

InnoPath views patents and the technical leadership and innovation that they represent as core strategic advantages. Significant investments in research and development are required in order to deliver on the promise of superior solutions via superior technology, but this is what the market demands and this is what our customers expect. We believe that our growing patent portfolio reflects this investment. As of April, 2010 InnoPath has been awarded 22 US patents and has over 30 filed and pending approval. The company has also been awarded patents in multiple countries internationally.

US Patents

- 1. Patent 6,738,766** recognizes InnoPath's unique method for providing personalized application search results in a mobile device. This involves receiving a search request from a user including at least one search keyword and a user identifier. An application registry database is searched for a first set of matching applications based on the search keyword, followed by a search of an application selection table for a second set of matching applications based on the search keyword and the user identifier. The combination yields a highly accurate search result based on matching applications that are ordered and sent to the user.
- 2. Patent 6,816,944** recognizes InnoPath's unique method for managing information in a mobile device. This involves downloading a set of files and determining whether the local cache has enough space to store the data. If there is insufficient space to store the files, outdated records are removed and available local cache space is checked again. This process is repeated until all download files are loaded into the local cache.
- 3. Patent 6,836,657** recognizes InnoPath's unique method for ensuring 100 per cent accurate updates online and over-the-air. This method allows wireless operators to reliably update mobile devices over the air to new firmware releases while maintaining the option to fall back to the original firmware revision (prior to the update) with 100 per cent reliability.
- 4. Patent 6,925,467** recognizes InnoPath's unique method to produce the most compact and efficient change files, applying a known file difference utility to an old program and a new program normally results in a relatively large amount of data, even if there are only a small number of modifications. With InnoPath's patented and highly innovative technology, only essential changes appear in a delta file, typically shrinking update packages by as much as 97 per cent.
- 5. Patent 6,928,467** describes methods where object stores are used as building blocks to construct a system with variable complexity on a network. Typically, an object store comprises information (e.g., data) stored in object format, or objects. The objects and object stores are managed by an object version management mechanism that adapts to different object store types and optimizes resource consumption by each object

store. Various data fields are used to indicate an object's version within an object store. Version information is used to compare the states among matching object replicas in matching object stores. Utilizing both the object store based system and the object version management mechanism, a data synchronization protocol is developed. The data synchronization protocol is capable of adapting to different types of object stores and the characteristics of network connection media to optimize data synchronization.

6. Patent 6,954,754 describes an exemplary method for managing a cache on a mobile device. This involves checking existing application or data file status to determine if they are out-of-date or if a scheduled update is overdue. If the files are out-of-date or the scheduled update is overdue, updated files are loaded.

7. Patent 6,957,212 describes an exemplary method for intelligently caching applications and data on a gateway. This involves calculating a cache benefit index for a set of files, to determine whether to cache the set of files on a local file system. If so, the files are cached on the local file system, and the cache tables in the gateway database are updated.

8. Patent 6,959,436 describes a method for intelligently providing application and data in a mobile device system. This involves collecting at least one year of user operation history and generating user and application registration information. Application or data is then selectively cached on a mobile device and a gateway based on the user's operation history. Other gateways are then synchronized based on the user's operation history.

9. Patent 7,003,534 recognizes a new method of generating different files using module information of embedded software components. The software component distributor (SCD) generates a new map file, hex file and device memory map (DMM). The SCD compares the new DMM and the corresponding original DMM, after the comparison is made the SCD inserts new data. Checking a module by its name and version is more efficient since modules can be many megabytes in size.

10. Patent 7,006,512 recognizes an exemplary method for managing requests in a mobile device system. This involves assigning a priority to each queue in a set of priority queues and inputting requests into the queues based on a priority associated with each request. Multiple requests in the set of priority queues are merged and before being sent to a request queue for a connection in a connection pool for a destination.

11. Patent 7,007,049 recognizes InnoPath's unique method for supporting device memory management during electronic file updating. This technology allows the creation of larger contiguous blocks of free or unused memory within the Flash ROM program or coding area by moving existing blocks to create larger 'free memory' areas that can be used for larger software updates. This function is similar to defragging a hard drive on a personal computer.

12. Patent 7,031,972 recognizes InnoPath's unique method for a file differencing and update system. The file differencing component, or file differencing engine, generates a difference file from an old and a new version of electronic files. This processing includes processing to reduce the number of changes introduced by code block swaps. During alignment operations, the block movements are dynamically recorded at minimal cost and encoded to support code recovery.

13. Patent 7,089,270 recognizes InnoPath's unique method for processing software images for use in generating difference files. Software/executable changes between file versions include primary changes/logical changes, which are defined to be the source code changes, and secondary changes. The secondary changes include address changes, pointer target address changes, and changes in address offsets. The pre-processing systems and methods provided use approximation rules between file versions to remove/reduce the secondary changes and encode information relating to the removal of these changes in information of the corresponding difference file.

14. Patent 7,096,311 recognizes InnoPath's unique method for updating electronic files using byte-level file differencing and updating algorithms. The upgrade client employs multiple memory areas to apply a difference file to the original memory image. Memory is copied and updated in blocks by reading the original memory image and processing it with the difference file to generate and apply new updated memory blocks.

15. Patent 7,099,884 recognizes InnoPath's unique method for data compression and decompression. The compression method identifies repetitive data of an input file and writes meta-data representative of the repetitive data to a first buffer. Non-repetitive data is written to a second buffer. The compressor concatenates the first and second buffers along with information of the length of the input file and the length of the first buffer to form a compressed file. A corresponding decompression method parses the compressed file and quickly computes the original file using a pre-allocated memory area.

16. Patent 7,313,577 recognizes InnoPath's unique method for generating difference files using module information of embedded software components. A software component distributor constructs updates only on the software components that have actually changed, identifying inserted, deleted or changed components. Difference information representative of these changed components is constructed.

17. Patent 7,320,010 recognizes InnoPath's unique method for controlling updates of electronic files. In controlling electronic file updates, an upgrade system identifies host device models that include an original electronic file upon receipt of a new file, when the new file is an updated version of the original file. Using the identified model list, the upgrade system automatically generates a target list of subscribers that use the identified models. The upgrade system filters the target list using data of pre-defined user groups and generates subgroups of the target list. The pre-defined groups can include groupings made according to any criteria. The upgrade system selects an upgrade control policy for each user according to the subgroup to which the user is a member. The upgrade control policy controls device update parameters. The upgrade system transmits upgrades and/or upgrade notifications to the appropriate host devices in accordance with the selected upgrade control policies.

18. Patent 7,350,205 recognizes InnoPath's unique method for upgrading electronic files of a mobile device upgrade client. A portable device receives upgrade files that repair errors in software components and/or that upgrade information controlling functions of the device via a wireless coupling. An upgrade client automatically updates the device components, including support to update the components of the upgrade client.

19. Patent 7,366,824 recognizes InnoPath's unique method for Updating electronic files using byte-level file differencing and updating algorithms. An upgrade client of a remote device receives a delta file block that codes differences between an original and a new version of a file. The upgrade client stores the delta file block in a first memory area. The upgrade client writes an original file block corresponding to the delta file block from an original memory area to a second memory area. A file updating algorithm generates an updated file block in the host device using the received delta file block and the original file block. This updated file block corresponds to the original file block, and is stored in a third memory area. The upgrade client updates the original file block of the remote device by writing the updated file block over the original file block in the original memory area of the remote device.

20. Patent 7,392,260 recognizes InnoPath's unique method for achieving code alignment of binary files. A file differencing component, or file differencing engine, generates a difference file in a first processor-based or computer system from an original or old version and a new version of an electronic file. Generation of the difference files includes processing to reduce the number of file changes introduced by code block swaps. The processing uses an alignment algorithm, which includes a sorting algorithm, to align the code blocks of the original version in the same order as those of the new version, thereby eliminating the increase in the number of byte-level file differences due to code block swaps. During the alignment operations, the block movements are dynamically recorded at a minimum cost level and encoded for transmission to the file updating component for use in code recovery.

21. Patent 7,516,451 recognizes InnoPath's unique method for maintaining mobile device electronic files including using difference files when upgrading a mobile device is provided that includes a first processor coupled among at least one additional processor and a communication device for use in maintaining electronic files of the device. The mobile device can, for example, be a cellular telephone. The mobile device further includes an upgrade engine coupled to the first processor. The upgrade engine receives maintenance files from remote servers via the communication device, where the maintenance files include difference files. The upgrade engine

uses information of the difference files to update software of the first processor. In addition to the upgrade engine, the mobile device includes an emulator that is coupled to the upgrade engine. The emulator transfers pre-specified ones of the difference files to the additional processor(s) where a rewrite engine uses the difference files to upgrade software of the additional processor(s).

22. Patent 7,676,506 recognizes InnoPath's unique systems and methods for pre-processing and post-processing original and new versions of files as part of difference file generation between the original and new file versions. The systems and methods of an embodiment include a set of algorithms that reduce the difference file size by preprocessing a variety of regions in software images for embedded computing devices, an example of which is the compressed read-only memory (ROM) file system (CRAMFS) image. The algorithms treat a variety of types of data regions that are created by the compiler. Embodiments operate on the server side and the client side. On the server side, the preprocessing generates Compact Functional Differences (CFD) hint data directly from a pair of CRAMFS images, without the use of symbol files or log files generated by compiler/linker utilities.

Japan Patents

1. Patent 4,364,790 Equivalent to US Patent 6,925,467 that recognizes InnoPath's unique method to produce the most compact and efficient change files, applying a known file difference utility to an old program and a new program normally results in a relatively large amount of data, even if there are only a small number of modifications. With InnoPath's patented and highly innovative technology, only essential changes appear in a delta file, typically shrinking update packages by as much as 97 per cent.

2. Patent 4,409,438 Equivalent to US Patent 7,007,049 that recognizes InnoPath's unique method for supporting device memory management during electronic file updating. This technology allows the creation of larger contiguous blocks of free or unused memory within the Flash ROM program or coding area by moving existing blocks to create larger 'free memory' areas that can be used for larger software updates. This function is similar to defragging a hard drive on a personal computer.