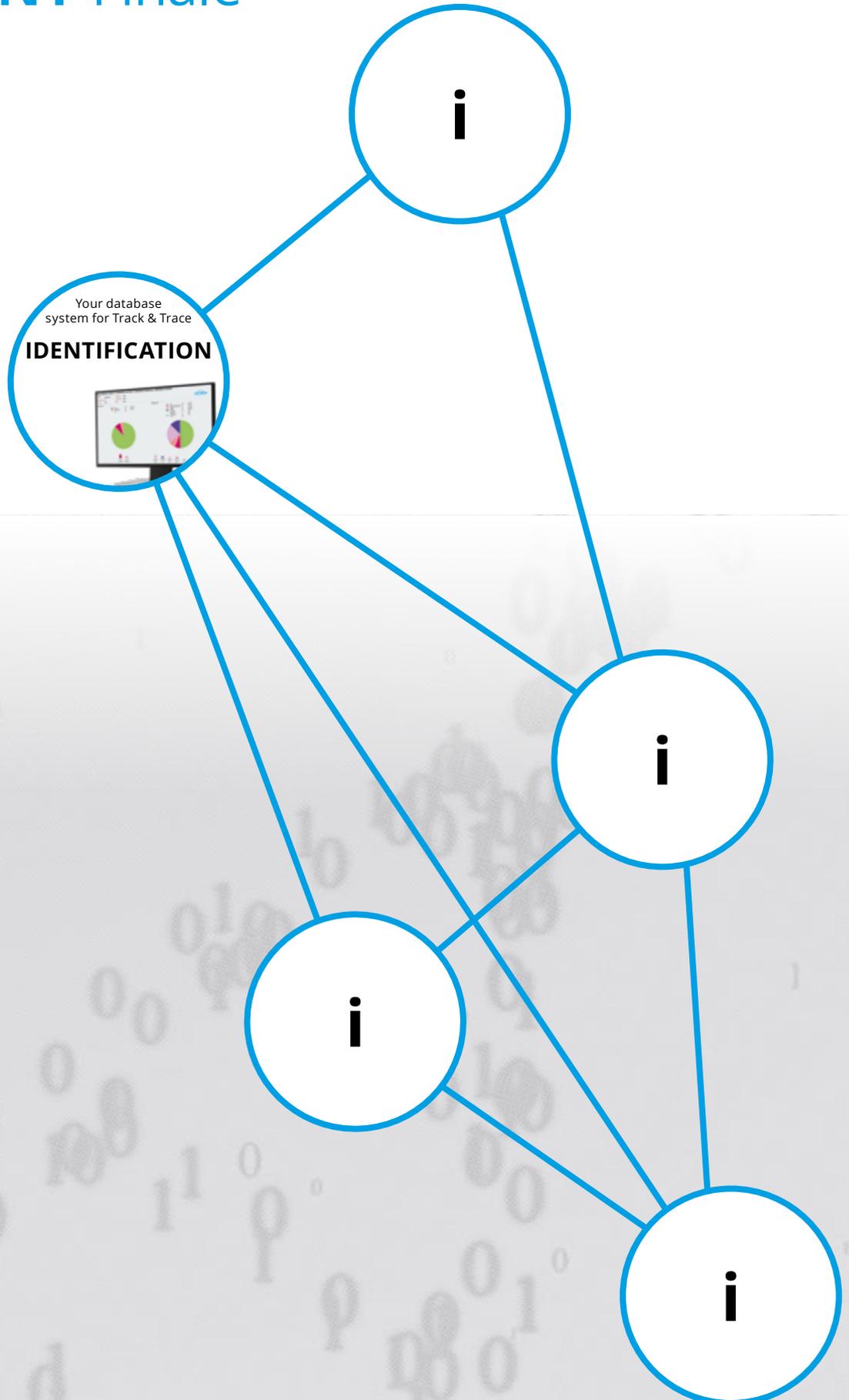


AGGREGATION SOLUTION

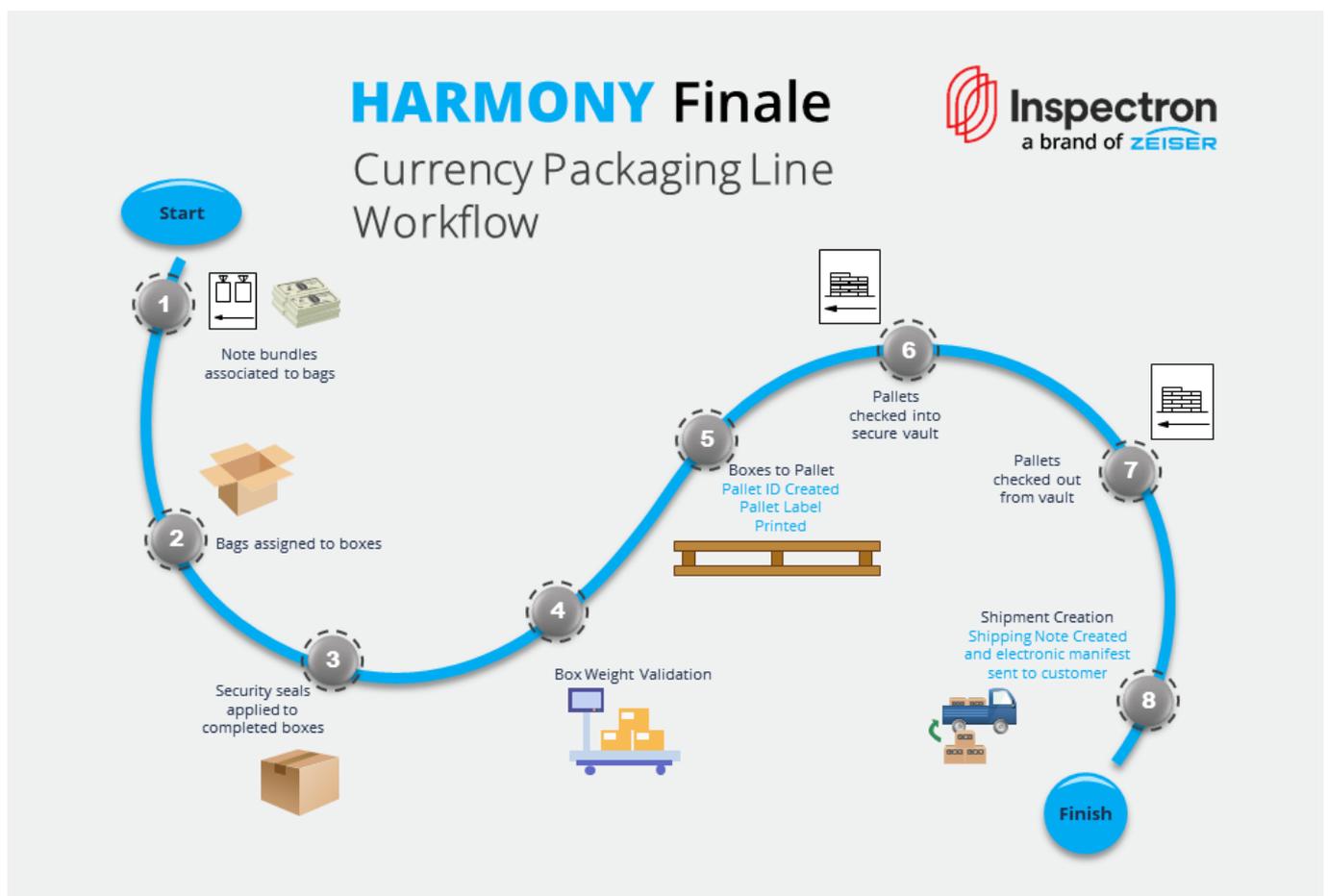
HARMONY Finale

A CASE STUDY



Today's challenge in the production of sensitive products in the security printing industry is the complete tracking of all individual products not only during the various process steps in the production area, but also in the logistics department with the different levels of aggregation and packaging up to the final shipment and manifest creation. Zeiser has an answer to both challenges. **Harmony Sentinel** as the solution for track and trace in production and **Harmony Finale** as the seamless continuation for the logistics area.

This case study gives an overview about the **Harmony Finale** solution installed in a high security environment for banknote production. This system is installed at a leading currency printer to track and trace banknote production from bundled banknotes through various levels of product aggregation up to shipment and manifest creation utilizing UHF tagged material within the aggregation process.



The customer required an efficient and on-time solution to enable them to produce shipping notes and electronic manifest files that would be sent to the end customer before the final product was physically dispatched. The system also needed to record in a database, the full link from bundled banknotes through all stages of aggregation and the associated RFID Tag values so that the exact contents of the complete aggregation hierarchy could be determined.

The installed solution consists of a server with a central Microsoft SQL database, Dual **Harmony** Servers for system failover and 10 clients for the various aggregations tasks in the packaging area. Each client has the relevant hardware attached for the process step, such as handheld barcode scanner, label printer, connection to the check weigher.

The **Harmony Finale** solution uses a core software framework, which allows for rapid configuration and development of the custom and defined software features required for the customers exact production needs using a modular approach. This includes custom graphic user interfaces that provided operators with the required tools and displays to allow them to undertake their tasks quickly and effectively.

By using the Control Room application, user management, roles and responsibilities could be easily defined to ensure that only permitted personnel are able to action and authenticate key system processes such as job/batch creation and the generation of shipping notes and manifests. This approach also allowed for configuration for some strategic and secure processes to require 4 or 6 eyes authentication so that the customer has full control over the entire production workflow.

While using the system, the operators are guided through all process activities by clear instructions on screen informing them of the required items to be scanned, along with the number of products still required to fulfil the aggregation step. All aggregation levels need to be confirmed by the operator as part of the strict customer defined requirements for the packing process. The job level settings approach allows for each job type to have different requirements for the packing process, so that aggregation levels, operator manual confirmation requirements etc. can all be configured on a job-by-job basis.



The **Harmony Finale** system also interacts with various hardware devices such as printers for printing out pallet and shipment labels. RFID Readers and a weigher are used for verifying that all boxes have an acceptable weight value between defined and configurable weight limit thresholds and that the boxes contain the expected RFID tagged materials. The modular software approach allowed for rapid configuration and development for the software interface required to the customers existing weighing machines, which also protected the customers previous investments.

A dedicated exceptions workstation provides the operator with the necessary tools and options required to fix any item in the production process when material had been damaged, or to replace any items that were recalled, or put on hold after the packing process has been completed. A Strict product breakdown strategy ensures that the operator is able to quickly rectify any items that require reworking.

A key benefit for the customer after implementation was the ability to quickly locate a banknote bundle in the event of possible QA errors detected after the packing process have been completed. The **Harmony Finale** solution allows the operator to quickly track down the bundles in question by performing a search in the system to display the complete aggregation hierarchy and ID's that contain the offending bundles.

The **Harmony Finale** solution is a fully flexible system that will allow you to manage your packaging process over bags, boxes, pallets up to shipment and provides a complete overview, report and manifest of the aggregation levels for a wide range of products such as paper and banknote production, passports, lottery tickets, tax stamps and other secure products.

Overview of ZEISER's high-resolution printer family for different printing ranges and substrate needs

- **FLUENTE iZ2** printing systems (UV inks): very fast printing speed with high resolution; extremely robust with easy to handle ink supply
- **FLUENTE Delta** printing systems (UV or water-based inks): wide printing range with high resolution and high speed
- **FLUENTE Omega** printing systems (UV inks): high printing quality with spot color; extremely versatile, robust and cost-efficient

ZEISER offers customized system configurations to meet your application requirements

- Production management software (i.e. T&T): **HARMONY**
- Inkjet printers: **FLUENTE**
- Curing devices: **SERENO**
- Transport systems: **VIVO**
- Verification systems: **VERO**

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