appliedvisions

THE THREE MODALITIES OF BUILDING A SOFTWARE APPLICATION

WHERE YOU ARE DETERMINES WHERE YOU GO NEXT

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No application-building project lives in a vacuum. At any point in the development continuum, there is a history that led to this moment, there are the realities of the resources available, and there are the functional intentions.

In other words, where we've been, what we have to work with, and what we need to accomplish all influence what we should do next.

But there is another factor involved, and it sets the tone for how this work is approached. We think of this factor as a "modality," which is defined as "a particular mode in which something exists or is experienced or expressed."

In all our years of developing software applications and technology products, we have identified three clear modalities that affect how you approach the effort, and what should happen next: *Crisis*, *Worry*, and *Growth*. The modality you find yourself in will determine which steps you take and how you approach the whole effort, in order to ensure a successful result. The trick is that the approach you *should* take based on your modality isn't always the same as the approach you might *want* to take.

IN CRISIS

Something has happened to make your current position untenable. Perhaps a competitor has released a disruptive capability that you are unprepared for. Or worse, you've been trying to develop a new capability, and something has gone very wrong with that project. The deadline is still looming, and funds are tighter. You hate to waste what has already been done, but you have no choice. You need to fix this problem, fast. In other words, this is not the time to create a long-term plan; the house is on fire.

WORRIED

Things are going "OK," but you see problems on the horizon, and you need to figure out what to do. You've decided a new application is the answer, but you want to make sure you end up with an application that ultimately contributes to company growth and competitive advantage. There is some deep thinking that needs to be done, but the project still needs to move right along so you can keep up with or surpass your competitors.

GOING FOR GROWTH

Things are going well, but you're smart enough to not be complacent. Competition is heating up; customer expectations are rising; markets are shifting. You're in pretty good shape, but you need to reach the next level. It's time to go for higher growth, and it will take a new product or application to pull it off. Maybe you already have the next big idea, or you just recognize that you need one. In either case, market opportunities will dictate where you go next, and what you offer to your customers.

You probably know which category you fall into—even if it may not be the answer you wish for.

Skip to your section to learn how to make the best of your situation, avoid common mistakes, and find a clear path to success.

CRISIS MODE

IN CRISIS — *Something has happened to make your current position untenable. Perhaps a competitor has released a disruptive capability that you are unprepared for. Or worse, you've been trying to develop a new capability, and something has gone very wrong with that project. The deadline is still looming, and funds are tighter. You hate to waste what has already been done, but you have no choice. You need to fix this problem, fast. In other words, this is not the time to create a long-term plan; the house is on fire.*

WHAT'S GONE WRONG?

- **You're close to launching, and a competitor has just announced an application that blows yours out of the water.**
  You thought you were creating the application that would shoot to the top of the charts in your industry. But a smart competitor has just launched a disruptive application that does everything yours does—and more—even better than yours. Maybe they do it differently, leaving you to look outdated. Now the bar is raised, and you need to catch up—fast.

- **The application was well into development when a "gotcha" was found.**
  This happens all too frequently. One company owner we know spent $100,000 on a reservation system for his company, and was well into the final stages of the project, when the developers realized that the technology they were using could not scale to meet the volume of activity they encountered. Their team completely misread the market for the product. The whole project had to be rethought.

- **You've spent months on a project, and it's become obvious it won't be finished in time.**
  In fact, you don't know if it can ever be finished, in its current form—at least, using the current team, technology, and methods that you've been using. You've lost faith in your team; something has to change.

- **You've been running your business on a bunch of legacy applications, and the "one guy" who knew how it all worked has announced he's retiring.**
  You've known for years that this day would come, and that your infrastructure needed an overhaul, but there were always reasons to kick the

can down the road. Now you have to make the switch, but it will mean moving into completely new territory: cloud applications, mobile, online chat . . . and you're not sure you're ready for all that.

- **You went offshore, and that <u>didn't work out.</u>**
  We see this a lot. It's true, some companies have had success going offshore, and the lower programming costs are certainly attractive. There are times when an offshore strategy works out just fine. When things do go wrong, it's usually due to the lack of intense management required for an offshore project. Culture and communication differences often have a serious impact on these types of projects.

- **Your customers and partners are leaving because you've <u>fallen behind</u> in terms of what you can do for them digitally.**
  They're finding other solutions, offered by competitors who have incorporated the latest technical functions into their products and services. Your customers expect the same from you. But because they're not getting it, they are leaving. Business is slowing down.

WHAT'S THE SOLUTION?

The solution will be partially dependent on the cause of your crisis. But because it's a crisis, it's all hands on deck. You need to see rapid results. We need to get in there and start fixing things for you.

We had a client recently whose legacy system was collapsing. They needed immediate and experienced assistance. When a client is in crisis mode, that's our mindset, too. We don't sit around making big plans and ignoring the fact that they are in a crisis. Our first priority was for them to be able to keep their business going and get them to the next, more stable, stage.

We still keep an eye on the longer-term plan, building a foundation for future solutions so we don't think only in the short-term. And we still talk to users, as fast as we can, to avoid making mistakes that hurt your future chances. But first we have to put out the fire.

In all cases, here is where we start to solve the problem.

- **Get the facts.**
  We start by sitting down with you, in person or virtually, and start asking questions of you and of your team.

  » What was your main goal? Is that goal the same now? Does everyone on the team share that goal?

  » How did you get to where you are now, and where do you need to end up?

  » How many resources do you have to work on this, in-house?

  » What kinds of tools, templates, languages, and methods were used?

  » Is there any usable code, or will we need to start from scratch?

  » Can we see what's been done so far?

  » What are the pressures you're under now (time, money, resources, customer expectations, competitive pressure, etc.)?

- **Discuss your options and make the right decisions.**
  We've been doing this for a long time; we've helped many companies get out of crisis mode. We have a number of ways of getting the project on the right track, fast.

Making use of what has already been done.
Obviously, if we can make proper use of any portions of code that have already been written, we will. There are many things we look for: Is the code well structured and well written? Is it secure? Is it using resources properly and efficiently? Sometimes the root of the problem is that the people writing the code just did a bad job, and it needs to be done over. Other times the code is good, it's just that the team was overwhelmed. Often, systems start out well and then collapse over time under the weight of constant change that is not managed well.

Making use of newer methods and/or new coding tools.
Writing code is obviously important, but the workflow processes and tools used to complete the project can make a big difference in how swiftly the project can be completed and in how quickly changes can be made. If your team was not following a good process, they could be working at cross purposes and failing to converge on a proper solution. Sometimes all it takes is some coaching and reorganization to get things back on track.

Taking a different approach to get to the goal faster.
Development projects can get off track because the programmers are focused on one aspect of the application (the aspect they think is the most important), or one method/language, because that's what they're used to working with. But these fixations often hamper the success of the project overall. There may be a much faster, more efficient way to approach the project, without being wedded to tools that ultimately make the project more complex than it should be.

One way to do this is to come up with a "good enough" or "subset version" of the desired full application, then add to it after the first release is out in the market. This can actually buy you much-needed time while keeping you in the market, and has the added benefit of bringing in revenue that can support your additional development efforts.

Or, you can look at your application from a completely new angle, as we add our business and market experience to the discussion. We often see potential for speed-to-market that programmers and coders miss, because their main goal is to get to work on the code.

There are market realities, competitive issues, and customer expectations that should be brought into the discussion—yes, even now, in crisis mode. These considerations often end up making the whole project go more smoothly, not only during the development process, but in terms of market acceptance when you take the product to market.

A small example: In one crisis we found one customer type that introduced all sorts of complexity to the system, breaking many other things. It turned out there were very few of those customers, and the decision was made to treat them manually—as special cases. This removed the complexity, and allowed the high volume of "normal" customers to be processed smoothly and error-free.

Usability testing is a big part of this effort, because if you focus on what customers really want, and how they want to do it, you can skip a lot of functions that seemed important but could be scrapped. An app that makes it super simple to perform the most coveted tasks will be far more popular than one that is stuffed with functions but isn't intuitive to use.

All of this may seem to be "anti-crisis," but it's not, really. It doesn't take long—we move fast—and it ensures that we can help you get out of crisis mode and into the market where you wanted to be in the first place.

- **Agree on the plan and set to work.**
  Once we know where we need to go, we get the team together—your people and our people—and we get to work. We agree on the approach, the resources we'll use, the ways we will communicate as we go, and the timeline. Customers often worry that introducing a change like bringing us in will demotivate the team, and prefer not to rock the boat. But we usually find the opposite; teams know when they are in trouble, and when some positive change comes along they often see it as an opportunity for a reboot and a chance to achieve the goals that they clearly saw slipping away.

WORRIED

WORRIED — *Things are going "OK," but you see problems on the horizon, and you need to figure out what to do. You've decided a new application is the answer, but you want to make sure you end up with an application that ultimately contributes to company growth and competitive advantage. There is some deep thinking that needs to be done, but the project still needs to move right along so you can keep up with or surpass your competitors.*

This is actually not such a terrible place to be. Every CEO should be worried about these things every day. If you are, it means you're looking ahead—and you're more likely to be successful because you see the future and you realize that you must take action *now* to get there.

WHY ARE YOU WORRIED?

- **A new competitor has emerged,** and they're offering options that you're not. You're worried you're losing customers to them. They are giving customers new ways to interact online and on their phones, including order management or self-service. It's just easier to do business with them than with you. You can't offer those new functions with the applications you're using now, and even if you could, the cost of doing so would be prohibitive. You need to move into new areas in order to get competitive, and you need to do it fast.

- **The systems you're using are getting too old,** to the point where you can't meet customer expectations. What worked 5, 10, or 20 years ago just isn't working now. It's harder than ever to find programmers who can work on these legacy systems. And these older applications just don't play nicely with the newer cloud-based applications that everyone is using. Integration is a massively complex affair; custom code is required for every new change; some of the hardware you're using now simply doesn't support these older systems; and the functions customers and workers have come to take for granted can't be accommodated. It's time for a change, but the prospect is daunting.

- **Customers are expecting to be able to interact with your company in new ways,** and you want to be able to meet those expectations. They now expect to be able to log in and see their order history and track their deliveries; they want to take full advantage of self-service functionality; they want a record or report of their orders or accomplishments; they want your products to provide useful data that they can use to run their own business. Whatever it is, they want it—and you don't have it.

- **You have grown out of your current systems.** They're not as efficient as you would like. Your workers are frustrated. It takes too many clicks, and too many applications, to perform their daily tasks. Good workers are hard to find these days, and the younger ones in particular are used to cloud-based apps that are easy to understand and use. But it's not just the worker experience; it could be the inability to take advantage of cloud-based resources or to integrate with your partners and suppliers, the way they want and expect you to.

- **New governmental regulations are requiring you to build compliance into your systems.** This affects some industries more than others, of course, but even the traditionally less-regulated industries are facing increased insistence on compliance. It could be a matter of consumer privacy, quality, process auditing, HIPAA, PCI, GDPR, or HR regulations; whatever the focus, the need for compliance is real and must be addressed. The goal is to do so without putting an undue burden on your workers and your processes.

- **There has been a massive shift in your marketplace** recently that has forced you to change what you're doing. The shift is forcing you to re-evaluate and re-design your business, and the applications that enable it. Again, you will want to do this in a way that minimizes the disruption to your day-to-day operations. Help with this will require more than just a programmer; you will need someone who can help you look at your entire business, understand your challenges at that level, and find the best way to proceed.

WHAT'S THE SOLUTION?

- **Get the facts.**
  We need to do an efficient but thorough assessment. We start by sitting down with you, and your team, in person or virtually, and asking questions.

  » What are you trying to achieve? What is your most critical business goal?

  » What are you hoping to avoid as you move forward on new technology-driven initiatives?

  » Who are you competing against, and what are their strengths and weaknesses?

  » What are the other considerations that must be addressed?

  » How many resources do you have to work on this, in-house?

  » What is the burden of supporting your existing technology platform, and how will that impede your team's ability to do something new and innovative?

  » Do you have any preferences, in terms of tools, methods, or languages?

  » What does this application need to integrate with?

  » Is it possible to make use of anything you are already using or doing?

  » Have you done any customer research to determine what they really want from your business?

  » What are the pressures you're under now (time, money, resources, customer expectations, competitive pressure, etc.)?

  » Are there things that you're not worried about that you should be worried about? Are there things that you're worried about that you don't really need to be worried about?

- **Discuss your options and make the right decisions.**
  The answers to these questions above will help us identify your options
  and make the right decisions. Time, budget, personnel, market opportunity,
  and, of course, the best tools and methods for the project all have to be
  determined in order for work to proceed most efficiently.

Time.
Every project has a deadline; we're all used to that. The most
successful deadlines are driven by two main forces: What is desired
and what is realistic.

"A few months" is what we all want; "about six months" is closer to
reality when the application is complex and interdependent on
other systems.

Sometimes the best course of action is to create an application
that satisfies a subset or simple function, and get that out into the
market very quickly. The subsequent revenue from that first launch
can finance the more advanced version. Cloud-based, software-as-a-
service applications lend themselves nicely to this approach, as they
can grow while your customers are using them.

In any case, we will agree to a realistic but aggressive deadline, and
work together to meet it.

Budget.
Developing applications that end up being successful and intuitive
requires more than just specialists who write code. We analyze
current market offerings and conduct user research to determine
how the application should be structured, which functions should be
included, how the application should look and work, which aspects
should follow industry conventions, and which aspects should deviate
from convention to improve usability.

The specialists we bring to the project to help make these decisions
are rare and valuable; they can bring clarity to the project in a way that
a roomful of programmers would not.

Of course, once these decisions are made, the programmers become the most important contributors. We hire programmers who write "clean" and secure code that is well organized and easily deciphered by other developers who work on the code later.

All of this careful coordination and thoughtful work doesn't come cheap. You're investing in your future, and it doesn't pay to under-spend now to the detriment of future market success. Nor should you just throw money at the effort in the hope of making things go faster. That leads to disappointment, which doesn't help anyone. You need to set a budget and pace that can and will succeed.

Personnel.
The right team is everything. Whether we guide you towards building your own team, or we undertake a joint effort between our people and your people, having the right people with the right skills, attitudes, and leadership is necessary for success.

- **Agree on the plan and set to work.**
  Once we know where we need to go, we get the team together—your people and our people—and we get to work. We agree on the approach, the resources we'll use, the ways we will communicate as we go, and the timeline. We've written extensively about how we structure our work, so we won't get into that here, except to note the most important thing: we maintain constant transparency so that you always know where we are, where we are going, and when we expect to get there. Accept no less from any team.

GOING FOR GROWTH

GOING FOR GROWTH — *Things are going well, but you're smart enough to not be complacent. Competition is heating up; customer expectations are rising; markets are shifting. You're in pretty good shape, but you need to reach the next level. It's time to go for higher growth, and it will take a new product or application to pull it off. Maybe you already have the next big idea, or you just recognize that you need one. In either case, market opportunities will dictate where you go next, and what you offer to your customers.*

WHY ARE YOU SO FOCUSED ON GROWTH NOW?

- **A new market opportunity has presented itself.**
  You have identified an emerging market that has a strong customer demand, but is underserved by competitors. Or you see a way to expand the market for your current products. You have the means to take advantage of that opportunity, but the bridge between what you offer and what the customer wants requires investment in new technology-driven solutions.

- **A competitor is struggling, and customers are leaving.**
  They're looking for another option, and you have what it takes. But you need to be as good as or better than the failing competitor. A new application will make it possible for you to attract and secure that new business, and serve the new customers.

- **You have managed to build the business to a certain point, but it's time to expand.**
  Your current systems have served you well up to now, but you are striving for new efficiencies and the ability to take faster advantage of new opportunities.

- **You have a new idea for a product or service, and you need help creating it and getting it into the market.**
  Central to the product or service is a new software application or platform, one that will immediately characterize you as a serious contender in that market. You want to create something that sets the standard.

WHAT'S THE SOLUTION?

It's always a bit more fun working on a growth challenge than working through a crisis or addressing a major worry. We get to be creative with you, brainstorming together on the best way to leverage your market opportunity. We have a little more time to talk to users and develop a prototype.

Of course, you are still a bit worried; all good managers worry, and in part because growth doesn't always involve known and positive footholds. And because many times an opportunity comes as a result of disruption. Our goal now is to help you flesh out your ideas and examine the implications of them, together. We immerse ourselves in your situation, examining both the opportunities and the challenges involved in growing new revenue streams.

One example: a trucking company that delivers produce to the food industry. For years, they've been serving restaurants. Now the pandemic has had a serious effect on that revenue stream, and it's time to shift in order to survive. Restaurants are down, but grocery store traffic has expanded considerably. Unfortunately, that's a very different market.

This is actually a combination situation—a crisis and a growth opportunity. Making this shift involves not only reaching out to a new market, with its own existing supply chain, but having the methods and infrastructure in place to do business with the grocery stores in a way that suits them. This requires new applications that integrate with other systems.

Another situation we see quite often is one where an incremental, seemingly small change to a current product can open up a whole new revenue stream for you, or give you an obvious and exciting advantage over your competition. An example: adding digital capability to a physical object, elevating your formerly non-digital product to digital status—connecting your product to the internet so that it can participate in the customer service and sales process.

Sometimes it is just a matter of bouncing your ideas off of people who know how to build these applications and IoT or embedded-intelligence systems. We help our clients figure out where the opportunities lie; examining the various possibilities together, joining your experience with ours. We think of it as brainstorming the technical possibilities, but there are also business considerations that come into play as well, which is a comfortable conversation for us because we have worked for so many types of companies with so many types of products and services.

Whatever your modality, we're not the people who come in and tell you what to do; we are the people who help you figure out what to do.

In addition to the technical help, we also take a hard look at your customers, what you offer now, and what your competition is selling. We do a lot of product management for our clients; identifying where a new product or even a productized service could fit.

Growth also comes from making it easier for your customers to buy from you. We have built "configurator" applications that allow customers to configure their own systems. Configurators make a lot of sense in today's intensely interactive climate. Customers expect to be able to "do" things with your applications or website, and to serve themselves whenever they want (which is often when your offices are closed).

A number of brick-and-mortar companies have come to us looking for a way to engage their customers digitally, especially on mobile, when they can't come into the physical building due to the pandemic. We have helped them match or exceed their competitors, offering subscription-based services or "try it on virtually" apps that were attractive to their buyers.

Companies that are more than happy to grow do better than those who resist change. Markets can move fast these days, and competitors can come into a

market with a slightly better approach and a solid marketing strategy, and totally disrupt that market. Growth is not just an option; it is a necessity. Just look at what happened to the taxicab and travel agency industries, and we can see how quickly this type of disruption can happen.

We are truly in the age of digital transformation, where you are only as good as your apps. If your business doesn't engage with your customers digitally, an opportunity is created for a competitor who is more than willing to do so.

As with all of our engagements, helping you take full advantage of a growth opportunity involves brainstorming, building the plan, and carrying it out. We work very closely with all of our clients to create a successful solution that meets customer, technical, and business requirements.

Frank Zinghini, CEO of Applied Visions, has been successfully leading top application development teams for decades across a wide variety of industries. Frank has dedicated his career to developing applications that work—for customers, for clients, and in the market.

Frank and his team have developed complex applications for a wide range of revenue-producing commercial applications; military applications; games and educational applications; applications for retailers and franchisees; business-to-business membership applications; and applications for Internet of Things and embedded devices. In all cases, Frank makes sure the effort involves the components that make an application successful: Deep user experience research, and wise business and technology decisions.

Frank is a native Long Islander who studied Electrical Engineering and Computer Science at Stony Brook University. Applied Visions supports the Stony Brook College of Engineering and Applied Sciences by funding a student scholarship, and Frank serves on the Computer Science Advisory Board for the College.

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Applications That Work.

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