

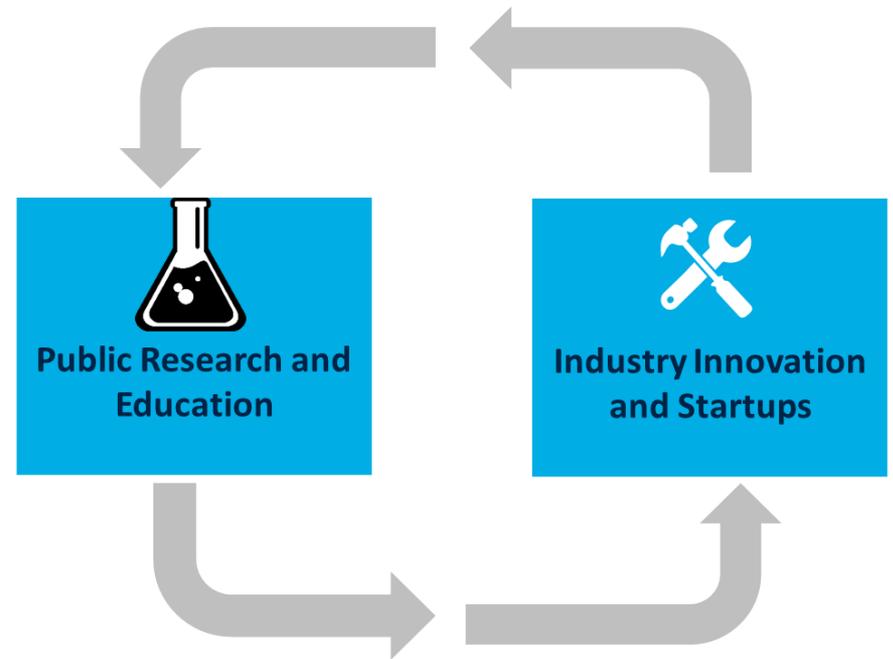
Macro-Regional Innovation Week
26-30 September 2016
Trieste, Italy

Technology Transfer: An Ecosystem Approach

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Presentation Outline

- I. Economics of Tech Transfer
- II. Contextual Challenges
- III. Framework
- IV. Project Experiences
- V. Main Takeaways



I. Economics of Tech Transfer: Institutional and Market Failures

Information Asymmetry

- Valuation of discovery
- Uncertainty about appropriation

Incentive misalignment

- Short-term/incremental improvements versus academic achievements
- Legal and regulatory framework and the incentives for collaboration

Access to specialized resources and support mechanisms

- *Information*: matching, valuation, market intelligence
- *Finances*: bridging the “valley of death”
- *Skills*: commercialization specialized skills

II. Contextual Challenges of Tech Transfer in ECA

Legacy issues: readjusting research orientation

- RDIs traditionally designed to serve SOEs
- Linkages to SMEs were absent

SMEs' limited capacity to identify tech., organizational, and managerial needs

- Demand for tech transfer (*its nature & channels*) strongly determined by level of economic development in the region
- Low levels of private R&D investment amplifies role of publicly-funded R&D

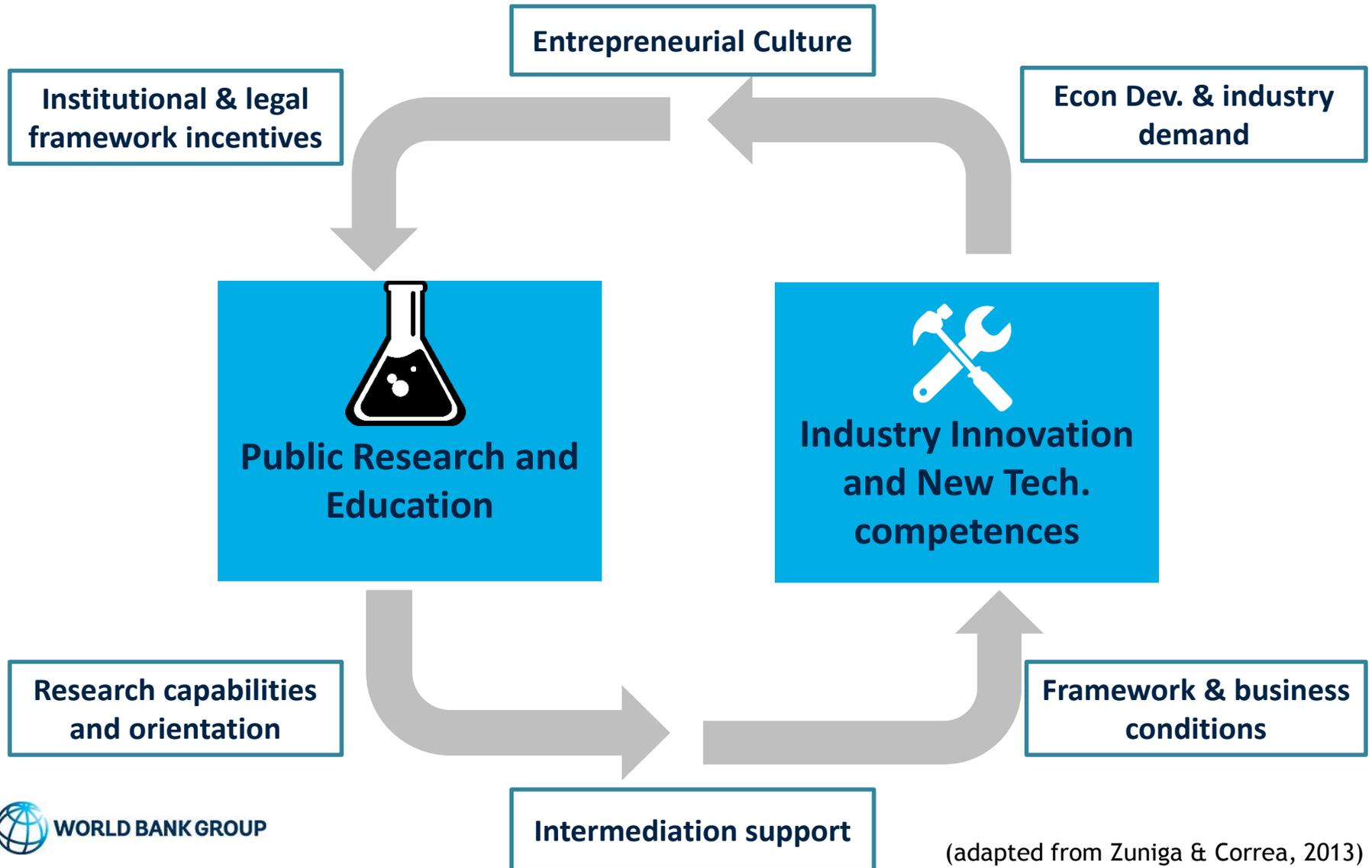
Commercialization specialized skills and technical capacity

- Importance of tacit knowledge and learning by doing

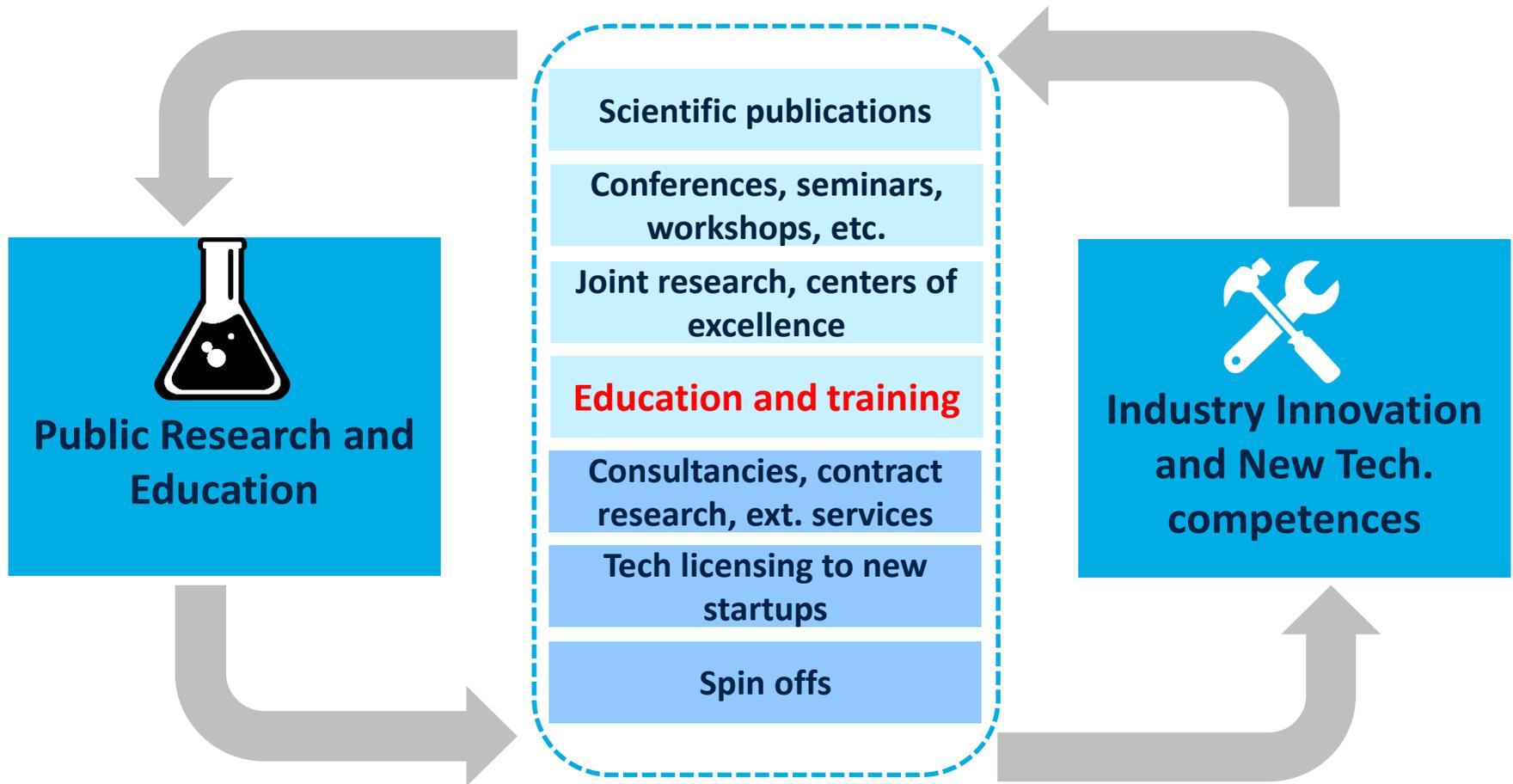
Entrepreneurial culture & institutional framework

- Incentive structure, risk taking, research governance, IPR regime, access to finance, degree of internationalization

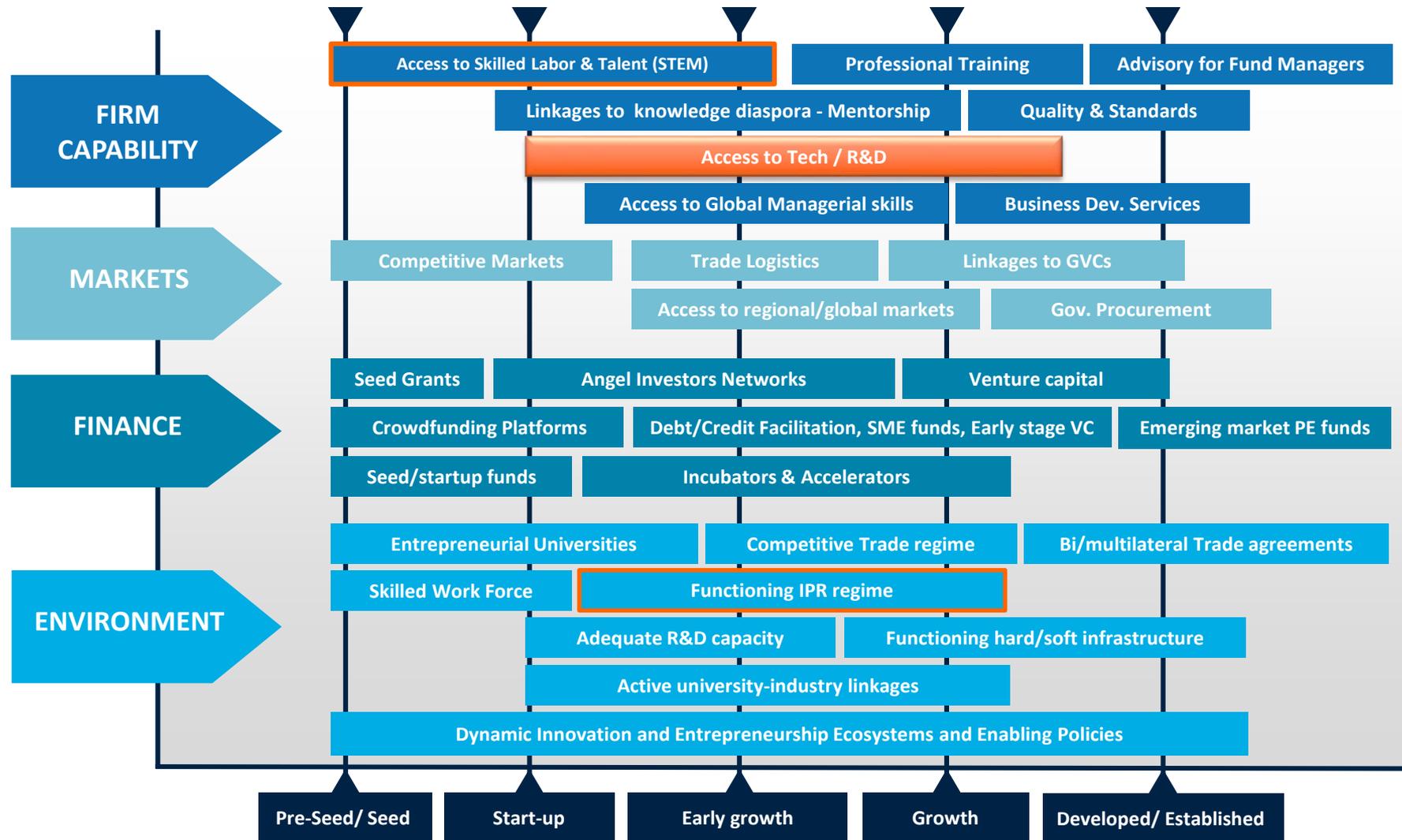
III. Framework: Tech Transfer and Shaping Conditions



III. Framework: Formal and Informal Channels for Tech and Knowledge Transfer



III. Framework: Tech Transfer as Leverage for Upgrading Firm Capability – The Big Picture



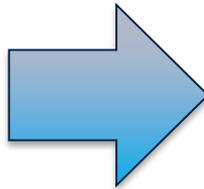
IV. Project experiences (1) Serbia: Piloting Interventions through the Innovation Fund

Main Challenges

- Low TRL (2 - 3)
- Lack of clarity on IP legal framework: Legal puzzle on ownership (faculty/institute /university)
- Lack of demand pull from private sector
- Lack of funding and other support from gov.
- Lack of skilled personnel and commercialization/tech brokers (valuation, market intelligence)

Primary Objective

- Design and pilot elements of the NIS that can facilitate commercialization of public R&D and support collaborative research with private sector



Interventions

Technology Transfer Facility (TTF) – *Supply side:*

- One stop shop
- Service provider for monetization of invention
- Financial support for IPR protection, patent filing, prototyping, proof of concept (10k/project)
- Valuation and Market intelligence services and tools
- Training on disclosures, valuation, technical assessment

Collaborative Grant Scheme (CGS) – *Demand side:*

- Co-financing joint research projects by SMEs and PROs (SME-led, Max 5 consortium members)
- 70% of total project budget (300k/project over 2 years)
- Technical review by int. peer reviewers, investment committee



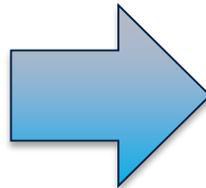
IV. Project experiences (2) Kazakhstan: Piloting a mini-NIS through Tech Commercialization Project (2008-15)

Main Challenges

- Legacy issues, weak linkages with SMEs/market
- Bureaucratic processes and Grant distribution lacking merit
- Outdated research infrastructure
- Weak IPR regime
- Lack of skilled personnel and commercialization/tech brokers (valuation, market intelligence)

Primary Objective

- Strengthening the scientific base and the relationship between science and market



Interventions

Providing support for:

Establishment of the Technology Commercialization Center (TCC)

Grant Program:

- Financed Senior Scientist Group (SSG) & Junior Research Group (JRG)
- Financed proof of concept, industrial prototyping
- Trained commercialization managers

Technological audit:

- Created a “Research Portal”, tech proposals with commercialization potentials

Legal framework improvement:

- 2 laws on commercialization of scientific research

Knowledge dissemination:

- Workshops, trainings, awareness campaigns, outreach and brokerage

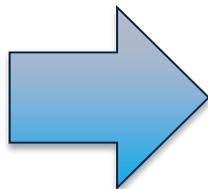
IV. Project experience (3) Croatia: Commercialization of Publicly-funded Research (2006-12)

Main Challenges

- Decline in public R&D investment and deteriorated scientific performance
- Business R&D investment decline after privatization of SOEs
- Limited appetite for RDI restructuring

Primary Objective

- Enable R&D institutions to commercialize research outputs and increase ability of SMEs to invest in R&D



Interventions

Research excellence:

- UKF: research funding, research collaboration (EU framework programs, ERA objectives). Cooperability program to mobilize scientific diaspora

Commercialization of publicly-funded research:

- TTOs: Commercialization of research outputs (spin-offs) – Ruder Boskovic Institute (RI)
- SPREAD: Improved scientific and technological cooperation (research contracts with industry and licensing)

R&D financing program for enterprises:

- BICRO: Proof of Concept program
- RAZUM: mobilize business R&D spending. Increased volume of Firms' investments in R&D

V. Main Takeaways

- Tech transfer is **more than establishing TTOs**
 - Train (*applied*) researchers, maintain industrial competitiveness, upgrade SMEs, establish new ventures
 - Informal knowledge transfer is as important, and not captured in metrics
- **Adopt an ecosystem approach** when designing interventions
 - Intelligent public interventions should address bottlenecks on the supply and the demand sides
- **Don't underestimate the culture**
 - It takes time to overcome legacy issues through building public institutions' capacity and learning by doing

Thank you

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