Towards 0.7 Terahertz Silicon Germanium Heterojunction Bipolar Technology

**Von** 2012-10-01 **bis** 2016-06-30, Abgeschlossenes Projekt

### Projektdetails

<table>
<thead>
<tr>
<th>Gesamtkosten:</th>
<th>Thema(en):</th>
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<tbody>
<tr>
<td>EUR 12 281 856</td>
<td>ICT-2011.3.1 - Very advanced nanoelectronic components: design, engineering, technology and manufacturability</td>
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<tr>
<th>EU-Beitrag:</th>
<th>Finanzierungsprogramm:</th>
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<tr>
<td>EUR 8 600 000</td>
<td>CP - Collaborative project (generic)</td>
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**Koordiniert in:**

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### Ziel

DOTSEVEN is a 3.5 year IP proposal for a very ambitious R&D project targeting the development of Silicon Germanium (SiGe) Heterojunction Bipolar Transistor (HBT) technologies with cut-off frequencies (f\text{max}) of around 700 GHz. Special attention will be paid to clearly demonstrate the capabilities and benefits of this technology with benchmark circuits and advanced system applications in the 0.1 to 1 THz range like THz imaging and sensing, wireless Gb/s communications and millimeter-wave radar. For a given lithography node, HBTs provide much higher cut-off frequencies compared to CMOS transistors while offering higher power density and better analog performance. SiGe HBT technology and SiGe HBT enhanced CMOS (SiGe BiCMOS) are key enablers for demanding mm-wave systems requiring more than a few µWatts of RF output power (which limits the applicability of even very advanced CMOS) and also offer high integration levels at low cost which precludes expensive and less integrated III-V solutions. 10 out of the 12 DOTSEVEN participants were already partnering in the predecessor FP7 project DOTFIVE which succeeded for the first time to push f\text{max} of SiGe HBTs (at room temperature) into the 500 GHz region thus setting a new world-wide benchmark. Triggered by the impressive DOTFIVE results, several activities in the rest of the world already have started to catch up or even surpass our achievements. The main objective of the highly qualified and motivated DOTSEVEN consortium is therefore to significantly expand the successful work of DOTFIVE, to further strengthen Europe's leading edge position in SiGe HBT technology and modeling as well as SiGe enabled mm-wave applications and to stay significantly ahead of non-European competition. A powerful and success-proven consortium has been set-up to achieve these goals. It consists of 5 industrial partners (including 3 SMEs) and 9 well distinguished academic research institutes spread all over Europe.

### Verwandte Informationen

**Multimedia**

- Picture Dotseven
- Logo Dotseven
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