departments, greater cross-fertilization of ideas and solutions could accelerate R&D. Initially devised to be a new medium to bring people and ideas together it was considered to be a first in large-scale communication referred to as a “massively parallel conference” (MPC) (Bjelland and Wood, 2008). World Jam 2001 was implemented through IBM’s existing intranet, as an attempt to capture and explore internal knowledge and information exchanged through this new method of organizing. Focus was on experimenting with a new medium in facilitating cross-functional dialogues throughout IBM.

Though the MPC was seen as an open space where participants can move from topic to topic and cross-pollinate ideas, it was seen as a way which individuals of all ranks could talk to each other, where communication was through forum posts and the organizational intranet primarily played the role as a knowledge repository of these posts. IBM realized early on the impact of this new collaborative work and its ability to build a sense of community with IBM. This early form of innovation jams was a first in providing a platform for communication across physical boundaries and hierarchy, while bridging time and space across (*Redefining Manager Interaction at IBM Report, 2002*) the company and world.

With almost 53,000 participants all IBM employees creating more than 268,000 posts (see for details), internal user support included a light technical cast maintaining a database for knowledge and information retention. Consequently, all intellectual property (IP) concerns were managed under standard business policies and maintained internally. Moreover, the concept phase of innovation jams

played one component of a larger innovation strategy for IBM and was still considered an experimental top-down approach to innovation because of the pre-filtering of information determining what information and knowledge was made available before and after an event. IBM would later cede more control over the information that circulated around and who would interact with one another as a result of IBM's willingness to continue to experiment with larger-scale communication platforms and advancements in technology that were occurring internally.

The overwhelming response to World Jam 2001 provided a foundation for future innovation jams to be held. Though World Jam 2001 participation and involvement was encouraging it was not free. Limitations included software not being fully implemented for participants, language support was only in English, and limited use of synchronous breakout technology and extra tools. For innovation jams to move into the next process phase several critical technological and phase changes were required. First, the existing technology and infrastructure was seen as an inhibitor to innovation jams use and a new independent platform was needed for scaling, enabling better computer-mediated support. Scaling allowed for future inclusion of external participants and subject matter experts who did not have access to IBM's existing intranet. Greater attention to user friendliness was considered to encourage even greater participation. Lastly, to manage a large-scale conversation with more effectiveness, data analysis tools were needed in order to sift through the large number of ideas and information that participants contributed. The overwhelming participation from World Jam 2001 encouraged IBM to explore new ways to virtually organize. Other spillovers occurred as a result of World Jam 2001 success. For instance, changes ensued with the adoption of companywide technologies such as blogs, wikis, and other online tools, along with cross-functional collaboration, creating interaction with unprecedented levels of richness not seen as IBM before.

#### Tool Phase:

Innovation Jam 2006 was a milestone in IBM's innovation process. It marked a turn in innovation jams from a concept to a management tool within IBM. It was within the tool phase that innovation jams are considered a key component in a larger management strategy for innovation. The tool phase for innovation jams invoked a new genre of corporate interaction that, by its very nature can only take place in computer-mediated virtual environment. Having already been established as an independent platform facilitating its transition from the concept phase, the tool phase embedded innovation jams in the organization as a management tool. This new computer-mediated environment provided greater structure for large-scale discussion through the extension of technology in the form of

data analysis and metric tools and pre and post-jam user support that allowed for greater idea generation and idea evaluation.

The transition into the tool phased also marked a first in allowing external collaborators to participate with innovation jams. Though participation was limited to family members of IBM employees it did offer a step to include external collaborators that were not employees of IBM. By giving external collaborators access to IBM's innovation jams; IBM could tap into an even broader range of contributors for idea generation and idea evaluating. It also marked a first for leveraging subject matter experts as facilitators and moderators in supporting the flow of discussion and in constructively developing issues raised within the innovation jam. Facilitators and moderators steered the dialogue, encouraged participation and deeper thinking, offering insight into the topic, or by identifying contributions that have the potential for immediate implementation.

The tool phase ushered in a more pragmatic outlook on open and collaborative work where innovation jams were seen as event and a catalyst for innovation that extended participation before and after an innovation jam was held. This helped create a buzz within IBM about innovation jams, where the term "*jamming*" was coined that referred to action of participating and contributing in an innovation jam.

Instead of a finite period of 48-90 hours to participate, Global Innovation Jams 2006 participation evolved in two separate parts. Steps included first breaking the innovation jams into a two stage jamming process. Stage one was used for idea generation and for discussing promising ideas. After several weeks then stage two was launched where executive and management reviewed the plethora of ideas by opening the innovation process further by creating a focused session for idea refinement. This gave management areas to hone in on, saving management time in preparing the next steps to connect top ideas with the needed financial commitment and the key actants to produce these ideas into real outcomes. *"A Jam at its heart is a management tool, a strategic communication tool. Early team members were from the corporate communications department. Today, the team is separate and part of the Enterprise Transformation unit under the CIO enshrined to harness IBM's culture for innovation."*

As the complexity of implementation and hosting innovation jams increased, challenges also surfaced forcing IBM to commit greater resources to large-scale collaboration. Unlike previous IBM innovation jams where preparation was not viewed as necessary, Innovation Jam 2006 and future jams

required familiarization with emerging technologies, which were described in on-line materials made available to all internal and external participants prior to the event (Herlander et al. 2007). Greater preparation was needed to support the jam facilitators and moderators, who prior to the innovation jam beginning, would be expected to review the innovation jam objectives and sit for training on the new independent platform.

Since Innovation Jam 2006 expanded participants to include family members of IBM employees, IBM added pre innovation jam rules. By making agreement to the jam rules a requirement to participate, IBM was able to establish a protocol to protect closely held IP to inhibit external collaborators from commercialized ideas elsewhere. It was within the tool phase that IBM adopts early forms of advanced mediated technology to build links between participants' contributions and analysis and its geographically dispersed workforce. Technological changes such as data analysis and metric tools were incorporated within innovation jams for measuring participation, contribution, and collaboration, while the use of virtual worlds provided an additional dimension and environment for interacting. The use of Second Life in Global Innovation Jam 2006 offered its 150,000 participants the unique 3D avatar experience of having a town hall meeting in Beijing's 'Forbidden City'. This virtual world<sup>ii</sup> experience was not limited to visualization, but also emphasized the importance and sense of "togetherness." IBM took this virtual world experience to corral the sense of being together, standing virtually shoulder to shoulder in the innovation process with other valued colleagues from around the world. These early stage visualization techniques gave innovation jam participants' access to a standardized level of representation of information at a more intuitive level.

Next, a second series of critical phase changes ensued that would help transition innovation jams from the tool phase to the service phase. First, changes how innovation jams were implemented and delivered were made. This included the adoption of more extensive pre and post preparation planning, allowing for webcasts, interests groups, and greater opportunities in connecting IBM employees and external stakeholders. IBM chose to strategically expand innovation jams offering to two separate platforms for large and more focused groups. This included the development of a scaled down platform called a MiniJam for a more focused discussion. Second, IBM began viewing innovation jams as a transformational intervention rather than a tool to be applied periodically. As innovation jams were gaining legitimacy as an integral part of IBM's global management strategy, they provided a platform for engagement, where technology and organizational relationships internally and externally could intertwine. And finally, the addition of jam rules and robust real-time data analysis would help

facilitate the transition of innovation jams from an internal management tool at IBM to a service of innovation to its clients by securing legal boundaries for large scale collaboration.

Service Phase:

By experimenting with innovation jams in the concept and tool phases, IBM learned to embrace its workforce as source of innovation, creating a platform to address challenging problems IBM and society faced. Innovation jams have evolved into another service IBM provides to its clients and customers, making this internally developed platform available to organizations that seek to harness their workforce and organizational network for innovative means. The service phase took advancements in the tool phase to a new level. Technological advancements within IBM gave way to more powerful tools for the intensification of innovation by integrating advanced IvT further into the innovation jam platform for accelerated decision-making and action.

Participation moved from IBM employees and family members to an even broader spectrum of stakeholders. The intent was to build tighter relationships internally within IBM across business units and externally with business units and stakeholders. External knowledge sources flowed from trained facilitators and moderators outside IBM, academics, subject matter experts, suppliers, customers, governing bodies, politicians, and legal advisors each playing a role in the orchestration of innovation jams for greater dialogue. This change drew on the collective wisdom of these valued stakeholders in the innovation process to gain new perspectives on problems and challenges IBM and its clients faced. In turn it helped delegate roles to an audience of people in search of innovation across this wide network that was made within IBM prior to the service phase.

With the search for innovation being pushed outward, IBM began focusing on segments of their network of innovation jam participants. IBM focused more attention on the audience it was targeting in order to direct specific topics and questions to those who may provide answers. With the development of the MiniJam platform, specific audiences could be targeted for accelerated decision-making and action for a focused discussion. For example, this allowed IBM to target managerial problems to its management workforce or engineering problems to its globally dispersed engineers.

To complement IBM's wide and focused network of innovation jam participants, IBM began incorporating more sophisticated technological tools in innovation jams. These technologies known as IvT's, help bridge participants creativity and insight to the innovation process. IvT played a critical role in supporting innovation jams by using and manipulating data for visualization and understanding that

underpins the innovation process within innovation jams. IvT brought new ways for participants to organize innovation and in understanding the on-going dialogue. One way IvT support innovation jams for IBM was through the priority to deliver real-time analysis allowing the pulse of the different conversations to be monitored. Advancements in technology moved from collecting and storing to transforming and visualizing information in real-time and overtime. Past phases limited information to static intranet pages or to basic analysis, while it was through the implementation of sophisticated real-time text analysis and data mining tools in the service phase that enabled information to become more dynamic. As information became more fluid through its visualization from data analysis tools it allowed dynamic themes to be followed as it happened in real-time- moving the innovation jam service stage into one iterative stage of insight. Analytical tools adopted from an IBM Research group provided the needed technology for robust analysis through the use of COBRA- Corporate Brand and Reputation Analysis. Topics were able to be refined using themeclouds that visually represented emerging trends and frequent words use that were commonly associated together. This allowed participants to add to the dialogue they were interested in faster and without the arduous task of reading from the forum posts that could number in the thousands.

Figure 3 is a themecloud of how analysis of jam forum discussions can be visualized using COBRA. It shows how the frequencies of words and word associations have changed overtime within the innovation jam. Figure 3 shows a sample of how the themecloud changes from the start of the jam and as it progression throughout the innovation jam.

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Figure 3 about here  
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### **Implications and Conclusions**

Our study aimed to understand, using a longitudinal framework the relationship between ten dimensions and innovation jams. This study contributes to elements of theory and practice particularly as organizations choose to leverage new technology to implement open innovation practices. The study addresses some of the obstacles organizations face in implementing open innovation practices identified within the literature that can be addressed by technology as it evolves from conceptual stages with little predefined use to an embedded system for innovative activity enabling.

Albeit each research methodology has its own drawbacks in generalizability our research does provide value in stimulating new insights, while the papers contribution and approach are indicative of how organizations learn to engage with an emerging model of innovation through their development and practice. The use of grounded theory approach in this study of innovation jams overtime was particularly fitting, offering organizational elements IBM has used to develop and adopt, that to date have largely been overlooked.

Constituted through the continuous development and use of innovation jams at IBM, reciprocal influences of social and technical practices emerge. IBM's use of innovation jams has grown its innovation process by incorporating a broader range of contributors to its innovation process and beyond inter-organization projects where each employee is a potential source for innovative ideas in driving IBM's future growth.

This study contributes to the open innovation literature by suggesting an evolutionary perspective of innovation jams. Using the locus of innovation evolution the authors identified several attributes that contributed to the changing patterns of evolution through different phases. It is through innovation jams and supporting IvT that have been instrumental in assisting IBM's open innovation innovators strategy, by increasing its openness and ability to external sources of knowledge, while creating a common platform for integrating its globally dispersed workforce through information sharing, problem-solving ability, and knowledge search and representation in the innovation process. IBM's approach to innovation jams sit on the assumption of action- not stability in being a leader in providing innovation as a service. IvT create a platform where greater fusion between humans and technology that assist them in the innovation process.

Through their use, innovation jams have developed legitimacy as a technology and as a service through the considerable interest and attention first within the organization and then through different levels of the organization and finally as external participants were invited. It is important to realize that competitiveness and productivity major impacts of technology, such as innovation jams may take some years if not decades after introduction, where effects of these technologies and their likelihood to evolve may not yet reflect in productivity figures (Dodgson, Gann, and Salter 2005) Next, this study has shown how new forms of technology such as visualization or sophisticated data mining techniques and their capacities can be integrated with large scale collaboration technology in the innovation process that reflects the new types of collaborative environment employees work in.

It appears that innovation jams are moving into a fourth phase of development where innovation jam events are being linked to other social networking tools and sites to continue the dialogue. Groups are forming on independent social networking sites that give individuals an opportunity to continue the dialogue in other virtual environments beyond the hosted innovation jam event. Connections that were made within the innovation jam appear to be spreading across the web, keeping collaborating in tacked regardless of geography, businesses, industry, and time possible but more importantly keeping the passion for and discussion on a topic alive.

Finally, this study suggests that the engineering approach lead by Gerstner (2002) in IBM's turnaround has continued today through the micro practices of experimenting with the application of innovation jams and IvT to drive innovation as a service. This is interesting because it suggests that IBM's development of innovation as a service that was previously thought (Chesbrough 2011 p. 144-145) to be to be occupied by only small niche firms with small markets opportunities may face competitive pressures not only from other small niche firms or intermediaries, but from large firms experimenting to control innovation services of markets in technologies or ideas. This may indicate the adaptive business models that innovation service firms have-, which have been a source of their competitive advantage (Chesbrough 2011), maybe adaptable within large organizations.

This transition to innovation as a service has been anchored by experimenting with technology in a co-creation process with IBM's employees, suppliers, customers, governments, and many other external knowledge sources. Experimentation with innovation jams has helped IBM integrate inputs from various important organizational actors and departments in the innovation process, gradually incorporating external knowledge sources. Technological experimentation includes the use of internally developed IvT such as virtual worlds and robust data analysis software and its capacity to standardize method to represent complexity simply. From this, IBM has been able to aggregate inputs in the form of innovation jam participants' contributions to solve complex problems, while at the same time incorporating external inputs in its practice of open innovation. This evolution of innovation jams as a viable platform to service its clients has led to its internally developed experience of innovation jams to be facilitator of internal knowledge and expertise of its workforce to be an external problem-solving engine outside of IBM.

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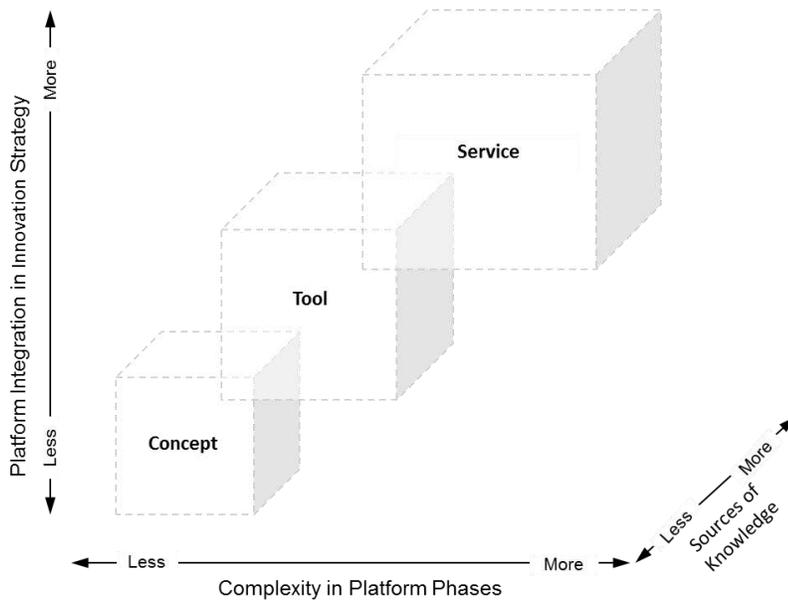
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Source of Data	World Jam	Value Jam	World Jam	Habitat Jam	Global Jam	Innov. Jam	SmWrk Jam	GIPulse Jam	SocBus Jam
	2001	2003	2004	2005	2006	2008	2009	2010	2011 →
IBM Innovation Jam reports	*	*	*	*	*	*	*	*	n/a
News & trade publications	*	*	*	*	*	*	*	*	*
Participant observations & field notes							*	*	*
Interviews & correspondence†	*	*	*	*	*	*	*	*	*
Jam forums							*	*	*

† Interviews and correspondence were about Innovation Jams at IBM and conducted between 2009-10.

**Table 1. Chronology and Context of Data Collection**



**Figure 1. Mapping IBM Innovation Jams Platform Integration, Complexity, and Sources of Knowledge**

**Table 2: Details on data collection**

Source of data	Type of source	Type of data	Use in the analysis
<b>IBM Innovation Jam Reports</b>	Primary	8 IBM Innovation Jam reports*. Innovation Jam reports consist of internal and public reports about each IBM innovation jam events. These reports are produced by IBM and detail information on the innovation jam platform, statistics about the jam and forums, participants' information, processes around the implementing, facilitating, and hosting of the innovation jam, and the results of the jam.	Familiarize with each innovation jam over the 10 year period since inception. Provide a longitudinal perspective of IBM's view on innovation jams providing rich description and statistics of each innovation jam. Detailed the technology and event from a company perspective, providing key findings and outcomes. Grounded the understanding of innovation jams as they occurred in time.
<b>Local, International News &amp; Trade Publications</b>	Primary	145 news and trade articles about innovation jams were collected published from February 2001 to February 2011. This time period covered three months prior to the first innovation jam at IBM and up to the latest innovation jam held. Articles contained either (1) public discourse about the company and the nature of the innovation jam being held, or (2) reflections on the innovation jam from participants after the innovation jam event.	Enrich our understanding through jam participants and external perspectives overtime on the jam experience, technology use, issues and limitations experienced and overall feeling that participants expressed.
<b>Participant Observations &amp; Field Notes</b>	Primary	Participation in 3 IBM Innovation Jams (SmartWork Jam, GlobalPulse Jam, SocialBusiness Jam) held in 2009, 2010, and 2011. Over 70 hours of participant observation was documented resulting in a total of 100+ pages of field notes, double-spaced. Participation in pre and post jam events made for each of the 3 innovation jams.	Capture direct experience and understanding of the actual process and practices participants use when interacting with the technology and social event to corroborate the emerging framework.
<b>Interviews &amp; Correspondence</b>	Secondary	In-depth semi-structured interviews where made with the IBM Program Director and the founder of the Jam Program Office and Collaborative Innovation and Chief Strategist at IBM. Interviews and correspondence were made over a 1.5 year period. These were recorded, transcribed and confirmed for authenticity by interviewees.	Familiarize with the history, the content, the structure, and the management of the technology from an "insider" perspective to improve our understanding of innovation jams and jam event implementation in triangulating evidence derived from innovation jam reports and participant observations.
<b>Jam Forums</b>	Secondary	Forum data on 3 innovation jams including: posts, participant information (ex. location, age, gender, affiliation, job role, language) and content.	Expanded our understanding with the jam data providing a look into forum, thread, and reply structure to triangulate and integrate the evidence deriving from innovation jam reports and participant observations.

\*The internal SocialBusiness Jam Report was not available at the time of this study.

	<b>World Jam 2001</b>	<b>Values Jam 2003</b>	<b>World Jam 2004</b>
<b>Dates</b>	May 21-24	July 29- Aug 1	Oct 26-28
<b>Time</b>	72 hrs.	72 hrs.	54 hrs. + 7 days of rating ideas
<b>Number of Forums</b>	10	4	6
<b>Number of People</b>	52,595 participants	22,007 participants	56,870 participants
<b>Number of Posts</b>	268000 posts	9,337 posts	32,622 posts
<b>Purpose</b>	New medium for bring people and ideas together, mass parallel conference (MPC)	Values and beliefs defining	To identify actionable ideas to accelerate profitable growth, unleash productivity, innovation consistent with IBM Values
<b>Knowledge location</b>	Internal employees	Internal employees	Internal employees
<b>Investment/ Motivation</b>	Cost estimated to be in the millions of dollars	Intrinsic motivation to define organizational values	Intrinsic and extrinsic, Committed \$100 million to implement 35 ideas
<b>Focus</b>	Large scale communication	Aligning employees in a common purpose	Productivity of workers and practices
<b>Fit</b>	1 component in larger collaboration strategy taking 10 months of planning	Exploration	Linked values to practices
<b>Technology/ Change</b>	Intranet, Database of existing knowledge available to all	Independent Platform (1st form of independent Platform)	First for pre and post jam events, Enlisted first-line managers to hold pre-jam discussion , moderated by 3 senior leaders that suggest hot topics, Ratings site translated into 11 languages for 7 days
<b>Issues</b>	Software not fully implemented, conversations only in English, use of site was difficult, few people used synchronous breakout technology or extra tools	Implementing platforms to IBM and newly acquired business unit	Rudimentary ability to post and analyze forums mostly directed at searching posts, 65% participation from Americas

	<b>Habitat Jam 2005</b>	<b>Global Innovation Jam 2006</b>	<b>Innovation Jam 2008</b>
<b>Dates</b>	December 1-4	July and Sept. 12-15	October 5-9
<b>Time</b>	72 hrs.	Two 72-hour sessions	90 hrs.
<b>Number of Forums</b>	7	10	4
<b>Number of People</b>	39,000 participants from 158 countries	150,000 participants from 104 countries and 67 participating companies	60,200 participants from 80 countries
<b>Number of Posts</b>	4,000 pages of posts	29,499 posts	32,000 posts
<b>Purpose</b>	Solving some of the world's most critical urban issues	Combine new technologies and & real world insights to create market opportunities	Building the "Enterprise of the Future"
<b>Knowledge location</b>	External Event (leaders of government, business and academia to youth, women's groups, citizens from impoverished communities around the world)	IBMers and their family members and IBM's customers and business partners	>1000 companies, personal commitment from CEO
<b>Investment/ Motivation</b>	Intrinsic and for a greater good	Tightening of relationships with external networks, \$100 Million to bring 10 ideas to reality (Ideas as currency)	Follow-up to CEO study conducted earlier
<b>Focus</b>	Critical issues related to urban sustainability	Immediacy in outcomes from ideas	Developing approaches to monitor, measure, manage, and transform enterprise
<b>Fit</b>	Sponsored by the Government of Canada, UN-HABITAT & IBM. Taking 3 months to market	Integral part of IBM's global management strategy	Leadership and commitment with direct conversations between senior management and the employee population
<b>Technology/ Change</b>	Eclassifier text mining used, kiosks for participating in developing world	3D virtual world meeting, Town hall meeting in China and in Second Life of the Virtual Forbidden City, 2 part process of jamming- 1. generate ideas 2 evaluate them	Using Jams as an iterative process for outcomes
<b>Issues</b>	Language barriers and technology divide limited impoverished communities	Lengthy break between jam event and idea generation and rating and reviewing phase	Greater measures for IP protection using real-time data analysis

	<b>SmartWork Jam 2009</b>	<b>Global Pulse Jam 2010</b>	<b>Social Business Jam 2011</b>
<b>Dates</b>	September 16-18	March 29-31	February 8-11
<b>Time</b>	72 hrs.	72 hrs.	72 hrs.
<b>Number of Forums</b>	4	10	5
<b>Number of People</b>	2,000 participants from 68 countries	6700 participants from 150 countries	2,700 participants from 80 countries
<b>Number of Posts</b>	5,000 posts	9,600 posts	2666 posts +600 tweets
<b>Purpose</b>	How business and people can work smarter together	Social issues facing the global community within the fields of science and technology, entrepreneurship, and human development	Exploring the value of social technology in business

<b>Knowledge location</b>	Engaging industry and university thought leaders, clients, Business Partners and IBMers	Development professionals, NGOs, government leaders, Diaspora community members, students, academic leaders, think tanks	corporations, academic institutions, nonprofit organizations, government agencies and 45 external invited guests
<b>Investment/ Motivation</b>	Exploratory to empower people for change	Intrinsic	Exploring new approaches for the next era of business
<b>Focus</b>	Creating a collaborative and connected business environment	To improve the ways in which global citizens work to solve our most pressing development needs	How to mitigate potential risks and management system required to drive organizational transformation
<b>Fit</b>	Learning how to influence change	Sponsored by USAID with guidance from National Security Council, Offices of Social Innovation and Science and Technology Policy at the White House	explore the key issues and challenges of becoming a social business
<b>Technology/ Change</b>	Mini jam was used, IMPACT 2010 Conference held as follow-up to creative solutions developed in jam, Quick polls that were used to quantify participant's views on questions related to the forum topics. (low tech form of collaborative decision making) 10 tips for jamming included	Mini jam was used over 100 facilitators, continued discussion through Facebook after jam closed, Real-time demographic monitoring, Social media channels such as Facebook and Twitter for in promoting jam, multiple roles in facilitating- facilitator, host, featured guests	Mini jam was used, concurrent discussion via Twitter
<b>Issues</b>	Outcomes limited to ideas and sentiment	English dominant language, Arabic was next with 9% , lack of translation capability- participants could post in any language but not possible to carry on a multi-lingual conversation,	n/a

**Table 3. Historical perspective of Innovation Jams implemented at IBM**

<b>Attribute</b>	<b>Concept</b>	<b>Tool</b>	<b>Service</b>
<b>Actants &amp; Interests</b>	IBM employees, intranet team	IBM employees, executives, managers, internal subject matter experts	IBM employees, trained facilitators, academics, stakeholders,
<b>Definition of Jams</b>	New medium to bring people and ideas together	Tool to align employees for a common purpose and structure for large scale discussion	A virtual round table to stimulate ideas, drive innovation around specific topics and collaborative solutions
<b>Goals of the Phase</b>	Capturing and exploration of new medium	Generation and evaluation	Influencing complex systems for accelerated decision making and action
<b>Knowledge Location</b>	Internal	Broad and internal	Internal and external with predetermined targeted audience
<b>Critical Phase Change</b>	Independent platform needed (scaling), inclusion of external knowledge and participants,	Event, Pragmatic outlook, not anonymous, 2 part process of jamming- 1. generate ideas 2 evaluate them	Transformational intervention, extensive pre and post preparation needed
<b>Requirements</b>	Intranet	Independent Platform	Pre and Post Jam events, multiple platforms
<b>Technological Changes</b>	N/A	Data analysis tools,	Robust real-time metrics and reporting, multiple platforms
<b>Methodology</b>	Top-down approach, information is pre-filtered determining what is available	Early stages to building a an egalitarian approach	Bottom-up approach supported with parallel forces from external knowledge
<b>Intellectual Property Risk Management</b>	Knowledge shared only with internal employees and maintained internally	Pre rule agreement needed, maintained internally	Pre rule agreement from all parties needed, text mining software and reporting for risk management
<b>Characteristics</b>	Building a sense of community	New medium for sharing and rating	Non-competitive active discussion, broad participation and legitimacy, Enabling culture change

**Table 4. Representative patterns in locus of innovation jam evolution**

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**Figure 3. Innovation Jam themecloud changes overtime**

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<sup>i</sup> See Dahlander and Gann (2010) for a review of openness in open innovation research.

<sup>ii</sup> See Dogdson and Gann (*forthcoming*) for details on the evolution of virtual worlds at IBM.