Urban Design Competition versus Design Interactivity and Communicative Quality Judgment

Reza Kazemian

THINKING AND PERFORMING DESIGNERLY

One of the most concise and comprehensive definitions of the concept of design as a verb is presented by Terry Winograd and Fernando Flores (1986) where they see design as the “interaction between understanding and creation.” Design can also be seen as a “reflection-in-action,” an incessant and dynamic learning by making and making by learning process, a “reflective conversation with the situation” (Schön 1983; 1993).

By its nature, a great portion of design practice takes place from several sources of knowledge that are not always known explicitly; through tacit knowledge (Polanyi, 1962) and in dialogue with feasibility, viability, and availability of design tools, information, requirements, methods, theories, and practical skills. In other words, design is an interaction with intangibly situated problems. Design is an orchestrated art of making (Dunin-Woyseth 2001) out of complexity, uncertainty, instability, uniqueness, and value-conflicts (Schön 1983). Along the reciprocal course of design practice, a repertoire of accumulated knowledge and experience compels its presence and transform turmoil of choices towards order and in all probability to a useful and appreciated artefact. During the design processes, designers constantly oscillate between chaos [disorder], logos [idea], oratio [speech, thought] and ratio [text, image, reflection, product]. Design is targeted to tackle wicked problems, to resolve value conflicts and add to the quality of life often in ill-defined and ill-structured situations (Cross,1984).

Herbert Simon (1996) in his seminal work, The Sciences of the Artificial, gives a broad definition of design concept. He asserts that all practitioners are designers because they produce artefacts of one kind or another. Practitioners produce artefacts like buildings, urban patterns or industrial products. They also produce artefacts like legal arguments, strategic business plans, educational curricula, medical diagnoses and so forth. Simon further declares that, “everyone designs who devises courses of action aimed at changing existing situations into preferred ones. The intellectual activity that produces material artefacts is no different fundamentally from the one
that prescribes remedies for sick patient or the one that devises a new sales plan for a company or a social welfare policy for a state. Design, so constructed, is the core of all professional training; it is the principle mark that distinguishes the professions from the sciences (Simon 1996, 111).

In line with such broad perspective, Thomas Mitchell for the preface of the second edition of John Chris Jones’ influential work, Design Methods (Jones 1992) summarizes more far-reaching definitions of Jones’ design perception. The definitions are considered through different angles, clustered into at least five different categories that are:

- **Design as participation**, the involvement of the public in the decision-making process.
- **Designing as the process of devising**, not individual products but whole systems or environments such as city, airport, transportation, hypermarkets, educational curricula, broadcasting schedules, welfare schemes, banking systems, computer networks.
- **Design as creativity**, which is supposed to be potentially present in everyone.
- **Design as an educational discipline**, that unites arts and science and perhaps can go further than either.
- **Designing without a product**, as a process or way of living in itself.

The essential question arises here is how design competitions can cover, judge, and address these multifaceted categories of design. The anonymity aspect of architectural competition and its vast reliance on and confidence in professional knowledge can impose many players to stay outside the playground and just watch what a few creative designers suggest the best architecture or urban design project to them. The main issue is how a few expert jurors can appropriately influence a massively complex of cultural, social, and societal system which is extremely difficult to understand and of which only a very small fraction of it can be controlled.

Donald Schón (1983) in *The Reflective Practitioners* expresses his serious concerns on the crises of professional confidence.

Indeed, some of the solutions by professional experts were seen as having created problems as bad as or worse than those they had been designed to solve. Just as urban renewal had emerged in the early sixties as a destroyer of neighbourhoods, its unexpected consequences attributed by critics like William Alonso to the weakness of its underlying theory, so in fields as diverse as housing, criminal justice, social services, welfare, and transportation, the most promising solutions, painstakingly worked out and advocated by the experts, came to be seen as problematic (Schón 1983, 10).

Yet the status protection and confidence of profession is a quite resistible force among those who are involved in competition enterprise. For instance, Hossbach and Lehmbas (2006) in *The Architecture of Competitions 1998-2005*, vividly illustrate such attitude where they address the competition through its profitability dimension. They write, “Architectural competition contributes to a building profitability in exceptional ways because it prioritize superior architectural quality and therefore tends to produce results that enjoy a higher level of acceptance by both the general public and the architectural community” (Hossbach 2006, 38). Unfortunately, neither the building profitability nor the exceptional way nor superior architectural quality, and not even a higher level of acceptance are clearly defined in their claim.

In some countries like Finland, the awareness of uncertainty, confidentiality, complexity, instability, and value conflict in architectural competition is seriously felt and some solutions are under consideration. It is leading to the emergence of some reforms in the legal and procedural structure of their competition system, towards giving some possibilities to younger architects and urban designers as well as towards involving citizens in the decision-making process. However, still the existing professional confidence and prestige are there as barriers that should be flattened by legal and procedural reforms. A new scientific ground of professional knowledge and consciousness through research, education, and practice is needed to sort out: how much experts really know and how ought they to act? And, as Winograd and Flores convey, designers need to establish a theoretical basis for looking at what artefacts do, not just how they operate (Winograd 1986).

**THE QUESTION OF URBAN DESIGN QUALITY**

Design as a verb has been a continuous value-adding struggle along the history. Design is a specific type of value creation and quality management of products aiming towards finding a tamed, ethical-aesthetical solution to a conflicting reality. A design process takes place through (re)organising existing structures, spaces, functions, meanings, norms, processes, objectives, systems and subsystems.

In order to understand the phenomena governing the creation of a cityscape as an artefact, our concerns should not be restricted only to the function of city and the methodology of urban design; we need to elaborate the question of design impacts in relation to the long term quality aspects. We should see it in a wider oscillating dimension, through the broad question
of how a society engenders and conceives new values and norms that their existence in turn may alter the quality of life of the society.

In order to develop such a comprehensive political-theoretical basis for quality judgment Winograd and Flores (1986) argue that, “we must step back and examine the implicit understanding of design that guides [societal and] technological development within our existing tradition of thought. Only by unconcealing that tradition and making explicit its assumptions can we open ourselves to alternatives,” to new design methodology, new design theory, and new design policy that flow from those alternatives.

We therefore have to illustrate the kind of queries we have in mind by seriously asking ourselves what is quality and how is it associated with artefact? The first thing to recognize is that different answers grow from the concerns of different preferences, different knowledge, different interests, different experiences, and different values. These given answers and reflections might all be perfectly valid, arising in particular domains to which the theories of design and quality are concerned (Winograd 1986). However, the most significance of a design innovation, a creative piece of work, or a new artefact lies on its impacts in a long term; on how it fits into and changes our thoughts, our ways of life, our communities, our environments, our networks, and the political systems and social behaviours. Again, the prior challenge should be to consider what artefacts do, not just how they operate. With this question we may release ourselves “from the tyranny of imposed ideas and enable each to contribute to and act upon the best everyone is capable of imagining and doing” (Jones 1992). And with this question we may take our prime and essential steps towards a democratic, safe, and sustainable society.

As the use of a new artefact, a new building, and a new built environment changes our practices, our norms, our concepts, and our understanding; that new way in turn creates changes the world we construct. In order to become aware of the impacts architectural design have on society we must reveal and review the implicit understanding, changes of our values and our thought, our work organisation, our innovation culture, our understanding of quality, and our concepts that serves as philosophical background for the future developments of our society (Winograd 1986). This provides a challenging task to every one of us; an immense responsibility that forces architects and urban designers as well as the architectural competition organisations to be particularly concerned with the impacts of their judgements and the effects of the dominating system on the lifeworld. (Habermas, 1987) It requires reviewing the essence of our tasks and limitations in our professional knowledge; to constantly develop and exercise new theories and methods based on proactivity, interactivity, transparency, and intensive dialogue.

EPISTEMOLOGY OF PRACTICE - DESIGN METHODOLOGY
Design methodology even known as the “science of design” is a relatively new discipline in academia. It is barely a half century old. The first international conference on Design Methods held in London in 1962, can perhaps be regarded as the formal way to give a birth certificate to the design methodology movement (Cross 1984). The first insightful works in design methodology appeared during the early 1960s and the 1980s by many pioneer figures among them Herbert Simon, Morris Asimow, Christopher Alexander, John Chris Jones, S. Gregory, Leonard Archer, Bryan Lawson, O. Akin, L. J. March, Donald Schön, Nigel Cross, Geoffrey Broadbent, and Peter Rowe.

Design methodology deals with the systematic reflection-on-action of a design course which is increasingly becoming an integral part in creative processes of all design family. Design methodology is a highly practice-based research enterprise working towards a research-based design practice. By suggesting an appropriate design method, designers can be able to select, nurture, and build up a design idea at its early stages, to better structure and manage a design process, to understand the users, to identify apt approaching plans and to create the right conditions for their use and impacts. With a fitting design method, practitioners can better manage their design organization and better deploy their internal and external communicability and interactivity. It can even make easier to work with openness and share the viewpoints across and beyond their design teams.

S. Gregory in The Design Method (1966), describes design methodology as the science of design which is concerned: “[…] with the study, investigation and accumulation of knowledge about the design process and its constituent operations. It aims to collect, organize and improve those aspects of thought and information which are available concerning design, and to specify and carry out research in those areas of design which are likely to be of value to practical designers and design organizations” (Gregory 1966, 34).

Nigel Cross (1984) defines design methodology as “[…] the study of the principle of practices and procedures of design in a rather broad and general sense. Its central concern is with how designing both is and might be conducted” (Cross 1984, vii). Cross outlines the territorial tasks of the design methodology in the following areas that are (Cross 1984):

- the study of designers work and think
- the foundation of appropriate structures for the design process
- the development and application of new design methods, techniques, and procedures
- reflection on the nature and extent of design knowledge and its application to design problems
- innovative design research methods
According to a group of design researchers, there is no need of design until different values or tendencies disagree with each other. Designers manage to cope with the conflicting values by (re)arranging and getting control of the organisation of relationships that can prevent value clashes (March 1976; Alexander 1976). One who wants to design an artefact has to acquire sufficient knowledge about very possibilities and limitations in solving a specific design problem including the long term behavioural impacts and social acceptance of artefacts. A conscious design process requires a methodology, a designerly way of thinking and performing, and an insight into the particularities hidden in different socio-cultural settings. It is essential for a designer to meticulously recognize the context, the conflicting principles and “all” implications of design in that culture.

In fact, considering what design is, is a prime step and necessary ground for explaining and understanding what design does; We should clarify first what design is (Lundeqvist 2005) in order to understand what design does prior of arbitrating and scrutinizing why, where, when, and/or for whom?

**URBAN DESIGN QUALITY – AN ESSENTIALLY CONTESTED CONCEPT**

Building cities belong to the polysystem domain of designerly thinking where several repertoires of heterogeneous ideas, processes, contexts and texts correlate with each other and shape complexes of our socio-spatial entities.

Cities are the most sensitive recipients and the leading carriers of values and norms of civilizations. They are the vital ideological, cultural, political, economic, social, and technological indicators of societies. Cities take shape through different cumulated values and when those (often tensional) values alter, the meanings, forms, contents, norms identities and functions of cities will be affected as well. These constantly transformational oscillations should be conceived as reciprocal spirals where cities also generate and inaugurate new concepts, new texts, new meanings, new norms, new values, and new knowledge into our life. Cities are the hubs of communication networks; where people constantly processing information to knowledge and knowledge to new values and virtues.

In the fields of social sciences, political philosophy and political epistemology many conceptual disputes and confusions arises in the nature of knowledge, processes, presuppositions, foundations, extent and validity of particular notions. Walter B. Gallie (1964) classes these specific types of conceptual problems as *essentially contested concepts* where there are tangible and prevalent agreement on the abstract and principle core of a particular perception itself but, at the same time, there are continuous disagreements and quarrels going on about what might be the best property, instance and recognition of that notion. According to Gallie essentially contested concepts “[…] inevitably involves endless disputes about their proper uses” and these disputes “cannot be settled by appeal to empirical evidence, linguistic usage, or the canons of logic alone.” Typical examples are concepts such as democracy, culture, people, law, justice, ideology, religion, and, among the others, urban quality. In order to minimize disparities among opponents and surface the path for the development of the essentially contested concepts, Gallie suggests a series of democratic conditions and criteria for evaluating the contentedness of such terminologies.

In fact Gallie’s theoretical framework seems sensible and valid, that is borrowed, extended and applied to new domains of study such as arts, aesthetics, design, and quality. Obviously, the way Gallie presents his arguments shows containing potentiality that breaks down the old frames of conventional understanding of design quality and takes it from design offices out and elevates it as a matter of political concern to be discussed openly in different philosophical and political arenas.

In this sense urban design is a highly interrelated making by learning and learning by making discipline through which we explore and support different ideas, theories, and methods to identify socio-spatial value conflicts, to confront environmental challenges, to create or redeploy models, to gain foresights, to articulate scenarios, to visualize possible solutions of a future, and to shape the world around us.

Urban design belongs to extremely complex and responsive decision-making process often in ill-defined, ill-structured, unstable and uncertain situations. In order to minimize uncertainties, to reduce present and future social tensions, to prevent environmental pitfalls and complications, to
promote living quality and standard, and to safeguard overall sustainability aspects in cities and their hinterlands, urban design needs to be studied meticulously and has to be strategically examined through cross-disciplinary perceptions.

Urban design is a field of study deals with a wide range of aspects, factors and policies of the built environments in cities. It is mainly directed towards activities providing comprehensive plans and formulating guidelines, policies and strategies to meet the social, economic, and physical needs of communities.

Urban designers do analyze social and technical issues; scrutinize the existing conditions and future transformational trends in urban settings. They create foundation and outlines for a wide range of activities in cities including land-use control, economic development, elevation of social prosperity, protection of cultural and natural resources, development of infrastructures, population control, employment opportunities, health-care, social integration, public housing, transportation system, energy efficiency, crime prevention, socio-environmental safety.

Urban designers are dedicated to resolve socio-spatial value conflicts usually through creating objective and firm artefacts in urban settings and urban features. They are mainly concerned with the tangible textures, geometrical arrangements, physical appearance and functionality of towns and cities. They deal with shaping socio-spatial interactions and communications that take place among people in buildings, in neighbourhoods, and in cities. They attempt to use and invent building technologies and visualize expressive meanings with new materials in order to create a physical world rich in diversity and experience. Urban designers have to be aware of sustainability issues in their professional endeavours. They have to deal with the aesthetical and functional organisation of practical realities in the city contexts. They should particularly work with translation and resolution of value conflicts through crystallising new design ideals and artistic visions when creating urban public spaces and urban architectures or when revitalizing valuable historical and cultural heritages of built textures in cities.

THE ESSENCE OF DESIGN COMPETITION

Understanding the conceptual and contextual disparities of reflection-in-action and considering the consequences of value differences of quality criteria and preferences in an urban design project are among the fundamental moments for creation of a successful urban environment. Among the most objectives of a quality-rich urban design project is its high level of interactivity, transparency and acceptance; a project that can be confidently received, conceived and appreciated by different actors, different interest groups and specially different end-users. It is widely accepted that these interactability aspects of the design project can minimize insecurity, instability, and the risk factors. It can establish a valuable scheme to create superior socio-spatial standard, enjoyable environments and rich experiences.

Along the history, urban design competition is recognized as an efficient and leading assessment system to promote, assure, lead and appreciate spatial qualities in cities. Urban design competition is considered as one of the most prevalent means in the creative processes of major public and private urban development projects. It has been deployed as a reliable bridge-making instrument and communicative channel among experts and their clients. Indeed, urban design competition can provide partaking opportunity to talented urban designers to exhibit the best of their professional skills and ideals in the real world and supports them to be fairly judged and rewarded publicly.

The knowledge obtained in conjunction with our recent study of architectural competition system in Europe indicates that urban design competition is a professionally respected but quite closed evaluation enterprise; although was thought to be built upon impartiality and democratic premises (Kazemian et al. 2007). However, by its nature, the embedded confidentiality of the judgment processes keep the system away from gifted young designers with limited resources and possibility of capital investment, from public opinion and their often valuable contributions. This dualistic character of urban design competition can ground a real thread to democratic foundation of society, to public interests, cultural capital, socio-economic structure, and sustainability as large.

Astonishing enough, despite several serious shortcomings in the competition system, the professional organisations are rather silent and protective. Research on potentiality to reform such an important professional institution – the competition system – towards more openness and better communication with broader spectrum of designers and public stakeholders is very scarce, insignificant and limited. Studies to find out ways to involve talented architects and urban designers in public requirements and interests in competition processes are needed. Guidelines on connectability and interactivity of values, meanings, preferences and attitudes of citizens and local inhabitants with urban designers, developers and competition jurors are needed. Through investigating the plausible connectability among different perspectives in prize-winning urban design projects we should know to what extents the complex societal impacts of a prize-awarded urban design project can be judged, rectified and realized while relying only on the outcomes of a few professional jurors at competition committees. What are
the essential quality criteria that are being prioritized by citizens and jury members? How is possible to promote the role and position of the end-users in such judgment processes? How are the end-users’ needs, values, skills and visions being met by the prize-awarded design solutions? How can the cycles of a quality judgment and selection process of an urban design project be opened to public while maintaining and stimulating the integrity, efficiency and fairness of the competition system?

The most recent information in the structure and procedure of architecture and urban design competitions are derived from a multidisciplinary study at the School of Architecture and the Built Environment of the Royal Institute of Technology (KTH) in Stockholm. The group is consisted of scholars with cross-disciplinary background committed to intellectually support, inspire, discover and sustain capabilities to bring about a higher level of efficiency in architectural competition system. As the core of its philosophy the group endeavours to bridge between the methods and theories of making processes and making artefacts in order to grasp, manage, and promote a holistic development of urban design based on the utmost desired quality criteria and standards.

The studies introduce detailed comparisons on traditions, organizations, judgment processes and quality criteria set up by the organizers of competition. Generally saying, in spite of many similarities in the competition cultures in the European countries, they still have several significant differences in their orientation, regulation and procedure. For instance, while a large portion of competitions is ordered by private sector in some countries, but different ranks of governmental institutions and public sector are visible as the major clients in other countries.

Responding to our questionnaire about the main responsibility and mission of the jury, the absolute majority of the informants (architect jurors) have seen the client’s or sponsor’s interests as their foremost task. The informants assumed they are not obliged to follow the project to its end because their mission will come to the end immediately after announcing a prize-winning project. (Kazemian 2007; 2009) Communication and dialogue with society is not prioritized and the evaluation process takes place in an environment of high secrecy. Communication with public is very limited and often takes place via short announces in official competition journals or newspapers. It is mainly at the latter phases of competition process when winners will be introduced to public and their works will be publicized in often formal ceremonies and exhibitions.

A need for comprehensive development of the scope of such studies and an in-depth investigation on the values and opinions of citizens who are receiving and experiencing these prize-winning projects as well as the level of the post-occupancy acceptance of such implemented projects are felt throughout our study.

Currently, however, we are witnessing an emerging dynamism in generating new knowledge in theories, processes and concepts of communicative urban design competition as well as in the related research methodologies to advance urban design competition processes in sync with fairness, transparency and interactivity that attempts to assure distributive justice, better urban qualities, higher performing standards, less uncertainty and vulnerability.

In 2008, a post-graduate study, *Arkitektstävlingar: om konsten att hitta en vinnare* [Architectural competitions, the art of finding a winner], is published by Charlotte Svensson at the Royal Institute of Technology in Stockholm. The study provides a close-up framework from a series of jury meetings and the process of judgment and selection of the winning projects. Still, the study lacks users’ opinions as a research objective.

Pertti Solla (1992) in the article, *Architectural Competitions in Finland*, gives a brief overall historical view of the development of design competitions in Finland for the period 1862-1992. He introduces some monumental prize-winning projects and the role of the Finnish Architects Association (SAFA) in arranging competitions but the depth of his inquiries and reasoning on public acceptance remains insignificant.

Leif Östman (2005) in his PhD dissertation presents a critical view towards the Finnish competition tradition, its functions and its impacts on the design quality of built environment. He takes up the competition process of a major library project in Lohja town from 2002. He opposes the system for its lack of concerns towards the end-users values and quality judgment. Östman’s study confronts the expert-oriented design competition with users’ interactivity and acceptance.

Hélène Lipstadt (1989) in an anthology, *The Experimental Tradition*, considers the years 1920s to 1980s as a period of shaping the modern American architecture and urban design heritages through deploying series of design competitions. She notifies that during the 1960s many competitions in the USA were carried out in open type. But, since the 1980s, the trend gradually moved towards the invited type of competitions.

*Winning by Design* by Judith Strong (1996) provides valuable information on the rules and procedural aspects of architectural competition in Europe.

---

2. Some parts of the findings are published in the *International Journal of Building Research and Information* (Kazemian et al., 2009), in *Arkitektstävlingar* (Architectural Competitions) (Kazemian, et al., 2007), and in *Jämförande analyser av arkitektstävlingar: erfarenheter från tre nordiska länder* (Comparative Analysis of Architectural Competitions: Experiences from Three Nordic Countries) (Kazemian et al., 2005).
She approaches the competition system from both sponsors and professionals point of views.

Jack L. Nasar (1999) in his work, Design by Competition: Making Design Competition Work, favours the established culture of competition in Europe in comparison with North America due to the vitality in terms of quantity of arrangement as well as their quality and clarity of rules and procedures. He remains however critical to the expert-oriented structure of the competitions. This view can be supported by the extracted data from Europe. In Germany, about 500 architecture and urban design competitions were carried out in 1979 (Wynne 1981) and since then they are kept at this level each year (Kähler 2001). Since the 1980s Germany has got a federal act that requests all public buildings to be designed and built by competition. A similar act has been introduced in France in 1986 which as a result created a tremendous growth in competition activities in the country with about 2000 provisions per year (Nasar 1999). Further, architectural competition in Europe is supported by the Directive of 1994 (Directive 2004/18/EC). The Directive is a major step towards harmonization and effective management of competition and public procurement in the EU. While the Directive sustains the intercultural exchange of experiences in Europe although it does not offer much solution in making the competition process open to public appraisal. The directive, however, provides a climate to further investigate the competition cultures in Europe to analyze and compare the existing similarities and differences in terms of their structural, legal and procedural aspects. It calls for a need to develop a common conceptual system in order to be able to better understand and depict architectural competitions in their cultural, social and political contexts.

Journal of Architectural and Planning Research has two special issues (1990:2 and 1987:1) on architectural and urban design competitions. In one of these issues, Ernst R Alexander (1987) presents an interesting project based on the analyses of 51 competitions in the USA from 1978 to 1984. Alexander shows that the type of management and organization of competitions are substantial for the successful selection of prize-winning entries. He sees the time consuming process as a major factor that affects the openness of the procedure and thereby the performance quality of competition.

To sum up, literature on urban design competition and the performance quality of design-winning projects seems to be very rare and sporadic especially from the end-users perspectives. As Nasar concludes, "[...] although many people have written about competitions, none of them critically and systematically evaluate how well the winning solution works for the consumer – the building inhabitants and passerby" (Nasar 1999, 21).

CONCLUSION

The process of generating socio-spatial changes, resolving societal value conflicts and mounting the quality of life is among the ultimate objectives of every urban design actions. However, the embedded complexity, uncertainty, instability, uniqueness, and value conflicts in urban design can make the best solutions vulnerable to inappropriateness and mismatch in societies. Inapt urban designs can, therefore, be very detrimental for community, encumbering for economy, hazardous for environment, and in a word unsustainable.

Urban design competition is a recognized system aiming to judge and assure the quality of best practices. It is an instrument for experienced and well-practised experts to select prize-winning projects in a rather closed decision making system while was thought to be built upon fairness and democratic premises. This dualistic character of urban-design competition can make the outcomes insecure, the aspects of quality contested, and the appropriateness of a built environment unpredictable.

The study is keen to provide a political argument about the essence of the urban design competition and find out a solution to the organizational and procedural aspects of competition that can promote the quality criteria of design through an increased communication and participation of key players especially the end users in the whole cycle of the scheme. In fact, the demand for openness and revival of the existing rules and procedures that augment the influence of actors is felt as a vital dimension in just urban design competitions.

How can we improve the quality criteria of the prize-winning urban projects in a reciprocal manner, while maintaining the efficiency, fairness and anonymity of the competition system? Can we defuse the best practices in urban design and avoid unpredicted economic, social, cultural, and environmental pitfalls through more communication and interactivity? What are the essential quality criteria considered by competition expert jury? How can the needs, values and visions of citizens be met by the prize-winning design solutions? How are the users’ feedback considered on the performance and quality of a built environment from initial concept to post occupancy?

The competition organisations have to be prepared for a thorough transformation in terms of their procedural, structural and legal compositions in order to achieve the targeted quality criteria with more interactive and communicative character. It is not impossible to reformulate the mission of jury committee and extend the whole quality judgment processes from competition program, implementation, to post-occupancy stages with regard to reciprocal transmission of experiences and knowledge among designers, jurors, clients and end-users. These are among the very vital issues remain to be addressed that can reward all parties.
REFERENCES