

2th BRICS Working Group meeting on PHOTONICS

October 13-15, 2020



Overview of Russian experience

October 13, Prof. A. Shipulin, Skoltech, a.Shipulin@skoltech.ru



Content. Structure of financing of photonics in Russia

1. Strategic documents in Russian Federation and Europe.
2. Financing from industry and state support.
3. Direct support from state:
 - National Technology Initiative.
 - Digital Economy.



Strategic documents in Russian Federation and Europe



STRATEGY FOR THE SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT OF THE RUSSIAN FEDERATION

Approved by the Order of the President of
the Russian Federation on 1 December 2016 No. 642



ПРАВИТЕЛЬСТВО РОССИЙСКОЙ ФЕДЕРАЦИИ

РАСПОРЯЖЕНИЕ

от 24 июля 2013 г. № 1305-р

МОСКВА

1. Утвердить прилагаемый план мероприятий ("дорожную карту") "Развитие оптоэлектронных технологий (фотоники)" (далее - план).
2. Руководителям федеральных органов исполнительной власти, ответственных за реализацию плана:
обеспечить реализацию плана;
ежеквартально, до 5-го числа месяца, следующего за отчетным кварталом, представлять в Минпромторг России информацию о ходе реализации плана.
3. Минпромторгу России осуществлять мониторинг и контроль реализации плана и ежеквартально, до 20-го числа месяца, следующего за отчетным кварталом, представлять в Правительство Российской Федерации доклад о ходе его реализации.

Председатель Правительства
Российской Федерации

Д. Медведев

Strategic documents in Russian Federation. There is no specific road map in photonics.

Strategic documents in Russian Federation and Europe

Europe's age of light!

How photonics will power growth and innovation

Strategic Roadmap
2021–2027

- Information & Communication
- Industrial Manufacturing & Quality
- Life Sciences & Health
- Emerging Lighting, Electronics & Displays
- Security, Metrology & Sensors
- Design & Manufacturing of Components & Systems
- Photonics Research, Education & Training
- Automotive & Transport
- Agriculture & Food

BRICS has to develop own road map in photonic



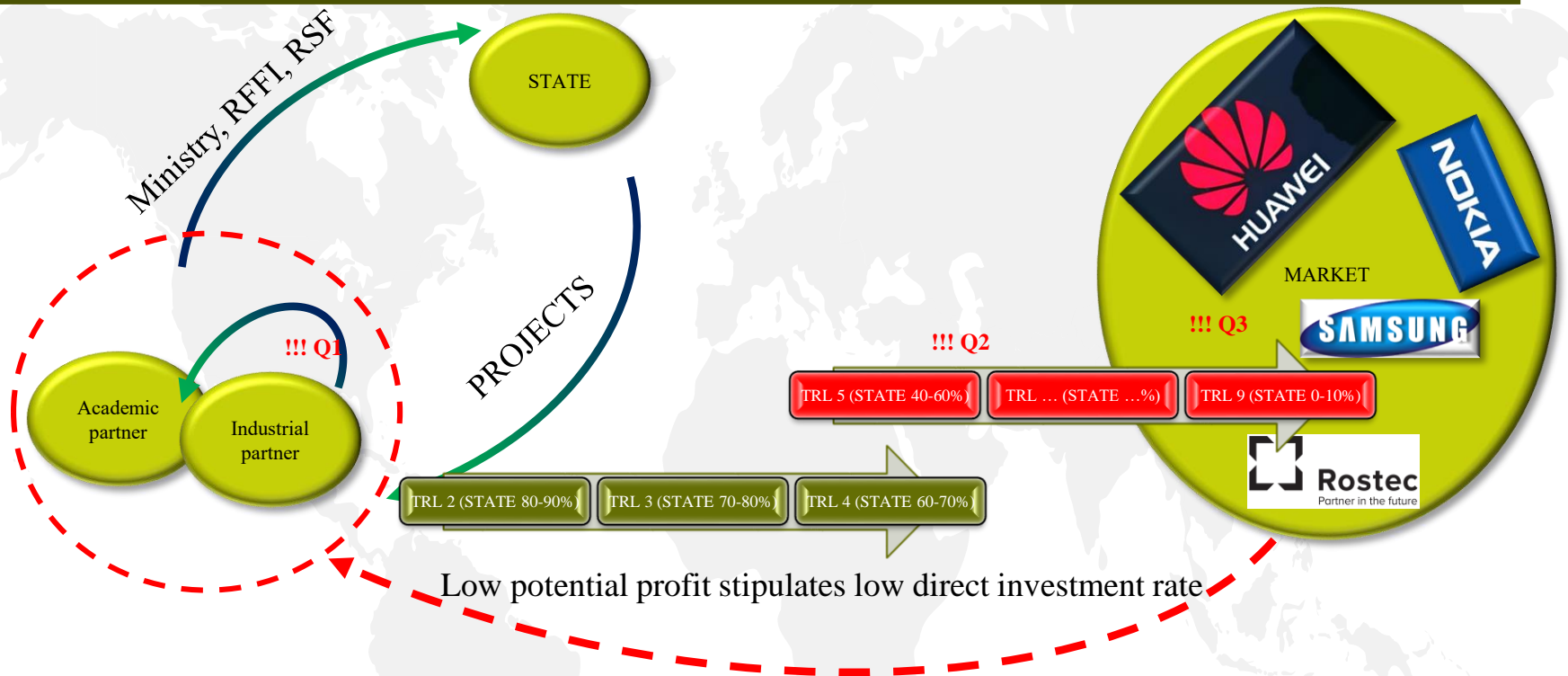
PHOTONICS PUBLIC PRIVATE PARTNERSHIP

PHOTONICS²¹

Strategic documents in Europe.

There is a specific road map in photonics - “Europe’s age of light”, March 2019.

Financing from industry and state support



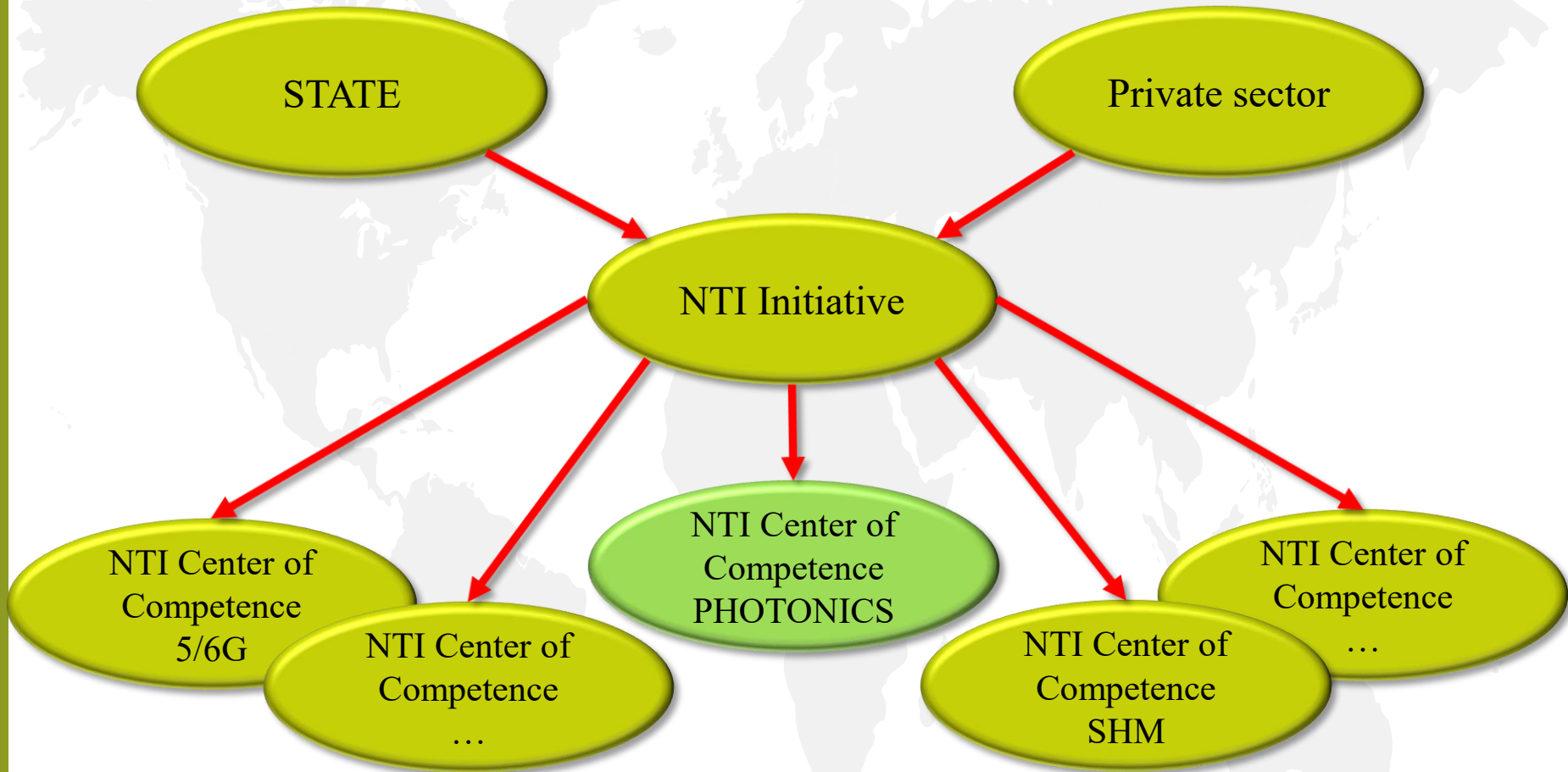
Q1: Low direct investment rate from industrial partner.

Q2: TRL does not reach level of market's interests.

Q3: Lack of free market niches for industrial partners.

Three main barriers to be removed

Photonics in the frame of National Technology Initiative



Photonics is one of the hardware technologies, where Russian Federation has enough world class competence and export potential.



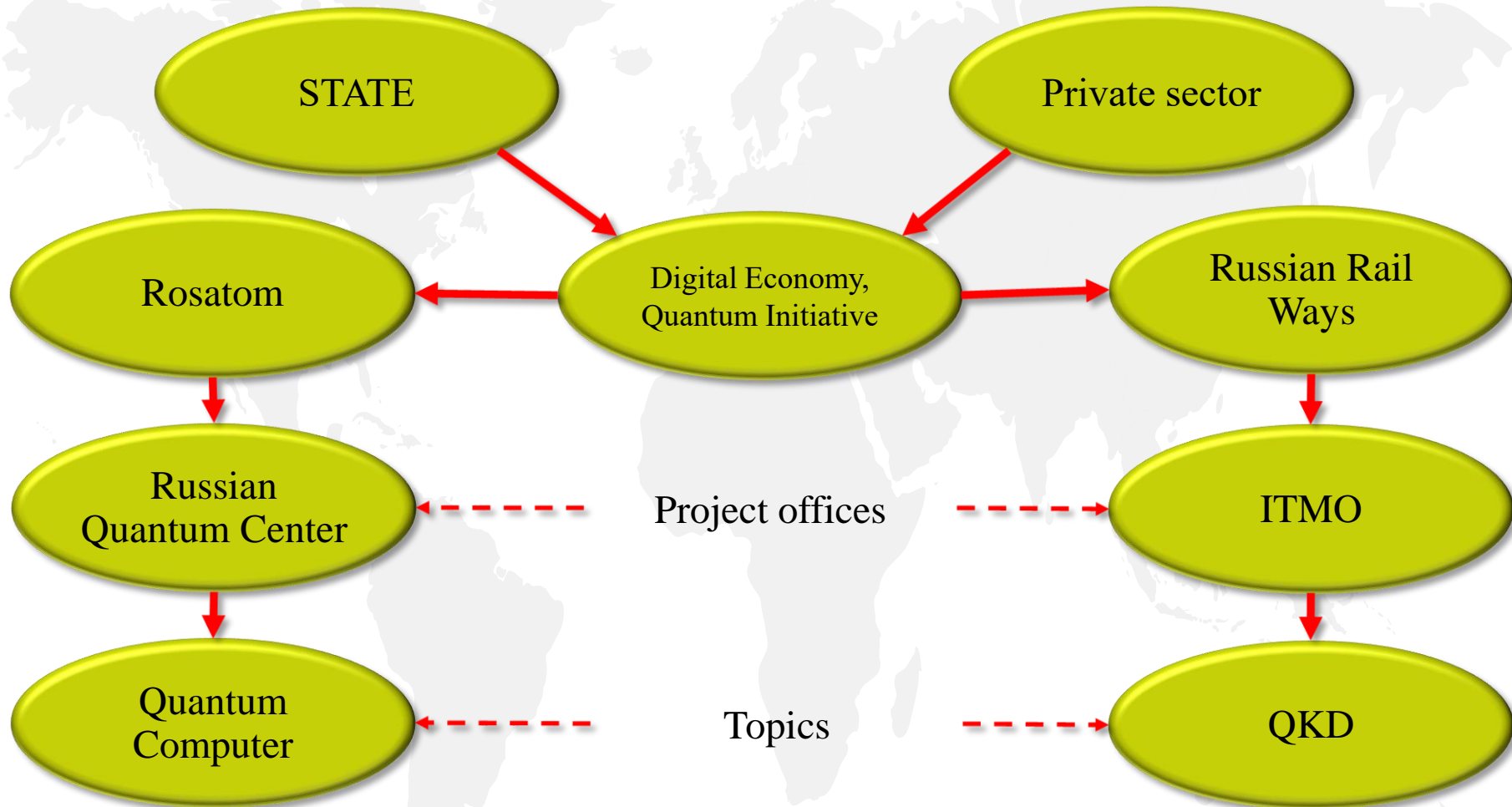
NTI Photonics Center of Competence

- High-frequency photonic integrated circuits (PIC) and their integration into final ICT solutions;
- Transceivers for 5G and 6G systems based on PIC technologies;
- Elements of compact high-frequency transceiver modules of the phased array (phased array) based on PIC technologies;
- Optical sensor systems based on low-frequency PIC;
- PIC circuits for optical frequency standards;
- Basic PIC production technologies;
- PIC packaging, combination with on-chip control electronics;
- Sensitive elements (sensors);
- Fiber and integrated optical sensors;
- Optical synchronization systems and components for them;
- Electronic sensors and fiber sensors;
- Fiber amplifiers.

Photonics is recognized as one of the throughout technologies in the frame of NTI



Digital Economy, Quantum Initiative



Photonics is not a separate topic in the frame of Digital Economy, nevertheless in both track there are photonic based topics



Conclusion

BRICS has to develop own road map in photonics based on common interest areas

