

## **Valuing High Growth Firms: Almaden Technologies<sup>1</sup>**

### **Case Study<sup>2</sup>**

*The subject firm for the problems represented in this case is Almaden Technologies, a fictional firm for which hypothetical values have been presented. The Income Statement, Balance Sheet, and Other Financial Information used herein are also used in support of building a body of Corporate Finance In-Class Problems and Case Studies.*

Almaden Technologies (AT), a Utah County start up with an innovative drone technology, has approached your private equity firm with a proposal to partner and fund its capital needs as it goes through its growth phases from corporate infancy to relative maturity.

The firm has developed iLenz, a “GoPro” style camera system coupled with a GPS pointer with sufficient accuracy to make it a highly desirable platform for numerous expected disruptive technologies envisioned in the expanding drone space. It also boasts the longest battery life in the industry and has the highest flight-time to weight ratio of any drone in its market segment.

In 2018 the firm’s founders invested \$2.5 million of their own funds, now held on the firm’s books as 250,000 shares of common stock and received another \$2 million in funding from an angel investor in exchange for a 30% equity stake in the form of preferred stock for 5 years that can either be converted one-for-two to non-voting preferred at a 15% dividend rate, or converted one-for-one into common stock based on a \$35 per share valuation.

The firm had \$3.345 million in sales last year (2020) and is projecting \$5.978 million in sales for the current year with an operating income of \$491,180. Though the overall domestic and global economy gyrated violently in 2020, Almaden Tech had an excellent year and felt little of the effect of the pandemic.

The firm is committed to keeping its non-R&D operating expenses (including depreciation & amortization) at the same percentage of revenue in the foreseeable future as can be calculated for the most recent year. This suggests that as the firm’s cost of goods sold (variable costs) and fixed costs of administration as a percentage of revenues decline the firm will invest more heavily in support of sales, marketing and human capital. It’s currently reinvesting all of its pretax income into R&D and expects to do so up to a maximum annual R&D budget of \$10,000,000. The firm is projecting Free Cash Flow for each of the next 6 years (including 2021-2016), currently accounts for R&D as an expense to limit its tax liability and has yet to capitalize the innovations and patents resulting from the expenditures.

In 2020 the firm’s flagship drone, Mercury 1.0, retailed for \$2,100 based on a markup of 300% over cost of goods sold, has a landed cost to the firm of \$600 per unit for the hardware and packaging, \$75 per unit for the software, and another \$17 in shipping. The product development and marketing teams are confident they can sustain a 35% growth rate for the next 3 years and 20% for the following 3 years, after which time they expect sales to grow at 10% annually based on continually integrating technological innovations into the product to keep it fresh and relevant.

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<sup>1</sup> This problem and solution set is intended to present an abbreviated discussion of the included finance concepts and is not intended to be a full or complete representation of them or the underlying foundations from which they are built.

<sup>2</sup> This problem set was developed by Richard Haskell, PhD, Associate Professor of Finance, Gore School of Business, Westminster College, Salt Lake City, Utah (2021).

The firm's VP of Operation is confident that as the scale of output increases the hardware and packaging, and software costs can be reduced from \$600 and \$75 per unit, respectively, to \$475 and \$35... as long as the firm can sustain annual production orders of no less than 5,000.

These projections are, in part, the result of contracts recently signed with the USGS and NPS. Additionally, significant interest has been shown by the National Board of Realtors, National Cattleman's Beef Association, American Sheep Industry Association and numerous residential and commercial real estate builders and developers. Though the firm has no plans to enter into the weaponized drone space it's plausible the firm may elect to license some of its technology to US Department of Defense.

The firm is seeking a Venture Capital equity investment of \$2 million based on a post-money valuation of \$15 million, plus another \$3 million in venture debt line at 8% to fund inventory purchases. Currently the firm outsources production to Leland Technologies, a domestic contract manufacturer in the technology space. The firm is expected to only use as much of the equity line as necessary to buy inventory for a given year, so the equity line is used, all or in part, at the beginning of the year and paid off at the end of the year.

With the \$5 million equity investment the firm plans to launch Quick Silver 1.0 (QS 1), an industrial drone with a payload capacity of 20 pounds using the iLenz technology. It expects to sell 1,000 QS 1.0 units in the year following FAA approval, expected in 2022, for which it is ready to begin production upon receipt of funding. It expects sales of QS 1.0 to increase by 75% for the following 3 years before declining to a 40% growth rate for 2 years. QS sales growth is based on a current development contract with Amazon and interest expressed by FedEx, UPS, and EBay. The firm expects long-run sales growth for the QS line to be in line with that expected for its Mercury line and is committed to integrating new technology into the product to allow it to increase payload while keeping costs from rising. The firm plans to sell each QS 1.0 for \$10,000.00 direct to corporate customers and expects a landed cost to the firm for hardware and packaging of \$5,000, plus \$75 for software based on 1,000 units, and is confident it can reduce its costs to a total of \$3,500 per unit with annual volume of greater than 3000 units.

Assumptions										
	Price	2018	2019	2020	2021	2022	2023	2024	2025	
<b>Revenues (units)</b>										
Mercury Sales	2,100				2,740	3,700	5,000	6,000	7,200	
Quick Silver Sales	10,000				-	1,000	1,750	3,063	5,360	
Royalties					15.00%	15.00%	15.00%	15.00%	15.00%	
<b>COGS (cost per unit)</b>										
Mercury (landed)					600	600	475	475	475	
Quick Silver (landed)					-	5,000	5,000	3,500	3,500	
Software					75	75	75	35	35	
Shipping					17.00	17.00	17.00	17.00	17.00	
<b>Operating Expenses</b>										
General & Administrative (fixed)					472,500	472,500	472,500	472,500	472,500	
General & Administrative (variable % revenue)					5.00%	5.00%	5.00%	5.00%	5.00%	
Marketing & Sales					10.00%	10.00%	10.00%	10.00%	10.00%	
Utilities & Equip Expense					8.00%	8.00%	7.00%	7.00%	6.00%	
Management Salaries & Benefits (fixed)					567,000	567,000	567,000	567,000	567,000	
Management Salaries & Benefits (variable % revenue)					5.00%	5.00%	5.00%	5.00%	5.00%	
Depreciation & Amortization					14.00%	14.00%	14.00%	14.00%	14.00%	
Research & Development (fixed)					3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	
Research & Development (variable % revenue)					0.00%	5.00%	10.00%	10.00%	10.00%	
Other Operating Expense (% revenue)					0.00%	0.00%	0.00%	0.00%	0.00%	
<b>Non-Operating Expense (Income)</b>										
Net Interest (% Credit Cards + LTD)					8.00%	8.00%	8.00%	8.00%	8.00%	
Other Non-Operating Items (% revenue)					0.00%	0.00%	0.00%	0.00%	0.00%	
<b>Tax Rate</b>										
					25.95%	25.95%	25.95%	25.95%	25.95%	
<b>Balance Sheet</b>										
Receivables (% revenue)					6.00%	6.00%	6.00%	6.00%	6.00%	
Inventory (% revenue)					10.00%	10.00%	10.00%	10.00%	10.00%	
Other Current Assets (% revenue)					1.65%	1.65%	1.65%	1.65%	1.65%	
Addition to Property, Plant & Equipment					150,000	1,000,000	300,000	300,000	300,000	
Addition to Other Investments					0.00%	0.00%	0.00%	0.00%	0.00%	
Accounts Payable (% COGS)					7.00%	7.00%	7.00%	7.00%	7.00%	
Credit Cards (% COGS + OpEx)					2.00%	2.00%	2.00%	2.00%	2.00%	
Wages Payable (% COGS + OpEx)					0.70%	0.70%	0.70%	0.70%	0.70%	
Other Current Liabilities (% OpEx)					0.50%	0.50%	0.50%	0.50%	0.50%	
Additions (reductions) to Equity					2,000,000	-	-	-	-	
Shareholder Receipts (Dividends & Distributions)					-	-	-	-	-	
Additions (reductions) to Long-Term-Debt					3,000,000	-	-	-	-	
Additions (reductions) to Other Credit Lines & Debt					-	-	-	-	-	

### Income Statement

	Actual		Projected	Forecast				
	2018	2019	2020	2021	2022	2023	2024	2025
<b>Revenues</b>								
Mercury Sales	-	1,575,000	3,150,000	5,754,000	7,770,000	10,500,000	12,600,000	15,120,000
Quick Silver Sales	-	-	-	-	10,000,000	17,500,000	30,630,000	53,600,000
Royalties	-	74,800	194,517	223,695	257,249	295,836	340,211	391,243
<b>Total Revenue</b>	-	1,649,800	3,344,517	5,977,695	18,027,249	28,295,836	43,570,211	69,111,243
<b>Cost of Goods Sold</b>								
Mercury (landed)	-	450,000	899,500	1,644,000	2,220,000	2,375,000	2,850,000	3,420,000
Quick Silver (landed)	-	-	-	-	5,000,000	8,750,000	10,720,500	18,760,000
Software	-	56,250	112,437	205,500	352,500	506,250	317,205	439,600
Shipping	-	12,750	25,500	10,200	95,200	93,075	67,575	67,575
<b>Total Cost of Goods Sold</b>	-	519,000	1,037,437	1,859,700	7,667,700	11,724,325	13,955,280	22,687,175
<b>Gross Profit</b>	-	1,130,800	2,307,080	4,117,995	10,359,549	16,571,511	29,614,931	46,424,068
<b>Operating Expenses</b>								
General & Administrative	64,250	234,000	472,500	771,385	1,373,862	1,887,292	2,651,011	3,928,062
Marketing & Sales	85,000	350,000	350,000	298,885	901,362	1,414,792	2,178,511	3,455,562
Utilities & Equip Expense	-	42,560	86,767	597,769	1,802,725	2,829,584	4,357,021	6,911,124
Management Salaries & Benefits (fixed)	-	567,000	567,000	865,885	1,468,362	1,981,792	2,745,511	4,022,562
Depreciation & Amortization	25,000	11,861	20,472	280,694	420,694	462,694	504,694	546,694
Research & Development (fixed)	750,000	1,000,000	1,000,000	3,000,000	3,901,362	5,829,584	7,357,021	9,911,124
Other Operating Expense (% revenue)	-	-	-	-	-	-	-	-
<b>Total Operating Expenses</b>	924,250	2,205,421	2,496,739	5,814,618	9,868,369	14,405,737	19,793,768	28,775,129
<b>Operating Income (EBIT)</b>	(924,250)	(1,074,621)	(189,659)	(1,696,623)	491,180	2,165,774	9,821,163	17,648,939
<b>Non-Operating Expenses</b>								
Net Interest (% Credit Cards + LTD)	-	-	-	252,279	252,268	258,759	262,328	276,299
Other Non-Operating Items (% revenue)	-	-	-	-	-	-	-	-
<b>Total Non-Operating Expense</b>	-	-	-	252,279	252,268	258,759	262,328	276,299
<b>Taxable Income (EBT)</b>	(924,250)	(1,074,621)	(189,659)	(1,948,902)	238,912	1,907,015	9,558,835	17,372,640
Taxes	-	-	-	-	12,399	98,974	1,753,152	4,508,200
<b>Net Income</b>	(924,250)	(1,074,621)	(189,659)	(1,948,902)	226,512	1,808,041	7,805,683	12,864,440

Balance Sheet										
		Initial	2018	2019	2020	2021	2022	2023	2024	2025
<b>Assets</b>										
<b>Current Assets</b>										
Cash		4,500,000	3,522,830	2,209,054	243,808	2,953,313	889,466	1,433,175	6,959,566	16,392,237
Receivables			-	23,467	199,166	358,662	1,081,635	1,697,750	2,614,213	4,146,675
Inventories			-	150,000	137,835	597,769	1,802,725	2,829,584	4,357,021	6,911,124
Other Current Assets			-	-	56,223	98,632	297,450	466,881	718,908	1,140,336
<b>Total Current Assets</b>			3,522,830	2,382,521	637,033	4,008,376	4,071,276	6,427,390	14,649,708	28,590,372
<b>Fixed Assets</b>										
Property, Plant & Equipment			175,000	295,000	1,854,957	2,004,957	3,004,957	3,304,957	3,604,957	3,904,957
Other Investments			-	-	-	-	-	-	-	-
Accumulated Depreciation			(25,000)	(36,861)	(57,333)	(338,028)	(758,722)	(1,221,416)	(1,726,110)	(2,272,804)
<b>Total Net Fixed Assets</b>			-	150,000	258,139	1,797,624	1,666,930	2,246,236	1,878,848	1,632,154
<b>Total Assets</b>			3,672,830	2,640,659	2,434,657	5,675,306	6,317,511	8,510,932	16,528,556	30,222,525
<b>Liabilities &amp; Shareholder's Equity</b>										
<b>Current Liabilities</b>										
Accounts Payable			78,540	96,797	98,841	130,179	536,739	820,703	976,870	1,588,102
Credit Cards			18,540	24,237	16,434	153,486	153,354	234,487	279,106	453,744
Wages Payable			-	17,012	5,455	-	-	-	-	-
Other Current Liabilities			-	1,484	2,458	29,073	38,339	58,622	69,776	113,436
<b>Total Current Liabilities</b>			97,080	139,531	123,188	312,738	728,432	1,113,811	1,325,752	2,155,282
<b>Long-Term Debt</b>										
Long-Term Debt			-	-	-	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Other Credit Lines & Debt			-	-	-	-	-	-	-	-
<b>Total Long-Term Debt</b>			-	-	-	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
<b>Total Liabilities</b>			97,080	139,531	123,188	3,312,738	3,728,432	4,113,811	4,325,752	5,155,282
<b>Shareholder's Equity</b>										
Preferred Equity		4,500,000	4,500,000	4,500,000	4,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000
Common Stock			-	-	-	-	-	-	-	-
Dividends & Distributions			-	-	-	-	-	-	-	-
Accumulated Retained Earnings			(924,250)	(1,998,871)	(2,188,530)	(4,137,432)	(3,910,920)	(2,102,879)	5,702,804	18,567,244
<b>Total Shareholder's Equity</b>			3,575,750	2,501,129	2,311,470	2,362,568	2,589,080	4,397,121	12,202,804	25,067,244
<b>Total Liabilities and Shareholder's Equity</b>			3,672,830	2,640,659	2,434,657	5,675,306	6,317,511	8,510,932	16,528,556	30,222,525

**Cash Flow Statement**

	2018	2019	2020	2021	2022	2023	2024	2025
<b>Cash Provided (used) by Operations</b>								
Net Income	(924,250)	(1,074,621)	(189,659)	(1,948,902)	226,512	1,808,041	7,805,683	12,864,440
Plus Depreciation	25,000	11,861	20,472	280,694	420,694	462,694	504,694	546,694
<b>Change in Working Capital</b>								
Decrease (increase) in Receivables	-	(23,467)	(175,699)	(159,495)	(722,973)	(616,115)	(916,463)	(1,532,462)
Decrease (increase) in Inventories	-	(150,000)	12,165	(459,934)	(1,204,955)	(1,026,859)	(1,527,438)	(2,554,103)
Decrease (increase) Other Current Assets	-	-	(56,223)	(42,409)	(198,818)	(169,432)	(252,027)	(421,427)
Increase (decrease) in Accts Payable	78,540	18,257	2,044	31,338	406,560	283,964	156,167	611,233
Increase (decrease) Credit Cards	18,540	5,697	(7,803)	137,052	(132)	81,133	44,619	174,638
Increase (decrease) Wages Payable	-	17,012	(11,557)	(5,455)	-	-	-	-
Increase (decrease) Other Current Liabilities	-	1,484	974	26,615	9,265	20,283	11,155	43,659
<b>Cash Provided (used) by Operations</b>	<b>(802,170)</b>	<b>(1,193,776)</b>	<b>(405,288)</b>	<b>(2,140,495)</b>	<b>(1,063,847)</b>	<b>843,709</b>	<b>5,826,390</b>	<b>9,732,672</b>
<b>Cash Provided (used) by Investments</b>								
Additions to PP&E	(175,000)	(120,000)	(1,559,957)	(150,000)	(1,000,000)	(300,000)	(300,000)	(300,000)
Other Investments	-	-	-	-	-	-	-	-
<b>Cash Provided (used) by Investments</b>	<b>(175,000)</b>	<b>(120,000)</b>	<b>(1,559,957)</b>	<b>(150,000)</b>	<b>(1,000,000)</b>	<b>(300,000)</b>	<b>(300,000)</b>	<b>(300,000)</b>
<b>Cash Provided (used) by Financing Activities</b>								
Additions (reductions) to Debt	-	-	-	3,000,000	-	-	-	-
Net Issues (repurchases) of Stock	-	-	-	2,000,000	-	-	-	-
Dividends & Distributions	-	-	-	-	-	-	-	-
<b>Cash Provided (used) by Fin. Activities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>5,000,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Net increase (decrease) in cash</b>	<b>(977,170)</b>	<b>(1,313,776)</b>	<b>(1,965,245)</b>	<b>2,709,505</b>	<b>(2,063,847)</b>	<b>543,709</b>	<b>5,526,390</b>	<b>9,432,672</b>
<b>Beginning Cash Balance</b>	<b>4,500,000</b>	<b>3,522,830</b>	<b>2,209,054</b>	<b>243,808</b>	<b>2,953,313</b>	<b>889,466</b>	<b>1,433,175</b>	<b>6,959,566</b>
<b>Ending Cash Balance</b>	<b>3,522,830</b>	<b>2,209,054</b>	<b>243,808</b>	<b>2,953,313</b>	<b>889,466</b>	<b>1,433,175</b>	<b>6,959,566</b>	<b>16,392,237</b>
<b>Adjusted Taxable Income &amp; Tax Loss Carry Forward</b>								
Addition to Taxable Loss Carry Forward	(924,250)	(1,074,621)	(189,659)	(1,948,902)	-	-	-	-
Tax Loss Used	-	-	-	-	(191,130)	(1,525,612)	(2,802,950)	-
Tax Loss Carry Forward	(924,250)	(1,998,871)	(2,188,530)	(4,137,432)	(4,328,562)	(2,802,950)	-	-
<b>Adjusted Taxable Income</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>47,782</b>	<b>381,403</b>	<b>6,755,884</b>	<b>17,372,640</b>

Almaden Technologies - Valuation Estimate									
Cash Flow DCF					Type	Multiple	2022 Variable	Estimated Value	Weight
		CF	PV <sub>DCF</sub>	Total PV <sub>DCF</sub>					
					Revenue	1.05	18,027,249	18,928,611	20%
1	2022	264,668	220,424	220,424	Gross Profit	1.50	10,359,549	15,539,323	20%
2	2023	357,733	248,128	468,552	EBIT	4.27	491,180	2,095,374	0%
3	2024	2,015,480	1,164,271	1,632,823	EBITDA	4.50	911,874	4,101,154	0%
4	2025	4,784,499	2,301,814	3,934,638	FCF	2.10	5,977,695	12,553,159	20%
5	2026	4,904,112			DCF			17,361,494	40%
					Estimated Value			16,348,816	
	<b>Long-run Growth (g)</b>	2.50%	PV <sub>DCF</sub>	3,934,638				<b>Estimated Equity Value</b>	
	<b>Discount Rate (r)</b>	20.07%	CV <sub>CF</sub>	27,908,759			<b>Enterprise Value</b>	16,348,816	
			PV <sub>CV</sub>	13,426,856			<b>Debt (-)</b>	(3,000,000)	
			VALUE <sub>DCF</sub>	17,361,494			<b>Cash (+)</b>	2,953,313	
							<b>Equity</b>	16,302,129	