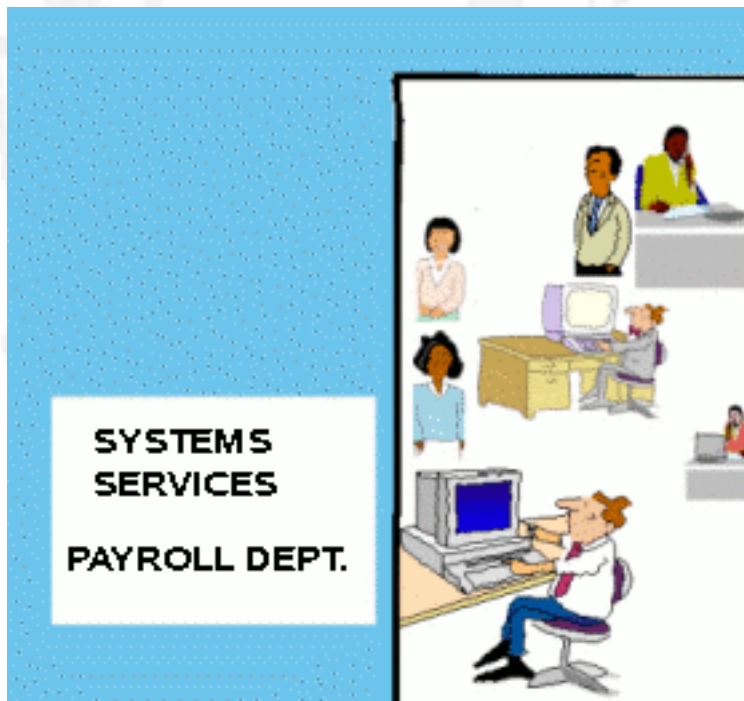




TelForm Clients

TelForms and current Technology.

A TelForm is a Java data collection or Client form for Personal Computers and Mobile devices. The aim of the data form is to allow Customers to input data into a system, such as the product details into an Order form. In so doing it should check that there are no errors in the data which would prevent the process from being carried out. Most client forms only perform basic checking and the real processing is done by the Server system at the Central Office. This costs time and expensive bandwidth. Furthermore there has been little standardisation whereas TelForms are automatically generated from an XML Schema, an international standard for defining the content of documents. TelFormFactory is used to graphically produce the XML Schema and the TelForms. The TelForm is then used to send data to a Server or TelFormHost which can also use the XML Schema to coordinate the Information processing, again checking the data entered in the TelForm appears correct according to the XML Schema. This means changes can be quickly and efficiently merged into the business process, while minimising information errors.



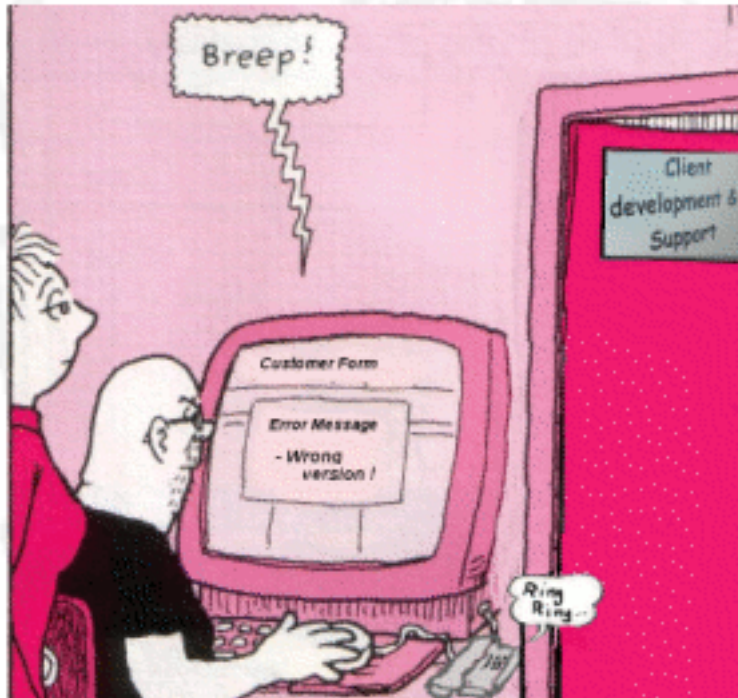
Most IT investment goes on Server-side systems.

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The vast majority of online data forms are comprised of web markup code and script languages, even in the internal systems of sophisticated companies. These are unsatisfactory for a number of reasons, primarily because the Markup languages used such as HTML and its variants were not designed to be used for data input, but rather for the look or presentation of the web page. Furthermore, the publication and acceptance of HTML and scripting reference standards took place against a background of rapid technology change in Networking, Personal Computer technology and Software Development in a ruthless commercial environment with high uncertainty and mortality. For this reason corporations often take for granted that their public are using only the most common Operating environment and Web Browser, often to the rejection of all others. Most corporate IT investment goes into the expensive server-side

systems, and a lot of their spending goes on Call Centres dealing with customers after they have experienced the Online system. Within the corporations I have seen, coordination between Client - Server departments is weak and changes within say online Banking systems, are inefficient and hugely expensive.

For example, I have been complaining to my bank for years that I can't quote my name in a message as I have an apostrophe in my name. Obviously the Software Engineers overlooked this possibility and designed a system to allow only alpha characters. Yet others may have a hyphen, or a space, or may simply be longer than that envisaged by either the Software designer or coder. The effects of this vary from minor inconvenience to major problems regularly experienced at airports and with international banks. Apparently it is very difficult to fix. We may wonder what other problems are present with more complicated system controls.



Client-side Planning, Development and Support Departments

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TelForms and XML Datatypes

Data is encoded in XML to allow ease of processing and all types of data can be encoded using XML. The number of XML files of Graphics, Sound and other media as well as User data, is constantly increasing on every PC, let alone large systems. XML Schema is used to manage data content by comparing its Datatype. The XML Schema definition stipulates a number of datatypes, such as string, boolean, hexBinary and about 40 more. These will be amended by an imminent new release of the standard. An XML document is said to be valid if it has been validated against an XML Schema by an XML Schema Validator. The TelForm itself does not incorporate any XML Schema Validator though future versions will. This is because the early Java releases assumed by this version of TelForms may not support state of the art validators, and particularly not midlet versions. Also Validator Error messages might not be meaningful to the everyday TelForm user. A Telform uses inbuilt Java code to check for data errors which has been tested against Schema validators at the TelFormHost. The TelForm also has its own datatypes which we commonly use such as email and telephone number which have native checking on Java mobile devices.

TelForms as Java stand-alone Applications, Web Browser Applets & Midlets for hand-held devices.

TelForm Applications and Applets have initially been targeted on the Java J2SE1.1 platform in order to accommodate a wider range of devices. Client functionality is limited compared to

later versions of Java in order to reach a wider client base. For similar reasons the TelForm Midlet is initially aimed at MIDP1.0 CLDC1.0. TelForms can run on a desktop PC, in a Web Browser, and on Mobile devices. The reason the same programme can run on many different systems is because each has a Java Virtual Machine which translates the Java byte-code into device actions.

Current versions of TelForms do not allow configuration of preferences such as colours, sounds and so on. Future versions will have fixed settings stipulated by the TelForm originator, and personal preferences set by the Telform user.



Sending a TelForm purchase order. The Client software and Server Schema has just been updated, transparent to the Customer.

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TelForm Applications - Stand-alone programmes - can be run on a Personal Computer with a Java 2 Standard Edition J2SE Java Runtime Environment JRE which includes the JVM. The TelForm can write to the PC file system if needed eg for logging, and may also use the network. There is almost no difference between the TelForm Application and its Applet version except that the Application has a main method which means it can be run from the command line or by clicking on the icon if properly configured. If there is an option then downloading the application may be more convenient than repeatedly downloading the Applet. The TelForm application should be treated as any other application as far as security is concerned. The credentials of the package should be checked, and System, Network and ant-virus software protection levels kept at 'adequate' levels. This is difficult because too many restrictions can prevent normal operation. Just in case - it is assumed that System and Data backups are taken regularly.



The TelForm on Mobile corresponds exactly to that on the Office PC, so training is minimised.

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Applets are downloaded from the Internet and run within a Web Browser with access to a JVM. Because of this there are many inbuilt security restrictions on applets, compared with very few on Script languages. After some years most Web browsers now more or less conform to Java permissions protocol using Digital Certificates for authentication. All Internet Users rely on Digital Certificates for business yet few keep control or are even aware of their existence. See for more on this. There may be other inconveniences such as overriding popup blocks and configuring Network proxy servers with the Java Control Panel. Also some Web Browsers will cache or store local copies of TelForm applets. This may prevent updating if the TelForm originator has been remiss in version control. It is suggested that cache sizes be kept fairly small and cleaned regularly.



Sending a TelForm timesheet to work before vacation can be critical to the budget. The Mobile version costs nothing extra to produce.

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Mobiles use a JVM system which conforms to Java Micro Edition J2ME standard, which is more aware of memory, network availability and other limitations of Mobile devices. Notably this edition of TelForms conforms to Java Midlet Information Device Profile 1 MIDP1 which cannot handle fractions. This causes some inconvenience as explained in the TelForm Mobile Guide. After Data Entry the TelForm checks the data for errors and if correct, the data is stored in local memory in case of network, battery or other problems. On opening the TelForm again the option will be given to send, edit or delete the data.

TelForm Midlets use Digital Certificates for authentication just as for Applets, though they often provide a manual over-ride for Network Access. At this time device and network security are less of a risk with Mobiles than with larger systems but of course the situation could change rapidly.

Future

The power of the Java programming language allows for increased security and reliability, for example automatically diverting to a backup TelFormHost site if the first is busy. Encryption other than the flawed https is relatively will be implemented in the future and Authentication methods are enhanced with Mobile devices.

See

See

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