

The future of manufacturing

Read the text about the future of manufacturing. Parts of the text have been removed. Choose the correct part (A-K) for each gap (1-8). There are two extra parts that you should not use. Write your answers in the spaces provided. The first one (0) has been done for you.

The future of manufacturing

For a glimpse into the future of manufacturing, look no further than Local Motors, the world's first open source car company to reach production. The company is based in Phoenix, Arizona, and operates out of an office (0) . Its designs are crowd sourced, and assembly of the vehicles is done by customers themselves in local micro-factories with the help of the Local Motors team.

The firm's best known vehicle is the Rally Fighter. Development began when Local Motors launched a competition asking its community of designers, (Q1) through to hobbyists, to come up with ideas for a new car. The winner was Sangho Kim, a 30-year-old graphic artist who was then a student at the Art Centre College of Design in Pasadena, California. His design was based on a P-51 Mustang fighter plane and was enthusiastically endorsed by the Local Motors community. Further competitions were launched to design the vehicle's individual exterior parts, such as lights and bumpers.

Meanwhile, Local Motors designed or selected the chassis, engine and gear box. Some parts it 3D printed itself and others it sourced from companies such as Honda or BMW. This meant that while the Local Motors community could design the appearance of the car, features (Q2) were under the control of the company.

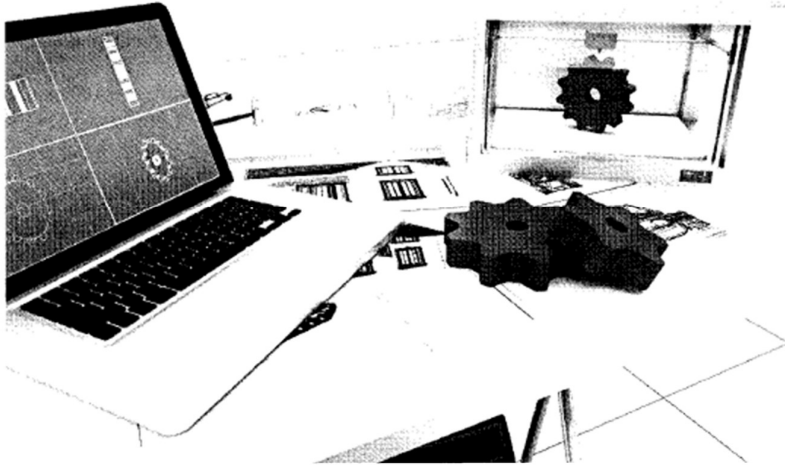
The Rally Fighter is undoubtedly a niche vehicle, but it shows how things can be done differently today. It's a globalised venture, but one (Q3) . This has become possible because the tools of factory production, from electronics assembly to 3D printing, are now available to individuals. Someone with a good idea for a new product can sit down at their computer and design it with an easy-to-use software tool and then make a prototype. 3D printers, such as the MakerBot, (Q4) , are now inexpensive and readily avail-

able. And with the arrival of flexible, web-centric factories, particularly in China, moving into full production can be very straightforward.

Anyone wishing to use open-access factories in China to manufacture something simply needs to visit a site such as Alibaba.com. A quick search will bring up several companies (Q5) , and it is then possible to use instant messaging to find out whether they are willing and able to do the job. The instant messaging tool can translate between Chinese and many European languages in real time, so each person can communicate using their native tongue. Response time is usually very quick and you can soon find out whether your product can be made and how much it will cost to produce.

Of course there are still disadvantages for Western countries using Chinese factories. However agile they are, the product still has to be transported half way around the world on a tanker, then taken to a distribution centre and from there to the local store. All of this means (Q6) comprises licensing, marketing, transport and logistics. A better solution might be to develop the idea of a network of micro-factories, as pioneered by Local Motors and other companies. These micro-factories could be linked on an internet platform. Consumers would choose items from the website (Q7) in the nearest micro-factory. This would give inventors access to global markets, but would mean they would not have to keep large inventories or pay for large production runs. It would have environmental benefits and could help generate jobs as well.

The days of inventors and designers having to pour vast quantities of money into building assembly lines and factories from scratch are long gone, with the result (Q8) are now at an all-time low. The next Industrial Revolution is underway.



A	that's highly customised and locally operated
B	that the vast majority of the cost of the item
C	that barriers to entry into manufacturing
D	which included everyone from highly qualified engineers
E	which is a huge pool of talent
F	which make similar items
G	that related to its safety and ease of fabrication
H	which would then be produced locally on demand
I	that's no larger than a high street store
J	that drives the manufacturing process
K	which were once out of the reach of many

0	I
Q1	
Q2	
Q3	
Q4	
Q5	
Q6	
Q7	
Q8	