



TRANSFORMING PERMITTING THROUGH AUTOMATION

STATE: OREGON

AGENCY: Department of Transportation

AWARD CATEGORY: Digital Services: Enterprise Solutions

PROJECT TITLE: ORION (Oregon Routing Information Online)

PROJECT DATES: September 2020 – May 2025

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EXECUTIVE SUMMARY

You have seen them on the roads. Ahead of you, or in an oncoming lane, a large truck carrying what looks to be a very large and heavy load. You recognize a familiar black and yellow banner on the truck: “OVERSIZE LOAD”

With just a glance, you can see that these trucks are much larger than the already imposing big rigs on the highway. And that’s because they are. A typical 18-wheeler is almost 9 feet wide, 14 feet tall, and 70 feet long. Over-dimension loads can be dramatically larger. Widths of 12 to 16 feet are common, heights often reach 18 feet or more, and “Superloads” often exceed 150 feet in length, with weights upwards of 250,000 pounds or more (2.5 times greater than the maximum weight of a regular big rig).

We call them “over dimension” because they exceed legal limits for size and weight and you can probably imagine what could go wrong as these loads travel through Oregon. Can the road accommodate their size, and in the case of a bridge, can it support their weight? Are there curves on the route that the truck won’t be able to negotiate? Will it fit under overpasses and other structures? And with a little imagination, you can see how everyday safety concerns like weather hazards and construction zones are magnified.

The movement of freight is essential to commerce in Oregon and mobility is a key priority for ODOT. In fact, the amount of over-dimension (OD) traffic on our roadways increases every year, and peak volume seasons are getting longer. This signals a healthy economy, but ensuring these loads can travel through the state without incident is critical to the safety of the traveling public, commercial operators, and the preservation of valuable transportation infrastructure. And this is where OD permitting comes into play.

The previous permitting system in Oregon ran on a mainframe and was coded in common business-oriented language (COBOL), elements of which were 30 years old. It presented all the challenges one would expect with such an architecture and outdated underpinning technologies. Opportunities to expand functionality, including automated routing capability established as a priority and best practice by the Federal Highway Administration (FHWA), were not feasible. In alignment with agency and divisional goals, the implementation of a modern, more flexible and stable size and weight-permitting system was selected as an ODOT strategic initiative. This project is a shining example of modernization because it enhances services to Oregonians, replaces an aging legacy platform, improves business processes and operations, and provides clear and tangible customer benefits.

ORION OVERVIEW

Loads exceeding legal limits are required to obtain an over-dimension permit. ORION provides carriers with 24-hour access to the permits they need to safely travel through the state. Routes are provided through the system based on transportation network data allowing instant access to routine permits. Carriers are also notified of road restrictions impacting their routes, ensuring they have the information they need, improving safety for everyone on Oregon’s roads.

Summary of benefits:

- Greater access to permit services
- Shorter processing times
- Improved customer service
- Reduced manual work
- Eliminated paper centric processes

“CCD’s operations rely on a legacy mainframe system that support our services and carry information on carriers, credentials, transactions and compliance activity. We have a long-term roadmap to gradually replace elements of these systems. The first, the new Over-Dimension permitting and routing solution, will greatly streamline the permitting process, allowing staff to shift their focus to more complex requests. —CCD 2022 Operating Plan

IDEA

Industry and Agency Needs

The motor carrier industry is evolving at a rapid rate. Over dimension loads are increasing as is overall load size and weight. In addition, commerce is highly competitive and dependent on moving freight as quickly as possible. Oregon has also observed increased demand for “Superloads”: Single-Trip Permits (STPs) that require more time and care to review due to their extreme dimensions and greater risks. Issuance of a permit is complex. Successful permitting relies heavily on cooperation and coordination with various groups across ODOT including the Bridge Unit, Transportation Data Section, Maintenance and Operations, Project Delivery in all five Regions, and the Mobility team. The

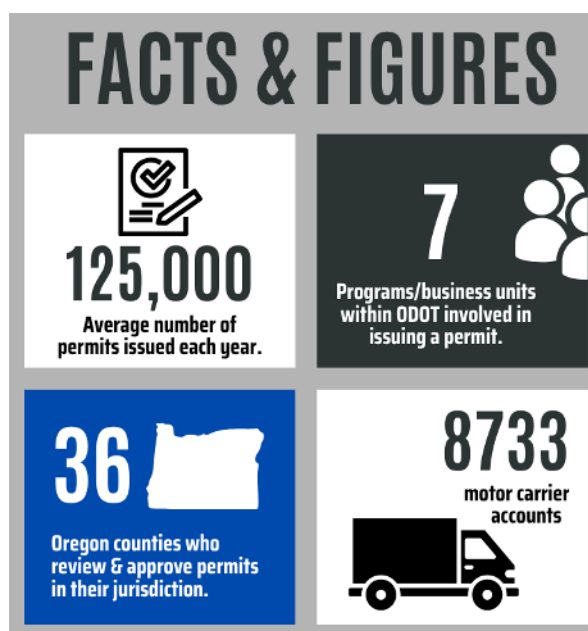
OD Permit Unit also has agreements with all 36 Oregon counties to issue STPs on their behalf following their review and approval. Communication and information exchange with all these groups had long been manual, labor intensive, and time consuming.

These challenges resulted in extended lead times, work backlogs and increased cost to the motor carrier, not to mention stress and frustration for staff within the OD Permit Unit. State infrastructure and work zone safety are subjected to increased risks as frequency and size of loads increase. This is especially true for highway construction projects that reduce lanes, narrow the roadway, and create additional obstacles for large vehicles that are already pushing the limits of available space.

Enhanced access to reliable data would provide CCD and internal partners with better planning and forecasting capability and more informed transportation project prioritization. In addition, upgrading the system to meet industry needs and standards for automated routing, established by FHWA, would allow Oregon to improve safety and keep up with our jurisdictional peers, many of whom had already adopted automated routing systems.

It was clear that the legacy system’s business logic was an impediment to meeting changing business requirements, satisfying our customer experience demands, and improving our data collection and analysis goals. And modifying the application would be akin to a complete re-write, which was infeasible. In a review of agency-wide change priorities, a proposal to replace existing OD permit technology with a new Commercial Off-the-Shelf (COTS) system was selected as an ODOT strategic initiative, and the project launched in 2020. Further commitment to the effort was made in ODOT’s 2021-2023 Strategic Action Plan (SAP), where the agency identified the need to invest in technology to support transportation needs, and in CCD’s 2022 Operating Plan, with division priorities to boost customer self-service capabilities and return on investment. Momentum to replace the over dimension permitting system has been strong and consistent from its earliest days.

ORION demonstrates Oregon’s commitment to safety and reliability, while promoting cross-divisional data and information sharing for trend analysis and future planning. The new system would benefit both the agency and the industry, decreasing permitting time and increasing mobility. Best of all, because ORION is built on a modern platform, future enhancements can be made without significant in-house programming resources, already strained to meet the needs of a large and complex agency.



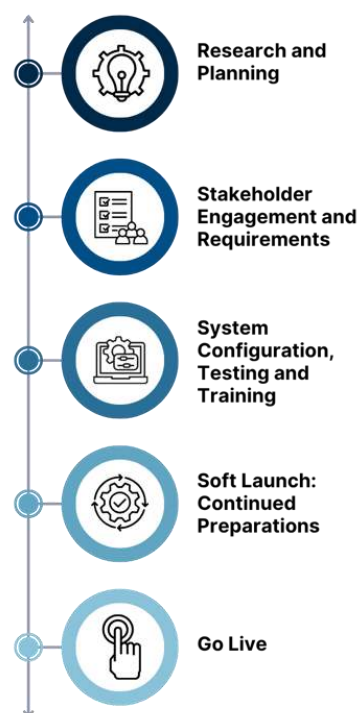
IMPLEMENTATION

Research and Planning

CCD had become increasingly aware of how the permitting program was negatively impacting customers and our ability to serve them. During the busy freight season, carriers waited days for routine single-trip permits. Increased wind energy projects led to more Superload permit requests. Staff attended conferences to learn more about automated routing capabilities and how other states had gone about their own modernization efforts. Most had already implemented such systems, and the reported benefits were dramatic: decreased time to issue routine permits; greater accuracy of permits; significantly reduced human error; increased compliance. We had taken our legacy system as far as we could and knew we needed to change. The business case was developed and approved by ODOT senior leadership in 2020. Project success would be measured in five primary areas:

- **Safety** – Protection of the infrastructure and increased safety for all.
- **Adoption** – Successful transition by carriers and other stakeholders.
- **Satisfaction** – High ratings when asked about project goals, support and system functionality.
- **Implementation** – On time and within scope and budget.
- **Efficiency** -Improved processes and decreased administration costs.

OUR ROADMAP



Stakeholder Engagement and Requirements

The approval of the business case and inclusion in the ODOT SAP put the effort into a higher gear. Sponsorship and an Executive Steering Committee, including other ODOT Division Leaders, was launched in early 2021. Work to document current state processes, system issues and limitations and future state aspirations began in earnest. Project management resources were secured, and an external organization change management firm was contracted. This project was unique for ODOT in that it had co-project managers who worked closely to ensure coordination and communication: one from the Information Systems Branch (ISB) and one from CCD. Their work ensured the business owner's voice was heard, stakeholders were appropriately involved and project outcomes were met. They served as important liaisons for the project teams. Early internal and external stakeholder engagement also began at this time to share as much as we could about the likely impacts of the new system on their work and the type of support that would be needed. By 2022, a firm with experience implementing this type of system in other states joined the team to help develop system requirements in preparation for a Request for Proposal that was released in 2023.

"Sponsorship, communications, project management, stakeholder engagement and contractor support were key to our success." – Project Team Member

System Configuration, Testing and Training

In early 2024, configuration of ORION began. The selected vendor had developed customized OD Permit systems for 23 other states, meeting a key project objective to procure a proven, off-the-self system that required minimal customization to keep costs within budget and facilitate future system upgrades. Our

lessons learned from other states, as well as the extensive planning and decisions made early in the project helped make the process go smoothly.

Our stakeholders were continuously engaged and informed throughout. In addition to getting ORION appropriately configured, various Application Programming Interfaces (APIs) were required because OD permit information is a critical input for other processes within and outside of CCD. APIs to pull in carrier information were also required.



Various methods including email, web content, flyers, webinars and other promotional materials were used to build awareness and prepare carriers as part of an extensive communication and marketing campaign. Throughout the project, pulse checks were utilized to measure the results of our communications and stakeholder sentiment, with adjustments made as needed. The primary communication goals were to build

awareness, provide opportunities for two-way dialogue and ensure consistent and transparent information sharing. Final preparations were made in early 2025, including extensive conversations with project sponsors to finalize and gain approval for soft launch.

Soft Launch: Continued Preparations

On March 17, 2025, ORION became available to a select group of carriers. The goal of the soft launch was to ensure the system was working as intended prior to full launch. We primarily invited carriers previously part of the Self-Issue Permit Program that would be discontinued with ORION. Having participated in that program, they could be counted on to provide good feedback. Twenty-three carriers participated and provided real-time feedback that helped to resolve issues and better prepare the team for go-live. Most questions were anticipated and communicated in advance, but some were not, and their participation was an invaluable way to test the system and support resources. We were ready and approvals were obtained for go live.

"You are doing a great job and have been helpful throughout the whole process. Thank you!" – Soft Launch Carrier

Go Live

On May 19, 2025, ORION went live for all carriers. Although there were bumps in the road—not unexpected for a major system implementation—even we were surprised by how quickly carriers adjusted and made the transition to ORION. The first few days were busy, as carriers needed to get used to the new system. Our strategy for carriers who had grown accustomed to calling in their application details was to redirect them and provide information on how to create an account in ORION. It worked better than anticipated and the volume of phone calls dwindled quickly.

CONFIGURATION DETAILS

OD permitting is complex, and rules are in place to balance mobility with safety. Some key elements of the configuration included:

- Routable Network – location of and information for all state and county roads.
- Pilot Cars – programming logic to ensure escort requirements were appropriately applied.
- Permit Types – varying rules for each type.

API EXAMPLES



TRIP CHECK

ORION feeds road restriction information (construction, maintenance, closures)



AUDIT

ORION provides Road Usage Fee information to ensure compliance.



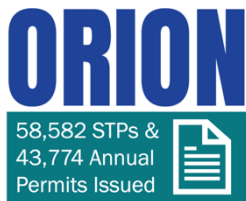
FMCSA

Federal system provides ORION with critical carrier information and status.



ENFORCEMENT

ORION provides permit details to enable Roadside Enforcement.



IMPACT

ORION has filled a critical need and met or exceeded project goals. Equally important, the system has not experienced any unexpected downtime. Results have been realized in three primary areas; safety, customer satisfaction and operational efficiencies.

Improved Safety

- **Timely Restriction Notices** – Road restriction notices are essential for safe travel and carrier planning. Previously, carriers received mailed notices, causing delays and missed updates, especially for unplanned closures. ORION now sends real-time email alerts when a planned route is affected and provides daily statewide updates. TripCheck (tripcheck.com) is also automatically updated by ORION, giving carriers immediate access to current conditions and improving roadway safety.
- **Higher Compliance Rates** – Before ORION, permit processing could take days, resulting in some carriers choosing to move freight without proper permits. Faster processing and improved access now remove barriers to compliance, ensuring carriers can obtain required permits quickly and operate safely and legally.
- **Data-Driven Route Protection** – Automated routing required a comprehensive rebuild of the digital representation of the statewide road network. ODOT, the vendor, and county partners created a more accurate, data-rich network that reflects true permissible dimensions. This significantly reduces the risk of collisions with bridges and infrastructure and produces the highest-quality routing data ever available in Oregon.
- **Lane-by-Lane Routing** - Because we know the vertical clearance available for each lane of travel under a structure on an Interstate, the implementation of lane-by-lane routing allows us to keep bigger items on the freeways where they belong, without unnecessary detours onto secondary or local roads. This innovation does not sacrifice the state's infrastructure or the safety of the traveling public.
- **Strengthened Complex Permit Oversight** - Efficiency gains now allow staff to focus on larger, more complex loads that require extensive coordination and careful safety review. These high impact permits now receive the time and attention necessary for safe movement.

“Unintentionally routing an overheight load into a structure is the nightmare that used to keep us awake. With ORION’s access to vertical clearance data, we can rest easier knowing the chance of human error is nearly zero.”—OD Permit Analyst

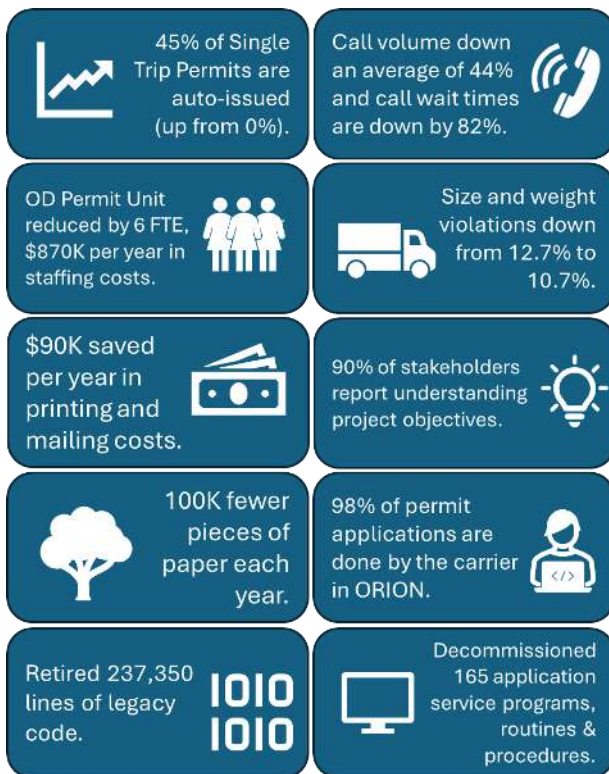
“Turnaround time is great.”
“You guys are doing an amazing job.”
“I find it user friendly, not challenging.”
“Loving this new system.”
“Keep up the good work.”
“I appreciate being able to do it myself.”
– ORION Customers

Customer Satisfaction

- **Access** – Carriers can independently obtain routine STPs and annual permits at any time including nights, weekends and holidays supporting continuous freight movement.
- **Service** – ORION has reduced processing times from days to minutes or hours. Call volume and wait times have dropped, and fewer customers need assistance to complete transactions.
- **Convenience** - Permits are now stored and retrieved electronically, minimizing paper use at weigh stations or during enforcement. Carriers can access permits and all associated maps directly from a mobile device.
- **Americans with Disabilities Act (ADA) Compliance** – Annual permit route maps, once color-coded and non-accessible, were converted to text-based, black-and-white PDFs aligned with ADA requirements. This ensures permit information is accessible to individuals with visual impairments.

Operational Efficiencies

- **Automated Data Sharing** – ORION represents a comprehensive modernization of OD permitting functionality. The new platform makes it easier to integrate and share information across systems, providing increased data accuracy and visibility to other transportation programs.
- **Administrative Cost Reduction** - Permit types were simplified for easier navigation by staff and customers. The reduction from 34 to 14 annual permits and from 27 to 8 STPs lowered program costs and shortened training time for new analysts. Additionally, there was a significant decrease in paper-centric processes. Restriction notices, permits and associated maps are no longer printed and mailed.
- **Optimized Operations** - Automated routing and other efficiencies eliminated the need to fill several vacant positions, resulting in taxpayer savings while increasing service quality. The OD Permit Unit has reduced its staff from 17 to 11 analysts. Overtime during peak season is no longer needed. And because we retired a meaningful amount of legacy code and have a reliable system that can evolve as needs change, CCD's Information Systems resources can better focus on other CCD modernization projects.
- **Streamlined Cross-Jurisdictional and Agency Partnerships** - Successful implementation required close coordination with ODOT's 13 maintenance districts and all 36 counties. Despite challenges, the project strengthened relationships, improved information sharing, and created lasting collaboration that benefits the agency and customers. Not only can road information be pulled for state highway system, but for our county participants as well. Road use analytics can potentially help decisions made at the county level to fund specific roads for improvement projects.



What we Learned

- Simplify where you can and challenge the status quo.
- Get stakeholders on your side early. Their support is key.
- Make quick decisions to avoid delays.
- Having clear roles and responsibilities is vital.
- Use your resources. Accept good advice when offered.

“Overall, this was a successful project, and I appreciate being a part of it.”
– ODOT Delivery & Operations Division
Region Manager

What Now

CCD plans to build onto the progress achieved from the initial implementation of ORION. Enhancements have been identified for future system updates to support improvement of services. Many of these will further increase auto-issuance and further reduce permit turnaround times. Longer term, there are opportunities to be involved in larger multi-state freight permitting initiatives. This is something industry has been requesting for years and our participation in these conversations would not be possible without ORION. Just as important, ORION was the first of several systems scheduled for replacement and lessons learned are already being applied to other modernization projects.