Cloud Manufacturing for a Service-oriented Paradigm Shift
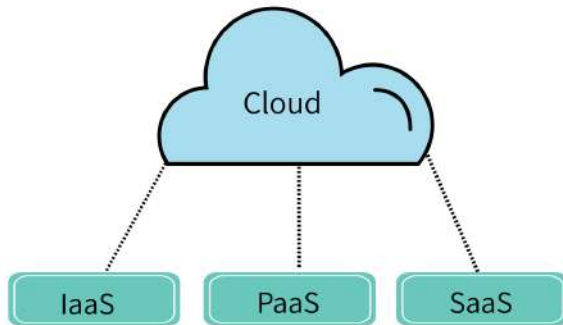
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About: Manufacturing businesses are being transformed from production & physical system-oriented to service-oriented business.
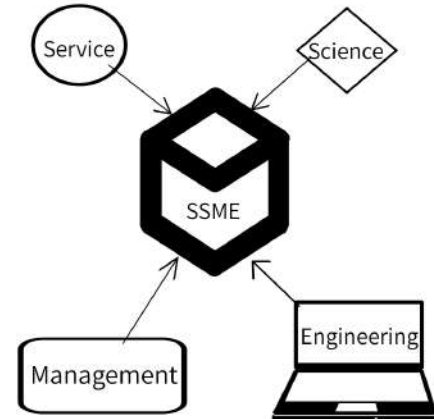
Three Operational Areas in Cloud Computing :

1. **IaaS** - Infrastructure-as-a-Service.
2. **PaaS** - Platform-as-a-Service.
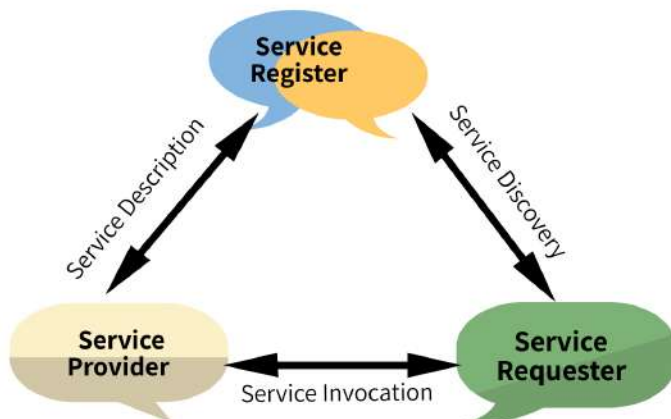3. **SaaS** - Software-as-a-Service.

Defining Cloud Manufacturing: A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable manufacturing resources that can be rapidly provisioned & released with minimal management effort or service provider interaction.

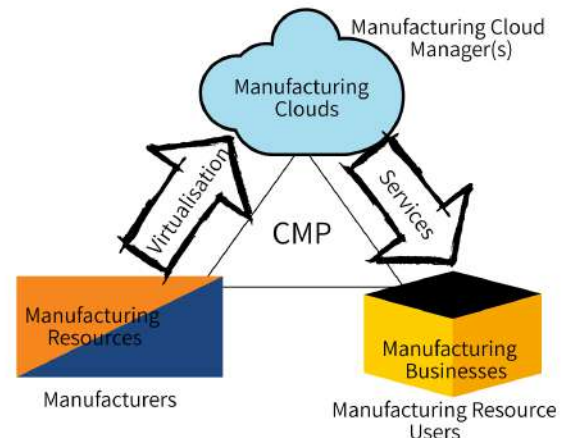## Service, Science, Management & Engineering (SSME) :

Problem Setting: After sophisticted demand & inspired by new smart technologies for product service systems in the market. Researchers started to develop a Service oriented business framework.
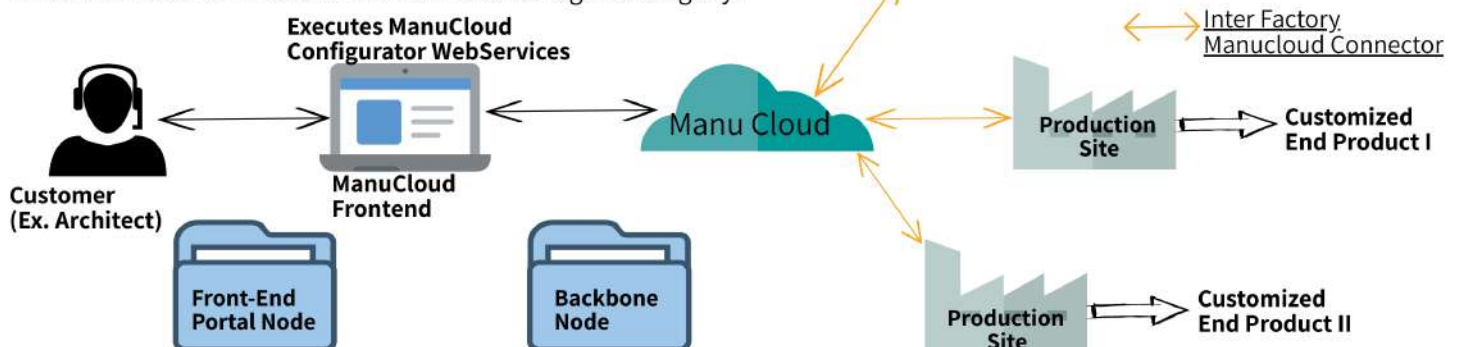
Service Oriented Architecture (SOA) :

Cloud Manufacturing Platform :

Approach / Conclusion : ManuCloud - an EU Project
For the next generation called MaaS (Manufacturing-as-a-Service).

Industry Perspective:

Service Users And Service Providers
1. Financial Flexibility. 1. Access to a large pool of Customers.
2. Business Agility. 2. Improving Productivity.
3. Instant access to Innovation. 3. Business Management Agility.

Successes from Cloud Manufacturing:
1. Data Security & Data Connectivity.
2. Data Process, Analytics & Synthesis.
3. Cyber-physical systems / Industry 4.0 / Smart factories.

References:
1. T.S. Banes, H.W. Lightfoot, S.Evans, A. Neely, J. Peppard from State of the art in Product-service systems.
2. Xun Xu from Cloud Computing to Cloud Manufacturing.
3. Y. Lu, J. Xu, X. Xu from A new paradigm shift for Manufacturing businesses.