SUMMARY

In an illustrative embodiment, an apparatus is provided. The apparatus comprises a parts library, a database, and a parts management system. The parts library is configured to store a plurality of part definition files. The database is configured to store entries identifying a printing of parts using the plurality of part definition files. The parts management system is configured to receive a request for a part definition file in the parts library, identify the part definition file in the plurality of part definition files in the parts library, receive an indication of a printing of a part using the part definition file, and store an entry identifying the printing of the part using the part definition file in the database.

In another illustrative embodiment, a method is provided. The method comprises receiving a request for a part definition file in a parts library; identifying the part definition file in a plurality of part definition files in the parts library; receiving an indication of a printing of a part using the part definition file; and storing an entry identifying the printing of the part using the part definition file in a database.

In yet another illustrative embodiment, a system is presented. The system comprises a parts library, a database, a parts management system, and a three dimensional printing system. The parts library is configured to store a plurality of part definition files. The database is configured to store entries identifying a printing of parts using the plurality of part definition files. The parts management system is configured to receive a request for a part definition file in the parts library from the three dimensional printing system. The three dimensional printing system is configured to print parts using the plurality of part definition files.

According to an aspect, there is provided an apparatus comprising: a parts library configured to store a plurality of part definition files, wherein the part definition files define three dimensional aircraft parts; a database configured to store entries identifying a printing of parts using the plurality of part definition files; and a parts management system configured to receive a request for a part definition file in the parts library from a three dimensional printing system, to identify the part definition file in the plurality of part definition files in the parts library, to verify that the three dimensional printing system meets part certification standards of a three dimensional aircraft part to be printed using the identified part definition file based on diagnostic information conforming to printer specifications and material specifications for the part as defined by the part definition file of the plurality of part definition files in the parts library, to receive an indication of a printing of the part using the part definition file, to store an entry identifying the printing of the part using the part definition file in the database, and to send a delete command to delete the part definition file to the three dimensional printing system in response to receiving the indication of the printing of the part.

According to another aspect, there is provided a method comprising: receiving a request for a part definition file in a parts library, from a three dimensional printing system, wherein the part definition file defines a three dimensional aircraft part; identifying the part definition file in a plurality of part definition files in the parts library; verifying that the three dimensional printing system meets parts certification standards of a three dimensional aircraft part to be printed using the identified part definition file based on diagnostic information conforming to printer specifications and material specifications for the part as defined by the part definition file of the plurality of part definition files in the parts library; receiving an indication of a printing of the part using the part definition file; storing an entry identifying the printing of the part using the part definition file in a database; and deleting the part definition file from the three dimensional printing system.

According to yet another aspect, there is provided a system comprising: a parts library configured to store a plurality of part definition files, wherein the part definition files define three dimensional aircraft parts; a database configured to store entries identifying a printing of parts using the plurality of part definition files; a parts management system configured: to receive a request for a part definition file in the parts library from a three dimensional printing system; and to verify that the three dimensional printing system meets part certification standards of a three dimensional aircraft part to be printed using the part definition file based on diagnostic information conforming to printer specifications and material specifications for the part as defined by the part definition file of the plurality of part definition files in the parts library, the three dimensional printing system configured to print the aircraft part and delete the part definition file in response printing the aircraft part.

The features and functions can be achieved independently in various embodiments of the present disclosure or may be combined in yet other embodiments in which further details can be seen with reference to the following description and drawings.

CLAIMS

What is claimed is:

1. An apparatus comprising:

a parts library configured to store a plurality of part definition files, wherein the part definition files define three dimensional aircraft parts;

a database configured to store entries identifying a printing of parts using the plurality of part definition files; and

a parts management system configured to receive a request for a part definition file in the parts library from a three dimensional printing system, to identify the part definition file in the plurality of part definition files in the parts library, to verify that the three dimensional printing system meets part certification standards of a three dimensional aircraft part to be printed using the identified part definition file based on diagnostic information conforming to printer specifications and material specifications for the part as defined by the part definition file of the plurality of part definition files in the parts library, to receive an indication of a printing of the part using the part definition file, to store an entry identifying the printing of the part using the part definition file in the database, and to send a delete command to delete the part definition file to the three dimensional printing system in response to receiving the indication of the printing of the part.

2. The apparatus of claim 1, wherein the parts management system is further configured to: request payment in response to receiving the indication of the printing of the part using the part definition file.

3. The apparatus of claim 1, wherein the parts management system is further configured to: transmit the part definition file to the three dimensional printing system.

4. The apparatus of claim 3, wherein the parts management system is further configured to encrypt the part definition file to form an encrypted part definition file, and transmit the encrypted part definition file to the three dimensional printing system.

5. The apparatus of claim 1, wherein the parts library is a first parts library, and wherein the parts management system is further configured to update a second parts library in a three dimensional printing system using the plurality of part definition files in the first parts library.

6. The apparatus of claim 1, wherein the parts management system is further configured to: send authorization to print the part on the three dimensional printing system using the part definition file in response to verifying conformation of the diagnostic information that the three dimensional printing system meets part certification standards for the part to be printed.

7. A method comprising:

receiving a request for a part definition file in a parts library, from a three dimensional printing system, wherein the part definition file defines a three dimensional aircraft part;

identifying the part definition file in a plurality of part definition files in the parts library;

verifying that the three dimensional printing system meets parts certification standards of a three dimensional aircraft part to be printed using the identified part definition file based on diagnostic information conforming to printer specifications and material specifications for the part as defined by the part definition file of the plurality of part definition files in the parts library;

receiving an indication of a printing of the part using the part definition file;

storing an entry identifying the printing of the part using the part definition file in a database; and

deleting the part definition file from the three dimensional printing system.

8. The method of claim 7, further comprising: requesting payment in response to receiving the indication of the printing of the part using the part definition file.

9. The method of claim 7, further comprising: sending the part definition file in the plurality of part definition files to the three dimensional printing system.

10. The method of claim 7, further comprising: encrypting the part definition file before sending the part definition file in the plurality of part definition files to a three dimensional printing system.

11. A system comprising:

a parts library configured to store a plurality of part definition files, wherein the part definition files define three dimensional aircraft parts;

a database configured to store entries identifying a printing of parts using the plurality of part definition files;

a parts management system configured:

to receive a request for a part definition file in the parts library from a three dimensional printing system; and

to verify that the three dimensional printing system meets part certification standards of a three dimensional aircraft part to be printed using the part definition file based on diagnostic information conforming to printer specifications and material specifications for the part as defined by the part definition file of the plurality of part definition files in the parts library,

the three dimensional printing system configured to print the aircraft part and delete the part definition file in response printing the aircraft part.

12. The system of claim 11, wherein the parts library is located in an authorization system.

13. The system of claim 11, wherein the database and the parts management system are located in an authorization system, and wherein the authorization system is configured to update the parts library by adding a number of part definition files to the parts library.

14. The system of claim 11, wherein the database and the parts management system are located in an authorization system, and wherein the authorization system is configured to update specifications for a number of part definition files of the parts library to keep the parts library up to date.

15. The system of claim 11, wherein the database and the parts management system are located in an authorization system.

16. The system of claim 15, wherein the authorization system and the three dimensional printing system are connected by a data connection.

17. The system of claim 11, wherein the three dimensional printing system comprises a number of three dimensional printers.

18. The system of claim 17, wherein the three dimensional printing system further comprises a data processing system.

19. The system of claim 11, wherein the parts management system is further configured to send authorization to print the part on the three dimensional printing system using the part definition file in response to verifying conformation of the diagnostic information that the three dimensional printing system meets part certification standards for the part to be printed.