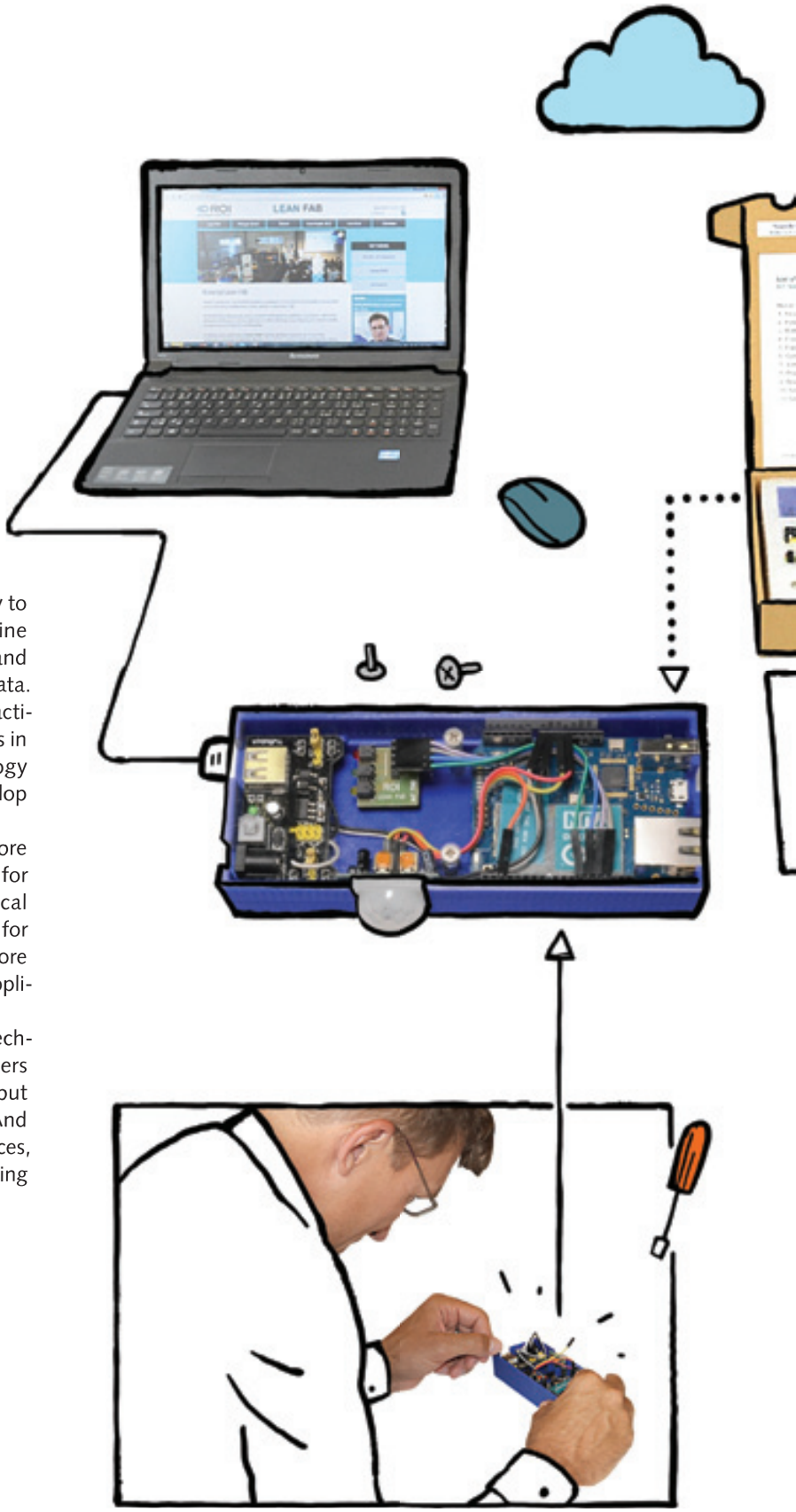
ROI LEAN FAB GOES IOT

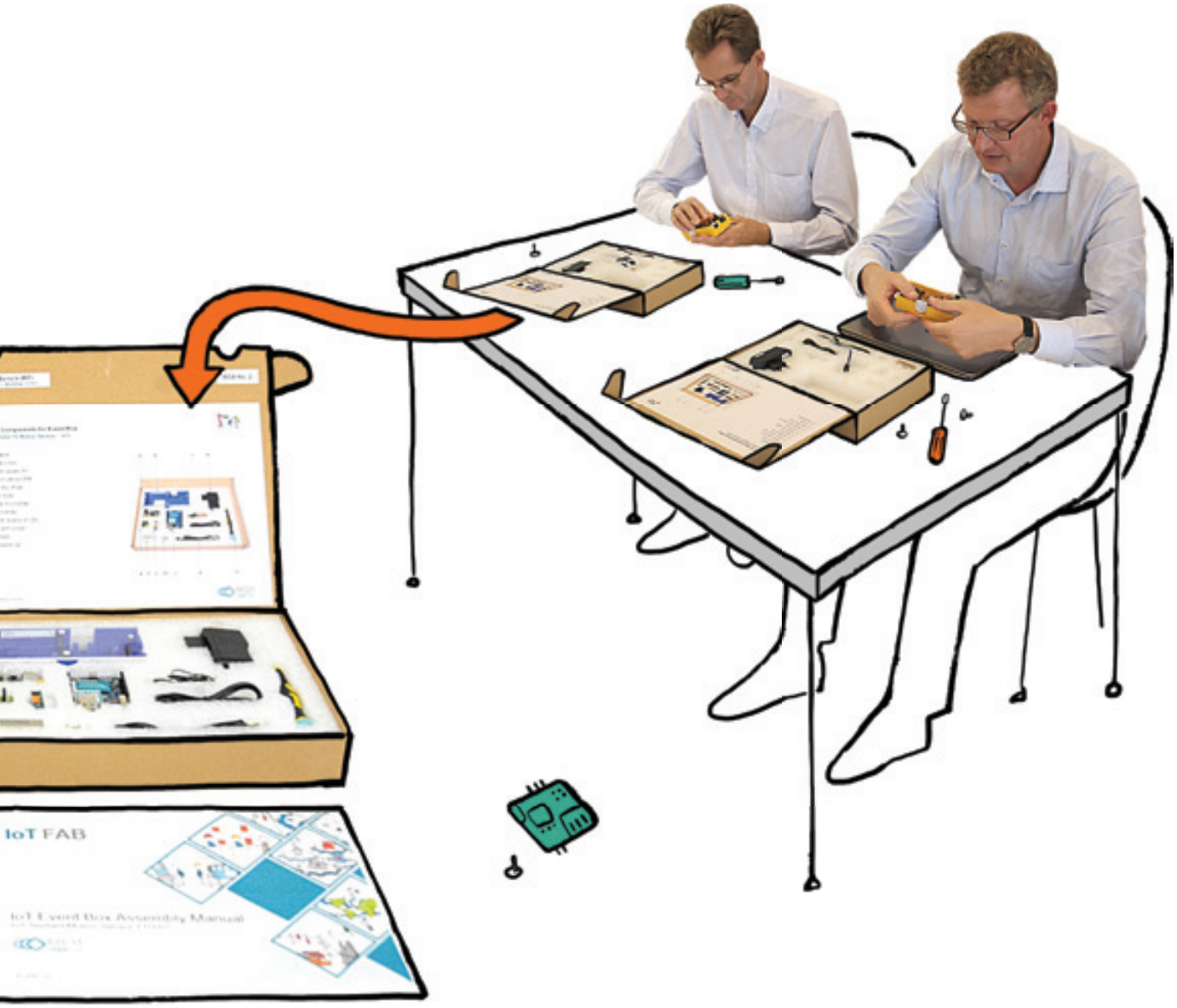


The Internet of Things provides the opportunity to achieve significant process improvements and to refine business models by interconnecting people, machines and workpieces and, additionally, making use of collected data.

It is possible to experience how this works in practice in ROI's IoT Lean Fab. Access to IoT excellence occurs in several steps that lead from the assured use of technology and lean manufacturing expertise to the ability to develop new business models.

Training participants do not just get to know core IoT technologies, they also learn how to develop them for themselves and to use them in practice. The technical facilities of the IoT Lean Fab offer the optimum platform for simulating and analyzing IoT-based processes as well as core lean technologies and for testing them in a concrete application environment.

The possibility of engaging with the specific technologies directly and largely free of theory lowers barriers and imparts not just the required skills and expertise but also the assurance to handle IoT structures confidently. And it also means shifting one's focus from products to services, taking a new look at one's own business model and opening up new and unconventional sources of income.



ACHIEVING IOT EXCELLENCE STEP BY STEP

1. The starting point is learning how to deal with important IoT technologies such as sensors, portals, apps, the cloud and modern databases, with the rapid, automated and flexible development of applications enabling the simple and playful communication of the skills required to deal with the technical infrastructures.

2. Technological know-how provides the basis on which training participants can develop their own IoT test environments (testbeds). This is where various types of non-interconnected production – reflecting specific customer scenarios – can be physically simulated. Possible defined areas of focus can be, for example, a complete value stream, SMED, maintenance or 5S.

3. Production is then optimized using lean methods and the potential that can be achieved with data-based transparency is demonstrated.

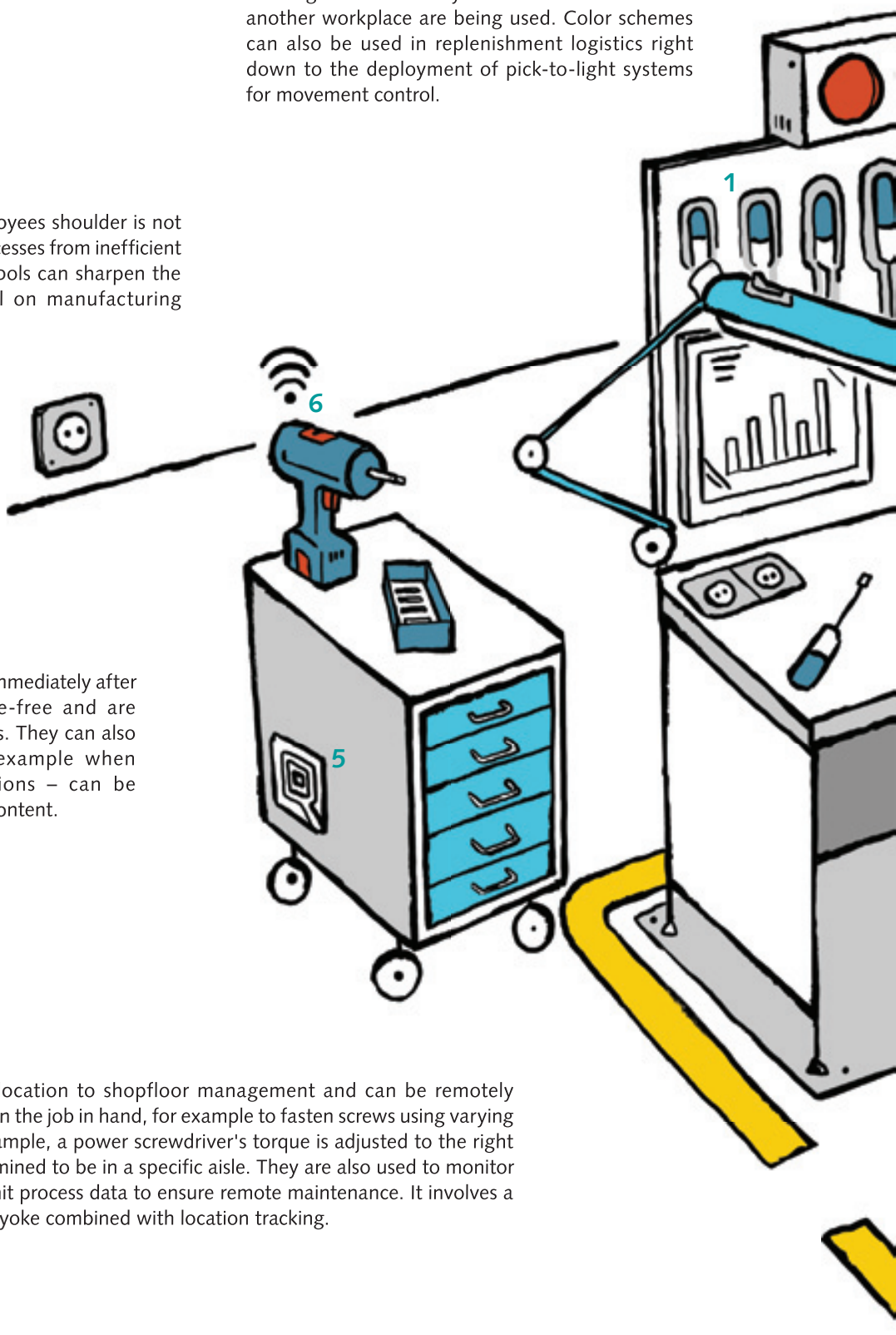
4. The next step involves selecting the data relevant for control based on the ROI KPI Board, and recording and processing them in the previously developed production scenario, with the participants using the same technologies that they themselves tested before. The results are then visualized in the form of apps and dashboards, and suggestions for optimization are developed.

EVERYTHING IN SIGHT?

Taking a glance over the employees shoulder is not enough to distinguish value-adding processes from inefficient practices. High-tech, but also simple tools can sharpen the view on waste and hidden potential on manufacturing workspaces.

1 Color Schemes

Prevents a workplaces 'disintegrating'. For example, a blue workplace only has tools with blue markings to make it easy to detect when tools from another workplace are being used. Color schemes can also be used in replenishment logistics right down to the deployment of pick-to-light systems for movement control.



7 LED Lights

Provide maximum brightness immediately after being switched on, are maintenance-free and are durable even with long service intervals. They can also be controlled remotely and – for example when networked with operating instructions – can be automatically adapted to match work content.

6 WiFi Tools

Report their location to shopfloor management and can be remotely configured depending on the job in hand, for example to fasten screws using varying levels of power. For example, a power screwdriver's torque is adjusted to the right setting when it is determined to be in a specific aisle. They are also used to monitor other tools or to transmit process data to ensure remote maintenance. It involves a process similar to poka-yoke combined with location tracking.

2 Shadowboards

Reduce time lost when looking for tools. For example, all tools are kept sorted and labeled in foam plastic trays and can be easily grabbed thanks to recessed grips – it is immediately obvious even with mobile units whether required tools are missing.

3 Traffic Lights

Above the workplace, but also in some cases for unmanned machines incident management. Employees can see immediately whether a workplace is equipped in accordance with the rules or whether machinery is operating correctly (green), whether a machine is being powered down or refitted (yellow), or whether a fault has occurred (red).

4 Smart Glass

Bring augmented reality (AR) to the workplace. Each employee is identified and is given a customized display of production parameters and operating instructions. The employee can also retrieve details about work plans and CAD drawings, create quality reports, scan objects, trigger automated workflows in the ERP system, communicate with service operatives and make use of remote service. Smart glasses, AR-software and other mobile applications will in future play a key role in the workplace.

5 Motion Sensors

On refitting, material or tool trolleys can transmit information to the logistics system via RFID chips. This allows unnecessary steps to be avoided and required elements to be localized faster.