



NESPRESSO®

BLUEBOTICS  
Mobile Robots at your Service

# The Nesbot™ Concept

## Overview

Nesbot™ is a robot. It is composed of two main parts: The fully autonomous mobile base and the automatic self-contained coffee machine.

## Fully Autonomous Mobile Base and Navigation

Nesbot™'s mobile base is a differential drive system running BlueBotics' autonomous navigation: ANT®. The navigation is composed of three parts: Map; Planning and Motion; and Localization.

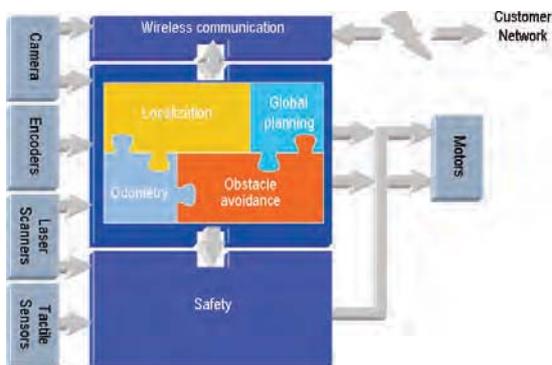
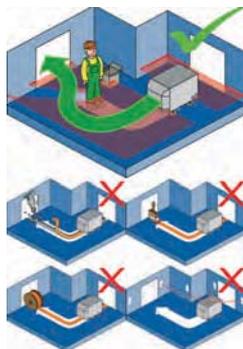


Fig. 1. ANT® uses various sensors for navigation and safety.

## Embedded Automatic Coffee Machine

The embedded automatic coffee machine has to fulfill some specific technical rules in order to work as an autonomous coffee machine. Issues like limited power consumption, fully automatic capsule handling with different blends, management of cups and trays had to be resolved.

The coffee machine part of the Robot can be divided into three subassemblies, which are the capsule storage and dispensing system, the coffee brewing system with hot water storage, pump system and extraction unit, and finally the cup and tray system, allowing a fully automatic coffee preparation process onboard.



Fig. 2. The self-contained coffee machine permits automatic just-in-time positioning of cups on the tray. The cup tower constantly controls the position of the next cup and the number of remaining cups. After the prehensor places the cup on the tray, the latter turns to put the cup under the brewing head. In parallel, the capsule dispenser releases the correct blend. The brewing can start and the user can enjoy NESPRESSO's superior quality ground coffee.

## The User Interface

### Overview

The user interface is one of the key elements of the system as it is one indispensable component for the service on which the business model will be based. There are in fact two different interfaces: The first one is a web-based application permitting the ordering from any web browser in a secured intranet network. The second interface is accessed via a pocket PC, which is placed on Nesbot™. The pocket PC can be used directly on Nesbot™ (onboard) to choose the coffee blends or it can be used off-board allowing the users choosing their blends for example around a conference table.

### Direct Ordering

Direct ordering consists of making the coffee order in front of the robot, for immediate coffee preparation. A pocket PC with a graphical interface allows this operation. The simplicity of use is key to this interface, as it is absolutely necessary, that even a non expert understands how to make a coffee. The graphical interface shows the six blends available on the Robot as well as a real time representation of the cup tray. As soon as the cup(s) or tray is removed, the cup color on the display turns back to gray. A simple touch on the screen at the desired blend starts the coffee preparation process.

### Ordering methods:

#### Onboard Ordering

This means that the pocket PC remains physically on the Robot and ordering is made in front of the machine.

#### Offboard Ordering

This means that the pocket PC can be removed from the robot and given around in a conference room for example. Every person can make his order and the Robot will start preparing the orders.

Normally, in a conference room the robot will not move around to each user, as often the room is too small. So the tray makes sense here, in order to remove 4 coffees at once and put them on the table.

#### Remote Ordering

Remote ordering consists of ordering a coffee without being in front of the Robot itself. The ordering tool in this case is a web based application, able to be integrated in a protected intranet network. You can either choose to order the robot without preselecting a coffee blend, or you directly order a coffee. According to your type of order, the robot arrives at the defined place, the defined time, and if you have ordered coffee, will start the coffee preparation automatically.

If you only ordered the robot, you can then proceed by direct ordering, explained in the previous paragraph.



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The future is present

the first working day of Nesbot™

