

Towards the definition an innovative supply chain: AMSA, an application of the cloud manufacturing

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Abstract. The technological progress has opened new scenarios in terms of manufacturing paradigms. In particular, the world of Internet has allowed to connect resources characterized by a different geographical position independently of the distance. Among the interesting technologies that are able to exploit these advantages are certainly the Additive Manufacturing and the reverse engineering systems.

The main paradigm that based its strengths in the aspects before mentioned is named Cloud. In particular, it represents a paradigm that allows to supply resources of different kind to catch up a certain goal. The most famous application of the Cloud paradigm is the Cloud Computing but, thanks to the new manufacturing technologies the application of this concept for the production has gained more importance. In this case the correct term to indicate the application of the Cloud paradigm to the production is Cloud Manufacturing.

This last term describes as, thanks to the resources linked through the web, it is possible to define a supply chain that allows to obtain the production of products in an innovative manner.

The innovation of this paradigm is the possibility to configure a supply chain characterized by: flexibility, availability of a tool for support decisional system, “on demand” production and manufacturing capabilities considered as services.

This paper reports an innovative application of the Cloud Manufacturing paradigm that has expected the definition a tool web-based that allows to configure the client requests and the relative supply chain considering the best available solutions. In particular, the developed system, called AMSA (Additive Manufacturing Spare parts market Application) have had as main goal the definition of a common platform to supply different kind of services: product development oriented to the Additive Manufacturing (DFAM, Design For Additive Manufacturing), production of prototype or small series with Additive Manufacturing and reverse engineering activities to obtain CAD models starting from a physical object.

The definition of different kind of services allow to satisfy several client needs such as: necessity to define an innovative product characterized by high performance in terms of stiffness/weight ratio, possibility to manufacture small series, such as in the motorsport field, and possibility to define CAD models for the obsolete parts for which the geometrical information are missed.

AMSA platform relies on the reconfigurable supply chain that is dynamic and it depends on the particular client needs. For example, when the client requires the manufacture of a small series of a particular component, AMSA allows to the technicians to choose the best solutions in terms of price and distance. Therefore, the suppliers that contribute to the definition of the dynamic supply chain have an important role.

The AMSA platform, for these reasons, represents an important tool able to link the suppliers to the customers in the best manner in order to obtain service that are characterized an high performance level.