Product Description

HortiMaX Productive

2017 GB

Contents

1   Productive

HortiMaX Productive is the latest generation of labor and production tracking software. We designed it based on over 20 years of knowledge and experience in the horticulture industry. HortiMaX Productive will help you keep track of a wide range of data, such as the hours worked by your workforce, labor costs, worker performance and observations made in the greenhouse (e.g. pests or broken glass), while at the same time keeping administrative burdens to a minimum. HortiMaX Productive will not only make managing your business more efficient, but will also help motivate your workers to maximize their performance.

In addition, this software (combined with our MiniMaX mobile handhelds, fixed terminals and/or Productive Labor Tracking app) will pay for itself within a short period of time – with most customers seeing a return on their investment within a year.

1.1   About this document

This product description explains how HortiMaX Productive will allow you to monitor and optimize labor productivity and operational processes at your greenhouse facility.

We firmly believe that HortiMaX Productive will meet the needs of most, if not all, greenhouse growers. To show you how HortiMaX Productive compares to similar systems on the market, we have included a table in chapter 7 entitled 'Competencies'.

2   User interface

HortiMaX Productive sets itself apart by its intuitive user interface, showing only the settings and data relevant to your specific needs.
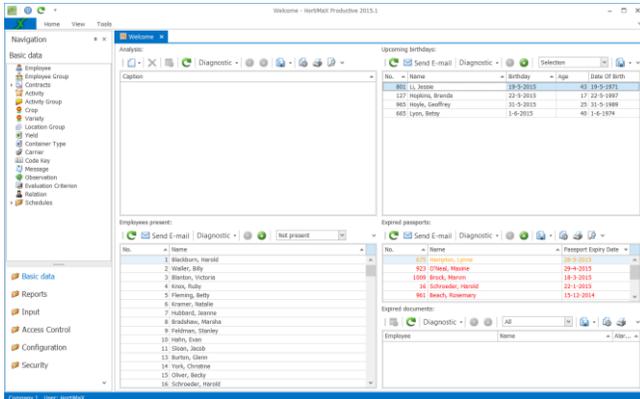
This makes the software easy and convenient to use.

Navigation is based on the use of easy-to-understand icons. Every icon indicates a specific action, such as display basic data, or change data entries. The design and structure of Productive is very similar to Microsoft Office, minimizing the learning curve for your workers.

The software uses 'intelligent' filters to determine which basic data should be displayed. For example, inactive workers are hidden by default. Search filters allow you find the information you need instantly.

The extensive security features protect your basic data at various user levels. Each user is assigned a role, which defines that user's rights. For instance, an Operations Manager is allocated different user rights than a worker in the Financial Department. This lets you program exactly what each type of user is allowed to view, modify and/or remove.

2.1   Name/Language selection

HortiMaX Productive displays the master data intended for workers in their native language. This includes the master data shown on the input terminals.

HortiMaX Productive can also be set up to display complete names in the software and short names on the terminals.

2.2   Activities

The software allows you to define an unlimited number of worker activities. Workers register an activity by answering the corresponding input questions on one of the terminals.

You can define multiple input questions for each activity, such as:

- Which crop does the activity relate to?
- Where did the activity take place (e.g. which compartment, row or table)?
- What was the amount of crop or yield harvested (e.g. number of kilograms or boxes)?
- What is the ID no. of the harvesting cart?
- Container count or type on the harvesting cart?

The input questions are divided into categories, so you can quickly set up the ones you want. Each input question is set up using a configuration screen with various setting options.
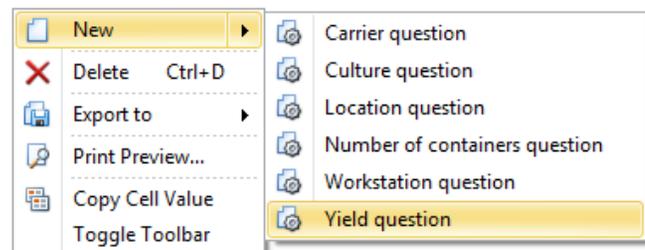
You can specify which activities certain workers may enter, minimizing the risk of faulty input. The activities that may be entered can also be grouped together, so they're easier to manage.

2.3   Yields

HortiMaX Productive can register harvested yields in various ways and supports the conversion from one yield type into another. For instance, the system can save the number of kilograms harvested rather than the number of boxes registered by a worker. The system can also store both yield types, so analysis reports can show both boxes and kilograms.

2.4   Standards

You can set the standard rate in which an activity is to be shown (e.g. 'kilograms per hour', 'boxes per hour', or 'plants per hour'). This is called a 'standard' in Productive. Every time a worker registers an activity, that worker is shown his/her

current standard (i.e. productivity level). Standards can also be shown on a computer accessible to your workers, allowing them to compare their results and encouraging them to improve their performance.

2.5 Performance-related bonus

HortiMaX Productive includes various bonus systems, aimed at improving performance through higher pay. Bonus rates can also be staggered, so that workers must achieve a certain productivity level to qualify for the next bonus rate.
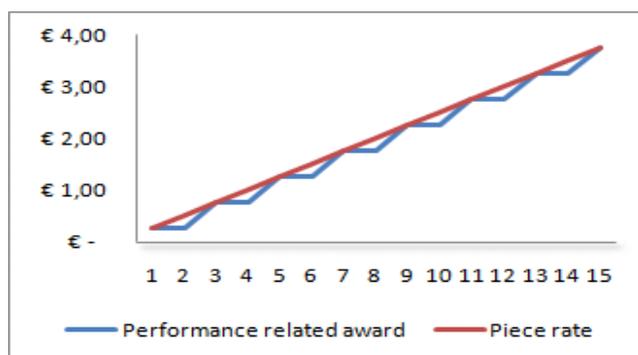
The standard norm, based on which the bonus rate is determined, can be calculated per registration, per day or per week. A day norm or week norm generally has a positive effect on work speed stability.

2.6 Wage data

HortiMaX Productive accurately registers the number of hours worked by each worker. As a result, the system is able to calculate the regular and overtime hours worked and conveniently displays this data in table format, along with the wages paid by week, month or period. The productivity of each worker is also registered, allowing the system to calculate any performance-related pay, wages for certain activities, or a combination of a fixed hourly rate and performance-related pay.

2.7 RFID tags

If fixed terminals or MiniMaX handhelds are installed, your workers can input data easier and faster with the aid of RFID tags (e.g. key rings, wristbands and badges). When a worker holds an RFID tag up to one of the terminals, the system will automatically register the information on the tag through a wireless connection.

An RFID tag can be assigned to a worker, activity, crop, greenhouse compartment and/or harvesting cart. RFID tags make manual data entry a thing of the past, preventing input errors by staff.

2.8 Observations

The *Observations* module is used to register observations made in your greenhouse, such as diseases, pests, dead plants, broken glass, etc. After workers enter any observations on a terminal, HortiMaX Productive can display them in either a table format or on a graphical floor plan of your greenhouse using the 'Greenhouse view' feature .

Different colours can be assigned to observations, making them easy to spot on the greenhouse floor plan.
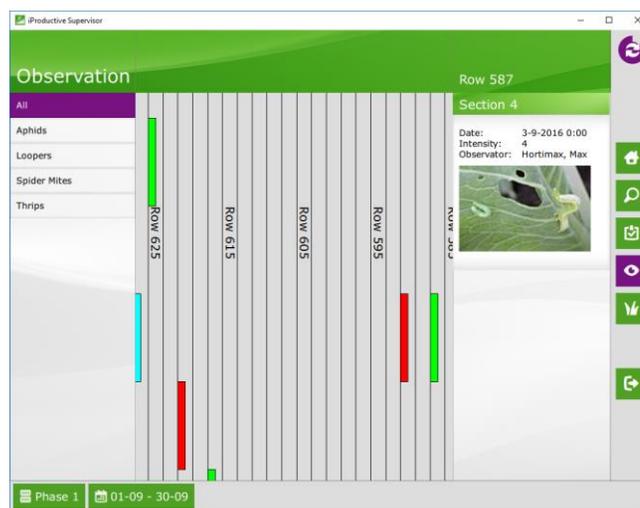

Observations can be entered on fixed terminals, MiniMaX handheld terminals or in the Productive Supervisor app. By assigning user rights, you can determine which workers are allowed to enter observations.

2.9 Quality control

The Quality Control feature allows supervisors to evaluate the work quality relating to a row of plants or harvesting cart. A quality rating scale (e.g. 1 to 5) can be defined for each type of activity, so supervisors can enter a rating for a worker's performance on a particular task.

Aftering entering a specific row and/or harvesting cart on a terminal, the system will display which worker was responsible for the row and/or harvesting cart in question. The ratings entered by the supervisor based on the work quality are stored along the other worker data.
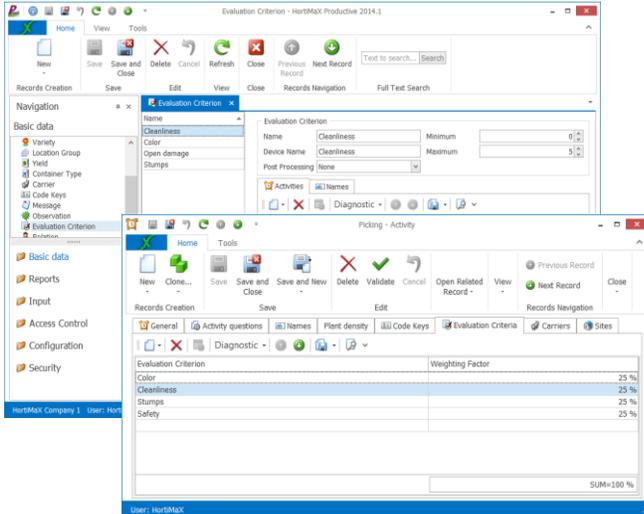

2.10 Correcting input errors

The system lets you easily correct any rare input or registration errors made by your workers.

The *Registrations per day* screen gives you direct access to the registrations made by your workers. This data can be filtered by worker, activity or crop/culture. The system highlights any registrations that do not meet the set requirements, so you can immediately find any incorrect input.

2.11 Greenhouse view

The Greenhouse view feature in Productive has become a concept in the horticulture industry. This feature conveniently displays information on a graphical representation of your greenhouse (resembling a floor plan).

More specifically, the Greenhouse view shows which workers are working on which rows of plants, which activities are being performed there and the productivity levels (standards) of your workers. If the same activity has been registered more than once in a certain row, that row will be highlighted in red. This instantly reveals any input errors that have been made in the rows. The Greenhouse view displays a top-down view of your greenhouse, in which the colour of the graphics can be used as key productivity indicators.
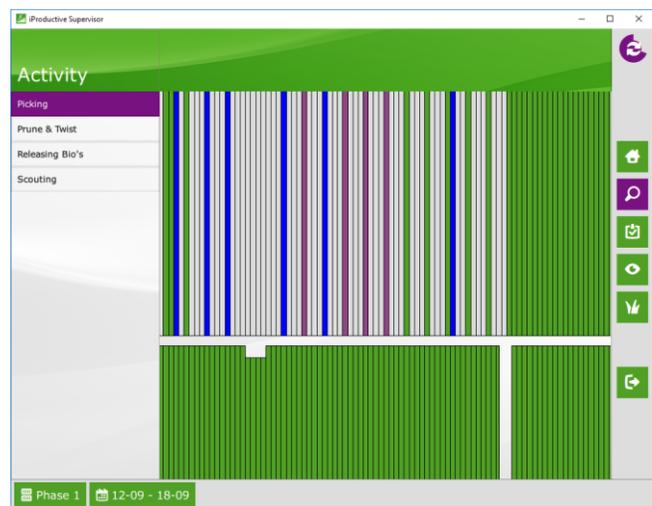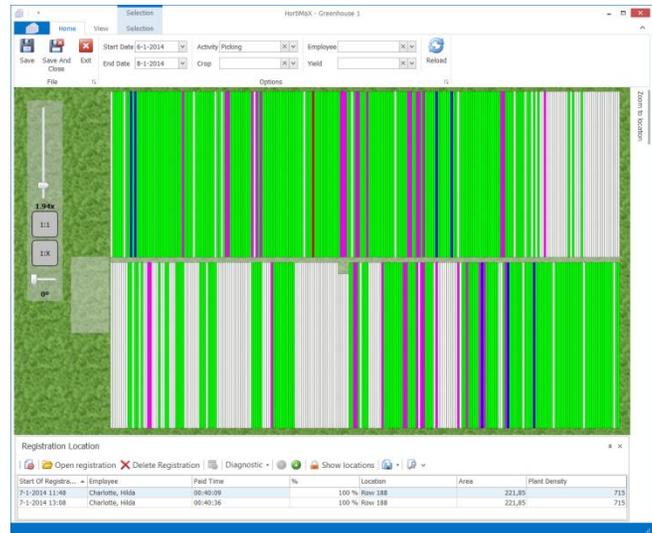
3 Analyzing data

HortiMaX Productive includes a number standard analysis reports, which you can customize to suit your needs. For instance, you can show or hide certain columns and set or modify data filters. This allows you to only display the data you need to respond quickly to what is happening in your business.
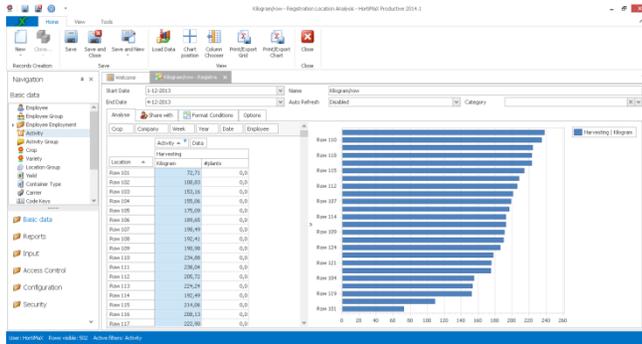
3.1 Numerical and graphical analyses

The template reports allow you to create customized reports. You can determine which fields in these reports should serve as filters, rows or columns. HortiMaX Productive uses pivot tables to organize data in a flexible and manageable way.
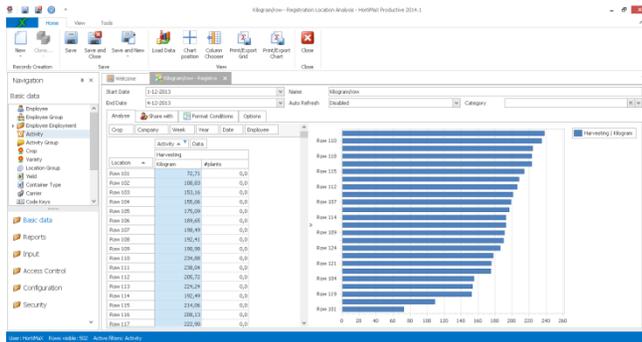
For your convenience, numerical data can be displayed in various graphical formats. This lets you choose a graphical format that best suits your needs.
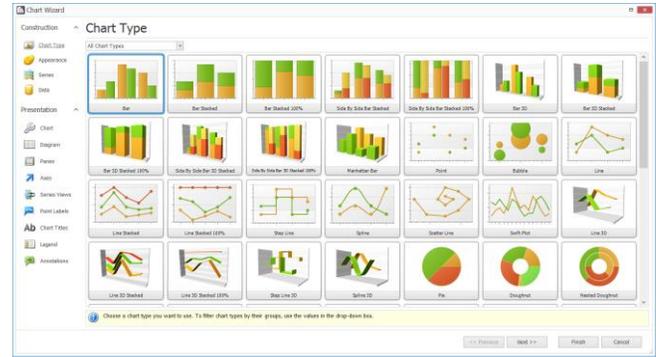
3.2 Reports

In addition to the numerical and graphical analyses, HortiMaX Productive includes the ability to generate reports.
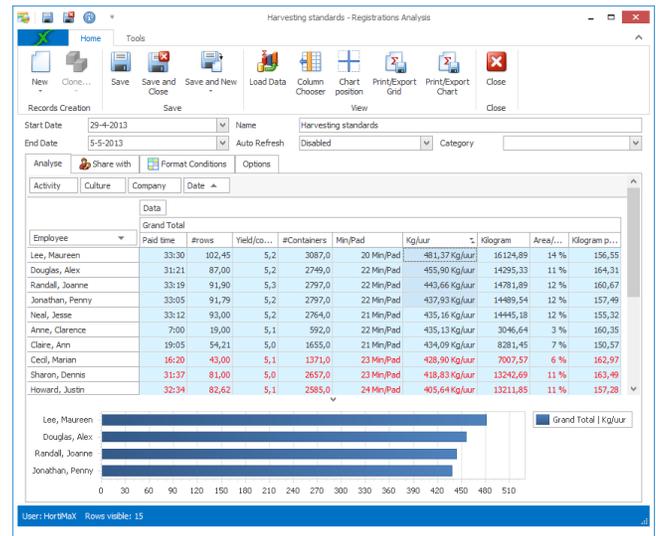
Reports are designed to be printed or exported to HTML, CSV, PDF, or a similar file format and can be e-mailed directly from HortiMaX Productive. Once a report has been generated, the print preview will be displayed. This screen enables you to print or export the data shown.
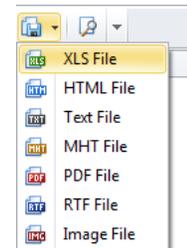
3.3 Flexible cost analysis options

Costs are calculated per registration. The cost of a registration is made up of the elements listed below. Costs are shown in both gross and net amounts.

- Hourly rate (if piece rate wages do not apply)
- Bonus per hour, kg or piece (provided the worker in question achieves the pre-set requirements and/or norms)
- Additional pay for working overtime, at night or during the weekend
- Additional pay for working on national holidays (a different bonus rate may be awarded if a worker works on holidays, such as Christmas)
- Possible corrections if the average hourly wage (including any bonuses and additional pay) for a day or week is below the minimum wage.

Costs can be analyzed by:

- Compartment (block), row or table
- Crop, worker or activity
- Business location or company

4 Access Control

The *Access Control* module allows you to specify which workers may enter your greenhouse facilities, through which doors and at what times. The pre-set access permissions are easy to modify if certain workers require extended access time in a particular period.

Workers use code keys to open electronically-locked doors or 'access points'. After a worker has been identified, Productive compares that information with the access rights assigned to that worker. If the worker may enter through that access point, the system will open the electronic lock on the door. Productive also registers who was allowed entry into your facilities, through which access point and when, as well as which workers were denied entry and at what times. This allows you to greatly enhance your company's security.

Productive can also distinguish between 'entrances' and 'exits', so you can quickly check which workers are present. This information can mean the difference between life and death in the event of an emergency, such as a fire.

Workers can also be denied the ability to enter data on the terminals if they haven't identified themselves at an access point. This forces your workers to log in when they enter your facility.

5 HortiMaX iProductive

iProductive is the collective name given to the HortiMaX apps designed to help you use the Productive management solution more efficiently

iProductive consists of two apps:
- iProductive Supervisor
  This app allows greenhouse managers to effectively monitor production, apply data entry corrections, as well as view and enter observations and quality evaluations.
- iProductive Labor Tracking
  This app provides team leaders or workers with a simple and straightforward method of entering labor data (registrations).

With iProductive Supervisor and iProductive Labor Tracking, paper is a thing of the past: you'll be 100% digital. No more copying data by hand, which is both time-consuming and error-prone. But what if you move out of range of your WiFi network? No problem at all – the iProductive apps even work offline. The data entered will be uploaded automatically once your WiFi connection is restored.

With smartphones and tablet devices becoming commonplace, the development of iProductive was a logical step forward.

5.1 iProductive Supervisor

Reducing administrative burden, so more time can be spent on your product, workers and quality improvement – that, in a nutshell, is the power of our iProductive app. HortiMaX Productive was designed to save costs and make workers and managers more efficient. With iProductive Supervisor, greenhouse managers can complete their tasks even faster and easier, and do so while on the move. This allows them to spend more time in the greenhouse, focussing on what matters most - your crop. That's why iProductive is the must-have management and operations tool for every manager in the horticulture sector.

iProductive complements our existing Productive solution and is mainly intended for supervisors and crop managers, as well as

maintenance engineers who often work with labor management, quality control or pest registration forms.

5.1.1 Adjust bonuses by work quality

Productive gives you the freedom to decide how worker performance should be evaluated. After you have defined the evaluation criteria, they are linked to an activity together with a weighting factor. This weighting factor determines how an unsatisfactory rating will affect the worker's bonus, motivating your workforce to do the best job they can. This is optional, however, since evaluations can also be used simply for reporting purposes.
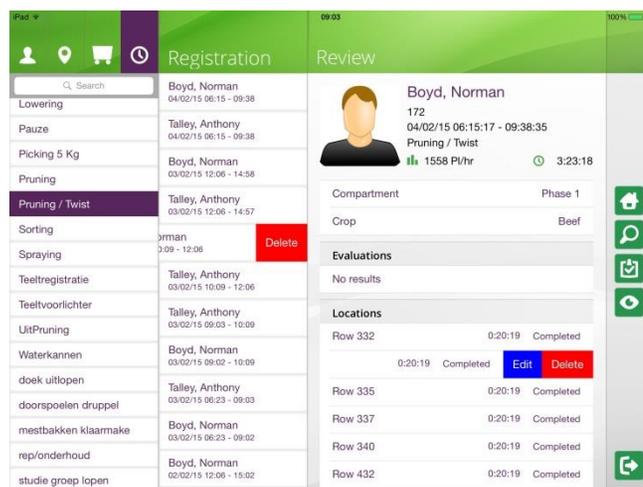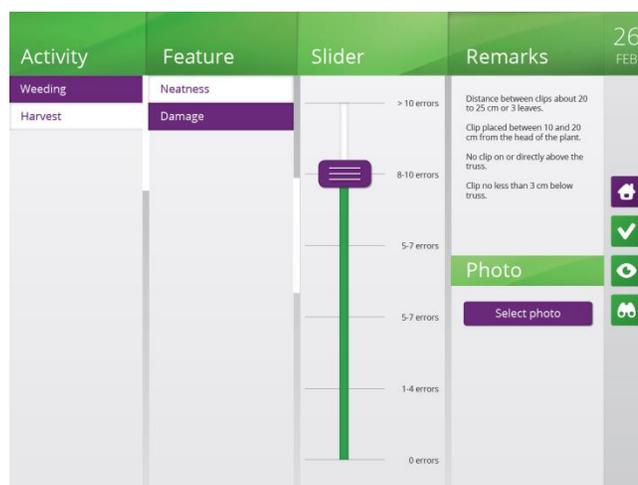
5.2   iProductive Labor Tracking

The iProductive Labor Tracking app provides an alternative or expansion to fixed terminals or MiniMaX handheld terminals.

With iProductive Labor Tracking, your workers and team leaders can enter labor and productivity data. The app features a simple and intuitive design, making it quick and easy to work with.

The app can be used in both personal or team leader mode.

5.2.1   Team leader mode

When the app is in Team Leader mode, the team leader can enter labor data for his or her team. Activities can be entered for an individual, a selection, or everyone.

At the start of a shift, a worker is added to the team. Before the worker carries out an activity, the team leader selects the activity and the required additional information, such as the compartment, row, crop and/or project. This means that the team leader is responsible for entering the registrations for his/her team.

activities that they have carried out during their shift. This means that the workers are responsible for entering registrations.
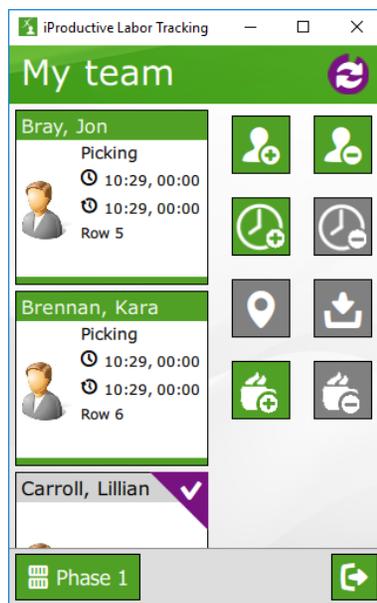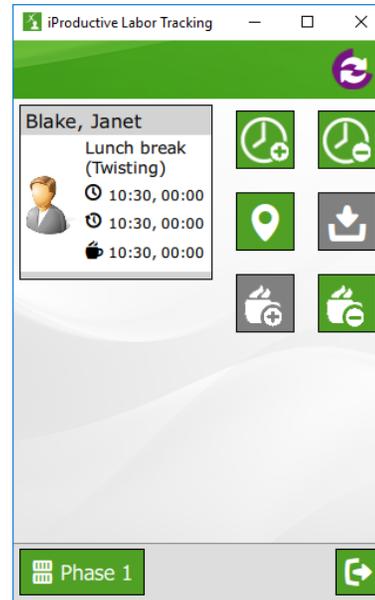
5.2.2   Personal mode

When the app is in Personal mode, workers each have their own smart device to enter the

6   Productive Insight

Productive Insight allows you to create presentations to be displayed in an area frequented by your staff, such as the canteen or hall. These presentations are designed to be shown on a television screen and will cover the entire screen.

The presentation may consist of the following slide formats:
- Table: every Productive analysis can be shown as a table.
- Graph: labor productivity (e.g. kg harvested per hour) can be shown by worker, worker group, etc.
- Microsoft Office documents: this allows you to show documents created in Microsoft Office, such as the work schedule for that day.
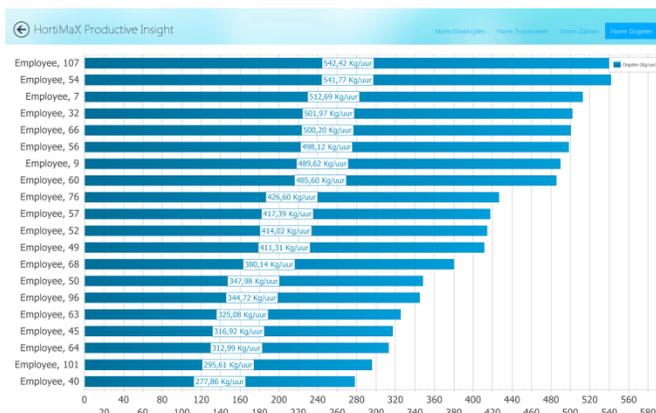
The slides are clear and visually attractive, so workers will have no trouble understanding the information.

If you have defined multiple slides, each slide will appear on the screen for a pre-set time, followed by the next one. These slide transitions will help draw your staff's attention to the screen.

7   Data entry

HortiMaX Productive supports various types of input systems to register labor and production data. Both systems provide real-time communication, enabling data to be analyzed straightaway. Both systems also allow workers to instantly view their performance results upon registering an activity. Real-time availability of data, options for checking data and motivating performance norms are vital to optimise the operational management of your business.

7.1 Fixed Terminals

If this input system is chosen, fixed connection points are installed for terminal holders and removable terminals. Both are splash proof.

Prior to use, the terminals are placed in the holders. The terminal holders recharge the terminals and allow data to be transmitted in real time. In most cases, it is sufficient to install a terminal holder every 16 meters on the walk paths.

We recommend keeping a terminal in every holder for labor-intensive crops, such as tomatoes or cucumbers. The terminals can be moved for less labor-intensive crops, such as sweet peppers.
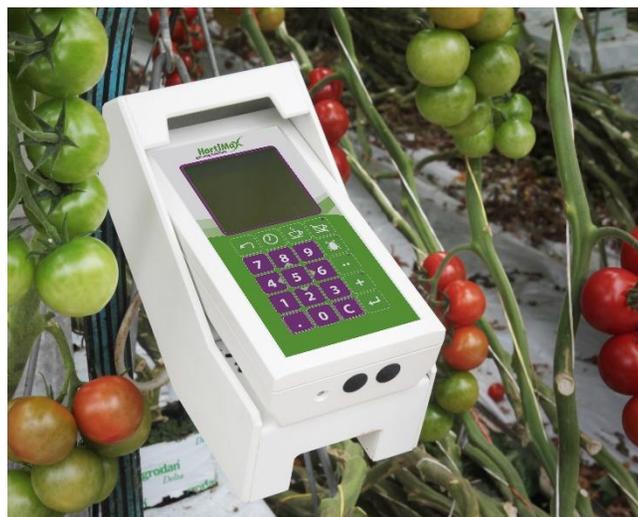
Workers enter data on the terminals using the numerical keypad or the RFID tags. Practical experience has shown that workers quickly learn the various input methods.

Benefits of fixed terminals:

- RFID support for worker identification
- Robust terminals and terminal holders
- No terminal required for each worker
- Large and clear display
- Menu-driven system

7.2 Weighing equipment

The following types of weighing scales can be connected to HortiMaX Productive:

- Standard mobile weighing scales
  Only supported in combination with a fixed terminal network.
- Widened mobile weighing scales Only supported in combination with a fixed terminal network.
- Mobile weighing hoists Only supported in combination with fixed terminals.
- Standard fixed weigh scales
- A fixed, countersunk weighing scale

HortiMaX weighing scales are tailored to your specific needs, making them suitable for any type of harvesting cart. Mobile weighing scales are connected to terminal holders with the aid of 2 connectors: one connector for the terminal and one for the weighing scale.

Mobile weighing scale, including or excluding automatic cart recognition

Manual input of cart number also possible

A fixed, pipe-rail weighing scale, including or excluding automatic cart recognition

Manual input of cart number also possible

A fixed, countersunk weighing scale, including or excluding automatic cart recognition

Manual input of cart number also possible

The mobile weighing hoist is used, for instance, for containers that are emptied from underneath (typically used in sweet pepper harvesting). A weighing hoist and fixed weighing scales are permanently connected to the fixed terminal network. If desired, a fixed weighing scale can be equipped with a harvesting cart recognition system.

7.3 MiniMaX handheld terminals

HortiMaX's pocket-sized MiniMaX terminals make it a breeze to enter labor and harvest data while on the move. All data is available in real time and provides instant information on the progress of activities, costs, worker performance, harvesting and quality. This makes your operational processes transparent and easier to manage.

free, since you can restrict your workers to only scan the RFID tags of activities, crops, rows, tables, containers or harvesting carts, for instance.

Information is transmitted via an industrial wireless network, which was specially designed for this application. These networks have been tested extensively in greenhouse environments. If the MiniMaX is out of range and the connection is lost, the device is able to store up to 2GB of data for transmission later. After a day's use, the battery can be recharged at night via a USB port.

Benefits of the MiniMaX handheld terminals:

- Utilizes an industrial wireless network
- Rechargeable via USB or docking station provided
- Clear display
- Operated with 5 buttons and icons
- Able to scan benches, rows, containers, or any other object with an RFID tag
- Pocket-sized (6x10x1.8cm)

The MiniMaX input terminals are sold separately as an addition to the standard terminal network.

Our MiniMaX solution is provided with a USB RFID read/write unit. This device allows you to assign RFID tags to basic data using the Productive software.

The MiniMaX so convenient thanks to its clear colour display, simple five-button controls and scanning capability.

A worker simply selects an icon or text on the display and presses the OK button. If the worker has just completed an activity, that worker is able to select it from a list in his/her native language. The display will then instantly show his productivity level in plants per hour or pieces per hour, for instance. This feedback helps to boost the motivation of your workforce considerably.

Inputting data with the MiniMaX is fast and error-

8   System

The figure below shows the proposed interface infrastructure, including how the information exchange will occur.

8.1   Data storage

HortiMaX Productive uses the Microsoft SQL Server database. SQL Server Express is included as standard. This free-to-use database edition has a limit of 10GB.

Under normal use about one gigabyte of data is collected.

The use of standard database software allows external applications to access your labor and harvesting information.

8.1.1   Multi-master replication

If multi-master replication is used, multiple databases can be inserted, updated and deleted. Modifications are synchronized with other HortiMaX Productive SQL databases. This offers many benefits to large companies with several greenhouse sites. It also allows high-level back-up systems or facilities to be used.

8.2   Networkarchitecture

A terminal network may consist of the following components:
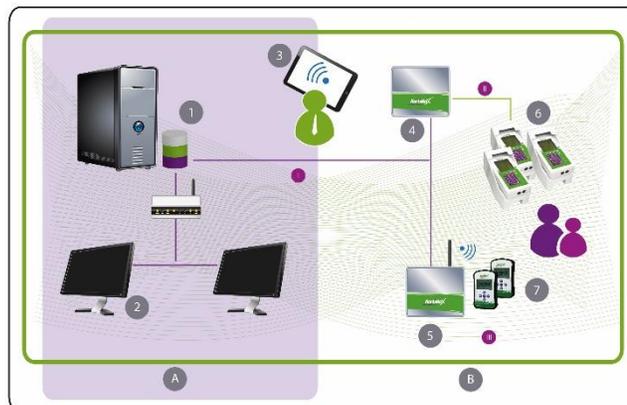
1) Office
2) Greenhouse

1) Productive server
2) Productive workstation
3) iProductive iPad app
4) Terminal network controller
5) MiniMaX Coordinator
6) Fixed terminals (model 7)
7) MiniMaX mobile terminals

  i. Ethernet
 ii. Wired network (model 7)
iii. Wireless network (MiniMaX)

8.3   System Requirements

This chapter describes the system requirements for each application.

HortiMaX Productive server
- Operating System
  Windows Server 2016, Windows 10 (32/64 bits)
- Minimum hardware requirements
  Dual Core CPU 2.4 GHz, 4GB of RAM memory, 20GB of hard disk space
- Recommended hardware requirements
  Dual Core CPU 2.4 GHz, 8GB of RAM memory, 20GB of hard disk space

HortiMaX Productive workstation
- Operating system
  Windows XP, Windows 7 (32/64 bits),

Windows 8 (32/64 bits), Windows 10 (32/64 bits)
- Minimum hardware requirements
Dual Core CPU 2.4 GHz, 4GB of RAM memory, 1GB of hard disk space

HortiMaX Productive Insight
- Operating system
Windows 7 (32/64 bits), Windows 8 (32/64 bits), Windows 10 (32/64 bits)
- Additional requirements
Microsoft Office, if Office documents are to be shown as slides
- Minimum hardware requirements
Dual Core CPU 2.4 GHz, 4GB of RAM memory, 1GB of hard disk space

9   Overview of features

Feature	
Ability to analyze data quickly and easily	✅
Ability to monitor costs and productivity by site, worker, activity and crop	✅
Permission-based setup for all users (restriction to certain reports, etc.)	✅
Secure data backup for maximum continuity and operational reliability	✅
Programming multiple activities at user level	✅
Reports and detailed breakdowns of labor costs by individual, team, phase, greenhouse and variety of produce	✅
Reports and detailed breakdowns of labor costs on a contract basis (if more than one contract labor provider is used)	✅
Ability to manage bonus payments based on individual and team-based productivity[1]	✅
Graphical representation of your greenhouse for quickly analyzing production data or correcting data entries by staff.	✅
Options for site-to-site communication and access to data at all sites	✅
Minimal manual input of labor data for payroll service providers.	✅
Preview/edit function before sending wage data to the payroll service provider is considered essential.	✅
Ability to display worker productivity data on a computer or video screen viewable by workers (e.g in your office or the canteen) in real-time	✅
Workers are identified by means of RFID chips (125KHz, type: EM4102).	✅

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