

RELEASE NOTES 15.0

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Simulation and Optimization of Warehouses

General Functionality

FEATURES

- **Highlight:** The selection window of highlight bins by product was extended by an additional column with checkboxes, so that products can be selected by ticking the checkbox. The possibility to filter by all selected (checked) products was added, and all bins belonging to any product from the current selection can be displayed.
- **Highlight:** The column 'Fill color' in the 'Product types' table gives the ability to define product type color when highlighting bins. In case the default color #bbb is set, the highlight color should be selected from the standard color palette.
- **Layout Editor:** In the creating bins modal window was added a checkbox "Save location name pattern to racks table" which saves the name pattern to the column 'bin formatting'. Also was changed the name of the column "bin formatting" in the Racks table to "location name pattern", the text of the first checkbox from "Use pattern from racks" to "Use location name pattern from racks table" and the text "name" in the modal window to "Location name or pattern". If the field "Save location name pattern to racks table" is true, "Use location name pattern from racks table" must not be true and unavailable to check, and vice versa.
- **3D:** Hidden racks are remembered after reloading the page. They remain hidden.;
- **Layout Editor:** In editing Background Image was allowed float values distances in manual scale for horizontal and vertical measuring;
- **Layout Editor:** When there is no background image loaded on the layout, the button to "Show the background image" is disabled, and when you hover over this button, a hint appears: "Please upload an image in the settings to enable this option.";
- **Layout Editor:** In the Available working hours, the possibility to select a date earlier than 5 years ago was added. So, now there is an opportunity to choose a year from 2010.
- **Layout Editor:** The rotation of a custom object by any number of degrees around its left corner has been added and can be found in the context menu of the custom object as rotate by degrees.
- **Layout Editor:** The measure distance between the rotated custom object and other objects has been implemented.

IMPROVEMENTS

- **Highlight:** The color palette of highlights was changed to brighter and distinctive colors.
- **3D:** Realistic pick cart models(Pick Cart low and Pick Cart high) and Europal models was created;
- **Layout Editor:** The clockwise rotation option is blocked when a degree rotation is applied to a custom object.
- **3D:** The logic of the API for updating and fetching rack visibility in 3D has been optimized.
- **Layout Editor:** The message about getting started info was removed.
- **Layout Editor, 3D:** A field called 'Rotation angle' was added to the properties for rotated objects.
- **Layout Editor, 3D:** A mark at the corner around which the custom object rotates was added.
- **Layout Editor:** BETA functionalities were hidden.

DBE

FEATURES

- **Bins table:** Added column, "Keep location unchanged in internal orderlines". This column has TRUE/FALSE values.
- **Product types table:** The column 'Fill color' was added.
- **Custom objects table:** The column 'Rotate by degrees' was added.

Algorithms

FEATURES

- **Copy data from layout:** added a new checkbox for copying Internal Order Tours, positioned between the Internal Orders and Orderlines option, and the campaign selection. Additionally, included an extra column, "Number of Internal Order Tours," in the resulting window.;
- **Good assignment:** A new input check box "Split by weight" was added. This parameter will be visible only when 'Check bin/rack weight' is checked. And the logic of splitting by weight will be considered only if "Split by weight" = true. If "Split by weight" = true and split by pick actions consider - algorithm choose min split actions number result and create a new split demand.
- **Assignment:** The updated transportation cost calculation algorithm considers the distance between the current and previous stage bins when the bin is within the nearby region range. This ensures that the products are assigned to the nearest bins, reducing overall transportation costs and labor efforts.
- **Compare Layouts:** Updated the Compare Layouts algorithm to skip tables lacking primary keys, adding warnings that specify the reason (e.g., "missing primary key" or "admin group"). Implemented error handling for column ID mismatches, displaying a message when a table's structure is invalid due to differing column IDs across versions. Restricted editing of the Table name column in the Compare Data table, reducing the likelihood of misconfiguration. Clear, concise warning messages list problematic tables, providing reasons for skipping and aiding users in troubleshooting.
- **Create all internal orders for campaign with split sort:** IOs are more effectively prioritized based on due dates when needed, enhancing order management and operational efficiency. The preferred due date strategy was removed.
- **Assign Pick/Put Locations:** a new checkbox parameter, "Update only new found locations", was added to the input parameters. The algorithm will only update the Internal Orderlines for which new locations were successfully found. If certain Internal Orderlines do not have new locations assigned, the algorithm will preserve their original location instead of resetting it to null (provided the checkbox value is true). Also, a warning message has been implemented: "Some locations were not updated. Internal Orderlines without a found location retained their original assignments".
- **Assign pick/put locations:** Column Keep location unchanged in internal orderlines has TRUE/FALSE values. TRUE: If a location is part of internal orderlines, it remains unchanged during the algorithm's execution, even with a new assignment. FALSE: The location is updated to the new assignment during the algorithm's execution. Ensures more flexibility and control over location assignments, particularly for workflows requiring fixed locations in internal orderlines.
- **Create all internal orders for campaign, Create inbound internal orders, LDO:** Added a hint to the checkbox "Save relations between orders" to clarify its purpose: "Save Order Relation' in the 'Order Processes' table should be set to true". Also, a warning was added in the form of a table content: Displays Order Processes where the Save Order Relation checkbox is set to false: "Order relations are not saved for some order processes."
- **Create all internal orders for campaign:** Added a strategy to optimize for distance within "Multi-order-straight" and "Multi-order-straight-considering-packers". First Order Selection Logic is based on the earliest Date (Start/Due Date). If multiple orders share the same date, the order with the fewest pick locations is chosen. Subsequent Order Selection Logic calculates the total distance for each potential order to determine the shortest route. Applies additional tie-breaking criteria: Largest number of same components, CaseTypeId, Number of same products, Smallest OrderId. Added an option to include the distance to the endpoint in distance calculations, but only for the new "Optimized Zoning" strategy. When "Count paths from first pick to last put only" is enabled, the distance calculations exclude the start

point to pick locations and the endpoint distance. The first location selection is independent of the initial start point.

IMPROVEMENTS

- **Case Pack by dimensions:** changes for packing stacked group items: we check if in the bottom position there is one stacked group or one product (if, for example, it couldn't do stacking, or sizes have not changed). If yes, don't pack stacked products in the above position. If no, pack it.
- **Case Pack by dimensions:** for Horizontal packing: do stacking logic only if soft item = No compress and stacking factor > 0 and stacking limit > 0.
- **Case Pack by dimensions:** added new checkBox "Use stacking limit for max. tower size". If 'Consider max. box tower' = true -> new option 'use stacking limit'. Added such logic for the new check box - algorithm checks packed products below on the proposed position on the XY plane and counts the numbers. If the numbers > stacking limit for this product, then we don't pack this product in this position and try another position. This logic will be used for each packing direction: Vertical + Horizontal.

Logistic Network Optimization

General Functionality

FEATURES

- **Location candidates:** 'Delete all' function was changed to 'Delete all locations'.
- **Scenario Manager:** Added links to layout names to navigate to layouts directly from the SM page. When you click on a layout name, it will be highlighted in green, and you will be redirected to the tab with the corresponding layout.
- **Google APIs:** Updated the application to use Places API (new) instead of the deprecated Places API. Replaced Directions API and Distance Matrix API calls with Routes API. Switched to the new Routes API for getting distances and travel times, replacing the older Distance Matrix service. Changed how we handle map events, using Google's newer ".addListener()" approach. For place searches (Autocomplete), we now request only the needed details (like location and address) for faster responses. Created our own status codes (e.g., "OK," "ERROR") so we can handle new API responses more clearly. Implemented fetch() for API calls, ensuring modern, promise-based handling of HTTP requests. Adopted new endpoints for the Place API, using the latest parameters for improved performance.

IMPROVEMENTS

- **Polygons: Draw / import polygons:** After clicking the "Select All" button, the map zooms to the entire area with polygons.
- **LNO postal codes:** The worldwide list of postal codes was updated in the file "lv_lno_postal_codes.csv"
- **Compute optimal flows:** Deleted inputs 'Allow preproduction' and 'Include production wishes' from UI inputs and as request COF parameters. Deleted such warnings: "Production wishes were included which violate max. days of preproduction" and "Production wish for {0} pieces could not be fulfilled".
- **Main menu:** Improved the appearance of warnings so that they do not overlap the panel.

Direct Edit and Reporting

FEATURES

- **Cost by cof per item per edge table:** Table shows cost of theretically possible flows. In this table was added a new table action (TA) 'Fill Cost by cof per item per edge'. If no orders are found, it prompts the user with a warning: "Please recalculate flows and total cost". If some edges already exist, the system notifies the user with a warning: "Some records already exist and were not copied".

DBE

FEATURES

- **Compute optimal flows:** Deleted "Production wishes" table.
- **Location candidates to carrier compatibility table:** a new column "Ignore" was added.
- **Case type and Case type sets:** added new option of extract data on UI - "Data-> Export -> Case types and case type sets". Added logic for export Case types, Case type sets, and their compatibility in the same form as we have in Data Import.

Algorithms

FEATURES

- **Compute Flows:** The Consider stock parameter is hidden in the Compute Flows algorithm. Always set to false.
- **Capacity limit:** calculated like the minimum for a product and product type.
- **Usage factor:** calculated by priority if it is in the product, then from the product, if not in the product, then from the product type.
- **Compute optimal flows:** In carrier configuration enhancement, a new warning was created when all items cannot be pulled, and a notification is displayed: "Not all inbound items were pulled due to carrier restrictions". The "Show details" option provides a link to the model with a list of orders where not all items were pulled, along with the associated carriers and the number of items not pulled.
- **Copy data from layout:** The ability to copy flows was added. A table with the number of copied flows was added in the resulting window. Two warnings were added. If the start or end location is not found on the layout, then the algorithm will not copy this flow, and we will receive a message: "Some flows were not copied because their start or end locations were not found on the target layout". In case the flow was copied, but certain ID tour, ID carrier, ID case type set, ID product in, and ID product out were missing on the layout. Then the user receives a message: "Some columns from the original flows were not copied as they were missing in the target layout".

IMPROVEMENTS

- **Compute optimal flows:** Logic of 'Allow preproduction' and 'Include production wishes' deleted from COF.

Platform

General Functionality

FEATURES

- **Import:** added link to download file with failed records.
- **Help:** added a language drop-down menu.
- **DBE:** A new option of Massive Update, specifically 'set values to values of column,' has been added.
- **Layout Selector:** The icon for "layout deleting disabled" was changed to the gray bin with a red cross in the bottom right corner.
- **Layout Selector:** The ability to add a layout to favorites has been added.
- **DBE Export:** added a checkbox to export text values and foreign key values with apostrophes.

- **DBE Import:** Added import logic when the "Update if exists" and "Use import data template" checkboxes are enabled that checks for duplicates. Also, edited the warning and added the link to download the file with failed records during SP execution.
- **Operation:** In working hours reporting changed "Working hours" link in list to open the table filtered by logged in worker ID and sorted in descending order by date.

IMPROVEMENTS

- **W2MO server:** Added asynchronous logging, so processes can proceed with execution while logging is performed.
- **Realtime data storage configurations:** when the 'first start' column is edited, it is updated for existing schedulers.
- **W2MO server:** deleted unnecessary parameters from requests/methods.
- **DBE:** The marker value combines the name and ID (e.g., '32 (32)').
- **DBE:** Table action is executed when the Action is set to true and the row is not selected or selected.
- **DBE:** The filter type 'Like' is set by default for timestamp columns.
- **W2MO server:** implemented authentication via Google provider.
- **Packsizes:** Added status messages about order status (calculation or waiting). Added new status for partial results (orders weren't fully packed). Added start calculation uncalculated orders in case server was restarted.
- **Check and repair:** add new functionality "Check data".
- **Periodic layout backup:** Added checkbox 'Include ML models' for periodic layout backup.
- **3D:** Added the ability to change the status of a bin on the 3D.

Direct Edit and Reporting

FEATURES

- **Tables:** The ability to open several tables in a new tab by clicking on the middle mouse button was added.
- **Reports:** Adjusted defaults in navigation report.

IMPROVEMENTS

- **Reports:** Changed procedure for rights generation. The pallet transportation statistics report is now visible to the amr_operator user role.
- **Reports:** Added logic to the report calculation procedure to take data from the archived IO table. Added consideration of archived internal orders into the calculation.
- **Archiving of Fill level estimation:** Added insert and delete by batches and commit after these actions.
- **Order completion report:** Orders can be limited to any value up to 10000000.

DBE

FEATURES

- **DBE:** Added table "Camera history".
- **Warehouse info details table:** added a column "Imported/Cloned on".
- **Active user roles table:** added 'Delete user' table action.
- **Realtime data storage configurations:** Added processes to clear data for tracking reports, and if a user sets 'Constantly archive table' for archives, a warning is shown: "Archiving is not supported for archive tables".
- **Warehouse info details table:** A column "Created on" was made visible to the user.
- **Active users roles table:** Added table action "Unblock User".

IMPROVEMENTS

- **Warehouse monitor virtual camera table:** 'Lock relative targets' column was hidden.
- **Realtime data storage configurations:** Added warning 'Process was scheduled for next day as current time is later than 'First start'' in case 'first start' is before now.