**State Committee for Communications, Information and Telecommunication Technologies of the Republic of Uzbekistan**
**Tashkent University of Information Technologies**

To Protect
Supervisor
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«____»_____2013 y.

# GRADUATION QUALIFYING WORK OF BACHELOR

Theme: **CREATION OF VIRTUAL REFERENCE SERVICE OF FUNDAMENTAL LIBRARY OF ACADEMY OF SCIENCES REPUBLIC OF UZBEKISTAN.**

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**Tashkent 2013.**

CONTENTS

This final qualifying work is devoted to creation of Virtual Reference Service of Fundamental Library of the Academy of Sciences of Uzbekistan.

Virtual Reference Service in another libraries were reviewed and analyzed, such as USA, Sweden, Australia, Netherland, France, Germany, the UK, revealed shortcomings, mistakes, and ways of the flash site development are given.

Bachelor has developed a functional and organizational structure of the virtual reference service, give suggestions in organization of this service for the information and library institutions.

Ushbu malakaviy bitiruv ishi O'zbekiston Fanlar Akademiyasi asosiy kutubxonasining virtual ma'lumotlar xizmatini yaratishga bag'ishlangan.

Ishda mavjud virtual ma'lumotlar xizmatlarining tahlili, Amerika, Avstraliya, Fransiya, Gollandiya, Janubiy Afrika, Svetsiya, Buyuk Britaniya davlatlarining virtual ma'lumotlar xizmatlarining tahlili, yangi yaratilgan xizmatning dasturiy tuzilmasi, qurilishi, algoritmi, uni takomillashtirish yo'llari, xiamatni yaratishda qo'llanilgan tizimlarning afzalliklari ochib berilgan.

Talaba virtual ma'lumotlar xizmatining funksional va tashkiliy strukturasini ishlab chiqqan holda va ushbu xizmatni tashkil etish bo'yicha takliflar keltirgan.

Настоящая выпускная квалификационная работа посвящена созданию Виртуально справочной службы Фундаментальной библиотеки Академии наук Узбекистана.

Действительные Справочные Службы в других библиотеках были рассмотрены и проанализированы, особенно в таких странах как, США, Швеция, Австралия, Голландия, Франция, Германия, Великобритания, раскрыты недостатки, ошибки и даны пути развития виртуально справочной службы.

Бакалавр разработал функциональную и организационную структуру виртуально справочной службы, дал предложения по организации этой услуги для информационно-библиотечных учреждений.

## Introduction

The information revolution beginning at the early 21 century has essentially changed the role of libraries. Usage of new information technologies hundreds times increased the opportunities of access to information.

In purposes of creation cordially new information centers, based on regional universal scientific libraries, oriented on satisfaction of intellectual needs of young generation, preservation cultural, moral and spiritual values, creation of all necessary conditions for wider in information supply, therefore the President of the Republic of Uzbekistan Islam Karimov's Decision №381 of June 20, 2006 «About organization of information-library service to the population of the Republic» became an important step in library service development. There were created information-librarian centers in Karakalpakstan Republic, 12 regions and in Tashkent city with transmission it from Ministry of culture and sport to Uzbek agency of communication and information. In purposes of coordination, development of information-librarian centers, the Ministry of Republic of Uzbekistan accepted a decree №178 from the 1th August 2006, where with the order of organizational structure definition there were determined the propositions of Centre. According to new decree of Uzbek agency communication and information were determined the range of questions, propositions and worked out the plan of arrangements. In this way the Republic information-librarian center was organized, confirmed the Statute, and worked out job instructions of Centre's staff. The Centre has government registration, opened accounts in bank etc.

Rendering of services based on the new information technologies, wider service of the population with systematic information became the priority objective of all libraries. Because the today's reader wants to find necessary books very quickly, in several seconds through electronic directories to look through the database of the largest libraries of the world over the Internet.

That's way I want to create Virtual Reference Service of Fundamental Library of Academy of Sciences Republic that would be serviceable, easy-to-use, lot of opportunities such as:

- any user can access to virtual reference service
- useful links
- specialized portals
- archives of electronic texts
- information search service
- E-mail reference

So I hope that my qualify work to develop library service and helpful to users. Technological developments have affected not only the format and sources of the information libraries use to provide reference service, but also where we provide reference service. Libraries and their resources have partially moved to the virtual world of the Internet. As a result, library patrons can access our resources from outside of the physical library. In an effort to reach patrons accessing the library via their computers, many libraries and library consortia are extending their reference service to include virtual reference. Technology now allows users to submit their queries to the library at any time from any place in the world. Virtual reference is responsive to patrons' need for convenient access to reference service. The information-seeking preferences, communication behavior patterns of library clientele are rapidly changing. It is critical for librarians to make informed decisions for resource allocations, to sustain and grow responsive services, as well as to choose optimal service delivery models. Research is needed to understand the needs of a diverse user population in order to design services to meet users' needs.
I hereby declare that this thesis is my original work and it has been written by me in its entirety. I have acknowledged all the sources of information which have been used in the diploma work.

# CHAPTER 1. ANALYSE OF VIRTUAL REFERENCE SERVICE.

## 1.1 Analyse of digital and virtual reference service forms.

Traditionally an individual institution provides reference service in a physical location, that is, in a library. With the development of technology, especially Internet technology, libraries have developed virtual (or "digital") reference services (VRS) in order to provide efficient and effective reference services to patrons in and out of the library and even to Users not in the library's usual service community. According to the guidelines provided by the Reference and Users Services Association (RUSA), virtual reference is a reference service, such as chat, videoconferencing, co-browsing, instant messaging (IM), voice over Internet protocol (VoIP) or email, conducted electronically through computers or the Internet. Most VRS are in real time and use synchronous communication. Although reference services can be conducted using telephone, fax or mail, those are not virtual reference. Provision of VRS is not limited by location and time. In fact, most VRS are offered outside regular office hours. Some are even 24/7. In consideration of cost and of staff availability most VRS are offered by a group of libraries or consortia rather than by individual institutions. Public libraries in many states work together to provide VRS. The target users may have characteristics different from traditional library users. VRS users may spend considerable time in front of computers and surfing on the Internet. They use email, instant messaging or VoIP to communicate with friends and at work. Some may participate in online chatting. Besides adults, teens and children may be potential users of VRS because of their familiarity with computers and the Internet.

In this special issue different aspects of VRS are discussed. These aspects include the history (and possible future) of VRS, participatory librarianship instead of one-to-one service, evaluation of VRS, implementation of professional and ethical standards in VRS and reasons why non-users have not tried VRS. These issues include licensing agreements for digital materials used during digital references, staff training materials, online interview skills, staffing levels, patterns, expectations, marketing of digital reference services and collaboration among

libraries. So I suggests that scalability and centrality are crucial to the future of VRS. Readers are encouraged to think about answers to the following questions: How do we move digital services beyond a one-at-a-time proposition to one that satisfies large numbers of needs? How can we demonstrate the importance of libraries and their services through VRS and connect libraries to people's everyday lives? We discuss the possibility of moving virtual reference toward participatory librarianship, which seems to be the answer to ours' scalability. Many librarians suggest that virtual reference may be done by answering users' questions using pools of expertise provided by different sources. Librarians are one type of source. Users might also be able to see answers to their questions coming from different sources with different contexts and points of view. The perspective of the library staff considers "how the service works." The perspective of the users considers "satisfaction with the information provided and the interaction with the librarian." Because of the difference of perspective, there can be different possible focal points of the evaluation of online reference services. Different types of data will be collected accordingly. A non-user is defined as someone who uses IM or chat for personal or business purposes and may use library services in email, telephone or face-to-face mode but does not use synchronous chat reference services. Focus group interviews and online surveys were conducted for data collection. The findings of focus group interviews show that non-users consider chat reference to be like a generic online chat room (a negative); they may be unwilling to use new software; they do not want to bother librarians; and they worry that librarians would reveal their identities or reference requests to other people.

Digital reference (or virtual reference) is a service by which a library reference service is conducted online, and the reference transaction is a computer-mediated communication. It is the remote, computer-mediated delivery of reference information provided by library professionals to users who cannot access or do not want face-to-face communication. Virtual reference service is most often an extension of a library's existing reference service program. The word "reference" in this context refers to the task of providing assistance to library users in finding information, answering questions, and otherwise fulfilling users'

information needs. Reference work often but not always involves using reference works, such as dictionaries, encyclopedias, etc. This form of reference work expands reference services from the physical reference desk to a "virtual" reference desk where the patron could be writing from home, work or a variety of other locations.

The terminology surrounding virtual reference services may involve multiple terms used for the same definition. The preferred term for remotely-delivered, computer-mediated reference services is "virtual reference", with the secondary non-preferred term "digital reference" having gone out of use in recent years. "Chat reference" is often used interchangeably with virtual reference, although it represents only one aspect of virtual reference. Virtual reference includes the use of both synchronous (i.e., IM, videoconferencing) and asynchronous communication (i.e., texting and email). Here, "synchronous virtual reference" refers to any real-time computer-mediated communication between patron and information professional. Asynchronous virtual reference is all computer-mediated communication that is sent and received at different times.

*History.*

The earliest digital reference services were launched in the mid-1980s, primarily by academic and medical libraries, and provided by e-mail. These early-adopter libraries launched digital reference services for two main reasons: to extend the hours that questions could be submitted to the reference desk, and to explore the potential of campus-wide networks, which at that time was a new technology.

With the advent of the graphical World Wide Web, libraries quickly adopted web forms for question submission. Since then, the percentage of questions submitted to services via web forms has outstripped the percentage submitted via email.

In the early- to mid-1990s, digital reference services began to appear that were not affiliated with any library. These digital reference services are often referred to as “Ask A” services.

Providing remote-based services for patrons has been a steady practice of libraries over the years. For example, before the widespread use of chat software, reference questions were often answered via phone, fax, email and audio conferencing. Email is the oldest type of virtual reference service used by libraries. Library services in America and the UK are just now gaining visibility in their use of virtual reference services using chat software. However, a survey in America revealed that by 2001 over 200 libraries were using chat reference services. The rapid global proliferation of information technology (IT) often leaves libraries at a disadvantage in terms of keeping their services current. However, libraries are always striving to understand their user demographics in order to provide the best possible services. Therefore, libraries continue to take notes from current cyber culture and are continually incorporating a diversified range of interactive technologies in their service repertoires. Virtual reference represents only one small part of a larger library mission to meet the needs of a new generation, sometimes referred to as the "Google Generation", of users who have grown up with the internet. For instance, virtual reference may be used in conjunction with embedded Web 2.0 (online social media such as Facebook, YouTube, blogs, del.icio.us, Flickr, etc.) applications in a library's suite of online services. As technological innovations continue, libraries will be watching to find new, more personalized ways of interacting with remote reference users.

*Forms of digital reference. Web forms.*

Web forms are created for digital reference services in order to help the patron be more productive in asking their question. This document helps the librarian locate exactly what the patron is asking for. Creation of web forms requires design consideration. Because web forms substitute for the reference interview, receiving as much information as possible from the patron is a key function.

Aspects commonly found within web forms:

- A return email address to send the answer to the question
- The question being asked
- The type of question

- What sources have been consulted by the patron
- How the patron is planning to use the information
- Location of the patron (are they a library patron?)
- A name to personalize the interaction
- A date by which the information is needed
- The type of sources being requested (print or electronic)

**Chat using commercial applications**

Several applications exist for providing chat-based reference. Some of these applications are:

QuestionPoint, Tutor.com, AspiringKidz.com, Vienova.com and VRLplus. These applications bear a resemblance to commercial help desk applications. These applications possess functionality such as: chat, co-browsing of webpages, webpage and document pushing, customization of pre-scripted messages, storage of chat transcripts, and statistical reporting.

**Chat using instant messaging**

Instant messaging (IM) services are used by some libraries as a low-cost means of offering chat-based reference, since most IM services are free. Utilizing IM for reference services allows a patron to contact the library from any location via the internet. This service is like the traditional reference interview because it is a live interaction between the patron and the librarian. On the other side the reference interview is different because the conversation does not float away but instead is in print on the screen for the librarian to review if needed to better understand the patron. IM reference services may be for the use of in-house patrons as well as patrons unable to go to the library. If library computers support IM chat programs, patrons may IM from within the library to avoid losing their use of a computer or avoid making embarrassing questions public.

Successful IM reference services will:

- Create a profile to convey information about the library and increase online presence.
- Accept imperfection in conversations without spending time to go back and make corrections. Most words are recognizable through context.

- Become familiar with and use accepted IM abbreviations such as LOL (Laugh Out Loud).
- Don't panic. While speed is important it is more important to not feel rushed.

At times, IM becomes challenging because of lack of non-verbal cues such as eye contact, and the perceived time pressure. Moreover, formulating the question online without the give and take of nonverbal cues and face to face conversation presents an added obstacle. In addition, to provide effective reference service through IM, it is important to meet higher level of information literacy standards. These standards include evaluating the information and its source, synthesizing the information to create new ideas or products, and understanding the societal, legal, and economic issues surrounding its use.

*Software features*

Virtual service software programs offered by libraries are often unique, and tailored to the individual library's needs. However, each program may have several distinct features. A knowledge base is a chunk of information that users can access independently. An example of this is can a serialized listing of frequently asked questions (FAQ) that a user can read and use at his or her leisure.

Online chat, or instant messaging (IM) has become a very popular Web-based feature. Instant messaging is a real time conversation that utilizes typed text instead of language. Users may feel a sense of satisfaction with the use of this tool because of their personalized interaction with staff.

The use of electronic mail (email) in responding to reference questions in libraries has been in use for years. Also, in some cases with the IM feature, a question may be asked that cannot be resolved in online chat. In this instance the staff member may document the inquiring patron’s email address and will the user a response.

With the increase in use of text messaging (Short Message Service or SMS), some libraries are also adopting text messaging in their virtual reference services. Librarians can use mobile phones, text-to-instant messaging or web-based services to respond to reference questions via text messaging.

Co-browsing, or cooperative browsing, is a virtual reference function that involves interactive control of a user's web browser. This function enables the librarian to see what the patron has on his or her computer screen. Several types of co-browsing have been offered in mobile devices of late; libraries may have software that incorporates dual modes of co-browsing in a variety of formats. For instance, it is possible to browse on a mobile device within and between documents (such as Word), webpages, and images.

### 1.2. An International Comparison of Virtual Reference Services

In an attempt to determine and compare the nature of virtual reference services in both academic and public libraries outside the United States, we analyzed data com-piled from web form transactions e-mailed to and from libraries via the Question-Point virtual reference service. The study reviewed transactions that were handled during a typical week in April 2006 and in April 2008 by twenty-three libraries in ten countries: Australia, Belgium, France, Germany, Mexico, the Netherlands, Slovenia, South Africa, Sweden, and the United Kingdom. We analyzed transactions by language, type of institution (public or academic), question type (access, bibliographic, or subject), answer type, subject, and response time, with attention to how these characteristics had changed in two years. The results of the study provide insight into how students and the general public use virtual reference services in various countries and how service efficiency differs among countries and library types. The use of virtual reference is becoming more prevalent in libraries throughout the world, yet studies of the use of transactions from virtual reference inter-changes in non–U.S. countries have not appeared widely in the literature. In this paper, we use "virtual reference" to mean a synchronous communications between patron and library; we do not address synchronous (or chat) reference. This study is one of the first to examine this aspect of library communication from a multinational point of view for both academic and public libraries. This study is as far as is known the first that considers virtual reference use in Belgium, Mexico, or Slovenia.

*PURPOSE*

The purpose of this study was to dis-cover similarities and differences in virtual reference services in non–U.S. countries. To make these comparisons, we examined such factors as country, language, type of question and answer, subject, response time, and user status. We also wanted to know if there were any changes of those factors be-tween 2006 and 2008, and if service efficiency (measured by turn around times) had improved. We confined our literature search to empirical and case studies conducted in the ten countries under examination here in publications indexed in Library Literature and LISA: Library and Information Science Abstracts since 2000.

***American Library Association's digital reference guidelines.***

The definition formulated by the American Library Association's (ALA) 2004 MARS Digital Reference Guidelines Ad Hoc Committee contains three components:

1. "Virtual reference is reference service initiated electronically, often in real-time, where patrons employ computers or other Internet technology to communicate with reference staff, without being physically present. Communication channels used frequently in virtual reference include chat, videoconferencing, Voice over IP, co-browsing, e-mail, and instant messaging.
2. While online sources are often utilized in provision of virtual reference, use of electronic sources in seeking answers is not of itself virtual reference.
3. Virtual reference queries are sometimes followed-up with telephone, fax, in-person and regular mail interactions, even though these modes of communication are not considered virtual."

In January 2011 Question Point and the American Library Association were in talks about offering a National Ask A Librarian service across the whole United States of America. At present the Ask services in the US are run at a local level.

***Other countries***

In Europe some countries offer services in both their own national language and in English. European countries include: Finland, the Netherlands (in Dutch only), Denmark, and France. Other countries which offer virtual reference services include: Australia, New Zealand, Canada, and the state of Colorado in the United States.

A collaboration between UK and Australian library services, entitled Chasing the Sun, has been initiated using Question Point software so that an all-hours digital reference chat service can be offered. Targeted at health libraries where reference queries from health professionals could occur at any time of the day or night due to medical emergencies, the collaboration between the two countries means that someone will be on hand to field the query at any time. Although the UK libraries involved are currently based in England the program may expand to other countries and health services if successful.

***Australia***

Porter's discussion of thirty transcripts from a chat reference service aimed at off-campus nursing students at La Trobe University found that 30 percent of the questions asked revolved around document delivery. Lee's study of forty-seven e-mail and chat reference transactions at Murdoch University measured, among other criteria, turnaround time in answering e-mail (mean delay of six hours) and question and answer types (e-mail questions tended to have a higher pro-portion of administrative questions than chat and required fewer techniques of the reference interview). Sullivan analyzed ninety-six question-and-answer pairs from the Bayside Library Ask-a-Librarian service in Victoria and found that 47 percent of the reference questions were classified as research queries. Davis and Scholfield's report on a collaborative arrangement between an Australian and a Scottish library for 24/7 coverage found that such an agreement cut down on the turnaround time of answering e-mail inquiries but found procedural and administrative inquiries hard to deal with. Davis' report on an instant-messaging (IM) trial with the National Library of Australia found that 61 percent of inquiries were general reference, 73 percent were completed during the IM sessions, 40 percent ended in

ten minutes or less, and 91 percent of users rated the services as "very good" or "excellent."

***France***

DiPietro and Calenge, as well as Bazin, discuss the Guichet du Savoir, an online information service offered by the Lyon Municipal Library, but make no comparisons to other libraries. Nguyen talks about virtual reference from a theoretical perspective and thus eschews any mention of specific virtual library services.

***Germany***

Simon found that users have trouble locating e-mail reference services on library websites. In a separate study, Simon analyzed how Chinese and German students use e-mail information.

***The Netherlands***

Doek talks about the chat service of Bibliothek van de Universiteit van Amsterdam (UVA) (one of the libraries analyzed here).

***South Africa***

Darries found that among the twenty-six academic libraries surveyed, the majority of libraries provided electronic reference service via e-mail and the library website, but these services had low levels of use.

***Sweden***

Jonsby studied the Ask the Library service in nineteen public libraries and found that the service's time limit of three days was appropriate, as most inquiries were answered in the same day; school students were the largest user group; literature topped the field of inquiries (37 percent); and the time it took to answer an inquiry was often longer than it would have been if the user had been present in the library.

***The United Kingdom***

Virtual reference services are growing in popularity in the UK with more institutions accepting queries via email, instant messaging and other chat based services. A study of the use of virtual reference within UK academic institutions

showed that 25% currently offer a form of virtual reference, with 54% of academic institutions surveyed considering adding this service.

UK public libraries were instrumental in some of the first steps towards UK-wide internet collaboration amongst libraries with the EARL Consortium (Electronic Access to Resources in Libraries) in 1995, in a time where internet access was a rare commodity for both library staff and the public. Resources were collated and lines of communication opened between libraries across the UK, paving the way for services all over the world to follow suit. There are now a number of area-specific reference services across the UK including Ask A Librarian (UK-wide, established in 1997), Ask Cymru (Welsh and English language service), Enquire (Government funded through the People's Network, also UK-wide), and Ask Scotland. Ask Scotland was created by the Scottish Government's advisory body on libraries, SLIC (Scottish Library and Information Council), and funded by the Public Library Quality Improvement Fund (PLQIF) in June 2009. It uses the Online Computer Library Center's Question Point software.

Davies' study of four small rural libraries that experimented with replacing all reference books with virtual access found that searching for answers to simple questions online was too inconvenient for users. Beard, Bottomly, and Geeson's survey of thirty users of a virtual e-mail reference service at Bournemouth University found that two-thirds of the questions asked were subject-related. Cloughley analyzed the results of ten reference questions sent to three U.S. and two UK free digital reference services and found that the average response time varied from fifteen minutes to sixty-seven hours, correct answers were given at only two of the services, and most did not pro-vide sources. Chowdhury and Margariti found that among five libraries in Scotland, the actual turnaround time for answering e-mail questions was faster than was stated on their webpages and that a great majority of inquiries were "mechanical" questions on how to use IT resources rather than specific subject requests.

*METHOD. Data Collection.*

We compiled files of questions that were e-mailed to twenty-three Question Point libraries in Australia, Belgium, France, Germany, Mexico, the Netherlands,

Slovenia, South Africa, Sweden, and the United Kingdom via web form—and the resulting librarian–patron exchanges—for the week of April 3, 2006. The week was chosen because it was within the school year of the countries in the study and had no known conflicts with national or religious holidays in any of the countries. For each library, we randomly selected twenty-five questions that were asked during that week; if a library had fewer than twenty-five questions for that week, we gathered transactions from subsequent weeks until the twenty-five-question quota was met or until the end of the month. To ensure the broadest geographic coverage possible, we included public, academic, and national libraries. A specialized business school in Germany was excluded, however, because we felt its specialization would skew the results. Another sample of transactions from the same libraries was gathered for the week of April 7, 2008. However, three libraries—one each in Belgium, Sweden, and the United Kingdom—had since dropped the service, so we had no transactions from them and worked instead with only the transactions from the remaining twenty libraries. We compiled 991 questions—515 from the first study and 476 from the second. To guarantee privacy, all user identification information—name, address, telephone, as well as names mentioned in the transcripts—was stripped from all the transactions in both samples.

*FEATURE. Coding.*

We coded each transaction according to how it fit into the following categories:

- Type of institution: academic or public. Of the twenty-three institutions in the study, eighteen were academic, four were public, and one was national. The data for the one national library were rolled into those for public libraries because we felt that the users and questions asked there more closely resembled those in public libraries.
- Language. Each transaction was coded according to the language of the question, not the answer (which was occasionally in a different language).

Questions were asked in a total of eleven languages: Afrikaans, Arabic, Dutch, English, French, German, Hungarian, Polish, Slovenian, Spanish, and Swedish, though three (Arabic, Hungarian, and Polish) were used only once.

- Question type: access, bibliographic, or subject. Access questions were those relating to library policy (book re-turns, fines, loan extensions, etc.) or how to access library resources (databases, catalogs, software, etc.). Bibliographic questions were those in which the user asked if the library owned a specific title or could obtain it. Subject questions called for specific information on a subject. Test questions, incomplete questions, or otherwise inappropriate questions (such as spam or someone obviously not serious) were excluded from the final sets.

- User status. Questions from academic institutions were coded according to whether the users were undergraduate students, graduate students, or staff (which may include faculty) if that information was requested and supplied on the web form. We coded 417 questions this way; many of the non-Anglo phone libraries did not track this demographic.

- Subject classification. We coded 663 questions by subject using the one hundred broad-level subjects of the Dewey Decimal Classification (DDC) system (000–990). A subject class was assigned to subject and bibliographic questions, and occasionally to access questions when a subject was inherent to the nature of the help request.

- Response time. The time (in hours) between when the question was first asked and the library's first response to the patron was recorded. For the sake of uniformity, weekends were factored in as part of the time.

*RESULTS AND DISCUSSION. Language.*

English was used by the greatest number of users, mostly because of the six institutions located in the two Anglophone countries (the United Kingdom and Australia). Among the non-Anglophone countries, however, Dutch comes out on top with the greatest percentage of questions asked (23 percent), though German and French were close behind (22 and 20 percent, respectively). Some

observations:

- English was used at all but four libraries, including three French, two Dutch, and three German libraries.
- Eleven institutions handled at least two languages, including those in South Africa, where both Afrikaans and English (among other languages) are official. Three libraries handled three different languages, and a German public library handled six.
- No primarily English-language institutions handled any language other than English. In libraries where questions were asked in languages other than that of the library's location, English was the second language of choice, used twice in Belgium (where none were in Dutch, the country's other official language), twelve times each in France and Germany, and twenty-eight times in the Netherlands.
- One question each was received in Hungarian, Polish, and Swedish in a German public library—and answered in kind. The one Arabic question sent to a French public library was answered in French.
- Lest it seem that only Anglophone countries are monolingual, in three non-Anglophone countries—Mexico, Slovenia, and Sweden—users asked all questions in their country's official language.

*Question Types*

The breakdown of question types is nearly the same for access and subject questions (see table 2). However, the variances among countries are notable. More than three-fourths of the questions asked in Belgium (which had only academic libraries in the study) were access questions. At the other end of the scale, Mexico (also academic-only) had only 6 percent access questions. France (all public libraries) also had relatively few access questions, and Sweden (public only) had none. On the other hand, Mexico and Sweden had the highest percentages of subject questions, and the top two countries for access questions (Belgium and

Australia) were the bottom two for subject questions. The percentages were remarkably consistent for the two years studied. When we break down questions by type of institution, almost half the academic questions in all disciplines were access questions, and subject and bibliographic questions were nearly tied for second place. However, in public libraries, three-fourths of the questions were subject questions; bibliographic and access questions made up the final quarter. These percentages, too, were fairly consistent from 2006 to 2008, though public library bibliographic questions decreased from 19 to 13 percent. The high percentage of subject questions in Sweden (87 percent), France (62 percent), Germany (44 per-cent), and the Netherlands (41 percent) may reflect the large number of public libraries in this study from those countries, though we must note again that 88 percent of the Mexican academic questions were also subject questions. Even in Slovenia, with only one library (an academic), slightly more than half were subject questions.

**Table 2.** Percentage of Question Types by Country

| Country | Access (%) | Bib (%) | Subject (%) |
|---|---|---|---|
| Australia | 70 | 17 | 13 |
| Belgium | 76 | 12 | 12 |
| France | 11 | 27 | 62 |
| Germany | 27 | 29 | 44 |
| Mexico | 6 | 6 | 88 |
| Netherlands | 37 | 22 | 41 |
| Slovenia | 25 | 22 | 53 |
| South Africa | 42 | 24 | 34 |
| Sweden | 0 | 13 | 87 |
| United Kingdom | 50 | 32 | 18 |
| **Total** | **39** | **24** | **37** |

Note: Percentages for Belgium and Sweden reflect 2006 data only. UK data represent one fewer institution in 2008.

*Answer Types*

The tendency toward subject questions in public libraries is further supported when we look at answer types (see table 3). Although answer type naturally depends somewhat on the question type, it remains significant that half of all academic library questions were answered with instructions compared to less than a tenth of the public library questions. Even looking at subject questions alone, 41 percent of academic questions were answered with instructions compared to only 5 percent of subject questions in public libraries. Furthermore, public libraries gave factual answers to subject questions almost one-third of the time, and academic libraries did so less than one-tenth of the time. This higher percentage of instructional answers in academic institutions, and the correspondingly higher percentage of factual answers in public institutions, is not surprising if (as in the United States) public libraries and academic libraries differ in mission: public libraries tend to focus on freedom of information for all, and they tend to do the research for patrons. Academic libraries, on the other hand, focus on how to find information, so they tend to offer resources and instruction on how to use them.

**Table 3.** Results of Questions and Answers by Library Type

| Library Type | Question Type | Answer Type | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | C | CL | F | I | P | R | NA | Total |
| Academic | A | 100 | 3 | 7 | 228 | 0 | 22 | 11 | 371 |
| | BIB | 56 | 4 | | | | 1 | 12 | 207 |
| | S | 9 | 2 | | | | 1 | 12 | 222 |
| **Academic Total** | | **165** | **9** | | | | **4** | **35** | **800** |
| Public | A | 6 | 0 | | | | 1 | 0 | 14 |
| | BIB | 10 | 0 | 11 | 4 | 3 | 4 | 1 | 33 |
| | S | 1 | 3 | 43 | 7 | 72 | 9 | 9 | 144 |
| **Public Total** | | **17** | **3** | **54** | **18** | **75** | **14** | **10** | **191** |
| **Grand Total** | | **182** | **12** | **87** | **418** | **149** | **98** | **45** | **991** |



User Status

Of the 417 transcripts on which users indicated a status, 51 percent of the participants were undergraduates, 38 percent were graduates, and the remaining 11 percent were staff. Graduate students asked access questions at a slightly higher rate than did under-graduates, and undergraduates asked subject questions at a higher rate than did graduate students. Graduate student question types were 62 percent access, 25 percent bibliographic, and 13 percent subject; undergraduate-student questions were 56 percent access, 18 percent bibliographic, and 26 percent subject. This dimension was one of the few in our study that changed significantly between 2006 and 2008, but the changes were parallel in both student groups; access questions increased (by 14 percent among graduates and by 4 percent among undergraduates), and bibliographic and subject questions de-creased in both groups.

*Subject Classification.*

The evaluated transactions show that public libraries spend most of their e-mail virtual reference time on subject questions, which make up 75 percent of all questions they received. But as noted earlier, 88 percent of the Mexican academic questions were subject-related. Slovenian and South African academic libraries also had significant portions of subject questions.

Although only 18 percent of its questions were subject-related, the United Kingdom nevertheless had the second largest number of subject questions (ninety-four), so it is noteworthy that it had a fairly even distribution through-out the subject categories. However, South Africa, with the largest subject set, had a much less even distribution that was concentrated heavily in law, business, and medicine (see table 4).

**Table 4.** Subject Classification of Questions by Country

| DDC | Australia | Belgium | France | Germany | Mexico | Netherlands | Slovenia | South Africa | Sweden | United Kingdom | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 000 | 0 | 0 | 13 | 14 | 1 | 5 | 3 | 4 | 0 | 6 | **46** |
| 100 | 3 | 1 | 3 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | **13** |
| 200 | 0 | 1 | 3 | 4 | 0 | 2 | 0 | 2 | 0 | 7 | **19** |
| 300 | 16 | 2 | 13 | 22 | 12 | 21 | 9 | 57 | 0 | 24 | **176** |
| 400 | 1 | 0 | 3 | 2 | 3 | 4 | 0 | 3 | 2 | 5 | **23** |
| 500 | 2 | 1 | 4 | 6 | 5 | 11 | 1 | 12 | 1 | 4 | **47** |
| 600 | 11 | 0 | 4 | 5 | 7 | 26 | 8 | 47 | 5 | 18 | **131** |
| 700 | 1 | 1 | 20 | 8 | 1 | 8 | 3 | 4 | 3 | 6 | **55** |
| 800 | 3 | 0 | 12 | 11 | 1 | 5 | 6 | 11 | 2 | 9 | **60** |
| 900 | 1 | 0 | 9 | 20 | 0 | 8 | 4 | 5 | 2 | 14 | **63** |
| **Grand Total** | **38** | **6** | **84** | **92** | **32** | **91** | **34** | **146** | **16** | **94** | **633** |

The breakdown by broad discipline varied considerably, however, depending on library type. In academic libraries, slightly more than one-third of all questions asked were about humanities subjects, but the sciences and social sciences were tied at second (see figure 2). In public libraries, however, two-thirds of all questions asked were about humanities subjects (see figure 3).

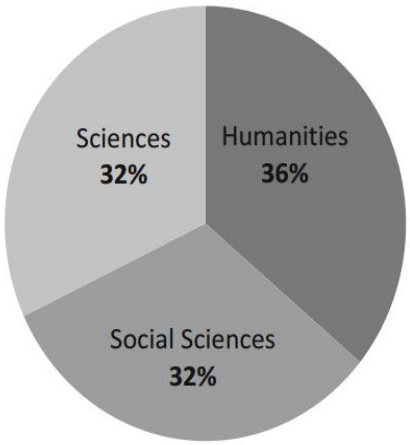



**Figure 2.** Breakdown of Subjects in Academic Libraries

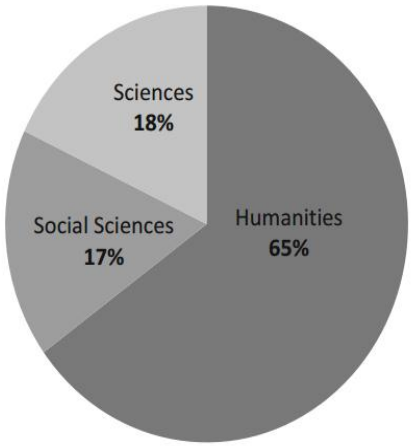



**Figure 3.** Breakdown of Subjects in Public Libraries

*Response time*

If, as is generally cited, virtual reference is the library's attempt to be where its patrons are when they need it, then responses within a reasonable time are assumed to be part of that convenience factor. And, unlike in-person, telephone, or chat

exchanges, e-mail has no immediate acknowledgement from a human being unless an e-mail is sent with a notification of receipt or with the answer itself, or an apology that an answer cannot be found. We noted immediately, in the 2006 data, that times varied greatly, ranging from a few minutes to several weeks! Belgium and Australia had the quickest average turnaround times (18 and 20 hours, respectively). South Africa and France had the longest (165 and 110 hours, respectively). It should be pointed out that those two countries also had the widest discrepancy between mean and median turnaround times. As for need-by and promised-by times, no public libraries in either of our sample years had need-by fields on their web forms—or they were not completed—so we compared their turn-around times only with what was indicated on their websites as a target. In 2006, academic institutions responded to patrons within the time the patron indicated they needed the information 87 percent of the time (according to 108 forms that collected that information). However, for that same year, 30 percent of the time neither public nor academic libraries responded within the time advertised on their websites (according to 394 transcripts). Belgian, Mexican, Australian, and German academic libraries scored the highest for responding within the advertised time, more than 90 percent. In 2008, responses within advertised time improved somewhat: Only 27 percent of the academic libraries took longer than advertised, and only 17 percent of the public libraries took longer. Australian academic libraries maintained their lead with the fastest turnaround times (we did not have Belgian libraries to compare against in our 2008 transcripts). See figure 4.

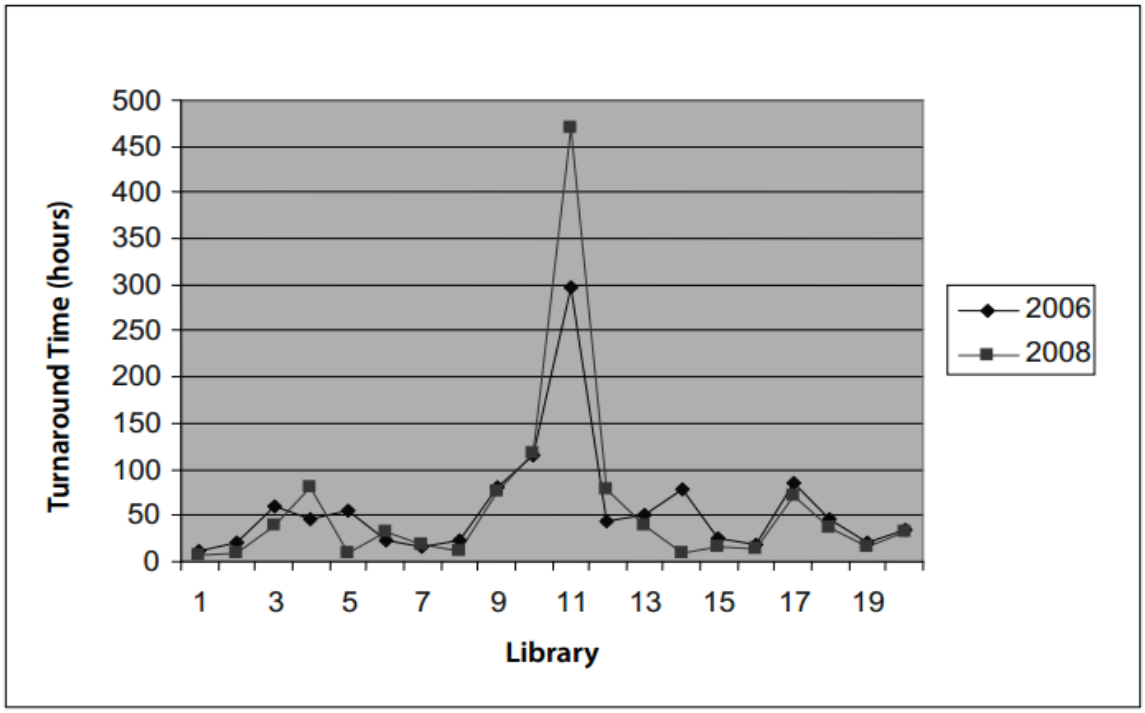



**Figure 4.** Comparison of Turnaround Times for Two Years

As noted earlier, turnaround times varied widely. It's not surprising, of course, that some easier questions would receive responses right away, while harder questions, sure to entail more research, would be set aside for a better time. Expectations are what matter, and websites and intake forms are often intended, at least in part, to help set expectations. So we might postulate that in April 2006, Mexico met expectations 100 percent of the time, given their advertised turnaround time. Yet their turnaround time average was eighty-four hours (seventy-one hours was the median). On the other end of the scale, the Dutch academic libraries met expectations only 48 percent of the time, yet they had much faster turnaround times, averaging thirty-six hours, with a seventeen-hour median. We should note two countries in particular: South Africa, which only has academic libraries in our study; and France, which only has public libraries. South Africa shows by far the longest turnaround times in both years of our study. In 2006, they met advertised turnaround times only 50 percent of the time (though when the intake form asked for need-by time they did much better); their turnaround time averaged almost two weeks. In fact, one of the institutions is skewing the numbers for the others, as their turnaround times sometimes extended into five or six weeks! When this

institution is removed from the calculation, South Africa shows a still-long but respectable average turnaround time of ninety hours, with a twenty-hour median, and a much higher percentage of fulfilling its advertised service level.

In 2006, France also did not show well in turnaround times and meeting advertised service levels. Like all public libraries, France's showed a higher rate of subject-related questions than academic libraries, which may trans-late into more research required. The French libraries also cited print sources in 50 percent of their transactions, the most of any country.

## CONCLUSION.

In this chapter was described the basics of virtual and digital electronic resources and services. In the first part examined the concept and history of virtual reference. As well as analyzed and compared international virtual reference services such as USA, Spain, Australia, France, Germany, the Netherlands, the UK and their requirements for Virtual Reference Service has been described in the second part of the first chapter.

Also we have analyzed of virtual reference services, their standards and new technologies that have changed the traditional practice at the library's reference desk. Major American virtual reference services initiatives and their characteristics are described.

# CHAPTER 2. FUNCTIONAL STRUCTURE OF VIRTUAL REFERENCE SERVICE.

## 2.1. Characteristics of the service.

Technological developments have affected not only the format and sources of the information libraries use to provide reference service, but also where we provide reference service. Libraries and their resources have partially moved to the virtual world of the Internet. As a result, library patrons can access our resources from outside of the physical library. In an effort to reach patrons accessing the library via their computers, many libraries and library consortia are extending their reference service to include virtual reference. Technology now allows users to submit their queries to the library at any time from any place in the world. Virtual reference is responsive to patrons' need for convenient access to reference service.

The purpose of these guidelines is to assist libraries and consortia with implementing and maintaining virtual reference services. The guidelines are meant to provide direction, without being over- prescriptive. Variance among institutions will result in differences in the adherence to these guidelines, but the committee hopes to have cast the model broadly enough to provide a framework for virtual reference which can be widely adopted and which will endure through many changes in the ways in which libraries provide virtual reference services.

Virtual reference is reference service initiated electronically, often in real-time, where patrons employ computers or other Internet technology to communicate with reference staff, without being physically present. Communication channels used frequently in virtual reference include chat, videoconferencing, Voice over IP, co-browsing, e-mail, and instant messaging.

While online sources are often utilized in provision of virtual reference, use of electronic sources in seeking answers is not of itself virtual reference.

Virtual reference queries are sometimes followed-up with telephone, fax, in-person and regular mail interactions, even though these modes of communication are not considered virtual.

*Preparing for Virtual Reference Services*

Virtual reference should be undertaken with a view to the long-term integration of the service with the rest of the institution's reference services. Even at the planning or pilot phases, virtual reference should not be treated as an ad hoc service. Administration should be aware of the staffing, start-up and maintenance costs involved in providing and marketing virtual reference and should be prepared to commit to long-term provision of resources. Ideally, all levels of the institution's management should commit to supporting virtual reference before the service is formalized. As with any new service, total support from all members of management may not be possible; however, there should be a sufficient core of staff committed to providing a virtual reference service. Representative members of the administration and reference library staff should be involved in planning, training, implementation, and promotion of virtual reference services and the selection of virtual reference software. Representative members of the target audience should be involved in planning and promotion of virtual reference.

Relevant computing staff should be involved in the planning, implementation, and maintenance of the infrastructure needed, and in the software selection and purchase decision, particularly with regard to compatibility with existing library software and infrastructure.

Virtual reference service should be a consideration in collection development decisions, selection of electronic reference sources, and especially licensing issues that might affect use of resources to serve off-site patrons. Library staff and administration should facilitate regular assessment of the program's effectiveness and commit to adjustments as needed. Assessment should be comparable to the assessment of other reference services.

*Provision of Service. Clientele.*

The library should define the patron population and publicize this policy on the service's Web site, or other places where patrons may access it. Technical issues of patron authentication or proxy server login should be addressed as they apply to

various groups within the patron population. If there are persons excluded from this service by institutional policy, enforcement should be uniform.

Guidelines for appropriate behavior while using the service should be made available to patrons. Marketing of the service should clearly define the target audience.

*Parameters of Service*

The level of service to be provided should be defined and announced, so that staff and patrons will understand the mission of the service. Level of service includes the types of questions the service will answer (perhaps easier to define in the negative), as well as the patron population the service will serve.

Guidelines should be established for determining which queries fall outside the parameters of service, and how to respond in those cases.

Before the service begins, it should be decided if document delivery will be included and whether patrons will be charged for document delivery.

Parameters of time should be determined and announced to both patrons and staff. For synchronous virtual reference, the times at which the service is staffed should be indicated. For asynchronous virtual reference, guidelines for how frequently queries will be checked, or how soon an initial response can be expected, should be given. Internal and external links to the virtual reference service should be designed to catch the attention of potential patrons and to clearly communicate the nature of the service.

*Service Behaviors*

Virtual reference requires of library staff many of the same communication and interpersonal skills necessary for other forms of reference. The absence of a physically present patron and the different modes of communication may call for additional skills, effort, or training to provide quality service on par with face-to-face reference services.

Staff should exhibit the professional competencies essential for successful reference and patron services librarians, as articulated in RUSA's "Professional Competencies for Reference and User Services Librarians." Standard guidelines of

reference service (such as reference interviewing, exchange of questions between services, et al.) should prevail.

Staff should follow interpersonal communication practices that promote effective provision of reference service, as articulated in the RUSA "Guidelines for Behavioral Performance of Reference and Information Services Professionals."

Staff should be required to demonstrate skills in the effective use of online communication, as well as demonstrate awareness of the common potential problem areas when conducting reference interviews online, as compared to the face-to-face reference interview. Initial and on-going training should be offered to help staff learn and retain these effective online behaviors.

Staff should treat patrons' and colleagues' online communication, including stored transcripts or records, as private and confidential.

*Collaborative Virtual Reference*

Some libraries may choose to provide virtual reference services collaboratively with other libraries, for various reasons including: to extend their hours of operation, to distribute staffing of the service across multiple libraries, to extend the expertise available, or to realize cost saving associated with economies of scale. Such collaboration may include working with virtual reference vendors, and/or participation in large regional or national collaborations.

Expectations for libraries participating in a collaborative service should be clearly defined before the local library commits to such a service. Responsibility for centrally administering and coordinating the service should be clearly defined.

Each library should have a project liaison to represent the library in the group's activities. Expectations for project liaison's duties should be clearly stated.

Procedures for communications between and among participants should be clearly delineated. Participating libraries should commit to a prescribed minimum level of service. For synchronous virtual reference, this level of service should be a set minimum number of service hours, based upon factors such as size of library or staff, patron population being served, budget, and extent of online reference service desired. For asynchronous virtual reference, this level of service should be

a prescribed minimum number of questions to be handled or monitoring of the queue for specific blocks of time. Scheduling of libraries' contributions to the service should be centrally administered. For synchronous virtual reference, each library should commit to specific blocks of time. Finding specific reference staff to fill these blocks of time should be the responsibility of the local library, and not that of the project director. For asynchronous virtual reference, participating libraries should commit to monitoring question queues for incoming questions in specific blocks of time.

The service should provide a central source of information on member library policies, operations, procedures, and regulations, so that it is simple for project reference staff to find information about other libraries. The service should establish a clear set of guidelines for establishing priorities for service for patrons from the various libraries e.g., in a collaborative virtual reference service; questions are handled on a first-come-first-served basis, with no preference given to patrons from the on-duty staff's own local library.

The service should establish clear policies and guidelines for using licensed online electronic resources to serve patrons from other participating libraries.

The service should establish clear policies and guidelines that effectively ensure patron privacy in a multi-library setting. Observance of the NISO Question/Answer Transaction Protocol for transferring questions between services is encouraged.

*Organization of Service*

Integration of Virtual Reference Service.

Virtual Reference is an extension of an institution's existing reference services. While staffing models and the location of the service may be different from face-to-face reference services, it should be accorded the same status and quality goals and be viewed as a part of the larger service of reference.

All public services staff should have an awareness of the virtual reference service's goals and basic operation. Procedures should be established for referring a virtual patron (question) to another reference or public services point. Procedures should include both how the referral is presented to the patron and how information about

the referral is communicated between the virtual reference desk and referral destination.

*Infrastructure/Facilities*

It is a goal of all reference services to be of high quality. Integration of virtual reference into the mainstream of reference services implies that all services (in-person, telephone, and virtual) will be supported at a level to ensure quality service. Each library should examine staffing models to determine one that is appropriate for their organization. While there is not a "one-size-fits-all" service model, a model should be chosen which would support quality reference interactions via all modes of communication. Staff should be provided space, furnishings, hardware, and software to accomplish the mission agreed on by staff, administration, and technological support staff. Equipment, facilities, and software should be updated as needed to maintain efficacy. Planning should take into account the continuing evolution of technology. Awareness of the patrons' infrastructure and capabilities should be taken into account when planning library capabilities and choosing virtual reference software.

Technical set-up should take into consideration use of the supporting software by patrons and reference staff with disabilities. Some options include choosing software that complies with section 508 of the Rehabilitation Act, software with non-text options such as voice-over-IP, or providing text on the Web site that directs screen-readers to an email form or alternate contact information.

*Finances.*

The library budget should include specific allocation of funds to cover the personnel, hardware, software, connectivity, furnishings, training, publicity, and space to support this service. Planning should include ongoing budgeting even when the service is started as a pilot or with seed money from a grant. Whether the

service is to be free to the patron or fee-based should be determined before the service begins and modified as needed.

*Personnel.*

Virtual reference service responsibilities should be shared among staff to ensure continuity of service. When possible, staff should be trained for all reference services (face-to-face and virtual) to provide greater depth of knowledge and flexibility for staffing. Library staff conducting virtual reference should be selected on the basis of ability, interest, and availability. Service behaviors as described in section 3.3 and skills to use the supporting technology need to be part of staff selection. Staff should be provided time and resources for training and continuing education to ensure effective service.

*Marketing.*

A marketing plan should be developed and implemented as part of the planning and on-going operation of the service. A target audience or audiences for the virtual reference service should be determined and marketing should be appropriate to that audience. Members of the target audience should be included in the planning and evaluation of marketing. There should be a budget for marketing and marketing should be assigned as a responsibility to a staff member or members. Marketing should be routinely evaluated and updated to keep the message fresh and reach new audiences.

*Evaluation and Improvement.*

A virtual reference service should be analyzed regularly, using input from staff and patrons, to evaluate its effectiveness and efficiency, with the goal of providing a high-quality service. Evaluation may encompass many methods such as the analysis of usage statistics, patron feedback, and reviewing transcripts.

Evaluation of the virtual reference service should be equivalent to and part of a library's regular evaluation of all its reference services. Evaluation should be used to improve the service as needed through adjustment of staffing, levels of staffing, service parameters, training, or other improvements as indicated by evaluation and assessment results.

*Privacy.*

Virtual reference communications between patrons and library staff should be private except as required by law. Data gathered and maintained for the purpose of evaluation should protect patrons' confidentiality. It is recommended that patrons' personal identifiers, such as name, e-mail, etc. be stripped from transaction records. Stripped records may be maintained for statistical and evaluative purposes. Libraries need to develop retention schedules and privacy policies for their virtual reference transactions.

Patrons should be advised whether a record of the transaction will be retained, and what, if any, personal information will be stored with the transaction log. Privacy policies and transcript retention schedules should be publicly available. Reference transactions may be used in the creation of databases and FAQs but care should be taken to maintain the privacy of patrons and the confidentiality of patrons' inquiries. Beyond removal of patron identifiers, inclusion in a database should not compromise patron confidentiality, and this should be evaluated when choosing questions for inclusion in a database. Patrons should be informed, through publicly available policy, that their questions might be included in a database. They should be provided a means to request removal of their inquiries from the database.

Data gathered and maintained for training purposes and for publicizing the service should also protect patron confidentiality.

## 2.2. Algorithm of Virtual Reference Service.

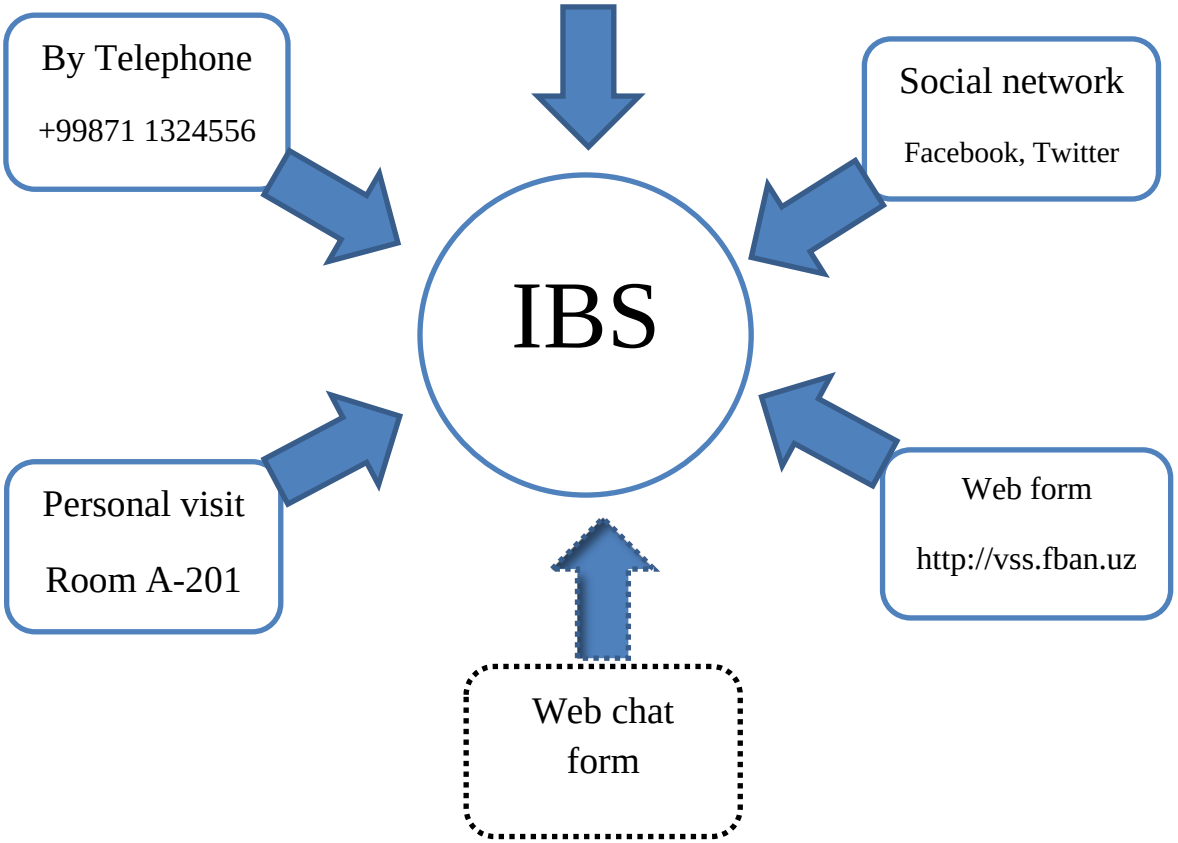
Structure of Virtual Reference Service. (Table 2.1)

| Name | Signify |
|---|---|
| Home | About Fundamental Library's history and further information through with useful links |
| Corporative | We are introduced web sites of all libraries and information centres of Uzbekistan, and President Islam Karimov's decision "About the organization of information and library providing the population of the republic" by this page. |
| FAQ | This part is devoted to Frequently Asked Questions and simple answer to them. |
| Service | In service part is given information about type of services that readers are serviced by library. |
| Ask A Librarian | Users can take information what they are interested and find location, contact form of library. |

Users can ask their questions any accessible and convenient for these ways. (Picture 2.1)

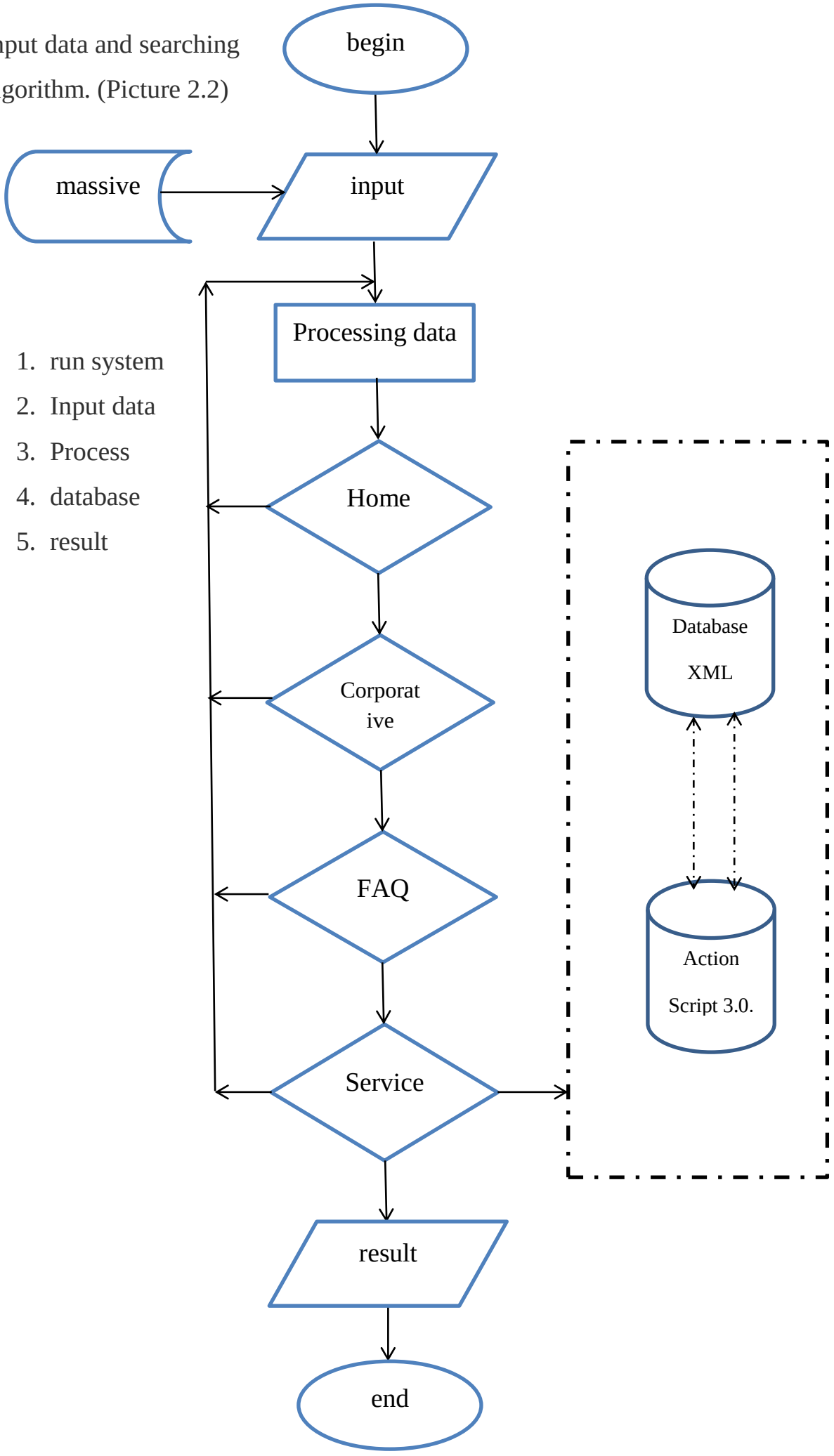
IM

vss@fban.uz




IBS - Information and bibliographic services.

Input data and searching algorithm. (Picture 2.2)




1. run system
2. Input data
3. Process
4. database
5. result

Searching algorithm.

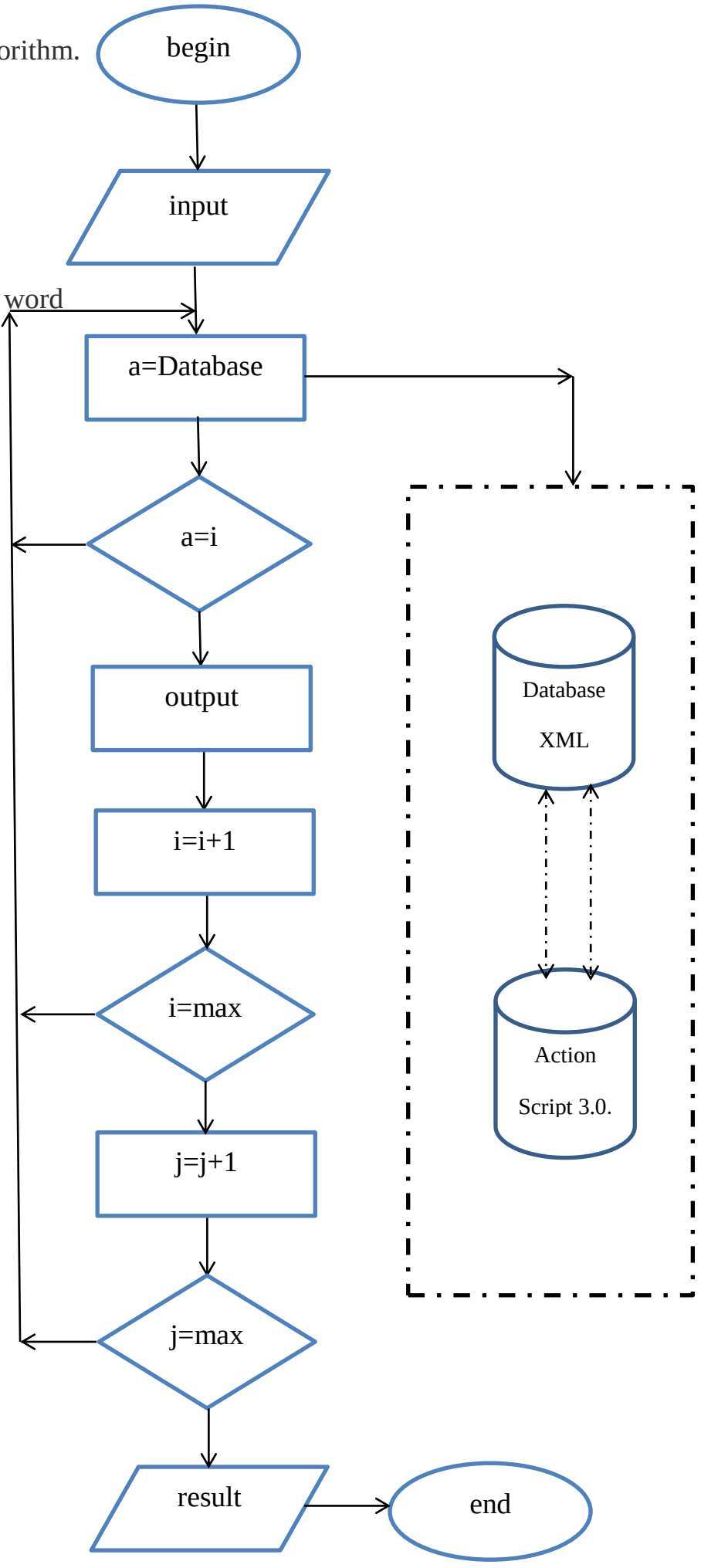
(Picture 2.3)

1. run system
2. enter system
3. search by key word
4. sorting
5. cycle check
6. searching

the last element

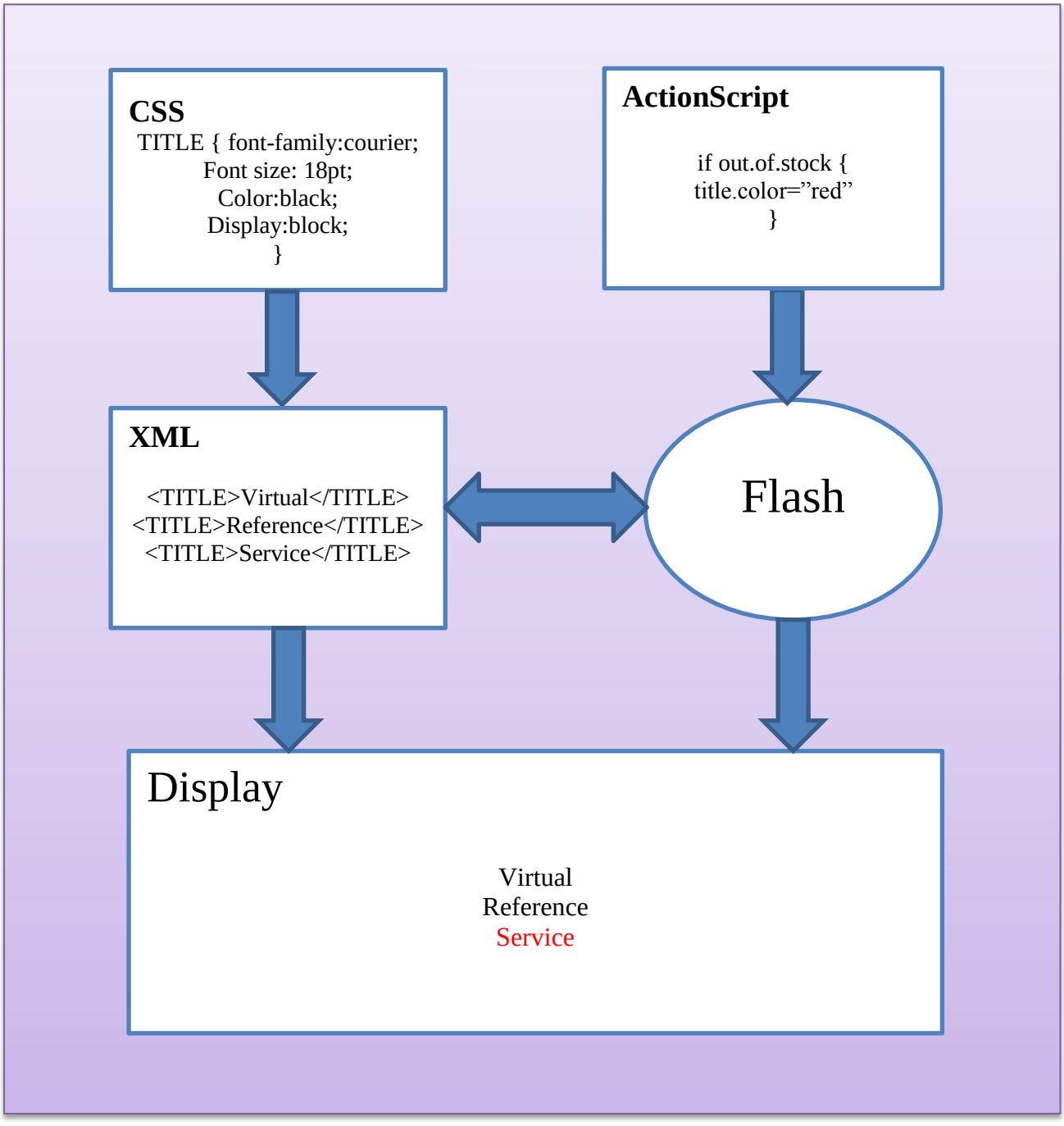
even it not find

7. result



Software structure.

You'll typically be working with four technologies that combine to create an interactive Web page: XML (or HTML), a scripting language, CSS, and Flash. This illustration shows their relationship. (Picture 2.4)



# CONCLUSION.

In this chapter  is illustrated the information about characteristic of service preparing for VRS, parameter and organization of service, how to evaluate and improve the service and software structure.

# CHAPTER 3. GUIDELINES FOR IMPLEMENTING AND MAINTAINING VIRTUAL REFERENCE SERVICES.

## 3.1. Program and program languages are that used to creation of Virtual Reference Service (interface of program).

There are lots of programs and program languages are used to create web sites. Basic uses HTML, XML, PHP, Python, Perl, JavaScript,J2EE, Ruby, JQuery, CSS, ASP.NET, Flash, C, C++, MySQL and so on. So I want to focus on the design at web site and it looks like fashionable Flash site with XML. The reason to creation stylish web site to attract people to enter it. I think it should be beautiful. First of all we should know the main knowledge about programs and program languages. I chose XML, Flash and ActionScript (object- oriented language) to create Virtual Reference Service web form.

What's XML.

*Extensible Markup Language (XML)* is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. It is defined in the XML 1.0 specification produced by the W3C, and several other related specifications, all gratis open standards.

XML is a way of adding intelligence to your documents. It lets you identify each element using meaningful tags and it lets you add information ("metadata") about each element. XML is very much a part of the future of Web, and part of the future for all electronic information. XML is a syntax for marking up data and it works with many other technologies to display and process information. It looks and feels very much like HTML. XML isn't going to replace everything else you've already learned; it complements it and extends it. XML isn't going to change the way your Web pages look. You'll still need to use CSS--Cascading Style Sheets--(with XML) to define font colors or JavaScript (again, with XML) to make your images fly around. Yet XML will change the way you and others read documents and it will change the way documents are filed and stored. It's a new technology

and you certainly don't *need* to use it in order to build a great Web site - but you will want to be aware of it as you look at the Web of the future. As of 2009, hundreds of document formats using XML syntax have been developed, including RSS, Atom, SOAP, and XHTML. XML-based formats have become the default for many office-productivity tools, including Microsoft Office (Office Open XML), OpenOffice.org and LibreOffice (OpenDocument), and Apple's iWork. XML has also been employed as the base language for communication protocols, such as XMPP. The material in this section is based on the XML Specification. This is not an exhaustive list of all the constructs that appear in XML; it provides an introduction to the key constructs most often encountered in day-to-day use. XML is a simplified version of SGML and a cousin of HTML. It was developed by members of the W3C and released as a recommendation by the W3C in February 1998. SGML, the parent of XML, is an international standard that has been in use as a markup language primarily for technical documentation and government applications since the early 1980s. It was developed to standardize the production process for large document sets. Think: Medical records. Company databases. Aircraft parts catalogs. Other really huge documents. Marking-up documents in SGML allows information to be passed from one system to the next without losing information. With databases marked-up in SGML you can see what Widget A is all about *and* go check to see if Widget A is in stock. Early on, people thought that SGML would be useful for the Web. In fact, HTML is really an very basic application of SGML! But HTML quickly became used for visual layout, so a group of people returned to the basics, determined to create something that had the strengths of SGML without being so difficult to implement - and had the ease of use of HTML, but with more structural power. The result was XML. The design goals of XML, taken from the XML Specification are:

- XML shall be straightforwardly usable over the Internet.
- XML shall support a wide variety of applications.

- XML shall be compatible with SGML.
- It shall be easy to write programs which process XML documents.
- The number of optional features in XML is to be kept to the absolute minimum, ideally zero.
- XML documents should be human-legible and reasonably clear.
- The XML design should be prepared quickly.
- The design of XML shall be formal and concise.
- XML documents shall be easy to create.
- Terseness in XML markup is of minimal importance.

If you've ever used HTML, XML is going to look very familiar!

When you view the source of a document written in XML the first thing you'll see is the XML declaration, which looks like this:

<?xml version="1.0"?>

Then, in the body of the document, you'll see a lot of tags. The tags look familiar at first -- they start with the usual less than sign and end with the usual greater than sign, like this:

<name>

*XML Versus HTML*

HTML and XML are cousins. They draw off the same inspiration, SGML. They both identify elements in your page. They both use a very similiar syntax. If you are familiar with HTML, XML will also feel familiar. The big difference between HTML and XML is that HMTL has evolved into a markup language that describes the look, feel and action of a Web page. An `<H1>` is a headline that is displayed in a certain size, for example. In contrast, XML doesn't describe how a page looks, how it acts or what it does. XML describes what the words in a document ARE. This is a critical distinction! While HTML combines structure and display, XML separates them. This means that XML documents are more portable and can be used in many different types of applications. In the near future, we'll see both XML and HTML documents. Eventually, XML will probably replace HTML, or HTML will become an application of XML. But that doesn't mean you

should toss out everything you know! In many ways, XML builds on HTML and if you know HTML, XML will be easier to work with.

*XML applies structure to documents. Documents are sets of related information.*

The term structure seems to bring some unpleasant imagery with it, especially for creative souls who want to make this medium work in new and innovative ways. But when one is dealing with publishing, the term structure is quite positive. It is the way we put a skeleton behind information, so that the pieces of information work together and make sense as a whole.

There are two key principles behind a structured model:

1. Each part - or element - has a relationship with other elements. This series of relationships defines the structure.
2. The meaning of the element is separate from its visual appearance.

Metadata is data about data. A key use of XML is to collect and work with metadata. At its most basic level, XML is a metadata language. That is, it is a way of assigning information to pieces of data. The most obvious use of this is to identify a piece of data as a certain structural element. But this is just the beginning. XML is about much more than marking up documents for use in a web browser. XML is really about adding layers of information to your data, so that the data can be processed, used, and transferred between applications.

XML alone will not display a page. You must use a formatting technology, such as CSS or XSL to display XML-tagged documents in a Web browser. The Document Object Model lets you address, change, and manipulate any individual portion of the Web page. The phrase "document object model" means that you treat your document as a collection of individual objects, rather than a single solid unit. The W3C DOM is the set of rules for doing this in a standard way in a Web browser, with HTML and XML files.

*The XML Document.*

An XML file is an ASCII text file with XML markup tags. It has a .xml extension, like this: booklist.xml

*Inside an XML File.*

An XML file contains three basic parts:

1. A declaration that announces that this is an XML file;
2. An optional definition about the type of document it is and what DTD it follows;
3. Content marked up with XML tags.

*Begin the Valid XML Document.*

To begin a well-formed document, type the XML declaration:

<?xml version="1.0" standalone="no" encode="UTF-8"?>

If you are embedding XML, it will go after the <HTML> and <HEAD> tags, and before any Javascript. If you are creating an XML-only document, it will be the first thing in the file.

*Version.*

You must include the *version* attribute for the XML declaration. The version is currently "1.0." Defining the version lets the browser know that the document that follows is an XML document, using XML 1.0 structure and syntax.

*Standalone.*

The *standalone="no"* attribute tells the computer that it must look for a DTD and validate the XML tags.

*Encoding.*

Finally, declare the encoding of the document. You can leave off this attribute and the processor will default to UTF-8.

*CDATA.*

CDATA stands for "character data." Character data are letters, numbers and other symbols that are used exactly as they are typed. They are not parsed or processed, or treated as if they have any special meaning.

You can create a CDATA section within your XML document. A CDATA section is handy way to show code examples or to use characters, such as > that

would otherwise take on a special meaning. You can use CDATA instead of using a series of <, for example.

To create a CDATA section:

1. At the place in the document where you want the CDATA section to appear, begin a CDATA definition with the less than sign and an exclamation point.

2. <! Type an open square brace and the letters CDATA.

<![CDATA

3. Type another open square brace.

<![CDATA**[**

4. Now type the CDATA itself. In this example, we are typing some sample code.

<![CDATA[<NAME common="freddy" breed"springer-spaniel">Sir Fredrick of Ledyard's End</NAME>

5. End the section with two closing square bracket and a greater than symbol.

<![CDATA[<NAME common="freddy" breed"springer-spaniel">Sir Fredrick of Ledyard's End</NAME>**]]>**

**Flash Professional CS5.**

Adobe Flash Professional is a multimedia authoring program used to create content for the Adobe Engagement Platform, such as web applications, games and movies, and content for mobile phones and other embedded devices.

History. Adobe Flash Professional is the successor of a software product known as FutureSplash Animator, a vector graphics and vector animations program released in May 1996. FutureSplash Animator was developed by FutureWave Software, a small software company whose first product, SmartSketch, was a vector-based drawing program for pen-based computers. In 1995, the company decided to add animation capabilities to their product and to

create a vector-based animation platform for the World Wide Web; hence FutureSplash Animator was created.

In December 1996, Macromedia bought FutureWave and so re-branded and released FutureSplash Animator as *Macromedia Flash* v1.0. In 2005, Adobe Systems acquired Macromedia; subsequently, in 2007, *Adobe Flash CS3 Professional*, the next version of Macromedia Flash was released.

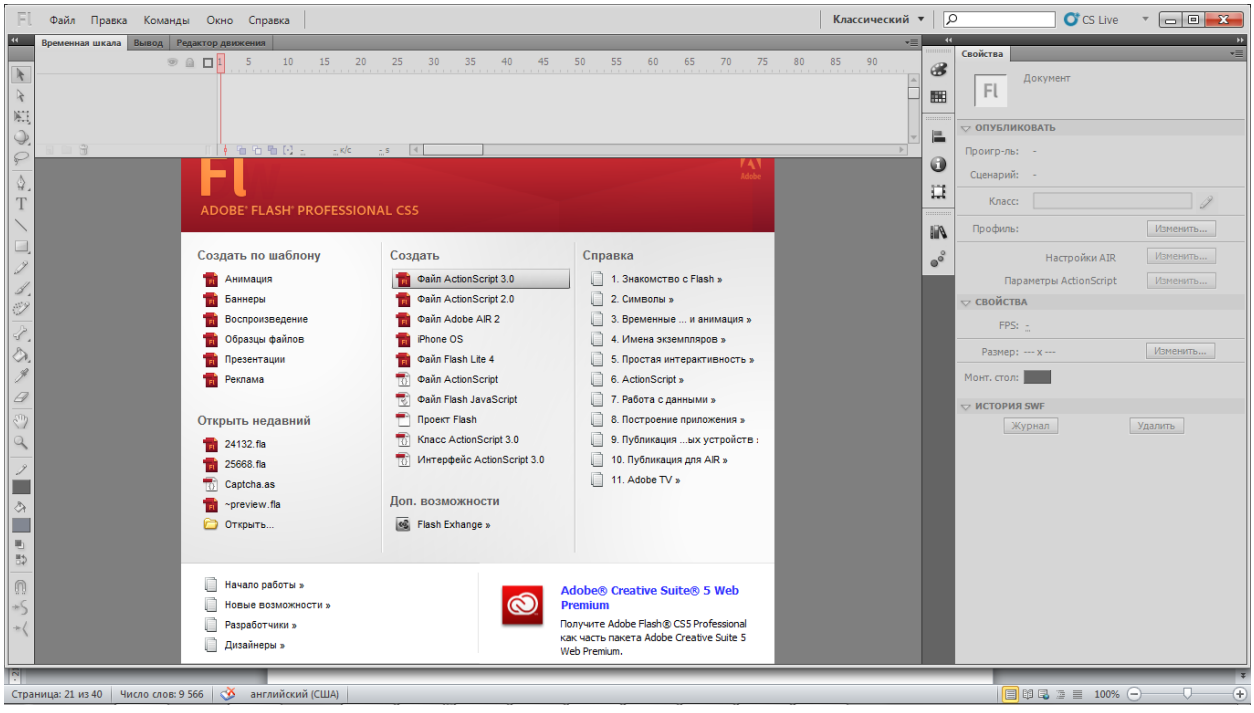
In this chapter, I create an example to demonstrate encapsulation in Adobe Flash Professional CS5, Dreamweaver, Photoshop, PHP, HTML, XML, ActionScript 3.0. programs and program languages.

If you haven't read the introduction to encapsulation in Chapter 1, I would advise you to do so now before we get into the practicalities of applying the concept to an ActionScript 3.0 project. Just to recap, encapsulation helps us to hide the details of our object-oriented code. I'll show you an example of encapsulation in action and start off by setting up the graphics. Setting up encapsulation this section describes the manual work—drawing the shapes and parts needed in the encapsulation example. Let's start with a blank FLA:

1.Launch Flash CS5.

2.Choose Flash File (ActionScript 3.0)from the Create New menu on the Start Page (see Picture 3.0).

3.Save the blank document as VRS.fla.



Picture 3.0. Flash CS5 Start Page

If you have the Start Page in Flash CS5 disabled, you should—depending on your settings—be presented with either a new blank FLA, last edited FLAs, or nothing at all when you launch the application. If it gives you a blank FLA, simply follow steps and save it as VRS.fla  in the other cases, you create a new blank FLA by going to File a new and choosing Flash File (ActionScript 3.0) from the General tab.

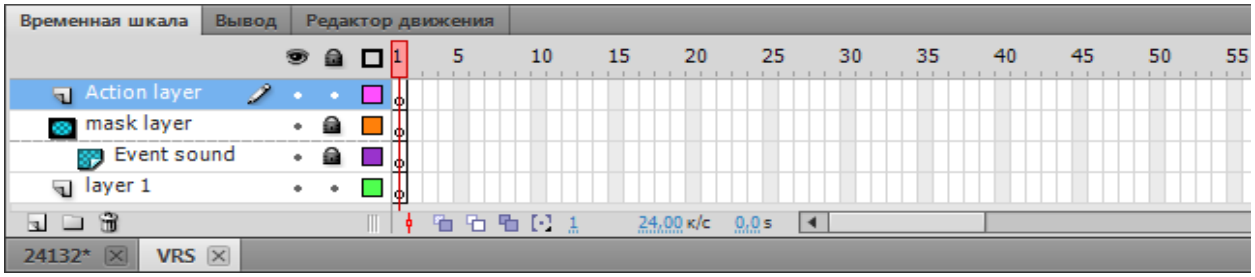
*Creating new layers*

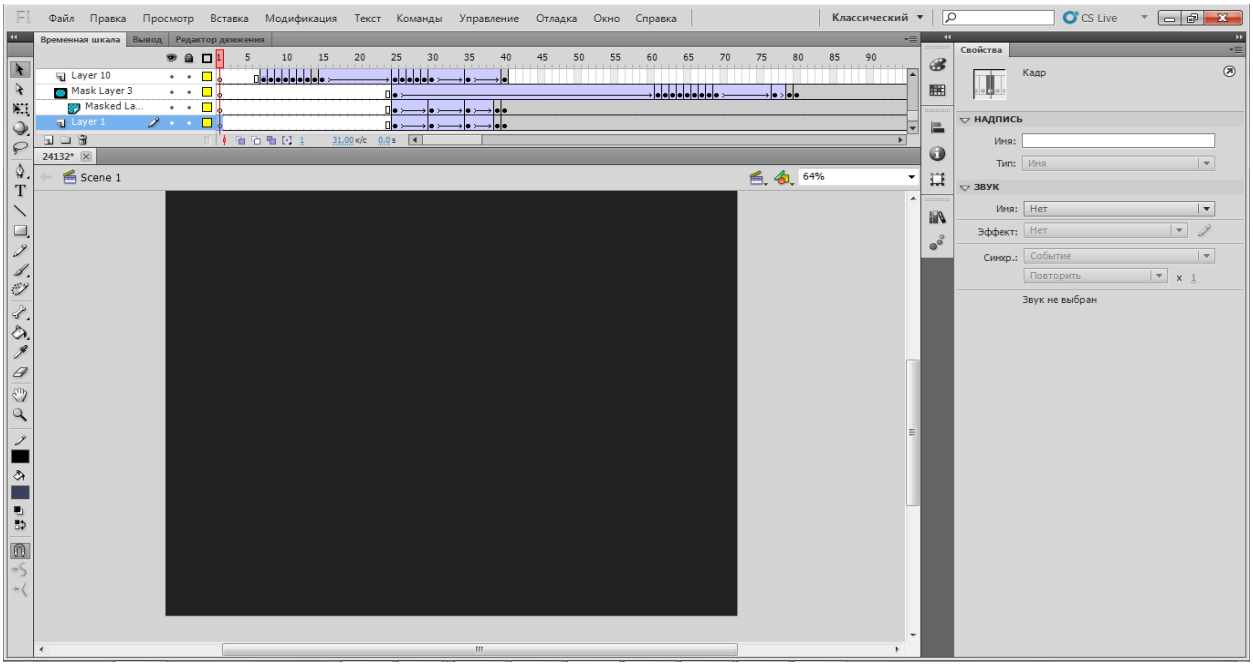
First, create new layers in the timeline to hold them:

1.Display the timeline (select Window a VRS) if it isn't visible.

2.Double-click Layer 1and rename it Background.

3.Create a new layer in the timeline (select Insert as Picture 3.1), as shown

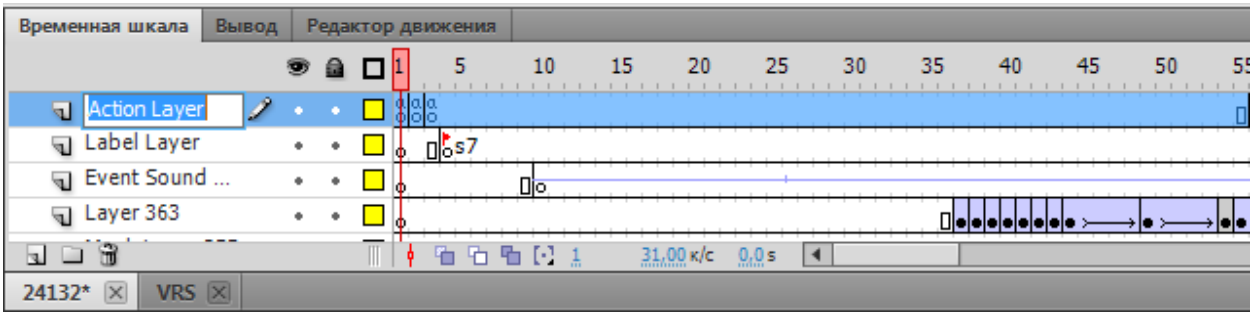



4.Double-click Layer 2 and rename it Event layer.

5.Create a new layer in the VRS for mask layer.

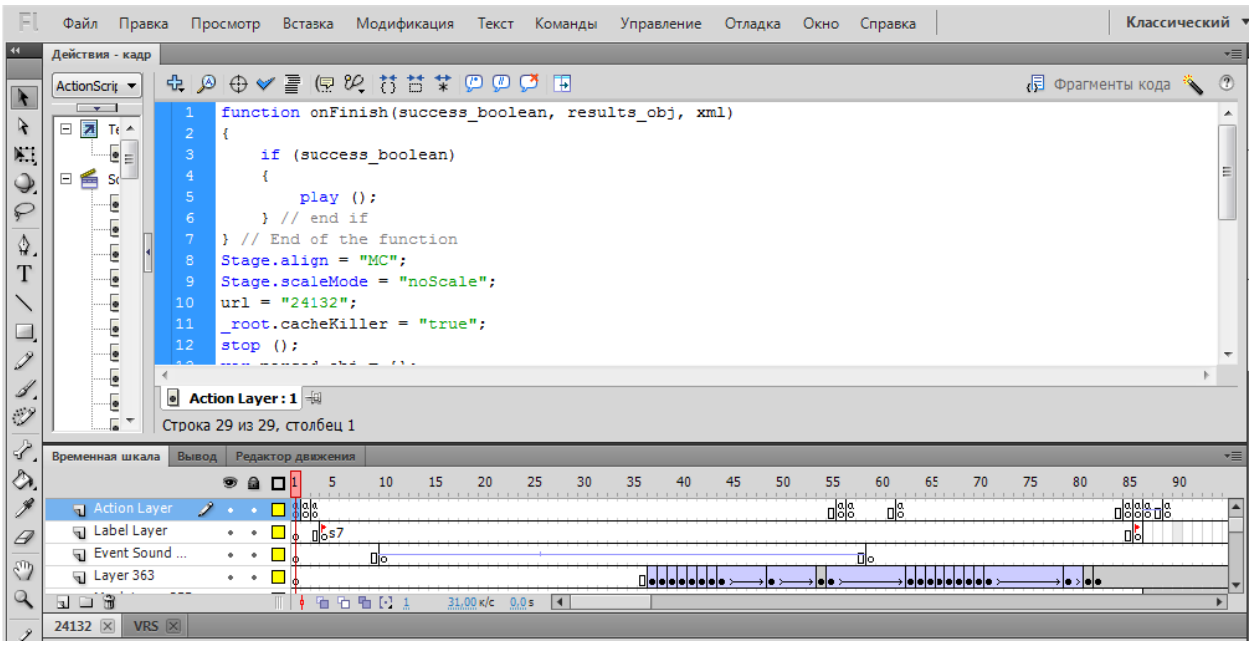
6.Double-click Layer 3 and rename it ActionScript(see Picture 3.2).




Picture 3.3. Renaming the layer in the VRS panel

7. Select Frame 1of the ActionScript layer.

8.Open the Actions panel (select Window Actions or press F9).




9.Add the following ActionScript code in the Actionspanel (see Picture 3.3):

```
function onFinish(success_boolean, results_obj, xml)
{
   if (success_boolean)
   {
```

```
    play ();

} // end if
```

*ActionScript* is an object-oriented language originally developed by Macromedia Inc. (now owned by Adobe Systems). It is a dialect of ECMAScript (meaning it is a superset of the syntax and semantics of the language more widely known as JavaScript), and is used primarily for the development of websites and software targeting the Adobe Flash Player platform, used on Web pages in the form of embedded SWF files. The language itself is open-source in that its specification is offered free of charge and both an open source compiler (as part of Apache Flex) and open source virtual machine (Mozilla Tamarin) are available.

ActionScript was initially designed for controlling simple 2D vector animations made in Adobe Flash (formerly Macromedia Flash). Initially focused on animation, early versions of Flash content offered few interactivity features and thus had very limited scripting capability. Later versions added functionality allowing for the creation of Web-based games and rich Internet applications with streaming media (such as video and audio). Today, ActionScript is suitable for use in some database applications, and in basic robotics, as with the Make Controller Kit.

Flash MX 2004 introduced ActionScript 2.0, a scripting language more suited to the development of Flash applications. It is often possible to save time by scripting something rather than animating it, which usually also enables a higher level of flexibility when editing.

Since the arrival of the Flash Player 9 alpha (in 2006) a newer version of ActionScript has been released, ActionScript 3.0. ActionScript 3.0 is anobject-oriented programming language allowing far more control and code reusability when building complex Flash applications. This version of the language is intended to be compiled and run on a version of the ActionScript Virtual Machine that has been itself completely re-written from the ground up (dubbed

AVM2). Because of this, code written in ActionScript 3.0 is generally targeted for Flash Player 9 and higher and will not work in previous versions. At the same time, ActionScript 3.0 executes up to 10 times faster than legacy ActionScript code due to the Just-In-Time compiler enhancements.

Flash libraries can be used with the XML capabilities of the browser to render rich content in the browser. This technology is known as Asynchronous Flash and XML, much like AJAX. Adobe offers its Flex product line to meet the demand for Rich Internet Applications built on the Flash runtime, with behaviors and programming done in ActionScript. ActionScript 3.0 forms the foundation of the Flex 2 API.

History. Action Script started as an object-oriented language for Macromedia's Flash authoring tool, now developed by Adobe Systems as Adobe Flash. The first three versions of the Flash authoring tool provided limited interactivity features. Early Flash developers could attach a simple command, called an "action", to a button or a frame. The set of actions was basic navigation controls, with commands such as "play", "stop", "getURL", and "gotoAndPlay".

With the release of Flash 4 in 1999, this simple set of actions became a small scripting language. New capabilities introduced for Flash 4 included variables, expressions, operators, if statements, and loops. Although referred to internally as "ActionScript", the Flash 4 user manual and marketing documents continued to use the term "actions" to describe this set of commands.

*2006–today: ActionScript 3.0* In June 2006, ActionScript 3.0 debuted with Adobe Flex 2.0 and its corresponding player, Flash Player 9. ActionScript 3.0 was a fundamental restructuring of the language, so much so that it uses an entirely different virtual machine. Flash Player 9 contains two virtual machines, AVM1 for code written in ActionScript 1.0 and 2.0, and AVM2 for content written in ActionScript 3.0. Actionscript 3.0 added limited support for hardware acceleration (DirectX, OpenGL).

The update to the language introduced several new features:

- Compile-time and run-time type checking—type information exists at both compile-time and runtime.
- Improved performance from a class-based inheritance system separate from the prototype-based inheritance system.
- Support for packages, namespaces, and regular expressions.
- Compiles to an entirely new type of bytecode, incompatible with ActionScript 1.0 and 2.0 bytecode.
- Revised Flash Player API, organized into packages.
- Unified event handling system based on the DOM event handling standard.
- Integration of ECMAScript for XML (E4X) for purposes of XML processing.
- Direct access to the Flash runtime display list for complete control of what gets displayed at runtime.
- Completely conforming implementation of the ECMAScript fourth edition draft specification.
- Limited support for dynamic 3D objects. (X, Y, Z rotation, and texture mapping)

*ActionScript 2.0*

The following code, which works in any compliant player, creates a text field at depth 0, at position (0, 0) on the screen (measured in pixels), that is 100 pixels wide and high. Then the `text` parameter is set to the "`Hello, world`" string, and it is automatically displayed in the player:

```
createTextField("greet", 0, 0, 0, 100, 100);
greet.text = "Hello, world";
```

When writing external ActionScript 2.0 class files the above example could be written in a file named `Greeter.as` as following.

```
class com.example.Greeter extends MovieClip
{
  public function Greeter()
```

```
        {
            var txtHello:TextField = this.createTextField("txtHello", 0, 0, 0, 100, 100);
            txtHello.text = "Hello, world";
        }
    }
```

*ActionScript 3.0*

ActionScript 3.0 has a similar syntax to ActionScript 2.0 but a different set of APIs for creating objects. Compare the script below to the previous ActionScript 2.0 version:

```
var greet:TextField = new TextField();
greet.text = "Hello World";
this.addChild(greet);
```

Minimal ActionScript 3.0 programs may be somewhat larger and more complicated due to the increased separation of the programming language and the Flash IDE.

Presume the following file to be `Greeter.as`:

```
package com.example
{
    import flash.text.TextField;
    import flash.display.Sprite;

    public class Greeter extends Sprite
    {
        public function Greeter()
        {
            var txtHello:TextField = new TextField();
            txtHello.text = "Hello World";
            addChild(txtHello);
        }
    }
```

```
}
```

Actionscript 3 can also be used in MXML files when using Apache's Flex framework:

```
<?xml version="1.0" encoding="utf-8"?>
<s:Application xmlns:fx="http://ns.adobe.com/mxml/2009"
              xmlns:s="library://ns.adobe.com/flex/mx/polysylabi"
              xmlns:mx="library://ns.adobe.com/flex/mx" layout="vertical"
              creationComplete="initApp()">
   <fx:Script>
      <![CDATA[
         public function initApp():void
         {
            // Prints our "Hello, world!" message into title
            title.text="Hello, World!";
         }
      ]]>
   </fx:Script>

   <s:Label id="title" fontSize="54" fontStyle="bold"/>
</s:Application>
```

Data types

ActionScript primarily consists of "fundamental" or "simple" data types which are used to create other data types. These data types are very similar to Java data types. Since ActionScript 3 was a complete rewrite of ActionScript 2, the data types and their inheritances have changed.

ActionScript 2 top level data types

- String - A list of characters such as "Hello World"
- Number - Any Numeric value
- Boolean - A simple binary storage that can only be "true" or "false".

- Object - Object is the data type all complex data types inherit from. It allows for the grouping of methods, functions, parameters, and other objects.

ActionScript 2 complex data types

There are additional "complex" data types. These are more processor and memory intensive and consist of many "simple" data types. For AS2, some of these data types are:

- MovieClip - An ActionScript creation that allows easy usage of visible objects.
- TextField - A simple dynamic or input text field. Inherits the Movieclip type.
- Button - A simple button with 4 frames (states): Up, Over, Down and Hit. Inherits the MovieClip type.
- Date - Allows access to information about a specific point in time.
- Array - Allows linear storage of data.
- XML - An XML object
- XMLNode - An XML node
- LoadVars - A Load Variables object allows for the storing and send of HTTP POST and HTTP GET variables
- Sound
- NetStream
- NetConnection
- MovieClipLoader
- EventListener

ActionScript 3 primitive (prime) data types

- Boolean - The Boolean data type has only two possible values: true and false or 1 and 0. No other values are valid.
- int - The int data type is a 32-bit integer between -2,147,483,648 and 2,147,483,647.
- Null - The Null data type contains only one value, null. This is the default value for the String data type and all classes that define complex data types, including the Object class.

- Number - The Number data type can represent integers, unsigned integers, and floating-point numbers. The Number data type uses the 64-bit double-precision format as specified by the IEEE Standard for Binary Floating-Point Arithmetic (IEEE-754). values between -9,007,199,254,740,992 ($-2^{53}$) to 9,007,199,254,740,992 ($2^{53}$) can be stored.
- String - The String data type represents a sequence of 16-bit characters. Strings are stored internally as Unicode characters, using the UTF-16 format. Previous versions of Flash used the UTF-8 format.
- uint - The uint (Unsigned Integer) data type is a 32-bit unsigned integer between 0 and 4,294,967,295.
- void - The void data type contains only one value, undefined. In previous versions of ActionScript, undefined was the default value for instances of the Object class. In ActionScript 3.0, the default value for Object instances is null.

ActionScript 3 some complex data types

- Object - The Object data type is defined by the Object class. The Object class serves as the base class for all class definitions in ActionScript. Objects in their basic form can be used as sociative arrays that contain key-value pairs, where keys are Strings and values may be any type.
- Array - Contains a list of data. Though ActionScript 3 is a strongly typed language, the contents of an Array may be of any type and values must be cast back to their original type after retrieval. (Support for typed Arrays has recently been added with the Vector class.)
- Vector - A variant of array supported only when publishing for Flash Player 10 or above. Vectors are typed, dense Arrays (values must be defined or null) which may be fixed-length, and are bounds-checked during retrieval. Vectors are not just more typesafe than Arrays but also perform faster.
- flash.utils:Dictionary - Dictionaries are a variant of Object that may contain keys of any data type (whereas Object always uses strings for its keys).
- flash.display:Sprite - A display object container without a timeline.
- flash.display:MovieClip - Animated movie clip display object; Flash timeline is, by default, a MovieClip.

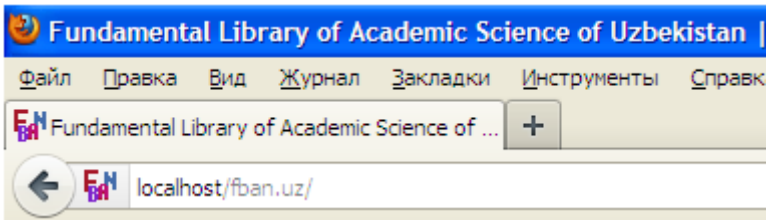
- flash.display:Bitmap - A non-animated bitmap display object.
- flash.display:Shape - A non-animated vector shape object.
- flash.utils:ByteArray - Contains an array of binary byte data.

### 3.2. Manual for users.

The new Virtual Reference Service of Fundamental Library has been created on the basis of research carried out by international comparisons and their experiences. Building on the experiences and feedback gathered our traditionally over the years, our new flash site provides all the functionality of other virtual reference services as well as:

- any user can access to virtual reference service
- useful links
- specialized portals
- archives of electronic texts
- information search service
- E-mail reference

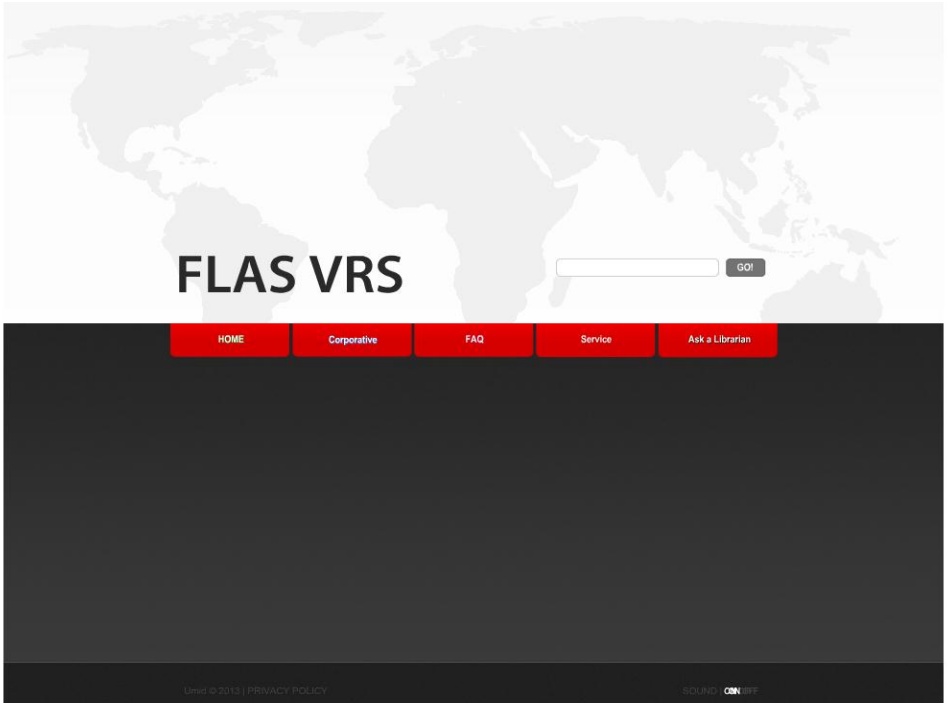
First of all you have to access enter the internet. Than open browser and type www.fban.uz and we have got this result (Picture 3.5):



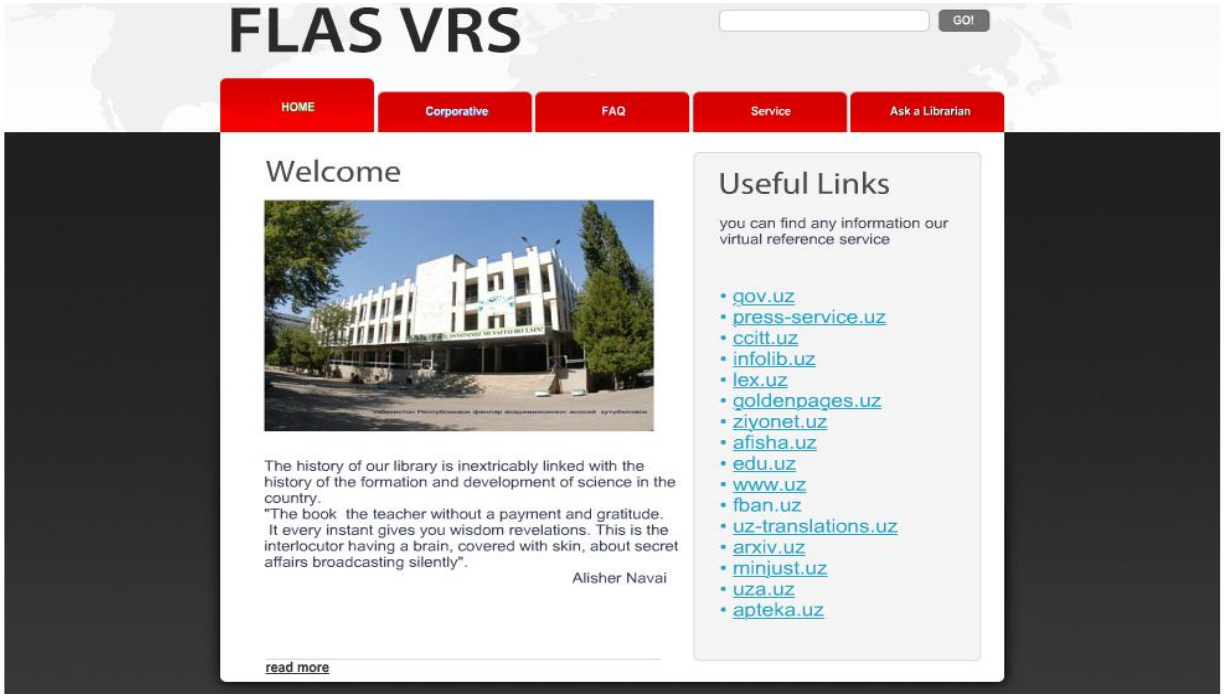

After opened web site FLAS, we see panel menu and select Virtual Ma'lumotlar Xizmati (Virtual Reference Service). (Picture 3.4)


After clicked the section opened new window with another domen vss.fban.uz

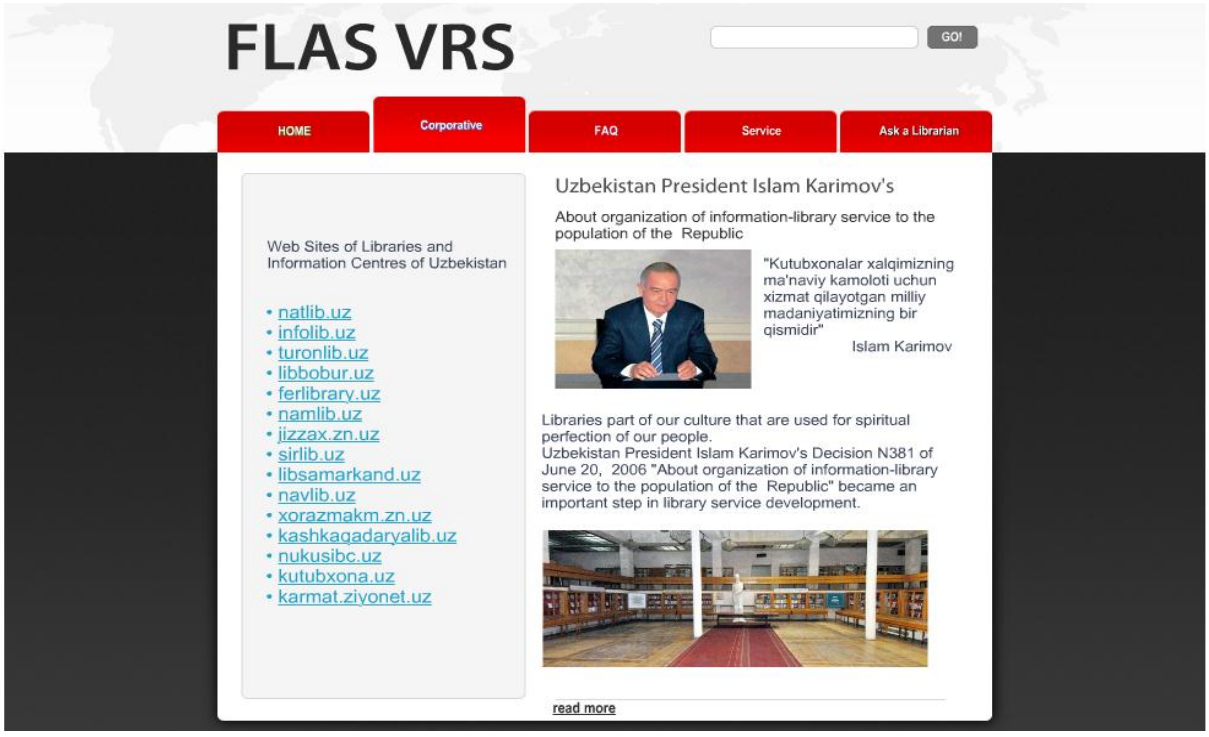
It looks like (Picture 3.5):




We can see that Virtual Reference Service site has 5 section: home, corporative, FAQ, service and Ask A Libararian. In home section has information about history of FLAS and oher useful links (Picture 3.6):

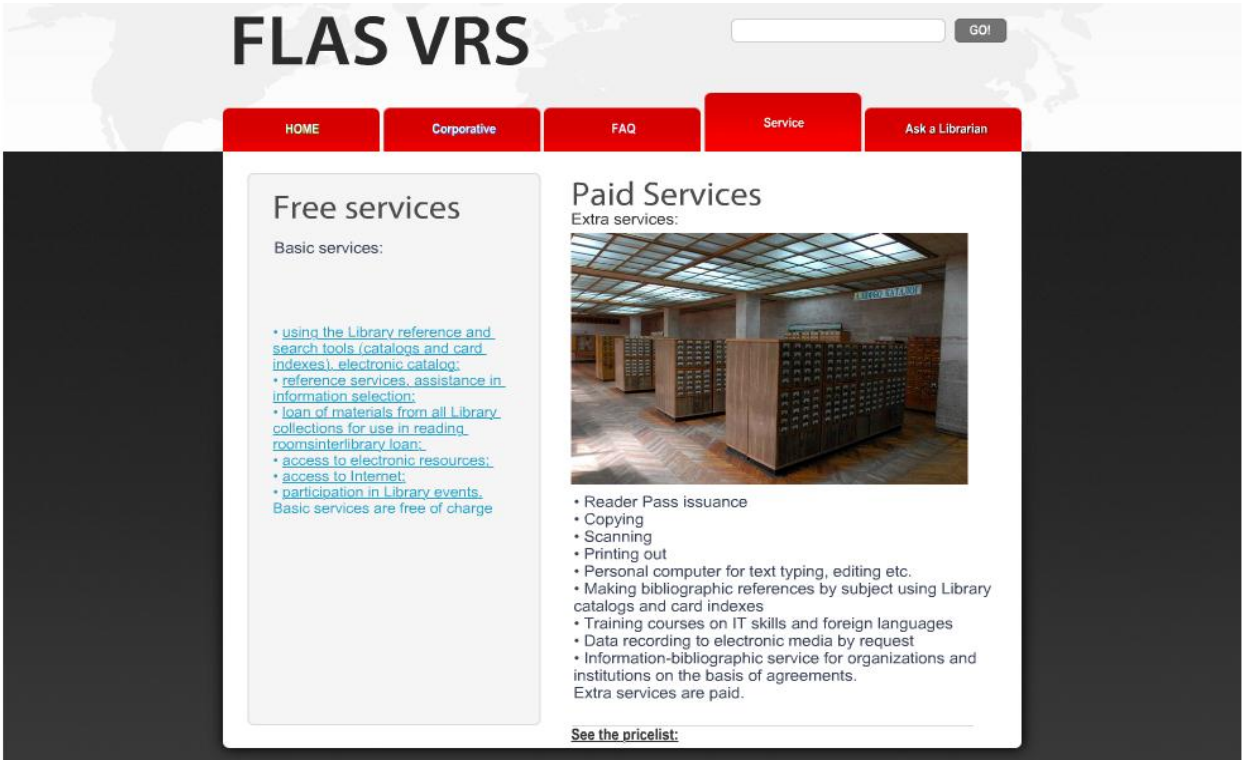



The second part is called Corporative. In this part has web wites of libraries and Information Centres of Uzbekistan and the President of Republic Uzbekistan Islam Karimov's Decision N381 of June 20, 2006 "About organization of information-library service to the population of the Republic". (Picture 3.7)

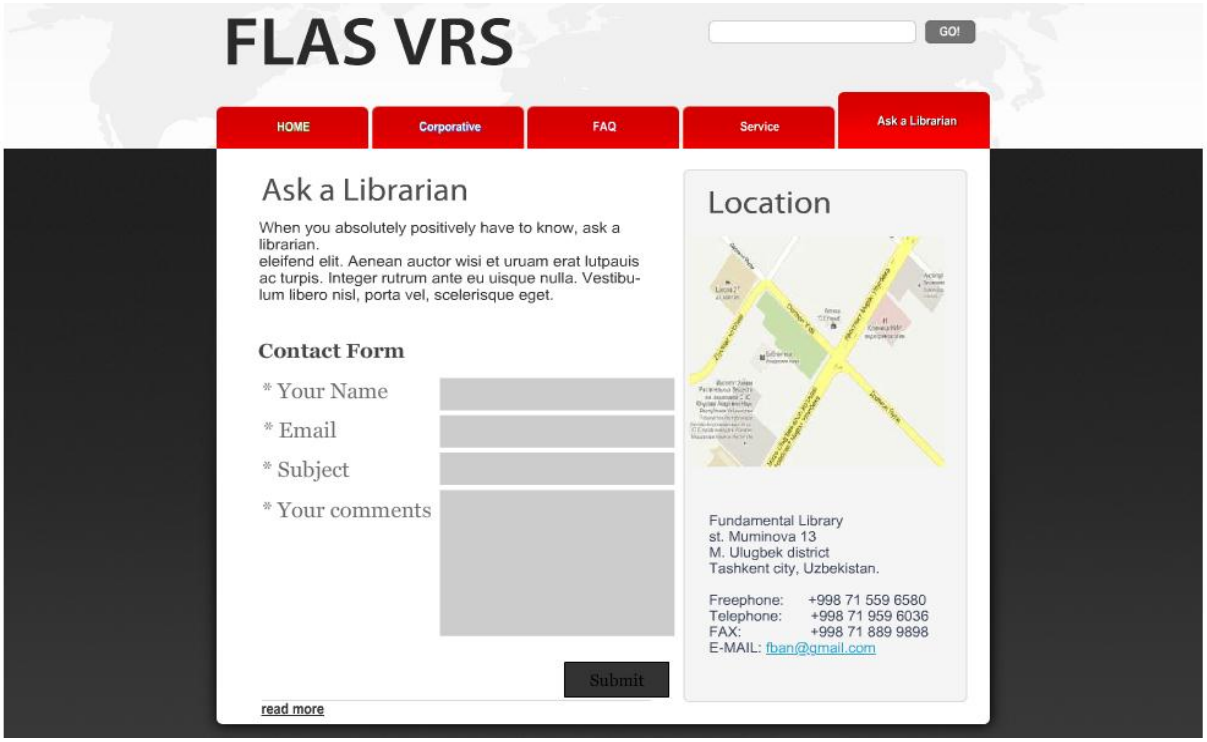



In FAQ section is devoted to **Frequently asked questions** are listed questions and answers, all supposed to be commonly asked in some context, and pertaining to a particular topic and some famous quotes about library. (Picture 3.8)


In Service part includes library's services which are contain list of free and paid services. (Picture 3.9)




The last section is demonstrated IM (instant messaging) as e-mail to librarian so it is called "Ask A Librarian". And users find the further information how to get library, library location, contact form. If users has question they should fill in contact form, the question will be answered in 2 hour till 2 workday. (Picture 3.9)




## CONCLUSION.

The last section includes guidelines for implementing, characteristic of VRS, how ask questions accessible and convenient ways, how to build virtual reference service flash web site, searching engine, input data. For users are given instruction manual for use virtual reference service. Wide-scale works in the country under the leadership of President Islam Karimov on rendering modern information and library services to population, especially to the youth, has given its prolific results. The resolution of the head of state "On organizing information and library services to the population of the republic" dated from 20 June 2006 is an important guide in this direction. In accordance with the Decree of the President "On further development of information and library works and services based on information-communications technologies in 2011-2015" from 23 February 2011 creation of single integrated information and library network and preparing high-quality specialists in this sphere is underway. In line with the decree of the President Islam Karimov «On measures on organization of activities of the National library of Uzbekistan named after Alisher Navoi - information resource center» of March 20, 2012 conditions and information resource base to comprehensively meet the intellectual, cognitive, educational, spiritual-moral and cultural needs of the population with the use of modern information-communication technologies are created. In particular, over the past period of 2013 the library collections increased by more than 19.5 thousand copies and currently has more than 6.5 million publications.

Aiming to improve information and library sphere was took place the seventh international conference “Central Asia 2013 – information and library resources in science, education, culture and business” in Tashkent.

The conference, organized by the Committee of the Legislative chamber of the Oliy Majlis of the Republic of Uzbekistan on information and communication technologies, the State Committee of communications, informatization and telecommunication technologies of the Republic of Uzbekistan, the Alisher Navoi national library of Uzbekistan, the Ministries of culture and sports, public education, higher and secondary special education and a number of other agencies and organizations, is attended by representatives of over 40 spheres, experts and scientists from over 10 countries, such as Uzbekistan, the US, Germany, China, Russia, Ukraine, Azerbaijan, Iran and Kazakhstan.

Conference goal – encouragement of information and library institutions, educational institutions, archives, museums and other organizations to provide efficient cooperation in the development and use of electronic information resources in science, education, culture and business.

At the end I want to say that "Development" is a desirable goal for most people and nations. While development is associated with economic progress, the economy is not the only factor. There are other factors involved, including life skills and security. Science and technology, and access to information are crucial factors in development. To achieve the goal of development, professional education is essential, and we must make fundamental changes in higher education systems.

Library and Information Science Education is vitally important for development. Therefore librarians, libraries, and library associations, as well as information systems, all play a role in fostering creativity, innovation, and dealing with people's needs and expectations. Library and Information Science Education can overcome its problems and shortcomings and meanwhile adapt itself to rapid social changes. Librarians should consider what is needed for national development and train sophisticated professionals to deal with development issues (234). This requires qualified Library and Information Science Education teachers who have adequate knowledge and experience to train the best students.

I hope my qualifying work will be useful for users.

# CHAPTER 4. SECURITY OF LIFE ACTIVITY.

## 4.1. ELECTROMAGNETIC RADIATION.

Electromagnetic radiation can be classified into two types: ionizing radiation and non-ionizing radiation, based on its capability of ionizing atoms and breaking chemical bonds. Ultraviolet and higher frequencies, such as X-rays or gamma rays are ionizing, and these pose their own special hazards: see radiation and radiation poisoning. Non-ionizing radiation, discussed here, is associated with electrical and biological hazards.

### Types of hazards

#### Electrical hazards

Strong radiation can induce current capable of delivering an electric shock to persons or animals. It can also overload and destroy electrical equipment. The induction of currents by oscillating magnetic fields is also the way in which solar storms disrupt the operation of electrical and electronic systems, causing damage to and even the explosion of power distribution transformers, blackouts (as occurred in 1989), and interference with electromagnetic signals (e.g. radio, TV, and telephone signals).

#### Fire hazards

Extremely high power electromagnetic radiation can cause electric currents strong enough to create sparks (electrical arcs) when an induced voltage exceeds the breakdown voltage of the surrounding medium (e.g. air). These sparks can then ignite flammable materials or gases, possibly leading to an explosion.

This can be a particular hazard in the vicinity of explosives or pyrotechnics, since an electrical overload might ignite them. This risk is commonly referred to as HERO (Hazards of Electromagnetic Radiation to Ordnance). MIL-STD-464A mandates assessment of HERO in a system, but Navy document OD 30393 provides design principles and practices for controlling electromagnetic hazards to ordnance.

On the other hand, the risk related to fueling is known as HERF (Hazards of Electromagnetic Radiation to Fuel). NAVSEA OP 3565 Vol. 1 could be used to evaluate HERF, which states a maximum power density of 0.09 W/m² for frequencies under 225 MHz (i.e. 4.2 meters for a 40 W emitter).

## Biological hazards

The best understood biological effect of electromagnetic fields is to cause dielectric heating. For example, touching or standing around an antenna while a high-power transmitter is in operation can cause severe burns. These are exactly the kind of burns that would be caused inside a microwave oven.

This heating effect varies with the power and the frequency of the electromagnetic energy. A measure of the heating effect is the specific absorption rate or SAR, which has units of watts per kilogram (W/kg). The IEEE and many national governments have established safety limits for exposure to various frequencies of electromagnetic energy based on SAR, mainly based on ICNIRP Guidelines, which guard against thermal damage.

There are publications which support the existence of complex biological effects of weaker non-thermal electromagnetic fields, including weak ELF magnetic fields and modulated RF and microwave fields. Fundamental mechanisms of the interaction between biological material and electromagnetic fields at non-thermal levels are not fully understood.

## Electromagnetic Radiation Protection

Electromagnetic Radiation Pollution has increased dramatically due to the rising number of terminal devices and their required infrastructure. We've got Wireless Internet, Mobile Communications Towers (Mobile Phone Masts), Satellite GPS Systems, PC and Laptop Computers, Mobile/Smart Phones and Digital Cordless DECT Phones, Televisions, Electronic Games, GPS, Household Appliances, and more in our Environment! It's a part of everyone's daily life to use the modern convenient gadgets.

## Electromagnetic Radiation(EMF/EMR) Protection, Shielding & Blocking.

Protection from EMR is the forth step. When you can't reduce, you may need to protect. Radiation shielding is a very complex subject and its application must be made after consideration of all possibilities and elements. Especially when it comes to protection and shielding for EHS people it must be understood that the protection will not help in all conditions and not with everyone. In some cases wrong EMR protection can also lead to injury and damage. For example, using Radiation emitting equipment within the protected space is not clever and in some cases can cause serious problems. For these reasons and more, protection is always the last step, when there is no other choice.

Today you can find many protection devices and materials that claim to protect you from Electromagnetic Radiation (EMR). There for some products and techniques that worked for one Electromagnetic Hyper Sensitive person will not work for all. There for when you use protection you must use it wisely, you need to measure the EMR levels before and after the installation and to understand the way the protection effects you and your surroundings. For example it would be a mistake to protect your house for RF radiation and then use a wireless device inside it.

We hope to serve both the readers, who are seeking protection products and materials, as well as the people and companies that manufacture and sell these products. We hope these products will help other people, and we hope that these people will help the manufactures to develop and create more protection products and to increase awareness of the health effect that EMF causes.

When and why to protect and block EMF/EMR?

There is electromagnetic radiation all around us. When we are at work, when we are on the go and when we are at home. It is very important to live, sleep and work in an electromagnetic radiation free environment. Some people can feel the electromagnetic radiation which affects their lives every day. All people, especially Electromagnetic Hyper sensitive people, should try to minimize their exposure to electromagnetic radiation when possible.

The house you live in protects you from wind and rain, sun and cold. Some of the building materials blocks and protects from some types and frequencies of EMR but not all materials and not all types and frequencies. In more houses today, you can find various types of electromagnetic radiation sources. Some of them emit electromagnetic radiation all the time. Even if you deal and solve all the issues with all the electromagnetic radiation sources within the house, there still a possibility that your house is being bombarded by electromagnetic radiation from the outside. Sometime it is a Low frequency electromagnetic radiation source, like a high voltage electric wires, that go next to your house. Sometimes it is a high frequency electromagnetic radiation source across the street or in you neighbored house, like a mobile phone mast or DECT cordless phone, and in some cases it is both.

**Some ways to protect human from Electromagnetic Radiation:**

When talking on your cell phone, your safest bet is speakerphone mode with your phone a hand's length away. Not quite as good (because it still emits some radiation), but better than holding the phone to your head, is a wired headset. A Bluetooth emitter is your third choice. It will deliver lower levels of microwave radiation than your cell phone, but more than the wired headset. Turn your headset off when the phone is not in use.

Try not to keep your phone turned on next to your body throughout the day. Or, if you must, position the cell phone so that the antenna, which emits radiation, is facing away from you.

Try to use your phone when you have the maximum number of bars, indicating the best reception. When signal quality is poor, your phone emits more radiation.

Try not to use your cell phone in elevators, cars, trains or planes. Cell phones draw more power, and emit more radiation, in enclosed metal spaces.

Text instead of calling whenever possible. The farther your phone is from your body, the better.

When you are home, use a wired landline. Remember, cordless phones connected to a landline can emit radiation much like cell phones.

You may be tempted to use one of the many radiation shields on the market, but keep in mind that they may hamper reception, causing your cell phone to churn out more radiation.

If you have a wireless router in your house or apartment, keep it in a little-used room and out of the bedroom (or turn it off altogether at night). Strive to keep your bedroom as free of electronic radiation as possible. In addition to routers, banish cell phones, wireless phones and computers. Purists will want to unplug electric devices near the bed. If you are worried about "dirty electricity," use a battery-powered alarm clock and make sure that extension cords or power strips do not sit under or around the bed. Avoid electric blankets and wired mattress warmers.

Connect to the Internet with an Ethernet cord, not a wireless router, whenever possible.

Disable your computer's wireless connectivity software, including Bluetooth, Airport and the like. Otherwise, your computer will continuously send out electronic "handshakes," exposing you to more EMFs.

Use a "wired-only" printer, as well as wired computer peripherals like a mouse and keyboard.

The new generation of wireless baby monitors, often configured to sit right under the bed or the mattress, emit radiation comparable to a cell phone.

Beware of radio-frequency-based smart meters, increasingly being installed by utilities around the United States to control power consumption within a house. They have come under suspicion as a significant source of electromagnetic radiation.

## 4.2. EMERGENCY SITUATIONS.

An emergency is a situation that poses an immediate risk to health, life, property or environment. Most emergencies require urgent intervention to prevent a worsening of the situation, although in some situations, mitigation may not be possible and agencies may only be able to offer palliative care for the aftermath.

While some emergencies are self-evident (such as a natural disaster that threatens many lives), many smaller incidents require the subjective opinion of an observer (or affected party) in order to decide whether it qualifies as an emergency.

The precise definition of an emergency, the agencies involved and the procedures used, vary by jurisdiction, and this is usually set by the government, whose agencies (emergency services) are responsible for emergency planning and management. In order to be defined as an emergency, the incident should be one of the following:

Immediately threatening to life, health, property or environment. Have already caused loss of life, health detriments, property damage or environmental damage.

Have a high probability of escalating to cause immediate danger to life, health, property or environment.

In the most developing countries, it is generally a requirement in most states that there must be a notice be printed in each telephone book requiring that, if a person requests the use of a telephone line (such as a party line) because of an emergency, the other person must relinquish use of said line immediately, if their

use is not also in the nature of an emergency. An emergency is also typically defined by those state statutes as "a condition where life, health or property is in jeopardy and the prompt summoning of aid is essential."

Whilst most emergency services agree on protecting human health, life and property, the environmental impacts are not considered sufficiently important by some agencies. This also extends to areas such as animal welfare, where some emergency organizations cover this element through the 'property' definition, where animals owned by a person are threatened (although this does not cover wild animals). This means that some agencies will not mount an 'emergency' response where it endangers wild animals or environment, although others will respond to such incidents (such as oil spills at sea that threaten marine life). The attitude of the agencies involved is likely to reflect the predominant opinion of the government of the area.

## Types of emergency situations.

Dangers to life

Many emergencies cause an immediate danger to the life of people involved. This can range from emergencies affecting a single person, such as the entire range of medical emergencies including heart attacks, strokes, and trauma, to incidents that affect large numbers of people such as natural disasters including tornadoes, hurricanes, floods, and mudslides.

Most agencies consider these to be the highest priority of emergency, which follows the general school of thought that nothing, is more important than human life.

Dangers to health

Some emergencies are not immediately threatening to life, but might have serious implications for the continued health and well-being of a person or persons (although a health emergency can subsequently escalate to be threatening to life).

The causes of a 'health' emergency are often very similar to the causes of an emergency threatening to life, which includes medical emergencies and natural disasters, although the range of incidents that can be categorized here is far greater than those that cause a danger to life (such as broken limbs, which do not usually cause death, but immediate intervention is required if the person is to recover properly).

Dangers to property

Other emergencies do not threaten any people, but do threaten peoples' property. An example of this would be a fire in a warehouse that has been evacuated. The situation is treated as an emergency as the fire may spread to other buildings, or may cause sufficient damage to make the business unable to continue (affecting livelihood of the employees).

Many agencies categorize property emergency as the lowest priority, and may not take as many risks in dealing with it. For instance, firefighters are unlikely to enter a burning building they know to be empty, as the risk is unjustified, but are more likely to enter a building where people are reported as trapped, unless they believe they can stop the spread of the fire, or "save" the building.

Dangers to the environment

Some emergencies do not immediately endanger life, health or property, but do affect the natural environment and creatures living within it. Not all agencies consider this to be a genuine emergency, but it can have far reaching effects on animals and the long term condition of the land. Examples would include forest fires and marine oil spills.

## Systems of classifying emergencies

Agencies across the world have different systems for classifying incidents, but all of them serve to help them allocate finite resource, by prioritizing between different emergencies.

The first stage in any classification is likely to be defining whether the incident qualifies as an emergency, and consequently if it warrants an emergency response. Some agencies may still respond to non-emergency calls, depending on their remit and availability of resource. An example of this would be a fire department responding to help retrieve a cat from a tree, where no life, health or property is immediately at risk.

Following this, many agencies assign a sub-classification to the emergency, prioritizing incidents that have the most potential for risk to life, health or property (in that order). For instance, many ambulance services use a system called the Advanced Medical Priority Dispatch System (AMPDS) or a similar solution. The AMPDS categorizes all calls to the ambulance service using it as either 'A' category (immediately life threatening), 'B' Category (immediately health threatening) or 'C' category (non-emergency call that still requires a response). Some services have a fourth category, where they believe that no response is required after clinical questions are asked.

Another system for prioritizing medical calls is known as Emergency Medical Dispatch (EMD). Jurisdictions that use EMD typically assign a code of "alpha" (low priority), "bravo" (medium priority), "charlie" (requiring advanced life support), delta (high priority, requiring advanced life support) or "echo" (maximum possible priority, e.g., witnessed cardiac arrests) to each inbound request for service; these codes are then used to determine the appropriate level of response.

Other systems (especially as regards major incidents) use objective measures to direct resource. Two such systems are SAD CHALET and ETHANE, which are both mnemonics to help emergency services staff classify incidents, and direct resource. Each of these acronyms helps ascertain the number of casualties (usually including the number of dead and number of non-injured people involved), how the incident has occurred, and what emergency services are required.

Agencies involved in dealing with emergencies

Most developed countries have a number of emergency services operating within them, whose purpose is to provide assistance in dealing with any emergency. They are often government operated, paid for from tax revenue as a public service, but in some cases, they may be private companies, responding to emergencies in return for payment, or they may be voluntary organizations, providing the assistance from funds raised from donations.

Most developed countries operate three core emergency services:

Police – who deal with security of person and property, which can cover all three categories of emergency. They may also deal with punishment of those who cause an emergency through their actions.

Fire service – who deal with potentially harmful fires, but also often rescue operations such as dealing with road traffic collisions. Their actions help to prevent loss of life, damage to health and damage to or loss of property.

Emergency Medical Service (Ambulance / Paramedic service) – These services attempt to reduce loss of life or damage to health. This service is likely to be decisive in attempts to prevent loss of life and damage to health. In some areas "Emergency Medical Service" is abbreviated to simply EMS.

In some countries or regions, two or more of these services may be provided by the same agency (e.g. the fire service providing emergency medical cover), and under different conditions (e.g. publicly funded fire service and police, but a private ambulance service).

There may also be a number of secondary emergency services, which may be a part of one of the core agencies, or may be separate entities who assist the main agencies. This can include services providing specialist rescue (such as mountain rescue or mine rescue), bomb disposal or search and rescue.

The Military and the Amateur Radio Emergency Service (ARES) or Radio Amateur Civil Emergency Service (RACES) help in large emergencies such as a disaster or major civil unrest.

Emergency action principles (EAP)

Emergency action principles are key 'rules' that guide the actions of rescuers and potential rescuers. Because of the inherent nature of emergencies, no two are likely to be the same, so emergency action principles help to guide rescuers at incidents, by sticking to some basic tenets.

The adherence to (and contents of) the principles by would be rescuers varies widely based on the training the people involved in emergency have received, the support available from emergency services (and the time it will take to arrive) and the emergency itself.

Key emergency principle.

The key principle taught in almost all systems is that the rescuer, be they a lay person or a professional, should assess the situation for danger. The reason that an assessment for danger is given such high priority is that it is core to emergency management that rescuers do not become secondary victims of any incident, as this creates a further emergency that must be dealt with.

A typical assessment for danger would involve observation of the surroundings, starting with the cause of the accident (e.g. a falling object) and expanding outwards to include any situational hazards (e.g. fast moving traffic) and history or secondary information given by witnesses, bystanders or the emergency services (e.g. an attacker still waiting nearby).

Once a primary danger assessment has been complete, this should not end the system of checking for danger, but should inform all other parts of the process.

If at any time the risk from any hazard poses a significant danger (as a factor of likelihood and seriousness) to the rescuer, they should consider whether they should approach the scene (or leave the scene if appropriate).

Managing an emergency.

There are many protocols emergency services apply in an emergency, which usually start with planning before an emergency occurs. One commonly used system for demonstrating the phases is shown here on the right.

The planning phase starts at preparedness, where the agencies decide on how they will respond to a given incident or set of circumstances. This should ideally include lines of command and control, and division of activities between agencies. This avoids potentially negative situations such as three separate agencies all starting an official rest center for victims of a disaster.

Following an emergency occurring, the agencies then move to a response phase, where they execute their plans, and may end up improvising some areas of their response (due to gaps in the planning phase, which are inevitable due to the individual nature of most incidents).

Agencies may then be involved in recovery following the incident, where they assist in the clear up from the incident, or help the people involved overcome their mental trauma.

The final phase in the circle is mitigation, which involves taking steps to ensure no re-occurrence is possible, or putting additional plans in place to ensure less damage is done. This should feedback in to the preparedness stage, with updated plans in place to deal with future emergencies, thus completing the circle.

## Ministry of Emergency Situations of the Republic of Uzbekistan

Ministry of Emergency Situations of the Republic of Uzbekistan has been established by the Decree of President of the Republic of Uzbekistan "On Establishment of Ministry of Emergency Situations of the Republic of Uzbekistan" №UP-1378 dated March 4, 1996 and Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On issues of activity organization of the Ministry of Emergency Situations of the Republic of Uzbekistan" №143 dated April 11, 1996.

Regulations and structure of the Ministry of Emergency Situations have been approved by the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On issues of activity organization of the Ministry of the Republic of Uzbekistan of Emergency Situations" №143 dated April 11, 1996.

**Main tasks of the Ministry include:**

- development and implementation of the state policy in the field of preventing emergency situations;

- protection of lives and health of the population, material and cultural values; and liquidation of consequences and reduction of negative effects during the emergency situations in peace and war time;
- establishment and administration maintenance of the State system of the prevention and actions in emergency situations;
- organization of development and implementation of measures in the territory of Uzbekistan in the field of population protection, country territory, objects of national property; and prevention and liquidation of consequences of emergency situations;
- coordination of activity of the ministries, departments, Council of the Ministers of the Republic of Karakalpakstan, mayor's offices (khokimiyats), Regions (Viloyats), cities and districts on protection of population and national property; prevention and liquidation of emergency situations caused by accidents, catastrophes and natural disasters;
- direction of works on liquidation of large extreme situations; formation and maintenance of forces and means readiness required for this purpose;
- coordination of works on setting up the state emergency reserve funds of financial, food- stock, medical and material resources;

**In accordance with assigned tasks, the Ministry carries out the following functions:**

- carrying out a supervision and monitoring over the environment condition, situation in potentially dangerous objects and attached territories;

- planning and implementation of specific and scientific - technical programs and measures on prevention of emergency situations, ensuring safety and protection of population, reduction of potential casualties and damages, and on support of stable functioning of industrial objects and branches of economy in emergency situations;

- training improvement of management bodies on emergency situations, forces and means on actions during emergency situations; organization of training for the population on protection and actions during emergency situations.

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**APPENDIX.**

```
function onFinish(success_boolean, results_obj, xml)
{
    if (success_boolean)
    {
        play ();
    } // end if
} // End of the function
Stage.align = "MC";
Stage.scaleMode = "noScale";
url = "24132";
_root.cacheKiller = "true";
stop ();
var parsed_obj = {};
var unCash = new Date().getTime();
if (_root.cacheKiller == "true")
{
    fileToLoad = url + "_main.xml?cacheKiller=" + unCash;
    fileToLoad = url + "_main.xml";
}
else
{
    fileToLoad = url + "_main.xml";
} // end else if
gs.dataTransfer.XMLParser.load(fileToLoad, onFinish,
parsed_obj);
_root.emp.useHandCursor = 0;
_root.mus = 1;
_root.n = 1;
_root.num = 1;
```

```
function onFinish(success_boolean, gallery_obj, xml)
{
    if (success_boolean)
    {
        play ();
    } // end if
} // End of the function
function textSelectable(selectedObject)
{
    isTextSelected = getSettingsValue(mainObj,
"textSelectable", "item");
    if (isTextSelected == "true")
    {
        selectedObject.selectable = true;
    } // end if
} // End of the function
function getXmlSection(obj, itemName, sectionName)
{
    for (i = 0; obj[itemName][i]; i++)
    {
        if (obj[itemName][i].name == sectionName)
        {
            returnedResult = true;
            return (i);
            break;
        } // end if
    } // end of for
} // End of the function
function getSettingsValue(obj, itemName, itemType)
{
```

```
    sectionNum = getXmlSection(obj, "section",
"settings");

    for (k = 0; obj.section[sectionNum][itemType][k];
k++)

    {

        if (obj.section[sectionNum][itemType][k].name ==
itemName)

        {

            return
(obj.section[sectionNum][itemType][k].value);

            break;

        } // end if

    } // end of for

} // End of the function

function getCopyright(textObj)

{

    textObj.htmlText = getSettingsValue(mainObj,
"copyright", "item");

    textSelectable(textObj);

} // End of the function

function getCompanyName(textObj)

{

    textObj.htmlText = getSettingsValue(mainObj,
"companyName", "item");

    textSelectable(textObj);

} // End of the function

function getSlogan(textObj)

{

    textObj.htmlText = getSettingsValue(mainObj,
"slogan", "item");

    textSelectable(textObj);

} // End of the function
```

```
function getSystemValue(textObj, systemOptionName)

{

    textObj.htmlText = getSettingsValue(mainObj,
systemOptionName, "item");

    textSelectable(textObj);

} // End of the function

function getMenuLink(textObj, linkNum)

{

    sectionNum = getXmlSection(mainObj, "section",
"menu");

    textObj.htmlText =
mainObj.section[sectionNum].link[linkNum].value;

    textSelectable(textObj);

} // End of the function

function getMenuSystemOrder(linkNum)

{

    sectionNum = getXmlSection(mainObj, "section",
"menu");

    return
(mainObj.section[sectionNum].link[linkNum].systemOrder);

} // End of the function

function getCurrentText(textObj, textNumber)

{

    sectionNum = getXmlSection(mainObj, "section",
"pages");

    currentPage = _root.link - _root.firstPageFrame;

    textObj.htmlText =
mainObj.section[sectionNum].page[currentPage].texts[0].pa
geText[textNumber].value;

    textSelectable(textObj);

} // End of the function

function getGlobalText(textObj, textsNumber, optional)
```

```
{
    sectionNum = getXmlSection(mainObj, "section",
"global_text");
    textObj.htmlText =
mainObj.section[sectionNum].texts[textsNumber].value;
    if (optional == undefined)
    {
        textSelectable(textObj);


    } // end if
} // End of the function
function getGlobalImageName(imageNumber)
{
    sectionNum = getXmlSection(mainObj, "section",
"global_img");
    currentPage = _root.link - _root.firstPageFrame;
    imageParams = new Array();
    imageParams.name =
mainObj.section[sectionNum].image[imageNumber].imageUrl;
    imageParams.linkToOpen =
mainObj.section[sectionNum].image[imageNumber].link;
    return (imageParams);
} // End of the function
function getMenuPreviousLink(linkNum)
{
    k = 0;
    for (systemOrder = getMenuSystemOrder(k);
systemOrder; systemOrder = getMenuSystemOrder(k))
    {
        if (systemOrder == linkNum)
        {
            orderResult = k + 1;
```

```
            break;
        } // end if
        ++k;
    } // end of for
    return (orderResult);
} // End of the function
function getCurrentImageName(imageNumber)
{
    sectionNum = getXmlSection(mainObj, "section",
"pages");
    currentPage = _root.link - _root.firstPageFrame;
    imageParams = new Array();
    imageParams.name =
mainObj.section[sectionNum].page[currentPage].image[image
Number].imageUrl;
    imageParams.linkToOpen =
mainObj.section[sectionNum].page[currentPage].image[image
Number].link;
    imageParams.target =
mainObj.section[sectionNum].page[currentPage].image[image
Number].target;
    return (imageParams);
```