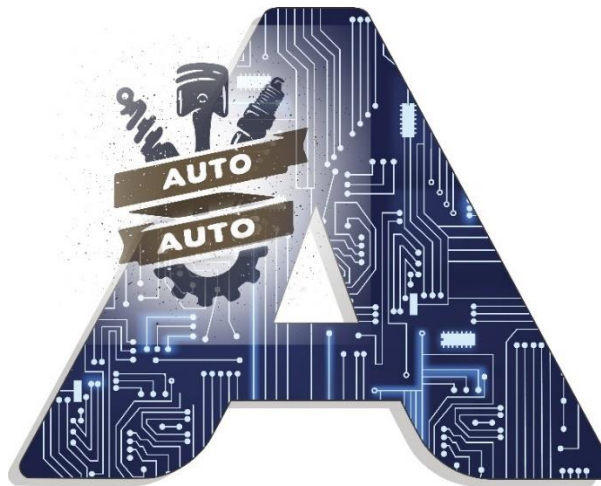


**Chartered Institute of  
Management Accountants**

**CIMA**

**August 2017 Strategic case study examination**

**Pre-seen material**



**Contents**

	<b>Page</b>
Company background	3
AutoAuto's product range	4
Product in development – driverless vehicles	6
Mission statement and Vision	7
Industry background	8
AutoAuto's strategy	9
Development process	10
AutoAuto's Board of Directors	11
Organisation chart	12
Extracts from AutoAuto's financial statements	13
Extracts from competitor's financial statements (Primnav)	15
Extract from risk report in AutoAuto's Annual Report	17
AutoAuto's Corporate Social Responsibility Report for year ended 30 June 2017	18
AutoAuto's share price	19
Costing information	20
Management accounts for quarter ended 30 June 2017	21
Press clippings	22

## **AutoAuto**

You are a senior manager in the finance function at AutoAuto. You report directly to the Board and advise on special projects and strategic matters.

AutoAuto is based in Upland where the currency is the U\$. Companies prepare their financial statements in accordance with IFRS.

## Company Background

AutoAuto is an electronics and design company which specialises in modern computer technology for cars and other vehicles. AutoAuto specialises in safety and navigation aids such as satellite navigation systems (satnav), parking aids and other devices that are intended to make driving safer.

AutoAuto's business model is to develop "disruptive" technologies. In other words, it produces ground-breaking products that change their industry. For example, AutoAuto's satellite navigation system is fitted with advanced voice recognition technology and has a high-speed wireless internet connection. The system can be operated by voice command and the software is highly flexible in terms of the extent to which it can accept instructions. For example, if the driver says "satnav, I am hungry", the system will search the internet for fast food locations that have convenient parking and will offer a number of choices, all without the driver having to look at a screen or touch a control.

AutoAuto has two streams of revenue. AutoAuto licenses technology to vehicle manufacturers. When it does so, it usually charges a royalty whereby the manufacturer pays an agreed price per unit manufactured. It also sells equipment as an original equipment manufacturer (OEM). Vehicle manufacturers buy and install these products. AutoAuto deals only with vehicle manufacturers. Its products are not for sale to the retail market for sale as upgrades or replacements.



AutoAuto does not have its own factories, so production has to be subcontracted. This avoids the need to share commercially sensitive information with customers and enables AutoAuto to retain control over build quality.

AutoAuto was founded 15 years ago by Allan Yellowlees, Christina Marchel and Abdullah Said. All three had previously worked together in the research department of an electronics company. AutoAuto was floated on the Upland Stock Exchange 5 years ago. The three founders remain on the Board of Directors, but sold most of their shares at the time of flotation. They retain the following holdings:

Allan Yellowlees	10%
Christina Marchel	8%
Abdullah Said	7%

## AutoAuto's product range

AutoAuto presently offers the following products:

<b>SmartNav</b>	 <p>SmartNav is an advanced satellite navigation (satnav) system that has an integrated internet connection.</p> <p>SmartNav is connected to the vehicle's electronics on the vehicle production line. SmartNav monitors several factors in addition to navigation. For example, if the vehicle will need fuel in order to reach its destination, the system will not only warn the driver of the need to refuel, but it will suggest the cheapest place to do so. It may even recommend a short diversion to avoid paying high prices.</p> <p>SmartNav also has advanced voice recognition and interpretation capabilities. The driver can ask for directions to a filling station without learning specific code words. For example, "fuel", "petrol" or "find a filling station" will all be understood.</p>
<b>TruckGuard</b>	 <p>TruckGuard is a system that monitors blind spots around heavy goods vehicles. Drivers cannot always see cars, cyclists and pedestrians if they are close to the truck, particularly the trailer. Cyclists are particularly vulnerable to being crushed if they are overtaking on the inside of a vehicle that is moving slowly in traffic, especially when the vehicle turns or changes lanes.</p> <p>To avoid distracting the driver, TruckGuard monitors potential hazards and may broadcast an audio warning to other road users. For example, a cyclist who enters a blind spot while the truck is stationary will hear a recorded warning from external speakers mounted on the vehicle. If the danger increases, perhaps because the truck starts to move and the driver signals to turn into the cyclist's path, the driver will be alerted by an audio warning inside the vehicle. The brakes can be applied automatically if a collision is imminent.</p>

<p><b>CruiseMaster</b></p>	<div data-bbox="450 224 807 750" data-label="Image"> </div> <p>All cruise control systems permit the driver to drive at a constant speed without having to operate the accelerator or brake. This allows for greater comfort on long journeys. Typically, the system is programmed to disengage if the driver touches the brake pedal. This reduces the risk of an accident if the driver releases the brake and the car accelerates unexpectedly.</p> <p>CruiseMaster is linked to the vehicle's SmartNav or a competitor's satnav. This gives a very accurate average speed reading. It also enables the CruiseMaster to reduce the speed setting to match the speed limit on that stretch of road. The vehicle will then drive at the speed selected by the driver or the speed limit, as appropriate.</p> <p>CruiseMaster uses microwave sensors in the front bumper to detect other vehicles on the road ahead. The CruiseMaster system will automatically slow the vehicle down to match traffic speed, avoiding the need for the driver to intervene. The driver can set the system up to drive at 50 miles per hour, but the system will slow the vehicle down to, say, 47 miles per hour in order to avoid getting too close to the vehicle in front.</p> <p>CruiseMaster constantly detects hazards even when the system has not been switched on. For example, it will gently apply the brakes if the driver gets too close to the car in front and will make an emergency stop if the car is in imminent danger of hitting a stationary object, such as a queue of cars on the motorway.</p>
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<p><b>ParkSpace</b></p>	<div data-bbox="450 1397 896 1877" data-label="Image"> </div> <p>ParkSpace is a parking aid for cars. When activated, the ParkSpace system detects parking spaces that are large enough to accommodate the car. If the driver confirms that the space is suitable, the system then takes over and manoeuvres the car into the space while also recognising hazards such as encroaching cars or pedestrians.</p> <p>ParkSpace can also assist the driver in exiting a tight space without hitting anything.</p>
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## Product in development - driverless vehicles



AutoAuto has invested heavily in a project to develop a system to create safe and efficient technology for driverless vehicles. AutoAuto intends to use existing technologies and intellectual property that it already owns to create a fully functional system that can be sold to vehicle manufacturers for a price of only a few thousand US\$ per vehicle. This is an ambitious target, particularly because several competitors are developing rival systems that are expected to sell for a much higher price.

The most immediate goal is for AutoAuto to develop a system that can offer the drivers the choice between controlling their vehicle themselves and switching to driverless mode. In driverless mode, the vehicle would follow the route selected by the satellite navigation system to get to the predetermined destination, while remaining a safe distance from other vehicles and obeying the speed limit. The vehicle will be fitted with traditional controls and the driver will be able to override the system at any time by taking hold of the steering wheel and touching either of the accelerator or brake pedals. The system that is under development will give the driver the freedom to engage driverless mode in order to, say, make a telephone call safely, or to relax on the motorway section of a long journey. AutoAuto's marketing department has already developed an advertising campaign that draws a comparison between driverless mode and the automatic pilot on an aeroplane, where the pilots remain at the controls but can programme the plane to fly itself while they monitor the flight.

Clearly, the phrase "driverless vehicle" is slightly misleading because the intention is that there will be a human driver at the controls at all times, even if he or she is not actually operating the vehicle.

## Autonomous vehicles

In the long term, AutoAuto hopes to develop fully autonomous vehicles that do not require drivers. For example, heavy goods vehicles could transport goods from one location to another without the need to employ drivers. The technology underlying a fully autonomous vehicle is not necessarily much different from that of a driverless vehicle, although the software would have to cope with issues such as rerouting automatically when a road is closed unexpectedly or with the need to find a safe and convenient parking space close to a destination.

Making a vehicle autonomous is a far more demanding challenge than making it driverless. The driverless vehicle concept has always implied that there will be a human in the driving seat to take control whenever the need arises. An autonomous vehicle might be designed to take to the road without a driver and so the systems will have to be far more robust in order to cope with any issues that arise on the road.

### **Mission statement**

AutoAuto's mission is "Making vehicles drive themselves".

This was the founders' original mission statement, even though the technology did not exist to enable that to become possible in a literal sense. Successive new products have, one step at a time, brought the company closer to achieving this.

### **Vision**

AutoAuto will be the industry leader in each of its product ranges, offering the latest technology, ease of use and value for money.

AutoAuto will be the industry leader in terms of innovation and product development.

## Industry background

The motor industry is a global business, with a relatively small number of major manufacturers of cars and commercial vehicles. Globalisation has led to a homogeneity in the market with manufacturers often struggling to differentiate their products.

One of the approaches that has been used to effect in the car market has been the addition of features and accessories that add an air of excitement or novelty to a car. For example, air conditioning was once regarded as a luxury feature on large and expensive cars, but now many manufacturers offer it on medium-sized and even small cars. Some manufacturers even fit it as standard.

AutoAuto is one of several companies which offer products that can be incorporated into new vehicles in order to add perceived value. For example, it sells SmartNav to several companies, all of which have customised the basic system to some extent. One manufacturer focussed its television advertising on the “peace of mind” feature when it launched its latest family saloon car. Additional software in the SmartNav system installed by that manufacturer permits the driver to transmit a request for assistance in the event of an emergency. A menu enables the request to specify whether the problem is a mechanical breakdown or a more serious matter requiring the emergency services. The system then informs the relevant parties and includes the vehicle’s location.

AutoAuto is one of several companies which specialise in electronic driver aids. This is a competitive niche of the automotive industry because it is potentially very profitable. The development of a new feature to an existing product can be a significant selling point. Furthermore, the vehicle manufacturers themselves often feel that they have little choice but to follow the innovations of their competitors.

The nature of this industry creates opportunities for companies such as AutoAuto, but there is a constant threat of competitors offering their own innovations and so it is necessary to spend heavily on research and development.

Gretton Electronics and Primnav are AutoAuto’s most immediate competitors. These companies both offer satnav systems and Gretton Electronics has a successful cruise control system that competes directly with AutoAuto’s CruiseMaster. Neither competitor’s products are as technically advanced as AutoAuto’s.



## **AutoAuto's strategy**

AutoAuto sells its products to vehicle manufacturers, who build them into their vehicles while they are on the production line. For example, a carmaker might design a range of cars with the intention of building the AutoAuto SmartNav system into their dashboards as a standard feature. The carmaker might also offer ParkSpace as an optional extra in the same car, with the customer paying for that feature when ordering the car.

None of AutoAuto's products can be bought by individual motorists or even by garages. AutoAuto does not wish to compromise the performance of its products by designing them to be fitted to vehicles that have been fully built.

AutoAuto's current range of products has been designed with a view to integration into a driverless vehicle system. For example, SmartNav cannot presently operate a vehicle's controls, but that facility could be added because the design would permit the addition of the necessary electrical and data connections. A driverless vehicle is some way off because AutoAuto must still complete the development of the necessary hardware and software to link the inputs from the various sensors that have been developed and also a mechanical system that will enable the system to operate the brakes, accelerator and steering.

AutoAuto faces stiff competition, both in its existing markets and in the development of a driverless vehicle system.

Companies such as Gretton Electronics and Primnav manufacture satnav systems and other devices such as cruise control. These companies sell to vehicle manufacturers as well as the aftermarket. For example, Primnav satnavs can be purchased as portable devices that can be moved between vehicles.

AutoAuto also faces competition in the development of a driverless vehicle system. For example, Robocar is working on a system that it hopes will become the industry standard. Robocar has already had some success with a system that controls large trucks. Robocar's system relies on a cable buried under the road to assist with navigation and also to detect the presence of other vehicles. Sensors in the trucks follow the path laid out by the cable. The cable will also pass information about a stopped vehicle so that trucks will come to a controlled stop before they hit it. This system cannot detect pedestrians, so the system is sold exclusively for use in isolated areas where access can be restricted. Robocar's primary customers are in the mining industry, which uses the system to operate driverless trucks to carry ore from mines to nearby refineries.

## Development process



AutoAuto employs 250 design engineers, who work from a design office in Upland's Capital City. Each engineer is equipped with a workstation, which is effectively a powerful PC with a graphics card that is optimised to display complex technical drawings. The engineers use the Spinweev computer-aided design (CAD) package to design the hardware elements of the company's products.

Spinweev is an industry-standard CAD package that is used by vehicle manufacturers. Using the standard package means that a manufacturer can send AutoAuto a new or modified design for, say, a truck body and AutoAuto's engineers can redesign sensors and other components so that they still fit and work effectively. For example, a recent modification to a truck design required the sensors in the TruckGuard system sold to that manufacturer to be adapted so that the signal was not blocked.

Clients also use CAD files supplied by AutoAuto. For example, the truck manufacturer used Spinweev drawings of the remodelled TruckGuard sensors to reposition the holes in the body panels used to mount the sensors in position.

AutoAuto also sends Spinweev CAD files to the companies who manufacture the products that it sells on an OEM basis. These files are effectively very precise instructions for the manufacturer because they specify the exact size, shape and material for each separate part. In some cases, the files can be input into computer-aided manufacturing systems so that the components can be made to these exact dimensions without human intervention.

## **AutoAuto's Board of Directors**

### ***Allan Yellowlees, Co-founder and Chief Executive***

Allan co-founded AutoAuto. Today he serves as Chief Executive.

Allan has a Bachelor of Engineering degree in Electronics and a PhD in Advanced Technology.

### ***Christina Marchel, Co-founder and Director of Engineering***

Christina co-founded AutoAuto. Today she serves as Director of Engineering.

Christina has a Bachelor of Engineering degree in Electronics. Previously, in the early part of her career, she worked for a large car manufacturing company in the country adjacent to Upland.

### ***Abdullah Said, Co-founder and Director of Research and Development***

Abdullah co-founded AutoAuto. Today he serves as Director of Research and Development.

Abdullah has a Bachelor of Engineering degree and a PhD in Automotive Electronics.

Abdullah is in charge of the AutoAuto's Research and Development budget. AutoAuto has patented many of Abdullah's ideas and has brought them to the market.

### ***Juliane Horsch, Director of Legal Services***

Before she joined AutoAuto, Juliane practised law with a major law firm where she specialised in intellectual property rights.

She has written extensively for legal publications.

### ***Andrew Jarvis, Director of Finance***

Andrew has been AutoAuto's Director of Finance since 2011. He has a degree in accountancy, an MBA and is a professionally qualified accountant. Andrew worked for other technology companies before joining AutoAuto.

### ***Angela Sawyer, Director of Business Development***

Angela was appointed to the Board in 2013. She was previously a senior sales and marketing manager in a major car manufacturer. She is in charge of sales.

### ***Arnaud Rachelle, Chairman***

Arnaud has had a long and distinguished career in the automotive industry. He was the Marketing Director of Vector Motors, a major car manufacturer. He has served as AutoAuto's Chairman for three years.

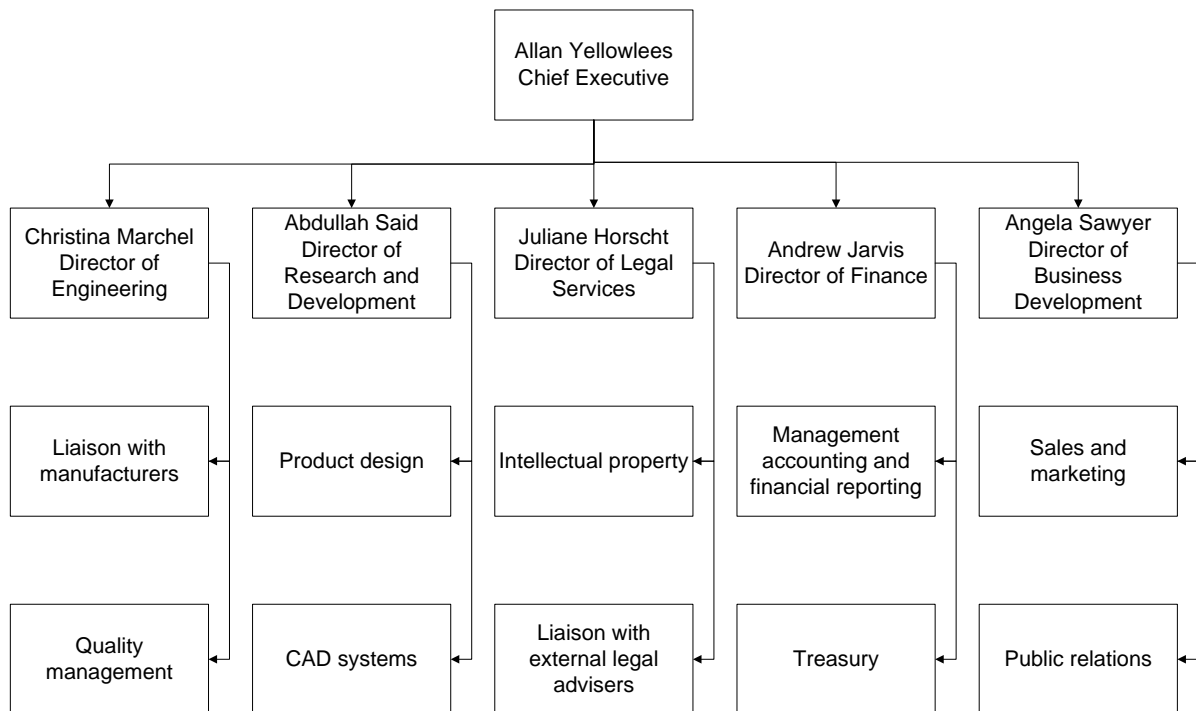
### ***Deirdre O'Neill, non-executive director***

Deirdre has been a non-executive director for two years. She was previously a partner in a major corporate law firm.

### ***Beatson Kamuli, non-executive director***

Beatson has been a non-executive director for three years. He was previously managing editor of one of Upland's leading national newspapers.

## Organisation Chart





The following information has been extracted from AutoAuto's financial statements for the year ended 30 June 2017

**AutoAuto**

**Consolidated statement of profit or loss**

**For the year ended 30 June**

	<b>2017</b>	<b>2016</b>
	<b>U\$m</b>	<b>U\$m</b>
Revenue	2,073.0	2,238.8
Cost of sales	(883.9)	(886.4)
Gross profit	1,189.1	1,352.4
Research and development expense	(269.5)	(291.0)
Other operating expenses	(178.2)	(145.3)
Operating profit	741.4	916.1
Finance costs	(64.0)	(80.0)
Profit before tax	677.4	836.1
Income tax expense	(155.8)	(192.3)
Profit for year	521.6	643.8

**AutoAuto****Consolidated statement of financial position****As at 30 June**

	<b>2017</b>	<b>2016</b>
	<b>U\$m</b>	<b>U\$m</b>
<b>Non-current assets</b>		
Goodwill	240.0	240.0
Other intangible assets	1,042.3	1,017.1
Property, plant and equipment	256.2	273.5
	<u>1,538.5</u>	<u>1,530.6</u>
<b>Current assets</b>		
Inventories	68.0	68.2
Trade receivables	172.8	186.6
Cash and cash equivalents	146.5	136.4
	<u>387.3</u>	<u>391.2</u>
<b>Total assets</b>	<u><u>1,925.8</u></u>	<u><u>1,921.8</u></u>
<b>Equity</b>		
Share capital and share premium	300.0	300.0
Retained earnings	545.8	306.2
	<u>845.8</u>	<u>606.2</u>
<b>Non-current liabilities</b>		
Loans	800.0	1,000.0
Deferred tax	52.4	55.7
	<u>852.4</u>	<u>1,055.7</u>
<b>Current liabilities</b>		
Trade payables	73.4	73.7
Current tax	154.2	186.2
	<u>227.6</u>	<u>259.9</u>
	<u><u>1,925.8</u></u>	<u><u>1,921.8</u></u>

## Extracts from a competitor's financial statements

### Primnav

#### Consolidated statement of profit or loss

For the year ended 30 June

	2017	2016
	U\$m	U\$m
Revenue	4,767.9	4,386.5
Cost of sales	(1,452.2)	(1,336.0)
Gross profit	3,315.7	3,050.5
Research and development expense	(445.5)	(363.3)
Other operating expenses	(238.4)	(219.3)
Operating profit	2,631.8	2,467.9
Finance costs	(98.0)	(98.0)
Profit before tax	2,533.8	2,369.9
Income tax expense	(582.8)	(545.1)
Profit for year	1,951.0	1,824.8

**Primnav****Consolidated statement of financial position****As at 30 June**

	<b>2017</b>	<b>2016</b>
	<b>U\$m</b>	<b>U\$m</b>
<b>Non-current assets</b>		
Goodwill	800.0	700.0
Other intangible assets	1,985.0	1,749.0
Property, plant and equipment	1,048.0	1,037.0
	<u>3,833.0</u>	<u>3,486.0</u>
<b>Current assets</b>		
Inventories	111.7	102.8
Trade receivables	397.3	365.5
Cash and cash equivalents	214.6	196.5
	<u>723.6</u>	<u>664.8</u>
<b>Total assets</b>	<u><u>4,556.6</u></u>	<u><u>4,150.8</u></u>
<b>Equity</b>		
Share capital and share premium	500.0	450.0
Retained earnings	1,811.9	1,512.7
	<u>2,311.9</u>	<u>1,962.7</u>
<b>Non-current liabilities</b>		
Loans	1,400.0	1,400.0
Deferred tax	145.6	137.8
	<u>1,545.6</u>	<u>1,537.8</u>
<b>Current liabilities</b>		
Trade payables	120.6	111.0
Current tax	578.5	539.3
	<u>699.1</u>	<u>650.3</u>
	<u><u>4,556.6</u></u>	<u><u>4,150.8</u></u>



## Extract from risk report in AutoAuto's Annual Report

### Risk factors

#### Competition

AutoAuto faces strong competition in the market for its existing products. It sells to a relatively small number of major vehicle manufacturers and the loss of even a single major customer would constitute a significant loss of contribution.

AutoAuto is working towards the development of a safe and commercially-viable driverless vehicle system. If a competitor launches an alternative system before we do then we may struggle to regain market share.

#### Investment in new innovations

AutoAuto must continue to invest in the development of product improvements and replacements. There can never be any guarantee that such investments will be profitable.

#### New technologies

AutoAuto's core business activities centre on seeking out opportunities in the advanced technology industry. The employment of skilled staff to lead the development of these new technologies creates constant pressure for the company, particularly because we are always competing to retain such experts.

#### Legal liability

AutoAuto's existing products can affect the behaviour of drivers and other road users, which could create questions of liability in the event of an accident. For example, a driver who engages CruiseMaster will rely on that device to maintain a safe distance from the vehicle in front. There could be an argument that AutoAuto is responsible for any collision in these circumstances.

The question of legal liability will become even more significant as existing products are enhanced with new features. Ultimately, AutoAuto hopes to offer a system for driverless vehicles which will increase our exposure.

#### Software issues

AutoAuto's products generally rely heavily on third-party software to carry out tasks such as navigation and the provision of feedback from external sensors. AutoAuto could be held liable for any losses associated with programming errors. Apart from immediate concerns such as accidents, there could also be concerns that we could be held liable for consequential losses such as a driver missing a flight because of a navigation error when driving to the airport.



## **AutoAuto's Corporate Social Responsibility Report for the year ended 30 June 2017**

AutoAuto recognises that there is a need for compromise between the interests of each major stakeholder group. AutoAuto believes that it is possible to behave in a manner that meets the fundamental needs of all. All major decisions allow for a balance between stakeholder interests, including shareholders, employees, the employees in our supply chain and the environment.

AutoAuto is a sustainable business because its products are designed to reduce the risk of accidents and also to manage scarce resources. Driver aids such as CruiseMaster and TruckGuard should encourage more responsible driving and should reduce the risk of collisions. Navigation aids such as SmartNav enable drivers to choose the most fuel-efficient route to a destination, avoiding wasteful holdups in traffic jams. When vehicles burn less fuel they also create fewer harmful emissions.

SmartNav's internet connection enables AutoAuto to gather data about the motoring needs of drivers whose vehicles have been fitted with this system. This enables us to advise vehicle manufacturers about their customers' driving styles and the ways in which vehicles can be made more reliable and economical. Customers who do not wish data to be gathered in this manner can disable the upload of such data in their SmartNav's privacy settings.

Electronic devices can contain hundreds of parts, which are made from a variety of materials, including scarce and toxic heavy metals and various grades of plastic. AutoAuto takes great care to ensure that it complies with all relevant legislation in managing the acquisition, handling and disposal of waste. We also have rigorous safeguards in place to ensure that our suppliers comply with all relevant legislation.

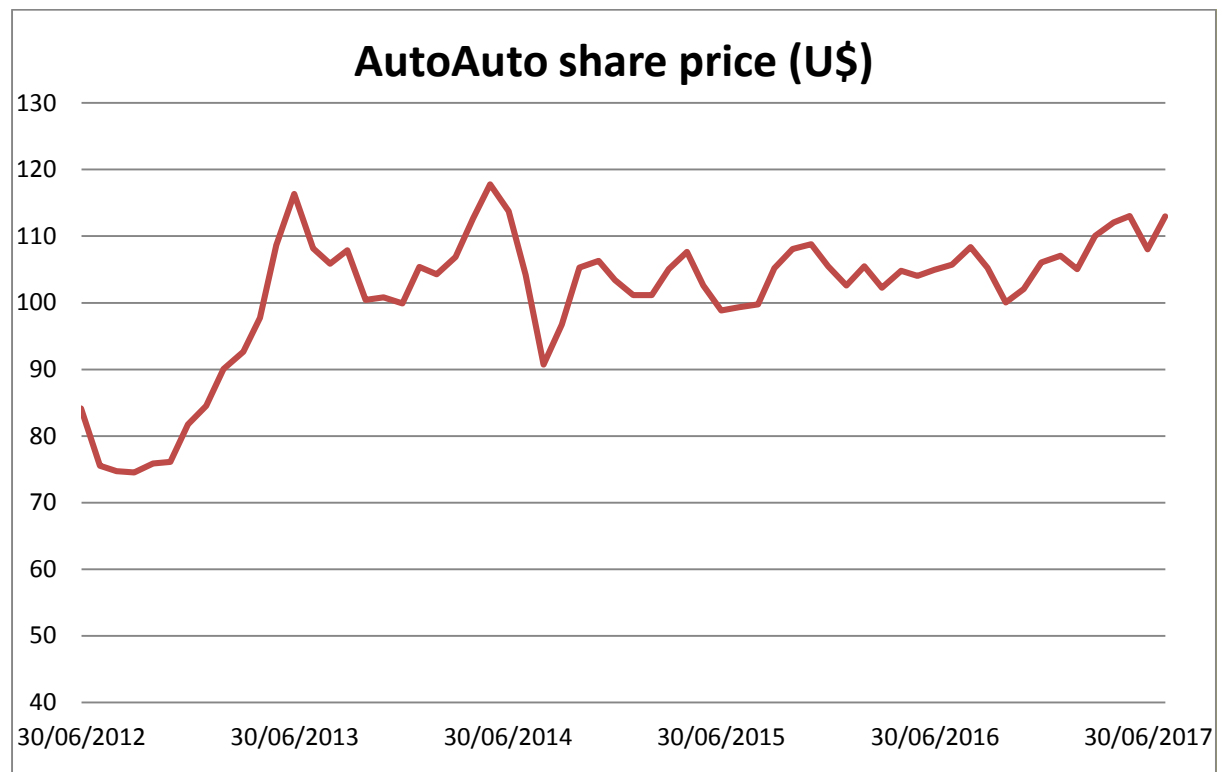
All of AutoAuto's products are built into vehicles and so have relatively long lives compared with removable (and therefore disposable) products. AutoAuto's products are designed to last for the life of the vehicle. The SmartNav navigation system can be updated to add new or additional maps as and when they become necessary.

All products are clearly marked with information on recycling, so that they can be removed and broken down as appropriate when their host vehicle is eventually scrapped.

All suppliers are required to meet the highest standards with respect to the treatment of labour and AutoAuto conducts frequent audits of suppliers' factories.

AutoAuto's management team is keen to reduce the number of serious driving accidents in the world. We are working towards the development of driverless vehicles that will have the ability to identify hazards that would be difficult for a human driver to spot and to process data without the inevitable lapses in concentration that cause most collisions.

## AutoAuto share price



## Costing information

The costs of making SmartNav, AutoAuto's most popular product, are as follows:

### SmartNav

	U\$
Aerial	2.47
Electronic components	23.47
Touchscreen	64.40
Case and other plastic parts	11.45
Average cost of map licences	25.00
Other software licences	12.80
Manufacturing costs	16.80
Packaging	6.42
	<u>162.81</u>

The mapping data is sourced on a country-by-country basis. Some governments offer maps as a free service, while others either levy a charge or leave the mapping to commercial organisations.

The SmartNav includes route planning software, and also software that converts instructions to speech. The SmartNav device is integrated into the vehicle's other electronics. There is no need to include a speaker because SmartNav uses the in-car entertainment system to voice instructions to the driver.

The manufacturing costs are essentially a fee paid to the sub-contract manufacturer, and include some generic parts and materials such as screws and wire.

The packaging takes the form of plain cardboard boxes that protect the product while it is on the way to the vehicle manufacturer.

**Management accounts for the quarter ended 30 June 2017**

	April U\$ million	May U\$ million	June U\$ million	Total U\$ million
<b>Revenues</b>				
OEM	155.5	168.5	164.5	488.5
Royalties	17.3	14.7	22.4	54.4
	172.8	183.2	186.9	542.9
<b>Operating expenses</b>				
Salaries				
Design	(8.9)	(9.1)	(9.1)	(27.1)
Marketing	(2.2)	(2.3)	(2.3)	(6.8)
Legal	(3.3)	(3.2)	(3.3)	(9.8)
	(14.4)	(14.6)	(14.7)	(43.7)
Manufacturing costs	(75.1)	(75.4)	(75.5)	(226.0)
Research	(14.8)	(15.3)	(13.9)	(44.0)
Other operating expenses	(9.2)	(9.4)	(9.3)	(27.9)
<b>Total operating expenses</b>	(113.5)	(114.7)	(113.4)	(341.6)
<b>Profit</b>	59.3	68.5	73.5	201.3

## Press clippings

# Upland Business Times

## Robocar signs major contract with United Minerals



Robocar signed a major contract to convert 80 ore-carrying trucks to driverless mode at United Minerals' Wolonga open-cast iron ore mine. The contract's value has been estimated at U\$12m, plus a further U\$4m to install the buried cables and other devices that are used to operate the vehicles.

A spokesperson for Robocar commented that the Wolonga contract demonstrates the potential of its driverless system. It will be possible to have all 80 trucks operating 24 hours a day with little or no human

intervention. The trucks navigate using sensors to follow the buried cable. A computer system sends instructions so that empty vehicles are directed to the diggers that load them up. The full vehicles are then sent to specific bays at a processing plant five miles from digging operations.

The cycle repeats endlessly. The digger drivers are the only human beings who exercise any direct control. Whenever a truck has been fully loaded the digger drivers types a command to inform the computer that the truck is ready to proceed. Otherwise, the trucks drive themselves, only deviating whenever they run out of fuel or the onboard diagnostics indicate that some maintenance is in order.

In time, Robocar hopes to develop a system that will eliminate the need for the sensor cable. A combination of GPS and laser sensors should make it possible to create more flexible driverless systems.

# Upland Daily News

## Driverless vehicles one step closer



Upland's government has agreed to permit AutoAuto to conduct tests of its driverless vehicle system on two stretches of motorway. Testing will begin in September 2017 and the testing phase will last for one year.

This will be the first time that such a system has been tested on Upland's public roads. A spokesperson for the Ministry of Transport stressed that road users had nothing to fear because test runs would be conducted with a skilled driver ready to take control of the system at any time. Also, the tests would be conducted at quiet times of night, with a fleet of conventional cars and other vehicles providing the traffic.

If these trials are satisfactory then the next step would be to permit tests to be carried out in town, with the greater complexity of traffic and also the need to interact with pedestrians.

A spokesperson from AutoAuto said the company was delighted that this decision had been taken and that driverless vehicles could be on sale by 2020.

# Upland Business Times

## Legal concerns might affect the introduction of driverless vehicles



It may require a change in the law to clarify just who is responsible for any accident involving a driverless vehicle.

It will, in any case, require a change in the law to permit drivers to take their hands off the steering wheel while their vehicle is in motion. It is anticipated that the law will require the driver to monitor progress and to deactivate the self-driving mechanism at the first sign of trouble.

This raises complicated questions, such as whether a driver who believed that the vehicle was proceeding safely should be

held responsible in the event that a malfunction or programming error caused a crash. Would it be a valid defence to blame the manufacturer of the system or the programmer who wrote the software? These concerns will make it difficult to obtain insurance for driverless vehicles.

Paradoxically, there is an overwhelming safety case for driverless vehicles.

Worldwide, there are 1.3 million fatalities on the roads every year and 50 million injuries.

Insurance companies estimate that 94% of these accidents are caused by human error. Letting a computer take control will eliminate accidents caused by careless or aggressive driving.

Driverless vehicles will also reduce the burden on policing, may also make streets safer and less congested, and allow those with disability greater movement. All of these features will lead to an improved quality of life for the disabled and cleaner environment for everyone.