Agri-Marine Robotics (AMR) is a privately-owned technology and manufacturing firm located in Aberdeen. AMR specializes in autonomous agricultural and underwater robots that are used in a variety of crop harvesting, underwater research and exploration, and offshore oil and gas operations. Until the economic recession of 2008, most of AMR’s profits came from its agricultural division, where it was the market leader and sold its berry-picking, weeding and seedling-thinning bots (sometimes known as agbots) across the UK and all over Europe. After 2008, sales of agricultural equipment fell dangerously low, but Angus Macrae, AMR’s Director of agricultural sales and marketing, is delighted to report that orders are slowly picking up to pre-recession levels. Angus, who has worked at AMR since graduating and whose wife, Anisha, is a member of the sales team, is launching a “robust” new marketing campaign using AMR’s extensive database of pre-recession agbot customers. He is hopeful that the resulting income will help secure the future of the company. Until recently, the company was relatively unknown outside the agricultural and underwater sectors. Last year, however, AMR entered the international spotlight with two major announcements. Their new prototype autonomous manipulator system for use on remotely controlled vehicles was shown at an international tradeshow. The system’s AI (artificial intelligence) element coincided with increased media interest in AI, and the story was picked up by several newspapers; its futuristic design featured on the BBC website and a striking photograph made the front cover of New Scientist magazine. Industry analysts have claimed it is the most advanced system yet, and at least 5 years ahead of the competition. It is also adaptable for use in both subsea and land-based vehicles. AMR are counting on a large influx of orders to fund future expansion. Last year, AMR also publicised two major contracts they landed with large multi-national offshore oil operations, one with Total SA, which is headquartered in France, and one with Gazprom, which is majority owned by the Government of Russia, though technically private. These contracts are particularly welcome because the oil and gas industry has survived an especially tough couple of years with weak demand and low prices. During this time it has been difficult for AMR to make strategic decisions and plan for the future. The company has benefited over the years from a number of private investors but has not till now considered becoming a PLC by floating on the Stock Exchange. Public flotation could INF10101 | Information: Society & Security Coursework 2 of 3 INF10101 2017\_18 TR2 CW Scenario - issued.docx/19-Jan-18 mean millions of pounds of potential new investment, with share options offered as incentives to valuable staff. AMR is a small-medium enterprise (SME) with a head office in Aberdeen housing 55 employees, and a manufacturing site with 32 employees approximately 20 kilometres away. At head office, research and development (R&D) and sales and marketing (S&M) are divided into agri- and marine, while the finance, IT and human resources are common to both divisions. At the manufacturing site, one area deals with agricultural systems and another with underwater systems. The two divisions share the team that develops and maintains the AI systems that make AMR’s devices unique. The team members split their time between HQ and the manufacturing unit. The Director of marine production, Terry Dixon, and the Director of agri- production, Stefan Ziegler, both agree that increased capacity and “smarter” industrial practices will be necessary to accommodate manufacture of the new manipulator system, once the hoped-for orders start arriving. Their plan is to implement IoT devices and sensors throughout the complex manufacture process. AMR’s network has evolved rapidly as the company has changed, and cybersecurity has not always been given top priority. All servers reside in a small server room at the head office. These include a web server, an email server, and a file server containing design specifications, code and the testing / learning data used by the robots. The network applications are a mix of commercial off-the-shelf (COTS) software and in-house custom applications created over time by external consultants. AMR has daily backups of customer, financial, production and R&D data that are taken to a secure site by courier. AMR’s workstations and servers are a mix of Microsoft Windows and Linux operating systems. The workstations run a local virus scanner. A small IT staff of four headed by Susan Copthorne maintains all the systems and the network. Susan, a BCS member who graduated in biology over twenty years five ago, has had a number of IT-related roles in large and small firms, both manufacturing and service sector. As an experienced member of staff trusted by the CEO, Susan has been asked to recruit two new members for the IT team in anticipation of the company’s expansion, but her adverts have received hardly any interest and applications from the BCS-accredited computing graduates she’d prefer. She wonders if qualified IT professionals consider Aberdeen too out-of-the-way and dull to relocate to, and is debating whether to recruit a graduate from a different academic discipline and train him or her. Despite the specialist nature of AMR’s industrial sector and product range, the recent publicity surrounding the launch of the manipulator system has raised the company’s profile considerably. AMR’s externally facing Internet presence consists of a set of informational websites which have experienced many more hits, and a virtual private network (VPN) link between head office and manufacturing as illustrated in Figure 1. The VPN is also used external access by employees as a kind of “virtual office” to the applications they use on-site, though these applications are not mobile-friendly. These sites and services are maintained by AMR’s small network operation team and a small external team of web developers; Susan would like to extend use of the virtual office, as well as bring web development in-house. The VPN requires login credentials, but only specified users are granted access via access control list (ACL). The chief executive officer (CEO) of AMR is John Sutherland, an electronics engineer who established the firm in 1983 and tends to run it as a family concern, more recently alongside his daughter, Fiona, who is a qualified accountant. John has recently been talking to a number of vendors about cybersecurity; he is concerned about AMR’s newly increased profile. He has recently been approached by a China-based venture capital company, and this has encouraged his fear that competitors may target his organisation for intellectual property theft. He is also worried about environmental “hacktivists” who are upset about AMR’s involvement in offshore oil drilling, about which Fiona has received a recent hostile tweet. A number of vendors have thrown around the terms “ransomware” and “APT” and he would like to know more about then and if they are a real threat. AMR’s board has agreed that the organisation needs to increase its cybersecurity capabilities. The opinions expressed here about Aberdeen do not necessarily reflect those of the teaching team.