

[0097] Accordingly, in this manner, changes in both directions (to both the original electronic document and the backing store document) may be tracked and synchronized into the other document.

[0098] As an alternative, instead of using the Microsoft Active Accessibility framework to track insertion point location and/or selection events, it may be possible to use Edit/RichEdit windows and detect the insertion point movements that way. In such a system, Windows messages still could be used for determining the specific text change that occurred.

[0099] C. Additional Features Relating to Examples of the Invention

[0100] Aspects of the invention expand the availability and functionality of pen-based computing systems to use electronic pens and electronic ink to edit many different types of documents, including documents that do not directly support or accept electronic ink input or data. As described above, even for documents that do not accept or support electronic ink data, a user can input electronic ink via a correction interface or other ink entry panel or program, the ink can be recognized, data corresponding to potential alternatives associated with the recognized ink can be stored in a separate backing store document, and the recognized text can be pumped into the original document, i.e., into the application program and/or electronic document that does not directly accept the electronic ink. Therefore, in accordance with at least some examples of the invention, there is a need to move data that includes machine-generated text from recognized electronic ink or speech data as well as potential alternatives associated with that text (e.g., alternatives stored as a property of the individual ink or text word or character string). Additionally, if desired, the backing store document further may create and store an object including the original raw ink data (e.g., in conventional ink serialized format ("ISF") or any other suitable or desired format) as well as spacing instructions for the start and/or end of the word or character string. By keeping the original ink data, the ink can be re-recognized, if necessary, optionally taking into account user made changes to the recognized text (e.g., changes made through a correction interface like that illustrated in FIGS. 5A and 5B, changes made by speech input, etc.), in order to further improve the recognition results.

[0101] Various movements of the text, ink, alternatives and/or associated data may be used in some aspects of the invention. For example, the text, ink, alternatives and/or other associated data may be moved: (a) from a "pending text" area associated with a handwriting input interface (e.g., a Latin skin, an East Asian skin, etc.) to the electronic document and/or to the backing store electronic document; (b) from the electronic document and/or the backing store document to one or more portions of a correction interface (e.g., the character-by-character correction portion 522, the task portion 524, or the suggestion portion 526 of the example shown in FIG. 5B); or (c) from a "pending text" area on a handwriting input interface (e.g., a Latin skin, an East Asian skin, etc.) to one or more portions of a correction interface (e.g., the character-by-character correction portion 522, the task portion 524, or the suggestion portion 526 of the example shown in FIG. 5B).

[0102] Examples of various features included in at least some examples of the invention include: (a) sending the

handwritten ink objects plus alternative data from the pending text area (e.g., Latin, East Asian, or other text), optionally with autospacing instructions (or other data) to the backing store document and maintaining it in the backing store document to allow correction by the end user both before and after the data is injected into an electronic document that does not support saving the additional data; and (b) as above in part (a) but between a text injector system and the backing store document.

[0103] The correction interface also may include various features without departing from the invention. For example, the correction interface may allow the original machine-generated text to be displayed to the user and allow the user to write over the machine-generated text, using electronic ink, on a character-by-character basis, to produce the correct results (e.g., as shown at 530 in correction portion 522 of FIG. 5B). As another example, the correction interface may include an inking area that allows a user to freehand input electronic ink data (not limited to a character-by-character basis). When character-by-character edit capability is available (as in correction portion 522), the handwriting recognition system also may allow display and selection of alternatives for individual characters, if desired.

[0104] Also, in at least some examples of systems and methods according to the invention, the correction interface and other features of the systems and methods may store the language of the incoming ink or speech data, to enable user selection of the language of the input, the dictionary to use during recognition, and the like, optionally on a word-by-word basis.

[0105] As mentioned above, in accordance with at least some examples of the invention, the original ink data is maintained with the recognized text (e.g., as a property or object) so that the ink can be recognized, if necessary or desired, optionally taking into account user made changes to the recognized text (e.g., made through a correction interface like that illustrated in FIGS. 5A and 5B), in order to further improve the recognition results. Even when the text is corrected or changed by the user, in at least some examples, the original ink and alternatives (potentially updated alternatives, if re-recognition has occurred) will be maintained with the recognized or corrected text. Re-recognition also may take place in situations, taking into account a user's changes, for example, where a user has broken a single recognized text word into two or more words (e.g., by inserting a space between characters via correction portion 522) and/or where a user has grouped two or more recognized words into a single word (e.g., by deleting blank spaces between recognized words using correction portion 522).

[0106] When re-recognition occurs, for example, when a new language is selected for a word or grouping of words, when spaces are inserted or deleted between characters, when one or more characters are changed by a user, as described above, the suggestion list (e.g., in suggestion portion 526) also may be updated based on the new recognition results. In this manner, the specific suggestions provided may better reflect the user's original intent. Additionally, in at least some examples of systems and methods according to the invention, if a task list is provided in the correction interface (e.g., like task portion 524), it also may be updated to reflect user made changes and/or re-recognition.