

AE: Turning Reactive Resource Management to Proactive Readiness to Scale



Unanet

The \$1.2 trillion **Infrastructure Investment and Jobs Act** has created incredibly favorable market conditions for architecture and engineering (AE) firms since its enactment in November 2021. Brought forward to help rebuild the U.S. infrastructure and give Americans access to clean drinking water and high-speed internet, the law is said to have created 1.5 million jobs per year – a trend that is expected to last for the next decade.

This new influx of large-scale infrastructure projects has given AE firms a massive boost and created unprecedented opportunities for growth. That said, the very nature of architecture and engineering means that their growth hinges on the skilled talent they have on hand. This, however, is proving to be a challenge.

Changing economic conditions and shifts in labor preferences mean that skilled AE talent is hard to find. An even bigger challenge is the effective management of the existing labor force to drive productivity and increase billable hours without risking burnout or unnecessarily growing the non-billable staff as well.

Most of these challenges are a direct result of how AE firms approach resource management. Unanet's 2024 AEC Inspire **Report has found that almost a third (30%) of AEC firms still rely on spreadsheets for business intelligence, and only 35% consider their labor resource forecasts to be "very accurate."** In fact, half of those surveyed say they lack tools for data management and analysis altogether.

Increasing output without necessarily accumulating additional costs means that, in order to scale, your organization must leverage technology to streamline operations, automate tasks, and gain accurate, real-time insights into every aspect of your resource and project management. This white paper explores the current challenges faced by the AE industry and how innovative systems can provide you with the forecasting and resource planning data necessary to avoid many of these pitfalls.



THE REALITY OF GROWTH IN A TIGHT LABOR MARKET

Growth is the watchword of AE firms today. Scaling isn't optional; it's necessary to keep up with the demand. However, if your organization wants to accomplish this without adversely impacting profitability, you need to be mindful of how you approach hiring, resource utilization, and performance tracking. Tackling these tasks ad-hoc not only creates silos but can lead to bottlenecks which will eventually cost your business millions in lost revenue.

The alternative, a data-driven approach, may require some more work upfront (depending on where your organization is on the resource management maturity scale discussed below), but this will pay dividends in the long run. Staffing and planning with accurate data that tells you exactly where your resources are being used, how much they cost, and how many more you will need in the future is key to effective growth. Here's how today's firms are best utilizing this information.

Optimizing billables

One way to facilitate growth without adding more headcount is to optimize the billable hours of your existing workforce without increasing the number of non-billable employees. Increasing the billable time of your existing technical labor from 70% to 80% or 90% can have a massive impact on performance and overall ROI.

You can achieve this by reducing the non-billable work your billable workforce has to perform, such as manual time tracking, data logging, and wrestling with scheduling issues and other miscommunications. You need visibility into the percentage of their workday that is spent on non-billable work so you can actively remove these activities from their to-do list, or at least reduce the amount of time spent completing them. Look at the type of non-billable tasks they perform the most and search for a solution that can automate these to let your technical staff focus on more ROI-driving work instead.

Keep your non-billables in check

Aside from optimizing the billable time of your technical staff, you also need to be mindful of how your non-billable workforce may expand. Unfortunately, non-billables can eat away at your profitability, so a

good grasp of metrics like your net revenue per total staff is key. Undertaking more project work increases the administrative burden on the team that has to plan, schedule, allocate, invoice, and account for those resources. Without automation and technology to support your staff, adding more non-billable headcount will simply replicate errors rather than reduce them. It will also expose your operations to delays. All of these issues lead to higher costs and lower margins.

You can pre-empt these challenges by introducing lean practices across your non-billable business functions to allow your existing workforce to work more efficiently. For instance, implementing an integrated ERP system that is easily accessible and keeps track of people's schedules, availability, rates, and credentials can go a long way in making sure your project delivery is compliant and delivered on time. Automated reminders and notifications can also ensure invoices are paid on time without the need for follow-up.

Having such a transparent and integrated overview of all of your resources will not only keep your non-billables in check but will allow you to identify inefficiencies, underutilized resources, and recurring bottlenecks in your operations.

Understand your hard backlog vs. soft backlog

The way in which AE companies manage their backlog can have a major impact on their long-term strategy as a business. In this context, having visibility over your available resources is only one part of the equation. Equally important is having a clear, unified view of your ongoing, closing, and upcoming projects in the pipeline.

Accomplishing this requires you to have both a high-level and detailed view of your hard and soft backlogs. You need to know exactly what resources, costs, timelines, and revenue are tied up in each and how you will spread or increase your technical and administrative staff to account for fluctuations. Having accurate forecasts about your resource needs can help you be more strategic about how you position yourself in new markets and regions.

The reality for many organizations is that data often lives in disparate systems, often leading to inaccurate forecasting, overbooking of skilled talent, and mismanaged project timelines. This, in turn, creates strain on your existing talent and customer relationships, hindering your capabilities to meet deadlines, avoid missed opportunities, and focus on larger, more strategic initiatives.

Maximize the value of your junior hires

Hiring junior talent is a common strategy in the AE industry, but this approach comes with its own challenges. The Employment Benefits Research Institute (EBRI), for instance, has found that employees aged 25-34 have an average job tenure of less than three years, significantly lower than the median of five years and 7.5 years among those aged 45-54. Aside from the added risk of turnover, junior hires also require more training and mentoring until they can reach peak productivity – a task that often falls on your senior technical staff.

To address these challenges, AE firms can deploy strategies that make the onboarding process more efficient and minimize disruptions to productivity:

1. **Streamline non-billable processes:** Leverage technology to automate tasks that take senior staff away from project work, such as time and expense approvals, billing reviews, and new project pursuits. Freeing up these resources allows senior staff to focus on high-value work without compromising mentorship.
2. **Equip new hires with data:** Create systems that capture and centralize institutional knowledge, transforming it into a readily accessible "knowledge hive." The incoming generation is highly adept at learning from and exploring data. Providing tools that help them understand how your firm operates and delivers projects accelerates their acclimation process, boosts their billables, and reduces the mentorship burden on senior staff.



TO EXPAND YOUR BUSINESS, YOU MUST KNOW YOUR BUSINESS

In an industry that's very heavily resource-dependent, your growth is linked to the amount of billable work you can deliver each day. It's particularly important that you not only have visibility over your hard and soft backlog but also that you understand your resource needs through three different lenses.



Forward Pricing

Having real-time visibility over the regions in which your hard and soft backlog lives can be indispensable for balancing workloads, anticipating regulatory requirements, and identifying any potential risks before they arise.

Mapping your projects regionally alongside the available resources can be instrumental in allocating the right resources to the right projects in the most efficient way. This can be based on their proximity, expertise, or regional knowledge that may be relevant to that project's success.



Services offered

Another important dimension that can impact resourcing is the services you offer. A high-level overview of your services broken down by market sector can help you plan and schedule resources better. For example, one sector may lean heavily towards design services while another is focused more on environmental.

This can not only optimize current resource management but also inform your future business development efforts.



Areas of expertise

The technical expertise you have on hand can dictate the services or projects you can deliver (for instance, HVAC design or urban planning). Understanding what disciplines would be required for future projects can help you better utilize existing resources while also hiring new staff early to avoid unnecessary delays.

All of these elements correlate with one another to create a clear map of what resources you need, when you need them, and where. Once you have that visibility, you can be far more strategic about how you deploy them.

AE Firms Still Plan and Schedule Resources Manually

With all of these factors to manage – and the strong need for technology and automation to provide efficiency and visibility – you might be surprised to find that many AE firms are behind the curve. AE firms with a double-digit growth rate are more likely to have most or all of their applications in the cloud, yet many still struggle with automation, resource management, and utilization. In 2024, 42% of companies said that forecasting was still an issue, and skill set utilization was one of the least frequently tracked metrics.

As a result, most resource planning and scheduling today happens in silos. There has been movement in integrating projects with time and billing, but many other aspects of resource management are still manual – if they exist at all.

This disjointed approach to data collection has a knock-on effect on all aspects of project delivery. Key team members may not have visibility over key metrics like resource availability and utilization rates, which, in turn, could lead to delayed decision-making, an increased risk of over- or underbooking resources, and a reduced ROI.

Without a unified system that can turn data into meaningful insights, firms run the risk of making decisions based on inaccurate assumptions about workload distribution or project progress. This, in turn, can hamper their ability to adapt to unexpected scope creep or other changes in project demands.

A modern ERP system that is easy to use and accessible from any device can be a big step in the right direction. A purpose-built ERP platform with AE-specific functionality can help you optimize workflows by:

- Tracking individual employee rates based on their certifications, experience, etc.
- Scheduling resources with a clear overview of resource loads and distributions.
- Forecasting capabilities based on expected demand.
- Resource performance tracking to improve utilization and identify growth opportunities.
- Providing firms with key performance metrics like their net revenue per staff member.





WHAT SOLID RESOURCE PLANNING LOOKS LIKE

Delivering complex projects requires a strategic blend of technical expertise, streamlined project management, and the ability to navigate regulatory, environmental, and stakeholder challenges. It demands precise coordination of diverse teams and an ongoing commitment to quality and safety standards – something that becomes more challenging with a growing workload.

Resource planning is a comprehensive process that consists of several parts:

- Accurately forecasting project needs.
- Allocating resources effectively.
- Monitoring utilization rates.
- Aligning workload schedules with pre-agreed project deadlines.
- Ongoing adjustments to address changes in project scope.

Each step requires detailed insight into every other aspect of your operations to maximize value and drive profitability. For instance, effective resource allocation

depends on many factors, such as resource availability and utilization rates, expertise, location, and the specific needs of each project. Obtaining this requires a unified and integrated approach to data collection and analysis.

What Solid Resource Planning Looks Like

Depending on your maturity level in resource management, your organization can take different approaches to optimizing some or all of these steps.

To understand what an ideal resource planning scenario looks like, let's first explore the different maturity levels and see where you may sit on the scale:

Maturity Scale for Resource Management in Architecture and Engineering

Maturity Level Characteristics	Characteristics	Possible Improvements
1.Ad Hoc	Resource planning is unstructured and reactive, with no formal processes or tools in place.	Introduce basic project management tools and define standardized processes for resource allocation.
2.Basic	Basic resource planning is conducted but is mostly manual, relying on spreadsheets or informal methods.	Implement centralized resource planning software to improve visibility and reduce manual effort.
3.Defined	Formal processes exist, and tools are used to manage resource allocation and scheduling.	Enhance forecasting accuracy by integrating historical data and project management systems.
4.Data-driven	Resource planning is proactive, leveraging data for scheduling and tracking utilization rates.	Use advanced analytics and reporting to optimize resource allocation and align with strategic goals.
5.Continuous Improvement	Resource planning is fully integrated with business operations, supported by predictive analytics, and is continuously updated to meet future needs.	Focus on continuous improvement through machine learning and AI-driven insights for maximum efficiency.

To assess where you sit on this scale, here are some questions to consider when discussing these five different areas:



Streamlined Workflows

Are your processes documented, repeatable, and consistent across projects?



Integrated Infrastructure

How well are your processes integrated across disciplines to minimize redundancies and inefficiencies?

Is your technology infrastructure scalable to support growth and innovation?



Centralized Data Collection

Do you collect, analyze, and use data effectively to make informed decisions?



Clearly Defined KPIs

Do you have defined key performance indicators (KPIs) to assess project success, financial health, or client satisfaction?

Is your decision-making guided by measurable outcomes rather than assumptions?



Organizational Agility

How quickly can you adapt to changes in regulations, client demands, or market trends?

Answering these questions should help you identify gaps in your processes and propose high-impact initiatives that can significantly improve how you allocate, schedule, and manage resources.

Aim for continuous improvement

Once you have clarity on the improvements you need to make, adopt a tailor-made solution that addresses these challenges head-on and helps you achieve and maintain organizational maturity over time.

Look for a cloud-based ERP solution that allows you to track and report on the key metrics your organization cares about and offers automation in areas that are currently labor-intensive for your team.

Some things to consider during the selection process are:

1. The tool integrates all stages of resource planning into a single, centralized system.
2. It comes with pre-built, robust analytics and reporting functionality.
3. It offers real-time visibility into the progress of each project.
4. It integrates resource management with projects and accounting.
5. It proactively sends notifications and recommendations to prevent issues and optimize performance.

This functionality is the starting point from which you should assess your next ERP system. There is, of course, more to a quality ERP system than rich functionality.

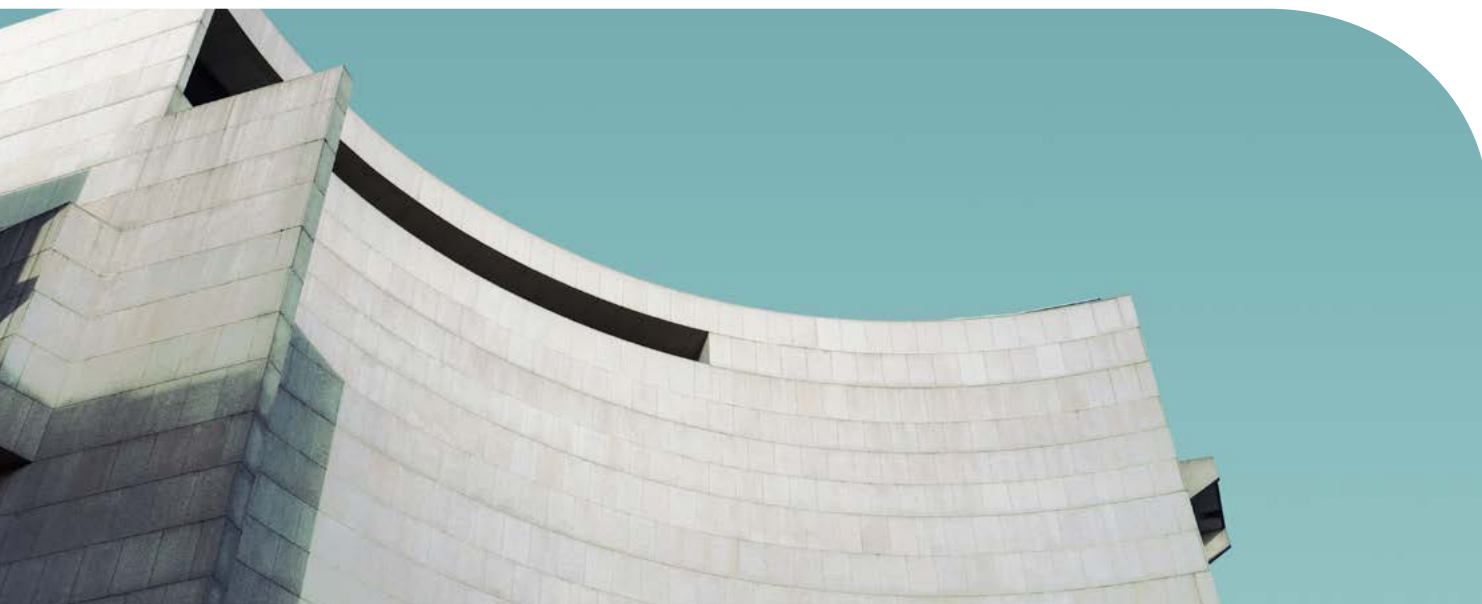
When evaluating solutions, consider these factors:

1. **Purpose-built:** Is the ERP built for architecture and engineering firms?
2. **Usability:** How intuitive is their user interface?
3. **Support:** What's their onboarding and support experience like?
4. **Integrations:** Does the platform come with a comprehensive API that can easily integrate with other tools in your tech stack?

Choose the right ERP partner

In an ideal scenario, your ERP provider will tick all these boxes and come with additional capabilities to support all your business functions – from business development and marketing all the way to project management and resource optimization.

In this context, ERP solutions come with their own maturity level depending on how comprehensive and automated their solution is.



ERP Providers Maturity Level

ERP Maturity Level	Integration Availability	Use of AI/ML	Functionality
1.Basic	Limited integrations, often siloed modules.	No AI/ML capabilities.	Basic project management, time tracking, and invoicing functionality.
2.Intermediate	Integrates with common software (e.g., CRM, accounting, etc.).	Basic AI/ML for task automation (e.g., data entry, etc).	Includes lite resource planning, document management, and enhanced collaboration tools.
3.Advanced	Extensive integrations with industry-specific tools.	AI/ML is used for predictive analytics, risk assessment, and workflow optimization.	Comprehensive project lifecycle management, advanced financials, and analytics dashboards.
4.Cutting-Edge	Open APIs and seamless integration with emerging technologies.	AI/ML enhances decision-making with targeted analytics and real-time insights.	Continuously evolving business suite with automated operations, accurate forecasting, and ongoing innovations to solve emerging business challenges.

The right ERP provider should be able to support your organization in all areas of project delivery. This is not only important for improving your workflows, but it can also have a significant impact on client relationships. Sticking to agreed timelines and delivering consistent, high-quality results is key for building trust and credibility with your clients and, ultimately, for winning more work.

The right ERP solution is more than a tool – it's a strategy that drives growth and innovation while keeping your clients at the heart of your operations. A reliable ERP system empowers your team to make informed decisions and achieve more with less. This level of optimization is not only good for your bottom line, but it's instrumental for setting yourself apart from your competition, where marginal performance improvements can be the difference between winning more contracts and being left behind.

HIXON INC. LEVELS UP OPERATIONS WITH UNANET AE ERP

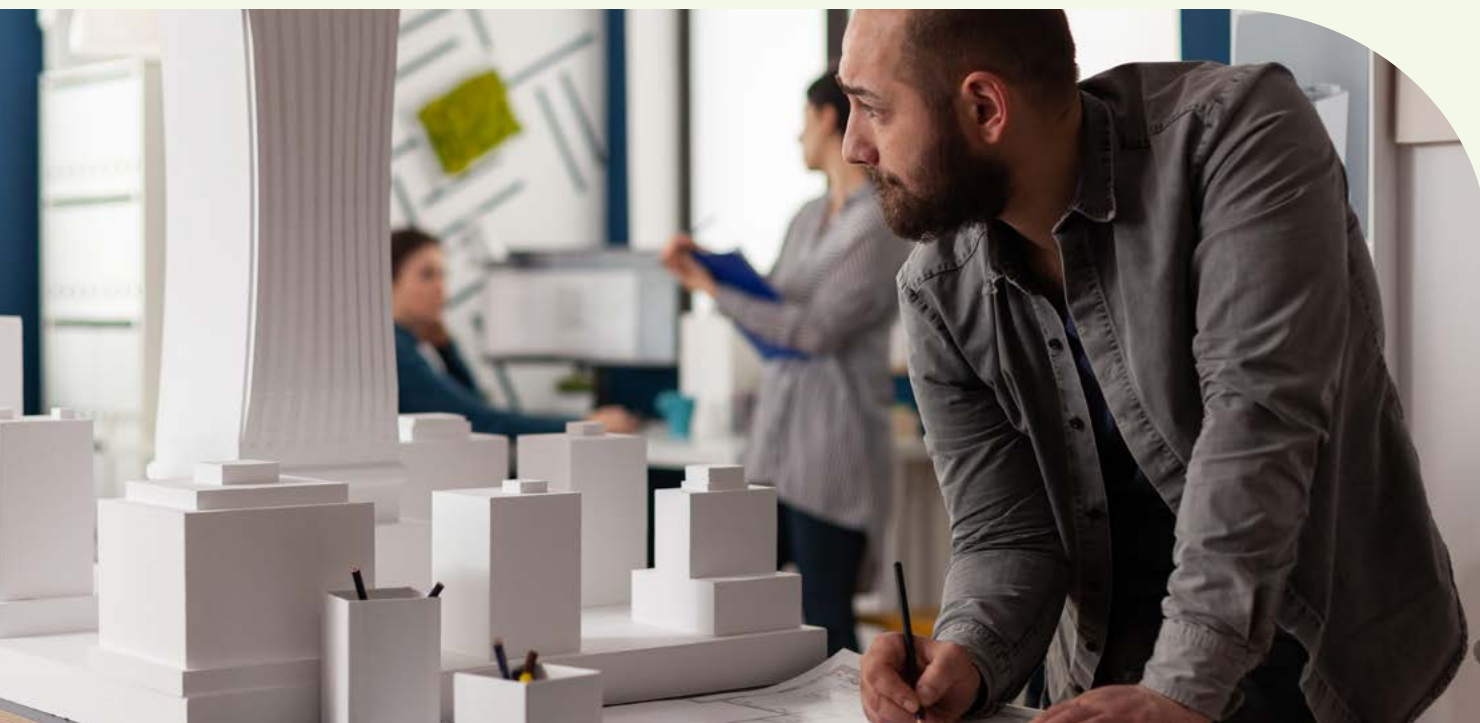
Hixon Architecture, Engineering, and Interiors is an Ohio-based firm offering architectural engineering and interior designs for the food, workplace, retail, and technology industries. In 2010, the company adopted Unanet's AE ERP solution to optimize operations and drive data-driven decision-making across the business.

Since implementing the new ERP, Hixon has transformed their resource and project management practices, where data analytics drive all aspects of project delivery – from hiring and training to invoicing and collections.

"The analytics are the bread and butter of how we manage our business. We can see the trends and make decisions accordingly, without having to go through a bunch of spreadsheet gymnastics to get there," says Joseph Kobos, Hixson's Operations Process Manager.

Some of the benefits Hixon has noticed are:

- Automated and streamlined invoicing saves the team, on average, eight hours per week in additional administrative work;
- Improved decision-making on resource scheduling through accurate project forecasting, timely hiring, and informed budget allocation;
- Real-time insights into how the business is performing based on pre-defined KPIs;
- Noticeable growth, without increasing their non-billable staff, through automating their production planning, resource scheduling, and invoicing.



UNANET: A UNIFIED VIEW OF YOUR RESOURCE AND PROJECT PERFORMANCE

Unanet's AE ERP solution is purpose-built for the architecture and engineering sector and integrates all aspects of project management and project-based accounting into a single, cloud-based platform. The solution supports forecasting, budgeting, and resource allocation to help companies make better-informed decisions in real time every day.

Within Unanet, AE firms have an immediate overview of all their ongoing projects and can anticipate future needs through predictive analytics, integrated visual dashboards, and detailed reporting. Smart technologies enable organizations to create efficient schedules where resource utilization is optimized and overbookings are easily spotted and rectified.

Unanet goes beyond providing basic project visibility – we drive innovation and adoption with automation at the core. By automating non-billable processes like planning and scheduling, billing and collections, and

expense management, Unanet empowers teams to focus on what truly drives growth and profitability – billables. AI-powered tools also optimize your cash flow and ensure projects are not only delivered but delivered profitably. It's the future of project management – tailored for firms ready to lead the way.

Is your organization ready to take resource management to the next level? Unanet's all-in-one ERP solution helps you transform your workflows, identify inefficiencies, and drive performance through accurate analytics and data-driven decision-making.

Contact Us to learn more



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Where Information Means Insight

Unanet serves more than 4000 businesses with its ERP software solutions purpose-built for professional service organizations. Unanet's software helps project-driven organizations reliably plan, track and manage projects, people and financials. Unanet's customer-centric culture means we strive to deliver insights with personal service.



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