



The Heartland Corridor: Opening New Access to Global Opportunity

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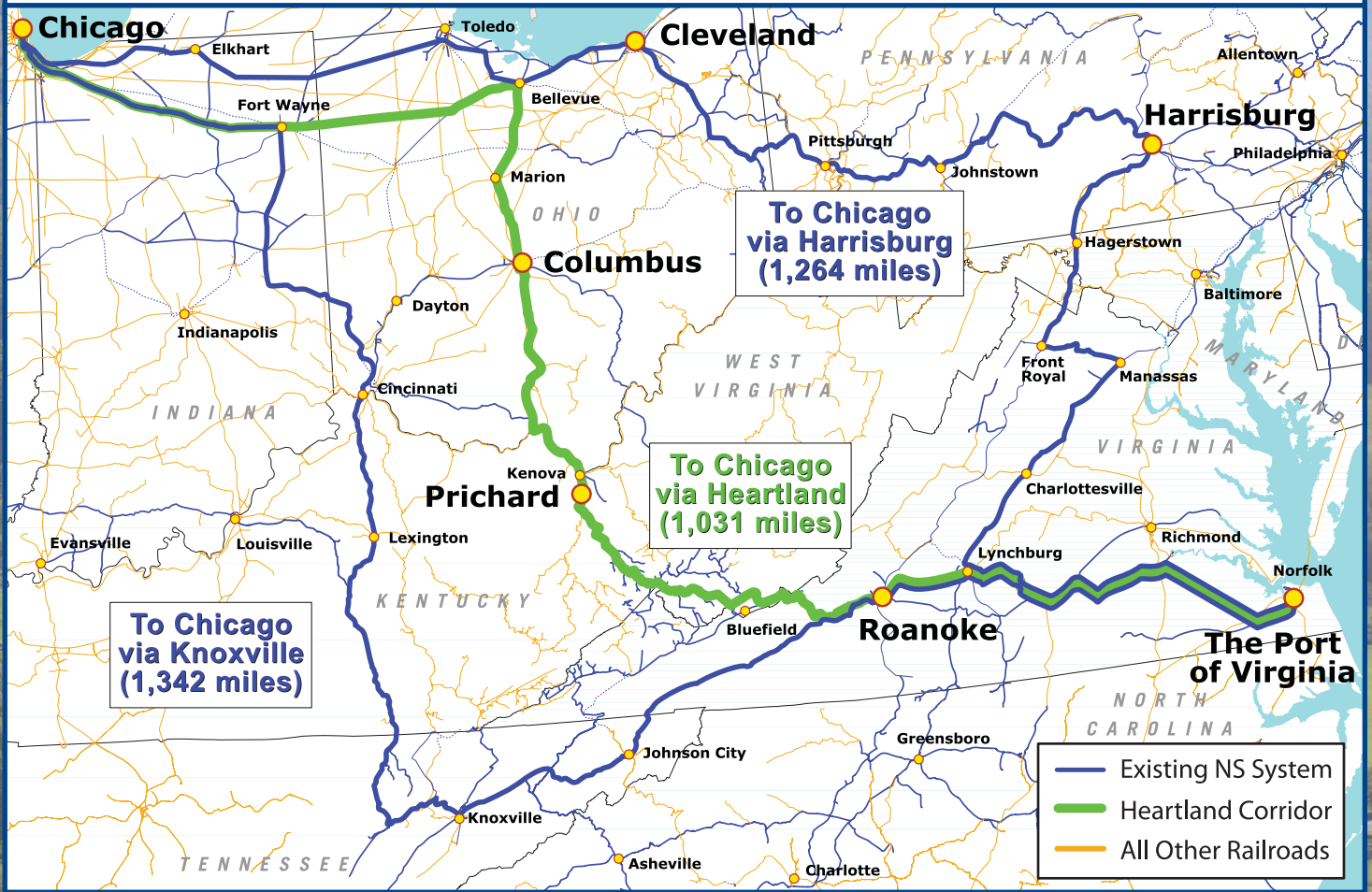


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The Heartland Corridor Initiative is one of the most important transportation success stories of the new century. In opening the door for dramatic new freight transportation efficiencies and important economic development opportunities, it provides valuable insights into how privately owned railroads can work cooperatively with all levels of government to the benefit of both.

Introduction and Background

By helping to promote railroad projects and secure financing, federal, state, and local governments played an important role in the development of America's railroads during the nineteenth century. Railroading revolutionized ground transportation, and railroads played a major role in the nation's economic growth. The industry's unchecked commercial might caused a backlash, however, and populist sentiments led to the passage of the Interstate Commerce Act of 1887. Nearly a century of increasingly restrictive railroad economic regulation followed. During this era, the main government role in railroading was that of policeman, not partner.

Government oversight of railroad operations and finances chilled opportunities for partnerships with railroad companies. Rather than accept the additional strings they assumed would be tied to public investment, railroad executives preferred to build and maintain infrastructure using borrowed money backed by freight and passenger revenues.

Similarly, all echelons of government were hesitant to discuss public investment in railroad infrastructure projects. Railroad properties were (and are) privately owned rights-of-way, operated primarily for the good of those who own railroad stocks. Any discussions of public investments in rail properties were quickly met with outcries over "corporate welfare." Government entities were only willing to step in with financial assistance when railroad company failures threatened essential rail service to shippers and passengers.

In Only One Generation

By the second half of the twentieth century, the position of the railroad industry was untenable. Continued regulation and the emergence of alternative freight and passenger modes led to steep declines in rail traffic and revenues. The 1970 collapse of the Penn Central Transportation Company, the nation's largest corporate bankruptcy to date, was a clear warning that the railroad industry was in ill health. It became clear that the federal government had two options: either inject large doses of capital into railroads, or free the industry from outmoded regulatory constraints and allow it to be competitive. The latter option was chosen. Passage of the Staggers Rail Act in the fall of 1980 began the dismantlement of the century-old economic oversight framework. Staggers minimized residual federal economic regulation, and most state jurisdictions soon followed suit.

With newfound regulatory freedom, railroad companies quickly began to rationalize route networks, modernize operating practices, and replace aging equipment. Remaining track was rebuilt to the high standards needed for a modern transportation system. All told, rail carriers invested billions in their systems even as real rail rates for customers plummeted and revenue ton-miles (output) soared.

The productivity and financial gains attributable to Staggers continued to accrue throughout the 1990s. Even so, by the mid-point of that decade, quiet discussions regarding spot-specific capacity constraints began to take place. Deregulation had revitalized traditional rail traffic and, at the same time, the gates controlling what is now a flood of international container traffic were just beginning to open. For some, it was becoming increasingly clear that a “rail renaissance” was not only possible but necessary for the nation to maintain present standards of personal and freight mobility into the twenty-first century.

Within this context, the public sector (governments) and the private sector (railroads) both began to rethink their traditional reluctance toward cooperative efforts. Projects such as the Alameda Corridor and the Kansas City Fly-Over, while limited in geographic scope, demonstrated the value of public-private partnerships. Hence, by the turn of the new century, the public-private environment was finally set to pursue more broadly scaled infrastructure opportunities.

Heartland—The Vision

There was no single owner of the vision that became *Heartland*. Instead, it represented a coincidence of needs and a confluence of ideas that were gradually molded into a project of substantial value to a highly varied set of participants.

In 1999, the Appalachian Regional Commission (ARC) funded an intermodal study through Marshall University’s Nick J. Rahall II Transportation Institute (RTI). The study report, *Transportation and the Potential for Intermodal Efficiency-Enhancements in West Virginia*, documented the extent to which a lack of intermodal access disadvantaged many communities in the heart of Appalachia. The study outcome struck a chord with regional business and economic development interests, as they recognized the economic and employment potential of the emerging global marketplace.

At the same time, leaders at Norfolk Southern Corporation (NS), encouraged by the rapid growth in international container traffic at the ports in Norfolk, Virginia, were anxious to explore infrastructure improvements that would help accelerate the railroad’s growing role as a national force in intermodal transport. Initially, the vision focused on establishing a new double-stack-cleared container route from the Virginia Port Authority’s marine terminals in Hampton Roads through the heart of West Virginia to the major logistics park at the Rickenbacker International Airport in Columbus, Ohio, and on to the midwestern industrial heartland. This was an interdisciplinary vision driven collectively by transportation, economic development, and international trade interests; an intermodal vision bringing together highway, rail, maritime, and aviation professionals; an inter-jurisdictional vision extending over 677 miles and involving three states and the federal government; and, finally, a vision of integrating the often varied needs and expectations of both its public- and private-sector partners.



A Bit of History

The NS main line is one of the most direct rail routes between the mid-Atlantic and the Midwest. The first 75 miles of the line were originally constructed by the Norfolk & Western Railroad (N&W) from a junction at Radford, Virginia, west to coalfields in Pocahontas, West Virginia. The opening of the line in 1883 started the flow of southern West Virginia's rich coal deposits to the Tidewater region. In 1890, N&W purchased the 126-mile Scioto Valley Railway, which ran between the Columbus, Ohio, area and Petersburg, Ohio. N&W manage-

ment quickly made plans to close the 191-mile gap between Petersburg and Pocahontas. With the completion of this link in the fall of 1892, N&W had a 700-mile main line linking Norfolk and Columbus.

The original N&W main line, nicknamed "the Pocahontas," quickly became a major artery for coal, grain, timber, and merchandise traffic. Branch lines fed large volumes of coal into the traffic stream—coal destined both to Tidewater ports and to ports on the Great Lakes. As traffic grew, N&W invested in improvements to increase speeds and reduce costs. Tunnels carrying the tracks through Appalachian mountain ridges eliminated many of the original riverbank curves, allowing increased train speeds. Line relocations further reduced grades and removed curves. N&W bypassed a troublesome summit in 1904 with the opening of a 59-mile water-level cutoff between Naugatuck, West Virginia, and Kenova, West Virginia. Double and triple tracks, along with signals and power-operated switches, expedited the flow of trains.

When originally constructed, the Pocahontas main line required only eight tunnels between Radford, Virginia, and Kenova, West Virginia. As N&W improved the line, however, the number of tunnels increased to more than 35 and included structures of various types and configurations. Double-track portions of the railroad had parallel single-track tunnels in some locations and double-track tunnels in others. A few relocated portions of the line remained single track because of the tunnels, especially those west of Naugatuck, West Virginia. Many of the tunnels avoiding bends in the river had a bridge at each end.

Tunnels limit the size of railroad equipment, and so are considered a necessary evil by railroaders. Enlarging tunnels, especially long ones, is expensive, time consuming, and disruptive to operations. Over the years, as railroad equipment increased in size, N&W used every measure possible to increase tunnel clearances without actually enlarging the tunnels. Typical approaches included lowering the track within the tunnel and shifting tracks away from tunnel walls.

In 1982, N&W merged with Southern Railway to form the modern Norfolk Southern Corporation, a major rail carrier that operates nearly 21,000 route miles in 22 eastern states and the District of Columbia. While NS still handles large volumes of coal and other freight over the Pocahontas route, double-stacked containers cannot fit through the many remaining tunnels. NS must instead detour its growing double-stack traffic over other routes, adding hundreds of miles and many hours of travel time to each trip.



Even prior to the emergence of double-stack traffic, both N&W and NS, its successor, had considered programs that would increase tunnel clearances along the Pocahontas route. Yet such an undertaking was never commercially viable as a stand-alone railroad project. As the economic and employment benefits of intermodal access became increasingly apparent, public-sector jurisdictions served by the route demonstrated a new willingness to consider participation in a joint undertaking that would substantially enhance intermodal capacity, efficiency, and access between the mid-Atlantic region and the industrial Midwest, through the heart of Appalachia.

At the Table—Participants and Process

The initial *Heartland Corridor* meetings, suggested by NS, were hosted by the West Virginia Department of Transportation (WVDOT) in early 2001 and attended by NS, WVDOT, the Ohio Rail Development Authority, ARC, and representatives of RTI.

Early on, there was clear recognition of the likely benefits that would accompany an improved mid-Atlantic-to-Midwest intermodal routing—including the potential for new economic and employment opportunities in Central Appalachia. Beyond this recognition, however, there was uncertainty about both the overall direction and the appropriate roles and responsibilities of individual participants. The group agreed to solicit and evaluate a new research proposal from RTI. The proposal would feature three distinct tasks: estimating traditionally defined project benefits and costs, exploring and quantifying any related economic development benefits, and, to the extent possible, defining and clarifying the roles of the various project participants. Entitled the Central Corridor Double-Stack Initiative, the project was conducted throughout 2002 and completed in March 2003. Its results were to serve as an analytical foundation (and sometimes lightning rod) throughout the remainder of the *Heartland* project's evaluation and development.

NS, RTI, and WVDOT jointly financed the research and planning activities. Representatives from these sponsors assumed a prominent role in what was to become known as the Steering Committee.

This is not to say, however, that other interests did not have an important voice in the study process. Steering Committee membership was never fixed. Anyone who wanted a seat at the table was granted one, and his or her opinion was treated with due respect. This “open” philosophy sometimes slowed the study process, but in the end, the broader buy-in it engendered negated any delay consequences.

Not only was participation in the study process fluid, so too was the process itself. There was no formal mission statement, and even the tasks that guided the research and planning changed as new information was brought to the fore. Essentially, four questions surrounding the tunnel work in Virginia and West Virginia drove early discussions. These included:

1. Is this work doable?
2. How much will it cost?
3. How large are the potential benefits?
4. How will benefits be divided among distinct groups?

Evaluating Likely Costs

While everyone quickly agreed that the project could be successfully undertaken, the question of costs was to prove much thornier.

There are at least three common ways of enlarging tunnel clearances (in addition to undercutting tunnel floors to lower tracks, which N&W had already done where possible).

The first method—called crown mining and traditionally preferred by NS—involves removing the top portion of the tunnel liner, excavating the tunnel crown (ceiling) to gain more clearance, then placing a new tunnel liner to provide stability. To reduce the risk of collapse, work must be limited to small sections of the tunnel and the track must be closed to train traffic during work periods. As a result, crown mining can be expensive and time consuming.

The second method involves mechanically notching a concrete or masonry tunnel liner to provide the necessary clearance. Notching is practical when clearance restrictions occur on the upper corners of the liner crown and are small relative to the liner thickness. If necessary, voids behind the liner are filled with grout and the roof structure strengthened using roof bolts. Notching is used by western railroads, but has little history in the east.

The third method, called “daylighting,” involves removing the tunnel



roof entirely. This eliminates the tunnel as a clearance problem, but is only practical when the overburden is shallow, the geology ensures stable slopes, and developments over the tunnel present no problems. Daylighting is often the most expensive option and can be environmentally disruptive.

NS was very cautious in evaluating which methods would be appropriate at specific locations. The company reminded the study team that NS alone was responsible for preserving track integrity and ensuring that rail traffic could continue during construction.

While study team members were sensitive to the NS vantage point, they were also aware that methodological choices would greatly affect project costs. Given this reality and a desire for partial government funding, team members felt compelled to scrutinize methodological choices and associated costs. This scrutiny was not always popular with NS participants. Ultimately, to avoid any impasse, the team prepared an array of cost estimates reflecting differing opinions regarding tunnel-specific methods.

Cost estimates were also affected by the projected length of time tunnel crews would have access to the affected trackage each day. This required lengthy and often lively meetings with NS operating personnel, who were understandably concerned about the ability to operate a sufficient number of trains. However, even if these meetings were sometimes uncomfortable, they were productive, and all concerned accepted the resulting agreements.*

Dividing the Big Pie

The *Heartland* routing will slice more than 200 miles and nearly 24 hours off existing NS double-stack routes between Norfolk and the Midwest. Consequently, even the non-railroaders who participated in the process could easily understand the potential benefits. Moreover, the combination of public source data and NS proprietary cost information made the calculation of likely savings attributable to the proposed improvements fairly manageable.

However, the next analytical step was much more difficult. In order to recommend who should shoulder which share of project costs, it was necessary to estimate how the newly available benefits would be split among shippers, ship lines, ports, and the railroad.

Markets for the movement of international containers were (and are) extremely competitive. Steamship lines and third-party logistics providers (3PLs) negotiate hard bargains with competing ports and railroads, and motor carriers stand ready to slice



* As actual work has progressed, NS has been remarkably flexible and forward-thinking both in the adoption of construction methods and in train scheduling.

away as much short- to-intermediate-haul traffic as they possibly can. All agreed that *Heartland* would significantly reduce costs, but there was a tremendous amount of uncertainty about where these savings would actually accrue.

Slowly, it became clear that most of the benefits would accrue to shippers and firm shareholders from across the United States. Consequently, the only jurisdiction that could readily recover the portion of benefits equal to project construction costs is the federal government. Thus, the federal funding share should be substantial.



Also, while NS downplayed the value of the project to its own profits, the carrier was willing to contribute a considerable share of construction costs. Ultimately, the individual states recognized the economic potential of *Heartland* and brought their own support and investment to the table as well.

By mid 2003, the study team was prepared to present its findings and recommendations to the Steering Committee. Using the most conservative assumptions possible, benefits exceeded cost by a margin of over three-to-one, and these figures excluded many of the potential economic and employment benefits that would accrue to communities along the *Heartland Corridor* route. Moreover, all concerned seemed relatively comfortable with the general funding prescription contained in the study's conclusion. Within the Steering Committee, there was now general agreement to move the project forward.

Documenting the viability and desirability of a multi-lateral infrastructure project among a small number of well-informed participants served only as an important first step. Now it was necessary to present the study's results effectively to both constituents and policy makers in order to mobilize additional support for *Heartland*.

The disparate group of study participants dispersed to advance the *Heartland* proposal within their individual venues. However, unlike the earlier process, these individual efforts were carried out with both a shared vision and common message. This was to prove critical to the ultimate success of *Heartland*.

Throughout 2004 and into 2005, study team and Steering Committee members presented research results. In state capitals, town halls, and business offices, and on Capitol Hill, scores of familiar questions were answered thousands of times, while both methods and conclusions were constantly scrutinized. As a product of this process, untold numbers of stakeholders helped shape and promote what eventually became a coherent legislative initiative. Even so, maintaining the needed momentum sometimes seemed to be an impossible task.

Then in July 2005, as President George W. Bush prepared to sign into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), it was done. The word came: “We have a bill, and *Heartland* is in.” Ultimately, the project would benefit from \$140 million of federal transportation investment drawn from a mix of Section 1301 and Section 1702 funding. *Heartland* proponents celebrated briefly and then set about the arduous task of transforming federal legislation into a fully coordinated implementation blueprint that would span three states, four modes, and five years.



Building Coalitions to Build *Heartland*

As emphasis shifted from building support for *Heartland* to implementing the vision, the project’s development coalition began to grow dramatically in both scope and complexity.

To help manage the project’s federal investment, the Federal Highway Administration turned to its Office of Federal Lands Highway to coordinate with NS and with the Virginia Department of Transportation (VDOT), the Virginia Department of Rail and Public Transportation (VDRPT), the WVDOT, and the Ohio Department of Transportation (ODOT). Together, public officials from the federal government and the three state governments began working with their private sector NS associates to plan and administer more than \$150 million in infrastructure improvements to the 677-mile corridor, referred to as the “Central Corridor Double-Stack Initiative.”

At the same time, work began on the development of new intermodal terminals that would be critical to *Heartland*. In the Hampton Roads area, the Virginia Port Authority (VPA) worked with VDOT, VDRPT, and NS to integrate the new high-speed double-stack rail corridor with both existing and planned VPA marine terminals. This included the \$60 million Commonwealth Railway Mainline Safety Relocation Project in support of the new APM/Maersk marine terminal. Former VPA executive director Robert Bray termed *Heartland* the “capstone” of Virginia’s port development efforts. To the west, NS and the Columbus Regional Airport Authority launched a \$60 million partnership to create new intermodal transfer capabilities at Rickenbacker International Airport, a high-speed international logistics hub and a major economic engine of the central Ohio region.

Importantly, planning also began on more than \$30 million of new inland port facilities in southwest Virginia and West Virginia. In Virginia, VDRPT and VDOT worked with NS and area economic development interests to coordinate planning for a new intermodal terminal to help southwest

Virginia businesses become more globally competitive and to help attract new enterprise and employment into the area. In West Virginia, the West Virginia Public Port Authority went to work with WVDOT, NS, regional economic development agencies, and representatives from both Kentucky and southeast Ohio to establish a plan to help area businesses take full advantage of the new access to global commerce the *Heartland Corridor Initiative* would create.

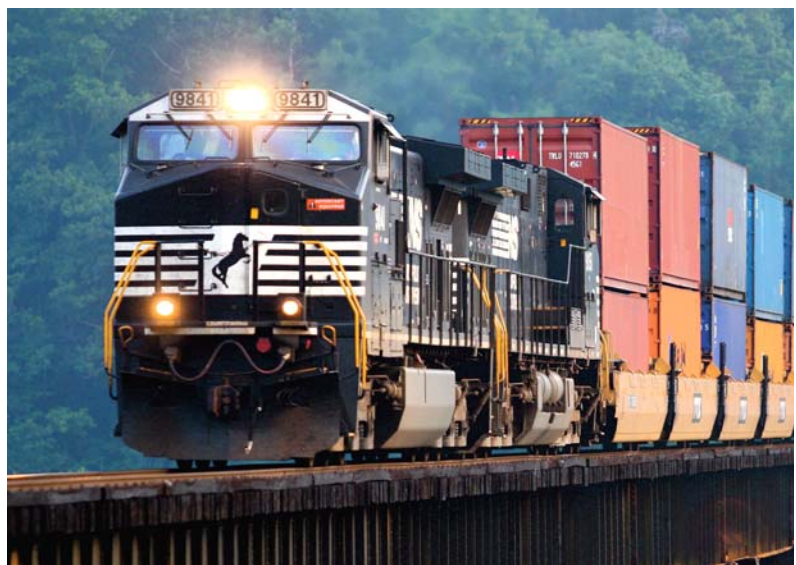
Collaboration, Cooperation, and Innovation

From its inception in 2001 to the launch of the first high-speed double-stack trains, now scheduled for 2010, *Heartland* is a decade-long testament to vision, persistence, and collaboration. It is a half-billion-dollar investment in America's future that will increase transportation capacity and efficiency, enhance global competitiveness, and stimulate exciting new economic and employment opportunities. In a salute to its founders, senior chairman of the Intermodal Transportation Institute Board of Directors and former Federal Railroad administrator Gilbert E. Carmichael declared, "The *Heartland Corridor* has become a model of collaboration, cooperation, and innovation. You have proven that our often-fragmented modes of transportation can work together, and you have demonstrated the potential of building successful new public and private partnerships. Perhaps most importantly, you have participated in the creation of a powerful new link in the global supply chain that will stimulate economic growth and opportunity."

In a cramped and overheated conference room in early 2001, a group of men and women quietly pondered an idea that had been informally discussed for years—opening a new, efficient intermodal route between the mid-Atlantic and the industrial Midwest, through the very heart of Appalachia. At the conclusion of that meeting, participants were publicly shaking hands and privately shaking their heads. Drawing together disparate groups with wildly divergent interests in an attempt to embark on a public-private initiative that would span three states, hundreds of individual jurisdictions, and nearly a thousand miles was more than most participants could digest in one sitting.

Nonetheless, whether driven by commitment or by pure curiosity, the group met a second time and a third, until there was an undeniable momentum, an indefatigable desire to either validate or cast aside the proposal. From that point forward, the group began to learn.

Discretion demands that some of the lessons learned remain cached in the memories of those who were there, and other lessons are too case-specific to be of much use in other settings. Still, much of what was learned through the *Heartland* experience is applicable in other settings and, therefore, worth repeating here.



Lessons include:

- Listen to and understand the needs of others. No single advocate of the *Heartland* process could have ushered it through the development process alone. Instead, it took the cooperation of very different groups with correspondingly different interests.
- The perspectives, expectations, and constraints of participants will always differ. Accept this and learn from it. On a good day, it will help you prevail; on a bad day, it will help you explain what happened to your boss.
- Involve all who want to be involved. If need be, get a bigger table.
- Pick fights prudently. Contrary to formal definitions, “consensus” does not mean that everyone agrees; it just means that everyone stops arguing.
- Developing public-private partnerships is hard work. Remain sensitive to and respectful of your partners’ interests, especially when they differ from your own.
- A rising tide must raise all boats. Any outcome that imposes significant losses on any involved party is not sustainable. Forget it.
- Be ready to answer difficult questions. Good policy must be defensible in the face of the most difficult questions.
- Even good projects are not won easily, and there WILL be gloomy days.



There is, perhaps, one final noteworthy lesson. The decade-long process has yielded both professional relationships and personal friendships that are almost universally prized. In this way, *Heartland's* legacy includes a strong platform from which new and even more ambitious initiatives are being explored. At the outset, many involved considered *Heartland* to be the project of a lifetime. Now we understand that *Heartland* is only the beginning—a bold new generation of transportation and economic development success that is reshaping our lifetime and the lifetimes of those yet to come.

The authors of this case study, Mark L. Burton and David B. Clarke, are research associate professors at the University of Tennessee–Knoxville. However, at the time of the Heartland Corridor study, they were at Marshall University and Clemson University, respectively.



This case study was commissioned by the Appalachian Regional Commission to demonstrate how vision, innovation, and collaboration can enhance access to opportunity and help shape Appalachia's economic growth and success in the twenty-first century.