II INTERNATIONAL CONFERENCE
KRASNOYARSK, RUSSIA
25-27 September 2020

APITECH
Прикладная физика, информационные технологии и инжиниринг

APITECH
Applied Physics, Information Technologies and Engineering

Science & Technology City Hall
Krasnoyarsk

«Conference on Applied Physics, Information Technologies and Engineering» APITECH-2020

«Database management systems application for the organization's metrological support»

M S Stepanov, I G Koshliakova, O Yu Sorochkina and K V Kirimova

Problem statement

Metrological support is of utmost importance in any product manufacture. The main metrological assurance component, is the choice of the measuring instruments, taking into account their metrological characteristics, design and dimensions, reliability, performance.

The most complete existing measuring instruments information is contained in the State measuring instruments register. It contains a very large data amount, and therefore the necessary information selection is a very time-consuming task.

A convenient way to solve this problem for organizations is to create an electronic platform for the necessary information storage. One of the information storage forms is a database. The most accessible and popular relational database management system is Access, which is part of the Microsoft Office.

For example, the simplest measuring instruments database basis may contain two interrelated tables: "Measuring instruments" and "Technical characteristics". Further, such a database can be developed by adding other related tables. Figure 1 shows an example of a table in the "Measuring Instruments" database.

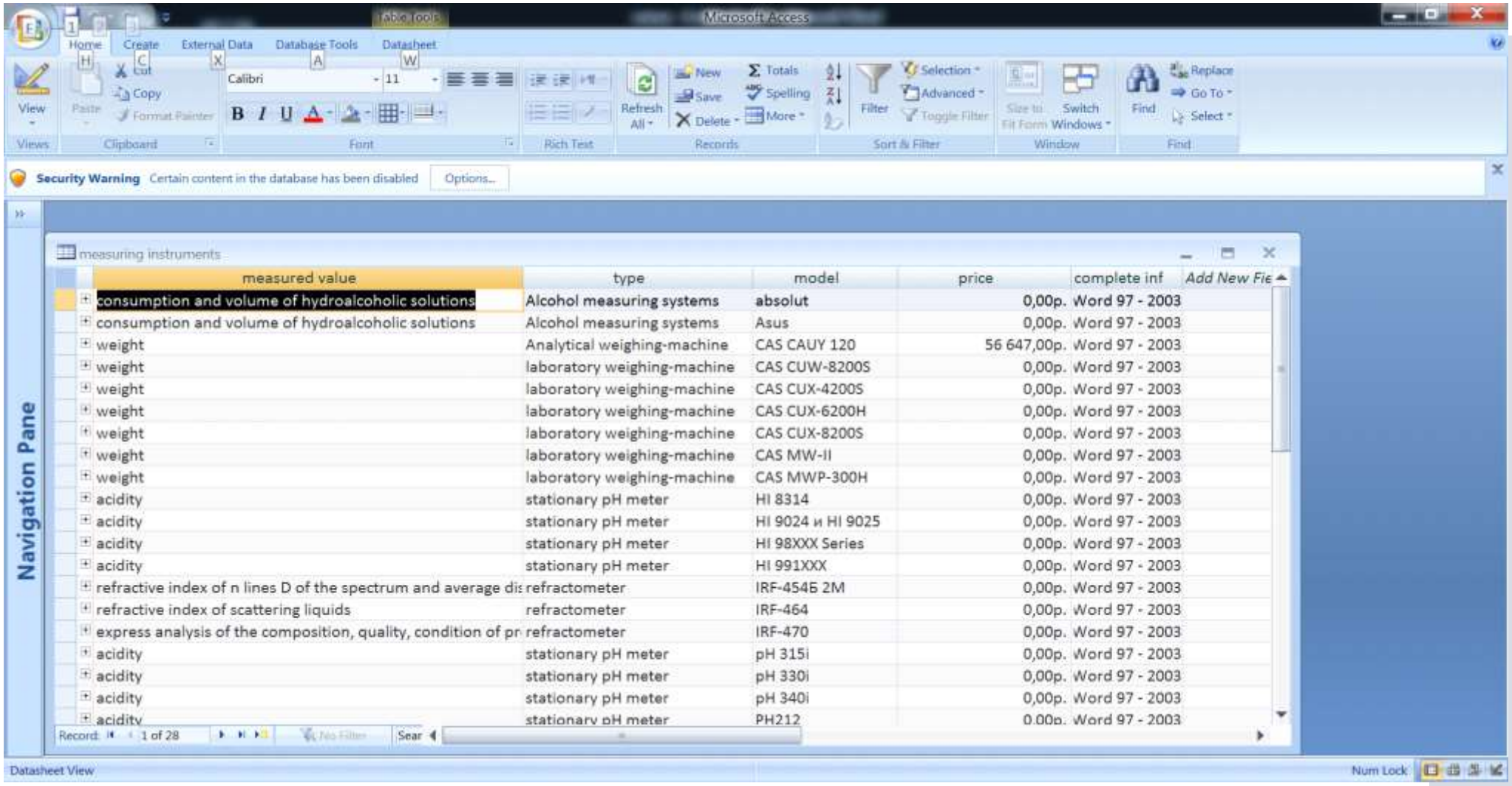

Figure 1. The table in the "Measuring Instruments" database

A typical "Measuring Instruments" table view is shown in the figure 2. This table contains the following fields: measured value, type, model, price, complete information.

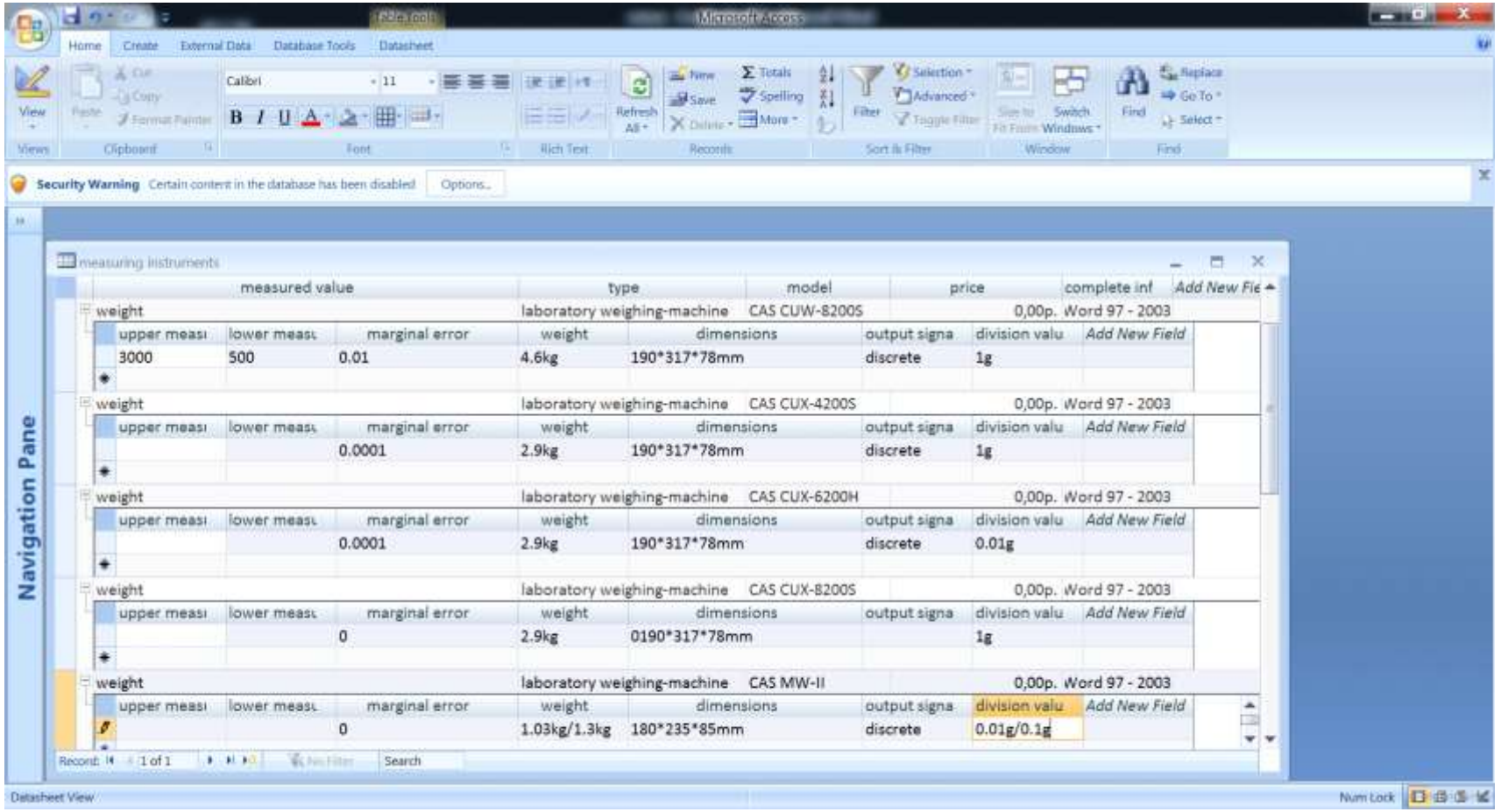

Figure 2. "Measuring instruments" table view

The corresponding "Technical characteristics" table (Figure 3) contains the following fields: model, upper measurement limit, lower measurement limit, maximum error, weight, dimensions, output signal type, scale division.

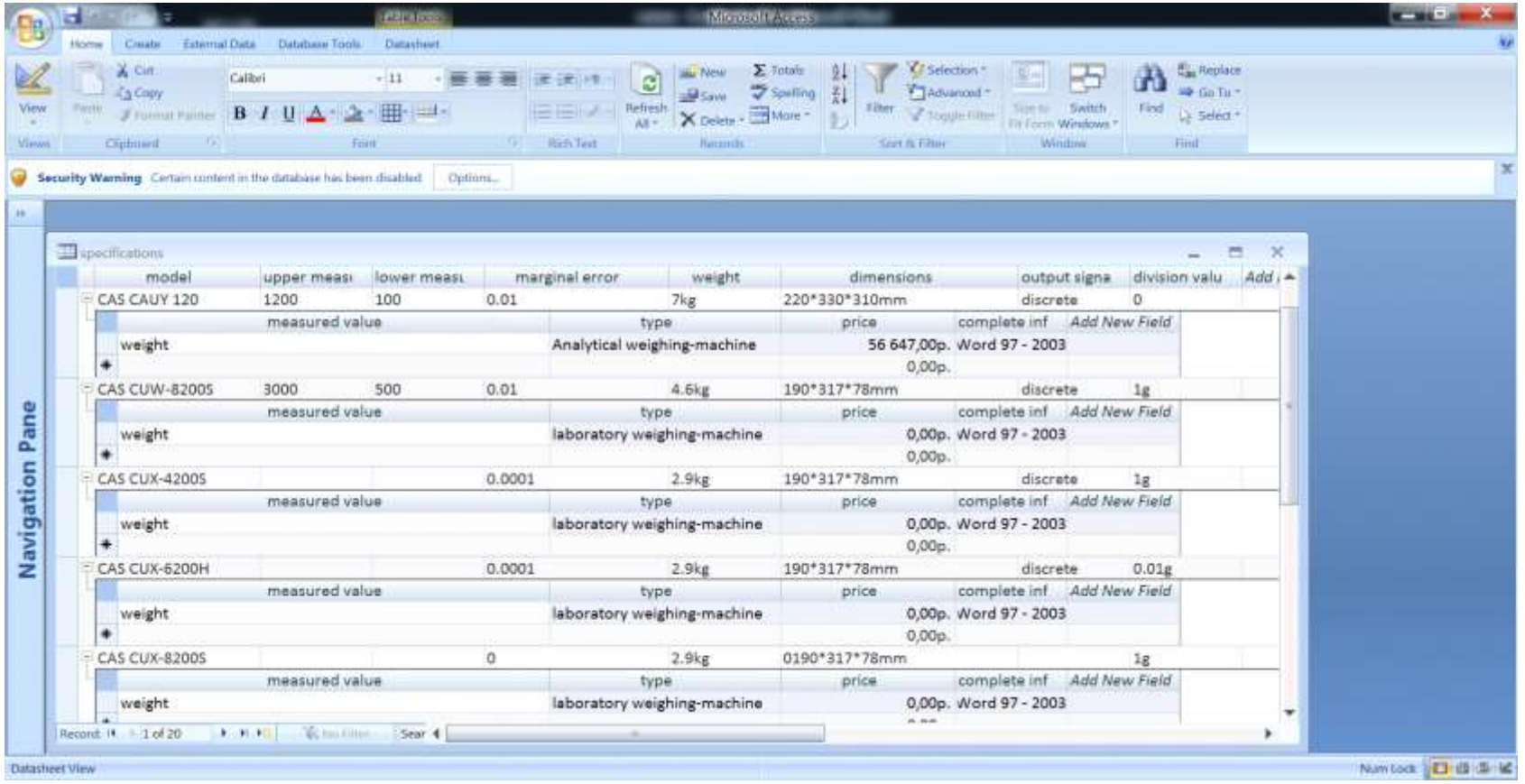

Figure 3. View of the "Specifications" table

The necessary information selection and grouping is performed using the various types of requests function generation.

A query allows us to extract information from different tables and collect it for display in the report form, or to actions data performance.

To specify the selection and grouping conditions, a constructor or query wizard is used, as well as the Structured Query Language (SQL), which is the main tool for relational databases optimizing and maintaining.

The forms are used for convenient data presentation when they selecting or changing.

The information presented in the report for printing form shown in figure 4.

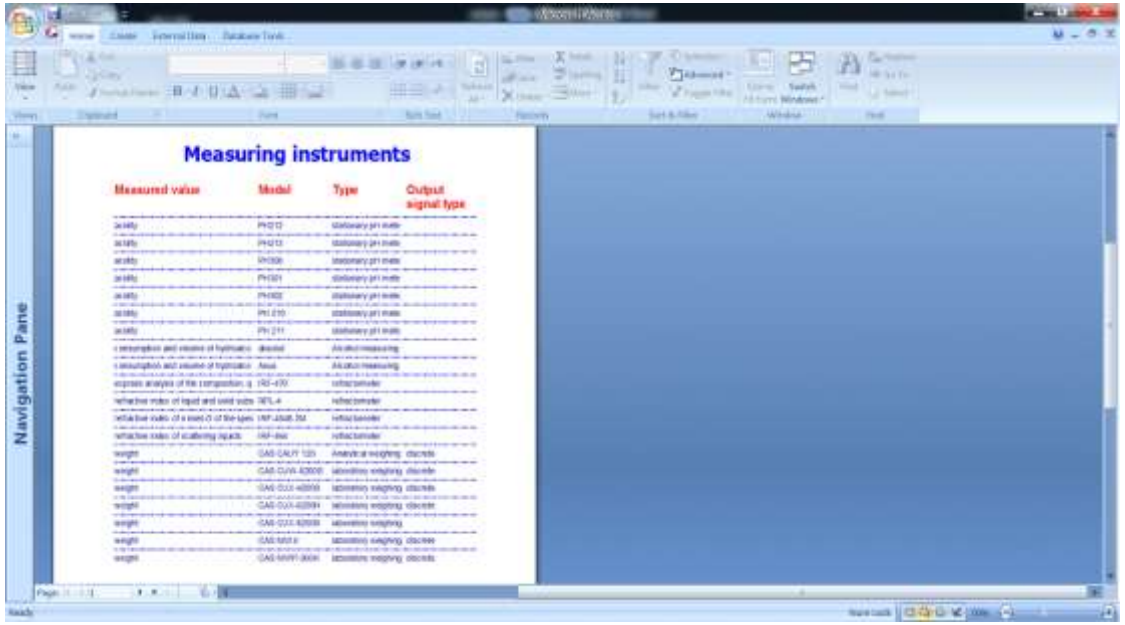

Figure 4. "Measuring instruments" report.

Conclusions

The Microsoft Access system using to automate metrological support in an organization can significantly speed up the necessary information finding and using process, eliminate possible errors, increase work productivity, and increase the organization's profit.

Contacts

Makar Stepanov, Irina Koshlyakova, Oksana Sorochkina, Kristina Kirimova

Don State Technical University, 1 Gagarin square, Rostov-on-Don

E-mail: stepanovms@yandex.ru

II INTERNATIONAL CONFERENCE
KRASNOYARSK, RUSSIA
25-27 September 2020

Conference on Applied Physics, Information Technologies and Engineering - APITECH-2020