



- (51) International Patent Classification:
G06Q 50/10 (2012.01)
- (21) International Application Number:
PCT/US2012/042830
- (22) International Filing Date:
15 June 2012 (15.06.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
13/161,215 15 June 2011 (15.06.2011) US
PCT/US2011/065489
16 December 2011 (16.12.2011) US
13/422,814 16 March 2012 (16.03.2012) US
PCT/US2012/030952 28 March 2012 (28.03.2012) US
- (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US US 13/073,931 (CIP)
Filed on 28 March 2011 (28.03.2011)
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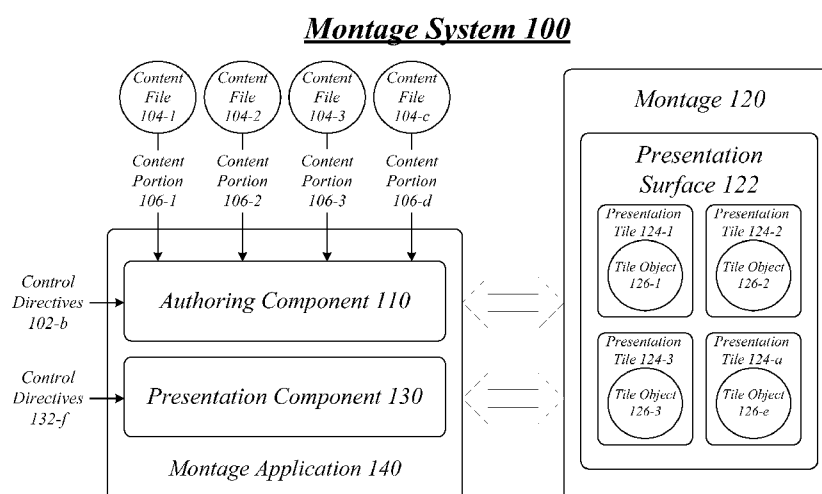
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

- (54) Title: TECHNIQUES FOR GENERATING CUSTOM OBJECTS REPRESENTING CONTENT FILES

**FIG. 1**

- (57) Abstract: Techniques for generating custom objects for content files are described. An apparatus may comprise a logic device arranged to execute a montage application comprising an authoring component operative to generate a tile object for a digital montage, the authoring component to receive a control directive to associate a content file with a presentation tile of a presentation surface of the digital montage, identify a content file type for the content file, and generate the tile object with information from the content file in accordance with the content file type. Other embodiments are described and claimed.

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

TECHNIQUES FOR GENERATING CUSTOM OBJECTS REPRESENTING CONTENT FILES

BACKGROUND

5 [0001] A montage may comprise an aggregation of separate elements to form a single composite element. For instance, a montage may comprise a composite picture made up of several separate pictures, or a video sequence comprising a rapid sequence of disparate images. Electronic montage systems have been designed to create digital montages using digital content, such as a composite web page comprising different constituent web pages
10 served from different web applications. Sometimes the constituent web pages are organized according to a central theme, such as a web pages related to a given search term used by a search engine, or web pages consistently visited by a user as stored in a browser history. Often, the constituent web pages are lower-fidelity representations of the actual web page due to space limitations of the composite web page. As such, a user may select
15 a constituent web page to retrieve a higher-fidelity version of the selected web page for more in-depth viewing.

[0002] As an amount of digital information increases, however, it becomes increasingly difficult to build a digital montage in a way that provides meaningful information to a user. More particularly, it becomes increasingly difficult to represent content from
20 multiple content sources in a digital montage in a way that allows a user to make an informed judgment regarding whether a particular content source is of interest. It is with respect to these and other considerations that the present improvements have been needed.

SUMMARY

[0003] This Summary is provided to introduce a selection of concepts in a simplified
25 form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended as an aid in determining the scope of the claimed subject matter.

[0004] Various embodiments are generally directed to electronic montage systems. Some embodiments are particularly directed to an electronic montage system arranged to
30 generate a digital montage from heterogeneous data sources. The electronic montage system may allow a user to generate a customized digital montage with customized representations for a data source, thereby allowing other users to quickly identify and select a data source of interest for closer viewing. The electronic montage system may

publish the customized digital montage to other users via a publishing model, a messaging model, or a combination of a publishing model and a messaging model.

[0005] In one embodiment, for example, an apparatus may comprise a logic device arranged to execute a montage application. The logic device may comprise, for example, a processing system having a processor and memory. The montage application may comprise an authoring component operative to provide a presentation surface having multiple presentation tiles, receive control directives to associate content files with presentation tiles, generate tile objects for the content files based on content file types for the content files, and store the presentation surface and tile objects as a montage.

[0006] The montage application may further comprise an authoring component operative to generate a tile object for a digital montage. The authoring component may receive a control directive to associate a content file with a presentation tile of a presentation surface of the digital montage, identify a content file type for the content file, and generate the tile object with information from the content file in accordance with the content file type. The authoring component may generate the tile object as a tile object surface having selected information from the content file contained within one or more tile object containers.

[0007] The montage application may still further comprise a presentation component operative to generate a first user interface view to present each tile object within each associated presentation tile of the presentation surface, receive a control directive to select a tile object, and generate a second user interface view to present a content file corresponding to the tile object.

[0008] These and other features and advantages will be apparent from a reading of the following detailed description and a review of the associated drawings. It is to be understood that both the foregoing general description and the following detailed description are explanatory only and are not restrictive of aspects as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 illustrates an embodiment of a montage system.

[0010] FIG. 2 illustrates an embodiment of an authoring component.

[0011] FIG. 3A illustrates an embodiment of a presentation surface.

[0012] FIG. 3B illustrates an embodiment of a presentation surface with tile objects.

[0013] FIG. 3C illustrates an embodiment of a tile object with tile object containers.

[0014] FIG. 4 illustrates an example for an authoring component.

[0015] FIG. 5 illustrates an embodiment of a messaging system.

[0016] FIG. 6 illustrates an embodiment of a message flow for a messaging system.

[0017] FIG. 7A illustrates an embodiment of a user interface view of a message.

[0018] FIG. 7B illustrates an embodiment of a user interface view of a montage.

[0019] FIG. 7C illustrates an embodiment of a user interface view of a tile object.

5 [0020] FIG. 7D illustrates an embodiment of a user interface view of a content file.

[0021] FIG. 8A illustrates an embodiment of a logic flow for an authoring component to generate a montage.

[0022] FIG. 8B illustrates an embodiment of a logic flow for an authoring component to generate a tile object for a montage.

10 [0023] FIG. 9 illustrates an embodiment of a logic flow for a publishing component.

[0024] FIG. 10 illustrates an embodiment of a computing architecture.

DETAILED DESCRIPTION

[0025] Various embodiments are generally directed to electronic montage systems arranged to generate a digital montage from heterogeneous data sources. The electronic
15 montage system may allow a user to generate a highly customized digital montage using content files generated by different software programs, such as application programs, for example.

[0026] The digital montage may include one or more tile objects comprising customized representations for an underlying content file. A tile object may comprise a
20 representation, agent or “teaser” for a content file. A tile object is a concise set of information from an associated content file rendered in a way that allows a content consumer to quickly and easily determine whether an associated content file is of interest, and merits closer inspection of the associated content file. A tile object may be constructed using information selectively extracted from a content file and formatted
25 according to a type definition specifically built for the content file. The type definition includes detailed information about a content file, such as file extensions, data schemas, formatting controls, embedded objects, embedded code, properties, scripts, and other file specific information. The type definition also includes a set of rules concerning types of information to extract from a content file, formatting of the extracted information, a
30 number of tile object versions to build, and so forth. In this manner, a wider range of content files may be used to author a digital montage, while constructing highly representative tile objects providing meaningful information for a viewer. This approach allows viewers to easily peruse the tile objects in a montage, identify a content file of interest among the many tile objects, and select a tile object to quickly retrieve the content

file for closer viewing. As a result, the embodiments can improve affordability, scalability, modularity, extendibility, or interoperability for an operator, device or network.

[0027] FIG. 1 illustrates a block diagram of a montage system 100 having a montage application 140. In one embodiment, for example, the montage system 100 and the montage application 140 may comprise various components, such as components 110, 130, for example. As used herein the terms “system” and “application” and “component” are intended to refer to a computer-related entity, comprising either hardware, a combination of hardware and software, software, or software in execution. For example, a component can be implemented as a process running on a processor, a processor, a hard disk drive, multiple storage drives (of optical and/or magnetic storage medium), an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a server and the server can be a component. One or more components can reside within a process and/or thread of execution, and a component can be localized on one computer and/or distributed between two or more computers as desired for a given implementation. The embodiments are not limited in this context.

[0028] In the illustrated embodiment shown in FIG. 1, the montage system 100 and the montage application 140 may be implemented by an electronic device. Examples of an electronic device may include without limitation a mobile device, a personal digital assistant, a mobile computing device, a smart phone, a cellular telephone, a handset, a one-way pager, a two-way pager, a messaging device, a computer, a personal computer (PC), a desktop computer, a laptop computer, a notebook computer, a handheld computer, a tablet computer, a server, a server array or server farm, a web server, a network server, an Internet server, a work station, a mini-computer, a main frame computer, a supercomputer, a network appliance, a web appliance, a distributed computing system, a multiprocessor system, a processor-based system, a gaming device, consumer electronics, programmable consumer electronics, a television, a digital television, a set top box, a wireless access point, a base station, a subscriber station, a mobile subscriber center, a radio network controller, a router, a hub, a gateway, a bridge, a switch, a machine, or combination thereof. Although the montage application 140 as shown in FIG. 1 has a limited number of elements in a certain topology, it may be appreciated that the montage application 140 may include more or less elements in alternate topologies as desired for a given implementation.

[0029] The components 110, 130 may be communicatively coupled via various types of communications media. The components 110, 130 may coordinate operations between each other. The coordination may involve the uni-directional or bi-directional exchange of information. For instance, the components 110, 130 may communicate information in the form of signals communicated over the communications media. The information can be implemented as signals allocated to various signal lines. In such allocations, each message is a signal. Further embodiments, however, may alternatively employ data messages. Such data messages may be sent across various connections. Exemplary connections include parallel interfaces, serial interfaces, and bus interfaces.

[0030] In the illustrated embodiment shown in FIG. 1, the montage system may include one or more content files 104-*c* and the montage application 140. The content files 104-*c* may comprise digital content generated by a software program, such as an application program, a web application, a web service, and so forth. The montage application 140 may use one or more selected content files 104-*c* to generate a montage 120. In one embodiment, the one or more content files 104-*c* may be manually selected by a user. In one embodiment, the one or more content files 104-*c* may be automatically selected by a software program, such as by using search results related to a given search term used by a search engine, or content files 104-*c* consistently visited by a user as stored in a browser history.

[0031] The montage application 140 may comprise, among other elements, an authoring component 110 and a presentation component 130. The authoring component 110 may be used by a user to author or produce a montage 120. A user authoring or producing a montage 120 may sometimes be referred to herein as a “content producer.” The presentation component 130 may be used by a user to view or navigate a montage 120. A user viewing or navigating a montage 120 may sometimes be referred to herein as a “content consumer.” The montage application 140 further includes other components as described in more detail with reference to FIGS. 2-11.

[0032] The authoring component 110 may generally manage authoring operations for the montage application 140, including generating user interface views and tools to allow a content producer to generate, create or otherwise author a montage 120. A montage 120 may comprise a singular composite or aggregation of digital information elements from selected content files 104-*c* to form a single composite digital information element. A montage 120 may comprise, for example, a composite document having different constituent digital information elements generated by heterogeneous applications, such as

applications files for application programs. Sometimes the constituent digital information elements are organized according to a central theme, such as those digital information elements relating to a business project, personal vacation, or a holiday. Often, the constituent digital information elements are lower-fidelity representations of the actual content files 104-*c* due to space limitations of the composite document. As such, a content consumer may select a constituent digital information element to retrieve a higher-fidelity version of the associated content file 104-*c* for more in-depth viewing.

[0033] In one embodiment, for example, the authoring component 110 may be arranged to provide a presentation surface 122 for a montage 120. The presentation surface 122 may have multiple presentation tiles 124-*a* defined or disposed on the presentation surface 122 in a certain topology. The authoring component 110 may receive control directives 102-*b* to associate certain content files 104-*c* with certain presentation tiles 124-*a*. The authoring component 110 may generate tile objects 126-*e* for the content files 104-*c* based on various content file types and type definitions associated with the content files 104-*c*. The authoring component 110 may store the presentation surface 122 and tile objects 126-*e* as part of a montage 120, which can then be published or distributed to various content consumers.

[0034] It is worthy to note that “*a*” and “*b*” and “*c*” and similar designators as used herein are intended to be variables representing any positive integer. Thus, for example, if an implementation sets a value for $a = 5$, then a complete set of presentation tiles 124-*a* may include presentation tiles 124-1, 124-2, 124-3, 124-4 and 125-5. The embodiments are not limited in this context.

[0035] The authoring component 110 may begin authoring operations to generate a montage 120 by providing a presentation surface 122 having multiple presentation tiles 124-*a*. A presentation surface 122 may comprise a two-dimensional (2D) or three-dimensional (3D) topological space of any defined size having a coordinate system and boundaries. Examples for a presentation surface 122 may comprise a document for a word processing program, a slide for a presentation program, a worksheet for a spreadsheet program, a note for a note program, a contact card for a personal information manager (PIM), and other spaces typically used by application programs.

[0036] A presentation tile 124-*a* may comprise a defined region of the presentation surface 122 designated for presenting a discrete set of information, such as a tile object 126-*e*. A defined region may be of any size, dimension or shape as desired for a given implementation. A given presentation surface 122 may have any number of presentation

tiles 124-*a*, and each presentation tile 124-*a* may have a set of definitions (e.g., size, shape, dimension, geometry) to ensure that all the presentation tiles 124-*a* fit within a given size for a presentation surface 122. Definitions for presentation tiles 124-*a* may dynamically change based on a presentation surface 122, set of content files 104-*c*, associations

5 between content files 104-*c* and a presentation tile 124-*a*, tile objects 126-*e* associated with content files 104-*c*, properties for a display, properties for a device, user preferences, and other factors. The embodiments are not limited in this context.

[0037] In one embodiment, a content producer may custom define a presentation surface 122 and presentation tiles 124-*a*. A user interface for the montage application 140 may
10 provide various controls specifically defined to modify characteristics of a presentation surface 122 and a set of presentation tiles 124-*a* on the presentation surface 122.

Examples of such controls may include without limitation drawing controls, dimension controls, size controls, width controls, height controls, pixel controls, refresh controls, and so forth. Alternatively, a content producer may select from any number of montage
15 templates providing different presentation surfaces and presentation tiles 124-*a*.

[0038] The authoring component 110 may receive control directives 102-*b* to associate certain content files 104-*c* with certain presentation tiles 124-*a*. The authoring component 110 may generate a user interface view and tools allowing a user to select a content file 104-*a*, and associate the content file 104-*a* with a presentation tile 124-*a*. For instance, a
20 user may use an input device such as a pointing device to select a content file 104-1 and drag the content file 104-1 over a presentation tile 124-1. A user selection may generate a control directive 102-*b* as a message or signal indicating the selection to the authoring component 110. Alternatively, control directives 120-*b* may be programmatically generated in accordance with a content selection algorithm. For instance, a content
25 selection algorithm may have a set of defined rules to automatically select content files 104-*c* from results of a search generated by a search engine, or by analysis of user browsing patterns. The embodiments are not limited in this context.

[0039] A content file 104-*c* may comprise any digital information element or digital content generated by a software program, such as an application program, a web
30 application, a web service, a client application, a server application, a system program, and so forth. Different software programs may generate different types of digital content. As such, digital content generated by different software programs may comprise heterogeneous digital content. Examples for a content file 104-*c* may include without limitation application files, such as a word processing file, a spreadsheet file, a

presentation file, a personal information manager (PIM) file, a database file, a publisher file, a drawing file, a note file, a message file, a project file, and so forth. Further examples for a content file 104-*c* may include multimedia files, such as an audio file, an image file, a video file, an audio/video (AV) file, an animation file, a game file, a markup file, a web page file, a social networking service (SNS) file, and so forth. It may be appreciated that these are merely a few examples of a content file 104-*c*, and embodiments are not limited to these examples.

[0040] In one embodiment, a content file 104-*c* may comprise a content file for a productivity suite of inter-related client applications, server applications and web services, designed for a particular operating system, such as a MICROSOFT® OFFICE productivity suite for MICROSOFT WINDOWS®, made by Microsoft Corporation, Redmond, Washington. Examples for client applications may include without limitation MICROSOFT WORD, MICROSOFT EXCEL®, MICROSOFT POWERPOINT®, MICROSOFT OUTLOOK®, MICROSOFT ACCESS®, MICROSOFT INFOPATH®, MICROSOFT ONENOTE®, MICROSOFT PROJECT, MICROSOFT PUBLISHER, MICROSOFT SHAREPOINT® WORKSPACE, MICROSOFT VISIO®, MICROSOFT OFFICE INTERCONNECT, MICROSOFT OFFICE PICTURE MANAGER, MICROSOFT SHAREPOINT DESIGNER, and MICROSOFT LYNC. Examples for server applications may include without limitation MICROSOFT SHAREPOINT SERVER, MICROSOFT LYNC SERVER, MICROSOFT OFFICE FORMS SERVER, MICROSOFT OFFICE GROOVE® SERVER, MICROSOFT OFFICE PROJECT SERVER, MICROSOFT OFFICE PROJECT PORTFOLIO SERVER, and MICROSOFT OFFICE PERFORMANCEPOINT® SERVER. Examples for web services may include without limitation MICROSOFT WINDOWS LIVE®, MICROSOFT OFFICE WEB APPLICATIONS, MICROSOFT OFFICE LIVE, MICROSOFT LIVE MEETING, MICROSOFT OFFICE PRODUCT WEB SITE, MICROSOFT UPDATE SERVER, and MICROSOFT OFFICE 365. The embodiments are not limited to these examples.

[0041] In one embodiment, a content file 104-*c* may comprise a content file personally authored by a same content producer of the montage application 140 to create a montage 120. For instance, assume a content producer is a project manager for a business project, and during the course of the business project, has authored various application files associated with the business project, such as a word processing file, a spreadsheet file, and a presentation file. The content producer may use the authoring component 110 of the

montage application 140 to create an executive report having tile objects 126-*e* for each file personally authored by the content producer.

[0042] The authoring component 110 may generate tile objects 126-*e* for selected content files 104-*c* based on various content file types for the content files 104-*c*. Once a content file 104-*c* has been associated with a presentation tile 124-*a*, the authoring component 110 may generate a tile object 126-*e* for the selected content file 104-*c*. In one embodiment, a single content file 104-*c* may be associated with a single presentation tile 124-*a*, thereby forming a one-to-one correspondence. In one embodiment, multiple content files 104-*c* may be associated with a single presentation tile 124-*a*, thereby forming a one-to-many correspondence.

[0043] A tile object 126-*e* may comprise a representation, agent or “teaser” for a content file 104-*c*. A tile object 126-*e* is a concise set of information from an associated content file 104-*c* rendered in a way that allows a content consumer to quickly and easily determine whether an associated content file 104-*c* is of interest, and merits closer inspection of the associated content file 104-*c*.

[0044] A tile object 126-*e* may be generated using a content portion 106-*d* retrieved from a content file 104-*c*. A content portion 106-*d* may comprise a subset of information derived or extracted from a complete set of information stored by a content file 104-*c*. One advantage of a montage 120 is that information from different content files 104-*c* may be presented on a single presentation surface 122. However, each content file 104-*c* may comprise a greater amount of information than can be presented within a defined region of a single presentation tile 124-*a*. For instance, if a content file 104-1 comprises a word processing document, the authoring component 110 may be unable to fit all the information (e.g., text, figures, images, drawings, embedded objects) contained within the word processing document within an available area or space of a presentation tile 124-1, even when miniaturized as a thumbnail. As such, the authoring component 110 may retrieve a subset of information from a set of information contained within the content source 104-1, format the subset of information to fit within a set of boundaries for the presentation tile 124-1, and store the formatted subset of information as a tile object 126-1. For example, the tile object 126-1 may comprise a combination of a title for the word processing document, a content producer (e.g., author) of the word processing document, and an image from the word processing document.

[0045] A tile object 126-*e* may also include, or be associated with, a reference (e.g., an address, pointer or link) to a corresponding content file 104-*c*. When a tile object 126-*e* is

selected by a user for closer inspection, the reference may be used to retrieve a corresponding content file 104-*c* to present a full-fidelity presentation of the content file 104-*c*. In one embodiment, the reference may be to the content file 104-*c* as stored in a local datastore. In this case, the reference may be used to retrieve the content file 104-*c* using peer-to-peer technology. In one embodiment, the reference may be to the content file 104-*c* stored in a remote datastore. In this case, the reference may be used to retrieve the content file 104-*c* using network storage and access technology.

[0046] In one embodiment, a single content file 104-*c* may be associated with a single presentation tile 124-*a*. In this case, a single tile object 126-*e* is presented in each presentation tile 124-*a*. In one embodiment, multiple content files 104-*c* may be associated with a single presentation tile 124-*a*. In this case, multiple tile objects 126-*e* may be presented in a single presentation tile 124-*a*. When rendered, a content consumer may use a selector tool provided by the presentation component 130 to navigate between multiple tile objects 126-*e* presented in different presentation tiles 124-*a*, and also between multiple tile objects 126-*e* presented in a single presentation tile 124-*a*, so that the content consumer can select a tile object 126-*e* of interest. For instance, assume a content producer associates pictures from corresponding content files 104-1 to 104-100 with the presentation tile 124-1. Thumbnails for the 100 pictures may be generated as tile objects 126-1 to 126-100, and sized to fit within a given dimension for the presentation tile 124-1. A selector tool may be used to navigate between the tile objects 126-1 to 126-100 to select and enlarge a given picture.

[0047] Once a user has completed authoring operations to associate different content files 104-*c* with different presentation tiles 124-*a* of a presentation surface 122, the authoring component 110 may store the presentation surface 122 and tile objects 126-*e* as part of a montage 120.

[0048] The presentation component 130 may generally manage presentation operations for the montage application 140, including generating user interface views and tools to present a montage 120 on an electronic display for an electronic device. In one embodiment, for example, the presentation component 130 may generate a first user interface view to present each tile object 126-*e* within each associated presentation tile 124-*a* on the presentation surface 122 of the montage 120. The presentation component 130 may receive control directives 132-*f* to select a tile object 126-*e*, and generate a second user interface view to present a content file 104-*c* corresponding to the selected tile object 126-*e*.

[0049] FIG. 2 illustrates a more detailed block diagram of the authoring component 110 of the montage application 140. The authoring component 110 may intelligently generate a tile object 126-*e* for an associated content file 104-*c* by retrieving certain portions of content from the content file 104-*c* based on a type definition for the content file 104-*c* type. For instance, the portion of content may comprise text from the content file 104-*c*, metadata for the content file 104-*c*, an object from the content file 104-*c*, or some combination thereof.

[0050] In one embodiment, a content file 104-*c* may be stored in a local datastore 210 implemented within a same electronic device implementing the montage application 140.

For example, a computing device may implement the montage application 140 using content files 104-1, 104-2 stored on a mass storage device of the computing device. In one embodiment, a content file 104-*c* may be stored in a remote datastore 212 implemented by a different electronic device as the one implementing the montage application 140. For example, a computing device may implement the montage application 140 using a content file 104-3 stored on a mass storage device of a server device.

[0051] In the illustrated embodiment shown in FIG. 2, the authoring component 110 may comprise or implement multiple type modules 202-*g*. Each type module 202-*g* may correspond to a content file type for a respective content file 104-*c*. Examples for a content file type for a content file 104-*c* may include without limitation application file types, such as a word processing file type, a spreadsheet file type, a presentation file type, a PIM file type, a database file type, a publisher file type, a drawing file type, a note file type, a message file type, and so forth. Further examples for a content file 104-*c* may include multimedia file types, such as an audio file type, an image file type, a video file type, an AV file type, an animation file type, a game file type, a markup file type, a web page type, and so forth. It may be appreciated that these are merely a few examples of a content file types, and embodiments are not limited to these examples.

[0052] A type module 202-*g* may retrieve information from a content file 104-*c* based on a type definition 204-*h* for a content file type, and generate a tile object 126-*e* based on the retrieved information and the type definition 204-*h*. A type definition 204-*h* may comprise a set of definitions, rules, properties, methods, events, coordinates or instructions to extract selected portions from a content file 104-*c*, and format the extracted portions within a defined region of a presentation tile 124-*a*. By implementing specific types definitions 204-*h* for specific content files 104-*c*, the authoring component 110 may

generate highly customized tile objects 126-*e* specifically designed for a particular context (e.g., business, personal) and associated set of content consumers. A type definition 204-*h* may be a default type definition provided with the montage application 140, or a user-defined type definition that is created using the montage application 140.

5 [0053] By way of example, assume a content file 104-1 is a word processing document 104-1, a type module 202-1 is for a word processing file type, and a type definition 204-1 is a set of definitions for the word processing file type. The type definition 204-1 may include various types of information used in creating a tile object 126-1. For instance, the type definition 204-1 may include supported file formats associated with different versions
10 of a word processing application, such as extensible markup language formats (e.g., .docx, .docm, .dotx, .dotm), binary formats (e.g., .doc, .dot), and open document formats (e.g., .odt). The type definition 204-1 may include security credentials (e.g., passwords, certificates, public or private keys) to access encrypted files. The type definition 204-1 may include tools to access embedded or loaded code for a file (e.g., macros, expansion
15 packs). The type definition 204-1 may include supported fields in a document (e.g., *Ask* field, *Author* field, *Database* field, *Fillin* field, *Includepicture* field, *Includetext* field, *Mailmerge* field). The type definition 204-1 may include rules to handle links for a document (e.g., linked objects, master documents, template references, linked cascading style sheet references). The type definition 204-1 may include rules to handle data sets
20 (e.g., mail merge data). The type definition 204-1 may include rules to handle object linking and embedding (OLE) objects. Other information for the type definition 204-1 is possible, and the embodiments are not limited in this context.

[0054] Further, the type definition 204-1 may contain a set of rules pertaining to types of information to retrieve from the content file 104-1. For instance, the type definition 204-1
25 may include three classes of information and associated rules, including a content and properties class (e.g., paragraphs or properties) from the content file 104-1, a content objects class (e.g., image, embedded object) for the content file 104-1, and a content pages class within the content file 104-1, or some combination thereof. It may be appreciated that any number of classes or categories may be defined for a given content file type.

30 [0055] In one embodiment, examples for the content and properties class may be illustrated in TABLE 1 as follows:

TABLE 1

<u>Content/Property</u>	<u>Description</u>
Title (property)	The title property of a document
Abstract	The abstract of a document (e.g., retrieved from a custom XML part)
Filename	The filename of the document
Author	The author of the document
Title (1 st instance of title style)	The first paragraph with Title style applied
First N Body Paragraphs	The first N body paragraphs within the document
First N Headings	The first N paragraph headings used within the document (e.g., using same rules to generate a TOC, such as ignore headings in textboxes, frames, etc.)

[0056] In one embodiment, examples for the content objects class may be illustrated in TABLE 2 as follows:

TABLE 2

<u>Object</u>	<u>Description</u>
1 st Image (not in table)	<p>The first image within the document that is not in a table</p> <ul style="list-style-type: none"> Image is filled and centered within the tile
1 st Image (filled and centered)	<p>The first image within the document (can be contained in a table)</p> <ul style="list-style-type: none"> Image is filled and centered within the tile
1 st Table	<p>The first table within the document</p> <ul style="list-style-type: none"> Table image is clipped to fit within the tile For a table that contains LTR language clipping will start from bottom right of table For a table that contains

	RTL language clipping will start from bottom left corner of table
1 st SmartArt® (filled and centered)	The first SmartArt graphic within the document <ul style="list-style-type: none"> • SmartArt image is filled and centered within the tile
1 st Chart (filled and centered)	The first chart within the document <ul style="list-style-type: none"> • Chart image is filled and centered within the tile
Table of Contents (TOC) (Web or Digital Layout)	The first TOC, as it appears in web (or digital) layout, within the document
1 st SmartArt (shrunk)	The first SmartArt graphic within the document <ul style="list-style-type: none"> • SmartArt image is shrunk and then centered to fit within the tile
1 st Chart (shrunk)	The first chart graphic within the document <ul style="list-style-type: none"> • Chart image is shrunk and then centered to fit within the tile
1 st Equation	The first equation within the document that is a display equation (not inline)
TOC (Print Layout)	The first TOC, as it appears in (shrunk) print layout, within the document. The TOC will be clipped to fit the dimension of the tile

[0057] In one embodiment, examples for the content pages class may be illustrated in TABLE 3 as follows:

TABLE 3

<u>Page</u>	<u>Description</u>
1 st Page (Shrunk Print Layout)	The 1 st page (non-cover page) in the document as represented in Shrunk Print Layout
1 st Page (Print Layout + shrunk)	The 1 st page (non-cover page) in the document as represented in Print Layout <ul style="list-style-type: none"> • The image is shrunk and then centered to fit within the tile
1 st Page (Web or Digital Layout)	The 1 st page (non-cover page) in the document as represented in Web (or Digital) Layout
Cover Page (Print Layout + shrunk)	The 1 st cover page in the document as represented in Print Layout <ul style="list-style-type: none"> • The image is shrunk and then centered to fit within the tile
1 st Page (Print Layout)	The 1 st page (non-cover page) in the document as represented in Print Layout <ul style="list-style-type: none"> • The image is filled and centered within the tile
Cover Page (Print Layout)	The 1 st cover page in the document as represented in Print Layout <ul style="list-style-type: none"> • The image is filled and centered with the tile
Cover Page (Shrunk Print Layout)	The 1 st cover page in the document as represented in Shrunk Print Layout

[0058] The authoring component 110 may use the type module 202-1 and associated type definition 204-1 to retrieve a content portion 106-1 from the content file 104-1 from the local datastore 210. The type module 202-1 may then organize and format the content portion 106-1 to generate the tile object 126-1. For instance, a rule for the type definition 204-1 may state that any text retrieved from within the document, such as the first N paragraphs, will retain style formatting as specified within a document. Another rule may be that content properties that are not actual text within a document will be formatted as

Normal style as defined within the document. Yet another rule may be that if the entire text of the content portion 106-1 cannot fit within the dimensions of the presentation tile 124-1 then an ellipsis “...” will be appended at the end of the text. These are merely some exemplary rules, and others are possible. The embodiments are not limited in this context.

- 5 [0059] In some cases, the type definition 204-1 may define a set of rules to create the tile object 126-1 from a combination of a content and properties class, a content object class, and a content page class, sometimes referred to informally as a “mashup.” This provides for a highly customized tile object 126-1 constructed to represent content of the content file 104-1.
- 10 [0060] In one embodiment, examples for different class combinations may be illustrated in TABLE 4 as follows:

TABLE 4

<u>Class Combination</u>	<u>Description</u>
Title + author + First N paragraphs	The title on one line, then author, then the first N body paragraphs that can fit within the tile
Title + author	The title on one line and then author
Title + First N paragraphs	The title on one line, and then the first N body paragraphs that can fit within the tile
Filename + author + First N paragraphs	If no title, then use the filename on one line, then author, then the first N body paragraphs that can fit within the tile
Filename + author	If no title, then use the filename on one line, and then author
Filename + First N paragraphs	If no title, then use the filename on one line, and then the first N body paragraphs that can fit within the tile
Title + 1 st image (not in table)	The title on one line and then the 1 st image, which is not in a table
Filename + 1 st image (not in table)	If no title, then use the filename on one line, and then the 1 st image, which is not in a table

[0061] The type definition 204-1 may also provide rules limiting the tile object 126-1 to a single class or type within a class. For instance, a rule may define the type module 202-1 to only use content in the form of text from the content file 104-1, or content objects in the form of images for the content file 104-1.

5 [0062] The type definition 204-1 may further identify a device to generate the tile object 126-1 for the content file 104-1. For instance, a rule may define the type module 202-1 to interact with a server device to generate and retrieve the tile object 126-1.

[0063] The type definition 204-1 may still further provide rules to generate a list of multiple versions of the tile object 126-1 for presentation to a user for final selection. For instance, a rule may generate P versions of the tile object 126-1, with P representing any positive integer (e.g., $P = 10$). A list of multiple versions of the tile object 126-1 may be generated in accordance with examples given in TABLE 5 as follows:

TABLE 5

<u>Tile Object Version</u>	<u>Class</u>
Abstract + 1 st image	Class Combination
First N paragraphs + 1 st image	Class Combination
Title + author + First N paragraphs	Class Combination
Filename + author + First N paragraphs	Class Combination
Title + First N paragraphs	Class Combination
Filename + First N paragraphs	Class Combination
Title + 1st image (not in table)	Class Combination
Filename + 1st image (not in table)	Class Combination
Title + author	Class Combination
Filename + author	Class Combination
1st Page (Shrunk Print Layout)	Page
Cover Page (Shrunk Print Layout)	Page
1st Page (Web or Digital Layout)	Page
Cover Page (Print Layout + shrunk)	Page
Abstract	Content/Property
Title (property)	Content/Property
First N Body Paragraphs	Content/Property
Filename	Content/Property
1st Image (filled and centered)	Content Object

1st Chart (filled and centered)	Content Object
1st SmartArt (filled and centered)	Content Object
TOC (Web or Digital Layout)	Page
1st Table	Content Object
1st Image (not in table)	Content Object
1st Chart (shrunk)	Content Object
1st SmartArt (shrunk)	Content Object
1st Equation	Content Object
Title (1st instance of title style)	Content/Property
1st Page (Print Layout + shrunk)	Page
Cover Page (Web or Digital Layout)	Page
TOC (Print Layout)	Content Object
Author	Content/Property
First N Headings	Content/Property

[0064] The type module 202-*g* may generate a tile object 126-*e* using additional information to that provided by a type definition 204-*h*. For instance, a type module 202-*g* may receive as input information about a presentation tile 124-*a* selected for a content file 104-*a*. A type module 202-*g* may receive information such as a location, size, shape, dimension, geometry, boundaries, adjacent presentation tiles 124-*a*, adjoining presentation tiles 124-*a*, and so forth. For instance, if a type module 202-1 is using type definition 204-1 to construct a tile object 126-1 that is too large for current dimensions of a presentation tile 124-1, the type module 202-1 may use information about adjacent or adjoining presentation tiles 124-2, 124-3 to determine whether the current dimensions for the presentation tile 124-1 may be increased to accommodate a larger tile object 126-1, and the current dimensions for the presentation tiles 124-2, 124-3 may be decreased accordingly. The authoring component 110 may implement various fitting algorithms to accommodate such cases.

[0065] FIG. 3A illustrates an embodiment of a user interface view 300 generated by the authoring component 110. The user interface view 300 may include a presentation surface 122 with a number of empty presentation tiles 124-*a* before any tile objects 126-*e* have been created for the content files 104-*c*. The user interface view 300 may also include various graphical user interface (GUI) tools 302-*s* for receiving control directives 102-*b* from an author, such as a copy command 302-1, a cut command 302-2, and a paste

command 302-3. Other GUI tools 302-*s* may be used beyond those shown in FIG. 3A, such as a move command, a paste special command, and so forth.

[0066] The user interface view 300 may further include a file navigation tool 304. The file navigation tool 304 may comprise a file manager application for a given OS designed for navigating a file system with stored data files. For instance, the file navigation tool 304 may be used to navigate and present various content files 104-*c* from the local datastore 210 or the remote datastore 212. An example of a file navigation tool 304 may include MICROSOFT WINDOWS EXPLORER designed for a MICROSOFT WINDOWS operating system. Other file navigation tools may be used as well.

[0067] During authoring operations, the authoring component 110 may receive a control directive 102-*b* to associate the content file 104-1 with the presentation tile 124-1 from an input device, such as a pointing device 308 or a gesture 310 on a touch-screen display, for example. For instance, a content producer may create a montage 120 by utilizing the file navigation tool 304 to navigate and present content files 104-*c* stored by one or both datastores 210, 212. The content producer may use various input devices, such as a pointing device 308 or a gesture 310 on a touch-screen display, to select a content file 104-*c* for a presentation tile 124-*a*. As shown, the pointing device 308 may be used to select the content file 104-1 and use a drag-and-drop technique to move the content file 104-1 over the presentation tile 124-1. Alternatively, the GUI input tools 302 may be used to perform similar operations.

[0068] FIG. 3B illustrates an embodiment of a user interface view 320 generated by the authoring component 110. The user interface view 320 may include a presentation surface 122 with a filled presentation tile 124-1 after a tile object 126-1 has been created for the content file 104-1. Once the content producer selects the content file 104-1 and associates it with the presentation tile 124-1, the authoring component 110 may identify a content file type for the content file 104-1. In this example, the authoring component 110 identifies the content file type for the content file 104-1 as an application file type, and more particularly, a word processing file. The authoring component 110 may utilize the type module 202-1 and the type definition 204-1 specifically designed for generating tile objects from word processing files. The type module 202-1 may use the type definition 204-1 to retrieve the appropriate content portion 106-1 from the content file 104-1, with the content portion 106-1 comprising information of a content and properties class, a content objects class, a content pages class, or a class combination. The type module 202-

1 may use the content portion 106-1 to generate the tile object 126-1, and present the tile object 126-1 within boundaries of the presentation tile 124-1.

[0069] FIG. 3C illustrates an embodiment of a user interface view 340 generated by the authoring component 110. The user interface view 340 illustrates construction of a tile object 126-*e* once a given content file 104-*c* has been associated with a corresponding presentation tile 124-*a*.

[0070] As previously described, there are occasions where it is desirable to have some kind of meaningful representation for a content file 104-*c*, such as a MICROSOFT OFFICE document, a web site, maps, feeds, articles, weblogs (blogs), and so forth. A tile object 126-*e* provides a custom representation for a content file 104-*c* that teases or entices a user to read or view content from a content file 104-*c*. To be effective, one desirable feature of a tile object 126-*e* is that it should be readable and compelling as a teaser or preview of a content file 104-*c*. In addition, a tile object 126-*e* should be generated automatically and without any mandatory user input or interaction. In some cases, however, user interface controls (e.g., GUI input tools 302) may be presented to optionally solicit user input.

[0071] To initiate tile creation operations, the authoring component 110 may receive a control directive 102-*b* to associate a content file 104-*c* with a presentation tile 124-*a* of a presentation surface 122 of a digital montage 120. The authoring component 110 may identify a content file type for the content file 104-*c*, and generate a tile object 126-*e* with information from the content file 104-*c* in accordance with the content file type.

[0072] In various embodiments, the authoring component 110 may automatically generate a tile object 126-*e* having a tile object surface 346 with select information retrieved from a content file 104-*c* as contained or presented within one or more tile object containers 342-*u*. In one embodiment, the selected information may comprise content from a content file 104-*c* or a content portion retrieved from a content file 104-*c*, such as a content portion 106-1 for content file 104-1, for example.

[0073] Similar to a presentation tile 124-*a* of a presentation surface 122, a tile object container 342-*u* may comprise a defined region of the tile object surface 346 designated for presenting a discrete set of information, such as a content portion or a content portion clip 344-*v*. A defined region may be of any size, dimension or shape as desired for a given implementation. A given tile object surface 346 may have any number of tile object containers 342-*u*, and each tile object container 342-*u* may have a set of definitions (e.g., size, shape, dimension, geometry) to ensure that all the tile object containers 342-*u* fit

within a given size for a tile object surface 346. Definitions for tile object container 342-*u* may dynamically change based on other tile object containers 342-*u*, a tile object surface 346, associations between a content portion or content portion clips 344-*v* and a tile object container 342-*u*, one or more presentation tiles 124-*a*, a presentation surface 122, a set of
5 content files 104-*c*, associations between content files 104-*c* and a presentation tile 124-*a*, tile objects 126-*e* associated with content files 104-*c*, properties for a display, properties for a device, user preferences, and other factors. The embodiments are not limited in this context.

[0074] In one embodiment, a content producer may custom define a tile object surface 346 and tile object containers 342-*u*. A user interface for the montage application 140
10 may provide various controls (e.g., GUI input tools 302) specifically defined to modify characteristics of a tile object surface 346 and a set of tile object containers 342-*u* on the tile object surface 346. Examples of such controls may include without limitation drawing controls, dimension controls, size controls, width controls, height controls, pixel controls,
15 refresh controls, and so forth. Alternatively, a content producer may select from any number of tile templates providing different tile object surfaces and tile object containers 342-*u*.

[0075] In one embodiment, for example, the authoring component 110 may select information from a content file 104-*c* suitable for a respective tile object container 342-*u*.
20 The authoring component 110 may select such information, for example, based on a content file type for a content file 104-*c*. As described in detail with reference to FIG. 2, the authoring component 110 comprises multiple type modules 202-*g* corresponding to each content file type, with each type module 202-*g* arranged to retrieve a set of information from a content file 104-*c* in a specific manner based on a type definition 204-*h*
25 for the type module 202-*g*. The authoring component 110 may identify a content file type for the content file 104-*c*, use a type module 202-*g* and associated type definition 204-*h* to select information from the content file 104-*c*, and generate a tile object 126-*e* with the selected information.

[0076] In one embodiment, the authoring component 110 may execute a fitting
30 algorithm designed to fit information from a content file 104-*c* within one more tile object containers 342-*u* to form filled containers 348-*w* in accordance with a set of container definitions for the corresponding tile object containers 342-*u* and the fitting algorithm. In one embodiment, container definitions may comprise part of a type definition 204-*h* of a type module 202-*g*. Additionally or alternatively, the container definitions may comprise

additional information to that provided by a type definition 204-*h*. For instance, a type module 202-*g* may receive as input information about a tile object container 342-*u* of a presentation tile 124-*a* selected for a content file 104-*c*. A type module 202-*g* may receive information such as a location, size, shape, dimension, geometry, boundaries, adjacent tile object containers 342-*u*, adjoining tile object containers 342-*u*, and so forth. For instance, if a type module 202-1 is using type definition 204-1 to construct a tile object 126-1 that is too large for current dimensions of a tile object container 342-1 of a presentation tile 124-1, the type module 202-1 may use information about adjacent or adjoining tile object container 342-2, 342-3 to determine whether the current dimensions for the tile object container 342-1 may be increased to accommodate a larger amount of information from the content portion 106-1, and the current dimensions for the tile object container 342-2, 342-3 may be decreased accordingly. The authoring component 110 may implement various fitting algorithms to accommodate such cases.

[0077] There may be occasions where it is desirable to allow users to choose a tile template for a given tile object 126-*e* from a set of automatically generated tile templates available for a particular content file 104-*c*. For instance, if a user does not like any of the tile templates or automatically generated tile objects 126-*e*, the user may use a set of user interface controls to edit a tile template or specific tile object 126-*e* to customize content selected for a tile object 126-*e*. An example of user interface controls may include, for example, GUI input tools 302.

[0078] As described with reference to FIG. 3B, once the content producer selects the content file 104-1 and associates it with the presentation tile 124-1, the authoring component 110 may initiate creation, construction, or generation of a tile object 126-1 to represent content contained within the content file 104-1.

[0079] For instance, the authoring component 104-1 may identify a content file type for the content file 104-1. In this example, the authoring component 110 identifies the content file type for the content file 104-1 as an application file type, and more particularly, a word processing file. The authoring component 110 may utilize the type module 202-1 and the type definition 204-1 specifically designed for generating tile objects from word processing files. The type module 202-1 may use the type definition 204-1 to retrieve the appropriate content portion 106-1 and/or content portion clip 344-*v* from the content file 104-1, with the content portion 106-1 comprising information of a content and properties class, a content objects class, a content pages class, or a class combination. The type module 202-1 may use the content portion 106-1 and/or the content portion clips 344-*v* to

generate one or more filled containers 348-*w* for the tile object 126-1. The type module 202-1 may then present the filled containers 348-*w* within boundaries for the tile object 126-1.

[0080] Referring again to FIG. 3C, the user interface view 340 may illustrate a case where a content file 104-1 has been associated with a presentation tile 124-1 as described with reference to FIGS. 3A, 3B. More particularly, the user interface view 340 illustrates construction of a tile object 126-1 once a given content file 104-1 has been associated with a corresponding presentation tile 124-1. As shown in FIG. 3C, the user interface view 340 illustrates a tile object 126-1 with a filled container 348-1 containing a content portion clip 344-1 from a content portion 106-1 of the content file 104-1 during creation of the tile object 126-1 for the content file 104-1. For instance, the authoring component 110 may extract one or more content portion clips 344-*v* from the content portion 106-1 retrieved from the content file 104-1. The type definition 204-1 may contain a set of rules pertaining to types of information to retrieve from the content file 104-1. For instance, the type definition 204-1 may include three classes of information and associated rules, including a content and properties class (e.g., paragraphs or properties) from the content file 104-1, a content objects class (e.g., image, embedded object) for the content file 104-1, and a content pages class within the content file 104-1, or some combination thereof. The authoring component 110 may use the rules provided by the type definition 204-1 to retrieve selected content portion clips 344-*v* from the content portion 106-1 of the content file 104-1. The user interface view 340 illustrates a case where a content portion clip 344-1 is retrieved from the content portion 106-1 and placed within a corresponding tile object container 342-1 to form filled container 348-1. The authoring component 110 may continue retrieving selected content portion clips 344-*v* from the content portion 106-1 to create additional filled containers 348-2 to 348-*w* in accordance with the rules provided by the type definition 204-1 until the tile object 126-1 is completely filled.

[0081] FIG. 4 illustrates an example of the authoring component 110 generating the tile object 126-1. As shown, the content file 104-1 may comprise various types of information of the content and properties class, including a title 402, a first paragraph 404, a second paragraph 406, and various metadata 408. The content file 104-1 may further comprise various types of information of the content objects class, including an image 410, a bar chart 412, and an equation 414. The type definition 204-1 may include five rules, including a first rule to use a specific tile template labeled "Tile Template 1," a second rule to retrieve a title 402, a third rule to retrieve an author from metadata 408, a fourth

rule to retrieve a first N paragraphs 404, 406 (e.g., $N = 2$), and a fifth rule to retrieve a first graph, which in this case is the bar chart 412. The type module 201-1 may use the type definition 204-1 to retrieve the content portion 106-1 from the content file 104-1 according to rules 1-5 of the type definition 204-1, and generate the tile object 126-1, which is
5 presented as a user interface view with the specific information of the content portion 106-1 formatted according to “Tile Template 1.”

[0082] FIG. 5 illustrates an embodiment of a messaging system 500 suitable for publishing or distributing a montage 120 generated by the montage application 140. A content producer may generate a montage 120 using the montage application 140 using
10 various user interface views provided by the user interface component 538. The user interface component 538 may comprise a native user interface component for the montage application 140, or a user interface component for an OS executing the montage application 140 (e.g., MICROSOFT WINDOWS). Once a montage 120 has been generated, a content producer may distribute the montage 120 to various content
15 consumers using a publishing model, a messaging model, or a combination of a publishing model and a messaging model.

[0083] In one embodiment, the montage application 140 may use a publishing component 532 to publish a montage and associated content files 104- c from a local datastore 210 to the remote datastore 212. The remote datastore 212 may be implemented
20 as part of a network storage server 550 accessible by a network service, such as a social networking service (SNS), for example. Content consumers may access the network service to view the network service versions.

[0084] In one embodiment, the montage application 140 may use a native message component 534 to send a montage 120 and associated content files 104- c as a message 516
25 and message attachments via a messaging architecture, such as a message server 540. Content consumers may access and view the message versions. Alternatively, the montage application 140 may use an external (non-native) message application 542- k .

[0085] In one embodiment, the montage application 140 may use a combination of both the publishing model and the messaging model, by publishing a montage 120 and
30 associated content files 104- c to a network service, receive links 518- n for network versions of the montage 120 and associated content files 104- c , and send a message 516 with the links 518- n . Content consumers may access the message 516, select a link 518- n , and view the network version of the montage 120. Further, content consumers may select

a tile object 126-*e* of the montage 120 to view the network version of the content file 104-*c* associated with the selected tile object 126-*e*.

[0086] The montage application 140 may use a security component 536 to manage permissions and access to a montage 120 and associated content files 104-*c* by content consumers. The security component 536 may manage accounts, authentication information, authorization information, security information (e.g., encryption/decryption algorithms, security keys, certificates, etc.), permission levels, and so forth. In one embodiment, the security component 536 may receive a control directive from an input device representing a command from a content producer to authorize communicating content files 104-*c* from the local datastore 210 to the remote datastore 212 for the network storage server 550 accessible by a network service.

[0087] In the illustrated embodiment shown in FIG. 5, the messaging system 500 may comprise multiple computing devices 510-*j*, a message server 540 and a network storage server 550 all communicating over a network 530. The computing devices 510-*j* may each implement the montage application 140 and/or one or more message applications 542-*k*. Although the messaging system 500 as shown in FIG. 5 has a limited number of elements in a certain topology, it may be appreciated that the messaging system 500 may include more or less elements in alternate topologies as desired for a given implementation.

[0088] The network 530 may comprise a communications framework designed to communicate information between the various devices of the messaging system 500. The network 530 may implement any well-known communications techniques, such as techniques suitable for use with packet-switched networks (e.g., public networks such as the Internet, private networks such as an enterprise intranet, and so forth), circuit-switched networks (e.g., the public switched telephone network), or a combination of packet-switched networks and circuit-switched networks (with suitable gateways and translators).

[0089] The message server 540 may comprise or employ one or more server computing devices and/or server programs that operate to perform various methodologies in accordance with the described embodiments. For example, when installed and/or deployed, a server program may support one or more server roles of the server computing device for providing certain services and features. Exemplary message server 540 may include, for example, stand-alone and enterprise-class server computers operating a server OS such as a MICROSOFT OS, a UNIX® OS, a LINUX® OS, or other suitable server-based OS. Exemplary server programs may include, for example, communications server programs such as MICROSOFT OFFICE COMMUNICATIONS SERVER (OCS) for

managing incoming and outgoing messages, messaging server programs such as MICROSOFT EXCHANGE SERVER for providing unified messaging (UM) for e-mail, voicemail, VoIP, instant messaging (IM), group IM, enhanced presence, and audio-video conferencing, and/or other types of programs, applications, or services in accordance with

5 the described embodiments.

[0090] The network storage server 550 may also comprise or employ one or more server computing devices and/or server programs that operate to perform various methodologies in accordance with the described embodiments. For example, when installed and/or deployed, a server program may support one or more server roles of the server computing
10 device for providing certain services and features. Exemplary network storage server 550 may include, for example, stand-alone and enterprise-class server computers operating a server OS such as a MICROSOFT OS, a UNIX OS, a LINUX OS, or other suitable server-based OS. Exemplary server programs may include, for example, network storage server programs such as MICROSOFT LIVE providing online network storage of documents and
15 files, including multimedia or media files such as images, photographs, photo albums, videos, video albums, and so forth. Exemplary server programs may further include, for example, network application programs such as social networking application programs, search applications, document management programs, weblogs (blogs), word processing programs, spreadsheet programs, database programs, drawing programs, document sharing
20 programs, message applications, web services, web applications, web server, and/or other types of programs, applications, or services in accordance with the described embodiments.

[0091] The computing devices 510-*j* may each comprise a processor 502 and a memory 504 communicatively coupled to the processor 502. The processor 502 and the memory
25 504 may each be communicatively coupled to a communication interface 509. An exemplary architecture and examples for computing devices 510-*j* may be described with reference to FIG. 10.

[0092] The communication interface 509 may comprise or implement various communication techniques to allow the computing devices 510-*j* to communicate with
30 each other and the other devices of the messaging system 500 via the network 530. For instance, the various devices of the messaging system 500 may each include a communication interface 509 that implements various types of standard communication elements designed to be interoperable with the network 530, such as one or more communications interfaces, network interfaces, network interface cards (NIC), radios,

wireless transmitters/receivers (transceivers), wired and/or wireless communication media, physical connectors, and so forth. By way of example, and not limitation, communication media includes wired communications media and wireless communications media.

Examples of wired communications media may include a wire, cable, metal leads, printed circuit boards (PCB), backplanes, switch fabrics, semiconductor material, twisted-pair wire, co-axial cable, fiber optics, a propagated signal, and so forth. Examples of wireless communications media may include acoustic, radio-frequency (RF) spectrum, infrared and other wireless media.

[0093] In various embodiments, the communication interface 509 may comprise multiple different types of transports 512-*m*. Each of the transports 512-*m* may implement or utilize a same or different set of communication parameters to communicate information between the various devices of the messaging system 500. In one embodiment, for example, each of the transports 512-*m* may implement or utilize a different set of communication parameters to communicate information between the computing devices 510-*j* and the message server 540. Some examples of communication parameters may include without limitation a communication protocol, a communication standard, a radio-frequency (RF) band, a radio, a transmitter/receiver (transceiver), a radio processor, a baseband processor, a network scanning threshold parameter, a radio-frequency channel parameter, an access point parameter, a rate selection parameter, a frame size parameter, an aggregation size parameter, a packet retry limit parameter, a protocol parameter, a radio parameter, modulation and coding scheme (MCS), acknowledgement parameter, media access control (MAC) layer parameter, physical (PHY) layer parameter, and any other communication parameters affecting operations for the communication interface 509 implemented by the computing devices 510-*j*. The embodiments are not limited in this context.

[0094] In various embodiments, the communication interface 509 of the computing device 510-1 may implement different communication parameters offering varying bandwidths or communications speeds. For instance, the transport 512-1 may comprise a high-speed interface implementing suitable communication parameters for high-speed communications of information to the network 530, while the transport 512-2 may comprise a low-speed interface implementing suitable communication parameters for lower-speed communications of information to the network 530.

[0095] With respect to wired communications, for example, the transport 512-1 may comprise a network interface designed to communicate information over a packet-

switched network such as the Internet. The transport 512-1 may be arranged to provide data communications functionally in accordance with different types of wired network systems or protocols. Examples of suitable wired network systems offering data communication services may include the Internet Engineering Task Force (IETF)

5 Transmission Control Protocol (TCP) and the Internet Protocol (IP) suite of communications standards, the User Datagram Protocol (UDP), the Datagram Congestion Control Protocol (DCCP), the Stream Control Transmission Protocol (SCTP), the Resource Reservation Protocol (RSVP), the Explicit Congestion Notification (ECN) protocol, the Open Shortest Path First (OSPF) suite of protocols, Reliable Transport

10 Protocol (RTP), the IETF Real-Time Transport Protocol (RTP), and so forth. The transport 512-2 may be arranged to provide data communications in accordance with different message protocols, such as the Simple Mail Transfer Protocol (SMTP), extended SMTP (ESMTP), Post Office Protocol (POP), POP3, the Internet Message Access Protocol (IMAP), Multipurpose Internet Mail Extensions (MIME) protocol, Unix-to-Unix

15 Copy (UUCP) protocol, the International Telecommunication Union (ITU) suite of protocols such as the ITU-T X.400 protocol, and so forth. It may be appreciated that other wired communications techniques may be implemented, and the embodiments are not limited in this context.

[0096] With respect to wireless communications, for example, the transport 512-1 may

20 comprise a radio designed to communicate information over a wireless local area network (WLAN). The transport 512-1 may be arranged to provide data communications functionality in accordance with different types of wireless network systems or protocols. Examples of suitable wireless network systems offering data communication services may include the Institute of Electrical and Electronics Engineers (IEEE) 802.xx series of

25 protocols, such as the IEEE 802.11a/b/g/n series of standard protocols and variants (also referred to as “WiFi”), the IEEE 802.16 series of standard protocols and variants (also referred to as “WiMAX”), the IEEE 802.20 series of standard protocols and variants, and so forth. The transport 512-2 may comprise a radio designed to communication

information across data networking links provided by one or more cellular radiotelephone

30 systems. Examples of cellular radiotelephone systems offering data communications services may include GSM with General Packet Radio Service (GPRS) systems (GSM/GPRS), CDMA/1xRTT systems, Enhanced Data Rates for Global Evolution (EDGE) systems, Evolution Data Only or Evolution Data Optimized (EV-DO) systems, Evolution For Data and Voice (EV-DV) systems, High Speed Downlink Packet Access

(HSDPA) systems, High Speed Uplink Packet Access (HSUPA), and so forth. It may be appreciated that other wireless techniques may be implemented, and the embodiments are not limited in this context.

[0097] In various embodiments, the communication interface 509 of the computing device 510-1 may implement a same set of communication parameters offering identical or substantially similar bandwidths or communications speeds. However, the transports 512-1, 512-2 may be utilized by the montage application 140 and/or the message application 542-1 at different points in time. In one embodiment, for instance, the montage application 140 may communicate a montage 120 and one or more content files 104-*c* for the montage 120 during a first time interval, and the montage application 140 and/or the message application 542-1 may communicate a message 516 with information pertaining to the montage 120 and/or supporting content files 104-*c* during a second time interval. In one embodiment, for example, the first and second time intervals may be completely discontinuous, where a start time and an end time for the first time interval are before a start time for the second time interval. In one embodiment, for example, the first and second time intervals may be partially overlapping, where a start time for the first time interval is before a start time for the second time interval but the end time for the first time interval is after the start time for the second time interval. The embodiments are not limited in this context.

[0098] The computing devices 510-*j* may each implement the montage application 140 with the message component 534 and/or one or more message applications 542-*k* arranged to communicate various types of messages in a variety of formats. One embodiment will be described with reference to the message applications 542-*k* for the messaging model, although such descriptions may apply to other embodiments utilizing the message component 534 of the montage application 140.

[0099] Each of the message applications 542-*k* may be representative of a particular kind of transport, enabling handling of messages of particular types and formats for the particular application. The message applications 542-*k* may comprise without limitation a facsimile application, a video message application, an instant messaging (IM) application, a chat application, an electronic mail (email) application, a short message service (SMS) application, a multimedia message service (MMS) application, a social network system (SNS) application, and so forth. It is to be understood that the embodiments are not limited in this regard and that the message applications 542-*k* may include any other type of messaging or communications application which is consistent with the described

embodiments. It also is to be appreciated that the computing devices 510-*j* may each implement other types of applications in addition to message applications 542-*k* which are consistent with the described embodiments.

[00100] As shown in FIG. 5, for example, the computing devices 510-1, 510-2 implement
5 respective message applications 542-1, 542-2. The message applications 542-1, 542-2
may generally operate to generate, send, receive, update, modify and otherwise manage
messages for the computing devices 510-1, 510-2. It may be appreciated that the
implementation details shown for the computing device 510-1 and its message application
542-1 as described herein also applies to the computing device 510-2 and its respective
10 message application 542-2.

[00101] In one embodiment, the message applications 542-1, 542-2 are implemented as
stand-alone client-based applications stored and executed by local resources provided by
the computing devices 510-1, 510-2, such as the processor 502 and the memory 504 of the
computing device 510-1, rather than network based message applications implemented on
15 network devices and accessed by the computing devices 510-1, 510-2 via a web browser.
In one embodiment, the message applications 542-1, 542-2 may comprise distributed
applications suitable for distributed processing and partially executing on local resources
for the computing devices 510-1, 510-2 and partially executing on network resources.
Additionally or alternatively, the message applications 542-1, 542-2 may comprise
20 network based message applications implemented on network devices and accessed by the
computing devices 510-1, 510-2 via a web browser. The embodiments are not limited in
this context.

[00102] In one embodiment, for example, the message application 542-1 may be arranged
to communicate a message 516 over a transport 512-2. The message 516 may include one
25 or more embedded links 518-*n* for a montage 120 and/or one or more content files 104-*c*
and/or a montage 120 when communicated over the transport 512-2. The one or more
embedded links 518-*n* may comprise, for example, a reference to the montage 120 and/or
the one or more content files 104-*c* as stored on the network storage server 550 and
accessible by a message sender or a message recipient.

[00103] Each of the links 518-*n* may comprise a reference or pointer to stored montage
30 120 and content files 104-*c* that a user can directly follow, or that is followed
automatically by a program. References are data types that refer to a referent (e.g., stored
montage 120 and content files 104-*c* such as an object, file, data item, and so forth)
elsewhere in memory of a device (e.g., a file server) and are used to access the referent.

Generally, a reference is a value that enables a program to directly access the referent. The referent may be stored on a same device as the reference or a different device as the reference. Most programming languages support some form of reference. Examples for the links 518-*n* may include without limitation hypertext and hyperlinks, such as those
5 used by the World Wide Web (WWW). Hypertext is text with hyperlinks. A hyperlink typically comprises an anchor, which is a location within a message from which the hyperlink can be followed. The target of a hyperlink is the stored montage 120 and/or content file 104-*c* to which the hyperlink leads. The user can follow the link when its anchor is shown by activating it in some way, such as by touching it (e.g., with a touch
10 screen display) or clicking on it with a pointing device (e.g., a mouse). When a link 518-*n* is activated its target is displayed, via a web browser or an application program.

[00104] As previously described, the montage application 140 may use a hybrid of both the publishing model and the messaging model, by publishing a montage 120 and associated content files 104-*c* to the remote datastore 212 of the network storage server
15 550, receive links 518-*n* for network versions of the montage 120 and associated content files 104-*c*, and send a message 516 with the links 518-*n*. Content consumers may access a message 516, select a link 518-*n*, and view the network version of the montage 120. Further, content consumers may select a tile object 126-*e* of the montage 120 to view the network version of the content file 104-*c* associated with the selected tile object 126-*e*.

20 This hybrid model may be described in more detail with reference to FIG. 6.

[00105] FIG. 6 illustrates an embodiment of a message flow for the messaging system 500. As shown in FIG. 6, the publishing component 532 may publish a montage 120 and associated content files 104-*c* to a network service 652. The publishing component 532 may send the montage 120 and associated content files 104-*c* to the network storage server
25 550 over the transport 512-1 as indicated by arrow 602. As a high-speed transport, the transport 512-1 may have sufficient bandwidth to transport larger file size typically associated with the content files 104-*c*, relative to a message size for a message 516, for example.

[00106] The network storage server 550 may receive the montage 120 and the associated
30 content files 104-*c*, and store them in the remote datastore 212. The network storage server 550 may then send links 518-*n* to the montage 120 and the content files 104-*c* as stored in the remote datastore 212, as indicated by arrow 604.

[00107] The publishing component 532 may receive the links 518-*n*, and forward the links to the authoring component 110. The authoring component 110 may associate a link

518-*n* with each tile object 126-*e*, and update the montage 120 with the associations so that a content consumer can select a tile object 126-*e* and access an associated content file 104-*c* from the remote datastore 212 for deeper viewing of the content file 104-*c*.

[00108] In one embodiment, consistent with the publishing model, the authoring

5 component 110 may send the updated montage 120 to the publishing component 532. The publishing component 532 may then publish the updated montage 120 and the links 518-*n* on the network service 652 as indicated by arrow 606. For instance, the network service 652 may comprise a social networking service (SNS), and content consumers having a defined relationship with the content producer (e.g., friends) may access the montage 120 and associated content files 104-*c* via the published links 518-*n*. In another example, the
10 network service 652 may provide an account to the content producer, which can be enabled for viewing by content consumers according to permissions set for the network service 652 and/or the security component 536. A content consumer may access the network service 652 via the computing device 510-2, select the link 518-*n* to a file for the
15 montage 120 via a web browser, request the montage 120 from the remote datastore 212 as indicated by arrow 610. The network service 652 may receive the request, and send the montage 120 to the computing device 510-2 as indicated by arrow 612. The computing device 510-2 may present the montage 120 as a user interface view of the presentation surface 122 with the tile objects 126-*e* in the presentation tiles 124-*a*. The computing
20 device 510-2 may generate a user interface view as a web page for a web browser, or as a user interface view of an application program, such as the montage application 140 or a montage viewer designed to view a montage 120.

[00109] In one embodiment, consistent with the messaging model, the authoring

component 110 may forward the updated montage 120 and links 518-*n* to the message
25 component 534 (or message application 542-1). The message component 534 may receive as inputs the links 518-*n* and message content 620. The message content 620 may comprise a message from the content producer. The message component 534 may generate a message 516 with the message content 620 and the links 518-*n*. Additionally or alternatively, the message 516 may optionally include the montage 120 and/or certain
30 content files 104-*c* depending on file size restrictions and available bandwidth on the message transport 512-2. The montage 120 may comprise a full-fidelity version of the montage 120, or a lower-fidelity version of the montage 120 more suitable for available bandwidth of the transport 512-2, such as a thumbnail version of the montage 120.

[00110] The message component 534 may send the message 516 over the transport 512-2 to the message application 542-2 of the computing device 510-2 via the message server 540 as indicated by arrow 608. A content consumer may open the message 516, select the link 518-*n* to the montage 120, and request the montage 120 from the remote datastore 212 as indicated by arrow 610. The network service 652 may receive the request, and send the montage 120 to the computing device 510-2 as indicated by arrow 612. The computing device 510-2 may present the montage 120 as a user interface view of the presentation surface 122 with the tile objects 126-*e* in the presentation tiles 124-*a*. The computing device 510-2 may generate a user interface view as a web page for a web browser, or as a user interface view of an application program, such as the montage application 140 or a montage viewer designed to view a montage 120.

[00111] FIG. 7A illustrates an embodiment of a user interface view 700 of an exemplary message 516. As described with reference to FIG. 6, a content producer may use the montage application 140 and/or the messaging application 542-1 to generate and send a message 516 with a montage 120 or a reference to the montage 120. A content consumer may receive the message 516 via the computing device 510-2 and the messaging application 542-2. The user interface view 700 provides an example for a message 516 implemented as an email message.

[00112] The message 516 may comprise a ribbon bar 702 having various command elements for an email, such as a *Reply* button, a *Reply to All* button, a *Forward* button, a *Delete* button, a *Move to Folder* button, and a *Create Rule* button, among others. The message 516 may further comprise an address bar 704 with addressing information, and a message body 706. The message body 706 may comprise a surface having montage file thumbnail 720 and a link 518-1 to the montage 120 as stored in the remote datastore 212. The montage file thumbnail 720 may comprise a lower-fidelity version of the montage 120.

[00113] A content consumer may select the montage thumbnail 720 using an input device, such as a pointing device 710, for example. A content consumer may also select the link 518-1 titled "Student Class Trip" using an input device, such as a gesture 712 on a touch-screen display, for example. In both cases, the selection launches a web browser or an application program to view the montage 120.

[00114] FIG. 7B illustrates an embodiment of a user interface view 740 of a montage 120 once launched from the message 516. Depending on a given implementation for the computing device 510-2, the computing device 510-2 may generate the user interface view

740 as a web page for a web browser, or as a user interface view of an application program, such as the montage application 140 or a montage viewer 730 specifically designed to view a montage 120. For instance, the presentation component 130 of the montage application 140 implemented for the computing device 510-2 and/or the montage viewer 730 may receive a control directive to open the montage 120, and initiate operations to retrieve the montage 120 from the remote datastore 212. The presentation component 130 and/or the montage viewer 730 may present the user interface view 740 of the montage 120, including the presentation surface 122 with the tile objects 126-*e* in the appropriate presentation tiles 124-*a*.

[00115] When rendered as a web page, the presentation component 130 may use code specifically designed for a web page, such as Hypertext Markup Language (HTML) or similar code. However, HTML code may be limited by a given type of web browser implemented by the client device 510-2. When rendered as a user interface view for the montage viewer 730, the presentation component 130 and/or the montage viewer 730 may use code optimized for the montage viewer 730. For instance, a montage 120 may be generated using HTML code for a web page, with extensible markup language (XML) code embedded within the HTML code. The XML code may be generated with a data schema specifically designed for the montage application 140 or the montage viewer 730. As such, the montage application 140 or the montage viewer 730 may render a higher-fidelity version of the montage 120 relative to a lower-fidelity version of the montage 120 used for a web page.

[00116] FIG. 7C illustrates an embodiment of a user interface view 750 of an example of a montage 120 as presented in the montage viewer 730. As described with reference to FIG. 7B, the montage viewer 730 may present the user interface view 740 of the montage 120, including the presentation surface 122 with the tile objects 126-*e* in the appropriate presentation tiles 124-*a*. Assume that the presentation surface 122 includes the tile object 126-1 for the content file 104-1 as described with reference to FIG. 4.

[00117] A content consumer may select the tile object 126-1 using an input device, such as a pointing device 710, for example. The presentation component 130 of the montage application 140 implemented for the computing device 510-2 and/or the montage viewer 730 receives a control directive to select the tile object 126-1, and retrieves the content file 104-1 for the tile object 126-1 from the remote datastore 212.

[00118] FIG. 7D illustrates an embodiment of a user interface view 760 of a content file 104-1 once launched from the montage 120. The presentation component 130 and/or the

montage viewer 730 may present the user interface view 760 with a full-fidelity version of the content file 104-1 retrieved from the remote datastore 212. Alternatively, a content file 104-1 may be rendered using a native application program similar to the one used to generate the content file 104-1, or a viewer specifically designed for such an application program. The embodiments are not limited in this context.

[00119] In various embodiments, the presentation component 130 may dynamically generate a montage 120 for viewing on displays having different properties, such as different sizes, resolution, refresh rates, backlighting, power consumption, and so forth. In such cases, the presentation component 130 may be arranged to detect display properties of a display, and modify a montage 120 for presentation on the display. For instance, the presentation component 130 may generate a much larger version of a montage 120 with a greater number of presentation tiles 124-*a* and tile objects 126-*e* when presented on a large wall display with touch controls as found in many conference rooms. Meanwhile, the presentation component 130 may generate a smaller version of a montage 120 with a fewer number of presentation tiles 124-*a* and tile objects 126-*e* when presented on a smart phone. Similarly, the presentation component 130 may generate a montage 120 with different levels of fidelity based on screen resolution or pixel size of a given display. In another example, the presentation component 130 may generate one version of a montage 120 when in portrait mode, and another version of the montage 120 when in panoramic mode, such as when a user rotates a smart phone or tablet. The embodiments are not limited in this context.

[00120] Operations for the above-described embodiments may be further described with reference to one or more logic flows. It may be appreciated that the representative logic flows do not necessarily have to be executed in the order presented, or in any particular order, unless otherwise indicated. Moreover, various activities described with respect to the logic flows can be executed in serial or parallel fashion. The logic flows may be implemented using one or more hardware elements and/or software elements of the described embodiments or alternative elements as desired for a given set of design and performance constraints. For example, the logic flows may be implemented as logic (e.g., computer program instructions) for execution by a logic device (e.g., a general-purpose or specific-purpose computer).

[00121] **FIG. 8A** illustrates one embodiment of a logic flow 800. The logic flow 800 may be representative of some or all of the operations executed by one or more

embodiments described herein, such as the authoring component 110 of the montage application 140 to generate a montage 120.

5 [00122] In the illustrated embodiment shown in FIG. 8A, the logic flow 800 may provide a presentation surface having multiple presentation tiles at block 802. For example, the authoring component 110 may provide a presentation surface 122 having multiple presentation tiles 124-*a* via the user interface 538. The presentation surface 122 may be selected from among a number of montage templates, or custom designed by a content producer.

10 [00123] The logic flow 800 may receive a control directive to associate a content file with a presentation tile at block 804. For example, the authoring component 110 may receive a control directive 102-*b* to associate a content file 104-*c* with a presentation tile 124-*a*. The control directive 102-*b* may be from an input device representing a command by the content producer.

15 [00124] The logic flow 800 may identify a content file type for the content file at block 806. For example, the authoring component 110 may identify a content file type for the content file 104-*c*. Identification may be performed by inspecting a file extension of the content file 104-*c*, metadata for the content file 104-*c*, analysis of information within the content file 104-*c*, information for an application program used to produce the content file 104-*c*, and so forth.

20 [00125] The logic flow 800 may retrieve a portion of content from the content file based on the content file type at block 808. For example, the authoring component 110 may select a type module 202-*g* based on the content file type, and use the selected type module 202-*g* to retrieve appropriate content portion 106-*d* from the content file 104-*c* in accordance with a type definition 204-*h* associated with the content file type discovered
25 for the content file 104-*c*. In one embodiment, the content file 104-*c* may be stored in the local datastore 210, and the content portion 106-*d* retrieved over a data bus using the file navigation tool 304. In one embodiment, the content file 104-*c* may be stored in the remote datastore 212, and the content portion 106-*d* retrieved over a network using the file navigation tool 304.

30 [00126] The logic flow 800 may generate a tile object based on the content portion at block 810. For example, the authoring component 110 may use the selected type module 202-*g* to generate a tile object 126-*e* from the retrieved content portion 106-*d* in accordance with associated type definition 204-*h*. The tile object 126-*e* may be presented within a presentation tile 124-*a*. The tile object 126-*e* is designed to present sufficient

information about the underlying content file 104-*c* to allow a content consumer to determine whether he or she would like to view a full-fidelity view of the content file 104-*c*.

5 [00127] The logic flow 800 may store the presentation surface and tile object as a montage at block 812. For example, the authoring component 110 may store the presentation surface 122 and any tile objects 126-*e* as the montage 120. The montage 120 may then be distributed, published and consumed by various content consumers using the messaging system 500, for example.

10 [00128] FIG. 8B illustrates one embodiment of a logic flow 820. The logic flow 820 may be representative of some or all of the operations executed by one or more embodiments described herein, such as the authoring component 110 of the montage application 140 to generate tile objects 126-*e* for a montage 120.

15 [00129] In the illustrated embodiment shown in FIG. 8B, the logic flow 820 may receive a control directive to associate a content file with a presentation tile of a presentation surface of a digital montage at block 822. For example, the authoring component 110 may receive a control directive 102-*b* to associate a content file 104-1 with a presentation tile 124-1 of a presentation surface 122 of a digital montage, such as montage 120.

20 [00130] The logic flow 820 may identify a content file type for the content file at block 824. For example, the authoring component 110 may identify a content file type for the content file 104-1. The authoring component 110 may identify the content file type for the content file 104-1 as one of an application file type including a word processing file, a spreadsheet file, a presentation file, a personal information manager file, a database file, a publisher file, a drawing file, a note file, or a message file, among others.

25 [00131] The logic flow 820 may retrieve a content portion of the content file based on the content file type at block 826. For example, the authoring component 110 may retrieve a content portion 106-1 of the content file 104-1 based on the identified content file type.

30 [00132] The logic flow 820 may generate a tile object based on the content portion at block 828. For example, the authoring component 110 may automatically generate a tile object 126-1 based on the content portion 106-1. More particularly, the authoring component 110 may generate the tile object 126-1 as a tile object surface 346 having selected content portion clips 344-*v* contained within corresponding tile object containers 342-*u*.

[00133] The authoring component 110 may automatically select certain content portion clips 344-*v* from the content portion 106-1 of the content file 104-1 based on the content

file type. More particularly, the authoring component 110 may select content portion clips 344-*v* from the content portion 106-1 of the content file 104-1 based on a type definition 204-*h* associated with the content file type, the type definition comprising information of a content and properties class, a content objects class, or a content pages class. Once
5 selected, the authoring component 110 may associate the selected content portion clips with corresponding tile object containers 342-*u* of a tile object surface 346.

[00134] Additionally or alternatively, the authoring component 110 may select certain content portion clips 344-*v* from the content portion 106-1 of the content file 104-1 in response to user control directives. For instance, the authoring component 110 may
10 receive control directives 102-*b* from an input device to select content portion clips 344-*v* from the content portion 106-1 of the content file 104-1. Further, the authoring component 110 may also receive control directives 102-*b* from the input device to associate selected content portion clips 344-*v* from the content portion 106-1 of the content file 104-1 with corresponding tile object containers 342-*u*.

[00135] Once a content portion clip 344-*v* is associated with a tile object container 342-*u*,
15 the authoring component 110 may utilize a fitting algorithm to fit content portion clips 344-*v* within corresponding tile object containers 342-*u* to form filled containers 348-*w* in accordance with a set of container definitions for the corresponding tile object containers 342-*u* and/or a tile object surface 346.

[00136] Once a set of filled containers 348-*w* are generated, the authoring component 110
20 may utilize a same or similar fitting algorithm to fit filled containers 348-*w* within a tile object surface 346 in accordance with a set of surface definitions for the tile object surface 346 and/or the presentation surface 122.

[00137] FIG. 9 illustrates one embodiment of a logic flow 900. The logic flow 900 may
25 be representative of some or all of the operations executed by one or more embodiments described herein, such as the presentation component 130 of the montage application 140.

[00138] In the illustrated embodiment shown in FIG. 9, the logic flow 900 may generate a montage comprising a presentation surface with multiple presentation tiles each having a tile object for a corresponding content file at block 902. For example, the presentation
30 component 130 may generate a montage 120 comprising a presentation surface 122 with multiple presentation tiles 124-*a* each having a tile object 126-*e* for a corresponding content file 104-*c*.

[00139] The logic flow 900 may send the montage and content files to a network service at block 904. For example, the publishing component 532 of the montage application 140

may send the montage 120 and associated content files 104-*c* to a network storage server 550 for storage by a remote datastore 212 accessible via a network service 652.

[00140] The logic flow 900 may receive references to the montage and each content file at block 906. For example, the publishing component 532 may receive links 518-*n* to the
5 montage 120 and each content file 104-*c*. The links 518-*n* may comprise references or pointers to network versions of the montage 120 and each content file 104-*c* as stored on the remote datastore 212.

[00141] The logic flow 900 may associate a reference for a content file with a corresponding tile object at block 908. For example, the publishing component 532 may
10 pass the received links 518-*n* to the authoring component 110. The authoring component 110 may associate a link 518-*n* for a content file 104-*c* with a corresponding tile object 126-*e*. When a content consumer selects a tile object 126-*e*, the presentation component 130 may retrieve a content file 104-*c* associated with the tile object 126-*e* via the associated link 518-*n*.

15 [00142] **FIG. 10** illustrates an embodiment of an exemplary computing architecture 1000 suitable for implementing various embodiments as previously described. The computing architecture 1000 includes various common computing elements, such as one or more processors, co-processors, memory units, chipsets, controllers, peripherals, interfaces, oscillators, timing devices, video cards, audio cards, multimedia input/output (I/O)
20 components, and so forth. The embodiments, however, are not limited to implementation by the computing architecture 1000.

[00143] As shown in FIG. 10, the computing architecture 1000 comprises a processing unit 1004, a system memory 1006 and a system bus 1008. The processing unit 1004 can be any of various commercially available processors. Dual microprocessors and other
25 multi-processor architectures may also be employed as the processing unit 1004. The system bus 1008 provides an interface for system components including, but not limited to, the system memory 1006 to the processing unit 1004. The system bus 1008 can be any of several types of bus structure that may further interconnect to a memory bus (with or without a memory controller), a peripheral bus, and a local bus using any of a variety of
30 commercially available bus architectures.

[00144] The system memory 1006 may include various types of memory units, such as read-only memory (ROM), random-access memory (RAM), dynamic RAM (DRAM), Double-Data-Rate DRAM (DDRAM), synchronous DRAM (SDRAM), static RAM (SRAM), programmable ROM (PROM), erasable programmable ROM (EPROM),

electrically erasable programmable ROM (EEPROM), flash memory, polymer memory such as ferroelectric polymer memory, ovonic memory, phase change or ferroelectric memory, silicon-oxide-nitride-oxide-silicon (SONOS) memory, magnetic or optical cards, or any other type of media suitable for storing information. In the illustrated embodiment
5 shown in FIG. 10, the system memory 1006 can include non-volatile memory 1010 and/or volatile memory 1012. A basic input/output system (BIOS) can be stored in the non-volatile memory 1010.

[00145] The computer 1002 may include various types of computer-readable storage media, including an internal hard disk drive (HDD) 1014, a magnetic floppy disk drive
10 (FDD) 1016 to read from or write to a removable magnetic disk 1018, and an optical disk drive 1020 to read from or write to a removable optical disk 1022 (e.g., a CD-ROM or DVD). The HDD 1014, FDD 1016 and optical disk drive 1020 can be connected to the system bus 1008 by a HDD interface 1024, an FDD interface 1026 and an optical drive interface 1028, respectively. The HDD interface 1024 for external drive implementations
15 can include at least one or both of Universal Serial Bus (USB) and IEEE 1394 interface technologies.

[00146] The drives and associated computer-readable media provide volatile and/or nonvolatile storage of data, data structures, computer-executable instructions, and so forth. For example, a number of program modules can be stored in the drives and memory units
20 1010, 1012, including an operating system 1030, one or more application programs 1032, other program modules 1034, and program data 1036. The one or more application programs 1032, other program modules 1034, and program data 1036 can include, for example, the montage application 140, the authoring component 110, the presentation component 130, the security component 536, the publishing component 532, the message
25 component 534, the user interface 538, and the messaging application 542.

[00147] A user can enter commands and information into the computer 1002 through one or more wire/wireless input devices, for example, a keyboard 1038 and a pointing device, such as a mouse 1040. Other input devices may include a microphone, an infra-red (IR) remote control, a joystick, a game pad, a stylus pen, touch screen, or the like. These and
30 other input devices are often connected to the processing unit 1004 through an input device interface 1042 that is coupled to the system bus 1008, but can be connected by other interfaces such as a parallel port, IEEE 1394 serial port, a game port, a USB port, an IR interface, and so forth.

[00148] A monitor 1044 or other type of display device is also connected to the system bus 1008 via an interface, such as a video adaptor 1046. In addition to the monitor 1044, a computer typically includes other peripheral output devices, such as speakers, printers, and so forth.

5 [00149] The computer 1002 may operate in a networked environment using logical connections via wire and/or wireless communications to one or more remote computers, such as a remote computer 1048. The remote computer 1048 can be a workstation, a server computer, a router, a personal computer, portable computer, microprocessor-based entertainment appliance, a peer device or other common network node, and typically
10 includes many or all of the elements described relative to the computer 1002, although, for purposes of brevity, only a memory/storage device 1050 is illustrated. The logical connections depicted include wire/wireless connectivity to a local area network (LAN) 1052 and/or larger networks, for example, a wide area network (WAN) 1054. Such LAN and WAN networking environments are commonplace in offices and companies, and
15 facilitate enterprise-wide computer networks, such as intranets, all of which may connect to a global communications network, for example, the Internet.

[00150] When used in a LAN networking environment, the computer 1002 is connected to the LAN 1052 through a wire and/or wireless communication network interface or adaptor 1056. The adaptor 1056 can facilitate wire and/or wireless communications to the
20 LAN 1052, which may also include a wireless access point disposed thereon for communicating with the wireless functionality of the adaptor 1056.

[00151] When used in a WAN networking environment, the computer 1002 can include a modem 1058, or is connected to a communications server on the WAN 1054, or has other means for establishing communications over the WAN 1054, such as by way of the
25 Internet. The modem 1058, which can be internal or external and a wire and/or wireless device, connects to the system bus 1008 via the input device interface 1042. In a networked environment, program modules depicted relative to the computer 1002, or portions thereof, can be stored in the remote memory/storage device 1050. It will be appreciated that the network connections shown are exemplary and other means of
30 establishing a communications link between the computers can be used.

[00152] The computer 1002 is operable to communicate with wire and wireless devices or entities using the IEEE 802 family of standards, such as wireless devices operatively disposed in wireless communication (e.g., IEEE 802.11 over-the-air modulation techniques) with, for example, a printer, scanner, desktop and/or portable computer,

personal digital assistant (PDA), communications satellite, any piece of equipment or location associated with a wirelessly detectable tag (e.g., a kiosk, news stand, restroom), and telephone. This includes at least Wi-Fi (or Wireless Fidelity), WiMax, and Bluetooth™ wireless technologies. Thus, the communication can be a predefined structure as with a conventional network or simply an ad hoc communication between at least two devices. Wi-Fi networks use radio technologies called IEEE 802.11x (a, b, g, etc.) to provide secure, reliable, fast wireless connectivity. A Wi-Fi network can be used to connect computers to each other, to the Internet, and to wire networks (which use IEEE 802.3-related media and functions).

[00153] Various embodiments may be implemented using hardware elements, software elements, or a combination of both. Examples of hardware elements may include devices, logic devices, components, processors, microprocessors, circuits, circuit elements (e.g., transistors, resistors, capacitors, inductors, and so forth), integrated circuits, application specific integrated circuits (ASIC), programmable logic devices (PLD), digital signal processors (DSP), field programmable gate array (FPGA), memory units, logic gates, registers, semiconductor device, chips, microchips, chip sets, and so forth. Examples of software elements may include software components, programs, applications, computer programs, application programs, system programs, machine programs, operating system software, middleware, firmware, software modules, routines, subroutines, functions, methods, procedures, software interfaces, application program interfaces (API), instruction sets, computing code, computer code, code segments, computer code segments, words, values, symbols, or any combination thereof. Determining whether an embodiment is implemented using hardware elements and/or software elements may vary in accordance with any number of factors, such as desired computational rate, power levels, heat tolerances, processing cycle budget, input data rates, output data rates, memory resources, data bus speeds and other design or performance constraints, as desired for a given implementation.

[00154] Some embodiments may comprise an article of manufacture. An article of manufacture may comprise a storage medium to store logic. Examples of a storage medium may include one or more types of computer-readable storage media capable of storing electronic data, including volatile memory or non-volatile memory, removable or non-removable memory, erasable or non-erasable memory, writeable or re-writeable memory, and so forth. Examples of the logic may include various software elements, such as software components, programs, applications, computer programs, application

programs, system programs, machine programs, operating system software, middleware, firmware, software modules, routines, subroutines, functions, methods, procedures, software interfaces, application program interfaces (API), instruction sets, computing code, computer code, code segments, computer code segments, words, values, symbols, or any combination thereof. In one embodiment, for example, an article of manufacture may store executable computer program instructions that, when executed by a computer, cause the computer to perform methods and/or operations in accordance with the described embodiments. The executable computer program instructions may include any suitable type of code, such as source code, compiled code, interpreted code, executable code, static code, dynamic code, and the like. The executable computer program instructions may be implemented according to a predefined computer language, manner or syntax, for instructing a computer to perform a certain function. The instructions may be implemented using any suitable high-level, low-level, object-oriented, visual, compiled and/or interpreted programming language.

[00155] Some embodiments may be described using the expression “one embodiment” or “an embodiment” along with their derivatives. These terms mean that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment. The appearances of the phrase “in one embodiment” in various places in the specification are not necessarily all referring to the same embodiment.

[00156] Some embodiments may be described using the expression "coupled" and "connected" along with their derivatives. These terms are not necessarily intended as synonyms for each other. For example, some embodiments may be described using the terms “connected” and/or “coupled” to indicate that two or more elements are in direct physical or electrical contact with each other. The term "coupled," however, may also mean that two or more elements are not in direct contact with each other, but yet still co-operate or interact with each other.

[00157] It is emphasized that the Abstract of the Disclosure is provided to ~~comply with 37 C.F.R. Section 1.72(b), requiring an abstract that will~~ allow the reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, it can be seen that various features are grouped together in a single embodiment for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as

the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separate embodiment. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the respective terms "comprising" and "wherein," respectively. Moreover, 5 the terms "first," "second," "third," and so forth, are used merely as labels, and are not intended to impose numerical requirements on their objects.

[00158] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined 10 in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

CLAIMS

What Is Claimed Is:

1. A computer-implemented method, comprising:
5 receiving a control directive to associate a content file with a presentation tile of a presentation surface of a digital montage;
identifying a content file type for the content file;
retrieving a content portion of the content file based on the content file type; and
generating a tile object based on the content portion.
10
2. The computer-implemented method of claim 1, comprising generating the tile object as a tile object surface having selected content portion clips contained within corresponding tile object containers.
- 15 3. The computer-implemented method of claim 1, comprising selecting content portion clips from the content portion of the content file based on at least one of: the content file type, and a type definition associated with the content file type, the type definition comprising information of a content and properties class, a content objects class, or a content pages class.
- 20 4. The computer-implemented method of claim 1, comprising associating selected content portion clips with corresponding tile object containers of a tile object surface.
5. The computer-implemented method of claim 1, comprising receiving a control
25 directive from an input device to, at least one of:
select content portion clips from the content portion of the content file; or
associate content portion clips from the content portion of the content file with corresponding tile object containers.
- 30 6. The computer-implemented method of claim 1, comprising fitting content portion clips within corresponding tile object containers to form filled containers in accordance with a set of container definitions for the corresponding tile object containers and a fitting algorithm.

7. An article of manufacture comprising a storage medium containing instructions that when executed enable a system to perform the method of any of claims 1, 2, 3, 4, 5, 6, or 7.

5

8. An apparatus, comprising:

a logic device arranged to execute a montage application comprising an authoring component operative to generate a tile object for a digital montage, the authoring component to receive a control directive to associate a content file with a presentation tile of a presentation surface of the digital montage, identify a content file type for the content file, and generate the tile object with information from the content file in accordance with the content file type.

10

9. The apparatus of claim 8, the authoring component operative to select information from the content file for a tile object container based on a type definition for a type module corresponding to the content file type, and generate the tile object based on the selected information.

15

10. The apparatus of claim 8, the authoring component executing a fitting algorithm arranged to fit information from the content file within one more tile object containers to form filled containers in accordance with a set of container definitions for the corresponding tile object containers and the fitting algorithm.

20

Montage System 100

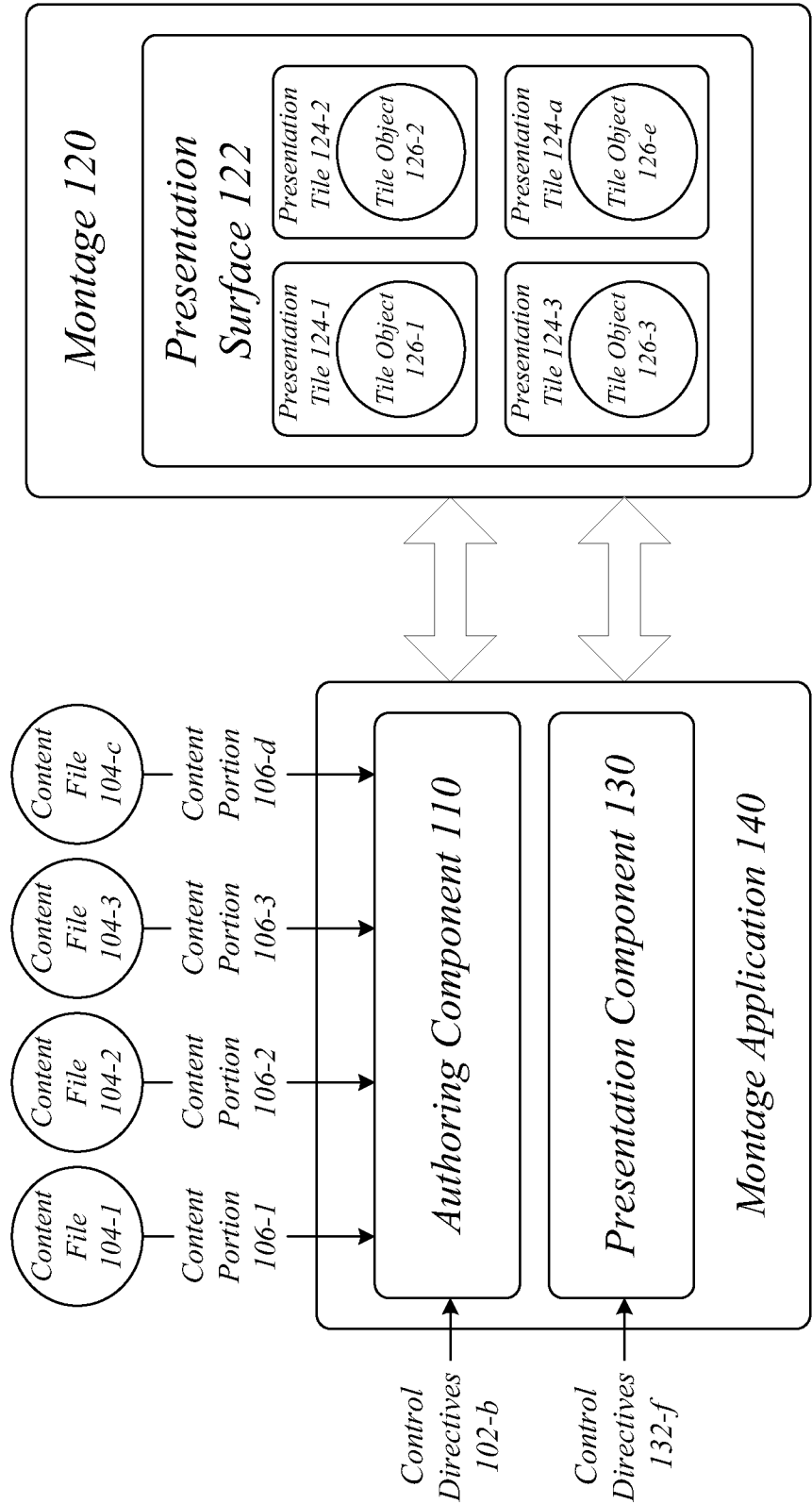


FIG. 1

Montage System 100

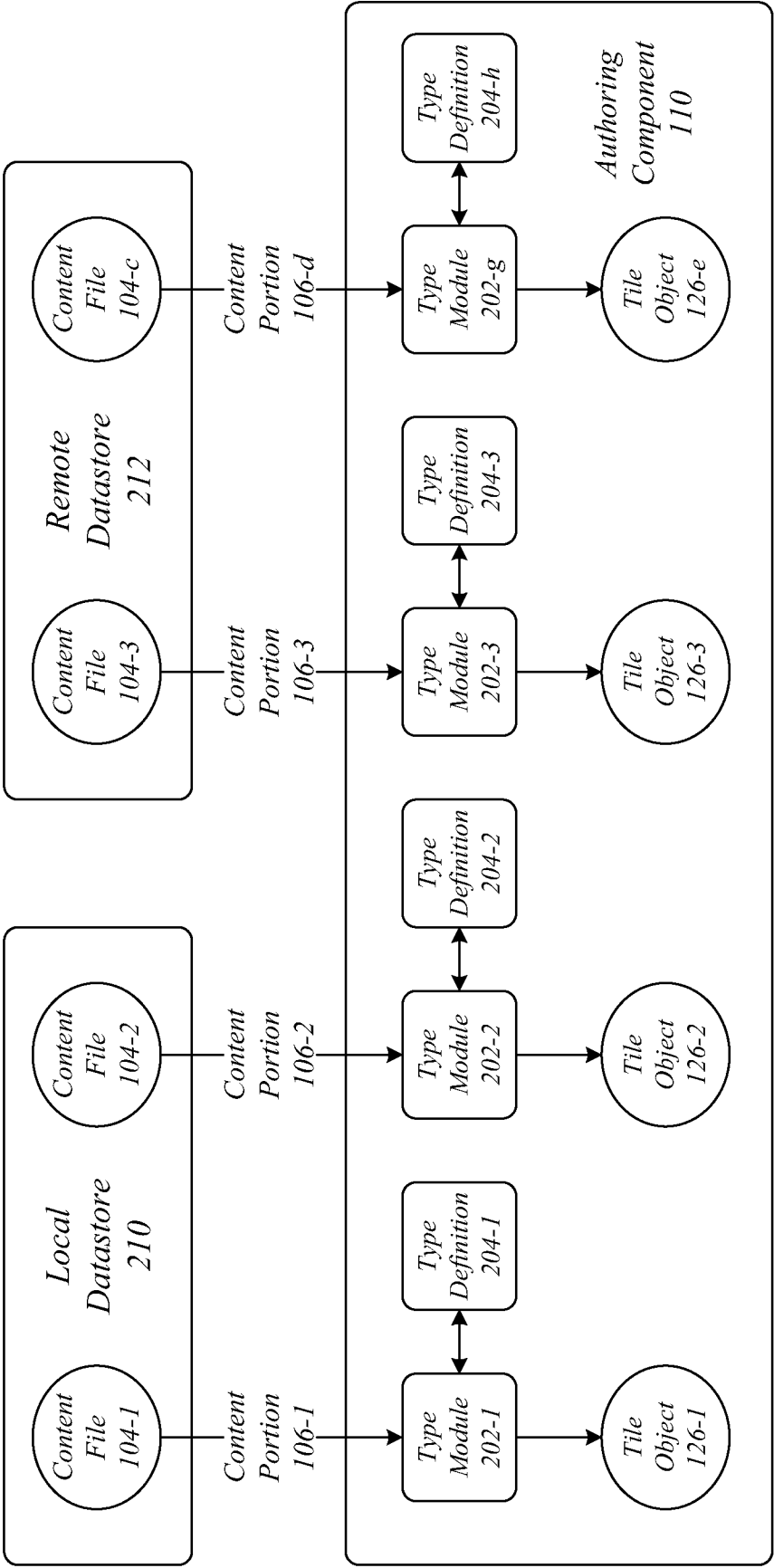


FIG. 2

User Interface View 300

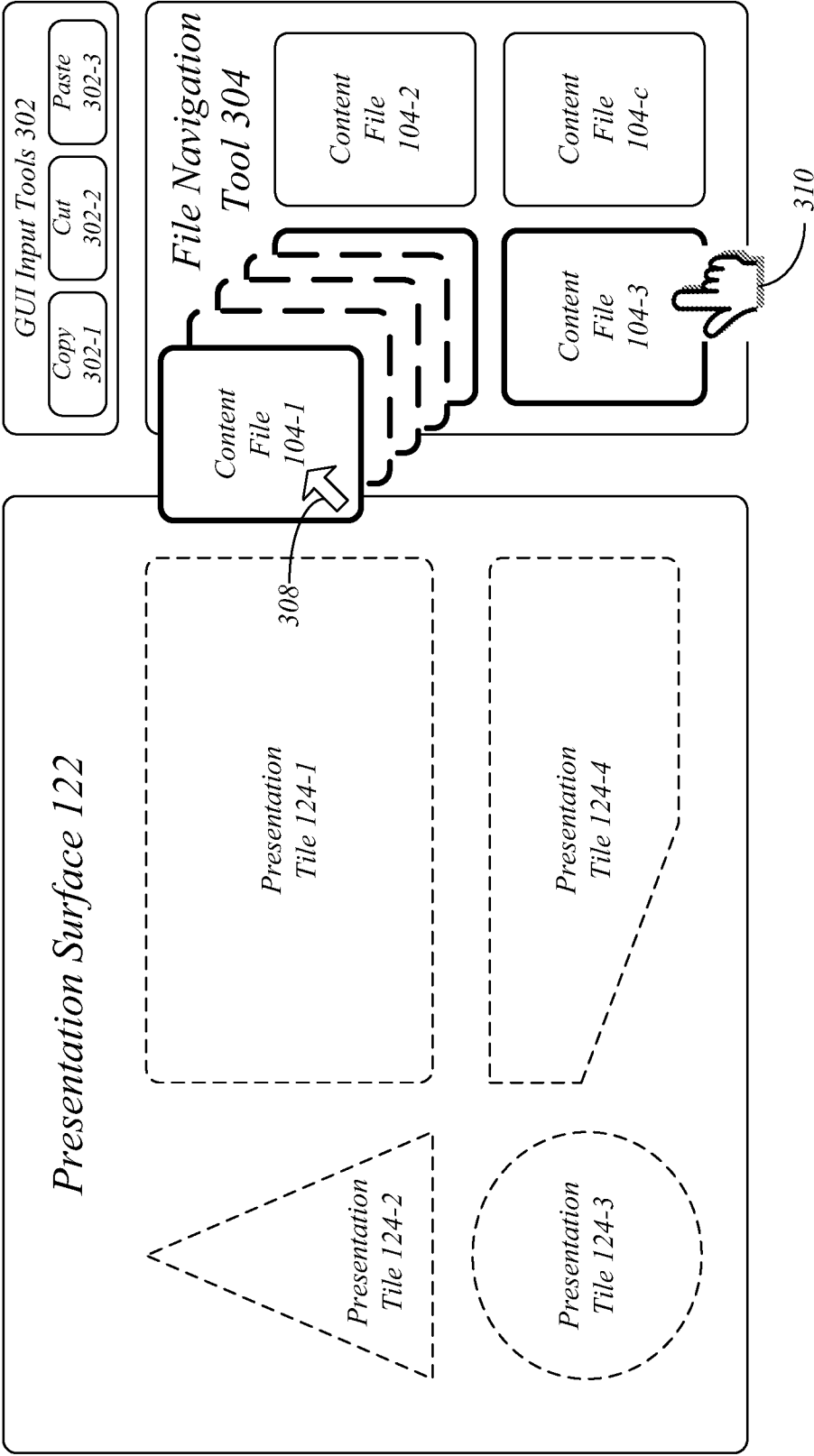


FIG. 3A

User Interface View 320

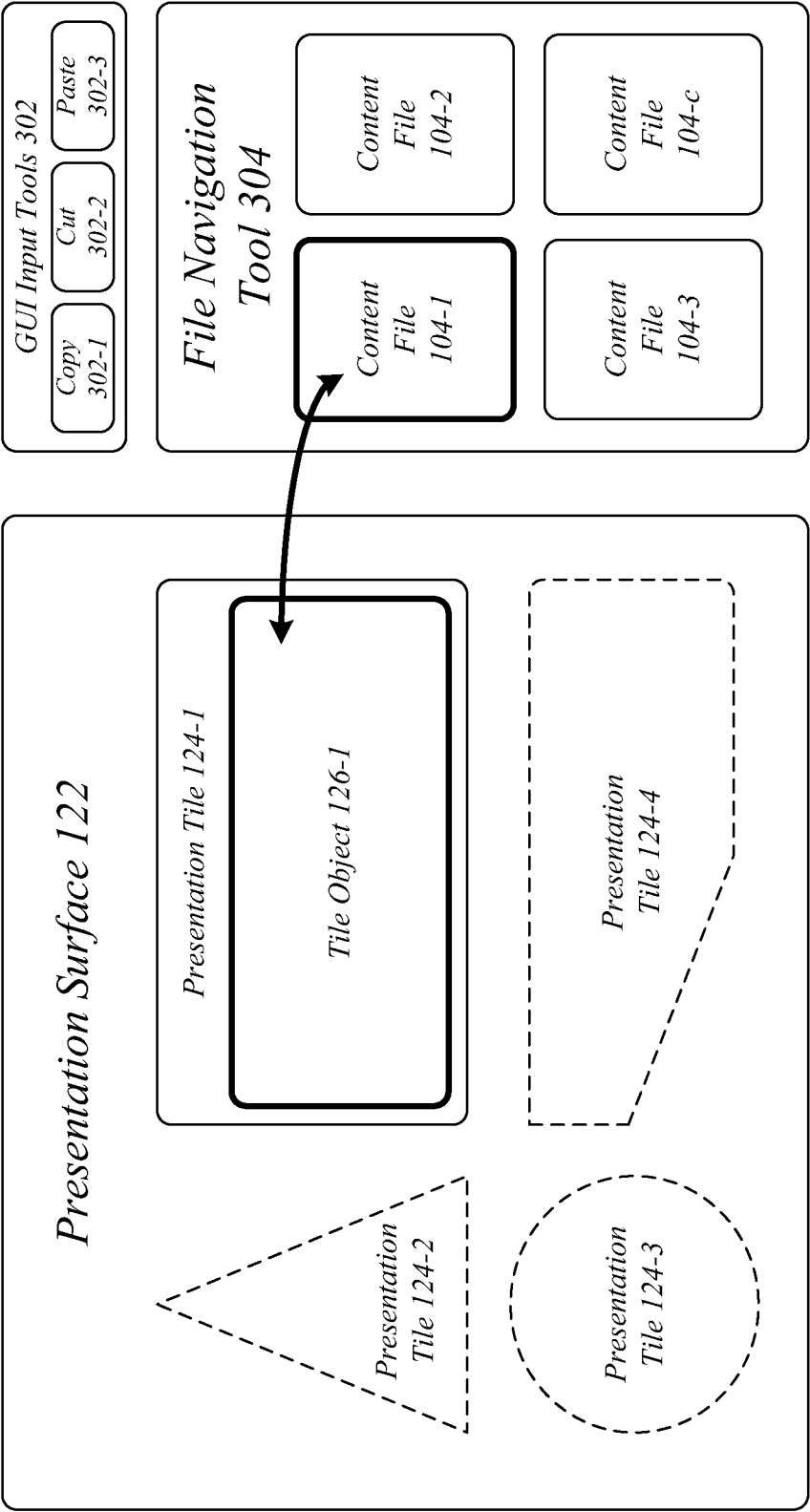


FIG. 3B

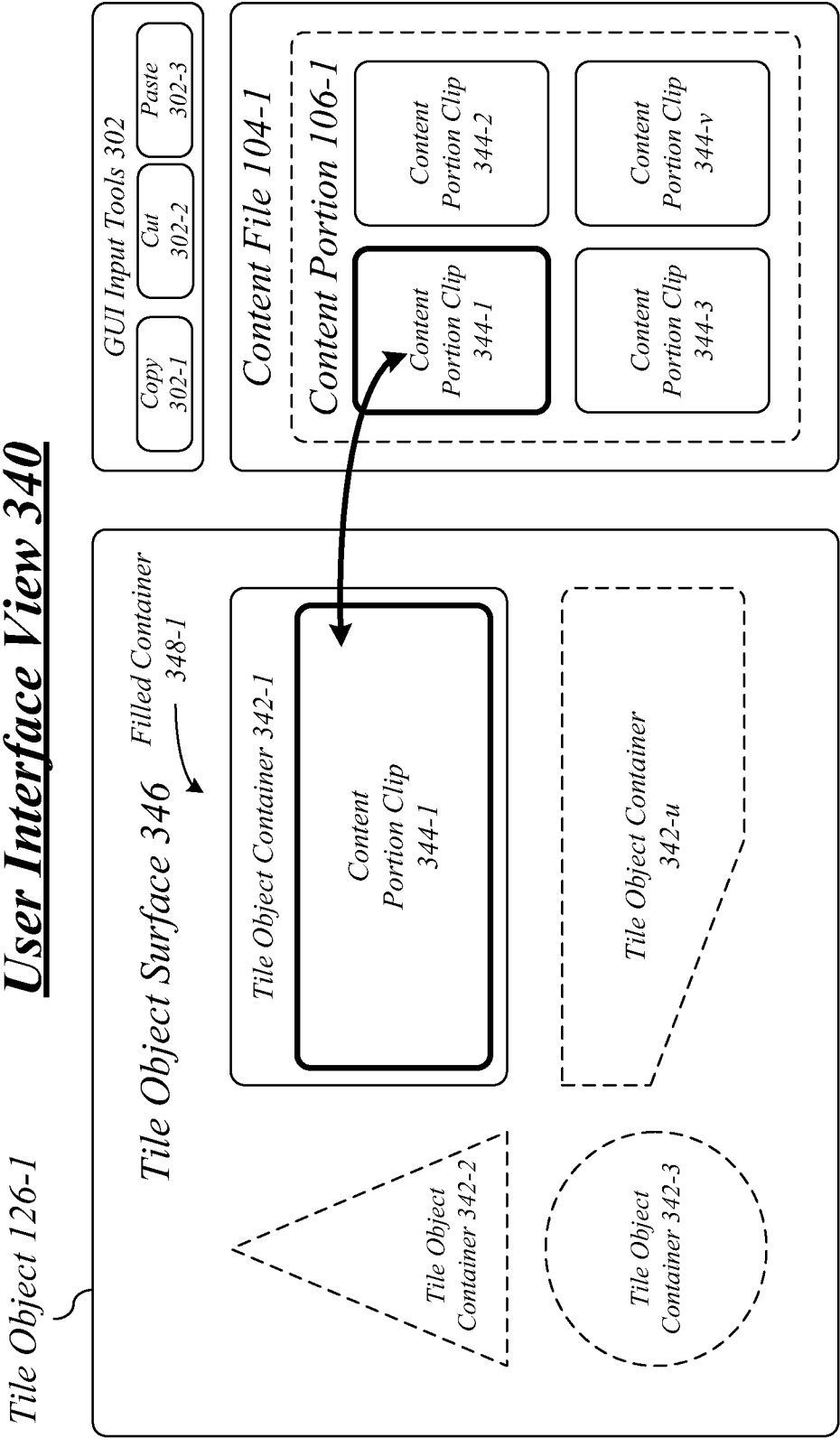


FIG. 3C

Authoring Component 110

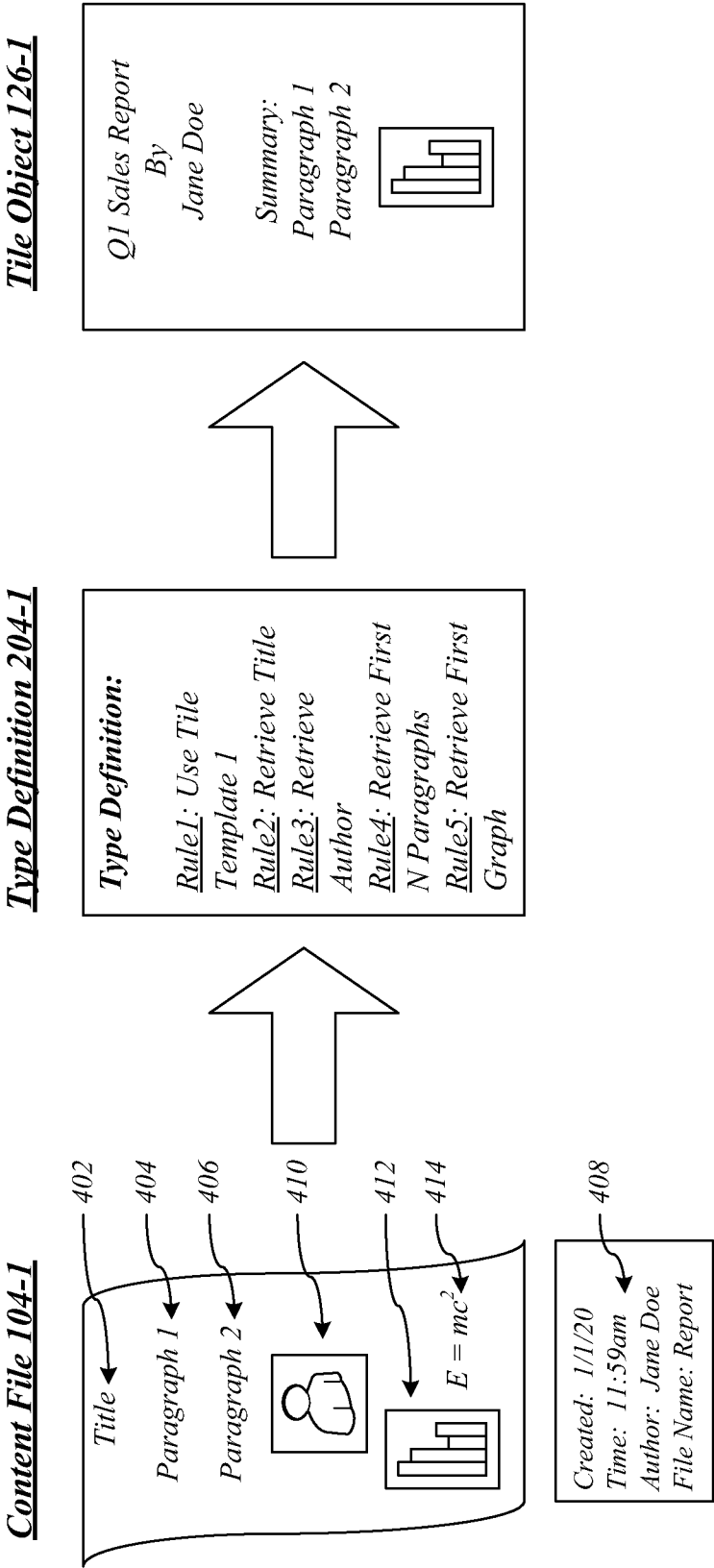


FIG. 4

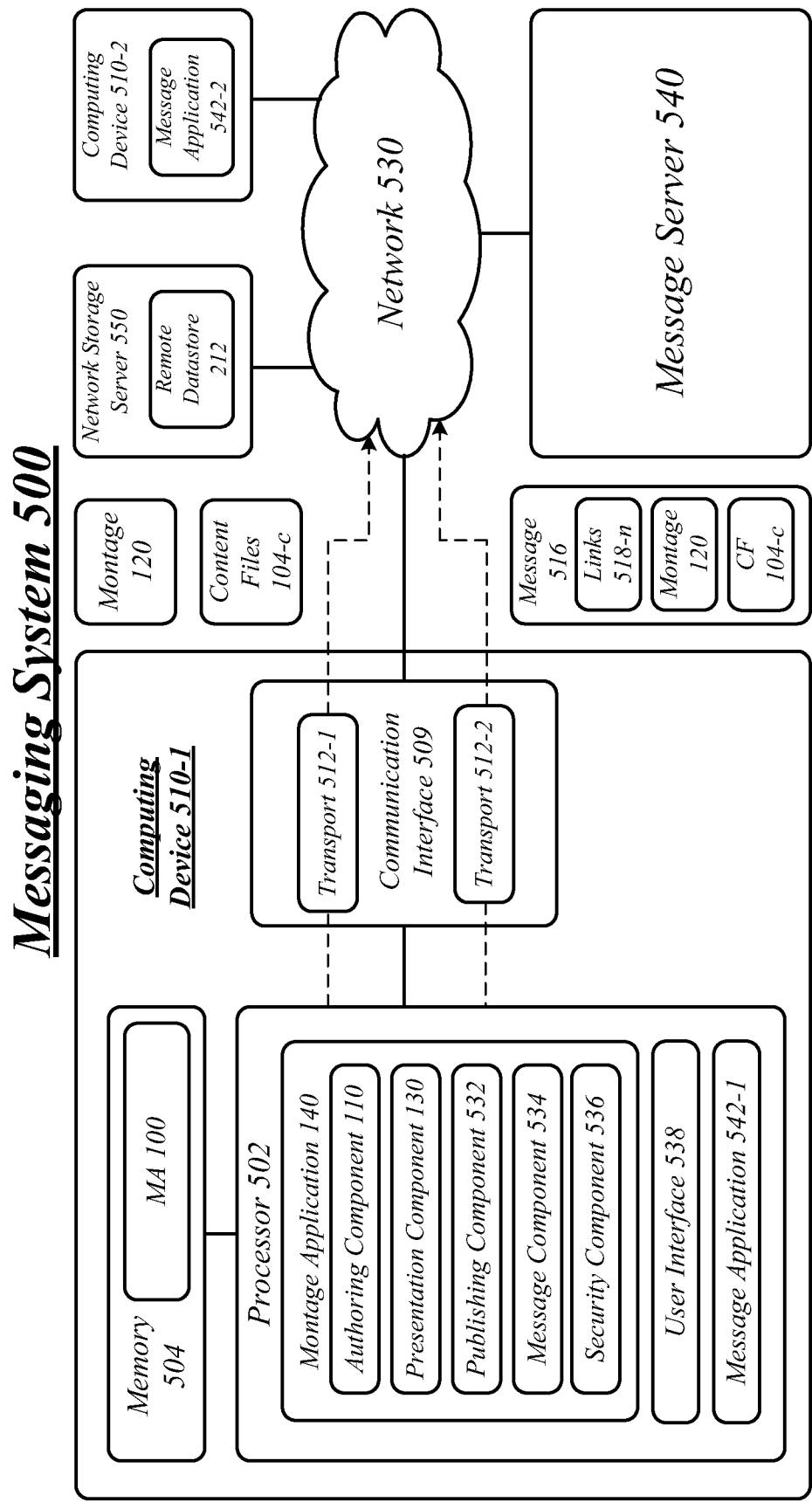


FIG. 5

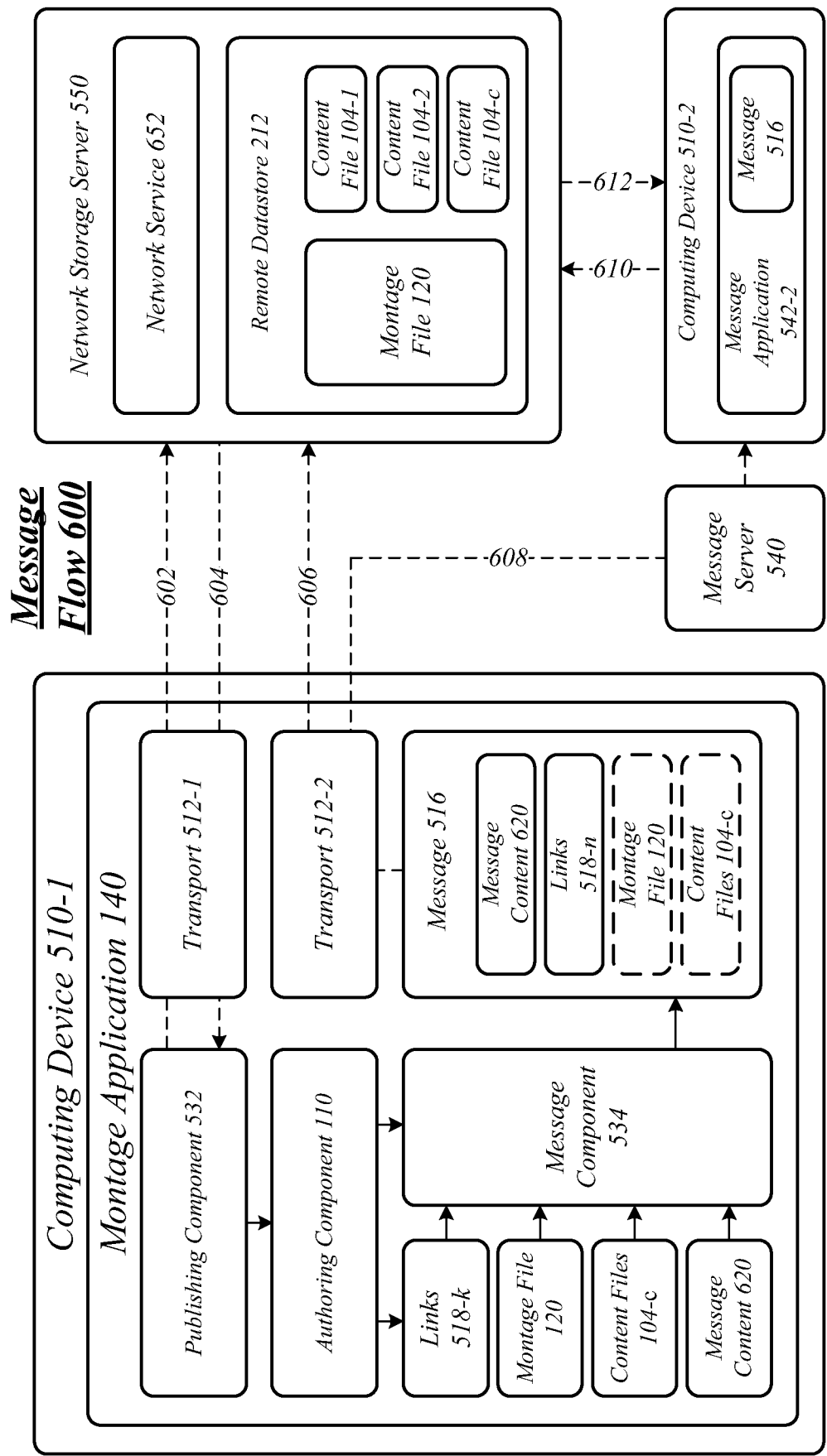


FIG. 6

User Interface View 700

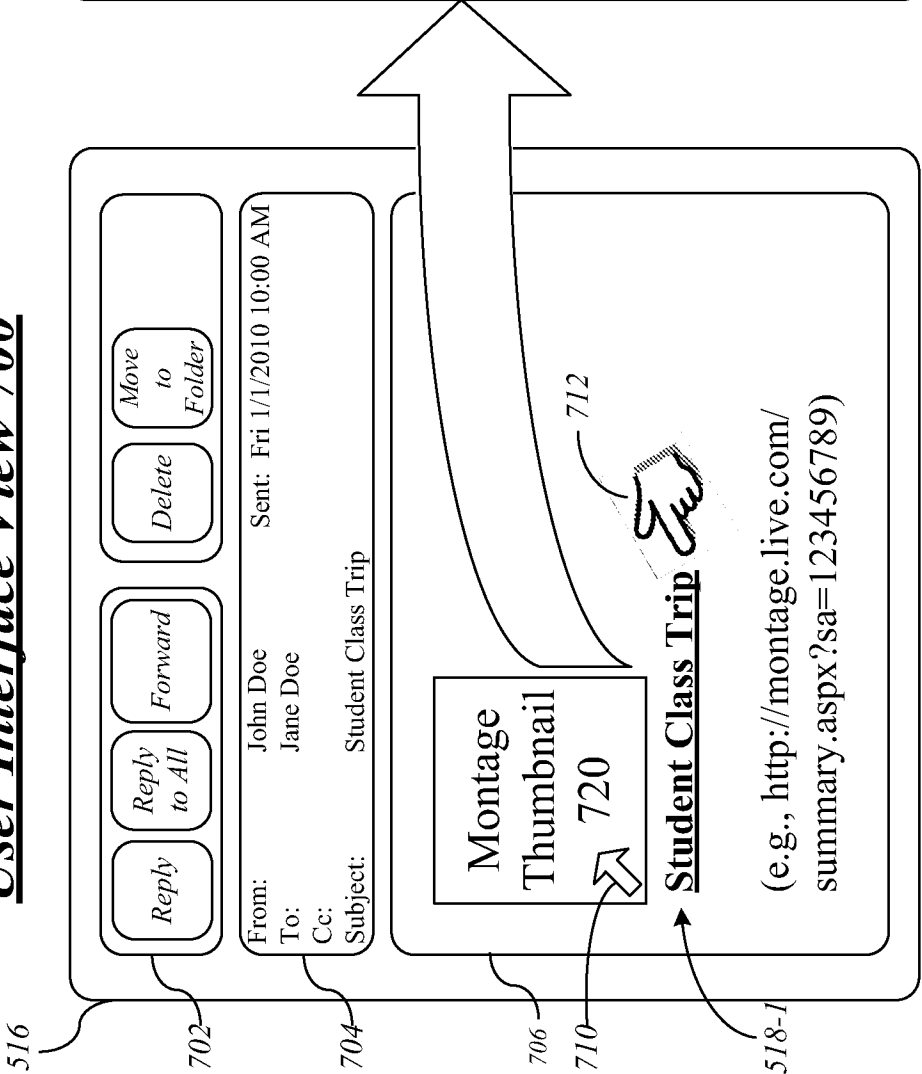


FIG. 7A

User Interface View 740

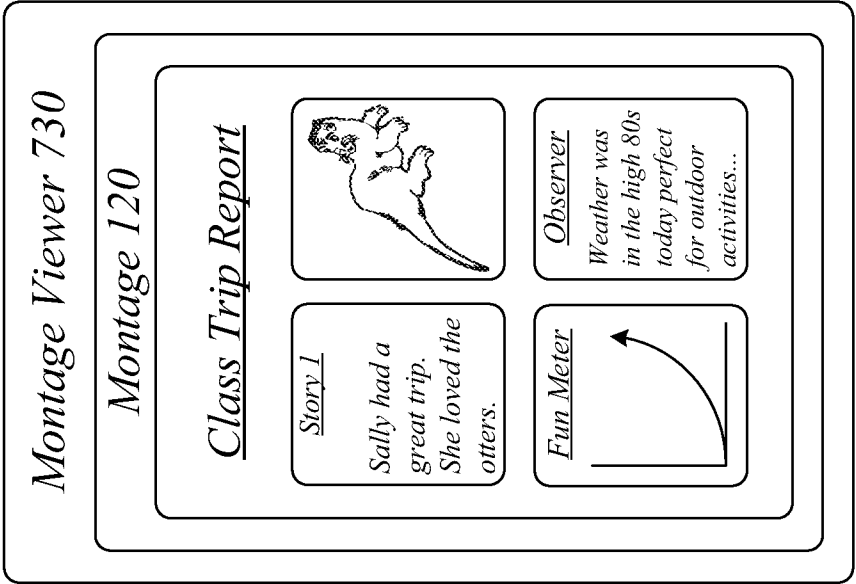


FIG. 7B

User Interface View 750

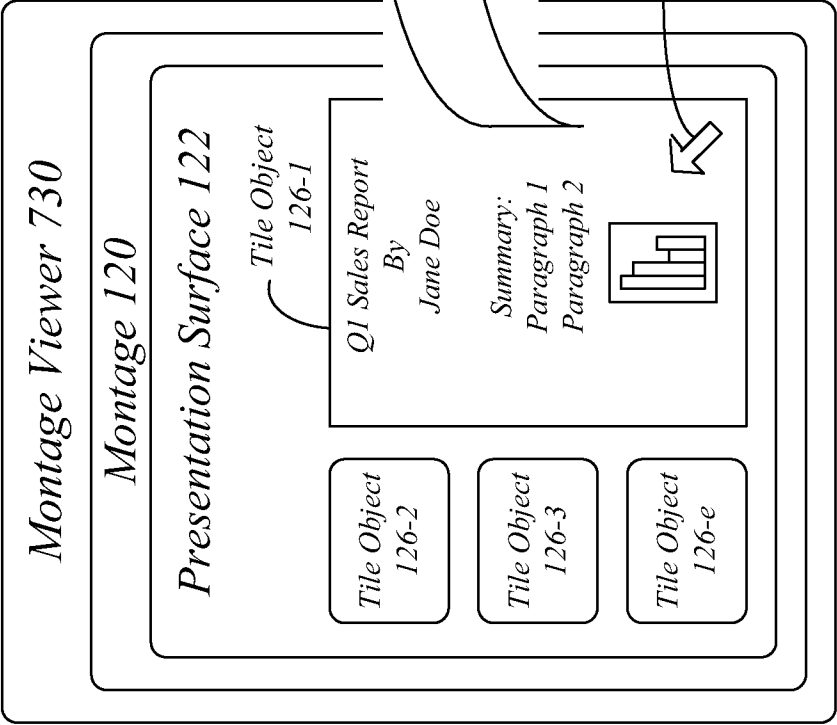


FIG. 7C

User Interface View 760

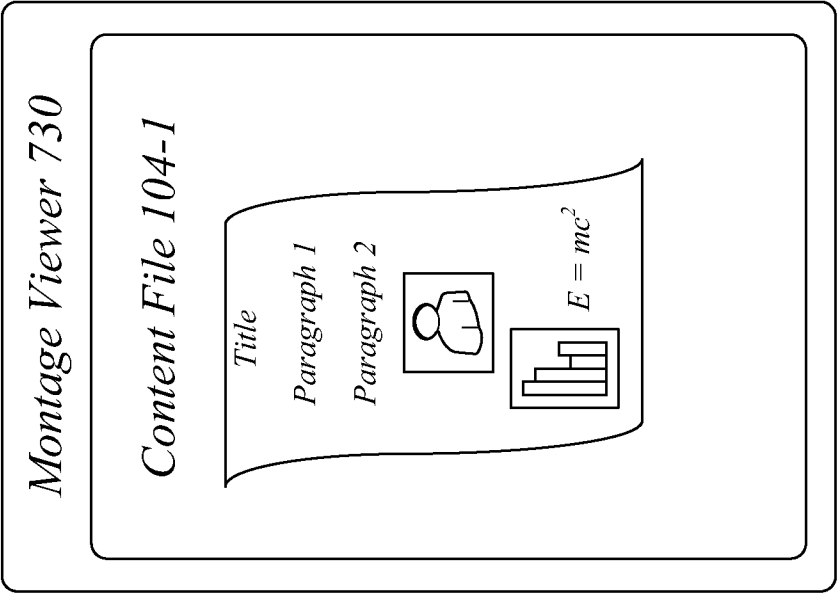
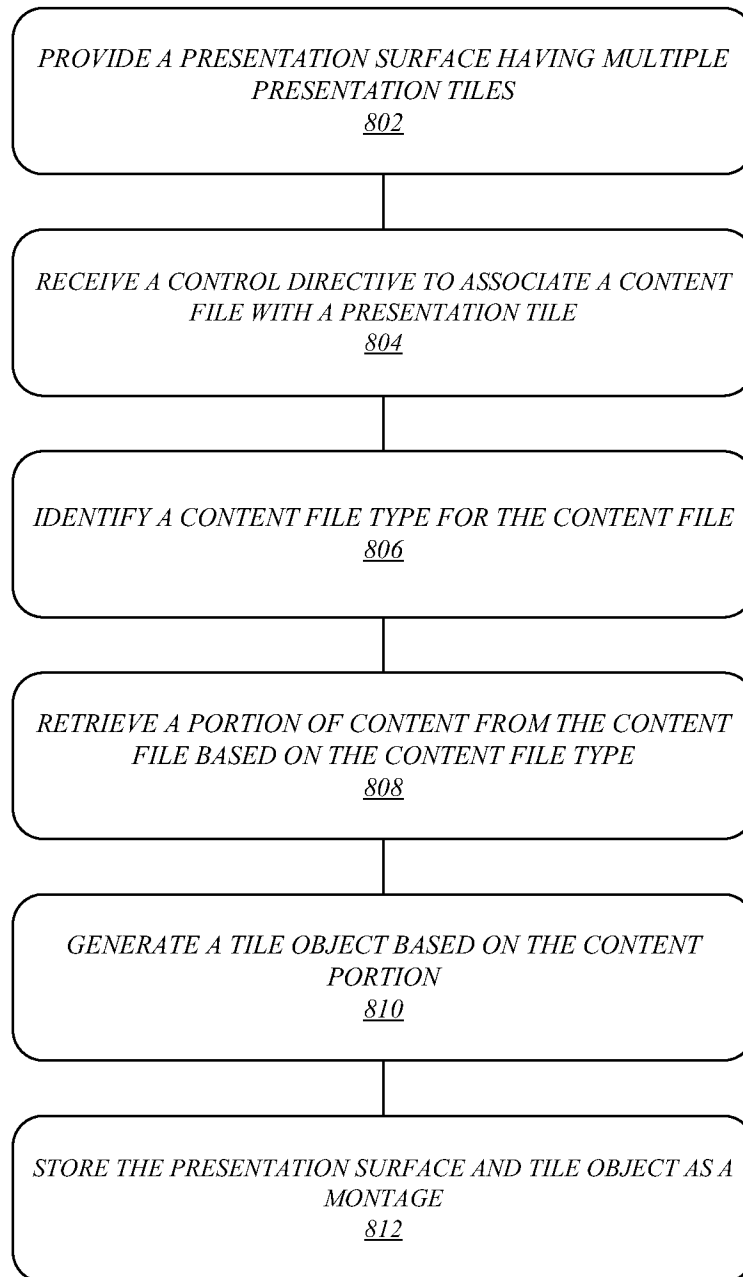
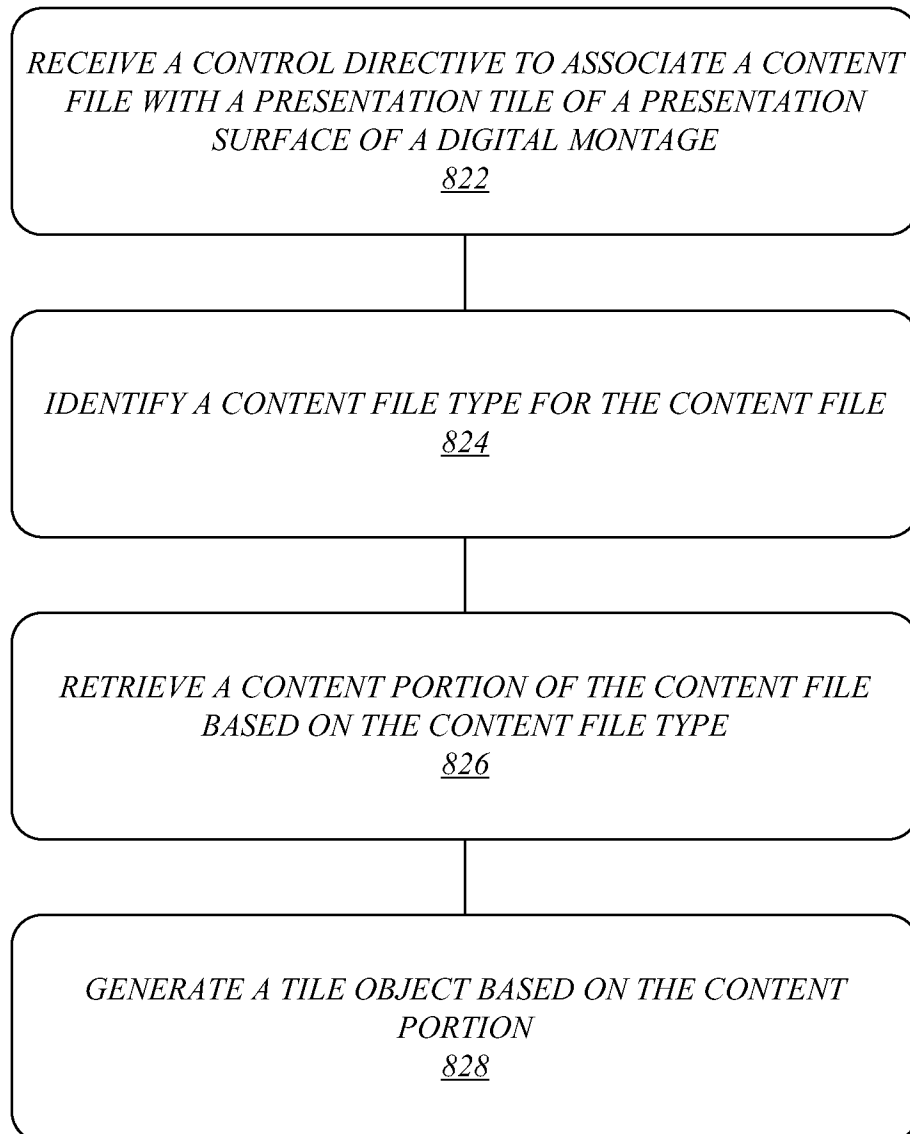


FIG. 7D

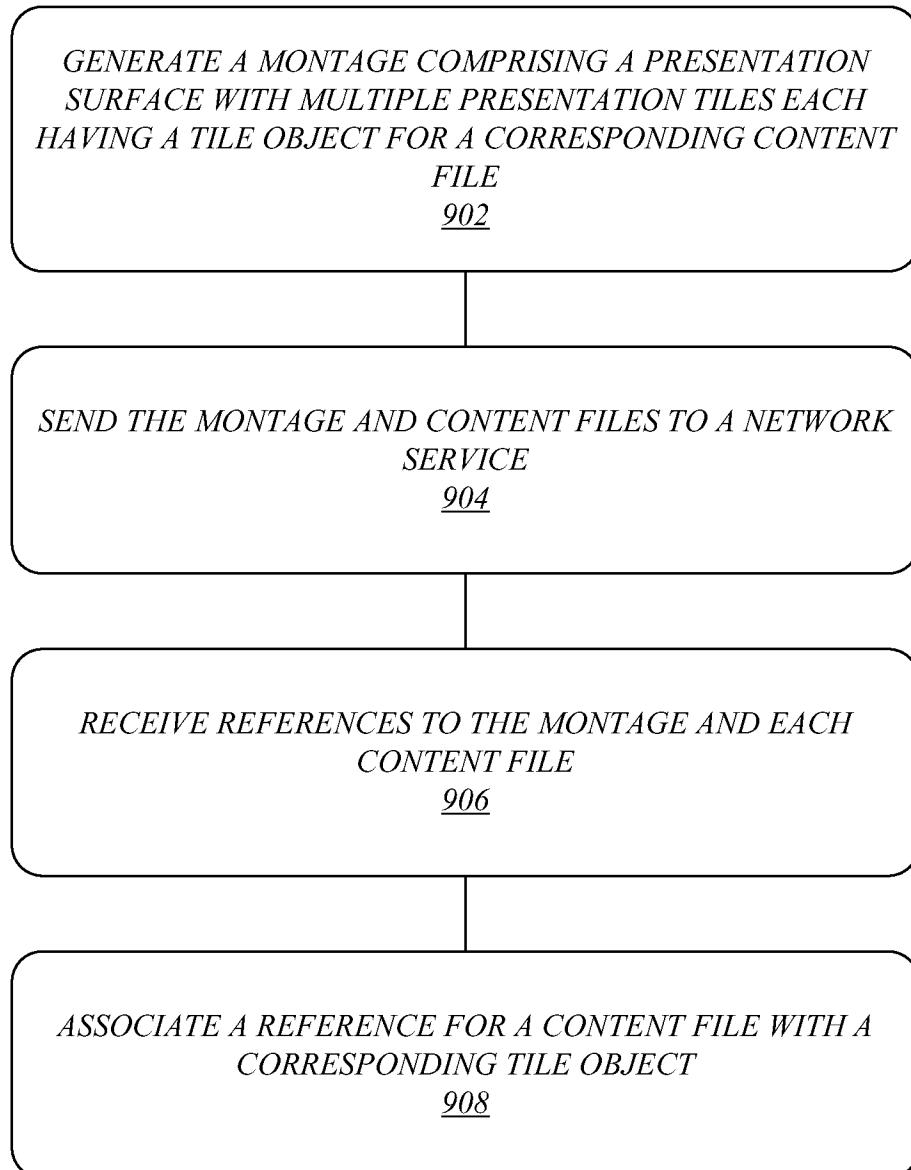
11/14

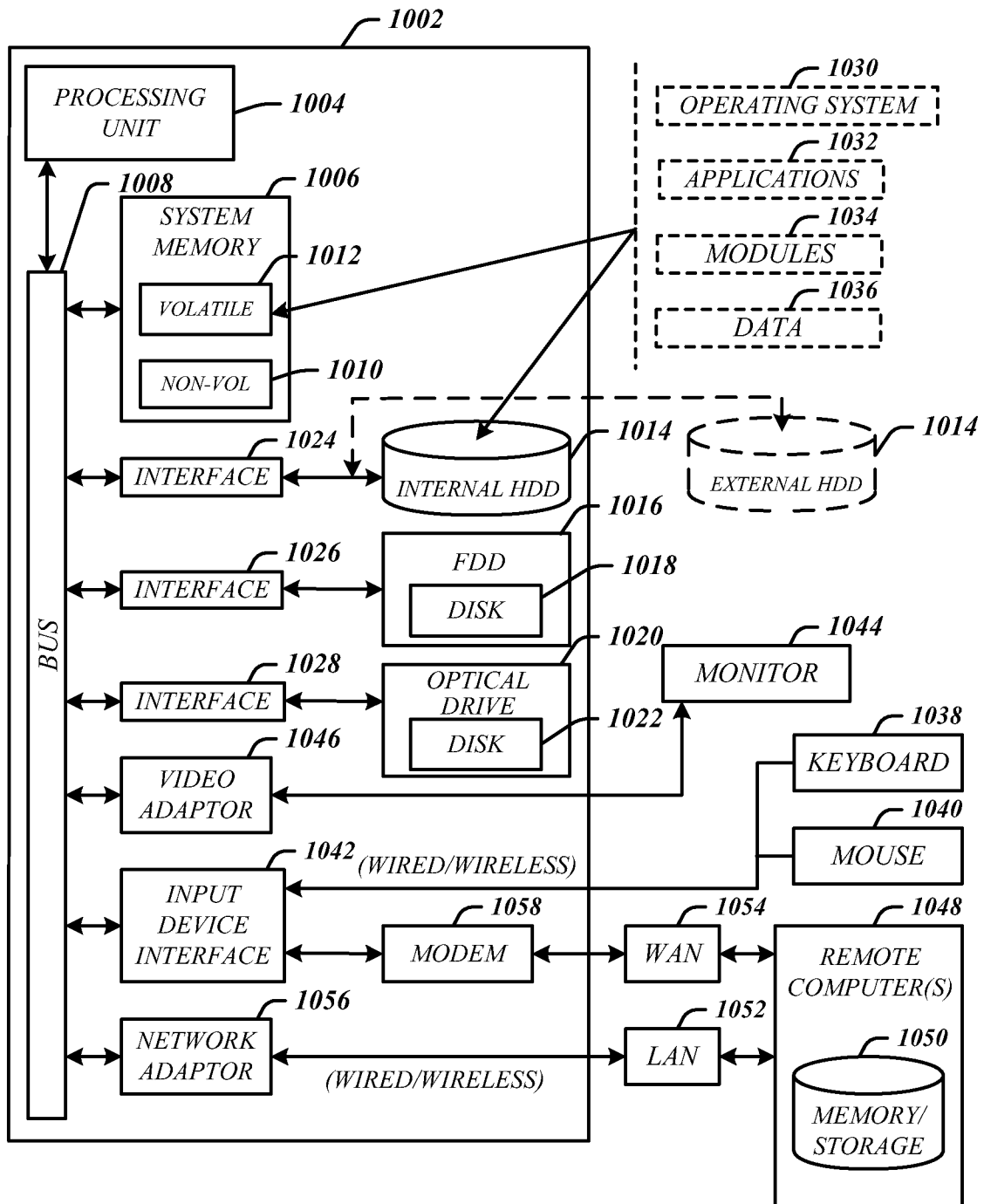
800**FIG. 8A**

12/14

820**FIG. 8B**

13/14

900**FIG. 9**

1000**FIG. 10**