

- Good day everyone! I am **Dr. Irina Pavlova**, I am from Tomsk, Russia.
- I would like to **welcome** you in our course “Innovation systems and technological development”.

- You may ask me first
“Where is Tomsk?”
- Well. Tomsk is located **in Siberia**. So, yes, **winters** here are quite frosty here. And yes, **people** are very warm and extremely hospitable.

- In this video I am going to answer 5 “**Why**” questions **about this course.**

- **Why systems?**
- A system is a **collection of elements or components** that are organized for a **common purpose**.
- **All of nature and the universe** can be said to be a system. A system is a **unity** when performing a **specific task**.
- **This whole maintains its existence** and performs certain functions through the interaction between its parts. Any engineer will easily **understand a notion of a system**. **Technical system...**

- **Why systems?**
- Yes... But in this course, we will go **beyond this engineering approach** and we will look at the systems in **social sciences and humanities.**
- Systems theory and systems approach is a **very solid base** to understand the nature and operation of any economic or social system as well as their subsystems.

- **Why innovation systems? Why technological development?**
- The concept of the innovation system **stresses the flow of technology and information among people, enterprises, and institutions.** This flow is **the key** to an innovative process.
- A system of innovation is **a set of distinct institutions** which jointly and individually contribute to the development and diffusion of new technologies.
- They provides **the framework** within which **governments form and implement policies** to influence the innovation process.

- Why innovation systems? Why technological development?
- **The goal** of a national innovation system is knowledge generation, distribution and use.
- **It is about how we** create knowledge, how we disseminate it, how we use it, how we learn and interact in the course of knowledge sharing.

- Why innovation systems?
- Today, everything is changing so fast. Just think about **Gartner hype cycles!!!** Cycles which show how technologies grow and mature, how they become ripe.
- In 2017, experts specified **3 major** technology trends – Artificial Intelligence which is Everywhere, Transparently Immersive Experiences, and Digital Platforms.
- In 2018, we already talk about **5 emerging technology trends!** AI which is already democratized!! Digitalized ecosystems, do-it-yourself biohacking, transparently immersive experiences and ubiquitous infrastructure! **Just think about it!** Ubiquitous infrastructure!

Why innovation systems?

- Innovation system is **the subsystem of society**, first of all its economy, aimed not only at reproduction, reproduction of the achieved level of all development, but also at its renewal, and progress.
- This concept **whether it is defined** globally or at the level of the nation, industrial sector, technology or a specific region, is attracting much attention these days.
- And we will put this approach, which is so familiar to engineers, systems approach, to help us **to think out of the box**.

- **Why TUSUR?**
- TUSUR stands for Tomsk State University of Control **Systems** and Radioelectronics.
- And we believe that we are very professional in **understanding systems and their mechanics.**
- Our university is a **very dynamic** entrepreneurial entity within a **vibrant** entrepreneurial ecosystem.
- So, yes, we think that we are capable to use the notion of systems applicable to innovation processes.

- **Why should we study? What will we study and learn? How will we enrich our professional experience with the knowledge from the course?**
- We have some comprehensive modules on understanding systems, including **economic, social and innovations ones.**
- We will look into the concept of national innovation systems, their **structure, functionality and performance. Actors. Institutions. Interactions.**
- We will discuss their **technological trajectories and path dependence.** A special focus is **on localization theories and aspects** – regional innovation systems, research-intensive clusters, smart regions.

- **Why should we study?**
- Next, we will look into **some innovation statistics**.
- If we hope for the performance, we need to know how to measure it. Variables, indicators, composite indices, rankings. Like “Doing Business”.
- Do you know how your country is ranked in 2018 on “Ease of Doing Business”? I know everything about the Russian Federation.
- We are ranked 31st among 190 countries. Is it good? Here, we need to apply our critical thinking and complex problem solving skills to understand what could be good.

- **Why should we study?**
- Tomsk is ranked 20th in ease of doing business in Subnational Economy Rankings. It is well above Moscow which is on the 30th position. Is it good?
- Critical thinking and complex problem solving skills once again.
- That is very important to understand current economic, technological and innovative development of countries and regions.

- **And finally. Our last WHY**
- **Why engineers and students majoring in engineering might need this course?** I guess that you are also **very curious** why you need this course.
- Have you ever heard about **T-shaped people**? "T-shaped" is a **metaphor** for the **depth and breadth** our skills. Yes, it directly related to engineers and **their soft skills**.

- **And finally. Our last WHY**
- A T-shaper:
- Has deep knowledge **in at least one area**, for TUSUR students and graduates it could be, for example, **a programming language.**
- This person understands many other areas and their complexities, i.e., storages, front-end, big data, etc., and knows how to communicate clearly in that area.
- And also this person possesses **boundary crossing** competencies.

- I truly hope that we all will benefit from this course.
- **Personally for me**, I see the gain as a quite interesting experience, first, to develop the course and, second, to go through this course together with you – our learners, colleagues and partners.
- **Let's grow** together as T-shaped professionals **augmenting our cross-boundary knowledge, competencies and skills.** Good luck!