

WHITE PAPER

# PHOTONICS

SWITZERLAND

BACKGROUND – INTENTIONS – ACTION ITEMS

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# Background

- Motivation: Photonics Research Funding
  - in Switzerland
  - and abroad > D > EU > USA
- Photonics Roundtable
  - 2017-2018 7 meetings, so far
  - 15 Members: see Impressum, half-half mix Science-Industry
  - managed by Swissmem FG Photonics
  - RT to be maintained as kind of Steering Board, slightly amended

# Background

- Content

- Key: 1. Executive Summary

- > Recommended Actions 1-5 (Handlungsempfehlungen)
- > Editorial (by Hans Hess, Chairman Swissmem)

- Content:

2. Photonics Switzerland, a great opportunity for uniqueness's as sought by the Swiss Industry
3. state of Photonics in Switzerland as of today
4. actual activities of Photonics in Switzerland
5. Recommended "New Photonics Key Areas" for Switzerland

Recommended Actions 1-5 ( > Handlungsempfehlungen)

Annex: detailed background info to items 3 - 5

# Background

- Status White Paper
  - available in German and as of now in French too, both as PDF and as Brochur
  - Executive Summary in English to come
- Roll Out / Introductions / Publications
  - BR Johann Schneider-Ammann, WBF
  - Gregor Häfliger, SBFI, Vize-Direktor Forschung und Innovation
  - Innosuisse, several
  - WBK's, both chambers SR and NR (Kommission Wissenschaft, Bildung, Kultur)
  - ETH-Rat / Rektorate

# Intentions

with the [White Paper Photonics Switzerland](#), we pursue the following objectives

1. to develop further the existing Competences, Technologies and Know-how in Photonics / Optics in Switzerland
2. exploit the attractive growth rate of Photonic-Technologies for the Swiss Industry and Economy
3. to provide and to foster production within Switzerland, with the latest Products and Processes
4. to bolster up and to support the innovation, particularly with the SME
5. to build strong competitiveness for Swiss Entities in their international markets

# Intentions

*this means particularly:*

> promote best possible activities in favor of Research Funding for Photonics Technologies

*but as well:*

- initiate and support new offerings in Education in Photonics Technologies

*and, in order to support the a.m. objectives:*

- run any possible PR-activities to promote

Photonics as a most modern and rewarding Technology-Segment for Switzerland's Industry and Economy

# Action Items

1. Recommended Actions 1-5 acc. WP (Handlungsempfehlungen)
2. Research Funding
  - Impulsprogramm 2019-2020
  - BFI Botschaft 2021-2024
  - Innosuisse Projekte
3. Education in Photonics Technologies
4. PR-activities / Promotion Photonics

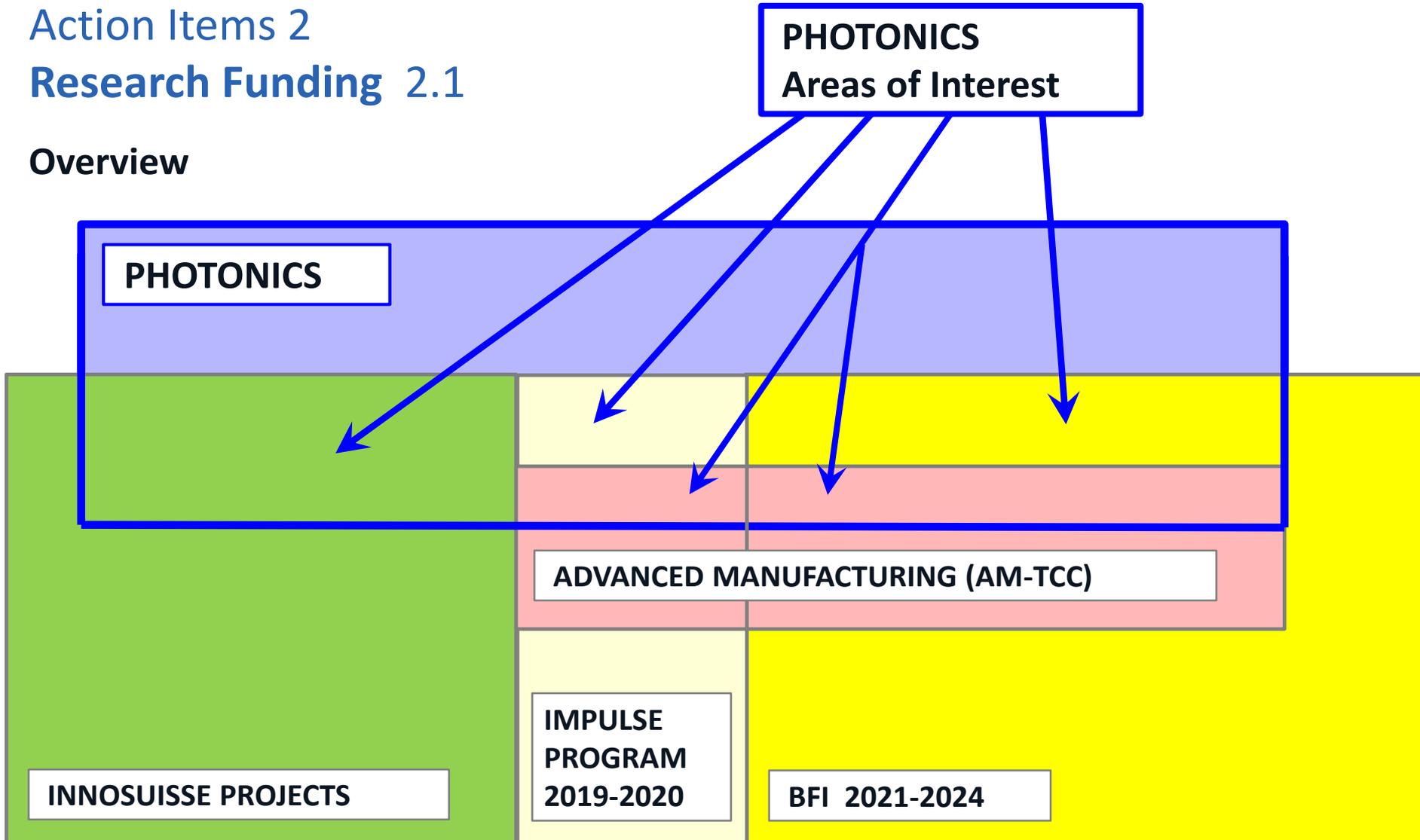
# Action Items 1

## Recommended Actions 1-5 (Handlungsempfehlungen)

1. Photonics has to be considered as a crucial Technology-Cluster in Switzerland's Research Funding (also by official authorities) **achieved**
2. Funding shall be directed to 6 new Photonics Key Areas
  1. *Advanced Manufacturing*
  2. *Industrie 4.0 und IoT*
  3. *Smart Sensing, Digitalisierung und Messtechnik*
  4. *Daten- und Bildverarbeitung, Augmented und Virtual Reality*
  5. *Medizintechnik*
  6. *Communication Systems*
3. Projects shall be assigned to the pre-competitive phase and focused on industrial objectives
4. Funding / Projects shall be addressed to Impulse-Program 2019-2020 and BFI 2021-2024, they shall aim for BRIDGE- type of Programs such as AM
5. Photonics Community to actively generate Projects for the Programs, incl. participation of SME

# Action Items 2 Research Funding 2.1

## Overview



## Action Items 2

### Research Funding 2.2

- **Impulsprogramm 2019-2020**

- 2x 12 Mio. CHF
- Focus area: "Industry 4.0 and Advanced Manufacturing-Technologies"
- 2 Start Milestones: 1. Mai 2019 and 1. Nov. 2019
- application open as of 27. November 2018
- particular areas of interest related to Photonics
  - *IoT with smart Photonic Sensors for machine learning (incl. automotive, LIDAR, etc. )*
  - *Advanced Manufacturing: using Photonics as well as of Photonic Components and Systems*
  - *Photonic analytical measurement techniques incl. artificial intelligence algorithms*
  - *Optical communication incl. cyber security and / or quantum cryptography*
- more details to the "Impulsprogramm" in later agenda items today

## Action Items 2

### Research Funding 2.3

- **BFI Botschaft 2021-2024**

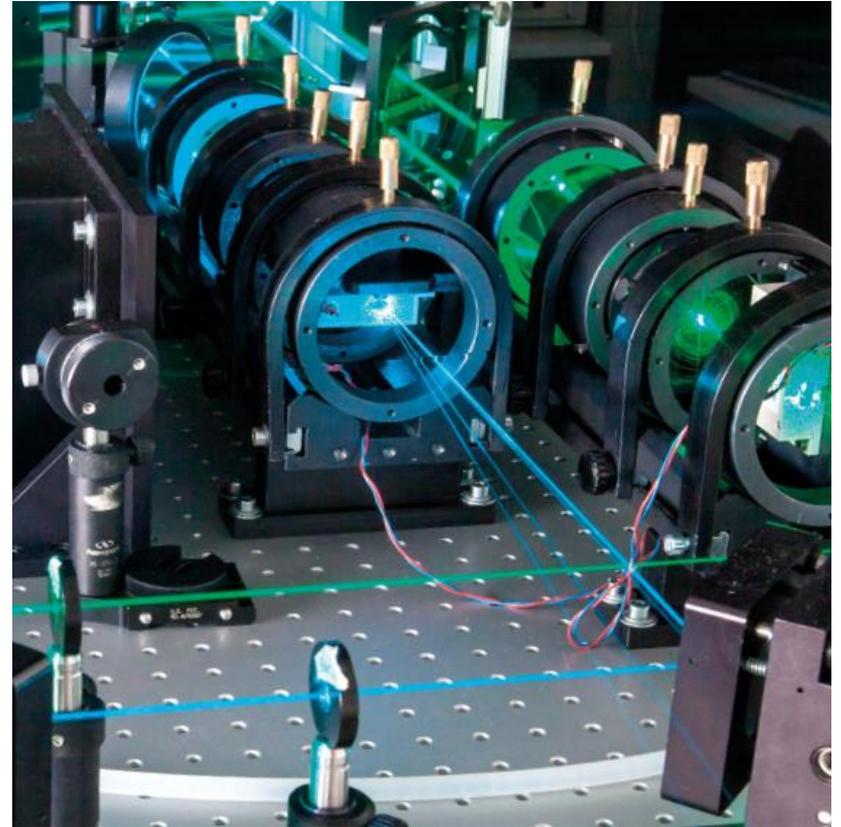
*Botschaft zur Förderung von Bildung, Forschung und Innovation*

- first focus area for Photonics:
    - > Program for Advanced Manufacturing (AM-TCC)
    - > however, this is a rather specific Program set up
  - second: Photonics Community to evaluate, develop and apply for further areas of particular interest and importance
    - > among the 6 New Photonics Key Areas for Switzerland (see WP HE2)
    - > should be interdisciplinary project set up and make use of cross-functional technology-involvement
- intention: to be developed in specific Photonics-workshops in Q1/2019
- > organization tbd
  - closing date: around June 2019 (!)

## Action Items 2

### Research Funding 2.4

- **Innosuisse Projects for Photonics**
  - always possible, just as usual
  - just apply, as known



## Action Items 3

# Education in Photonics Technologies

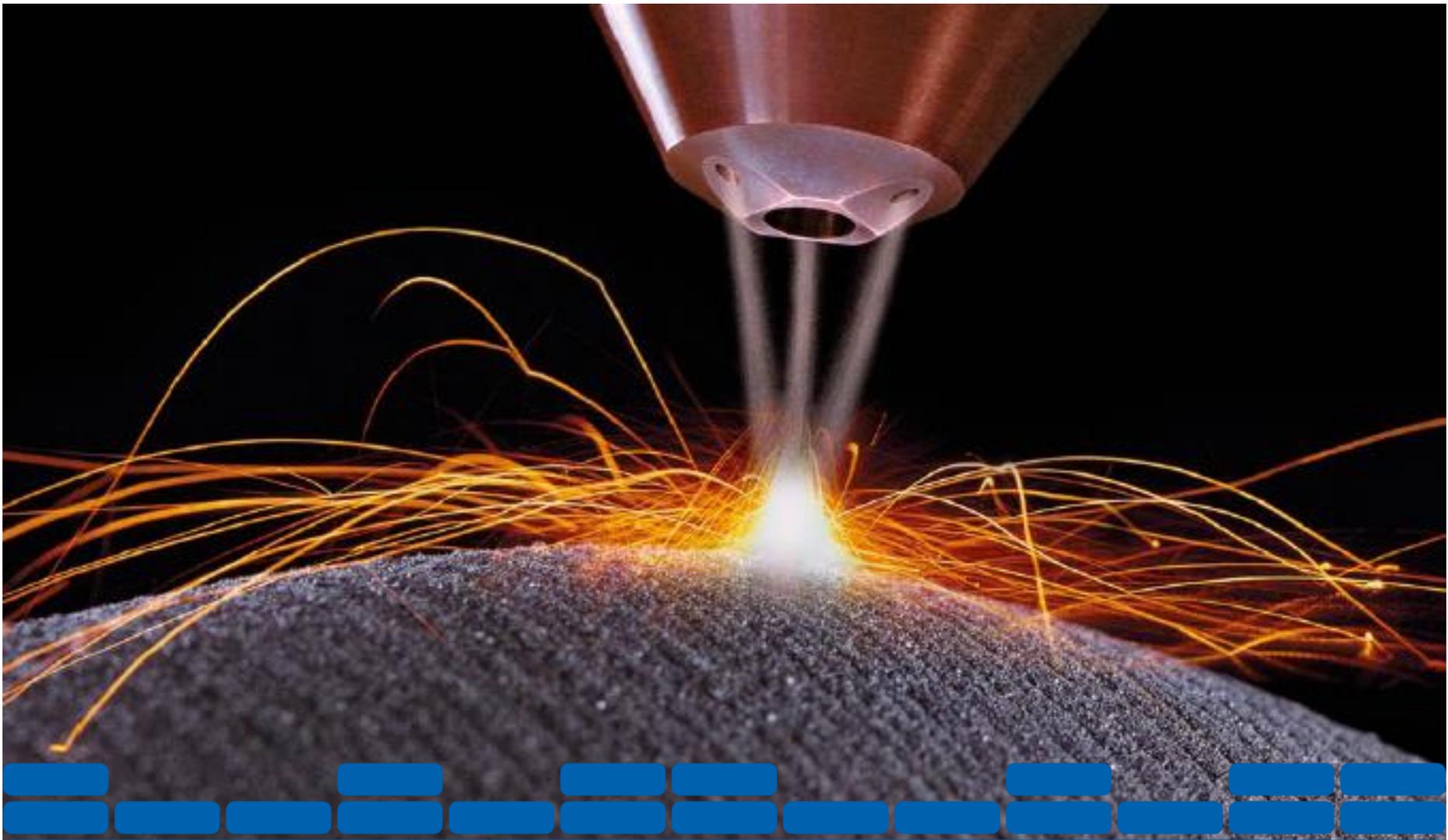
- Bachelor of Science
  - NTB: Bachelor of Science Systems Technology / Photonics, first 10 Diplomas in October 2017
  - HTW: Bachelor of Science in Photonics
- MSE Master in Photonics > nation-wide: all Swiss FH's are participating
  - starting as of 2020
  - coordinator Valerio Romano)
- strengthening and expansion of Photonics in technical Faculties / Schools of Engineering, such as:
  - ETHZ / EPFL
  - FH's

## Action Items 4

### PR-activities / general Promotion Photonics

- further Roll Out White Paper – where ever appropriate and useful and by all members of the Photonics Community
- "Branchen-Marketing" Photonics  
several ongoing activities of Swissmem FG Photonics (such as Media, MINT-promotion, others)





Thank you