Initial situation
The demand for individualised plastic products is increasing. The production of small batches without impairing economic efficiency or availability is a genuine challenge. Combining injection moulding, additive manufacturing and Industrie 4.0 technologies should make it economically viable to individualise large-volume products in single-unit batches in a flexible, automated, cyberphysical production system.

Solution
A fully networked and automated production cell will be used to demonstrate the manufacture of individualised office scissors in series, for example. An ALLROUNDER injection moulding machine and a freeformer for additive manufacturing are linked by means of a seven-axis robot. When entering their orders, users will create their own individual lettering on a tablet PC and choose from one of four types of scissors. The data will be registered in digital form and high-volume production will start automatically. A data matrix (DM) code turns every product into an information carrier. In the next step, the freeformer will apply the 3D plastic lettering in an additive process. The ARBURG host computer system, ALS, plays a central role in registering the parameters and passing them on to a web server. The product, process and quality data can be retrieved from the product-specific website in the cloud by means of the code using mobile devices.

Benefits at a glance
- Increased added value, production efficiency and process reliability
- A more flexible and efficient high-volume process for individual parts or multi-variant small-volume batches
- Online data archiving, documentation of quality assurance and traceability of parts