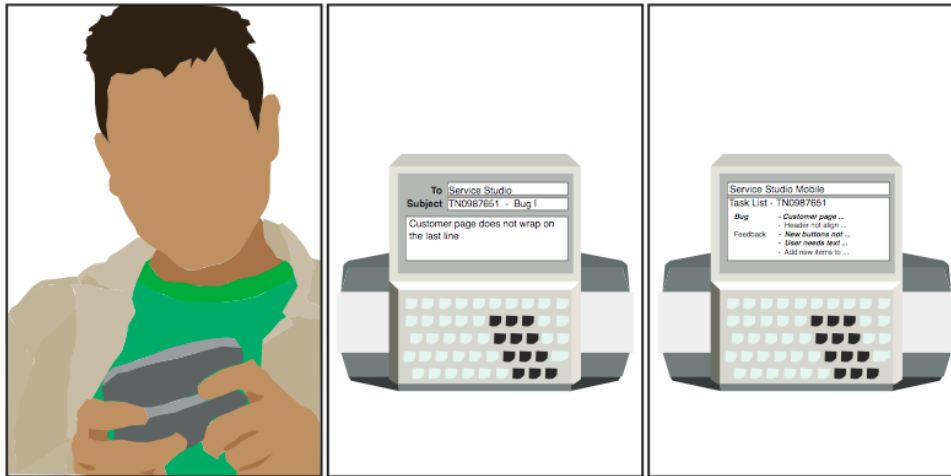


Appendix F: Concept validation scenarios

Title: Mobile phone interaction

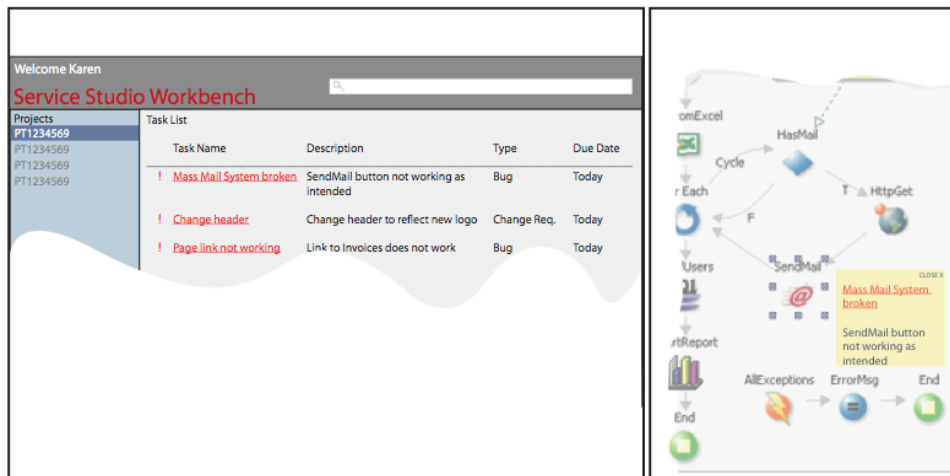


While out to lunch, Tim receives a text from the client which indicates a bug in the software

Tim forwards the text message to Service Studio by entering the project number and the word Bug in the subject line

Tim opens the Service Studio mobile application and sees that the item forwarded has been added to the list of bugs in his tasks list

Title: Integrated notifications in Service Studio



Karen logs into Service Studio and is immediately taken to her workspace which displays her inbox with all notifications.

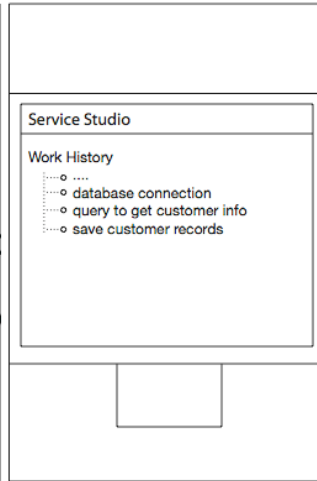
She notices that three (3) of the notifications are in red and to the top of her inbox items. Realizing that these are urgent, Karen selects the first item on the list.

Service Studio opens the attached eSpace at the relevant position with the original message giving the description of the problem opened next to the item until Karen closes it.

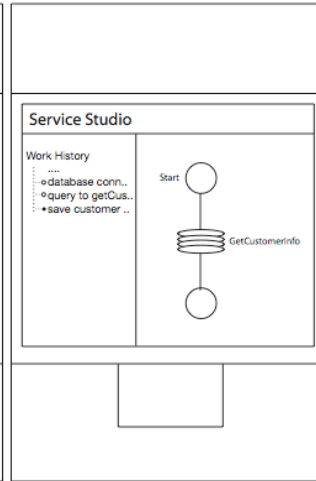
3. Work History and Bookmarks



Tim starts his workday by launching Service Studio.



He clicks on the Work History tab to see the last steps he took on the platform.

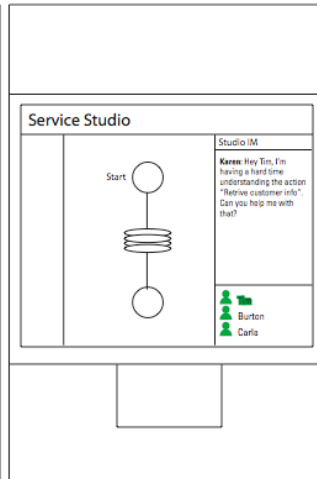


He double clicks on the last item, which takes him to the related code piece he was working on.

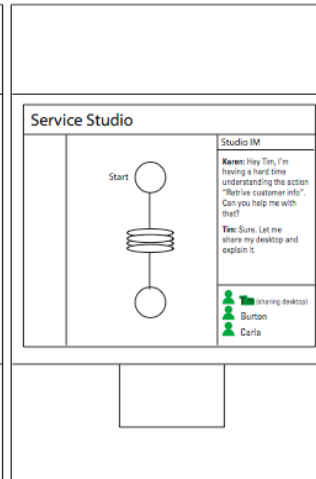
4. Instant Messaging with other developers



Karen is trying to fix a bug in a previous project and does not understand what the code is doing.

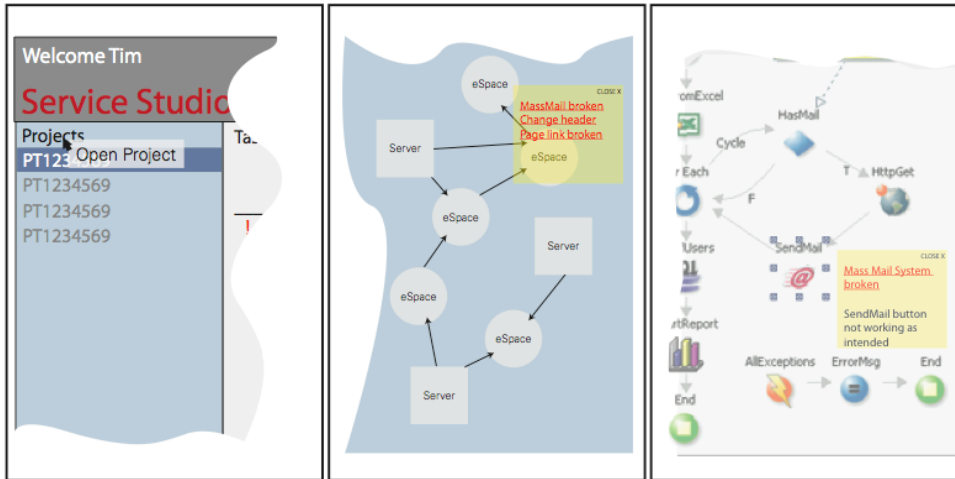


Not knowing who the code belongs to, Karen circles the area with the problem, right-clicks it and selects contact author.



Realizing that the author, Tim, is online, the system opens an IM with Tim. Karen shares her desktop with Tim so he can explain what the code is doing

Title: High Level System Diagram

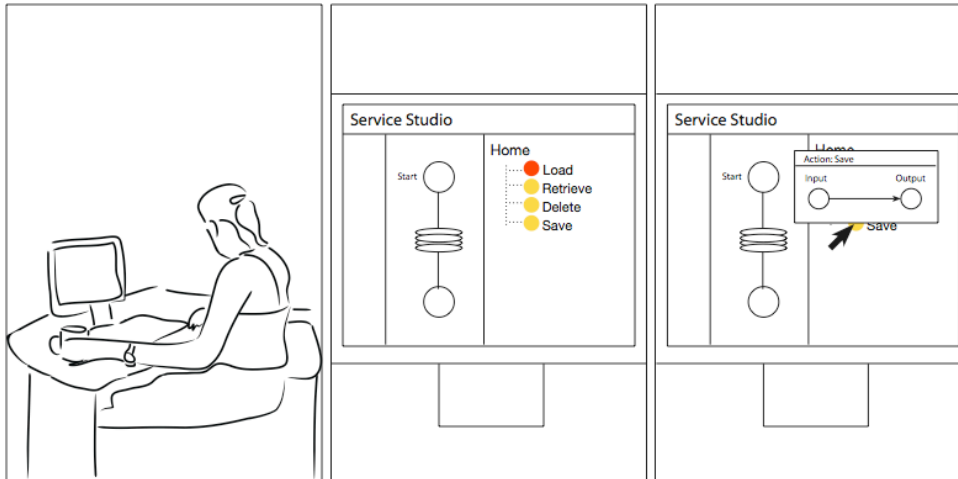


Tim opens his next project by selecting it from the list provided in his workspace and Service Studio opens the project diagram showing all the items in the project and how they are connected, tagging all the areas that need attention.

He scrolls into the first eSpace requiring his attention and the eSpace opens in business logic view, again tagging the items that require attention and placing the project diagram to the right in list form.

Tim realizes that the problem may be in the database and he selects the server containing the database from the system diagram list and Service Studio logs in to the server.

6. High-level Action Summary

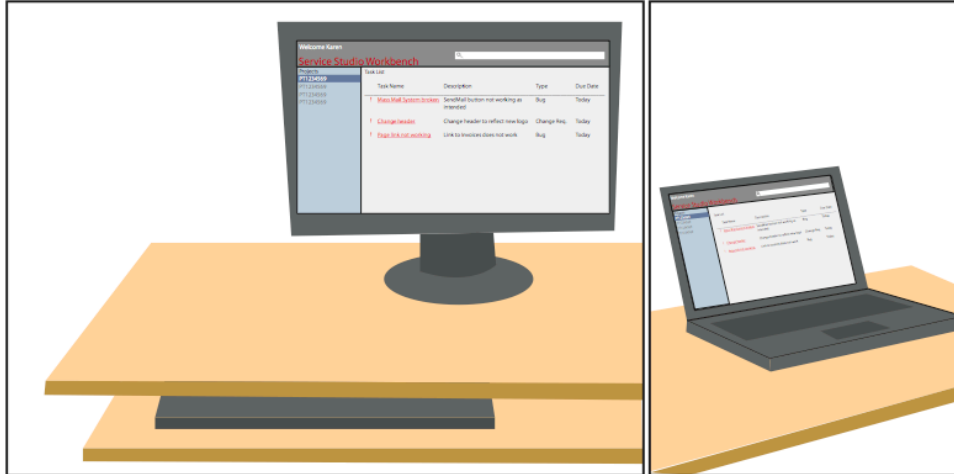


Karen opens up an eSpace that another developer has worked on.

She sees that the developer has added 3 new actions. She can't understand what the actions do from the names.

She hovers the mouse over the actions to see input and output parameters for that action without opening them.

7. Panel layouts & skins

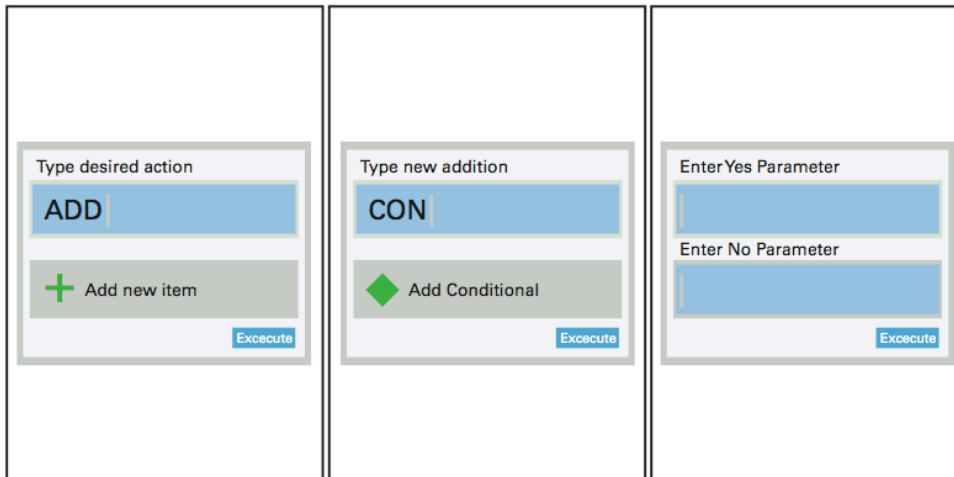


Tim has been using Service Studio on his work computer for a week now and decides that he wants to use a different skin for the look and feel of the platform. He selects one from those provided by Service Studio.

Tim then tweaks the skin by moving, resizing and hiding panels and adjusting the font size and color of the widgets, and saves his settings and goes home for the day.

Later that evening, Tim logs into Service Studio from his home PC and is happy to find that the settings he made on his work PC are now available from home as well.

8. Keyboard addition of actions and elements



Karen needs to add a conditional to the eSpace so she types CTRL + Spacebar, which opens a shadow box where she types "Add" and hits the ENTER key.

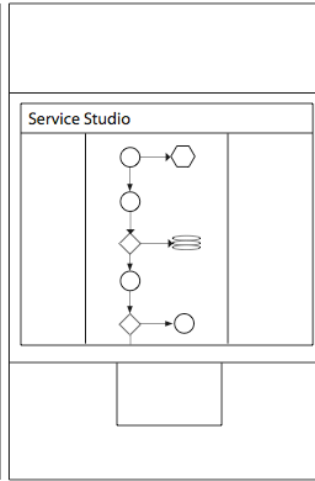
She starts types CON and once the panel suggests conditional, she hits the ENTER key.

She enters the parameters and hits the ENTER key and the system updates the logic view to include the new conditional.

9. Interactive snippets of the running application



Tim is working on a new project when he gets stuck in a particular portion of the code.



He selects the part of the code he's working on and sends an Interactive Snippet to Karen, another developer on the project.

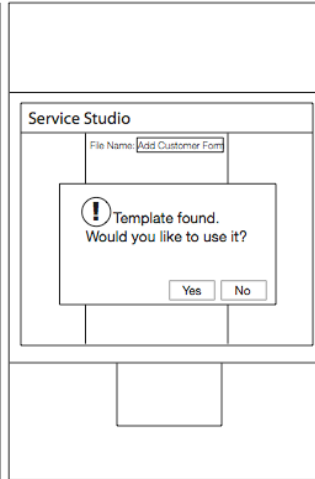


Karen is able to make changes to the code snippet she receives and once she saves her changes the system automatically updates the main file.

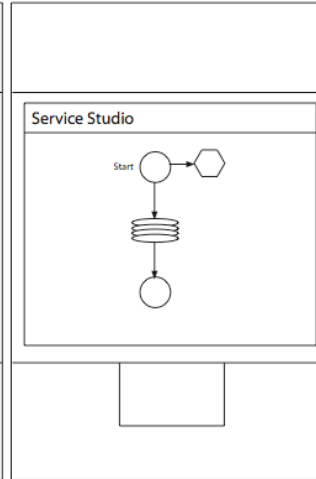
10. Automatic pattern recognition



Karen is creating a new web page which contains an add customer form.



As she creates the new file and enters the name (Add Customer Form), the system realizes that there is a template that matches what Karen is trying to do, and makes the suggestion to Karen.



Karen accepts the suggestion and the system creates the code needed for that web page.

Appendix G: Concept validation notes

Scenario 1: Mobile Phone Interaction

USER E:

- Nice to have, but not a key feature for the environment
- Writing down the idea is the key point but doesn't see the need to send it immediately
- Doesn't want to use this
- Personally, he writes down anything after work hrs or emails it to himself so that he won't forget useful, the idea of acting immediately he emails it to himself, takes notes in his blackberry also finds easy to remember espace names but not the project number

USER F:

- It's a perfect feature
- Being able to work "offline" and take notes is what's best
- This should also integrate with the AMT
- She often forgets tasks and needs to right them down: may happen once or twice a day
- Tasks can be often forgotten if not written right away
- Nice but not key to environment
- It would be cool but may have been solved
- Not priority one
- Would not be used alot
- Yes he's faced this problem
- Write it down somewhere
- At home he'll create a task on outlook
- He'll email himself
- Things to do next day
- He has forgotten a task when he didn't remember to write it down

USER G:

- real scenario
- "if manager is not in office, makes sense to text message"
- makes more sense to project manager/management team
- participant does not receive texts for tasks (he focused on panel 1)
- normally not a problem using AMT and SS separately, but sometimes tasks are really complex making it harder...
- does not see the benefit of learning about tasks when away from the office; only develops in office
- "this would be great!"
- "a perfect feature"
- being able to take notes "offline" is good
- takes notes on post-its right now
- sometimes forgets things if they don't get written down in the moment

USER H:

- not me but the project manager will use this because he assigns my tasks.
- i just get my tasks using AMT.
- but being able to see them in the platform would be good.
- he prefers to use pen and paper.

USER I:

- Definitely helpful
- When away from computer/platform, this user uses pen and paper
- He has not forgotten a task/note if not taken down - he just remembers it

Scenario 2: Integrated Notification

USER E:

- Very helpful
- Can see it as a feature integrating the service studio and project management tool
- Also helpful for searching the place to fix the problem is pain when he doesn't remember the code or he is not the one who wrote it technical concerns useful - jumping to espace from tasklist(has a problem of finding where to start to finish the task)

USER F:

- Great
- The workspace is good
- Also likes the linking
- Since user has lots of projects and different client it's a problem knowing where to begin
- The best way to sort is by project
- It will be useful to have all the information in one place
- Currently user keeps a folder for this purpose
- Very helpful
- Good to combine both spaces
- Prioritized log in
- friendly
- focused to do what needs to be done right away
- user has lost time trying to begin his work
- especially when something was old
- forgot the code or it was made by someone else

USER G:

- likes idea of having task list in SS rather than switching between SS and AMT (AMT can take long time to load)
- seems like an improvement; good for developer, maybe not so much for manager
- would manager actually open up eSpace and link bug to the specific code??
- useful to link straight to eSpace; reduces time taken

- most of the time spent is reading the work item and related documentation, not so much finding the bug in the code
- sometimes must make changes in more than one eSpace (i.e., bug is in multiple logics)
- "great"
- likes workspace with messages; being able to link directly to eSpace
- lots of projects, so can be hard to find code; once "in" work, "I know what I'm doing"
- folders in email set up by project to make it easy to find related info

USER H:

- it's a great improvement
- i don't if the manager will spend time attaching the eSpace to the notification.
- it really improves the time spent checking the AMT (login from the browser) and back to the SS
- normally if eSpaces are dependent each other, i need to discover myself which eSpaces I have to make the changes for
- so if the system tell me which one(s) i need to work on, that'd be great.
- great idea but 1st part exists, urgent items organized by priority, when you click on it ss opens on desktop
- finds it difficult to begin work

USER I:

- Great idea, they were already planning to do this - OS currently has half of this implemented: the urgent tagging exists, but if you click it doesn't take you to the spot
- He has had trouble looking for where to begin his work
- This is not necessary as each developer's task rarely deals with the same code itself, but more like the same eSpace, and also, they have communication tools that help them get the information they need from other developers without looking at their code

Scenario 3: Work History & Bookmarks

USER E:

- Current Service Studio opens an space in the place where it was left off
- This feature is good.
- In terms of taking to left off place, not great
- Useful in terms of knowing what the user did last may not go back to where he left off always in a code review situation would be helpful to know the changes made to the code

USER F:

- This is very good
- Working on several projects changing context is difficult
- doing several tasks

- waiting on a confirmation
- it is sometimes difficult to forget where she left off
- she leaves reminders
- too many reminders leads to chaos if not erased
- There's no list currently of work history
- if you open an espace it opens in the same screen you worked on
- This would be great
- Taking you to the right place is not new
- It's ok
- The day before there can be trouble .. but for long term it's good
- Seeing your steps is very useful
- going back for a while is even better
- when you switched task is good to
- if you have everything there it's easier and improves the developer experience

USER G:

- positive response
- asked about where it's stored, can other developers access the bookmarks, etc.
- likes it as a new feature
- improves *somebody else's* starting on the code (i.e., helps a newbie find where to go)
- has had problems finding where he left off, mostly in big complex stuff
- automatic logging is good; person working can add notes (e.g., the way, etc.)
- it would be nice to add feedback to the steps
- jumping to specific steps when something breaks is good (doesn't usually go back to code unless it breaks)
- "this is great. I usually forget"
- works in several projects at a time, loses context when switching between them
- good for doing multiple things at once (e.g., when waiting on something)
- uses Reminders to indicate where she was working
- reminder list can be long if not erased

USER H:

- Interesting, good improvement
- good for collaboration, when a new person comes, can see the steps previously taken, improves the time consumed to understand somebody else's code
- maybe a description for the step could be optional, if i want to add a comment there
- we usually put lots of remarks to the code, to understand, so making this automatic is good
- difficult to find where you left off but when ss opens it opens at the space where you las worked on
- history: can feel the need
- undo: usable just for the last action

USER I:

- Really useful
- Related to previous scenario but with direct access to spot in the code
- User has had trouble finding where he left off - currently the platform opens in the eSpace you last were when you shut down
- History of steps: tries to remember page/action he was working on, reviews chats he had with other developers that day
- Undo: they can currently roll back to previous versions

Scenario 4: IM with Other Developers

USER E:

- Teams are together physically, this concept is helpful for remote collaboration
- Can achieve it without built-in; looked happy using skype
- Have tools already
- Not a high priority feature
- good to track who touched the code last
- contacting the person is a different thing though - when is it appropriate to contact
- right now it is word of mouth or documentation of authors(chances slim to none)

USER F:

- Great
- automatic tagging is good and most of the time they don't know who did what
- to know who is publishing what is also important
- if they are working in the same eSpace
- this will eliminate error messages and waiting for these messages
- help is often useful through IM
- Tags will be nice if not complete integration
- Skype is the first choice, if in a hurry they use mobile
- Face to face if in same place
- Most times you have physical presence
- This is more helpful for remote development
- This will be cool but you can achieve it without having it integrated in the service studio
- This is done as a work around
- This is the right way of doing things but the tools already exist
- He wouldn't prioritize it

USER G:

- "would be really good" (highly positive response)
- especially for people not at same location
- uses Skype right now
- "like a live demo"
- sometimes it's necessary to know if another developer is working
- publish is interrupts a running application
- merging is required if working on the same action

- not very common situation
- usually just talk to author of code directly if has problems
- does not always know who wrote what code
- "looks great also"
- helps with clarification, especially when working with more than one developer at the same time
- avoids error messages, waiting to publish, etc.
- uses Skype to ask for help at the moment
- at least text chat in SS would be nice
- mostly uses Skype to communicate; if in the same location will walk over and ask developer; uses mobile if in a hurry

USER H:

- very good improvement, especially if the team is not working together
- voice comm should also needs to be supported because we use skype
- if this is built in they we'd only focus working in SS
- it'd be good to if other developers are actually working on the same eSpace
- because sometimes we accidentally change the same stuff and can't merge.
- knowing the author of the code is imp, if i don't know the author i ask my Engager, if s/he doesn't know, then we have no way telling that.
- common practice
- useful to see specific info, who was the last person worked on the project.
- don't need to see who's online, we use skype
- helpful to see who's in real-time working on the same project, when we find out it's usually to late

USER I:

- Platform already does this, but not automatically
- See how many other developers are working: useful for specific parts, now you can only see the author, but who is online
- Who is online working: now use Skype status

Scenario 5: High-Level System Design

USER E:

- Looked like they have few such diagrams, he mentioned seeing them.. don't know the form
- Helpful in understanding the architecture of applications
- Details of eSpaces is helpful
- Capability of printing the high level diagram
- Task routing from the high level diagram is not helpful as already integration is doing this always good currently Delivery manager puts up the diagram of architecture of project tagging the diagram adds value would be understandable (layering of espaces in important) had problems in understanding where the espace fits into the project

USER F:

- Great
- The diagram with the eSpaces and the servers is a good idea
- Logging into the server is also good
- User likes integrated password
- the diagram is very good
- adding the screens will also be helpful
- adding the entry points is welcomed
- cross eSpace bugs and broken references exist alot
- entering a project for the first time, knowing how the eSpace interacts with each other is very useful at work entry point
- database symbol next to the eSpace is useful
- Having entities defined
- the chosen zoom interaction is understandable
- This is similar to what we saw before
- This will be helpful for developers to understand overall architecture of applications
- This will be very helpful not only in this way described but it can be consulted at any time and provide more details of what each eSpace provides
- if it can be pulled of server or integrated it would be very good
- requesting print would be great
- it's helpful to see the tasks in this way but the diagram is also more helpful by itself
- The previous routing with tasks for the day would be enough
- For finding things and understanding the whole app. this would be more helpful

USER G:

- "seems to be a good feature"
- "in the beginning", good to see complete project flow when starting a project
- common to have problem caused by another eSpace
- need to publish dependent eSpaces
- if quick publish button publishes all dependent eSpaces, that would be nice
- scrolling would be very nice, faster
- "oh, great!"
- "I like it"
- likes spaces & servers, opening server, logging into databases
- useful for adding screens, entry points
- broken references cause a lot of problems (example of one eSpace causing bugs in another)
- great for first-time seeing a new project that is already under development
- idea: database symbol next to eSpaces that have entities defined
- zooming with scroll works

USER H:

- seems to be a good feature

- good for someone new to the project, in the beginning it's important to understand this
- sometimes if eSpaces are dependent or if the UI is really big, we divide them into multiple UIs, i need to open and publish the others, which is a pain, if they'd be automatically published...
- could be useful for really big projects.
- we have similar stuff but there is no tagging
- ss has ER diagrams

USER I:

- Useful - currently have something similar but without tagging problems
- SS uses E-R(Entity-Relationship) diagrams, no other diagram would be useful, but for the one we have for eSpace-Serves relations looks promising (shows how each eSpace affects others)

Scenario 6: High-Level Action Summary

USER E:

- Doesn't bring much value as right they click to see the action
- very important
- can be annoying on mouse over coz of pop ups
- makes it easy to look for patterns in the code

USER F:

- This is best for actions referenced from another eSpace
- Better than having to open the application to see what it's doing
- Descriptions are also very useful
- Currently user will merge or ask the previous author to learn the eSpace's intended function
- It would be cool but there's nothing new but it's done in a different way
- Getting the information more directly is good but it isn't that valuable

USER G:

- "this can be useful" => in/out parameters
- would it show descriptions too??
- much faster than going back & forth in code
- sometimes need to see logic, not just params
- can this work for adding a new action from a different eSpace?? (i.e., preview params to determine which action to use)
- without a note/description from developer, he would have to look at logic
- great, especially with actions that are referenced from a different eSpace
- "I just like this feature"
- description should also be shown (if it exists)

USER H:

- this can be useful seeing the parameters

- we usually do ctrl+alt+left to go back and forth between the actions
- spend less time check what the action does but sometimes we have to see the logic
- makes sense if we can see developer's comments on it.
- input and output is not enough, descriptions would be more useful
- pop-ups won't be useful

USER I:

- Not as helpful
- Input/output parameters are not enough, but the description is all he needs
- Hovering would not be practical as there would be many pop-ups all over the place

Scenario 7: Panel Layout & Skins

USER E:

- Resizing and hiding panels can be good
- As each one of them have diff patterns in mind
- Personally he doesn't prefer to change fonts and colors
- Good, the idea of server holding the settings customizing is useful
- dockable objects would help Service studio has the notion of standard IDE

USER F:

- With a laptop user doesn't need this feature
- Downloading latest version of SS is available in current system
- Moving and resizing panels is welcomed
- The login isn't necessary with a laptop
- Flexibility is welcomed especially for those not accustomed to CSS, etc.

USER G:

- good methods to customize
- would improve use (e.g., move most used widgets to display, etc.)
- probably improves development in some situations
- likes to customize other apps (when possible, and if it needs it)
- "as we have a laptop we don't need this feature" (i.e., they never switch computers)
- can download newest version of SS from server (???)
- not a high priority feature
- does like being able to move panels around
- useful to have control over programs, especially with non-technical developers

USER H:

- he wasn't too excited about this
- maybe for the panels and widgets
- skins and themes, not necessary, could be distractful
- i personally like to customize, some people could be distracted

- arranging the items are definitely useful

USER I:

- Fun, but not necessary
- Distracting to some people who cannot focus on their work
- Rearranging SS: could be useful - but its all about knowing where each thing is and how things are organized
- "I am used to the current arrangement, thats what matters"

Scenario 8: Keyboard Additions

USER E:

- Hi-tech and geeky
- Helpful for who love shortcuts
- Visual tool is good, he preferred drag and drop
- adding should be in context to canvas itself
- for Expression editor, keyboard shortcuts are good plan
- for adding screens, actions mouse is useful and easy

USER F:

- User prefers the mouse interaction
- For individuals who prefer keyboard shortcuts maybe
- User only works with keyboard when completely necessary
- Resizing, adding and moving things can be good cause everyone has a unique way of working
- Everyone has a different pattern as to where to retrieve
- He doesn't care about changing skins or colors
- once the proper research is done then what's provided should be enough
- the ones that is used more often can be at hand
- This fact is great ... but no value to colors and skins

USER G:

- can be useful
- not sure he would change to use it, but could be good for "new development"
- how can I define where _____ is put into the logic??
- "nice feature" if it can be used across entire system, like in EE (I think..)
- does not need keyboard shortcuts
- "I like the mouse"
- very used to mouse, doesn't see the need for keyboard

USER H:

- this was hard to explain
- can be useful
- he wasn't too excited
- will take longer
- definitely better to do it w/ keyboard cause it's faster, "typing is a waste of time"

USER I:

- This would take much longer than drag-dropping widgets
- Keyboard shortcuts would be good, but keyboard input not

Scenario 9: Interactive Snippets

USER E:

- Didn't understand the scenario
- "Run" publishes the eSpace they are working on currently
- Don't touch my code Additions can be made by the owner of the code once the changes are known
- When it is important to get the job right away, this is appreciated
- Other developer inserting code is taking away responsibilities - BAD PLAN

USER F:

- Great
- For high complexity code, not having to start from scratch to debug is good
- Selecting a small section of code
- She likes this feature very much: it's very useful
- This is already in the system (run already works this way)
- Publish and run can be done faster but this is not new

USER G:

- "good"
- sometimes need logic from other eSpaces
- "how can I test a small part of my action?"
- currently makes "dummy screens" to test individual actions
- now has single sign-on with session variables (???)
- "great"
- "I like this very much"
- likes not having to start whole application to debug
- gets the idea :)
- sometimes have to get through a lot of procedures to get to a specific point in order to test it (this feature avoids this)

USER H:

- hard to achieve because of eSpace dependency
- they use a workaround by creating dummy screens to test small codes.
- he talked about having sessions variable and losing it when they have single sign-off?
- a link that goes to the exact spot is useful
- some developers would want to see the whole eSpace

USER I:

- Use a link that goes to spot in the code
- Other developers need to see the whole eSpace - thats how SS works, not in small parts

Scenario 10: Automatic Pattern Recognition

USER E:

- "I Like it"
- Drag and drop patterns as widgets
- Need to understand the pattern

USER H:

- LOVE IT!
- This is like artificial intelligence
- it detects understands what you are doing
- auto-complete queries would be cool

USER I:

- studied AI so he likes it. ss understands what you're doing..
- auto-complete is good

Appendix H: Think-Aloud tasks

Task A1: You are starting your workday. Edit your "My To Do List" so that it contains work you want to do today

1. Add the following to your "My To Do List":
 - all the highest priority tasks from eSpace "Customers"
 - if there are any new change requests
 - all tasks from yesterday
2. Add a new task to "Customers" eSpace. Name the task as: "My task for today"
3. Open the first task from My ToDo List
4. Read the details of the first task and open the code

Task A2: You are starting your workday. Edit your "My To Do List" so that it contains work you want to do today

1. Add the following to your "My To Do List":
 - highest priority Change Requests for "Calculator Bootstrap" story
2. Add a new sub work item to "Visual Distinction of WIs by type" work item
3. Open the details of the first work item from My ToDo List
4. Look at the location of the work item in the Design Bench

Task A3: You are starting your workday. Edit your "My To Do List" so that it contains work you want to do today

1. Add the following to your "My To Do List":
 - highest priority Change Requests for "Calculator Bootstrap" story
2. Add a new sub work item to "Visual Distinction of WIs by type" work item
3. Claim the Work Item "Page Numbers are missing"
4. Open the details of the first work item from My ToDo List
5. Look at the location of the work item in the Design Bench

Task B1: Now you would like to check what you did on this code yesterday

1. Find the last steps you worked on in your History

Task B2: Now that you're memory is refreshed, you want to complete the tasks by editing the eSpace

1. Compare the "RegistrationFlow" webflow for "SupplierServices" eSpace to the "Login_Flow" webflow of the same eSpace
2. Add "SelectedURL" URL to the "RegistrationFlow" webflow you just created
3. Add items to the "Delete" action of the "SupplierServices" eSpace so that it contains the following Logic
4. Find the "ViewSuppliers" Permission in the "SupplierServices" eSpace

Task C1: You would like to find another task to do by browsing the eSpaces

1. Reveal all tasks for the "RegistrationFlow" webflow. This webflow is in eSpace "SupplierServices"
2. Hide all tasks

Task C2: Now that you have completed the tasks, you need to annotate your code.

1. Find the Note entitled "missing element" and delete it
2. Create a new Note named "Update table color" that contains the text "Find original hex color code, and update for the tables in this entity"
3. Attach your Note to the "VendorRegistry" entity of the "SupplierServices" eSpace

Task D1: You want to complete the tasks by editing the document

1. Change the "RegistrationFlow" webflow for "SupplierServices" eSpace to match the "Login_Flow" webflow of the same eSpace.
2. Check the errors in the "RegistrationFlow" webflow you just created
3. Add items to the "Delete" action of the "CollaborationService" eSpace so that it contains the logic found in the "CatchAllExceptions" action of the "SupplierServices" eSpace

Task D2: You realize that something a person is working on is something you needed help with.

1. Send an email to Jordon S. (another person that has worked on the Web Flow) to ask for their help

Task E1: Now that you have completed the tasks, you need to annotate your code

2. Find the Note entitled "missing element" and delete it
3. Create a new Note named "Update table color" that contains the text "Find original hex color code, and update for the tables in this entity"
4. Attach your Note to the "Document" entity of the "CollaborationService" eSpace

Task E2: You notice that someone else is working on this Web Flow

1. Find out what parts of the Web Flow the other developers are working on

Task F: You notice that someone else is working on this Business Logic

2. Find out what parts of the Business Logic the other developers are working on
3. Say which parts the other developers are working on

Task G: You need help to fix this business logic

1. Send an email to Jordon S. (another person that has worked on the Business Logic) to ask for help

Appendix I: Wireframe user test notes

USER A:

- really stuck on task B
- couldn't find the annotations button
- we need to find a proper name for annotations button, because "show/hide tasks" are not clear, it is not clear what's under that button
- didn't use the breadcrumbs for navigation, used the project explorer
- Task D: "I didn't know I have introduced a bug into the system".
- Information bar: the information there should be labeled, is it a bug, error, notification. to grab user's attention and clear message.
- Split view is really confusing and not intuitive at all. When Gem showed her how it works she said "Oh My God!"
- Because everything is drag and droppable, she just wanted to throw away the zip text box
- trash can for the design view items. so that, they can drag and drop elements there.
- Notes section, she tried to navigate with the arrows but we weren't supporting, we should
- Note pop-out icon wasn't intuitive
- we should change that icon
- she realized she should be clicking Collaborators drop down when Gem places the red dot on the interface.
- User's comments:
 - good that interface is drag and drop, it's easy when you get a swing of things
 - actual prototype where i can click around would be better
 - layout is nice
 - toolbar which is drag and droppable is great

USER B:

- Can I search for a note?
- I have no idea what note is.
- didn't understand that notes had a drop down, wasn't intuitive
- tried to add a note by clicking on an item in the flow and clicking on + on the notes panel
- collaborators wasn't intuitive enough.

USER C:

- She found the drop-down for notes easily
- "attach note to an action, i don't know how to do that". she tried adding the note same with the previous user (by clicking on an item in the flow and clicking on + on the notes panel)

- is there a way to minimize the post-it, like with a shortcut, space-bar, double-click on the title bar
- she was really stuck and couldn't find the collaborators, her feedback was -> it'd have made sense if it was down on the left side, because all the project related items are on that side. right side is for tools.

USER D:

- Task C:
 - no idea where to start
 - "nothing looks like history" (i.e., no affordance, can't see something that looks like other systems' history)
 - does not try dropdown at all
- Task D:
 - -doesn't notice breadcrumbs
 - -tried for "undo" initially
 - -once opens dropdown, no problems navigating through the steps/task
 - -compares the 2 flows by clicking back and forth between the tabs
 - ->holds one next to the other, because of tedious clicking back and forth on paper prototype
 - -finds logic confusing
 - -"would try" file->new task *or* project explorer->new task to add new action to the flow
 - -goes straight to design view because doesn't know where debug area is (i.e., skips step 2)
 - -no problems with step 5
- Task E:
 - -scrolls through notes until finds desired note
 - -clicks on trash can above it
 - -no problems with step 3
 - -drags note; hides note by clicking "button next to trash" ('wizard' couldn't keep up with his pace, he didn't have the "hide" button at this point)
 - ->clicks hide button once it was placed on interface
- Task F:
 - -clicks red dot, but not sure he'd notice it on his own (i.e., saw it because Gem put it there)
 - -"assumes" all parts in red are collaborator work
- Task G:
 - -tries the project explorer, but says it's "probably not right"
 - -sees collaborators right after mentioning project explorer; no problems afterwards
- Additional Feedback:
 - -move ambient dot to right of collaborators arrow, better connection with opening collaborators that way
 - -asks about the right tool bar hide icon
 - -should be able to click folded part of note to "turn page"

- -explain "these create these" for the right tools at beginning of test, helps reduce confusion
- -question: what does "info" button do on debug message??
- -move the debug error to a "dropdown" message at top of design area, ala Firefox; not likely to notice them down out of the way when focusing on design area...

Appendix J: Think Aloud test notes in Portugal

Task A. You are starting your workday. Edit your "My To Do List" so that it contains work you want to do today

USER 55C

- User saw History/To Do List drop-down very quickly (KL)

USER 44K

- nice to have checkboxes for selection (CS)
- looked for a select all button (CS)
- he was specifically looking for work Task to open a task (CS)
- archive option for the tasks that are closed (CS)
- Hour logging from the workbench would be good because sometimes they work on multiple tasks at the same time and user found it difficult (CS)
- to remember how much they spent on each task. (CS)
- completed the task (CS)

USER 99V

- User was looking for an expected to find bugs in "Tasks" and not "Backlog", but easily found them in "Backlog" (KL)
- Task author: is that who created it or who assigned it to a developer? User expected it to be the creator (KL)
- User thought he could see tasks of the eSpace that was open, not all tasks (KL)
- Sort and filter icons of each column of the table are not clear. What filters are currently on? What are those 3 dots? If it is a custom/other option it should be at the top of the options menu (KL)
- Why am i able to add a work item? Only managers can do that, i do not have that privilege as a developer (KL)
- When creating a new task i should not be able to leave the priority empty (KL)
- Want to open code by clicking on the eSpace of a work item, from the additional information window (KL)
- User did not like wording of "Link to code" as the action is to "Open an eSpace" (KL)
- "Location" in work item info should have full breadcrumb of location (KL)

USER 93G

- The fact the My To Do List is empty looks like a problem (KL)
- Definition of work item reminds him of "pending" and a todo reminds him of "current" (KL)
- I want to see the expected effort of work items so i can plan my day (KL)
- Realized that all items were assigned to him (KL)
- Issues should already be in the todo list (KL)
- Dragged work item on todo list tab (KL)

- New items should have switch status to "open" only when developer actually starts working on it (KL)
- No reason to have custom work items in my task management (KL)
- To make a new item: only managers can do this. Developers can split existing work items (breakdown existing work items) but not make new. Design idea to split into multiple rows and have it autocomplete the the % completion column (KL)
- Added new item details in bottom pane with additional info (KL)
- Want to see unassigned items and be able to claim them from Service Studio. Have them listed in the same table with all work items (KL)
- Rename To Do List tab something like "immediate, current, progress" (KL)
- Great to link work item with location in code in Design Bench. Would it open the visual representation like a screen or a batch job like a timer (KL)
- Add location breadcrumb on the label of the link to code (KL)

USER 11I

- User suggested to have Custom option for certain fields for filtering (CS)
- %Completed field is not important (CS)
- For hour logging the fields should be: Actual, Estimated and Remaining Time (CS)
- User want to functionality of adding work items from My Timesheet in case the user has done a task without adding the work item into My To Do List (CS)
- Difficulty understanding Work Items come from AMT (KL)
- Which filters/sort are on? (KL)
- Icons for filter/sort are not easy to understand at first glance (KL)
- Use bottom "information" pane to enter new item details (KL)
- No feedback that item is "saved" or "canceled". User looking for confirmation (KL)
- Clicked on "DesignBench" icon and expected to be taken to the point in the code where the work item is for (KL)
- Wants to filter one of the columns by custom word (KL)
- Timesheet is not useful, developers use it only at the start and end of task (KL)
- "I wanna see my work items, not everyone's together" like on AMT (KL)

USER 37E

- Quickly saw the Work Items tab and completed the task (KL)
- Selected all tasks one-by-one using the checkboxes (KL)

USER 60L

- Likes the workbench idea: user was shown but not tested on this task (KL)

USER 71X

- User begins by checking what's available (CS)
- User realizes that the buttons are disabled (CS)
- User kept looking for a search option (CS)
- User realizes he can drag and drop to the My TODO list tab (CS)
- User takes a long time to find the filter and sort buttons for the list (CS)
- Once user finds the sort and filter buttons he understands what they mean (CS)

- User doesn't realize that he's found the highest priority bug because the word used is "high" (CS)
- User believes that a/z for sort is misleading when the column isn't alphabetical (CS)
- User would like to have a main check to select all (CS)
- User would like a main filter option to clear all filters rather than having to do it individually (CS)
- User would like all the options available in buttons to also be available in right-click (CS)
- User would like the Type, Priority & Status to be filled automatically when splitting a task (CS)
- User reads all options first before trying to filter for the option he's looking for (CS)
- User checks for a name filter when trying to find a specific task by name (CS)
- User thinks it's important to see items assigned to his colleagues (CS)
- User would like to assign other developers work to himself if that developer is unavailable (CS)
- User indicated that teams are small so that list will not be too large (CS)
- User did not originally realize that these were his tasks (CS)
- Once user realized that these tasks are his he is able to understand the use of the show unassigned check box (CS)
- User expects that clicking on the design bench button will take him to the code related to the task selected (CS)
- User would like to see the work items from other developers as well as the unassigned items - because for example when his colleague is sick he can take claim his task. (CS)

Task B. Now you would like to check what you did on this code yesterday (history)

USER 44K

- user successfully completed the task (CS)

USER 23F

- task completed within 1-2mins (AM)
- "must be some history somewhere" (AM)
- looks at notes, then finds it (AM)
- To Do looks like steps, not a list (KL)

USER 15J

- User successfully completed the task (CS)

USER 99V

- Quickly found drop down and completed task (KL)

USER 37E

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- User claims that once he saw the "History/To Do List" drop down it was easy to complete the task (KL)

Task D. You want to complete the tasks by editing the document (deal with code)

USER 55C

- User copies code and navigates with breadcrumb (KL)
- Really likes visual breadcrumb (KL)
- Examines debug area (KL)
- Likes dual pane mode but to use for comparing 2 webflows, not actions (KL)
- No direct access to all entities. Our design is logical with top to bottom but there is an extra step (KL)
- New design is good for knowing "where i am" (KL)

USER 44K

- user thinks that this a copy paste between the actions (CS)
- user was confused about the task because simple copy paste between the web flows won't work, he had to change the links as well (CS)
- user completed the task (CS)

USER 15J

- User didn't notice the toolbar (CS)
- User successfully completed the task (CS)

USER 99V

- User was not sure if the tools referred to both panels or not (KL)
- User placed the flow on the eSpace level and redirected the arrows from the old element (KL)
- User wants to have an alphabetical list of all actions. Also suggested to group actions in folders (KL)
- "This is neat but i cannot quickly find what i am looking for" (KL)
- User did not see the need for orange/blue color coding as he easily figured out the parent-child relationship of the linked panes (KL)

USER 11I

- User looked for a back button to go back like in the browser (CS)
- User needed to compare the web flows side by side in order to understand what and why he's changing (CS)
- User suggested for eSpace diagram: click on the arrows between the eSpaces to understand the relation and dependency between them (CS)
- Actions & Database tables, Entities and Web locks are usually shared between the actions (CS)
- User suggested also to see different versions of the eSpaces side by side to compare (CS)
- User suggested the functionality of dragging and dropping entities to screens (CS)

- User thought that code toolbar was code properties (KL)
- No use of breadcrumb thumbnails (KL)
- Expected to see details of arrow between eSpaces, like list of actions, database tables and web logs (KL)
- "I wanna see entirety attributes and screens at the same time (KL)
- Code comparison is done among 2 eSpaces or 2 versions of the same eSpace (KL)

USER 37E

- If something is highlighted it should be on the right (CS)
- seeing all the eSpaces good, don't need to go to Service Center (CS)
- with all the eSpace references it would be a mess (CS)
- there could be a toggle or check box, to hide/show the dependencies OR select multiple of them to see the connections (CS)
- eSpace name could be in the breadcrumb or in the status bar, doesn't need to be obvious (CS)
- click on the action to see the connections (CS)
- click on a screen to see all the actions and entities (CS)

USER 60L

- Icons and design look like it is for kids (KL)
- Entities icon looks like washing machine (KL)
- While panes were in dual mode and user clicked on an eSpace on the right pane, user did not understand that the panes drilled down and that the eSpaces moved to the left pane. User was unaware of what she had just done (KL)
- Notices breadcrumbs and vocalizes "where she is in the code" (KL)
- User does not see the need for two panes. Why see the parent view of the diagram, for example why see the flows and actions when editing code of an action? (KL)
- Unlinked split view: helpful to work simultaneously on to actions (KL)

USER 71X

- User couldn't find the webflows (CS)
- "Can we open both flows at the same time?" (CS)
- user tries drag and drop from the tree (CS)
- user can't accomplish the last step (CS)
- user haven't noticed the horizontal scroll bar (CS)

Task E. Now that you have completed the tasks, you need to annotate your code

USER 55C

- Would like enumeration of notes (KL)

USER 44K

- User didn't understand the work "annotate", is like "take notes"? (CS)
- User tried right-clicking which doesn't work (CS)

- Two-dashes on the "Remove Notes" icon was confusing (CS)
- Had no problems understanding the breadcrumbs (CS)
- Understood the high-level diagram (CS)
- Completed the task (CS)

USER 23F

- Task completed in about 2-3mins (AM)
- Saw notes right away, found the required note immediately (AM)
- Looks for right-click for deletion (AM)
- Did not try delete icon right away, because it has two minus signs on it (confused) (AM)
- Hover text looks good (KL)

USER 15J

- User looked for find, search for the note (CS)
- User said: "Notes should be inside the flow" (CS)
- like the drag and drop (CS)
- Document Entity was hard to find (CS)
- User successfully completed the task (CS)

USER 99V

- Annotate in design or development screen comes at the end of a task (KL)
- First impression of notes was that they exist somewhere in the code (KL)
- There is no feedback that note has been saved (KL)
- Show how/if note is associated with the code you have open (KL)

USER 60L

- There is no feedback that note was deleted (KL)
- User wants to see the author and priority status of a note (KL)
- User would like to see other people's notes and view them by eSpace (KL)

USER 71X

- User tried right-click to attach the note because user thinks that drag and drop is sometimes hard (CS)

Task F. You notice that someone else is working on this Business Logic - find out where

USER 55C

- Look for comments on canvas to find collaborators (KL)
- Compare current and server version for that info (KL)

USER 44K

- user couldn't understand if History means his history or History of the Workspace (CS)
- user was looking for highlights on the code (CS)

- user couldn't realize the green dot and he was given a hint (CS)
- user said that: bottom part looks like a "status bar" not actions stuff to click on. (CS)

USER 23F

- task completed in approx. 6mins (AM)
- "how did I notice someone else working?" (AM)
- clicks on elements, hovers over tools looking for it (AM)
- looks in left dropdown panel (AM)
- tries high-level (window) menus (AM)
- finally sees "collaborators" (AM)
- tries clicking all the names (AM)
- clicks green dot (AM)
- imagines picking developer and seeing the highlights that way (AM)
- "I assume Jordan is working on send online and offline" (AM)
 - User had a hard time finding the green button (CS)

USER - 99V

- Saw status icon right away but did not know where other developer was working on. User said he would like to see who is working on what both on eSpace and action level (KL)
- User did not know if this status was "informational" or a "warning". If it is a warning (as he sees fit for the usage of the fact that other people are working in the same area) it should not be green, maybe yellow? (KL)
- User tried to right-click on icon (KL)
- User found where other developers are working on, but now did not know who it is that is working there. He wants to be able to look up the where someone else is working but also look up who is working on something at the same time (KL)

USER 11I

- haven't done this task with this user (CS)

USER 60L

- User would like to see who is working on what through the tree and visual elements, not a button or other menu (KL)
- Useful to have a status icon of "other working". It is useful to see who worked on what eSpace but no more detailed elements are required (KL)

USER 71X

- user says he usually looks at the tree to see if something is checked out or in (CS)
- user liked the dot (CS)

Task G. You need help to fix this business logic - contact Jordan S

USER 55C

- Cool to be able to IM and email your collaborators (KL)
- Want to right-click on logic and message developer (KL)
- Took some time to find button (KL)

USER 44K

- user successfully completed the task (CS)
- User said: it was in a weird place (CS)
- User said the warnings could be like MSN messenger status popups: "Someone just published this eSpace" (CS)
- User said the people in the drop down could be ordered by the amount of changes s/he made. (CS)

USER 23F

- task completed in roughly 1-2mins (AM)
- clicks collaborators (AM)
- understands now that these are not tasks, but rather how to contact that developer (see Task F) (AM)
- "it was not obvious" (AM)

USER 15J

- User successfully completed the task (CS)

USER 71X

- User said, he'd prefer to open Outlook or Skype to talk with him even if it's in the platform (CS)
- It's faster if collaborators are here (CS)
- user liked a shortcut key. Like hit ctrl twice (CS)

Post-TA Interview Questions:

Question 1. Is there anything about the prototype that you particularly like or dislike?

USER 55C

- Logo bar is empty, you should put something there (KL)
- Good to have multiple tabs open with different action (KL)
- Interaction with context menu of action, comments, canvas, authors - send info (KL)
- Good to have History and To Do List in Design Bench (KL)
- Contextual tool menu is good, so to save space by hiding some tools. Have the common ones not the recently used ones (KL)
- Likes breadcrumb navigation (KL)
- Like to move panels around (KL)
- Used to see properties on the right side (KL)
- Would like automatic evaluation of expressions and queries (KL)
- Would like autocompletion of action names (KL)

USER 44K

- Notes part was a little bit weird (CS)
- Combo box was a little weird seeing to do list and history (CS)
- liked navigating from one space to the other. (CS)

USER 23F

- How can i directly go somewhere? (KL)
- Really good eSpace diagram (KL)
- Expected to see the tree somewhere, did not want to believe its gone (KL)
- Suggest to have tabs with different types of elements on eSpace diagrams, not clouds of similar elements (KL)
- Important to understand dependencies of elements and who is working on what. But doing this visually is messy. Maybe it can be filtered (KL)
- Diagram is not appropriate for all activities: production, development and QA (KL)

USER 99V

- Neutral view, no love or hate (KL)
- Knowing who else is online is useful. Knowing where someone else is working is useul too. But i want to know who is working where! (KL)
- Differen direction of Service Studio: automation and accelerator actions like dragging an entity onto a query (KL)
- Diagrams: "I want a list representation" (KL)

USER 93G

- Great integrating Service Studio and other OS tools. Managers will use AMT and developers use Service Studio (KL)
- Bring ECT in additional info panel of a work item (KL)
- A project starts with sizing which bootstraps AMT (KL)
- Need to use spreadsheet which logs hours and updates expected completion numbers (KL)

USER 37E

- User likes the integration as he does not have to go to Service Center to upload/download and change eSpaces (KL)
- About project and diagrams: User wants to see information about an item: its components and dependencies, and be able to toggle between hiding and seeing all the dependencies. Actions: see connections of a single action, eSpaces: show all dependencies.
- A current problem for this user is to where a code element is used. Currently he has to delete it for the platform to produce errors for the user to find out where these are (KL)
- Project diagrams: be able to filter the diagrams (KL)

USER 60L

- User would like to be able to search through notes too, not just code (KL)

- This user really likes the tree (KL)
- User suggests users will need wide screen monitors for the new platform design, need a lot of screen space (KL)
- User suggests to be able to hide panels (KL)

Question 2. How do you feel about managing your tasks in Service Studio?

USER 55C

- Are the items in the todo list assigned to me? (KL)
- Remove task, do not delete or update (KL)
- Mental model that todo list is Design Bench and Work Bench is the same is successful (KL)
- Good to have To Do List in Design Bench but would some interactivity like use estimates, edit the list, take notes (KL)
- How about integrating logging from Service Studio to AMT (KL)

USER 44K

- If it's integrated with AMT great (CS)
- liked the organization and sorting (CS)
- liked a lot My To Do List (CS)
- Would be good if hour logging is integrated too. User suggested a way logging the time, when you double click on a task to open it, the timer starts for that tasks and it automatically logs the time user spends (CS)
- Archiving the tasks when they're finished would be good (CS)

USER 23F

- Nice to integrate. How about to also log hours? Completion of a task comes when expected time equals the spent time (KL)
- Backlog is the project requirements with work items such as issues, requests, change requests, defects (KL)
- I want to take notes about work items (KL)

USER 99V

- AMT integration is cool, it would be nice to also "close" a task from Service Studio. What about other tools like ECT? (KL)
- Mapping work items with the code is good (KL)

USER 93G

- User looked at all the fields for the work item on the table and in details part, user found the field enough for the developer use, user only suggested to add "Story Description" field. (CS)

USER 37E

- Great to manage tasks in Service Studio (KL)
- The timesheet functionality has to also be integrated (KL)

Question 3. How (else) could you imagine using the work History?

USER 55C

- Good to have History in Service Studio (KL)
- What if i could see the History of other developers? I could avoid comparing eSpace versions with ones on the server (KL)

USER 44K

- Ctrl-Z: to go back in time (CS)
- finding bugs, what have I done yesterday (CS)
- Versioning, merge histories (CS)
- When they're fixing/editing somebody else's code, they write notes to the code with initials. Like a mental reminder that who changed the code and why (CS)
- Automatic tracking of history is good but they have a need to comment on it (CS)

USER 23F

- Use to undo after testing to go back to previous versions (KL)
- Collect statistics, patterns to tune out how to estimate work items (KL)

USER 99V

- Use history as undo (KL)

USER 60L

- User wants to use history to confirm if she took the right actions and correctly completed her tasks (KL)

Question 4. What, if anything, would you like Service Studio to open when you start it up at the beginning of the day?

USER 55C

- A welcome screen like in Outlook (KL)
- Like to see high priority work items from AMT (KL)
- Who is online (KL)

USER 44K

- Recent eSpaces that user has lastly worked on + My To Do List (CS)
- when user doesn't know what to do for that day, user opens the AMT to get a tasks (CS)
- but usually when user opens SS, user opens an eSpace (CS)

USER 23F

- See the last eSpace i was working on on the right pane, and the route on the left(KL)

USER 99V

- Would like to have a welcome screen with today's tasks (KL)

USER 37E

- See the view of all eSpaces (KL)

Question 5. What are your thoughts on the thumbnail view of the design context, when shrinking the context to maximize development area?

USER 55C

- See the view of all eSpaces (KL)
- Thumbnail is redundant if you have breadcrumb thumbnails (KL)
- Is the thumbnail interactive like a Photoshop map? (KL)
- You should minimize the thumbnail cause its not useful (KL)
- Be able to zoom in/out at all levels but have dual panels only in the maximized level (KL)

Appendix K: Class critique notes

June 11

Feedback on the scenarios:

Scenario 1. Service Studio mobile

- why send a text message, just access the service studio.
- fix it write there, not while out to lunch while looking at the app.
- keyboard is hard to use if it's not qwerty, pen and paper is better, i won't text myself.
- what is the culture of the company, work at the lunch break?

Scenario 2. integrated notifications

- using inbox as a to do list
- pleasantness to the end developer, --bugzilla, cc your bug number
- good, connecting to the code
- finding what's broken is the hard part, then you'll fix it
- full size, byte size version and inbox version

Scenario 3. work history and bookmarks

- when i need to do next, can i add to the list? record next steps..
- traditional, where i was in the diagram and why i did it. some visual that i can see what i did. compare the base version and the last version josh.
- bookmarking has to be automatic.
- poeple actually take notes, which everybody hates to do.
- code inspections to give it to somebody.
- bug tracking to look at what were the last things i did. look at last couple of changes i did.

Scenario 4. IM

- it's already been solved what bother
- share desktop or share what you're working at, the exact image
- remote desktop is in their system already
- it should launch skype, when he's offline but launch my email client
- concerned about logging IM conversation, people will talk more than work, less likely to use chat
- existing systems are doing a great job
- screen sharing and code highlighting is good, not IM

Scenario 5. high level system diagram

- is it going to be readable and useful
- is having the notes scalable? if diagrams get complex

Scenario 6. action summary

- input & output enough information?

Scenario 7. panel layouts & skins

- have laptops at work but at home they have big monitors
- maybe keeping the font size could be good
- getting rid of the panels have a layout with the LightRoom

Scenario 8. quicksilver interaction

- is this random access or sequentially, repeatedly, long period or short period of time.
- normal traditional shortcut because you're already in the context.
- mouse based gesture of adding things for the power user.

Scenario 9. interactive snippets

- is tim watching what karen is doing?

Scenario 10. pattern recognition

- better not be a popup
- developers are control freaks, have a patterns somewhere, have them use when they want to.
- ajax kind of search, which template
- see a preview of what the template is
- don't shove them into their faces.

June 2nd

Crit on the design opportunities:

PROCESS

- have time between validation session to share insights with the group.
- could have audio recording, OR
- 1 person reading sb, 2 notetakers.

- sketching as flows not as wireframes, from the flows create the wireframes

DESIGN OPP

- organization and cohesiveness; similar
- organize the same info
- testing
- bug fixing

organize the list, re-arrange them

- where in the process does these opp happen? development->publishing
- some developers do which you can't change, like naming conventions
- you have an influence how developers code stuff, the structure, the most appropriate stuff. enforce coding style or leave it flexible?

- are the needs different for the developers who use visual coding? it seems overlapping with text based coding
- if users want to see the code maybe you can't eliminate it, it could be experience goal to make them not see the code and be comfortable
- regular developers which have the pride on their coding

July 7th

- where in the process does these opp happen? development->publishing
- make the colors consistent with the logo and the menu.
- to close a task from the design bench when i'm done with it.
- when you hover over or right click on the object the control panel could expand and grow smaller.
- right click and see all the tools.
- toggle to see the tools. hit spacebar to see the tools. or hide and show everything.
- have an icon in the control panel so that it's a confirmation that you've chosen the right thing and looking at the right items properties.
- try to assign like a toggle to see the properties on the code for the selected item?
- office 07 menus are semi transparent so you'll see the rest of the menu when you expand it.
- most important info should be o top left
- flow of reading should be left to right
- swap the left and right panel?
- display the number of collaborators like on facebook. or closer to the label. feel comfortable without the color, without the dot, only # of people. it's right in your face. -

Appendix L: Models (See CD)