

Smarter, Simpler, Social

An introduction to online social software methodology

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Introduction

There are many difficult challenges facing organisations today. Business faces an apparent [crisis of trust](#), or at least a much more sceptical and less loyal customer base than they have enjoyed in the past. Meanwhile, public sector bodies, especially government agencies are struggling to deliver [new online services](#) to their customers and stakeholders in the face of exaggerated expectations and ambitious policy targets. More generally, organisations of all kinds are wrestling with the need to achieve meaningful interaction between customers, partners and staff, and many see online applications and services as the answer.

Companies, public organisations and governments have invested huge amounts of time and money on intranets, Web sites and networked enterprise software hoping to solve some of these problems and achieve efficiencies and increased competitiveness. Yet many are still struggling with the process of change required to truly exploit new technology, and few can claim to have grasped the human issues surrounding its adoption.

Various studies show that these systems usually turn out to be more expensive, harder to implement, less flexible and significantly less effective than their developers claim is the case. PA Consulting found in July 2000 that [92% of companies were disappointed](#) with expensive Enterprise Resource Planning (ERP) implementations, whilst in the worst cases of failure, companies claimed to be [losing over \\$100m](#) as a result of failed enterprise software projects. In the public sector, there has been much debate about why their IT projects often fail to deliver, with some blaming [internal cultural issues](#) and others [pointing the finger at mercenary suppliers](#). For users, enterprise software, corporate intranets and some public Web sites are often perceived as overly bureaucratic, inflexible systems rather than tools for innovation and empowerment. For purchasers, the issues are even clearer: increasing investment is producing only marginal returns if at all, and user participation is below predicted levels.

In some respects, this first wave of online communication technology adoption is coming to an end and the key issues now are about uptake, usage and assimilation – in other words: making it work. In most cases, the answer is not necessarily to continue building bigger and more centralised software systems, but to support smaller, simpler distributed networks of people, content and services that are more adaptable and responsive to changing needs and goals. Continuing to build bigger and more complicated systems is actually the opposite of what is needed to unlock the human potential such systems were designed to tap. Indeed, as we shall see, the concept of enterprise software itself is grounded in out-dated “process thinking” and does not sit well with our current understanding of organisations as living systems.

Whilst the first wave of online applications was characterised by large, centralised top-down implementations driven by a command-and-control mentality, the outlines of an alternative approach that is informed by new thinking about social networks and online behaviour is coming into focus. This approach is driven not by major IT vendors, but by rapid innovation occurring “in the wild”, where free or almost free online social applications are achieving usage levels and a depth of user engagement that enterprise software purchasers can only dream about. It is smarter, simpler and social.

This paper aims to provide an overview of what is being called ‘social software’ or ‘online social applications’, tracing their roots in online community thinking and identifying some of their underlying features. It will also examine some of the emerging perspectives on social networks and online behaviour that might help us understand how to develop better online social applications, and it will suggest a methodology for creating meaningful online social applications around existing social networks and stakeholders.

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Software becoming bigger, more stupid

The development of new online software products and services occurs so rapidly that just keeping pace with change is hard enough, especially given the fog of vapourware and spurious differentiation that can sometimes obscure real progress. However, in most cases developers do not have the attention span to perfect their inventions, nor can users learn how to make them work properly, before we are all supposed to move on to the next "Big Thing." It's as if we invent the bicycle on Monday, the car on Tuesday and then by Friday we build the space shuttle, yet we still don't know how to ride the bike properly - it takes time.

In the past few years, we have seen various new breeds of enterprise communication software used within organisations – such as e-learning, knowledge sharing, project collaboration, business process management, CRM, e-commerce and publishing applications - but until very recently each of these has been regarded as a separate specialist application rather than as one element or mode of our online interaction. In real life, we shift back and forth between such modes of interaction without needing to learn a new language or set of rules, yet on corporate intranets and other online systems, such activities are often rigidly segmented. As a result, these distinct areas have specialised and theorised faster than they have actually progressed in terms of their usage. Individual users tend not to demand bigger and more feature-rich separate systems; they just want to interact, learn, share and communicate better, faster and easier.

A good illustration of this problem is the absurd distinction between e-learning and knowledge management software. For several years, these "sectors" have held countless conferences, published reams of ideas and generated more and more buzzwords – and they have been getting more specialised all the time. Leading e-learning analyst [Brandon Hall](#) attempted to address the integration of learning, knowledge management and human resource software at the 2002 Online Learning conference. His [presentation and discussion](#) suggest that even this modest goal is ahead of the curve for major purchasers of enterprise software.

Common sense suggests that dividing up the various aspects of our interaction with people and information in this way is basically counter-intuitive. Each of these elements has an important role to play in building online relationships, but ideally they should be just one part of a clear, simple, holistic online experience. The area of [Enterprise Application Integration](#) (EAI) is receiving more attention from corporate IT departments trying to bring their different systems together, but this is about data and interoperability rather than creating an integrated experience for users. We need a new approach to building adaptive social applications that are easily deployed and can be

humanised – not just customised – to support different types of online interaction and different modes of communication.

Many organisations now have more IT infrastructure than they can usefully manage in the form of hardware, software and online applications, whilst others are still getting up to speed; but the real challenge is how to make all this technology work for the people it is intended to serve – and that is fundamentally a social issue. Only as the design and usage of online communication tools and applications becomes more transparent - more [natural](#) and usable – will we begin to learn how they work when embedded in our day-to-day life, rather than simply used because they are novel.

As we move beyond the invention and adoption of first wave online communication technologies into the assimilation phase, we need to take what has been invented and learn how to make it work for us, to help organise ourselves and our work better. This phase is all about understanding people and the many different ways in which they engage with each other online and offline. It is about serving people's needs to build valuable online relationships, adapting systems to people rather than the other way around.

There is much anecdotal evidence to suggest that computer users tend to adapt their own way of thinking and experiencing to computer-related concepts, such as files, directories and even, as Paul Ford describes in a [recent essay](#), image layers and channels. In such cases, what we are really doing is adapting to the limitations and bugs of past hardware and software development in order to get on better with our machines. Jaron Lanier, philosopher-scientist and Virtual Reality pioneer, suggests in [an interview on the Sun Web site](#) that we try to overcome one aspect of this problem by making software less rigid and more fault-tolerant: *"If you look at how things work right now, it's strange -- nobody -- and I mean nobody -- can really create big programs in a reliable way."* He suggests we use pattern matching and inference logic to emulate the way we think, which would help computers interact with us, but also with each other, in a more adaptive manner. Most computer users quickly realise that they need to adapt to their software rather than the other way around if they are to get anything useful out of it. Whilst we might be able to forgive this in basic productivity tools, the inflexibility and intolerance of some of the communication and organisational software we use is a much more serious problem.

The more we use technology to interact and the more inter-connected we become because of it, the greater the anxiety and alienation it can cause us. In his [musings](#) on the dangers of over-reliance on technology and what he calls interaction anxiety, Fabio Sergio quotes Philip Agre's article [Welcome to the always-on world](#), which discusses some of the challenges of a world which is undergoing *"a tremendous shift in human relationships: from episodic to always-on."* One

indicator of this shift is in levels of email use. A December 2002 BCS Henley Research Panel survey of senior IT managers in the UK found that *“Respondents received on average 52 E-mails per day. 7% of the sample received more than 100 E-mails per day.”* In such a context, it is obvious that the usability of email and contact software can have a dramatic effect on peoples' working lives and their productivity.

If we are to address these challenges, the balance of adaptation must shift in our favour, so that we can start to use computers and online technologies as tools to [augment](#) our social interaction rather than manage it for us. To a certain extent, as [Adam Greenfield](#) argues, most things we do online are basically social, whether it is finding information, organisations and people or managing our day-to-day work, and that also applies to most of the tasks we ask our technology to perform. Since the earliest days of the Internet, developers and users alike have been striving to develop the social aspect of online communications. Indeed, this is arguably what the Web was intended for. Yet this is badly under-developed in most current online software, especially business-related systems, despite the fact that it is vital to the task of encouraging take-up and usage of online systems in general.

From Online Communities to Social Software

Online communities have traditionally been seen as a useful approach to engaging with the social aspects of online communication, and they have been at the heart of some of the most innovative uses of online communication technology, from the [Well](#) through to [UpMyStreet](#) and [Habbo Hotel](#).

It seems ironic that one of the most individualist industries (internet development) in the most individualist cultures (e.g. US, UK) has spent so much time discussing community. As [Meg Pickard points out](#), this perhaps reflects an anxiety with our own social fragmentation and alienation, a search for meaning, or possibly a yearning for a sense of community that has been lost with the decline of the "third place" – public spaces where people would normally meet and interact physically.

Over time, the term online community has come to be associated with a wide variety of web sites, software tools and platforms, from instant messaging to e-commerce ventures. The publication [Online Community Report](#) carries a directory of news and developments in this area, and lists what it sees as the ten most important [current trends](#). In addition to this list, we might add the

increasingly visible online social networks [Ryze, Ecademy and Friends Reunited](#), where people gather together to network and share information about themselves. Despite the failure of so many similar ventures during the dot-com boom, with business models based upon advertising revenue and subscriber fees, new online social networks are still emerging, such as [There](#) and [Everyone's Connected](#).

Recently, the idea of online communities has been taken a step further to encompass the wider, more general notion of social software. Some practitioners have now started thinking in terms of social software as a successor to online communities, and this has provoked a resurgence of debate over what constitutes an online community, and what we mean by social software.

In November 2002, [Clay Shirky](#) organised a "Social software summit," which started a debate among online community practitioners about the evolution of online community and social software thinking. Prompted by [Ross Mayfield's reflections](#) on the meeting, fellow weblogger and summit participant Matt Jones began a discussion ("Defining Social Software" - soon defensively re-named "[Discussing 'Social Software'](#)") in which he grasps for a definition that can elevate social software above what he perceives as increasingly commoditised "online community" tools and applications. Matt begins with the obvious assertion that social software involves human-to-human interaction in groups of three or more, where network effects mean that the interaction improves as more people participate; but as [Stefan Magdalinski](#) reminds us, many online social applications have failed to scale well in the past (e.g. USENET) and some have degenerated once they reached a certain size. As with online communities, what matters is who social software seeks to connect, why and for what purpose. For example, another participant, [Matt Webb](#), recoils in horror at the brash business networking approach of the [Ecademy](#) business community, which he sees as trying to *"*actively* meet[ing] people, ... (like [they] read tipping point and did it deliberately!)"*. For Matt, the organically developing, homespun generation of webloggers is a community but a dedicated business networking group is not.

Tom Coates, [also present](#), touched on one of the key problems with online communities as they are currently conceived, which is also a key challenge for social software:

"We're all members of hundreds - thousands even - of different overlapping communities all the time. Some are tiny, some are huge. Some are more important to us than others, but all are important to an extent."

We all have multi-layered identities and may be part of any number of overlapping communities at any one time, and yet online communities as currently conceived demand complete immersion in a single community at a time. They can be too demanding and idiosyncratic.

A greater problem, however, is that although we can build very effective communication and online interaction tools to support existing communities, and occasionally a new virtual community might even coalesce around these tools, we cannot generally create a community with software. In Meg Pickard's words: *"If I wanted to start up a standing-on-one-leg-in-the-rain community, would you join? Not unless you were already interested in standing on one leg..."* In the real world, communities sometimes come together around a river, a road, some shops or in a business perhaps even a fire escape where smokers gather; but artificially created physical communities, like 1960's housing projects, are less likely to stimulate the same generative communal interaction, despite the best intentions of the planners. In the online world, perhaps in addition to building online community structures, we should also focus our efforts on stimulating basic, effective forms of social online interaction with the aim of increasing our capacity to connect with others in general. Some of the best online communities are not built – they emerge.

Sometimes, conventional online communities can do an excellent job by bringing people together around common interests or objectives, but we cannot simply build them like pre-fabricated buildings and expect people to participate. Stimulating and supporting communal activity is more involved than just building a structure and providing content. As well as focusing on the community space, it may involve equipping individuals to participate or interact, and removing obstacles or friction that prevent people from making links with each other. It is a more multi-faceted exercise than the first wave of online communities suggests.

This is perhaps where a broader notion of social software is required. For example, Ross Mayfield writes that as well as supporting online applications with a social purpose, *"Social Software adapts to its environment, instead of requiring its environment to adapt to software."* He is quick to point out the implications of this for current enterprise software:

Realizing these models requires a fundamental change in architecture. You won't see SAP release a "Social Software Module" or Peoplesoft announce an "Enterprise Social Software Management" product. If that was the case, we would all be talking about it, but there is too much legacy. Perhaps this is the opportunity, for major categories of enterprise software to be fundamentally revisited by new companies, but that depends upon the value proposition.

Clearly an enthusiast, and also a purveyor of social software services, Ross nonetheless acknowledges that we are a long way from achieving adaptive social software:

The value proposition of Social Software must be more than intuitive (if software adapts to me and my relationships, I will spend less time adapting to it, or not using it). Social Software will definitely offer new collaborative functions, but that's not the core value either. The value of Social Software is its embedded economies of scope. The ability for an asset to adapt to new uses (its environment) without large transaction costs.

What does that mean in practice? Fabio Sergio's [freedorifero](#) site discusses how and why this adaptive quality might be expressed from a visual design point of view. He sees online user experiences as essentially "unfinished," requiring the user and a context to complete the resulting rational and emotional interaction that is the basis for user experience. Consequently, he believes the role of design is to fade into the background, so that users have more freedom to participate in the final product, and to focus instead on drawing users in, engaging them and extending the experience by encouraging dissemination. His wonderfully optimistic essay [ConnectedLand](#) pursues this idea and links together current developments in design, information architecture and technology to speculate on future directions for interaction design.

The emergence of ubiquitous, mobile, discrete computing increases our general level of connectedness, but it also poses a challenge: how to design for variable contexts and leave the way clear for emergent behaviour and unpredicted outcomes. Dan Hill provides a good introduction to this subject in a [presentation](#) to the [AIGA London Forum](#) in December 2002 that covers several design disciplines and cites examples of this technique in action within computer games, operating systems, weblogging tools and online software. One of the few oft-quoted examples of this technique in mass-market web sites, which he mentions in his presentation, is the [BBCi homepage](#) where some graphical elements subtly change colour depending upon user behaviour to highlight often-used navigation.

This adaptive quality, which goes beyond ideas of personalisation as currently used in online communities, is a key component of online social applications. It is crucial to understanding how we can realise the goal of embedding social tools in peoples' everyday lives and consciousness - something that few online communities can lay claim to. Even the best tend to require too much behavioural bandwidth, and because they often connect a mass of individuals to a "system" rather than directly to each other, arguably the community is sometimes just a glorified audience, as [Clay Shirky points out](#).

Networked individuals and personal publishing

In the early days of online communications, there was much debate about whether the Internet could foster a sense of community; whether online “virtual” communities would start to replace physical human interaction and also whether Internet usage in general was detrimental for offline community engagement. Much of this ignored the fact that in societies that were early Internet adopters, the nature of community bonds and structures had anyway already changed. As Wellman, Boase and Chen suggest in their paper [“The Networked Nature Of Community: Online And Offline”](#):

Communities started changing from groups to networks well before the advent of the Internet. Initially, people believed that industrialization and bureaucratization would dissolve community groups and leave only isolated, alienated individuals. Then scholars discovered that communities continued, but more as sparsely knit, spatially-dispersed social networks rather than as densely-knit, village-like local groups. A similar debate has developed about the impact of the Internet on community. Some fear that it will isolate people from face-to-face interactions. Others extol the Internet's ability to support far-flung communities of shared interest.

In their study, Wellman, Boase and Chen conclude that the increasingly connected nature of our online world is moving us away from certain types of interaction being located in a particular place and towards greater multi-modality in our online person-to-person connections:

The developing personalization, wireless portability, and ubiquitous connectivity of the Internet all facilitate networked individualism as the basis of community. Because connections are to people and not to places, the technology affords shifting of work and community ties from linking people-in-places to linking people at any place.

Probably the best-known example of this is the explosive weblogging phenomenon, which has seen thousands of simple, personal publishing web sites emerge in the past three years. These sites (weblogs) have created a throng of individual editorial voices with a high degree of interconnection, which means ideas, links and discoveries spread rapidly among them. These independent online voices have restored a much needed personal element to online publishing that had been lost since the Web's earliest days.

The first web log, according to blogger lore, was the list of links to new and interesting sites begun at the dawn of internet time by Tim Berners-Lee, who is credited with the invention of the World-Wide Web at CERN, followed by Netscape's "What's New!" page for users of its new web browser in 1993. In 1997, Dave Winer started publishing [Scripting News](#), which was closer to the modern idea of a blog, and [Slashdot](#) was launched; but it was not until 1998 and early 1999 that a community of bloggers started to emerge and then grow exponentially. As an indication of the extent of this phenomenon, [Blogger](#) and [Live Journal](#) (two of the simpler blog creation tools) currently claim around a million users (with at least 200,000 live blogs) each.

In many ways, the weblogging community is close to the original hopes and dreams of online community pioneers. Bloggers have developed a shared [history](#), [language](#), [social structures](#), [celebrities](#), [cynics](#) and other features of a community, although weblogging remains a preserve of techno-literate, highly mobile individuals, which means it is still characterised by relative exclusivity compared with the wider population of Internet users. Various recent developments suggest that this is just the beginning and "blogging" is set to hit the mass market, such as [Google's](#) acquisition of [Pyra Labs](#), who run Blogger, increasing [mainstream press coverage](#) and the tell-tale emergence of so-called "business blogs" in addition to the existing personal ones.

Superficially, blogging can appear to be a narcissistic, banal and faintly ridiculous online sub-culture, but blogs have occasionally produced some excellent content and they have made a substantial contribution to our understanding of online interaction and socialisation. Most important, blogging has seen free software succeed where million-dollar software has often failed – to engage people in collaboration, knowledge sharing and debate. Individual bloggers cite various reasons for this. Sam Ruby articulates two good reasons: weblogs act as "petri dishes" for innovation; and they lead to what he calls [manufactured serendipity](#) ("Google [notices](#) that there is a high correlation between the content of my weblog and [this conference](#). So I [decide to go](#).")

Others see in weblogging the seeds of a more meaningful and compelling form of online social interaction than we are currently familiar with. [Sébastien Paquet](#) of Université de Montréal, regards weblogging as a highly effective form of "personal knowledge publishing." In an article on [KnowledgeBoard](#) (a good site, ironically based on a clumsy one-size-fits-all "online community" [product](#)), he [articulates a vision](#) for online communities of this kind to act as a kind of cultural salon:

"Because they simultaneously fuel individuals' growth and cultural development, online communities will be embraced by culture-makers and evolve to become a major part of the

process that is culture. It will happen simply because online communities give people more freedom to explore and cultivate their interests, and because they increase their ability to connect with like-minded people, as compared to previously available means. "

Even just on a technical level, the world of blogging is home to some of the simplest but most effective [XML-based syndication standards](#), which should serve as a lesson to enterprise software developers everywhere. One of these innovations is the use of [trackback](#) links (aka pingback, linkbacks, etc.), which enable weblogs to track links created to their content by other weblogs and automatically link back to these citations, which is a very effective way of stimulating debate. Ruby discusses this in a more recent essay entitled [Cohesion](#). This is a very interesting example of social software in action. So far, a relatively small number of people are experimenting with what this means and what it can do, but already it has had an unpredictable impact on dialogue, association and transmission of ideas within blogging communities. Some observers, such as [Ben Hammersley](#), speculate that this technique may lead to [emergent metadata](#) as an alternative to fixed methods of site and content classification. In other words, with enough trackback-type links, we could define what a site is about by reference to its inward and outward connections to other sites.

Weblogging began as a personal publishing phenomenon, but organisations are just starting to see the potential uses of this technique to provide services, sell products, build brands and communicate with stakeholders. Ross Mayfield suggests some business blog [ideas](#) in this respect, and Business 2.0 carries a [listing](#) of some early business-oriented blogs. Beyond this immediate bandwagon jumping, which inevitably follows new Internet trends, good and bad, the potential impact of this form of online interaction and knowledge sharing has much deeper implications for the way we structure communication within and between organisations.

However, the important thing to understand about the evolution of online communication in general, weblogs included, is not just that the tools have got better, but that their usage is now starting to reach a qualitatively new level. The pre-condition for this change is achieving a critical mass of inter-connectedness between people and computing devices. In the right context and with enough general "connectedness", the use of simple online communication techniques (such as those described earlier in connection with weblogs) can create network effects that spawn unpredictable, sometimes dramatic, emergent behaviour. Studying and learning from the dynamics at play under these conditions is vitally important if we are to pursue the goal of developing useful social online applications.

Supporting emergent networked behaviour

Howard Rheingold has in mind this idea of emergent behaviour when he writes about [“Smart Mobs.”](#) Rheingold is a veteran of the first stage of online community development, and in Smart Mobs he travels the connected hotspots of the world to survey emergent networked behaviour, his curiosity aroused by observing Japanese youth absorbed in text messaging. His thesis in Smart Mobs is essentially that mobile communication devices, pervasive computing and new networked communication technologies have the potential to amplify human talents for cooperation; this creates the conditions for smart mob behaviour where, under certain conditions, people can exhibit signs of collective intelligence as they “swarm” or “flock” together. He cites as evidence the 1999 anti-WTO protests, where protestors used dynamically updated websites, cell-phones, and swarming tactics during the “battle of Seattle,” and the text messaging networks that helped Filipinos organise demonstrations to topple President Estrada.

The behaviour of smart mobs, and in some respects online blogging communities, exhibit many of the features of what scientists call [complex systems](#): they are emergent, highly connected with intricate inter-relationships, self-organising and simple on the micro level but create effects that appear complex and unpredictable on the macro level; plus, they tend to evolve through rapid collaboration or feedback loops. In the physical world, such systems (arguably human evolution is one example) are not necessarily the most efficient, but they are highly adaptive to changing conditions and they generally get the job done. Complexity theory has become a very popular way of thinking about the behaviour of biological, meteorological, financial, social and other systems, and it has helped us understand that apparently turbulent and chaotic systems actually have a tendency to create their own non-linear order.

The classic pop-science example that illustrates the point is the way in which ants forage for food. Ants display a kind of collective intelligence (described by some as a [“hive mind”](#)) that is based on apparently dumb rules, repetitively followed by thousands of individual insects. Each ant forages for food in an apparently random manner, but when it finds food it marks a pheromone trail back to its colony. Trails fade over time, but positive feedback means that well-travelled paths will attract more and more ants until the particular food source is exhausted. The system works because there are enough ants each following the same rules to ensure comprehensive coverage of any given area.

This technique, whereby simple drone-like behaviour can create a physical piece of shared knowledge, has been referred to as [generative psychogeography](#). Parallels have been drawn

between this behaviour and "[warchalking](#)," where individuals mark "free" wireless internet hotspots in cities for other users to come along and use. Complexity theory shows us that from the seeds of such small inter-connected actions, large trees of system behaviour can grow. These physical phenomena are reflected online as well, where the emergence of the [Wiki](#) movement and the growing cult of [Google](#) both display a simple form of collective intelligence. Wiki web sites – named after the Hawaiian word for "quick" – open themselves up to editing by anybody who cares to contribute, albeit in many cases with some moderation, such as the surprisingly good [Wiki encyclopaedia](#). Google's page rank systems works by using link popularity as a major measure of relevance, which means that user behaviour contributes to the selection of search results. The popularity of weblogs (measured in site traffic) is perhaps even closer to the ants model than Google. Examination of site statistics shows that a tiny minority of sites get the vast majority of blog traffic because of the nature of the positive feedback loop created by the interconnections between blogs. This is similar to the ants' pheromone trails, where some trails rapidly emerge as dominant as others fade to almost nothing. This phenomenon has been described in terms of [power laws](#), and [some bloggers](#) have responded to the analysis by recoiling from what they see as the anti-democratic conclusions of the research, seeking to find a way to equalise traffic in some way.

Complexity theory is a type of so-called "systems thinking" applied to the natural world. Systems thinking essentially involves treating a system (e.g. a large organisation) as a unified whole that is greater than the sum of its parts, rather than reducing it down to its component parts and analysing each in isolation. Pioneered by the [Santa Fe Institute](#), these days complexity theory is an important part of how we understand the behaviour of organisations and social systems, and the subject of a major research initiative of the [European Commission](#).

The case for applying systems thinking to organisational behaviour was made most famously by [Peter Senge](#) in "*The Fifth Discipline: The Art and Practice of the Learning Organization*," first published in 1990. In his book, Senge sets out five disciplines - Systems Thinking, Personal Mastery, Mental Models, Shared Vision and Team Learning – that underpin "learning organizations" with the capacity to meet the challenge of doing business in *complex, dynamic, and globally competitive* markets. According to Senge, systems thinking is the fifth and overarching "leadership discipline" because it integrates the others into a holistic body of theory and practice.

The application of systems thinking can help explain why some small changes to a system can have a huge impact, whilst in other cases apparently major change can have almost no influence on existing system or organisational behaviour. For example, Peter Fryer, a consultant specialising in the application of complexity theory to companies and public bodies, uses the term [Trojan Mice](#)

to describe actions taken to affect change that are “small enough to be understood and owned by all concerned but their effects can be far-reaching.” He poses these as a counterpoint to large, highly-conspicuous events (Trojan Horses) that organisations often set up to force through change, but which are soon forgotten and ignored. This analogy will certainly resonate with anybody who has tried to affect top-down change within a large organisation.

Highly connected social networks behave much like complex systems if the right conditions exist, and the rise of ubiquitous computing and networked communications is taking us further in this direction. Among companies and governments alike there is a sense that the old “command and control” system of top-down management is not working. In both cases, there is a growing fear of asymmetric threats – a sense that large, hierarchical systems are vulnerable to external threats such as, for example, [terrorism](#) in the case of governments and anti-corporate [culture-jamming](#) and [hand-to-brand activism](#) in the case of consumer brands. For many organisations, the problem is a lot more mundane: they are throwing huge resources at enterprise software, intranets and other systems that are attempting to affect organisational change with very little to show in terms of results; meanwhile, they watch frustrated as their employees, customers and stakeholders flock to cheap, simple [web sites](#) that engage them directly and retain their interest.

If we recognise that organisations and communities are not simply reducible to their component parts – if they behave like complex systems – then surely the applications we use to connect people must reflect this? Some of these emerging theoretical approaches to the analysis of online social networks and behaviour can potentially help us build better, more social online applications for real, existing groups of people.

Mapping social networks

Whilst complexity theory and systems thinking suggest that we cannot treat organisations like simple machines whose moving parts can be dis-assembled and re-assembled at will, that does not mean that we cannot hope to analyse and predict their behaviour with a view to improving organisational development. There are a variety of approaches to observing and measuring the behaviour of an organisation or social network, and indeed a number of different measures to use.

Established methods of online application development often observe individual user behaviour at the point of human-computer interface; this usually takes the form of [usability testing](#) on new applications and is guided by study into the nature of [Human Computer Interaction](#) (HCI). Software designers use this at different stages of iteration to ensure that what they build is usable for the target audience, and by observing how users go about certain tasks when faced with a visual interface they are able to learn something about whether the system they are building meets its requirements.

Recently, some people have extended this process by using [ethnomethodology](#), a perspective founded by the American sociologist Harold Garfinkel, and outlined in his 1967 book *"Studies in Ethnomethodology."* The term simply means the study of ways in which people make sense of their social world, based upon the assumption that social order is illusory, constructed from our impressions and experiences, which we then try to organise into a coherent pattern. Garfinkel suggests that the way we make sense of our social world is through a psychological process he calls "the documentary method," which consists of selecting certain facts from a social situation, which seem to fit a pattern and then making sense of these facts in terms of the pattern. Once the pattern is established, it is used as a framework for interpreting new facts, which arise within the situation. Another concept he uses is "indexicality," which means people make sense of something by reference to its context – in other words they "index" it to particular circumstances.

Ethnomethodologists are concerned only with observation, not theory, which is why the approach has often been adopted by those who are looking for a framework to study social networks and interaction, such as the [Knowledge in Organisations Research Group](#) (KORG) at Manchester Metropolitan University. Because this approach does not presume a social order or system, it can be used as a neutral way to analyse dialogue and the development of social constructs. It has been used quite successfully to [inform the design of computer systems](#) and applications, and has

produced an interesting [collection of behavioural patterns](#) observed in the workplace that provide useful pointers for application and interaction design.

Whilst HCI informs the way we observe individual (human-computer) behaviour and ethnomethodology can help us study online social interaction, entirely new approaches have emerged whose aim is to help us understand online networks and social behaviour on a more general level.

[Social Network Analysis](#) has been around since the early Twentieth Century as a way of analysing connections and inter-relationships between people, and it has been used extensively in psychology and anthropology to map different forms of social interaction. It involves mapping and measuring relationships and flows between people, organisations (and sometimes computers) via links that show the relationships between these “nodes” to create a visual and mathematical analysis of a social network. It seeks to quantify the “degree” of a node’s position in a network (how many connections it has to others), its “betweenness” (the extent to which a node connects otherwise un-connected network regions) and its “closeness” (a measure of how closely connected the node is to others). In this way, social network analysts can build up a detailed picture of the real activity within a social network, which can often differ markedly from official hierarchies and formal structures within organisations.

Laura Garton, Caroline Haythornthwaite and Barry Wellman provide a [good basic guide](#) to analysing social networks, with particular emphasis on online communication, in the University of Southern California’s Journal of Computer-Mediated Communication. There are also a growing number of simple software tools available that can support the task of analysing social networks. For example, in an article entitled [“E-mail reveals real leaders”](#) in Nature magazine, Philip Ball looks at how HP Labs have experimented with the automatic analysis of email archives to map the real communities of practice that exist in a large organisation. This use of email artefacts as a dataset for social network analysis looks set to become a standard technique in this field. A useful guide to different methods of visualising online social interaction can be found at [Inf@Vis](#), whilst a number of other such tools can be found in [Roland Piquepaille's Technology Trends](#).

At the point where social network analysis meets complexity theory, several writers have attempted to analyse the transmission of ideas and social epidemics, most notably Malcolm Gladwell in his book [“The Tipping Point”](#). Gladwell seeks to understand why some ideas become so widespread so quickly, whilst others just fade away. In tracing the spread of social epidemics, he identifies three psychological types who play a key role in disseminating ideas: mavens, connectors and salesmen. He defines Mavens as *“data banks, they provide the message,”* whilst Connectors

are "social glue: they spread it." Salesmen are people "with the skills to persuade us when we are unconvinced of what we are hearing... they are as critical to the tipping of word-of-mouth epidemics as the other two groups."

Identifying and feeding these people with ideas for mass dissemination is every marketer's dream, and many of them are continually trying (usually in vain) to create artificial social epidemics with viral email campaigns and so on. But, how many organisations or online social networks can really claim to know who their connectors, mavens and salespeople really are? There are two potential lessons here for developers of online social applications: firstly, that these applications should help identify such roles within their networks; and, secondly, that they should support and reinforce the behaviour of such people.

As well as looking at social networks and individual relationships, many organisations also try to map the product or outputs of these relationships. Within large organisations and business networks, the practice of flowcharting organisation structures, processes and value chains is now fairly well established. It is upon this basis that many large business process systems have been constructed. However, as Verna Allee writes in her book "[The Future of Knowledge](#)":

"The popular model of the value chain is also an engineering concept, derived from expanding the process view to the business as a whole. But modelling a business as a value chain does not help us analyse the myriad of value-creating activities that take place across the enterprise.

Another danger in organizing around business processes is a tendency to embed them in rigid bureaucracies, technology systems, and structures such as ERP and SAP systems. If, for some reason, the process needs to be transformed, it is very difficult to change because so much structure is wrapped around it."

Allee is a proponent of a more holistic mapping practice aimed at identifying value networks, which she defines as "a web of relationships that generates economic value and other benefits through complex dynamic exchanges between two or more individuals, groups or organizations. Any organization or group of organizations engaged in both tangible and intangible exchanges can be viewed as a value network, whether private industry, government or public sector." For Allee, the value that her approach seeks to map – an organisation's intangible assets - consists primarily of knowledge and relationships. Similarly, but from a different perspective, [Chris Macrae](#), [Group Partners](#) and others are using this approach to help companies map their interconnectedness with

themselves and the wider world to develop greater awareness of their positioning through systems thinking.

Another related approach is knowledge mapping, adopted by [Valdis Krebs](#) and a host of others over the past five years in an attempt to audit the intangible value of an organisation's knowledge stock. Krebs has taken this further with his company [orgnet](#), which has developed a widely used organisation network analysis software product that maps knowledge exchange, information flow, communities of practice, alliances and other networks within and between organizations. When applied to large data sets, this can uncover some interesting features of social networks. For example, by [analysing the results of Amazon's collaborative filtering feature](#) (customers who bought x also bought y), Krebs found that the book he was interested in buying was actually the one common purchase among four distinct clusters of books. Undertaking a similar study, but focusing only on strong ties between purchases of political books, he found a [clear division into two clusters](#) with a remarkable consistency within each and only one book acting as a bridge between the two schools of thought. As Krebs points out, quoting network specialist [Ronald Burt](#), this illustrates the point that a closed network *"amplifies predispositions, creating a structural arthritis in which people cannot learn what they do not already know."*

In both studies quoted above, Valdis Krebs discovered individual books that acted as a bridge between networks. If we assume that these books are proxies for the views of their readers, then we can extrapolate that the purchasers themselves operate in relatively closed networks that tend to reinforce existing views and prejudices. This speculative conclusion is supported by the work of Ronald Burt, who has conducted extensive research into network behaviour based upon four years of data relating to the social networks of bankers in a large organization. Burt demonstrates that people who play a bridging role in social networks are key to the formation of social capital, and themselves possess greater competitive advantage, because they overcome structural holes in networks. He also discovered that bridge relationships [decay faster than other types](#) of network linkage, which in turn has implications for the social capital of the networks they are part of. However, by virtue of the fact that they sit astride different networks with their own ideas and perspectives, people who bridge networks are [more likely to have good ideas](#).

In *Tipping Point*, Gladwell describes "Connectors" as *"people with a special gift for bringing the world together... the kinds of people who know everyone."* He says they *"are people whom all of us can reach in only a few steps because, for one reason or another, they manage to occupy many different worlds and subcultures and niches..."* and concludes that *"by having a foot in so many different worlds, they have the effect of bringing them all together."*

“Connector” is a general network role, but Burt’s research and Krebs’ mapping work suggest that it is the combinatorial and transformative character of, specifically, bridge relationships that creates the greatest advantage and social capital. Yet, as we know from the real world, a bridge is only as good as what it connects and what that connection achieves.

Knowledge Sharing and Social Capital

Human capital is a property of individuals, and organisations already seek to encourage its development through online training, e-learning and human resource management. Social capital is a property of human networks, and it is built around relationships and networks. When business and government talk about creating knowledge organisations and the knowledge society, they are talking about developing social capital. Online social applications can be used for learning and other purposes that develop human capital, but where they can really make a difference is in developing social capital within networks.

Social capital, like knowledge, is both abstract, intangible and of variable value depending upon context. Consequently, there has been a natural human tendency to try to package up the explicit manifestations of social capital, such as knowledge and contact information, but this has led to approaches such as [knowledge management](#) being misunderstood as logistical, technical exercises of data capture. However, the relationship between content, people and systems is not so simple – just storing information does not necessarily create social capital – as [Peter Morville](#) points out:

“We use people to find content. We use content to find people. Success in the former requires we know what other people know and who other people know. Success in the latter demands good search, navigation and content management systems. We might also think of the documents themselves as “human surrogates,” representing the knowledge and interests of authors. And of course, we humans also serve as surrogates for one another.”

This is a good expression of some of the original ideas of the [knowledge management school](#), led by pioneers like [Karl-Erik Sveiby](#), who has always emphasised the social and communal aspect of knowledge. These ideas have a lot to contribute towards studying the development of social capital, but as Sveiby himself acknowledges, the knowledge management movement has been hijacked by (mainly US-based) software vendors with the result that much knowledge

management IT infrastructure is woefully divorced from anything approaching normal human behaviour and is hardly worthy of the name.

Too many knowledge sharing initiatives focus on making available databases of resources and information in new and clever ways, at the expense of simply connecting people with other people in order to share knowledge. This suggests another goal for online social software, which is to remove friction and break down barriers to interaction so that people can communicate and collaborate more effectively. An often overlooked aspect of this challenge is consideration of issues relating to language, shared meaning, how we deal with communication breakdown and discovery – how we find people who we do not yet know based on shared interests or other characteristics.

As we extend our relationships beyond our families and immediate communities, we face potential problems of trust, credibility and reputation. Online relationships can develop more rapidly than face-to-face interaction, but the way we form trust relationships is still a slower, more cautious process. This poses a huge challenge for online social software, analogous to the issue of trusted domains and security in hardware and software networks. People speak about trust as the currency of online social networks, and in many ways this is true, but it cannot be represented and exchanged like [coinage](#). This is also an area in which different cultures can influence online social networking in different ways, which is something that social software needs to take into account. People from the United States are much more comfortable forming superficial relationships very quickly that have just enough shared trust and values to enable effective dialogue, whereas European cultures are more selective and slower to form new relationships, but these can become much deeper and stronger over time. Cultures also [differ in a multitude of other ways](#), for example, in how explicit they are about the existence of disputes or disagreements or how overt they are about self-promotion. Given the limited bandwidth of online communication techniques compared to the far richer face-to-face mode of interaction, failure to understand these subtleties can lead to communication breakdown, the destruction of social capital and ultimately the degeneration of online social networks.

We can understand and at least partially map online social networks, but we cannot hope to quantify, capture or even reliably predict the content and the outcomes of interactions within them. Technology can only act as an enabler in the process of nurturing online social capital, but the process itself is almost entirely person-to-person. Rather than seek to capture the knowledge that exists within a social network, which is impossible, all we can do is try to support the network with technology and maintain a healthy level of connections between people so that when and where they need to, they can connect effectively with others.

Towards a social methodology

The rise of “always-on” ubiquitous computing and increasing inter-connectedness through online communications are creating the necessary conditions for complexity and emergent behaviour in online social interaction. Systems thinking is becoming increasingly relevant to understanding how online social networks develop, yet much of our current online software and systems are still rooted in organisational process-driven ideas that cannot adequately explain phenomena we see around us.

Instead of imposing centralised one-size-fits-all software and then using a combination of coercion and marketing to encourage people to use it, we should be building smaller, more modular and adaptable software services around the very people who will use them, and they should be simple to use, ideally transparent to the user. If we are to exploit the potential of online communication to develop social capital in networks and organisations, then these online applications should aim to augment our social interaction and support our connections with others rather than replace them. In addition to building large, structured online environments where people come together to work, share knowledge and communicate, we need to equip users with the tools required to interact on their own terms, and allow the emergent properties of highly-connected social networks to come into play.

Current knowledge management, learning, CRM, communication and collaboration systems attempt to segment our online interaction into discrete channels that demand too much attention and adaptation from their users. Even some of the best online software and tools do not provide interoperability, nor are they sufficiently adaptable for their users to mould them to fit their own specific purposes. This is a problem that also applies to much of what is loosely termed social software now, such as Instant Messaging, social networking and weblog creation tools. Many of these are proprietary, inflexible, idiosyncratic and far too demanding of user attention.

A crucial differentiator for social software is the notion of adaptability to human behaviour, which means we will have to progress beyond existing information search, tagging and classification systems to enable computers to understand more about us, the way we think and what is relevant to us in any given context. The ideas behind the [Semantic Web](#) hold out much hope for making the glut of available information work for us rather than the other way around, and for letting

computers process more of it without our intervention. Metadata, [ontologies](#) and interoperability standards all provide different perspectives on the online world around us. When these can be mixed and matched between people and devices and layered on top of each other, then we can start to share ideas more effectively. Other emerging protocols, such as [Friend of a Friend](#) (FOAF), that describe aspects of social networks and the connections between people could potentially facilitate trust-based interaction and network navigation.

However, social software is not just about the tools themselves, it is also about how they are designed and built, what they are used for, and also the process of their adoption, rollout and uptake. The way developers work and also the way organisations run projects to integrate online communication systems into their work and culture are both still far too technology-centric.

We believe that any methodology for creating online social applications should begin by conducting stakeholder and social network mapping to identify the key people involved and how their inter-connections are organised. Ethnographic methods can help observe existing behaviour within these networks, and social network analysis can help identify roles, patterns of interaction and structural holes that might need to be bridged or links that need to be strengthened. Developing from this base, we need analytical frameworks for looking at the nature of these relationships, the knowledge flows between them, the organisational processes people are involved in, and their information and interaction needs. Only when we have this, can we start to produce representative user personae that can guide development.

Although user research, surveys and focus groups have been widely used to try to provide some user input into the development process, social software development requires a much more intensive engagement with key stakeholders early in the process. This can help mobilise existing knowledge, experience, ideas and energy that can be brought to bear on the project in a positive way. For example, control of language means control of the means of self-representation, as [religious](#) and [political](#) leaders have understood for hundreds of years. Therefore, we advocate intensive stakeholder engagement in the process of information architecture development, content analysis and classification. If stakeholders can contribute to the language and terminology used to organise and mobilise knowledge, they are more likely to engage with the resulting system or product.

Based on this knowledge of the environment in which the project seeks to act, it is easier to come up with initial ideas for specific tasks that online software can support, whether it is about culture change and organisational development, communication and collaboration, learning and personal development, publishing or knowledge sharing. Then, the task is to use our understanding of

network dynamics and social systems to deploy techniques, online tools and environments that can support these applications on a collective basis, whilst still addressing individual needs and characteristics. The resulting software must be designed primarily to enable users to connect with each other and help them organise and self-manage their work. This means relationship management tools and personal content / knowledge management tools are increasingly important, and these are two classes of software that have suffered more than most from [bloatware](#) tendencies and usability deficiencies.

The user experience of online social applications, derived from the research and analysis, should be as adaptable, simple and as transparent as possible. In design terms, the ideas behind the [undesign movement](#) provide a useful way forward, although this is not its main purpose. The lesson of successful sites such as Amazon, Ebay and Hotmail is to keep it simple and adaptable. However, the emotive and cultural aspects of the user experience we are trying to create must not be overlooked. If we are asking people to use our tools to augment their social networking, the usage of these tools must be easy, unobtrusive and appropriate to the context in which they operate. This applies equally to visual and structural design.

Information architecture is an area that promises to be transformed by our evolving thinking about social software. Clearly, we need to look at the users, content and context of any project in the light of our social network research. *"Sites don't exist in a vacuum,"* as IA guru [Louis Rosenfeld says](#), *"but in a broader information ecology made up of content, tools, people, roles, interactions, policies, barriers, etc."* However, the potential for innovation in this area goes way beyond this.

There has always been [debate](#) about the usefulness of [metadata](#) and shared standards in the real world, but social software has the potential for something much more exciting: multiple sources of collaborative, [emergent metadata](#) that can go beyond syndication towards synchronisation. Ideally, users should be able to experience, share and manage personal knowledge according to their own individual perspectives. This would mean a move away from the primacy of systems to focus on making it easier for people to find, organise, and share knowledge and information. Combined with techniques such as [latent semantic indexing](#) and ontology building, this could make it much easier for us to personalise search engines according to our own point of view rather than just basic preferences.

The advent of [XML](#), [RDF](#) and distributed [Web services](#) technology in general makes such ideas a real possibility for even relatively small projects. The main benefit of these approaches to technical development is that small, simple, modular applications and services can be developed rapidly, and with a much lower risk and cost. Development techniques that aim for modular code with common

properties and methods are also a good idea – [Fusebox](#) is an example from the world of Web application development, but there are others. It is gradually becoming more appropriate to think in terms of supplying a pool of shared online tools within common methods and parameters, rather than building a single huge monolithic software product. If that is the case, what is stopping us from being able to build tools around the very people who use them, involving them in the development and evolution of their own online tools and applications?

In project management terms, it is also desirable to build around the existing networks, people and resources identified during the initial research, both for reasons of cost and also to ensure involvement and buy-in from the start of a project. Building online social networks should be about building organisational capacity and social capital both for the host organisation and the network they serve. Complete outsourcing of such a core function is no longer the automatic answer, with too many outsourced projects failing or, where they do succeed, creating little in the way of knowledge transfer and residual capacity for the host organisation. Purchasers may not fully understand the process at the beginning of a project, but if they don't feel confident talking about the issues involved by the end of it, then the developers have not done their job properly. If social software is to live up to its name, it must be borne out of a partnership between stakeholders, purchasers, developers and users, and this should ideally involve de-mystifying and making more accessible the design and development process.

Conclusion

Online social software is a tremendously exciting area that has the potential to overcome many of the limitations and failings of traditional online enterprise, communication and community systems. It requires a new, more engaging and inclusive approach to the entire development process, from conception and research, through design and development to implementation and rollout.

In summary, social software should be:

Smarter

- XML/RDF/RSS syndication technologies
- Distributed, collaborative metadata
- Ontology development and the Semantic Web
- Adaptive design and context-awareness

Simpler

- Smaller, modular software with common methods and properties
- Web services and shared protocols
- Usability and 'unfinished' user experience design
- Shared and open source code

Social

- *In the way it is conceived:* stakeholder engagement, inclusive process
- *In the way it is built:* collaborative development, partnership
- *In what it does:* augments social networking; weblogs, wikis, messaging, etc.
- *In how it works:* adaptive qualities, personalisation, agent technologies, etc.

about headshift

Headshift specialises in the research and development of innovative online applications that build lasting value in the real world through online social interaction.

We work with companies and public organisations to:

- **Research and analyse** the behaviour of existing online communication systems and help restructure them where necessary.
- **Develop strategies** for online communication, using tactics that place the needs of people before technology.
- **Promote cultural transformation** using knowledge sharing, self-managed learning, and inclusive stakeholder communication techniques.
- **Conceive, build and manage** online social applications that create value by providing meaningful user experiences.

Headshift offers a unique combination of qualitative and quantitative research methods, real-world business expertise, award-winning experience in the development of online applications, and a deep understanding of the social impact of information and communication technologies.

We pride ourselves on the quality of our analysis, and we are confident we can demonstrate this in response to a client brief.

specific services

- research, analysis & strategy development
- online communication support
- design & build of online social applications
- project & supplier management

levels of engagement

- site support
- project engagement
- retained consultancy
- joint partnership

values

We value trust and transparency, which we apply equally to our client work, our commercial arrangements, and all our dealings with partners and staff because we believe that the development of trust relationships among stakeholders is key to the survival of knowledge organisations in the 21st Century.

As online communication professionals, we believe we have a particular responsibility to promote meaningful uses of internet-related technologies that have a positive impact on peoples' lives.

key people

Headshift's founders, **Lee Bryant** and **Livio Hughes**, are the former Chief Operations Officer and Chief Executive Officer, respectively, of an award-winning Internet consultancy they co-founded in March 1996 and left recently to focus on their true passion: research, consulting and innovation.

Since 1996, Lee and Livio have led a wide variety of online consulting, design and development projects, working with a diverse range of businesses and organisations in the corporate, public and voluntary sectors. Some of the clients they have worked with include household names, respected professional and academic institutes, and well-known public sector organisations. They have helped them all achieve real-world benefits from online communications. Many of these projects have won some of the online industry's top awards in e-government, e-learning, customer service and online brand development. Some of these have also established communication standards and stand as examples of best practice in their sector.

Since establishing Headshift, Lee and Livio have quickly built a new and diverse client portfolio – but the quality of the engagements remains as high as ever, and their focus is always the same: **build lasting value in the real world through online social interaction**.

In a personal capacity, Lee and Livio are also engaged pro bono in a number of not-for-profit educational ICT projects throughout London.

See over for key person profiles.

our network

Headshift is the lead partner in a network of specialist consultants, developers and professional services firms built up through collaborative working over the past seven years. This network can be called upon on support individual assignments as required, but we are able to keep our rates low by only involving specialist staff where required.

All Headshift partners are market leaders in their respective business areas, which include:

- Business process mapping and analysis
- Change management consulting and delivery
- Corporate learning and training
- Executive coaching and mentoring
- Brand consulting
- Business-to-employee communications
- Customer strategy and CRM

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key people: profiles

Lee Bryant is an on-line communication and community specialist with a focus on knowledge development. Lee has a strong belief in the empowering potential of the Internet, and a commitment to the development of an international knowledge-based society that can transcend cultural and economic barriers.

Prior to becoming involved with the Internet, Lee wrote and researched in the field of International Relations, focusing on the role of international organisations in political crisis, specialising in the former Yugoslavia. He has written on the Bosnian conflict for the Guardian, New Statesman, WarReport and a number of other UK and international publications. He has also addressed major political conferences throughout Europe on the topic and delivered undergraduate guest lecture programmes on political conflict.

During the Bosnian conflict, Lee helped organise support for local humanitarian organisations, and travelled widely throughout the country. In 1993, Lee provided media liaison on behalf of the Bosnian delegation to the Geneva peace talks, and from 1993 until 1995, he worked as a media consultant for the Bosnian government in London and Sarajevo.

It was his experience of running a highly responsive international information network during this time which first stimulated Lee's interest in using internet and other communication technologies to achieve horizontal communication flows that put people and organisations in control of their own self-representation.

He has been playing with words and computers since the age of 10 and published his first code aged 11.

Livio Hughes began his career in scientific support roles at the International Centre for Theoretical Physics in Trieste, Italy. He subsequently worked in commercial management roles at Société Générale de Surveillance and at consumer finance corporation Avco Trust in the UK.

Before co-founding tmg, Livio lectured on several undergraduate political theory and philosophy courses at the University of Westminster in London, and undertook Ph.D. research at the University's Centre for the Study of Democracy, working with world-renowned democracy theorist Professor John Keane.

Livio has also taught current affairs and media studies at the City Literary Institute and provided research and consultancy on political issues to national and international news and current affairs programmes, such as Newsnight, Panorama, World in Action and Dispatches. He has also contributed research to Sunday Times and Private Eye investigations.

Livio's interest in the Internet stems from the time when – as a postgraduate student using the medium for research – he first grasped the excitement of the paradigm shift implied by direct communication, the bypassing of traditional media representation, and the generation of new and largely untested economic, social and cultural models.

Areas of special interest for Livio include business models for competing in the digital economy, globalisation, media convergence and online communities.