in offices to provide passage to different regions in a building or the like. In this connection, there is frequently a need for registration and deregistration of cards.

If data is found in the external register with a register mark that it is allowed for the card reading unit in question then it could be transported to the unit **57** which stores the data in the storage **60** and also makes the checking comparison with the newly processed data.

Another possibility is that when a new card is issued and handed over to a card owner then registration data such as the information on the strip **58** is sent over to the unit **57** through the device **61**. The unit **57** stores the registration data. The first time the card is inserted in the card reader and the data from the designs **51** are calculated by the computer the data is stored in the storage **60** and the card owner can pass.

Still another possibility is to have the data from a lot of cards stored in the storage **60** in dummy addresses and to change the address to an ordinary one by distant control as soon as a card is handled over to a new owner.

If a deregistration information for a card is fed to the device **61** then the unit **57** could either put a note in the store registration that the card is invalid or erase the data.

While the invention has been described with reference to specific embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the true spirit and scope of the invention as stated in the claims. In addition, modifications may be made without departing from the essential teachings of the invention as apparent from the claims. For instance, the teachings of the inventions is also adaptable on 1D data reconstruction, such as on several temperature measurements in one occation or the like. In such a case an input device connected to the computer **12** records variation of the quantity in relation to a predetermined variable and the calculation means reconstructs the measured quantity as a series of measurement data. An application on telecommunication is also supported by the invention, for instance by making an oversampling on each sampled analog signal. Even though 3D imaging of smaller objects is described in the first embodiment 3D imaging of larger objects, for instance tomographic recordings, such as PET scanning (PET=Position Emission Tomography), is supported by the invention. The invention is also applicable on holography both on thin film and volume holograms. Other applications relates to nuclear medicine, X-ray diagnostic imaging, such as mamography and odontologic imaging, ultra sound imaging, radar imaging, IR-imaging, meteorological charts, geographical sharts, CT scanning etc.

What is claimed is:

1. A method for providing high fidelity reconstruction built on a grid having grid points of an observed sample, said method comprising the following steps:

providing several recorded, observed data of the sample, each from a different aspect of the sample;

providing an initial estimated densitiy distribution of the sample at the individual grid points;

providing a blurred prior prejudice density distribution at the individual grid points using estimated data;

calculating in an iterative process for each iteration:

a new estimated distribution of the sample at the grid points using the prior prejudice density distribution and comparison between the estimated distribution in the next preceding iteration and the recorded, observed data of the sample,

a new prior prejudice density distribution at the individual grid points on the new estimated distribution less blurred regarding the density distribution at the grid points than the prior prejudice distribution in the next preceding iteration;

continuing the iterations until the difference between the new estimated distribution and the next preceding estimated distribution is less than a predetermined density resolution distribution condition on the grid points.

2. A method according to claim **1**, in which

blurring is provided by making a Fourier transform of the estimated structure and by multiplying the coefficients of this Fourier transform with the Fourier coefficients of a gaussian and spherical filter.

3. A method according to claim **1**, in which

said blurred structure is normalised before it is used as the new prior prejudice distribution in the next iteration cycle.

4. A method according to claim **1**, in which the sample to be reconstructed is an outcut envelope from an object to be observed; and that the rest of the object is a buffer and is reproduced from iteration to iteration without reconstruction.

5. A method according to claim **1** comprising the following steps:

a) providing several recorded observed data of the sample, each from a different aspect of the sample;

b) providing a variance for individual observation grid points in each recorded observed data;

c) calculating the reconstruction of the observed sample structure in the iterative process taking said initial estimated distribution as a first iteration reconstruction approximation;

d) for each iteration:

calculating said new prior prejudice distribution using the next preceding reconstruction result,

calculating a reduced chi-squared statistic (C) using the immediately preceding calculated reconstruction, the recorded observations and said variance, and the grid, while maintaining normalization of the calculated reconstruction,

calculating an entropy (S) using the immediately preceding calculated reconstruction and the new prior prejudice distribution;

e) maximising the entropy under the constraint of driving the reduced chi-squared statistic towards +1, and providing a new calculated reconstruction to use in the next iteration cycle; and

f) presenting the reconstruction.

6. A method according to claim **1**, further comprising

providing a point spread function being a convolution using qualities of the recording device;

providing a projected point spread function, called smearing function, on the calculated reconstruction;

approximating that the smearing function is greater than zero only for a limited number of grid points of said sample; and

producing a structure whose projection convoluted with the point spread function will adapt to the observed structure.

7. A method according to claim **6**, further comprising providing an overlap function defined by the smearing function, and driving said reduced chi-squared statistic towards +1, and maximising the entropy, using said overlap function.

8. A method according to claim **7**, wherein the several recorded observation data of the sample are provided by