

## BGT60TR13C

Advanced XENSIV™ 60GHz radar sensor  
for consumer & IoT applications

FY 21/22



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# PSS target applications are enabled by a small set of versatile core technologies including radar sensors



**Augmented & virtual reality**



**Smart city**



**Voice-user interface**



**Commercial and consumer multicopters**



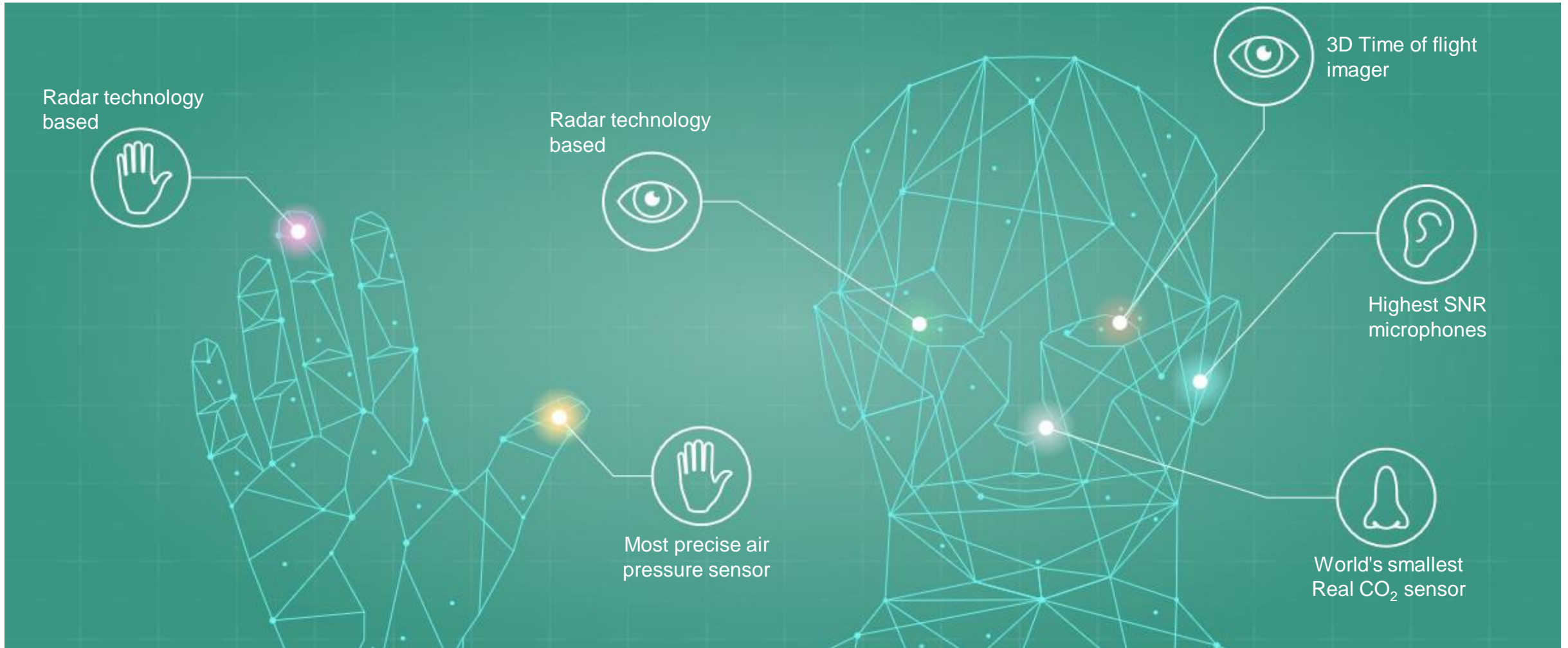
**Gesture control**



**Industrial robotics**

# Intuitive Sensors – Giving things the human senses to make our lives easier

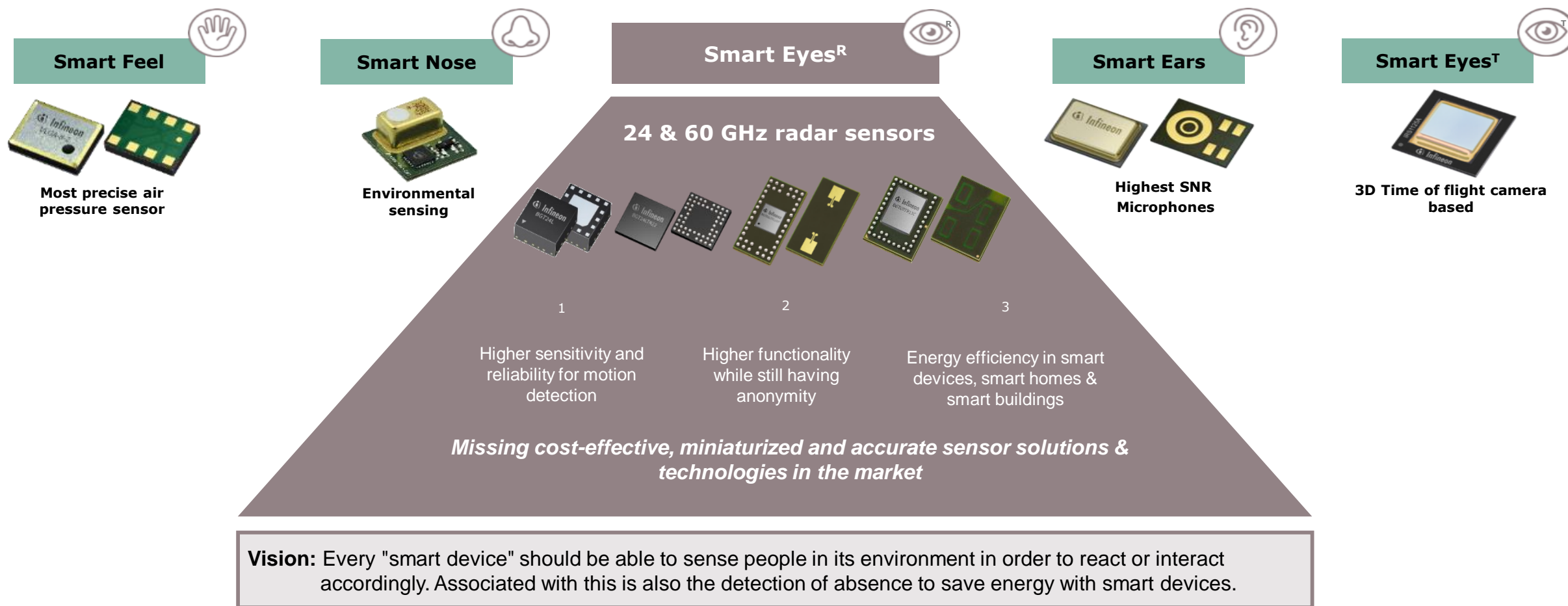
Infineon **XENSIV™ sensors** are exceptionally precise thanks to industry-leading technologies. They are the perfect fit for various customer applications in automotive, industrial and consumer markets.





# The Smart Eyes – Track your environment, anytime, anywhere

## Infineon XENSIV™ sensors – simulate the human senses



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# Among all sensing technologies RADAR offers the most opportunities

## Radar detects any motion

- › Radar can detect even the smallest kind of motion including vital signs
- › No need to wave in front of motion triggered lighting systems or similar devices
- › **Radar feels presence!**



- › Radar can sense distance, velocity, breathing & heart rate, gestures, track people and much more!
- › Radar performance parameters can be adjusted
- › **Radar is versatile and flexible!**

## Radar is powerful



## Radar detects through obstacles

- › Radar waves penetrate all non-conductive materials
- › Radar sensors can be hidden in the end product, allowing product design flexibility
- › **Radar sensing is anonymous!**

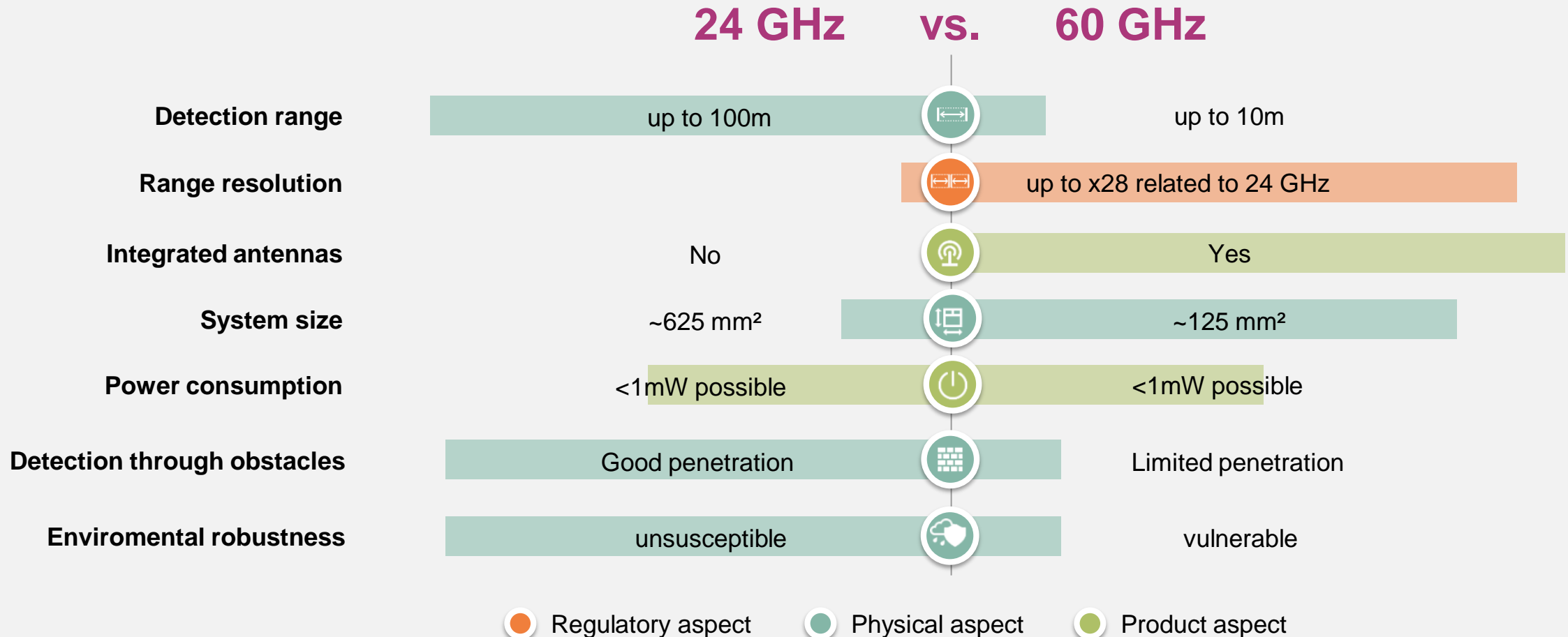
- › Radar works in sun, dark and all other lighting conditions
- › Radar is robust to fog, dust and temperature
- › Radar sensors do not require maintenance
- › **Radar is environmentally resilient**



## Radar is robust

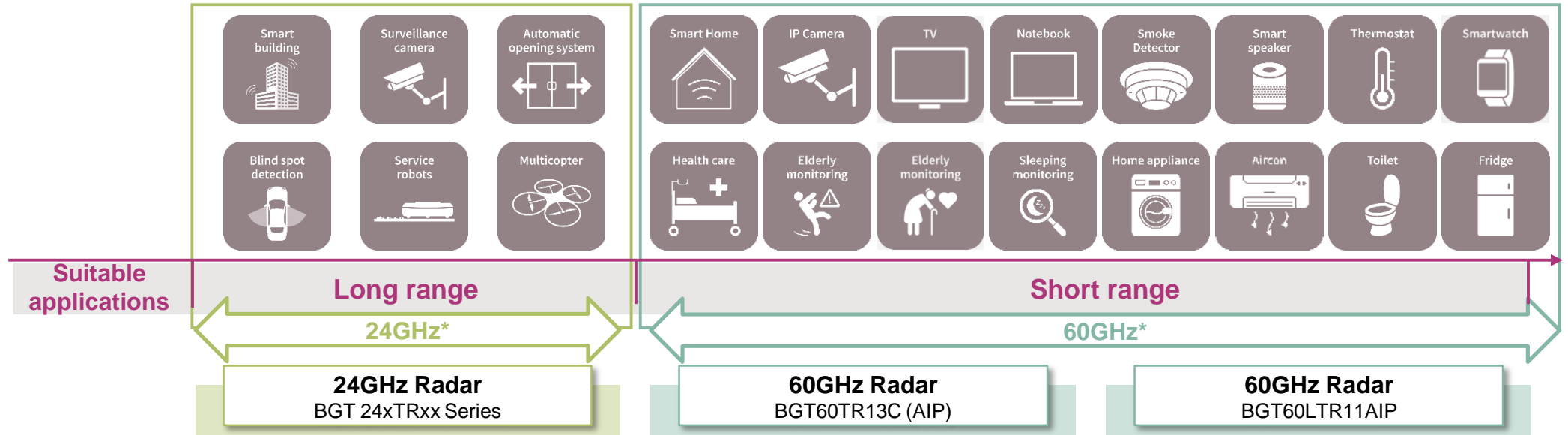
# Decide on the right frequency depending on your personal requirements towards the radar system

We have Doppler as well as FMCW radar sensors in both of our radar families





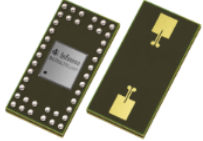
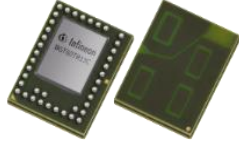






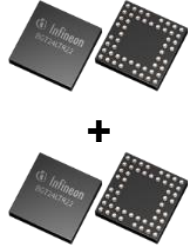
# With our XENSIV™ 60 GHz radar sensors we address different applications than with our established XENSIV™ 24 GHz portfolio



<b>Detection Range</b>	>100m (depends on antenna)	Up to 10m	Up to 7m (in autonomous mode)
<b>Range Resolution</b> (Target separation)	Medium (up to 75cm)	High (up to 2,5cm)	---
<b>RF System Size*</b>	25mm x 25mm	17mm x 13mm	6.3mm x 3.3mm
<b>Antenna</b>	External Antennas	Integrated: 1Tx and 3Rx	Integrated: 1Tx and 1Rx
<b>Environmental Factor Robustness</b>	High-Moderate	Low-Moderate	Low-Moderate
<b>Material Penetration</b>	Higher	Lower	Lower
<b>Sensitivity</b>	Lower	Higher	Moderate

\*Dependent on Application and System

# Infiniteon currently offers a broad portfolio of XENSIV™ 60GHz and 24GHz radar sensors

	1Tx / 1Rx	1Tx / 2Rx	1Tx / 3Rx	2Tx / 2Rx	2Tx / 4Rx
60GHz	<div>PIR replacement</div> <div></div> <div>3.3x6.5 mm<sup>2</sup></div> <div><b>BGT60LTR11AIP</b> Doppler Radar Antenna-in-Package</div> <div>Available</div>		<div>Consumer</div> <div></div> <div>5 x 6.5 mm<sup>2</sup></div> <div><b>BGT60TR13C</b> FMCW Radar Antenna-in-Package</div> <div>Available</div>		<div>Automotive</div> <div></div> <div>6 x 6 mm<sup>2</sup></div> <div><b>BGT60ATR24C</b> FMCW Radar Without Antenna</div> <div>Available</div>
24GHz	<div></div> <div>2.4 x 2.4 mm</div> <div><b>BGT24LTR11</b></div> <div></div> <div>4.5 x 5.5 mm</div> <div><b>BGT24MTR11</b></div>	<div></div> <div>4.5 x 5.5 mm</div> <div><b>BGT24MTR12</b></div>	<div></div> <div><b>BGT24MTR11</b> + <b>BGT24MR2</b></div>	<div></div> <div>3.6 x 3.6 mm</div> <div><b>BGT24LTR22</b></div>	<div></div> <div>+</div> <div><b>Cascading</b> <b>BGT24LTR22</b></div>

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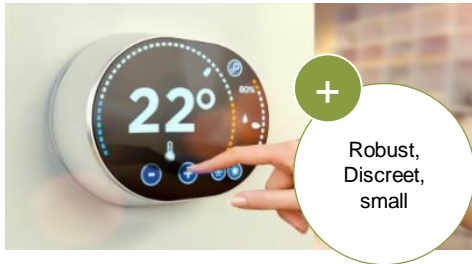
# Use cases for XENSIV™ 60 GHz radar sensors are versatile.

→ Radar can be deployed in many different applications.

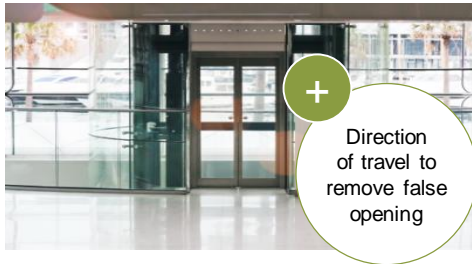
## Applications for Radar

### Motion detection

#### Smart Home



#### Door opening



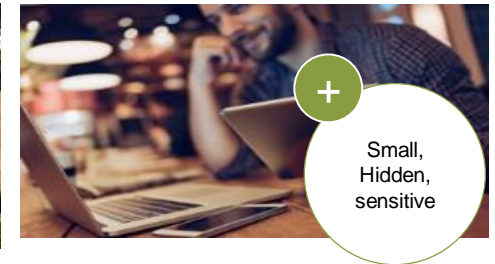
#### Security



#### Lighting

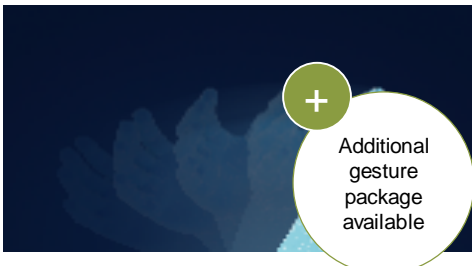


#### Monitors & Laptops



### Advanced sensing

#### Gesture control



#### Material detection



#### Smart Appliances



#### Robotics



#### Vital sensing





Use cases for 60 GHz radar sensors are versatile.  
→ Radar can be deployed in many different applications.

## Applications for Radar

### Motion detection

### BGT60LTR11AIP

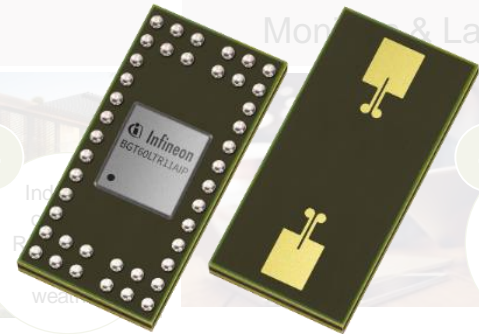
- › Smart & cost-effective macro motion sensor solution
- › Autonomous mode (operating without  $\mu\text{C}$ )
- › Flexibility by hardware preset pins

→ Enabling radar for everyone!

Robust,  
Discreet,  
Small

Direction  
of travel to  
remove false  
opening

+  
Privacy  
protection,  
and  
increased  
accuracy



+  
Small,  
Hidden,  
sensitive

### BGT60TR13C

### Advanced sensing

- › FMCW radar sensor with integrated antennas
- › Detecting micro motions (mm)
- › Provides max. flexibility with external signal processing

→ Providing max. functionality for experienced users!



Added  
config  
pack  
available

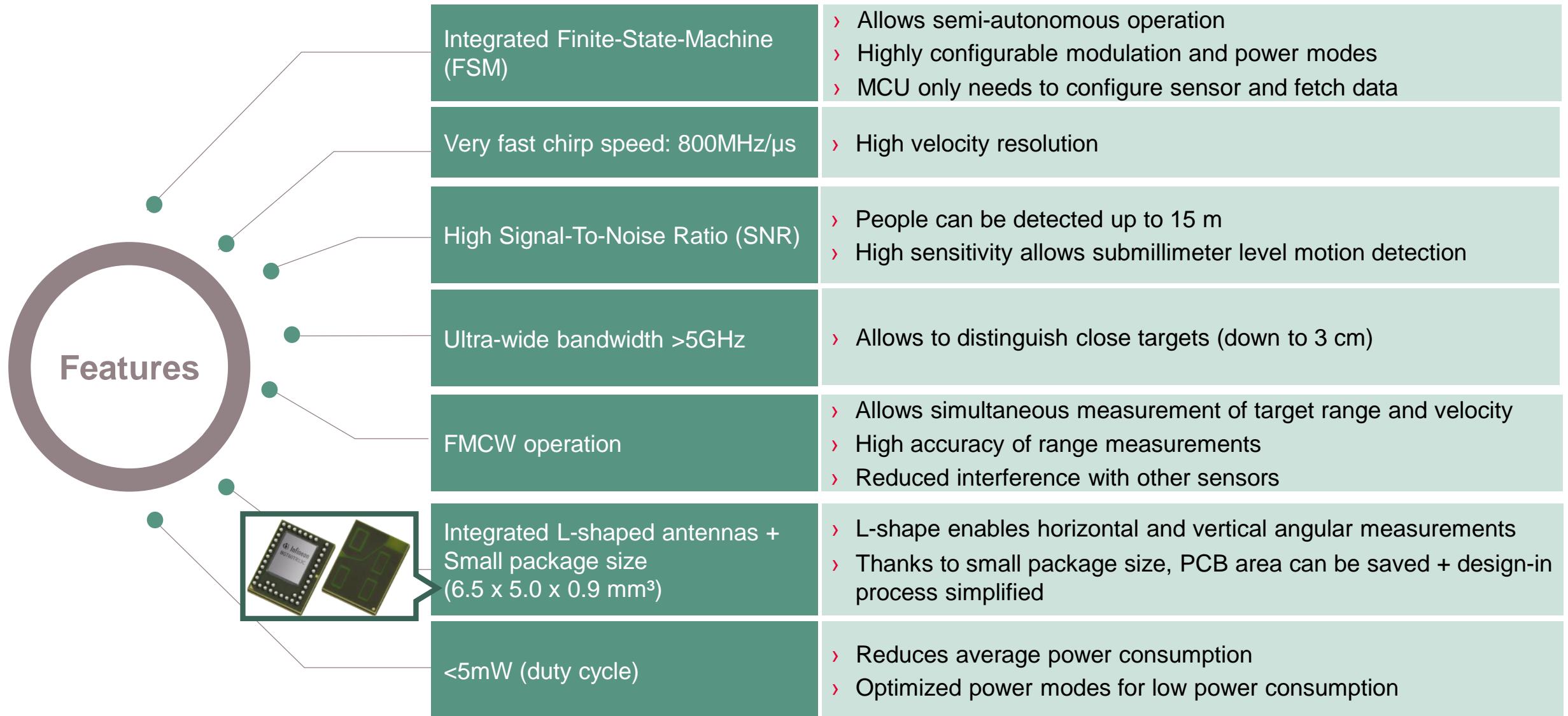
+  
Object  
recognition &  
classification

+  
Robust,  
small  
footprint

+  
Safety,  
accuracy and  
robustness

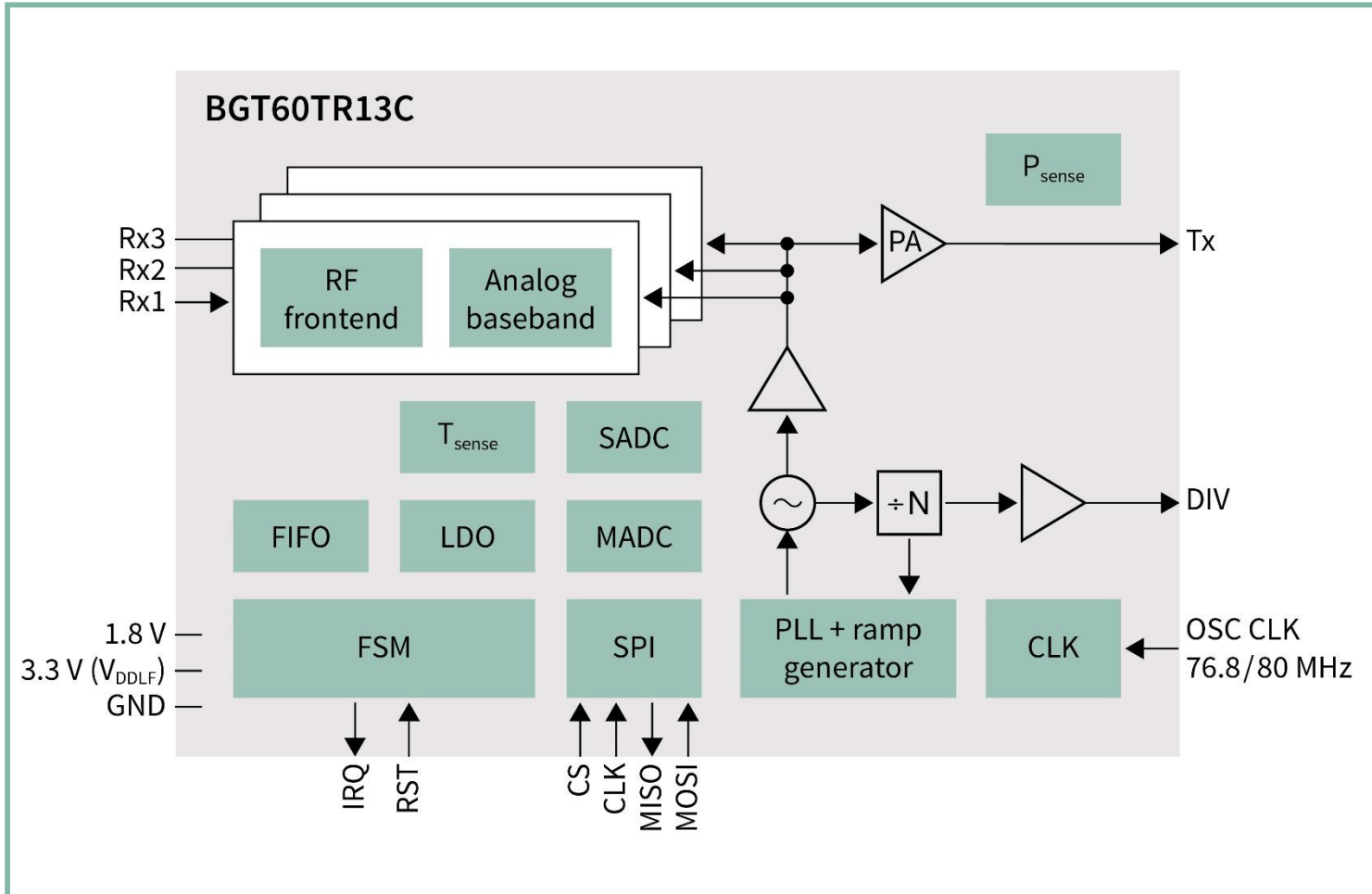
+  
Breathing &  
heart rate  
measure-  
ment

# BGT60TR13C feature-set offers several benefits to customers worldwide



BGT60TR13C is equipped with three receiving and one transmitting antenna, which ensures that a huge variety of use cases can be tackled

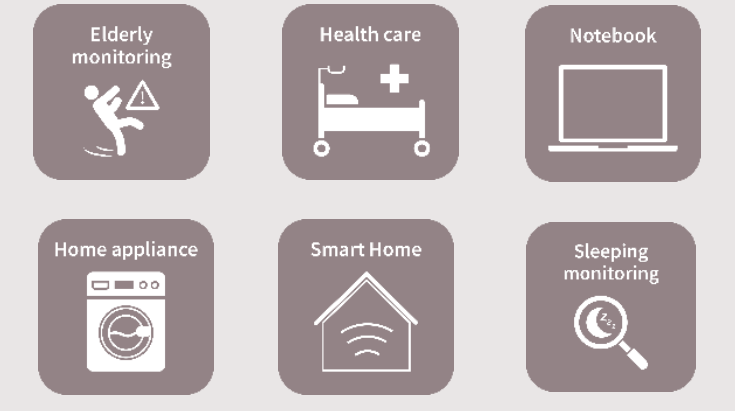
**BGT60TR13C block diagram**



**Use cases**



**Applications**



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A man in a dark suit stands with his back to the camera, reaching out towards a glowing digital interface. The background is a composite image of a city skyline, a world map, and various technological icons like a globe, a house, a Wi-Fi symbol, and a smartphone. The interface consists of concentric circles and lines that the man appears to be manipulating. Two purple thought bubbles are present, one on the left and one on the right, each containing text and a globe icon. A large purple banner is in the bottom left corner.

BGT60TR13C  
Product Page



BGT60TR13C  
Demoboard Page



**Visit our  
Infineon website!**

# Interested in ordering a BGT60TR13C demoboard? Please contact your respective sales person & follow the below mentioned steps!

## 1) Order Demoboard

- › Order your required XENSIV™ 60GHz radar demoboard: To get the BGT60TR13C demoboard use the following OPN No:

SP No.	OPN No.
SP005728718	DEMOBGT60TR13CTOBO1



## 2) Download Infineon Toolbox

- › Download the Infineon Developer Center: <https://www.infineon.com/toolbox>
- › Sign-in to the Infineon Developer Center
- › Ensure that you're always logged-in

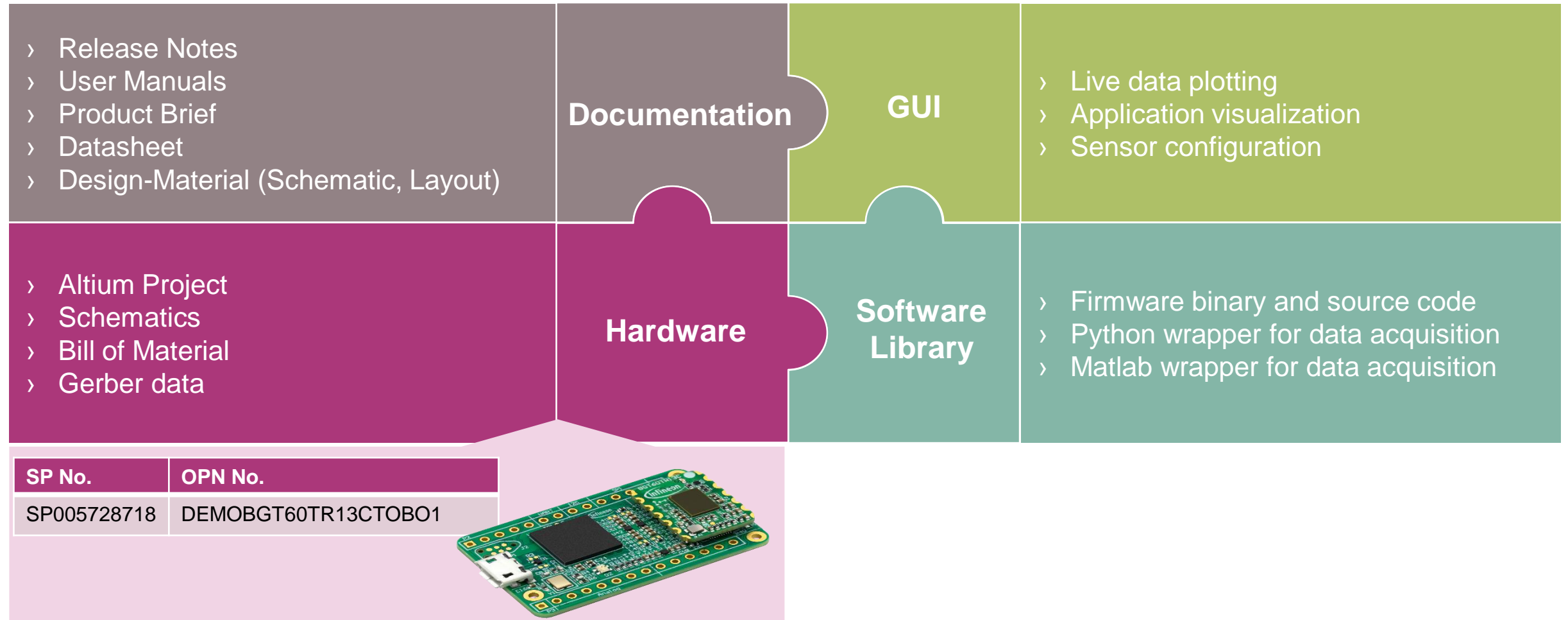
## 3) Download RDK Tool

- › Search in the tool finder for: **Radar Development Kit**
- › Download the Radar Development Kit Tool
- › Next slide-set will provide a detailed overview of the RDK content



Curious to learn more about BGT60TR13C Hardware & Software offering? Watch [this training!](#)

# Radar Development Kit (RDK) Tool offers BGT60TR13C documents, hardware specifications, GUI as well as a software library





Part of your life. Part of tomorrow.