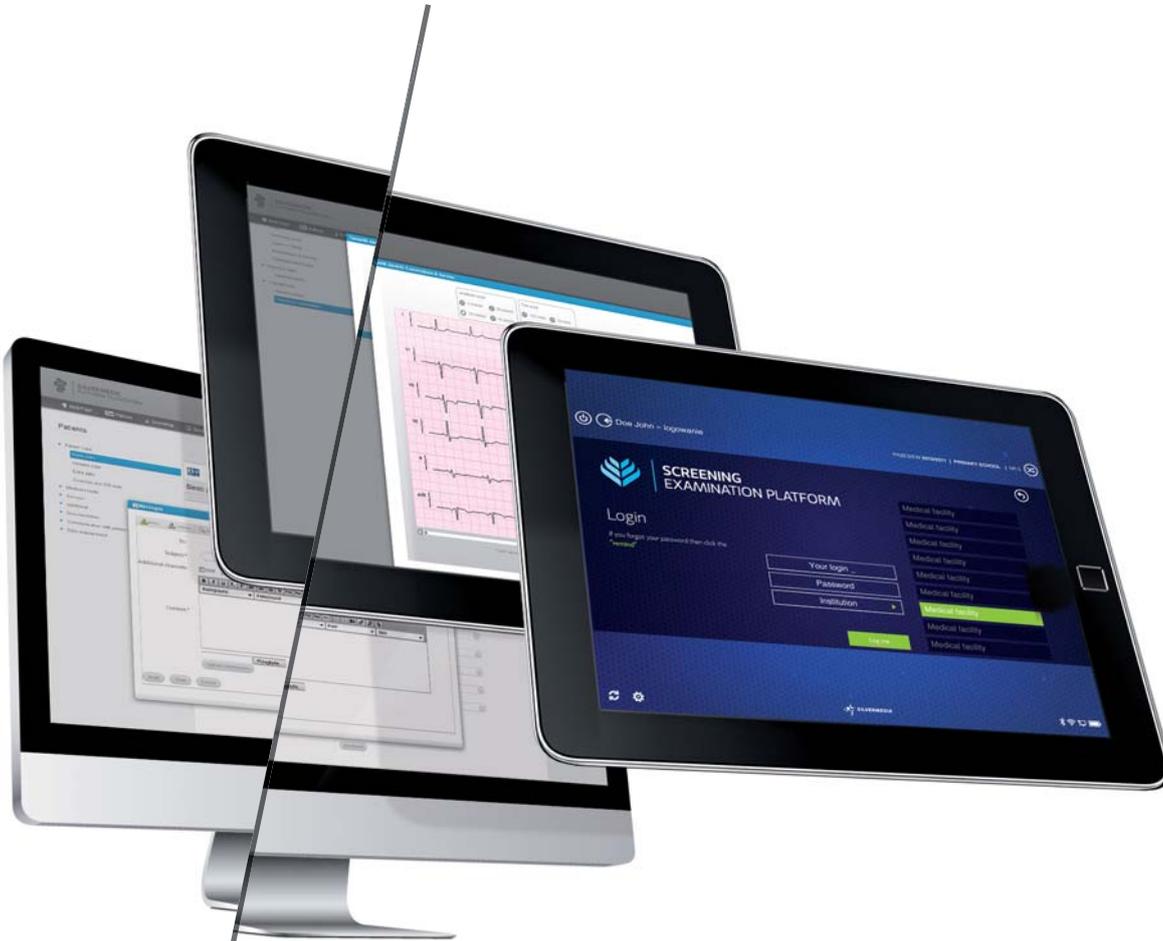


## SILVERMEDIC IN SCREENING PROGRAMS



*Ideal solution to support the organization and management of health screening programs and the performance of screens using customized medical testing devices*

### INTRODUCTION

Screening programs are an important preventative medicine strategy for early detection. However its popularity has been limited by complications in cost, organization and coordination. Thanks to Information Technology, screening programs can be organized much more easily and cost effectively.

Silvermedia's range of high quality, customizable, powerful and user friendly solutions for science and healthcare is a platform called Silvermedic. Applied to screening programs, Silvermedic simplifies the complex process of performing screens and managing screening programs, reduces the number of administrative and specialist staff required to execute the program, optimizes the time of specialists to enable them to concentrate their effort on the medical part of the screening process, and allows screening programs to be run on a massive scale.

It achieves these benefits with a number of features and functions. It also allows the various stages in preparing screening programs to be run in parallel. It configures mobile devices to perform screening tests. It supports classification of screens both automatically and manually. It lets the program manager closely monitor the program as it is being executed. It simplifies communication between all staff involved. It coordinates follow-up procedures such as diagnosis and treatment. Finally, it analyzes all data into reports and statistics in real-time.

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## SCREENING PROGRAMS – STATE OF THE ART

Screening is a widely recognized and used prophylaxis method which prevents the consequences of diseases with early-stage detection and treatment. Screening detects disease at early stages, where visible symptoms may not yet occur. It does this with simple diagnostic tests. But the outcome of screens, either positive or negative, is often fraught with error. As a result, positive outcomes must be confirmed with follow-up testing and analysis by specialists.

The most popular screening programs are in oncology (breast cancer, cervical cancer), audiology (hearing disabilities) and neonatology (hypothyroidism, phenylketonuria). The appropriate use of screening limits the negative effects of disease, shortens the time needed for treatment and improves the quality of life of the screened population.

Equally important is the economic aspect of cancer screening. In most cases, screening examinations are easy, cheap and rely on accessible diagnostic methods. Only patients with positive outcomes are directed for further diagnosis. Because of the high costs and limited accessibility of advanced diagnostic methods, screening provides a cost effective and highly accessible solution to advanced methods.

The main limitation of screening is, among others, the requirement for high population coverage. To resolve this issue it is necessary to use administrative tools to support screening programs. Such programs have a high cost in preparation and execution, and can be a significant financial burden on the health system. But despite this, the direct and indirect costs of these diseases are far greater than the cost of effective health prevention.

Information technology has opened new possibilities for screening. The use of mobile devices and wireless data transmission allows screening programs to significantly reduce the organizational and administrative costs. IT support can also facilitate constant monitoring and more effective program management. Thanks to the integration of e-health with the concept of screening programs, we should expect significant growth in the number of screening programs in the near future, and a positive effect to population health and well-being.

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## SILVERMEDIC FOR SCREENING PROGRAMS

Silvermedia's range of high quality, customizable, powerful and user friendly solutions for science and healthcare is a platform called *Silvermedic*. The idea behind the development of *Silvermedic* is to create a set of IT tools that would allow us to create dedicated solutions for specific needs in a faster, more cost-efficient manner. Using our years of experience in the science and healthcare domains we have prepared web applications, applications for mobile devices, administration and management tools, all of which can be combined, configured and extended to meet the expectations of our clients.

***One of the Silvermedic's flagship solutions is for screening program support. Its main goals are to:***

- / Simplify the complex process of performing screens and managing screening programs
- / Decrease the number of administrative and specialist staff required to execute the program
- / Optimize the time of specialists to enable them to concentrate their effort on the medical part of the screening process
- / Allow screening programs to be run on a massive scale, which would be very difficult without this advanced IT solution

To achieve these goals, several *Silvermedic* modules are utilized. *Mobile Suite* adapts the *Silvermedic* suite to be used on mobile devices (such as smartphones, tablets and netbooks). It enables testers to manage their working schedule, access all relevant, program-related information, perform screens according to the program policy, process the results, display them on the mobile device and upload them to the *Health Record*. *Health Record* is the patient data repository, containing records of each individual patient's demographic details, test and survey results, consultation notes and screening outcomes. The *Screening Program Platform* handles all the program management, including program planning, resource management and program monitoring. It keeps a record of all medical test equipment and mobile devices, plus any other resources. It tracks the locations and use history of this equipment, plus who it is assigned to. For personnel, this module organizes their schedules: which testing locations they must go to and when, which patients it must screen, and how long everything should take. The program tracks in detail the activities of the testers, and compares this data with the plan developed in the module. This comparison enables the program manager to keep close control of the program's implementation and the possibility to quickly and effectively adapt to issues. It uses the *Telemedicine Diagnostics* module for automatic or manual outcome classification, and *Silvermedic's* powerful messaging capabilities for notifying the patients of the screening results.

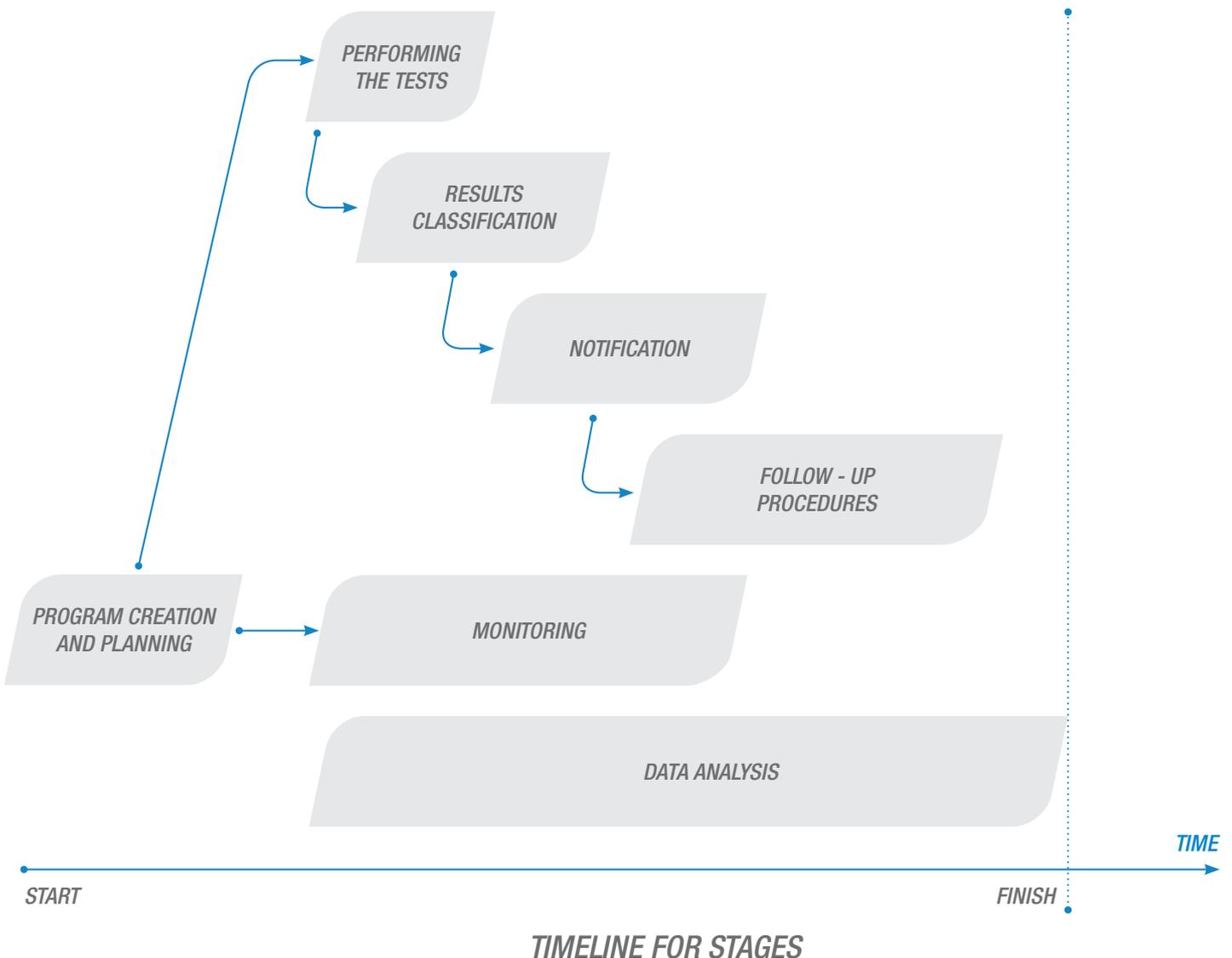
The information from all modules comes together into *Health Intelligence* to provide valuable and interesting inputs for research projects. It is customizable what kind of information and conclusions the client wishes to gain from this module.

# SCREENING PROGRAMS

The general process for the implementation of screening program can be divided into the following stages:

- 1. Program creation and planning** – all necessary information related to the screening program is entered or imported into *Silvermedic*, including the screening method, outcome classification method, resources and program schedule. After the program is published, devices are automatically configured to work in the boundaries of the program.
- 2. Performing the tests** – testers perform screens using devices, automatically uploading the results into central system upon connection to the Internet.
- 3. Results classification** – tests are classified as positive or negative, either automatically or manually according to the program's policy and the deployment model.
- 4. Notification** – patients are contacted about the screen outcome.
- 5. Follow-up procedures** – this includes diagnosis, appointment scheduling, consultation and treatment. Data in these stages are either maintained by *Silvermedic* or external software, depending on the deployment model.
- 6. Monitoring** – the program manager uses the features delivered by *Silvermedic* to monitor the performance of testers, compliance with program schedule and policy. It prompts the manager to organize corrective actions as necessary.
- 7. Data analysis** – data is analyzed, reports and statistics prepared.

*Silvermedic* screening program software allows for the parallel execution of the stages thanks to the powerful processing features of the central system, in particular the automatic transmission of data from devices. It is not necessary to wait to classify the results until all the tests are performed, data analysis can start as soon as the first data comes in.



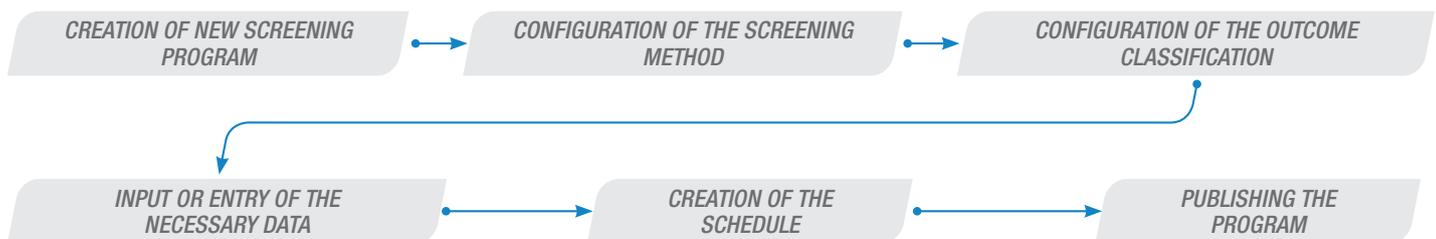
## SCREENING PROGRAM CREATION AND PLANNING

*Screening Program Platform is designed to create and manage multiple screening programs in parallel. It permits the:*

- / Creation of new screening programs.
- / Configuration of the screening method, including tests to perform, questionnaires to fill, and patient demographic data to gather.
- / Configuration of the classification method of incoming screening data. Depending on types of tests used it can be fully automatic classification using customized algorithms, manual classification by a specialist, or a combination of both.
- / Entering or importing screening resources including devices, testers, and screening locations.
- / Importing the demographic data of screen subjects.
- / Creation of the program schedule – who, when and where screens will be performed.

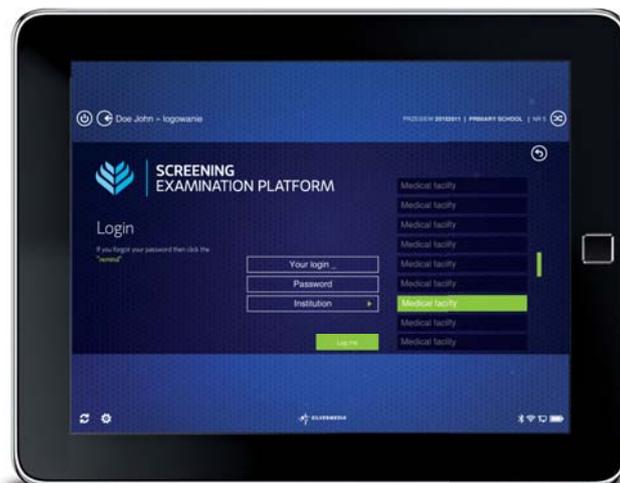
Some of the above features are optional to use, and its relevance depends on the actual screening program.

The system allows program managers to plan the program in *Silvermedic* as drafts until it is ready to finalize and publish. Mobile devices connected to *Silvermedic* are configured with *Mobile Suite* to work with the program. The fully functioning devices download all necessary information and configuration data and upload user-entered information and updates.



## PERFORMING THE SCREENS

*Silvermedic* delivers the customized set of tools required for performing the tests. For survey-based screening programs, a web application, customized smartphones or tablets are generally used. "Kiosk devices" are also possible. For more advanced screen tests like ECG, audiometer or blood pressure measurement, we propose the usage of *Screening Examination Platform*.



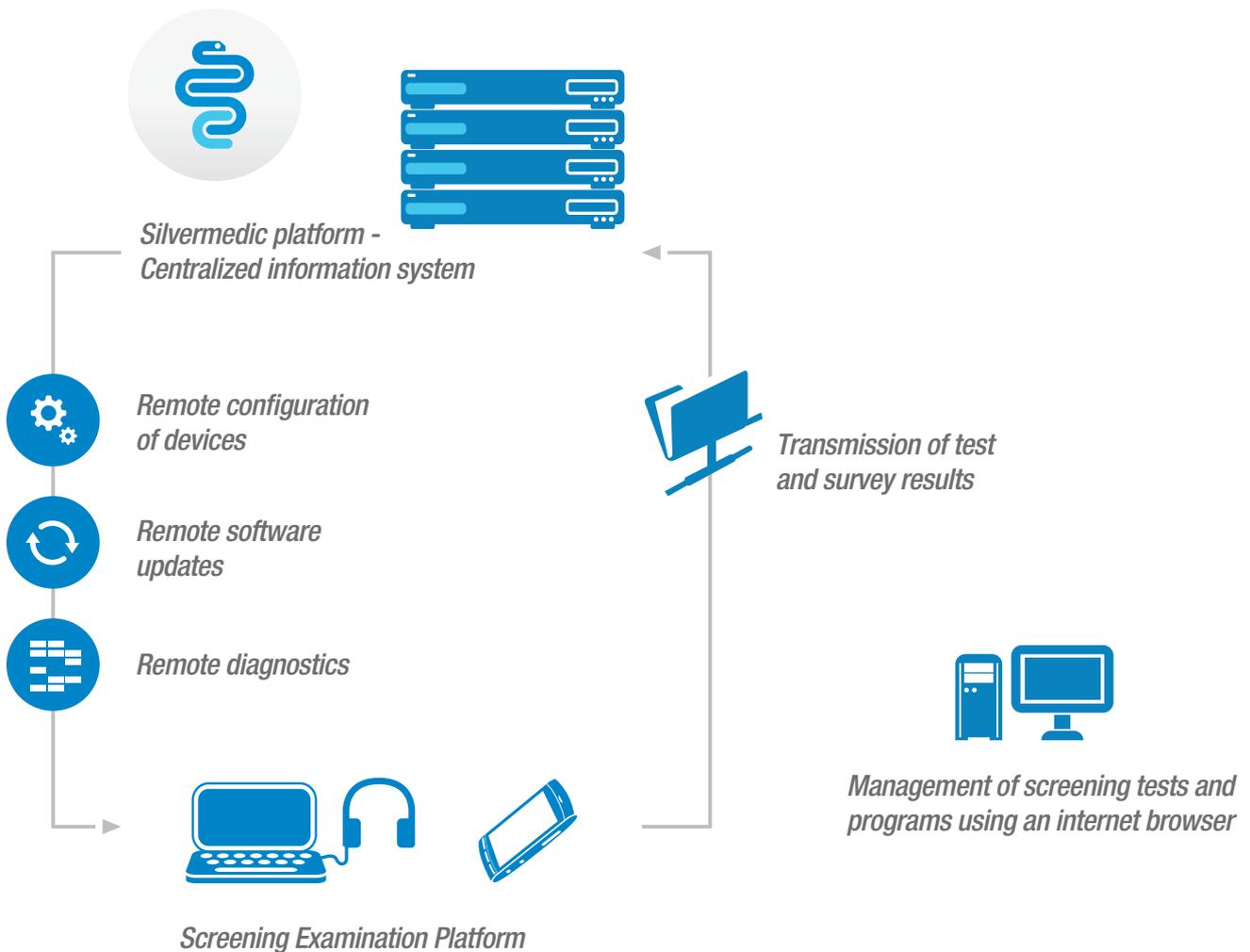
# SCREENING PROGRAMS WITH SILVERMEDIC

## SCREENING EXAMINATION PLATFORM

*Screening Examination Platform (SEP)* is a mobile medical device based on netbook or tablet hardware. It performs various medical tests using the devices' own hardware or relying on external medical devices connected through Bluetooth or USB port. Following the program's plans and policies, the mobile device downloads the program's configuration to know which data to gather, tests to perform and surveys to fill. It is capable of working offline, it stores all data on the hard drive until connection to the Internet, when it synchronizes with *Silvermedic's* central system. It was created with remote monitoring, configuration and maintenance in mind, so the physical access to devices is not required whenever the configuration changes occur.

### *Screening Examination Platform makes it possible to:*

- / Perform a wide range of tests (including new tests and devices) in remote locations without Internet access, in compliance with the screening program's policy
- / Automatically send data to a central system for analysis
- / Minimize the human factor that can influence screens because all possible screening-related processes are automated
- / Perform the screening without expert staff on-site
- / Allow screening programs to be run on a massive scale, which would be very difficult without this advanced IT solution



## PROGRAM MONITORING

Monitoring testers in programs across wide geographic areas is a difficult task. The features of *Silvermedic* automate the monitoring process so that the program manager has all the necessary information together to support problem solving.

*Silvermedic* provides [automatic monitoring features to monitor compliance with the program plan](#). A messaging system is used to inform the users of important events, validation errors, and the possibility of tester mistakes. Real-time reports are available to observe the current status of program delivery.

### Using *Silvermedic* for screening program monitoring:

- / Decreases the amount of administrative staff necessary for monitoring
- / Focuses the program manager's role on analysis and problem solving rather than information collection and administration

## RESULTS CLASSIFICATION

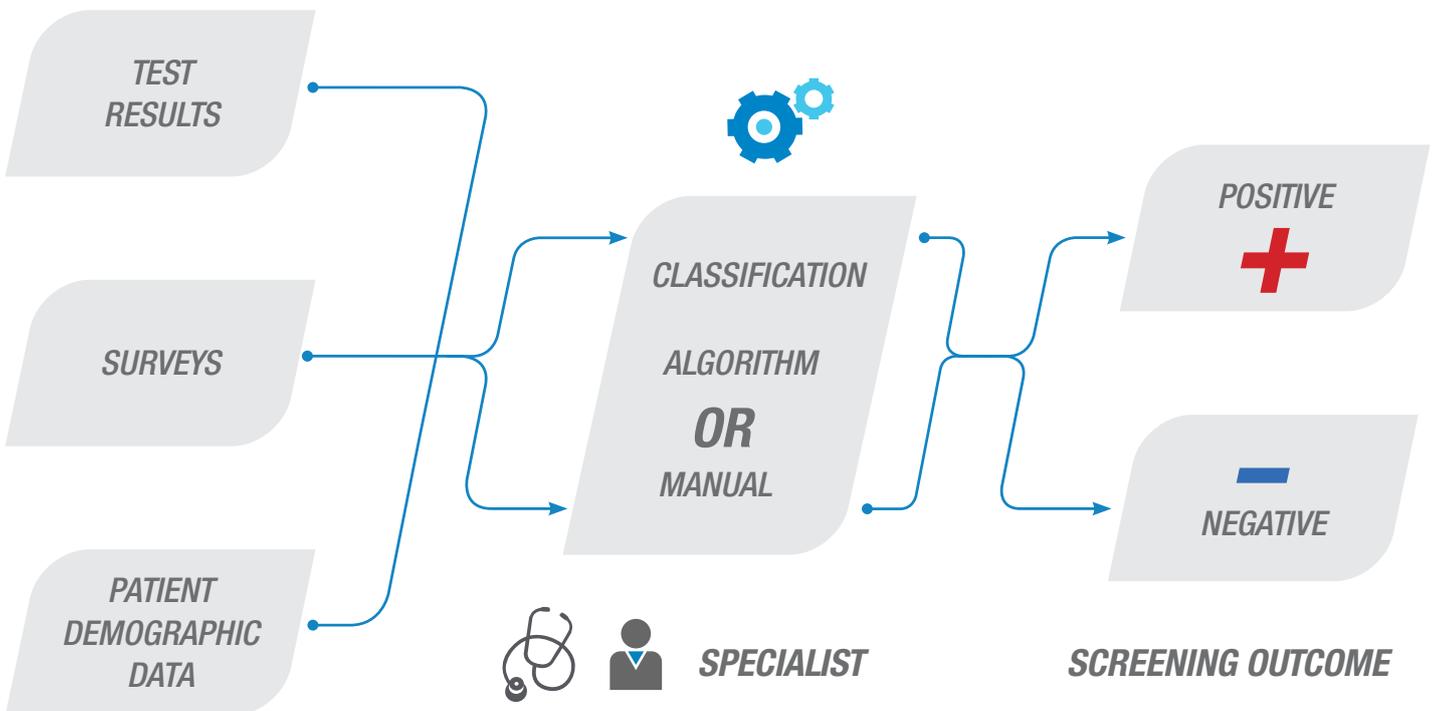
*Silvermedic*'s Telemedicine Diagnostic module classifies the results of each patient's screen in accordance with the program policy. Depending on the program and tests used, the [classification can either be automatic, manual or semi-automatic](#).

Automatic classification uses dedicated algorithms to analyze the result and classify it based on sets of rules. Manual classification allows specialists to review the result and, with the support of filters and browsers, make the classification. A hybrid, semi-automatic classification is also possible, where a specialist reviews the automatic classification and either approves or changes it.

In wider, more interdisciplinary screening programs it may be necessary to distribute the test results among specialists from different fields and organizations before the classification can be done. *Silvermedic* supports deep integration with external IT systems for describing some types of examination results and the creation of step-based processes to manage the classification.

### Using *Silvermedic* for results classification brings:

- / Faster, more reliable, program-compliant classification
- / Optimization of specialists' work effort
- / Diagnosis anytime, anywhere thanks to web-browser tools



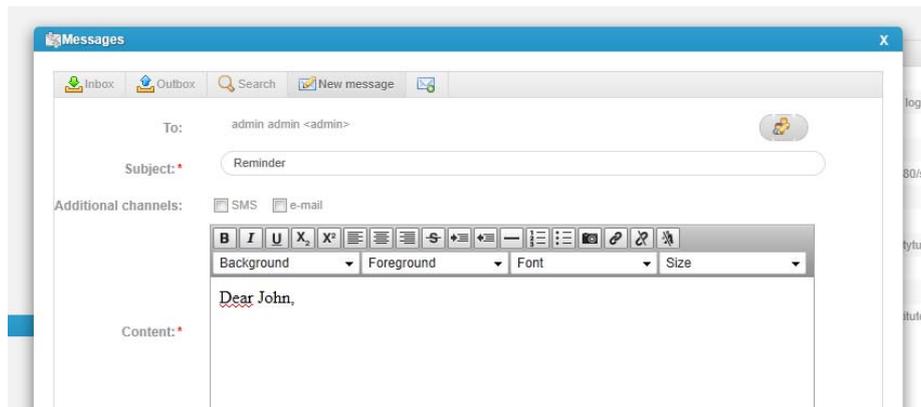
# SCREENING PROGRAMS WITH SILVERMEDIC

## COMMUNICATION INCLUDING NOTIFICATION

*Silvermedic's* powerful communication features provide [direct messaging between the users](#), e.g. testers and program manager, program manager and specialists. These can be both one to one, or one to many. It can also be used to [automatically remind and notify different users](#).

*Silvermedic's* communication features can be utilised to deliver screening results to patients. There are many options to do this: accessing the results through *Portal* connected to the *Silvermedic*, printing and sending reports by post, or mass e-mail. It is also possible to use multiple communication channels simultaneously.

The *Portal* can be set up as a publicly available information source about the screening program, including but not limited to automatically updated information related to program schedule, document templates, reports and statistics.



## FOLLOW-UP PROCEDURES

There are numerous follow-up procedures required in screening programs. These can be managed internally with *Silvermedic*. It can also be handled by an external system integrated with *Silvermedic*, which would feed the external system with all the information necessary for follow up.

## DATA ANALYSIS & REPORTING

*Silvermedic Health Intelligence* is a solution for [powerful reporting and data analysis](#), with automated reports as well as features for user-made reports. It uses all data to process into superior knowledge. In screening programs, it is used for epidemiology reporting, analyzing performance, and validating the specificity and sensitivity of tests. Reports can be embedded in *Portal* with automatic refreshing.



## READ MORE

For more information on Silvermedia, please visit our website: <http://www.silvermedia.eu/>

More information related to our IT solutions for science and healthcare, including use case scenarios, case studies and detailed competencies descriptions, can be found on our website:

<http://www.silvermedia.eu/scienceandhealthcare/>

## QUOTATION

*“ The implementation of this screening tests support system allowed us to accomplish all our goals in a smooth and timely manner. The Silvermedic Suite improved the coordination of all our actions, significantly simplified the gathering of research results and accelerated the implementation of the research results assessment process. ”*

– Marcin Kopaczewski, Deputy Director of Organization and Development, Institute of Physiology and Pathology of Hearing, Warsaw, Poland.

*“ The implementation of our multidisciplinary screening program was made possible by the integration of the Silvermedic Platform deployed in IFPS with our system used here in IC, Anin. It allowed for the efficient coordination of activities, automated distribution of data and sharing of information. Such efficient integration made it easier for us to focus on substantive aspects of the project. ”*

– Tomasz Berdyga, Project Leader, Institute of Cardiology, Warsaw, Poland.

## QUALITY CERTIFICATIONS



To ensure the best possible quality of our services, Silvermedia has obtained ISO Certifications: ISO 9001 and ISO 13485.



**Certificate ISO: 9001** - Silvermedia meets the requirements of its Quality Management System.



**Certificate of ISO: 13485** - Silvermedia meets the requirements of a quality management system for the design and manufacture of medical devices.



**CE certificate** - Silvermedia possesses a CE certificate for our Screening Examination Platform medical device.

## PARTNERS AND MEMBERSHIP



As an innovative company, Silvermedia cooperates with major scientific and R&D institutions in Poland, including AGH University of Science and Technology, Jagiellonian University Medical College, Medical University of Warsaw and Children's Memorial Health Institute in Warsaw. We are members of clusters:



We are technology partners of the Association of Polish Counties.

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