

Evidence to Parliamentary Enquiry into **The Semiconductor Industry in the UK**  
On behalf of SILC:

Background on SILC:

### **SILC - Sensing Innovation Leadership Council**

The Sensing Innovation Leadership Council is an independent, stakeholder-led organisation. Our role is to support our community members to exploit their sensing capability and to act as their voice to inform policy makers and funding organisations.

Our formation was driven by:

- A recognition of the major and growing importance of sensing
- The opportunities that sensing technology presents to the UK economy
- The difficulties of operating an innovation pipeline in such a complex and diverse area

The Council is formed by representatives from government, academia, technology integrators, companies involved in the creation and exploitation of sensing capability and people with long experience in this cross-sectoral domain, we:

- Look at trends and opportunities in the world of sensing
- Identify areas of focus for the UK
- Work with stakeholders to support and address the opportunities presented.

We maintain links with a range of stakeholders and interested individuals to help inform thinking and ensure that opportunities are communicated.

*1. What is the current and future anticipated demand for common products built with semiconductor materials (e.g. computer chips) both in the UK and globally? SILC has its focus on sensing technologies. The use of semiconductors in this field is three-fold: a. increasingly, sensors are becoming Smart – i.e., they contain on-board processing to deliver quality assured data in a numeric (digital) format. This is achieved, as with all embedded systems using integrated circuits and often programable elements. b. the sensing elements themselves are often constructed from semiconductor materials. These will include physical, chemically, or biologically active structures excited by the measurand. It is this area that our comments will focus upon since these devices are unique to sensing and manufactured in lower volumes with commensurately smaller barriers to entry. c. the delivery of a sensed value will often include further processing e.g. using AI or machine learning, to take the raw measured value and produce actionable intelligence. This processing, whether embedded or remote will, of course, also make use of computers based in semiconductor materials.*

*2. What is the UK's semiconductor supply chain and is this secure? If not, how can this be improved? What specific strengths does the UK have to contribute to regional or global semiconductor supply chains? How competitive is the UK within the global context of the semiconductor industry? Focussing on sensing elements formed from semiconductors: most of these are currently sourced overseas in the far east, USA, or Europe. They tend to be bespoke and not readily substituted without product re-design. The manufacturing is low volume compared with semiconductor fabs for electronics. It therefore offers a lower barrier to entry if there is a will to onshore the activity.*

3. *Are there opportunities for strengthening different parts of the current UK semiconductor industry? What are the potential weaknesses and strengths of the UK semiconductor industry to meet future requirements of electronic device manufacturing?* On the down-side, there is little such manufacture in the UK presently. On the up-side it is much easier to instate than semiconductor fabs for electronics because of the lower volumes involved.

4. *In which industries does the UK not have an end-to-end semiconductor supply chain? Are there any opportunities for these supply chain gaps to be filled within the UK?* Sensing systems are users of semiconductors as part of their supply chain, but also a key part of the supply chains of all businesses producing products as well as many which provide services based on sensed data. SILC has long advocated a sensing systems innovation centre for the UK and this is something that such a centre would make available to UK businesses seeking to grow in sensing with the support of UK end user businesses with ever-increasing demands for sensing in products and services.

5. *How can the Government strengthen semiconductor research and innovation? Are there any current areas of weakness in the present Government strategy to semiconductor innovation? Is there effective communication between the various stakeholders within the UK's semiconductor ecosystem?* We do not see significant shortfalls in semiconductor R&D for design, but semiconductor manufacture could become a greater UK focus. However, it is only worth UK plc doing so as part of an industrial strategy focus of growing semiconductor manufacture as a whole, or in niche areas. One potential niche where the UK could excel and create both volume and competitive advantage at National level is semiconductor sensor manufacture.

6. *Does the UK have the required skills, talent and diversity to be able to boost its current semiconductor industry and to respond to future disruption?* Academic support to the semiconductor industry could rapidly switch to increase focus where needed. The skill sets required for volume production will need more focus.

7. *What are the potential national security concerns or vulnerabilities in our semiconductor industry? How should the UK collaborate with the United States and European Union? What are the ramifications on other industries and the wider economy within the UK?* In the short term, there are supply vulnerabilities for military hardware and potential cyber security vulnerabilities in UK infrastructure but longer term, there are concerns the UK investment in such key defence technologies as quantum sensing, may be exploited overseas though lack of UK based manufacturing capability. Some semiconductor manufacture may reasonably be regarded as a commodity to be sourced wherever the price is right. The challenge are identifying the dividing line e between this sector and more critical semiconductors and avoiding all of our national eggs being in one basket. The widespread and growing use of use of sensing across most of UK industry means that emerging vulnerabilities deserve some focus.

8. *Is the Government currently providing the clarity and direction required to enable growth and security in the semiconductor industry? Are the right governmental organisations involved with ensuring effective development of our current semiconductor industry to thrive in the future?* Arguably not. Certainly, in the area of semiconductor sensing device manufacture, there has been no UK government focus.