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TRADE DIRECTORATE
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Working Party of the Trade Committee

TRADE POLICY ASPECTS OF ELECTRONIC COMMERCE

ONLINE PRODUCT CUSTOMISATION

*As of 8 March 1999, no written requests for further revisions were received in the Secretariat. Therefore, this
paper is now FINAL and will be de-restricted under the responsibility of the Secretary-General.*

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Introduction

1.   As requested by the Working Party at its June 1998 meeting, this paper provides an analysis of the "online customisation" process in which the customer and producer, through an online, interactive process, tailor a product[1] to the customer's individual requirements. Although the use of data networks to customise products is not new, e-commerce greatly expands the application and reach of online customisation processes; such that the recent OECD Secretariat study on "The Economic and Social Impact of Electronic Commerce: Preliminary Findings and Research Agenda"[2] and a US Department of Commerce study on "The Emerging Digital Economy"[3] describe online customisation as one of the significant innovations afforded by e-commerce.

2.   The paper provides an overview of the role played by customisation in various e-commerce activities, together with a set of case studies of products that are customised *and* delivered online (so-called "digitised" products).[4] The focus of these case-studies reflects the interest of Delegations in more detailed analysis of the nature of online delivery; which the recent WTO Secretariat Study described as "perhaps the most notable contribution of Internet technology and the most challenging aspect from a policy perspective".[5]

3.   As was noted in TD/TC/WP(98)30, one such challenge relates to the nature and appropriate trade policy classification of products that are delivered online in digital format.   In the view of some Delegations, all such electronic transmissions are services, exclusively; whereas some other Delegations have not reached firm conclusions on this matter, for example in relation to the digitisation of products that are generally recognised as goods when attached to physical carrier media (e.g., books, newspapers and periodicals, software, music).

4.   The Secretariat fully appreciates that, with the commencement in September 1998 of the WTO work programme on Global Electronic Commerce, WTO Members are discussing the international trade rules implications of such issues (e.g. in terms of the international trade rules, how distinctions between products, sectors and commercial functions work and whether online-delivered products are "like

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[1]   In keeping with standard economic terminology, this paper employs the word "product" as a neutral term that encompasses both goods and services, in the WTO sense of these terms. This is also the practice of the WTO Secretariat in its papers for the WTO Work Program on Global Electronic Commerce, wherein it routinely refers to "products" that are traded (i.e., marketed, ordered or paid for) electronically but delivered physically, and "products" that are also delivered electronically in digital format, without entering into the question of whether the latter are "goods" or "services", in the WTO sense of these terms.

[2]   OECD 1998 (DSTI/ICCP(98)15; for coverage of customisation issues see in particular PART 3, "Growth of Electronic Commerce: Present and Potential", paragraphs 42 and 75-77).

[3]   Produced by the Secretariat on Electronic Commerce of the US Department of Commerce, Washington DC, 1998, http://www.ecommerce.gov; for coverage of customisation issues see in particular pages 44-45 of the main report and aspects of the case-studies on digitised products in Appendix 4.

[4.]   This term is used as a neutral description of commercial activities and content delivered over electronic networks. No judgement is thereby intended as to whether or not that constitutes trade in goods or services, in the WTO sense of these terms.

[5]   "Electronic Commerce and the Role of the WTO", World Trade Organisation, 1998, pages 1-2.

products" *vis-à-vis* conventional goods and services). Nevertheless, the Working Party agreed that it would be useful to study the online delivery process in more detail; in the first instance -- as proposed in TD/TC/WP(98)30 and TD/TC/WP(98)46 -- by focusing on online customisation with a view to gaining a clearer empirical picture of how it works. This is particularly important with respect to international trade practices that are not yet subject to specific international trade discipline.

5.   The paper is structured as follows -- *Section 1* provides an overview of the online customisation process that emphasises its reliance on an integration of computer technologies with database and inventory systems so as to provide the essential interactivity between the customer and the supplier. This includes reference to the role of customisation at both business-to-business and business-to-consumer levels of e-commerce, and some practical examples of the online customisation of various physically delivered goods. *Section 2* contains a series of more detailed case studies of online customisation of various digitised products (travel bookings; news; virtual greeting cards and bouquets; and music). The case studies include background sections where this is relevant to the explanation of the customisation process. In conclusion, *Section 3* notes that a number of policy-related issues may arise from online customisation/delivery (outlined in an Annex to the paper). Mindful that some of these issues have since been taken up in the WTO work programme, it is not proposed that the Working Party take them up directly, but rather use them as a framework for considering what further analytical or case-study work the Working Party could undertake in support of the WTO work programme. Some suggestions for further such TCWP work are also included.

Section 1 -- Overview of Online Customisation

6.   The concept and practice of *mass customisation* -- providing each customer with the "tailor-made" benefits of the pre-industrial craftsman era at the low costs of modern mass production -- emerged in the late 1980s, through the integrated application of new data-management practices and new technology-based manufacturing tools.[6] Such "mass customisation" practices using internal or private data networks were adopted by large companies across the manufacturing and services sectors. Some early examples included McGraw-Hill's custom-made textbooks created from its vast educational materials databases; TWA Getaway Vacations' custom-designed tour package for the price of a standard tour; and Motorola's capacity to manufacture any one of 29 million variations of pagers within 20 minutes of receiving an order.[7] This type of customisation on private networks typically focussed on business-to-business transactions.

7.   With the emergence of the Internet by the mid-1990s as a prospective single infrastructure for the movement and management of data over public and private networks means that small and medium-sized companies and individual consumers can also provide or gain access to customisation systems, and consumers can avail themselves of "self-customisation" options, *on public networks.* This online customisation enables a *direct* and *interactive* process between the supplier and the individual customer, so as to allow the latter to select from and specify their own combination of all of the options available for the finished version of a product.

8.   Thus with the take-off of the Internet as a vehicle for e-commerce, a variety of established companies moved to offer web-site access to their existing "internal" customisation systems, e.g. the

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[6]   See, for example, *Mass Customization: The New Frontier in Business Competition,* Joe Pine, Harvard Business School Press, 1992; *The One-to-One Future: Building Relationships One Customer at a Time*, Don Peppers, 1993; *Pathways to Agility: Mass Customization in Action*, Joe Oleson, John Wiley & Sons, 1998

[7]   Pine, op.cit.

companies cited above, and car companies such as BMW and Saturn in respect of "finishing details" such as paintwork, upholstery and other interior features; while some companies established themselves at the outset as Web-based providers of customised products, e.g. Dell Computers. The ensuing two Sections show that many more companies are following suit across a broad range of product areas.

9.   Thus whilst the use of data networks to achieve mass customisation did not begin with the Internet, the migration of so many companies to the Web in the past few years has made online customisation a genuine phenomenon. This is because the Web represents "the first manifestation of a unified channel" or "single platform"[8] for the entire value-chain, including the exchange of individualised specifications, both within and between companies large and small, and between them and individual consumers. In turn this is a function of both the utility of the Web as a standard technology for a wide variety of communications that previously used different systems; and its capacity for provision of data in multimedia form (i.e. in more than one medium at the same time, such as video, text, graphics, sound). As a consequence, hitherto distinct value-chain technologies and functions are being integrated; in a way that is at once more interactive and more automated, as well as far easier than before.[9]

10.   Online customisation goes by a number of other names (e.g. relationship marketing, one-to-one enterprise marketing, feedback marketing); however the shared concept is to combine technology and service to tailor products to individual customers, so as to build customer loyalty and boost unit margins. Some analysts consider that it represents, in effect, "computerised modularisation" of markets, that is to say the creation of ever more precise niche markets.[10]

The role of customisation in business-to-business e-commerce

11.   The business-to-business segment of e-commerce presently accounts for around 80 per cent of activity; and is expected to retain its dominance for the foreseeable future. Whilst the primary transformative effect of e-commerce at business-to-business level is expected to be on *production processes and commercial functions*, customisation nevertheless features strongly in that.[11] For example, much of the activity in the growth area of e-commerce logistical support, such as warehousing, call-centre operations and customer support, packaging, delivery and parcel-tracking systems, and even tax collection management, is out-sourced to companies which provide highly customised operations for their client e-businesses. Customisation is also a marked feature in the procurement of the technological infrastructure for e-business whether it be web-site creation and maintenance/upgrading, hardware and software configurations and, of course, online customisation systems themselves.

12.   In addition, customisation features increasingly in business-to-business electronic procurement of production inputs across a broad range of sectors, which can now be commissioned on a global basis according to highly detailed specifications. And the basic unit, which powers so much production of both goods and services- the microchip - can itself be custom-programmed online. For example, at the website of Marshall Industries,[12] prospective chip customers can review available specifications, conduct online

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[8]   International Management in Retail Group (IMRG) *White Paper on Electronic Commerce in Europe - An Action Plan for the Marketplace,* July 1998, p.4 (www.imrg.org)

[9]   *Electronic Commerce -- How Online Transactions Can Grow Your Business,* David Kosiur, Microsoft Press, 1997.

[10]   See for example, *Enterprise One-to-One: Tools for Competing in the Interactive Age*, Don Peppers, 1998; E-Business online magazine July 1998 (http://www.hp.com/Ebusiness/july98/peppers.htm)

[11]   OECD 1998 PART 3, op.cit., page 18.

[12.]   www.electronicdesigns.com

simulations by downloading a sample code which can be modified to suit the product being built, test it on a "virtual chip" on the Web and analyse its performance, all prior to order. The Marshall website utilises 25 languages and currencies; and also provides online customised order tracking through a secure extranet that links it to its customers and suppliers, and customised online after-sales service and training through streamed video, audio and real-time chat.

The role of customisation in business-to-consumer e-commerce

13. The recent OECD study on "The Economic and Social Impact of Electronic Commerce: Preliminary Findings and Research Agenda" noted that, once consumers have Internet access, the principal drivers of business-to-consumer e-commerce are convenience, choice, personalisation, amusement and savings.[13] It is noteworthy that a number of the products, which, according to the study, presently dominate business-to-consumer e-commerce, are also those most amenable to online customisation. Namely, in what the study described as the "tangible goods" category (i.e. ordered and customised online/delivered physically) there are computers, clothing and greeting cards; and, in the "digitised" category (i.e. ordered, customised and delivered online to the consumer's computer over the network) there is entertainment (adult content, on-line games, music and video), travel, news, banking, stock-trading and insurance, and e-mail.[14]

14. This OECD study also pointed out that, in the business-to-consumer segment, many of the largest e-merchants which do not offer customised products nevertheless provide such a huge range of products whilst serving niche markets so small that they begin to approach custom-made options (e.g. Walmart, Amazon.com). And that likewise, personalisation of on-line shopping through options such as storing of individual consumer preferences and past purchases for ease of reference, personalised parcel delivery tracking, regular updates on issues and products of interest, personal reminder lists, and creation of individualised web-pages at the point of Internet access are becoming standard.[15]

15. A particular commercial rationale for the personalisation/customisation of the online "experience" is to attract and retain customers and to facilitate the targeting of online advertising. For example, websites that give consumers the ability to register and customise online either a tangible product to be delivered physically or a product to be delivered online, also allow the provider to analyse patterns of online behaviour, including responses to advertising links and "what makes people buy online;" and to improve their online marketing and sales strategies according to customers' age groups, special interests, geographic location, and so on.[16]

Online customisation/ physical delivery

16. Online customisation of "tangible" products, where the product is ordered/customised online but delivered physically, has been described as "bringing the plant to the people." Outlined below are just five

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[13]   OECD 1998, op.cit, Part 3 page 16.

[14]   ibid, Part 3, pages 11 and 13.

[15]   ibid. (The OECD does it too; its online bookshop -- accessed via the OECD homepage at www.oecd.org -- provides a customised e-mail alert service that advises customers of available and forthcoming OECD publications based on their specified interests).

[16]   Jupiter Communications Research Studies on Consumer Strategies -- *"Targeted Advertising and E-Commerce"* (www.jup.com/store/studies/tac/) and *"Promotional Content"* (www.jup.com/research/cc/)

of the most common examples -- computers, cars, clothing, teaching materials, and greeting cards;[17] while online customisation of products that are delivered in digital format, including several case-studies, is handled in the ensuing Section 2.

17.	In the case of computers, both personal and business computer systems can be custom-configured online using interactive software that provides a graphic and textual display of the complete available inventory, including specifications, compatibilities and prices. Thus a PC can be custom-configured by individual component such as memory size, drives, screen size, accessories, server; and the unit can also be customised for integration with existing systems. This means the consumer can order a simpler or more complex system than "standard", as well as mix and match various attributes, accessories and add-ons; rather than being limited to choosing between already-built models from the shop-floor or having to order a pre-configured model.

18.	By way of illustration, on the Dell Computers sites,[18] as customers makes their selections, a back-end database keeps track and displays the running price in real time. Once the transaction is processed (using conventional e-commerce technology) the order-message is routed to the factory for assembly with the custom-built computer system usually shipped within 5 days. Dell has from its inception built its business on customisation and its customers range from the individual user to small businesses to entire data centre systems.

19.	For clothes and cars, the Web provides a similar capacity for businesses to let the customer use interactive tools to visually build the product he/she wants, and routes the customer's specifications directly into the industrial production process. For example, BMW's website lets the customer view and select on-screen a wide range of "finishing options" for its main models, including exterior paintwork, interior details such as type and colour of upholstery leather, music system, wood inlays, bar fridges; with the order routed to a local BMW dealer to take the transaction forward.

20.	In the case of clothing, both small specialist clothing producers and multinational clothing companies have established websites enabling the user to specify the fabric, colour, style and individualised sizing. For example, a French online company, Valmary,[19] offers made-to-measure men's shirts, clothing and accessories. The customer can view the various product options on the screen, specify individual measurements, colours and detailing requirements, and order and pay online, via a personalised fashion file in the company's database, which is linked to a computer-assisted fabric-cutting system. Another example is InterActive Custom Clothes which offers customised jeans from its website,[20] using a cookie-driven miniature database into which the customer enters 11 individual measurements and chooses the desired fabric and styling variations (e.g. leg style, number and placing of pockets, belt loops, etc). The information is downloaded into an industrial cutting machine, which produces the pieces for sewing in less than a minute.

21.	In the case of teaching materials, McGraw-Hill's Primus Custom Publishing website[21] represents an adaptation to the Web of that company's earlier customised textbook database; which comprises over 12,000 different texts spanning 20 disciplines (including history, economics, business, literature and

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[17]	EBusiness June 1998 article (www.hp.com/Ebusiness/june98/m_customization.htm) and additional web-site research.

[18.]	www.dell.com/products/poweredge/whydell/global.htm, and www.dell.co.uk

[19.]	www.valmary.com

[20.]	www.ic3d.com

[21.]	(www.mhhe.com/primis/process/p.3/htm)

philosophy). Customisation options include (i) textbooks for sale at a specific school comprising customer-specified combinations of the company's licensed and client-authored content (e.g. core texts, reading books, workbooks, study guides, laboratory manuals, software and software manuals, course notes); (ii) a database-generated version of an out-of-print title covered by the company's copyright; and (iii) adapted McGraw-Hill texts derived from the company's copyrighted material (e.g. selected chapters from standard texts, articles, review notes, case studies); changes in binding, enhancements such as tabs, dividers, and inclusion of the customer's own material (e.g. teachers can enter their own course outlines and schedules for the cover section).

22.   With greeting cards ordered online, the websites of major suppliers not only offer ranges far greater than any "bricks-and-mortar" store can carry (e.g. a couple of dozen categories and thousands of individual cards), but also customised options that they cannot, such as "write your own" covers and inside "banner messages" as well as entry of quite detailed personal messages of around 65 words. Several million personalised cards were purchased online/delivered by standard post in 1997; and nearly one million more personalised "virtual cards" were purchased online and delivered by email (see Section 2).

23.   For flower bouquets ordered online, while it is not yet possible to actually choose the precise kinds of flowers for a bouquet, the principle custom-options are to select from a dozen or so "occasion" categories and view photo images of around a dozen suggested bouquets for each such category. This permits the customer to view the bouquet before buying, an advance on the phone order, as well as providing a broader range than all but the largest florists. The accompanying message can also be personalised through submission of an email containing the desired text (up to 70 words, which is longer than a phone operator would transcribe).

24.   It is also worth noting the increasing trend to the "digital customisation" of certain household appliances, whereby the appliance is linked digitally to after-sales service and maintenance centres which monitor its usage and performance and notify the individual consumer that the appliance needs servicing. Another example, as featured on CNN's October 1998 Technology Report, involves a refrigerator designed in Japan with a mini-computer screen on the front door that can be programmed to provide customised information about diets and recipes from the Internet.

Section 2 -- Case Studies of Online Customisation of "Digitised" Products

25.   As noted in TD/TC/WP(98)30, any product that can be reduced to digital format (i.e. 1 and 0 data "bits") can be delivered over the Internet or other computer networks. This is the case already with many products which comprise text, graphics, sound or video, e.g. news, books, music, films, computer software, patterns and designs, many financial and travel services, architectural plans, etc. Of course, several of these products may also be delivered attached to physical carrier media (paper, tapes, diskettes), by a service provider or by electronic means such as the telephone and fax machine.

26.   The digitisation of a product for online delivery also permits almost unlimited online product or content customisation, the only practical limitation being bandwidth availability. As the following case-studies illustrate, the key e-commerce applications that permit online customisation of digitised material include (i) online access to aggregated digitised databases and archives, (ii) sophisticated search and streaming software agents, (iii) email, (iv) data-broadcasting (i.e. of text, sound, images) and (v) the integration of back-office systems with the front of the Web-site accessed by the customer.

27.   The online customisation may be "controlled" by the provider permitting the user to select from various options ("mass customisation") or involve the user's direct online access to digitised databases of text, graphics, video, sound "bits" ("self-customisation"). In the process, digitised text, graphics, moving images and sound are increasingly packaged together in customised combinations, and commercial functions such as advertising, marketing, retailing and delivery are occurring on a single, often seamless platform. The resulting product may then be downloaded onto physical carrier media after the online customisation and delivery, and/or stored on the computer (thus simultaneously having two distinct "forms").

28.   When the digitised product is stored on the receiver's computer it may be re-accessed repeatedly and re-mixed with other digitised material received at a later stage. Thus a digitised product stored on a PC does not need to be "consumed on delivery" but can be reverted to at a more convenient time, accessed repeatedly over time, and further customised by the user to suit specific and changing requirements, including by "mixing" it with subsequently delivered customised material. This applies particularly with digitised streams of information and entertainment. Indeed with so much content available, and physical constraints on time and location (e.g. many consumers' primary access to a PC is at work), customised formatting is an increasingly essential tool for the management of "too much choice". In this regard, the prospect of affordable set-top boxes that provide for integrated and interactive streaming of various digitised products to the home (e.g. banking, news, entertainment) along with delivery improvements such as cable modems and direct subscriber links, are also likely to provide customised "programming" options that build on those being developed in Internet e-commerce.

29.   The following four case studies describe online customisation options presently available for a number of e-commerce "products" (travel bookings, news, music, and virtual greeting cards and bouquets). There being no previous detailed study of this issue to hand, the Secretariat has constructed the case studies by analysing a sample of websites offering customised options in each category. The sample was built-up through reference to industry journals such as E-Business magazine, Internet guides such as "Le guide des 200 meilleurs sites Web", and by using various Internet search-engines to search for websites that provide customisation options.

30.   While around half the examples so located and cited in the case-studies are websites of US-based companies, some of those in fact also comprise local partnerships in countries such as Australia, Sweden

and the UK; and a number of other UK, French, German and Swiss websites are also cited. [22] This "composition" in the examples reflects a couple of factors: the strong take-up of online customisation by US companies and the author's linguistic shortcomings to locate and analyse websites in all the other OECD countries and languages. In the result, the case studies and examples cited are intended simply to be *illustrative* of the online customisation process.

I.   Travel planning and ticketing

31.   Customisation in this online activity is mostly of the "self-customisation" type, whereby the user customises the travel product him/herself. In the "bricks and mortar" environment, of course, the traditional travel agency provides "mass" customisation -- the customer explains what he/she wants to do and the agent accordingly provides a range of options and prices. Online, the customer uses a variety of search technologies to himself locate, compare, and purchase suitable itineraries, hotels, flights, package deals, guide books, and so on.

32.   However, this self-customisation process is not simply a matter of accessing the travel section of an Internet portal site or a dedicated travel search engine (e.g. Accommodation Search Engine, www.ase.net) and typing in a destination, to be presented with myriad hypertext links as a starting point for a lengthy browse between websites. Rather, the principal factors in self-customisation in this sector are database/content aggregation and the extent to which the back-office functions of various travel providers -- airlines, hotel booking systems, car rental companies, etc -- are linked to the user's point of interface on the Web.[23]

33.   Thus the trend is to single-point-of-entry online travel networks that aggregate both *content* (e.g. on destinations, transport timetables, hotels) and *functions*, including reservation systems (flights, trains, buses, car rental, accommodation) and travel-related retailing (e.g. tickets for shows or sports, luggage, guidebooks).

34.   There are a number of different models for this --

   a) The "travel agent network", wherein the user can research destinations and activities, and be linked online to an agent or company serving that part of the market, including for reservations and ticketing.[24]

   b) The "online reservation system",[25] which provides direct and user-friendly access to industry booking engines for airlines, trains, car rental, and accommodation. Tickets may be collected

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[22.]   It should also be noted that the domain name suffix ".com" does not *prima facie* mean that the website is US-based. If a ".com" domain name has not been registered already, and the registering company chooses to do so, it can do so as ".com" regardless of its home country. Alternatively if the ".com" name is already reserved, or if it chooses to, the company can register its name as ".co.(country abbreviation).

[23]   For example, an electronic reservations system such as SABRE (Semi-Automated Business Research Environment) which forms the basis for the reservation systems for many airlines, car-rental and train companies, and around 40,000 hotels and travel agents in more than 100 countries, is thus also the system that users operate when they make online reservations with those companies, and on the easySabre and Travelocity websites.

[24.]   For example, Internet Travel Network (www.itn.com), which groups 10,000 participating travel agents worldwide, Hotels & Travel on the Net (www.hotelstravel.com), which has links to hotel chains, airlines, travel services and reference material worldwide; www.nouvelles-frontieres.fr; www.degriftour.fr

from a partner travel agent or be stored electronically until the point of check-in. This is also the model used by most major airlines on their individual websites.

c) The "enhanced travel directory",[26] which provide travel-related content (e.g. destination galleries, special interest tours, maps), and online air, car, and hotel booking systems.

d) Hotel "Directories", which provide details and photos as well as online bookings,[27] those which provide content-only but in more detail[28] and, in some cases, with RealPlayer video-clips for a "virtual tour" of listed hotels.[29]

e) The "Business Travel Centre", which provide content on destinations and activities, timetables and hotels, together with online reservations and tracking of frequent flyer points for the business travel market,[30] and specialist systems provided to corporate intranets, such as American Express Corporate Traveller, which are customised to incorporate individual corporate travel policies, preferred suppliers and special rates, budget reporting requirements and frequent flyer points management.

35.   Access to these online travel systems is generally free (apart from specialist corporate systems), with revenue derived from content licensing and advertising links to other retailers. Indeed, part of the business model involves the savings made from the "de-commissioning" of the intermediary travel agent.

36.   The rapid establishment of the "self-customisation" online model effected by the extension of direct access to industry booking systems to the consumer would appear to leave little scope or necessity for development of a "mass customisation" online model (which arguably is what traditional "bricks and mortar" travel agents already provide). To the extent that "mass customisation" is employed, it mostly consists of various "personalisation" options, such as entry and saving of a customer's profile for better targeting of his/her automated searches (e.g. preferred airlines or hotel chains, airline seat preferences, no-smoking hotel rooms, hotels with in-room mini-bars, etc); and provision by email of regular updates on issues specified by the user; such as travel bargains (low fares, destinations, activities) or travel issues and activities of interest to the frequent traveller (e.g. new boutique hotels in European cities, upcoming jazz concerts in New York).

[25.]   For example, EasySabre (www.easysabre.com), Travelocity (www.travelocity.com), Ticketmaster Travel Online (www.ticketmaster.com/spotl/travel), Global Online Travel (www.got.com), Internet Travel Agency (www.internettravelagency.com), Travel Now (www.travelnow.com).

[26.]   For example, Microsoft Expedia (http://expedia.msn.com), American Express Travel (www.americanexpress.com/travel/index.html), Travel Web (www.travelweb.com), Uniglobe Travel Online (www.uniglobe.com).

[27.]   For example, Places to Stay (www.placestostay.com), Hotel World (www.hotelworld.com), Hotelreservation.com (www.hotelreservation.com).

[28.]   For example, The Hotel Guide (www.hotelguide.com), ReservHotel (www.reservhotel.com), All Hotels on the Web (www.all-hotels.com), Resorts Online (www.resortsonline.com), www.itineraires.com

[29.]   For example, HotelView (www.hotelview.com).

[30.]   For example, Biztravel.com (www.biztravel.com), The Trip.com (www.thetrip.com).

II. News

Background

37.   The role of electronic systems in the production and distribution of news -- not only radio and television, but also the print media via computerised assembly and printing systems -- has made news content particularly adaptable to the Internet. Accordingly, the past three years has seen a "rush to the Web" by media outlets. As illustrated by *Box 1,* thousands of newspapers, magazines, broadcast and cable television and radio stations from all over the world have established Websites.

Box 1. Online news media sites around the world

Newspapers	3,115	Magazines	3,862	Syndicated News Systems	150
Africa	54	Africa	55	Africa	1
Asia	214	Asia	176	Asia	2
Canada	204	Canada	141	Canada	8
Caribbean	22	Caribbean	11	Caribbean	1
Europe	509	Europe	621	Europe	13
Latin America	152	Latin America	62	Latin America	2
Middle East	36	Middle East	23	Middle East	2
Oceania	32	Oceania	109	Oceania	1
USA	1,892	USA	2,664	USA	120
Television	**1,282**	**Radio**	**2,100**		
Africa	12	Africa	33		
Asia	73	Asia	162		
Canada	1	Canada	149		
Caribbean	6	Caribbean	4		
Europe	197	Europe	246		
Latin America	35	Latin America	29		
Middle East	13	Middle East	8		
Oceania	43	Oceania	81		
USA	902	USA	1,388		

Source: The Editor and Publishing Company's Online Media Directory
(http://www.mediainfo.com), September 1998[31]

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[31]   The E&P aggregated database presented here does not provide a breakdown of sites-per-country for each media category except for the US and Canada; for that it is necessary to go to individual country databases (which are linked to the actual sites). However, at the aggregated "all media" level of the database, sites are listed for 21 African countries, 21 Asian countries, 15 Caribbean countries, 49 European countries (covering West, Central and Eastern Europe), 19 Latin American countries, 8 Middle East countries, and 5 Oceania countries.

38.   Whilst the range of material thus carried varies considerably, particularly in less-developed markets, a reasonably comprehensive news media website tends to include the following news content: current stories (newspapers, magazines, TV and radio), editorial content (newspapers and magazines), programme scheduling (TV and radio), product reviews (e.g. books and movies in the case of most media, specific products relevant to a magazine's subject matter), additional Web-only graphical and interactive content (all media), and access to searchable online archives (all media). In addition, newspaper, television and radio sites tend to carry weather, sports and financial news, along with "city guides" (travel, restaurants, entertainment, etc). There is also a wide range of online-only (i.e. no physical counterpart) news systems and magazines of both a general and specific interest nature.

Online customisation

39.   As with other online digital material, news content can be customised to a "market of one" (be that one individual consumer or one corporation/institution). In this regard, the "killer applications" for customisation are aggregated electronic story archives and a range of delivery technologies (e.g. on-screen "data-casting" and email).

40.   News archives have long formed an important and valuable reference and research tool for education, government and corporate purposes; first in storage-costly paper form and in the last decade or so via royalty-based partnerships between news providers and proprietary distribution systems such as Nexis-Lexis and CD-ROM producers. The Internet represents a way to extend the interactivity of different forms of archived news (i.e. combining text, sound, image) more readily and cheaply, and to a far bigger audience.[32] Online access to news media, including archived content, also means that news no longer has to be "consumed on delivery" but can be reverted to at a more convenient time or accessed repeatedly over time. It can also be customised in myriad combinations to suit the specific and changing requirements of users.

41.   A wide range of individual newspapers, magazines, radio and TV websites already provide customised news by email, including summaries of breaking and headline stories and stories on subjects the user has specified an interest in tracking, programming highlights, forthcoming webcasts, etc. Aggregative news websites, which bring together the current and archived resources of several providers, are also increasingly offering customised content. An aggregative site may combine the resources of various media organs of one company, or several companies in an online partnership; or it may be an "umbrella site" that individual websites agree to link into (e.g. www.netitnow.com/news/index, a "best of the francophone web" aggregation).

42.   Of the various applications for delivery of customised news, email is the most cost-effective and readily utilisable (including because the user does not need to log in to the Internet to receive and read it).[33] The customisation process generally requires a user to specify the issues she/he is interested in, typically by selecting from a list of topics, although two-way customisation, in which the user specifies key words, names or themes, is increasingly common. The HTML email function (the incorporation into email of HTML links) means that the recipient can then move directly from an email item to its Web source.

43.   An example of customised news delivered by email is the www.europeinfos.com site, which provides customised news from an aggregated database of francophone websites. Users specify their

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[32]   *"The Killer App in Your Library: Archives as a Web Revenue Engine",* Editor & Publisher Co., September 1997, www.mediainfo.com/ephome/news/newshtm/minfocom/0997a.htm)

[33]   Email as the Killer App, from an article *"Take Another Look at Push",* 30 September 1998 www.mediainfo.com archives, http:usnewspapers.tqn.com/library/weekly/aa101297.htm

interests from a lengthy menu and receive a made-to-measure news service in their email box each day at the hour they have specified to receive it. The "flash permanente" news topics include "politique, culture, club de la presse, economie, societe, multimedia, international, sports", weather, traffic, pollution, TV and stock exchange information. In addition to the daily-customised email, the user can also create their personalised news archive on special interest topics.

44.   On-screen "data-casting" systems also provide highly sophisticated customisation options, particularly when multiple sources are combined for customised feeds. This approach, pioneered by proprietary news and information systems such as Reuters and Bloomburg, has moved to a new level through both specific-issue partnerships (e.g. financial, health, computer and technology news providers) and in the general news category.

45.   *Box 2* presents an example of this type of on-screen news customisation-- CNN's CustomNews-- which is in effect an on-screen customised newspaper with built-in audio and visual feeds; and thus go well beyond the capacity of either newspaper or TV/radio in providing news. The CNN system is offered in English in partnership with local news companies in other English-speaking countries (at www.cnn.com), in Spanish in partnership with local news companies in Spain and various South American countries (http://cnnenespanol.com), in Portuguese in partnership with local news companies in Portugal and Brazil (http://cnnemportugues.com) and in Swedish in partnership with local news companies in Sweden (http://cnn.passagen.se).

46.   Just as individual users are making use of customised news options to manage their information requirements and pursue their particular personal and professional interests, there is also strong corporate/institutional demand for cost- and time-efficient customised news covering specific issues and archive access relevant to the enterprise's specific activities. Leading examples include existing proprietary systems which are part-migrating to the Web (e.g. Reuters, FT Profile), and Web-specific systems such as PointCast (www.pointcast.com), which provides a customised news system for accessing via the Web and/or company intranets in partnership with leading print and TV media outlets and specialised information providers, e.g. on the banking sector.[34]

47.   In addition to the supply of customised current and archived news, customised online systems provided by individual media and aggregative sites increasingly incorporate a marketing and retailing function, either through on-site "banner" advertising links or the inclusion of purchasing links within items containing product reviews or other subject-specific content. To illustrate this, *Box 3* lists the topics available for the creation of a personalised entry-page to the Internet portal site Yahoo! as an example of the extent to which the mass customisation of online news is converging with customised online content in multimedia form, from the entertainment, computer, health, financial and travel sectors, as well as assorted Web-retailing functions. Most Internet portal sites now offer similar options. This blurring of information, entertainment and advertising is not, of course, unique to e-commerce, but it is much more pronounced online; and the off-line environment does not incorporate a direct link to the retailer to enable on-the-spot online purchase of the advertised product.

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[34]   Pointcast aggregates material from CNN, The Wall St Journal, The New York Times, The Washington Post, Time, Fortune and Wired Magazines, and specific-purpose material from Price-Waterhouse. According to Pointcast, more than 40 per cent of Fortune 1000 firms are using its system and bandwidth-saving software -- article from Computerworld, 31 August 1998, www.computerworld.com/home/news.nsf/all

Box 2. CNN's CustomNews

Drawing on CNN's own news databases, the media and entertainment databases of its parent company TimeWarner, and an online affiliate partnership with over 100 other news outlets and magazines, users create their own customised news-pages which they can access from the Web or have their PC default to at log-on or when idle. Users can build their pages themselves by selecting from a wide range of topics, as well as entering particular topics or themes for a personalised online "clipping service"; or they can select from a narrower range of topics (e.g. "A Little of Everything", National and World News headlines, Business, Sports, Science and Technology, Lifestyle and Showbiz).

The following listing presents a representative sampling of the categories from which users can select under the 'build my own newspage' option; and aims to give an idea of the extent of customisation that is possible. Many of the various topic categories shown here have further specific sub-items. The set-up process takes about half an hour to select topics and enter specifications, and entails entry of basic personal information. No fees are charged, as revenue is derived from on-site advertising.

World news -- just about every country in the world is listed, along with "global" thematic categories such as conflicts, disasters, international organisations, and so on.

US news -- a wide range of institutional, policy and thematic topics, all states, human interest categories, and so on

National news -- i.e. for the country of partner company providers

Weather -- weather forecast data may be requested for up to five cities in the world from a listing of several thousand.

Sports -- results and stories on an extensive range of major and minor sports and sporting events.

Business -- individual US stock symbols may be entered, and selections made from listings of the main international indexes. These can also be presented on a floating ticker at the top or bottom of the screen.

Science and Technology -- a range of topics including space research, the Internet, computers, environmental issues.

Showbiz -- categories include art exhibitions, performing arts, movies, music, TV, and celebrities.

Lifestyle -- categories include health, relationships, food, recreation, fashion and travel.

"Alt(ernatives)" -- a range of cartoons, games, crosswords, horoscopes, comic strips and categories such as cultural icons, unexplained phenomena.

Personal clipping service -- up to 10 names, topics or themes can be entered for ongoing tracking in the news, creating a personalised archive of articles.

CNN News Stream -- selects and organises the order of items for the personalised news ticker that runs across the top or bottom of the newspages.

TD/TC/WP(98)65/FINAL

Box 3. Yahoo's personalised web page options (www.my.yahoo.com)

Options for left side of web-page	Options for right side of web-page
Album releases	Currency converter
Announcements	Destination Spotlight
AutoLoan	Email Search
B's Fab Finds (hot websites)	Flight reservations
Computer Tips	Keyword searches
Daily Briefing	Mayo Clinic Health News
Daily Download	Message Boards
Daily Horoscopes	Movie Showtimes
Favourite Chats	Net Events
GeoCities Neighbourhoods	News Clipper
Health Tips	News Headlines
Healthy Meals	Phone Search
Lottery Results	Software reviews
Map It!	TV Listings
Mortgage Monitor	Team Calendars (sport)
Movies -- New, Top 20, Coming Soon	Team Reports (sport)
My Bookmarks	Today's Fitness Feature
Nutrition Physician	Today's best fares
Quotes/Portfolios	Weather
ShareWare	Website Tracker (by topic)
Shopping Top 10	Yahoo Categories (shopping and content topics)
Ski report (seasonal)	
Upgrades and Downgrades	
Vitamins and Herbs	
Y! Categories Search	
ZD Net rumour and comment	
Zacks Earnings Surprises	

III.   Music

Background

48.   Music has been recorded and distributed in digital form (i.e. as 0 and 1 data bits) since the introduction of the compact disc (CD) in the early 1980s and more recently the "music video" and digital videodisc (DVD). The Internet extends the options for digital delivery of music beyond the need to affix it to such physical carrier media *prior to sale*. It also "digitises" other key aspects of the commercial supply chain for music such as promotion, marketing and retailing.

49.   The first Internet website to provide for digital posting and downloading of music was created in 1993[35] and the first online music news and promotional sites and "order online for physical delivery" CD retail sites appeared in 1994. Now, there are tens of thousands of music websites,[36] providing for:

– Online delivery of *music information* (e.g. regarding artists, awards, clubs and scenes, events, history, industry listings and bulletins, labels, organisations, reviews);

– Online delivery of *interactive content* (e.g. chat rooms, web-casting of interviews, launches, and concerts, free music samples);

– Online advertising and ordering//physical delivery of commercial products (e.g. magazines, sheet-music, concert tickets, musical instruments and equipment, records, CDs and videos); and

– Online advertising, ordering and delivery of some *commercial products* (e.g. magazines, sheet music and pre-recorded and live-playing music).

50.   Music can be delivered online in two ways: "streaming", in which the music is played in real-time via the PC's audio player; and "downloading", in which a music "file" is copied onto the PC's disk drive for playback later or transfer to a CD-recorder. Streaming software such as RealNetworks' RealPlayer can be downloaded to a PC for free from the Internet (www.real.com) and from Netscape's Netcenter portal site. The recently released RealSystem 5.0 streams audio, video and multimedia.

51.   After downloading, the consumer can store a music file on the PC drive for playback via the PC's sound system, or the file can be written to a CD-Recordable (CDR) disc in a standard audio format that will also play on a standard consumer CD player. The price of CD Recorders is falling dramatically, presently costing around US$300 and the blank media around US$3-4. Bandwidth constraints on surfing and downloading are also expected to improve as the 56-Kbps modem becomes standard and as telephone lines are upgraded to cable.[37]

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[35]   The Internet Underground Music Archive (www.iuma.com), launched in 1993, remains the largest alternative music distribution system for independent musicians. The site carries music, images and text from more than 1000 independent bands, features a "Radio IUMA" online channel; and provides direct email access to the musicians, secure on-line ordering and digital distribution of their music, and interactive community chat forums.

[36]   See *"Music on the Net: A Topographical Tour of the Online Music World",* produced by ICONOCLAST for LiquidAudio Inc., 1997, available from www.liquidaudio.com on the site's press page.

[37]   Ibid; also *"A New Spin"* (guide to formats for personal digital recorders), Time Magazine, 12 October 1998.

52.   A particularly important issue for online music delivery is copyright protection. Accordingly, the leading systems for online commercial delivery of music incorporate anti-piracy safeguards; e.g. Cerebus (UK)'s Virtual Pressing Plant and Eurodat (France)'s system for secure audio file transfer on the Internet, which permit a downloaded music file to be played only from the server to which it was encoded for delivery; and LiquidAudio (USA)'s "end-to-end" music delivery system that employs an enhanced version of Dolby Laboratory's digital compression technology, digital watermarking,[38] high sound quality and royalty management. LiquidAudio's software also enables transfer of album liner notes and cover graphics. The commercial/retail software package enables a server to transfer copy-protected files, log downloads and track royalty payments. With a 28.8-Kpbs modem (i.e. the current standard for home PCs), LiquidAudio can transfer a CD-quality pop song in about 12 minutes.[39]

53.   At the present time, the amount of music available online for digital delivery is limited by the fact that the major recording/distribution companies are reluctant to make their current and back-catalogues available for online access and downloading.[40]   This is essentially due to concerns about piracy and the impact of online delivery on their existing marketing, pricing and distribution practices and retail alliances.[41] Nevertheless, various trials of the technology are reportedly underway, e.g. IBM is reported to be negotiating with Sony and Warner Music Group to trial a "pirate-proof" online digital music distribution system ("the Madison Project"); and Deutche Telekom has been trialling an online "Music on Demand" project that includes mass customisation options with Polygram and several small and independent record companies.[42]

54.   As a consequence, until recently the supply of online music files has been limited to "sample clip" libraries (thirty second clips), online release of individual tracks by some established musicians for promotional or "test" reasons, and a larger range of online releases by "alternative" musicians wishing to bypass established recording/distribution labels. (There are also plenty of "bootleg" sites where fans upload and download a wide variety of music from their existing CD collections).

55.   However, in the past few months this picture has started to change markedly. For example, several leading popular musicians have made some of their tracks available for digital delivery on the Internet. In some such cases, where the group is under contract to a record label, they have been told to

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[38]   A digital watermark is an inaudible piece of binary data that is randomly encoded in an audio file, capturing a range of copyright information including an International Standard Recording Code (ISRC), user ID, acquisition and other royalty tracking information. Watermarks are impossible to remove without rendering the original file useless. When a copy of an original file is made, the watermark identifies and registers the copy to the "log" of the original purchase. This serves to deter bulk copying/piracy, if not casual copying "among friends".

[39]   LiquidAudio Inc. 1997, op.cit.

[40]   The Big Six music companies -- Bertelsmann Music Group, EMI-Capitol Music Group, MCA, Polygram, Sony Music and Warner Music Group -- directly or as parent companies to smaller labels are estimated to control about 85 per cent of the pre-recorded music market; and in addition to the manufacturing process also own music distribution companies (Liquid Audio Inc, 1997; op.cit). In addition, Warner and Sony are also two of the world's largest film, TV and video production and distribution companies, and Bertelsmann is the world's largest English-language book publisher.

[41]   *"Music Industry Hears Footsteps of an Online Revolution",* New York Times Syndicate item from 29 September 1998 (accessed from http://nytsyn.com, by selecting "Computer News" then "Hot Topics", then "Web/Internet"); *"Sonic Boom: The Digital Reinvention of Music",* Wired Magazine 28-30 October 1997 (http://www.wired.com/news/news/technology/sonic-boom/)

[42]   *"IBM Lays Groundwork For Digital System", "Internet Jukeboxes - Music To The Ear",* both in The Financial Times, 11 August 1998.

delete them by the record companies. In other cases, musicians have chosen to post "re-mixes" of previous material or new material on their own websites or those of independent online distributors.[43] In January 1999, 400 European musicians signed a petition to the European Parliament stating that while they "want to use new digital technologies like the Internet to create and deliver (their) music"; they want to know that in doing so the European Copyright Directive will protect them against online piracy.[44]

56.   Thus already, some "generic" music labels, a number of smaller music labels, various individual musicians and some online CD retailers are beginning to offer expanding lists of tracks for online delivery and customised CD compilation (see below). At the same time, the conventional reliance on radio and music television playlists for the promotion of music is being challenged by Internet music-listening sites, whose audience reach is both larger and much more niche-oriented than "bricks-and mortar" stores and broadcast stations.[45]

Online customisation

57.   Against this background, customisation already features at various stages of the online music supply chain; in relation to customised product information, customised CD compilation, and customised listening to music and news on the Web.

a)   Customised information

58.   At the **product research and comparison** stage, the deployment of intelligent software search agents enables users to request customised product information. For example, dedicated music search engines on most leading Internet portal sites enable the user to type in the name of a musician or a specific CD and be provided with lists of and links to websites relating to the query, including price information. More sophisticated search systems within individual online music retailing sites provide the user, in response to a similar query, with a set of "virtual displays" related to the query, which she/he can then move between ("browse"), listening to music samples and viewing album liner notes, as well as comparing product prices.

59.   The Web also facilitates the development of closer artist/audience and retailer/customer relationships, through the **ongoing provision of customised information.** For example, a number of music retail, record label and fanclub websites provide customers with screen-based options to indicate the music genres, individual musicians or specific products of interest and receive regular bundles of information about them, either by email or creation of a personal "page-front" to the provider's website. The bundles can include "sample" digital music and video clips as well as text.

60.   Online CD retail websites such as CDNow (www.cdnow.com) provide customised information for individual users such as a "Wish List" (to keep track of items the user might want to purchase in the future, by adding new items whenever she/he comes across them); "Gift Registry" (storage of the names of items the user would like to receive as gifts); "CDNow Recommends" (which searches the online store to give personalised recommendations based on the user's tastes and tips on new music related to the user's

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[43].   "Online distribution: Music company Internet fears start to come true", Financial Times, 16-17 January 1999.

[44].   "Artists Unite for Strong Copyright", open letter to the European Parliament, Financial Times, 18 January 1999; and "Battle lines confused in EU copyright wars", Financial Times 20 January 1999.

[45].   Sources as for footnote 28.

existing interests); "Favourite Artists" (which sets up links to the discographies of the user's favourite musicians, and provides updates on new releases and events).

b)   Customised CDs

61.   It is also technologically feasible to use the Internet to create **customised CDs from pre-recorded music archives,** wherein the content and sequencing of tracks[46] is customised according to the consumer's preferences. This may be done either by the consumer selecting from online catalogues of music files for downloading to a PC for storage or transfer to a CD recorder ("self-customisation"); or by selecting from online file listings with the CD created by the provider and mailed to the consumer ("mass customisation"). As the range of copyright-protected online music files presently available has started to increase, both options are being offered commercially.

62.   In the "self-customisation" category, the Cerberus Sound and Vision (www.cdj.co.uk) Digital Jukebox claims to carry the largest legitimate (i.e. copyright-protected) CD quality online audio catalogue on the Web; providing online access to and downloading of over 1,000 individual tracks from a wide range of music genres (ambient, blues, classical, country, dance, easy listening, experimental, folk, funk, hip-hop, indie, jazz, metal, new age, pop, reggae, soul, traditional, world). Cerberus' online catalogue has been created, and is expanding continually, through the express permission of musicians, who send their CD or its digital code to the company for posting online. Copyright is protected through Cerberus' own online technology (see paragraph 49 above) which registers the user's server and player-code so that when the customer downloads a track, its catalogue number is encrypted for use on that PC only.

63.   Another example is NK2's Music Boulevard (www.musicblvd.com), which provides licensed online access to/downloading of a growing list of individual tracks in the rock, classical and jazz genres. The online delivery incorporates the LiquidAudio system described in paragraph 52 above. For example, the complete Miles Davis catalogue is available online; from which users can create their own customised Miles Davis CD, by selecting and downloading any 10 of over 100 Miles Davis tracks for a total cost of US$15.95. Users can listen to the tracks online prior to purchase via a link to the milesdavis.com channel on Music Boulevard's Jazz Central Station (see the case study below). Users can also order online for physical delivery from the complete list of Miles Davis CDs; and those of other musicians whose work the site is licensed to deliver online. The recently announced merger between NK2 and CDNow aims to create an "online retail site" for over 500,000 music titles.

64.   Examples of sites offering both online delivery of music files and customisation of physical CDs include   www.frontstage.com,   www.magic.fr/indie-musique,   www.musique-net/daydream,   and www.alapage.com, all based in France; www.primus-online.de, based in Germany; www.citymusic.com, based in the UK.

65.   In the "mass customisation" category (i.e. where the provider produces a physical CD based on the   customer's   specifications),   examples   include   MusicMaker (http://MusicMaker.com);   K-Tel International's online "Custom Compilation System" (www.k-tel.com); www.diama.com in France; www.awaycom.ch/cdnet and www.cdlaser.com, both based in Switzerland; and www.musicsales.co.uk, which has local partners in Australia, Denmark, Spain, France and the US.

66.   The foregoing examples demonstrate that online music delivery has already moved beyond sampling/promotion to a demonstration of the viability of the technology and copyright systems for online CD customisation, including via online delivery. Other music-related products available for digitised

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[46]   As used in this section, "track" is an individual song or movement, "title" is an entire CD.

delivery on the Internet include sheet music (e.g. http//:euro.sheetmusicdirect.com) and photo-image archives (e.g. www.photodisc.com, a UK-based site).

67.   Should the major record labels proceed to make a broader range of catalogued music available for online customised ordering, this is expected to create significant new growth in music purchasing.[47] Consider that the largest "bricks-and-mortar" CD retail chains (Virgin, Tower Records, etc) stock in-store around 60,000 to 100,000 titles and the largest online retailers (order online, deliver physically) list around 250,000 titles; whilst the out-of-physical-circulation "back catalogues" of the leading recording companies amount to many tens of thousands more.[48]

68.   Subject to that happening, access to online delivery of music file catalogues will be through a licensing system similar to that in effect for software. The transaction scenario for online delivery of customised music does not differ greatly from existing online procedures, in that the consumer would register on-site, provide credit card details, and agree to specified terms including the company's legal undertakings regarding the consumer's personal data and the consumer's legal undertakings on copyright protection. After clearing these gateways, the consumer could either browse and select files for his/her "customised CD shopping cart" from various listings, or specify the desired titles and receive advice on their availability. After verification of the transaction, the files would be delivered by the company's server to the consumer's for downloading and recording (self-customisation).   Alternatively, if the consumer chose, the customised CD could be sent to him/her in physical form (mass customisation).

69.   It is likely that, if the copyright protection, licensing and royalty management issues surrounding online listing and delivery of pre-recorded music archives are resolved to the satisfaction of the rights-holders, CD customisation would also start to be provided in-store, as well as by mail order (e.g. as K-Tel intends to do). For example, a number of the large "bricks-and-mortar" music retail chains are reported to be interested in providing 24-hour in-store turnaround and/or mail-order systems for customised CDs; and Internet-cafes would presumably charge customers for access to CD-recorders and purchase of blank carrier media along with Internet access to the archive sites.

c)   *Listening to customised music and news on the Web*[49]

70.   As already shown in the online news case study (paragraphs 35-37, Box 1), a large number of radio stations have established Web-sites, including for online transmission of some content.[50] While it is estimated that only 10 per cent are thus "repurposing" their content for the Web, this has already led to online customisation of content. The leading models are *aggregative sites*, such as Broadcast.com (www.broadcast.com) and www.comfm.fr, which aggregate content from a range of radio and TV channels; and *Internet-only networks* such as Imagine Radio (www.imagineradio.com), a self-contained

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[47]   Jupiter Communications (www.jup.com), cited in LiquidAudio Inc., 1997, op.cit., estimates that with broad take-up of online delivery, online music sales, presently worth around US$20 million for order online/physical delivery of CDs, will soar to US$1.6 billion by 2002. Jupiter also predicts that over time the Internet will render as artificial existing distinctions between performance, broadcast and distribution of music.

[48]   LiquidAudio Inc., 1997, op.cit.

[49]   This section draws on a July 1998 article from Ebusiness online magazine *"Will the Internet Kill the Radio Star?"* (www.hp.com/Ebusiness/july98/netradio.htm) and additional website research by the Secretariat.

[50]   Users listen to online radio content via streaming and tuning technologies, so it is necessary to have installed player software such as RealPlayer, Windows Media Player, or have a browser such as Internet Exporer version 4.0. with built-in player software. The add-on of a tuner to the player helps maintain quality when streamed music is decompressed as it reaches the user's desktop.

network of 20 original, niche-oriented Internet-only music and news sites which "mass customises" its content.

71.   Of the aggregative sites, www.confm.fr is an aggregative website where 65 TV and cable websites, 43 radio sites and 52 newspaper sites providing francophone content may be accessed from a single point of entry; with the main "customisation" at this point through the on-site indexing system. Broadcast.com was launched in 1995. It offers online content from over 260 separate radio and TV channels, including a wide range of daily "feature" web-casts, e.g. live music concerts and sporting events, live coverage of trials, the launch of the latest space-shuttle flight, topical public affairs and educational items; and a range of special interest web-casts, e.g. live feeds from technology conferences, hourly stockmarket reporting, interviews with the rich and famous, etc. It also provides an on-site jukebox for sampling and purchase of over 2,000 CDs and hundreds of audio books. It recently entered a partnership agreement with search engine Yahoo! to provide cross-promotion and links between the two sites. Broadcast.com also maintains online archives of its programmes, which are accessible on demand. All up it provides more than 50,000 hours of online programming per week.

72.   Thus unlike a radio or TV station, there is no limit to the number of programmes being offered at the one time to a "market of one." The front-page to the broadcast.com website provides both a "Channel Guide" organised by type of content (e.g. business, education, entertainment, music, news, public affairs, special interest, spiritual, sports, technology); and a list of the day's features (e.g. live coverage of events in the news or sports events, featured programmes, interviews, concerts, etc). Users can set the site to be the first page that comes up on their browser when they connect with the Internet; and request emailed notices of forthcoming programming according to their particular interests.

73.   Customisation is further advanced in the "Internet-only music and news sites" category. For example, Imagine Radio's "personal tuner" allows listeners to rate the songs they hear on a scale of 1 to 10 so as to "tune out" songs they don't want to hear again; and DJ.com (www.dj.com) features "personalised formatting" from over 80,000 tracks on 75 channels ranging from the latest club-music to modern funk and hip-hop to Celtic instrumental.

74.   Another example, NetRadio (www.netradio.com) groups 150 niche websites for particular genres of music (e.g. crooners, jazz, classical); and provides listeners at any song or genre site with updates via HTML email on special offers for CDs and concerts in that area of interest. This incorporates a "shopping basket" direct retail link. Thus unlike radio, the advertising/retailing information is both customised and may be responded to upon reception or stored for future reference. The websites of leading music "e-tailers" such as N2K's Music Boulevard (www.musicblvd.com) also contain genre-specific online sub-sites such as Jazz Central Station, Classical Insites and Rocktropolis; in combination with online sales/physical delivery of the CDs played, and the opportunity to purchase and download near-CD quality versions of some of the tracks to the PC for (US)$0.99 per track.

75.   With talk and news content, the main customisation model is through production of niche content for affiliation/aggregation with other content providers so as to increase the range of content that users can then "custom-stream" to their PCs. Examples of such niche material are innumerable; however two leading examples which are tending to crop up on a number of online listening websites are NetMarket (www.worldwidewebradio.com) which is aimed at the e-business audience; and CNET Radio (www.news.com site) which focuses on online technology news in 3 daily web-casts covering news, live remote feeds from special events, listener call-ins, and industry interviews.

76.   As with the other case-studies in this paper, it is the combination of types of digitised content -- in this case graphics and audio -- in a medium where the listener can make a purchase "on the spot" and via the same medium, that differentiates online listening to news and music from the radio. Although more

than 50 million tuners have been downloaded, demonstrating at least initial interest in online audio content, the constraints are those which are familiar to other online-delivery segments -- connection speed and bandwidth, and the user's physical location; for example, most people listen to the radio in the car, where Web-delivery is not yet an option, or at work, where is increasingly is.

IV.   Virtual Greeting Cards and Flower Bouquets

77.   As noted in Section 1, a limited form of customisation/personalisation of "physical" greeting cards and flower bouquets is already a commercial success; and digitised "virtual" cards and bouquets -- delivered as an attachment to email -- are also commercially popular and profitable.

78.   Virtual greeting cards may be relatively simple pictorial and textual layouts, i.e. a screen-based replica of a physical card; or they may be multimedia bundles that combine text, graphical animation and sound, and so "move, talk and sing". Thus computer animation/audio specialists have entered the market alongside the big established greeting card suppliers. A typical website[51] will list several dozen "greeting occasion" categories with multiple options per category; in some instances the specialist companies provide interactive design tools to permit consumers to design their own. The sender also specifies the desired personal message. The greeting is sent as an email attachment, which contains instructions for the receiver on how to view the "card", which may be a photograph, still or animated graphic. The receiver will need software such as Shockwave for animated cards, and RealAudio plug-in software for cards containing audio features (both are downloadable online for free).

79.   By way of illustration, a randomly selected animated/audio virtual card from the "Missing You" category of the www.animatedgreetings.com website will play on the screen as seven consecutive pages of animation, in which a "lonely little guy" undertakes various activities on his own, accompanied by scrolling text: "Here's my calendar, take a peek (little guy opens the calendar) At how I spent my bumpy week Monday didn't have much cheer (drinking in a bar on his own) Tuesday wasn't music to my ear (playing a saxophone on his own) On Wednesday fun just passed me by (sitting at his desk working while others head out the door) And Thursday's games just didn't fly (playing tennis on his own) Friday was a bit deflated (watching TV on his own) While Saturday's thrills just dissipated (leaving a party on his own) Then my off-balanced Sunday seemed to say (falls off a garden swing) I've missed you every single day" (dark clouds roll apart, sunshine - and the lonely guy's smile - breaks through).

80.   In addition to customisation of the sender's message, other customisation options include enabling senders to specify their own "front and inside" text, and select from a range of audio tunes (e.g. certain Christmas carols to accompany a Christmas card). However, some sites also offer the customer the opportunity to customise the animated imagery, thereby creating a customised, e-mailable "mini-movie". For example, at the www.dfilm.com site, it is possible to pick a character, backdrop, plot line and music from a broad range of options, add your own dialogue and send the resulting customised animated cartoon as an email.

81.   With virtual flower bouquets, the customisation process is similar to that for greeting cards, in that the sender may choose from a range of bouquets presented graphically on-screen, specify the text to "wrap around" the bouquet and select a tune to accompany it when it appears on the receiver's screen. Other "personalisation" options available on both card and bouquet sites include personal "date reminder" and address book systems.

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[51].   For example, www.animatedgreetings.com, www.submit.point.de, www.ultrabyte.com/karten, www.fleur-guillonneau.com

Section 3 -- Further work

82.   As noted in the Introduction, the purpose of this paper is to contribute to the development of a clearer empirical picture of online delivery, through a closer examination of *one* of its features, online customisation.

83.   The paper shows that, while customisation did not originate with e-commerce and is not unique to it, nevertheless e-commerce greatly expands the reach of customisation and lets the customers do it "for themselves". The paper also shows that online customisation processes are being applied both to products that are ordered/customised online but delivered physically; and products that are delivered online. Some of the case studies illustrate the way that, after online delivery, a digitised product may be downloaded for attachment to physical carrier media (paper, disk) and also remain stored in the computer for further online access and remixing with subsequently delivered material; thus simultaneously "having two forms".

84.   In discussing the paper, the Working Party may therefore wish to focus on how effectively the paper has met the objective, as set by the Working Party, of clarifying what online customisation is; whether there are additional aspects that merit further examination; and on the utility of the case-study approach for helping to clarify various underlying policy-related issues that have arisen, or appear likely to, in the WTO work programme.

85.   A number of such policy-related issues are outlined in the attached Annex. It is not proposed that the Working Party take those up directly, but rather use them as a framework for considering what further analytical or case-study work the Working Party wishes to undertake, in follow-up to this paper or on other issues; in support of the WTO work programme.

86.   For example, arising from this paper there could be value in further analysis of the "downloading" function, including transfer to physical carrier media or retention in the hard-drive of a computer, compared to other forms of delivery. Alternatively, the Working Party may want to turn its analytical focus to other areas, e.g. the policy neutrality issue, by comparing how various products are treated when they are attached to physical carrier media; or a survey of measures taken to facilitate e-commerce that have been taken unilaterally by various OECD and non-OECD members.

ANNEX
VARIOUS POLICY RELATED ISSUES ARISING FROM ONLINE DELIVERY OF CERTAIN DIGITIZED PRODUCTS (PROVIDED AS BACKGROUND TO THE WORKING PARTY'S CONSIDERATION OF NEXT STEPS IN ITS WORK PROGRAMME)

I.   **Customised physical products**

   i. Where e-commerce operates to produce a customised version of a physical good (e.g. books, computers, cars, clothing, sofas, microchips), how should the role of e-commerce in that be characterised? For example, does it represent an intrinsic albeit electronic stage in the manufacturing process, the embedding in a good of a new service, etc.

   ii. How do existing WTO disciplines cover such processes, and for what purposes will these disciplines be needed in the e-commerce context?

   iii. With regard to the resulting products, are the customised versions of these physical goods sufficiently "like" mass-produced versions to be accommodated within existing classifications?

II.   **Customised digitised products**

   i. Does the conventional "like product" concept hold for those goods that have both a physical version and a digitised, on-line delivered, version (e.g. newspapers and magazines, CDs, software, cards and bouquets)? Or are the digitised versions in effect new products that are not "like" the physical version?

   ii. How should the role of e-commerce in the creation of such digitised products be characterised, and the products themselves be classified?

   iii. How is this view affected by the way that e-commerce per se and customisation in particular enables the bundling and/or mixing and remixing of digitised text, sound and video in ways which cut across conventional product and sectoral definitions?

III.   **Integration of functions**

   i. What are the implications for conventional trade policy terms and classifications of the way that e-commerce enables hitherto distinct *functions* in the value-chain to be performed in an integrated and interactive way on a single platform (e.g. aspects of the design/production, marketing, wholesaling and retailing of a wide range of conventional goods and services, and the same range of functions *plus delivery* of digitised products)?

   ii. To what extent do existing WTO disciplines distinguish such functions in respect of conventional goods and services?

iii. Is it too limiting to characterise e-commerce as simply another means of distribution or mode of supply?

IV.   Infrastructure aspects

How do these "specific" characterisation/classification issues that arise from customisation processes relate to the broader question of ensuring that the characterisation of e-commerce takes account of the way that its *infrastructure* integrates goods and services (e.g. hardware such as PCs, routers, servers, etc; networks and network access providers; software systems; enabling technologies such as e-payment, authentication/certification and e-business logistics management systems, and services such as advertising, and parcel delivery), and its heavy reliance on effective intellectual property protection?