

## The overall goal of the project

is to develop and implement an innovative model for ensuring the children with developmental problems or disabilities the possibility to play, on the one hand for the sake of the play itself (unstructured play) and on the other – for the sake of the play as a function for improvement of the motor skills and social contacts of these children (structured play).

## Target groups

- Children with developmental problems and their parents.
- Speech therapists, psychologists, social workers and special educators.
- Representatives of different communities, governmental and nongovernmental organizations.

## Main activities

Adaptation and customization of unstructured computer games to facilitate and enhance motor skills, social interactions and verbalization.

Development of innovative robotic and motion-sensing structured play for imitation, collaborative & cognitive skills.

Piloting the proposed innovative methodologies and technologies with children with developmental problems.

## Expected results:

to develop new knowledge and skills related to settings, tools and methodologies associated with the play of children with developmental problems.

In the result methodologies the child or the therapist are aided by assistive computerized and robotic technologies to challenge and facilitate the play.

## Design concepts of play

- Playfulness and joyfulness.
- The child is engaged in free and spontaneous activities and interactions.
- Adaptive level of difficulties.
- Configurable scenarios.

## For more information:

<http://www.iser.bas.bg/METEMSS>

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## METHODOLOGIES AND TECHNOLOGIES FOR ENHANCING THE MOTOR AND SOCIAL SKILLS OF CHILDREN WITH DEVELOPMENTAL PROBLEMS (METEMSS)



## Project Coordinator:

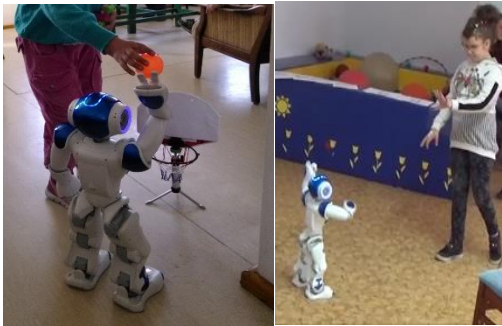
Institute of System Engineering and Robotics  
Bulgarian Academy of Sciences

## Partners:

- University of Stavanger, Norway
- The South-West University, in Blagoevgrad, Bulgaria
- Day care center for Children in Banskó, Bulgaria
- Day care center for Children in Gotse Delchev, Bulgaria

## HUMANOID ROBOT NAO

Interactive scenarios with humanoid robot NAO for facilitating motor skills and social interaction, “PECS”, “Turn Taking”, “Copycat”, etc.



## WALKING ROBOT “BIGFOOT”

Non-humanoid robot for stimulation of collaborative and cognitive play.



## Play is fundamental and important for the development of children

*Children with impairments have limitations in cognitive, motor, speech-language and communication skills.*

*Play is a medium that can enhance skills by joyful and self-stimuli!*



How can new assistive technologies facilitate and stimulate play in children with developmental problems?

**Experience from METEMSS**

## KINECT SENSOR

Human-motion sensing device (KINECT sensor) for facilitating motor skills and “bring magic” to selected computer games that challenges the educational and social abilities, as well as cognitive play.



## MINION with robotic hand for gestures imitation

Gestures are recognized by Kinect enabled-application for facilitating interaction and verbalization.

