

Reflections on Building a Flow Measurement Business

PRESENTED TO

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Fluid Flow Measurement

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I am delighted to be here at the 9th International Symposium on Fluid Flow Measurement this week. It gives me a reason to get out of the house now that I am retired and it gives me an opportunity to share some lessons with you about my experience in growing a company that I founded called Caldon. You will note that I am using the title Old Salt and All-Around Advisor. You will begin to understand this after I get into my presentation. Being the Captain aboard a boat and CEO of a company have a lot in common. I have enjoyed both of these roles tremendously.



The Challenge is to Survive the Storms



I've learned that growing a business today is like sailing on the high seas.

We chart our course and hope for good wind and sunshine.

But the outcome of our voyage is often determined by the storms.

You Must Prepare, Prepare & Prepare



In sailing and in starting a business, good luck alone will not assure success. Thorough preparation is vital. You have to chart your course carefully or develop a well thought out business plan if you are to have a chance at accomplishing your mission.

Provision Well and Allow for Contingencies



Before embarking, a good sailor takes aboard adequate provisions, an experienced crew and allows for potential contingencies. The entrepreneur must have a talented team, a fair amount of start-up capital, and unbounded determination.

The Careless May Not Survive

Yet, not every boat reaches its destination. And some that do, arrive with tattered sails or injured crew, or too late to accomplish their mission.

In 1987, when I started Caldon, less than one in five industrial start-ups survived for the long haul.

Caldon A Small Boat In A Global Sea



In keeping with this analogy I began to think of Caldon as a small boat sailing in a large global sea.

The Dream

Create a Business

- Excel at high technology
- Specialize in instrumentation
- Sell into industrial markets
- Grow to \$25 million/year
- Build long term value

It began with a dream.

I was 51 years old when I sat down and began to write a business plan in which I called on my nearly 30 years at Westinghouse. I wanted to create a good business, one that excelled at high technology, that specialized in instrumentation and sold its products into the industrial markets. Starting with nothing, my goal was to reach \$25 million in sales and to build a business of enduring long term value. I was delighted when we exceeded \$25 million in the early 2010's. I am even prouder of the long term value we created in this business.

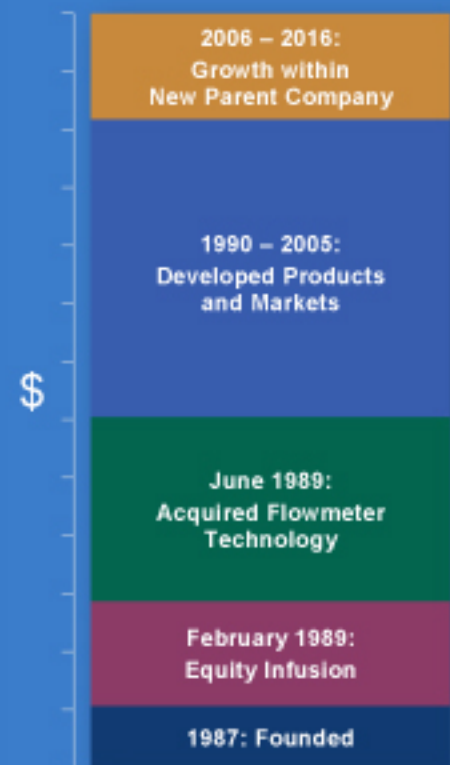
*Live
Your
dream*

Capital

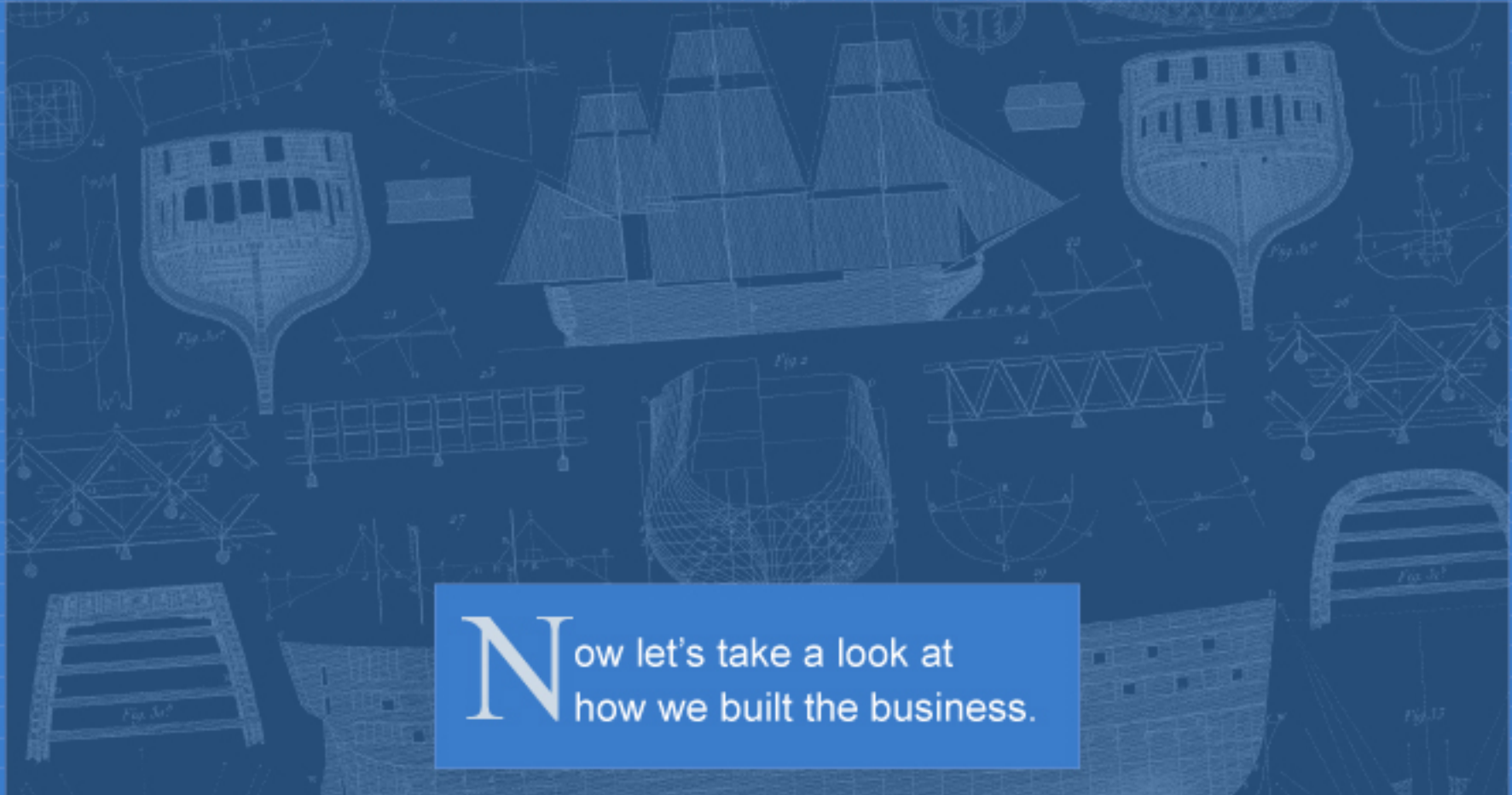
I started Caldon in 1987 using my savings and sweat. I sold everything I owned but my home to get started. I worked the first two years without a salary. Financially however, Caldon's keel was laid in February of 1989 when we obtained our first round of equity capital.

Our next big step was in June of 89 when we acquired our flowmeter technology from Westinghouse and moved it to Pittsburgh. To accomplish this, we obtained another infusion of capital.

I naively thought this would be adequate for the long haul. Later, 5 million dollars, and then a lot more, would be necessary to bring us to a leading position in the market. Most of this was used for product and market development.



Building the Business

A detailed technical drawing or blueprint background, rendered in a light blue color on a darker blue background. The drawing features various mechanical and structural components, including a large central ship-like structure with multiple masts and sails, several smaller hull-like shapes, and various truss and frame structures. Numerous lines, circles, and geometric shapes are scattered throughout, suggesting a complex engineering or architectural plan. Some parts are labeled with 'Fig. 1' through 'Fig. 17'.

Now let's take a look at
how we built the business.

Laying the Keel

Start-up Strategy

- Establish a strong base of proprietary technology
- Build an effective organization
- Provide highly differentiated products

We worked seriously to lay a foundation for creating value. The strategy was simple and consisted of three parts. We would establish a strong base of proprietary technology. We would build an effective organization. And we would develop and sell highly differentiated products that provide greater value to customers. We actually did these things and the keel that we laid served our boat well. It carried us from the infancy stage to the go-go stage where our business took off.



Building a “Can Do” Culture

We worked hard at building a “can do” culture in which our crew could be counted on to do their jobs well. We carefully selected a set of core values, to guide our behavior toward one another as well as toward our customers. I cannot tell you how important this has been for us. Having a crew with high standards, who accept responsibility, who act with integrity and keep promises, who are responsive and truthful is something special. And learning from mistakes has proven to be as important as any of the other values.

Establishing Core Values

- Set high standards and goals
- Accept responsibility
- Act with integrity
- Fulfill promises and obligations
- Be responsive to customers and associates
- Relate information clearly and truthfully
- Correct and learn from mistakes



A Commitment to Customers



Commitment to Customers

- Listen to what they say
- Be responsive to their requests
- Give them clear and factual information
- Deliver a quality product to them
- Fulfill promises made to them

We developed a set of rules that reflected the commitment we desired to make to customers. It should be no surprise that customers do business with people they like and trust. Of course, it is not our good looks and great personalities they like. It is the way that we treat them. How well we listen to them, how responsive we are to their requests, whether our information is clear and factual, whether we give them high quality products, and whether or not we keep our promises.

You might have noticed the similarity between this commitment and our core values. I can tell you first hand it was a wonderful experience to watch these principles take hold in our organization. They have not always been easy to follow. It has taken constant attention, hard work, and creative thought. And on some occasions, fulfilling promises has taxed our commitment and our integrity to the limit.

Three Key Strategies



INNOVATION



SPEED



CUSTOMER INTIMACY

As our business began to take off, I studied what was working and what was not. I also began to recognize the strategies employed by other companies. I concluded there were three that could set us apart from the others. These are Innovation, Speed and Customer Intimacy. I realize that some business schools teach that you must select one core strategy, but I liked these three, and I decided to use all of them.

Innovation

Innovation is a very effective strategy, if you can master it. It requires a tremendous amount of creativity and hard work. It requires taking risks and it requires a tolerance for uncertainty. It requires continually making investments in the business. These are not popular requirements among businessmen today. It is practiced by few large companies today because it is not only hard work, it is difficult to sustain, year after year. But for us, at least so far, it has been a difference maker. It has allowed us to literally create new niches in the market and to develop highly differentiated products. There is one great American company that you know well who employs this strategy – Apple, the maker of iMacs, iPhones and now, the Apple Watch.



Speed

Speed means that we do things fast. Or at least we try to do things fast. Customers love it when we respond quickly, whether it is getting out a proposal, answering their questions, shipping their order or solving a problem for them.

Speed is one strategy that big organizations cannot make work well. It is incompatible with bureaucracy. This is one reason why small companies create new products more quickly than the larger ones.



Customer Intimacy



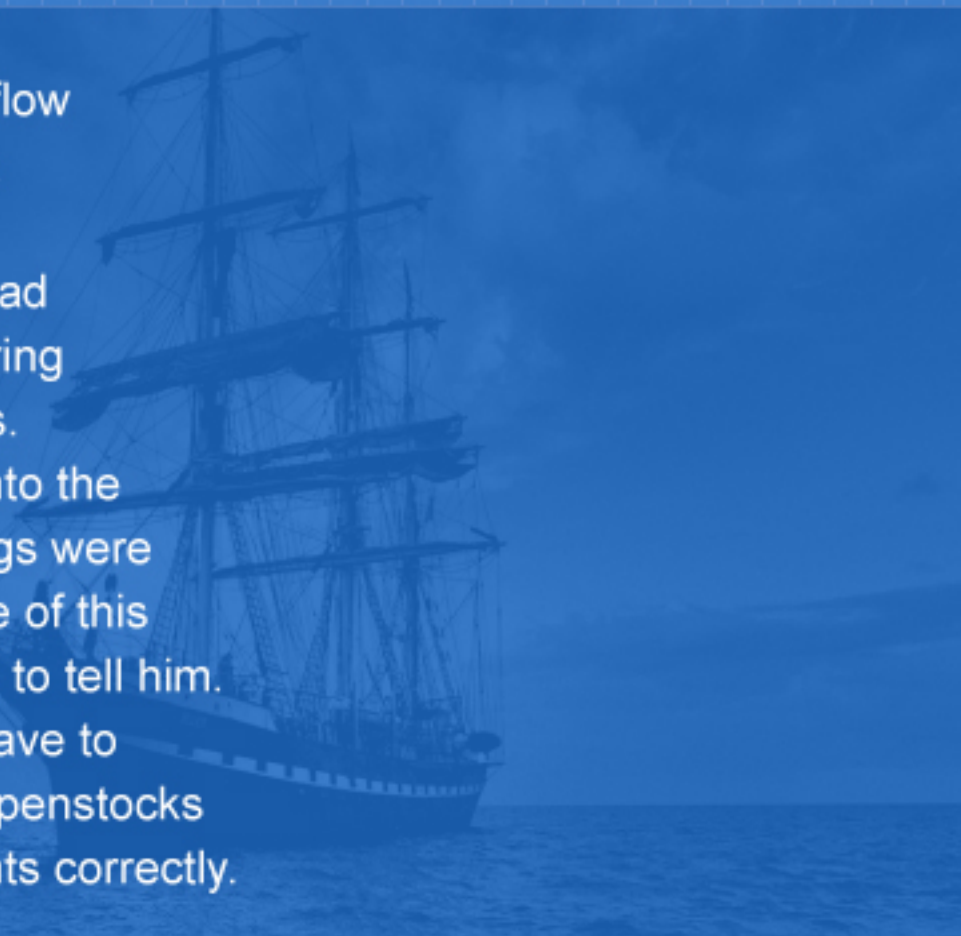
Early on, when I began stressing a commitment to customers, I didn't realize it but I was establishing the mind set in our organization to go forward with the strategy of Customer Intimacy. I now believe this strategy contributed the most to our success. It is the most difficult to sustain and consequently is practiced by very few companies today. It required that we constantly asked our employees to work extra hard at making the customer's life easy, to give them the service they needed, even if the customer was difficult or perhaps undeserving. This is unnatural and hard on employees.

Surveys of Caldon customers showed that this strategy worked. They give us high marks for our professional and positive approach, for our willingness to solve problems at times of their making, for our coming when they call even if it is on Christmas Eve. Keeping Customer Intimacy alive and well in Caldon rewarded us with customer loyalty.

And the Storms Came...

Anyone who sales a lot or manages a technology company is likely to encounter a storm now and then. I have learned that when dealt with quickly, when blessed with a good crew, and with being honest with all parties involved, facing storms can be a beneficial learning experience. And storms caused by problems involving customers can even be good for customer relations. I have been through a number of storms, but I will tell you about two of them that were frightening but eventually served to strengthen our company.

A Small Storm

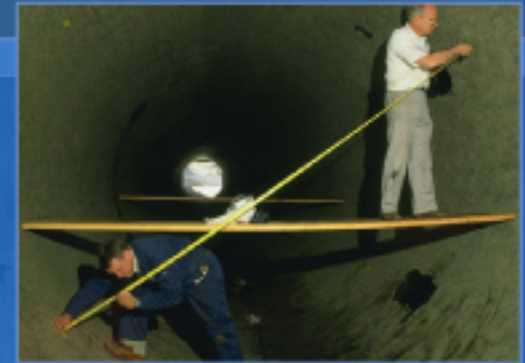
A large, multi-masted sailing ship is shown on the ocean under a cloudy sky. The ship is dark-colored with white trim along the hull. The background is a blue-tinted photograph of the sea and sky.

Months after we installed our flow meters in the penstocks of a hydroelectric generating station we discovered that our field engineer had made some mistakes when measuring dimensions inside these large pipes. When the incorrect data were put into the flowmeter software, the flow readings were in error. The customer was unaware of this but to be true to our values, we had to tell him. We further told him that he would have to shutdown the station and drain the penstocks so we could make the measurements correctly.

A Small Storm

The customer threatened to sue Caldon for reimbursement of the expenses that the plant would incur. I explained it would be simpler if they just sent me an invoice to cover their costs. I worried over this as we had little money in the bank at the time.

The work got done and eventually we received an invoice, for a mere \$5,000. It seems that they never had a supplier confess to a mistake, let alone volunteer to pay for it. We were rewarded with forgiveness of most of our debt.



Installing measurement system in hydroelectric plant

A Bigger Storm

We accepted an order for a system to detect leaks in pipelines that carried a slurry at a copper mining operation. The abrasive slurry eroded holes in the pipes. After 2 years and spending \$2.3M on a \$1.2M order we could not reliably detect the very small leak that we agreed to. Against the advice of a lawyer, I went to the mining company and explained that there were factors that we now understood that would prevent us from detecting a leak that small in their slurry lines. Admitting this technically put us in default of the contract, making us liable for a lawsuit. The Vice President was impressed by my not bringing a lawyer with me and consequently kept his out of the room. At the end of the meeting, he thanked me for coming. We shook hands and I left. The photos, by the way, show some of our flowmeters on the pipelines as well as solar panels and a windmill we provided for emergency power. The meters were lined with Irathane, an abrasive resistant material.

A Bigger Storm

I really lost sleep over this one because the mining company often engaged in lawsuits. But eventually this customer decided to stick with Caldon. They were impressed by how hard we tried and by our technical understanding of the problem. So they went to the environmental regulator, armed with a technical story that we provided, and persuaded the regulator to relax the spec to a level we could achieve.

Surprisingly, the Vice President later asked me to accept an order for another of their pipelines. I said no, telling him that I lost my shirt on the first order. But we did accept the order after he told me to increase our price so we could make a profit. In fact, Caldon have since received numerous orders from this company and almost always have one in house.



Equipment at a Mining Site

Cal's Role

What do you think my role in all of this was? Well for one thing someone has to have a steady hand at the helm when the boat is tossing about, as seen here.

As I see it, I had three basic responsibilities.

The first was to determine the direction that the business should take and how to get there.

The second was to communicate that vision throughout the organization. And the third was to provide the resources needed to succeed. This includes providing employees with such things as adequate funding, equipment, access to outside resources, training, education and mentoring.

If there was a fourth, it was setting the right example.



A Change in Direction

In the late 1990's we developed our first meters for the oil industry. By 2003 these meters were gaining a good reputation. As a result, a number of large companies began taking an interest in acquiring Caldon.

By the fall of 2005 discussions with potential buyers narrowed to two companies. By the end of the year a global leader of flow equipment products, systems and services to the oil, gas and process industries prevailed and Caldon was acquired on January 3, 2006.



Smooth Sailing

The new parent company understood that a technology business is built around people, not documents and machines. They avoided tampering with the things that made us good. They were immensely supportive, financing a beautiful new facility and an outstanding flow calibration laboratory. And their values were amazingly close to those of Caldon. In short, the fit between Caldon and our new parent was a good one. Now let's take a look at our track record.



Growth (\$000)

Caldon Growth Trend
2005 - 2010



Following our acquisition in early 2006, we continued on our growth path. I was thrilled at the end of 2009 when I could see us getting close to \$40 million. Our strategies were still working.

A Critical Storm

Then came the bad news. On March 11, 2011 an earthquake and tsunami hit Fukushima, Japan causing major damage to the Diachi Nuclear Power Plant. Our Nuclear Power orders dried up immediately as the industry went into a hunker down mode. It's been said that the most important characteristic of an entrepreneur is persistence, he never quits. Thanks to the persistence of everyone at Caldon—and the support of our Parent - we found opportunities to bring in orders from other markets and soften the blow.



Surviving the Storm

Recovering from Fukushima

Revenue followed a similar growth trend, more than tripling in the 5 years between 2005 and 2010. Watching our revenue approach new levels was even more exciting.



Caldon Growth Trend – 2005 - 2013

Looking Ahead Storms and Opportunities

Change is always with us, of course, and I could see that there were changes happening within our parent company that threatened our ability to execute on our strategies.

The two most notable were the growing number of general and administrative personnel in bureaucratic positions and the tightening of central control in decision making. Would Caldon's strategies of Innovation, Speed and Customer Intimacy continue to work given the new corporate landscape?

By the time I retired in 2014 I could see cracks forming in our treasured Caldon strategies. Our ability to serve our customers as they expected to be serviced weakened – just as we headed into the energy crises of 2015.

But this is just one more storm – around the corner is another entrepreneur, with a dream to build a team and company...

An Important Lesson

I think that the most important lesson I learned at Caldon is that it is possible to build a small organization that accomplishes big things. How can you do it? First you hire self-motivated people. You put them in an environment having a healthy, positive culture, and you give them responsibilities and the authority to make decisions. You also give them the resources and the mentoring they need to succeed. If these people embrace the leader's values and vision, they can accomplish big things.



A Big Accomplishment

Let me share one example with you. I still am amazed that we pulled off something so big. In 1994 our chief engineer got the idea that if we could develop a flowmeter that could significantly improve the accuracy of measuring thermal power, the reduction in uncertainty could be used to increase the power generated by a nuclear power plant. We went about developing such a meter and worked hard to get the regulator's approval.



A Big Accomplishment

We reduced the measurement uncertainty from 2% to 0.3%, providing the potential for a 1.7% power increase. The first of these metering systems was approved for use in 1999 at the Comanche Peak Nuclear Plant in Texas. These meters have been installed in 122 Nuclear plants which are now generating 1630 MW of additional power. This is the equivalent of building a large nuclear power plant that costs \$7 billion or more. We actually helped the nuclear power industry accomplish this at less than 10% of that cost.



My Debt



I cannot end here without acknowledging my indebtedness to the many wonderful people who were in the boat with me. They include not only my terrific employees but consultants, college professors, bankers, lawyers, suppliers, customers, a major investor and my family and my fantastic friends.



But there is one person to whom I am indebted most of all, and that is the first mate, my wife Donna, who is a good sailor by the way. During the first two years when I drew no salary she provided money from her business to sustain us. She tolerated my long days and nights at the office, giving up vacations, my forgetting birthdays and our anniversary, and on and on.