

Project TimeSafe

/TimeSafe/SysReqs

System Requirements

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Printed by: Artem Danielov

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System Requirements	Rationale	Priority
1 Purpose of The Document		---
The purpose of the document is to define system requirements for the TimeSafe software. Based on these requirements system architecture will be designed with furtherelaboration of component requirements. Also these system requirements will be used for creation of system verification plan and will help to perform system testing.		---

System Requirements	Rationale	Priority
2 Short System Description		----
TimeSafe is an advanced personal task management software.		----
TimeSafe will be available in two versions - for PC and for CellCo communicator.		----
Both versions will provide exactly the same functionality.		----
Task schedules and other information can be synchronized between CellCo and PCs.		----

System Requirements	Rationale	Priority
3 Functional Requirements		--
3.1 Creating tasks		--
System shall allow user selection of a required task type.		Mandatory
3.1.1 Short tasks		Mandatory
System shall ask user to enter the following parameters specific to short tasks:		Mandatory
- Title of the task		Mandatory
- Detailed description of the task (optional)		Negotiable
- Category of the task		Negotiable
- Importance of the task		Mandatory
- Time and date of deadline (optional)		Mandatory
--- rationale for the deadline (optional)		Negotiable
- Date and time , when user plans to start the task		Mandatory
--- System shall allow setting date and time as exact value		Mandatory
--- System shall allow setting date and time as a time interval with date and time for bottom and top limits		Mandatory
- Whether reminder must alert or not in the beginning of the time interval (only for the case if start time for the task was set as a time interval).	The situation when reminder must alert in advance is rare. But if it is the case, user can set time interval for the task with reminder in the beginning of it.	Negotiable
3.1.2 Long tasks		Mandatory
System shall ask user to enter the following parameters specific to long tasks:		Mandatory
- Title of the task		Mandatory
- Detailed description of the task (optional)		Negotiable
- Category of the task		Negotiable
- Importance of the task		Mandatory
- Time and date of deadline (optional)		Mandatory
--- rationale for the deadline (optional)		Negotiable
- Duration (pure time required to complete the task)		Mandatory
--- System shall allow setting duration as exact value.		Mandatory
--- System shall allow setting duration as two values for minimum and maximum possible duration		Negotiable
- Planned time interval , when user plans to perform the task.		Mandatory
--- The time interval means two date-time vaules for start and for finish.		Mandatory
--- System shall not allow setting of the planned time interval shorter than the task duration.		Mandatory

System Requirements	Rationale	Priority
- Whether reminder must alert or not at the beginning of the planned time interval.	There is little sense in setting reminder time relative to the planned time interval, while it would complicate the logic significantly. If user needs some preparation for the task, pre-task can be used.	Negotiable
- Whether the task can be interrupted, interruptions are undesirable, or interruptions are impossible.		Negotiable
- Whether the task can be split into parts or the task must be done completely at once.		Negotiable
- Whether performing the task requires " immersion ". <i>Immersion means process of focusing attention on the task. It takes usually 10-20 minutes.</i>	This setting in the case of overlapping tasks allows to determine whether it is worth to interrupt the task with reminder or not. Also it allows to give user recommendations on scheduling tasks.	Desirable
3.1.2.1 Pre-task System shall allow assigning the task with a pre-task.	Pre-task stands for additional task that has necessarily to be made before the main task. For example, driving to a customer before presentation. Orit can be preparation for a meeting.	Negotiable
System shall ask user to enter the following parameters of the pre-task:		Negotiable
- Title of the pre-task		Negotiable
- Duration (time required to complete the pre-task)		Negotiable
--- System shall allow setting duration as exact value		Negotiable
--- System shall allow setting duration as two values for minimum and maximum possible duration		Negotiable
- Whether the pre-task can be interrupted, interruptions are undesirable, or interruptions are impossible.		Negotiable
3.1.2.2 Post-task System shall allow assigning the task with a post-task.	Post-task stands for additional task that has necessarily to be made after the main task. For example, driving back from a customer after presentation.	Negotiable
System shall ask user to enter the following parameters of the post-task:		Negotiable
- Title of the post-task		Negotiable
- Duration (time required to complete the post-task)		Negotiable
--- System shall allow setting duration as exact value		Negotiable
--- System shall allow setting duration as two values for minimum and maximum possible duration		Negotiable
- Whether the post-task can be interrupted, interruptions are undesirable, or interruptions are impossible.		Negotiable
3.1.2.3 Task split into parts System shall allow splitting a long task into separate parts.		Mandatory
For each part of the task, system shall ask user to enter date and time.		Mandatory
For each part of the task, system shall ask user to enter duration.		Mandatory
--- System shall allow setting duration as exact value		Mandatory
--- System shall allow setting duration as two values for minimum and maximum possible duration		Negotiable

System Requirements	Rationale	Priority
If user has set task parts with total duration less than overall duration of the task, system shall inform user about the time that was not allocated.		Mandatory
If pre-task exists for the task, system shall consider the pre-task as preceding every part of the task.		Mandatory
If post-task exists for the task, system shall consider the post-task as following every part of the task.		Mandatory
3.1.3 Complex tasks		Negotiable
System shall ask user to enter the following parameters specific to complex tasks:		Negotiable
- Title of the task		Negotiable
- Detailed description of the task (optional)		Negotiable
- Category of the task		Negotiable
- Importance of the task		Negotiable
- Time and date of deadline (optional)		Negotiable
--- rationale for the deadline (optional)		Negotiable
System shall allow user assigning a complex task with a number of subtasks.		Negotiable
System shall allow user assigning a complex task with at least 20 subtasks.		Negotiable
System shall allow user to assign any existing short task as a subtask to the complex task.		Negotiable
System shall allow user to assign any existing long task as a subtask to the complex task.		Negotiable
System shall allow user to assign any existing complex task as a subtask to another complex task.		Negotiable
System shall not allow assigning a complex task with a subtask that has different category.		Negotiable
- System shall ask user if she wants to change category of the subtask.		Negotiable
System shall not allow assigning a complex task with a subtask that has higher importance.		Negotiable
- System shall ask user if she wants to change importance of the subtask.		Negotiable
System shall not allow assigning a complex task with a subtask that has deadline exceeding deadline of the complex task.		Negotiable
- System shall ask user if she wants to change deadline of the subtask or deadline of the complex task.		Negotiable
3.1.4 Dependencies between tasks For any task, system shall allow user to set dependency of the task on other tasks. <i>Dependency means that the task(dependant) cannot start until all foregoing tasks have been completed.</i>	For example, you cannot start printing ad brochure until make-up is finished. If you don't know exactly when make-up will be ready, it is very convenient to set start time for <i>print</i> task as the end of <i>make-up</i> task.	Mandatory
System shall allow user to select foregoing tasks for the dependant task.		Mandatory
System shall allow user to specify that the dependant task starts right after all foregoing tasks have been completed.		Mandatory

System Requirements	Rationale	Priority
For dependant short task, if user specifies that the task starts right after all foregoing tasks have been completed, system shall disable setting of usual start date-time.		Mandatory
For dependant long task, if user specifies that the task starts right after all foregoing tasks have been completed, system shall disable setting of usual planned time interval.		Mandatory
System shall not allow specifying that the long task starts right after all foregoing tasks have been completed, if the long task is split into parts.	Parts of a split task must have exact start time.	Mandatory
3.1.5 Repeating tasks System shall allow setting tasks as repeating on specific dates.		Mandatory
System shall allow setting daily repetitions for a task.		Mandatory
System shall allow setting repetition period in days.		Mandatory
System shall allow setting repetition on every working day.		Mandatory
System shall allow setting weekly repetitions for a task.		Mandatory
System shall allow setting repetition period in weeks.		Mandatory
System shall allow setting days of week, on which the task repeats.		Mandatory
System shall allow setting monthly repetitions for a task.		Negotiable
System shall allow setting a day of the month, when the task repeats.		Negotiable
System shall allow setting repetition period in weeks.		Negotiable
System shall allow limiting the number of repetitions.		Negotiable
System shall allow setting a number of repetitions explicitly.		Negotiable
System shall allow setting limiting date, after which the task stops repeating.		Negotiable
3.2 Task collisions System shall automatically warn user if taskcollisions are encountered.		Mandatory
System shall automatically warn user during creation of a new task, if collision with another task occurs.		Mandatory
System shall allow user to search for taskcollisions at any moment.		Mandatory
- System shall allow user to specify importance of the tasks, for which she wants to search for collisions.		Negotiable
- System shall allow user to specify time period, for which she wants to search for collisions.		Mandatory
System shall consider relative importance of tasks when warning user about task collisions.		Negotiable
System shall consider inaccuracy in duration of tasks when warning user about task collisions.		Negotiable
3.2.1 No time for long task System shall warn user, if time for a long task is set as an interval and duration of the task is longer than available free time within the specified time interval.		Mandatory

System Requirements	Rationale	Priority
System shall show other tasks filling the specified time interval.		Mandatory
System shall suggest user to select one of the following actions:		Negotiable
- to edit the task		Negotiable
- to move the task		Negotiable
- to move other tasks filling the time interval		Negotiable
- to ignore		Negotiable
3.2.2 Short task colliding another short task When user creates a new short task, system shall warn user if the task falls into time already allocated for another short task of the same importance .		Mandatory
System shall suggest user to select one of the following actions:		Negotiable
- to select one of the two tasks, which will be activated earlier		Negotiable
- to move one of the two tasks		Negotiable
3.2.3 Short task overlapping long task System shall warn user, if a short task falls into time allocated for a long task, which is undesirable or impossible to interrupt.		Mandatory
System shall suggest user to select one of the following actions:		Negotiable
- to edit any of the two tasks		Negotiable
- to move any of the two task		Negotiable
- to ignore		Negotiable
3.2.4 Long task overlapping long task(s) System shall warn user, if time allocated for a long task overlaps time allocated for another long task.		Mandatory
System shall show all long tasks overlapped by the task.		Mandatory
System shall suggest user to select one of the following actions:		Negotiable
- to edit the task		Negotiable
- to split the task, if appropriate		Negotiable
- to move the task, completely or partially		Negotiable
- to move overlapped tasks, completely or partially		Negotiable
- to ignore		Negotiable
3.3 Organizing tasks		--
3.3.1 Scheduling tasks for the nearest day/week/month		Mandatory
System shall allow selecting time period, for which tasks are displayed.		Mandatory
System shall allow setting time-scale, at which tasks are displayed.		Mandatory

System Requirements	Rationale	Priority
System shall allow setting filter for displayed tasks by the following parameters:		Negotiable
- category		Negotiable
- importance		Negotiable
- duration		Negotiable
- deadline		Negotiable
System shall be able to display only subtasks of a certain complex task.		Negotiable
If the complex task has another complex task as a subtask, system shall display subtasks of that complex subtask too.		Negotiable
System shall allow moving tasks.		Mandatory
3.3.2 Setting start time for a short task System shall allow setting exact start time for short tasks, that did not have exact start time, but were assigned with time interval instead.		Mandatory
System shall highlight tasks that do not have exact start time.		Negotiable
3.3.3 Adding a new part to a long task System shall allow adding part to a long task, for which required time was not allocated completely.		Mandatory
System shall highlight tasks, for which required time was not allocated completely.		Negotiable
System shall ask user to set date and time, when the new part starts.		Mandatory
For splittable task, system shall ask user to set duration of the part.		Mandatory
--- System shall allow setting duration as exact value		Mandatory
--- System shall allow setting duration as two values for minimum and maximum possible duration		Mandatory
3.3.4 Splitting a long task System shall allow splitting a long task, for which start time was already set, into two parts.		Mandatory
System shall ask user to set duration of the first part.		Mandatory
--- System shall allow setting duration as exact value		Mandatory
--- System shall allow setting duration as two values for minimum and maximum possible duration		Mandatory
System shall ask user to set start time of the second task.		Mandatory
System shall allow splitting a part of a long task into subparts in the same way.		Mandatory
3.4 Reminder		--
System shall alert user in the following cases:		Mandatory
- when start time of a task comes		Mandatory

System Requirements	Rationale	Priority
- when time interval set for a task begins, if reminder was set to be activated in the beginning of the time interval		Negotiable
- deadline for a short task comes		Mandatory
- long task must be started in order to meet its deadline		Mandatory
- end of time interval set for a short task comes		Mandatory
- long task must be started in order to meet the end of the time interval set for the task		Mandatory
System shall alert user by the following means:		Mandatory
- popup dialog		Mandatory
- sound		Mandatory
- vibration (for CellCo version)		Negotiable
System shall suggest user to select one of the following actions:		Mandatory
- to start performing the task		Mandatory
- to postpone the task		Mandatory
--- if user selects to postpone the task, system shall ask user to set new start time or time interval for the task		Mandatory
- to be reminded later (only when reminder was activated in the beginning of time interval set for the task)		Negotiable
--- if user selects to be reminded later, system shall ask user to set new time for the reminder		Negotiable
--- system shall allow setting new time for the reminder only within the time interval and so that the task could be completed in time		Negotiable
- to turn off the reminder (only when reminder was activated in the beginning of time interval set for the task)		Negotiable
System shall not alert user in the following cases:		Mandatory
- if user performs more important task and interruptions are undesirable or impossible		Negotiable
- if user performs a task of the same importance and interruptions are impossible		Negotiable
3.5 Performing tasks		--
System shall allow user to start performing any task at any moment.		Mandatory
When user performs a task, system shall show the task as currently performed .		Negotiable
System shall allow user to complete currently performed task.		Mandatory
System shall allow user to pause currently performed task.		Negotiable
System shall allow user to resume paused task.		Negotiable
System shall allow user to stop paused task.		Negotiable

System Requirements	Rationale	Priority
- System shall ask user to enter time, when the stopped task will be continued.		Negotiable
- System shall allow user to interrupt the stopped task without setting time, when it will be continued.		Negotiable
3.6 Alarm clock		--
3.6.1 Default alarm clock parameters		--
Default alarm clock parameters are used if they were not changed explicitly for a particular day.		Mandatory
System shall allow user to set the following default alarm clock parameters:		Mandatory
- Time		Mandatory
- Melody		Negotiable
- Loudness		Mandatory
- Duration		Mandatory
- Number of repetitions		Negotiable
- Pause between repetitions		Negotiable
- Application that will be launched, if needed.		Desirable
System shall allow user to set default parameters different for every day of week.		Mandatory
3.6.2 Changing alarm clock parameters for particular days		--
System shall allow user to select dates, for which she wants to change parameters.		Mandatory
System shall allow user to change any default parameter for selected dates.		Mandatory
3.6.3 Alarm clock activation		--
On preset time system shall start playing melody.		Mandatory
System shall stop playing melody, when user presses any button of CellCo (or any key on PC)		Mandatory
System shall stop playing melody, when preset duration is exceeded.		Mandatory
System shall repeat playing melody after the playing was stopped, if user did not press any button (or key).		Negotiable
- If user does not press any button(or key), system shall repeat playing melody for preset number of times.		Negotiable
On preset time system shall launch the application, if an application was set.		Desirable
3.7 Synchronization		--
System shall allow synchronization between two PCs.		Negotiable
System shall allow synchronization between CellCo and PC.		Mandatory

System Requirements	Rationale	Priority
System shall provide synchronization of the following information:		--
- complete information about all scheduled tasks		Mandatory
- customized list of task categories		Negotiable
- customized list of task importance values		Negotiable
- common (for all devices) GUI settings		Mandatory
System shall NOT provide synchronization of the following information:		--
- alarm clock settings		Negotiable
- reminder alert parameters		Negotiable
- device specific GUI settings		Negotiable
If since the last synchronization changes have been made on both devices, system shall ask user to select one of the two devices that contains right information.		Mandatory
System shall warn user, if synchronization is not complete and connection is lost.	Connection may be lost both due to some technical troubles and due to user's actions, such as taking CellCo away of PC.	Mandatory
- System shall display warning on both devices.		
- System shall play sound warning on both devices.		
3.7.1 Automatic synchronization System shall be able to start synchronization automatically.		Mandatory
System shall provide automatic synchronization when CellCo is connected to PC through USB.		Mandatory
System shall provide automatic synchronization when CellCo is connected to PC through BlueTooth.		Mandatory
System shall provide automatic synchronization when PC is connected to another PC through USB.		Mandatory
System shall provide automatic synchronization when PC is connected to another PC through BlueTooth.		Mandatory
3.7.2 Manual synchronization System shall allow user to start synchronization manually.		Mandatory
System shall allow user to start synchronization manually when CellCo is connected to PC through GPRS-Internet.		Mandatory
System shall allow user to start synchronization manually when one PC is connected to another PC through LAN or Internet.		Negotiable
3.7.3 Active device selection System shall not allow user to work with TimeSafe on two devices simultaneously, if the two devices are connected trough BlueTooth or USB.		Mandatory
System shall allow user to switch between connected devices after automatic synchronization has been made.		Mandatory

System Requirements	Rationale	Priority
3.8 Customization		--
3.8.1 Task categories System shall allow user to set custom task categories.		Negotiable
System shall ask user to set name for each category.		Negotiable
System shall allow user to set at least 16 categories.		Negotiable
Default list of categories shall be: Work and Private		Negotiable
3.8.2 Task importance System shall allow user to customize list of task importance levels.		Negotiable
System shall allow setting name for each importance level.		Negotiable
System shall allow user setting at least 10 importance levels.		Negotiable
Default list of importance levels shall be: Low , Medium , High , and Very High		Negotiable
3.8.3 Reminder alert parameters System shall allow user to customize reminder alert parameters		Negotiable
System shall allow to select melody.		Negotiable
System shall allow setting loudness.		Negotiable
System shall allow setting duration.		Negotiable
System shall allow to select, whether the device must vibrate (for CellCo only)		Negotiable
System shall allow turning sound alerts on/off by pressing button on CellCo (for CellCo only)	For example, when user is on meeting it would be inconvenient if sound alerts will appear.	Negotiable
3.9 User registration PC version of TimeSafe shall require user to register.		Mandatory
One time a day system shall ask user to register.		Mandatory
- System shall ask user to visit TimeSafe web-site in order to register.		Mandatory
- System shall ask user to enter registration code received at TimeSafe web-site.		Mandatory
- System shall allow user to cancel registration.		Mandatory
System shall not ask user to register anymore, once she has entered registration code.		Mandatory

System Requirements	Rationale	Priority
4 User Interface		--
4.1 Localization TBD		--

System Requirements	Rationale	Priority
5 External Interfaces		--
5.1 Synchronization		--
5.1.1 Synchronization thru USB TBD		--
5.1.2 Synchronization thru BlueTooth TBD		--
5.1.3 Synchronization thru LAN or Internet TBD		--
5.2 Special buttons onCellCo TBD		--

System Requirements	Rationale	Priority
6 Compatibility		--
TimeSafe shall work on all CellCo communicator models.		Negotiable
TimeSafe shall work on Windows CE 3.0 and higher.	First version of CellCo will have WinCe 3.0 preinstalled.	Mandatory
TimeSafe shall work on Intel based PCs with Windows 98/2000 and higher.	Win98 and Win2000 will have 10% and 30% of all personal computers share respectively. Lower versions of Windows will have much less share, will have problems with USB support, and their users will unlikely buy advanced gadgets like CellCo.	Mandatory

System Requirements	Rationale	Priority
7 Constraints		--
7.1 Consumed System Resources for CellCo Version		--
TimeSafe program files should not consume more than 2 MB of flash memory.	CellCo will have built-in flash memory size beginning from 64MB	Negotiable
TimeSafe should not consume more than 1 MB of RAM in background mode.	CellCo will have RAM size beginning from 64MB	Negotiable
TimeSafe should not consume more than 4 MB of RAM in active mode.	CellCo will have RAM size beginning from 64MB	Negotiable
7.2 Synchronization speed		--
System should make synchronization through GPRS or Internet in 20 seconds or less, when connection speed is 32 Kbit/sec.		Negotiable
System should make synchronization through BlueTooth connection in 2 seconds or less, when CellCo is in 3 meters or less from PC.		Negotiable
System should make synchronization through USB and LAN connections in 2 seconds or less.		Negotiable
7.3 Installation package		--
For PC version of TimeSafe the size of installation package should not be larger than 3 MB.		Negotiable

System Requirements	Rationale	Priority
8 Terminology		----
Long task - a task that requires significant (5 min and more) amount of time to complete it. For example, writing a report or holding a presentation.		----
Short task - a task that requires negligible time to complete it. For example, short call, writing a short e-mailmessage, or putting a book into bag.		----
Complex task - a task comprised of several tasks. For example, releasing ad brochure is a complex task comprised of the following subtasks: writing ad text, making product photographs, making design concept, finding appropriate pictures, make-up, printing. Usually some subtasks depend on other subtasks.		----