Swissmem White Paper Photonics Switzerland, Executive Summary

The rapidly developing markets require significantly faster, more powerful, miniaturized and low-consumption systems and components. Current electronic technologies can no longer achieve this by themselves. With photonics, completely new technologies and technology combinations are available that enable entry into lucrative growth markets. Photonics is a cross-sectional technology and a fundamental driver of technologies, processes, applications and business models. Photonics is recognized worldwide as the key technology of the 21st century. Together with the existing location strengths, Swiss industry photonics can enable a strong position in global markets. This is especially true for highly integrated microsystems with photonic and other functions such as sensors, lasers, data science, and many others. But this needs appropriate support and promotion.

Some relevant characteristics of photonic technologies:

- they have numerous applications, and thus enable significant cross-sectional technologies
- they show an annual growth rate of 6 - 8%
- today, they have the same significance for society as electronics in the past century
- Swiss industry and science are very well positioned in terms of research and market
- major initiatives based on photonics open up new fields of application.

However, if novel technologies develop rapidly and disruptively – opening up completely new product opportunities and at the same time massively influencing other areas of technology – then a broadly based, jointly implemented, national foundation program is essential to compete in the relevant markets. The targeted and coordinated collaboration between industry and science – supported by federal funding agencies – should empower Switzerland in the lucrative field of photonic technologies to achieve powerful innovation and competitive market performance in order to secure prosperity and high-quality jobs."