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# Stages of Maturity for E-Business: The SOG-e Model

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## Abstract

*Stages of growth and maturity models of IT usage and management have long been presented as guides to the understanding of traditional IT in organisations. The advent of the Internet and the rise of Internet Commerce (IC) in the 1990s has expanded the role of IT in organisations. In many organisations, a new set of Internet-based applications connect the business to consumers and suppliers, and enable the buying and selling of goods and services across computer networks. These marketing and sales applications are often referred to as “front office” applications in distinction to the traditional IT or “back office” systems. This paper presents a model called the SOG-e model, that considers both traditional and IC applications in terms of growth and maturity. The SOG-e model charts the progress of both IC and traditional IT in an organisation and incorporates the notion that in mature organisations, there is a seamless integration of the IC and traditional IT streams into a coherent e-business capability.*

**Keywords:** I-Commerce, E-commerce, E-Business, stages of growth, models of IT maturity

## 1. Introduction

As an organisation enters the world of electronic business there are many issues to think through as well as many challenges and opportunities as information technology (IT) provides a new channel to reach consumers and a welter of new business possibilities. However, there are few well-defined and accepted strategies and models for management to adopt and follow in order to understand and evaluate the organisation's current position and to plan its future electronic business position and progress. Such strategies and models would provide a guiding path of increasing maturity and sophistication, which would include consideration of both traditional information systems (IS) and IT as well as the Internet and Internet Commerce (IC) based systems. Developing such a model of maturity and sophistication for an organisation's entire electronic business infrastructure, skills, strategies, and management will form the basis of this paper.

## 2. Models of IS/IT Maturity and Sophistication

Since the introduction of computer technology into organisations in the 1960s, there have been numerous attempts to develop models of IS/IT maturity (Nolan, 1973, 1979; Earl, 1983; Bhabuta, 1988; Hirschheim, et. al., 1988; Galliers and Sutherland, 1994). Among these models, the Galliers and Sutherland model (1994) appears the most sophisticated of these offerings, and will form the basis of much of the subsequent discussion in this paper.

All of these models are premised on the idea that organisations pass through notional ‘stages’ of maturity or sophistication with respect to the way they use and manage IS/IT to support and facilitate business activities, processes and operations. Such models of maturity may be used for descriptive or prescriptive purposes. The stages of growth models may be helpful to describe and evaluate an organisation's maturity and sophistication in its use and

management of the IT resource, for the purposes of enhanced and shared understanding. It is also conceivable that they are used somewhat prescriptively in a planning sense, both outlining a possible direction for migrating towards greater sophistication in deployment of IS/IT throughout the enterprise and also helping to strengthen the link between IS/IT investments and initiatives and business objectives. An important function of some stages of growth models, or models of maturity, is also to consider issues concerning the management and organisation of the IT function as the organisation progresses to greater sophistication in its use of IT. Many of the earlier stages of growth models were criticised for being somewhat IT-centric, suffering generally from a lack of attention to the interrelationship between IT and the rest of the business. The Galliers and Sutherland model (1994) is a notable exception in this regard.

Galliers and Sutherland (1994) identified six stages of increasing maturity of IT use in organisations. Stage 1 essentially describes an ad hoc, somewhat chaotic adoption of IT that typifies the early use of IT in organisations. Subsequent stages articulate increasing maturity, through to stage 6, by which stage an organisation has successfully incorporated IT right into the very heart of its operations, with IT valued as an important contributor to strategic initiatives and competitive positioning. IT is also seen as starting to redefine the organisation’s value chain through electronically supported linkages to suppliers and business customers. Readers are referred to the Galliers and Sutherland (1994) paper for a full description of these stages.

A particular strength of the Galliers and Sutherland model (G&S) (1994) lies in its definition of seven elements (Strategy, Structure, Systems, Staff, Style, Skills, and Superordinate goals) for each stage, thus offering and enabling a more complete understanding and evaluation of the relevant organisational and managerial actions, attributes and structures (Waterman, et. al., 1980; Pascale and Athos, 1981) that characterise each stage. Thus the G&S model enables organisations to recognise their current level of maturity along seven dimensions, each of which characterizes a different aspect of the total IT function in an organisation. An example of the use of the G&S model is illustrated in Table 1.

**Table 1. An Assessment of the Maturity of IS/IT Usage at Magic Cars**

	1	2	3	4	5	6
Strategy						
Structure						
Systems						
Staff						
Style						
Skills						
Superordinate goals						

During recent research into the adoption of internet technologies (amongst other things) in car yards in Western Australia (see Marshall et al., 1999), the G&S model was used with the CEO of Magic Cars to assess that organisation’s current level of sophistication with respect to IS/IT usage to support basically internal, “back office” functions. Overall, it could be concluded that Magic Cars is at stage 3, although Table 1 illustrates that it is not necessarily

at stage 3 on all seven dimensions. Indeed, one of the benefits of the G&S model is its ability to graphically display organisational strengths and weaknesses which may help management to identify areas needing particular attention, and providing insights into how the organisation may advance the maturity of its own use of IT into the future. Developing a shared understanding and learning from the past in order to move forwards are thus benefits of the use of this model. In using the G&S model in this way, the authors were able to work with management at Magic Cars in identifying an appropriate future positioning with respect to IS/IT, and on planning future IS/IT requirements.

Generally speaking, the G&S model (and indeed, most of the stages of growth models) assume a linear progression from less to more sophistication of IT adoption and use over a period of time. The G&S model helps to define strategies to assist in that movement. Some unusual circumstances (for example, importing packages and/or skilled personnel) may enable an organisation to “jump” over a stage, although accumulating the knowledge and learning of the “missed” stage is assumed (Galliers and Sutherland, 1994). Similarly, untoward occurrences (hostile takeover, loss of key personnel, for example) may also result in a backwards movement from more to less mature stages.

One major weakness of the G&S model stems from its age: it was developed before the burgeoning of the Internet, of telecommunications technologies, and of the emergence of IC and an increasingly interconnected world of electronic business. Thus, it seems inevitable that stages of growth models be developed to account for the Internet-based IT activity in organisations, alongside traditional notions of IS/IT usage in organisations.

### 3. Towards an Integrated Model of E-Business

If the important limitation of the G&S model (1994) is to be overcome, then a model is required that is able to take into account not only increasing sophistication with respect to traditional IS/IT use in organisations (primarily back office applications and technologies), but which is also able to embrace the various stages of increasing maturity of use and sophistication of the newer, front office systems and technologies that characterise the world of IC. Thus, an integrated model of electronic business maturity can be achieved through mapping a model of IC Maturity onto the Galliers and Sutherland model discussed earlier in this paper. The result is called the SOG-e Model (Stages of Growth for E-Business) and is illustrated in Figure 1.

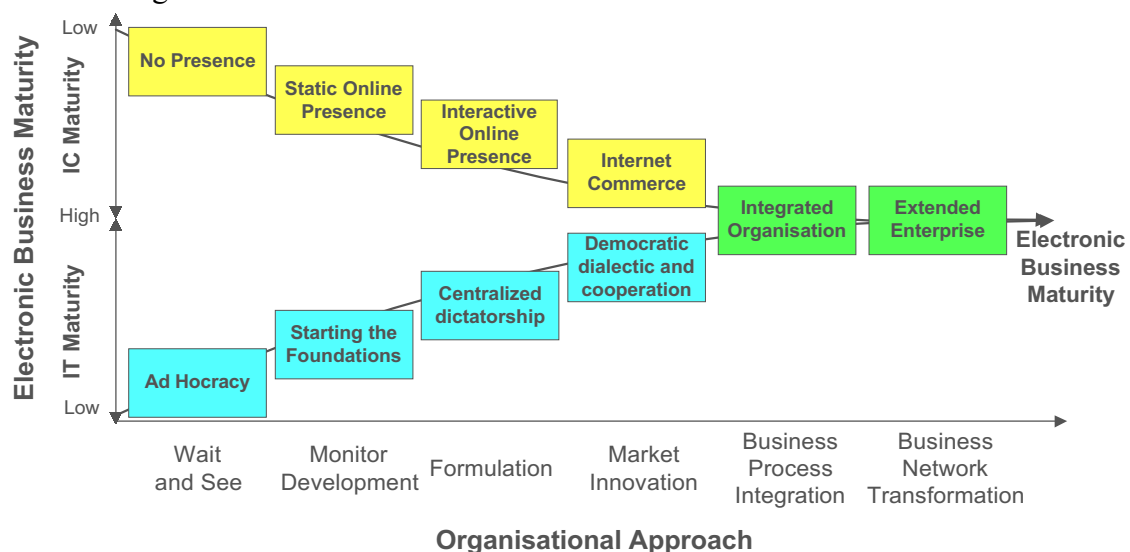


Figure 1. The SOG-e Model of E-Business Maturity

The SOG-e model retains the six stages of the G&S model to describe the maturity of traditional IS/IT within an organisation (illustrated in the bottom half of Figure 1), but adds a six stage IC Maturity Model, which describes maturity in terms of IC (which is captured in the top half of Figure 1). Attention is drawn to the y-axis in this figure, which charts electronic business maturity. In the bottom half of the y-axis, representing traditional IS/IT maturity, movement from bottom to top represents increasing maturity, whereas in the top half of the y-axis which represents IC maturity, a movement from top to bottom is required to suggest increasing maturity. The meeting point in the centre of the diagram (achieved in stage 5 Integrated Enterprise and stage 6 Extended Enterprise) represents the most mature stage of electronic business. These final two stages are not dissimilar to the final two stages of organisational transformation described by Venkatraman (1994). According to Venkatraman (1994), internal integration and business process redesign based on an intranet-driven strategy is more appropriate for increasing internal productivity, while business network redesign and business scope redefinition using an Internet-driven strategy are needed to leverage the external network of business relationships. While it is accepted that at less mature stages, these two components of an organisation's total IT capability may evolve somewhat separately and independently, arguably greater sophistication of IT use (for whatever purpose) must involve full integration, both within the organisation (stage 5 of the SOG-e model) and ultimately, extended to include an organisation's strategic business network (stage 6 of the SOG-e model).

As with all other stages of growth models, the SOG-e model assumes that the normal progression is from less mature to increasing sophistication over time. Being at a more mature level assumes an accumulation of the knowledge, experience, skills and expertise of all the previous levels. An important new dimension of the SOG-e model however, is to recognise that within the same organisation, there may exist different levels of maturity for the different components of IT use. Thus it is conceivable that an organisation may be overall at stages 3 or 4 with respect to its use of traditional IS/IT, but may still be at stage 2 (for example) with respect to its maturity in IC. In much the same way, an organisation may have evolved quite quickly to stage 4 (transacting over the Internet) without having achieved equal maturity with its "back office" IT. To be at stage 5 or above on the SOG-e model, however, by definition implies at the very least integration of "front" and "back" office applications and technology.

Like the G&S model, the SOG-e model acknowledges that organisations may "jump" over levels (but assumes that in one way or another, they have acquired the skills of the "missed" level), and also recognizes that extreme circumstances and failure may cause an organisation to regress along one or both of the arms of the model. Being at a reasonably sophisticated level of the G&S model (say stage 6) may also support rapid movement through the maturity stages for IC. Thus, if an organisation has experience and success of dedicated IOSs (not Internet-based) that are well integrated with the rest of the IS/IT presence in the organisation, it may be comparatively simple to migrate these systems and/or add Internet-based IOSs and thus quickly achieve stage 5 or 6 on the SOG-e model without ever having developed an electronic business site, for example. The authors would assert however, that to be able to do this successfully, an organisation would have to possess (or have access to) the requisite skills, knowledge and experience suggesting that it could develop an active on-line presence if it so desired.

Given this general overview of the SOG-e model, it seems appropriate to consider definitions of each of the six stages in some detail. In terms of IT maturity, the descriptions, comments,

and definitions of stages 1 (ad hococracy) through to stage 4 (democratic dialectic and co-operation), particularly the seven Ss for each stage, are retained from those original definitions of Galliers and Sutherland (1994). However to complete the description of the model, it is proposed here to describe each of the stages of the IC maturity model, and briefly consider the seven Ss for each of those stages. It must be noted that given the expanded nature and essence of this model, the final two stages must also be redefined somewhat to embrace the new realities and possibilities of the Internet and associated technologies. A summarised version of this description and discussion is contained towards the end of this paper in Table 3.

### ***Stage 1: No Presence***

Organisations at this stage may be characterized as adopting a “wait and see” approach. Despite reports of rapid growth in IC, and the concomitant expectation of substantial returns on investment, the strategy adopted here is to wait for competitors or business associates to go on-line, assess their results, and then act when business benefits and/or profitability accrue from the IC investment. The “no presence” approach may stem from ignorance of the Internet, but preliminary research results (Marshall et al., 1999) suggest it is more typically associated with uncertainty about the costs and benefits of IC (in contradistinction to the costs and benefits of *not* establishing an electronic business presence), issues of risk and security associated with IC, and uncertainty as to whether an organisation’s goods or services are suited to advertising and sale over the Internet. As it has been suggested that early adoption of on-line IC strategies is essential (AOT and OIC, 1998), gathering relevant information and knowledge is an important activity at this stage.

### *Strategy*

At stage 1, there is comparatively little happening with respect to the use of the Internet for commercial purposes. Individual organisational members may be using the Internet for communication purposes, but at this stage, its adoption is very limited. This lack of involvement may stem from a number of possible conscious (or indeed unconscious!) strategic decisions. For example, it may reflect a conscious decision not to be involved in IC at this point in time, given consideration of factors such as the rate of take-up of IC within the industry, the nature of the business, its financial position, and other organisational considerations, and the like. By contrast, the “no presence” strategy may be indicative of certain amount of inertia and lethargy with respect to IC, perhaps a lack of technical knowledge, perhaps a lack of understanding of the potentiality and opportunities offered by IC, and so on. Our initial research suggests that both positions may typify the strategy of organisations at this stage.

### *Structure*

Quite simply, at this stage there is no formal structure: there is no perceived need for it.

### *Systems*

An organisation at this stage may have the basic Internet facilities, such as e-mail and ftp, but these are typically used at the whim of individual players, and thus there is typically a fairly unsystematic approach with few, if any, controls being imposed (or being viewed as necessary).

### *Staff*

Predictably, there are no formally employed staff with delineated responsibilities for IC at this stage.

### *Style*

The style that characterises the “no presence” stage reflects the type of strategy adopted by organisations. Typical of those who have consciously decided not to be involved is a type of “wait-and-see” approach, where intelligence gathering and monitoring may be prevalent. Others who are not involved because of lack of knowledge or lethargy, many quite unaware of IC trends in their business environments.

### *Skills*

As expected, these are very limited, with some end-user expertise, but it is likely that this is developed primarily from personal motivation rather any deliberate organisational initiatives.

### *Superordinate goals*

Generally speaking, there are a few shared goals or visions for IC at this stage. Considered avoidance (hanging back) or a deal of ignorance may pervade the business behaviours of the organisation at this stage.

### ***Stage 2: Static On-line Presence***

At this stage, the organisation establishes an initial presence on the Internet, but this is limited to a static, information provision role only where information dissemination and communication is essentially uni-directional from the organisation out to interested parties. Information published on-line at this stage may take the form of corporate brochures or brochureware (Berryman, 1999), product/service information and catalogues, information for shareholders, job opportunities with the organisation, and the like. O’Connor and Galvin (1998) suggest that of those organisations with an electronic business presence, this is the most common stage of maturity, despite its limitations in terms of accruing the full benefits associated with on-line trading and the IC revolution. This is an essential stage nevertheless, for experimenting, learning, and building organisational commitment.

### *Strategy*

At stage 2, strategies may be developed that focus on an effective information dissemination. Typically at this stage, organisations use their presence on the web to publish information for various client groups, such as product and/or service information, company history, activities and sponsorships, recruitment opportunities, annual reports and shareholder information, and so on.

### *Structure*

Typically at stage 2, there is still no formal structure with respect to IC activities. Is not uncommon at this stage for IC activities to simply become an “expanded” area of responsibility for the IT department or even for some other organisational member, irrespective of whether that activity is actually conducted in-house, or is outsourced to an ISP or a web developer, for example.

### *Systems*

At this stage, there must be investment in the basic systems and technologies needed to satisfy the corporate need to join “the Internet race”. Such investments may remain fairly primitive, in the sense that they provide for uni-directional communication (and hence information provision) only. It is not uncommon for there to be comparatively little maintenance of the corporate web pages at this stage, and hence, perceptions that the information provided is relatively static in nature.

### *Staff*

As the adopted strategy would suggest, at this stage it is usual for a designated staff member or members to expand their normal responsibilities to include the IC activity.

### *Style*

Again, variants in style may be evident at stage 2. Those who have developed a web presence primarily because of perceptions that “everyone else has one”, often approach the IC venture with a somewhat cavalier “I’ve got nothing to lose” approach. By contrast, those who are making very careful, measured decisions to establish a basic web presence are much more likely to be cautious in their activities.

### *Skills*

Skills required this stage are still somewhat basic, with access to basic web site design skills are requirements at stage 2.

### *Superordinate goals*

There may well be some confusion or contradiction evident at this stage in the emphasis and importance placed on IC by the organisation. Initiatives in this stage are still likely to be the somewhat uncoordinated result of individual effort, and hence there are likely to be mixed messages evident with respect to the significance of IC to the organisation.

## ***Stage 3: Interactive On-line Presence***

This is the first stage at which organisations enter into two-way communication and interaction with customers on the Internet. Internet channels such as email, browsers and databases help to provide information as required to customers, and may also serve to gather information and feedback from customers. One of the classic strategies adopted at this stage is to offer “giveaways” such as screensavers and the like, free to customers (freeware) who will provide their profile or other desired information back to the organisation (O’Connor and Galvin, 1998). While products or services may be ordered after browsing the Internet by email, online forms, fax or phone, typically there is no use of the Internet to actually complete the transaction at this stage. Payment is thus made by more conservative and traditional means such as mailed cheques, C.O.D., and so on. While at this stage, the Internet site is not generating cash directly through on-line transactions, it may be supporting sales completed in traditional ways (i.e. after gathering information from the electronic business, the customer visits a traditional physical store and completes a transaction). Popular sites with a large amount of traffic may also be able to generate revenues from advertising and referrals to other sites (O’Connor and Galvin, 1998).

### *Strategy*

It is evident that specific strategies adopted in stage 3 in terms of information disseminated and gathered usually reflect and indicate the desire to build brand and/or corporate image through the use of the Internet. Thus IC offers the opportunity for organisations to broaden their market reach, and provides a new channel for managing customer relationships.

### *Structure*

Typically at stage 3, there has developed a coordinated team-based approach to IC. While the specific “housing” of the team may vary, is not uncommon to see coordinated teams with the requisite skills (e.g. IS/IT, marketing, PR, and so on) developed to manage the IC activity either in-house, or via an effectively managed outsourced arrangement.



### *Systems*

This stage sees a focus move to acquiring the hardware, software and skills needed to support the building of the corporate database and a customer database. The interactive applications that typifies stage will imply a need for more regular and proactive maintenance.

### *Staff*

Organisations at this stage may recognise a need for some specific staff members. Thus we see the emergence of roles such as a webmaster or web administrator, a database administrator, and/or information specialists at stage 3.

### *Style*

At stage 3, organisations are rapidly moving towards the full-blown IC that characterises stage 4. Thus an enthusiastic, headlong rush towards greater involvement in IC may be evident, or perhaps a much more considered, cautious trialling of IC prior to becoming too much further involved.

### *Skills*

Throughout many parts of the organisation, there is, by stage 3, a much greater technological confidence with Internet related technologies. Individual expertise may, at times, be quite well-developed

### *Superordinate goals*

By stage 3, a much more coordinated and pervasive enthusiasm for and understanding of the IC initiative is evident. Greater shared understanding of the role of IC in the enterprise is evident.

### ***Stage 4: Internet Commerce***

It could be argued that this stage marks a fundamental change in business activity as, at this stage, organisations are able to complete transactions over the Internet. Thus on-line inquiries, orders, payments and other services are provided interactively using the Internet as a medium for the conduct of the transaction. At this stage it would be expected that IC activity is starting to impact organisational structures and processes, with changes being necessitated to accommodate the new way of transacting business. Additional skills and technology may be required to deal with round the clock trading and distribution issues.

### *Strategy*

IC is now a serious part of organisational activity, and thus strategies evolve which deal with the planning and analysing of the implications, impacts, opportunities and potential of this new mode of doing business on-line. Strategy at this stage often reflects an opportunity-seeking attitude, with emphasis on product, service and market repositioning, and extension of the consumer base.

### *Structure*

At this level of sophistication, the expectation would be for there to have evolved a specialised, on-line section or department.

### *Systems*

Investments in fully functional transactional trading applications such as payment systems and shopping trolley applications are required at stage 4. There may be limited integration

between these front office applications and existing back office systems, leading sometimes to difficulties in coordinating front and back office applications. There is usually a high maintenance and security requirement associated with IC systems at this stage.

#### *Staff*

Staff requirements reflect the fully-fledged Internet trading capability, with a typical requirement emerging for business analysts (bridging the gap between IT specialists and skilled ended-users), market analysts (to exploit the new media and new opportunities), and a systems administrator to start coordinating IT activity in the organisation.

#### *Style*

Typically by the stage, the caution and experimentation of earlier stages have been replaced by much more opportunistic and entrepreneurial approach to IC.

#### *Skills*

Given the heavy involvement in and commitment to IC by this stage, it becomes important that the IC staff have a good understanding of the business and also of the capabilities, potentialities and limitations of IT. A “hybrid” analyst with both IT and business skills may have emerged at this stage.

#### *Superordinate goals*

By stage 4, the organisation has made a considerable commitment to IC, and there is thus usually quite high expectations with respect to IC. Actual financial returns may not have been achieved at this stage, but there is it certainly a belief in the value of this initiative.

### ***Stage 5: Internal Integration***

At stage 5, obviously progress has been made in integrating the “front office” Internet transaction capabilities and accompanying technologies with “back office” IS/IT business support systems and technologies. There is a consciousness throughout the organisation of the need to align IS/IT investment with business strategies, and that processes and structures may have to be reengineered to accrue the true benefits of modern technologies (Premkumar, 1994). Discontinuities between IC trading activities and traditional trading activities disappear as organisations achieve better levels of integration across all the IS/IT investments. In this regard, IC may act as a catalyst to remove duplicated effort and truly integrate intra-organisational IS/IT initiatives and investments. Cultural changes may be evident as organisations embrace the new on-line IC environment (AOT and OIC, 1998). This stage of the model reflect the first, true “melding” of traditional IS/IT usage and IC investments.

#### *Strategy*

Given the much more holistic approach to IS/IT at this stage, strategies adopted typically reflect an interest and concern in information and process integration, coordination and control. The effective management of knowledge and efficient and effective deployment of IS/IT to act in a way akin to a corporate nervous system becomes central to corporate success at this level.

#### *Structure*

The formal structure will typically reflect the emphasis on the integration of all IT activities across the organisation, together with the closer integration of IT with the rest of the business.

This stage will also herald the emergence of a corporate information centre, an integrated IT function servicing all the needs of the business.

#### *Systems*

Systems requirements of at stage 5 reflect the drive to establish fully integrated, enterprise-wide information systems. The extensive use of data mining and data warehousing technologies and intranet technologies are key components of the corporate nervous system, a sensing, monitoring, responding, controlling, evaluating and disseminating information system, thus establishing the infrastructure for the sense-and-respond adaptive enterprise (Haeckel, 1999).

#### *Staff*

The integrated IT function is headed by IT manager or CIO, a well-regarded and highly valued member of the senior executive team. A key function of the CIO is in tightening links and understanding between IT at the rest of the business. This may lead to the merging into one the corporate and IS planner roles.

#### *Style*

Managers at stage 5 are fully aware of, understand, and are committed to the integrated electronic business environment and the notion of an adaptive and responsive, customer-oriented organisation.

#### *Skills*

The major skills required at this stage of those needed to facilitate organisational integration. High-performance teams reflecting the IT-business fusion take on some specialised IT function is and entrepreneurial marketing roles.

#### *Superordinate goals*

Coherence and integration other pervasive themes at stage 5, evident in the organisation-wide stewardship of the business.

### ***Stage 6: External Integration***

IT plays a key role in transforming entire business networks at this stage. Thus blurring and extension of traditional organisational boundaries will occur, giving rise to notions such as the extended enterprise (Oracle 1999; Harrison and Pratt, 1998), and the virtual organisation (Marshall et al., 1999). Evident at this stage is the integration of business processes and technologies of networks of buyers and sellers, resulting in close and mutually beneficial relationships between trading partners. Extranet technologies may be usefully employed at this stage. Business strategies and IS/IT strategies must be closely aligned at this stage, both internally, to provide a seamless process of placing and receiving an order, making appropriate logistical arrangements, and making and receiving payments electronically, and externally, across all players in strategic business networks. The resultant “internetworked enterprise” (Tapscott, 1996) is responsive, flexible, dynamic and opportunistic in its business activities.

#### *Strategy*

Strategies must now span beyond traditional organisational boundaries to embrace all members of strategic business networks. Thus strategies are geared towards forming, maintaining and exploiting the strategic business networks, towards constantly renewing and protecting sources of competitive advantage, and towards maintaining an ongoing strategic

conversation with business partners and the like. Strategic thinking, a process of synthesis and creativity with a focus on cooperation, culture and values, replaces strategic planning with its “hard-line” analytical approach and its focus on competition (Masifern and Vila, 1998).

### *Structure*

Structures adopted are that of the strategic business network and the virtual or extended enterprise. Coordinated coalitions and alliances will tend to replace more ponderous, bureaucratic structures and hence provide the flexibility and responsiveness required in dynamic environments.

### *Systems*

IS/IT that span across traditional organisational boundaries become more prevalent. These integrated interorganisational systems (using either traditional networks or Internet-based networks) help to build and maintain relationships within the strategic business networks, and enhance the strategic use of information amongst these relationships.

### *Staff*

The role of the CIO now spans organisational boundaries, with CIOs and CEOs forming close links to other members of the strategic business network. The CIO or IT director is now a member of the Board of Directors.

### *Style*

The commitment to the extended enterprise concept is recognised through futuristic thinking and an adoption of mutual dependency and cooperation amongst members of the strategic business network.

### *Skills*

All senior managers in the stage 6 organisation understand IS/IT (in its broadest sense) and potential and opportunities it provides. Business network transformation becomes a major concern for many managers.

### *Superordinate goals*

This is a visionary organisation, with the vision shared across the strategic business network. The organisation embraces fluid, dynamic and interactive thinking, planning and acting.

**Table 3. Summary of SOG-e 7Ss**

Element	Stage				
	1	2	3	4	5
Strategy	Utilisation of Internet technology for communication purposes (i.e. email & ftp)	Effective information dissemination (ie. Annual reports, company history, product info, company activities, recruitment opportunities)	Building of brand & corporate image  Provides added value information	Seek opportunities in new mode of doing business  Product, service, and market repositioning Expanding consumer base	Information & process integration, coordination & control  Building of corporate knowledge management Building of corporate "nervous" systems
Structure	None	No formal structure  Expanded responsibilities of IS department or other organisational representative	Coordinated team of requisite skills (IS-Marketing-PR department)	Specialised online section/department	Corporate information centre(s)  Integration of all IT activities & the firm
Systems	Basic Internet facilities (ie. email & ftp)  Unsystematic approach No or little control	Basic systems to satisfy the corporate needs to join "the Internet race"  No operational application Little maintenance (on occasional basis)  unidirectional communication  Information provision only	Interactive applications  Periodic maintenance Acquisition of hardware, software, skills, etc  Building of corporate database Building of consumer database	Fully functional trading applications (ie. payment systems & shopping trolley)  Limited integration with existing back-office systems  High maintenance	Fully integrated corporate systems  Intranets and/or other similar approaches  Corporate "nervous" systems
Staff	No formally appointed staff	Designated staff with expanded responsibility	Webmaster/Web administrator Information specialists Database administrator	IS-Business analysts  Market analysts System Administrator	CIO/IS manager - member of senior executive team Corporate/business/IS planner (one role)
Style	Wait-and-see / unaware	jump-in-nothing-to-loose / proceed with caution	Testing the water  Enthusiastic  Considered	opportunistic / entrepreneurial	Aware and committed to E-Business
Skills	Limited user-level expertise	Web-site design	technological savvy (Internet related technology), individual expertise	IC group has good understanding of business  IS & Business (specially in marketing) knowledge & skills of IC	Organisational integration  High performance team (IS-Business fusion)  Knowledgeable users in some IC areas Entrepreneurial marketing skills
Superordinate goals	Avoidance/ignorance	Some confusion - uncoordinated individual effort	Growing enthusiasm and understanding	Commitment and expectation	Coherence and integration  Stewardship of E-Business

#### 4. Uses of the SOG-e Model

The SOG-e model is useful as a framework to help managers and practitioners understand and describe the current state and position of an organisation with respect to electronic business, including an assessment of maturity with respect to IC, in addition to an understanding of the maturity of an organisation's "back office" IS/IT investments. An evaluation of the organisation's progress with respect to a number of conditions at each stage (the seven Ss) is enabled and supported by the path of maturity, progress and increasing sophistication with electronic business that is depicted by the model. The strengths and weaknesses of the current position of all facets of an organisation's IS/IT can be assessed. Further, a clear understanding of the current position, together with the prescriptive picture that the model provides, can guide future planning and strategy formulation with respect to electronic business. Thus the model could be viewed as a guide to understanding, diagnosing and evaluating the current position as well as providing insights and guidance on future

progression and direction in electronic business, including the realisation of future business benefits.

Magic Cars (as previously discussed in Table 1) was also keen to involve itself in IC. Using the SOG-e model with the CEO and IT Manager of Magic Cars, the picture in Table 2 emerged.

**Table 2. Using SOG-e to Assess the IC Maturity at Magic Cars**

	1	2	3	4	5	6
Strategy						
Structure						
Systems						
Staff						
Style						
Skills						
Superordinate goals						

Despite his awareness of trends in the US, the CEO was doubtful that full transactions completed over the Internet would, in the foreseeable future, become vital to his business. However, he was keen to move on to stage 4 to avail himself of the chance to complete additional warranty and service deals, and insurance sales over the Internet. The SOG-e model was able to provide a focal point to discussions, and underpinned strategies developed for moving towards more sophisticated levels of IC maturity over time. It was also recognised that long term, Magic Cars would benefit from integrating its front and back office applications, thus moving towards stage 5 on the SOG-e model. What emerged quite clearly to the management team was the need to carefully move their internal systems towards stage 5 as well, recognizing and planning for the need for them to be increasingly integrated with the firm’s internet-based systems and technologies.

## 5. Conclusion

This paper has described a stages of growth model that integrates the concerns and issues of the traditional IS/IT systems or “back office” of organisations with the Internet Commerce systems or “front office”. No stages of growth model to date has attempted such an integration, despite the fact that such an integration is a key aspect of EB maturity.

Preliminary research with this model has resulted in pleasing results. In general, feedback from industrial and commercial partners in this research has been very encouraging and has suggested that the model is a valuable framework, in particular with respect to their strategic IS/IT planning. However, further and more formal empirical research is needed to validate, refine and enrich the SOG-e model. The authors are currently conducting an in-depth study which examines EB maturity within the context of Australian organisations via the SOG-e model.

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