# Capsim report

Business, Company



I. Executive Summary Erie Corporation has been founded in 2011 with the mission is to provide both reliable products for low-technologycustomers including Traditional and Low End segments; and premium- technology oriented customers including High End, Performance and Size segments. This business plan is written so as to provide the board of directors a detailed picture about the company's strategies as well as the direction how we can implement these strategies. The plan consists of three parts.

The first part is about the corporate objectives and strategy. In detail, at the end of year three, Erie aims to be one of the two leading companies in the market with a net profit of \$10, 000, 000 and 25% of market shares of the whole industry. In addition, the company's management expects to gain at least 30% of contribution margin for each product, to reduce 60% to 70% of total labor costs and 11. 8% of total material costs. Erie's strategies are niche costleadershipand niche differentiation.

In particular, while products in Traditional and Low End are oriented to operate under the niche cost leader, products in three remaining segments including High End, Performance and Size are aimed to follow the niche differentiator strategy. This is because while price is the most considerable criterion of customers in Traditional and Low End segments, this does not matter to the other three segments' consumers as long as the products offered are premium-technology.

To implement this strategy effectively, Erie should operate under the direction like this, besides revising products to meet customers' expectation; the company set up a relatively low price for products in Traditional and Low

End segments and vice versa for products in the three remaining segments. Simultaneously, the company will invest on capacity and automation gradually for all segments. This will bring to Erie a competitive advantage over other competitors in terms of long-term cost savings.

In addition, maximum second shift capacity may be run as much as possible and a significant amount ofmoneywill also be spent on promotion and sales budgets so as to capture the highest possible percentage of market shares. Furthermore, Erie is willing to make losses at least in the first two years because in the remaining years of the simulation, when higher capacity and automation are ready as well as Human Resources and Total Quality Management functions are applied, Erie will become more competitive in the market and hence can make profit as the production costs will be minimized.

Secondly, specific objectives, key performance indicators and strategy which are followed strictly the corporate objectives of all departments including R&D, Marketing, Production, Human Resources and Total Quality Management will be also set out. Finally, a back-up plan which might be utilized when there is trouble in the operation of the company's products is also prepared. Under this plan, the failed product will be remained for two years instead of stopping its operation immediately so as to sell its remaining inventory and wait for the new product to be finished and could be sold to the market.

Table of Contents Executive Summary 1 Introduction 4 Corporation Objectives & Strategies 4 1. Corporation Objectives 4 2. Corporation Strategies. 4 R&D Department 5 1. Objectives 5 2. KPIs. 5 3. Strategies. 5 Marketing Department 6 1. Objectives 6 2. KPIs. 6 3. Strategies. 7 Production Department 8 1. Objectives 8 2. KPIs & Strategies. 8 3. Strategies. 9 Human Resource Department 10 1. Objectives 10 2. KPIs & Strategies. 10 TQM Department 11 1. Objectives 11 2. KPIs & Strategies. 11FinanceDepartment 12 1. Objectives 12 2. KPIs & Strategies. 2 3. Strategies. 12 Back-up Plan 13 Conclusion 14 Reference 14 Appendix 15 II. Introduction Sensor industry is more likely an oligopoly because the products are high technological including cameras, biometric devices and labs-on-a-chip. In addition, there are only six firms dominating the market and the total demand for the whole industry remains stable which means that new firms cannot enter into the market. Furthermore, year after year, while customers' expectations are becoming higher and higher, the products are getting older and price ranges are stricter.

This indicates such a challenge for all companies in the market. A critical successful factor which can assist all companies to overcome this difficulty is that each company should choose an appropriate strategy to follow so as to succeed and become more competitive in the market. Recognizing this fact, Erie has chosen two strategies including niche cost leadership and niche differentiation that are appropriate for each types of segments. In this business plan, these strategies will be examined in depth and detailed actions of all Erie's departments which are followed these strategies are also sketched out.

III. Corporation Objectives and Strategies 1. Corporation Objectives By the end of year 3, Erie will: \* Be one of the two leading companies in the sensor industry \* Achieve net profit of \$10, 000, 000 \* Obtain at least 25% of market shares of the whole industry \* Gain at least 30% of Contribution Margin for each product \* Reduce at least 70% of the total labor costs and 11. 8% of total material costs 2. Corporation Strategies According to customers' buying criteria of Traditional and Low End segments, prices are deemed to be the most considerable factor.

In fact, respectively, the price ranges of Traditional and Low End take up approximately 23% and 53% over other criteria such as position and reliability. In other words, customers are willing to purchase low-tech products as long as their prices are relatively low. As a result, Niche Cost Leadership seems to be the most appropriate strategy for these two segments. On the other hand, prices are the most insignificant buying criterion in High End, Performance and Size segments. No matter how high the prices are, customers in these segments are more preferable to hightech product.

In particular, for the High End and Size segments, ideal position occupies 43% and products' ideal age is 29%. Furthermore, reliability is the most important consideration to customers in Performance segment. Hence, Niche Differentiation is a proper alternative for these three segments. IV. R&D Department 1. Objectives \* Meet customers' expectations in all segments \* Control R&D budgets for products in Traditional and Low End segments as low as possible \* Continuously update products' positions for High End, Performance and Size segments every year . KPIs \* Keep R&D costs for in Traditional and Low End segments maximum at \$1, 000, 000 \* Invest minimum \$1, 500, 000 for revising products in High End, Performance and Size segments 3. Strategies a. Traditional and Low End segments For these two segments, Erie decides to invest slightly and annually in performance and size while decrease the mean time beforefailure(MTBF) of products in year 1. After that, MTBF will be remained stable during the first three years. | EAT| EBB| | Year 1| Year 2| Year 3| Year 1| Year 2| Year 3|

Performance 5. 7 6. 4 7. 1 3 3 3. 2 Size 14. 3 13. 6 12. 9 17 17 16. 8 MTBF 16000 16000 16000 14000 14000 14000 Table 1: R&D investment for Traditional & Low End segment for the first three years b. High End, Performance and Size segments So as for customers to perceive the differentiation of our products in these three segments, performance, size and MTBF should exactly meet the customers' expectations. Therefore, Erie decides not to launch the products in the first year.

Since second year, when the products appear in the market, they will be revised annually in order to appeal to be younger in customers' perception | Year 1| Year 2| Year 3| | ECHO| Performance| 8| 9. 8| 10. 7| Size| 12| 10. 2| 9. 3| MTBF| 23000| 24000| 24000| | EDGE| Performance| 9. 4| 11. 4| 12. 4| Size| 15. 5| 14. 6| 13. 9| MTBF| 25000| 27000| 27000| | EGG| Performance| 4| 5| 6. 1| Size| 11| 8. 6| 7. 6| MTBF| 19000| 20000| 20000| Table 2: R&D investment for High End, Performance and Size segment for the first three years V. Marketing Department 1. Objectives \* Increase sales of 5 segments by 10% each year Increase demand over 10% each year \* Reach above 25% of market shares for Traditional and Low End segments, and above 20% for High End, Performance and Size segments at the end of year 3 \* Keep the sales forecast error of 5 segments fluctuate between 5% - 10% during three years 2. KPIs \* Keep the price of products of Traditional and Low End segments lower than the average price of their price ranges; the ones of High End, Performance and Size higher than the average price \* Remain the same prices of all products for the first three years, then slightly decrease all prices from \$0. to \$1 after year 3 \* Maintain customer awareness and accessibility of 5 segments from 95% to 100% \* Keep the forecast errors for 5 segments not higher than 200, 000 units for Traditional and Low End segments; 50, 000 units for High End, Performance and Size segments every year 3. Strategies a. Pricing Strategies \* Traditional & Low End In a product life cycle, the introduction stage starts when development is complete and ends when sales indicate that target customers widely accept the products.

The marketing strategies are ' fully implemented during the introduction and should be tightly integrated with the company's competitive advantages and strategic focus' (Ferrell & Hartline, p210, 2008). Therefore, during the first three years, in light of cost leadership strategy, Traditional and Low End segments will be followed the penetration pricing approach, which is setting relatively low initial prices, so as to maximize sales, gain widespread market acceptance, and capture large market shares quickly.

It means that, in order to comply with the low cost strategy, the prices of the segments are set below the average of their price ranges. In particular, the price of Eat, which dominates Traditional segment, is established at \$21. 5 per unit compared to \$25 of the average price, whereas the one of Ebb, which takes up majority of sales of Low End segment, is set at \$18 compared to \$20. (Refer to appendix 1b: Pricing Forecast for further details) This approach is suitable for these two segments because of two main reasons.

The first reason is that the segments' customers are price sensitive since prices outweigh such other elements as ideal position and reliability. The other one is due to the fact that R&D expenses are relatively low as customers do not pay much attention on the segments' characteristics. \* High End, Performance & Size Unlike to Traditional and Low End segments, High End, Performance and Size segments are pursued differentiation strategy; hence, price skimming approach seems to be an appropriate alternative.

The rationale behind price skimming is to intentionally set high prices relative to competitors, thereby skimming the profits of the top of the market, recovering the high R&D and marketing expenses associated with developing new products. In other words, the prices of these three segments will be set above the average of price ranges and should be, at least, obtain the contribution margins of 30%. In detail, the prices of Echo, Edge and Egg is respectively set at \$39, \$34. 5 and \$34. 5 for High End, Performance and Size segments compared to the average prices of \$35, \$30 and \$30 of each price ranges. Refer to appendix 1b: Pricing Forecast for further details) b. Promotion and Sales Strategies Percentage of products' awareness and accessibility, which reflect the number of customers who know the existence of a company's products, and who can easily interact with the company, are determined respectively by each product's promotion and sales budgets. In order to increase demand up to 10%, our company, therefore, initially invests \$3, 000, 000 in promotion budgets during the first two year, and \$2, 200, 000 in sales budget of Eat and Ebb during three years because customer accessibility requires long time investment to achieve 100%.

Since year 3, when customer awareness achieves over 100%, the investment in the promotion budgets will be scaled back to \$1, 500, 000. For Echo, Edge and Egg, since they will be launched in the second year, there are only \$1, 500, 000 invested in promotion budgets, and around \$1, 100, 000 to \$1, 500, 000 spent in sales budgets in the first year. However, when they are ready for sales, their promotion budgets will be increased up to \$3, 000, 000, whereas their sales budgets will be invested up to \$2, 200, 000 in the second year so as to encourage customers' demand. (Refer to appendix 1d: Promotion and Sales Budgets for further details)

VI. Production Department 1. Objectives: \* Achieve a proper plant utilization
\* Control production costs effectively 2. KPIs By the end of year three,
Production manager aims to: \* Keep plant utilization ratio from 90% to 130%
to minimize machine downtime cost and expensive 2nd shift charge \*
Decrease labor costs for all segments by 60% to 70% \* Maintain overtime
ratio at 0% \* Minimize inventory carrying costs at maximum 25% of total
production per year 3. Strategies a. Automation Due to the fact that each
rate of automation will decrease labor costs by 10%, Erie will increase
automation in all segments.

Even though the costs of automation are high, this is such a short-term aspect. In long-term, the improvement in automation will bring a greater benefit because costs spent on automation just incurred once while the reduction in labor costs is annual. Therefore, Erie plans to raise automation rating for all segments so as to achieve rate at 7 for Ebb and 6 for all other segments in year 3 as set out in table below: | Year 1| Year 2| Year 3| Eat| +1| -| +1| Ebb| +2| -| -| Echo| +1| -| +2| Edge| +2| -| +1| Egg| +2| -| +1| Table 3: Production investment in automation level for 5segments the first three years b. Capacity

Using an efficient amount of capacity can help the company to achieve economic of scale as well as to be consistent with the pricing strategy as set out by Marketing department. Furthermore, in order to satisfy higher demands as well as to follow sales forecasts of Marketing department, production manager plans to buy 600 units for Ebb; 300 units for each of Edge and Egg in year two. After that, in year three, 500 units of capacity will be purchased for Eat and Ebb. This will also help Erie achieve plant utilization ratio objective as mentioned above. | Year 1| Year 2| Year 3| Eat| -| -| 500| Ebb| -| 600| 500| Echo| -| -| -| Edge| -| 300| -|

Egg| -| 300| -| Table 4: Production investment in capacity for 5segments the first three years Additionally, in case that there is a restriction for purchasing capacity like limitation in the maximum investment or unexpected increase in sales, second shift of capacity will be utilized as much as possible to maximize sales. At the same time, using second shift workers will also be chosen instead of first shift workers with overtime. The main reason is that while second shift workers are paid the same wage rate of addition 50% as first shift workers work on overtime, second shift ones are more efficient as they are not as tired.

Moreover, the employee turnover rate is lower which can help Erie to keep talent workers and reduces future recruiting costs. Relying on second shift workers, Erie will also achieve its goal which is to keep overtime ratio at 0%. VII. HUMAN RESOURCE DEPARTMENT 1. Objectives The department intends to: \* Increase Productivity Index by 5% \* Lower Turnover Rate to 7. 5% in year 3 2. KPIs and Strategies: Erie plans to invest \$4 million for Recruiting Spend and 40 training hours in both year 2 and 3 in order to support Production department reducing labor cost.

However, 5% turnover rate is unavoidable annually because of retirement, relocation and weeding out poor workers. | Year 2| Year 3| Recruiting Spend (\$000)| \$ 4, 000| \$4, 000| Training Hours| 40| 40| Table 4: HR investment in recruiting and training for workers the first three years VIII. TQM DEPARTMENT 1. Objectives By the end of year 3, Erie proposes to: \* Reduce material costs by 11. 8%, labor costs by 14% and administrative costs by 60% \* Shorten the length of time required for R&D projects to complete by 40% \* Increase demand by 14. 4% for the product line 2. KPIs and Strategies

For each initiative, Erie is planning to invest \$1, 500, 000 in a 3 year cycle. In particular, in year 3, 4, 6 and 7, \$1, 500, 000 will be invested in each initiative; while in year 5 and 8, there is only \$1, 000, 000 budgeted for each initiative. The firm chooses an investment of \$1, 500, 000 because expenditures beyond \$ 4 million over 2 or 3 years in each initiative will lead to the diminishing returns. | Year 3| Year 4| Year 5| | Year 6| Year 7| Year 8| Process Management Budgets| | CPI Systems| \$1, 500, 000| \$1, 500, 000| \$1, 000, 000| Vendor/JIT| \$1, 500, 000| \$1, 500, 000| \$1, 000, 000|

Quality Initiative Training \$1, 500, 000 \$1, 500, 000 \$1, 000, 000 Channel Support Systems| \$1, 500, 000| \$1, 500, 000| \$1, 000, 000| Concurrent Engineering \$1, 500, 000 \$1, 500, 000 \$1, 000, 000 UNEP Green Programs| \$1, 500, 000| \$1, 500, 000| \$1, 000, 000| | TQM Budgets | | Benchmarking| \$1, 500, 000| \$1, 500, 000| \$1, 000, 000| Quality Function Deployment Effort| \$1, 500, 000| \$1, 500, 000| \$1, 000, 000| CCE/6 Sigma Training \$1, 500, 000 \$1, 500, 000 \$1, 000, 000 GEMI TQEM Sustainability Initiatives| \$1, 500, 000| \$1, 500, 000| \$1, 000, 000| Table 5: TQM investment in each initiative during 8 years IX. Finance Department 1. Objective By the end of year three: Avoid emergency loan \* Achieve the cumulative profit between \$15, 000, 000 to \$20, 000, 000 \* Utilize debt in investment effectively 2. KPIS \* Maintain the leverage between 1.8 to 2.8 \* Achieve the ROE ratios between 15% to 25% \* Maintain closing cash position at around \$12, 000, 000 to \$15, 000, 000 each year \* Maintain working capital day from 30 to 90 days 3. Strategies a. Emergency loan: In order to finance the maximum investment in the capacity and automation of the first three years, the highest amount of stocks and bonds will be issued in year 1 and continue to be considered issuing since year 2 in case of cash shortage.

In addition, to sustain the loss in the first two years for capturing the market shares, a maximum amount of current debt will be borrowed in the first year. This in turn could avoid a 7.5% of penalty for the emergency loan. After that, our company will continue to borrow a sufficient amount of current debt with the purpose to maintain our cash position at around 12, 000, 000 to \$15, 000, 000. Besides, the credit for account receivable is set at 30 days so as to have a sufficient amount of cash to avoid emergency loan. b. Leverage

The purpose of maintaining the leverage ratio is not to use too much retain earnings for funding the growth and avoiding a high amount of debt which can lead our company to a financial risk because of a significant amount of interest expense. In order to keep an appropriate leverage ratio, the total amount of debt will only be considered in the worst case. However, if the leverage is too high, the production investment needs to be scaled back. c. Cumulative profit So as to achieve the above expected cumulative profit, firstly, the day of working capital needs concerning and maintaining from 30 to 90 days.

This in turn can protect our company from a risky position if problems occur as well as help us achieve a higher productive rate. Secondly, the expenditure for HR and TQM will be carefully calculated. Finally, the account payable policy is set at 30 days which will minimize significantly suppliers' material withholding. Hence, our company's profit can be improved in case of stock out because of lacking materials. X. Back-up plan Most companies have to confront with several unexpected and difficult situations during operating period.

One of these difficulties could be that some companies might collapse as losing their ability to continue to compete with other competitors in some products. The reason for this would be that they no longer make enough sales to cover costs which lead to a decrease in market shares and an extreme financial loss as well. Therefore, in order to avoid this situation, Erie has developed a back-up plan in case that one of our products suffers serious loss. According to the BCG matrix, it is believed that Traditional and Low End segments might be in the ' harvest' stage since year 5.

This is because these two segments have dominated a large proportion of market shares. Moreover, their growth rates start to decrease significantly for a long time of being operated in the sensor market. As a result, our company intends to adopt the exiting strategies when these segments begin to make relatively small profits or suffer serious loss. Instead, our company decides to develop and launch a new product which will be followed the differentiation strategy like High End and Performance segment since these segments are just in the ' hold' stage at that time, hence can catch up with other competitors' products.

XI. Conclusion In conclusion, relying on the application of such strategy, Erie's products will be high-recognized in the market as they are revised regularly and efficiently. In addition, through the advantage of an initially significant investment, the company could become more competitive in the market as its production costs are minimized. Furthermore, by accepting a little bit of risky at about the first two years, Erie will gain a competitive advantage over other competitors in terms of long-term cost savings and hence could provide cheaper products and increase sales in later years. XII. Reference \* Ferrel.

O. C. & Hartline. D. M. 2008, Marketing Strategy 4e, South- Western Cengage Learning, the USA. XIII. Appendix 1. Marketing Forecast a. Sales Forecast | Year 1| Year 2| Year 3| Eat| 2, 000, 000| 2, 200, 000| 2, 420, 000| Ebb| 2, 200, 000| 2, 420, 000| 2, 665, 000| Echo| 430, 000| 475, 000| 525, 000|

Eat| \$43, 000, 000| \$47, 300, 000| \$53, 030, 000| Ebb| \$39, 600, 000| \$43, 560, 000| \$47, 970, 000| Echo| \$16, 770, 000| \$18, 525, 000| \$20, 475, 000| Edge| \$12, 075, 000| \$13, 282, 500| \$14, 662, 500| Egg| \$13, 800, 000| \$15, 180, 000 \$16, 732, 500 d. Promotion & Sales Budgets | Promotion Budget (000) | Sales Budget (000) | Year 1 | Year 2 | Year 3 | Year 1 | Year 2 | Year 3 | Eat| \$3, 000| \$3, 000| \$1, 500| \$2, 200| \$2, 200| \$2, 200| Ebb| \$3, 000| \$3, 000| \$1, 500| \$2, 200| \$2, 200| \$2, 200| Echo| \$1, 500| \$3, 000| \$3, 000| \$1, 500| \$2, 200| \$2, 200| Edge| \$1, 500| \$3, 000| \$3, 000| \$1, 100| \$2, 200| \$2, 200| Egg| \$1, 500| \$3, 000| \$3, 000| \$1, 100| \$2, 200| \$2, 200| . Production Plan PROUCTION PLAN Year 1 - 2011 | Eat Ebb Echo Edge Egg NA NA NA| Total| Units sales forecast| 2000| 2200| 430| 350| 400| | | | 5380| Inventory on hand 189 39 40 78 62 | | 408 Production schedule 1800| 2200| 400| 300| 340| | | | 5040| Production after Adj. | 1782| 2178| 396 297 337 | | 4990 Margins | 2nd shift production % 0% 57. 10% 0% 0% 0% 0% 1 Labour cost/unit \$8. 22 \$8. 26 \$9. 39 \$9. 39 \$9. 39 | | | | Material cost/unit| \$10. 96 | \$7. 63 | \$15. 53 | \$15. 45 | \$13. 3 | | | | Total unit cost| \$19. 18 | \$15. 89 | \$24. 92 | \$24. 84 | \$22. 62 | | | | CM 10. 8% 11. 7% 36. 1% 28. 0% 34. 4% | | | Physical plant | Total 1st shift capacity 1800 1400 900 600 600 | | 5300 Buy/sell capacity --| --| --| --| --| | | | Automation rating | 4 | 5 | 3 | 3 | 3 | | | | New automation rating 5 7 4 5 5 | | | | Investment \$7, 200 \$11, 200 \$3,

600 | \$4, 800 | \$4, 800 | \$0 | \$0 | \$0 | \$31, 600 | Workforce| Last year| Needed This Year 1st shift 2nd shift Overtime | Max Invest 32, 694 | Completement 700 820 820 705 115 0% A/P Lags 30 (days) 3. Proforma Financial Statements a. Balance Sheet PROFORMA BALANCE SHEET ASSETS | Cash 28034 Accounts Receivable 10240 Inventory 1055| Total Current Assets| 39328| Plant & Equipment| 145400| Accumulated Depreciation (47626) Total Fixed Assets 97774 | Total Assets 137102 | LIABILITIES & OWNER'S EQUITY | Accounts Payable | 7699 | Current Debt | 20341 Long Term Debt 60694 Total Liabilities 88734 Common Stock 32060 Retained Earnings 16308 Total Equity 48368 Total Liabilities and Owner's Equity 137102 b. Cash Flow Statement PROFORMA CASH FLOW STATEMENT| Cash Flows from Operating Activities| | Net Income (Loss)| (13274) Adjustment for non-cash items | | Depreciation & Writeoff 9693 Change in Current Assets and Liabilities || Accounts Payable | 1116 || Inventory 7562 | Accounts Receivable (1933) Net cash from operations 3165 || Cash Flows From Investing Activities || Plant Improvements |(31600)| | Cash Flows from Financing Activities | Dividends Paid | Sales of Common Stock 13, 700

Purchase of Common Stock| | Cash from long term debt | 18994| Retirement of long term debt| | Change in current debt (net)| 20341| | Net change in cash position| 24600| | Starting cash position| 3, 434| Closing cash position| 28034| c. Income Statement PROFORMA INCOME STATEMENT| Product Name| EAT| EBB| ECHO| EDGE| EGG| Total| Sales| 42385| 39600| 16770| 12075| 13757| 124587| | Variable Costs| | Direct Labor| 16227| 18156| 4043| 3284| 3748| 45458| Direct Material| 21632| 16771| 6682| 5403| 5279| 55768| Inventory Carry| 0| 33| 18| 75| 0| 127|

Total Variable Costs| 37859| 34960| 10743| 8761| 9028| 101352| | Contribution Margin| 4520| 4640| 6027| 3314| 4729| 23235| | Period Costs| | Depreciation| 3120| 3173| 1320| 1040| 1040| 9693| SG&A: R&D| 269| 0| 1000| 1000| 1000| 3269| Promotions| 3000| 3000| 1500| 1500| 1500| 10500| Sales| 2200| 2200| 1500| 1100| 1100| 8100| Admin| 365| 341| 145| 104| 119| 1074| Total Period Costs| 8955| 8715| 5465| 4744| 4759| 32637| | Net Margin| (4429)| (4075)| 562| (1431)| (29)| (9402)| | Other| 1635| EBIT| (11037)|

Interest| 9384| Taxes| (7147)| Profit Sharing| 0| | Net Profit| (13274)| d. Cash Budget CASH BUDGET| | Total| Beginning cash balance| 3, 434| Cash from operations| 3, 165| Total Available Cash| 6, 599| Less:| | Capital expenditures| (31, 600)| Interest| (9, 384)| Dividends| 0| Debt retirement| 0| Other| (1, 635)| Total Disbursements| (42, 619)| Cash Balance (Deficit)| (36, 020)| Add:| | Short-term loans| 20, 341| Long-term loans| 18, 994| Capital stock issues| 13, 700| Total Additions| 52, 035| Ending Cash Balance| 16, 015|