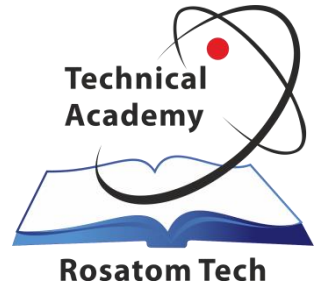




ROSATOM

## Rosatom Technical Academy

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# Nuclear Security Infrastructure Training for the New Nuclear Power Programmes

*Marina Labyntseva*

*Deputy Director, International Training  
Centre*

- Russia's approaches and practices in the area of nuclear security training
- Rosatom Technical Academy practices in training and capacity building
- Practices in systematic approach to training (SAT) application to the training activities

# Main Actors in Domestic Nuclear Security Education and Training

**Department for Physical Protection of Rosatom Corporation (main customer)**

## **Sectorial E&T centers**

**Rosatom  
Technical Academy**

**Training centers  
at major nuclear  
facilities**

## **Partners (customers)**

**Atom-Okhrana  
(guard forces)**

**Atomspectrans  
(transport company)**

**Nuclear facilities and  
enterprises**

**External organizations**

## **External E&T providers**

**Moscow Engineering  
Physics Institute**

**Training centers  
of other sectors**

**TSO and equipment  
vendors**

- Source: A. Golovin. Development of training facilities for the training center for PP at the St. Petersburg branch of Rosatom-CICE&T, Presentation at the International Nuclear Forum "Safety of Nuclear Technologies", 2015.

# General Provisions for Training in Nuclear Security

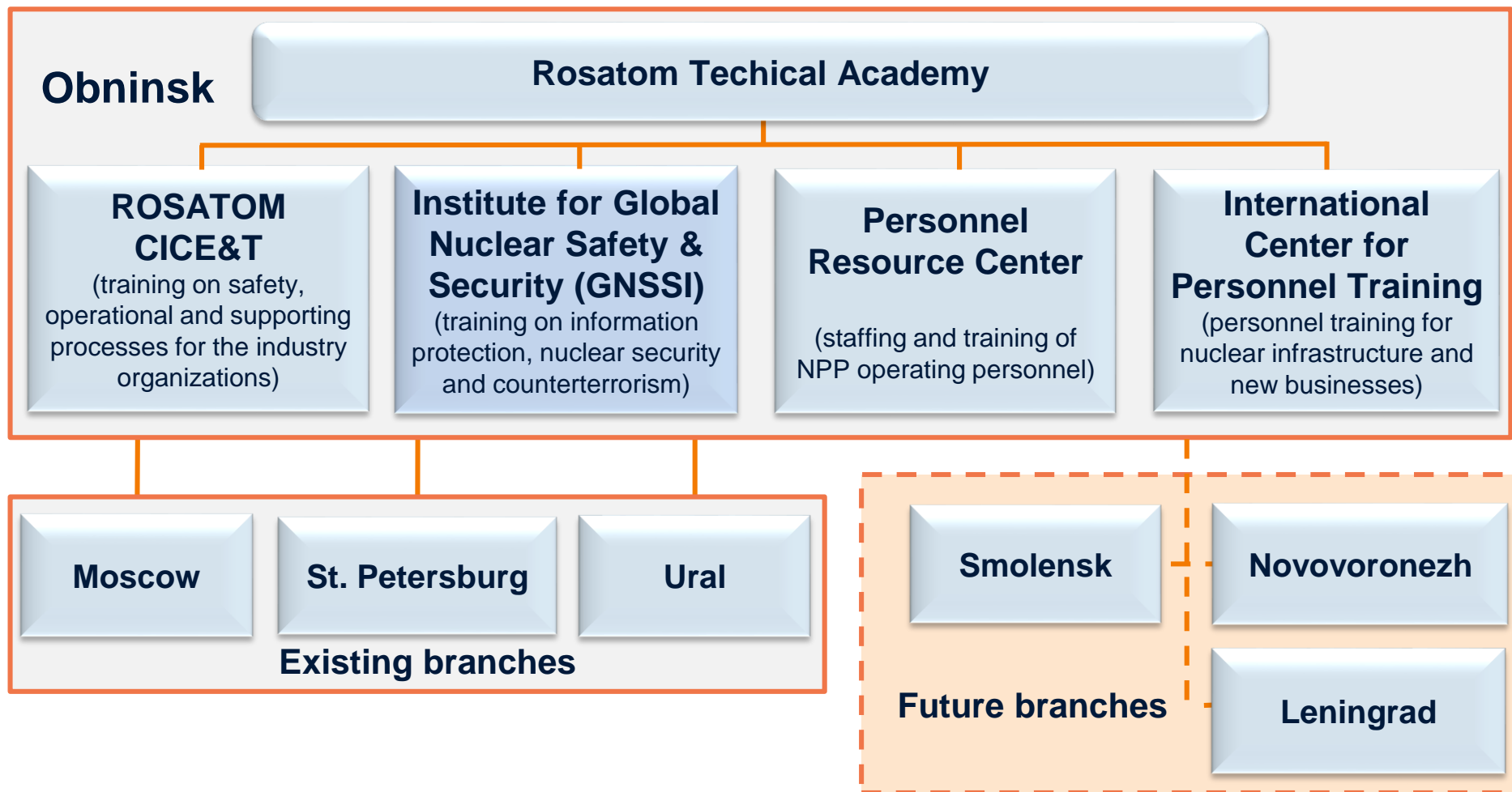
- Each organization creates a **system for professional training**.
- **Main goal** of this system is achieving and maintaining necessary level of personnel qualification.
- System for professional training has **several elements**:
  - officials in charge of training management in the organization;
  - training division(s) in organization;
  - training facilities;
  - training documentation (regulations, procedures, etc.);
  - training programmes and training materials;
  - instructors.
- **Training frequency**: initial training; continuing training - every 5 years or less for managers, every 3 years or less for specialists; and when the job position is changed.

# Categories of Personnel for Nuclear Security Training

- Heads of physical protection and security divisions;
- Operators of physical protection systems and equipment;
- Personnel in charge of information and computer security;
- Guards and response forces;
- Staff responsible for the transport of nuclear and other radioactive material;
- HRD managers.



# Integrated Structure of Rosatom Technical Academy

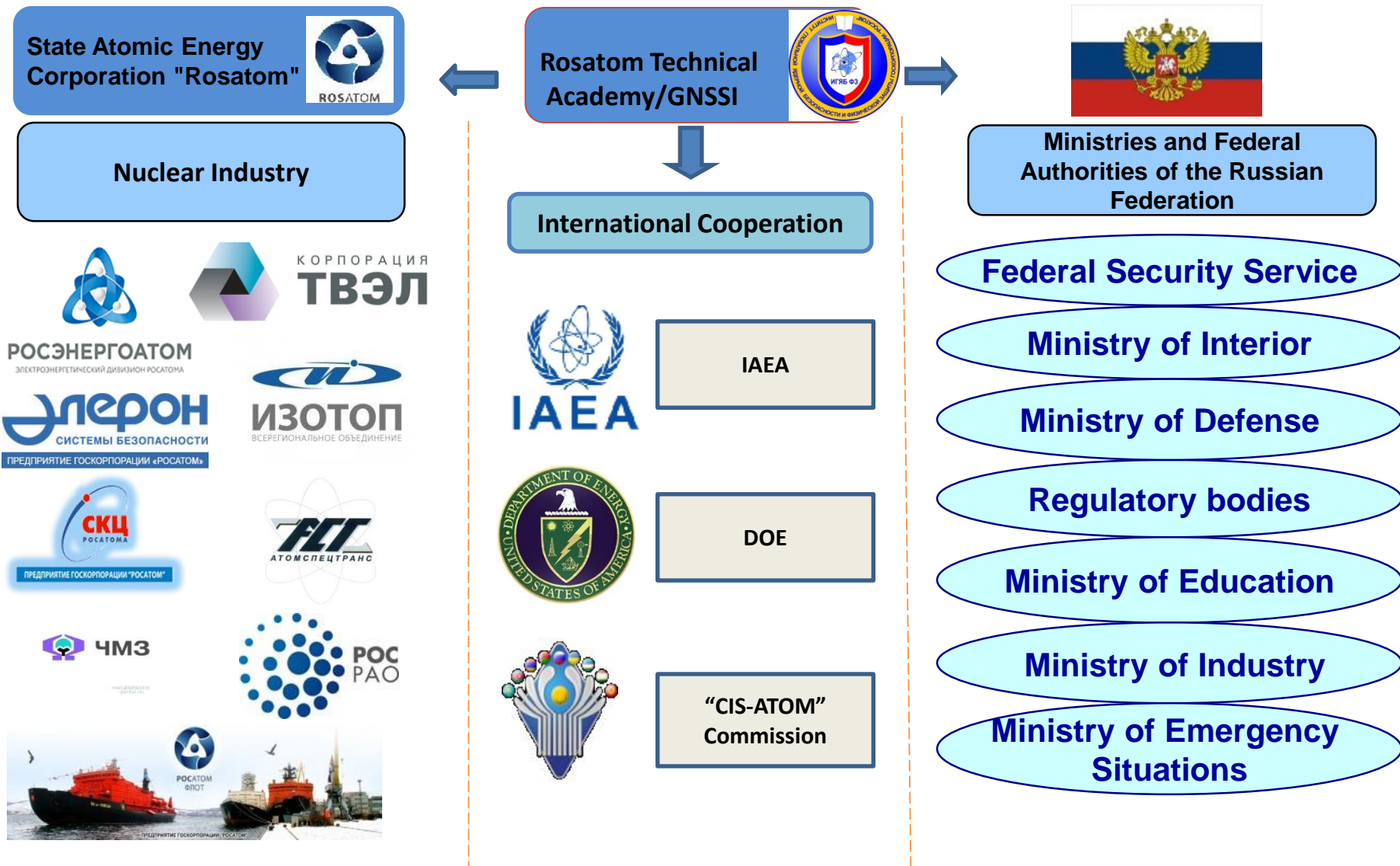


# Training Programmes in Nuclear Security and Related Areas

Programme name	Number of courses
Physical protection	36
Information security	21
Asset protection (anti-corruption)	11
Nuclear security culture	2
Instructor training	15
Accounting for and control of nuclear material, radioactive sources and radioactive wastes	3
Emergency preparedness and response	8



# Partners in Nuclear Security Training





# Training Facilities in Obninsk



# Cooperation with the IAEA

- Rosatom Technical Academy (former Rosatom-CICE&T) is a leading continuous education and training institution for the Russian nuclear industry.
- In order to enhance the relationship between the IAEA, Rosatom Technical Academy and Rosenergoatom, these organizations have signed **Memorandum of Cooperation**.
- Main area of cooperation is assistance in training and capacity building, including development of joint educational and training courses focused on the infrastructure of countries embarking on nuclear programmes.
- Significant part of this cooperation activities is related to nuclear security.
- Rosatom Technical Academy is a member of the INSEN and NSSC networks.

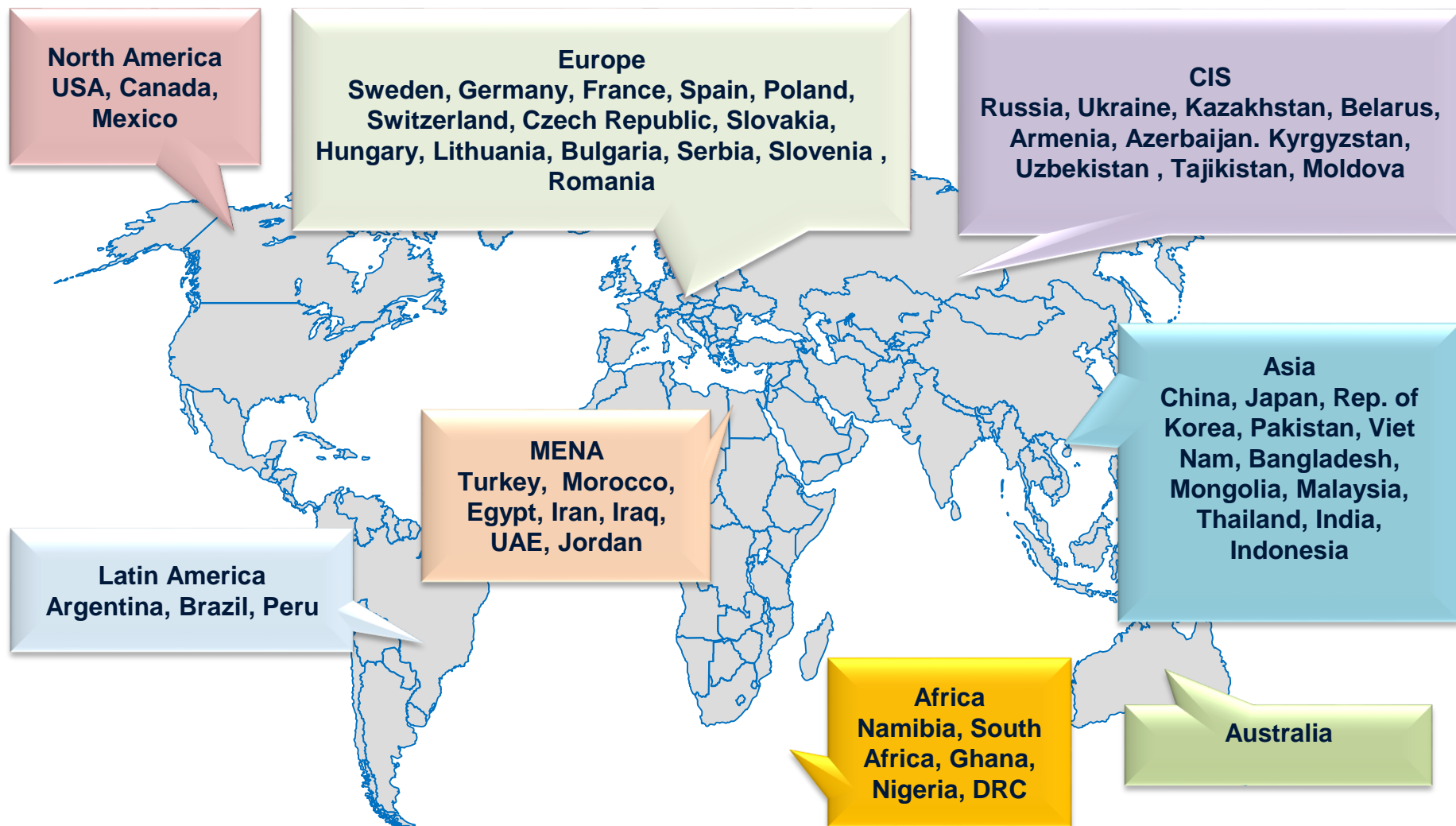
# Regular International Training Courses in Nuclear Security (1)

Since August 2017 Rosatom Global Nuclear Safety and Security Institute (GNSSI) became a part of the Rosatom Technical Academy. Training courses implemented by the GNSSI in cooperation with the IAEA:

- International training course on the practical operation of physical protection systems at nuclear facilities;
- International training course on physical protection inspections at nuclear facilities;
- Regional training course on nuclear security in practice: field training for university students;
- Regional training course on the security of radioactive sources.

# Regular International Courses in Nuclear Security (2)

**More than 860 Participants from 53 countries**



# Training Activities Implemented by Former CICE&T

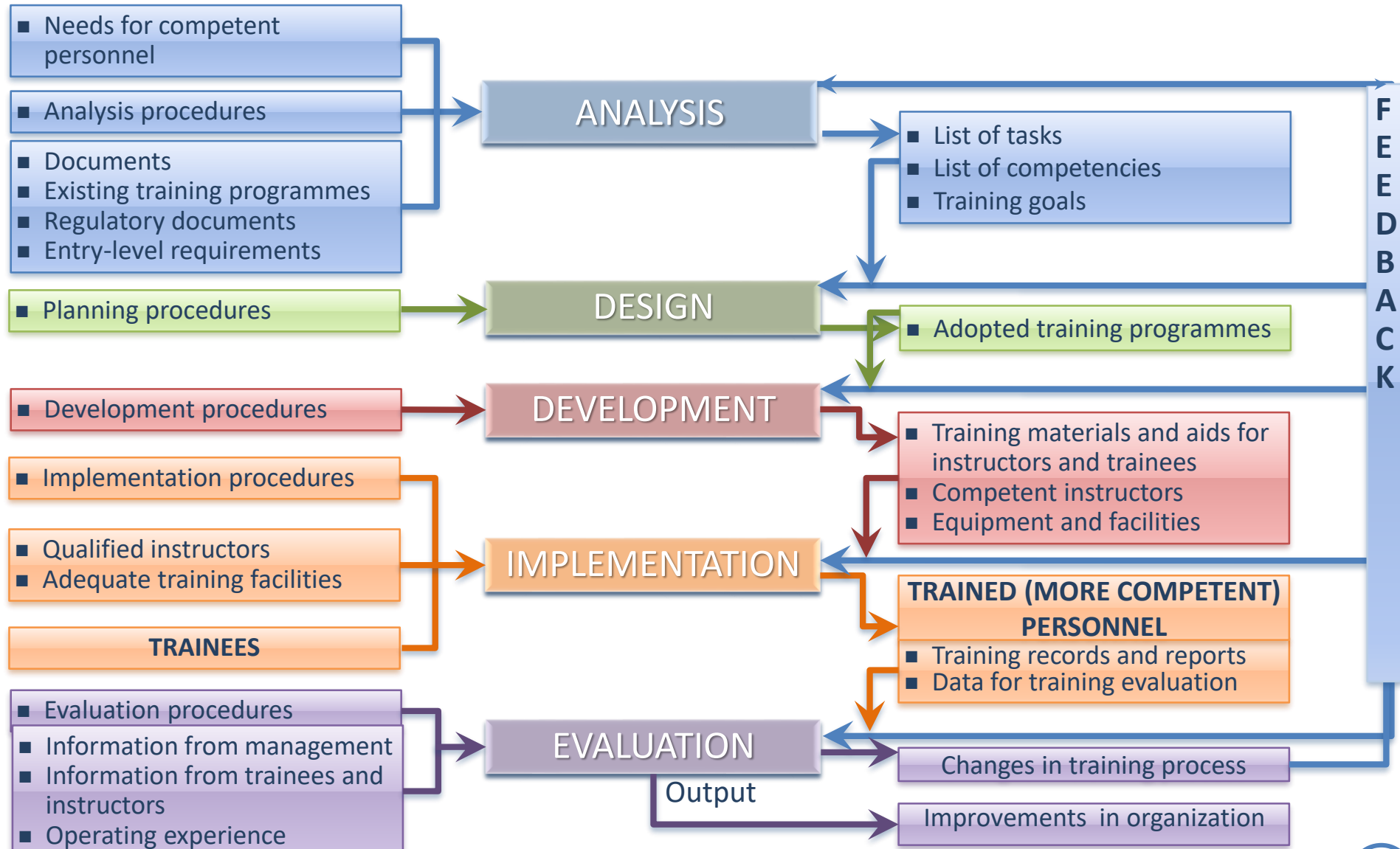
- Systematic approach to physical protection and nuclear material accounting and control (PP and NMAC) education and training, Nuclear Institute “Sosny”, Belarus, 2009- 2012.
- Development of training material on PP and NMAC for Training Center of the Institute of Nuclear Physics, Kazakhstan 2010-2014.
- Train-the-trainers courses (basic provisions and best practices) on PP and NMAC, Russia, 2008- 2015.
- Development and Implementation of pilot course on practical training of NMAC instructors, 2015.
- Development and implementation of training programmes on nuclear security culture for Rosatom specialists in cooperation with USA. More 330 trainees in 2012- 2015.

# Use of Systematic Approach to Training (SAT)

## INPUTS

## SAT PHASE

## SAT PROCESS OUTPUTS





# Training Needs Analysis Results

On the basis of training needs analysis, the following training needs were identified:

- A need for the regional distribution of nuclear security training activities, including creation of new training facilities in the St. Petersburg branch.
- Needs for training of staff of main organizations from countries embarking on nuclear power development: nuclear energy programme implementing organization (NEPIO), regulatory bodies, owner/operator, front line agencies.

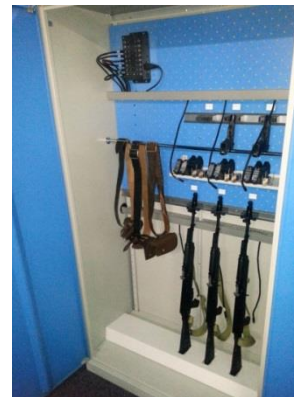
# Needs for Training Facilities in St. Petersburg (1)

- Central alarm station simulator;
- Laboratories for technical means (sensors) for physical protection;
- Laboratory for information protection;
- Scale model of protected nuclear facility;
- Classroom with video conference communication line with Situation Crisis Centre of Rosatom;
- Interactive shooting range;
- Check points with equipment (vehicle, pedestrian).





# Actual Training Facilities in St. Petersburg (1)



# New Training Programmes for Newcomer Countries

- ❑ Development of the course concept and training material:
  - Identification of resource material for training and development of the course concept;
  - Drafting training programmes based on the approved concept, its duration and target audience;
  - Identification of training programme elements (e.g. lectures, interactive exercises, hands-on exercises, nuclear facility visits);
  - Development of course handbooks, presentations, instructor materials, quizzes and other assessment tools;
  - Review of the draft training material by independent subject matter experts of Rosatom Corporation;
  - Implementation of a pilot course and its improvement.
  
- ❑ Implementation of training activities on regular basis.

# Staffing per 2 NPP Unit for the Construction Phase

	Construction year						
	-6	-5	-4	-3	-2	-1	Total
<b>Unit 1</b>	construction and installation works				commissi oning	First criticality power startup	
<b>Unit 2</b>		construction and installation works				Commissi oning, first criticality	
<b>NPP subdivisions</b>							
Management		12	0	0	0	0	<b>12</b>
Operational management		21	30	93	270	220	<b>634</b>
Technical support		0	5	16	16	13	<b>50</b>
Repairs and maintenance		0	5	14	123	152	<b>294</b>
Nuclear, radiation and industrial safety		0	6	9	5	2	<b>22</b>
Administration management		8	12	16	3	3	<b>42</b>
<b>Security division</b>		<b>2</b>	<b>12</b>	<b>12</b>	<b>25</b>	<b>41</b>	<b>92</b>
Training division		5	7	11	7	0	<b>30</b>
<b>Total:</b>		<b>48</b>	<b>77</b>	<b>171</b>	<b>449</b>	<b>431</b>	<b>1176</b>

■ Source: E. Salkov, Operation personnel training for foreign nuclear power plants of Russian design, presentation at ATOMEXPO 2015

# Nuclear Newcomers Course Goal

To describe and discuss basic elements and major phases of the development and sustainable functioning of **nuclear security infrastructure** for implementation of national nuclear power programme.



# Nuclear Newcomers Course Structure (1)

- Introduction to the IAEA
- International instruments for nuclear security
- Nuclear security recommendations (NSS13)
- National plan on nuclear security infrastructure
- Legal and regulatory framework
- National threat assessment and DBT
- Security during early phases
- Security considerations for facility design
- Graded approach in physical protection



# Nuclear Newcomers Course Structure (2)

- Sustaining nuclear security regime
- NMAC for nuclear security
- Computer security and information security
- Key functions of PP system
- Security plan for nuclear facility
- Nuclear security measures for transport
- Host country presentation on good practices in nuclear security



# Nuclear Newcomers Course Methods and Participants

*Course methods: presentations, round table discussions, group exercises using exercise book and handbook, facility tour*

- Trainees involved in the establishment of sustainable nuclear security infrastructures for the development and implementation of national nuclear power programmes.
- Nuclear security experts from Russia, France, Germany, Netherlands and the IAEA were course lecturers and sub-group instructors.

# Nuclear Newcomer Course Implementation

- The pilot course ***Nuclear Security Systems and Measures for the Implementation of a National Nuclear Power Programme*** was held in Obninsk from 17 to 21 October 2016. The course was attended by more than 20 top and middle managers from Bangladesh, Egypt, Indonesia, Jordan, Nigeria, Poland, United Arab Emirates, and Viet Nam.
- Second course was held from 25 to 29 September 2017. 23 participants from 17 countries took part in the course.



# Conclusion

- Continuous education and training of Rosatom employees in the area of nuclear security are implemented with the use of focused programmes, designed and developed in accordance with needs for acquiring specific competencies.
- Rosatom Technical Academy programmes, projects and best practices in human resource development are provided with the use of SAT.
- Good practices of Rosatom Technical Academy provide opportunities for international cooperation in nuclear security training, including IAEA education and training networks and other platforms.