AGENCY TECHNOLOGY INFRASTRUCTURE AND INVESTMENT

A Guide for Creative Agencies

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EXECUTIVE SUMMARY

The advertising industry has undergone a complete change in the past decade: a change driven by the ongoing technology revolution in business and contemporary culture. Agency operations, as well as agency culture, are increasingly affected by and dependent upon technology.

Today's agencies rely on technology leaders not only for keeping current infrastructure systems up and running, but also for providing research, strategy, access, and security, in order to meet business goals and invest in the future.

This white paper identifies the broad trends in technology and their impact on advertising, as well as the key technology players in the industry, as a first step toward informed infrastructure planning and design.

Agency leaders can use the guiding principles in this paper to focus their efforts on **agency technology infrastructure (ATI)** design and investment.

A plan for building ATI, both for "greenfield" (from-scratch) operations as well as for redesigns and expansions, is supplemented with pro-forma budgets and maps, tips and advice, and online resources.

Nowhere is agency IT leadership more important in today's agency environment than in the technology of security and business continuity. This paper presents steps and advice for protection and planning in both areas. In these increasingly critical areas, the IT team's training, research, and skills serves to protect the operational health of both agency and clients, now and in the future.

Agency technology is a vital and underserved aspect of agency management that will continue to evolve. We welcome comments and suggestions for updates to this paper.

INTRODUCTION

The pace of change in technology has not slowed in the last decade; if anything, the pace is faster, and technology leaders work twice as hard to keep up. At the same time, the advertising business has changed completely in the past 10 years. Most of us would agree with the view that advertising today is all about creating amazing content and distributing it via kick-ass technology.

A successful creatively driven agency is comprised of makers—people obsessed with creating and producing amazing work. Today's makers rely on technology. Behind the scenes, all that technology must be organized to drive creativity for the individual user, communicate with the client, deliver the work and manage the operations of the agency.

The ATI today sits in the middle of the agency's operations and its potential. Agency technology management must understand the agency's creative, production, and operations capabilities; have a deep understanding of the technology possibilities; and then design and implement technology possibilities to enable that work.

Where technology and IT management used to be an add-on—a side issue to the core business—it is now critical to how we get things done.

Managing **agency technology infrastructure (ATI)** is a **growth and support strategy**, and also **an investment**. We make this investment in two ways: A financial investment in ATI, carefully planned to bring the greatest return for the company; and a commitment to managing technology, with the goals of the business in mind, now and in the future.

Commitment here means taking ownership of the decisions and directions built out in the company infrastructure, especially in independent agencies such as 22squared. **Collaboration and accountability** between agency management and IT are not just corporate buzzwords; we are in this together, and what we do makes a difference.

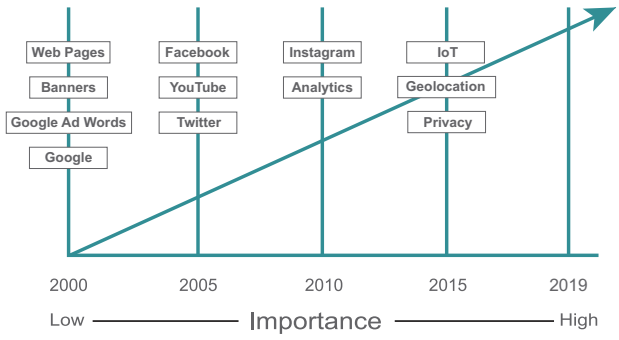
WHY DOES AGENCY TECHNOLOGY INFRASTRUCTURE EXIST?

A business's technology infrastructure exists, like a skeleton, to support everything around it in all endeavors. In the advertising industry, the IT department is a valuable and critical part of any agency, comprising highly skilled technologists with specialties in IT architecture, engineering, systems administration, support, A/V, networks, servers, storage, and security.

But in agency work, it's not enough just to keep the lights on and the trains running on time. Crucial to the success of the agency, today's agency IT department exists to drive the very best creative work and insure complete security for agency clients. No less important, technology now drives new consumer behaviors, creates new cultural ecosystems, and shapes the marketing universe.

As the advertising digital age has unfolded, ATI complexity and necessity have grown substantially. It is the agency IT department's responsibility to keep informed and ahead of the curve in multiple specialized areas of technology, in an increasingly complex digital and regulatory landscape. And agency management's role is to support this now core capability.

In the advertising world of today, it's impossible to imagine the operation of a successful agency without a robust technology infrastructure. Technology is a strategic creative asset. In 2019 ATI is more important than ever. As the digital advertising age has unfolded, ATI complexity and necessity have grown substantially.



GLOBAL TECHNOLOGY ADVANCES INFLUENCING BUSINESS

Today's IT leader has to architect and build infrastructure that leverages and incorporates enormous shifts in how we do business and how we do creative. All of these technologies were new only 10 years ago:

- high/always-on access to internet via WiFi
- mobile/tablet-first
- social
- access to applications and tools anytime and anywhere through the cloud

These trends aren't new, but the scale and speed with which they have become business reality is what challenges agency technology infrastructure. Their implications drive technology architecture and culture inside today's agency. These are table stakes now, and they must be really great to satisfy the technology-driven workforce of today.

The Internet

More than 4.4 billion people now have access to the internet, more than half the global population, and 3.5 billion use social media. Essentially, all business today is conducted, and virtually all creative today is produced and delivered, via internet. There is simply no possibility of running a business in a walled-off IT environment. IT leaders must be at the leading edge of knowledge and change at all times.

Social Technology

After only 15 years of existence, Facebook has 2.4 billion users. Twitter reports 350 million active users, and Snapchat claims over 200 million daily users. Did anyone predict this explosion?

The advertising industry is particularly sensitive to trends and shifts in the use and importance of various social platforms. Not only do the major social outlets drive an increasing proportion of advertising creative, they are a 24/7 backchannel for an increasing proportion of the industry's creative workforce. IT leaders must be out ahead of trends, bring expert knowledge to the agency, and know how to pilot and implement new technologies.

Smartphones

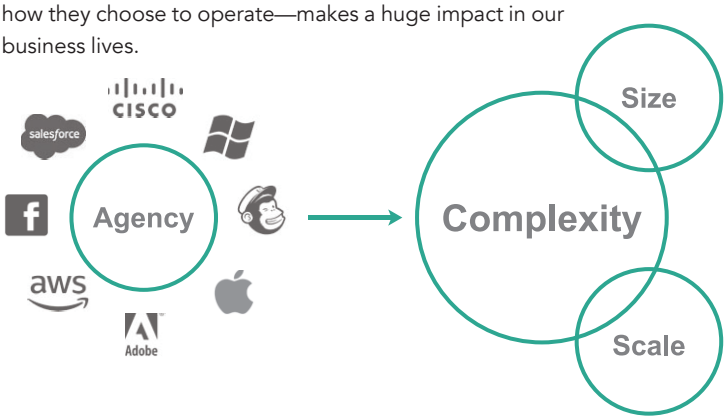
There will be an estimated 6 billion smartphones on the planet by 2020. Within the industry, everyone has one. The smarter the phones get, the more work gets done via mobile devices. Mobility as an issue—for security as well as productivity—for IT leaders will crop up in this discussion as one of the most important trends influencing industry IT.

IoT, WiFi, Cloud

Today, mobile-first/WiFi is the expected standard connection to the Internet, and robust WiFi is an absolute internal requirement for agencies. More and more scalable technologies have moved to the cloud as storage prices continue to drop, but some security issues grow more complex, especially as IoT continues to infiltrate more everyday devices in the lives of consumers.

Dominant Technology Companies

A list of perhaps 20 companies would cover almost every aspect of doing business in advertising. For an IT leader designing agency technology infrastructure, understanding these very influential players is a vital part of the job. What these companies decide to do—how they write their algorithms, what they choose to invest in, how they choose to operate—makes a huge impact in our business lives.



Additionally, the key technology players own and leverage more and more of the technology universe, including networking, storage, hosting, collaboration, video, and telephony. They improve and repackage their offerings, provide critical patches to existing systems, and roll out new platforms with some regularity. Managing the agency's use of these relationships and key resources is a very important requirement.

IMPACT OF TECHNOLOGY TRENDS ON ATI

These broad external advances manifest in specific trends that present substantial challenges and implications for agency leaders. Agency technology infrastructure must incorporate and deal with these trends, and the technology leader's role now includes more research, strategy, and validation.

As in many industries today, technology and the generational shift in the workforce is forcing changes in the business work environment and culture. A technology change is often matched by a cultural change plus a change in use and expectations regarding digital tools and technology (for example, analytics with security and transparency). IT strategy and management must address both kinds.

Areas of especially tech-driven agency activity include the media planning/buying departments, analytics, and creative technology. Because agency operations, automation, and media transparency are also dynamic and ongoing issues, IT leaders must stay informed and knowledgeable in those areas as well.

TREND	EXAMPLE
Latest user-level hardware for power users	*Laptops, tablets*
Technology architecture must be scalable, to use best-in-breed tools and vendors	*Fast network in order to use third-party platforms*
Technology and culture will be linked	*Example: WiFi network must accommodate two to three devices per person*
The young, smart talent that fills agencies have a high expectation for high performing technology	*Many people in agencies think of themselves as technologists*
Security is a bigger and bigger risk	*More of IT's capital and resources will be dedicated to security infrastructure*

Mobility and Young Staff

Essentially, young people are deciding which technology tools to use, as well as when and where they want to use them. The concept of security and the proper provisioning and de-provisioning of technology, while still very important, is hard to apply in every mobile and innovative application. Nevertheless, the IT leader needs to advise creative technologists on the right way to deploy those tools; provide acceptable company tools where personal tools (such as Dropbox) are prevalent; and continue to insure security in mobile applications for clients and staff. Multi-factor authentication (MFA) is now a must-have for access to agency platforms and tools.

Clients, Audits, and Security

Client involvement in agency IT matters has grown over the last two or three years. Clients are now weighing in through security addenda or audits; they want to know how you work with all of these third parties. They want to see the agency's provisioning and de-provisioning process, and they even want to know how you audit them—just the way they audit you. The IT leader may become more client-facing, compared to years past, as a result. Most agencies will now have someone acting as a Chief Information Security Officer (CISO) or Operations Security (Opsec) officer. The IT leader will partner closely with this leader.

Privacy rules and regulations are changing rapidly. The European Union announced General Data Protection Regulations (GDPR), effective in 2018, and California just passed privacy rules, to go into effect January 1, 2020. Today's ATI leader will be required to have strong expertise in security and privacy issues and implementation. IT leaders should explore getting a Certified Information Privacy Technologist (CIPT) or similar designation from any educational entity approved by the International Association of Privacy Professionals (IAPP) and understand the core practices around these standards. Additionally, they will need expertise in network vulnerability scanning (NVS) and remediation with tools such as Nessus. Disciplined patch management for server, desktop, and mobile OSes is another imperative.

Advertising Technology and the AdTech Stack

The agency environment is filling up with technologies, applications, and platforms to support the digital advertising supply chain, commonly called the advertising technology stack. Typical platforms/players in the media ad tech stack include entities from the demand-side platform (DSP), media buying, media planning, ad exchange, ad server, and analytics practices. The ATI must work seamlessly with the ad tech stack to thrive and be secure, and IT leaders will have to come up with hybrid internal/cloud solutions to drive insights and performance.

Marketing Technology and the Marketing Tech Stack

The marketing tech stack is populated by some of the biggest brands in technology—Google, Salesforce, Adobe, MailChimp, WordPress, etc. Marketing tech stack players bring best-in-class technologies that many of our clients use. This allows the agency to deploy powerful technologies to drive creative and media.

IT leadership may be asked to contract with and engage these vendors on behalf of the organization. New marketing tech stack players may be introduced anytime the agency engages a new client or new digital project. It is IT's role to vet and mitigate any attendant risks and added complexity.

Large Players Inventing New Technology

Salesforce, Adobe, Google, Facebook, Amazon Web Services, Apple—these and other giants are driving the technology environment everywhere.

First, agency management and IT leaders must understand how to integrate these large tech companies with the ad tech and marketing tech stack entities and the agency environment.

Second, these 800-pound gorillas rule the business environment in their fields, and they get what they want. IT leaders need to keep up with their constant "improvements" and nimble enough to keep their system operating efficiently in the aftermath of a gorilla-size system change.

New Media Tech, New Advertising Opportunities

There's always a lot of talk about new, innovative, cutting-edge tech with fancy initials: AI, IoT, VR, AR. Very tech-focused agencies or agencies that offer technology solutions will always immerse themselves in new technologies in anticipation of client demand. For all agencies, though, it's important to understand how new technology and new platforms work where new forms of communications exist. Agency management and IT must support ways for the staff to productively play with new technology, while responsibly managing any risks with techniques, such as network DMZ areas, to sandbox innovation.

Analytics and Data

For those agencies that include it in their offerings, analytics practices, activities, and projects have grown exponentially in the past three to four years. Data from many sources is critical to driving insights and nimble recommendations for clients, and agency analytics departments will be looking to pull more and more data into the agency and/or host it in the cloud. Clients also demand that their data live within a safe and secure environment. Requirements placed on agencies by clients only grow, sometimes to an extraordinary degree.

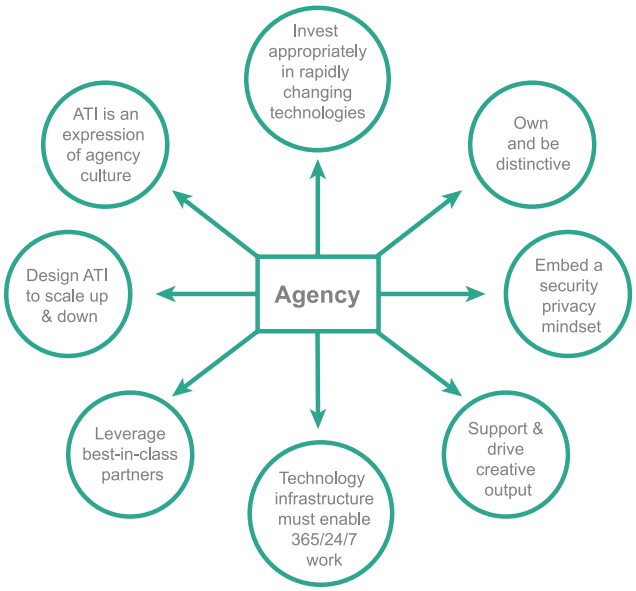
Agency IT and analytics leaders will work with the client's CISO or Opsec officer to create data maps of all data, develop data life-cycles, and build and manage ATI to derive those insights.

Working with Tech Partners

Five to 10 years ago, agencies and technologists could fulfill internally almost everything a client required: produce the creative, conduct analysis and place media, and push media via one or two partners. Today, the vast array of ad tech and marketing tech partners make this work far more complex. It's now almost a requirement that agency work will take place both internally and externally. With literally hundreds of potential partners in these spaces, a typical agency will deploy hundreds of different technology tools.

ATI GUIDING PRINCIPLES FOR AGENCIES

For agency and IT leaders working to upgrade and maintain a legacy tech infrastructure in response to the the trends listed above, or lucky enough to be building a greenfield system for your agency, there are helpful guiding principles to keep in mind for ATI. How you apply them depends on what kind of agency you are—what your resources are, what type of clients you have, and what your company culture is.



Invest appropriately in rapidly changing technologies.

Most agencies do not want to be—they can't afford to be, really—the pioneer for emerging technologies. But staying ahead means exploring the possibilities and practicalities of new technology. The best approach is to try "proof of concept" trials for the newest technologies until it's clear that full-scale investment is worthwhile.

Own and be distinctive in technology infrastructure.

This means to treat the ATI as your own: to be distinctive in the technology areas that drive the most creativity. For an IT leader, infrastructure design is a highly creative activity that allows them to build a bespoke environment for agency talent to flourish.

All technology must support and drive creative output.

Creative magic is the agency's most important asset and product, hard as it is to define or quantify. But creative work needs great communications and delivery, and analytics support as well. Technology is the necessary enabler; any system that inteferes with creative magic is working against the best interests of the agency.

Embed a security and privacy mindset into all infrastructure considerations.

Every part of the ATI must support a secure environment, even if it seems unlikely that certain systems would lead to weakness in security and privacy.

Technology infrastructure must enable 365/24/7 work.

That means anytime, anywhere, in any user configuration. Today's young agency workforce expects and demands an array of hardware, as well as variable times and places for work. ATI must facilitate these expectations to get the most—and the best—from them.

Use best-in-class partners for scale and best technologies.

Today's technology giants, and their newer business models, are more flexible and efficient for mid-sized companies than you may realize. Doing it yourself is often the more expensive and cumbersome option. The best course may be to own the design of the technology, but not all the components.

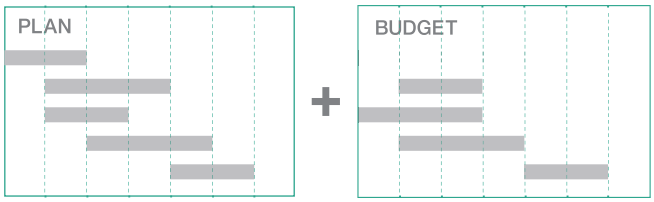
Design ATI to be scalable, both up and down.

Advertising agencies exist in an "accordion" state, expanding and contracting depending on the number of clients/amount of work coming in house. ATI must be able to handle rapid increases in users and equipment as well as smart reductions in order to optimize its IT investment.

ATI is an expression of agency culture.

This principle can't be overstated: ATI exists to support the excellent product of the firm. In almost every case, that is creative work. Technology design determines the ease and openness of creative collaboration, the clear understanding of boundaries and confidentiality, and the ability of clients and staff to access agency resources.

BUILDING AGENCY TECHNOLOGY INFRASTRUCTURE – CONSIDERATIONS



Every agency has a particular combination of goals, circumstances and resources, and any design for ATI, whether greenfield or brownfield (upgrading/revamping an existing system) should reflect its agency's unique combination.

One way to discover your agency's unique combination is by considering the questions below. Treat what follows as a diagnostic tool to support decision making.

What is the agency's culture?

Infrastructure is an expression of culture. Evaluate your business culture to inform your technology decisions. Most qualities of a culture lie somewhere between two poles in several areas:

Is your culture "open" or "closed"? Does collaboration or tight control rule? Do you view the environment as wide-open or locked down? Does the current degree of openness match the needs of the work and the workforce? An open culture means, for example, you allow and facilitate collaboration and sharing on platforms such as Google Enterprise.

Is your culture risk-averse or risk-open? Is innovation and experimentation encouraged, or is it managed? If the firm's appetite for risk is high, you'll allow the newest, edgiest technologies into the environment for exploration by the broadest range of people.

Is your organization stable or dynamic? Do you want to enable continual changes to the environment, or do you need to know with high predictability what is happening at all times? What constraints do client demands and contracts put on your agency or specific teams? Your answers here will inform your decisions to build off cloud/hybrid cloud solutions, or to go for more "owned" architecture.

Will the organization be scaling up or scaling down? Is the firm thinking of acquisitions, pivots, expansion, branch offices? If your firm is busy bringing in new business, are you ready and able to add large numbers of people on short notice? If your firm is focused on stability, are you supplying everything your users need to stay happy and productive? Inasmuch as you can predict this in an "accordion" industry, try to determine near- and far-term movement.

What work does the infrastructure drive?

Agencies and firms within the advertising industry come in many flavors as well as sizes. Know your specific agency's type of work; it will dictate much of your infrastructure planning. Find out if there are any plans to expand into new product or service areas that would affect ATI investment and design. Some examples of agency work and their specific tech requirements:

AGENCY WORK	*TECH REQUIREMENTS*
Creative	Macs, Adobe, large bandwidth, collaboration platforms
Analytics	Windows environment, SQL databases, Tableau, security
Creative Technology	Dev-ops, development tools, technology stack
Production	Production studio, edit bays, massive storage
Content	Access to apps and websites

What are the financial principles of the agency?

Agency management and IT must design and deploy technology in accordance with the financial goals and operating practices of the company. (See Appendix 1 and 2 for financial structure models.) In an agency, there are five principles you need to apply to your thinking:

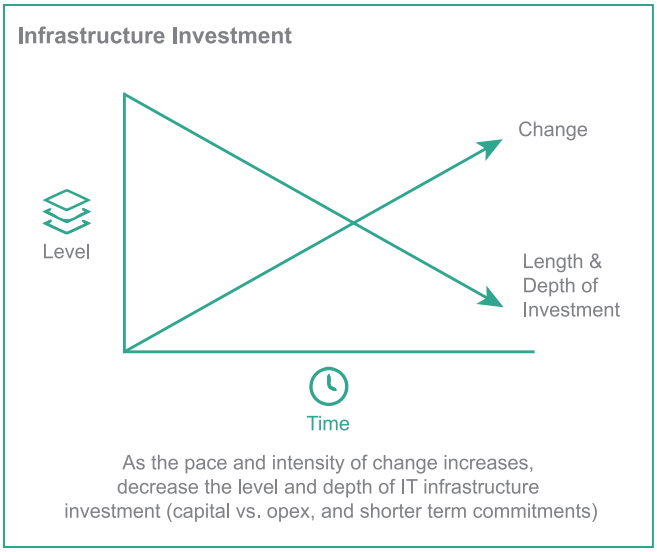
Infrastructure as percentage of revenue. This is the level of capital investment per year that your firm is financially comfortable with. Know the goal and the tolerance.

Capital planning and depreciation. Capital expenses (capex)— laptops, servers, etc.— are fixed and have a multiyear lifespan. Depreciation must be factored in as well. Any independent agency will have its own set of numbers, probably defined as a percentage of revenue within a comfort zone. Holding companies use formulas to apply to each unit. How much capital expense per head, or percent of revenue, do you have? These numbers often change, but you should know them.

Operating expenses (opex) goals. These are recurring expenses that hit the P&L every month: Google, Microsoft, telephone service, etc. Taken together, IT might constitute 75% to 80% of an agency's capital and operating expenses.

In-source/out-source. How comfortable is your agency with putting much of your ATI in the cloud or other outsourced options—or do client agreements require you to have certain parts of your ATI on-premise or owned.

Buy, borrow, or build. This kind of decision point—usually seen when bringing in something new to the company— doesn't happen often. But when it does, it must involve an array of players—finance, end users, technologists, etc.—and apply the financial principles of the agency, outlined above, to find the solution for an individual agency.



What is core/not-core?

In other words, which ATI elements are critical and which are not critical? Know this before you begin to design. The example below could reflect your particular agency, or might need additions and column shifts to present an accurate picture:

CORE/CRITICAL	*NOT CORE/NOT CRITICAL*
Network	Cloud storage
Security	Cloud servers
A/V and telepresence	Cloud backup
User level technology	Cloud telephony

BUILDING AGENCY TECHNOLOGY INFRASTRUCTURE – THE PROCESS

Create a planning team.

The agency's organizational structure should determine who should lead the planning team: the person directly involved in most of the actions and decisions of the project most of the time. This is often the agency's IT leader, but this may fall to others on the management team. A team leader should always have the sponsoring support of a VP-level-or-higher company executive.

Team members should include an architect, if building space for technology is involved; representatives from the agency (possibly department heads for those departments most affected by the project); a project manager, if the team leader requires coordination assistance; a representative from the builder or construction contractor; and representatives of the most important subcontractors, such as AV, cabling, HVAC, and electric.

Owning Decisions

Ownership is part of the technology investment—the commitment kind—mentioned in the introduction. It means that all stakeholders are committed to the decisions made during the planning process. The only way to get across-the-board ownership of decisions is to bring stakeholders in early, keep them informed continually, and be responsive to the feedback from all team members.

Design a pro-forma agency technology infrastructure.

Here is the creative side of an ATI project; in the case of a greenfield build, this may be the most creative work of a tech leader's career. After the homework is done—absorbing the guiding principles, business landscape, and the considerations listed above—it's time to make a rough sketch, or pro forma version, of the infrastructure. This step can be divided into two parts:

Create an architecture schematic. Sketch out your vision of the new or revamped infrastructure, from the network and data center to end-user hardware. Leave placeholders for your unknowns. (See Appendix 2 and 3 for examples of infrastructure maps.)

Have a picture of success. Write out the best functioning, ideal infrastructure for your agency. Then gather tough questions about each section. How will the cloud storage work? What about failover? A risk register with your worst-case scenario for each element should be represented.

Find and use vendors/partners.

This important phase is a circular process. At first, it's a two-way information stream. You are educating potential partners and vendors about your company and your industry. In turn, they are informing you about systems, products, and potential. As you bring in more vendors, you get smarter.

Educate vendors. As you do this, they can give you better, smarter information. You'll offer a preliminary information session, a kind of verbal RFP where IT gives the big picture as well as the details, to potential partners. They may come right back with more questions. If you're talking to the big enterprise companies (and there are only a handful), they'll want to know who else you're talking to; that information will help them focus their responses. Find resellers or integrators that can represent the big platforms and can configure them to your size.

Prepping Vendors and Teams About Advertising

With third parties, if you prep them, they come prepared as well. If you give them enough information ahead of a meeting, they'll bring the valuable information you're looking for right at the start. Prepping is knowing the big picture. You're educating vendors about your industry, not just about your company. Lots of vendors don't understand how advertising works, especially today.

Start by pointing vendors to the company website for background. And once the project team is assembled, give an in-depth presentation explaining what your company—and advertising—is about. A lot of the people we work with, especially in technology, really don't understand how advertising and a creative enterprise works.

Emphasize that the project isn't a typical build-out. You need a place where smart people can create and be inventive, and one as tough as a fraternity house: if it can't handle a beer can being thrown against it, it's not going to work here.

Get input. Part of your conversation with vendors will reveal important and valuable information to you. You'll take some of the questions the first provider will ask you and ask those questions of the next people to come in. You're that much smarter when you meet the second provider, and really smart with the third provider. You'll know then what answers you're looking for and will know when you hear the right answers.

This process may also show you that you don't really want to go in a certain direction, now that you understand the complications or security issues. You may decide to rethink part of the pro-forma infrastructure. But always go back to the first provider with your concerns; there may still be an ideal solution waiting to be uncovered.

Work with best in class where possible. Apple, Cisco, highly rated Windows/Microsoft resellers, AWS, Google—these platforms and companies have solutions to meet almost every situation and will know how to play nicely with your clients and third parties. For mid-size agencies, aligning with these players also enhances your professional profile.

Get bids against the draft infrastructure. After this informative, circular process, partners and vendors will respond with draft proposals; they'll say, in their language, "This is what we heard from you; this is what we propose." There should be dollars attached. In order to compare these bids, you become the translator of each vendor's company language. For example, you probably will have two to three bids or proposals for your network/WiFi. Because you've gone through the circular information process, you understand one another well enough to review it.

Select three options for each key element of the architecture. These will be **Best, Solid,** and **Minimally Acceptable.** From the bids, you'll see the cost ranges for each element, and you'll understand what you get for the different costs.

Price the pro-forma agency technology infrastructure.

Each element in the infrastructure architecture should be assigned to one of the following categories and subcategories:

a. Capex
b. Opex
    i. One-time
    ii. Recurring

You'll begin to overlay your infrastructure costs on the company's financial structure, client contracts, and policies. You'll see where you're off-target, and you'll be able to make some adjustments to bring the pro forma in line with the budget. For example, a key consideration may be whether you store data on premise, or use the cloud at AWS or Google or Microsoft, or both.

What about NDAs?

The more advanced the tech solutions you are exploring, the more likely you'll be asked to sign non-disclosure agreements (NDAs) in order to test software and systems. You may not want to, but unfortunately, you need this information to build your plan. Of course, your agency has its own NDAs, too. A good strategy is this: If the trial involves giving away valuable agency information of any sort, no matter how inconsequential, get the vendor to sign your NDA. Otherwise, sign theirs if you can't get your hands on a test, trial, or sample some other way.

Pro-forma staffing to manage ATI.

Whether a greenfield build or an upgrade/expansion, there are bound to be staffing changes. Certain rules of thumb can be applied to help estimate how much and what sort of staffing you'll need:

1. In-house staff: In advertising, the size of in-house staff varies widely by culture of agencies. But in general, as a "medium touch" culture, you'd expect the following ratio/team in a fully integrated agency:

FACILITY A: 250+ PEOPLE (THESE EXAMPLES ARE FLEXIBLE UP TO ANOTHER 30 TO 50 USERS)	*FACILITY B: 125+ PEOPLE*
IT Director	——
IT Engineer	*IT Engineer*
IT Systems Administrator	——
IT Help Desk	*IT Help Desk*

2. Third party or outsource
Given the critical role ATI plays at most agencies, in-house staffing will most likely be the requirement. (The larger digital agencies are even setting up Help Desk Bars—installations that look and feel like the Apple Genius Bar.) For most agencies, Help Desk functions are most likely to be outsourced, and there are several good options. On-site A/V support, on the other hand, is very difficult to outsource.

Gain preliminary approvals for budgets, capital, partners, and staff.

The information gathered in the above steps gives you enough to get preliminary approval, based on Best, Solid, and Minimal Acceptable solutions. The Solid option in your proposal may always be the one every stakeholder will move towards. But to make that option work for everyone, there will be trade-offs.

Trade-Offs

Once you have your Best, Solid, and Minimally Acceptable plans in place, you can see where the trade-offs are: For example, if you're slammed with a last-minute price increase in the newest laptops, perhaps you can make do with a simpler multimedia set-up in the conference rooms (from the Minimal plan) and apply the savings to the hardware. (But remember: Creatives are your most important customers, and they care about aesthetics. So aesthetics is rarely eligible for trade-off.)

Obtain final bids and proposals.

With revised specs and target costs, you'll go back to vendors for final bids and proposals. This a labor-intensive process—legal reviews, financial reviews, and conforming the designs and SOW's submitted must meet at all requirements. Allocate more time than you think you need for this phase.

Build an ATI implemenation plan.

This phase is large-scale project management. The IT leader, along with the team, will develop an overall project plan—timelines, durations, resources, owners—that captures every aspect of the project.

Assign and engage the implementation team. Most of your planning team members will be on the implementation team as well, but you may not involve them as much or as often, unless something comes up requiring their input or approval. Key players on your team will be people well-versed in the kind of environment you need. (This includes, for a period of time, key partners as well.) For example, in the case of an agency focused on creative and analytics, leaders from both of those areas would join the team, as well as chosen vendors in those fields.

Build a detailed implementation plan. The implementation plan will lay out the scope, timeline, and resources for the project. Be very, very detailed; really push yourself to itemize every single task, duration and needed resource. You can streamline the plan later on. Do use some sort of commonly accepted project management software—Smartsheet, Kanban, Microsoft Project, or other—that shows dependencies and your critical path (the most important things that have to happen).

Build honest timelines. You can't build your timeline without input from your experts and without good project management software. Remember, you can only manage three elements: scope, time, and resources. A change to one element will probably require changes in one or more of the other elements. Well-constructed timelines with dependencies, availability of resources, etc. show how any changes affect the project and allow you to have a fact-based discussion to support the new decisions you'll no doubt have to make.

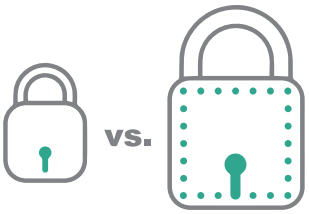
Build detailed budgets. The final output of all your planning is an overall, detailed budget: really a series of budgets, which will be Implementation, Staff, Opex, Capex, and Contingency (generally 3% to 5% of the overall budget). The budget must include all expenses, including licenses. That way, you'll have something to trade when trade-off time comes, as it surely will.

Determine critical impacts to business continuity. The ATI planning and/or implementation leader has to consider all possible business continuity impacts to the ATI. Examples to consider are power outages (sudden or planned), weather, destruction of facility: What is the plan if these extreme things happen? Like any technology service provider, you must work out and articulate an acceptable service level agreement (SLA) with with agency management and clients. The SLA details acceptable downtime and recovery processes, etc. Your technology infrastructure plan must include remediation strategies to meet the terms of the SLA. (More on this later.)

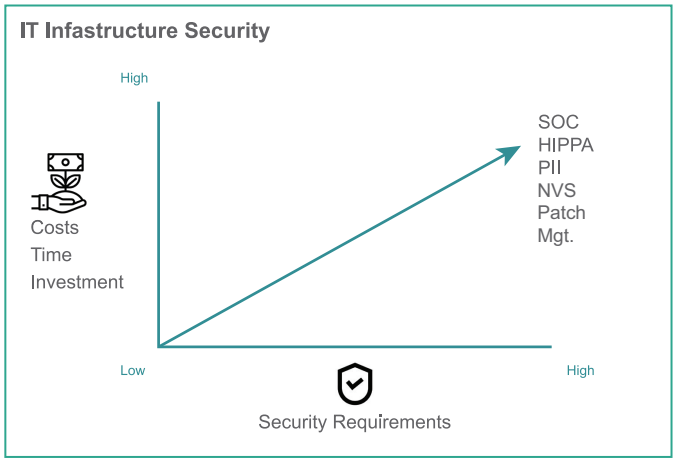
Vendor/Partner Relationships

Consider your connection to third-party providers as valuable relationships. When it's a really good relationship, whether with Cisco or a Google reseller, they are continuallly educating you. That's part of their sales process, of course, but you gain a lot of knowledge that way. And when you need help, or something happens, you've already established a channel for communication, and that saves time.

SPECIAL CONSIDERATION: SECURITY AND BUSINESS CONTINUITY



Today there are no areas of technology more critical to the business than security and continuity. These two areas are seeing major shifts in technology and points of focus every year, paradoxically making it harder to plan ahead in areas that are all about planning ahead.



Security and Privacy

The word security implies a fixed and unchanging bulwark against intrusion: a firewall, a complex password, or a lock and key. Today, technological security includes constant implementations of patches, registration, and detection software, as well as ongoing education. Here are some basic approaches for agency technology leaders:

Develop a culture-of-security mindset across the agency. This is the first and most important element in a secure technology environment. The leadership team, along with those responsible for security (IT director, Opsec, CISO, etc.) must embrace and lead this effort, because it affects everyone in the company. Technology leaders need to assess the depth of that culture in their own organization. If your company is touching data, along with media and analytics, you'll need a strong culture of security. If your agency is more purely creative, then your security restrictions might be lighter, relative to how much sensitive data, analytics, and media you handle, to allow for free creative inflow.

Roll out security awareness and adoption for staff. If you need to create or bolster a security culture for your agency, you'll publish a well-considered **security policy** and have all employees sign it every year; provide annual security training; and create a **change-management policy**, an **incident-response plan**, and a **vendor risk-management plan**. Not only do these steps heighten awareness among all staff, they clarify everyone's responsibilities and actions in case of security issues.

Your infrastructure must reflect your security culture. This is the other half of the earlier requirement that your infrastructure reflect your company culture. Your infrastructure design must demonstrate its commitment to your security culture. An example: a robust intrusion detection system (one that goes to a granular level, examining both incoming and outgoing data), and secure data warehouse (both on- and offsite).

Manage vendor and third-party tools. The IT leader, in partnership with the security lead, must implement a vendor and third-party tool monitoring and management program.

Attain a third-party audit designation. This attests that the organization operates in a secure and safe way. This step is virtually required in today's security world and IT infrastructure. National Institute of Standards and Technology (NIST) tracks patches and vulnerabilities for software and systems. Service Organization Controls (SOC), originating in the accounting world, publishes standards against levels of security. In today's environment, a SOC2 Type II standard would be the minimum.

Recognize the weakest link. At the end of the day, any security program or infrastructure is vulnerable to human folly: people don't mean to mess up, but they do. What files are walking out the door every night? What gets left in the seat pocket on the airplane? What password is taped to the front of the monitor? That's why good security practice circles back to creating a culture of security. Fortunately, the youngest workforce has a decent mindset for security, or at least for protecting themselves, which can be extended to protecting the company.

Security Training

An agency infrastructure leader today cannot succeed without having strong security knowledge and training. This includes going for certifications; for example, as a Certified Information Privacy Manager. An IT manager may become a Certified Information Privacy Technologist. Although it's optional now, these kinds of certifications are sure to become requirements in the future. The certification training is offered by various organizations, such as the IAPP; the content of the training and the certification standards are agreed upon by governing bodies, as with accounting standards.

Business Continuity

Business continuity is a euphemism for disaster recovery, whether that disaster is an earthquake or a hacker attack. IT leaders need to be watchful, plan ahead, and prepare for the worst. A business continuity plan should develop in parallel with an ATI plan. In addition to company culture and security culture mindsets, make IT design decisions with a crisis mindset, too. Off-site data warehouses look even more attractive to a crisis mindset—especially if they're out of state. Some redundancy in equipment and mirrored sites no longer seems so wasteful if it means employees could continue working after a main-office power outage. Here are important directions IT leaders should take in infrastructure design:

Plan for natural disasters. If you live in an earthquake, tornado, flood, or hurricane zone, assume that disasters will happen. Your infrastructure may not be able to function if your area's power grid goes down; if transportation disruption prevents employees from coming to the office; or if water or fire damage to hardware (computer stations, servers, telephony) makes your office unusable. You'll design your business architecture so that people can work anytime, anyplace, at a moment's notice. The organization must know how to attach to the network remotely (via VPN), how to access help desk remotely, and so forth.

Be vigilant about evolving threats and security patches. Viruses, malware, email, and web exploits, and the list goes on. Assume that hacker attacks are a matter of when, not if. Create a protocol to ensure that all systems are upgraded as patches are released; creative agencies that run on Mac laptops have some advantages here, but finance departments and other business systems will be more vulnerable. IT must track releases from NIST and implement all Microsoft patches released monthly. IT must have a monitoring tool that tracks and alerts about all patch releases.

Prioritize backup and redundancy. Your ATI architecture should design backup systems and some redundancy (whether co-locations or mirror offices) with crisis, not just convenience, in mind. Should the offsite data warehouse be out of state, and not just across town? Is cloud storage good enough if the power is down?

Create a crisis management team. This may or may not be a role for the IT leader, but the agency must name a team to handle crisis issues that come up, and provide a single voice for managing through those issues.

Write a disaster recovery plan. As we mentioned in the previous section, you'll do this as part of your implementation plan, so that critical systems have a way to fail over to another system. In implementation, you're worried mostly about failures in, say, the telephone system, or during replacement of back-up batteries. This disaster recovery plan will, for example, outline step-by-step data recovery after power is restored and form the core of your agency's SLA.

A FINAL WORD: IT LEADERSHIP IN AN AGENCY ENVIRONMENT

Since its early days as a support and substitute for many commercial activities, IT is now an utterly necessary component of every business. Although many basics of legacy tech management remain the same, the uses, the complexity, and even the consequences of technology deployment continue changing, and with increasing speed.

Agency management now needs to consider ATI a core concern and contributor to the business. The agency IT leader's job description has also evolved. In addition to acting as the senior engineering manager, the IT leader's roles now include strategist, creative enabler, and guardian. The agency and its IT leader is responsible for seeing over the technology horizon; planning for future business needs and requirements; allocating resources efficiently and strategically; protecting company assets and investments; and understanding changing requirements in compliance and security.

IT leadership in an advertising agency has additional challenges. The most important asset in an agency is its creative staff, and, technologically speaking, today's creatives require a lot of room—room to experiment, to work wherever and whenever, to push boundaries.

I've found that IT leadership means balancing, even continually rebalancing, opposing forces: on one side, allowing freedom (for experimentation, mobile access, etc.); on the other side, continuing to protect and secure both the client and the company from data hacking, natural catastrophe, or whatever comes next.

For agency IT leaders, it's a big and exciting challenge, and today, a challenge that's essential to the success of the agency.

Mike Grindell
EVP–Operations Security Officer, CIPM
22squared

Agency Technology Infrastructure Leadership

POSITIVES	CHALLENGES	RISKS	COSTS
• Get to work with great technology • Create amazing work • Are a critical team member to agency success • Can innovate and experiment	• Always a low-level buzz of dissatisfaction - A/V - WiFi - Passwords - Printers	• Stuff just goes wrong • Security • Human error • Technology usually breaks when needed the most	• After staff and real estate – IT is #3 cost to agency

APPENDIX

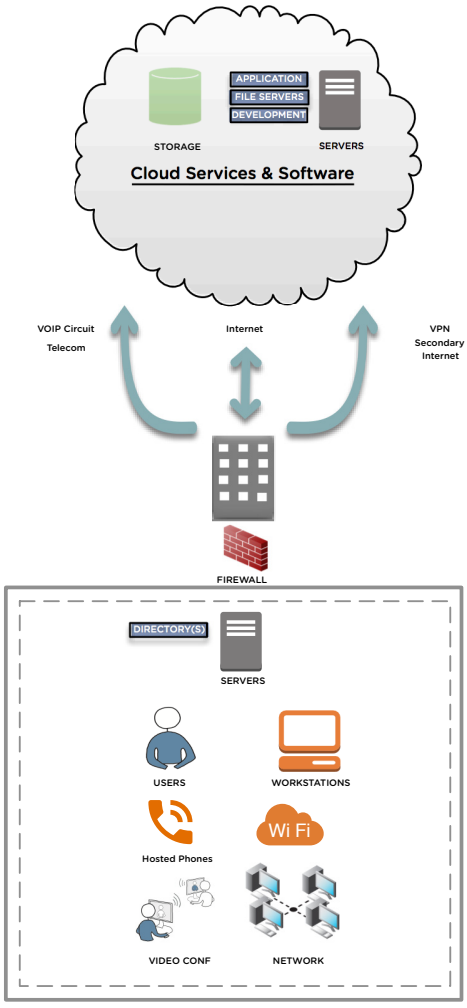
1. Example Financial Structure

REVENUE	$XXX
STAFF	50-60% of Revenue
REAL ESTATE	3-5% of Revenue
DEPRECIATION	1-2% of Revenue
TECHNOLOGY OPERATING EXPENSES	2-3% of Revenue

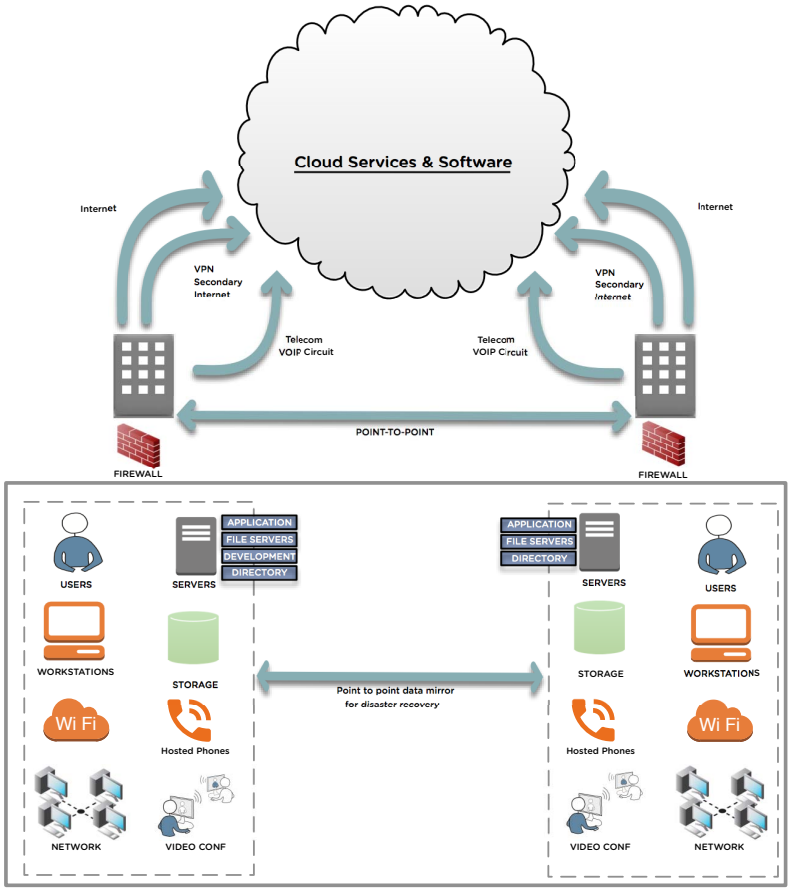
2. Capital & Depreciation Expense Model

PURCHASE PRICE	$XXX
SALVAGE VALUE	$X
DEPRECIABLE VALUE	$XX (Purchase - Salvage)
LIFE (in years)	Y
DEPRECIATION EXPENSE	Z (Depreciable Value/Years)

3. ATI Architecture: Cloud



4. ATI Architecture: Two Offices



RESOURCES

Macadmins
https://macadmins.software/
The site is run by Microsoft and lists all the latest versions with links to KBs about issues.

Stack Overflow
https://stackoverflow.com/
This developer/programmer site contains a large library of applications and programming information.

Apple Support Site
https://support.apple.com
Provides support and info across all Apple products

Microsoft Technet
https://technet.microsoft.com/en-us/ms376608.aspx
This is Microsoft's portal for IT pros, containing tech resources for all things Microsoft.

National Institute of Standards and Technology
https://www.nist.gov/topics/information-technology

IEEE: Institute of Electrical and Electronics Engineers
https://www.ieee.org/
Industry standards, and publications

FOOTNOTES

[1] The 4A's has published a GDPR guidance paper for agencies, The GDPR: What United States Agencies Need to Know, downloadable here: https://www.aaaa.org/wp-content/uploads/2017/12/4As_Venable_GDPR_Primer_2017.pdf

In addition the 4A's guidance for the California Consumer Privacy Act, The CCPA: California Consumer Privacy Act: What Agencies Need To Know, can be found here: https://www.aaaa.org/wp-content/uploads/2019/05/The-CCPA%E2%80%94What-Agencies-Need-to-Know.pdf

[2] For a fast visual summary and explanation of GDPR, see this diagram: https://www.itgovernance.co.uk/blog/eu-gdpr-infographic-what-the-new-regulation-means-in-1-minute/

[3] Two infographics—the "Display Lumascape" https://www.lumapartners.com/luma-institute/lumascapes/display-ad-tech-lumascape/ and the "Marketing Technology Landscape" https://cdn.chiefmartec.com/wp-content/uploads/2018/04/marketing_technology_landscape_2018_slide.jpg—eloquently demonstrate the size and complexity of technology partnerships in advertising. A third, "Bridging the AdTech & MarTech Divide," https://www.adobe.com/au/landing/adtech-martech-glossary-download.html?s_cid=7011O000002bMYOQA2&s_iid=7011O000002SW4JQAW&utm_source=Direct shows the production flow between advertising and marketing technologies.

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