

## **CAPTURING VALUE IN THE NEW ECONOMY: DYNAMIC TRANSACTION MANAGEMENT**

*White Paper*

### **1. Global hide-and-seek in the value maze**



Economy is an eternal quest for value. As economy grows more complex, this quest becomes more frantic. Business is now a vast hide-and-seek game in a global labyrinth. Ubiquitous and elusive, value emerges suddenly, only to disappear quickly, before re-appearing unexpectedly.

What you see is not what you get

What better example of value's hide-and-seek than tribulations of the "new economy?"

*Resurgence: Wither the bubble?*

Triumphant four years ago, left for dead two years ago, the new economy is now roaring back to life. Its main vector - Internet-based e-commerce - is growing strongly and gaining market share on traditional business. Its standard-bearers, Amazon and e-Bay, have shown remarkable resilience and agility. Their marketplace performance is impressive and their financial valuation continues its upward trajectory. Other icons of the new economy, Yahoo, Expedia, lastminute.com, E-trade, Doubleclick, are also doing well. Online advertising has rebounded strongly. Moreover, significant new players have emerged, such as Google, whose rise, even by Internet time standards, has been nothing short of meteoric.

Even in telecommunications, which suffered 2 trillion dollars hit as a result of bubble implosion, the new holy trinity of mobile, broadband Internet access and Wi-fi exhibits the vital signs of robust and growing demand.

*Business model contamination*

The main criticism of the new economy – its seemingly chronic unprofitability – proved conclusively unfounded. New business models, based on unconventional economic approaches, have now demonstrated their robustness and staying power.

Moreover, such business models are not confined to the emerging sectors of e-commerce and related businesses. In the same way that bad money chases the good money and dirty dancing is more attractive than clean dancing, "bad" business models drive out "good" business models and pristine businesses are now tainted.

Thus, the paragon of an industrial corporation, General Electric, is deriving half of its revenue (and 40% of its profits) not from sales of industrial products but from financial fees of GE Capital and GE Insurance and advertising commissions of NBC network.

Major car companies such as GM or Ford are heavily dependent for their profits on the contribution of their financial services arms.

Detractors of the new economy saw it as a temporary aberration and new business models as passing fads. Once the froth of excess has been blown away, businesses and markets would revert to their traditional ways of measuring and capturing value and determine prices. But this was not to be. As a matter of fact, reverse happened: exception has become the rule; new models contaminated and undermined old models. The notion, which seemed so controversial few years ago, that the new economic and technological environment requires radically new approaches to valuation and pricing methodologies is now gaining broad acceptance.

*Instability*

However, the new economic landscape remains unsettled. It is clear that the old business models relying for revenue generation on direct (paid by consumers) and proportional (to the cost and/or to the use) pricing no longer work reliably:

- The costs are becoming more complex: even for traditional industrial goods, production is no longer the major or the fastest growing cost element
  - Direct sales of products are no longer the exclusive or dominant revenue drivers
  - Ancillary revenues and unconventional distribution channels are becoming essential
  - Customers are fickle and capricious and no longer obey iron laws of branding and loyalty
- Yet, the new models are far from stable. Internet and e-commerce provide a testing ground for various pricing models and approaches: bundling, unbundling, access-based, usage-based, service-based, sales commissions, banners, page-based, keyword-based or contextual advertising, sponsoring or digital bartering. Those models are constantly evolving, in response to customer reactions and accumulated business experience. Furthermore, they are rarely “stand alone”, usually they are combined into composite schemes. Beyond their variety, new pricing models and structures share common traits:
- They rely on multiple revenue streams
  - Indirect (third-party) charges are becoming more prevalent and their range expand
  - They are becoming more complex. Simple formulae no longer work
  - They allow frequent and dynamic adjustments

### Price-value paradox

The new situation creates a “price-value paradox:” a growing disparity between price and value.

On the one hand, ever more sophisticated pricing methodologies proliferate. These methodologies allow:

- Refined price discrimination based on fine-grained customer and market segmentation
- Rapid calculation and updates of a great quantity and variety of prices

Yield management systems, widely used by airlines to manage their pricing strategies, are an early example of such methodology. For a large airline, it is not uncommon to manage some 500 000 distinct tariffs.

Telecommunications are probably the most fertile area for sophisticated pricing. Operators and network equipment suppliers developed highly complex Billing Services Systems (BSS), to manage interconnection charges between carriers, mobile and Internet pricing plans and broadband services offerings.

On the other hand, the very proliferation of pricing methodologies suggests that the underlying economic value becomes more and more difficult to measure and to capture. Constantly changing prices reflect constantly changing values. Value is no longer fixed and absolute, but variable and relative. And value-based pricing appears as a Holy Grail: most desirable but unattainable.

Is this value transformation a temporary aberration, a byproduct of rapid economic and social change, which will disappear once the necessary adjustments have been made? Or is it structural evolution, reflecting a fundamental shift in the underlying economic trends? Let not prolong the suspense: as far as we are concerned, the value transformation is structural. It reflects irreversible trends:

- From products to services
- From tangible to intangible economy.

These trends mean that the core economic value is no longer created at the production stage and that is becoming transaction-based.



## ***2. Beyond the new economy and the Internet: shift to the intangible***

Shift to the intangible is the defining trend of developed economies. The economic landscape of the present and future is no longer shaped by physical flows of material goods and products but by ethereal streams of data, images and symbols. On the demand side, we consume more and more content-based artefacts of information, communication and entertainment. This consumption is non-destructive and non-subtractive: my consumption does not reduce your consumption. On the supply side, intangible assets such as brand, human capital, intellectual property and knowledge have become major determinants of companies' performance and value.

### Dematerialisation logic: Abundance and disequilibrium

The logic of the emerging economy is unsettling and strikingly different from basic tenets of conventional economics. Obsolescence, redundancy and volatility, which have been perceived in the past as pernicious epiphenomena now constitute essential and necessary vectors which shape consumption patterns and supply-side resource deployment. Instability and volatility become pervasive: market positions and hierarchies change rapidly and dramatically.

The conventional logic is concerned with scarcity, the dematerialisation logic with abundance. The former stresses equilibrium; the latter, disequilibrium.

Intangible economy is structurally abundant. Financial systems generate too many transactions; Hollywood, too much entertainment; the Internet, too much information. Physical goods decay and their consumption marks the beginning of the end of their economic life. Intangible artifacts, on the other hand, are not eliminated or depreciated through consumption. Many intangible artefacts are eternal: we will forever read Shakespeare, listen to Mozart or watch Fellini.

Moreover, the gap between supply and demand of intangible artefacts is growing and feeds on itself: to navigate through the information overload we need catalogues, indexes, documentation, whose very proliferation calls for more cross-references, hyper-text links and so on. Information about information is a growing business.

In the economy of abundance, the buying power trumps the selling muscle and economic power is transferred from producer to consumer.

### No disintermediation

More fundamentally, intangible economy undermines traditional frontiers and distinctions. Time-honoured separation between work and leisure, home and work-place, intermediate good and final output, consumer and producer, buyer and seller become blurred. As networks replace hierarchies and connectivity among economic agents intensifies, the number of potential relationships explodes and value-generating chains are becoming more convoluted. Contrary to the widespread conventional wisdom, intangible economy is not frictionless and does not entail the disintermediation. Actually, the abundance of information, the blurring of frontiers and the explosion of relationships increase the need for new intermediation structures and mechanisms. "New economy" leaders, Amazon, E-Bay, Expedia or Yahoo, can be seen examples of such structures and mechanisms.

### Different economic models

Because of these characteristics of intangible economy, well-established pricing and value-determination rules of the traditional economy - marginal cost and consumers' willingness to pay -, while still widely applicable, no longer adequately capture the bulk of economic value.

Traditional pricing is based on physical support of a product and its production costs. In the new « weightless » universe the support is less and less important, and the production costs represent a declining share of total costs:

- Only 17% of the cost of a spaghetti box is basic foodstuff. All the remaining is marketing, logistic, design, etc...
- Software design and development constitute the single most cost important item for new aircraft or car.

Moreover, for intangible artifacts, such as information or audiovisual entertainment, which represent an increasing share of consumption there is no proportionality between the cost of inputs and the value of outputs. Mass consumption does not imply mass production. Economies of scale for intangible artefacts are determined by consumption rather than by production.

Because the output of the intangible economy is elusive and fleeting and its velocity is high, economic value generated by this economy is much more difficult to measure, to capture and to share. Industrial economy has introduced price uniformity and stability. Intangible economy favours price differentiation and variability. The bazaar and barter are back from the pre-industrial age but they have now become digital and global.

Broad implications of the shift from traditional to intangible economy for value determination and pricing are shown below.

<i>Traditional economy</i>	<i>Intangible economy model</i>
<ul style="list-style-type: none"> <li>• Value is determined during the production stage.</li> <li>• It reflects scarcity: lower the availability, higher the value.</li> </ul>	<ul style="list-style-type: none"> <li>• Value is no longer determined in the production stage.</li> <li>• Value is no longer determined by scarcity: Scarce does not mean valuable and abundant does not mean worthless. Information is always overabundant, some of it is valuable, and some of it is not. Brands are valuable precisely because they are ubiquitous.</li> </ul>
<ul style="list-style-type: none"> <li>• Pricing is based on marginal cost (which under conditions of scarcity is increasing).</li> </ul>	<ul style="list-style-type: none"> <li>• Marginal cost is falling and can no longer be used for price determination. For many intangible artifacts such as information, the marginal cost is close or equal to zero.</li> </ul>
<ul style="list-style-type: none"> <li>• Alternatively, economic value is revealed through consumer's willingness to pay. Customer can only consume a good, if he purchases it and this possession is exclusive</li> </ul>	<ul style="list-style-type: none"> <li>• For intangible artefacts, willingness to pay is hard to gauge: consumption does not necessarily imply purchase: in newspapers or in broadcast television, the number of "free riders" far exceeds that of paying consumers.</li> </ul>

Thus, in the intangible economy, customer is no longer a buyer and the economic cost cannot to be reduced to the production.

### 3. *Valuation challenges*

Put succinctly, the valuation challenge of intangible economy is fourfold

- Value is elusive : difficult to capture
- Value is capricious: hard to measure
- Core definitions – cost, consumer, producer– lost their pristine clarity
- Transaction-based valuation is tricky and fickle.

#### Elusiveness of value

Everybody agrees that the intangible economy creates considerable economic value. Explosion of information and knowledge has triggered a wide range of new activities and jobs, and generates considerable income and wealth. Yet, while this is certainly true at the macro-economic, national or cross-border regional levels, at the enterprise level, purveyors of intangible artefacts experience great difficulties monetizing and capturing value generated. It is this difficulty that led many analysts to assert the chronic unprofitability of the new economy stalwarts. And it is not limited to the e-commerce or information portals. According to Peter Drucker, the "computer industry never made a dime"<sup>i</sup> A similar argument can and has been made about Hollywood studios<sup>ii</sup> and, more recently, about the recording music industry.

The difficulty of monetization arises from two primary and complementary sources:

- Unwillingness to pay. This is particularly true for information and content-based artefacts. The facility of replication and sharing makes free consumption easy and ubiquitous. Why should one pay for something that can be seen, heard or read for free.
- Consumption externalities. For intangible artifacts purveyors, free offerings are a cost-effective way of generating positive consumption externalities. Free-riding is often necessary to build an audience. It is an integral part of the well-established mass media – TV or newspapers - business models. The bulk of commercial TV broadcasting is free of charge to the viewer, and free press is the fastest growing segment of newspaper market.

While the problems of monetizing content are not new, they are exacerbated in the Internet environment, which created an ubiquitous low-cost content acquisition and distribution network. Free riding becomes pervasive. Intangible content and material support are increasingly dissociated. Media and computer technologies lower the cost of replication to practically zero. Internet made information and communication very cheap. Conversely, the cost of preventing it and policing access rights becomes prohibi-

tive. The equilibrium between paying customers and free riders has been shattered, undermining the economics of sectors such as recorded music, where the widespread copying and distribution via the Internet is blamed by the industry for the fall in global revenues, estimated at 5% in 2001. According to IFPI (International Federation of Phonographic Industry), recorded music piracy is a “USD 4.3 billion worldwide problem.”<sup>iiii</sup> In 2001, pirated music represented over 12% of worldwide sales.

On-line information providers are seeking to increase their revenues from content offered but despite their strenuous efforts, the percentage of Internet users willing to pay for content remains stubbornly low. Even so, these payments are primarily for access to content rather than for content per se. And, at the same time, prices of data, such as real-time financial market prices, which previously was being sold at premium prices, dropped dramatically to the point of practically free distribution and commoditization.

#### Value capriciousness: From intrinsic value to inherent volatility

The difficulties of capturing the value of intangibles reflect a deeper conceptual problem of measurement; the inherent instability of intangible economy. Fixed yardsticks and benchmarks lose their pertinence and relevance. Volatility becomes structural. In the intangible economy the notion of an intrinsic or absolute value is largely meaningless. Economic value is now highly context-dependent, user-specific and time-sensitive: from one transaction to the next, even for the same customer, the price can change dramatically. To a financial investor, the same piece of market data can be worth millions in the morning and nothing in the afternoon. This structural volatility affects not only markets for finished artefacts but also contaminates the valuation of business assets. Intangible assets are not like tangible assets. Their measurement remains a highly contentious and controversial topic. Accountants and financial analysts have yet to agree on their classification, their inclusion in company accounts and their appraisal principles.

#### Definitional confusion

Intangible economy does not follow the fuzzy logic of overlapping rather than the rules the binary logic of exclusivity. Well-established definitions are no longer clear-cut and unambiguous.

#### *Costs and prices*

As the share of production costs in overall cost structure falls, the cost definition and resulting calculation are becoming more complex and contentious. From a simple, arithmetic exercise, cost determination has evolved into a highly sophisticated art. For intangible assets, depending on the method chosen (historical acquisition cost, market value, replacement costs, etc.), their calculated value can differ by a factor of ten or more.

#### *Customers: catch me if you can*

The traditional definition of a customer is based on acquisition of products and services in exchange for payment. Those who do not pay can be easily precluded from consuming. But, in the intangible economy, this is no longer the case. Let's take the case of Yahoo. According to its 2002 Annual Report, in early 2003, it had

- 200 millions viewers
- 2 million registered users
- 200 000 paying subscribers

Who are Yahoo's "customers": those who actually pay for its services, those who have registered or those who use it regularly, without paying or registering? The latter category apparently does not contribute any income but in fact is the largest revenue generator, as it creates a huge attraction pool for advertising.

Occasional users, intensive but free-riding consumers and paying clients compose continuously evolving subsets of a customer galaxy. Transition from one subset to another is multifarious: users are converted into customers, some of whom eventually decide to purchase but this conversion is neither automatic nor irreversible. This heterogeneity of the customer base explains the instability and capriciousness of customer behaviour.

*From producer and consumers to prosumers*

In the same way that the notion of consumer has become blurred, the definition of producer lost its sharpness. In 1980 Alvin Toffler - in his book *The Third Wave* - coined a term of "prosumer", a blend of *producer* and *consumer*. He used it to describe an emerging type of consumer who would be involved in the design and manufacture of products, which then would be made to individual specification. This has been now become a widespread feature of product design. For intangible artefacts, joint creation is often a rule rather than an exception. Software application is designed as much by its users as by programmers. Joint creation creates convoluted value chains and raises serious issues of intellectual property and value allocation. For instance, in case of foreign exchange information service, do the data belong to the bank, which quotes the rates, to the customer who initiate the transaction or to the service providers, who creates the platform and formats for displaying data? Depending on the answers, the structure of commissions and their allocation will differ considerably.

Triumph of transactions and markets*Transaction: a critical activity*

In the new environment, it is the transaction, which becomes the critical activity for value determination. In other terms, economic value is established and disclosed through transaction among economic agents.

However, the concept of transaction needs to be clearly defined, particularly as it relates to purchase and markets. Transaction should not be equalled with purchase or sale. All sales/purchases are transactions but not all transactions are sales/transactions. For operational purposes, transaction can be defined as a **transfer of rights to use an artifact or an asset**. Monetary payments are just one form of counterpart for such a transfer.

*Markets for intangibles*

In a transaction-driven universe, markets become ubiquitous. But changes in the substance of the economy necessarily imply a change in the nature of markets. Their main purpose is no longer to support trading of physical goods but to facilitate exchange of intangibles. This does not mean that markets for physical goods have disappeared or become irrelevant. They are alive, well and growing. However, markets for intangibles are growing considerably faster. Furthermore, the evolution of physical goods markets is heavily influenced by the dematerialisation logic. Markets for intangibles differ in many significant respects from markets for physical goods.

*Physical goods markets*

- Split into a series of discrete transactions
- Objects of transaction are clearly identifiable and physically separable
- Buyers and sellers are obviously distinct and not easily interchangeable.

*Intangible markets*

- Transactions form a continuous process
- Objects of transactions are polymorphic and fungible: they readily change form and shape
- Buyers and sellers are often interchangeable and sometimes indistinguishable.

Dematerialisation loosens previously tight links between intangible content and material support. Like a dragon in a tale, identical content appears in various shapes and disguises: a song can be sung live, pressed on a CD, shown as a video-clip or ripped as a MP3 file. Basic transaction objects can be spun off into families of tradable artefacts with distinct markets and transactions. Thus, in financial markets, the fastest growing segment is that of derivatives, futures and options, whose value is based on underlying financial instruments such as stocks and bonds.

Confronted with proliferation of trading opportunities, market participants need to adopt flexible and reactive attitudes. Blurring of distinctions between buyers and sellers is a natural extension of convergence between producers and consumers. Academics exchanging data over Internet or financial institutions on a trading network are simultane-



#### 4. *Coping with the valuation challenges*

Intangible economy is not a recent or isolated occurrence. Economic agents have been grappling with the valuation challenges for many years. Their diversity cannot be accommodated by a single and static response. Over time, a range of responses has evolved. Internet has considerably expanded and accelerated this evolution.

##### Dynamic pricing and yield management

This approach is an extension of the classical marginal pricing prescribed by the micro-economic theory. Price change continuously as a function of customer demand and supplier costs. Furthermore, prices are differentiated, reflecting customer segmentation.

##### *Airlines*

In the airline sector, dynamic pricing is widely used under the name of 'yield management.' It is based on two simple principles, one favoring the customer, the other one, the airline. The first principle is that an airline flight is essentially a fixed cost: once the breakeven passenger load is reached, the marginal cost of an additional passenger is very low and conversely, its profitability very high. The second principle is that passenger demand is highly segmented: business travelers have little flexibility in their choice of dates and itineraries, while leisure travelers have considerable discretion. Interactions between those two principles create highly complex system, comprising hundred of thousands of price options. As result, three people sitting in the same airplane row are likely to pay often substantially different prices.

Despite its widespread adoption, increased conceptual sophistication and technical refinement, yield management is not a miracle cure. Many airlines remain financially fragile. The main reason is that the yield management does not overcome the constraints of fixed costs and capacity limits.

##### Metering

Metering can be seen as a variation of dynamic pricing, applicable more specifically to intangible artefacts such as content (news articles, music, photos, etc). Their marginal costs are very low and therefore a marginal cost pricing should be based on small increments. Metering is based on the principle that these increments should be both regular and transparent to the user. Traditional telecommunications billing is the best example of metering: customers pay for their calls in function of time and distance: more time spent and longer the distance between call parties, higher the charges.

Metering has been made possible by the granularity of information technology which allows tracking of minute quantity variations and economical processing of very small transactions. Large-scale deployment of Internet-based applications created high expectations for metering, seen as major growth driver for e-commerce of digitised content. Thus, the web was seen as fertile testing ground for innovative metering schemes. Micropayments in particular were seen as a killer application. Between 1995 and 2000, Digicash, Cybercash, Millicent and other sophisticated designs were launched with great fanfare and prestigious backing.

Yet, their actual development proved disappointing. Despite considerable media coverage and excitement among the digerati, practically none of the systems succeeded - most have been bankrupt, closed or quietly abandoned. Micro-payments standardisation initiatives, despite a strong support from cross-industry bodies World Wide Web Consortium, made little progress, due to the lack of interest of business participants.

Micropayments problems are not limited to cyberspace. Despite sustained efforts of large banks and their card consortium, electronic purse projects are still struggling to gain consumer acceptance.

Widespread and persistent difficulties of micropayments schemes suggest that the underlying problem is more fundamental than the lack of appropriate encryption technologies, common standards or calculation methods. It resides in two economic fallacies:

- Confusion between processing costs and total transaction costs. While processing of micropayments may be the practically costless, related system set-up and management costs are often perceived as high. For the end user, the need to follow complex log-in procedures and to keep track of small transactions, creates a considerable nuisance cost and conse-

quently reduces his/her willingness to use the scheme. For the merchant, to the extent that micropayments do not fit into existing payment systems, they may require significant set up outlays. For the scheme operator, achieving on-line anonymity and security is a tall order. Micropayments schemes often deploy complex technologies, built around public key cryptography, which impose heavy computational overhead and intricate institutional structures of trusted intermediaries. Furthermore, the exception handling costs (in case of transaction problems), which require human intervention and extensive support infrastructure, and which may be as high as 50 dollars per transaction, cannot be significantly reduced or automated. Thus, handling of digital cash is more cumbersome than that of physical cash. And, all of this for very small amounts! Neither customers, nor merchants or payment system operators have any economic incentives to use micropayments.

- Assumption of proportionality between cost and value. Micropayments and other metering schemes assume that the value placed by customer on an artefact is proportional to its cost. Yet, as discussed above, this assumption cannot be taken for granted for intangible artefacts. Thus, a metering system cannot fully capture their economic value and is likely to be economically sub-optimal: some customers would consider prices posted by such system as dissuasively high, while others would see them as ridiculously low. If, in response to this conundrum, system operators seek to introduce higher degree of variability, they risk negating the major virtue of metering: its regularity and intelligibility to the user.

Clearly, metering systems are not the Holy Grail of e-commerce. This does mean that micropayments are completely doomed: they may constitute an appropriate mechanism for certain types of transactions. They have been used with considerable success in mobile telecommunications. Operators such as Orange have used their know-how to offer a pricing per second, rather than by minute to gain market share on its rivals (who soon followed suit). Similarly, European mobile operators developed a flourishing short message business (SMS). However, these initiatives are not strictly micropayments schemes, to the extent that there is no transaction-per-transaction settlement. Rather, they are really micro-accounting schemes, where small value transactions are aggregated up to a medium-sized amount, which is then settled periodically through classical payment arrangements. This way, no additional support costs at the transaction level are incurred. Micro-accounting schemes work well for simple products such as airtime or short messages. They are less well suited for rich-content products and services.\*

#### Ancillary pricing

Ascent of the intangible economy, which reduces the relative value of traditional products, forces all businesses to look for additional sources of revenues. As “Business Week” puts it:

*“America used to be the land of the free. Now, it's the land of the fee. Companies, hard-pressed for money, are taking every possible opportunity to nickel-and-dime people to death.”<sup>iv</sup>*

Ancillary revenues, fees, charges and commissions, come primarily from two sources:

- Services linked to products
- Transaction-related commissions and products.

Thus, software vendors rely increasingly on maintenance and upgrade charges rather than direct sales of new licences. For market leaders such as SAP and Oracle, these charges account for over a third of total revenue and constitute the largest and fastest growing sales segment.

While fees and commissions are called “ancillary”, their contribution is anything but negligible. For instance, financial institutions generate the bulk of their revenues and profits through ancillary services. Thus the commercial banks earn the major share of their income from the free use of assets entrusted to them by clients, whether on-sight

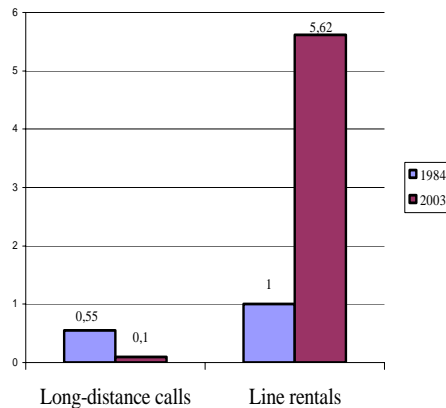
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\* iTunes service launched by Apple, where users can download a wide variety of songs for 99 cents, may seem as a counter-example. However, although the service has been very successful with 25 million downloaded by end 2003, it is doubtful whether the amount generated – 24.75 million dollars – made a meaningful direct contribution to Apple’s profitability and, more importantly, whether it capture the lion’s share of recorded music. However, I-tunes enabled Apple to implement a variant of a well-known cheap razor- expensive blades strategy. This variant reverses the relative pricing of two components, in case of Apple, cheap blades (i-tunes) facilitate the sale of expensive razors (I-pods). I-tunes should be also seen as part of a broader value-capturing strategy not only of Apple but also of music producers. The need to place i-tunes in larger context is precisely our point.

deposits or securities. The balance is generated from services, which are not linked to their traditional primary business of lending. Some of these services, such as payments, used to be provided for free. Now they become a major revenue driver. In telecommunications, network operators responded to the steep decline of call charges by introducing or increasing other fees such as line rentals.

US telephone charges evolution

(in USD)



Source: FCC

Bundling

Ancillary pricing may be widespread and heavily used, it suffers nevertheless from two major drawbacks:

- It exasperates customers by its opacity and ubiquity. Some call it “kleptopricing”
- It may be complex and cumbersome to set up and manage.

Thus, merchants and suppliers seeking to reconcile a comprehensive of various nuances of value and simplicity, turn to bundling: selling a set of products and services for a single price. Bundling appears as natural extension of ancillary pricing. Thus, banks are using bundling extensively to price their services: for instance, customer pays a single price for securities research, transaction execution and portfolio monitoring. Furthermore, in case of mutual funds, she can, for a fixed price, switch a certain number among funds. In information services, whether on-line or off-line, bundling through subscription is widespread. Let us also note that the bulk of Internet services are offered for a fixed price. The success of AOL in 1990s, when it became a dominant US ISP, is widely attributed to its decision in 1995 to offer a fixed-price access to all its services.

Interestingly, many analysts view bundling as a relic of the era of insufficient information and high transaction costs, which would be made obsolete by the greater use of Information Technology. Yet, not only IT did not obliterate bundling, it actually facilitated its expansion. Technology, for instance, made possible “affinity bundling,” bringing together goods and services, which are physically distinct but complement each other. A good example here is a travel bundle, offering for a single price air travel, hotels and car rentals.

Its continuing popularity can be explained by two complementary factors:

- Bundling reduces the pricing system variety and thus facilitates the control of system monitoring and management costs.
- Bundling is economically more optimal than the ancillary pricing. According to two US academics, [Y.Bakos and E.Brynjolfsson](#),<sup>v</sup> bundling pricing strategies are more profitable to Internet content providers and more interesting to information users. They capitalise on the fungibility of intangible artifacts and digital convergence: thus Wall Street Journal sells for a single price its paper edition, access to its web site and (in a more limited way) to its archives and sister publications.

Third-party or indirect pricing

Approaches presented above, while often markedly different in their underlying concepts and implementation methodologies, share one major attribute: they limit themselves to direct customers, those who pay for their consumption. This limitation leaves

out transactions that are based on third-party payments. Commercial television provides an ubiquitous example of such transactions: viewers watch without paying programs, which are funded by advertising. Without advertising, mass media - radio, TV and press - would not take off as they did in the XXth century.

Importance of indirect pricing is growing. Advertising is evolving in response to the transformation of distribution channels and content proliferation. From broad-based and uniform, it is becoming focused and customised: direct marketing, sponsoring, payment-for-leads grow more quickly than traditional media campaigns of brand building.

Internet has further accentuated and amplified this transformation. Online advertising is growing more quickly than the overall sector. From 4% of overall US advertising spending in 2002, online advertising is projected by Morgan Stanley to reach 14% in 2005. Internet advertising growth is fuelled by three factors:

- Strong growth of e-commerce
- Movement of traditional advertisers from offline to on-line
- Development of new cost-effective forms of internet advertising such as paid search.

Those three trends are structural and mutually reinforcing. E-commerce champions such as Amazon are large buyers while online advertising sellers such as Yahoo contribute to enlarge e-commerce reach. Paid search attracts traditional advertisers such as Procter & Gamble or General Motor, who recognise its effectiveness.

As Internet becomes part of advertising mainstream, it simultaneously transforms it:

- Mass customisation is no longer an option, it is an absolute requirement. Largest Internet sites, such as Yahoo or E-Bay combine mass audience and personalised experience.
- Result measurement capability: Internet deeply alters the efficiency equation of advertising: its toolset creates the capability to measure instantly the actual advertising message impact.
- Transaction linkage: Internet dramatically shortens the distance and time lag between the advertising message and the related transaction decision.

Internet begat new advertising models such as the paid search, where is advertisers bid for high placement. Since 2001, the paid search has become a multi-billion dollar business. Estimated by U.S. Bancorp Piper Jaffray at \$1.8 billion in 2003, global paid search spending is expected to grow fivefold to \$7 billion a year by 2007.

Although advertising is the best-known third-party payment system is not the only or not necessarily the largest one. Indirect pricing and third-party payment systems are extensively used in healthcare, the largest and the fastest economic sector today. In all countries and economic systems, healthcare is ruled by indirect pricing: the patient either does not pay at all or pay only a fraction of the cost and value of medical services and drugs. Even the most radical rationalisation and reform projects do not seek to eliminate the dominant role of indirect payments.

Main reason for the growing popularity and use of third party payment systems is that they are well-suited to the requirements of intangible economy and provide efficient mechanism to generate and to capture value created by the intangibles.

Development of sport business provides a good illustration of such a mechanism. Sport was always popular but until recently it was not a huge and global business. The transformation was caused by a crucial insight: the key to growth was to focus the marketing efforts not on enthusiastic supporters but on those who had only vague interest in sport. Thus, football began to prosper economically since it began to cater to those who never come to the stadium and who are unwilling to pay. Thus, the most financially successful football club in the world, Manchester United, has over 75 000 dedicated fans, who fill to capacity the Old Trafford stadium every time the club plays in Manchester. Yet, the club claims a customer base of 50 million. Thus, over 99% of its "customers" never paid a ticket to enter Old Trafford. It is safe to assume that about the same percentage never actually attended any Man U game in any city. They follow team's exploits on television for free. Yet, this bunch of free-loaders generates three quarters of Man U revenue. This is also the case of other UK football clubs such as Arsenal or Liverpool (All three clubs are listed on London Stock Exchange).

Manchester U, Arsenal and Liverpool: key financial data 2001

	Manchester U	Liverpool	Arsenal
Turnover (annual rise)	£129.6m (+12%)	£99.4m (+20%)	£90.9m (+40%)
Gate money	£46.2m	£30.6m	£24.5m
TV money	£51.9m	£42.6m	£31.9m
Gains on player sales	£17.4m	£13.2m	£2.8m
Pre-tax profit/loss	£32.0m	£9.0m	-£22.0m

Source: Evening Standard, Annual reports

The dependence on non-paying television audience is even stronger in other mass culture sports (basketball, car races or baseball).

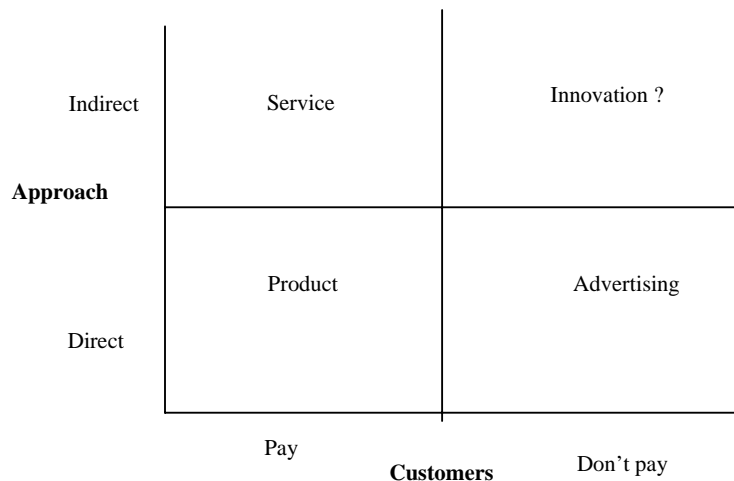
Mix and match: Composite approach

Various approaches presented above are neither static nor mutually exclusive. Sophisticated practitioners of these approaches constantly tinker with them and mix them in order to adapt to changing circumstances. They aim to diversify their revenue streams:

- Television networks seek to lessen their reliance on mass advertising in favor of pay per view, access fees and specialized service (news, seminars)
- Telecommunication companies move away from exclusive dependence on metering and communication charges and begin to look at ways and means of gaining revenues from content and services
- Software companies, in addition to maintenance and upgrade fees, offer consulting services. For their basic offerings, they seek variable, use-based pricing formulae
- Financial services companies attempt to leverage their information assets and transaction processing capabilities.
- Internet and e-commerce can be seen as a one huge pricing laboratory: online merchants and portals constantly experiment new approaches to transaction and valuation.

The scope of pricing approaches is growing larger every day, as shown below.

Evolving pricing approaches



source: GEF

**5. Toward Dynamic Transaction Management**

It should be now clear that the development of new pricing schemes and business models is not a passing fad but a requisite response to fundamental economic transformation. Nor is it enough to treat them on ad hoc basis. Current approaches appear insufficient. Thus, the evermore sophisticated billing systems fail to grasp the nettle of bundling and indirect revenues: it is difficult if not impossible to bill a non-paying user. The very instability of pricing and valuation calls for a broader conceptual and operational

framework, harnessing together various, seemingly disparate, elements in a consistent and coherent fashion.

### Core assumptions

Such framework should be based on the following core assumptions:

- Business increasingly rely on multiple revenue streams
- Boundaries and distinctions between producer and customer, and between buyers and sellers, continue to blur
- Intangible economy facilitates continuous product differentiation and procreation
- Economic value is relative, fundamentally unstable and context-dependent
- Third-party and indirect pricing represent a durable and growing trend
- Reduction of transaction costs increases the reach and the complexity of transaction management
- There is no disintermediation, although some of the emerging intermediation requirements can be automated.

### Definition

We call the new framework, **Dynamic Transaction Management**:

- Dynamic: No scheme or model is a panacea. Their usefulness and pertinence are function not only of technological progress and overall economic development but also of user attitudes. In the intangible economy, the customer is always smart: he comprehends quickly even the most complex schemes and is capable of adapting his behaviour in order to turn them to his advantage. In the same way that designers of security systems assume that every system is vulnerable, designers of pricing schemes should take as given that users will seek to game them. As a matter of fact, loyalty is much more difficult to attain than security.
- Transaction. Value is elusive. It can only be captured partially and indirectly, through transactions among economic agents. These transactions are not limited to bilateral monetary sales or purchases but a cover a range of economic exchanges, often involving large networks of intermediaries and principals, dealing with varied sets of tangible and intangible assets and artifacts. It is by focusing on transactions that can capture and measure value in all its guises.
- Transaction Management. Transactions networks are not only complex, they are also difficult to monitor and regulate. They are open and often unbound. Furthermore, they are not necessarily self-equilibrating. Their behaviour is marked by uncertainty, which may create highly undesirable outcomes for their promoters but also to the community-at-large. Hence the importance of robust and vigilant system management tools. Last but not the least, DTM is geared to operate within high-volume, zero-latency environment.

### Three tightly integrated functions

DTM methodology is structured around three basic functions: capture, benchmarking, sharing.

- Value should be captured: entities using DTM should be able to capture if not the whole at least the lion's share of the value generated by a transaction or a set of transactions, regardless of the origin and trajectory of the value. In particular, DTM should facilitate the capture of indirect value.
- Value should be benchmarked. As all values are relative, it is essential to make various value vectors and manifestations comparable. DTM should allow the construction of benchmarking and indexing frameworks, so that values originating from different often heterogeneous sources can be referenced and measured using common units and scale of account.
- Value should be shared. Transfer of value is no longer synonymous with monetary payment. Furthermore, in the intangible economy, the ownership is no longer exclusive. For intellectual property assets, the value is an increasing function of sharing and dissemination. DTM should therefore provide appropriate mechanisms to allocate and share value among parties concerned.

At present, these functions are fulfilled by specialised systems:

- Pricing schemes are used to is captured value
- Value is benchmarked through accounting systems
- Traditionally, value allocation and sharing are determined by contract or a set of contracts. As the volume of transactions surged and their complexity increased, settlement and clearing networks were created and contracts were automated. Best known examples of such

networks can be found in financial services: credit card payment networks and securities clearing systems. Telecommunications operators and large retailers have also developed systems for applications such as mobile roaming or supplier chain management. These systems are often highly sophisticated but, in isolation, they provide only partial solutions to the valuation challenge. When they are integrated across functions, they are often restricted to specific category of transactions (financial markets for instance) or a pricing method. They may be scalable but are not easily transferable to other categories of transactions. DTM methodology relies on sophisticated pricing schemes, innovative accounting mechanisms and reliable transaction processing networks, while seeking to overcome their limitations through a tight integration of the basic three functions.

### Dynamic Transaction Management architecture

Dynamic Transaction Management architecture comprises four core components

- **Pricing engine.** This engine covers the full array of pricing approaches:
  - Imposed prices – fixed and controlled by public authorities
  - Calculated prices – established by discretionary formulae
  - Negotiated prices – resulting from transactions among concerned parties
  - Derived prices – based on prices of other products or artifacts
  - Composite prices – combining several other approaches
- **Transaction modelling tools.** These should allow the deployment of a wide variety of transaction modes:
  - Bilateral negotiation
  - Multilateral auctions
  - Order-driven matching systems
  - Price-driven market-making system
  - Conditional (multi-stage) trading

Modelling tools should accommodate the range of transaction sizes and, more importantly, allow a mix and match of existing transaction modes as well as facilitate design and deployment of new ones.
- **Behavioural database.** Its purpose is to track users behaviour in various schemes and, in particular their responses to explicit and implicit incentives contained in the schemes. Pertinent behavioural elements would then be analysed and fed back to the pricing engine and transaction modeling components in order to allow appropriate adjustments. If required by system operators, tracking, analysis and feedback could be carried in real-time.
- **Integration framework.** This framework would contain APIs to existing transaction support and customer service applications such as accounting, billing, settlement, relationship management, etc.

### DTM ecosystem

DTM methodology is part of a broader economic system (ecosystem). At its macro-level, this ecosystem is governed by peculiar rules of intangible economy. Downstream, DTM methodology is translated through customised consulting into operational and practical applications and systems. These systems differ markedly in function of specific firm or sectoral requirements. They can be aggregated into transaction networks. Common methodology, including APIs, is intended to facilitate interconnection at either pricing, transaction, accounting and/or settlement stages of the valuation process. Inter-connected transaction networks form the embedded matrix of intangible economy.

## **6. Examples of applications**

DTM ecosystems are well-suited for applications with following characteristics:

- High transaction volume
- Wide range of transaction types
- Intricate supply chains and business relationship networks
- polymorphic product set
- Multiple revenue streams
- Traditional business model under urgent threat.

A list of applications with these characteristics is already long and growing continuously. Some areas however are facing urgent DTM challenges. Three appear of particular interest:

- Telecommunications
- Digital content
- Retail financial services

### Telecommunications

This sector boasts the most technically and commercially sophisticated pricing systems, capable of handling huge volumes of small-value transactions. Mobile operators appear particularly nimble and responsive. However, there are considerable disparities in their approaches, leading to markedly different business results: thus European operators boast considerably higher customer base, ARPU and profitability than their US counterparts. The difference in performance is largely due to two, seemingly minor, pricing decisions:

- In Europe, the callee no longer pays for incoming calls (which is still the standard operating practice in the US).
- In Europe, operators charge for text messages (SMS). Although, their charges are low, in aggregate they generate huge revenues and even larger profits.

For public sector incumbents, such as France Telecom and Deutsche Telecom, the ability to quickly generate substantial mobile revenues largely compensated the revenue erosion in their core fixed line business. Furthermore, they were to transfer into new networks, the basic principle of variable capacity-based pricing (in case of mobile, time-dependency).

However, moving forward, telecommunications face new challenges:

- The new core business of mobile is facing slower growth under competitive and regulatory pressures
- More generally, the switch to IP-capable networks entails a switch to fixed amount pricing and the latter is under strong downward pressure.

Generalisation of IP means that all traffic, whether 3G or VOPI or Giga-ethernet is now data traffic. Telcos need to develop new data-based services and appropriate schemes to capture value, generated by these services. For instance, some operators are already moving from time-based to time-sensitive pricing. Thus, an information deemed urgent will be charged more than the non-urgent one.

The logic of IP-based data services will have two major consequences for telecommunications operators:

- Their networks will become increasingly transaction rather than communication oriented. Key transactional functions will have to be embedded into the core network architecture
- They will be inevitable drawn into the content acquisition and distribution area, where they will both compete and cooperate with the existing and new content actors.

### Digitised content

Internet is threatening to disrupt if not destroy any businesses, whose living depends on content susceptible to be digitized and distributed over an IP network. Piracy is seen as a mortal threat to the recorded music industry. Traditional mass media, newspapers and television, are losing readers and viewers to Internet. In addition, they need to invest considerably resources to develop Internet capability. Their results so far have been mixed. New digital content players, such as general (Yahoo) or specialised information portals (TheStreet.com) have also struggled to established viable business models. Even those companies, which were already well-ensconced (and highly profitable) in the commercial data business, such as Reuters and Thomson Financial, are confronted with brutal price deflation and exploding competition.

In response to what is perceived as a set of life-threatening challenges, content providers have adopted widely differing responses. All kinds of bundling, metering and micro-transaction schemes are being launched and tried. Internet has become an extremely active pricing and valuation schemes laboratory.

While it is too early to draw any definite conclusions from these content and valuation experiments, it is nevertheless possible to draw two major conclusions:

- None of the schemes tried can be deemed to be sufficient and stable over time. Mix-and-match of various schemes is the only viable approach and its composition needs to be adjusted frequently and often substantially. What works in the early lifecycle of a company for a small number of early adopters may not be appropriate for mature mass market when the number of users is very large. Successful scheme for songs may or may not be transferred to movies or newspaper articles.
- Indirect and third party payments are the vital ingredient of value capture. Online advertising in particular emerges as the critical battlefield. It comprises a variety of support and delivery mechanisms, whose relative attraction changes over time. The initial mainstay of internet advertising, the banner, has now lost its appeal. And the current favourite, paid search placement, is already morphing into contextual and event-driven advertising.

#### Financial services: retail banking

Large retail banks across the world can no longer rely on credit business and deposit-lending spread as their main revenue and profit drivers. As part of their adjustment strategies, banks have launched bundled offerings, providing a combination of payment, card and related services for single price and targeted at specific market segments: the young, the high user, the international traveler and thus offering various levels of services. Typically, banks offer three levels of service: entry level or minimum, standard and premium. In France, in 2003, the annual fees range from 0 euros (for an entry level package for teenagers) to over 180 euros for a premium package (which includes the fee for credit card (Visa Premier)), with average fees clustering around 50 to 60 euros.

The main objective of packages is not so much to offer cost savings as to encourage a broader use of banks' services. They appear as a vector of cross-selling: all standard and premium packages include insurance and many packages, such offer rebates for securities accounts charges. Packages are also used to promote a greater use of multi-channel delivery capacity: thus French banks offers graduated discounts for Internet and mobile banking use, as well as discounts on telephone banking.

Pricing of "packages" raises several challenges:

- **Inclusiveness.** While packages are often marketed as "all-inclusive", the basic fee often only covers a limited number of transactions and thus does not eliminate specific transaction charges.
- **Consumer distrust.** Consumer associations are deeply distrustful of banking packages, which they accuse of creating pricing complexity and opacity. They have successfully lobbied for restrictive regulation. In France for instance, consumer protection legislation forbids banks from selling bundled products and services, unless products and services included are also available separately or cannot be dissociated.
- **Supply chain complexity.** In order to increase attractiveness of their packages, banks need to offer a broader range of services. These services, which may include DIY or cheap movie tickets, are often offered by other suppliers, who need to be compensated and integrated within the system. Furthermore, banks have often outsourced their payment and card processing services, which are critical to the packages. Some of these outsourcers have acquired considerable market power and are therefore tough negotiators.
- **Competitive leapfrogging.** Pricing of packages is often defined less by internal strategic calculations than by need to respond quickly to competitors' offerings. Used to a slow product evolution, banks need to accelerate their product cycle: innovative banks may launch some 300 new offerings per year. Thus, the competitive

#### *Intriguing case of financial portal*

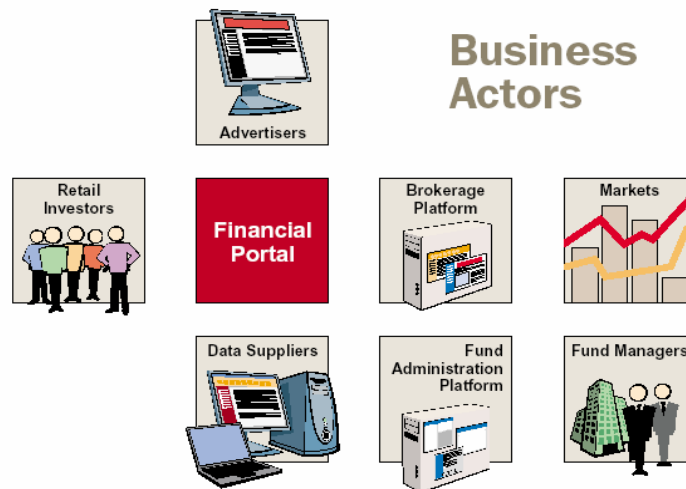
Those challenges are not dissimilar from those faced by mobile telecom operators and by digital content providers. This is not an accident but a demonstration of convergence of intangible economy and information technology. To see how this convergence operates in practice, let's take case of a business, which is situated at the crossroads of information technology, content distribution and financial: Internet-based financial portal.

Portals, such as Yahoo Finance, TheStreet.com in the US, Boursorama in France or Interactive Investor in the UK offer a wide range of information, analysis and research previously available only to professional traders and institutional investors. They also provide linkages to online brokers and other suppliers of financial services. Financial portals have capitalized on a latent demand for financial information among investors

and on technological opportunities, created by the Internet. Not only have they captured market shares from specialised data suppliers such as Reuters and Bloomberg but they have attracted considerable audience. In the UK, Interactive Investor claims an audience of 1.3 million users and is the fifth most visited Web site.

The eco-system of financial portals involves a diversified set of business actors:

- **Retail Investor** - end users that access the portal to either research investment opportunities, buy or sell financial products or monitor financial performance.
- **Advertiser** - companies that advertise on the portal to promote their own financial or related products through banners, pop ups, page impressions and targeted campaigns.
- **Data Suppliers** – sources of real time, delayed or static information to the portal, such as market prices information, fundamental data, financial research etc.
- **Financial markets** – virtual or physical places where prices are displayed and financial transactions are executed: equities, bonds, foreign currencies, derivatives, commodities etc. In most cases, portal users cannot access markets directly but have to channel their orders through execution brokers
- **Execution brokers** – financial intermediaries, who execute orders on the behalf of registered portal users and provide necessary the back office functionality
- **Fund managers** - providers of mutual funds and similar instruments.
- **Fund administration platform** – back-office facility to handle fund transactions and subsequent administration.
- **Other financial service product providers** – for product such as credit cards, bank accounts, insurance, mortgages etc.



There are multiple flows of costs and revenues between these actors and the portal.

Revenues flows include:

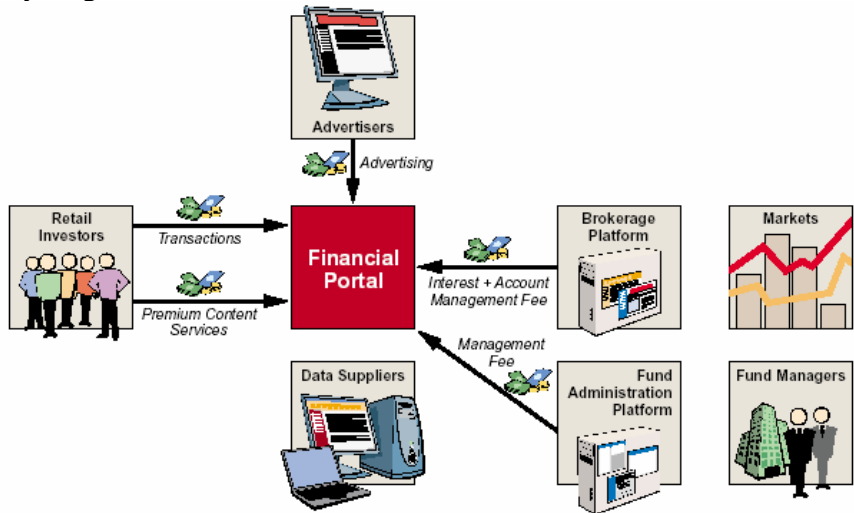
- **Brokerage revenues.** These comprise :
  - Commissions on market trades carried out from the portal by its users. Commissions would differ among markets and instruments. They could be fixed or variable (based on transaction amounts and value). Commissions are paid by portal users to execution brokers.
  - Account management fee, paid by users to financial institutions for account maintenance and reporting
  - Interest on client cash. Portal receives from financial institutions, which maintain accounts of portal users, a share of interest generated by the cash kept in the account
- **Fund revenues.** There are two types of fund revenue;
  - Commissions on transactions, paid by users to fund managers. These commissions can be fixed or variable
  - Management fee, calculated on the fund assets held by the users and paid to fund administration
- **Advertising and marketing.** This is a diversified and constantly evolving category. Possibilities include:
  - Page impressions
  - Guaranteed page impressions

- Keyword-based ads
- Sponsored content
- Targeted mail campaigns

The portal receives advertising and marketing revenues from advertisers. Payments can be based on exposure or on results, particularly the click-through rate.

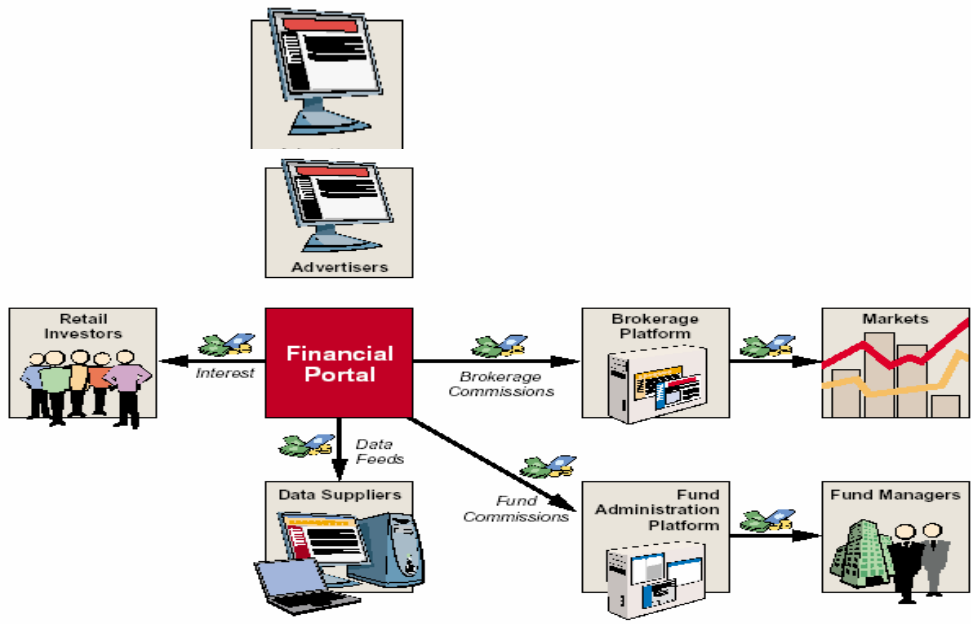
- **Premium content services.** The financial information displayed by the portal is tiered. Some of it offered for free to all comers, some of it remains free but with access restricted to registered users. For premium information and content, such as real-time market prices, portal may charge either an access fee or a subscription charge. However, these fees and charges can be waived for active users or those who hold high-value accounts.

A summary diagram of main revenue flows is shown below.



Cost outflows from the portals include:

- **Brokerage commissions**, due from the portal to financial institutions for transaction execution and account maintenance for securities



DTM methodology allows a speedy modeling of all transactional flows among business actors, creation of pricing plans for these flows, their implementation, monitoring and adjustment in function of use and competitive requirements.

## 7. Conclusion

Pertinence of DTM and its broader ecosystem is not limited to leading-edge services and other new economy offerings. Even in “traditional” sectors, need for new pricing and valuation approach becomes imperative. All businesses need to acquire two critical capabilities:

- **Management of complexity:** to cope with the proliferation of channels, supports and participants. New distribution and delivery networks are no longer multi-channel, they are now cross-channel: they are interconnected and interactive
- **Instant reactivity:** to respond rapidly, sometimes in real-time, to the evolution of the demand and to the competitive threats.

Some economic agents have now acquired the ability to deliver the right message at the right time at the right price. It can be said that they are already practicing DTM, but they do implicitly it without knowing that they are doing that. It is time to make DTM, its underlying concepts and operational precepts explicit.

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### Footnotes

<sup>i</sup> Wired 4.08 August 1996

<sup>ii</sup> Let us recall the court case *Buchwald v. Paramount Pictures*. Even though the film “Coming to America” grossed at least \$80 million, Paramount argued that writer Art Buchwald and producer Alain Bernheim were not entitled to payment under the “net profits” provisions of their contracts because the film had not earned a profit. The trial court agreed with the plaintiffs that this standard provision was unconscionable. After Paramount appealed the trial court’s decision, the Guild submitted an amicus brief in support of the plaintiffs, and -- rather than risk having the decision affirmed -- Paramount settled.

<sup>iii</sup> IFPI, Music Piracy Report, June 2002

<sup>iv</sup> Business Week, *Fees, Fees, Fees*, September 29, 2003

<sup>v</sup> Yannis Bakos and Erik Brynjolfsson, *Aggregation and Disaggregation of Information Goods: Implications for Bundling, Site Licensing and Micropayment Systems*, June 1997