

# RELEASE NOTES 14.0

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## Simulation and Optimization of Warehouses

### General Functionality

#### FEATURES

- **Layout Editor:** added scroll to Rack context menu if not all options are visible;
- **3D:** changed the logic of rotating the camera while simulating the transporter for a specific order – when the transporter changes the direction of movement, the camera turns in the correct direction;
- **Layout Editor:** changed naming of station after cloning – after cloning station, the newly created station will be renamed;
- **Layout Editor:** created a result dialog with count of cloned racks and info about failed renaming after cloning racks with renaming;
- **3D:** added warnings and hints in case of unsuccessful operation of the load balancing algorithm;
- **Layout Editor:** forbade editing of 'Stage' field on the properties panel of racks that have bins, added this possibility to 'Update racks with bins' button on the properties panel;
- **3D:** added 'Follow order' button for simulating the transporter for a specific order;
- **Layout Editor:** added possibility to change the Front side for a rack with bins on the Rack properties panel;
- **Layout Editor:** grouped buttons that update properties of bins on the Rack properties panel;
- **Highlight:** added possibility to highlight bins by bins type with colors defined in Bin type table;
- **Layout Editor:** renamed and regrouped algorithms in Operations menu: removed the submenu for 'Labor costs', removed algorithm 'Labor costs->Calculate' from menu, renamed 'Calculate for several campaigns' to 'Calculate labor costs', renamed 'Total cost' to 'Calculate total costs', reorganized the Load balancing submenu;
- **3D:** grouped all capacity-related features into a submenu for Simulation and Load balancing;
- **Layout selector:** added selection of several layouts via rectangle selector for two views, standart & 'as threads';
- **Layout selector:** added information that layout is shared to warning when deleting all selected layouts;
- **Highlight:** added possibility to show detailed highlight for bins with max SKU > 1

#### IMPROVEMENTS

- **3D:** properties in the rack were not synchronized with DB;
- **Layout Editor:** option 'Scale image' was renamed to 'Adjust image size';
- **Layout Editor:** moved 'Calculate closest components' and 'Calculate shortest paths distances' algorithms to 'Layout' menu;
- **Visualization by internal order:** improved the construction of the red line according to the input parameter 'Process internal orders';
- **Layout Editor:** color pickers in W2MO were unified;
- **Layout Editor:** expanded the menus' tabs in scope of the canvas upwards so that a user does not need to scroll at all;
- **Layout Editor:** limited the number of the same warnings appearing on the page;
- **Layout Editor:** optimized modal window for Tooltips;
- **3D:** fixed 'Started actions' button in Load balancing;
- **Layout Editor:** added possibility to resize stations by angles;
- **3D:** regrouped and reordered the Simulation input parameters;

- **3D:** replaced capitals from algorithms' names except the first word, so that only the first word is capitalized;
- **Layout editor:** added a second hint message 'Navigate to the second object' for distance calculation between two objects, so that user knows that it's needed to navigate/ hover on the second object without clicking on it;
- **Layout editor:** increase volume of the background image to 10 MB;
- **Highlight:** added all custom columns to 'Bins by custom field...' option;
- **3D:** removed scroll in simple view from Load balancing/Simulation;

## Direct Edit and Reporting

### FEATURES

- **Reports:** created a new section 'Archived tracking reports' in 'Object tracking' for archive reports;

### IMPROVEMENTS

- **Reports:** report 'Load balancing: skipped internal orderlines' was changed to 'Load balancing: internal orderlines processing state';

## DBE

### FEATURES

- **Stations table:** implemented logic of 'Resize stations by angles' in DBE;
- **Orders table:** added possibility to open 'Show case pack schema' for IOs of stage 2+;

### IMPROVEMENTS

- **Case types table:** added new column 'min\_value' next to 'max\_value';

## Algorithms

### FEATURES

- **Bulk storage optimization:** option 'Allow mixing of substitutes' was added with the logic that two products might be packed into the same row, if they have the same master product.;
- **Create all internal orders for campaign:** implemented a new logic for Internal order creation with consideration of subtransporters;
- **Bulk storage optimization:** Bulk area packing map for racks and bins (depends on case type) was implemented in 2D and 3D;
- **Total cost:** add the possibility to open charts from DBE;
- **Load balancing:** when selected tables data can be exported to csv file, on the export button we will get loading data message because of preparing data;
- **Load balancing:** added checkbox 'Create report internal orderlines processing state' to inputs dialog;
- **Extrapolation:** removed input parameter 'Copy additional order information to new orders' for Average strategy;
- **Extrapolation:** added endings to copied\extrapolated orders after running the algorithm, in order to show which orders/orderlines are simply copied and which are extrapolated;
- **Available working hours:** made the values of the 'Stat' and 'Duration' fields reflect the actual time and duration of the beam, not be the default;
- **Assign pick/put locations:** changed logic for input parameter 'Wave group';
- **Interactive case optimization:** added error UI window message;
- **Submit a plan:** updated 'Start/ End date' for Internal Orders table;

- **Assign pick/put locations:** expanded the wave group list to show 'Return' and 'Triggered replenishment' if internal orders with these wave groups are present;
- **Create all internal orders for campaign:** added new warning 'No compatible pick positions could be found for:' for cases when the 'bin' value for pick orderlines is 'null' or 0, or when the orderlines are found in the error bin;
- **Calculate case types by volume:** improved checking sizes logic in split step, the old logic using dimension indices was removed: now, in the beginning of the packing, it is checked by the new logic if single items are fitting to a certain case type;
- **Calculate case types by dimensions:** improved the logic for 'minimum split of orderline', so that products are not separated to too many different cases;
- **Calculate case types by dimensions:** added a new warning 'All internal orders for transport process(es) were packed by volume and will not be shown in Show case pack schema' for case when all internal orders were packed using case pack by volume logic;
- **Calculate case types by dimensions:** included 'max volume ratio dimension' in calculation of unused space;
- **Buffer area simulation:** added new algorithm to simulate inflows and outflows of pallets in an area;
- **Calculate case types by dimensions:** added logic to allow in case of stacking only the rotations allowed by the fixed orientation constraints;
- **Calculate case types by dimensions:** added the logic for considering case types 'min value' column in all case pack algorithms;
- **Buffer area simulation:** added possibility to select a simulation strategy independently for inflows and outflows;

## IMPROVEMENTS

- **Load Balancing:** the load distribution logic, the delay and processes waiting calculation logic were changed;
- **Copy assignment:** new warning 'No assignment present in current campaign' was added in case the algorithm does not copy any assigned products;
- **Load balancing:** the logic of calculating simulation steps and time were changed according to the same logic as in the simulation algorithm for the case 'Stop in front of bin = true';
- **Calculate case types by dimensions:** added more interruption points, so that the algorithm could be cancelled at calculation stage;
- **Create all internal orders for campaign:** warning 'Fill last order of wave was not performed due to missing pick/put locations in internal orderlines' was removed since it can no longer be reproduced because pick/put locations are always assigned now during internal order creation;
- **Create all internal orders for campaign:** improved consideration of restrictions for subtransporters in transporter case type configuration;
- **Load balancing:** changed the logic and added new processing status for internal orderlines in Load balancing;
- **Load balancing:** the logic of warnings in the results window was changed;
- **Bulk Storage Optimization:** added logic of row direction to TA 'Create separate racks out of pack schema';
- **Create changeover cycles:** refactoring was done, removed duplication of code;
- **Load balancing:** added new processing status 'General time limit reached' for internal orderlines in LB;
- **Bulk Storage Optimization:** added new sorting criteria 'Best result case pack by dimensions';
- **Bulk storage optimization:** improved performance of the algorithms to match Calculate case types by dimensions;

- **Load balancing:** changed logic so that when 'Load balancing: internal orderlines processing state' report is not filled out, the algorithm should not store in memory objects with statuses for each internal orderline, but should store only the reasons why certain orderlines were skipped;
- **Calculate case types by volume:** rewrote logic of 'lv\_calc\_order\_vol\_step' database store to back end side;
- **Calculate case types by dimensions:** improved logic for packing with fixed orientation = XY\_plane;
- **Load balancing:** reordered the input parameters on UI;
- **Labor costs:** reordered the input parameters on UI;
- **Labor costs:** improved the warning visualization for multiple campaigns;
- **Assign pick/put location:** concealed 'Maintain load per product' option for Custom Strategy;
- **Interactive case optimization:** added the message 'Calculating cases was not performed' if there are no case types in the layout;
- **Load balancing:** improved the selection logic for export mode by adding 'Select' dropdown instead of 'Select all' button;
- **Calculate case types by volume:** added checking sizes logic on choosing best case type step;
- **Buffer area simulation:** improved the calculation of the average number of pallets by changing the rounding to mathematical rounding;
- **Interactive case optimization:** added 'Help' button to input window;
- **Load balancing:** rename the modal from 'Recalculate load balancing' to 'Load balancing';

## Logistic Network Optimization

### General Functionality

#### FEATURES

- **View:** added a new option 'Opacity clusters', which allows making clusters translucent;
- **Scenario manager:** added a dark mode;
- **Direct panel:** added a 'Refresh' button to Location candidates;
- **Copy layout:** added copying og layout settings when copying the layout;
- **Saved map views:** improved accessibility of saved maps when sharing layouts;
- **Saved map views:** implemented a confirmation for deleting a saved maps view;

#### IMPROVEMENTS

- **Covered area visualization:** improved visualization by flows by adding the option to consider outbound flows and internal flows;
- **Visualization:** added the possibility of choosing to priority visualize accounts and location candidates on markers and clusters separately;
- **Visualize by path of orders:** add a 'Select all'/'Unselect all' button instead 'Reset';
- **Polygons:** added a confirmation window with message 'Do you really want to delete all polygons?' after calling deleting and 'Selected polygon(s) were successfully deleted' message after confirming deleting;
- **Scenario manager:** improved the 'Welcome to scenario manager' page in dark mode;
- **LNO:** improved the warning position so as to prevent its overlapping with left panels in Main menu, Accounts, Optimization, Location candidates, Polygons, View;

### Direct Edit and Reporting

#### FEATURES

- **Location candidate cost overview report:** added all columns to chart, but only few columns (total inbound cost, total outbound cost, total inbound weight, and total outbound weight) will be shown and other columns will be displayed as crossed out;

- **Total overview flows report:** added new columns 'Road distance', 'Road distance delivery time', 'Road distance ton-kilometer';
- **Flows per product per day report:** added a new column 'Road distance';
- **Orders on flows report:** added new columns 'Road distance', 'Road distance delivery time';

#### IMPROVEMENTS

- **Orders on flows report:** renamed 'Driving distance' column to 'Calculated distance';
- **Logistic network optimization flows report:** added table actions 'Change start account of flows' and 'Change end account of flows';

### DBE

#### FEATURES

- **Internal orders table:** added columns 'Network cost weight', 'Network cost volume', 'Network transportation cost weight', 'Network transportation cost volume';
- **Location candidates to carrier compatibility table:** added 'Ignore' column;
- **Fill distance Polygon table:** the table and the logic, which filled it, was removed;
- **Cost by COF per item per edge table:** added a new column 'Custom string';
- **LNO flow order table:** added a new column 'Road distance';

#### IMPROVEMENTS

- **Case types table:** hid unnecessary columns that are not used;
- **Reports bar charts:** added possibility to visualize percentages additionally to the real value;
- **LNO flow order table:** renamed 'Driving distance' column to 'Calculated distance';
- **Table action 'Create inbound / outbound orders from flows':** set the current date to 'Entered date' during the execution of the table action;

### Algorithms

#### FEATURES

- **Compute optimal flows by orders:** added new algorithm to process each order separately and choose an optimal way for the order if products of an order can be produced by different manufacturing sites and in case all products can't be sent from 1 manufacturing site;
- **Find best location:** added a possibility for the consideration of piecewise capacity constraints in the flows parameters;
- **Compute optimal flows:** enhanced carrier configuration to include/exclude some records during flows calculation;
- **Find location candidates:** added option for multiple centers of gravity, based on weight, volume and number of items;
- **Compute cost:** added logic to the algorithm so that, before starting the search for CaseTypeSet in the Chain, it will also search for the CarrierID, similar to the Compute optimal flows algorithm;
- **Compute cost:** added a new checkbox 'useOnlyCompatibleCarriers', as the selection of CarrierID depends on this parameter;

#### IMPROVEMENTS

- **Compute flows/Compute optimal flows:** added parameter 'Use only compatible carriers';

- **Find location candidates:** added validation to 'Number of locations' and 'Number of iterations';
- **Compute cost:** improved the logic of considering 'Discretization steps' parameter;
- **Compute optimal flows:** hid the parameter 'Divide flows for scheduling by' from COF panel and set 'Alternate sources' as the default value;
- **Find best locations:** improved the speed of the algorithm execution;
- **Find location candidates:** improved logic by adding '-' option to the 'Calculation criteria' and changing validation for 'Number of locations';
- **Find location candidates:** improved the logic by adding a new parameter 'Filter selection for orders' with a drop-down list of all created filters from table Orders in this layout;
- **Find location candidates:** improved the logic by adding calculation criteria 'Number of items', which works by weighing each order according to the amount of items;
- **Find location candidates:** improved the logic by hiding 'Number of iterations' from UI and setting the number, which gives the best result, as the default value;
- **Compute cost:** renamed the check x/y/z logic to check max/mid/min for 'Optimize case selection' inputs to make clearer what is meant, and also to make them dependent from each other;
- **Compute optimal flows:** improved the logic by hiding 'Allow preproduction' and 'Include production wishes' since they were designed with a customer-specific focus in the past, and now they are no longer in demand;

## Platform

### General Functionality

#### FEATURES

- **W2MO server:** create a newer and more modern favicon for W2MO instead of the old one;
- **W2MO server:** created a default 'w2mo-system' user in w2mo, for the similar purpose as 'cameraserveruser' was created, so that any changes done by schedulers or MySQL processes would be represented by this user in w2mo tables;
- **Layout selector:** updated the default thumbnail for layout type 'Warehouse/Production';
- **Identification Workplace:** implemented storing self-training model when exporting layout;
- **Identification Workplace:** implemented deleting order video from whvideoapp when order is unconfirmed;
- **Layout Export:** added a new input parameter 'Include archives' (checkbox);
- **Copy layout:** added a new input parameter 'Include realtime data' (checkbox);
- **Layout selector:** added 'Include tracking notifications' checkbox during layout export/ copying;
- **Rack properties:** added 'Protected bins' checkbox in order to implement the possibility to protect created bins from deletion;
- **Layout editor:** added warning 'Some bins are protected and cannot be deleted to preserve fleet management configurations' in case if a user tries to delete some bins from the rack with 'Protected bins' = true;
- **Periodic layout backup:** added checkbox 'Receive notification, if backup wasn't successful' in order to receive notifications per email, if backup wasn't done successfully;
- **Layout selector:** added button to switch to the Beta-version of new DBE;
- **Layout Export:** added message and loader for export;
- **2D:** added possibility to search for the needed table so that the search matches with the sequence of symbols with appears in the name of a table;
- **Label studio:** added tag 'No tag' when there is no tag assigned to picture/s;

- **Label studio:** added dropdown menu;

## IMPROVEMENTS

- **3D:** made the field 'Tracked object ID' editable while creating a tracked object, so that a user could change ID manually;
- **Identification Workplace:** improved sorting of products;
- **W2MO server:** changed project files header version to 2010-2024;
- **W2MO server:** moved from MySQL 5 to latest version of MariaDb;
- **Error page:** updated design relative to other W2MO products;
- **Layout Export:** extended parameter 'Include realtime data';
- **Copy layout:** adjusted checkbox 'Include archives';
- **Identification Workplace:** improved Measurement detector mode by showing as the first picture of this product that matches the general name formatting;
- **Error page:** added the possibility to reload the page in case the user cannot go back;
- **W2MO server:** added possibility to set up due date and email notification for subscription;
- **Label studio:** extended image uploads/export form to use tags;
- **Label studio:** extended the model training page with the ability to train by tags;
- **Label studio:** implemented triggering page refresh on image or annotation upload;

## Direct Edit and Reporting

### FEATURES

- **Reports:** added column 'Campaign' to the following reports: Detailed efforts per internal order, Efforts per internal order (condensed), Waiting times, Buffer size, Package hierarchy, Internal orders by zones, Changeover groups created internal orders;
- **Reports:** created Buffer area simulation report;
- **AMR reports:** added possibility to select multiple entries at once;
- **Reports:** added possibility to save last values and use default values for report parameters;

### IMPROVEMENTS

- **Reports:** removed Goal processing report and Goal processing statistics report as they were not used and had no effect on Pallet transportation statistics report;

## DBE

### FEATURES

- **Pack schemas table:** created a new table action 'Create separate racks out of pack schema';
- **Tables:** created a new table 'Transporter case type configuration';
- **Tracked object table:** added a new column 'Description' after column 'Transporter';
- **Campaigns table:** added new columns 'Shift start' and 'Shift end';
- **Racks table:** added a new table action 'Update stage', which allows user to update the stage of rack and its bins;
- **Racks table:** implement the possibility to change the front side for a rack with bins to the table action 'Update rack front side';
- **Table actions:** added possibility to select multiple entries;
- **Realtime data storage configurations table:** added column 'First start', so that a user can define manually at what time the process should be started;

- **AMR operation table:** added column 'Order process' to help define for statistic the total number of pallets and intervention for each order process;
- **Assignments table:** created table action 'Add assignment';

#### IMPROVEMENTS

- **Warehouse monitor cameras table:** improved the table action 'Notifications configuration' so that we would be able to define the time to consider a camera as disconnected;
- **Active users table:** increased size of email column to 256 symbols, so that we could work with the email addresses from zulip streams;
- **Racks table:** made column 'Stage' not editable;
- **Warehouse monitor cameras table:** renamed the column 'Action detection model' to 'Classifier detection model';
- **DBE Import/Export:** improved import/export time;

### CRM

#### FEATURES

- **Contacts history of edits table:** added additional triggers for the table when user updates columns 'Name', 'Account type', 'Industry', 'Central phone', 'Street&nr', 'City', 'District', 'Country', 'State', 'Postal code' in Accounts table;

#### IMPROVEMENTS

- **Contacts table:** added warning messages to Table action 'Create one mailing list for contacts';
- **Accounts:** improved the possibility to search for matching words with wildcards;