Rules and instructions of researcher services

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1. Introduction

Statistics Finland's researcher services offer unit-level data for scientific studies and statistical surveys. The data can be used through Statistics Finland's remote access service and in the Research Laboratory or outside Statistics Finland as sample data. By signing a research project-specific agreement or an agreement on the use of the SISU microsimulation model, the researcher commits to follow the rules and instructions of the researcher services. The rules and instructions that relate to confidentiality, data protection, publishing of results and ending of the project apply to the research use of all unit-level data. There are separate rules for remote access use and Research Laboratory use of data, see Sections 3 and 4. The screening process of research results is applied both to remote access use and use in the Research Laboratory, see Section 5. The practices for remote access use of researcher services also apply to remote use of the SISU microsimulation model. As an exception, different practices are applied to the screening of research results in microsimulation.

2. Confidentiality

The use of unit-level data is subject to a user licence. Only the person who has been granted a user licence is permitted to use the data and the data can only be used for the purpose accepted in the decision. No efforts must be made to identify the targets of the data from the material. By signing the agreement applying to the research project or the use of the SISU microsimulation model and the pledge of secrecy, the researcher pledges not to disclose to anyone or use for their own or private benefit the data they have been authorised to use and are prescribed as confidential by law (unit-level personal and business data included in the research data). The obligation to maintain secrecy also concerns computer software used in statistics production and information concerning such software, the disclosure of which compromises statistical confidentiality (Statistics Act 280/2004: Section 24). The obligation to secrecy shall remain in force even after the expiry of the agreement.

3. Rules of the remote access system

3.1 Logging in to the system

Remote desktop use from the researcher's workstation to Statistics Finland's server is opened through an online service (Appendix B). The user logs in to the online service with a personal user ID and password that are to be stored carefully. In particular, the user IDs and passwords should be stored separately.

In addition, the user is identified by a text message code. The system sends a so-called flash message to the user's mobile phone number. The phones and SIM cards related to this number should also be stored carefully.

Remote access use must take place from the premises of the customer that has signed the user licence. Remote access can only be made from the IP address specified by the customer. Statistics Finland checks that they are in compliance with the terms of use.

The remote use workstation's data security updates, as well as the virus and firewall protection, must be up-to-date.

3.2 Using the system

A work folder is reserved for research projects where the project material is stored. Reading rights to the data folders are granted in accordance with the project-specific or SISU model user licence. In the SISU model, each user is reserved their own work folder to which the user can grant rights to other users of the model. The users of the microsimulation model can also share files in the remote access use environment with other users through a joint forum folder.

The system shall only be used for the purpose mentioned in the user licence and its functionality shall not be hindered in any way. Log data are collected on the use of the system for billing, and for the maintenance and control of the system[1]. The use of the system is billed in accordance with the price list of researcher services.

The remote access is only intended to be used by the researcher named by the customer. Therefore, the remote workstation must be locked when it is left unattended. The user must log out from the system when he/she no longer works with the remote access.

The data must be handled so that confidential data do not fall into the hands of outsiders. Protection can be improved, for example, by adapting work premises and protection of the screen. Data subject to user licence shall not in any way be revealed to a person that does not have a user licence to the data.

Software files and files containing results can only be sent by email via Statistics Finland's personnel from tutkijapalvelut@stat.fi. Research results are screened to ensure data protection (see Section 5).

3.3 Resources

Each research project is reserved 20 GB in disk space. SISU microsimulation model users are also reserved 20 GB disk space per user. If the project or the user of the

[1] Register description TK-00-473-08

SISU model requires more disk space it is charged separately. The calculation and software resources available in the system are limited and their availability depends on the number of logged in users. Saving of overlapping datasets or intermediate files is not recommended. Simultaneous heavy runs should be avoided. Individual calculation and software resources can be offered to an individual customer or project in accordance with a separate agreement.

3.4 Maintenance

Statistics Finland bears the responsibility for the maintenance of the remote access system during office hours. Problems can be reported by email to tutkijapalvelut@stat.fi or by calling researcher services +358 9 1734 2758. In problem situations, the contact person is the customer's contact person that signed the remote access use agreement. Statistics Finland is not responsible for the user support of software.

Statistics Finland has the right to shut down the system for maintenance reasons. Interruptions caused by maintenance are communicated in the information notifications on the start page of the remote use service and by sending an email to the contact persons of the organisations.

4. Rules of the Research Laboratory

4.1 Use of the identity card and electronic access key

Researchers that work in the Research Laboratory are issued an identity card with a photograph which must always be worn when on the premises of Statistics Finland. Researchers must contact a member of the personnel of Statistics Finland if the card has been mislaid or forgotten.

Unless otherwise agreed, researchers may only work in the Research Laboratory during normal office hours between 8 am and 4.15 pm.

Researchers are issued an electronic access key for moving about the premises of Statistics Finland. On arrival at Statistics Finland, researchers must sign in by pressing the “sisään” (in) button and on leaving the premises sign out by pressing the “ulos“ (out) button on the time clock. Respectively, when leaving for lunch, researchers should press the “ulos” (out) button and on returning from lunch the “sisään” (in) button. Forgotten sign ins and outs are reported by email to tutkijapalvelut@stat.fi.

4.2 Working in the Research Laboratory

Researchers have a limited amount of disk space at their disposal on network drive H. Continuous storing of large files or datasets should be avoided. Saving of overlapping datasets or intermediate files is not recommended. Exceeding the allocated disk space may create additional costs, which researchers will be charged for according to the price list of the Information Technology Department. Files may not be saved on the hard disk of the workstation where they could be accessed by other researchers. Back-up copies may neither be taken of the hard disk.

The Internet can be browsed with the customer terminals of the Library of Statistics. Research Laboratory computers may not be used for sending or receiving email.

Own data storing devices may not be brought to the Research Laboratory. Data storing devices may also not be taken out of the Research Laboratory without permission.

The workstation must be locked whenever it is left temporarily, and switched off at the end of the day. In exceptional cases and based on separate agreement, runs can be left open on the workstation. Reservations for a researcher space can be made by telephone (+358 9 1734 3493 and 2926) or email (tutkijapalvelut@stat.fi). The researcher space is invoiced in accordance with the price list of researcher services.

Software files and files containing results can only be sent by email via the researcher services' personnel from tutkijapalvelut@stat.fi. Research results are screened to ensure data protection (see Section 5).

5. Data protection and screening process of print-outs

According to the obligation to maintain secrecy, the researcher must ensure that the research results contain no unit-level data or possibility of their disclosure. Researcher services applies a screening process of research results, which ensures the implementation of data protection in the print-outs produced by the researcher from the data. The researcher shall ensure that the print-outs sent to screening meet the data protection provisions listed in Section 5.1. The print-outs must be clearly interpretable. In tables, the number of observations in cells must be visible, as well as the number of observations used in calculating estimates and parameters. If necessary, Statistics Finland's personnel can provide additional information concerning data protection.

5.1. Data protection provisions for print-outs

The following is a more detailed description of the data protection provisions for different print-outs.

Frequency and magnitude tables

Print-outs published by the researcher must follow Statistics Finland's policies for protection of tabular data in terms of data protection (Appendix A). The principle rule in the protection of enterprise data is that each cell or group must contain at least three (unweighted) observations. As an exception, the threshold for GVC/international sourcing questionnaire data is five observations. In addition, the dominance rule[2] (1.75) is applied to certain data. When protecting establishment-specific data, enterprise level protection must also be ensured, so each cell must contain establishments of at least three different enterprises. Likewise, group level protection must be considered in enterprise data that contain data on group relationships. A cell-specific threshold value of three is applied to protecting personal data and special attention is paid to the delicacy of variables to be tabulated. In combined employer-employee data, both personal and enterprise levels must be protect-

[2] Information about the dominance rule can be found in Section *3 Concepts and methods connected to the statistical disclosure control of tabulated data* of Appendix A.

ed, so each cell must contain employees from at least three different enterprises. The same protection practices are applied to own-account worker data in tabulated business statistics as to other business data.

Different distribution parameters

A maximum and minimum are usually linked to one observation. If this observation can be identified, the maximum or minimum cannot be published.

Distribution parameters (excl. minimum and maximum) form an exception of tables where the number of observations left in between the distribution parameters correspond with the cell frequencies. If these numbers exceed the threshold value three, the distribution parameters can be published.

A mode can be published if (nearly) all observations do not get the same value.

The average, other ratios and the highest sub-items of distribution parameters (e.g. variation) can be published if at least three observations have been used in their calculation.

Other numerical print-out types

Index point figures, correlation multipliers and test aggregates (t, F, X^2, etc.) can usually be published if enough observations (at least ten) have been used in the calculations.

The regression model can be published in whole if the model is based on enough observations and the model does not depict a time series based on observations of one enterprise/person. Individual multipliers of the model can usually always be published.

Images

Like numerical print-outs, images cannot reveal data of a single observation unit. Images drawn based on the data are permitted if a single image point cannot reveal the underlying individual observation.

Images are taken to screening like tables, documented clearly and precisely. Image formats that are suitable for screening include:

Bitmap formats
- PNG (Portable Networks Graphics)
- BMP (Bitmap)
- JPEG (Joint Photographic Experts Group)
- TIFF (Tagged Image File Format)

Vector formats
- EPS (Encapsulated PostScript)
- PS (PostScript)
- PDF (Portable Document Format)
- SVG (Scalable Vector Graphics)
- WMF/EMF (Windows Metafile)

In Stata software, above-described image formats can be created with the graph export command. In SPSS software, the image format can be selected in the Export output function. In R software, information about the drawing function is available

with the help command (grDevices). Certain image types, like Stata's gph files, save as a rule the material used for drawing the image, which means that they are not necessarily suitable for transfer.

It is more difficult to identify the data of individual observational units if the image has been drawn based on sample data. Many business data are, however, total data, so the data of an individual enterprise can be identified from the images more easily with, for example, outlying values. Even if the data are not total data of all Finnish enterprises they may be total data in terms of a less exhaustive sub-population, like a particular industry.

Bar charts and other images used to present classified data are typically accepted for publication as long as each category has enough observations. These types of data can usually also be presented in table format and Statistics Finland's policies for protection of tabular data (Appendix A) can be directly applied to these.

Sometimes distribution charts contain deviating observations or outliers that could reveal the observation unit's data. Distributions, histograms or cumulative distribution functions that have been adjusted or are presented at a sufficiently crude scale are allowed. The software's drawing functions often automatically mark deviating observations in, for example, box plots, and these should usually be removed from published images.

Distribution charts are typically used to show the values of two continuous variables, which means that they are trickier in terms of data protection than the indicators described above. For distribution charts, special attention should be paid to the nature of the data, for example, the size of the sample in relation to the sensitivity of the data and occurrence of deviating observations.

Clearly forbidden images include images that present the values of deviating observation units or distribution charts from which one can deduce, for example, the data of the largest enterprise in the sector.

5.2 Screening process of research results in practice

Different screening processes are applied to remote use of researcher services and remote use of the microsimulation model. Research results produced in remote access and Research Laboratory use are screened before the data are released, and you cannot transfer files to your own workstation from the remote access environment, the data transfer can be made upon separate request by email. In the SISU microsimulation, the user transfers files containing research results directly to his/her own workstation without any pre-screening.

Screening process in research projects

Research results generated in remote access and Research Laboratory use are screened to ensure data protection. All files taken to screening must meet the same criteria as tables and images intended for publication. For example in log files, only necessary sections and sections intended for publication should be sent to screening. The files are transferred to screening by copying them to the screening folder (...\out) and sending a screening request to the email address tutkijapalvelut@stat.fi. The number and size of files containing results must be kept reasonable (max. size 2Mb).

After the data protection screening, the results are sent to the researcher's email address. One to two working days should be reserved for the screening.

Screening process in microsimulation

In the microsimulation remote access environment, research results can be published without pre-screening. Thus the researcher can transfer files containing research results from the remote access environment to his/her own workstation.

Every user has his/her own personal Mail email folder in the remote access environment through which files can be transferred to the user's own workstation. The transfers takes place by copying the desired files (from the User, Forum or Admin folders) to the user's personal Mail folder. After about two minutes of the copying the file is automatically transferred both to the user's personal and Statistics Finland's microsimulation (mikrosimulointi@stat.fi) email. A separate email message is sent on every file copied to the Mail folder with the file copied to the folder attached to the message. The email shows the name of the transferred file and the sending date. The size of the attached file can at most be 1 megabyte (Mb).

Statistics Finland checks the transferred files from the microsimulation email afterwards. The researcher is obliged to follow the instructions and rules applying to the remote access system of researcher services when it comes to transferable data. These include protection of research results, limitations related to file sizes, etc. interpretability of data and publication of results (Section 6). *In particular, special attention should be paid to the data transferred in the microsimulation environment not, even by mistake, containing unit-level data or any possibility for such data to be revealed.*

6. Publication of results

Researchers pledge to publish their research results only in a form in which no individual enterprise’s or person’s data can be identified. In order to ensure this, the research reports and publications can be demanded for screening before the results are published. Researchers should note that adequate time (one to two weeks) must be allowed for the screening of data protection. You should agree on screening of research results in advance with the personnel of the researcher services.

When the results are published, Statistics Finland must be quoted as the source.

7. When the project ends

The material generated in remote access use and Research Laboratory projects are removed when the user licence of the project or the SISU model expires unless a separate agreement has been made on storing the material. The data released outside Statistics Finland must be returned/destroyed once the permission on their use has expired. All copies taken and intermediate files formed of the data must also be destroyed. Statistics Finland must be notified about their destruction.

8. Sanctions

If the researcher or customer breaches the agreements or instructions on remote access use, the remote access connection is shut down. The connection is reopened if the customer presents an acceptable written justification for the reason of the breach and the actions taken to prevent any future breach.

The sanctions for breaching the obligation of secrecy are set out in Chapter 38, Section 1 and 2 of the Penal Code. The obligation of secrecy also applies to researchers. The punishment is a fine or imprisonment for at most one year.

Appendices

APPENDIX A: Guidelines on the protection of tabulated data formed from research data

APPENDIX B: Instructions for the remote access system

Appendix A: Guidelines on the protection of tabulated data formed from research data

1. Purpose of the guidelines

These guidelines were compiled based on Statistics Finland's own guidelines on the protection of tabulated business and personal data (TK-00-270-13 and TK-00-271-13). By means of these guidelines, Statistics Finland seeks to promote responsible ways to operate in data protection issues and to ease the application of the acts and principles in the publication of statistical tables produced from research data.

All researchers using Statistics Finland's research data and publishing tabulated business or personal data should familiarise themselves with these guidelines and the underlying acts and principles of statistical ethics.

2. Application of the rules

In the Statistics Act (280/2004), provisions are given in Section 13 concerning the release of data collected by Statistics Finland for research purposes. The following is stated in the preamble of that Section[3]:

"When releasing data, the protection of data concerning personal data and business or professional secrets must be ensured case-specifically by practical measures, such as by requiring sufficient data protection measures and by attending to the provision of required data supervision and monitoring concerning the use of data. – – Because the end results of scientific research are usually public, it should always be separately made sure in connection with their publication that it would not be possible to identify the individual statistical units on which the research is based from the public end result of the research."

Based on the above, it is necessary to attend to the protection of data suppliers' privacy and business and professional secrecy in the end results of those scientific surveys where data released by Statistics Finland have been used. Researchers must take into consideration these protection guidelines when planning and compiling tabulated publications on their research results. In its part, Statistics Finland sees to the implementation of data protection in them through its review process.

3. Concepts and methods connected to the data protection of table data

Table data refer to statistics where unit-level data have been aggregated and arranged in table format. The statistical unit of tabulated personal statistics is such as a private individual, family, household or household-dwelling unit. The statistical unit of tabulated business statistics is such as an enterprise, establishment or group. The same protection practices are applied to own-account worker data in tabulated business statistics as to other business data.

Table data can be either

[3] Government proposal to Parliament for the acts amending the Statistics Act and Sections 2 and 3 of the Act on rural industry statistics (HE 154/2012).

- A **frequency table** where the cell values are the numbers of statistical units belonging to the cell, or
- A ***magnitude table,*** where the cell values are sums, averages or other corresponding key figures of some variable to be tabulated (e.g. turnover), or
- Combinations of the above where both cell frequencies and magnitude data are visible.

Magnitude tables are clearly more common in presenting business data, while personal data are more often given as frequency tables.

Tabulated data are subject to a ***disclosure risk*** if there is a risk of disclosure for some statistical unit in the table. ***Sensitivity rules*** are used in defining cell-specific disclosure risk. The most common sensitivity rules are:

- The ***threshold value rule***, by which a cell is sensitive if it contains fewer statistical units than the predetermined threshold value.
- The ***dominance rule***, i.e. the ***(n,k) rule***, according to which a cell is sensitive if its n largest units contribute more than k% to the cell total. When using the dominance rule, parameters n and k must be defined numerically to ensure equal treatment of the enterprises the statistics concern.
- The ***p% rule***, by which a cell is sensitive if the estimate for the value of the biggest statistical unit calculated based on the total cell value differs at most by p per cent from the correct value.

More than one sensitivity rule can also be used side by side. Then a cell is sensitive if it is sensitive according to at least one sensitivity rule.

Suppression or ***changing the classification*** is generally used as the protection method for tables.

- Suppression includes primary suppression of cells with a risk of disclosure and secondary suppression. Secondary suppression ensures that the values of primarily suppressed cells cannot be disclosed by means of table row or column totals.

  Suppression can also be made specifically for each cell. If only a small number of statistical units belong to a particular row total of the table (fewer than the used threshold value), the row is suppressed in total without regard to the number of statistical units in its different cells.

- By changing the classification, the cells with a risk of disclosure are removed from the table by combining the categories contained in them to other categories in the table. In practice, changing the classification usually means that the whole classification becomes less detailed.

Changing the values of cells with a disclosure risk can also be used as a protection method for tables. Such methods are rounding and replacing the original cell value with an approximate random number.

4. Recommendations on the protection of tabulated personal data

The disclosure risk of persons, individual families or household-dwelling units included in table data must always be assessed when planning tables and before pub-

lishing data. Data protection measures should be directed so that the disclosure risk is sufficiently small but without unnecessarily losing information from the data as a result of protection. Account should primarily be taken of the right of the statistical unit to data protection, but at the same time, remembering that society and people have a right to reliable statistical data needed for social decision-making and planning.

4.1 Assessment of the disclosure risk relating to a table

The disclosure risk relating to a table specifies the necessity for data protection measures. When defining the disclosure risk, the following are considered:

- **Variables containing sensitive data in the table,**
- **Small cell and category frequencies (threshold value rule),**
- Size of the population,
- Number of variables, and
- Size and location accuracy of the statistical area.

When assessing the protection need of data, it may also be important whether the table values are relative or absolute, whether the data concern one year or whether they are sums or averages of several years, and whether the population used in compilation of statistics is a certain special population group (e.g. foreigners, offenders, police, unemployed or high-income earners).

When assessing the disclosure risk, particular attention should be paid to sensitive data, which, according to the Personal Data Act, are sensitive data[4] describing a person's:

- Race or ethnic origin;
- The social, political or religious affiliation or trade-union membership of a person;
- A criminal act, punishment or other criminal sanction;
- The state of health, illness or handicap of a person or the treatment or other comparable measures directed at the person;
- The sexual preferences or sex life of a person; or
- The social welfare needs of a person or the benefits, support or other social welfare assistance received by the person;

and other sensitive data such as:

- Cause of death;
- Language, nationality, origin or country of birth;
- Income, debts and wealth, and
- Main type of activity, occupational status, rare occupation or other variable describing socio-economic group.

If a disclosure risk exists, the personal data in the table must be sufficiently protected.

4.2 Protection recommendations

The disclosure risk directed to the table always concerns certain cells. By defining these cells and the categories including them and by protecting them with a suitable

[4] Personal Data Act (523/1999), Section 11

protection method, the disclosure risk of the table can be lowered to an acceptable level.

Use of the threshold value

Cells containing a disclosure risk, or so-called sensitive cells in the table are determined with the help of the threshold value. In more exact determination of the threshold value, account should be taken of the same matters as when assessing the disclosure risk. In row-specific application, the recommended threshold value is at least ten statistical units and in cell-specific application, at least three statistical units.

Protection methods

The protection of cells (and at the same time the table) can be made by changing the structure of the table, by suppressing individual cell values or whole rows, or by changing cell values by rounding, for instance.

If the table has many sensitive cells or the sensitive cells are centred in a few categories, the protection should be made by changing the structure of the table. The structure of the table can be changed by revising the classifications of variables or by controlling the number of variables.

The number of table variables must be the lower the smaller area the statistics concern. In small area statistics, it is advisable to avoid cross-tabulation of several variables and rather publish direct distributions.

If the table has only a few sensitive cells, protection by suppression is recommended. Suppression can be done either cell-specifically or row-specifically, i.e. by suppressing all the cells of the row.

Complementary recommendations

Multidimensional tables. If a table containing personal data has three or more variables, of which at least one variable is sensitive or the area level is smaller than region, the disclosure risk is very probable.

Size of the statistical area. In statistics concerning bigger areas, such as statistics on regions or major regions, data protection measures need hardly ever be taken. In these tables, the population and classifications should also be selected so that the table will not unnecessarily have small cell frequencies.

When the size of the statistical area gets smaller, the number of units to be included in the statistics also decreases. Municipality-based statistics can also include a disclosure risk when the population of the area is small. In statistics on areas smaller than municipalities, the disclosure risk is always possible.

Sample statistics. Sampling has an effect on the disclosure risk. The risk is bigger if statistical data are produced using the whole population as data than if estimates concerning the whole population are produced from the sample data by means of design weights. However, the disclosure risk of personal tables formed from sample data should also be assessed. To ensure the quality of data protection and estimates, the threshold value should be used in sample-based statistics in defining the sensitivity of cells. The threshold value can be smaller, however, than used in corresponding statistics based on data of the whole population.

Case as the statistical unit. When compiling statistics on cases (e.g. criminal cases, traffic accidents) it is not necessarily a question of personal statistics. The

protection recommendations of personal statistics should, however, be applied to case statistics if an individual person can be identified from the statistics or characteristics of that person can be disclosed.

5. Recommendations on the protection of tabulated business data

Protection of tabulated business statistics can be made in different ways depending on various factors connected to the compilation of statistics. The following presents a three-step hierarchy for business data protection, to which all implementation modes of data protection can be grouped:

1. In situations where accurate disclosure is a sensitive matter, the use of the ***threshold value rule*** is sufficient. The threshold value rule is the default rule. The threshold value always has to be at least three.
2. When approximate disclosure of business data is a sensitive matter, the ***dominance rule*** or the ***p% rule*** must be used as the sensitivity rule. However, using the dominance rule or the p% rule must be restricted to recent statistical data and the threshold value rule must always be used alongside them. Data are recent as long as their disclosure has an impact on the market situation or the activity of an individual enterprise. The time limit for the recentness of data and use of the dominance rule is 15 months from the reference time. The threshold value rule must be used for older data than these.
3. If protection can be made by ***suppressing the identity and number of data suppliers***, this is recommended. Examples of this are estimates calculated from sample data, in connection with which data on the statistical units belonging to the sample are not published.

A statistical table need not be protected if no disclosure risk is directed to it or the data contained in it are prescribed by law as public. For example, data describing the activity of central and local government authorities and production of public services are mainly public[5]. Old data of over 25 years concerning enterprises are public.[6]

Complementary recommendations

Time dimension. The time dimension must be taken into account when deciding the protection procedures of business data. The relevance of business data decreases considerably the more time has passed from the reference time of the statistics to the publication time. Very topical short-term statistics must be protected against approximate disclosure as well.

Cell frequencies. Without endangering data protection, even small cell frequencies can be published in magnitude tables even if the actual cell value is protected. On the other hand, suppression of the number of statistical units is a way in applicable circumstances by which the data on the variable to be tabulated can be made public.

Statistics on establishments. When protecting establishment data, enterprise-level protection must also be ensured. When defining the disclosure risk of a cell,

[5] Statistics Act (280/2004), Section 12

[6] Act on the Openness of Government Activities (No 621/1999), Section 31 If it is a question of an individual own-account worker (personal data), its term of secrecy is 50 years from the death of that person.

attention should be paid to both the number of establishments in the cell and the number of enterprises to which the establishments belong.

Sample-based statistics. Sampling alone is not necessarily a sufficient protection method, because in sample-based statistics the largest enterprises are usually included and the biggest interest and disclosure risk specifically concerns large enterprises. The disclosure risk of business tables formed from sample data should also be evaluated. The estimates and index point figures enabling disclosure must be protected. An estimate or point figure may enable disclosure if data from only a few enterprises are used in its calculation. Then the reliability of the estimate also suffers.

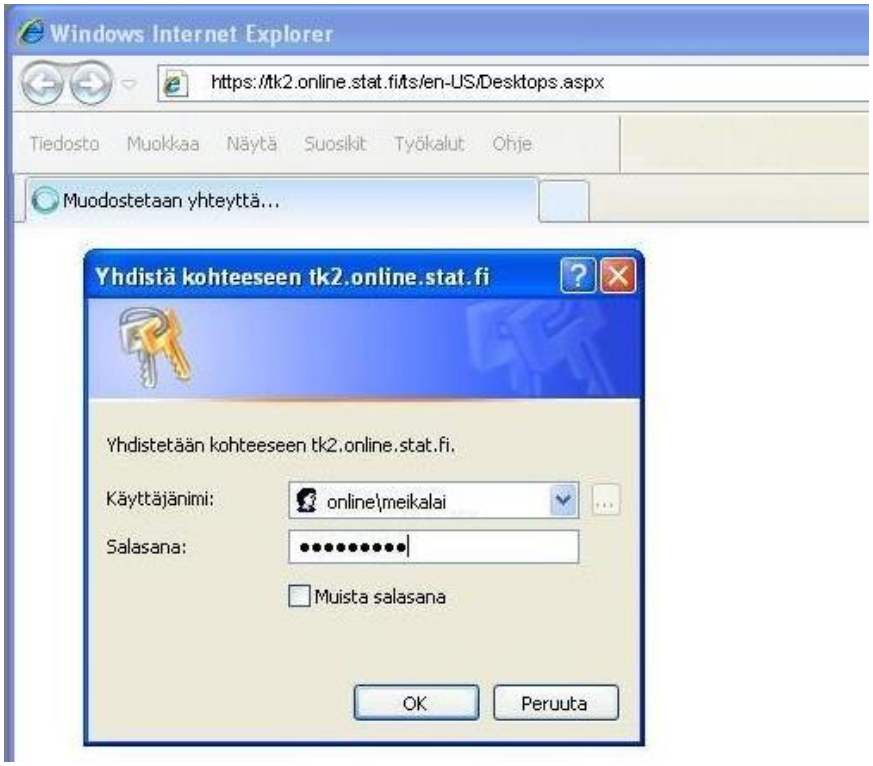
Appendix B: Instructions for the remote access system

The document Instructions for the remote access system describes how to log in to and use Statistics Finland's remote access system for research data. Logging in to the remote access environment differs from the logging in to a remote workstation in connection with research projects and microsimulation.

1. Remote use in research projects

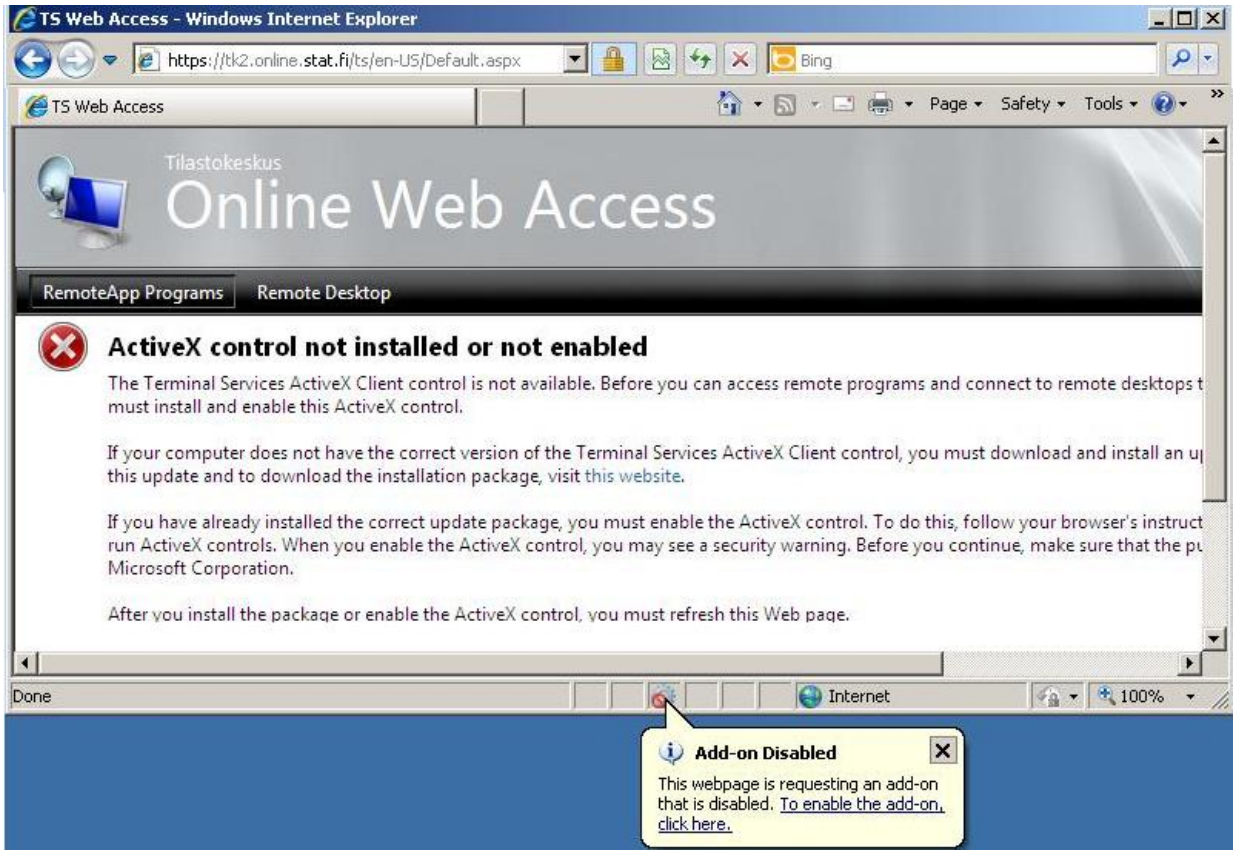
1.1 Logging in to the remote access environment

1. Contact Statistics Finland researcher services' Internet page with your Internet Explorer browser (Statistics Finland-> Products and services -> Research data-> Micro data-> Modes of data delivery) http://tilastokeskus.fi/tup/mikroaineistot/toimitusmuodot_en.html.
   Next, select Logging in to the remote access system https://tk2.online.stat.fi/ts/en-US/Desktops.aspx.
2. Use the code without the project number, e.g. Online\meikalai.



3. The code received as a flash message to your mobile phone is entered into the next Passcode window.

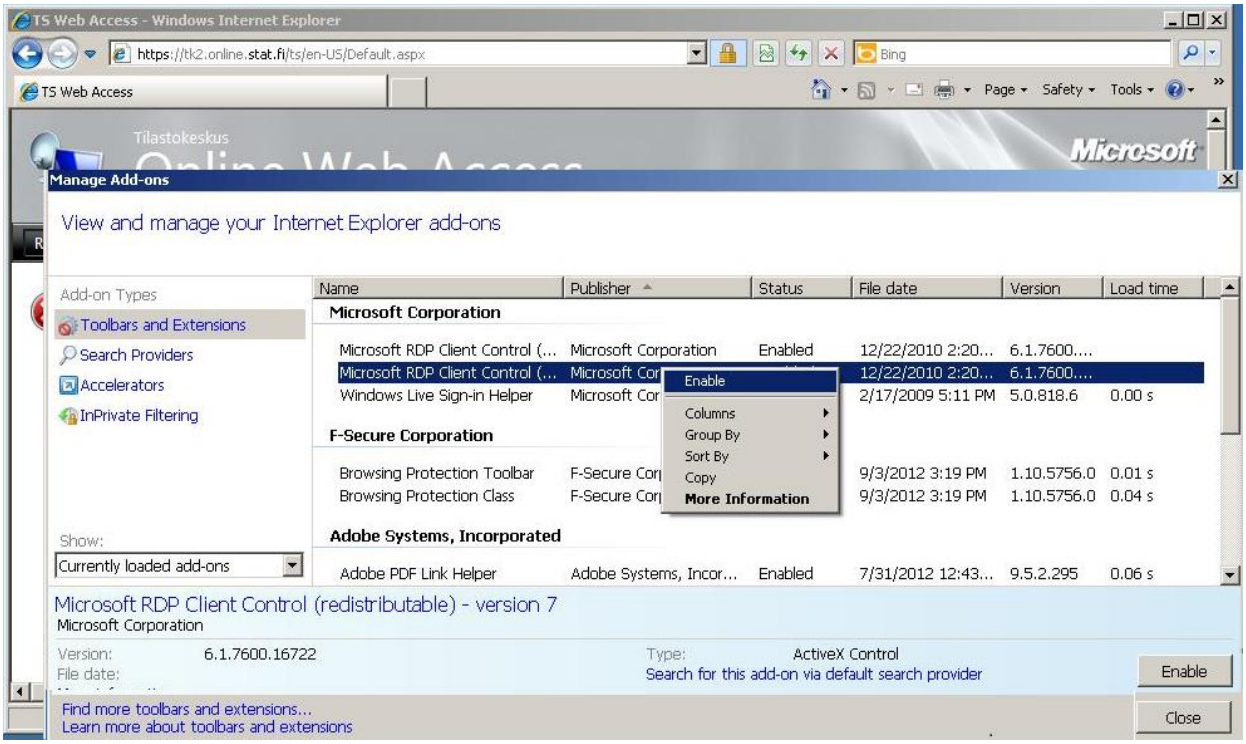
4. During the first log in, an ActiveX question will be asked. You can accept add-ons for the browser by clicking the icon at the bottom bar. You can also access browser settings from Tools - Internet options - Programs - Managing add-ons.



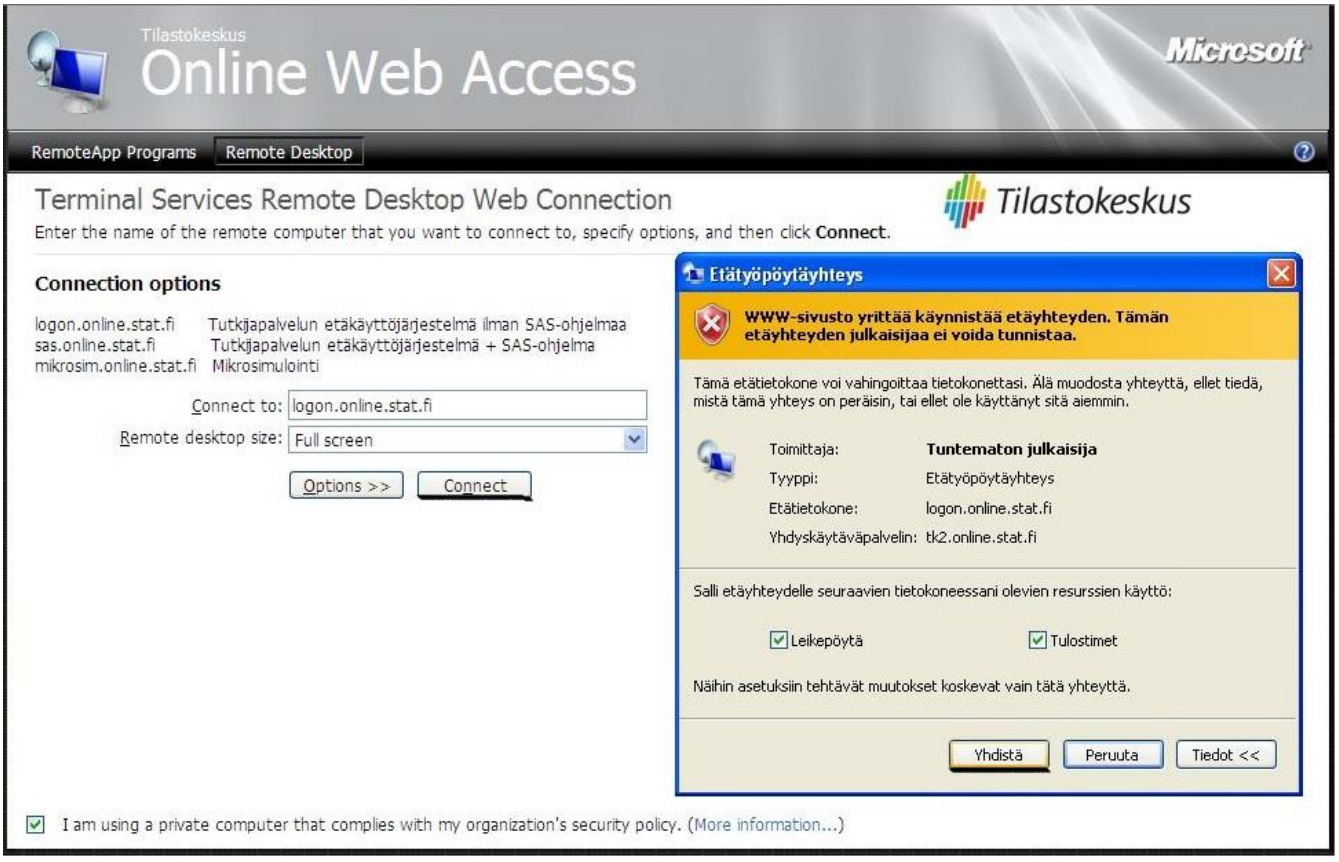
5. During the first log in accept the Microsoft RDP Client Control (or Microsoft Terminal Services Client Control) settings shown below.

   Click Show in the left hand bar and select All add-ons. Click on both rows one at a time with the right mouse button and select Enable.

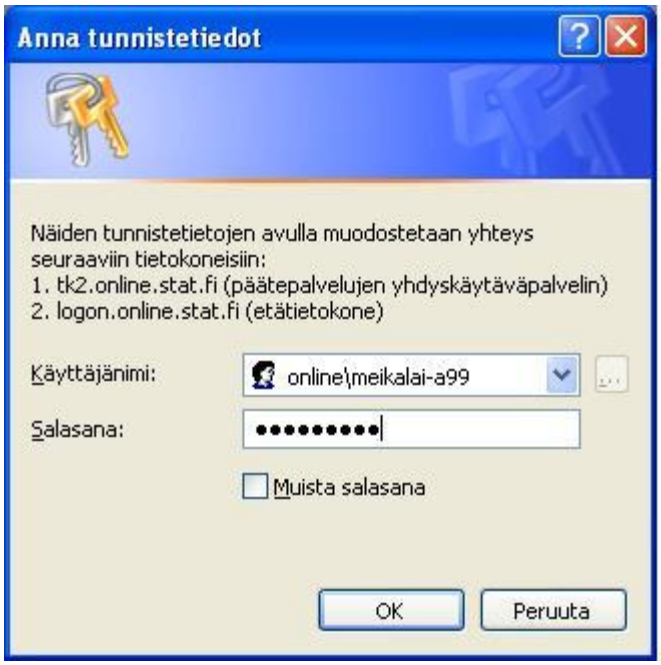
   If the above-mentioned rows are not visible in the Add-ons window
   a) Start the IE browser with administrator rights and accept the RDP Client Control settings
   b) Another option is to reset the settings of the IE browser. Before you do this, you should backup your favourites, etc. into a file (File– Import and Export – Export to a file …
   http://windows.microsoft.com/en-gb/internet-explorer/add-view-organize-favorites#ie=ie-11)
   Resetting your browser: Tools– Internet options– Advanced- Reset…button (you do not need to remove your personal settings).



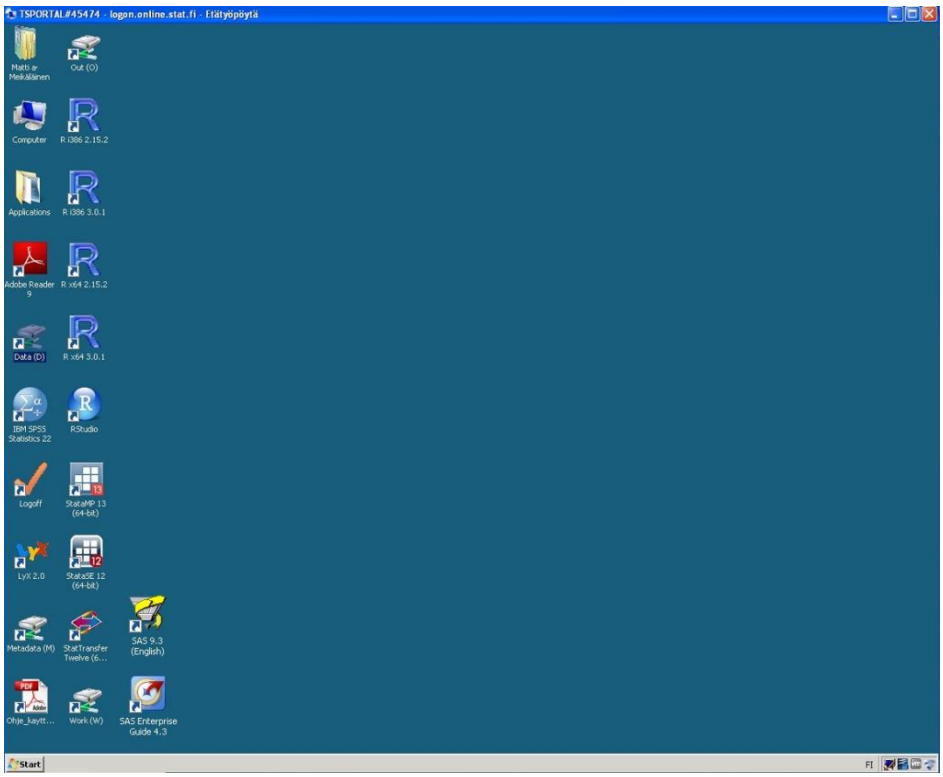
6. In the Web Access window click Connect and respond Connect to the prompt.



7. Now you will actually log in to the remote workstation using the User ID with the project number, for example, online\meikalai-a99.



8. The remote desktop will open.

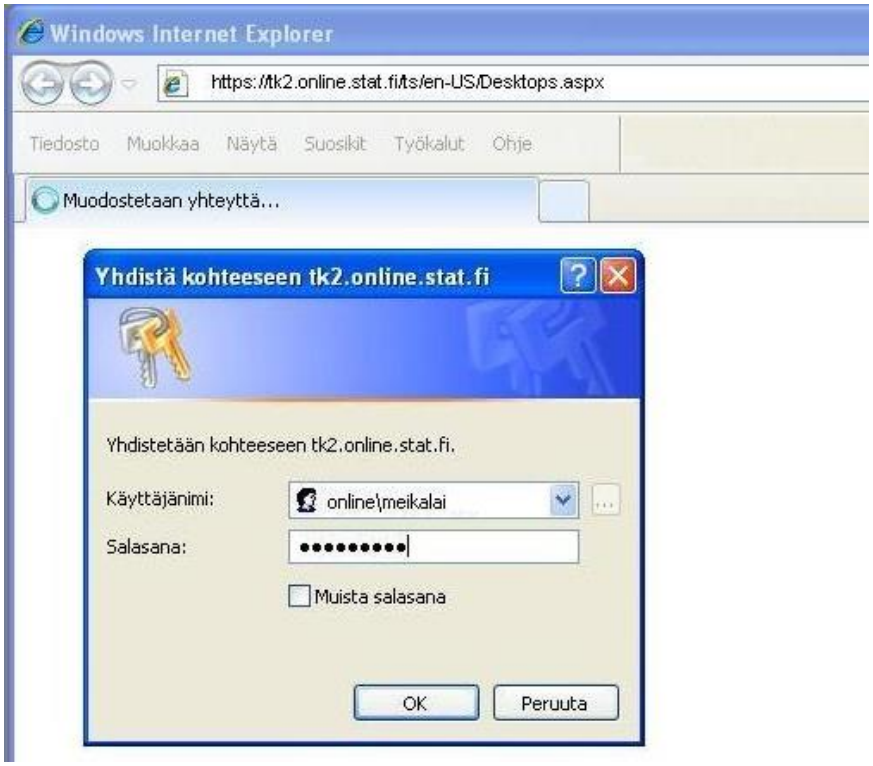


1.2 Logging in to the remote access environment when using SAS software

1. Contact Statistics Finland researcher services' Internet page with your Internet Explorer browser (Statistics Finland-> Products and services -> Research data-> Micro data-> Modes of data delivery)

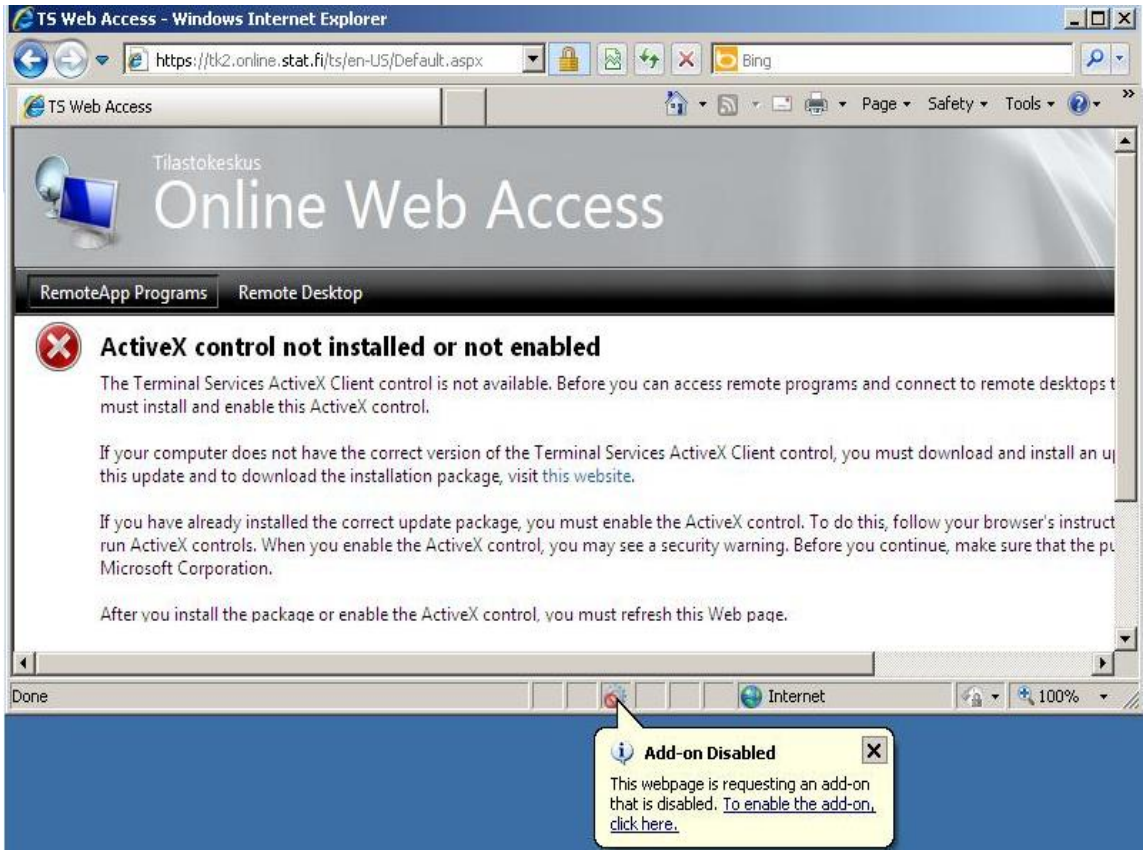
http://tilastokeskus.fi/tup/mikroaineistot/toimitusmuodot_en.html. Next, select Logging in to the remote access system https://tk2.online.stat.fi/ts/en-US/Desktops.aspx.

2. Use the code without the project number, e.g. Online\meikalai.



3. The code received as a flash message to your mobile phone is entered into the next Passcode window.

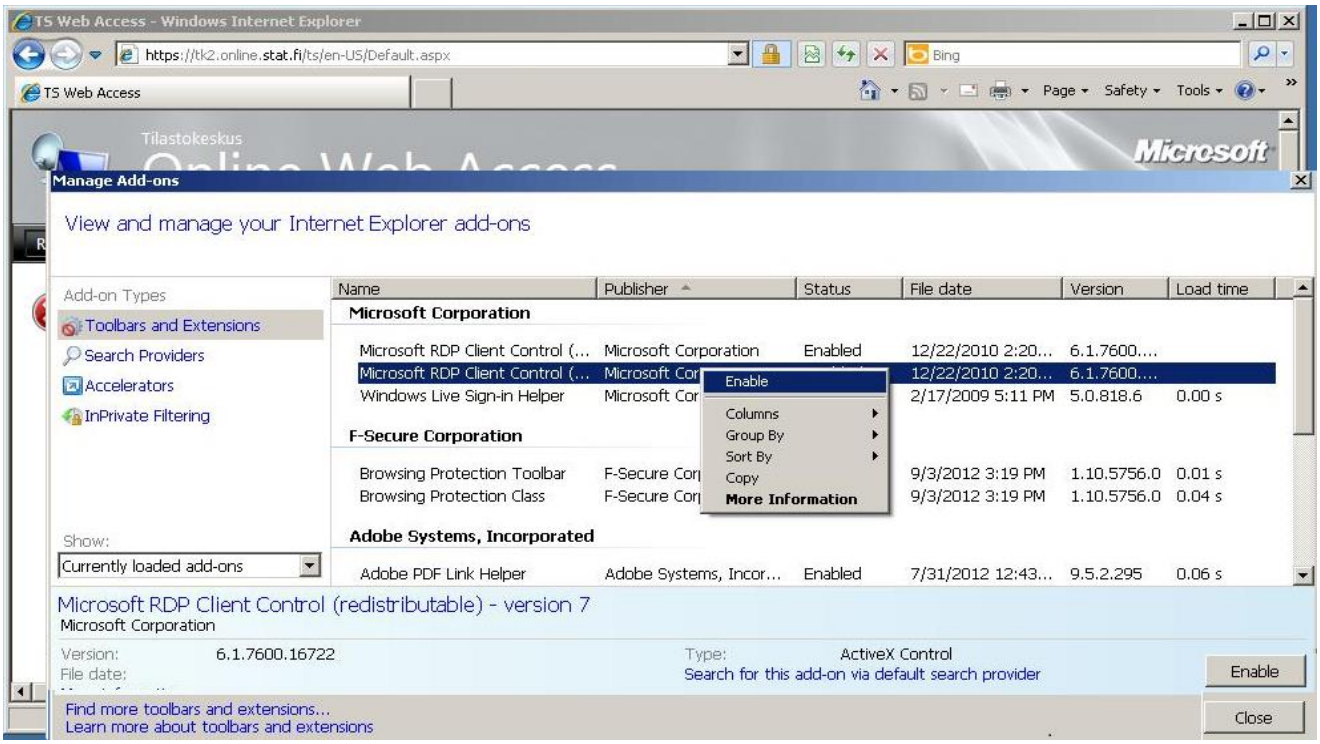
4. During the first log in, an ActiveX question will be asked. You can accept add-ons for the browser by clicking the icon at the bottom bar. You can also access browser settings from Tools - Internet options - Programs - Managing add-ons.



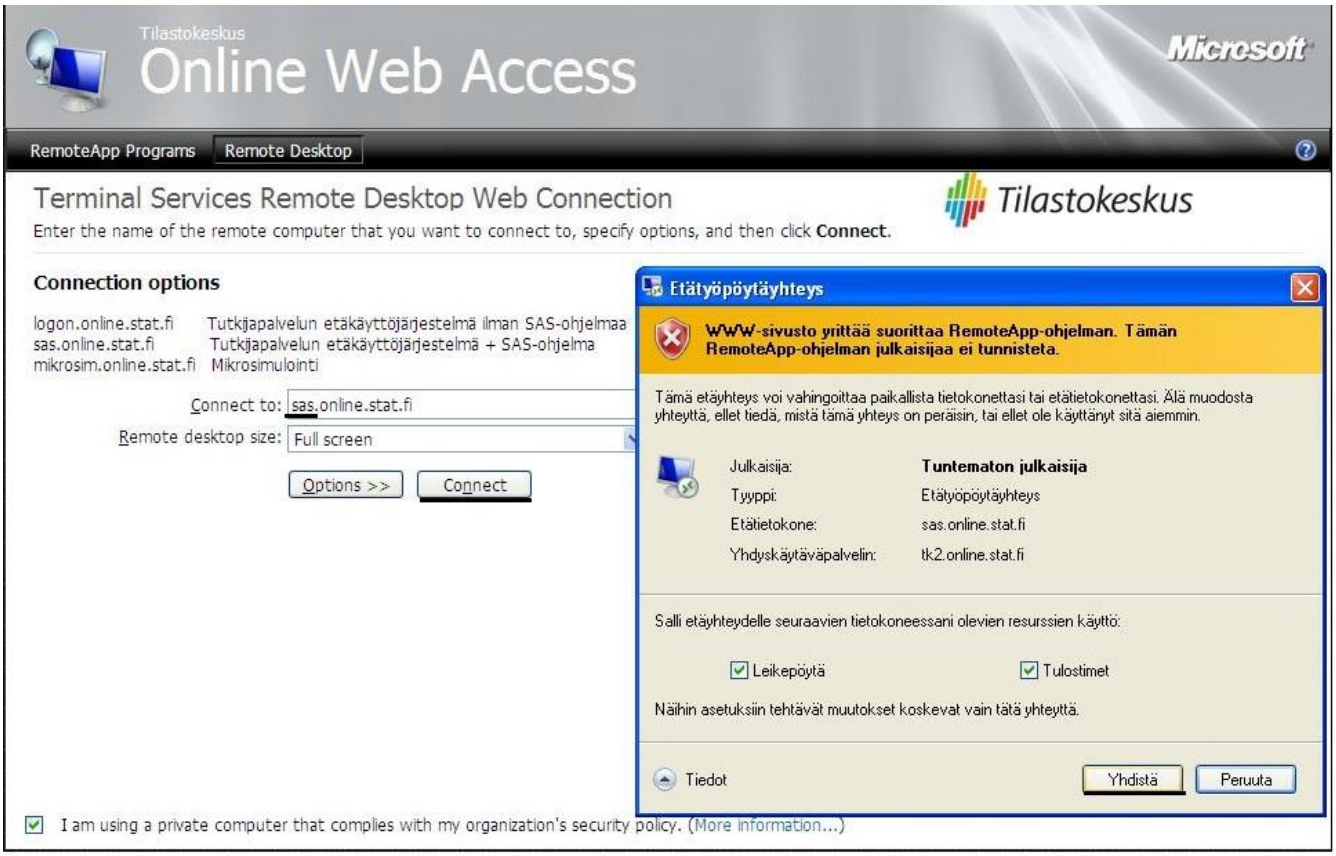
5. During the first log in accept the Microsoft RDP Client Control (or Microsoft Terminal Services Client Control) settings shown below.

   Click Show in the left hand bar: and select All add-ons. Click on both rows one at a time with the right mouse button and select Enable.

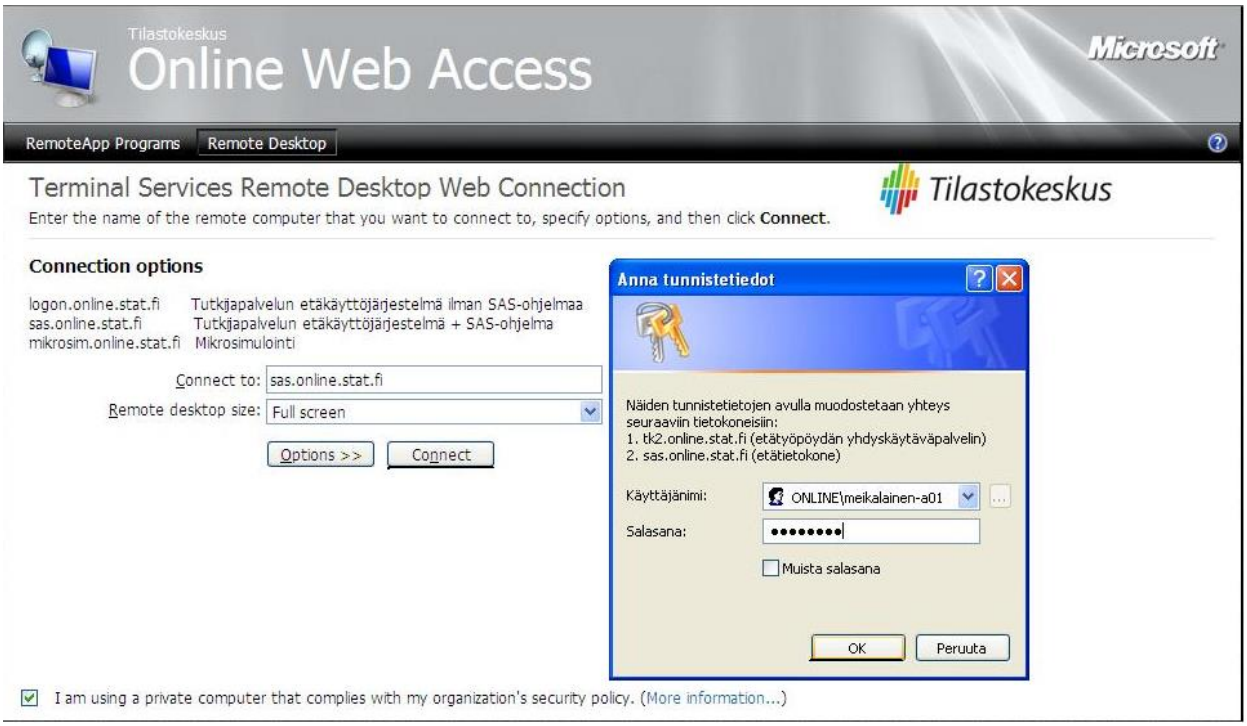
   If the above-mentioned rows are not visible in the Add-ons window
   a) Start the IE browser with administrator rights and accept the RDP Client Control settings
   b) Another option is to reset the settings of the IE browser. Before you do this, you should backup your favourites, etc. into a file (File– Import and Export – Export to a file … http://windows.microsoft.com/en-gb/internet-explorer/add-view-organize-favorites#ie=ie-11)
   Resetting your browser: Tools– Internet options– Advanced- Reset…button (you do not need to remove your personal settings).



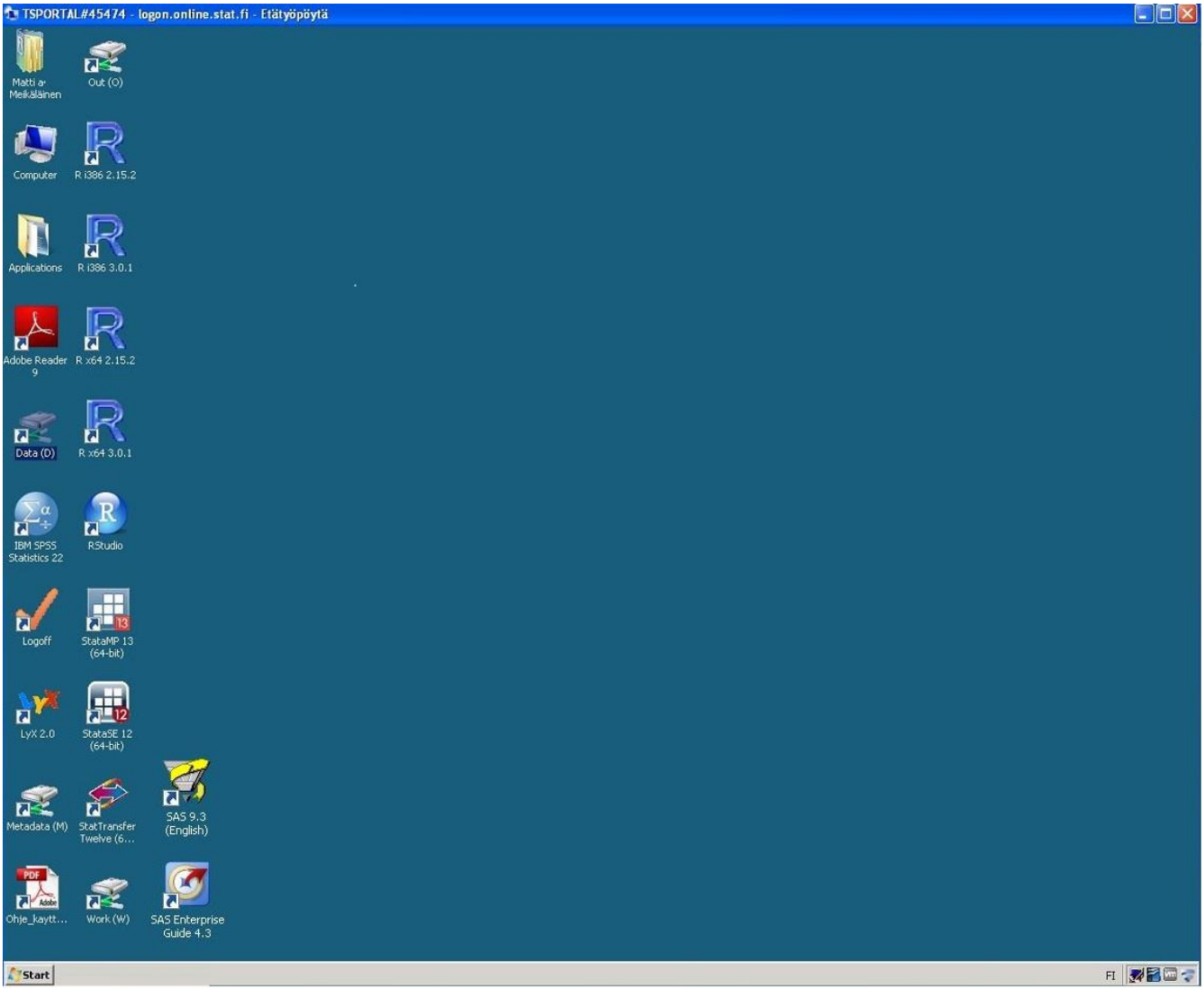
6. In the Web Access window type sas.online.stat.fi in the Connect to field.
7. Click Connect and respond Connect to the prompt.



8. Now you will actually log in to the remote workstation using the User ID with the project number, for example, online\meikalainen-a01.



9. The remote desktop will open.



1.3 General working instructions

The remote access system operates on eight Window servers. During in-logging users are directed to the server that has less loading at the time of logging in. Work is carried out as on a normal Windows workstation. Projects are named with consecutive numbering starting with the example project a01.

All material is stored in the work directory W:\a01. The directory is backed up once a day which helps secure the data if the disk server breaks down. The following disks are visible to the user:

D: Data contains the researcher services' ready-made datasets, reading rights depend on the user licence.

M: Metadata contains data descriptions.

O:\a01 Out directory for transferring results.

W:\a01 Users work directory.

Burdening the system can disrupt other users' work. The server slows down noticeably if the system runs out of memory (due to the use of swap memory). Therefore, the users should avoid unnecessary memory use.

In problem situations, contact the contact person of your organisation. The contact persons are responsible for user support for the software. Statistics Finland's support is only responsible for the functioning of the software and user IDs.

Data and software

Research data are in SAS 7 format (.sas7bdat). The data can be transferred into the desired format using the Stat/Transfer software. The following software are available in the system:
Stata 12 SE (64-bit) and 13 MP (limited number of users)
SPSS Statistics 22 (limited number of users)
R R 2.15 and R 3.01
SAS 9.3
Stat/Transfer 12
Open Office (word processing and spreadsheet program)
Rstudio
Notepad ++

Statistics Finland does not offer support for the applications in use.

Stata software

Stata 12 and Stata 13 have been installed in the system. The software being 64 bit means that it can read large amounts of data into memory. However, reserving too much memory results in the system slowing down, which means that at most 4,000 MB of memory can be reserved for Stata.

Finishing work

Log Off

When you finish your work for the day log off the system. Logging off releases the system resources.

Select the Logoff icon on the desktop (or in the start menu).

Close the browser window where you see the log in page.

Disconnect

If you take a short break while working, the remote connection can be disconnected without logging off. You can return to the same session by logging in again. The connection is closed by closing the remote access window (or from the start menu by selecting Shut Down and Disconnect). Disconnect leaves the session open, which means that the resources are not released (software licences and memory reserved for the user). Thus, you must always remember to log off at the end of the day.

The remote desktop connection locks if it remains idle for ten minutes. The connection is closed if it remains idle for 30 minutes. The software are not shut down. By opening the connection again, work can continue.

Transferring of results

All research results are transferred out from the system by administrators. Special consideration shall be applied to sending results to screening. You should avoid sending results for screening in small batches. The starting fee for the project includes two screenings (see rules and instructions for researcher services), additional screenings are charged separately.

Ensure that you follow tabulation rules (see instructions and their appendices).

Document result tabulation carefully in the files to be screened. Every table should be self-explanatory as in journal articles. The number of observations must be visible in each group.

Move the files to the folder O:\a01 (example project).

Send the result screening request to tutkijapalvelut@stat.fi (include the serial number of the project).

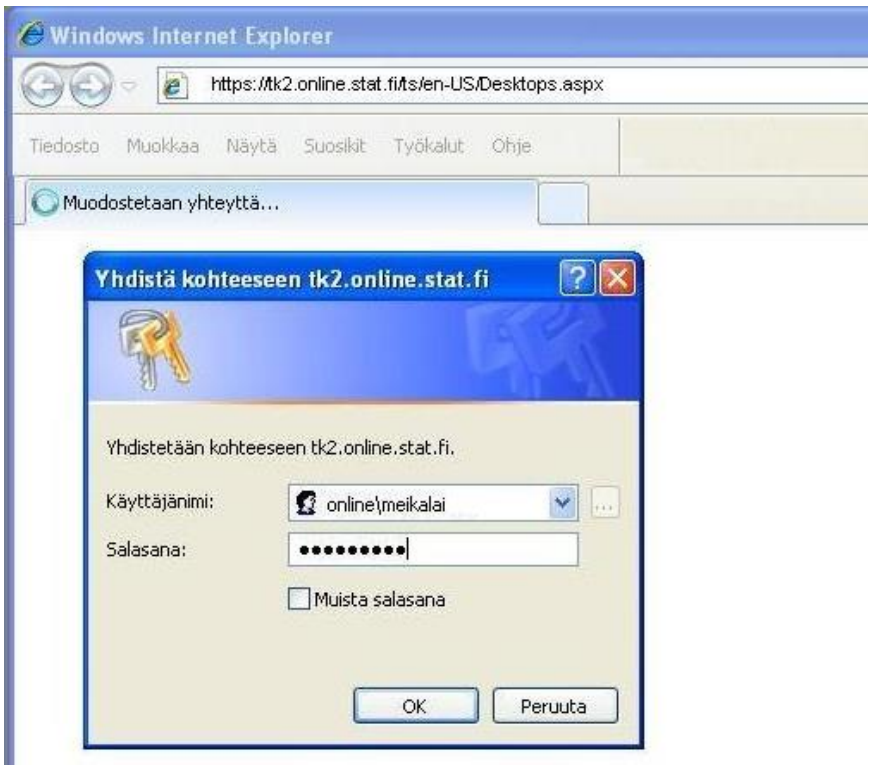
The results are sent to the researcher's email address after the screening.

2. Remote access use in microsimulation

1.1 Logging in to the remote access environment

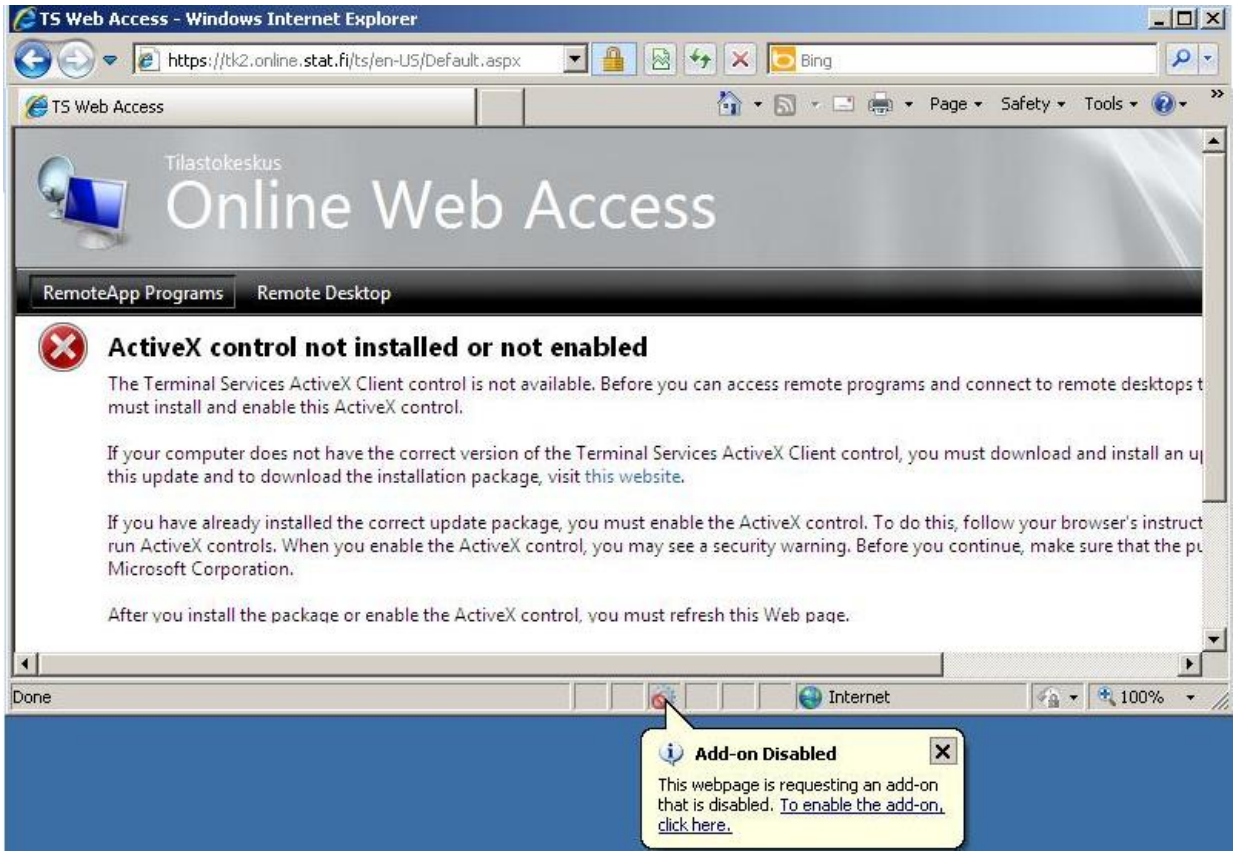
1. Contact Statistics Finland researcher services' Internet page with your Internet Explorer browser (Statistics Finland-> Products and services -> Research data-> Micro data-> Modes of data delivery) http://tilastokeskus.fi/tup/mikroaineistot/toimitusmuodot_en.html. Here you select Log in to the remote access service https://tk2.online.stat.fi/ts/en-US/Desktops.aspx

2. Use the code without the project code (-ms), e.g. online\meikalai.



3. The code received as a flash message to your mobile phone is entered into the next Passcode window.

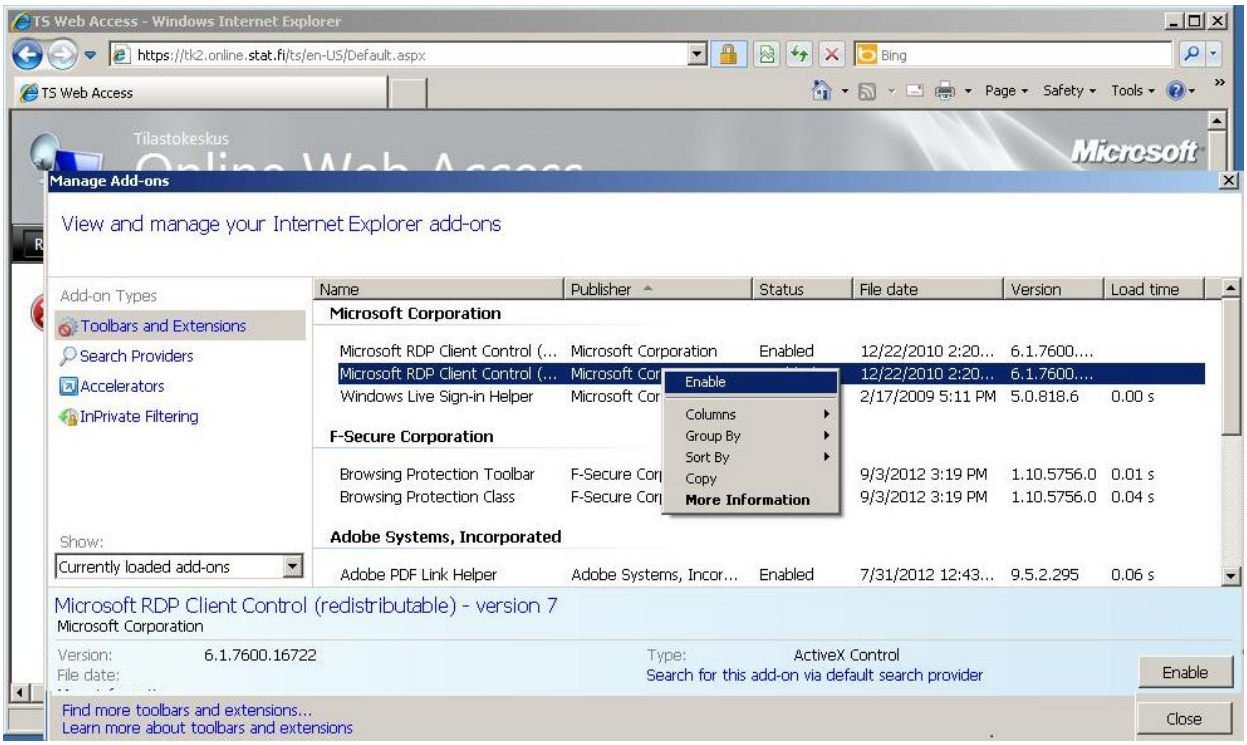
4. During the first log in, an ActiveX question will be asked. You can accept add-ons for the browser by clicking the icon at the bottom bar. You can also access browser settings from Tools - Internet options - Programs - Managing add-ons.



5. During the first log in accept the Microsoft RDP Client Control (or Microsoft Terminal Services Client Control) settings shown below.

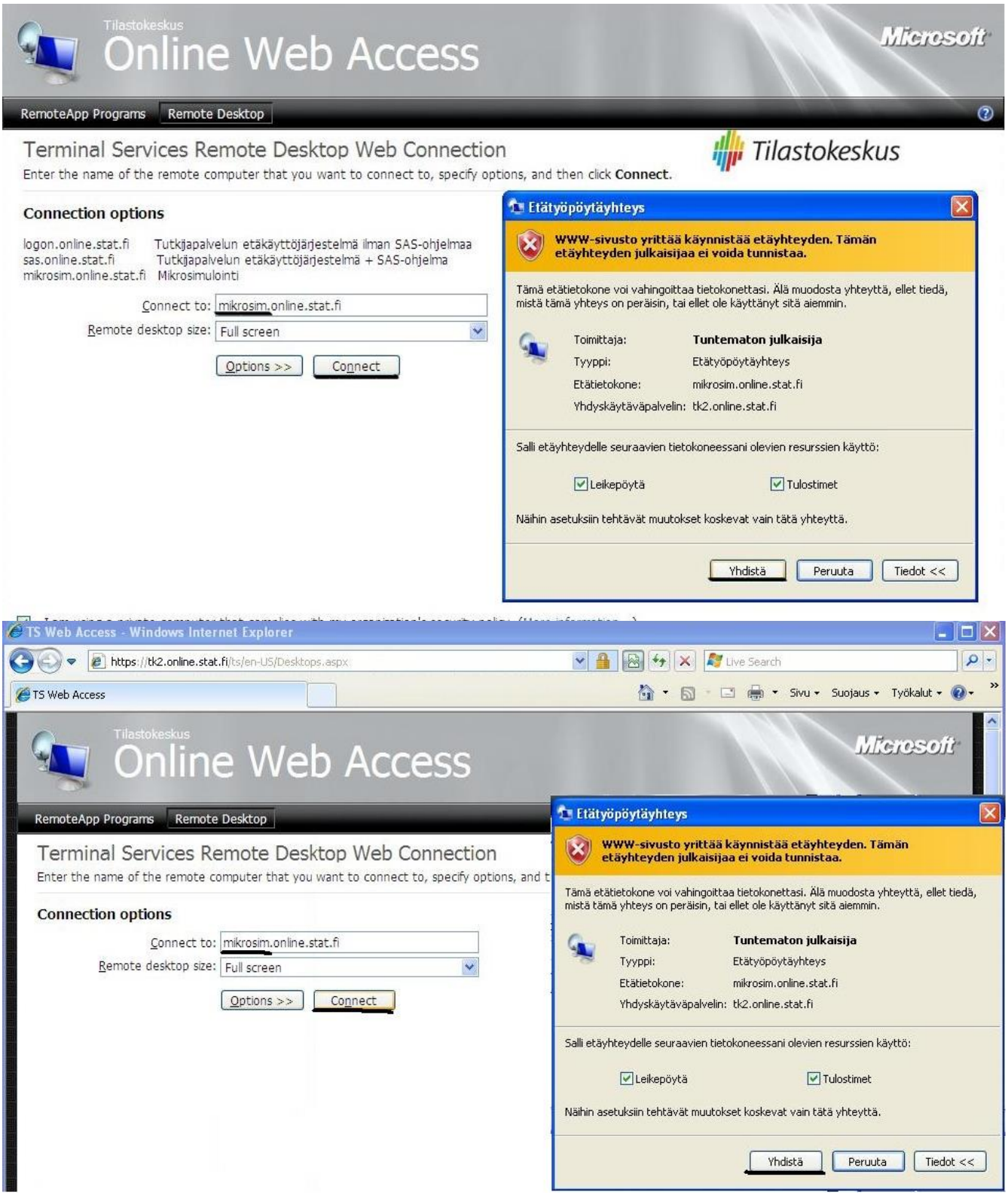
   Click Show in the left hand bar and select All add-ons. Click on both rows one at a time with the right mouse button and select Enable.

   If the above-mentioned rows are not visible in the Add-ons window
   a) Start the IE browser with administrator rights and accept the RDP Client Control settings
   b) Another option is to reset the settings of the IE browser. Before you do this, you should back-up your favourites, etc. into a file (File– Import and Export – Export to a file …
   http://windows.microsoft.com/en-gb/internet-explorer/add-view-organize-favorites#ie=ie-11)
   Resetting your browser: Tools– Internet options– Advanced- Reset…button (you do not need to remove your personal settings).

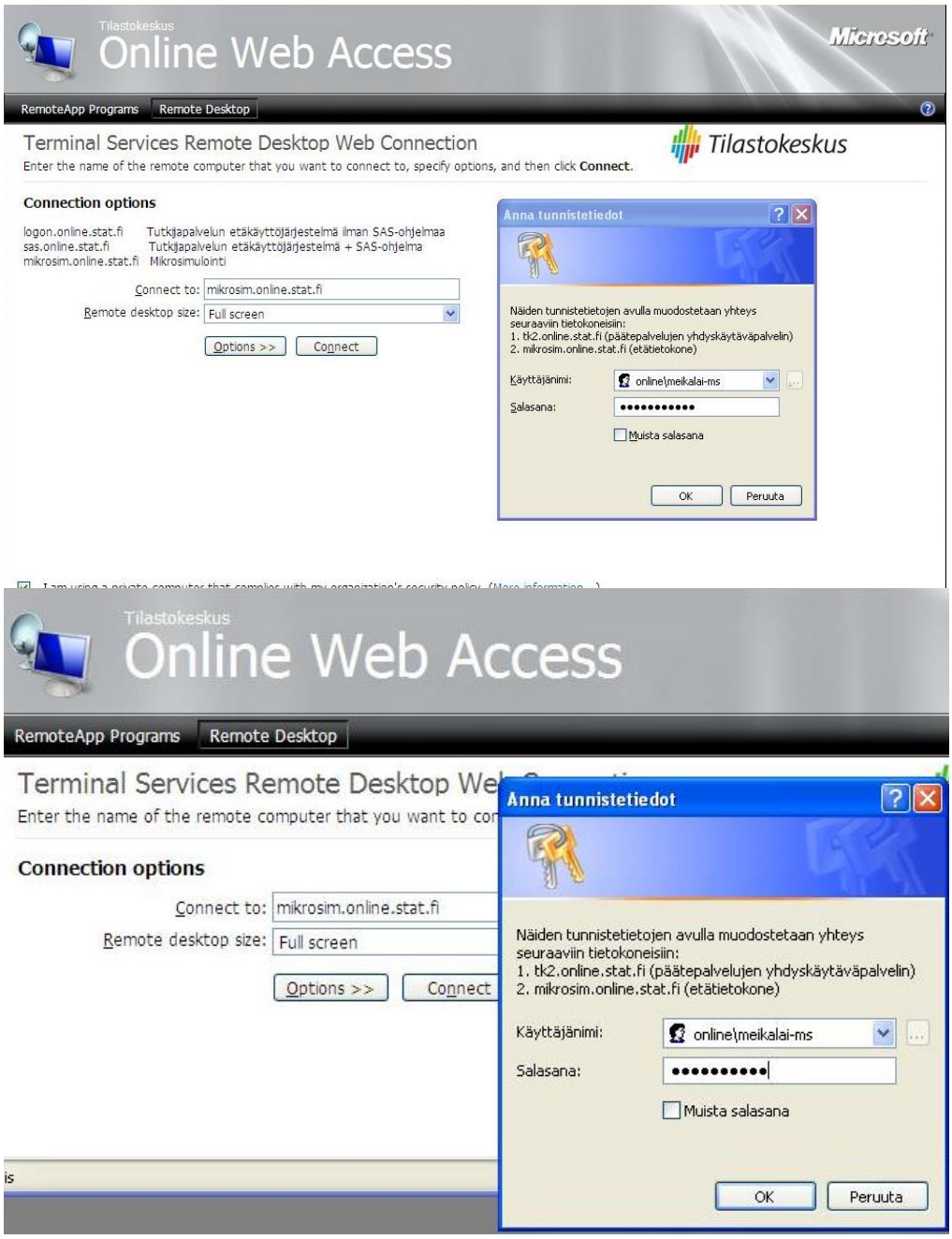


6. In the Web Access window type ***mikrosim.online.stat.fi in the Connect to field.***

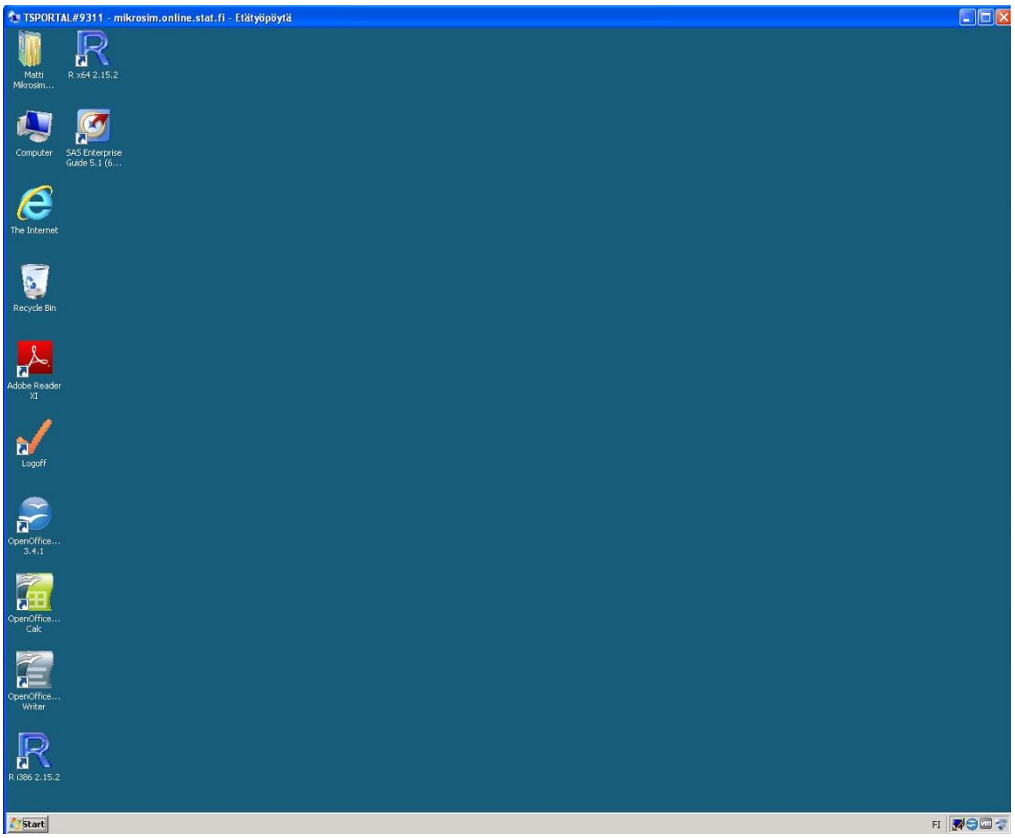
7. Click Connect and respond Connect to the prompt.



8. Now you will actually log in to the remote workstation using your microsimulation User ID, for example, online\meikalai-ms.



9. The remote desktop will open.



2.2 General working instructions

Directories and microsimulation model

The directory structure can be viewed by clicking the Computer icon on the desktop. Every user has his/her own **User folder (K:)** and **Admin (L:)** and **Forum (F:) folders that appear in the same manner to all** users. The user has full rights to the Forum folder and his/her own User folder, and reading rights to the Admin folder. The user does not see the User folders of other users. An up-to-date SISU model is always located in the Admin folder. In order to take the model into use, every user must copy the entire SISU folder into the root of their own User folder. Thus the model reads the files of the SISU model from the user's User folder and, for example, all result files are saved here. The size of the user-specific User folder is 20 GB.

The newest updates are always placed in the Admin folder, which the user can copy into his/her own folder. The root of the Admin folder includes a change log file.

All users have full rights to the Forum folder. Thus the Forum folder can be used to share files with other users.

The applications short cut (SISU.egp) can be found in the folder SISU\KAYTLIIT. The short cut starts EG and automatically runs the control file of the model (ALKUsimul.sas). The short cut can be copied onto the desktop. The model can also be started by opening it directly from the icon on the EG desktop and by running the control file manually. In every case, the model always requires that the control file is run before starting the simulation when a new EG session starts.

Software

The following software are available in the system:

- SAS EG 5.1
- Adobe Acrobat Reader 9
- Open Office 3.4.1

NB: Statistics Finland does not offer support for the applications in use.

Finishing work

Log Off

When you finish your work for the day log off the system. Logging off releases the system resources.

Select the Logoff icon on the desktop (or in the start menu).

Close the browser window where you see the log in page.

Disconnect

If you take a short break while working, the remote connection can be disconnected without logging off. You can return to the same session by logging in again. The connection is closed by closing the remote access window (or from the start menu by selecting Shut Down and Disconnect). Disconnect leaves the session open which means that the resources are not released (software licences and memory reserved for the user). Thus, you must always remember to log off at the end of the day.

The remote desktop connection locks if it remains idle for ten minutes. The connection is closed if it remains idle for 30 minutes. The software are not shut down. By opening the connection again, work can continue.