13.1 A complex net of communication flows

Medical-pharmacological information is at the very centre of a highly intricate communication net.

If we just look at a part of it, that of pharmaceutical products information, it becomes clear that many information agencies are interested in testing, approving,producing,marketing,distributing,selling, refining, and sometimes withdrawing these products.The following image [13] gives a good idea of the concerned dynamics :

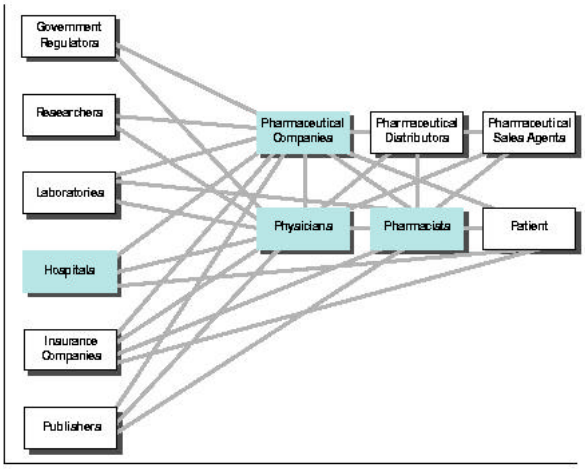


Figure 1
The healthcare sector and the information flows between the parties

The SwissCast service tries to answer some main communication issues in this field wich arise among information providers and users when exchanging and negotiating information over the Internet market.

In what follows, the information market situation will first be analysed, and then a special attention will be given to user needs as assessed also through interviews and focus groups. Finally, the service structure and functionalities will be presented and discussed.

13 The image is quoted by: Stefan Klein, Ron Lee, Lei Lei, Sajda Quereshi, Pharmatica - Supporting the complex pharmaceutical information needs changing healthcare sector, «Electronic Markets», 6/2 (1996), pp. 25-26, available on line through: http://www.electronicmarkets.org/

The Internet is acquiring a growing importance in the medical and pharmaceutical area.Nowadays there are many services devoted to this area professionals [14].

First of all, the Internet meets an already established stream towards electronic information delivery: the main medical data base — until now available on CD-ROM — can be accessed via the net, reducing costs, improving individuals' access time (professionals can access them also from their homes), and also improving updating opportunities.

Secondly, research institutions,Universities and scientific journals, as well as governmental bodies concerned with healthcare,can present their activities and research to the research community (again: cutting costs and with so many updating facilities).

Thirdly, professionals all around the world can meet and build up virtual communities where professionally relevant issues can be discussed and where their know-how can be updated in close discussion with their colleagues.

Fourthly, pharmaceutical companies find in Internet not only a new and challenging opportunity to have a world-wide "shop-window", but also a powerful medium for consensus building, PR and lobbying activities.Also publishing companies have more opportunities to sell books and pinpoint ads through the electronic medium [15].

Last, but not least, research institutions and hospitals can offer job vacancy information to a much wide target, thus getting more applications and improving their personnel quality standards.

14 Cf. World Health Organisation, *Health-for-all policy for the twenty-first century: "health telematics"*, 21 January 1998 (EB101/INF.DOC./9)

15 E-commerce is gaining growing attention in the pharmaceutical world: cf. *Electronic Commerce for Pharmaceuticals: Internet based e-commerce. Strategies and Opportunities*, April 26-27, 1999, Philadelphia (http://www.firstconf.com/ecpharma/program.html).

A number of surveys are being conducted to assess how much and why health professionals use the Internet. One such survey, conducted by the P\S\L Consulting Group [16], showed the growing importance of the Internet use among healthcare professionals;it also underlined some interesting Swiss differences:approximately one-third of internet users physicians in Switzerland are heavy users,accessing Internet at rates of once or more per week,here "home"and "office" were reported as the most frequent site of access by 40% and 43% of physicians respectively, and males and females are approximately equal in terms of monthly hours spent at 6.2 and 6.0 respectively. Healthcare professionals use e-mail and the web-browsing most.[17]

There are no extensive studies on the use of Internet by pharmacists,in any case websites directed to them are growing at a very fast speed, which certainly means a growing interest among professionals toward new opportunities provided by c.m.c. (cf. the site access statistics offered by http://www.pharmweb.net).Moreover, although only 400 Swiss pharmacies (out of 1600) use a completely integrated technological tool for their administration (in the Tessin area,they are at about 10-15),among OFAC clients (which are 1100 pharmacies out of 1600),about 60% already use a computer-based way when sending data, and their number is growing at a high speed.In addition,the list of Swiss approved drugs has been recently made freely available through a web interface (http://www.documed.ch)

Thus, what can be said with certainty is that Internet use is spreading widely outside the research Institutions, starting to become a mass communication medium.A growing number of doctors and pharmacists have an Internet access from their homes and personal offices.

In the last few months Internet based information in this field has gained higher consideration by professionals.Evidence for this could be taken from the following quotation from the Wall Street Journal (2/24/99):

«George D. Lundberg, MD, former 17-year editor of JAMA, has joined Medscape as Editor-in-Chief. According to Lundberg,"The Web is revolutionising access to healthcare information, and Medscape has set the standard of excellence in the medium.I am joining a team that is as passionate and dedicated as I am about improving healthcare by providing the highest-quality information possible."»

This means a convergence of the electronic medium with the traditional paper literature, and a dramatic of the confidence that health professionals have in electronic communication.

16 See: Physician Internet Usage: A Global Survey. A Study resulting from a special collaboration between ten members of the Healthcare Research Partners network. Executive Summary. Prepared by P\S\L Consulting Group. August 1998. See also the survey conducted by: Isis UK Ltd, 7 Chalcot Road, LONDON, NW1 8HL, Telephone: 0171 267 5705, Fax: 0171 722 4921, Email: isis@isisdes.demon.co.uk (the company hasn't a website), and presented during the Pharmaco.Net@'97: Getting The Most From Your Internet Investment. A Conference for Pharmaceutical and Biotech Companies, 27th-28th November 1997, Mandarin Oriental Hotel, Hyde Park, London, http://iir.co.uk/pharmaconet/ (last visited: April 99).

17 Cf. M.Perucchi, G Schmid, C. Limoni, Biblioteche mediche, utenti potenziali e bisogni. Uni inchiesta in un contesto neo universitario: il Cantone Ticino, Bolletino AIB, 35/1 (1995), n 65-74

Healthcare Internet based information services can be organised as follows:

1.
organisations' websites (Universities, Hospitals, research institutions, scientific journals' and books' publishers,doctors', nurses' and pharmacists' organisations,etc.)

2.
pharmaceutical companies' institutional websites. Information they offer could be organised as follows: *about us:* addresses and general information on the industry; *business:* data concerning production, selling trends, market quotations,etc.; *public:* open information, for laymen, concerning drugs and therapies; *professionals:* more detailed information,tailored for professionals (sometimes it can be accessed only through a password validation); *media:* press releases; *questions:* areas where questions can be asked; *search*: sometimes websites provide a site-search feature; *links:* many websites provide a list of useful links: to other services run by the same industry, to research sites,etc.; *products:* product description,usually divided depending on the fact that they need / don't need a medical prescription; *medical information*: some pharmacological industries provide (hosted by their main website, or by sites created for that purpose:see next paragraph) medical information.

3.
websites devoted to a specific subject (e.g.: http://www.roche-hiv.com), quite often sponsored by pharmaceutical companies

4.
health care information agencies' websites: press agencies, information brokers,etc. Among them, we can take a closer look at ReutersHealth (http://www.reutershealth.com),which organises information available through its website as follows:
Clinical: Results of clinical studies drawn primarily from medical literature and scientific meetings, relevant to patient care; *Drug & Device:* Early development of new drugs and devices,from lab findings through Phase Development III trials; *Economic:* Results of cost-effectiveness analyses; economic trends in healthcare; *Epidemiology:* Findings on the prevalence and incidence of diseases; *Ethics:* Topics, issues and controversies related to ethics of healthcare; *Industry:* Business matters relating to the pharmaceutical,biotechnology and medical device industries,including company appointments, reorganisations,financial statements, mergers and acquisitions; *Legislative:* National and state legislative activity related to healthcare; *Legal:* Precedents in law, including malpractice, company lawsuits, court rulings; *Managed Care:* Accreditation, financial statements, mergers and acquisitions of MCOs; disease management protocols, quality of care and access issues involving managed care; *Media:* Notable media events,coverage related to medicine; *Human Interest:* Off-beat stories pertaining to medicine and health; *Public:* Health Identification and prevention of diseases in the general population and sub-populations; *Political:* Politics of healthcare at federal and state levels; *Policy:* Policy statements, guidelines and recommendations related to healthcare proposed by professional and consumer groups; *Professional:* Development Management of medical practice, including contracts, personnel; also investment, career development, awards and achievements, and obituaries; *Regulatory:* Governmental agency actions, including FDA approvals and recalls, Medicare/Medicaid regulations and revisions; *Science:* Basic research findings from lab and animal studies with potential clinical implications

5.
mailing lists,newsgroups and chatting opportunities

6.
clearinghouses portals: websites (or single pages) devoted to show and update links towards selected resources (e.g.:http://www-sci.lib.uci.edu/HSG/Pharmacy.html)

When coming to information content and services offered by healthcare websites, they can be summarised in the following in complete list:

1. education and research (courses, literature, history of medicine)
2. pathology related information (research, diagnosis,therapy)
3. product information (pharmaceutical,surgery instruments,diagnostic tools etc.)
4. professional data base search facilities (e.g.:Medline,Toxline, etc.)
5. legal issues (e.g.: required vaccines in a given country, etc.)
6. forums, e-mail lists on given subjects,push facilities
7. information on what else can be found around in the net (e.g.:Martindale Health Science Guide:http://www-sci.lib.uci.edu/HSG/HSGuide.html)

8. book selling
9. job offerings
10. fringe benefits for subscribers (e.g.: getting a free e-mail account hosted by the service) Almost all services are provided free of charge to subscribers, and paid by sponsors ads.

Most of the services are offered using the well established pull technology (browsing websites following hyperlinks),some of them offer — as an additional service — the possibility of receiving an e-mail based update, in order to know the news mounted on the site.

New technologies raise a growing interest, mostly those which support broad band requiring data: delivering of good quality images and animations, all those technology which will support distance learning and in-service training.

Customisable web-pages are also offered:clients can choose among a list of subjects,and a page with only related information is showed to them.

Some push services are available (the most widespread are PointCast — http://www.pointcast.com — and Backweb — http://www.backweb.com), which deliver specific information channels, the information items they push are mostly obtained from specialised press agencies (e.g.: InteliHealth[18]; PR Newswire: http://www.prnewswire.com; Business Wire: http://www.businesswire.com; MedPatientsNetwork http://www.medpatients.com).

It is quite interesting that PointCast found the need of offering - for its medical area - not only news, but also a number of db search facilities,as well as some "institutional"information pieces (see "Health Resources") trying thus to become a single Internet entry point for health professionals.

A number of websites offer the possibility of subscribing to a mailing list,in order to periodically get updates on what's new on the website itself.Two among those services are worth a special presentation,due to their completeness and audience: Medscape (http://www.medscape.com) and Doctor's Guide (http://www.pslgroup.com/DOCGUIDE.HTM).

Medscape. The site's auto-presentation follows: «Medscape, a free site, is home to the largest medical community on the Web, with over one million registered members including physicians,healthcare professionals, and consumers.The site delivers clinical content across 19 specialty areas,allowing its members to access customized medical home pages geared to their areas of interest. Medscape features Next Day Conference Summaries, clinically focused summaries of important medical meetings written by world-renowned faculty; a wide offering of continuing medical education programs, including a CME locator; and expert-authored interactive treatment guides and updates to help clinicians deliver state-of-the-art patient care. Medscape offers the most powerful medical searching on the Web, with "one-click" free access to multiple content sources, including tens of thousands of full-text articles and interactive features. Medscape.com also contains the world's largest Web-based drug and disease database from First DataBank and an easy-to-use interface to MEDLINE and other extensive databases of the National Library of Medicine. A new physician joins Medscape every five minutes».

Medscape publishes two newsletters (Medscape's MedPulse and Medscape's Oncology MedPulse) where website updates are listed,each with a short summary and a link to the complete item.

Recently, Medscape got a 21 million dollars financing: Credit Suisse First Boston Corporation, a leading full service investment bank, acted as the sole placement agent to Medscape in the private placement.

Doctor's guide. Being a part of P\S\L Consulting Group, Doctor's Guide delivers its e-mail newsletter to more than 29.000 professionals.

18 4 InteliHealth (http://ipn.intelihealth.com/) is a joint venture between Aetna U.S. Healthcare and Johns Hopkins University and Health System, manages the InteliHealth Professional Network (IPN). IPN carries content and resources including news, journals, databases, directories, continuing education, and career opportunities—provided by the most prestigious and well-known professional health information companies. This information is delivered by the IPN web site and the PointCast Business Network

A few lines must be added concerning two more issues: the quality assessment of health related info over the Internet and its availability to everybody. Until now there are no general accepted quality standards, but this issue is getting more and more attention: some research projects are devoted to developing quality criteria (e.g.: HONCode — http://www.hon.ch[19]); cf. also:White Paper: Criteria for Assessing the Quality of Health Information on the Internet (Working Draft),Edit Date:14-10-1997,electronic access at:www.mitretek.org/hiti/showcase/documents/criteria.html). Yet less defined are the standards for confidentiality and access restriction: each service has its own policy; usually services offered to professionals require an accounting procedure.

Another issue, which will be more of interest in the near future, seems to be that of e-commerce, applied to medical advising and to the selling of drugs and medical devices.

19 HonCode has defined the following eight quality principles: Principle 1. Any medical/health advice provided and hosted on this site will only be given by medically/health trained and qualified professionals unless a clear statement is made that a piece of advice offered is from a non-medically/health qualified individual/organisation; Principle 2. The information provided on this site is designed to support, not replace, the relationship that exists between a patient/site visitor and his/her existing physician; Principle 3. Confidentiality of data relating to individual patients and visitors to a medical/health website, including their identity, is respected by this Website. The Website owners undertake to honour or exceed the legal requirements of medical/health information privacy that apply in the country and state where the Website and mirror sites are located. Principle 4. Where appropriate, information contained on this site will be supported by clear references to source data and, where possible, have specific HTML links to that data. The date when a clinical page was last modified will be clearly displayed. Principle 5. Any claims relating to the benefits/performance of a specific treatment, commercial product or service will be supported by appropriate, balanced evidence in the manner outlined in Principle 4. above; Principle 6. The designers of this Website will seek to provide information in the clearest possible manner and provide contact addresses for visitors that seek further information or support. The Webmaster will display his/her E-mail address clearly throughout the Website; Principle 7. Support for this website will be clearly identified, including the identities of commercial and non-commercial organisations that have contributed funding, services or material for the site; Principle 8. If advertising is a source of funding it will be clearly stated. A brief description of the advertising policy adopted by the website owners will be displayed on the site. Advertising and other promotional material will be presented to viewers in a manner and context that facilitates differentiation between it and the original material created by the institution operating the site.

Two area consultants — for the pharmaceutical and for medical information — helped in studying both the information market and user psychology and needs.

A number of interviews were conducted with professionals and AIPs (project partners), as well as focus groups and brain stormings in order to better define their information needs and attitudes toward a push service.

Four companies work as project partners and AIPs.

Pfizer AG (http://www.pfizer.com): a very big American company, with an important Switzerland branch. It's a world leading industry, very interested in new marketing strategies.At the World Economic Forum (held in Davos,Switzerland, February 2,1998),Henry McKinnell,executive vice president,Pfizer Inc, and president,Pfizer Pharmaceuticals Group underlined the role of information for the future of pharmaceutical industry, and closed his speech saying:«I hope that we will find willing partners who will let us help craft the healthcare systems of the 21st century, and bring healthcare into the "information age". It can and must be done, and done well.»;

IBSA — Institut Biochimique SA ((http://www.ibsa.com): a medium size company, whose auto-presentation follows «IBSA was founded in Lugano-Massagno, Switzerland,in 1945 through the initiative of a group of biologists from the Tessin area.Strongly oriented to the production of new, original pharmaceutical specialities, the company soon began manufacturing for export — particularly to the Middle East and Japan — in order to satisfy the growing demand for those markets. Since 1985, thanks to a twofold increase of the share capital which permitted the introduction of new technology, modernisation and streamlining the manufacturing departments,IBSA opened a new road.Without abandoning the production of traditional drugs,the company became involved in the development and manufacture of innovative pharmaceutical forms which would be extremely well-tolerated by the organism»;

Künzle: a little company (with eleven employees) with a very long tradition, always in the field of phytotherapeutic specialities.

Beside those pharmaceutical companies,an agency specialised in information brokering in health area has joined the project, providing a deep insight and a long experience in the information market concerned: ActaMed Services ((http://www.actamed.ch/): it works, at a very high level, in the area of pharmaceutical information,mainly by the way of providing scientific literature in hard copy.

Advantages of a push service AIPs emphasised were:getting to know who uses the service;having a clearly defined format for the messages to be delivered can give to all the industries the opportunity of a fair competition; it is accessible also for very little companies; it is possible to provide information about in progress researches, avoiding the timing imposed by printed review.They underlined also the following features as being quite important:not to give SEUs the choice of exclude a specific company and/or a single product;from the marketing point of view it would be preferable having the possibility of characterising information headlines with company logo or other eye/attention-catching strategies.

A number of question to be answered were raised: could the SwissCast service really improve business?, how to assess service effectiveness?, privacy issues, legal issues concerned with advertising (requested or non requested information).

Potential SEUs pointed out many issues to be considered to meet their requirements. For what concerns information quality all underlined this is a seminal point,for what concerns its quantity, a claim for short messages, really relevant and few was shared.All professionals emphasised they want a very simple GUI (a two clicks interface), a unobtrusive communication technology, which could be bared by quite "old" computers and popular software.

A quite negative attitude towards pharmaceutical companies' communication was showed by many interviewees.

Other issues which were underlined:confidentiality, legal issues,hot to divide the material any more, how to search in already existent health related databases, the language issue.

Almost all SEUs were interested in having search features both inside the SwissCast document database and inside other information services/websites,thus showing a need for a single, easy to use, interface to access the "Internet world".

In the following paragraphs are presented and discussed SwissCast answers to these needs.

A special attention was given towards establishing a set of keywords both AIPs and SEUs would use when describing information items they provide or want to receive. Although a fresh set of keywords has been defined to map information types,it didn't seem advisable to do the same for what concerns information content. For this purpose it has been adopted the MeSH (Medical Subject Headings) standard, by the National Library of Medicine of the USA. It is one of the most known classification trees, is widely adopted, and its adoption is free of charge. Moreover, it is continuously monitored and bettered,through ad hoc research projects [20].

Cf. the website (http://www.nlm.nih.gov/mesh/meshhome.html):«The Medical Subject Headings comprise NLM's controlled vocabulary used for indexing articles, for cataloguing books and other holdings, and for searching MeSH-indexed databases, including MEDLINE. MeSH terminology provides a consistent way to retrieve information that may use different terminology for the same concepts.

«The MeSH Browser may be used to find descriptors of interest and see these in relationship to other descriptors.This vocabulary look-up aid is designed to help quickly locate descriptors of possible interest and to show the hierarchy in which these descriptors appear.The Browser displays virtually complete MeSH records, including the scope notes, annotations, entry vocabulary, history notes, allowable qualifiers,etc. It also provides links to relevant sections of the NLM Indexing Manual. A fuller description of the MeSH Browser is available.

«MeSH organizes its descriptors in a hierarchical structure so that broad searches may include articles indexed more narrowly. This structure also provides an effective way for searchers to browse MeSH in order to find appropriate descriptors.

«The MeSH vocabulary is continually updated by subject specialists in various areas.Each year hundreds of new concepts are added and thousands of modifications are made. 1999 MeSH includes more than 19,000 main headings, 100,000 Supplementary Concept Records (formerly Supplementary Chemical Records),and an entry vocabulary of over 250,000 terms.»[21]

Another possibility which was taken into consideration was that of adopting the keywords provided by WHO, but — although not definitely rejected — it seemed to arise a few issues due its not free of charge use.

At first, there were chosen three subject-related keyword lists: namely Human systems & apparatuses, Pathological areas and Therapeutic agents, after a number of trials, it seemed wiser to restrict the mapping to the last two lists, avoiding not really necessary choices to be done by SEUs. Moreover, the last two keyword lists represent at a certain extent different point of views on the subject Physician and Pharmacists have.

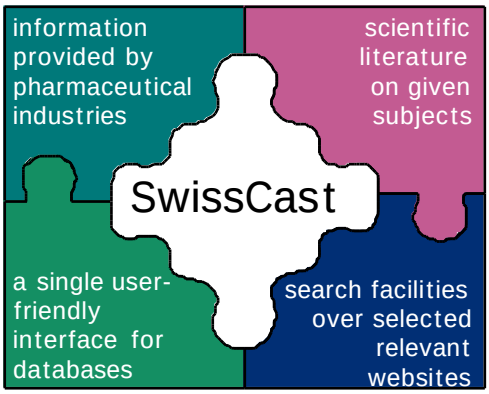
Having keyword in English does not seem to hinder healthcare professionals, being English the common language in the area.In any case, it is possible to provide specific interfaces for each language.

20 A new research project on the subject is being conducted by the National Library of Medicine: The Unified Medical Language System (UMLS) project (http://www.nlm.nih.gov/research/umls/UMLSDOC.HTML, last visited April 1999). «The UMLS approach involves the development of machine-readable "Knowledge Sources" that can be used by a wide variety of applications programs to compensate for differences in the way concepts are expressed in different machine-readable sources and by different users. The goal is to make it easier to develop systems that link information from patient record systems, bibliographic databases, factual databases, expert systems, etc. The UMLS Knowledge Sources can also facilitate the development of data creation and indexing applications.

21 «There are three UMLS Knowledge Sources, which are the following: The Metathesaurus (Section 2) contains semantic information about biomedical concepts, their various names, and the relationships among them. It is built from thesauri, classifications, coding systems, and lists of controlled terms that are developed and maintained by many different organizations. The Semantic Network (Section 3) is a network of the general categories or semantic types to which all concepts in the Metathesaurus have been assigned. The SPECIALIST lexicon (Section 4) contains syntactic information about biomedical terms and will eventually cover the majority of component terms in the concept names present in the Metathesaurus. A number of lexical programs are distributed with the UMLS Knowledge Sources for use with the lexicon and the Metathesaurus».

SwissCast in the area of pharmaceutical information could offer a number of useful services to the health-care professionals.

It could (1) convey information provided by pharmaceutical industries,(2) provide scientific literature on given subjects,(3) offer a single user-friendly interface for data-bases,and (4) offer also powerful search facilities over selected relevant websites.



The way it does it is a blend of pull and push: SEUs have their own page which presents only stuff they are interested in,and they are notified when new items are added to their document list.Moreover, they share a number of common features,which allow them to access data-bases.

Let us briefly analyse each of the above sketched four areas:

1. *convey information provided by pharmaceutical industries.*

Nowadays,this kind of information is the less organised:each company has its own style, and organises its web-site in an idiosyncratic way. A relevant service SwissCast could provide is requiring a common meta-description of companies' webpages.

Actually, companies which act as AIPs can add items to the SwissCast data base, filling in not only the document URL, but also offering its description using the same meta-descriptors SEUs use when defining their profiles,and adding a summary. Giving this sort of common platform to access those data is a very important added value to general information;

2. *provide scientific literature on given subjects*.

Given the actual copyrights rules, scientific literature that was firstly published in hardcopy can't be delivered in electronic form.It could nevertheless be indexed and searched in electronic form:users can so get the benefits offered by a computer-search,and then order the hard copy of the articles they are interested in.A project partner — Viamarketing — has the know-how to offer this important service.

Services 1. and 2.are provided trough the SwissCast push technology.

3. *offer a single user-friendly interface for data-bases.*

Almost all information services offered to healthcare professionals provide this feature, giving access to data-bases (e.g.:Medline) and generalities (e.g.: reference books, medical dictionaries).First of all,offering it means to be a potential "portal" to healthcare information;moreover, some databases are not directly available (e.g.: First DataBank), but only through websites with whom they signed an agreement.

Having a single access interface means also an easier database access:users who are not that fond of "new computer stuff" need a very simple, two-click interaction with the new medium;

4. *offer also powerful search facilities over selected relevant websites.*

When using a general-purpose search engine to retrieve healthcare information, one is astonished by the overwhelming number of items s/he gets.Offering a search facility over the Internet, which works only on a close, well controlled number of pre-selected relevant websites (cutting out every non professionally oriented information) is an interesting feature, and can save a lot of time to the SwissCast users.The SwissCast service offers also the possibility of searching and querying its document DB.

SwissCast should not be only (neither mainly) a well running piece of software: it must be first of all a service. Thus,the internal organisation is very important in order to reach its own goal.

A specific description of each actor involved in the SwissCast service, as well as of their role in the overall system, can be found in what follows. During the project phase, the service runs at a prototype level, with a very simplified internal structure, which can be also found in what follows.

1. AIP

Who. It is a company which has signed an agreement with the SwissCast service. It follows the standards proposed by the SwissCast Scientific Board and has a direct access to the SwissCast information database.
What. After having written a new piece of information and mounted it on its own website, the AIP accesses the SwissCast website and fills in a web form, where the new page content is described and summarised. It is also possible to store a new piece of information into de SwissCast document db without having a correspondent webpage: this allows all pharmaceutical companies to become an AIP.
During the project phase. Until now SwissCast has four AIsP working as project partners: Pfizer AG, Institut Biochimique SA, Künzle SA,Viamarketing – ActaMed. Other collaborations are under consideration.

2. Scientific Board

Who. Members of the SB are relevant personalities from the healthcare professions (doctors,pharmacists, nurses).They come from the University area as well as from Hospitals and professionals organisation. It seems to be advisable also to add at least a legal expert.
What. The SB supervises the overall service activity, verifying its compliance with accepted scientific standards; it accepts or refuses AIP applicants, gives directions to the service director in order to sign agreements with healthcare databases' legal owners, and to define the scope where the SwissCast free search will operate. The SB establishes also an advertising policy.
During the project phase. At first area consultants helped to better understand the pharmaceutical information market, afterwards a number of professionals gave their advises in interviews and during workshops. During this phase will operate only a provisory SB.

3. IE

Who. Is the person in charge of the Service. S/he depends functionally on the SB, and administratively on the company that owns the service.
What. S/he does (with the help of as many people as s/he needs) every activity required for an adequate service. Another important activity area s/he is in charge of is that of improving and disseminating the service.
During the project phase. A project team member plays this role.

4. Service Company

Who. The company which owns the service and gets revenue from it.
What. It does everything required (economically and legally) for the service running.
During the project phase. The Project SwissCast itself.

5. SEU

Who. Everybody who subscribed the Service.
What. Can access the Service and use it, after having set his/her own user-profile(s).
S/he can be asked to freely collaborate with the service (e.g.: suggesting new websites to be spidered, filling in a questionnaire).
During the project phase. A number of professionals who are testing and validating the service.

Every system activity is controlled through user friendly web interfaces.

The service information core is an ad-hoc designed document db, where information items are stored according to a defined standard form.

A second db records AIPs'data.

Others db contains SEUs' personal information and user profiles. Due to the fact that information items and user profiles are indexed using the same keyword structure, information relevance can be granted.

The push service is offered through personal webpages and e-mail.This choice was done taking into consideration many relevant points, done during interviews held with professionals, as well as taking into consideration literature and surveys on the subject.Those technologies were chosen first of all because of their easiness and diffusion: everybody who access the Internet is supposed to have enough know how to use them properly. In addition, they are not bandwidth demanding, allowing people an economic access also from their homes.

The main difference from e-mail newsletters like those by Medscape and Doctor's Guide, is that SwissCast push sends only customised messages,which means that it is a true push service.

When a new item is inserted into the document DB, it is made immediately accessible to all the concerned user profiles through the personal pages.An e-mail is sent — once or more times a week, according to user profile's settings — to SEUs,notifying,for each profile, how many new documents were added,and their title (and,if required,summary).E-mail has also an hyperlink which links straight to the SEU's list of profiles, without having to type in user ID and Password.

An ad-hoc bd was implemented, to interface Actamed literature db with Swisscast:nowadays every item inserted in this first one is automatically forwarded to the Swisscast db and assigned to concerned users'profiles.AIP can already access the service and feed its document db.

Due to the intrinsic nature of this information market,it seems to be wiser that - if possible - a third party runs the service also during the test phase. Thus Swisscast team could concentrate on testing, assessing and improving the service, while an external actor - with specific know-how and related skills in the field - runs it.