



Strategic Horizons

business simulation



Strategic Horizons

Business Simulation

Management Team Briefing

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Simulation Overview

The **Strategic Horizons** business simulation will give you an opportunity to explore and practice the skills and concepts related to driving business performance and enhancing your personal leadership.

This simulation is designed to provide a structured, risk-free environment in which to learn, apply, and improve your skills and understanding of the topics discussed during the program. You will have the opportunity to explore drivers of financial performance, operational productivity, and revenue growth.

Try not to think of this experience as a game but more as a real-world scenario in which it is considered okay to take calculated risks you would not necessarily take on the job. The business issues you will face in the simulation mirror challenges faced by leaders at your company. You will manage a manufacturer of wind turbines with market dynamics that include rapidly changing technology and shifting customer preferences. Although you are managing a business in a different industry, as leaders responsible for creating value you are facing issues like those you face in your real-life roles. You have the advantage of thinking out of the box without worrying about real life constraints. What might you do to solve the problem? How might you react without the constraints in your current role? You will be challenged to apply your business acumen skills that will enable you to be better when you get back to the real world.

During the business simulation, you will have the opportunity to practice application of skills in an integrated business environment where you will be able to:

- Develop a strategic mindset and leverage strategy tools and analytics for impact and value creation;
- Broaden your understanding of key financial drivers that enable profitable growth and create value for stakeholders and customers; and
- Utilize collaboration skills to achieve results with, and through, others.

Simulation Environment

During the simulation, you will work in a group of four to six people. The marketplace you will compete in reflects a business environment that connects to your own business role, personal experience, and leadership opportunities.

You will run your business over a three-year timeframe. Each year constitutes a period of simulation decision-making. Results will be compared across teams for shared learning and best practices at the end of each decision-making period.

Decisions made by one group in the simulation *will* affect the results of other executive teams.

Business Setting

The enterprise you will be responsible for competes in a rapidly emerging and exciting market space – Next Generation Wind Turbines designed for the unique challenges of urban and non-traditional applications.

The product is the Nautilus NextGen Turbine (NNT). Nautilus employs state-of-the-art technologies, materials, and engineering approaches to create a cost-effective product tailored to address unique deployment and operational challenges.

The marketplace is comprised of customers focused on the following needs:

- Power generation from urban wind currents in densely populated areas;
- Power generation where more cost efficiency is required than that provided by traditional horizontal axis wind turbines (HAWTs);

- Alternative energy technologies providing power generation in confined locations or those where aesthetic aspects are a major consideration;
- Infill applications to increase power generation within existing wind farm locations; and
- Mobile power generation and installation in extreme locations off limits to conventional products.

Simulation Process

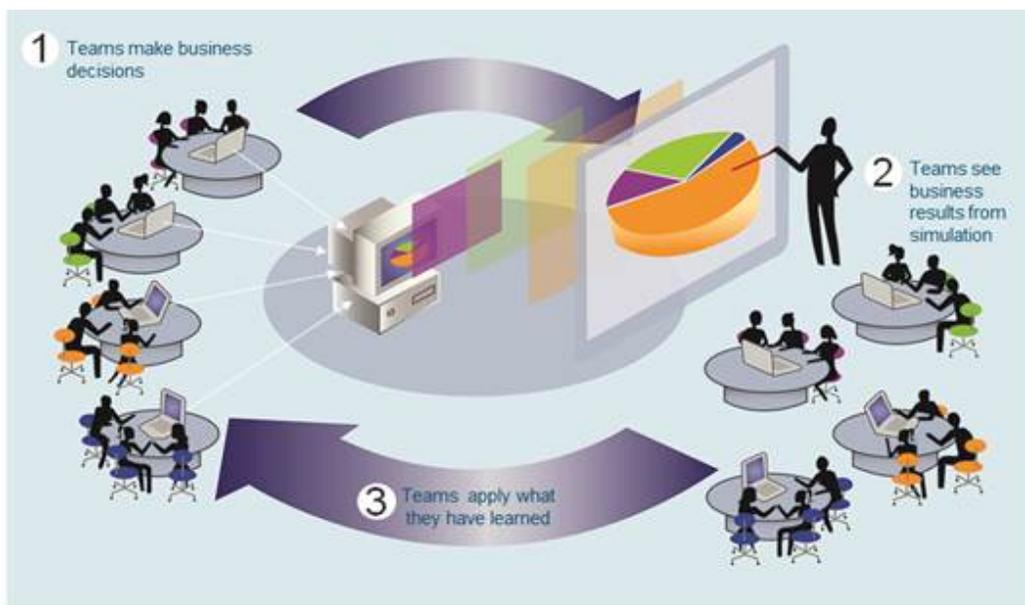
Your first task will be to organize your leadership team and assign roles and responsibilities. Next, you will develop a direction for your organization that addresses your specific market opportunities and is complementary to the strategies of your overall enterprise.

You will receive detailed operating and financial reports to help you assess the current state of the business. You will also receive market data to help you determine the direction for your organization.

After developing your strategic direction, you will begin the process of making business decisions for your enterprise.

Each set of decisions will cover one year of operations. After each year, you will have the opportunity to reflect on the actions of your leadership team and evaluate your effectiveness. This process will be repeated each year your team is responsible for running the business.

This process is represented graphically below:



Provide a safe learning laboratory to develop and practice skills that will help us grow as leaders and achieve our business objectives

Preparation for the Simulation

Prior to the beginning of the business simulation, please consider the following questions:

- Where do you believe the most significant organic growth opportunities for your real-life company will be generated in the next five years? Why?
- In your current job assignment, how do you impact your real-life company's growth and productivity, directly and indirectly?
- If you were to be named to the leadership team of an enterprise like the one represented in the business simulation, what are three things you would implement to enhance the enterprise's overall performance? Why?
- What is the benefit of the business simulation not *exactly* modeling your current organization? What opportunities does this create for you during the simulation?

Executive Team Briefing

FROM THE OFFICE OF THE CHAIRMAN

To: New Executive Leadership Team

From: David Montgomery
Chairman, Nautilus Consortium

Regarding: Roles and Responsibilities

It gives me great pleasure to welcome you to your new role as a member of the Leadership Team of your enterprise. I also welcome you to the exciting opportunities presented by the Nautilus NextGen Turbine.

I'll be frank with you – the expectations for your performance are high. Both the Board and our shareholders will be squarely focused on your ability to perform in this market – one that I anticipate will become highly competitive.

What are my expectations? First and foremost, I expect you to manage the business responsibly. Here are a few suggestions:

- Assess opportunities based on the capabilities and capacities of your company, the perspective of the customer and their needs, and the expected financial impact.
- Analyze your assumptions before acting and assess potential risk and explore risk mitigation alternatives.

I anticipate your biggest challenge will be balancing the long-term and short-term needs of the business. It's a life-long pursuit and balancing act – and it's what you must do if you hope to succeed. Again, a few suggestions:

- Meet your financial objectives – that goes without saying.
- Create a set of strategic capabilities and successful customer engagements.
- Invest in the business to ensure long-term viability.
- Meet customer needs and expectations now – and as they evolve in the future.
- Attract, develop, and retain the best people.

I know you are up to the challenge and I look forward to monitoring your success.

A Word about Nautilus

The Challenge

Imagine a method of generating electricity that will work effectively, and elegantly, in urban environments. All of the benefits of those large beautiful wind farms located in the countryside – but now in a smaller urban friendly footprint and engineered to perform at a similar or higher level of efficiency.

Addressing alternative energy demands in urban environments and for non-traditional applications is the focus of the Nautilus program. Configured for either government or commercial use, the goal of Nautilus is to achieve the following:

- Effectively operate in dense urban settings
- Provide power generation performance at levels competitive with traditional Horizontal Axis Wind Turbines (HAWTs)
- Leverage advanced technologies to provide safe and reliable performance with minimal maintenance

The Product

The vision for the Nautilus program was rooted in a very real-world scenario – harnessing wind energy in dense urban settings.

The science behind the Nautilus NextGen Turbine is brilliant in its simplicity. In the same way that an airplane wing uses the movement of air to generate a force powerful enough to raise an enormous aircraft and keep it airborne, the Nautilus NextGen Turbine captures energy from wind with incredible efficiency. The Nautilus NextGen Turbine’s blades use the natural flow of air to create lift, effectively minimizing drag and optimizing mechanical efficiency. Thus, the Nautilus NextGen Turbine can extract energy from winds even at low speeds.

The Nautilus name is derived from the turbine’s unique, nautilus-shaped, offset cam. The cam allows the blades to continually adjust for optimal pitch throughout a 360° rotation of the turbine. And with a shorter hub height, it is approximately 30 percent smaller, yet generates the same power when compared to horizontal axis wind turbines (HAWTs). The Nautilus NextGen Turbine’s horizontal orientation makes it inherently stable, working efficiently and safely in high-turbulence areas with less noise, vibration, and wear and tear. All combined, it adds up to a solution that delivers more power, flexibility, and reliability – all with a lower total cost of ownership and faster time to payback.

Key design elements of the NNT include:

- Smaller installation footprint
- Lift-based design to capture surface winds more efficiently
- Cost efficient installation and operation
- Modular design contributes to lower total cost of ownership
- Low noise signature

“Because the Nautilus NextGen Turbine packs so much efficiency into its compact configuration, it’s opening up opportunities to businesses and communities that could have never considered wind energy before. We believe it has the potential to completely redefine the market.”

Natalia Baden-Locke
Chief Engineer
The Nautilus Consortium

New Approaches for Greater Power Generation

Using the wind to generate more power – the Nautilus NextGen Turbine.

Because propeller-based turbines only operate efficiently in smooth airflows, they must be placed three diameters apart, hundreds of feet above the ground, facing the prevailing wind. To generate more power from the same amount of land, many of today's wind farmers are installing even bigger turbines, which must be elevated higher and spaced further apart. These larger turbines pose potential problems for commercial and military radar and bird migratory patterns, while also increasing visual and noise pollution.

Because the Nautilus NextGen Turbine features a lower hub height and smaller footprint, it can withstand turbulent environments – offering a practical, economical way to infill existing farms for greater overall power generation. Using its patented lift-based design, the Nautilus NextGen Turbine captures abundant surface-wind energy without disrupting the airflows that larger turbines need to operate effectively. Plus, the Nautilus NextGen Turbine can be installed and maintained without the use of cranes or special equipment, making it easier and less expensive to maintain.

Urban wind power generation? It's time.

The Nautilus NextGen Turbine makes every high rise a potential generation station. Until now, entering the wind energy market has been prohibitive due to the real estate requirements; cost to purchase, install, and maintain turbines; and noise, size, and visual pollution associated with conventional HAWTs. The Nautilus NextGen Turbine, however, is pioneering a new market for power generation – urban wind. Within the canyons of typical downtown environments, powerful wind drafts are created as the air hits building surfaces and moves upward.

The Nautilus NextGen Turbine is ideal for placement atop familiar and abundant urban structures, such as high-rise buildings, commercial rooftops, and parking garage structures. It is small enough to fit easily around rooftop perimeters, capturing the wind currents at their point of highest velocity. Some Nautilus NextGen Turbine models can reliably extract energy from currents as gentle as 6 mph to winds in excess of 80 mph.

The Nautilus NextGen Turbine is also an ideal power generation solution for low-rise urban and suburban environments, such as office buildings, warehouse complexes, corporate or college campus structures, shopping malls, and freestanding retail sites. To optimize both energy generation and aesthetics, the Nautilus NextGen Turbine can be concealed within architectural enclosures that may be used to concentrate airflows to increase the wind speed – producing even greater energy productivity and efficiency and, as a result, deliver a faster return on investment.

The Investors

The Nautilus Consortium was founded with a goal of reducing the time and cost to move from innovation to commercial deployment for urban wind energy power generation. The primary role of the consortium was to address critical challenges in advanced technology and manufacturing effectiveness. Additionally, the consortium worked to identify ways to speed development, reduce costs, share risks, and increase overall productivity.

Emerging technology, engineering, and power generation research is both high cost and high risk. The investors in the Nautilus program represent key partners in the forward-thinking application of this technology – brought together for a united purpose – a new category of alternative energy generation.

With the development of the Nautilus NextGen Turbine, the consortium has delivered on its promise to deliver synergy, value, and applied technology to this challenge.

Mission of the Nautilus Consortium

- Drive the search for new materials, engineering, tools, and processes
- Sponsor benchmarking and standards efforts
- Deliver immediate value by pooling resources for measurable results
- Focus the industry on the commercialization of advanced research
- Establish industry participation in the manufacture, delivery, and service for the urban and specialized application of wind turbines

The Competitive Scenario

The consortium has now acted upon the last component of its mission.

Six competitors have been established to advance the original Nautilus product in the marketplace. Each of these companies has been provided with the capabilities to establish themselves in the manufacture, sales, and service of Nautilus turbines.

In a unique arrangement, the consortium assisted in the establishment, funding, and start-up operations of these six companies. The consortium also assisted in the capture of initial contracts for NNTs and balanced the initial orders across the six companies. It is strongly believed that the future of this market has been strengthened by the participation of the consortium in bringing this product not only through the design phase, but also into actual production and operation.

Each of the six companies is publicly traded, competes directly with each other, and has no current technology sharing between the companies beyond the initial agreement that gave them license to commercialize the technology and design of the Nautilus NextGen Turbine.

Enterprise Overview

Welcome and congratulations on your new assignment.

Your role as a member of the Executive Leadership team brings you to the headquarters for this \$350 million enterprise. Each enterprise currently has three major active contracts. Product sales represent approximately 98% of our current revenue, the remainder of our revenue comes from service, logistics, and parts support for NNTs that have been delivered to customers and are in operation.

Market research has identified several major international corporate entities, along with several government agencies – both domestic and international – that the NNT will address. Between these current and potential customers, the market represents more than \$2 billion of new contracts to be awarded each year. Current market data indicates that you can expect a growing level of revenue in the industry for the next three to four years.

You should utilize this information in determining the strategy your executive team will develop and implement.

As a leader in one of the six enterprises that have access to the Nautilus technology, you are not alone in seeking this revenue. Your team will have to win the business of customers as well as retain the business of our existing customer base. You can expect your competitors to work aggressively to capture their share of these customers while trying their best to convince our current customers to migrate to them.

An overview of customers is provided at the end of this document. You will receive more information on the specific needs of each customer as they request proposals on individual contracts.

Marketplace

Product Segments

Market demand has been categorized into three distinct configurations. All these configurations utilize a standard NNT platform and incorporate the appropriate features and or design components.

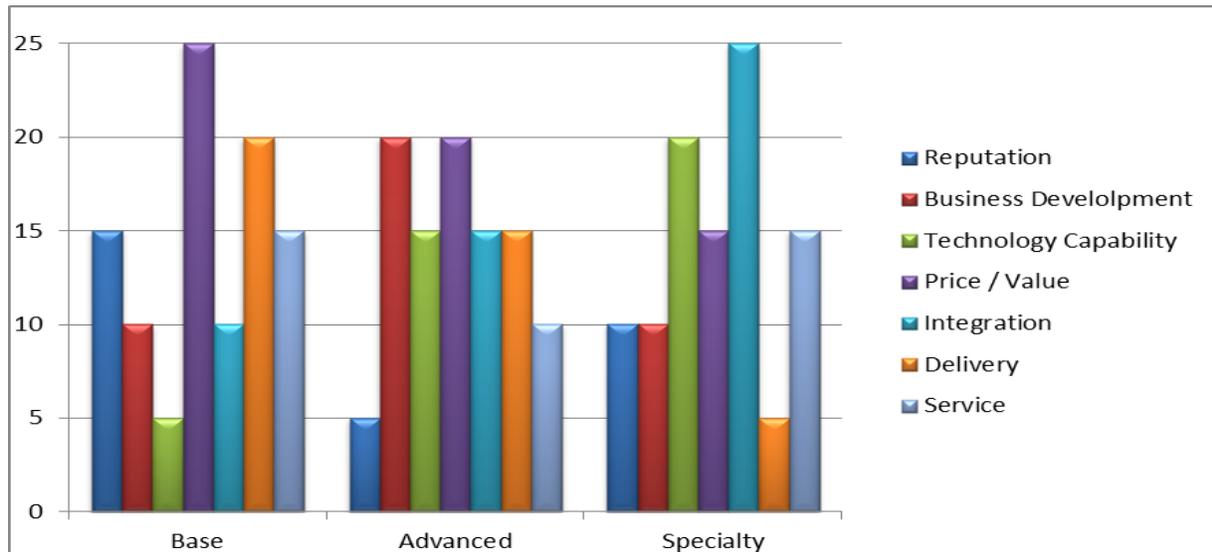
Base models are generally standalone units but can also be installed in arrays of up to three interconnected NNTs. They are installed to support power generation on urban commercial and residential structures. Base model NNTs may be also used in remote areas to supplement or serve as the primary source of power generation.

Advanced models are primarily installed as part of a medium-to-large array of NNTs. The advanced model can effectively interconnect in an array of up to 100 NNTs. These products are typically used in micro wind farms; as infill in existing traditional HAWTs wind farms; or can be used in large commercial, industrial, or military developments to provide a supplemental or primary source of power generation. These models feature an advanced controller and synchronization technology so that the array of NNTs can operate collectively at peak efficiency without creating interference or power loss within the array.

Specialty models are configured to operate in extreme geographical locations and/or temporary locations. These models can be configured for easy portability and operation in temporary locations to provide emergency power generation. They also are built to withstand unique environmental conditions including extreme cold weather operations, marine applications, and high-altitude applications. These units feature reinforced structures, heavy duty control and generator components, and a blade and rotor assembly that has been reinforced for extreme and high wind conditions.

Customer Needs and Selection Criteria

A recent market survey identified common needs among customers in the industry. These needs also serve as the key selection criteria our customers use when deciding to conduct business with our organization.



- **Reputation:** Customers want to avoid risk. They seek secure, well-known, well-respected providers with strong records in the marketplace. Our current and past performance is one of the key ways in which they can assess our operations.
- **Business Development:** Given the pace of change in this market, customers want to be kept informed of our capabilities and how we can address their specific needs. Customers also expect that our business development teams can appropriately represent these capabilities in response to requests for information and specific request for proposals.
- **Technology:** Customers are on the lookout for companies that demonstrate excellence and expertise in developing, integrating, and delivering products and services that will enhance their ability to succeed in their particular market. Our products must meet the expectations of our customers in terms of their requirements for safety, efficiency, and operational performance.
- **Price/Value:** Customers expect – in fact demand – good value from their chosen solution provider.
- **Integration:** Given the nature of our product and associated emerging technologies, customers desire to partner with organizations that are dependable integrators of these technologies. Our ability to effectively integrate technologies, systems, and major subassemblies – many of which will be provided by external suppliers – will be a key factor for our success in this market.
- **Delivery:** Customers will assess our ability to deliver in the time frames required to support their business. Of course, they are realistic and understand there is limited market capacity in the industry at this time. However, our products tie directly to their capital planning and operational forecasting. If we fail to deliver the level of performance at the time required we will severely jeopardize our relationships.
- **Quality of Service:** Customers expect to deal with providers who back the sale with a superior level of service – at the point of need, time of need, and at an appropriate price. They expect professional interactions as well as technical expertise and outstanding competence.

Management Responsibilities

Each year, you will make specific management decisions to implement your strategy. The rest of this briefing serves as a guide that will help you navigate through each decision area. The software you will use for your management decisions has several data entry screens; each screen contains functional decisions. The decisions you will make are outlined below.

Customer Opportunities

- Set focus for acquisition of new contracts across business segments.
- Determine pricing policies, potential business impact, and specific contract opportunities to pursue.
- Provide direction in terms of expected contract “wins” and growth implications.

Business Development

- Primary focus is on the identification and acquisition of customer opportunities.
- Manage staffing needs, determine staffing levels, and define recruiting focus.
- Manage investments in training, tools, and systems to enhance overall department capabilities.

Design & Engineering

- Primary focus is on the effective design coordination and integration of the various subassemblies that comprise the NNT, as well as ensuring successful final product assembly.
- Manage staffing needs, determine staffing levels, and define recruiting focus.
- Manage investments in training, tools, and systems to enhance overall department capabilities.
- Manage investments in product performance and technology enhancements.

Supplier Management

- Primary focus is on setting parameters on the extent of dependence on external suppliers, as well as the effective management and integration of key external suppliers.
- Manage staffing needs, determine staffing levels, and define recruiting focus.
- Manage investments in training, tools, and systems to enhance overall department capabilities.
- Determine levels of supplier involvement and supplier policies.

Manufacturing & Assembly

- Primary focus is on the effective manufacturing final product assembly.
- Manage staffing needs, determine staffing levels, and define recruiting focus.
- Manage investments in training, tools, and systems to enhance overall department capabilities.
- Determine capacity levels and manage investments in manufacturing configuration.

Customer Support

- Primary focus is on providing effective support in terms of parts, spares, warranty, and field support for customers of NNTs produced by our company.
- Manage staffing needs, determine staffing levels, and define recruiting focus.
- Manage investments in training, tools, and systems to enhance overall department capabilities.
- Determine levels of parts and spares inventories.

Management Decisions: Customer Opportunities

The first area of decisions involves identifying specific customer opportunities you will pursue in line with your business strategy. For each customer opportunity you choose to pursue, you will need to determine the alignment of your offering with the customer's needs and how you will staff your business development organization.

Customer Opportunity Types

Each customer opportunity will be for a specific model type of NNT – base, advanced, or specialty – and you will be presented with the number of units required as well as the price they are *expecting* to pay per unit. Customers will also indicate how they prefer to purchase these units – either as sole source contracts or spread across multiple suppliers.

- **Sole Contract** – a sole source contract where the customer will purchase all units under the contract from one supplier.
- **Spread 2 or Spread 3 Contract** – a contract where the customer prefers to spread the purchase over multiple suppliers. In a Spread 2 contract, the best provider will get a contract for 60% of the units; the 2nd supplier will receive a contract for 40% of the total units required by the customer. In a Spread 3 contract, the units will be split 50% to the 1st supplier, 30% to the 2nd, and 20% to the 3rd supplier. If there are not enough qualified suppliers bidding on the contract, the customer may contract for the total units using a smaller number of suppliers.
- **Allocated Contract** – a contract where the customer prefers to spread the purchase over multiple suppliers. The customer will determine the volume to be purchased from each supplier based on the relative strength of each supplier's offering. The customer will only purchase from suppliers who present a competitive offering. If a supplier is deemed not competitive the customer will not buy from them.

Pursue Opportunity?

If you choose to pursue a specific opportunity, you will need to mark the checkbox in response to this field. This will enable the process of developing a response to the customer's request for information.

If you do not select the checkbox you are choosing not to pursue the opportunity. If not pursued, the opportunity will be awarded to a competitor or the customer will identify alternative technologies to meet their needs.

Relative Pricing

This decision allows you to modify your pricing to a specific opportunity. Each customer opportunity has an expected price. By applying a price "discount" (represented by a negative value), you will offer to provide the contracted products at a lower price than expected in the customer's Request for Proposal (RFP).

If you request a "premium" (represented by a positive value) your proposal will present the customer a price higher than what is expected or outlined in the RFP. Customers will consider your price in the context of your overall offering.

Given that this is a new technology, customers will most likely not expect price discounts to exceed 15%. Price premiums in excess of 5%, especially if you have not achieved a distinct source of differentiation, will likely have a severe impact on the customer's reaction to your proposed solution.

Proforma Tool – Expected Win

This useful tool allows you to forecast customer response to your proposals and provide you financial and operational feedback on scenarios. Proforma entries are not seen by your customer.

Based on the contract type, the pull-down box next to each available contract in the Proforma allows you to select what percentage of each contract you expect to win. Your selection will update the Projected Results with the expected revenue – as well as the costs of delivering the business. Additionally, it will indicate the impact on staff levels in the various functional areas and display the impact of that contract on future year's backlog.

Keep in mind that this does not change your actual decisions for that year of operations.

Management Decisions: Business Development

The Business Development area of decisions provides direction to your sales organization in terms of workload planning, staffing, development, and productivity.

Productivity & Tools Investments

Investments in this area will improve workforce productivity by providing enablers such as improved processes and work flow, tools, knowledge management systems, and mentoring to your Business Development staff.

Investments should be considered based on the size of your organization. As the number of employees increases you should consider the level of investment. As a reference, minimal investments would be in the range of \$7,500 per year per employee. This would maintain the current level of productivity in the Business Development area.

With investments of \$15,000 to \$20,000 per employee you should expect improvements in productivity of 5% to 7%. Higher levels of investment may provide additional benefit but you will likely encounter diminishing returns.

Staffing, Recruiting, and Development Decisions

An outline of staff-related decisions that are common to each function, including recruiting, training, and training focus is presented after the non-staff related decisions unique to each function.

Management Decisions: Design & Engineering

The Design and Engineering area of decisions provides direction to your Engineering organization in terms of workload planning, staffing, development, and product investment.

Productivity & Tools Investments

Investments in this area will improve workforce productivity by providing enablers such as improved processes and work flow, tools, knowledge management systems, and mentoring to your Engineering staff.

Investments should be considered based on the size of your organization. As the number of employees increases you should consider the level of investment. As a reference, minimal investments would be in the range of \$10,000 per year per employee. This would maintain the current level of productivity in the engineering area.

With investments of \$20,000 to \$25,000 per employee you should expect improvements in productivity of 5% to 7%. Higher levels of investment may provide additional benefit but you will likely encounter diminishing returns.

Performance Investments

Investments in this area will impact customer's rating of the technology and features in your NNTs. Product performance investments will fund development of product enhancements, improved operational performance, and improved quality.

An investment of \$2,000,000 to \$3,000,000 would yield small benefits in overall performance – in the range of 3%. Higher investment levels (\$10,000,000 to \$15,000,000) will likely yield more significant impacts of 8% to 10% on the overall performance of your product and, potentially, create a source of differentiation in relation to your competitors. Higher levels of investment will return additional impact but you will likely experience diminishing returns.

Staffing, Recruiting, and Development Decisions

An outline of staff-related decisions that are common to each function, including recruiting, training, and training focus is presented after the non-staff related decisions unique to each function.

Management Decisions: Supplier Management

This area of decisions provides direction to your Supplier Management organization in terms of workload planning, staffing, development, and supplier responsibilities, and overall supplier integration approach.

Productivity & Tools Investments

Investments in this area will improve the productivity of your Supplier Management workforce by providing enablers, such as improved processes and work flow, tools, knowledge management systems, and mentoring to your Supplier Management staff.

Investments should be considered based on the size of your organization. As the number of employees increases you should consider the level of investment. As a reference, minimal investments would be in the range of \$5,000 per year per employee. This would maintain the current level of productivity in the Supplier Management function.

With investments of \$10,000 to \$15,000 per employee you should expect improvements in productivity of 8% to 10%. Higher levels of investment may provide additional benefit but you will likely encounter diminishing returns.

Staffing, Recruiting, and Development Decisions

An outline of staff-related decisions that are common to each function, including recruiting, training, and training focus is presented after the non-staff related decisions unique to each function.

Supplier Responsibilities

Your management team has the ability to determine the level of supplier participation/ responsibility in several areas.

The majority of the parts, systems, and components that comprise a NNT are sourced from external suppliers. These elements come together to create the various major assemblies that are integrated into the NNT. For the critical areas of Design and Engineering, Fabrication and Manufacturing, and Logistics and Service you will determine what portion of the work will be conducted by your suppliers and what portion will be performed inside your own organization. Based on the level of supplier involvement you will see impacts in terms of cost of components and investment required by your organization.

Additionally, your approach will impact your staffing requirements, manufacturing and assembly time, and quality metrics based on of the volume of work sourced from suppliers versus performed internally.

To the extent your suppliers provide increased levels of design, engineering, manufacturing, and customer support, your company will shift the burden of initial investments and on-going fixed costs to perform these tasks. However, your per-unit costs for these assemblies may be higher due to the higher investment levels that would be required of your suppliers.

The following tables show the range of manufacturing costs based on your supplier responsibility decisions. The Incremental Supplier Costs, Incremental Variable Costs, and Annual Fixed Costs will be prorated as a function of the portion of Fabrication & Manufacturing work done internally versus the amount of work contracted to your suppliers.

Table: NNT Cost Structure

	Cost of Raw Materials and Components per Unit	Incremental Supplier Assembly Costs per Unit w/ 100% Fabrication & Manufacturing Supplier Role	Incremental Variable Manufacturing Costs per Unit w/ 0% Fabrication & Manufacturing Supplier Role	Annual Fixed Cost w/ 0% Fabrication & Manufacturing Supplier Role
Base Model	\$ 87,500	\$ 35,000	\$ 12,800	\$126,000
Advanced Model	\$ 93,900	\$ 35,800	\$ 13,100	\$81,000
Specialty Model	\$ 100,000	\$ 36,300	\$ 20,700	\$72,000

You will incur the cost for Raw Materials and Components regardless of your decision on supplier responsibilities. These are the primary parts and materials that are used to make the specified component. Other costs will be pro-rated based on your decision regarding supplier responsibilities.

Additionally, there are certain charges which will be incurred for each NNT as Internal Costs.

Table: Costs for Integration and Licensing

	Integration Costs per Unit	Annual Costs
Integration Activities: Technical Integration & Final Assembly	\$14,000	\$1,200,000
Nautilus Technology License	NA	\$4,500,000

Your total Cost of Goods Sold per unit will be calculated as follows:

Unit COGS =

$$\begin{aligned}
 & \text{(Raw Materials and Components per Unit)} \\
 & + \text{(Supplier Responsibility \%)} \times \text{(Incremental Supplier Costs per Unit)} \\
 & + \text{(Internal Responsibility \%)} \times \text{(Incremental Variable Manufacturing Costs per Unit)} \\
 & + \text{(Internal Responsibility \%)} \times \text{[(Fixed Manufacturing Costs) / Units]} \\
 & + \text{(Integration Costs per Unit)} \\
 & + \text{[(Annual Integration Cost) / Units]} \\
 & + \text{[(Annual Nautilus Technology License) / Units]}
 \end{aligned}$$

The amount of internal variable costs and annual fixed costs for internal activities will be prorated based on what portion of the task is shifted to the responsibility of suppliers for Fabrication & Manufacturing. For example, if you choose to have external suppliers assume responsibility for all activities related to Design & Engineering and Manufacturing, your company would have no additional variable or fixed costs associated with these major subassemblies.

Management Decisions: Manufacturing

The Manufacturing decisions will provide direction to employees in that function. These decisions include workload planning, staffing, development, productivity investments, capacity investment, and capacity optimization.

Productivity & Tools Investments

Investments in this area will improve workforce productivity by providing enablers such as improved processes and work flow, tools, knowledge management systems, and mentoring to your Manufacturing staff.

Investments should be considered based on the size of your organization. As the number of employees increases you should consider the level of investment. As a reference, minimal investments would be in the range of \$5,000 per year per employee. This would maintain the current level of productivity in the Manufacturing area.

With investments of \$15,000 to \$18,000 per employee you should expect improvements in productivity of 5% to 7%. Higher levels of investment may provide additional benefit but you will likely encounter diminishing returns.

Plant Capacity Investments

Investments in capacity will add additional manufacturing and assembly capacity. Additional capacity costs \$15,000,000 for capacity capable of handling a throughput of approximately 600 NNTs per year based on a 20 day final assembly cycle time. Your actual throughput may vary based on productivity and other operational factors that allow you to improve your final assembly cycle time.

Capacity Configuration Investments

Investments in improving the manufacturing and assembly process work flow will involve investments in improved tooling, manufacturing processes, lean workflow optimization, and other enhancements to the overall manufacturing and assembly process. In addition to impacts on cycle time for final assembly, these investments may also yield improved financial performance. Investments of \$1,500,000 to \$2,000,000 annually will be required to maintain your current cycle time and productivity. Larger investments will yield larger improvements in cycle time and manufacturing productivity. For example, an investment of \$7,000,000 to \$8,000,000 would likely generate a 10% improvement in cycle time within your manufacturing plant.

Staffing, Recruiting, and Development Decisions

An outline of staff-related decisions that are common to each function, including recruiting, training, and training focus is presented after the non-staff related decisions unique to each function.

Management Decisions: Customer Support

Customer Support decisions will provide direction to employees in that function. These decisions include workload planning, staffing, development, productivity investments, and inventory decisions.

Productivity & Tools Investments

Investments in this area will improve workforce productivity by providing enablers such as improved processes and work flow, tools, knowledge management systems, and mentoring to your Customer Support employees.

Investments should be considered based on the size of your organization. As the number of employees increases you should consider the level of investment. As a reference, minimal investments would be in the range of \$5,000 per year per employee. This would maintain the current level of productivity in the Customer Support area.

With investments of \$15,000 to \$18,000 per employee you should expect improvements in productivity of 5% to 7%. Higher levels of investment may provide additional benefit but you will likely encounter diminishing returns.

Days Inventory

Your management team will need to determine the level of inventory to be kept in parts and spares. This decision will need to consider current installed base, field performance, and warranty and maintenance needs.

You will need to balance the cost and other financial implications of your inventory levels with the impact on customer satisfaction in the event you do not have specific parts when they are needed.

Staffing, Recruiting, and Development Decisions

An outline of staff-related decisions that are common to each function, including recruiting, training, and training focus is presented after the non-staff related decisions unique to each function.

Management Decisions: Staffing, Recruiting, and Development

Recruiting Targets or Layoffs

You will need to determine the number of employees to recruit or, if necessary, the number of employees to layoff. Larger numbers of recruits may stress your human resources organization and impact the quality of the recruits they are able to locate.

Hiring will occur at the beginning of the year and new employees will be available in the year recruited. Layoffs, if any, will also occur at the beginning of the year and these employees would not be available to you during the year layoffs occur.

Recruiting Focus

You may determine how your recruiting efforts are focused and impact the experience base of those people hired in to your organization.

You are able to set the percentage of recruits that come from the ranks of recent college graduates, those that have prior related work experience, and those who are recognized as leaders in their field and are highly qualified for your organization.

PLEASE NOTE: The sum of your recruiting emphasis decisions must equal 100%.

Training Days

You will need to determine the number of days allocated for training for each staff group. These days will be utilized to provide staff development and will use a variety of methods as appropriate. The focus of these days will be determined by your Training Focus decisions, discussed below.

As a reference point, we would expect all staff to receive a minimum of 10 days of training a year. However, you should consider if this level is adequate given the direction you are pursuing in the business and the skill levels of your employees.

Training Costs

The cost for each day of training is \$2,500 per employee. This cost includes all course expenses, travel, facilities, and related costs.

Training Emphasis

The specific focus of staff training will be dictated by your choices below.

- **Technical Skills:** The focus on technical skills training will enhance an employee's ability to handle complex technical issues, and effectively utilize design and engineering systems to more effectively improve product performance and capabilities.
- **Process Skills:** This provides training on engineering processes and procedures used within the business and also helps enable sharing of best practices and leveraging organizational knowledge.
- **Integration Skills:** This area provides training on the integration of complex systems; effectively engaging suppliers in the design, manufacturing, and assembly processes; and monitoring the performance of integrated components.

PLEASE NOTE: The sum of your training emphasis decisions must equal 100%.

Staff-Related Costs

Table: Costs for Integration and Licensing					
	Business Development	Design & Engineering	Supplier Management	Manufacturing & Assembly	Customer Support
Average Compensation	\$85,000	\$80,000	\$60,000	\$55,000	\$75,000
Labor Burden	30% of compensation	30% of compensation	30% of compensation	30% of compensation	30% of compensation
Recruiting					
Recent Grads	\$25,000	\$30,000	\$20,000	\$20,000	\$20,000
Prior Experience	\$40,000	\$40,000	\$30,000	\$25,000	\$25,000
Highly Qualified	\$50,000	\$50,000	\$40,000	\$30,000	\$30,000
Layoffs	\$21,250	\$20,000	\$15,000	\$13,750	\$18,750

Emergency Hires

If human resources has to perform emergency hires due to staff shortages, recruiting costs are expected to be two times standard recruiting costs.

Customer Profiles

The following information provides a brief overview of the various customers that are anticipated to have demand for NNTs within the next five to seven years.

Each year you will receive information on available contracts identifying specific information including payload configuration of NNTs required, expected price to be paid, total units to be contracted, type of contract to be awarded, and delivery schedule for contracted units.

Each of these companies has unique needs in terms of the type of product, the timing of delivery, and the manner in which they will use the products purchased from your company.

Customers

The following government customers are expected to have needs for NNTs in the foreseeable future:

National Defense and Military

Government and military customers from Japan and United Nations are expected to have requirements for NNTs.

NNT type: Advanced & Specialty models

Purpose: Defense and Military customers will require NNTs to be used in support of energy needs of defense operations and military deployments in remote and temporary environments.

Disaster Operations Customer

We have identified demand for NNTs to support disaster operations in Korea.

NNT type: Specialty model

Purpose: These customers will require NNTs to support rapid deployment of temporary power generation in areas impacted by major disasters. NNTs have gained acceptance for this purpose due to their ability to operate effectively in urban environments where traditional infrastructure may be severely damaged.

Commercial Customers

The following commercial customers have identified needs for NNTs in the foreseeable future.

Each of these customers has identified a primary need and expected NNT configuration. However, it is anticipated that customers will expand their orders to include additional NNT configurations in future years. Given each customer's business requirements they may be able to capitalize on the flexibility and performance of NNTs. This, coupled with the efficiency gained by a common fleet technology will likely be leveraged by customers that have satisfying NNT experiences.

(Belgium) Simmons Energy

Line of Business: Operator of urban micro-turbine wind farms.

NNT Type Advanced model

(Brazil) Urban Technologies

Line of Business: Supplier of equipment for alternative energy generation in urban areas.

Primary NNT Type: Base model

(China) New Energy Industries

Line of Business: Developer and distributor of alternative energy technologies used in remote, high altitude locations throughout Asia and the Indian Sub-continent.

NNT Type: Base and Specialty models

(Cyprus) Energy Finance Partners

Line of Business: A global provider of financing and lease services of energy generation equipment to global energy providers and major commercial operators. *Note: Energy Finance does not operate the equipment they purchase. They serve as a third-party lease and finance organization.*

NNT Type: Base and Advanced models

(Denmark) EuroWind

Line of Business: Specialist in micro-turbine wind power applications in urban areas.

NNT Type: Advanced

(India) KiloStar Energy

Line of Business: Provider of alternative energy sources for urban environments.

Primary NNT Type: Base

(Singapore) WindTech

Line of Business: A third-party provider of leased energy equipment to major commercial operators. *Note: Aero Lease does not operate the equipment they purchase. They serve as a third-party lease and finance organization.*

NNT Type: Base, Advanced, and Specialty models

(Spain) Green Madrid

Line of Business: Newly formed company focusing on development of micro-turbine wind farms in proximity to urban developments.

NNT Type: Advanced model

(US) Alliance Logistics

Line of Business: Operator of power generation equipment and related support services to on and off-shore oil and natural gas production facilities and mining facilities.

NNT Type: Specialty model

(US) Central Electric Utilities

Line of Business: Developer of support services and alternative energy generation for marine and high-altitude applications for commercial and government utility providers.

NNT Type: Specialty model

(US) Energy Systems Inc.

Line of Business: Operator of emergency power generation equipment to be used under contract to local and regional government agencies.

NNT Type: Specialty model

Glossary of Terms

accounts payable	Amounts owed by the company to suppliers of goods and services but not yet paid for.
accounts receivable	Amounts owed to the company for goods and services sold or performed but not yet collected.
annual report	A yearly record of a corporation's financial condition provided to shareholders containing a description of the company's operations, its financial statements and detailed explanations (notes) that summarize the company's financial activities for the past year and any significant plans for the future.
assets	Resources (such as cash, investments, inventories, land, buildings and equipment) that are used to operate the company.
asset utilization	A measure of how efficiently a company uses its resources.
balance sheet	Also called Statement of Financial Position. A document that shows the financial position of a business at a particular date. It lists assets, liabilities, and shareholders' equity according to the formula: $\text{Assets} = \text{Liabilities} + \text{Shareholders' Equity}$
breakeven analysis	The relationship between total costs and total revenue in order to assess the profitability of different levels of sales volume.
capital assets	See "fixed assets."
capital charge	A component of the calculation of economic profit Cost associated with using the net assets of the business, determined by multiplying the weighted average cost of capital by net assets.
capital expenditure (capex)	Funds used by a company to acquire or upgrade physical assets such as property, industrial buildings or equipment. This type of outlay is made by companies to maintain or increase the scope of their operations. A capital expenditure needs to be capitalized; this requires the company to spread the cost of the expenditure over the useful life of the asset.
cash and cash equivalents	Money you have control of and ready access to.
cash flow	The amount of cash moving into and out of a company.
contribution margin	The difference between revenue and the associated variable costs.
cost of goods sold (COGS)	Also called cost of products and services. Includes the labor, materials and overhead expenses used in manufacturing and in delivering the products and services sold.
current assets	Cash, accounts receivable (less reserves for bad debts), inventories and any other item that can be converted into cash in a short time, usually less than one year.

current liabilities	Short-term liabilities or obligations that are due within one year. (Taxes payable, accounts payable, interest on loans, salaries owed to employees, etc.)
earnings before interest and taxes (EBIT)	Operating earnings less interest and debt expense, plus/minus other income/expense.
earnings per share (EPS)	Net earnings (or income) divided by number of shares outstanding.
economic profit	<p>A measure that incorporates not only the profit a business earns, but also the value of the assets used to generate the profit. It provides employees a clear line of sight between their organizational performance and the company financial statements. The formula is:</p> $EP = \text{Net Operating Profit After Taxes (NOPAT)} - \text{Capital Charge}$ <p>If the EP of a business unit, project, or service is greater than 0, it is creating value for the company; if the EP is less than 0, it is destroying value.</p>
fixed assets	Tangible property used in the operation of a business such as land, buildings, machinery, fixtures, furniture and equipment. It does not include items normally consumed in the course of business operation or production.
gross margin	<p>Expressed as a percentage (so multiply by 100), the formula is:</p> $\text{Gross Margin} = (\text{Revenues} - \text{Cost of Goods Sold} - \text{Cost of Sales}) / \text{Revenues}$
fixed costs	Costs of operating a business that do not vary with the rate of output of goods and services.
income statement	Also called profit and loss statement (P&L), or statement of operations. A financial statement that summarizes the revenues and expenses for a particular accounting period. The difference between these two items is the net income (also called profit or earnings) or net loss.
income taxes	An expense reflecting taxes due, shown on the income statement. Income Tax is based on earnings before income taxes.
interest and debt expense	These are the expenses associated with borrowed money from banks and bondholders.
inventory	The products a company has for sale, including the various stages of completion of a company's products. Inventory includes raw material, parts, assemblies, work-in-progress (WIP) and finished products.
liabilities	What a business owes to others such as accounts payable, income taxes payable and long- and short-term debt.
long-term liabilities	Amounts owed to creditors but not payable until one year or more from the balance sheet date on which it is recorded.
margins	<p>Expressed as a percentage (so multiply by 100), the formula is:</p> $\text{Gross Margin} = (\text{Revenues} - \text{Cost of Goods Sold}) / \text{Revenues}$

	$\text{Operating Margin} = (\text{Revenues} - \text{Cost of Goods Sold} - \text{Operating Expenses}) / \text{Revenues}$
net assets	Total assets (less cash) minus total liabilities (less debt). Also see average net assets.
net earnings	Also known as net profit or net income. Operating earnings less interest and debt expenses (from borrowing), plus/minus other income/expense, less taxes.
net income	See “net earnings.”
net operating profit after taxes (NOPAT)	See “operating profit after tax.”
operating cash flow	Cash received from or used by the operations of the business driven by cash earnings and changes in working capital. Examples of actions that can affect this metric include negotiating better contract terms and improving billings and collections.
operating expenses (opex)	Ongoing cost for running a product, business, or system. Examples include research & development, sales & marketing, general & administrative.
operating margin	Expressed as a percentage (so multiply by 100), the formula is: $\text{Operating Margin} = (\text{Revenues} - \text{Cost of Goods Sold} - \text{Cost of Sales} - \text{Operating Expenses}) / \text{Revenues}$
operating profit after tax	Component of RONA calculation. The formula is: $\text{Operating profit after tax} = \text{Operating earnings} * (1 - \text{tax rate})$ Where operating earnings = sales less the sum of cost of products and services, BCC interest expense, G&A, R&D, share based plans expense and other operating expenses, as reflected on the statement of operations. Essentially the same as NOPAT used in the calculation of economic profit.
orders	Contracts or commitments received from customers for products and services. Orders are not typically recognized as revenue until the product or service is received by the customer.
quarterly report	A summary report or update provided to shareholders containing financial statements that summarize the company's financial activities for the past quarter and any significant plans for the future.
retained earnings	Accumulated net earnings (or loss) less dividends paid over the life of the business.
return on invested capital (ROIC)	A ratio that looks at the return generated by a company for the capital invested in it. ROIC focuses on the effective management of those assets used to produce earnings. Actions that can affect this metric include eliminating floor space and reducing inventory, among others.

return on investment (ROI)	A company's net profit after taxes, divided by its total assets. Also, a standard measure of project profitability, this is the profits over the life of the project expressed as a percentage of initial investment.
revenue	Also called sales. Money earned from the sale and delivery of products and services.
sales	See "revenue."
shareholder return	The sum of stock price appreciation plus dividends.
short-term debt	The amount of money owed to banks and bondholders, payable within one year.
short-term investments	Money invested in marketable securities that can be realized as cash within one year.
statement of financial position	See "balance sheet."
statement of operations	See "income statement ."
top-line revenue growth	Increase in sales year over year. Actions that can affect this metric include adding new products, improving existing products, adding new markets, increasing volume of existing products, and focusing investments on new technologies for current markets or known technologies for new markets.
value	The material worth of something. It can represent what people are willing to pay in hopes of receiving future profit. Dividing the total value for a company by the number of outstanding shares of stock gives a close approximation of the company's per share stock price. Thus, the total value represents the investor's expectations and confidence in the company, based on what is already invested in the company and the company's business plans for the future.
variable costs	Those costs that vary directly with changes in the number of units produced or sold.
variance	The difference between projected financial performance and actual financial performance.
working capital	Current assets such as cash, accounts receivable and inventories, less current liabilities such as accounts payable and other short-term liabilities.

