About the feasibility of Intranet/Extranet

Synopsis

As “economic feasibility” is intended the capacity of a project to produce, during its lifetime, sufficient revenue as to cover the expenses incurred for its implementation and to, further, secure a “return” in terms of profit. By definition, then, this economic indicator is evaluated by comparing, over time, investment, annual expenses and expected revenue; the resulting discount rate is the wanted indicator and is called Internal Rate of Return (IRR). For the economic “feasibility” of a project, its IRR must be greater than the current national interest rate. Associated with other indicators, the IRR can support management decisions.

The IRR model might not be always applicable. Not all projects, in fact, produce “return” in monetary terms. It is the case, for instance, of Hospitals, Universities, Research Centres where social and cultural objectives are the prevailing ones; nevertheless, when a no profit Organisations introduces Intranet/Extranet systems in its structure, an economic evaluation of such decision would still make sense. Working activity is strongly affected by Intranet/Extranet: the systems are conceived as to become the privileged way for employees to obtain work-related documents, to share knowledge, to co-operate on projects, to access training. The new technology lets speed up the approach to many working procedures so it can introduce significant changes into operating processes while, in turn, it can modify working culture and behaviour of employees. As a final result internal economies can be created in terms of money, time and labour savings that return to Organisation as benefit.

Under this aspect, the IRR model is still worth of some attention as it can provide significant support to management decisions by quantifying possible alternative strategies. The structure of model may keep the same: among the input variables (investment, expenses, revenue) the only term that should be re-interpreted is the “revenue” one. In particular, it should be replaced with “economies”. When planning the introduction of new facilities, for instance, the model can help deciding if investment should be concentrated at year zero or implemented over time. As well, when assessing operating expenses, the model may show appropriate solution between using own or external personnel. The IRR indicator will have in these cases no reference value (current interest): it will be sufficient to obtain the “best possible” IRR.

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Approach to feasibility of Intranet/Extranet systems

When designing the working structure of Firms/Organisations it is assumed that labour resources are separated into different sectors and that, by each sector, employees have to complete an assigned number of tasks as to satisfy a complex production process. To drive labour to complete their working actions, it is, then, necessary to define tasks, to organise tasks into processes and to frame processes into standard procedures. In this way employees (existing and new coming) enter a structure where their actions are, generally, planned and where they form, over time, their working behaviour and their working culture.

The introduction of new technologies that affect the production process can produce changes into existing working activities. Employees, used to previous approach, may get, at least initially, confused so that they oppose a certain resistance: the success of new system depends, then, very much from the behaviour of employees.

1. **The phase of planning**

The features to demand to an Intranet/Extranet system depend upon the complexity of applications wanted. A number of decisions should be taken in advance to approach the gross design of the system to install and to have a base of discussion with a potential Supplier.

Preliminary objectives. It is necessary to define, into some details, short and medium term objectives that the Firm wants to achieve (server is intended for internal and/or external communications; server must be connected to main database; server will be shared by part or by all departments of Firm; etc)

Size of the system. The number of users who will benefit from the new technology is an essential indicator to decide. It is, in fact, important to optimise labour resource within the lifetime of the system to ensure that organisation of work will not suffer unwanted shortages.

Project management. Firm/Organisation have to appoint a counterpart who, face to consultant, is responsible for taking technical decisions, is involved in the selection of the contractor and has the duty for completing the project together with the Supplier.

Further, Firm/Organisation have to inform about the applications they would like to include into the main software. So they should specify, for instance, operating system, applications, database wanted. Important, in this context, the specification of the characteristics of final users (production, research, services) so that the consultant can re-design the internal circulation of information, suggest new flow of documents, estimate fixed and operating cost, show the potential benefits.

2. **The phase of implementation**

Main equipment to provide when installing an Intranet system are the Central Unit (Web, memory) completed with its software and planned to serve a given number of terminal users.
The Web software is adapted to the company's needs either at the level of storing and maintaining data and at the operating level, where users put forward questions, research particular files, recall office automation supports, organise their working plan, interact with internal and external points.

The management team

A group of people is necessary to run the system: it decides how and when Central Unit has to store different version of documents and relevant manipulation. The smallest effective Web team has 3 people: the designer, the technical expert and the manager. Ideally, a Web group should have at least 5 people or more: an *HTML Specialist, a designer*, a *programme*r for database access and e-mail functions*, an Administrator* of system/Database to care of Web configuration/revision, a *manager* with effective responsibility.

The management team has the further objective of smoothing possible resistance of final users, in different sector of the Organisation, to share products and solutions among them; that is, to avoid the spontaneous creation, in the Organisation, of groups of users culturally distant from the main optimised objectives of the Organisation.

Editing/promotion team
The potential of a Web site depends upon its regular updating. As the system has to provide a flexible working area always easy to access it is necessary to appoint a group of people (editing group) in charge of keeping its validity over time and to improve interaction with users by continuous revision. Main activities (functions) of the Group are: *Tracking documents* (changes made, users visiting files, dates and times of access) in the memory of Central Unit; *Restricting access* (only selected group of users access appropriate files); *Updating files* (prevent employees to modify the same files at the same time); *Indexing files* (to provide efficient searching system).

Maintenance team
To face critical conditions of the system a dedicated team should be appointed. In case of internal resources, selected people must be sufficiently skilled as to be able to change the server's configuration if needed. Different solutions can be explored: like to ask the Supplier of the system to train internal team or to take over maintenance activity.

3. The Extranet system

The logical extension of Intranet, in a Firm, is to let other Firms/Organisations, pursuing same business interests, access own Intranet, over the public network, even under partial and controlled way. It is seen as a significant advantage since the communication among different Firms-Organisations might be as important as the communication among members of same Organisation: from practical point of view, the "expansion" of Intranet can help group of employees exchange documents and experience within a larger group of other people.

The establishment of an Extranet among different Entities involves two significant organisational actions: the protection of privacy over public network and the harmonisation of working procedures (storage of data; working process). From human point of view, as Extranet might involve two different working cultures, the working procedures should possibly turn uniform as to get the benefit of increasing labour efficiency.

4. Study of feasibility: the IRR model

Economic feasibility of Intranet/Extranet project is, usually, estimated by comparing, over time, the cost of implementing the system with the revenue, in monetary terms, it can produce within the same period. The estimate is made by using the IRR (Internal Rate of return) model based upon the cash-flow, over a chosen study period, of investment (initial cost), operating cost (maintenance, management) and expected revenue (quantification of benefits in monetary terms). The IRR is the discount rate that lets calculate the Net Present Value (NPV) of a series of cash-flows (expenses minus revenue) as to compare expected future income to certain initial investment. The model, valid for business production processes (goods, services),.is still

applicable to Organisations with social/cultural objectives (Hospitals, Universities, Research Centres) by interpreting the term "revenue" as "benefits" or "economies".

5. **Capital expenditure**

The Web site is the main Unit of the system. It is a fixed infrastructure that must be installed under its total capacity. Main components of a web are: the **web software** (store documents, perform programs), the **Hypertext Markup Language** (HTML), a **graphic editor** (manipulate images), a tool to **check links** (check validity), a tool to **trace access of users to files,** an **animation tool** (video special effects), a **search engine** (find information and documents in the web), an **IP desktop applications (**e-mail, training, workflow), a "**help applications**".

The Central Unit. Capital costs are the purchasing costs of hardware and software. They are part of the Firm's budget and are, normally, written off over a period of 4/5 years ahead; the expenditure relates to all those equipment necessary to install the Central Unit (Web server) and the interface with users (basic software). Depending upon the supply used (external consultancy or home made system), expenses may vary over a wide range so that a proper assessment of investment can be done only on a case by case basis.

The cost of basic structure (hardware and software) is represented as:

$$C_A = (A_1 + A_2 + A_3 + A_4 \ldots\ldots\ldots + A_i)$$

where ΣA_i groups all capital costs necessary to provide hardware and software of system and corresponds to the sum of all expenses independent from the size of Intranet (including cost of *Project management*).

The Network. To simplify evaluation of network cost, it can be assumed that users are distributed over a regular surface within the premises of the Firm: employees are connected to Central Unit by individual lines whose length depends upon their location in the area.
The distribution of terminal users over the circular surface is given by the density:

$$\delta = dN/dS = N/\pi R^2 \quad \text{lines/sqmeters}$$

If the unit cost of line is c_L the cost of junction network (integration 0 to R) is:

$$C_N = \int c_L * 2 * \pi\delta * x dx = (2/3) * c_L * \pi\delta * R^3 = (2/3) * c_L * N^{3/2}/(\pi\delta)^{1/2}$$

Individual cost. Relevant expenses cover, other than terminal PC and individual line, the "e-mail" facility for internal communications, the "training on line" to let users gradually familiarise with internal communications, the "access to Internet" to connect to external users.
If the sum total of these facilities is c_I per line, total annual individual cost is:

$$C_I = c_I * N$$

6. **Operating expenses**

Operating expenses involve the annual cost for specific teams in charge of editorial, maintenance, management, updating the system The dedicated skilled personnel is recruited either from external market or from own personnel. Particular tasks are:

- take care of content to properly serve the users;
- keep Intranet/Extranet efficient
- provide technical assistance;
- plan connections out to Internet.

To quantify operating cost it is only necessary to know the number of people involved and their corresponding salary. In case of three groups, relevant cost can be expressed by the following sum:

$$C_B = B_1 + B_2 + B_3$$

Where "B_i" is the product peoplexsalary per group.

The amount adds up to general operating expenses of Firm when the teams or consultancy are provided by the Supplier; it is, instead, already included into the operating expenses of Firm if teams are recruited from own personnel.

7. **Total final cost of Intranet system**

Total cost of an Intranet system is, then, the sum of three terms. The first one (fixed cost=A) is constant over the study period and relates to purchasing of Central Unit (hardware and Software). The second one (individual cost=B) is proportionate to the number of users and accounts for terminal PC with "built-in" facilities. The third one (network cost) is the cost of internal junction network calculated as a function of density distribution of personnel.
The formula expressing total cost has three terms: a fixed one (A), a term depending from size of system (N) and a term related to the density distribution of users (N). That is:

$$C_F = A + c_I*N + (2/3)* c_L*N^{3/2}/(\pi\delta)^{1/2}$$

as a function of "N". Or, as a function of "R":

$$C_F = A + c_I*\pi*\delta*R^2 + (2/3)* c_L*\pi*\delta*R^3$$

The formula lets evaluate a number of indicators that may turn useful to management especially during the phase of planning: for instance a gross estimate can be made of total investment necessary to connect "N_0" users or, as equivalent objective, to cover an area whose radius is "R_0" occupied by personnel in the premises of Organisation. Further, minimising the function of cost the optimum number "N_i" of users can be calculated or, as equivalent objective, the optimum radius "R_i" of area housing users. Again, it can be possible to adjust/revise the planning as a function of finance available and, in this context, even the steps of implementation of project can be decided.

8. **Cost estimate of Extranet system**

When two or more groups of people, already served by Intranet system, have common working interests an Extranet system can be implemented by connecting together Intranet areas. In this way, different Organisations far located or far sites of same Company can develop projects and production processes in co-operation enjoying the same facilities.

The reference structure

The network scheme for Extranet is made by a set of Intranets areas connected together. If the area covered by an Intranet is assumed to be a circle, Extranet structure can be represented by a number of circles linked two by two in a star configuration. The advantage of the scheme is that when calculating the cost of Extranet, it will, theoretically, be composed by two parts: the sum of cost of "n" identical Intranet systems and the sum of cost of "n-1" links (star configuration). The cost analysis may be referred either to a whole system of "n" Intranet areas installed simultaneously or, alternatively, to an existing Extranet system which expands by addition of a new Intranet area.

Simultaneous installation

The reference structure of the system is represented by "n" Intranet systems connected in a star configuration to a central Intranet system. The parameters to define are: the distances from the star Centre "$\mathbf{D_0}$" (average length of junctions); the unit cost "$\mathbf{c}_j$" (cost/km) of a link; the number of users per Intranet system "$\mathbf{N_0}$" and their density "δ" .

Total cost of system is given by summing up two terms: the first one corresponds to the cost of "**n**" Intranet systems and is characterised by functions like the (1); the second one is the cost total of "**m**" junctions over the public network.

Whether, for example, we assume for the Extranet structure "n_o" Intranet equal areas, all with the same radius "R_o" and equal number of users "N_o", connected by "m_o" junctions, all with the same distance "D_o" from the Centre, then we obtain the total simplified cost:

$$C_E = n_o * (A + c_l * N_o + 0{,}667 * c_L * (N_o^3/\pi\delta)^{1/2}) + m_o * D_o * c_j$$

Additional installation

The system starts, this time, from an original structure where "n_0" Intranet areas are connected together, as before. Cost of existing Extranet system is evaluated as before.

Relevant cost is:

$$C_E = n_o * (A + c_l * N_o + 0{,}667 * c_L * (N_o^3/\pi\delta)^{1/2}) + m_o * D_o * c_j$$

Additional cost is:

$$C_E = (A + c_l * N_o + 0{,}667 * c_L * (N_o^3/\pi\delta)^{1/2}) + * D_o * c_j$$

9. **Measuring benefits**

Intranet/Extranet may help saving money by reducing recourse to traditional office facilities and may let additional savings in terms of time and labour as the system can provide more efficient time-consuming processes. Existing literature separates the benefits provided by Intranet/Extranet systems into three kind of savings: the first one relates to direct reduction of intermediate consumption (telephone, fax, courier), the second one accounts for the shorter time necessary to complete tasks and the third one is an increase in labour "productivity". The term "productivity" is not always appropriate especially when dealing with Organisms (Hospital, Universities, etc) non profit oriented. In these cases, labour "efficiency" (same task completed in less time) better represents the concept.

Reference scenario

The hypothesis is made of an Intranet system installed in a medical structure, where three groups of professional people (72 Doctors, 192 Nurses, 10 Administrative) carry out their duties. **Annex 1** provides separation of working time and description of activities per category.
After the introduction of Intranet, each category of users is expected to have either less recourse to "intermediate consumption" and a better organisation of their respective activity.

As "intermediate consumption" is intended the recourse to telephone, fax, internal/external courier, photocopies, printing papers, in a word to all those office resources that facilitate information, communication, interconnection among employees when performing their work.
The benefit coming back to Hospital is the difference between consumption before and after the introduction of Intranet system. It is quantified on the basis of unit cost of facilities.
All categories of users have "tasks to perform" during their working time. It may occur that employees on duty are so busy as to be unable to complete all tasks in due time; as well it may occur that employee have so little number of tasks to complete as to have periods of inactivity. An appropriate organisation of work should optimise the working activity smoothing these two extreme situations. The study can be carried on by help of queuing models where the expected time necessary for the completion of a task is used as input data to measure engagement and/or of inactivity.

Doctors – estimating benefits

During their duty, Doctors do not make very much recourse to intermediate consumption that is supposed to concentrate upon telephone and photocopies. Doctors have, as main duties, to analyse anamnesis of patients under check, to confirm or to change treatments prescribed, to prepare and update diagnosis of patients, to decide their discharge.
The assumed salary is **300 US$/month**; the cost per hour is **2,06 US$/hour** (=300x12/1746)

Intermediate consumption – benefit for reduction of intermediate consumption (**Annex 2**) accounts for **48,96 US$/year** per Doctor: it corresponds to **1,36%** (=48,96/300/12) of annual salary. Total savings coming to the Hospital is **3525 $/year** (=72*48,96).

Service provided – To provide prompt assistance three doctors per day and per department have been assigned to assist 30 patients (per department): waiting of patients is **2,35 minutes**, doctors are idle by **50,93%.** It corresponds to an optimum. 2 doctors would have reduce their

idleness to 26,39% but would have increased patients' waiting at 16,77 minutes. On the other side, 4 doctors would have reduced patients' waiting at 0,5 minutes but would have increased their idleness at 63,20%. (**Annex 3**)

Impact of Intranet - a queuing model (**Annex 3**) shows that, under paper-based process, 0,1961 patients over 5 (3,92%) are queuing per hour for assistance, that their waiting time is 2,34 minutes (=0,039*60) and that 1,53 doctors over 3 (51,00%) are idle per hour.
The introduction of Intranet (**Annex 3**) reduces the number of patients queuing (from 0,1961 to 0,1676 per hour) and improves the potential efficiency of doctors by **1,67%** ((1,47-1,42)/ 3). Idleness per Doctor increases by 0,0555 (=1,5833-1,5278) which means **95,90 hours/year** (=0,0555x6x6x4x12) saved per Doctor. Total labour saved is **6904,8 hours/year** (=95,9*72) or to a theoretical redundancy of **3,95 doctors** (=6904,8/1746) in a year. Theoretical benefit is **14220 US$** (= 3,95*300*12) per year.

Nurses – estimating benefits
Nurses, like Doctors, do not have great intermediate consumption: like Doctors the facilities more used are supposed to be telephone and photocopies. As main duties, Nurses have the charge of controlling, regularly, indicators of patients' health, of updating relevant individual files, of selecting, preparing and giving treatment to patients at bedside, of assisting blood sample for laboratory analysis. Take decisions under emergency.
The assumed salary is **150 US$/month**; the cost per hour is **1,01 US$/hour** (=150x12/1780)

Intermediate consumption – benefit for reduction of intermediate consumption (**Annex 2**) accounts for **48,96 US$/year** per Nurse: it represents **2,72%** of annual salary (=48,96/150/12). Total savings coming to the Hospital is **9400 $/year** (=192*48,96).

Service provided – The choice of four nurses, per duty and per department, to assist 30 patients (per department) corresponds, again, to an economic optimum. In this case, waiting of patients is **0,69 minutes** and **60,42%** of nurses are **idle** per duty. 5 nurses would have reduced patients' waiting at 0,14 minutes but their idleness would have raised at 68,33%. On the other side, 3 nurses would have reduced their idleness at 47,22% but would have raised patients' waiting at 3,18 minutes.

Impact of Intranet - the queuing model (**Annex 4**) shows that, under paper-based processes, 0,0576 patients over 5 (1,15%) are queuing per hour waiting for assistance and that their waiting time is 0,69 minutes (=0,0115*60). These conditions are possible as 2,4167 nurses over 4 (60,42%) are idle per hour. The implementation of Intranet (**Annex 4**) reduces the number of patients queuing (from 0,0576 to 0,0343 per hour) and increases the potential efficiency of nurses by **3,75%** ((= 1,58-1,42)/4). The labour saved by nurses is **71,20 hours/year** (=0,04*1780) and corresponds to a total labour saved of **13670 hours/year** (71,20*192) or to a theoretical redundancy of **7,68** nurses (=13670/1780) in a year. Theoretical benefit is **13824 US$/year** (=7,68*150*12).

Administrative staff – estimating benefits
Administrative staff have a relatively great intermediate consumption compared to Doctors and Nurses. Included in their main duties are: to make admittance more rapidly (no need of forms to fill in manually), to immediately locate patients in the Hospital (access to database), to record accounting/billing on electronic sheets, to turn more efficient contacts with suppliers as stocking management is automatic and continuous.
The assumed salary is **150 US$/month**; the cost per hour is **1,01 US$/hour** (=150x12/1776)

Intermediate consumption – benefit for reduction of intermediate consumption (**Annex 2**) accounts for **118,08 US$/year** per Administrative people**:** it represents **6,56 %** of annual salary (=118,08/150/12). 10 people on duty/year produce a saving of **1180,8** $/year (=118,08*10)

Service provided - Under the conditions of paper-based work, 8,33 administrative staff per day have been assigned to complete 42,86 files per duty (**Annex 5**). Documents to be completed have an average waiting time of **7,2 minutes**, while **30,37%** (70% engagement) of Administrative Staff are **idle** per duty. 7,33 employees would have increased documents' waiting at **13,20 minutes** and would have reduced their **idleness at 20,87%**. On the other side, 9,33 Administrative Staff would have reduced documents' waiting at **4,2 minutes** but would have raised their idleness at **30,37%.** Since completion of documents has not the same urgency as assistance to patients, no optimisation was carried out: whether 7,2 minutes waiting are compatible with the deadlines of activity, 10 employees are considered sufficient.

Service provided – The choice of four nurses, per duty and per department, to assist 30 patients (per department) corresponds, again, to an economic optimum. In this case, waiting of patients is **0,69 minutes** and **60,42%** of nurses are **idle** per duty.
Impact of Intranet - the queuing model (**Annex 5**) shows that, under paper-based processes, 1,76 files over 15,00 (11,73%) are queuing per hour for completion, that their waiting time is 7,20 minutes (=0,12*60) and that 2,53 employees over 8,33 (30,37%) are idle per hour. The introduction of Intranet (**Annex 5**) reduces the number of files queuing (from 1,76 to 1,20 per hour) and increases the potential efficiency of employees by **4,80%** (=(2,93-2,53)/8,33). The labour saved by administrative people is **85,24 hours/year** (=0,048*1776) and corresponds to a total labour saved of **852,48 hours/year** or to a theoretical redundancy of 0,48 administrative staff (=854,40/1776) in a year. Theoretical benefit is **864 US$/year** (=0,48*150*12).

10. The economic "feasibility"
Economic feasibility of project is estimated\\ in **Annex 6.** Under the hypothesis that total investment (Central Unit, Network, PC) account for **250600 US$,** that operating cost (teams) is **3600 US$/year (**2 technicians**)** and that economies are **15287 $/year** (3525 + 9400 + 13824 + 2362), the IRR model produces a return of **–18,23%**: the economies produced are not sufficient to balance the expenses over the study period.
Changes into operating expenses, within the range 0 – 10800 US$/year, produce an improvement into final IRR of 5,57% (-16,36+21,93). As well the decision of separating investment in two consecutive years (0 and 1) does not modify final results.
Changes in expected benefits may provide a significant improvement of final result. Whether benefits would increase by 20%, final IRR becomes –15,18% with a "recover" of 3,05%. An

increase of 40% into benefits would increase final IRR at –13,63 with a "recover" of 4,60%. To get IRR=0 that is revenue to compensate total expenses in a standalone system, benefits should raise by 200%. sensitivity analysis does not show significant improvement of IRR over

11. Conclusions

As it was seen, the project produces economies: Hospital take significant advantage by the fact that Doctors, Nurses, Administrative Staff reduce their intermediate consumption. Further, for all categories of personnel there is a savings in labour (redundancy) that can orient management of Hospital to re-use the time saved in order to optimise labour resources.
All the above "economies" turn into an increase of availability of medical personnel during their duty periods: the better organisation of work becomes, then, the "utility" of patients whose benefit is to have waiting reduced and assistance increased.

Intermediate consumption

The comparison of intermediate consumption (telephone, fax, courier, copies) before and after the introduction of Intranet system, shows how labour forces turn to new technology. Final users are expected to keep almost constant their consumption of office supplies but the way of circulating information relies, now, upon the on-line facilities avoiding, whenever possible, photocopies, reducing paper messages, courier and utilisation of telephone. The benefit provided by Intranet, in the case-study proposed, accounts for a saving of **14076 $/year** (3525 + 1151 + 9400). In general, the evaluation of such benefit can be carried out either through the Accountings (where external telephone bills, rent of photocopy machine, external mail are recorded and quantified) and through internal checks (use of internal telephone, number of photocopies made, use of internal courier). It is a global figure, relevant to the whole activity of Organisation, but is already sufficient to get a reasonable estimate.

Labour savings

Labour saving derives either from the organisation of service to provide (Doctors and Nurses) and from the administrative activity to perform (Administrative people): for both, the use of queuing model helps quantifying the relevant benefit. The estimate of this indicator rely upon the knowledge of how assistance is organised, service is assured and duties are satisfied.

Service providing. In the first case (Doctors, Nurses) the input data necessary are, per duty: number of patients to assist, average time of service per patient, number of assistants. The organisation of activity in the Hospital and its structure may help evaluated average number of patients and number of assistants; the average time of service should be estimated either by direct interview with medical people or by help of a Questionnaire trying, as long as possible, to reduce subjective perception of interviewed. As the objective is to reduce the patients' waiting time, the benefit is measured through the idleness of Doctors and Nurses. It corresponds to the optimisation of medical resources as a function of patients' assistance. The benefit provided by Intranet, in case of Doctors and Nurses, accounts for a saving of **18153 $/year** (4329+13824).

Completing documents. In the second case (administrative people), the input data necessary are, per duty: number of documents to complete, average time of completion per document,

number of Administrative people. The organisation of administrative activity in the Hospital may help evaluating average number of documents to complete per day and number of administrative people on duty. The average time of completion per document should be estimated either by direct interview with administrative people or by help of Questionnaire trying, as long as possible, to reduce subjective perception of interviewed. Again, the benefit is measured through the idleness of administrative people that corresponds to the optimisation of workers as a function of the activity they have to carry out. The benefit provided by Intranet, in case of administrative people, accounts for a saving of **864 $/year**.

Increase in efficiency

Under the new procedures labour forces can perform their tasks/services in less time. That is: efficiency of labour forces is improved. The indicator relates with service provision and document completion: consequently it can be measured by the difference of personnel inactivity during the duty period and expressed as a function of people on duty.

In case of Doctors, the introduction of Intranet takes the number of idle doctor from 1,42 per hour (before Intranet) to 1,47 per hour (after Intranet). As number of Doctors on duty are 3, relevant increase in efficiency is **1,67%** ((1,47-1,42)/3).

Nurses idle move from 1,42 per hour (before Intranet) to 1,58 per hour (after Intranet). As number of Nurses on duty are 4, relevant increase in efficiency is **4,0%** ((1,58-1,42)/4). As well, administrative people idle move from 1,20 per hour (before Intranet) to 1,76 per hour (after Intranet). Since number of administrative people on duty are 8,33, relevant increases in efficiency is **6,72 %** ((1,76-1,20)/8,33).