From a Classical approach to Internet based (ASP) MSDS authoring systems.

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Introduction

Before starting to address our subject, I shortly want to introduce my Company.

JPASS International

1. Our mission   Mission Compass

2. Our products   Mission Compass plus products

3. Our services   Mission Compass plus services

4. Professional Association

5. Conferences, Trade shows

From a classical approach…

Before to start the subject I think that some facts have to be remembered just to give to anybody an idea of the complexity of the problem.

Just to highlight some recent and less recent Environmental or occupational **accidents**: Bopalh, Dioxine Crisis, **Erika**, Exxon Valdez, **SBE, New Zealand sea damage,** ... The U.S. Chemical Safety and Hazard Investigation Board reports on his site " http://www.csb.gov/about/who.htm." some of industrial accidents. Last Wednesday the 5 latest reported accidents were the following:

> June   7,   2001 -   8:00   PM   -   Beaverton, OR
> **Chemical Incident Injures 17 Workers at Microprocessor Plant; Most Injuries Minor**
>
> June   7,   2001 -   12:30   PM   -   Norco, LA
> **Lightning Ignites Gasoline on Top of 270K bbl Tank at Refinery; No Injuries Reported**
>
> June   6,   2001 -   8:00   PM   -   Yorktown, VA
> **Three-Alarm Fire at Virginia Refinery Follows Lightning Strike**
>
> June   6,   2001 -   11:00   AM   -   Sasolburg,   South   Africa
> **Fire at South African Refinery Claims Second Life; Full Extent of "Fairly Extensive" Damage Unknown**
>
> June   6,   2001   -   North   Haven, CT
> **Leak at Circuit Board Factory Injures One Worker; Containment Area Traps Most of Release**

Some related information:

Prevision (according EU) :   **7.500** serious accidents yearly due to usage of chemicals in Belgium... (or about **one per hour**...)

100.000.000 shipping of dangerous chemicals yearly in the USA and EU.

50.000.000+ MSDS produced yearly in Western Europe

2.000.000 chemicals in Europe, of which **75 % are dangerous** and require special documents, training, working and/or transport conditions with specific documents.

This is not new and this is why, with many other actions, MSDS are more and more required. The new "white book" published by the EU illustrates that trend.

If we look to the MSDS authoring systems, we can observe that since the early 80's the MSDS are created with:

- **Word processor like software**, with some expertise, i.e. expert system programs that are generally but not always linked to regulatory, chemical or toxicological databases.

- **Software using standardised multi lingual libraries and regulatory databases** providing that a same risk or status will also be described in the same way with the same words and that is whatever the language of the document .

- **The combination of both here above described products.**

The consequence of that kind of software is the necessity to be installed on the machine of each potential user, thus involving problems of interference with other software and high implementation costs. On the other hand the IT department has a good and reasonable cost control and the MSDS authoring software may be integrated within the company 's ERP etc…

Since the late 90's we start to see new MSDS authoring software, which is based not on that classical approach, but according to the new emerging ASP (Application Service Providers) model: i.e. one or more servers, containing the whole information and expertise required trough which any remote user is connected by the means of standard programs as Netscape navigator or Internet Explorer. The software and data maintenance is centralised, the local installation does not exist any more, and the IT controls the whole system: the servers and the local PC. A change of user or PC is not a problem anymore. That model cab be applied either internally (Intranet) or externally (Extranet). In the first case the IT department is the Intranet provider and links with ERP remain possible in the second case the IT has just to provide an Internet gateway and control the security aspects. Thus, creating a MSDS is as simple as ordering a Pizza at Domino's pizza, a book at Amazon or a flight at Virgin… in theory

This very attractive solution will generate problems but those problems have not to become inhibitors.

I will here under try to illustrate some aspects of that new approach: legal aspects, enterprise policy aspects, market constraints, technological constraints, human factors… At the end I will illustrate with the approach we are developing in our company to address that problem.

Some figures about the chemical industry
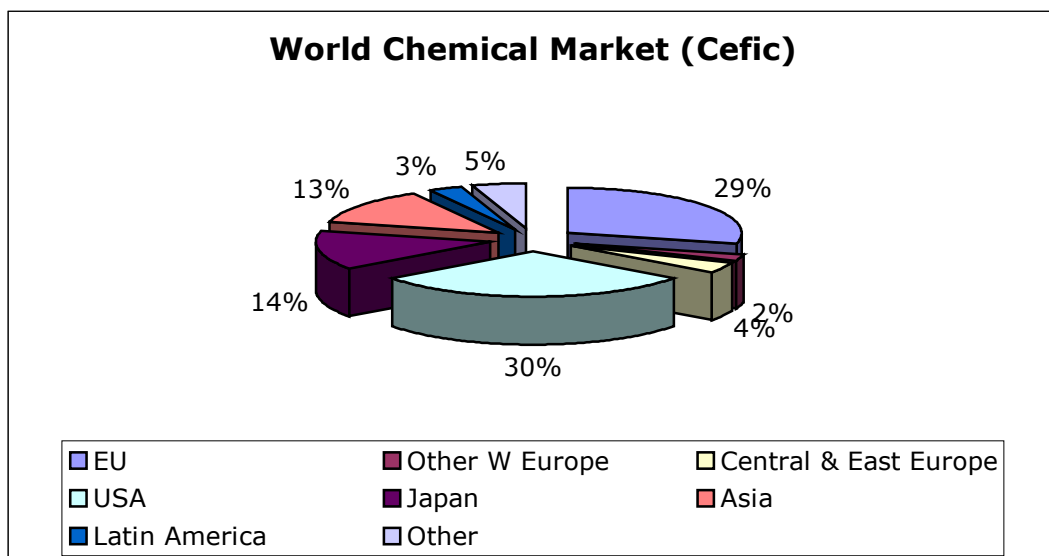
I will first, shortly, describe the current distribution of the world and European chemical industry. Our figures are extracted from studies performed by the CEFIC and available to members of the chemicals industry professional association. JPASS gained access to that as member of Fedichem.

The first graph illustrates the current distribution of the world chemical market: 2 major areas (Western Europe and US) cover more than 60 % of the market. Therefore regulations are mainly coming from those areas, the regulation for the third large market area (Asia) is now emerging but generally (out of Japan and China) closer to the European directives than to the US MSDS regulation.
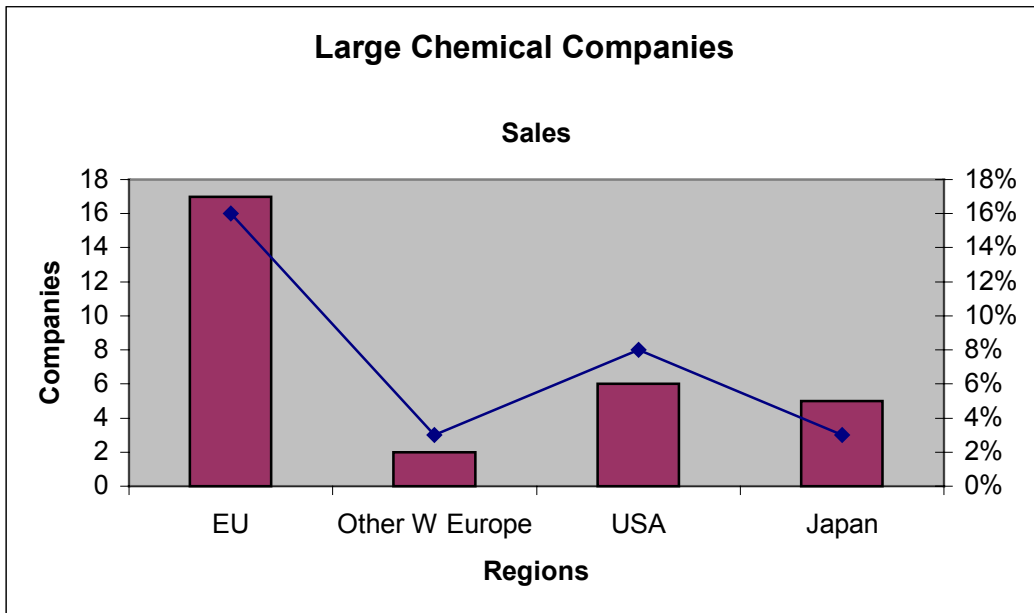
The second graph illustrates the number of large organisation (left axis) and their relative percentages of sales at world level. You will note the number of languages and alphabets related to those areas. And because large organisations have frequently production sites in emerging countries, their need for non English Latin alphabet and languages is dramatically increasing.

The third graph describes the distribution of EUs chemical enterprises in fregard of the number of employees. That shows the need of solutions suitable mainly for a large number of organisations frequently with limited IT resources where the ASP seems the most suitable. The first two groups of companies (more than 50 employees) are already equipped or are starting to be equipped. The smaller companies requiring extended expert systems with some remote support but, frequently, without any local skills.

After that introduction showing that there is a potential demand, let's continue with the different problems generated by an ASP approach.

Number of Enterprises by employment size-class
(Cefic)

Chart showing number of enterprises by employment size-class: 23120 (0-9), 6460 (10-49), 3060 (50-249), 1360 (250+). Y-axis: 0 to 25000. X-axis label: Classes. Legend: 0-9, 10-49, 50-249, 250+.
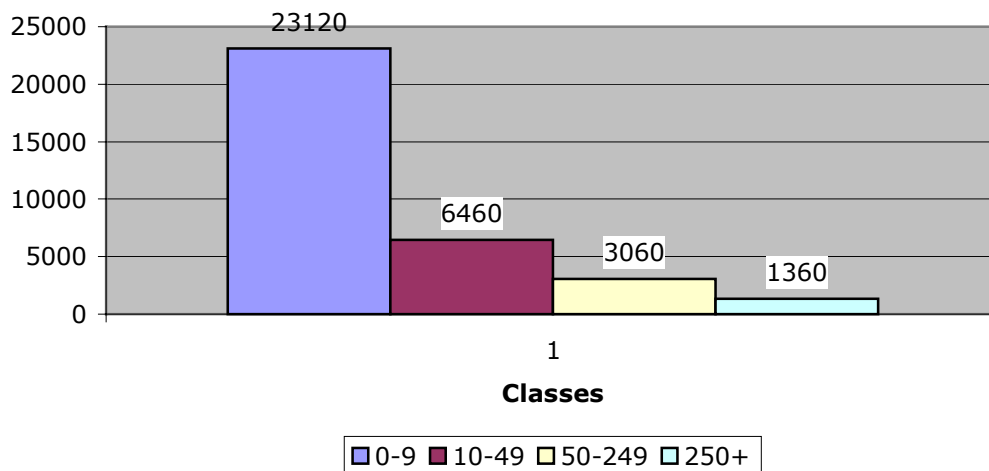
Legal aspects:

MSDS management may be divided in two areas:

- MSDS authoring (creation, maintenance…) and

- MSDS distribution (to provide the right MSDS to the right person at the right moment).

1. We do not see many legal constraints in the **authoring** area. We do not have information of countries where it is forbidden to export chemical formulations are forbidden. Therefore excepted for some patented and some strategic materials, there are no real legal inhibitors to the usage of MSDS Internet authoring systems.

2. Regarding the **distribution** of MSDS by electronic means, the situation is totally different. France, thanks to its Minitel system, is a pioneer country in that area. However, the weak performance level of the Minitel, does not provide a pleasant way to access MSDS, but the same database is now available on the Internet. Some French service companies (e.g. CMT Ecritel) have developed a profitable business in that area. The distribution of MSDS works either in **Push mode** (the supplier send the MSDS to his client when required: with the first shipping or with each modification ot the MSDS) or in **Pull mode** (the customer asks for the MSDS he needs and he can choose to be informed or not about the updates). In other countries that technology is now starting but do not forget that the EU allowed, explicitly, its use only in 1998, and that some countries have not yet, transposed the directive into local law. The legal aspect of the distribution, although significant, is of very little interest to the MSDS author. The law said, by simplifying it to the uttermost, that « **MSDS have to be provided to the end-user for free** ». Then if the supplier is able to prove that he has produced and given for free an MSDS to the customer where is the problem? Is the way used really important? How are you able to testify that you have really printed a document, put into an envelope or a faxed it, and that the right person has received it? I'm not a lawyer but a chemist, but where is the difference between the 2 different ways of transmitting the documents? Printing a document, (where on which printer, with paper, within a mix of different documents? …) Putting that document into an envelope (how to have the warranty that the right document is in the (right) envelope?) sending that envelope to the EH&S officer of the company ABC, where is that officer's office? He or she is probably overloaded with MSDS from any different supplier (500 raw material updated yearly will generate 2

updated documents per day (if only in one language). Therefore even if the supplier sends that MSDS with resisted letter with acknowledgment of delivery, you will multiply the complexity and the unique information correctly recorded is the request for printing. May be the acknowledgment letter of delivery (if any) will do so. On the other hand the standard automatic distribution by email of a, e.g. PDF file, with automatic read acknowledgment notification is simpler, more secure and cheaper for both supplier and customer….

However keep in mind that the current legislation very seldom grants a legal authentity to electronic documents. There is little jurisprudence, and the legislation varies tremendously from one country to another. However things are changing

To conclude the legal aspect, we do not see any practical legal inhibitor nor for the distribution neither for the authoring of the MSDS over the Internet.

The ASP's company policy:

We will now analyse the behaviour of companies that are into the Internet business. My personal experience covers enterprises from 3 up to more than 100.000 employees, some operating from one site others from many sites, over 10 EU countries, and 27 US states, producing, transporting or just selling chemicals, operating in one or different countries… This is probably statistically not correct but this is a true large experience.

The behaviour of these Internet based companies is really 'surprising': they say something but they operate really at 180° of the words. Everybody speaks and announces, **everything with e**: e commerce, e environment, e quality, e procurement, virtual company, e HR… But when you work with the operators the hard reality is totally different:

Where are the inhibitors?

1. The enterprise Internet policy
2. The quality of information available from internet
3. Anxiety, risk…
4. Human relation

We have had similar problems with MSDS on CD ROMS in 1991-1994.

Company internet policy.

For the **large companies** (only 4% of the EU chemical enterprises) the Intranet approach is a suitable and easy one. There is always an intranet site, but not frequently used for EHS&Q… For large companies ASP is cheaper than the classical Client Server approach, but not always suitable for their preferred ERP, or the IT company policy seems driven by the ERP product set… Another problem is the fact that ASP MSDS Authoring systems frequently involve the use of an expert system and that the large companies, for some reasons , do not use expert systems:

- Aren't those systems good enough? Not really but these companies have their own experts and this is one inhibitor.

- The second inhibitor is the fact that they produce more pure substances than blending and that families of similar or very close mixtures frequently compose their blended products.

- MSDS authoring software has to be linked with the ERP and most of the ERP systems do not have an MSDS authoring expert system, that's why they are balancing the usage of external expert systems?

- People are moving within the company not to perform their daily tasks but for meetings, and producing MSDS is a pure office task which is always performed on a specific desk, where the ASP is not really useful.

- They have teams of IT people able to install application software anywhere into the internal network from one unique central site.

- The usage of Internet is not always welcome and is frequently inhibited by security policies. The next slides will illustrate that part of the problem.

For the SME (at least 34.000 chemical SME within EU, according to CEFIC) making choices becomes more complex , in fact it frequently shows to be a nightmare:

- Outsourcing MSDS authoring to consultants,

- Buy or rent an MSDS authoring software. But the regulation DB is too expensive and other systems are not safe enough. We know at least 50 MSDS software in Europe and 64 in the US.

- Use a text processor but without neither an expert system nor multilingual facilities. Let's consider 5 minutes a company based in Oslo and having to deliver a product in Roma : they are working in Norway (not an EU country) and the client is in Italy. Therefore the MSDS must be written according EU and Italian law, but shipping documents have to be edited in Norwegian, Swedish, Danish, Dutch, German, French and Italian. And if the driver is Serb, in Serbian also. They need to have documents for Road and boat…

- Large SME (the M's) have also ERP and they want to integrate the MSDS authoring software with that ERP to avoid to rekey the information.

- Key in the formulation into an Internet ASP application looks impossible : confidentiality.

- Frequently the SME have only one single site and therefore they have no real need for a pure ASP system.

- But the smallest one (less than 10 people) have only 2 options: consultant or ASP. But they do not like that second option. And for the software vendor there is a commercial problem….

Fear of new technologies or rather carefulness…

A recent Survey carried out by the French Magazine « Liaisons Sociales » together with « France Télécom » (5/6/2001) shows that enterprises are more and more using their intranet for Human resources but at the lowest possible level: directory, social information, forms, training…) not yet HSE.

Jean-Marie Messier, chairman of Vivendi Universal explained that the «usage of new emerging technologies, is a great opportunity but still need to be thought over, in order to lead to an in-crease of mobility and training of the workers…".

Daniel Cohen, Professor of Economy at the University of Paris-Sorbonne showed that according to an US survey, competitivety and profitability only gain when new technologies are implemented jointly with a reorganization of the workplace.

Albert Angehern, IT director of the Institut européen d'administration des affaires (INSEAD), ex-plained that nevertheless "there is a large resistance towards innovation from the head executives of large companies", which for many reasons hide behind a" yes" instead of thinking "why not!". He recommends the creation of a «social Internet space", to speak of " the new buzz word client-employees » best illustrated by Mirabilis.com site of the US ICQ, bought by AOL.

The largest parts of head executives highlight the positive aspects of Intranet and Internet net-works. *Jean-Paul Meriau (Renault) explains, by example, the agreement with Nissan has "boosted the process of e-business 'integration" .*

MARRAKECH, 1st june 2001 (AFP)

Anyway, SME or large multinational, the current market asks for an permanent fast, online and secure access to any information related to the products. Emerging laws and new economic players are key factors for that. We will study now the current penetration of Internet into the enterprises. And therefore the market related constraints.

Market related constraints:

Today it is extremely easy to have an on line access to regulatory or toxicological databases. Pat Dsida, in this room one hour ago, has explained that better than me. There are companies giving access to Internet authoring system but is there really a market for that?

"Interesting", "limited", "confidential", "emerging" are the current qualifiers when you speak with those providers.

« Never », « not safe », « dangerous », « not for us »… are the answers of the potential customers.

But all of us are investing into ASP application. Are we all crazy ?

We have seen that there are within UE 36.000 chemical companies, of which 4 % have more than 500 employees, and more than 60 % less than 10. It is impossible, today, to provide an expert system at the same time easy to use and complying with the needs of those 23.000 companies. Recently, a customer (a company of 3 persons) asked us to create MSDS but they were making mixtures of substances reacting together, but they do not have any idea about the chemical specs of their raw materials… What they need is not and MSDS expert system but rather a chemical reaction expert system but they are unable to pay for that… Do not say that those enterprises have to disappear… Thus the first market constraint is to develop expert system able to handle any mixture of substances, as easy to use as a wireless phone or a fax, available 24 hours a day, with a user interface in minimum 25 languages, 5 alphabets. That expert system must be able to produce documents not only according to EU regulation but also the add-ins of the 15 current members, Norway, Switzerland, new countries, North America, and the Asian Pacific area. Another constraint is the need of an attractive pricing, a sales force able to reach 25.000 companies, and a throughput of minimum 50.000.000 documents a year, but with a 100% safe tracking system enabling 30 years history log files…

A market study is currently made in a Belgian University concerning that approach. But it seems evident that the challenge is important.

Last month at the A+A trade show in Düsseldorf (Germany) I have visited 9 booths of firms proposing MSDS authoring systems. All claimed to have an MSDS Internet authoring system: but none was demonstrable… There were 3 Belgian, 1 Australian and 5 German firms. Three has a translated user interface the others were in German or in English only…. Is there a market?

To find out, let's see go over some figures about the Internet usage within companies: another market related constraint. The first problem lies in gathering trustable and recent figures about the professional usage of the Internet. After hours of searching we have found first these not really recent figures but interesting if you know that any .com, .net, .org is considered as US Internet user…

Time magazine 1999 for Davos summit… list of the top 15 Interent penetration rate.

Country	Pop. (Mio)	Internet (000)	% (pop)	% ww	
USA	268	54 765	20.43%	54.70%	including .com, .net…
Japan	126	7 965	6.32%	7.97%	
UK	48	5 828	12.14%	5.83%	
Canada	30	4 325	14.42%	4.33%	
Germany	82	4 064	4.96%	4.07%	
Australia	18	3 347	18.59%	3.35%	
Netherlands	16	1 386	8.66%	1.39%	
Sweden	9	1 311	14.57%	1.21%	
Finland	5	1 250	25.00%	1.25%	
France	59	1 175	1.99%	1.17%	
Norway	4	1 007	25.18%	1.01%	
Spain	39	920	2.36%	0.92%	
Brazil	165	861	0.52%	0.86%	
Italy	57	841	1.48%	0.77%	
Switzerland	7	767	10.96%	0.84%	
				89.67%	

This is not the answer we were waiting for : but how to give access to an ASP expert system, without an Internet access?

In Computer World, here under, we discover that there is some concern about the personal use of Internet in firms where an access is possible.…

Employers OK with e-surfing
Firms tolerating some amount of personal use

12/18/2000   Dan Verton Computerworld

We've all done it. You sit down to lunch at your desk, click on the Internet icon and surf over to your favourite retail site, where you place an order for the Pokemon figures your son wants for Christmas. No harm done, right? Believe it or not, that's what most companies said in a recent survey. Despite the rash of horror stories about how much personal Internet use is costing companies in lost productivity, those surveyed and others interviewed by Computerworld said they just aren't very concerned about it.

Instead, they're publishing flexible policies on how computer assets can and should be used during work hours. And for the most part, the policies seem to be working.

In a recent survey conducted by the Santa Clara, Calif.-based Saratoga Institute, only 4.5% of the 244 companies that responded said they were "extremely concerned" about employees surfing the Net for personal reasons. Some 15.2% said they weren't at all concerned, and about 50% said they were "somewhat or more concerned."

"Everyone is aware of [the issue of Web-shopping at work], but very few companies are doing anything about it," said Michael Kelly, the study's author. "The legal scouts have not sent back much useful information on the right to privacy."

The Medstat Group Inc. in Ann Arbor, Mich., is one company that has never had productivity problems among its 700 employees as a result of Internet use, said Michael J. Karaman, vice president and chief technology officer for product development.

Of the companies surveyed by the Saratoga Institute, 82.6% said they have a written Internet use policy, and 62.9% said they include it in their employee handbooks.

"It is the responsibility of each employee to comply with the policy and of managers to monitor and ensure compliance," said Harris.

*But not everybody sees it that way. "The person making their [online] purchase is not necessarily doing their work, and they could be affecting other people's work as well by soaking up bandwidth," said Kevin Blakeman, president of U.S. operations at **SurfControl** PLC, a Scotts Valley, Calif.-based firm that develops Internet usage-monitoring tools that can alert companies when their employees are visiting objectionable Web sites.*

***SurfControl** recently completed a study that found that 30% to 40% of worker productivity is lost due to personal use of the Internet, and nearly three quarters of workers with Internet access acknowledged that their personal use slows down their company's network.*

The Saratoga Institute also acknowledges that personal usage that gets out of control can cost companies a lot in lost productivity.

In fact, a company with 1,000 Internet users who do personal Web surfing for one hour per day can lose more than $35 million in productivity costs each year, according to the institute.

In a recent survey performed by Oftel in UK, Oftel shows that 93 per cent of medium-sized and 69 per cent of small businesses are now connected or in the process of being connected to the Internet, and 20 per cent are using an unmetered package. 70 per cent of the 700 respondents claimed to be using the Internet more than when they first went online. Increases are attributed to lower costs of connection, more critical mass among smaller businesses and the introduction of electronic marketplaces and community sites which companies feel they must be a part of.

By February 2001, 60% of UK small and medium businesses said they were connected to the Internet, a significant growth from 49% in November 2000, driven by both small and medium sizes businesses. The results are summarised in figure 3a.

Figure 3a % UK SMEs with Internet access
Base: UK businesses, Feb '01 (Small: Base – 400, Medium: Base - 300)
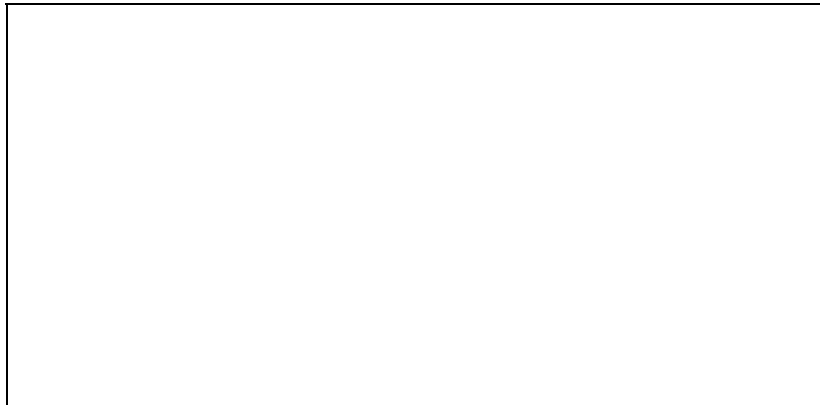
3.2 A further 9% of businesses (9% small, 4% medium) said they were in the process of getting connected. This is shown in figure 3b. Just over a fifth (23%) of UK businesses however, said they were unlikely to connect to the Internet within the next 12 months (predominantly small businesses). The August survey (www.oftel.gov.uk/publications/research/bint1000.htm) found that the main reason for this was a perception that the Internet was not relevant to the business and could not assist it in any way. Lack of knowledge about the Internet, how to connect and its potential uses and benefits were identified as potential barriers for a small proportion of businesses.

Figure 3b Internet penetration amongst UK businesses
Base: UK businesses, Feb '01 (Small: Base – 400, Medium: Base - 300)

http://www.oftel.gov.uk/publications/research/2001/q4internet0501.htm
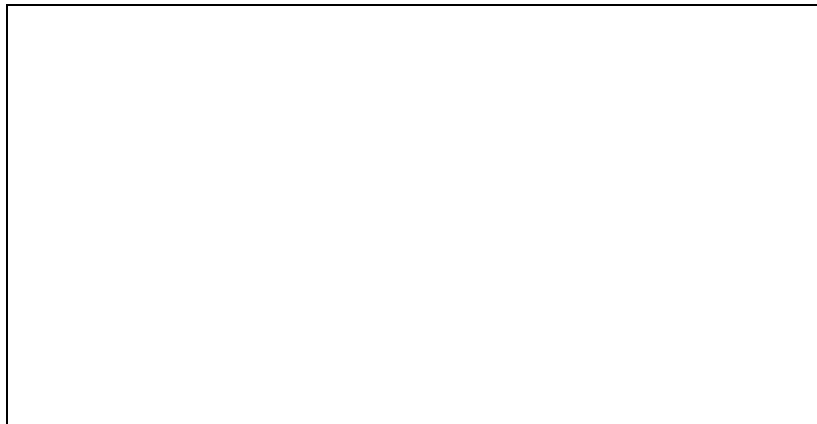
End 2000 Arthur Andersen wrote :

One of the most promising new Internet business models is the Application Service Provider (ASP). ASPs offer both corporate and private clients software services on demand over the Web, without the need to invest in specific software products. ASPs provide technology and applications in a targeted fashion and create substantial cost-savings for users. The Gartner Group found that by employing web-based application support, cost-savings could be as high as 80 percent. Moreover, in a recent survey, 57 percent of respondents indicated that they expect to use ASP services in the future. Innovative companies have begun to recognize the potential of this new market. Major ASP industry leaders, Hewlett-Packard, SAP, and Qwest have already formed an alliance to provide ASP services. Anyway, our own field experience with SME (those with less than 10 employees) shows that only 10% of those enterprises have an email address… Not very exicting.

And they continue:

Big Plans for Small Businesses

Many small and medium size enterprises (SMEs) are also beginning to appreciate the potential of the Internet to provide product exposure and create cost-savings. According to a recent Arthur Andersen poll, 50 percent of SMEs rank the Internet as their favored growth strategy for the next 12 months. Additionally, Arthur Andersen concluded that 85 percent of SMEs currently use the Internet and 53 percent now have a homepage. While SMEs are increasingly appreciating the potential of the Internet to enhance their businesses, many remain hesitate to conduct e-commerce. Arthur Anderson found that 54 percent of SMEs indicated that they do not conduct e-commerce and do not intend to launch an e-commerce-capable site in the next 12 months.

Source: Arthur Andersen, 2000

According to the Economists Intelligence Unit (EIU), North America and Western Europe are the world's most "e-ready" regions, defined as those that have high levels of connectivity and strong online business cultures. EIU ranked the world's top 60 *e*-ready countries in May 2000, rating the U.S. as the most *e*-ready country followed closely by Scandinavia, the Netherlands, the UK, and Canada. Falling just short of the top 20 were Japan (21) and South Korea (24), which continue to face concerns regarding the development of a receptive online business environment. Rounding out the lower rankings were those countries, which continue to struggle with developing adequate communication infrastructures and fostering a receptive business environment. Not surprisingly, these included Russia (44), India (50), China (51), and Iraq (60).

ICT Investment

Online success also requires investing in the tools of Internet business. Countries and companies that maintain high levels of investment and innovation in ICT gain competitive advantages in doing business on the Web. In 1999, Spectrum Strategy conducted an international benchmarking study to measure IT and Internet investment and progress in the leading global industrialized nations (G-7) for the UK's Department of Trade and Industry. For this study, Spectrum devised an

ICT usage ranking systems they referred to as an ICT Connectivity Indicator. This ranking indicates the number of companies using at least one of three selected electronic business technologies. These included websites, external *e*-mail, and EDI. Reflecting the findings of EIU, Spectrum ranked the U.S. and Canada first with a 65 percent ICT Connectivity Indicator. The UK ran a close third with 63 percent. Unlike EIU's *e*-readiness rankings, Spectrum's Connectivity Indicator does not measure business practices and environment.

e- readiness rankings (end 2000)
(top 20)

1	**United States**
2	**Sweden**
3	**Finland**
4	**Norway**
5	**Netherlands**
6	**United Kingdom**
7	**Canada**
8	**Singapore**
9	**Hong Kong**
10	**Switzerland**
11	**Ireland**
12	**Denmark**
13	**Germany**
14	**France**
15	**Belgium**
16	**Australia**
17	**New Zealand**
18	**Austria**
19	**Italy**
20	**Israel**

Source: Economist Intelligence Unit (EIU), 2000

Thus the connectivity constraint will not be a constraint… But what about the quality ?

Data Quality

We are looking for something extremely simple: the EU annex 1: Extremely shortly we have discovered a Belgian supplier (CD), a German (CD),2 US (CD and Internet), 2 Canadian (CD et Internet), 1 Swiss, 1 Dutch… And we are working mainly with the US because they see the EU regulation as a whole with some local add-ins and not as a an add-in to tehier national regulation. But we do not have translated substances…

Look up the word « MSDS » on the Internet with the follinging 3 search engines: Yahoo, Lycos et Alta Vista

Answers are :

On Yahoo: « MSDS » 127 Sites but not all related to Material Safety Data Sheets and none of the Dusseldorf companies, but you have to pay to be referenced by Yahoo…

On Lycos 179.000 sites where to discovered

At Alta Vista 384.226 references of the word MSDS

However the first sites are identical on the 3 search engines, is quality synonymous to the amount paid to be referenced?.

Loading MSDS from one of the different MSDS online libraries: almost all in US English, OSHA format and concerning pure substances;;; Is that quality ? Some are older than 13 years…

Another site starts with the following disclaimer:

Disclaimer:

CAMD does not claim this database to be all-inclusive. It shall be used only as a guide. The data is offered as typical values and not as a product specification. No warranty, either expressed or implied, is hereby made. CAMD shall not be held liable for any damage or injury resulting from the use of this database. The hard copies of the MSDS can be found on site, and where there is a question, should be used.

The Office of Occupational and Environmental Safety maintains a file of Material Safety Data Sheets (MSDS) sheets for LSU. Each laboratory or other location where chemicals are used by personnel is required to have MSDS sheets accessible to people working with chemicals at all times. Our files are hard copy files and must be copied to be used. MSDS sheets may be made available via computer. When you need an MSDS that is not in your hard copy file, you may find the Internet a good source.

There are a number of Internet accessible MSDS servers:

- LSU's MSDS Web Server. Contains a vast selection searchable by product name, ingredient, manufacturer, or CAS number.

- Free access to MSDS sheets are available at MSDSOnline.com

- LSU's Center for Advanced Microstructure and Devices (CAMD) has a site for LSU associated interests: CAMD MSDS.

- A widely used web server is: University of Vermont

- An MSDS search engine is available.

- Cornell University MSDS search - Cornell PDC Mateial Safety Data Sheets

- A link to search for Sigma Aldrich chemicals: Online MSDS search

- For products purchased from Grainer wholesale outlet the MSDS sheet can be located and printed out at Grainger MSDS site. A wide range of products, including solvents, paints, and welding rods can be found through this source. Grainger Services MSDS

- If you can't find what you're looking for, try: Where to find Material Safety Data Sheets on the Internet

- A good source of chemical information is at Chemfinder.

- Information concerning reactivity or compatibility is also available.

- General safety and health information is available from NIOSH as International Chemical Safety Cards.

- Additional safety and health information is available for over 2000 chemicals studied by the National Toxicolgy program

- http://msds.pdc.cornell.edu/msdssrch.asp   250.000 US MSDS

One of our partners, another member of the Kemika XXI network, ChemWatch proposes MSDS of more 50.000 substances in about 10 languages, mainly Asia-Pacific area, we are currently busy to 'Europeanise' those documents. Once again it is a long task and concerning mainly pure substances.

http://www.chemwatch.net

Therefore, assuming that I have access to a tool, it is not easy to find the right information, I need the approval from IT department who will try to force me to go to sites not really usfeul for

me for different technical or political reasons.

And here you have to play with the four most frequent inhibitors: anxiousness, confidentiality, environmental hackers, competitors and clients.

Anxiety or the 4 inhibitors.

Thus, assuming the fact that I have a suitable Internet access, that I'm very motivated to use it, I'm not sure to have the right information, or the information I need. On top of that let's imagine that I need the approval of my IT guru who will, for any mysterious reasons, force me to work with an « IT approved secure site » absolutely uninteresting. This is the right transition to address the next topic: the 4 inhibitors: fear of new technology, e terrorism, competition and customers.

For the SME the most important inhibitor is: information confidentiality: « Internet is not secure », « My competitor will copy my formulation" We have performed a telephone survey in Germany, we have called 2014 enterprises, and 1396 (69%) answered that they will accept to think about an Internet MSDS authoring system… We will be able by mid of next year to reveal if it was only a pure intellectual answer or a true answer.

But, let's go and review the major risks. :

Hackers

Hackers exist but they are not really frequent. Most of the hackers want mainly to prove their competence and to prove that the safety systems are never totally safe: that is true when you have time, money and skills everything can be broken. But who will be interested by the formulation a Small company blending 3 substances to produce a new soil cleaner used only in the area of Luxemburg? Others are more dangerous but their key targets are mainly banks and very large commercial organisations. Working with professional ASP providers will reduce the risk to almost 0%.

Virus

Virus are small pieces of code relatively dangerous: some are just displaying small icons on you screen, other are destroying your hard disk. The chance to get one virus is relatively reduced if you

- using a good anti virus software, regularly (weekly or daily) updated

- Control any downloaded file.

Unhonests companies

Shop as much as possible only on known sites and not from a brand new company created 3 days earlier….

Pay more attention to the content of the site than to the look of the site. Any average programmer is able to develop a very attractive site, but that does neither prove tha the person is honest nor serious.

Contract always with secure sites: those sites are using complex encryption protocols who protect your data to be read by any other person. A small locker on the screen and a specific window prompting you when you go to the site identifies secure sites.

Check the confidentiality policy of the site, and the quality chart of the company.

Expert Person versus Expert System

A recent trends is the « outsourcing », the « consulting ». Currently to sell an MSDS authoring system it requires more consulting tasks and services than just IT skills. One key important factor of that is the 'human relationship" between the consultant and his/her client.

Today, the consultant is a person, with a voice, a colour, hairs etc… It is not evident to ask to a computer connected to anonymous sites to be the consultant. I have looked up the key words « e-consulting » on Yahoo and I received 3 sites, non related to EHS.

In Belgium, a federal country with three regions, in the Flemish region there is currently a culture of EHS Consulting, a part are the local regulation, another the number of large enterprises and a third, may be, the fact that, e.g. ADR is not available in Dutch but in French, English and German.

To deliver e-consulting in EHS environment you need :

- EHS skills of course,

- Skills and information about international regulation this is, today, relatively easy with databases like: LOLI, Haaskoning, Ariel, CCOHS, Dechema…

- Excellent knowledge of languages not only English but also local languages : today, within EU, we have minimum 11 languages at JPASS our team of 8 persons are able to perform professional jobs in French, Dutch, German, English, Italian, Spanish, Portuguese… Considering our partners we are able to extend that to far east languages, Semitic languages and some east European language.

- E consulting requires also a extended availability, when possible 24 hours a day.

- Finally, performing expert systems: multi regulatory: EU plus local countries specification, US, WHMIS, Australian… According to our experience in that area (about 15 years) and our current projects it seems that none of the Expert systems available today are able to answer, correctly, at 100% of the here under specifications:

    o Formats and regulations

        - USA including local rules: New Jersey, California…
        - EU including national rules: MAK, WGK, table of professional diseases…
        - Australia
        - Japan
        - China
        - Other Asia Pacific countries
        - Canada

    o Languages and alphabets

        - Europe (Western and Eastern)   30+
        - Americas (North & South)   8+
        - Asia – Pacific   20+
        - Middle-East   5+

    o Other

        - Mixtures of reacting substances
        - Transportation rules ADR, IATA, DOT… not always similar to MSDS section 15 rules…
        - Trade secret
        - Customer specific rules
        - Link to ERP's: SAP, JD Edwards, Prodstar…

▪ …

However some of the currently available Expert Systems comply to a large extend with those items. But the best way to be as close as possible of 100% accuracy is to propose together the software (expert system) and the consultant (expert person), both connected to a network to be linked to a database and expertise of the colleagues. Just like me, the 2 speakers before me are working together within the Kemika XXI network. At JPASS we expand also that network by our own European Network. Based on my own knowledge we are probably the first worldwide expertise centre for Dangerous goods covering 3 continents (USA, Canada, UK, Benelux, France, Germany, Australia, Japan, Norway, Switzerland….), more than 30 languages and having developed at least 5 expert systems.

Finally, I will explain you shortly how, at JPASS International, we are developing the concepts I have addressed today:

Example of an ASP and C/S system: Pollux®

This example describes how, at JPASS International, we are solving those problems;

1. First we have developed a multi everything data base design: multi lingual, multi regulation, multi format, multi documents, multi IT architecture, multi users, multi sites, multi alphabets, multi …

2. Then we have developed 2 versions of the same software:

   a. One in Client/Server mode.

   b. One in ASP.

3. We have made that for 2 parts of the MSDS tasks:

   a. Authoring.

   b. Distribution

Any client may therefore have one, two, three or four modules and only one MSDS database.

Client Server Model
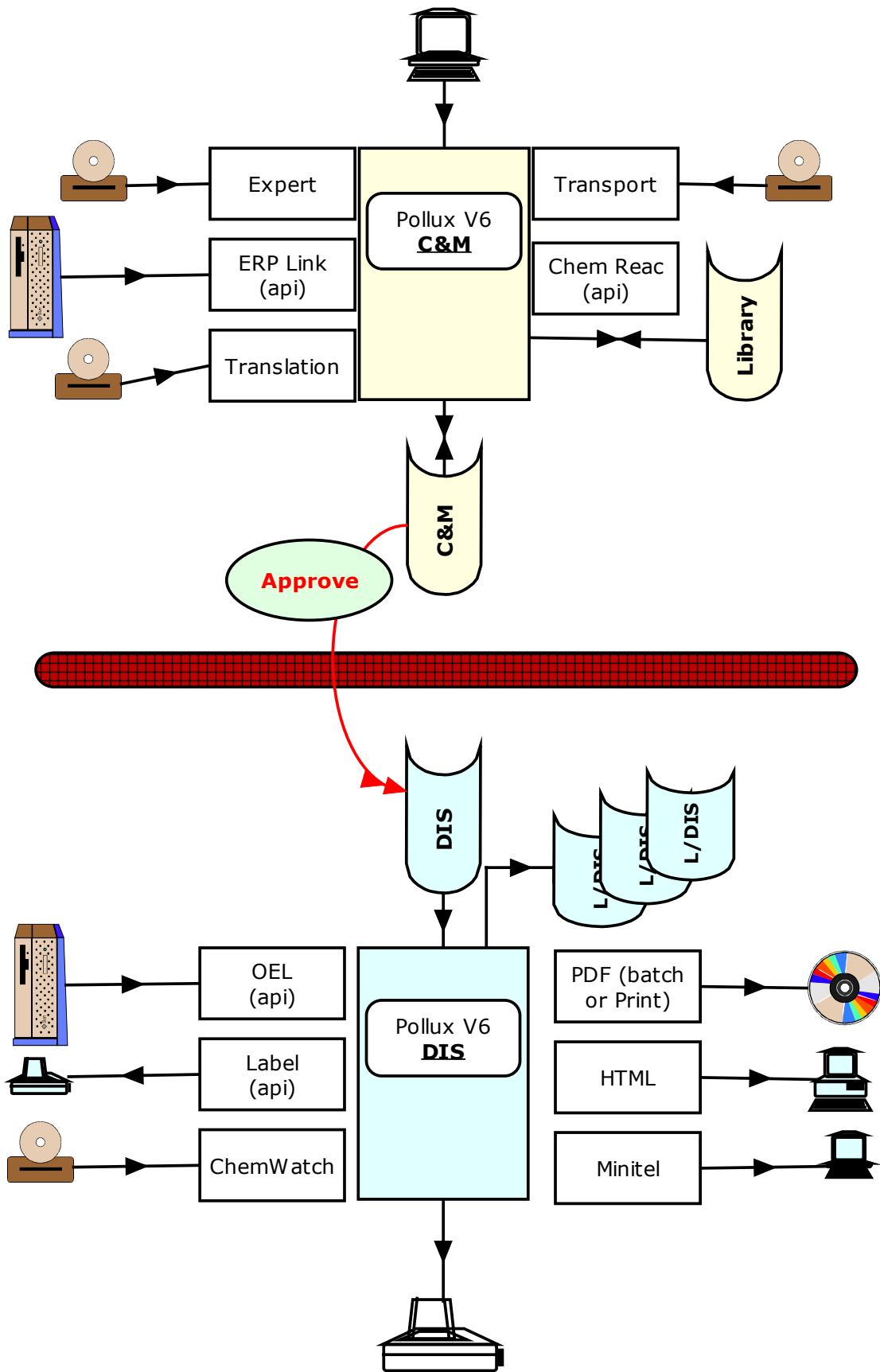
ASP Model
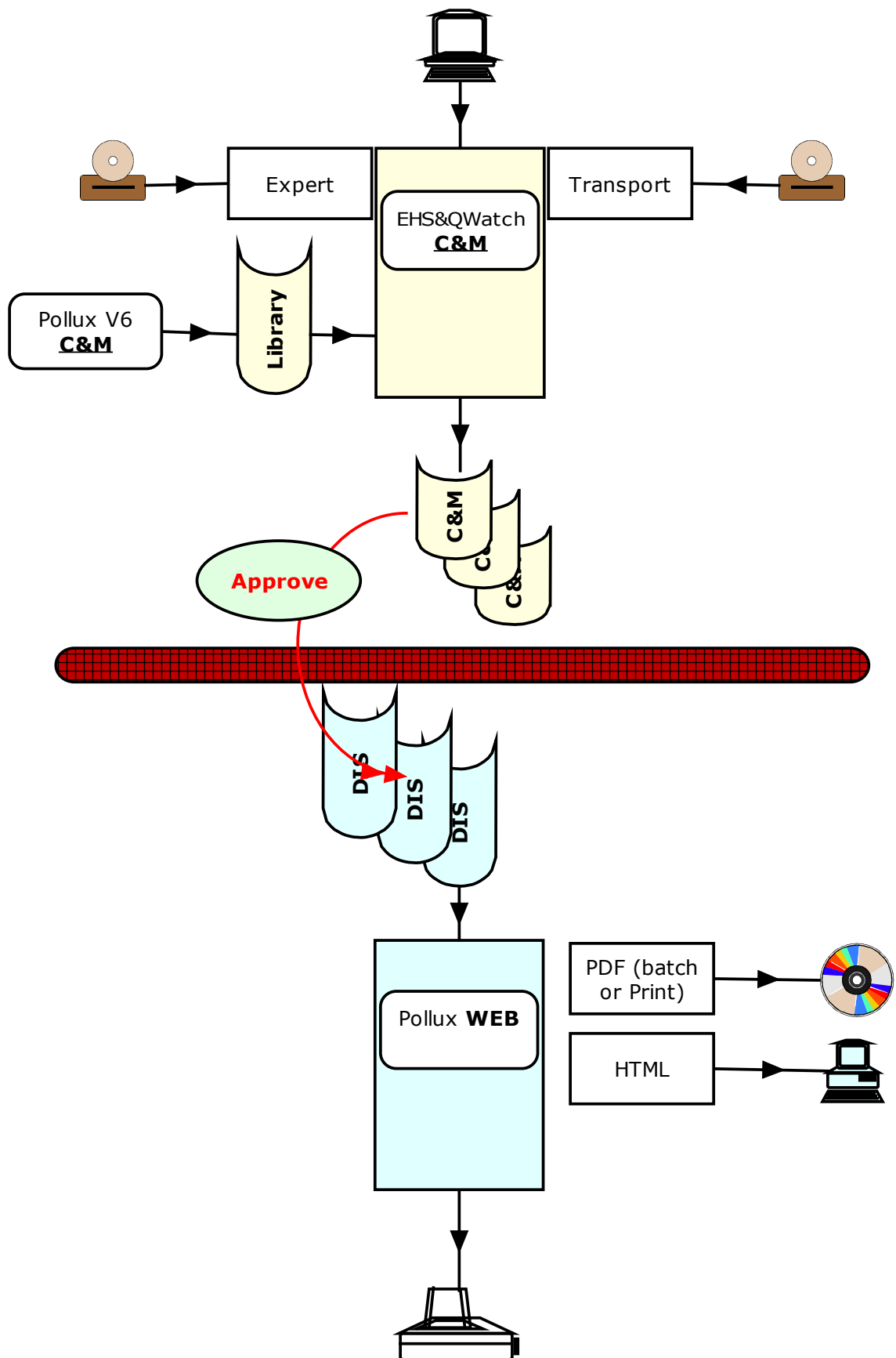
Combinations

	Authoring	Distribution
Type 1	**Client Server**	**Client Server**
Type 2	**Client Server**	**ASP**
Type 3	**ASP**	**ASP**
Type 4	**ASP**	**Client Server**
Type 5	**ASP & Client Server**	**ASP & Client Server**
Type 6	**ASP**	**ASP & Client Server**
Type 7	**ASP & Client Server**	**ASP**

Thanks to this approach, any company, whatever her size or organisation is able to find the most suitable environment as close as possible to her own structure and organisation.

Our experience shows that very large companies work principally in types 5, 6 or 7, medium enterprises to types 1, 2 and 4 and smallest one to type 3. For those who want black box software we will, shortly, propose an alternate solution also based on ASP and standa alone systems.

Just to inform you the current users of Pollux are 3 of the 5 first largest worldwide Petroleum companies, a Belgian SME company of 8 workers, and several companies with 50 to 5.000 workers.

Conclusion

To conclude, we are currently between two worlds in one part the replacing market concerning companies having already an MSDS authoring system and on the other hand a new market for SME, companies of new emerging countries, or new emerging regulation: Eastern Europe, Asia, pacific, South America…. The technology is also emerging but there are not thousands of users waiting for a 100% computer aided systems. But everybody says I want to try. An emerging technology ready, but not yet accepted by the customers who nevertheless say to be ready to try it in the future…

I hope that this short overview helped you to have a better understanding of that problem and that my own expertise will help you to take the right decision when required.

My last word will be go to the Internet but not alone, connected to experts and build with us the e-environment, le e-ehs, le e-msds.

Thank-you.