# **C**loud-based **R**apid **E**lastic **MA**nufacturing

# Glossary

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# Glossary

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| Abstract Service (or Abstract Activity) | A representation of a generic set of Concrete Services but where the actual Concrete Services may or may not be defined.  In the latter's case the Concrete service would be selected at runtime.   Abstract Services are available in the Service registry and if subscribed to, or are free and in the context of the user, are in the Process designer palette.  Abstract Services can be linked to 1 or more Concrete services of which 1 may be a default services.  In case of abstract service creation means adding a description, semantic annotation and optionally linking to concrete services one of which can be a default |
| Activity (or Process activity or Task) | Either a Concrete Service or Abstract Service in the palette Process Designer and which may be copied to the Process Designer workbench to become a process step |
| ANDON | ANDON is a manufacturing term referring to a system to notify management, maintenance, and other workers of a quality or process problem. The centrepiece is a signboard incorporating signal lights to indicate which workstation has the problem. The alert can be activated manually by a worker using a pull cord or button, or may be activated automatically by the production equipment itself. The system may include a means to stop production so the issue can be corrected. Some modern alert systems incorporate audio alarms, text, or other displays. |
| Arbitrary source | Data source that is common |
| Asset Ontology | |
| Augmented Reality | Augmented Reality is the integration of computer-generated content overlaid on a real world environment. |
| Big Data | Big data is high-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision-making, and process automation. |
| Capacity Acquisition | |
| Capacity Leasing | |
| CELL | A cell in manufacturing shop floors consists of a single designated area for a very specific production operation such as a series of welds by a robot on the top left corner of a passenger side front car door

Commonly there are a series of cells that are usually aligned physically in close proximity to allow a product to flow from one operation to the next in order to break down the production process into manageable parts. |

| Cloud Computing | A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable **computing** resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. |
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| Cloud Manufacturing | A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable **manufacturing** resources (e.g., manufacturing software tools, manufacturing equipment, and manufacturing capabilities) that can be rapidly provisioned and released with minimal management effort or service provider interaction. |
| Collaborative Manufacturing | |
| Concrete Service (or simply Service) | An executable piece of software which is executed at the client or in the cloud and is of type Internal Software Services, External Software Services or CPS Service.  A description and annotation must be added to describe the service.  Concrete Service include wrapped Services.  Concrete Services are available in the Service registry and if subscribed to, or are free and in the context of the user, are in the Process designer palette |
| CPS Service | Services which represent CPS systems are constructed between T4.4 and WP7/8.  E.g. a temperature sensor on a clutch brake |
| Data Interoperability | |
| Elastic Processes | |
| Platform Administrator | This user role enables users to manage the whole CREMA system.  This user has access for everything and insight into all data. |
| End User | |
| Engineer | |
| External software service | Software services similar to the Internal Software Services except that it is not suitable for the CREMA cloud – e.g. existing CRM or ERP systems running at the client or to represent a human actor/function.  These are typically always available |
| Internal software service | Services which are only 'software' in nature and can be run solely on the CREMA cloud – e.g. a complex algorithm for calculating schedules and which needs a scalable cloud for such calculations.  These are either available or built in the WP7/8 use cases |
| Intrinsic Service | Intrinsic services are 'hardcoded' activities that can become Process Steps.  They are internal to the process designer/runtime and represent, for example, decision/choices steps, timers/delays, and the steps to feed data from services to the MON and BDA components |

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| Machine Owner | |
| Manufacturing 4.0 | |
| Manufacturing Asset | Consist of manufacturing resources and manufacturing capabilities. |
| Manufacturing Capabilities | Manufacturing capabilities are actions/functional features of the manufacturing resources, i.e. the ability to perform the transformation of the set of manufacturing resources into another manufacturing form, resource, or product. |
| Manufacturing Process | Manufacturing process is business process with the set of the tasks that are aimed at achieving manufacturing goal. |
| Manufacturing Resources | Manufacturing resources are material or non-material manufacturing CPS equipment, implements for the equipment, and auxiliary parts for the manufacturing process. |
| Manufacturing Service | Manufacturing service is a set of manufacturing resources and manufacturing capabilities that act as one self-contained unit, i.e. product, part of the product, part of the manufacturing process, and conforms to the initial manufacturer's or customer's needs. |
| Manufacturing Interoperability | |
| Manufacturing Virtualisation | |
| Mobile Manufacturing | |
| OEE | OEE (Overall Equipment Effectiveness) is one of the most famous benchmark to measure the performance of the equipment in a factory. It calculates the global efficiency of a machine, equipment or a plant.<br><br>OEE calculation takes into account the next three variables:<br><br>• Availability (time)<br><br>• Performance (quantity)<br><br>• Quality (rejects)<br><br>All the results are expressed as a percentage that can be viewed as a snapshot of the current equipment effectiveness. There are many software solutions in the market to calculate OEE |
| Plant Manager | |
| Plant Operator | |
| POKA-YOKE | Poka-Yoke is a Japanese term that means "mistake-proofing". A Poka-Yoke is any mechanism in a lean manufacturing process that helps an equipment operator avoid (yokeru) mistakes (poka). Its purpose is to eliminate product defects by preventing, correcting, or drawing |

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| | attention to human errors as they occur. The concept was formalised, and the term adopted, by Shigeo Shingo as part of the Toyota Production System. It was originally described as baka-yoke, but as this means "fool-proofing" (or "idiot-proofing") the name was changed to the milder Poka-Yoke. |
| Process | A sequence of Process steps whose operation will result in the coordination of a set of CPS and manual (i.e. human) processes.  A process may repeat or cycle |
| Process Step | Once an Activity is part of a process it is referred to as a Process step |
| Process Optimisation | |
| Process Planning | Process planning is the systematic determination of methods by which a product is manufactured, economically and competitively. |
| Production Run | A production run is generally considered to be a specific number of parts that need to be pulled together and assembled to product a component with a specific specification. The number of components produced in a production run can vary enormously depending on the requirements of the scheduling system. So a production run may product a single component before all the tooling needs to be changed to make a different variant of the component or several hundred may be produced. |
| Service Provider | |
| Supply Chain | |
| System's Integrator | |
| Transformation Services | These are services, which transform data from one syntax/model to another.  For example one XML Schema to another XML Schema or a Flatfile to an XML file. In essence they are similar to an External Software Service (although can also be run as Internal Software Services) and are noted specifically since T4.2 develops technology for establishing them.  However, note they act solely as wrapped services and there is no T5.2 (PRU - Runtime) to T4.2 (DHS - Harmonisation) component interaction |
| Virtualised Manufacturing Capabilities | Virtualised manufacturing capabilities are real manufacturing activities or functional features of manufacturing resources that were abstracted, virtualized, and are available for the users within CREMA. |
| Virtualised Manufacturing Resources | Virtualised manufacturing resources stand for real physical resources (sensor, or CPS equipment, implements for the equipment, or auxiliary parts) that were abstracted, virtualized, and are available for the users within CREMA. |
| Virtualised Manufacturing Service | Virtualised manufacturing service is an aggregation and/or composition of a set of virtualised manufacturing resources and virtualised manufacturing capabilities, a real-world manufacturing |

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| | service within the manufacturing domain, which was virtualised and is available to the users within CREMA. |
| Virtual Reality | Virtual Reality enables people to generate simulations of real worlds using artificial environments, created with computer models. With this tool it is possible to interact with three dimensional environments using different interaction devices. |
| Wrapped Service | In the case of External Software Services and CPS Services then an additional CREMA software wrapper will be needed to invoke and describe the service |