What is now commonly called “supply chain optimization” is crippled by its narrow focus, limited to individual company logistics. Consequently, neither the marketplace nor the public sector have been able to design infrastructure for efficient industrial systems.

OTNA’s **Collaborative Industrial Optimization** reconceives planning and investment to serve entire industries and regions. For example, minerals, forest products, glass, and aggregates can be redesigned as “industrial systems” from mines and farms to factories and customers. The Collaborative Industrial Optimization (CIO) approach facilitates collaboration between shippers, transportation providers, and other stakeholders in a larger design frame than afforded by traditional marketplace interactions. It leads stakeholders to integrate knowledge about natural resources, business plans, freight data, land use, logistics, and economic development into productive systems. We need to think and plan whole industrial systems so that commercial and public investments solve problems and create new efficiencies, not just move more stuff faster.

Early rail lines in 19th century North America were envisioned as part of expansive supply chains, **from interior resources to coastal cities, from mine to factory, and from farm to table.** Before individual local projects were conceived and built, an entire corridor or region as an industrial system was envisioned. Contrast that with 2008 at the height of North America’s ethanol-production boom. Hundreds of billions in investment capital poured into the ethanol industry to fund individual “competing” projects. Unit train loading facilities, for example, were consequently built without matching unit train receiving facilities. Ethanol production skyrocketed while the ad hoc transportation and distribution system remained inadequate.

When closely observing infrastructure development across the continent, it is shocking how often a project's full promise is squandered because one party limits the conception to serve only their business interests. This is not usually from a nefarious intention. Fundamentally, no entity or business is at the helm guiding industry or infrastructure to serve multiple opportunities for shippers and society.

Today, Southern Nevada biofuel producers receive feedstock by truck from the San Pedro Bay area. They then truck the product back to the consumers in Southern California through populated areas in both states rather than use energy-efficient railroads available for these movements at origin and destination. Meanwhile, this inefficient commerce is rewarded with California Low Carbon Fuel Standard Credits.

Of the 138 warehouses built in recent years in Western Nevada, only one uses rail, even though they are all on or near a rail line. These distribution centers are essentially there to serve California’s market. This results in high-volume back-and-forth truck traffic on the same roads as commuters and tourists. A similar dynamic is found between each coastal state and its inland counterparts, as well as within metropolitan areas throughout the continent. In these densely populated regions, where collaboration among stakeholders could yield the greatest benefits, we often see the least coordination.

During OTNA’s work creating the 2021 Nevada State Rail Plan, we were struck by the opportunity of a Mining Materials Logistics Strategy to bring commercial benefits to the state’s mining companies, suppliers, and customers. This collaborative approach to mining’s inputs and outputs would justify new and enhanced rail infrastructure and services that could benefit other industries, the community, and the mining industry.

Some will claim that **Collaborative Industrial Optimization** demands trust and cooperation that our competitive economic system cannot sustain. In our experience offering this level of collaboration to people across North America, almost everyone welcomes it. We are confident that this is precisely how we must relate to industry, transportation, and each other to ensure our economic and environmental sustainability.

**Key Distinctions of Collaborative Industrial Optimization (CIO)**

**1. INDUSTRIAL SYSTEMS DO NOT BEGIN OR END AT POLITICAL BOUNDARIES**Supply chains extend across county, state, regional, and national borders. Needed improvements flow from planning in collaboration with entities throughout the supply chain.

**2. PLAN WHOLE SUPPLY CHAINS, NOT JUST PROJECTS**Infrastructure investments supporting whole systems rather than just one-off projects deliver meaningful advantages to a region, its businesses, and investors.

**3. PROJECTS OF LOCAL SIGNIFICANCE**There aren’t “Projects of National Significance” without many “Projects of Local Significance.”

**4. INCLUDING ALL PERSPECTIVES MAKES PROGRESS EASIER, NOT HARDER**Contrary to the prevailing belief that including all concerns and views is too complex, 360° inclusion of businesses, communities, and projects boosts the productivity of infrastructure plans and investments.

**5. PLANS ARE FOR ACTION**  
We can no longer invest in the type of “plans” that sit ignored on government shelves and hard drives. Plans must be designed for implementation from the outset.

**6. STAKEHOLDERS ARE PARTNERS, NOT SURVEY RESPONDENTS**  
Stakeholder engagement is often conducted superficially to fulfill a bureaucratic requirement. Effective investments require collaborative dialogue and co-creation with all stakeholder groups.

**7. RAIL AND ROADS ARE ONE SYSTEM**  
It is unproductive to pit highway, air, pipeline, and railway transport modes against each other in public policy or the marketplace.

**8. FREIGHT ANALYSIS MUST INCLUDE TRUCK DATA, EVEN IN RAIL PLANS**  
Truck shipment data provides critical visibility into the bulk of a region’s industrial activity, illuminating the path toward an ideal truck-rail balance.

**9. THE RIGHT TOOLS MAKE THE RIGHT DATA ACTIONABLE**  
Raw data is one level of usefulness; data made accessible and applicable is another. CIO’s tools enable stakeholders to use freight data for plan implementation and business development.

**10. INTEGRATE FREIGHT PLANNING WITH ECONOMIC DEVELOPMEN**T  
Transportation departments and economic development agencies work in silos on matters that co-influence industrial system productivity. CIO integrates these efforts into regional strategies.

**11. FREIGHT TRANSPORTATION IS INSEPARABLE FROM LAND USE PLANNING**  
Effective land-use planning can optimize economic development and minimize the impact of goods movement. Smart land use is as much about how goods move to and from a property as what happens on the property.

**12. CAPITAL IS AVAILABLE FOR ALL WELL-CONCEIVED PROJECTS**  
Now holding hundreds of billions of dollars, infrastructure investors and lenders worldwide are poised to deploy capital for industrial and freight projects in North America. They need this plan.

**Moving Forward:**  
Consider how investment in communities and industries is commonly structured. Investments are conceived so that the investor withdraws the benefits that capital makes available as narrowly and quickly as possible, with limited sharing, even with the people whose labor made the profits possible. We must restructure investments to ensure the benefits percolate and synergize among all stakeholders. Then, out of the enrichment of the system and the community, one makes one’s return on investment—just a few more words, but all the difference in creating the profound, long-lasting change our challenges urgently require.

END\_\_\_\_\_\_\_\_\_

A society that orients its capital deployment around competition for narrow gain can’t help funding further inefficiencies.

However, for the Collaborative Industrial Optimization process to meaningfully integrate the diverse interests of stakeholders, it is imperative to develop performance measures, tangible outcomes, and deliverables to implement rail-enabled economic development successfully.

**Competition** for individual gain straightjackets otherwise intelligent individuals to rivet their intelligence and attention on their narrow-vested interests. Collaboration and coordination expand our personal and collective intelligence into productive plans and investments. When we first came to Washington, DC, with our thinking about the value of railroads to the country and the opportunity of increasing attention and investment, we were received with open arms by Congress and the Executive Branch. Why that progress was shunned and stymied by the rail industry’s lobbyists demonstrates how otherwise good people will stand in the way of industry progress. We are almost all compensated now to maintain the status quo, usually gained toward inefficiency. As soon as an idea for improvement and efficiency comes along, it appears as a threat to our family.

The shortcomings of competition for narrow gain are not just evident in corporations; they are present in almost all quarters of commercial activity, academia, science, law, public policy, and planning. Nearly all interactions, from one-on-one to large group discussions, meetings, summits, and conferences, utilize an inadequate design and can be transformed.

This model integrates supply chain redesign, clear metrics, actionable data, and a process for inclusive dialogue. It’s an enabler of action, results, and whole systems transformation. It empowers people to recognize and embrace their leadership in meeting objectives, and then they can apply the tools effectively.

Collaborative Industrial Optimization is the integrated planning of industrial systems, land use, transportation, and economic development for a sustainable world.

Our precious national infrastructure investment can be optimally conceived to supercharge efforts to improve the nation’s supply chains, economy, and environment. OnTrackNorthAmerica’s Collaborative Industrial Development approach, borne out of this 30 years of fieldwork, can enhance the quality of life in rural and urban America.   
  
Collaborative Industrial Optimization is an investment strategy that integrates public-sector planning and investment with private-sector commerce and capital to simultaneously address supply chain, community, and environmental issues.

We have chosen to model collaboration and trust within supply chains. We work on private-sector commerce and finance and public-sector policy and planning. Most importantly, we stand for the community and the environment. Around what else would we orient supply chains? We determined early on that the world could best see and then transform the illogic of the past by coming face to face with our collective misuse of the wheel for moving heavy weight over land. The freight rail industry in North America earns 10% of the freight trucking industry's revenue despite its energy, capital, and space efficiencies. We continue to explore “Why would a society direct its precious resources toward inefficiencies?” Answering this question wisely tells us everything we need to know to transform the underlying causes.

Beyond freight logistics, the last fifty years have taught the U.S. and the world that clean air, clean water, natural resources, and land must all be considered integral to sustainable industrial supply chain systems. Climate change is teaching us—more urgently with every passing year—that energy, the most fundamental resource, must be produced more cleanly and used more efficiently if we are to survive.

Look at how transportation has typically been planned – or, more accurately, not planned. Supply chains are “legacies” reflecting the location of individual land transactions for each shipper and receiver, regardless of the inefficiencies those choices will impose for many years.

#### **A Message from Strategic Rail Finance’s Founder:** “North America is severely underutilizing freight railroads at a time when highway congestion, air pollution, and oil dependence threaten our economy and quality of life. While governments are increasingly looking to support rail development, they are challenged to coordinate with businesses that operate on privately owned infrastructure. Planners and policymakers need this new framework for effective engagement with the private sector. We can only produce the much-needed expansion of long-haul and local freight rail service through thoughtful, collaborative planning.

#### However, as logistics and transportation exhaust scarce resources, we need a new alignment of commercial activity and related public policies.

#### OnTrackNorthAmerica is leading businesses and governments to generate results together that neither can produce on its own.

#### Increasing rail transportation with its inherent energy, capital, and space efficiencies will provide cascading economic and environmental benefits.

Many individuals, entities, and commissions produce studies, reports, and recommendations. However, they have lacked a forum and method for effective interaction.

Case studies and pilot projects are fine when you are out to repeat the past. When you want to create a new future, there are no case studies, only current dynamics and new possibilities. The Wright Brothers weren’t operating from case studies.

Solving problems begins with imagining a new future and then clarifying the gaps and the issues.

Imagine a world where all the resources and effort applied to solving problems were instead used to create new possibilities. The path to a world that works for everyone is quickly transitioning commerce and governance from competition for narrow gain to coordination and collaboration for the greatest good. On that path, we can solve all of our challenges.

The world has only one way out of the mess we are in. That path requires us to let go of competition in business and governance and embrace coordination and collaboration for the greatest good. And supply chains are the perfect arena for examining and improving our conduct as individuals and organizations in business and governance. We have been doing frontline field research for years and can report back that competition as a path has run its course. We have investigated, conceived, discovered, and invented a complete set of tools for this large-scale multistakeholder thinking, planning, and acting. Our survival depends on our ability to use these tools to create a new future together. It includes everyone at every level. Relationships and dialogues are tools, too. It’s all about energy; energy is the exchange.  We can think together. People are generally bright, but our systems for gathering that intelligence into innovative business activity and public policies are woefully inadequate.

Truth-telling is paramount

Past and current realities, gaps, agendas, biases

Future possibilities, challenges, and opportunities

The Nevada State Rail Plan is different because the extensive knowledge of all stakeholder groups in the state informs our recommendations.

This plan is informed by people and their perspectives, not just information and data. Most plans rely on limited survey responses and superficial public gatherings. In contrast, we have had 500+ in-depth conversations with Nevada stakeholders. We have also convened stakeholders in small and large group meetings that consistently lead to productive, creative dialogue.

Would an entire state’s relevant stakeholders respond positively to an invitation to gather around rail development? Would they want to contribute to a whole system, whole state game plan for growing rail service? A strategy that supports their businesses, community, and environment? The resounding answer in Nevada has been YES.

People worldwide are thirsting to have their efforts join the efforts of others in dispatching the critical challenges of this moment.

The Nevada State Rail Plan is based on a new framework for capital investment, informed by the transformative understanding that ample private-sector capital is available for rail-enabled economic development.

The key to unlocking this infrastructure investment is to focus transportation plans and economic development strategies first on supporting existing businesses. Help them expand their markets and their material sourcing through logistics efficiencies. Existing business management will empower economic development by recommending new companies that they would value as local customers, processors, service providers, or suppliers. Rail development should be designed to connect these new businesses with existing businesses. This is how rail infrastructure enables a state’s economy to move up the value chain. Attracting new companies will be easier as the capital for new rail infrastructure will enjoy a lower risk profile.

The Nevada State Rail Plan is built on four principles: most notably, truth, followed by collaboration, inclusion, and commitment. Let me repeat that: truth, collaboration, inclusion, and commitment.

Truth matters to a successful rail plan because we cannot improve a system without starting with the truth of the current dynamics. Creating a new future requires tremendous positivity that must also be informed by a clear-eyed understanding of what is not currently working.

Let us direct that truthful analysis toward America's ultimate value—competition. I often reflect on my years as a high school and collegiate wrestler when I was naturally competitive. But in my career off the mat, I am committed to shining a light on the inadequacy of competition as an operating principle for commerce and governance.

Think about a county with an idea it would do well by developing a rail-served industrial park. It often wants to develop that park before an adjacent county to win the competition game. Is winning a competition to invest in a less-than-optimal industrial development a win, or is it likely to be a short-lived investment that will lose its luster in subsequent years when infrastructure is built in another county when the marketplace finally responds to a more advantageous siting for the region?

In response to our message of collaborative corridor and regional planning, the people of Nevada have embraced a fundamental perspective that collaboration is a more productive framework for advancing rail-enabled economic development. We have created an attractive model for other states and the world, demonstrating how stakeholders can cooperate with their neighbors across counties, regions, states, industries, and agencies.

The Nevada State Treasurer asked me an astute question when he asked what I observed was most at play in project development around the state. My answer was immediate. In case after case, projects had been hampered because the level of collaboration needed for rail development was missing.

What we call Radical Inclusion lights the path forward because all regions, communities, businesses, projects, and, indeed, every track mile in a state matter. We purposefully did not rank projects because the entire state and its rail network are part of a system best advanced by radical inclusion. Too often, ranking results in some regions getting supported while others are continually sidelined. Contrary to the accepted wisdom that too many perspectives and projects complicate matters, the inverse is the case. Infrastructure designed from all perspectives with diverse projects has a much greater likelihood of remaining relevant to the entire community and its industrial system.

The fourth fundamental principle of rail-enabled sustainable economic development is Commitment. Commitment is what separates a plan from a report. And that Commitment does not automatically appear when an agency contracts with a consulting firm. Commitment shows up when one or more individuals in or out of that agency and consultancy assume a personal promise to turn the studies into plans by engaging everyone to act, not just report. For that, I appreciate my partners on the panel, Kris and Sheldon, and their economic development compatriots around the state and the Nevada Department of Transportation management for embracing that personal commitment with me that this is a transportation plan that creates a new future for Nevada. The implementation began from our engagement and remains in high gear.

Nevada stakeholders have embraced these four principles—truth, collaboration, inclusion, and commitment—as critical underpinnings of effective rail-enabled economic development.

Like almost all publicly funded transportation plans, rail plans are usually written as perfunctory, bureaucratic exercises that create two-inch-thick, 100MB reports that are then sent to the USDOT and never read or referenced again.

Why would a society relate so inappropriately to its precious taxpayer dollars when there are vital infrastructure matters to address? Our society is numb to this dreadful squandering of human intellect and natural resources.

You may be reflecting on your own experience of plans and reports that, once written, barely see the light of day. But we can forge a new future. I am asking us to embark on that new path, modeled by the Nevada State Rail Plan, where truth, collaboration, inclusion, and commitment will lead us to a world that works for everyone. I invite all within earshot to take on transforming the business of infrastructure consulting.

Regarding transportation plans, the truth about railroad service—both the good and the bad—must be told.

Rail service can make all the difference to the viability of a large swath of industrial activity and the minimization of that activity’s environmental impact on a community. Yet rail service in Nevada and most states has evolved to move traffic through the state, not serve businesses and communities. Our civilization’s underutilization of railroads is not an indictment of the rail industry. It is a societal dynamic that must be addressed for our future economic sustainability. We can turn these undervalued corridors into Silk Roads worldwide, served equally by trucks, waterways, and railroads.

Nevada’s proximity to the 5th largest economy in the world has rendered it attractive to be served by the trucking industry and unattractive to be served by the Class I railroads, which dislike shorter movements. Therefore, 70% of all trucks moving within Nevada are going to or coming from California, exacerbating traffic issues in both states.

Only 4% of all the freight moving in Nevada is moving by rail to or from a Nevada business. Less than 0.25% of the cargo in Nevada is moving by rail between Nevada businesses.

Major commodity groups exist in most states that could better serve the state and the country if the reality of inefficient freight movement were examined and addressed.

Since Nevada’s significant industrial development is occurring just east of Las Vegas and east of Reno-Sparks, Nevada’s economic expansion is inevitably accompanied by an increasing volume of trucks moving through the two spots in the state where that traffic is most problematic: I15 through Las Vegas and I80 through Reno and Sparks. That exemplifies what is happening all around the country as we speak.

The Nevada State Rail Plan establishes eight distinct regions in the state, each with its rail-enabled economic development strategy that fits that region’s existing rail network, governing jurisdictions, industrial activity, and opportunities. (Show map with eight regions)

Rail-enabled economic development requires infrastructure siting after analyzing the commodities currently moving in, out, and through a region. Because supply chains extend for hundreds or thousands of miles from origination to destination, planning or investing without a grasp of those chains is self-defeating. With that understanding, you can identify the logistics-based marketplace advantages that providers of those commodities would gain by locating in your location. Now that you know what commodities would enjoy the most benefits, you have a straight path to the participants in those commodity supply chains.

Many of us have encountered communities that consider neighboring towns, counties, or states as targets of ridicule. When we arrived in Nevada in [month and year] to begin this project, I was struck by how many meetings included someone repeating a harmful meme about California. We were asked why we intend to include California in our scope when doing a Nevada rail plan. I explained that progress in Nevada cannot happen without collaborating with the stakeholders of its primary logistics partner, California. Supply chains do not stop at a state line. Nevada’s stakeholders made the point within a few months of these conversations. We are about to approach California and Utah to form the Southwest Supply Chain Coalition so that each state’s infrastructure investments can have the best chance of contributing to collaborations leading to healthy communities.

Where else can we break through the barriers erected by an overly confining allegiance to competition? Neighboring states are best engaged as partners, not competitors. Counties and regions within each state are connected and can support each other and assist communities and supply chains in other states with their issues and challenges.

In an increasingly interconnected world, antitrust fears and limitations have brought us close to the precipice. Isn’t it time to reorient around truth and trust?

When we asked businesses throughout Nevada how they feel about sharing their rail infrastructure with other companies, even in their industry, I can tell you of their overwhelming response… They said they hadn’t thought of that, but it sounds intriguing—tell us more. Rail-enabled economic development requires pooling resources and opportunities. While it can be challenging to justify infrastructure to serve individual businesses, even projects with large freight volumes are rendered more stable when the expense of construction and operation is shared among multiple users.

We must move beyond industrial development as a series of uncoordinated land transactions—neither the business community nor the community at large benefits from this chaotic approach to supply chain development. When supply chain analysis is not applied to land use planning, land is transacted at a fraction of its actual value—landowners, land developers, and the regional economy lose out in the process. Undeveloped land across the globe is more valuable than ever and must be used for its highest and best purpose. The impacts of the goods and people that have to move to and from a property must be choreographed as much as the activity planned at the property. This is important not only for the development of [the infrastructure] but also for ensuring the stability and sustainability of the lifestyles of the communities impacted by the development, for ensuring the environmental impact is appropriately addressed and mitigated, and that land opportunities are not wasted or haphazardly or unnecessarily developed.

Here is how this commitment to truth, collaboration, radical inclusion, and action is represented in pragmatic, unique maps of the Nevada rail system and land development. With the understanding and hands-on access these maps accommodate, all stakeholders can gather around a comprehensive approach to rail-enabled economic and community development.

Agencies can advance their mission in collaboration with other agencies, and rail-enabled economic development can be advanced as regional and corridor plans, not simply individual projects.

In closing out these introductory remarks, let me tell you about the Mining Materials Supply Chain Strategy. It was birthed within the Nevada State Rail Plan and, like so much of the plan, has global implications as a model for industrywide and cross-industry collaboration. We must get the word out as the world is about to invest trillions of precious capital, land, and natural resources in transportation infrastructure. After our initial trip across northern Nevada, hearing in town after town how active mining is, I sat down in my hotel and wrote an inquiry-based strategy for mapping the entire mining industry in Nevada and its chains of incoming supplies and outgoing materials. The state had previously determined that accommodating more instate processing would grow the economy. We can establish many supply chain efficiencies by mapping the supply chains, including existing mines, transportation infrastructure, and storage facilities. We can also identify precisely where to locate these new processing facilities so that they can be best served by existing or new rail lines to render the whole system more efficient, sustainable, and profitable while supporting the surrounding communities and being environmentally responsible.

Focusing our thinking on the common good is amazingly productive for our individual and collective intelligence. We are all smarter, and our plans are more likely to succeed when we align our economic development investments with what serves others, the community, and the environment. If one goal makes competition worthwhile, it is to compete to serve.