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<div align="center">Long: Adacel (ASX:ADA) - A$0.90</div>

Company, description, thesis

Adacel is an Australian company that derives most of their business in the US through the sale of air traffic management-related software and tools. Their two main operating segments are: Air Traffic Management — the software used to run the towers in charge of managing planes — and Air Traffic control — mainly the sale of simulation devices and services associated with training controllers on them.

I like the stock because:

- Backdrop of a poor 2019 in addition to obvious industry headwinds in 2020 create a viel upon the attractive features of the business. Based on contract delays and a pause in sales, this is a pseudo-reopening play as well, but doesn't have to be.
- Air traffic control: is a necessary job, undergoing a shortage only expected to worsen, is pivoting to simulation as a source of training, and is needed around the world. In the US, Adacel's MaxSim has 90% market share in a market that is not even close to half-penetrated. And then there's the rest of the world.
- Very strong position in their existing Air Traffic Management segment. Long-term contracts and a differentiation from peers in oversight of oceanic routes provide visible revenue streams far out.
- Well-incentivised management and a seasoned activist investor as chairman.

"The Bad" - Why you're getting this chance

The opportunity exists likely due to the loss of a FAA contract in 2017, the escalation of the lawsuit in 2018 challenging the decision hurting guidance, and the disfavor for air-travel related companies in 2020.

The company operates in two segments: systems and services. The former can often have negative gross margins and reflects the contract-side of the business. Essentially, for an agreed upon sum, it will provide services to get its products working in the ATM segment. It's fine if margins are ~0 here, because their systems installations have a service component once the initial work is satisfied at a higher gross margin. But this area also includes hardware sales, which should not be sold close to a loss. In recent years losses on installations have severely outshone their growing MaxSim sales.

Services are defined by the company as all revenue that is recurring in nature. As a contract-based business, their agreements are often up to a decade long, after which they will have to be refreshed. Herein lies the risk that they lose business due to the competitive nature of federal contracts. Compared to a Tableau subscription, which just bills your company unless you elect to cancel it, expired contracts are circulated broadly to invite competing bids.

In 2017 the company was informed that they lost a contract with the FAA providing Tower Simulation Services (TSS) to Adsync technologies. Based on my read of the situation, the FAA chose to award it to Adsync under the pretense that they were giving it to a small business, likely fulfilling a quota. The agreement was also focused on the services side of the business, which includes maintenance, software licenses, and sending out instructors that teach trainees using the MaxSim technology (subcontracted). Adsync continued to use the same technology, another basis for the complaint.

contract, for support services relating to field service representatives, contractor logistics support and program management;

What the Contract means

At the end of FY 2019 (November 2018), the company provided guidance that excluded all TSS revenues, causing a 50% drop that eventually set the backdrop for 2020. The contract has an annual revenue contribution of ~$3m based on 2019 results.

This is why these legal proceedings have no further bearing on the valuation of this company:
- First and foremost, Adsync used MaxSim software for their training, only reaffirming the competitive superiority of Adacel in this segment of the market. It's worth nothing if they don't profit as a result, but an insightful peek into their competitive position going forward.
- The case was settled and reflected fully in the company's H1 2021 financials. I read this as they lost the case (settled, can't really speak, no cash impact on financials, management looking forward to winning vs fighting), but view it as a positive because there are no more legal fees to weigh down results.
- Their initial guidance proved conservative. As of November 2020, the company expected to complete their contract as planned (sans the lost portion I presume).
- The contract is up for rebidding in ~July 2022.

Additionally, FY 2019 (June 18-June 19) was a particularly poor year of performance for the company, so poor that the first words on the annual call mentioned that they "have taken a deep and

thorough dive into the company". The results — a loss of $2m — were the culmination of legal fees, cost overages on systems contracts, as well as delays and lost bids on other contracts. One of those delays was because a customer did not believe that The Royal Bank of Canada was a real bank. One of the actions taken in response was having the CEO of 18 years (Gary Pearson) removed in favor of the CFO (Daniel Verret). There is nothing too special about this transition. Verret has solid experience, albeit not related to the aerospace industry prior to joining Adacel in 2016. He was the interim leader for a year before being officially confirmed.

The real change was in the chair of the board. The previous chair Peter Landos gave the reigns to Michael McConnell, a prior MD at Shamrock Capital who operates as a part of Thorney Investment Group with Peter. He has taken activist positions in Collector's Universe, Spark Networks, and Guidance Software in the past, to name a few, and is only focused on Vonage and Adacel currently. It seems like he is running his own book and has minimal oversight given that he is located in California while the rest of Thorney is in Australia, his activist positions prior to joining Thorney in 2016 and after leaving Shamrock in 2008, and his title of "Private Investor" on LinkedIn. He joined the board in 2017. Peter, compared to Micheal, does have a few other board seats but certainly has not taken an activist role in them.

Holders				
Common Stock Equivalent Held displaying as the Primary Data Item. Currency is displayed in AUD.				
			[View << | <]	
⊞ **Holder** ▽	**Dec-31-2018**	**Dec-31-2019**	**Dec-31-2020**	**Latest** ▽
⊞ Thorney Investment Group Australia Pty. Ltd.	24,955,331	24,955,331	24,597,118	24,597,118
⊞ Salom BEng (Electrical), FAICD, Silvio Independent Non-Executive Director	5,195,191	5,195,191	5,195,191	5,195,191
⊞ Smith B.E., David Wallace Former Non-Executive Director	2,951,922	2,951,922	2,951,922	2,951,922
⊞ McConnell B.A., M.B.A., BA (Econ), MBA, Michael J. Independent Non-Executive Chairman	287,842	400,000	1,227,778	1,227,778
⊞ Obena Ridge Pty Ltd	1,062,276	1,062,276	1,062,276	1,062,276
⊞ Thorney Technologies Ltd (ASX:TEK)	309,075	309,075	945,700	945,700
⊞ Ascender Capital Limited	-	563,505	737,109	737,109
⊞ Gracey, Emma Jane	-	-	600,000	600,000
⊞ Carnegie, James Douglas	599,564	599,564	599,564	599,564
⊞ Harriss, Ian Edwin	378,074	378,074	378,074	378,074
⊞ E J Fraser Pty Ltd	-	-	365,918	365,918
⊞ Bissapp Software Proprietary Ltd.	296,785	296,785	332,699	332,699
⊞ Stacey, Sharon Margaret	-	-	300,093	300,093
⊞ Westor Asset Management Limited	-	333,195	265,827	265,827
⊞ Eagle Eye Equities Pty Ltd	-	-	218,733	218,733
⊞ Hennessey, Brian Former Vice President of Business Development & Strategic Planning	125,157	125,157	125,157	125,157
⊞ Verret, Daniel Chief Executive Officer	-	-	94,000	94,000
⊞ Pickett, Kevin Vice President of Operations	-	-	94,000	94,000
⊞ Karzis B.Juris, LLB, Sophie Former Company Secretary	13,000	13,000	13,000	13,000
⊞ Beale, Julian Howard Former Independent Non-Executive Director	1,062,276	-	-	-
⊞ Boh, Hua Tan	187,100	-	-	-
⊞ Cook, Matthew James	-	137,500	-	-
⊞ Nuske, Kylie Lynette	-	137,500	-	-
⊞ Laratte, Karim Pierre	-	230,000	-	-
⊞ Gracey, Andrew Charles	-	275,000	-	-
Viewing 1-25 of 31 Holders [View 1-25 | 26-31] [View All]				

The general focus of the business going forward is solely on MaxSim and their ATM software, shelving the marketing of ancillary products like voice recognition.

ATM

Air traffic management consists of the backend that controllers use in order to monitor their planes, along with all traffic overhead. There are strict controls in place regarding how close planes can be to one another, along with the consistent need to track arrivals and departures and route the planes correctly and efficiently in the airport itself.

Beyond that, controllers also help planes with their route planning. There are two general ways planes are tracked — by space and by radar. The latter is when planes are on the ground and are within proximity to the tower itself or a radar in the network. The former is typically when planes fly above the ocean. In the past, planes basically flew blind for hours at a time, relying on paper maps to track their route. There are a lot of obvious problems with that and, as a result, in 2001 the FAA tasked Lockheed Martin with creating the backend for the Advanced Technologies and Oceanic Procedures (ATOP). The technology 20 year old technology (albeit improved) continues to be used at FAA outposts in California, Alaska, and New Jersey.

Zones 4, 5 and 6, FAA ATOP program, produces approximately $12M in annual services revenue

NavPortugal (2), Fiji (7) French Guiana (8) and Norway (9) contribute approximately $4M in annual services revenue.

Iceland (1) is a legacy Aurora system not currently managed by Adacel. The New Zealand (3) system is currently part of a major modernization program that incudes Adacel Aurora licenses

Adacel has parlayed their original technology to get the FAA contract, and has since parlayed that same technology into a series of new territories. Not pictured are their wins in Guadeloupe.

The company has two paths for expanding their revenue in this segment

1. Extend their relationship within ATOP. This agreement has been the lifeblood of the company at ¼ of total revenues. Losing this deal would be devastating, but not killer, and almost surely

result in a loss for an investor. Still, I think the probability of that happening is very low given their long standing relationship (this is what people are trained on and are used to — finding another supplier would be a huge pain; their relationship in $ has actually only grown in recent years). When it is up for renewal in July I think it's a lot more likely that this long-term contract is not only extended, but expanded in $ terms given their revenue growth from it over the previous contracted period.

2. Compete for new business. The suppliers of air traffic controller systems are generally competitive, consisting of major defense players around the world. Most typically offer piecemeal solutions vs the complete package Adacel offers through Aurora. Key competitors are Indra (Spain) and Thales (France; still in development) as well as internally developed solutions. Yet Adacel stands out compared to these deep pockets. As they put it:

> Originally developed for oceanic Air Traffic Management (ATM), Adacel's Aurora system has evolved into a cost-efficient solution for en route, approach and tower control, and is well-suited for smaller countries and island nations. The system incorporates the latest in Communication, Navigation and Surveillance (CNS)/ATM technologies, including space-based ADS-B ATS surveillance data provided by Aireon.

As nations with (and without, to a lesser extent) modernize their air traffic control systems, Adacel can earn their business.

Through either method, these are long term, high visibility, and high-likelihood of renewal contracts that we should be able to rely on. Of note is that, due to the nature of getting these systems online, the financial results in past years have been hurt by wins in Fiji and Guadeloupe due to cost overages (poor management, addressed and subsequently grilled on in the FY 2019 call). But once these systems get into the recurring revenue portion of the contract they have ~50% gross margins over long terms. We should expect additions to be chunky and limited here, but the existing base to be healthy. They supposedly have ~25 potential customers in the pipeline.

In order to strengthen their offering and broaden their market by improving the technology and linking systems with MaxSim (!). It's all words until it works, but see here: https://www.atc-network.com/atc-showcases/adacel/a-new-air-traffic-management-solution-for-emerging-economies-and-island-nations.

ATC

Air Traffic Control just means training systems.

Being an Air Traffic Controller is hard work. It's stressful and takes a toll on your life. As such, there is a negotiated retirement at 56. The FAA is also strict about letting people into the program, only allowing the 2-4 year training to begin at 30 based on their studied mental acuity. Prior to 30, you can start your career in the military, where Adacel derived 23% of their revenues. As a result of these unique constraints, the 2019 Census microdata for controllers and specialists looks like this:
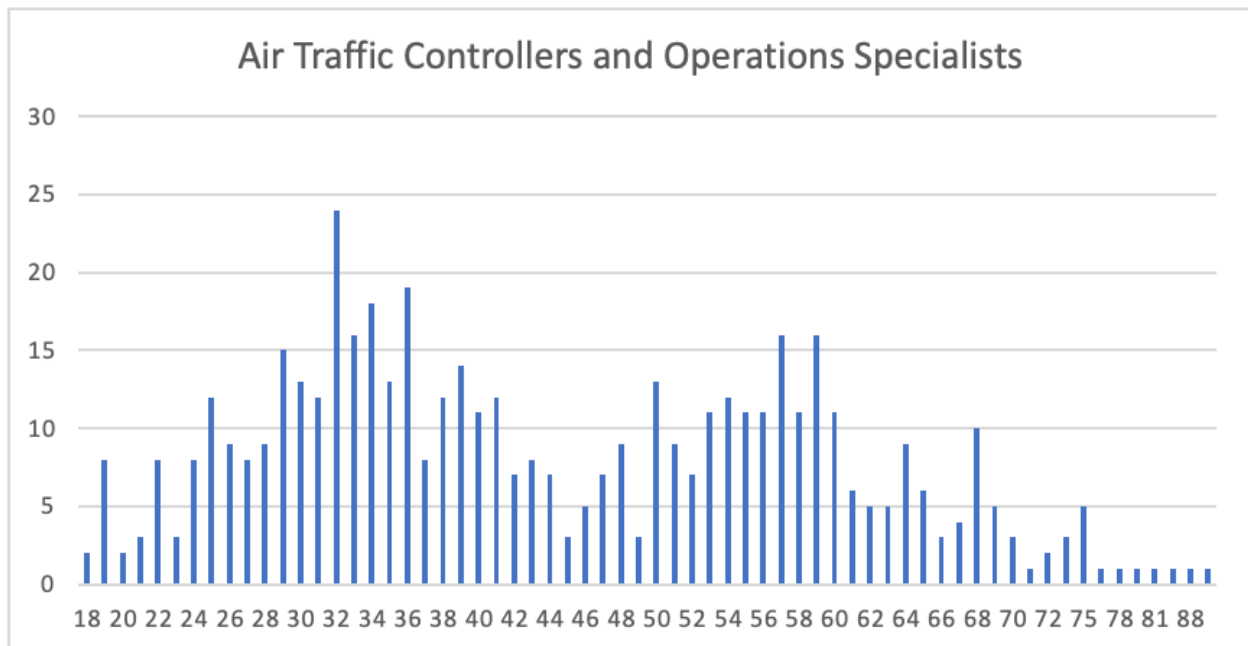

As we can see, there's a large cohort headed for retirement age. This survey data is meant to be broadly representative of the US population and points to the already worrying worldwide trend of a shortage in controllers.

Figure 3.1: Projected Controller Workforce Trends
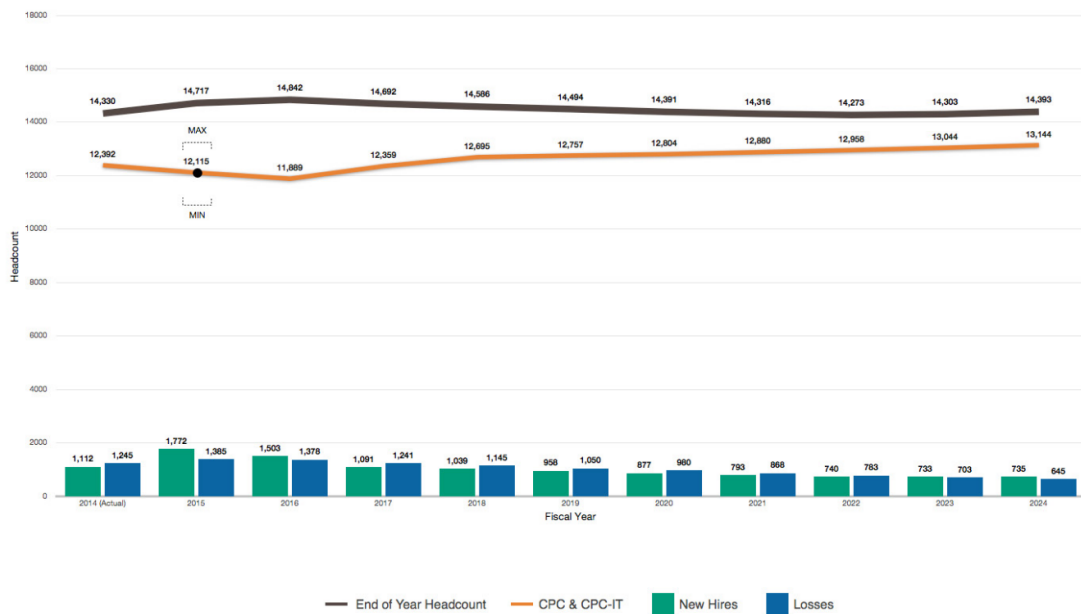
The above graph from 2015 demonstrates that attrition, both due to retirement and program dropouts (which is as high as 38%) does not meet the amount of new additions to their training program. Still, the FAA believes that net employment should remain stable.

Figure 4.7: Projected Total Controller Losses
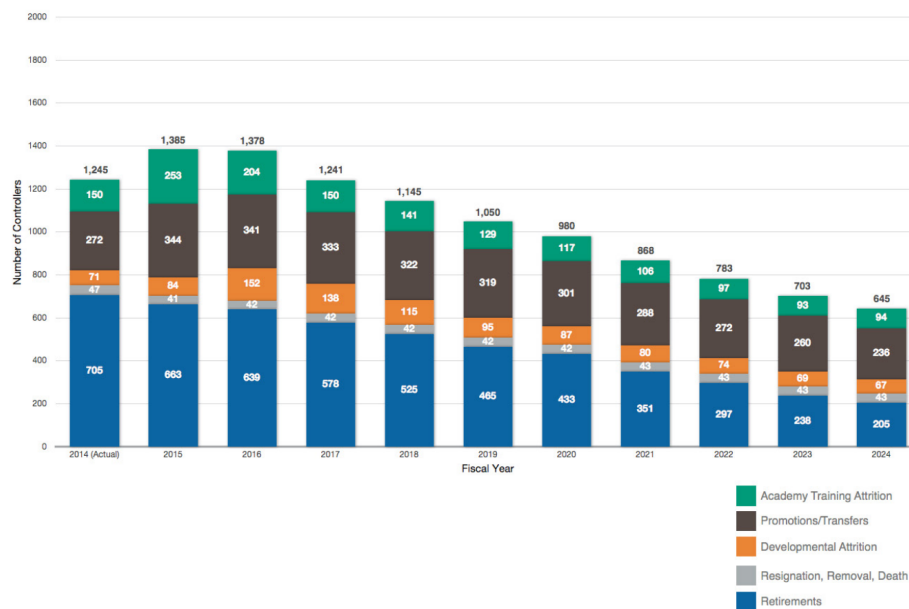
The problems with these FAA predictions are as follows:
- The FAA has not been able to hit hiring targets in recent years. In 2019, they sought 1400 (due to attrition, in contrast with the graph) but only found 900 potential controllers.
- COVID-19 likely led to a spike in retirements. 2021 and beyond will likely see a spike in travel. Who will control the planes?
- Initial projections were not close to actual traffic. They projected a slow and steady rise in traffic (defined as planes, not people) but failed to account for the rise of the middle class in Asia, the rise of low cost carriers around the world, and the expected pent-up demand due to Covid. From 2015 on, the rate of growth in passengers accelerated without any major changes in carrying capacity of planes in use.

Figure 1.2: System-wide Traffic and Total Controller Trends
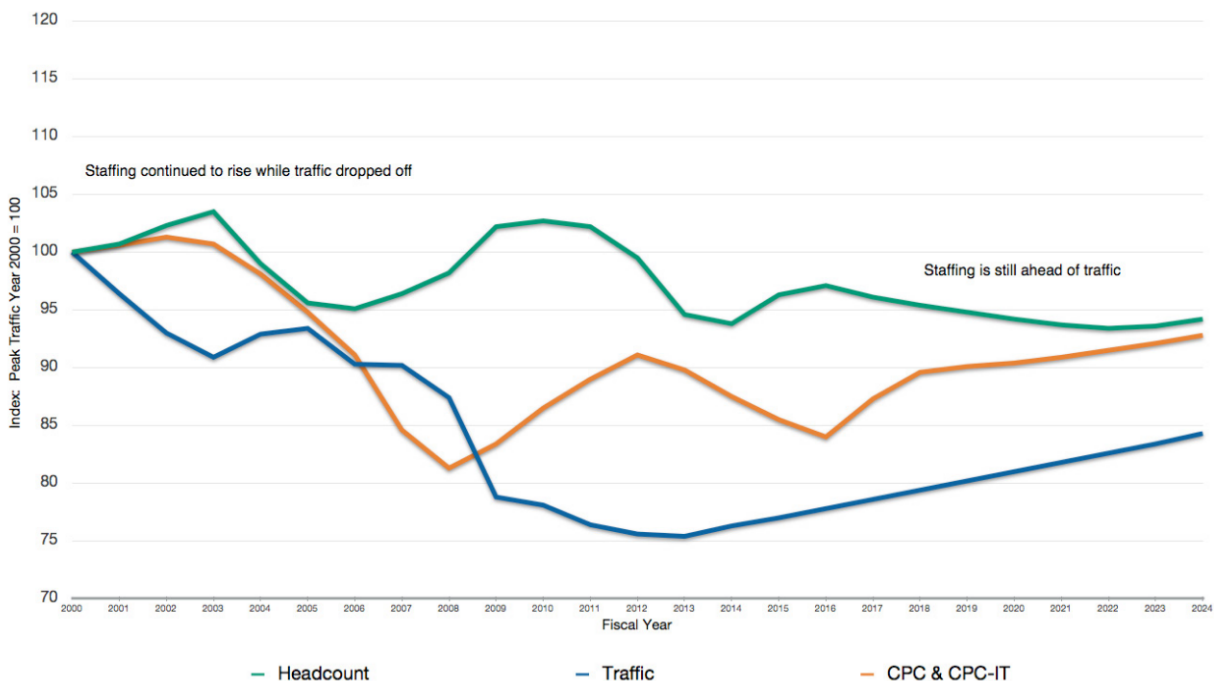
In 2019, it seemed like the FAA was short 2,000 controllers at most, with only 10,500 hired. This should only worsen in the coming years. And simply being fully staffed does not equate to preparedness. In 2018, 60% of European en-route (in the air) delays were due to controller shortages, often forcing planes to take less efficient routes in order to save time.

As we can see, there is a sizable supply (controller) and demand (people travelling in coming years) mismatch in the US and abroad. The FAA is aware and has taken steps to address that. In their

same 2015 plan, they mention simulators several times as a key tool in addressing the shortage in an efficient manner.

In the US, Adacel has a 90% market share. Digging deeper we see that the market is not close to fully penetrated. Using some dated figures as of 2017, Adacel had 50 FAA installations and expected that to grow to 100 by 2019, though they ended up losing part of the contract. If we assume 100 current installs with the FAA, the market is still not close to fully realized.

A couple different ways of thinking about the market size:
- 316 FAA operated Air Traffic Control towers in the US.
- 92 national (ie super-major, Alaska, Hawaii and Mississippi have 0), and 482 regional airports.
- 761 cities with over 1m people [by 2030](#) worldwide (a lot more with less still need airports).
- 1,200 international airports around the world.
- 700-1000 new trainees every year, in the US alone.
- Each existing Air Traffic Controller needs to complete a simulated refresher ~twice a year in the US (based on my interview)

And then we don't even have to think about the military opportunity, which is currently their largest purchaser of simulation technology in the US. Adacel has begun to provide systems to Mexico, Columbia, and Saudi Arabia and has ties to over 40 countries already which may be inroads to either the consumer or military route.

14 AURORA INSTALLATIONS | 370+ MAXSIM INSTALLATIONS | 250+ WORLDWIDE LOCATIONS | 40+ COUNTRIES
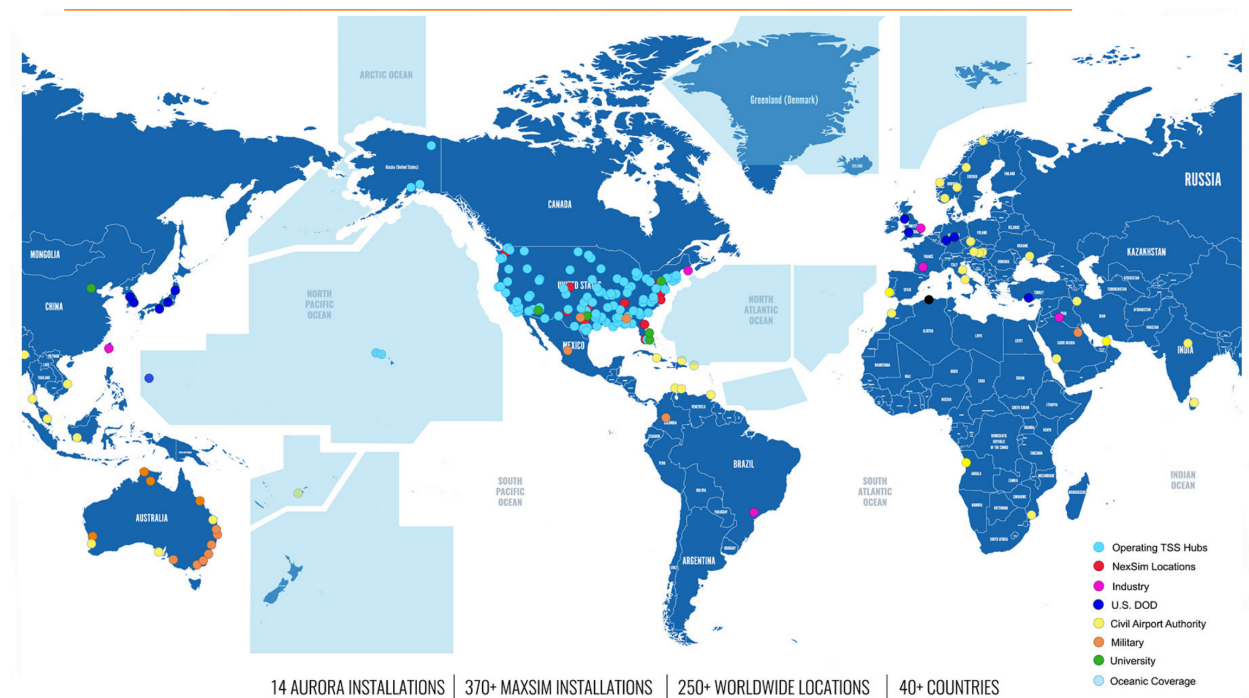
The scope of this opportunity does make me think that this smells like a potential acquisition for a company with more scale. But, as is, this should be achievable and accretive. Adacel can take a step back and rake in systems revenue and some muted licensing revenues in the services segment, allowing companies like Adsync to take in those training and maintenance contracts either by shifting their business model or subcontracting. Otherwise they can simply scale up as needed. In any case they have a clear path for execution within and without the US.

The 90% market share as a training software should also mean more than a simple hold on the market since, as an education platform, it makes the company the de-facto standard in the industry, comparable to Da Vinci's corner of the surgery market. They already have contracts at universities around the world and with the military, which acts as a training path in the US. Trainees and trainers must become acquainted with the system alike, increasing switching costs on both ends. And then given their developments with their ATM software, familiarity can boil over into more contract wins on that end of the business.

Valuation

When thinking about what this might be worth, it is also worthwhile to take note of management incentives. Besides constant dividends (though at a varying rate) and increasing use of buybacks, the company also has a history of special dividends, last in 2017 and 2018. Their comp is

also tied to the success of the business on only two metrics: EBITDA growth and ROIC. These metrics invite cost discipline and smart allocation of capital that otherwise should be returned to shareholders.

LTI Rights and Options Vesting (%)	FY20 LTI Rights and Options Vesting Conditions	FY21 LTI Rights and Options Vesting Conditions
	Continuous Employment until 30 June 2021	Continuous Employment until 30 June 2023
50%	For FY2020 an EBITDA of USD $4.5 million or greater; and for FY2021 an EBITDA 10% higher than the base budget approved by the Board or greater.	For FY2021 the Board approved budgeted USD EBITDA; and a 10% or greater average annual growth rate, over the subsequent two financial years ending 30 June 2023.
50%	An average annual return on invested capital (ROIC) of 26% over the two years FY2020 to FY2021 (based on the audited consolidated financial statements).	An average annual return on invested capital (ROIC) of 26%, or greater, over the three years beginning with FY2021 (based on the audited consolidated financial statements).

Yours today for ~10x fwd EV/EBITDA. As current ATM projects enter the services portion of their contracts gross margins should trend upwards, back to 2018 levels of 30% vs 20% in the TTM. Even if they did a poor job on the systems (installation) portion, it should not drastically alter the long term, high margin, and high-visibility nature of the rest of their agreement with recent wins in Saint Lucia (which may continue to be a drag on margins if management does not learn their lesson).

	2016	2017	2018	2019	2020	LTM
Services Total	30.11	32.67	29.96	28.12	29.98	
Services Gross Profit	18.91	14.47	13.60	13.50	15.14	
Services Gross Margin	62.8%	44.3%	45.4%	48.0%	50.5%	
Systems Total	17.81	9.76	20.82	13.24	9.73	
Systems Gross Profit	11.18	3.40	5.81	(2.36)	(1.17)	
Systems Gross Margin	37.2%	34.8%	27.9%	-17.8%	-12.0%	
Company Gross Margin	35.9%	33.7%	31.6%	8.2%	16.8%	19.9%

The closest comp is Telos (US:TLS) which trades at ~10x fwd revenues with 30% gross margins and an EV of $2.5B but is expected to grow much faster in tandem with cybersecurity paranoia by the US government. They create software for the FBI and CIA's messaging platforms. With a roughly similar margin profile, 1.75x trailing sales underestimates the potential of this business.