Claims:

1. A computer-based method for developing a cloud application for, and deploying the cloud application in, a cloud computing environment, with the cloud application being capable of being accessed and run by a computer system user that is authorized to connect to the cloud environment, comprising the steps of:

(A) on a computer-based device that is capable of connecting to the cloud environment developing the cloud application, and preparing the developed cloud application for deployment in a cloud environment by at least

(1) creating at least one web service for the cloud application,

(2) creating a user interface that includes user interface components, and

(3) creating jobs to store data for the cloud application;

(B) on the computer-based device that is capable of connecting to the cloud environment updating metadata associated with the cloud application according to at least the one web service created at step (A);

(C) on the computer-based device that is capable of connecting to the cloud environment updating at least a service definition and service inventory file with the updated metadata associated with the cloud application according to step (B);

(D) on the computer-based device that is capable of connecting to the cloud environment building web archive files for bundling at least the updated service definition and service inventory file updated at step (C), and the user interface and jobs created at step (A);

(E) on the computer-based device that is capable of connecting to the cloud environment bundling the web archive files built at step (D) and creating a cloud application for deployment in the cloud environment;

(F) on the computer-based device that is capable of connecting to the cloud environment creating a cloud application profile for the cloud application that has associated therewith the bundled web archive files bundled at step (E);

(G) on the computer-based device that is capable of connecting to the cloud environment connecting to the cloud environment and at least requesting deployment of the cloud application in the cloud environment by transmitting the cloud application profile created at step (F) to the cloud environment, and if the request is granted then step (H), otherwise step (A);

(H) on the computer-based device that is capable of connecting to the cloud environment obtaining approvals from the cloud environment to deploy the cloud application in the cloud environment;

(I) on the computer-based device that is capable of connecting to the cloud environment updating a service registry of the cloud environment with the services associated with the cloud application;

(J) on the computer-based device that is capable of connecting to the cloud environment updating access security for the cloud environment with authorization levels for computer system users to at least access, change, and manipulate data with respect to the cloud application; and

(K) on the computer-based device that is capable of connecting to the cloud environment promoting the cloud application to the cloud environment for use by computer system users according to the updated access security according to step (K).

2. The method as recited in claim 1, wherein updating the service registry of the cloud environment at step (I) includes updating the service registry with at least the one web service created at step (A)(1).

3. The method as recited in claim 1, wherein the jobs created at step (A)(3) include batch jobs and the batch jobs include being updated to a searchable registry in the cloud environment.

4. The method as recited in claim 1, wherein the cloud application includes foreground and background processes.

5. The method as recited in claim 4, wherein the foreground processes include web services and components of the user interface.

6. The method as recited in claim 4, wherein the background processes include jobs.

7. The method as recited in claim 4, wherein on the computer-based device that is capable of connecting to the cloud environment a separate web archive file is created for the foreground processes and the background processes.

8. The method as recited in claim 7, wherein bundling the web archive files at step (E) and creating a cloud application for deployment in the cloud environment includes bundling the binaries for the foreground processes and the background processes.

9. The method as recited in claim 1, wherein the at least one web service includes at least one of a group of services that include (a) a service for servicing application programming interfaces, (b) a search catalog service for searching for web services in the service registry, (c) a browse catalog service conduct lower level searches below cloud application function groups to constituent web services of such function groups, and (d) web service details service.

10. A computer-based system for developing cloud applications for, and deploying the cloud applications in, a cloud computing environment, with the cloud applications being capable of being accessed and run by a computer system user that is authorized to connect to the cloud environment, the system comprising:

a cloud controller for analyzing information collected and stored in a cloud in at least one cloud database;

a cloud stack electronically connected to the cloud controller, a service registry, and cloud application builder, with the cloud controller including at least cloud software systems, with the cloud stack electronically connected to the cloud and including at least operating software for the computer-based system;

the service registry electronically connected to the cloud controller, the cloud stack, and cloud application builder, with service registry including at least a register for registering web services for cloud applications deployed in the cloud environment; and

the cloud application builder electronically connected to the cloud controller, the cloud stack, and service registry, with the cloud application builder for building cloud applications for deployment in the cloud environment.

11. The computer-based system as recited in claim 10, wherein the at least one cloud database stores at least cloud application binaries.

12. The computer-based system as recited in claim 11, wherein the at least one cloud database stores at least cloud application binaries and monitoring information.

13. The computer-based system as recited in claim 10, wherein the cloud software systems includes one or more of a group that includes operating system software, virtual machine software, web server software, application server software, network security software, web access management software, database driver software, application builder runtime software, and third party library software.

14. The computer-based system as recited in claim 10, wherein the cloud application builder includes at least software development tools for creating at least components for cloud applications that are deployed in the cloud environment.

15. The computer-based system as recited in claim 14, wherein the software development tools include tools for at least developing web services, developing user interfaces and registering web services, and developing jobs.

16. The computer-based system as recited in claim 15, wherein the tools for developing user interfaces and registering web services include tools for developing user interfaces and registering web services that provide level access control to cloud applications developed and deployed in the cloud environment.

17. The computer-based system as recited in claim 10, wherein the cloud controller provides at least one or more of a group of functions a cloud application deployment workflow, a time and date for cloud application deployment in the cloud environment, scaling of the cloud environment depending on cloud applications to be run in the cloud at a given point in time, set a time and date for scanning cloud application logs, set a time and date for checking the physical and virtual machines associated with the cloud environment, set a time and date for monitoring cloud application transactions, and issue alerts in the cloud environment when errors occur in the cloud environment.

18. The computer-based system as recited in claim 10, wherein the cloud application builder includes software tools for building cloud application components.

19. The computer-based system as recited in claim 18, wherein the software tools for building the cloud application components include at least tools for developing at least one web service, at least one user interface and registering at least one web service in the service registry, and at least one job.

20. The computer-based system as recited in claim 19, wherein the tools for developing at least the one user interface and registering at least one web service in the service registry includes tools that provide access level controls for the cloud application being developed.

The invention claimed is:

1. A computer-based method for developing a cloud application for, and deploying the cloud application in, a cloud computing environment, with the cloud application being capable of being accessed and run by a computer system user that is authorized to connect to the cloud environment, comprising the steps of:

(A) on a computer-based device that is capable of connecting to the cloud environment developing the cloud application and preparing the developed cloud application for deployment in a cloud environment by at least

(1) creating at least one web service for the cloud application,

(2) creating a user interface that includes user interface components, and

(3) creating jobs to store data for the cloud application;

(B) on the computer-based device that is capable of connecting to the cloud environment updating metadata associated with the cloud application according to at least the one web service created at step (A);

(C) on the computer-based device that is capable of connecting to the cloud environment updating at least a service definition and service inventory file with the updated metadata associated with the cloud application according to step (B);

(D) on the computer-based device that is capable of connecting to the cloud environment building web archive files for bundling at least the updated service definition and service inventory file updated at step (C), and the user interface and jobs created at step (A);

(E) on the computer-based device that is capable of connecting to the cloud environment bundling the web archive files built at step (D) and creating a cloud application for deployment in the cloud environment;

(F) on the computer-based device that is capable of connecting to the cloud environment creating a cloud application profile for the cloud application that has associated therewith the bundled web archive files bundled at step (E);

(G) on the computer-based device that is capable of connecting to the cloud environment connecting to the cloud environment and at least requesting deployment of the cloud application in the cloud environment by transmitting the cloud application profile created at step (F) to the cloud environment, and if the request is granted then step (H), otherwise step (A);

(H) on the computer-based device that is capable of connecting to the cloud environment obtaining approvals from the cloud environment to deploy the cloud application in the cloud environment;

(I) on the computer-based device that is capable of connecting to the cloud environment updating a service registry of the cloud environment with the services associated with the cloud application;

(J) on the computer-based device that is capable of connecting to the cloud environment updating access security for the cloud environment with authorization levels for computer system users to at least access, change, and manipulate data with respect to the cloud application; and

(K) on the computer-based device that is capable of connecting to the cloud environment promoting the cloud application to the cloud environment for use by computer system users according to the updated access security according to step (K).

2. The method as recited in claim 1, wherein updating the service registry of the cloud environment at step (I) includes updating the service registry with at least the one web service created at step (A)(1).

3. The method as recited in claim 1, wherein the jobs created at step (A)(3) include batch jobs and the batch jobs include being updated to a searchable registry in the cloud environment.

4. The method as recited in claim 1, wherein the cloud application includes foreground and background processes.

5. The method as recited in claim 4, wherein the foreground processes include web services and components of the user interface.

6. The method as recited in claim 4, wherein the background processes include jobs.

7. The method as recited in claim 4, wherein on the computer-based device that is capable of connecting to the cloud environment a separate web archive file is created for the foreground processes and the background processes.

8. The method as recited in claim 7, wherein bundling the web archive files at step (E) and creating a cloud application for deployment in the cloud environment includes bundling the binaries for the foreground processes and the background processes.

9. The method as recited in claim 1, wherein the at least one web service includes at least one of a group of services that include (a) a service for servicing application programming interfaces, (b) a search catalog service for searching for web services in the service registry, (c) a browse catalog service conduct lower level searches below cloud application function groups to constituent web services of such function groups, and (d) web service details service.

10. A computer-based system executed by a processor for developing cloud applications for, and deploying the cloud applications in, a cloud computing environment, with the cloud applications being capable of being accessed and run by a computer system user that is authorized to connect to the cloud environment, the system comprising:

a cloud controller for analyzing information collected and stored in a cloud in at least one cloud database;

a cloud stack electronically connected to the cloud controller, a service registry, and cloud application builder, with the cloud controller including at least cloud software systems, with the cloud stack electronically connected to the cloud and including at least operating software for the computer-based system;

the service registry electronically connected to the cloud controller, the cloud stack, and cloud application builder, with service registry including at least a register for registering web services for cloud applications deployed in the cloud environment; and

the cloud application builder electronically connected to the cloud controller, the cloud stack, and service registry, with the cloud application builder for building cloud applications for deployment in the cloud environment.

11. The computer-based system as recited in claim 10, wherein the at least one cloud database stores at least cloud application binaries.

12. The computer-based system as recited in claim 11, wherein the at least one cloud database stores at least cloud application binaries and monitoring information.

13. The computer-based system as recited in claim 10, wherein the cloud software systems includes one or more of a group that includes operating system software, virtual machine software, web server software, application server software, network security software, web access management software, database driver software, application builder runtime software, and third party library software.

14. The computer-based system as recited in claim 10, wherein the cloud application builder includes at least software development tools for creating at least components for cloud applications that are deployed in the cloud environment.

15. The computer-based system as recited in claim 14, wherein the software development tools include tools for at least developing web services, developing user interfaces and registering web services, and developing jobs.

16. The computer-based system as recited in claim 15, wherein the tools for developing user interfaces and registering web services include tools for developing user interfaces and registering web services that provide level access control to cloud applications developed and deployed in the cloud environment.

17. The computer-based system as recited in claim 10, wherein the cloud controller provides at least one or more of a group of functions a cloud application deployment workflow, a time and date for cloud application deployment in the cloud environment, scaling of the cloud environment depending on cloud applications to be run in the cloud at a given point in time, set a time and date for scanning cloud application logs, set a time and date for checking the physical and virtual machines associated with the cloud environment, set a time and date for monitoring cloud application transactions, and issue alerts in the cloud environment when errors occur in the cloud environment.

18. The computer-based system as recited in claim 10, wherein the cloud application builder includes software tools for building cloud application components.

19. The computer-based system as recited in claim 18, wherein the software tools for building the cloud application components include at least tools for developing at least one web service, at least one user interface and registering at least one web service in the service registry, and at least one job.

20. The computer-based system as recited in claim 19, wherein the tools for developing at least the one user interface and registering at least one web service in the service registry includes tools that provide access level controls for the cloud application being developed.