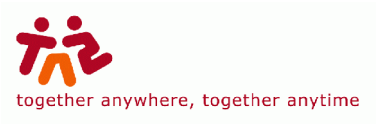

TA2 project
(www.ta2-project.eu)

ENVISION
(http://www.envision-project.org/)

COMET

Turning information into value

FIA Valencia – economic breakout session. Input from the Future Content Networks Group

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"… the old style humans owned a primitive information technology, which they called 'Internet'."

(Dan Simmons, ILIUM)

"What information consumes is rather obvious: it consumes the attention of its recipients."

(Herbert Simon)

Introduction

It may surprise you but there is no Internet. As such it's interesting that such a dynamic and robust set of new businesses have existed around something that isn't there. It is strange too that the dominant business model that consumers enjoy, for the benefit of unconstrained access to a world of information and communication, is 'free to the user at the point of consumption'

So what will happen as we get faster connection speeds, cheaper cloud based storage and services that can be dynamically combined and aggregated to generate new services and experiences? What will all this mean for business? What will we be trading? What will be perceived as valuable?

Overall for the economics of the "Future Internet" we need to ask a very simple question, what will be valued, who will pay and how will they pay for?

In this paper we explode the myth of the old Internet; we explain why it isn't really there and go on to explore seven things that we think will be at the cornerstone of building value in the Future Internet. Three are well known to us; four are, we believe, significant new opportunities that we expect to be the subject of more or less speculative new businesses based on the future Internet, (if there is one).

This is where we think we'll find new business opportunities:

- Reliability – it may not be what you think; and yes someone will pay.
- Emotions – it's why we like the moving image.
- Social relationships – we know about Facebook but it will be like being together.
- Exclusivity – the delivery of rare experiences to the rich.

And these three are the ones that won't go away:

- Personalisation
- Immediacy
- Utility

Reliability

As ways of representing information change; as increasing colour gamut, ultra high definition screens, 3D displays, haptic and scent based interface become normal, there will, be a business in guaranteeing, at a particular quality, the delivery of such bandwidth hungry forms of content. Possibly invisible to the end consumer, content providers will pay those who build and manage networks to ensure that their content is delivered with a proven quality and in time to their end consumers. This approach first seen in content delivery networks and more recently seen in carrier grade content delivery solutions such as BT Wholesale's Content Connect service, or Telefonica's Hybrid delivery Network implicit in the plans for the IP based delivery of TV in the UK through the Canvas service appears to be a sensible solution to a problem with which the internet is struggling.

These products are re-introducing a more direct relationship between those who own the content that fills and causes congestion in the network, and those that maintain and invest in networks in order to satisfy what appears to be an inexorable rise in demand for network capacity. It should also solve the 'grumpy triangle' that currently exists with users complaining of a poor experience content owners being frustrated that their product is not reaching its audience and service providers being exasperated at the unfair burden of the cost of delivery they are being asked to shoulder..

Telcos create their own infrastructure that they connect to other Telcos. The 'internet' just doesn't exist alone. It is an aggregation of Telcos providing local service. **You cannot buy 'internet access; you just can buy a 'local access'** and some service conditions about handling your

traffic into your providers' network and interconnection to other networks. The internet business model is hiding these details from the end user, but that model is failing nowadays and certainly some of the facts related to the interconnection are going to arise sooner or later.

Some projects like ENVISION try to offer a solution to this 'Reliability gap' from a different perspective: the overlaid global applications. Telcos are not the only driving force for reliable services in internet. It is possible to build reliability from inherently unreliable parts. To provide a global end to end service that moves OTT (Over The Top) content ENVISION explores innovative network and service architectures and also creates a rationale for economic exploitation.

For the ecosystem to thrive, all parties need to meet their goals. Where Telcos are in private ownership this includes a profit goal, necessary for the speculative nature of its investment and an integral part of the competition model that underpins our society. Governments may consider contributing to the solution by offering support where the economics of delivery do not make sense – such as with extremely rural geographies or to protect the interests of the poor and disadvantaged for the sake of the society at large – but the economic model most likely to survive in the long term is where all those in the ecosystem can see their goals met.

Emotions

We like our emotions to be stimulated. We pay for content that excites us, scares us, makes us feel happy or sad (and even better, both.) We like to feel in control, to gain a sense of achievement. And for these reasons we pay to watch films and play games. So there is value there. 'Content' is just information that comes out as the result of a creative process. Every human action produces information, but some actions produce a special kind of information that other humans recognize as 'creative content' or just 'content'.

Because the content is digital, it has meant the control the creators once exerted over the presentation of the material has been lost. And because the funding model for the industry is a hits based model, with the most successful titles paying for the duds that industry has struggled as the once loyal paying public has been able to get access to pristine, and sometimes slightly soiled, goods for free. As the Internet develops and is able to deliver even higher bandwidths able to support even higher definitions, more dimensions and greater interactivity, then provided the ecosystem that rewards the King of this ecosystem, the content, is kept healthy, provided control of access to content that is made for profit is controlled, then the content industry will also thrive and enjoy a renaissance. In the mean time the value chain will require controlled access schemes that work both for the industry and for the consumer. The great white hope currently lies with the "rights locker" model; a technology that records a user's right to play content in the network and to act as the gatekeeper of access wherever they may be. This may even open up a more fluid market model where users pay a fixed fee for the right to play content and the marginal possibly variable fee to cover the costs of its distribution.

'Content' is a kind of information protected by law. These laws are different in each country so there will be problems trying to have end-to-end content services in a global internet.

In fact, today there is no solution to have a single content market. There is another proof of the 'non existence' of internet'

Value can be eked from systems that allow emotion to be induced in the consumer. Sadly for the technologist, most of the ability to induce emotion is related to creative constructs, like narrative, but there is a degree to which screen size resolution, colour gamut and sound quality can also have an impact on the degree to which we are affected. There will be careful and conservative exploration of the interplay between such effects and the impact they have, but don't expect many creative risks in the short term.

Social Relationships

Let us consider another rich vein; human nature. We are social animals and seek to build and nurture relationships with others. The current Internet has been transformational for communication, (think e-mail and Facebook) because the information with which they deal serves our need to relate to others either socially (Facebook etc) or more pragmatically (e-mail). The information is almost not important, it is transient and personal, but what it enables, the nurturing of a relationship, is priceless. Whilst we, on occasion, need information and, on occasion, want to be entertained, the need to relate to others to nurture relationships we value is a fundamental human trait. The future Internet will afford more opportunities to nurture relationships with those we cherish. And if a future Internet offers more compelling, more effective ways of communication these will be valued. The information that may enable better communication is the subject of the FP7 project TA2 (Together Anytime, Together Anywhere). TA2 is developing platforms and demonstrator applications for the Future Internet that support rich communication experiences between families or groups of friends and that use base information components; the number of faces in the frame; who's speaking; to whom is this person speaking; to try and deliver a more compelling and effective fork of communication. The user evaluations of the TA2 systems will show how successful we are in turning simple information into services and experiences that will be valued by real users.

If users value and will spend time with something then business models will follow. Advertising and sponsorship seem likely models but with App stores proving that people will pay for something on line perhaps 'user pays' will make a welcome return to the payment vocabulary of the Internet.

Exclusivity

Value can also be derived from exclusivity, from scarcity; think De Beers, think diamonds. Scarcity is something that, to date, the economy of the Internet has not harnessed. The Internet tends to do 'commodity' to do 'open source' and 'freely available'. But as increasingly rich ways of representation are being developed and as the capabilities of the Internet develop, imaginative businesses will emerge that provide access to a deliberately rationed commodity. It may be an experience so 'mind blowing' and one that probably demands unusually high tech equipment that it is not available to the normal mortal. It could be an audience with a celebrity, where the interaction is so lifelike that it is a passable substitute for the real thing but which causes much less intrusion in the celebrity's lifestyle and is more clinical, more detached and more acceptable to them. It may be the ability to observe and partake in an exclusive concert, or to enjoy an experience like travelling in space. It is better that an engineer does not guess what it might be, but an economist will tell you there is value in scarcity and DeBeers will tell you that scarcity can be engineered.

Immediacy

The value of an information service will be affected by two time related factors: timeliness (information when I want/need it) and immediacy (information available to me so that I am amongst the first to know). The value of immediacy is strongly related to exclusivity (see next section).

We are, and always have been, challenged by time. We cannot create it or get it back; we want to enjoy our use of it and to not feel frustrated by 'wasting' time. As impatient beings we want things to be simple and quick; and information services that are efficient will be valuable. Either as something we pay for or as a site we visit, and which will then become a valuable advertising space (think of Google).

In commercial systems immediacy of, for example, financial prices, is highly prized as it allows automatic systems to trigger and trade before the competition; though perhaps such blind systems have flaws, they do in the mean-time drive considerable wealth generation. And fast immediate information is valued by sports fans, and by those who follow the news and celebrity gossip. It matters to our egos to know stuff and to not be left out; so such services are will continue to be

valued, but our expectations will grow and we will expect rich media versions of the news feeds and text based systems we may know enjoy.

Utility

Some information is quite utilitarian; a number, a temperature, a speed, a location. But such dull numbers can be bundled and interpreted to deliver against promises that appeal to our more emotional, sensory nature. Of course within the value chains that ultimate prey on our human needs and desires, there is value. Companies can sell raw data to allow others to build businesses that serve the more visceral human needs. Complex sensor data about traffic flows and speeds can be reduced to solve highly personal problems such as 'what is the best route to my destination?' The value in the low level data is harvested by speculative companies who build a business on interpreting the data to be able to sell benefits such as time saving and lack of frustration (in a product like a satellite navigation tools). Value will continue to be derived in such ways and data from sensors will be used in increasingly imaginative ways to build services that can be understood by people. In particular there will be value in interpreting the data with respect to the context of the user; this correlates and reinforces the previous mentioned value of personalisation.

Personalisation

Consumers will perceive value from systems that offer them the greatest help in discovering the content that meets their needs, be that for entertainment or information. Service providers will perceive value in intermediating systems that can index, categorise and recommend content from a wide range of content sources. Good recommendations can only be made if the system learns and can make sensible inferences from historical user behaviour taking the individual context into account. The necessary disclosures from users to enable such inferences will remain a sensitive issue but good personalisation makes users enjoy using the system more, it pleases them more often and will pay for itself through an increased market share/user base delivering against whatever the business model for the provider is (pay per view/subscription/advertising or a mix thereof).

Summary

The paper describes seven factors from which value can be built. Four are new. Three are pretty old. All are relevant.

The new ones:

- Reliability
    - The current Internet is based on a best effort ethos. The Future media Internet should expect to see economic value derived from network providers providing guarantees on delivery to content owners.
- Emotions
    - The current Internet has a weak economic model to support the incitement of emotion. The Future Media internet will unleash significant economic value through solutions to rights issues that meet the needs of both consumers and content creators.
- Social Relationships
    - The current Internet offers economic value based on relationship through its array of communication tools such as mail Facebook etc.. The Future Media Internet will

develop services to support relationship building that occurs in real time and between groups rather than just individuals.

- Exclusivity
    - The delivery of rare experiences to the rich, like the ability to enjoy an experience as travelling in space. This could demand from the Future Internet high technical capabilities beyond what's required for the regular user.

The old ones

- Immediacy
    - The current Internet with Twitter and RSS feeds is already massively aware of the value it offers related to time. The Future Media Internet will offer more of the same but in richer multimedia forms.
- Utility
    - The current Internet already offers complex problem solving based on the utility of simple information through, for example, services that help with navigation. The Future Media Internet should enable more services based upon the ability to fuse simple pieces of information to solve valuable real world problems. The value will be realised more through the intelligent fusing of data than on the delivery of current solutions through a bigger bandwidth pipe.
- Personalisation
    - The current Internet is already heavily based on personalisation. The Future Media Internet will offer more of the same and an ongoing level of experimentation. Success will come from achieving footfall due to the attractive form of the personalisation offered at an acceptable disclosure cost to the consumer. This will be different for different people.

Many of these are familiar, but exclusivity, emotions, reliability and the ability to turn utility information into value that appeals at a visceral level to people are perhaps the most exciting new areas within which economic wealth will be created by the Future Media Internet.