Welcome to Warwick, where bright sparks are making manufacturing bloom again

The Midlands university is championing research, says **Danny Fortson**

RICHARD LEA-HAIR

Cutting edge: Professor Vinesh Raja demonstrates one of WMG's creations — computer-assisted virtual surgery

THE man on the operating table didn't twince as professor Vinesh Raja plunged a pair of surgical pliers into his abdomen.

"Feel it," he says, handing over the device with a devilish smile. "You can feel the resistance."

He's right. As I jab the pliers deep into the patient's innards they react against the tissue walls — which is bizarre because the patient is a plastic dummy. The internal organ on the giant television screen looks very real. His abdomen, of course, is not. It is a simulation, created by some very smart software and a robotic swivel attached to the pliers.

Raja expects it to be a hit in medical schools. "It used to be that in the European Union a surgeon had to have 30,000 hours of training," he said. "That is now 6,000 hours, so a tool like this we think will be very useful."

The robo-patient is just one of several gizmos created by WMG, a unique partnership between Warwick University and the manufacturing sector. Lord Bhattacharyya, WMG's founder and a key adviser on industrial policy to the previous Labour government and to Margaret Thatcher, said that alliances like WMG (formerly known as Warwick Manufacturing Group) that link blue-sky university science and technology-starved companies are a necessary shot in the arm for Britain's sickly manufacturing sector.

Since 1970, industry's share of GDP has fallen from 33% to just 12% last year, the biggest decline of any western economy. Bhattacharyya, based in the Midlands, smack in the shrivelled heart of Britain's carmaking region, is one of a handful of business leaders championing a crusade to reverse the trend.

"I completely abhor what's happening here. Politicians talk glibly about rebalancing the economy, but what are they doing?" he said. "It's not rocket science. We bring and develop technology here [to WMG] and we link it to the market at every level. Every doctorate student works directly with a company, and they pay us because we can deliver substance."

WMG is more Silicon Valley than Midlands. The airy halls, high-tech labs and day-glow furniture make it feel like the research and development arm of a Fortune 500 company. Of its £120m annual budget, 90% comes from its 500 industrial partners.

The result is an astonishing array of new technologies, from artificial bones and low-carbon welding to the world's first Formula 3 car built entirely from sustainable materials.

Bhattacharyya is not pining for the glory days of manufacturing. That era, thanks to cheap mass producers like China, are gone.

The future, he said, is in high-tech, specialised products. "I want to move this region on from being a toolbox," he said.

Indeed WMG's Digital Lab research centre, where the virtual surgery technology was developed, is home to projects in areas such as e-security and new ultra-high-definition video. Three start-ups are housed there.

When Jaguar was designing its new XF model, it turned to WMG to model the car's "emotional experience". Bhattacharyya recently signed a £40m deal to build a state-of-the-art facility to develop and manufacture plastic computer chips and electronics.

To make WMG more than a one-off, though, the UK needs to imitate well-funded, focused organisations like A*Star in Singapore, a government agency focused on fostering high-tech research, or America's top universities with their deep ties to industry, Bhattacharyya said.

The current scattergun approach, where pots of money are divvied up between quangos and regions, is failing: "People criticise us because they say our research isn't purely academic. But this approach that doles money out to Scotland, the northeast, the north, to the Technology Strategy Board, the National Research Council . . . Before you know it, it's peanuts.

"We need to put it all together into one mission-oriented organisation whose main job would be to establish a production base. The Germans do it, and very successfully," said Bhattacharyya.

There is one problem, however, that no amount of money or government direction will solve: the British aversion to risk.

Bhattacharyya said: "We have kids who come here [to Warwick] from overseas. They learn, go back home and become millionaires overnight. Here it is so difficult. Making money in this country is still perceived as second-rate."