

## **ELECTRONIC APPROVAL OF DOCUMENTS**

### **FIELD OF THE INVENTION**

This invention relates to a method for arranging approval of documents in a range of environments, such as execution of resolutions by members of an organisation. The documents are made available and approved over a communications network such as the Internet.

### **BACKGROUND TO THE INVENTION**

In this specification, where a document, act or item of knowledge is referred to or discussed, this reference or discussion is not an admission that the document, act or item of knowledge or any combination thereof was at the priority date:

- (i) part of common general knowledge; or
- (ii) known to be relevant to an attempt to solve any problem with which this specification is concerned.

The duties of a corporate secretarial department are often complex and tedious. A wide range of knowledge and skills are generally required by staff in the department, including patience, an ability with interpersonal relationships, and a detailed awareness of corporate law. The staff are required to prepare a range of documents and events including minutes, board resolutions, and shareholders meetings. These often involve approval by particular individuals in the organisation, such as the directors for example. Staff in other organisations outside a corporate environment are also often required to perform similar roles.

### **SUMMARY OF THE INVENTION**

It is an object of the invention to provide for assistance in organisational duties involving preparation and approval of documents, or at least to provide an alternative to existing systems.

Accordingly the invention consists in a method of approving an electronic document using a communications network, comprising: preparing the document in accord with criteria of a predetermined process, providing the document on the network for approval by one or more participants in the process, notifying the participants that the document is available for approval, receiving and authenticating approval by participants over the network, verifying that the participants have approved the document in accord with the process, and archiving an authenticated copy of the document.

Preferably the method includes providing data on status of the process as approval of the document by the participants proceeds. Preferably a register of records of the organisation is updated substantially immediately after the document has been archived. In one embodiment the process is a resolution by directors, shareholders or other members of an organisation, and the criteria are derived from legislative or governing provisions relating to operation of the organisation.

In another aspect the invention consists in a computer system for enabling electronic approval of documents in accord with predetermined criteria, comprising: at least one processor for processing the documents under control of an operator, and computer program means having processor instructions for: preparation of documents for approval by participants, presentation of documents for access and review by the participants, issuing notification to the participants that the documents are available for review, receiving and storing digital signatures created by the participants in relation to the documents, verifying that the participants have approved the document in accord with the criteria, and transmitting documents to an archive system. Preferably the system includes a database of document formats predetermined in accord with the criteria, and a database of identification certificates for the participants. The system may be implemented over several computers of a local network, or a wider private network, or enabled over a public network such as the Internet.

## LIST OF FIGURES

Preferred embodiments of the invention will be described with respect to the accompanying figures, of which:

Figure 1 schematically shows participants who may be part of a process  
5 involving approval of documents over a communications network,

Figure 2 outlines operation of a process controller when preparing documents for the participants,

Figure 3 outlines a process by which a document may be approved by the participants,

10 Figure 4 outlines a process by which the participants may electronically sign a document in the process of Figure 3,

Figure 5 outlines a process by which a signed document may be lodged with an authority,

15 Figure 6 indicates how users may obtain access to documents stored in a register,

Figure 7 indicates a typical computer station for the operator,

Figure 8 indicates typical program modules that are available in carrying out the process,

Figure 9 is a simplified electronic structure of an approved document,

20 Figure 10 is a screen shot showing selection of tasks by the operator,

Figure 11 is a screen shot showing a document as presented to a participant for approval,

Figure 12 is a screen shot showing commencement of a digital signature by a participant,

25 Figure 13 is a screen shot showing how participant views completion of their signing process,

Figure 14 is a screen shot showing status of a signing process, and

Figure 15 is a screen shot showing how an approved document in the archive might appear to a viewer.

#### **DETAILED DESCRIPTION OF PREFERRED EMBODIMENT**

5 Referring to the drawings it will be appreciated that the invention may be implemented in many ways, and that this description is given by way of example only. The operation of communication networks such as the Internet, and of certification systems such as public and private key systems provided by various international certification authorities, will be appreciated by a skilled reader and  
10 details need not be given.

Figure 1 shows a process controller 10 that is involved with preparation and approval of documents by a group of participants 11-13 in an organisation. The controller could be a server system operated by a company secretary as part of a corporate network for example, with the participants being directors of the company. Each of  
15 the many possible participants has access to a computer terminal which may be connected to the process controller either directly through the corporate network, or through a public a communications network 14, such as the Internet, or through a virtual private network (VPN), for example. A gateway device 18 usually connects the local network to the wider network. Connections are preferably made using a  
20 secure sockets layer system (SSL). A server system at the controller may include a web server, application server and database server, for example, and the participant terminals would then typically include software such as browsers which are able to interact with the web server. The participant terminals are provided with hardware and/or software components that enable signature of electronic documents and  
25 operations involving digital certificates. The hardware components may include a card reader system for example, while software components may be incorporated in the browser.

Figure 1 also shows a certification authority 15 that is typically responsible for generation of public and private keys for the participants, and digital certificates. The  
30 authority is also generally connected to the communications network for convenient

interactions with the various parties as required. Many authorities of this kind such as Verisign are currently active around the world. A document archive system 16 which may be implemented in a broad range of ways is also shown, typically but not necessarily independent of the process controller 10. The archive may perform  
5 similar functions for a number of unrelated process controllers that are operating in relation to respective organisations and participants. It may alternatively be part of the same local network as the process controller 10. The nature of suitable archive systems are indicated in this specification and specific features of suitable systems will be known to a skilled reader. A control authority 17 such as a register of  
10 companies is also shown connected to the public network.

Figure 2 shows a series of interactions related to the process controller 10, between an operator such as company secretary and a server system that runs software for assisting preparation and registration of company records. In step 20 the operator logs on to the system for a specific purpose, such as to prepare one or more documents in  
15 accord with a predetermined process of the operator's organisation. Processes of this kind may be determined by criteria set out in legislation or by other governing provisions of the organisation. The company secretary could be working to prepare and arrange one or more resolutions of directors or shareholders of the company, who must participate in an approval process, for example. In steps 21 and 22 software in  
20 the server checks the access rights of the operator and displays an appropriate menu of possible tasks. The operator considers and selects a task in steps 23 and 24, generally involving preparation of a document of some kind. The document is prepared in step 25, perhaps by way of a pre-stored template for the task. The operator may require and prepare an attachment in steps 26 and 27. The document may be saved as a draft  
25 in step 28. If the completed document is to be sent to participants for approval according to the process of the particular task, then a working copy is generated and through steps 30 and 31, ready for review by the participants.

Figure 3 shows a possible procedure for approval of the document generated in Figure 2, in this example by way of signature. Approvals may be required by different  
30 participants in the organisation, and their details are generally accessible by the process controller or a related system. The number of required participants must also

generally be known in accord with the particular process, such as a majority of directors, for example. Notification is transmitted to the participants in step 40, typically but not necessarily by email. The notice would indicate that a document is available over the network for signature, although the notices themselves could  
5 include copies of the document. In step 41 the document may be transformed if necessary from one format to another, such as from text to an image, and then transmitted to the archive in step 42. The archive may or may not manipulate the document in various ways to form an electronic original document EOD.

In Figure 3 a signing process generally takes place in step 43, by which one or more  
10 participants preferably access a server in the process controller and are directed to view the EOD. A copy may be transmitted over the network to their browser software, for example. Participants may provide feedback in step 44, such as a suggested change in the wording of the document, usually by email. The controller notes each approval or is advised by the archive as signatures take place, and  
15 requirements of the process are eventually satisfied in step 45, once a minimum number of directors have signed for example. Feedback or passing of the requirements is notified to the participants in step 46, and the document may be revised if necessary and the process restarted in steps 47 and 48. On passing of the requirements of the process, the controller requests completion of the document at the  
20 archive and updates the database in steps 49 and 51. The participants are generally notified of completion in step 50 and the completed document may be registered with the control authority 17 if required.

Figure 4 outlines a possible interaction between the controller system and a computer system at the archive during the signing procedure in Figure 3. There may be different  
25 procedures for documents requiring signature by one or multiple participants. A participant accesses the server in step 60, typically over the Internet but possibly in other ways such as over a local network. The server initiates signing at a terminal operated by the participant in step 61, generally by way of a hardware or software token that is recorded at the controller. The preferred signature process involves a  
30 digital signature and certificate provided to the participant by the certification authority 15. Digital signatures are generally formed by hashing the document

according to a predetermined algorithm, and encrypting the hash result using a private key of the participant, as will be appreciated. The certificate of the participant contains the corresponding public key. Knowledge of the public key enables verification of the integrity and authenticity of the signed document. Other signature and certification systems are of course possible. The controller receives and transfers the signature and certificate of the particular participant to the archive in steps 62 and 63. The archive verifies or otherwise authenticates the participant, using the certificate or by some other means in step 64. If verification is not achieved an error message is sent to the controller for action in step 65. Otherwise the EOD is date and time stamped in step 66, and the participant's signature is appended to the EOD in step 67. The controller and participant are advised of a successful signature in step 68.

Figure 5 briefly indicates an optional process that may be useful in the context of a company secretary providing records to an external authority such as a companies office. The outcome of a successful approval process in Figure 3 may be a signed document that must be notified, copied to or made available to the authority. Existence of the approval and/or the signed document is first recorded by step 70 in an electronic register operated by the organisation, typically in conjunction with actions of the controller. Many organisations must maintain a register of official documents such as securities for inspection by other parties such as a control authority 17 in Figure 1. The database of the process controller can meet this requirement online. A reference to the archive where the EOD may be inspected is preferably all that is required, although an additional copy may be kept in a separate register. The operator determines whether the document is to be lodged in step 71 and if so, operates the server to transmit the document to the authority in step 72, preferably over the network 14 by email. The operator may then commence another task in step 74, returning to Figure 2, or may end the session on the server in step 73. Overall it can be seen that the system provides a step by step guide for an operator preparing documents, or carrying out other functions of the organisation. It also provides an audit trail that can be reviewed if required.

Figure 6 outlines a further optional process relating to operation of the register mentioned in relation to Figure 5. A user such as a shareholder of a company wishing

to obtain information accesses the register in step 80. This may take place over the network 14. A selection is made in step 81, and the user may exercise access rights such as viewing or editing a record in steps 82 to 85. A user may seek to add a record in steps 86 and 87, perhaps by adding a note related to the preparation or approval  
5 process in Figure 2 or 3. The database is updated appropriately in step 88 and notifications may be delivered to other parties in step 80. The register is updated and new documents can be inspected almost immediately after a signing process such as that described above.

Figures 7 and 8 indicate schematically the components of a process controller 10 in  
10 Figure 1, typically a desktop computer connected to a local network. An operator such as a company secretary or other person who carries out clerical duties for an organisation uses the controller to prepare and provide documents for approval by members of the organisation, and then to assist verification and storage of the approved documents. The controller has a main container 100, including a processor  
15 101, memory elements 102, 103 that are typically a RAM chip and a disc drive respectively, network interface 104, connected by a bus structure 105. The operator is able to interact with the controller by way of a keyboard 106, video screen 107 and screen pointer 108, also connected to the bus structure. Software and data to assist the operator are contained by the memory elements or may be provided over the network.  
20 The data includes document templates 110, rules of the organisation 111, participant details 112 such as name, email address and digital certificates. The software includes applications for document preparation 120, provision of access 121, notification 122, and process tracking 123.

Figure 9 shows the possible structure of a document after completion of an approval  
25 process, and storage in an archive. The contents 130 of the document depend on its purpose as prepared by the operator, such as for a company resolution. Data 131 relevant to the document and the approval process through may be attached, including names and dates of approval events, or possibly indications of disapproval. Digital signatures 132, 133, 134 are also included, typically in the form of a document hash  
30 that has been encrypted by a private key of the particular signing party. It will be appreciated that a wide range of document structures, data and indications of status

may be included in the document according to purposes of the organisation for which the document is held, and method of operation of the archive. Other authentication or certification components such as a watermark may be included in the completed document. A range of electronic formats such Adobe PDF may be used.

- 5 Figures 10-15 are screen shots that demonstrate how aspects of an electronic document approval process may appear to an operator, a participant and a viewer of a completed document, in relation to a company. Figure 10 indicates a range of typical tasks that might be presented to the company secretary, each requiring a formal notification or resolution by way of an electronic document, but not all of which
- 10 necessarily a full approval process. Figure 11 shows part of a directors resolution to hold a special meeting as prepared by the secretary and made available to a director for approval. Various options are indicated. Figure 12 shows a screen as might appear to a director during a digital signing process activated by password. Figure 13 shows how the director might be presented with an indication that their part of the signing
- 15 and approval process has been completed. Figure 14 shows a status screen, indicating in this example, the commencement of an electronic approval process. It will be noted that a corresponding process involving a tangible document may run in parallel with an electronic process, with status being recorded manually by an operator. Figure 15 shows how data relating to a completed document may be presented to
- 20 another party from the archive.

It will be appreciated that an approval process as described may be implemented as part of a large and sophisticated electronic management system for companies and other organisations. A full complete system may provide other functions such as a record of disclosures made by directors, and transactions made by the company.

- 25 The word 'comprising' or forms of the word 'comprising' as used in this description and in the claims do not limit the invention claimed to exclude any variants or additions.

**CLAIMS:**

1. A method of approving an electronic document using a communications network, comprising:
  - preparing the document in accord with criteria of a predetermined process,
  - providing the document on the network for approval by one or more participants in the process,
  - notifying the participants that the document is available for approval,
  - receiving and authenticating approval by participants over the network,
  - verifying that the participants have approved the document in accord with the process,
  - archiving an authenticated copy of the document, and
  - providing data on status of the process as approval of the document by the participants proceeds.
2. A method according to claim 1 further comprising:
  - receiving a proposed change to contents of the document and notifying the participants of the proposed change.
3. A method according to claim 1 further comprising:
  - updating a register of records of the organisation substantially immediately after the document has been archived.
4. A method according to claim 1 wherein:
  - the process is a resolution by directors, shareholders or other members of an organisation, and
  - the criteria are derived from legislative or governing provisions relating to operation of the organisation.
5. A method according to claim 1 wherein:
  - the document is made available as an pdf, html, or other text document on a web server.

6. A method according to claim 1 wherein:  
notification to the participants is sent by email.
7. A method according to claim 1 wherein:  
approval of the document is given by way of digital signature, and  
authentication of the signature is made by way of a digital identification.
8. A method according to claim 1 wherein:  
verification of the process includes verifying that a sufficient number but not  
necessarily every participant has approved the document.
9. A method according to claim 1 wherein:  
authentication of the approvals is enabled by an authentication service  
provider, and  
archiving of the document is carried out by another service provider.
10. A computer system for enabling electronic approval of documents in accord  
with predetermined criteria, comprising:  
at least one processor for processing the documents under control of an  
operator, and  
computer program means having processor instructions for:  
preparation of documents for approval by participants,  
presentation of documents for access and review by the participants,  
issuing notification to the participants that the documents are available for  
review,  
receiving and storing digital signatures created by the participants in relation  
to the documents,  
verifying that the participants have approved the document in accord with the  
criteria,  
transmitting document to an archive system, and  
providing data on status of an approval process as approval of the document by the  
participants proceeds.

11. A system in accord with claim 10 further comprising  
a database of document formats predetermined in accord with the criteria, and  
a database of details including digital identification certificates for the participants.