TMT ANALYTICS

CCP Technologies Ltd.

A versatile IoT platform for remote monitoring

CCP Technologies Limited (CT1) is commercializing proprietary remote monitoring technology used to manage critical control points (CCP's) in customers' venues, such as supermarkets, hospitals and petrol stations.

Through the company's proprietary Internet of Things (IoT) platform, wireless smart sensors use edge-computing and Sigfox, Narrow Band IoT (NB-IoT) or Wi-Fi networks to transmit critical information to the CCP Cloud. The company offers a variety of sensors (e.g. temperature, humidity and open/close events) and provides real-time alerts via SMS and email.

CCP Technologies Limited (ASX:CT1) has developed a proprietary IoT platform for remote sensor monitoring. The platform has wide applicability across a range of different sectors, including the Food, Food Service and Healthcare industries. The company's business model is based on a highly scalable, monthly subscription model.

Being deployed for temperature monitoring in food industry

The Food and Food Services industry in the United States and Australia is the first vertical in which CT1 has started rolling out its technology, specifically to monitor cool-room, freezer and refrigerator temperatures. Customers (e.g. Caltex, IGA, Metcash and Crowne Plaza) use CCP to lower food wastage and monitoring costs, avoid health hazards, improve food safety regulatory compliance and maintain their corporate reputations. We estimate this addressable market for CT1 at A$ 265M in size.

CT1's IoT platform is scalable across many different industries

CT1's platform provides a foundation for a range of IoT applications, which the company may decide to leverage on in the future, e.g. Smart City applications such as smart street lighting, traffic management and parking, remote energy metering and air quality monitoring. Additionally, we believe CT1's technology also has applicability in Agriculture, Healthcare, Energy and Oil & Gas.

Channel partnerships will expedite commercial roll out

CT1 is actively building out its channel partner network with Food service partners, Telco's, equipment manufacturers, IT integrators and resellers. The company recently announced a trial with Vodafone and is looking to agree on a global partnership, which should open up the European market.

SUBSCRIBE TO OUR RESEARCH HERE

Starting coverage with a BUY rating and a A$0.046 price target

In our view, CT1's share price does not fully reflect the company's market opportunity. We expect a rerate of the shares as the company demonstrates it can monetize on this opportunity in the next 12 to 24 months. Hence, we start our research coverage of CT1 with a BUY recommendation and an initial A$ 0.046 price target, which we believe has substantial further upside.

BUY

Current price: A$ 0.017

Price target: A$ 0.046

2 November 2017

			FY17A	FY18E	FY19E	FY20E
Number of shares (m)	285.4	Revenues	0.18	1.1	2.7	5.3
Number of shares FD (m)	296.9	EBITDA	-2.4	-1.75	-0.7	1.4
Market capitalisation (A$ m)	4.9	NPAT	-3.8	-1.8	-0.7	1.4
Free Float (%)	75%	EPS FD	-0.02	-0.01	-0.002	0.005
12 month high/low A$	0,034 / 0,014	EV/EBITDA	N/A	N/A	N/A	2.3
Average daily volume (k)	212	EV/Sales	17.8	4.0	1.6	0.6

Analyst: Marc Kennis

marc.kennis@tmt-analytics.com.au

+61 (0)4 3483 8134

CCP Technologies Ltd.　　FY-end June

Profit & Loss account

	2017A	2018E	2019E	2020E
Revenues	0.2	1.1	2.7	5.3
EBITDA	-2.4	-1.7	-0.7	1.4
EBITDA %	*N/M*	*-166.4%*	*-25.7%*	*26.7%*
Depreciation & Amortisation	0.0	0.0	0.0	0.0
EBIT	-2.4	-1.8	-0.7	1.4
EBIT %	*N/M*	*-167.1%*	*-26.3%*	*26.2%*
Interest income & expense net	0.0	0.0	0.0	0.0
Other items	-1.3	0.0	0.0	0.0
Profit before Tax	**-3.7**	**-1.7**	**-0.7**	**1.4**
Taxes	0.0	0.0	0.0	0.0
Net earnings	**-3.8**	**-1.8**	**-0.7**	**1.4**
Ordinary shares outstanding	188	237	285	285
Fully diluted # shares	188	243	297	297
Earnings per share	**-0.02**	**-0.007**	**-0.003**	**0.005**
Earnings per share fully diluted	-0.02	-0.007	-0.002	0.005

Cash Flow Statement

	2017A	2018E	2019E	2020E
Net income P&L	-3.8	-1.8	-0.7	1.4
Depreciation & amortisation	0.0	0.0	0.0	0.0
Impairments	0.0	0.0	0.0	0.0
Change in working capital	-0.1	-0.3	-0.2	-0.3
Other items	0.0	0.0	0.0	0.0
Cash flow from operations	**-2.4**	**-2.0**	**-0.9**	**1.0**
Net cash flow from investments	**0.0**	**-0.1**	**-0.1**	**-0.1**
Dividend paid	0.0	0.0	0.0	0.0
Change in equity	4.3	1.0	1.0	0.0
Change in debt	0.0	0.0	0.0	0.0
Other items	-0.3	0.0	0.0	0.0
Cash flow from financing	**4.0**	**1.0**	**1.0**	**0.0**
Net cash flow	**1.7**	**-1.1**	**0.0**	**1.0**

Balance Sheet

	2017A	2018E	2019E	2020E
Current assets				
Cash and marketable securities	1.7	0.6	0.7	1.7
Accounts receivable	0.1	0.2	0.4	0.9
Inventories	0.0	0.1	0.1	0.3
Other current assets	0.0	0.1	0.1	0.3
Total current assets	**1.9**	**0.9**	**1.4**	**3.1**
Fixed assets				
Net property, plant & equipment	0.0	0.1	0.1	0.1
Goodwill	0.0	0.0	0.0	0.0
Other intangible assets	0.0	0.0	0.0	0.0
Other assets	0.0	0.0	0.0	0.0
Total fixed assets	**0.0**	**0.1**	**0.1**	**0.1**
Total assets	**1.9**	**1.0**	**1.5**	**3.2**
Current liabilities				
Short-term debt	0.0	0.0	0.0	0.0
Accounts payable	0.0	0.2	0.1	0.2
Dividends payable	0.0	0.0	0.0	0.0
Other current liabilities	0.5	0.1	0.1	0.1
Total current liabilities	**0.3**	**0.1**	**0.4**	**0.7**
Long-term debt	0.0	0.0	0.0	0.0
Total provisions	0.0	0.0	0.0	0.0
Total group equity	**1.6**	**0.8**	**1.1**	**2.5**
Total liabilities and equity	**1.9**	**1.0**	**1.5**	**3.2**

Valuation

	2017A	2018E	2019E	2020E
Relative valuation				
P/E (reported)	N/M	N/M	N/M	3.6
P/B	2.0	4.7	4.3	1.9
P/CF	N/M	N/M	N/M	4.6
Price to sales	18.2	4.6	1.8	0.9
EV / sales	17.8	4.0	1.6	0.6
EV / EBITDA	N/A	N/A	N/A	2.3
Dividend yield	0.0	0.0	0.0	0.0
EV / Common equity	0.6	0.9	0.9	0.7

Discounted Cash Flow
Assumptions

Long term interest rate	2.5%
Risk premium	5.8%
Marginal tax rate	30%
Long term growth	3%
Leveraged Beta	1.75
Implied WACC	*9.6%*
TMT Analytics applied WACC	15%
DCF fair value per share	A$ 0.10

Profitability ratios

	2017A	2018E	2019E	2020E
Return on Equity	-232%	-206%	-63%	55%
Return on Assets	-200%	-177%	-48%	43%
Return on Invested Capital	N/M	-34%	-17%	43%
EBITDA margins	N/M	-166.4%	-25.7%	26.7%
EBIT margins	N/M	-167.1%	-26.3%	26.2%
Net margins	N/M	-166.9%	-27.1%	25.8%

Financial Strength

	2017A	2018E	2019E	2020E
Net debt	-1.7	-0.6	-0.7	-1.7
Net debt / Equity	-1.1	-0.8	-0.6	-0.7
Net debt / EBITDA	N/M	N/M	N/M	-1.2
Interest coverage	N/M	N/M	N/M	N/M

Capital Structure

Ordinary shares	285
Performance shares	6
Options and warrants (m)	6
Fully diluted	297
Market capitalisation (A$ m)	4.9
Market cap. fully diluted (A$ m)	5.0
Free float %	75%
12 month high/low A$	0,034 / 0,014
Average daily volume (k)	212.0
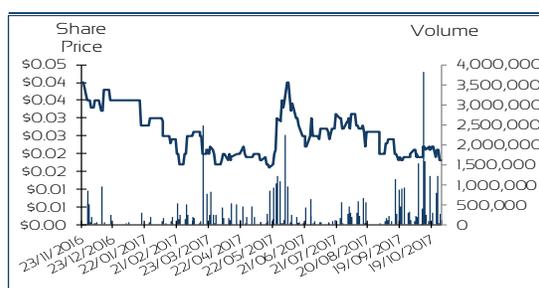
Source: Factset, TMT Analytics

1

Remote monitoring of Critical Control Points (CCP)

CCP Technologies Limited (CT1) is commercializing proprietary remote monitoring technology used to manage critical control points (CCP's) in customers' venues, such as buildings, supermarkets, petrol stations as well as remote locations, e.g. in the agricultural sector.

The company's platform is ideally suited to facilitate the fast-growing Internet of Things (IoT), which comprises of billions of devices, such as computers, smart phones, connected cars, wearables, smart street lighting, robotics and all sorts of other remote sensors that are connected to the Internet, including temperature sensors.

What are Critical Control Points?

Critical control points refer to specific points or procedures in a certain supply chain, such as refrigerated spaces and food preparation areas in the Food industry, that need to be monitored accurately in order to prevent food safety hazards. For instance, excessive temperatures in supermarket refrigerators may result in perishable foods going bad without staff or customers even being aware of it. Other than temperature, measurement at CCP's can also relate to humidity levels, gases, movement, air flow, rain fall etc.

Additionally, the causes for readings outside of critical limits can also be measured, for instance in the case of the Food industry whether a refrigerator door is open for too long or fails altogether (a so-called door event), which would result in increasing temperatures inside that particular refrigerator.

> *The key benefits of deploying automated wireless sensors to monitor critical control points for CT1's customers in the Food and Foodservice industry include less wastage, lower operating costs, better regulatory compliance and lower reputational risks.*

Remote wireless sensors to measure and transmit data

CT1 has developed a technology that helps customers automate critical control point data capture (temperature, humidity and door events) and record keeping. The company's wireless Smart Tags (Figure 1), are placed in customers' cool-rooms, refrigerators, freezers and ovens.

Customers include food retailers (supermarkets), food service operators (petrol stations, quick serve restaurants (QSR), hotels, restaurants, cafes), food manufacturers and processors (bakeries and aquaculture) and other food industry sector participants (e.g. transport and logistics).

FIGURE 1: CT1'S SIGFOX TAG (LEFT) AND WI-FI TAG (RIGHT)

Source: CCP Technologies

The company has deployed its solution in additional markets, such as in hospitals and vaccine storage environments. Linkage to Smart City initiatives also presents opportunities to monitor gas levels, air quality, soil conditions (e.g. pH).

The list of potential applications for CT1's technology is seemingly endless.

Monitoring CCP's in Food Retail and Food Service

Following its RTO late in 2016, CT1 commenced sales early in 2017 within the Food Retail and Food Services sectors, which predominantly involves monitoring of temperatures and door events for freezers and refrigerators.

A typical supermarket deployment can include as many as 50 tags

Food safety regulations in Australia and the United States drive CCP's adoption in the food industry. CT1's tags continually measure and subsequently upload the acquired data to the company's cloud-based platform 96 times per day based on a 15-minute sample period. Additionally, any measured value that is outside of the critical limits will be uploaded as it occurs, i.e. edge-computing technology on-board the CCP tags triggers real-time alert notifications.

Once uploaded, the data is available to customers on Web and Mobile dashboards that provide an overview of all tags per venue. Dashboards include historical records and graphs to provide simple trend analysis. CCP also includes a task management application, which allows a customer to record the reason for an alert (e.g. fridge door left open) to comply with food safety and HACCP (Hazard Analysis and Critical Control Points) requirements.

A large supermarket may have as many as 50 tags in one store, i.e. one tag for each of its freezers and refrigerated areas (Figure 2).

FIGURE 2: MONITORING REFRIGERATION IN FOOD RETAIL AND FOOD SERVICE SECTOR

Source: CCP Technologies, TMT Analytics

In this first vertical, CT1 is simultaneously targeting prospects in Australia and in North America through direct sales as well as through channel partners, such as food service companies, Telco's and hardware resellers.

Current well-known customers include Caltex, IGA, Metcash, Crowne Plaza and Stratosphere Casino.

Regulation and monitoring costs are key drivers for CT1 in this sector

Approximately 1.2 billion tons of food are wasted globally each year, according to IMechE, the Institution of Mechanical Engineers. Furthermore, approximately 48 million Americans suffer food poisoning each year in the United States alone (Source: CDC), causing more than US$ 150BN in healthcare costs in the US annually.

So understandably, the food sector is quite heavily regulated with Food Safety Standards in Australia covering a range of requirements for equipment, hygiene, food handling, food storage etc. In its various guides for food standards, The Australia New Zealand Food Authority makes specific mention of temperature measuring devices and the requirements around their specifications and use when receiving, processing and storing food. In the US, the FDA have similar requirements in the Food Safety Modernization Act (FSMA, 2011), the most sweeping reform of US food safety laws in over 70 years.

We believe food safety regulation is a key driver of more efficient, automated, temperature measurement in the Australian and US Food and Food Services sector.

Moving from manual to automated measuring will substantially reduce costs

Temperature measurements in the food industry are still mostly done manually, with staff taking temperature readings multiple times per day and manually recording these readings in logs. While satisfactory from a regulatory point of view, we believe these manual processes are prone to human error, e.g. when reading out, writing down and transferring these measurements into a computer.

Additionally, the entire process is cumbersome and therefore relatively costly to business owners. With manual systems, staff may not be aware of overnight fridge failure which could create food safety risk.

Therefore, we believe an automated, accurate and cost-effective solution is highly desirable from a regulation and operating cost point of view.

Additionally, CT1's solution can help reduce reputational risk stemming from potential food safety issues.

Other potential target markets for remote sensing

In addition to measuring temperature of food on-premise, we believe refrigerated and frozen food transportation is another attractive target market for CT1, and is adjacent to its current target market. CCP will release its new Smart Tags with specific shipment functionality in December 2017.

Furthermore, the broader Healthcare market with its strict regulation around storage of medicines and vaccines should be very fertile ground for CT1 as well. The company already provides its remote monitoring solution to a government entity to continuously monitor vaccine storage facilities. The company has stated its intention to target the Health industry in the longer term.

We believe measuring soil conditions (e.g. pH), air quality and rainfall could be an attractive market segment for CT1 within the Agricultural industry. The company already provides its solution to an on-shore aquaculture business and a dairy farming operation.

How the technology works: horses for courses

Once CT1's tags are deployed in a customer's environment, the data they collect is uploaded to the CCP Cloud Platform, which is based on Microsoft Azure. The actual upload to the CCP Cloud can be done directly from the tags to the cloud or through an on-premise gateway (i.e. WiFi). In cases where the venue requires a gateway/hub (Figure 3), CT1 uses 2.4Ghz RF to transmit data between tags and the on-premise gateway. In cases where no gateway is required (e.g. Sigfox solution), the tags can transmit their collected data directly to the CCP Cloud.

FIGURE 3: REMOTE MONITORING SETUP CAN UPLOAD DIRECT TO CLOUD OR THROUGH GATEWAY/HUB
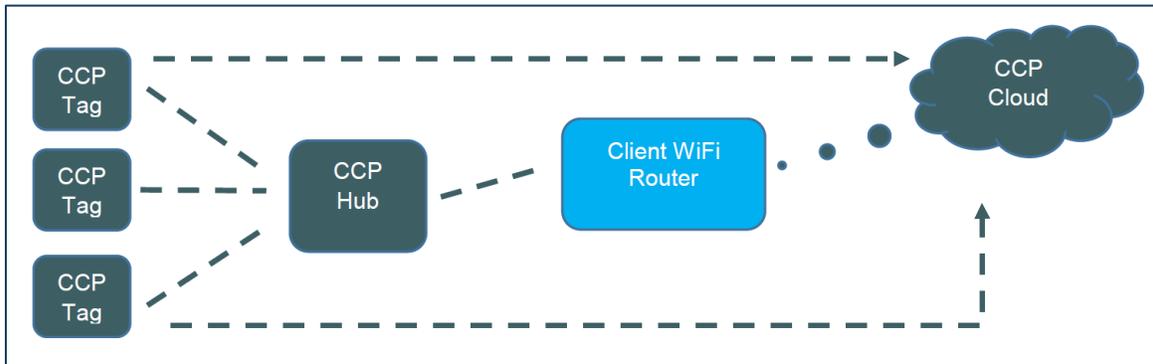
Source: CCP Technologies

Regarding Cloud connectivity, the choice of technology will depend on customer preference, application, location and venue type. For instance, a very remote location will require a different technology to upload data than a venue in a dense, urban area with plenty of Low Power Wide Area Network (LPWAN, e.g. Sigfox, NB-IoT) networks available. CT1 has a range of technologies to choose from when it comes to transmitting data from venues to its Cloud, including Sigfox, cellular networks and NB-IoT (e.g. Vodafone).

Sigfox network specifically tailored for typical IoT devices

Sigfox is a provider of Ultra-Narrow Band (UNB) connectivity in a cellular style network. UNB signals operate in the unregulated sub-GHz spectrum, i.e. at a very low frequency, using low power, and facilitate burst transmissions of small data packages up to 12 bytes. This is sufficient for many remote sensors to transmit their data to the Cloud.

Sigfox's effective communication range can vary from maximum 3 kilometers in urban areas to 50 kilometers in rural regions, with a range of more than 1,000 kilometers potentially possible outdoors under perfect conditions and with line of sight.

Using the Sigfox network, CT1's tags can upload their data directly to the CCP Cloud without the need for an on-premise gateway at the customer venue. CT1's Sigfox subscription costs amount to a few dollars per device annually, which we consider marginal compared to the company's subscription revenue potential per tag of between A$ 10 and A$ 15 per month.

The advantages of using Sigfox are low cost and wide range. However, the maximum data package size of 12 bytes (upload) and the maximum number of 140 data uploads and 4 downloads per day, limit the applicability of Sigfox to pure IoT applications, i.e. remote sensors that don't require high frequency, large data transfers. In other words, Sigfox is ideal for CCP applications.

Sigfox's network is focused on urban areas (Figure 4), but can be expanded relatively easily due to the low costs of base stations of a few hundred dollars each. In other words, should CT1 require additional coverage in its two main target markets of Australia and the United States, as

the company follows its customers, Sigfox should be able to facilitate this. CCP has agreements with Sigfox operators in Australia, US and Singapore.

FIGURE 4: SIGFOX COVERAGE IN AUSTRALIA AND THE UNITED STATES (IN LIGHT BLUE)
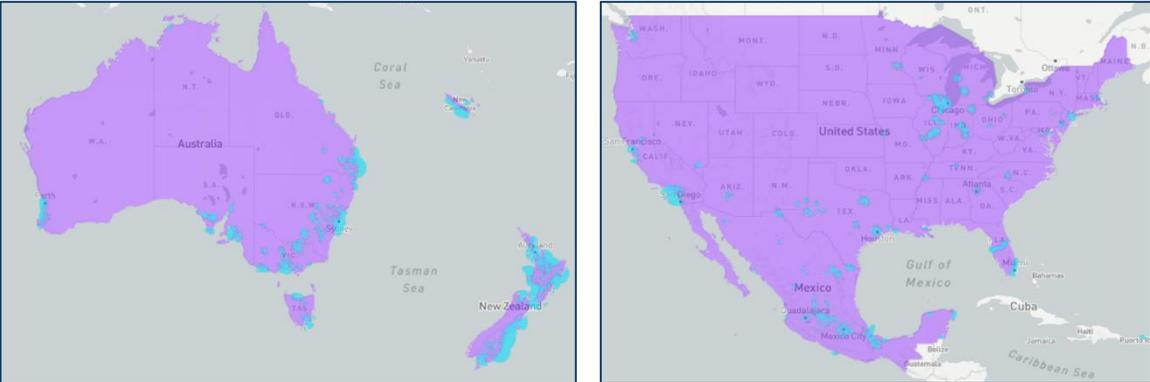
Source: Sigfox

Narrow band IoT as a second network option

Similar to Sigfox, Narrow band IoT (NB-IoT) is an LPWAN, which brings benefits in terms of power consumption, costs and range. However, where Sigfox operates in the unlicensed radio spectrum, NB-IoT can operate on unused bandwidth of older GSM networks or on dedicated bandwidth of LTE (Long-term Evolution) networks, i.e. 4G networks.

This means that NB-IoT connectivity is likely to be more reliable than Sigfox, and therefore likely to be a bit more expensive.

FIGURE 5: NUMBER OF CELLULAR IOT CONNECTIONS OVER NB-IOT NETWORKS (M)
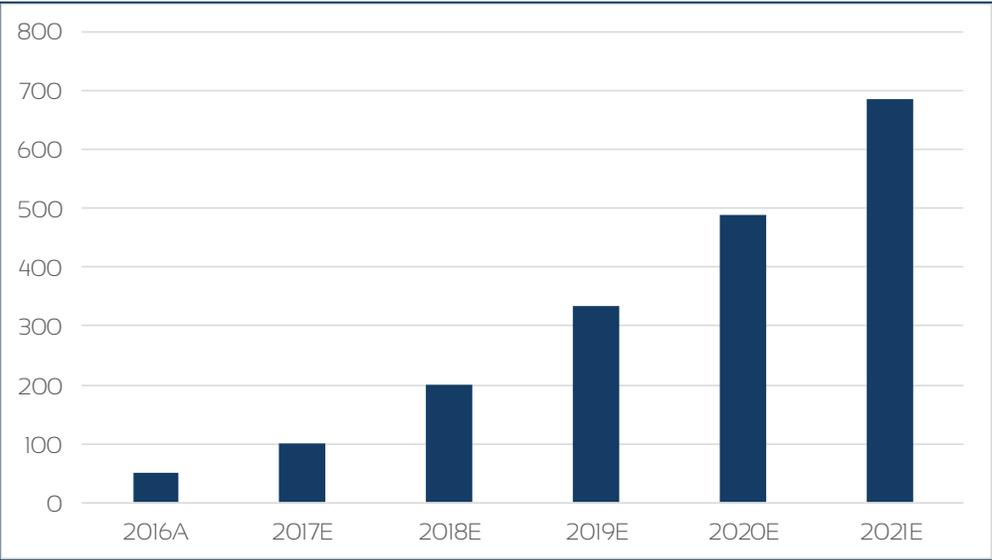
Source: Statista, TMT Analytics

A number of telecom operators, including Deutsche Telekom, KPN, Vodafone, are facilitating NB-IoT functionality across their existing cellular networks In Europe, the US, Asia and Australia, effectively opening them up for efficient use with IoT devices, such as CT1's remote sensors.

In fact, CT1 recently announced it was selected by Vodafone to trial its new NB-IoT network that is being rolled out across Sydney, Melbourne and Canberra. In addition to having a second LPWAN option available for its growing installed base of CCP sensors, we believe CT1 may also be able to leverage off Vodafone's customer base in the food industry.

Consequently, we expect CT1 will want to engage with Vodafone as a channel partner to specifically target prospects in the Food and Food Services sectors as well as in the Healthcare sector. Apart from a revenue share, this partnership would see Vodafone benefit from usage of its NB-IoT network by CT1's customers. In terms of costs to CT1, we expect Vodafone to charge annual subscriptions fees comparable with Sigfox due to high competitive tension.

Cellular networks (3G or 4G)

Lastly, a third way to upload sensor data to the Cloud directly is by using cellular technology, i.e. 3G or 4G. Cellular data connections have substantially more capacity to transmit data than LPWAN's, but are also a lot more expensive. We believe CT1 will not need a lot of cellular capacity to facilitate connectivity for customers, other than for redundancy.

Customers use the CCP app to monitor tags in real-time

Once tag data is uploaded to the CCP Cloud, customers can monitor their critical control points through CCP's Web and Mobile apps (Figure 6). Displayed data includes location, current value (e.g. temperature), signal strength, remaining tag battery life and a traffic-light based alert status.

FIGURE 6: CCP'S WEB AND MOBILE APPS

| LOCATION	TYPE	VALUE	STATUS	SIGNAL	BATTERY	ALERT
Dairy_Coolroom_Rear_L		1.4 °C				
Cafe/Barista Fridge_C		3.5 °C				
Dairy Coolroom Door_K		Door Open				
For Later Fridge Rio OB75174712_I		0.8 °C				
For Now Fridge Rio OB75174711_H		2.1 °C				
Freezer Upright/Coolroom_L		-12.5 °C				
Impulse Fridge #2 Stone N QI75320_E		4.5 °C				
Impulse Fridge #3 Stone N QI75321_F		3.5 °C				
Kitchen Upright Freezer_B		-10.7 °C				
Kitchen Upright Fridge_A		3.8 °C				

Source: CCP Technologies

Customers can view individual tag data (Figure 7) to analyse performance, perform failure analytics and optimize asset operation.

At 15-minute data capture intervals every 1,000 monitoring points deliver CCP approximately 3M data points every month. By aggregating such data from many different nodes and from many different customers, we believe CT1 will also have the opportunity to perform Big Data and

predictive analytics, which may be used to provide services, such as predictive maintenance alerts. We believe this would provide additional revenue opportunities for the company.

FIGURE 7: THE CCP PLATFORM ENABLES DATA ANALYTICS PER TAG
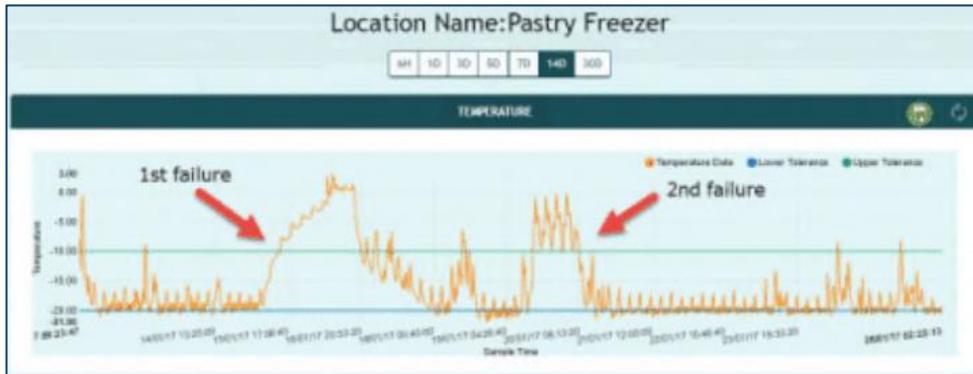
Source: CCP Technologies

Proprietary approach to IoT security is a key selling point

Many IoT devices and gateways are running on generic Operating Systems (OS), such as Windows 7 or 8, that weren't originally designed for IoT functionality, i.e. onboarding of more than a few devices and frequently communicating with the Cloud. Consequently, many IoT devices and gateways have vulnerabilities that can get exploited by hackers. We can read about all sorts of hacks of IoT devices in the media on a regular basis, including unauthorized, remote access to connected cars, toys, surveillance cameras etc.

In other words, security is the Achilles heel of today's IoT and it is inhibiting its growth. We have only recently started to see IT companies developing dedicated OS' for IoT devices, such as KasperskyOS even though some open source projects have been around for longer, like Contiki.

CT1 has developed a proprietary OS for its platform and connected devices, which facilitates end-to-end encryption of all communications, i.e. tag-to-hub, hub-to-cloud and tag-to-cloud pathways.

Furthermore, CT1 is not controlling customer assets; rather CCP monitors assets. The company uses dedicated gateways in customers' sites ensuring that the gateway is only used for CCP tags. Many other gateways, for instance in smart homes, need to onboard a variety of devices from different manufacturers that have varying security standards, which creates vulnerabilities in the network.

Consequently, we believe the CCP platform is secure and robust, which is a major selling point for CT1 in its commercial discussions.

Flexibility through full control over design and manufacturing

CT1 has 40 staff in Bangalore, India, from where the company runs its product development, design and hardware manufacturing operations. This set up provides substantial flexibility for CT1 in software and hardware design and allows the company to quickly react to changing product requirements. It also enables the company to scale up production rapidly if and when needed. CT1 demonstrated Sigfox tag development in under 6 months from concept to creation.

Current addressable market of 2.8 million monitoring points

The global cold chain tracking and monitoring market is expected to grow from US$ 148BN in 2015 to approximately US$ 426BN by 2022, according to Allied Market Research, implying a CAGR of more than 16% over this period. This includes food processing, cold chain logistics as well as Food Service and Food Retail.

Within this total market of 470 million monitoring points, CCP is initially targeting the American and Australian Food sectors, including Food Processing, Food Retail and Food Services, as well as hospitals, which in total represents an addressable market of 2.8M monitoring points.

> *Only taking into account monthly recurring revenues of A$ 10 per tag, and disregarding non-recurring revenue opportunities, such as one-time set up costs, we estimate the total value of this addressable market at A$265M annually.*

Collaboration model to expedite commercial roll out

In addition to direct sales, CT1 is actively expanding its network of channel partners to expedite the roll out of its monitoring solutions. Channel partners can include system integrators that incorporate CT1's tags into their offering, food service companies, Telecom and Sigfox operators as well as industry players, such as refrigeration companies and IT distributors.

Current channel partners include Food Service company Shamrock Group in the US, supply chain consultant Icon Global Link, UnaBiz, which is a Sigfox Operator in Singapore and Thinxtra, a Sigfox operator running Sigfox networks in Australia, New Zealand and Hong Kong.

Narrow Band IoT trial with Vodafone presents global channel partner opportunity

In addition to these existing channel partners, CT1 is currently trialing Vodafone's NB-IoT network in Melbourne and Sydney. Apart from NB-IoT being an additional connectivity option for CT1, Vodafone would also be a major channel partner for CT1. Both companies are currently discussing a global agreement which could result in CCP being offered to Vodafone's customers around the world.

> *While Europe is not currently a top priority for CT1, we would expect substantial commercial opportunities to arise in Europe on the back of a potential channel partnership with Vodafone, given this Telco's strong presence in Europe.*

Leveraging the CCP platform across other industries

Although CT1's current target markets largely comprise of the Food and Food Service industry in Australia and the United States, we believe the company's IoT platform has applicability in many different industry verticals.

For instance, tomorrow's Smart Cities will require data coming from many different sensors to be monitored, analyzed, aggregated and acted upon. Other sectors where we believe CT1's technology has potential applicability include Agriculture, Healthcare, Energy and Oil & Gas.

In our view, CT1's platform provides a foundation for a range of IoT applications, which the company may decide to leverage on in the future. This will likely require further product development, e.g. to develop a range of sensors. However, many sensors are readily available

off-the-shelf and the cloud-based platform is essentially built to accommodate different sensor data.

Big data analytics is a future opportunity as well

As we alluded to earlier, we believe Big Data and predictive analytics is likely to provide CT1 with additional revenue opportunities going forward once the company has reached a critical mass of installed tags. For instance, predictive maintenance on cool-rooms, freezers and refrigerators has the potential to save CT1's customers system failures and their associated costs (food wastage, reputation etc). CCP analysis shows that 5% of coolers and freezers will suffer a failure each year, typically costing more than the CCP solution.

Furthermore, it would provide potential channel partners, such as refrigeration services companies, with additional points of engagement with their customers.

In another example, shelf-life prediction models using collected data could be sold to customers as an additional service.

Fragmented competition

There are quite a few companies that offer some sort of temperature sensing technology to the Food and Food Service industries. However, many of these solutions are substantially more expensive than CT1's. Additionally, many don't provide a high level of integration (e.g. into dashboards that can be used by store operators), enterprise-grade data analytics or task management systems. Additionally, CT1 use 'edge-computing' technology in its Smart Tags. A combination of products and services in the CCP Solution provides competitive advantage.

CT1's closest competitors are Monika, active in Europe, the Middle East and Australia; SensiTech, which is part of United Technologies (NYSE:UTX), listed in the United States, and US-based Digi International (NASDAQ: DGII).

Furthermore, in October 2017 Digi International acquired TempAlert in the US and now services 35,000 customer venues in the Food Service and Healthcare sectors with its real-time temperature monitoring solutions. Digi is expected to achieve revenues of US$ 182M in 2017 and an EBITDA of US$ 14.4M (7.9% margin).

Digi is very acquisitive in this space

TempAlert was acquired by Digi for US$ 45M (~A$ 58M) in cash plus future earn-outs, or roughly A$ 2,900 per venue (excluding earn outs). Digi have now acquired four real-time temperature monitoring companies in the last two years and is becoming a key player in this space with 35,000 venues.

Revenue model driven by monthly recurring subscription fees

CT1 has three revenue sources: CCP Solution sales, development contracts and Cloud Platform licensing.

The CCP Solution generates monthly recurring subscription income per tag. This monthly subscription fee ranges from A$ 10 to A$ 15 per tag, depending on customer size and whether the sale was generated by a channel partner or by CT1 directly.

If a sale is generated by a channel partner, CT1 will share the revenues with this channel partner. In return, channel partners will provide first and second line support to customers and manage the relationship, including invoicing.

In addition to recurring revenues, CT1 also provides development services and licensing arrangements in the areas of data analytics and IoT platforms. CT1 announced a USD$180,000 platform licensing arrangement in March 2017. While these revenues are lumpy by nature, they do provide an interesting revenue stream for CT1. The company can leverage its existing team in India for this purpose.

Model assumptions

In modelling CT1's revenues, we have made the following assumptions:

- Monthly revenues per tag from direct sales amount to A$ 15 for smaller to mid-tier customers.

- Monthly revenues per tag from indirect sales through channel partners and direct sales to larger customers amount to A$ 10.

- The ratio direct/indirect sales will shift from the current 80/20 towards 35/65 by the end of FY20, as the company brings on more channel partners over time.

- The average number of tags per venue will grow from 10 currently to a maximum of 20 by the middle of 2018.

- Quarterly growth of the number of new venues being fitted with tags will grow from 50 currently to more than 300 by the end of FY20.

- The total number of tags will grow exponentially from approximately 1,000 currently to more than 42,000 by the end of FY20 (Figure 8).

FIGURE 8: DEVELOPMENT OF INSTALLED TAGS
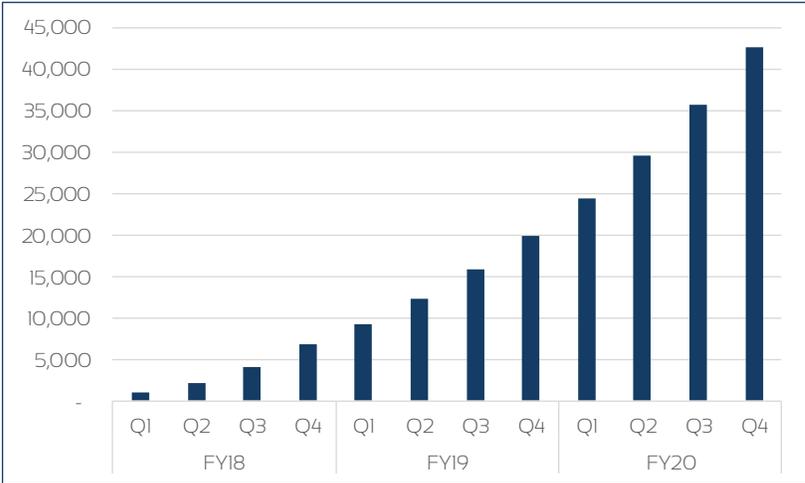
Source: TMT Analytics

Strong revenue growth and margin expansion projected

We anticipate strong revenue growth through the forecast period (Figure 9), in particular due to strong indirect sales. I.e. as additional channel partners come on board, we expect CT1 to be able to leverage their existing sales force. In turn, this should result in attractive EBITDA-margins, which we anticipate will plateau between 55% and 60%.

FIGURE 9: DEVELOPMENT OF REVENUES, EBITDA AND MARGINS
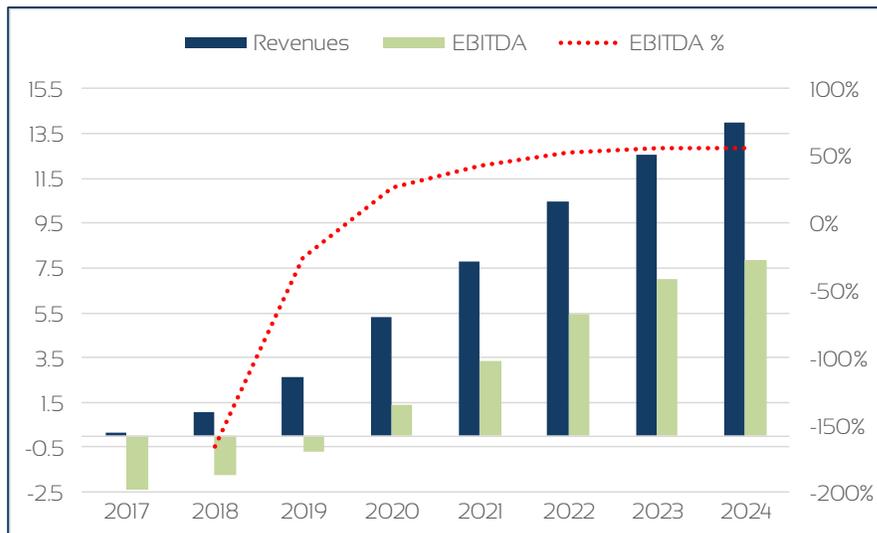
Source: TMT Analytics

Additional capital required

On the back of our financial projections, we have assumed CT1 will require up to A$ 2M in additional capital, in two tranches of A$ 1M (mid FY18 and early FY19 respectively), before it reaches operating cash flow break even, which we expect to occur during FY19 on a quarterly basis, with FY20 being the first full year of cash flow break even on an annual basis.

Valuation

Peer group valuation suggest initial upside to A$ 0.046 per share

In addition to Digi International, one of CT1's largest competitors listed on Nasdaq (NASDAQ:DGII), we believe several companies listed on the ASX are quite comparable to CT1 as well (Figure 10). This includes IoT-like companies, such as Catapult Sports (ASX:CAT), Quantify Technology (ASX:QFY), Scout Security (ASX:SCT) and MediBio (ASX:MEB), that have remote sensors in the field that upload measurements to the Cloud, which can subsequently be made available for customers through online dashboards. This group also includes data platform companies, such as Pointerra (ASX:3DP) and Buddy Platform (ASX:BUD). Given limited availability of financial estimates on some of these ASX-listed companies, we have limited our peer group to four companies (Figure 10).

FIGURE 10: PEER GROUP VALUATION

	Ticker	Revenues FY18 (M)	Revenues FY19 (M)	P/Sales FY18	P/Sales FY19	EV/Sales 2018	EV/Sales 2019
Digi International (US$)	DGII	205.1	221.1	1.3	1.2	0.8	0.8
Pointerra (A$)	3DP	2.3	5.7	6.0	2.4	4.9	2.0
Catapult Sports (A$)	CAT	79.7	97.3	3.9	3.2	3.7	3.1
MediBio (A$)	MEB	4.8	15.4	15.6	4.9	14.6	4.6
Average				**6.7**	**2.9**	**6.0**	**2.6**
Average excl. DGII				**8.5**	**3.5**	**7.7**	**3.2**
CCP Technologies	**CT1**	**1.1**	**2.7**	**4.6**	**1.8**	**4.0**	**1.6**

Source: TMT Analytics, S&P CapitalIQ

With revenues of US$ 205M expected for FY18, DGII is by far the largest company in this peer group with limited revenue growth anticipated for FY19. We believe this is reflected in the company's lowly valuation. Excluding DGII, ASX-listed 3DP, CAT and MEB are valued at an average P/Sales of 8.5x for FY18 and 3.5x for FY19, which is well above CT1's valuation for both years.

However, as is typical for many ASX-listed small caps, valuations for these companies are very much driven by actual revenues rather than potential revenues in twelve to twenty-four months' time.

In other words, given the anticipated strong revenue growth in the next few years, at an average FY19 P/Sales of 3.5x, we believe the peer group itself is undervalued.

Regarding CT1's 12-month share price potential, applying a 5x P/Sales multiple to our FY19 revenue estimate, yields a value for CT1 of A$ 0.0.46 per share, i.e. a value that the company's share price is likely to move towards through the current financial year.

Applying the peer group's average FY18 P/Sales multiple of 8.5x to CT1's FY19 forecasted revenues, i.e. in case CT1 were to rerate towards the peer group average P/Sales multiple, yields a value of A$ 0.076 per share.

We believe an initial target P/Sales multiple of 5x applied to CT1's FY19 projected revenues yields a realistic target price for CT1, i.e. A$ 0.046 per share with further upside potential to A$ 0.076 per share in case of a rerate towards the peer group average.

DCF valuation suggests substantial longer-term upside

The theoretical Weighted Average Cost of Capital (WACC) for CT1 of 9.6% (using a long-term growth rate of 3%, a leveraged Beta of 1.69, a marginal tax rate of 30%, a long interest rate of 2.5% and a risk premium of 5.75) yields a value of A$ 0.20 per share in a Discounted Cash Flow calculation.

However, we feel this WACC underestimates CT1's risk profile of a small cap in the early stages of its commercialization phase. In our view, a WACC of 15% is currently more appropriate. This still yields longer-term values for CT1 (Figure 11) that are substantially higher than today's share price.

FIGURE 11: DISCOUNTED CASHFLOW VALUATIONS PER SHARE (A$) USING VARYING WACC'S

12%	0.15
13%	0.13
14%	0.12
15%	0.10
16%	0.09
17%	0.086
18%	0.08

Source: TMT Analytics

Conclusion

CT1 has developed a highly versatile IoT platform that can be leveraged across many different industry verticals. The company's initial target sectors Food and Food Service alone account for 2.8M monitoring points and are valued at A$ 265M. Longer term, we expect the company to leverage its IP across other sectors, substantially adding to its revenue potential.

As CT1 scales up, we expect EBITDA margins to exceed 50%, signaling the company's scalable business model.

In our view, CT1's share price does not fully reflect the company's market opportunity. We expect a rerate of the shares as the company demonstrates monetization of this opportunity in the next 12 to 24 months.

Hence, we start our research coverage of CT1 with a BUY recommendation and an initial price target of A$ 0.046 per share.

Near term share price catalysts / Key Performance Indicators

- Announcements of new customer wins, large retailers, food service outlets and QSR in particular.

- Announcements of initial sales in Singapore on the back of CT1's new Sigfox tag.

- Updates around the NB-IoT trial project with Vodafone and a potential channel partnership with Vodafone globally.

- News around additional channel partners, such as IT Distributors, refrigeration services companies, field service companies, equipment manufacturers, system integrators and Telco network operators.

SWOT Analysis

Strengths

- CT1 offers a low-cost, easily deployable IoT solution to the market, which in most cases is substantially cheaper than competing solutions.

- CT1's proprietary in-house developed hardware, firmware and software provides the company with substantial flexibility with respect to product enhancements and development. Additionally, CT1's proprietary OS safeguards the CCP platform's security.

- The company can upscale production quite quickly if and when required.

- CT1 is not dependent on one specific communications protocol, but can utilise a number of different technologies and different partners to roll out its product offering.

- The CCP platform is suitable for a range of different IoT applications, which CT1 may add to its service offering going forward without significant additional investments.

Weaknesses

- Even though CT1 owns proprietary IP, we believe the barriers to entry in this market are not extremely high. Emulating a similar solution is straightforward, however, takes significant time.

- CT1 has limited financial resources compared to some of the larger companies in this market. This may put the company at a disadvantage when tendering for projects in competition with these larger companies.

- Additionally, the company will likely need to raise capital to support its growth ambitions.

Opportunities

- CT1 is addressing a high growth Technology trend, the IoT, which has many different sorts of applications across a range of different industry verticals some of which the company may choose to address in the future.

- Typical customers in CT1's target markets are supermarkets, petrol stations, QSR and Food Service customers. Temperature monitoring in such market segments are still largely done manually, which presents a very significant automation opportunity for CT1.

- Data analytics and predictive analytics present major revenue opportunities for CT1 once its installed based has reached a critical mass of nodes. Examples of such services include predictive maintenance alerts and shelf-life prediction.

Threats

- There are many peers operating in this space and while many competitors have solutions that are substantially more expensive and/or are not as tailored to the Food and Food Service industry, they may still present strong competitive pressures to CT1.

- Refrigeration equipment companies may decide to develop and include proprietary CCP platform functionality into their equipment, thereby potentially infringing on CT1's market.

Appendices

Board of Directors

Leath Nicholson (Non-Executive Chairman): Mr. Nicholson was a Corporate Partner at a leading Melbourne law firm, gaining experience with a breadth of ASX listed entities, before co-founding Foster Nicholson in 2008. His principal clients continue to be ASX listed companies and high net worth individuals. Mr. Nicholson has particular expertise in mergers and acquisitions, IT based transactions and corporate governance.

Michael White (Chief Executive Officer and Executive Director): Mr. White has over 20 years' executive experience in cold chain management and brings global food industry connections. He has a track-record of successfully developing technology businesses in food production and supply chain management across Asia Pacific and North America. He holds a Bachelor of Agricultural Science (La Trobe University) and Master of Environmental Science (University of Melbourne)

Anthony Rowley (Chief Operations Officer and Executive Director): Mr. Rowley has an extensive background in corporate governance, sales and marketing, business planning and administration. He was involved in the creation of Telstra Internet and some of Australia's early e-commerce initiatives. With more than 25 years' experience in private and public-sector organizations, he is an experienced business advisor and executive manager.

Adam Gallagher (Non-Executive Director): Mr. Gallagher has strong experience and working knowledge of the Technology sector, M&A transactions, finance and capital markets through nearly twenty years of commercial, IT and investment experience across major banks, stock exchanges, digital media, communications, private equity and listed companies. For the last ten years he has predominantly worked with expansion stage technology businesses both listed and unlisted as an officeholder, advisor and investor. He also had seven years of funds management experience as a microcap manager consistently achieving returns well above the All Ords Index.

Anoosh Manzoori (Non-Executive Director): Mr. Manzoori is currently the CEO of Shape Capital Pty Ltd, an advisory and venture investment firm. He has networks and access to venture capital and private equity groups in Australia and in the USA. Previously, he was the founder and CEO of the second largest cloud hosting company in Australia. He built the Company from scratch, reaching 75,000 customers within 5 years, with over 10% market share in Australia, before selling the company to MYOB in 2008. Mr. Manzoori is a member of the Institute of Company Directors and is an Expert Network Member for the Department of Industry, Innovation and Science.

Patents

CT1 has applied for one patent, PCT/AU2015/000466, which is pending.

GENERAL ADVICE WARNING, DISCLAIMER & DISCLOSURES

The information contained herein ("Content") has been prepared and issued by TMT Analytics Pty Ltd ABN 17 611 989 774 ("TMT Analytics"), an Authorised Representative (no: 1242594) of BR Securities Australia Pty Ltd. ABN 92 168 734 530, AFSL 456663. All intellectual property relating to the Content vests with TMT Analytics unless otherwise noted.

DISCLAIMER

The Content is provided on an as is basis, without warranty (express or implied). Whilst the Content has been prepared with all reasonable care from sources we believe to be reliable, no responsibility or liability shall be accepted by TMT Analytics for any errors or omissions or misstatements howsoever caused. Any opinions, forecasts or recommendations reflect our judgment and assumptions at the date of publication and may change without notice. TMT Analytics will not accept any responsibility for updating any advice, views, opinions or recommendations contained in this document.

No guarantees or warranties regarding accuracy, completeness or fitness for purpose are provided by TMT Analytics, and under no circumstances will any of TMT Analytics, its officers, representatives, associates or agents be liable for any loss or damage, whether direct, incidental or consequential, caused by reliance on or use of the Content.

GENERAL ADVICE WARNING

The Content has been prepared for general information purposes only and is not (and cannot be construed or relied upon as) personal advice nor as an offer to buy/sell/subscribe to any of the financial products mentioned herein. No investment objectives, financial circumstances or needs of any individual have been taken into consideration in the preparation of the Content.

Financial products are complex, entail risk of loss, may rise and fall, and are impacted by a range of market and economic factors, and you should always obtain professional advice to ensure trading or investing in such products is suitable for your circumstances, and ensure you obtain, read and understand any applicable offer document.

DISCLOSURES

TMT Analytics has been commissioned to prepare the Content. From time to time, TMT Analytics' representatives or associates may hold interests, transact or hold directorships in, or perform paid services for, companies mentioned herein. TMT Analytics and its associates, officers, directors and employees, may, from time to time hold securities in the companies referred to herein and may trade in those securities as principal, and in a manner which may be contrary to recommendations mentioned in this document.

TMT Analytics receives fees from the company referred to in this document, for research services and other financial services or advice we may provide to that company. The analyst has received assistance from the company in preparing this document. The company has provided the analyst with communication with senior management and information on the company and industry. As part of due diligence, the analyst has independently and critically reviewed the assistance and information provided by the company to form the opinions expressed in the report. Diligent care has been taken by the analyst to maintain an honest and fair objectivity in writing this report and making the recommendation. Where TMT Analytics has been commissioned to prepare Content and receives fees for its preparation, please note that NO part of the fee, compensation or employee remuneration paid will either directly or indirectly impact the Content provided.

RECOMMENDATIONS

TMT Analytics' issues a BUY recommendation in case of an expected total shareholder return (TSR, share price appreciation plus dividend yield) in excess of 25% within the next twelve months, an ACCUMULATE recommendation in case of an expected TSR between 5% and 25%, a HOLD recommendation in case of an expected TSR between -5% and +5% within the next twelve months and a SELL recommendation in case of an expected total return lower than -5% within the next twelve months.