XperiDesk

Fast and efficient technology development for diverse high-tech industries

camLine
agile • efficient • reliable

Streamlining Technology Development

Today, time to market of new products and technologies is the key to success. XperiDesk enables you to make every aspect of technology development faster and more cost-effective. The tools promote the optimal use of existing knowledge and help in the creation of new knowledge.

Key benefits

- Focusing engineers on value added / creative tasks
- 20% productivity increase of engineering teams
- 20% less experiments conducted
- 25% increase in IP reuse
- Approx. 5 % revenue uplift

The Situation

From a top level view the following issues prevail:

- New processes are increasingly complex
- Budgets are tighter
- Shorter time-to-market is demanded
- More and more digital development data is constantly generated
- Protecting IP is essential
- Documentation requirements are becoming stricter

The Challenges

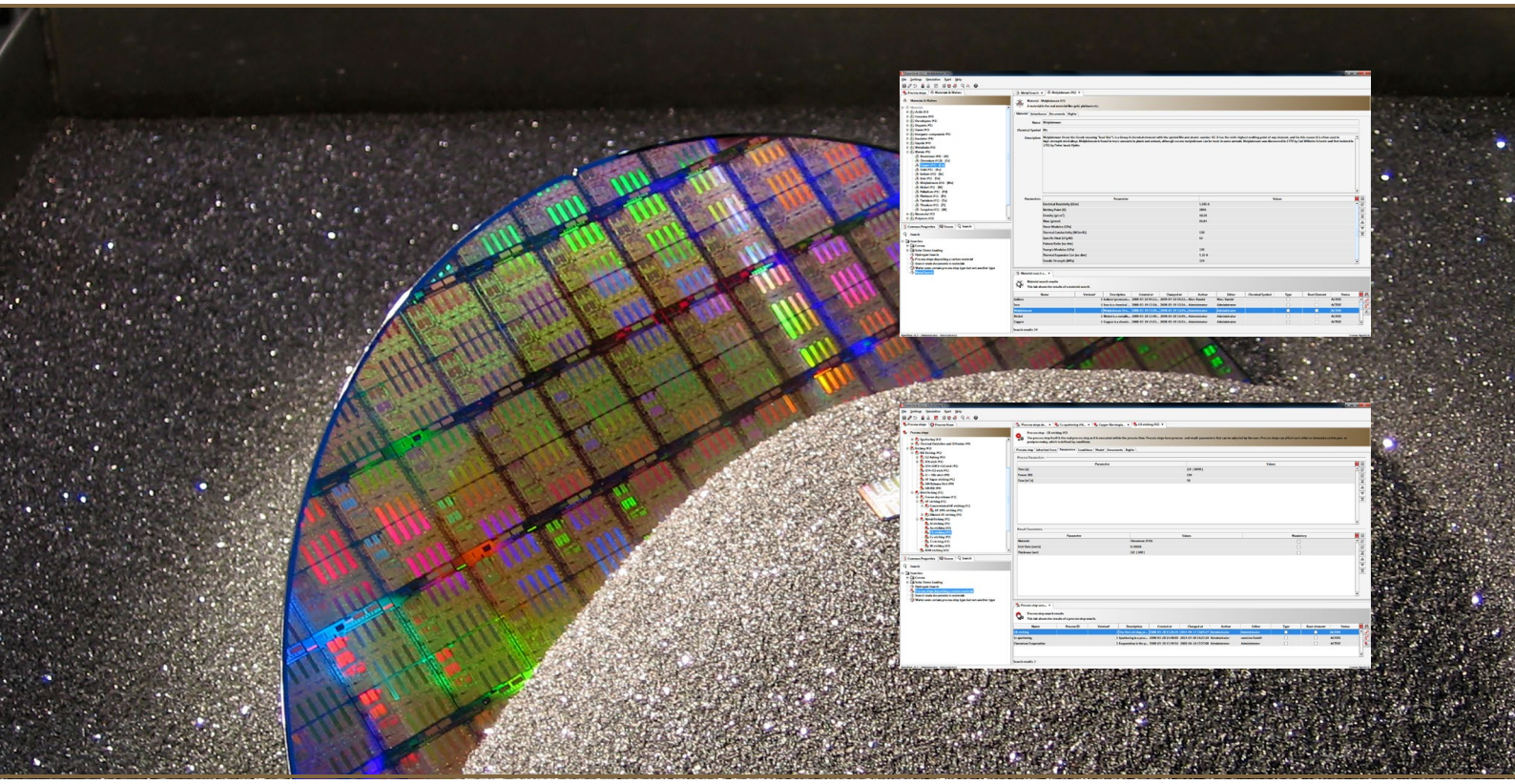
- Only approx. 25% of development projects reach the market and of those, 66% fail their original expectations
- 20% of projects take too long and miss their market window and 35% of companies experience runaway projects
- R&D drowning in unstructured data but desperate for information – 40% of R&D experiments are repeated

The Solution

- Market driven development processes using holistic data management weeding out bad projects early
- Expediting R&D by virtualizing experimentation and enabling learning from past projects reducing time and scrap
- Audit compliant information and knowledge management with versatile, multi-dimensional, and graphical retrieval

camLine offers software and services which form a complete solution to help organizations leverage their existing knowledge, optimize their R&D workflow, and develop their manufacturing processes to achieve profitability faster and at lower cost.

XperiCipe



Hierarchical offline Tool Recipe Management

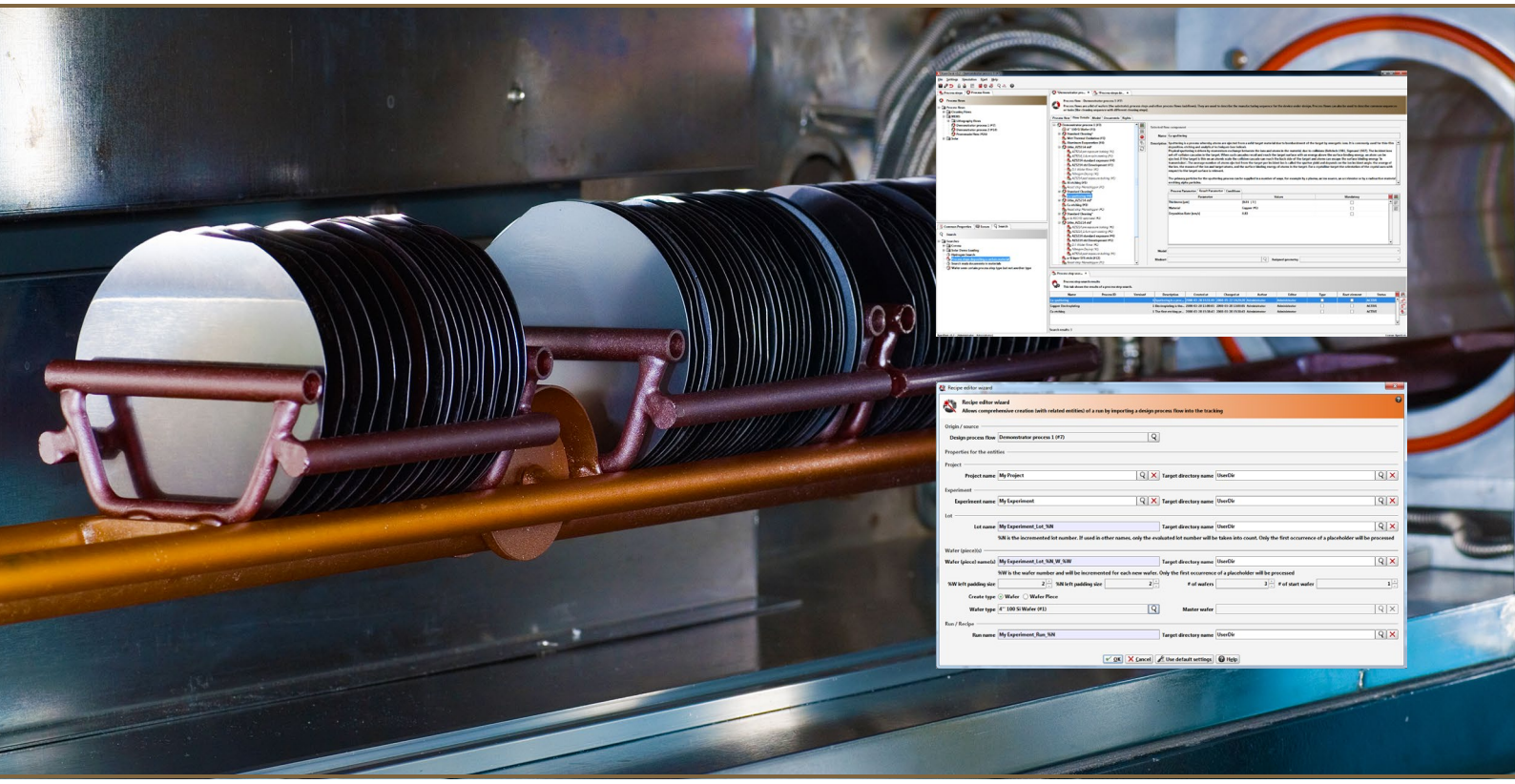
„IP is one of our core assets. However, it was difficult to productize it. Now, we have all process steps and modules documented in the XperiDesk recipe editor and can offer them as real product to our customers."

There is an increasing demand for shorter project schedules and faster time to market. Imagine what recipe maintenance efficiency could be achieved if:

- You can reuse existing recipe modules without error prone copy & paste.
- You can maintain recipes offline and hierarchically without interfering with production.
- You can adapt existing recipes complying to full lifecycle obligations.
- You do not need to search but will find the recipes and their changes when you need them.

XperiCipe enables you to reuse the recipes and documentation from previous developments, efficiently. It supports you in the management of data, information, and knowledge during the initial concept stages as well as lifecycle aware maintenance of manufacturing flows. Data is managed from the minuscule conversion of values into different units to the organization of entire manufacturing flows including reworks. This documentation provides you with the means to productize and value your recipe IP.
With each development cycle, XperiCipe generates a greater aggregate of transferable efficiency. Use the simple drag & drop interface to reuse established processes and process modules. Sophisticated versioning and lifecycle management ensures that you are able to change recipes at any time without damaging your historical process documentation or production.
All these powerful tools come with unmatched flexibility. In short, XperiCipe offers you the tools you need to be even more efficient. It gives you the necessary freedom you need to do research and recipe maintenance, effectively.

XperiCipe



Expedite your Tool Recipe Management

Features

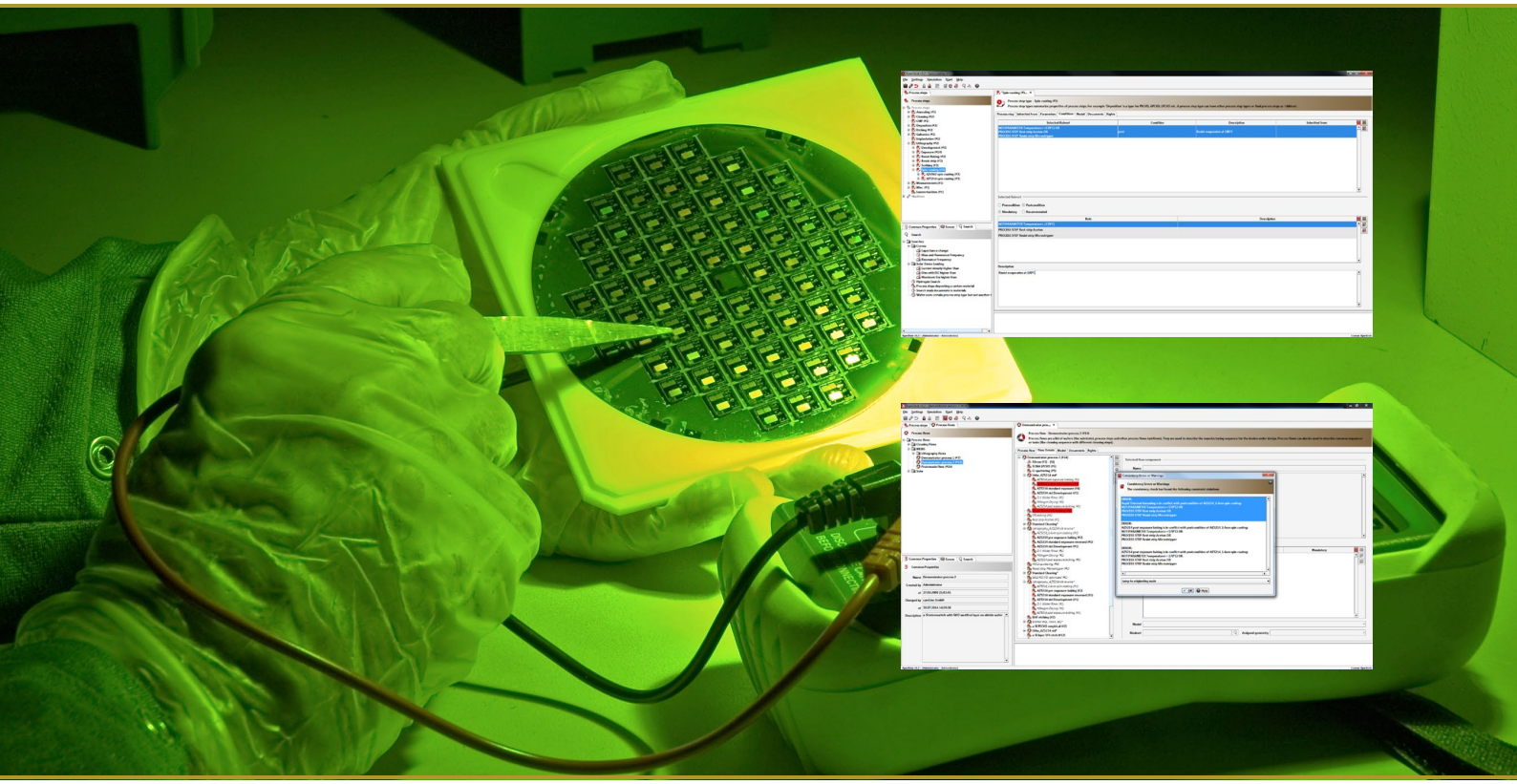
- Arrange process flows with reworks, process recipes, materials, substrates into multiple categories
- Use sophisticated inheritance and grouping capabilities to ease access, organization and maintenance
- Physically quantifiable parameters and automatic unit conversion provides for accurate representation (parameters as intervals, materials, etc.)
- Use complex calculation models to change parameter values according to your target parameters (e.g. deposition time depending on the needed layer thickness)
- Drag and drop editing allows for assembling of new or modification of existing process flows within minutes
- Multiple users can use the same process data for discrete needs, purposes and views without data duplication
- Access and organize data without having prior knowledge of the structure of the data
- Retrieve all recipe data flexibly using the sophisticated search engine
- Protect your IP through user rights management on an per item basis

Benefits

- Faster and more efficient tool recipe maintenance with reduction of error prone copy and paste while creating new recipes and process flows
- Seamless, compliant documentation of the recipe history
- Turn your IP into a salable product

„To create runcards for experiments used to be tedious. Lots of copy and paste in Word and Excel… resulting in lots of errors. With the recipe editor in XperiDesk, that changed. It's just a drag and drop exercise to create and verify new process flows."

XperiFication



Manufacturability assessment and scrap prevention

„The rookie contaminated the oven… again. With the rule based checks in XperiDesk, that wouldn't have happened."

Can you imagine the value of being aware that an experiment were going to fail before you executed it? Imagine the value:

- You can avoid scrap substrates due to misprocessing
- You can evade equipment downtime due to contamination
- You are able to obviate unsuccessful experiments

XperiFication's rule based consistency checking engine fulfills this critical development and business requirements. It permits you to perform a virtual assessment / manufacturability check on a newly created or modified process flow recipe. By using knowledge gained in previous experiments it helps you to avoid costly failed / unsuccessful experiments.

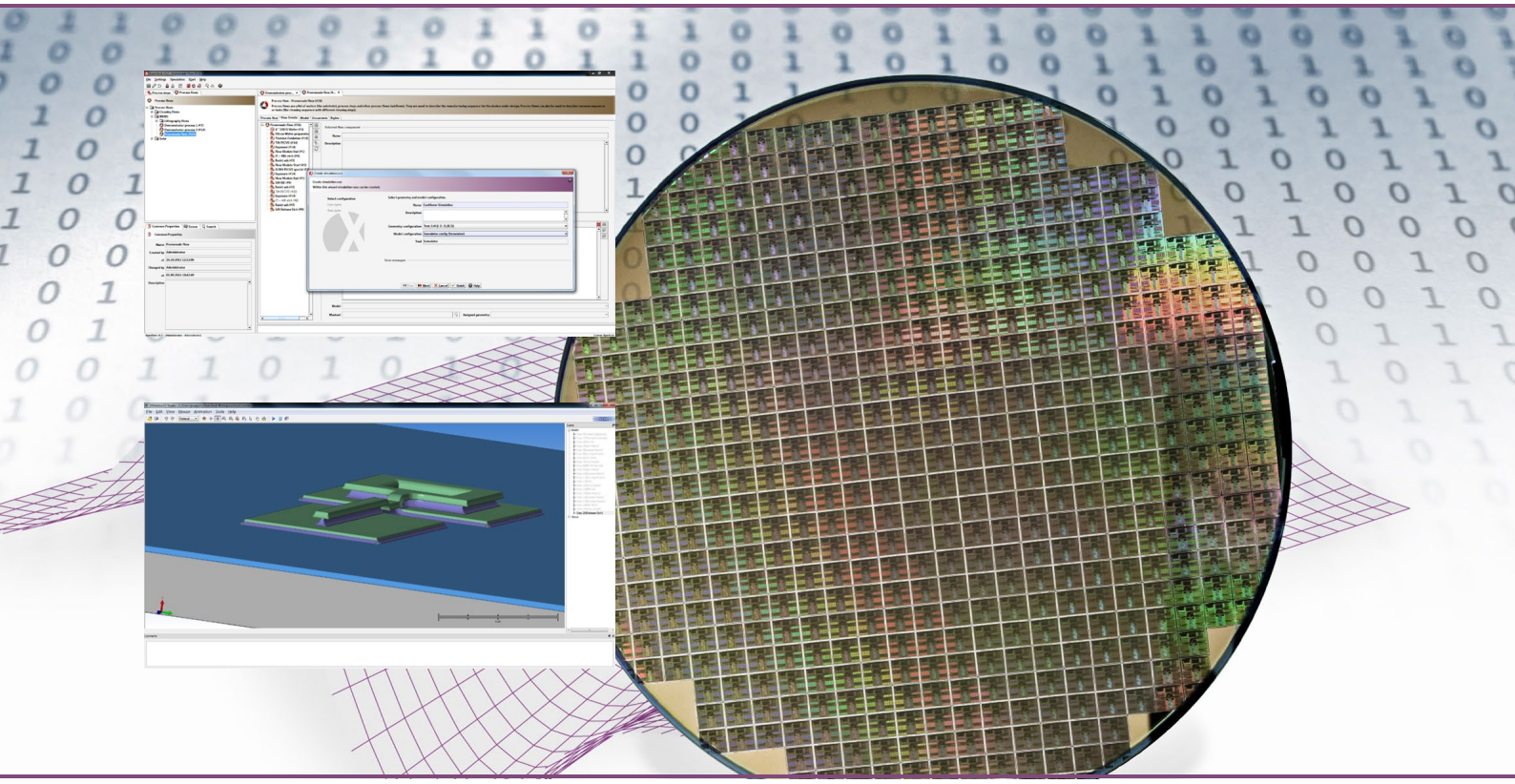
Features

- Formalize your manufacturing knowledge into a reusable knowledge database
- Create hierarchical rules specific to your equipment, recipes and environments
- Manage generic and specialized rules
- Easily share the knowledge about boundary constraints of your equipment and allow for collaborative learning
- Assess manufacturability with rule based consistency checks

Benefits

- Share manufacturing knowledge between your engineers
- Enforce consistency checks for processes before actual manufacturing
- Eliminate the repetition of errors
- Prevent damage or contamination to equipment

XperiSim



Powerful and flexible Simulation Management

What would it mean to you if:

- All your process engineers could perform virtual prototyping and assessment before running experiments in your fab?
- Process engineers could do process calculations (TCAD simulations, cost assessments, etc.) at the push of a button?

XperiSim's generic simulation and calculation interface achieves exactly that. It manages models for multiple simulators/ calculators that can be adapted by experts for company wide use. That frees up the experts time to do more sophisticated setups and allows all engineers, without prior experience, to run all kinds of flow based calculations (device structure generation, costs, etc.) themselves. XperiSim builds the necessary input without requiring any programming or intimate calculator engine knowledge

Features

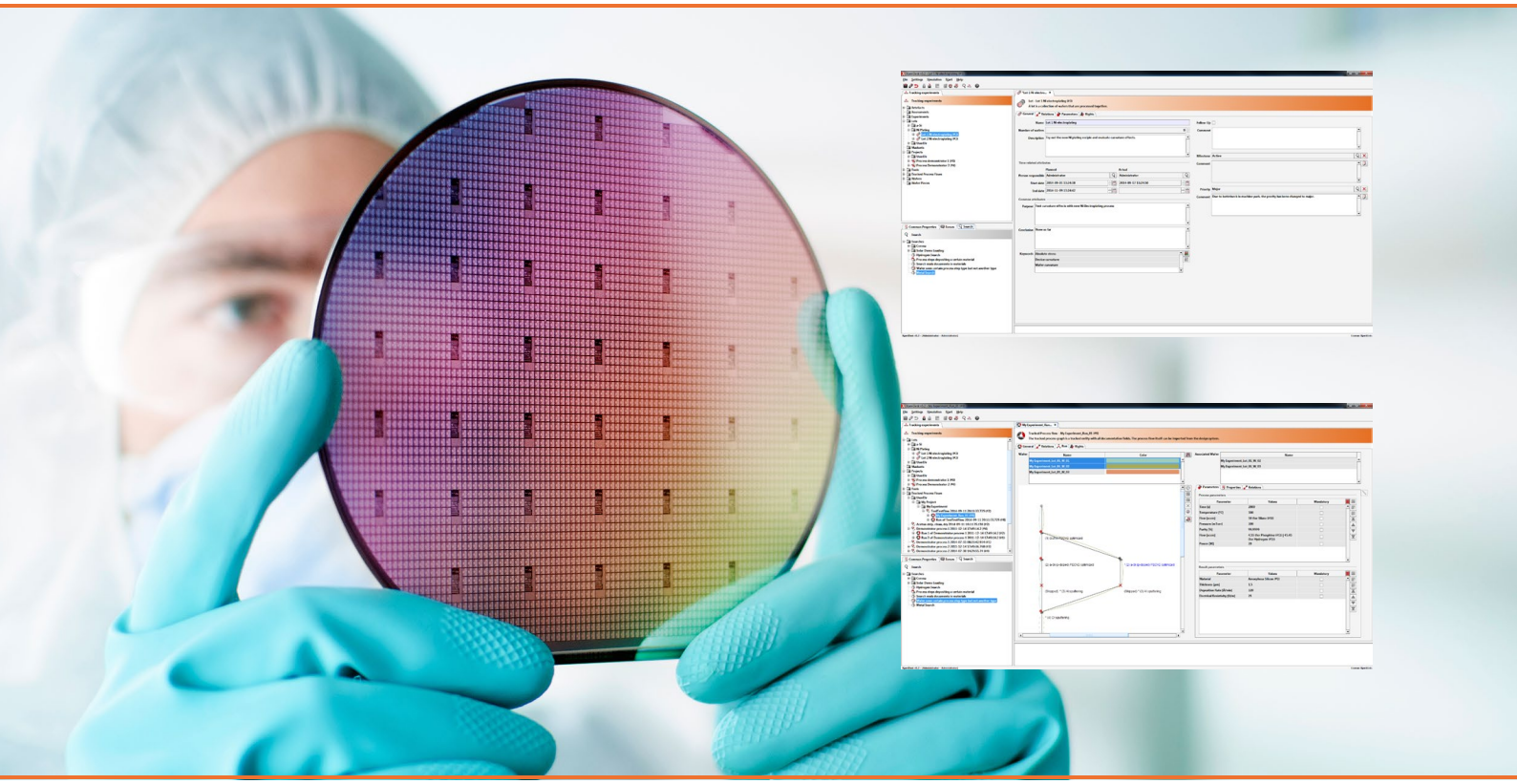
- Manage mask sets, calculation models and tools including model inheritance inside the process recipes
- Apply virtual prototyping via an open interface to diverse simulation, calculation and visualization software
- Access complete simulation history from any client
- Enable the comparison of simulation and real results (with XperiLink)

Benefits

- Start and control simulation and calculation from the same environment without media breaks
- Expedite the usage of expensive calculation tools by allowing all engineers to use them
- Reduce the Work In Progress by virtualizing experimentation

„TCAD Simulation is great, but we were never able to leverage it. Only one guy was able to use the simulator and he had other tasks to perform as well. Using XperiDesk's simulator interface reduced his workload by half!"

XperiLink



Experiment Management, Tracking, and Historian

„We did that before, but I don't know where to find the results… do you have any idea how often I heard that? With XperiLink, all experiments AND their context are recorded and tracked. That's just a time saver!"

Are you tired of:

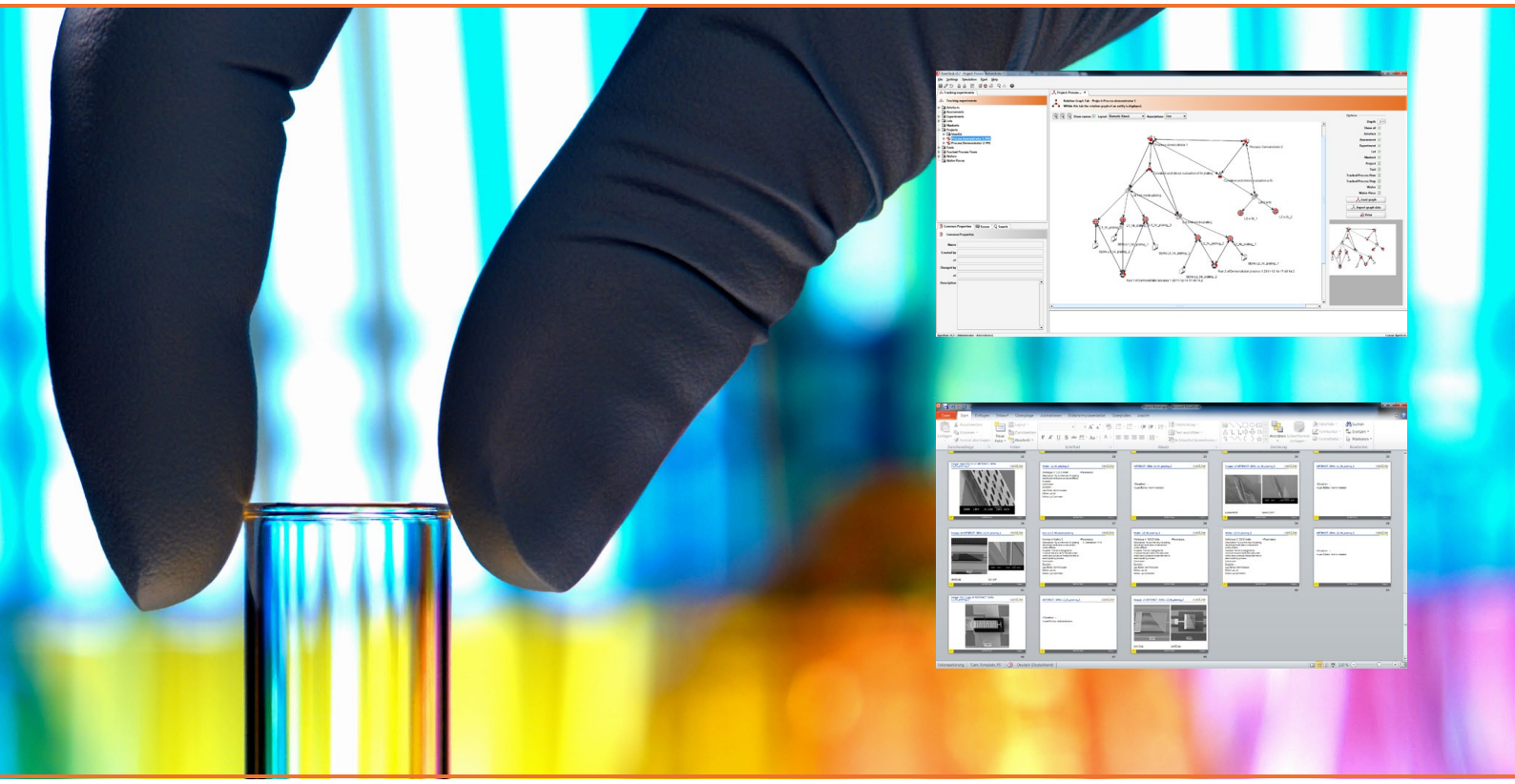
- Mundane data management tasks?
- Incomplete and inconsistent data for analyses?
- Data in different non searchable formats and silos?
- Spending hours to rearrange data for statistical assessment and reports?

XperiLink is an information management environment that provides you with the ability to establish and investigate relationships between all your data. This is the bedrock for creative thinking and next generation innovation. Who could have imagined experimental verification could be so efficient and exhilarating again? The XperiLink module of the XperiDesk suite has made this a reality.

We would like you to think of XperiLink as the solution for your future experiment management needs, but XperiLink also offers a solution to your current experiment challenges. Together with the XperiDesk clients, you can use XperiLink to look at your historical data in a new light and discover relations you were not able to see before.

XperiLink functionality leaves little to the imagination. From the simple generation of a consistent runcard, via Design of Experiment (DoE) to tracking production in a prototype / small volume fabrication line, XperiLink supports the complete management of experimental information (structured and unstructured) including the management of all documents.

XperiLink



Expedite your Experimentation

Features

- Use unmatched information management flexibility
- Plan and track your development and experiments, including Design of Experiments (DoE)
- Manage data for diverse entities you cope with on a daily basis, e.g., projects, experiments, lots, wafers, recipes, measurements
- Keep track of all your changes, reworks, and observations during execution
- Manage all types of files and links incl. drag & drop into and out-of XperiDesk
- Manage relationships between any type of data object to keep the context of your experiments and use tags to give a meaning to the relations
- Browse AND find your data using diverse points of view, e.g., project driven, lot driven by using comprehensive multiple criteria searches, filters and views, e.g., the configurable relation graph
- Track data changes in a compliant way and compare versions of the history
- Search, select and pre-process data to export to MS Office (PowerPoint, Excel, ...), CSV, statistical software e.g. Cornerstone or selective, transferrable knowledge packages (e.g. process step libraries) Protect your of IP with per item level access protection

Benefits

- Audit compliant experiment documentation with complete version and change history
- Improved development transparency, reuse and collaboration
- Innovate and do not reinvent the wheel by re-learning previous knowledge

„I found a nice image with the desired result. But how was the wafer processed? Who did it and why? With the relation graph to answer those questions is a piece of cake, I just open it and see the COMPLETE context of the file!"

XperiEIC

XperiDesk Excel Import Client

„We are using MS Excel for our development. With the Excel Importing capabilities of XperiLink we were able to keep our established worksheets while enhancing data visibility and searchability drastically!"

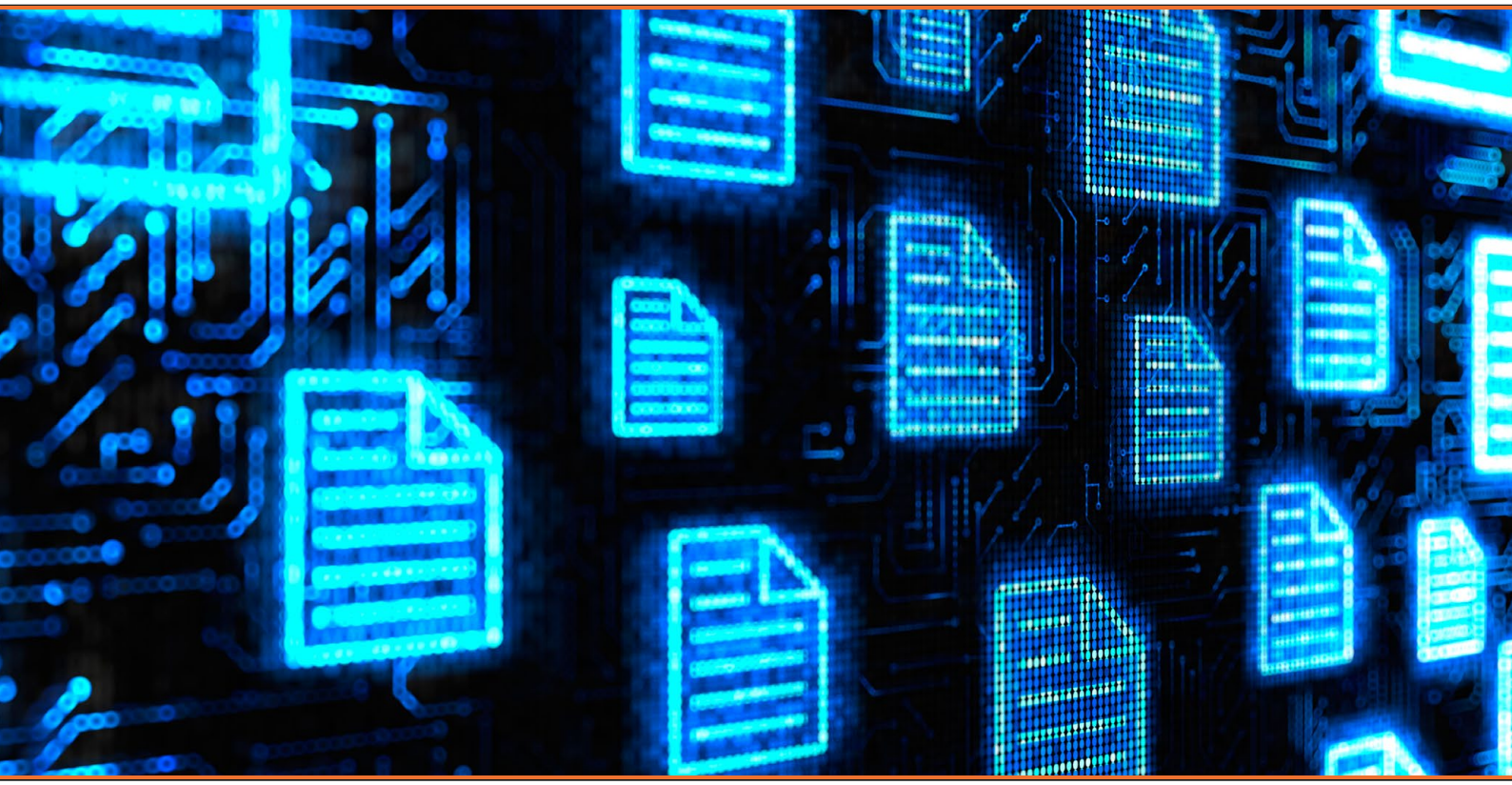
Do you use Microsoft Excel for your development? Do you have:

- Data cluttered in different files?
- Non-functioning links?
- Non-searchable files without context?
- Many different sheet formats?

The XperiDesk Excel Import Client offers an easy way to import existing data from Excel and similar sheets, CSV, or TXT files into XperiDesk. Data from different sources is loaded into the system. The data is linked automatically to other results or data points in XperiLink. Parameter values become even aware of their unit. This results in searchable information instead of distributed raw data in Excel- and other files. Cause and effect analyses can now be made faster, reports become available on a button click and it takes minutes instead of days from data generation to statistical analysis.

- Sophisticated raw data importing and structuring capabilities from MS Excel sheets, CSV, and TXT files
- Versatile cell selection and tabbing possibilities to extract data, even using regular expressions to filter content
- Loaded data becomes unit aware and is assigned to specific parameters
- Creation of diverse entity types from extracted data
- Context building via relating raw data with pre-existing data in XperiLink
- Scheduled jobs can be used to import sheets on a regular basis
- History is kept by sophisticated versioning possibilities
- XperiEIC is a separate client to XperiDesk. Data can be consolidated from diverse locations into a single server.

XperiFLC



XperiDesk File Loading Client

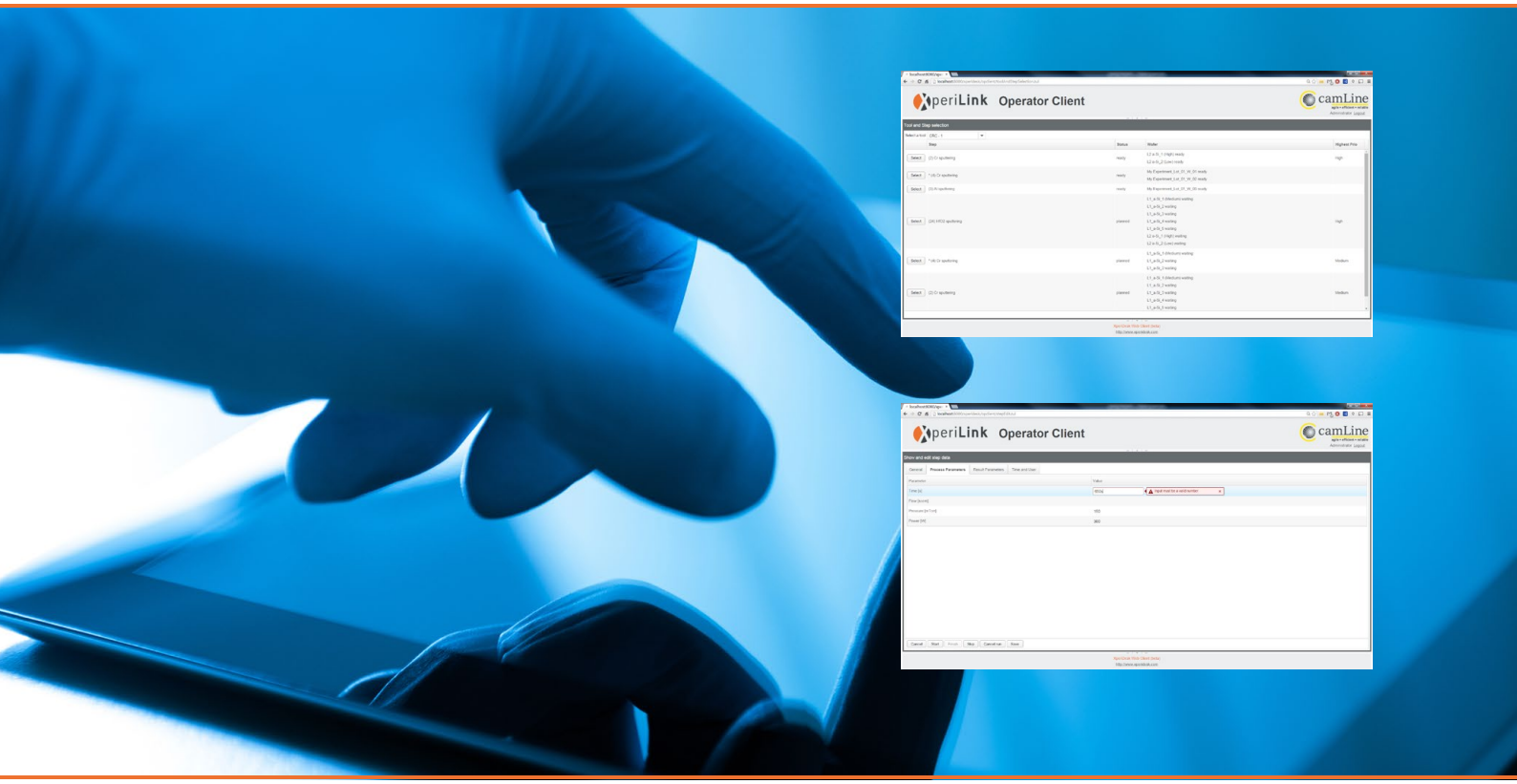
During the execution of experiments a lot of digital data is generated. Until now most of this data is stored on file servers, Groupware, content management systems or distributed on various local computers. Even worse, the complete context of a data item is not maintained.

The XperiDesk File Loading Client allows you to collect these files and to put them into context again. It loads and links the metrology results to the substrates, the production process and other results. The data is then available and searchable in the context of the experimentation or production.

- Sophisticated unstructured file importing capabilities from file servers
- Creation of all types of entities based on information in filenames and paths
- Regular Expressions can be used to extract information from the full file paths and names
- Relating file data with pre-existing data in XperiDesk and therefore (re-)establishing the context
- Scheduled jobs can be used to import file trees on a regular basis to merge new into old data (keeping old data available in a separate version)
- XperiFLC is a separate client to the XperiDesk server. Data can be consolidated from diverse locations into a single server.

„Our research results were distributed on the laptops of the different engineers. Visibility was low and files were inaccessible especially when engineers were out of office. Running the XperiDesk File Loading Client once a day has improved date visibility and traceability tremendously!"

XperiOPS



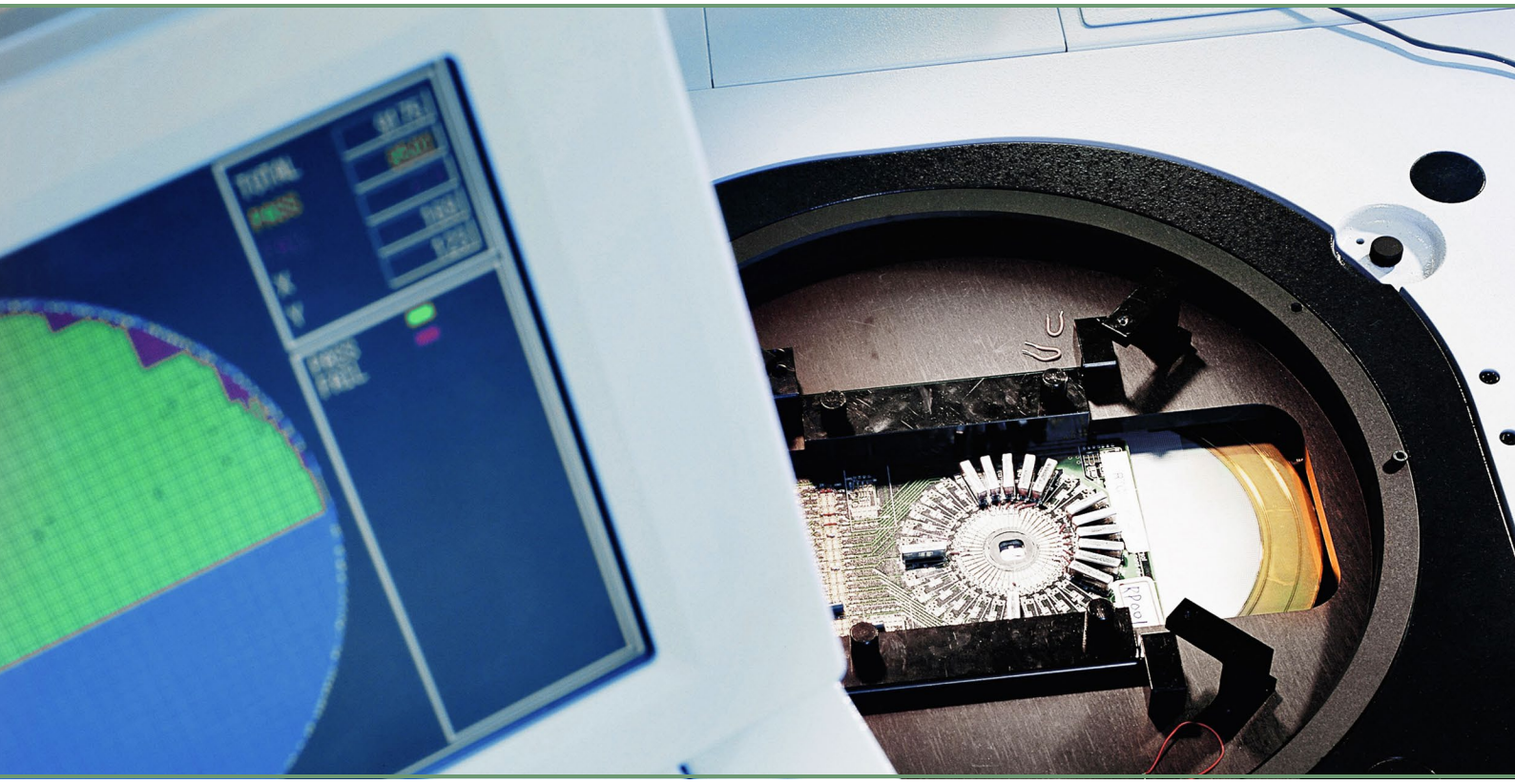
XperiDesk Operator Client

„Previously our operators were noting down their observations, parameter settings, etc. on the paper runcard's and were supposed to register the data again electronically in a spreadsheet. With the XperiDesk Operator client they can easily and directly collect the information electronically on their tablets and the data is immediately available to everyone."

A lot of paper runcards are still used in R&D oriented environments. They are moving along with their lots and once printed are difficult to amend with last minute engineering changes. This fire and forget approach makes the coordination of which lot has priority and the scheduling of the different moves as well as which operator is supposed to move which lot at which machine a mostly manual process. Furthermore notes and measurement data are oftentimes recorded manually on the runcard and are later on entered into some system or are scanned as non-searchable images. This double recording cause overhead as well as it is potentially error prone. With the XperiDesk Operator Client these issues can be addressed. The paper runcard can be substituted by electronically guiding the operator through the next necessary steps at the selected equipment.

Observations, recipe changes, measurement data, etc. can be recorded directly on the networked equipment or on a mobile device and is therefore immediately visible to everybody.

- Slim and web-based GUI for operators in the line
- Tool based view on all Work In Progress (WIP)
- Increased accuracy in tracking and tracing
- Increased efficiency in WIP coordination and visibility
- Possibility to amend the last minute changes through engineering
- Reduced data replication and duplication errors
- Improved lab / fab throughput



XperiDesk SQL Import Client

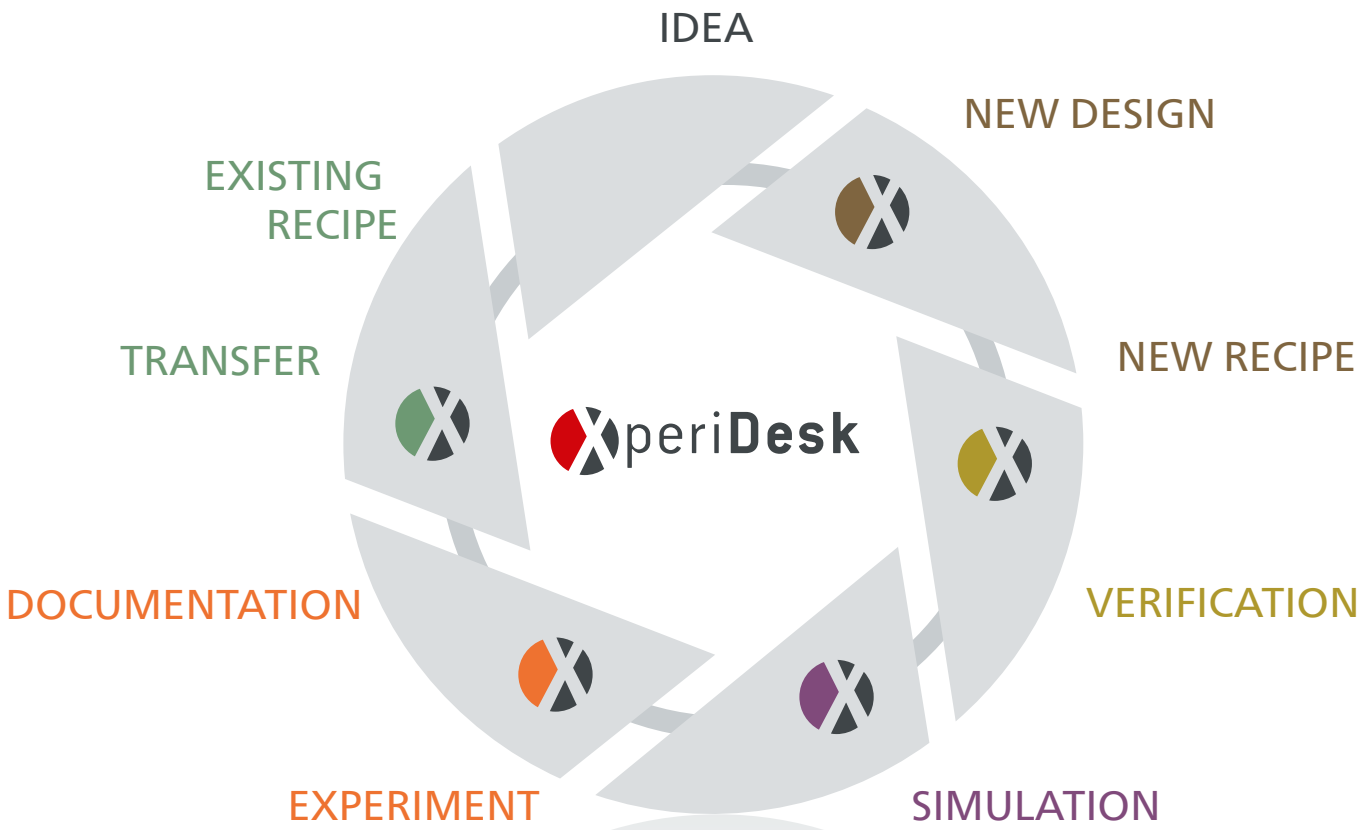
You have multiple SQL based databases to collect your data in? You want to extract selective sets for analysis in a coherent way? You are familiar with this situation:

- The MES has the data for the processing
- The Measurement group has its own database
- QA uses other means to store its data
- You spend hours to collect and merge this data for a report…

The XperiDesk SQL Import Client enables you to easily collect data from different SQL databases and merge all your development data into a central repository. The data is automatically linked to other results or data points in XperiLink. Parameter values become even aware of their unit. Together with the other tools of XperiDesk, it is able to solve many data management problems.

- Sophisticated data import using the full flexibility of SQL
- Selection of data from query results by just naming the column
- Formatting of results using regular expressions
- Formalizing especially numeric parameters (with unit!)
- Data can be related to any existing entity (lot, project, wafer, etc.) in XperiLink
- Jobs can be run in batch mode and scheduled to be run regularly
- New data can be merged, old data is kept in history
- The XperiSQL is a separate client to the XperiDesk server such that data can be consolidated from diverse locations into a single server.

„Our MES contains the raw data of the experiments we do. However, this data is not linked to the other results. With the SQL Client we can now extract that data and relate it to all the images and documents we have for the experiment."



XperiCipe XperiFication XperiSim XperiLink XperiSIC

STREAMLINING TECHNOLOGY DEVELOPMENT

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CONTACT CAMLINE
info@camLine.com, +49 (0) 8137 935-0