



IFA

Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung

# Development of a Nano Exposure and Contextual Information Database (NECID)

Johannes Pelzer<sup>1</sup>, Wouter Fransman<sup>2</sup>, Wiho Stöppelmann<sup>1</sup>, Christian Schumacher<sup>1</sup>, Derk Brouwer<sup>2</sup>, Ismo Koponen<sup>3</sup>, Delphine Bard<sup>4</sup>, Olivier Witschger<sup>5</sup>, Elzbieta Jankowska<sup>6</sup>, Tomi Kanerva<sup>7</sup>, Markus Berges<sup>1</sup>

<sup>1</sup> IFA, Germany; <sup>2</sup> TNO, The Netherlands; <sup>3</sup> NRCWE, Denmark; <sup>4</sup> HSL, UK; <sup>5</sup> INRS, France; <sup>6</sup> CIOP, Poland; <sup>7</sup> FIOH, Finland

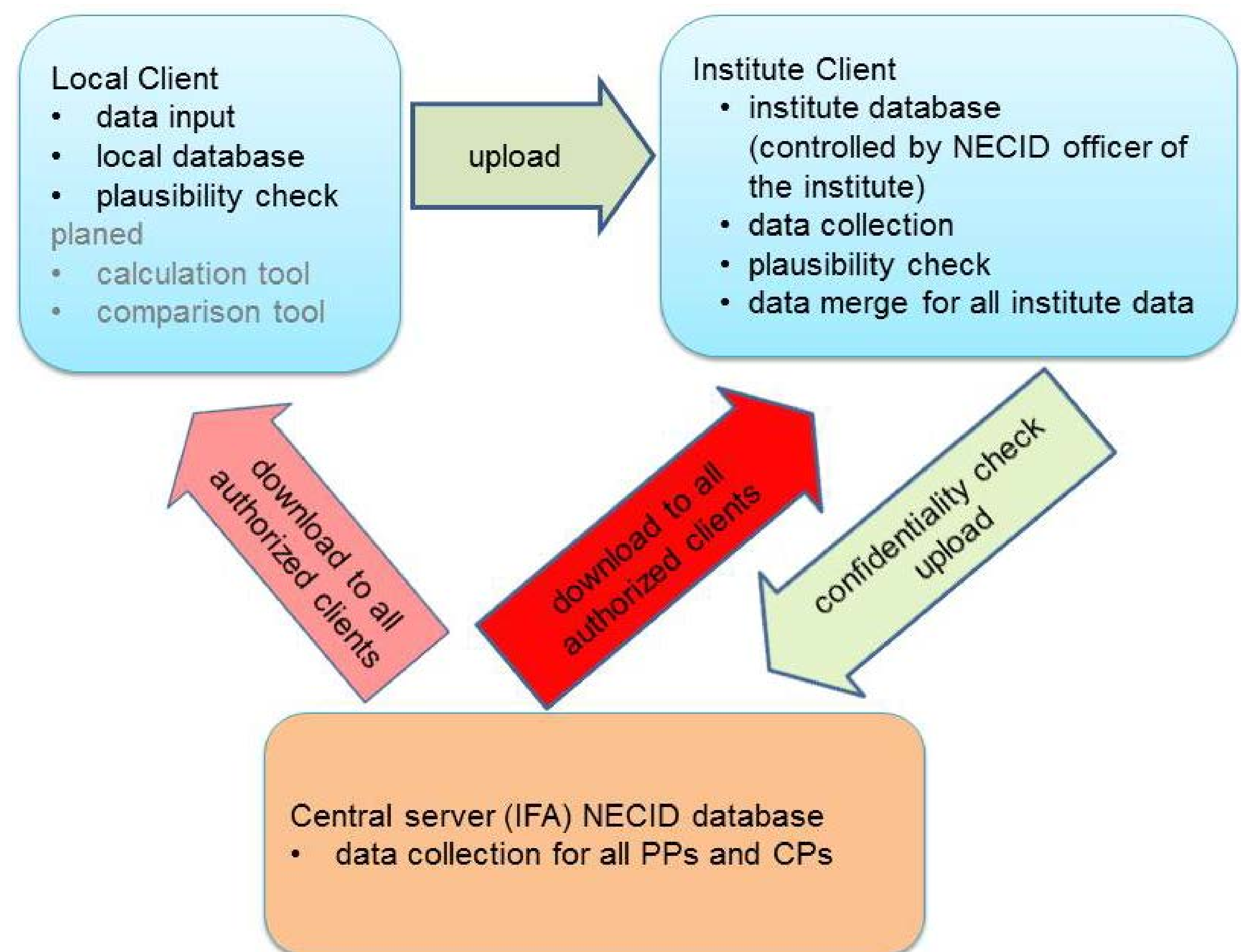
## Introduction

For the assessment of exposure to nano objects and subsequent research studies, there is a need for a harmonized documentation of results and contextual information of workplace measurements. IFA and TNO are leading a group of PEROSH institutes, that develops for this purpose the "Nano Exposure and Contextual information Database, NECID". Based on the experience of the group in workplace measurements and other databases for hazardous substances NECID focuses on the detailed description of activity and material as well as the ambient conditions. This results in significant differences in the structure to the existing databases. As starting point the intended user group are research institutes and should be expandable to third parties.

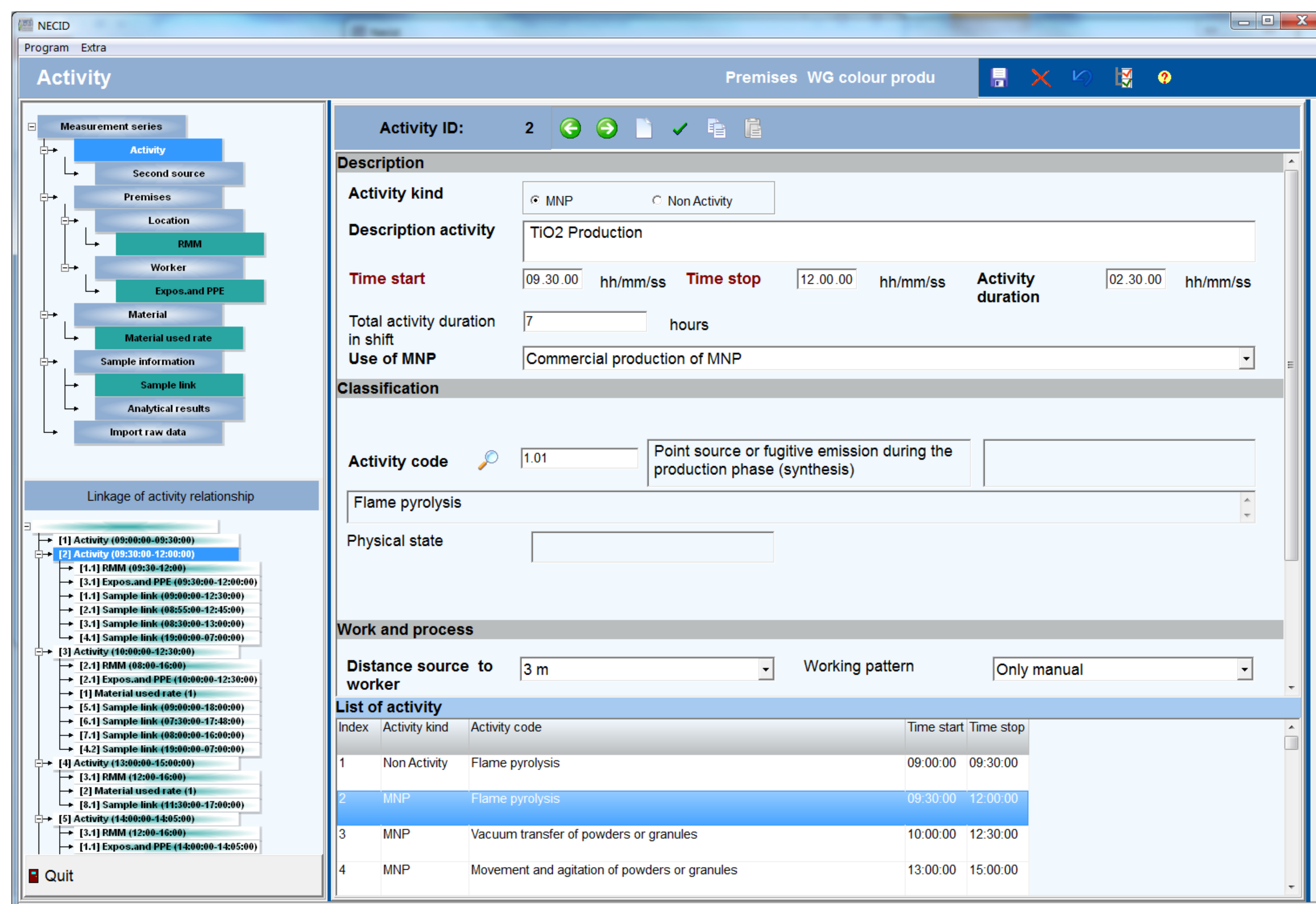
## Aims

- Harmonization and improvement of exposure measurements of MNM
- Uniform documentation of measurements and data treatment
- Multiple use by storing detailed contextual information and raw data: e.g. for
  - Exposure modelling
  - Scenario building
  - Epidemiological studies
  - Source of information for risk management
- international data base to enlarge data pool

## Data flow



## Database structure and content



The data entry of one measurement series is structured in five main screens and four sub screens.

- |  |   |
|--|---|
| <p>Main screens:</p> <ul style="list-style-type: none"> <li>• Activity</li> <li>• Premises</li> <li>• Material</li> <li>• Sample information</li> <li>• Import raw data</li> </ul> | <p>Sub screens:</p> <ul style="list-style-type: none"> <li>• Second Source</li> <li>• Location</li> <li>• Worker</li> <li>• Analytical results</li> </ul> |
|--|---|

Four additional entry screens enable the user to link the main screens to each other. This facilitates to map complex situations during the measurement in the database and sets the base for multiple use.

The client software allows the user to store all collected data of a measurement. On a second level datasets can be merged among a group of users in one institute to build up an institute wide database. To fulfil the aim of an international database for a group of institutes the datasets should also be uploaded to the central server. The transfer protocol considers the confidentiality settings and does not transmit these data. Consequently the data on the server are free for research use for all partners of the database and can be downloaded by all authorized users. Different user-specific rights and legal agreements for the handling and storage of data and the required IT security play a critical role for this multinational database and the possibility of data sharing.

## Outlook and discussion

For autumn 2013 a beta version of NECID is planned. First parts of NECID could be tested in the EU-project NANODEVICE and some other projects agreed to used the same data collection format. To push harmonization process calculation and comparison modules are planned. Their function will be multi-purpose analysis of the exposure data but in a harmonized documented way.

NECID will provide a sustainable (in view of hosting and maintenance) source of information for risk management, the development of occupational exposure benchmark levels/limits and can refine the compounding of individual assessment factors in exposure assessment and modelling to avoid unnecessary conservatism.

