

Product Coverage Outline Examples

Examples of Product Coverage Outlines

(according to the Rapid Software Testing methodology)

PCO Examples - 1

What is a PCO?

A product coverage outline is a detailed, working reference used to answer questions about coverage and its scope, such as:

- What could we test?
- What should we test?
- What are we testing?
- What did we test?
- What did we NOT test?
- What have we not tested yet?

It may be in plain text or in mindmap form. It may even be a diagram, or a set of Post-Its.

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Product Coverage Outline Examples

What is on a PCO?

- The short answer is “**product factors that could matter**”.
- A product factor is **something about the product that you might wish to cover in some test; something that you could examine during a test; or something that could influence the outcome of a test.**
- Put these factors on the PCO especially if there is some chance you would otherwise forget or neglect them.
- Factors include things users see, and things they don't see;
 - what the product is and what it's made of; its components;
 - what the product does;
 - the data it processes;
 - the interfaces that it provides or uses;
 - platform elements; and even
 - kinds of things users might do with the product; and
 - relationships between the product and time.
 - See the Product Factors section of the Heuristic Test Strategy Model

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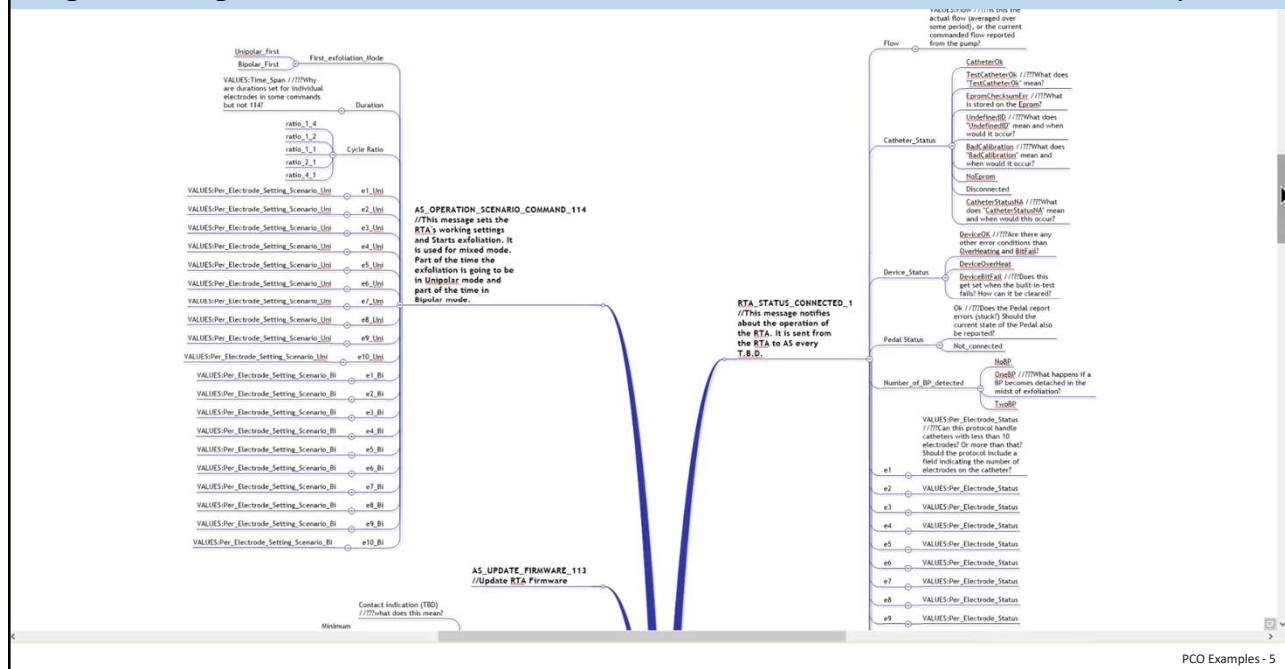
What is not on a PCO?

- **Do not include test procedures, test ideas, or test activities.**
 - Think in terms of a cookbook with recipes for preparing particular dishes. Each recipe contains a list of ingredients. A PCO is like the *list of ingredients* that will get used in preparing the dish. A PCO is not the recipe.
- **Do not include quality criteria or risks.**
 - Because the same risk can apply to many different factors in a PCO, having risks in a separate outline give more flexibility.
- **Do not include logistical notes about the test project.**
 - A PCO is not a test plan. That's different. A PCO is a working reference for considering *what* to test; **factors that we could examine in a test, or that could influence the outcome of a test.**

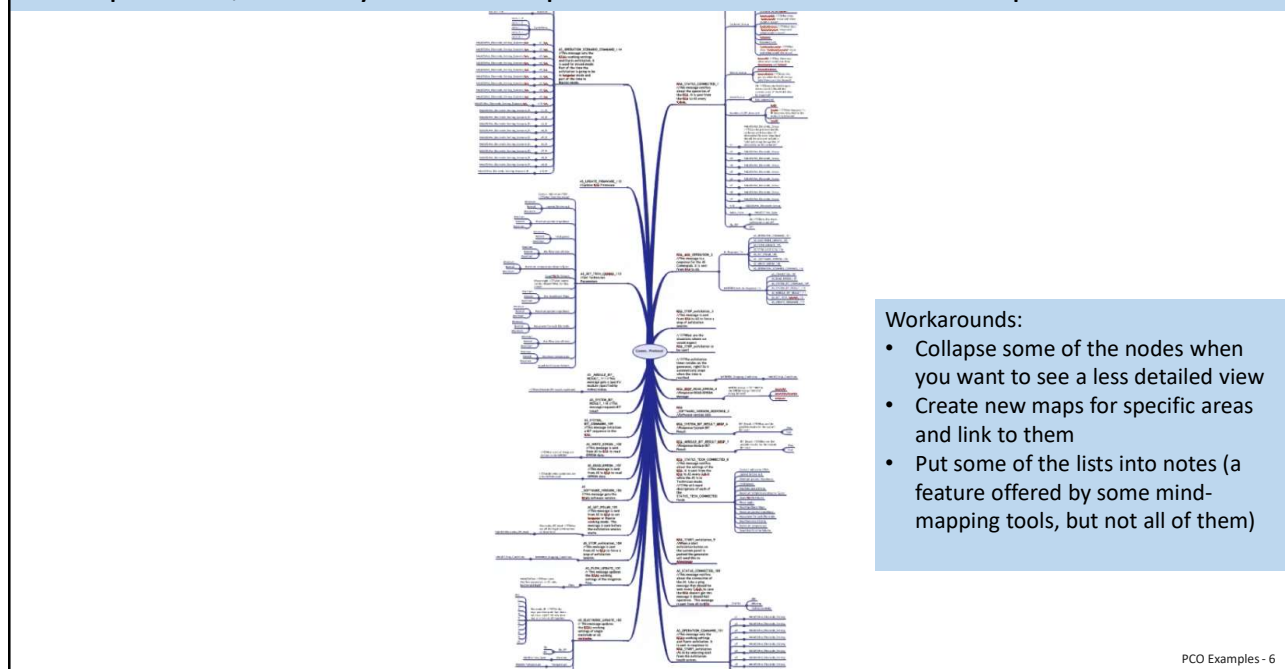
PCO Examples - 4

Product Coverage Outline Examples

Large Coverage Outline for Communications Protocol, Derived from Formal Spec



It's impressive, but maybe too complex to be usable as a mind map...



Workarounds:

- Collapse some of the nodes when you want to see a less detailed view
- Create new maps for specific areas and link to them
- Put some of the lists into notes (a feature offered by some mind-mapping tools, but not all of them)

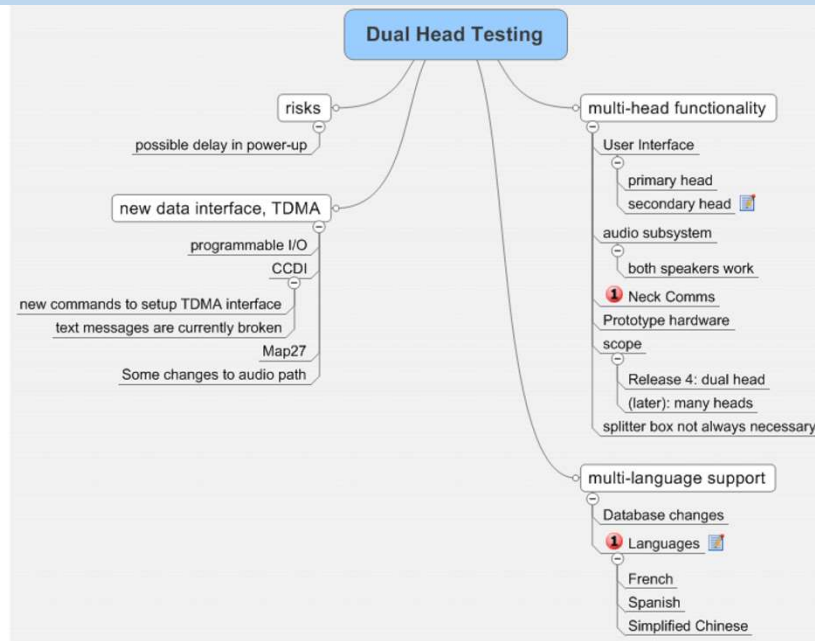
Product Coverage Outline Examples

This is the same material flattened out and put into a more usable spreadsheet...

273	272 AS_OPERATION_COMMAND_101	e3	Temperature	high	minimum	
274	273 AS_OPERATION_COMMAND_101	e3	Temperature	maximum	low	
275	274 AS_OPERATION_COMMAND_101	e3	Power	minimum	high	
276	275 AS_OPERATION_COMMAND_101	e3	Power	low	maximum	
277	276 AS_OPERATION_COMMAND_101	e3	Power	high	On	
278	277 AS_OPERATION_COMMAND_101	e3	Power	maximum	Off	
279	278 AS_OPERATION_COMMAND_101	e4	On/Off	On_	Zero	
280	279 AS_OPERATION_COMMAND_101	e4	On/Off	Off	Very brief	
281	280 AS_OPERATION_COMMAND_101	e4	Duration	Zero	Moderate	
282	281 AS_OPERATION_COMMAND_101	e4	Duration	Very_brief	Long	
283	282 AS_OPERATION_COMMAND_101	e4	Duration	Moderate	Maximum	
284	283 AS_OPERATION_COMMAND_101	e4	Duration	Long	minimum	
285	284 AS_OPERATION_COMMAND_101	e4	Duration	Maximum	low	
286	285 AS_OPERATION_COMMAND_101	e4	Temperature	minimum	high	
287	286 AS_OPERATION_COMMAND_101	e4	Temperature	low	maximum	
288	287 AS_OPERATION_COMMAND_101	e4	Temperature	high	minimum	
289	288 AS_OPERATION_COMMAND_101	e4	Temperature	maximum	low	
290	289 AS_OPERATION_COMMAND_101	e4	Power	minimum	high	
291	290 AS_OPERATION_COMMAND_101	e4	Power	low	maximum	
292	291 AS_OPERATION_COMMAND_101	e4	Power	high	On	
293	292 AS_OPERATION_COMMAND_101	e4	Power	maximum	Off	
294	293 AS_OPERATION_COMMAND_101	e5	On/Off	On_	Zero	
295	294 AS_OPERATION_COMMAND_101	e5	On/Off	Off	Very brief	
296	295 AS_OPERATION_COMMAND_101	e5	Duration	Zero	Moderate	
297	296 AS_OPERATION_COMMAND_101	e5	Duration	Very_brief	Long	
298	297 AS_OPERATION_COMMAND_101	e5	Duration	Moderate	Maximum	
299	298 AS_OPERATION_COMMAND_101	e5	Duration	Long	minimum	
300	299 AS_OPERATION_COMMAND_101	e5	Duration	Maximum	low	
301	300 AS_OPERATION_COMMAND_101	e5	Temperature	minimum	high	
302	301 AS_OPERATION_COMMAND_101	e5	Temperature	low	maximum	
303	302 AS_OPERATION_COMMAND_101	e5	Temperature	high	minimum	
304	303 AS_OPERATION_COMMAND_101	e5	Temperature	maximum	low	
305	304 AS_OPERATION_COMMAND_101	e5	Power	minimum	high	
306	305 AS_OPERATION_COMMAND_101	e5	Power	low	maximum	
307	306 AS_OPERATION_COMMAND_101	e5	Power	high	On	
308	307 AS_OPERATION_COMMAND_101	e5	Power	maximum	Off	
309	308 AS_OPERATION_COMMAND_101	e6	On/Off	On_	Zero	
310	309 AS_OPERATION_COMMAND_101	e6	On/Off	Off	Very brief	
311	310 AS_OPERATION_COMMAND_101	e6	Duration	Zero	Moderate	

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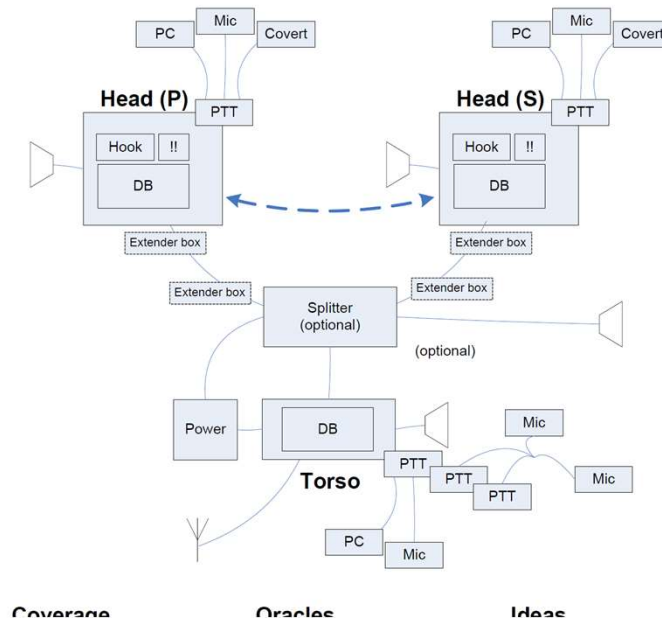
These are notes from a briefing about testing a two-headed radio...



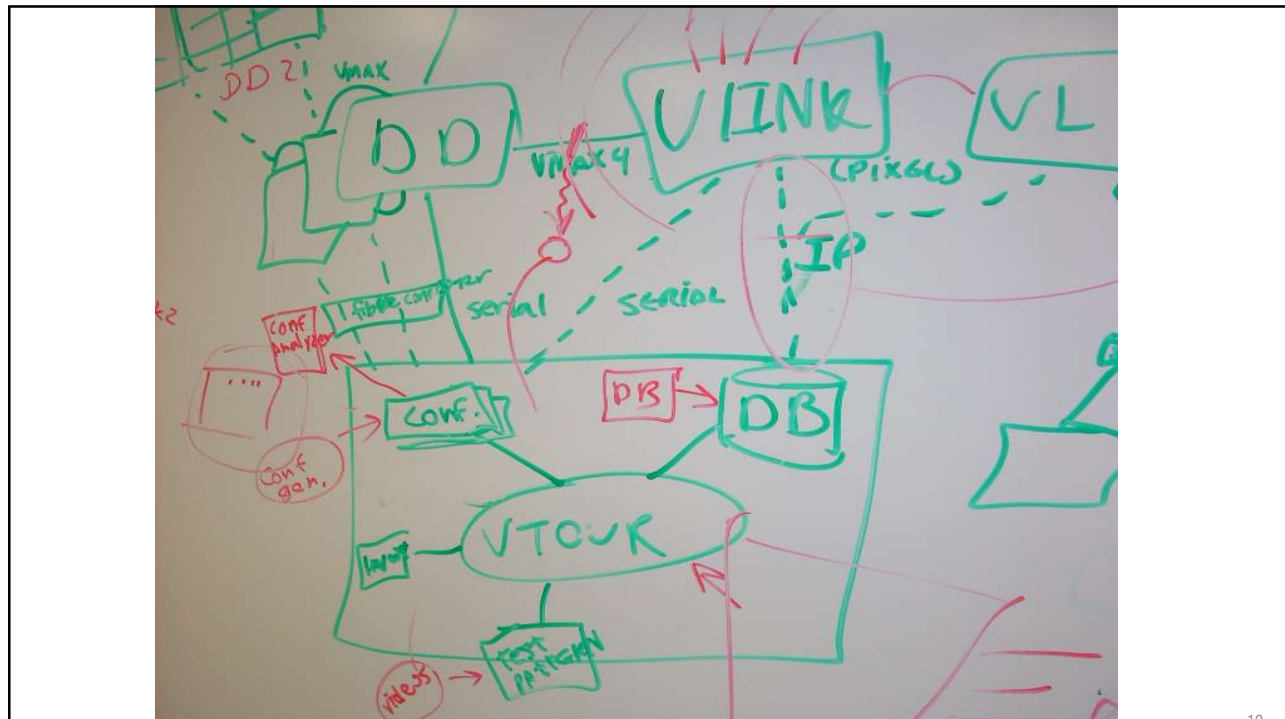
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Product Coverage Outline Examples

After a couple hours of meetings, we made a diagram of major testable elements...



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Product Coverage Outline Examples

Then after testing for a few hours, we used the HTSM model to brainstorm more...

```
Software Feature Analysis
??? upgrade path for firmware? How do you upgrade it?
??? upgrading in situ? (on vehicle)
??? what if different heads have different firmware/hardware versions?

Interfaces
??? Audio feedback issues with multi-head?

Hardware
Splitter box
??? reduce audio quality?
Keypad microphone serial protocol
GPIO protocol
Remote kit variants
Different Band Torsos (sanity check)
  UHF
  VHF
Microphones
  Keypad
  Standard
  Dynamic
Control head variants
Neck Comms
  Cable length
  Timing issues
  Connections
  Brown out issues
  RF interference on cables

Non-executable files
Collateral
Installation guide for dual heads
```

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Notice that product factors not easy to diagram are easily added to text outline...

```
Lockout between heads
  Interruption of some kind during lockout
    (e.g. disconnection event, emergency mode)

System Interface
Serial communication via secondary head by mistake

Application
Autodetect of microphones
Software functions enabled/disabled
Software function enabling
??? Thermal shutdown? Thermal sensors?
Security lock
Dual head menu
Hook switch listen-in mute
Listen in

Scanning mode vs. non-scanning mode

Calculation
Time-related
Audio lag from torso to the different heads
Transmit inhibit
Auto-power-down
Transformations
Database changes

Startup/Shutdown
```

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Product Coverage Outline Examples

This is a very simple example of a PCO that only includes structural factors...

Component Breakdown

This is a breakdown of OWL components to a reasonable granularity:

1. **TEventHandler**
2. **TStreamable**
3. **TModule**
 - 3.1. TApplication
 - 3.2. TLibManager
 - 3.3. TResId
 - 3.4. TLibId
4. **TDocManager**
5. **TDocTemplate**
6. **TDocument**
 - 6.1. TFileDocument
 - 6.2. TDocFileDocument
7. **TView (TEditSearch and TListBox parentage)**
8. **TWindow**
 - 8.1. TDialog
 - 8.1.1. TInputDialog
 - 8.1.2. TPrinterDialog
 - 8.1.3. TCommonDialog
 - 8.2. TControl
 - 8.2.1. TSScrollBarData
 - 8.2.2. TScrollBar
 - 8.2.3. TGauge
 - 8.2.4. TGroupBox
 - 8.2.5. TStatic

PCO Examples - 12

This is a very high level PCO (a list of programs) used for test estimation...

Tool	Popularity	Rate of Change	Complexity	Existing automation	Required Testing*
TD32	High	High	High	None	Extensive
TDX	High	High	High	Minimal	Extensive
TDW	High	High	High	Moderate	Extensive
TDV	High	High	High	Moderate	Extensive
TD286	High	Low	High	Moderate	Moderate
TD386	High	Low	High	Moderate	Moderate
TD	High	Low	High	Moderate	Moderate
GUIDO	High	High	High	Minimal	Extensive
TPROF	Moderate	Moderate	High	None	Moderate
TPROFW	Moderate	Moderate	High	None	Moderate
TF386 (TFV)	Low	Low	High	Minimal	Moderate
TFREMOTE	Low	Low	Moderate	None	Minimal
TDREMOTE	Moderate	Low	Moderate	None	Minimal
WREMOTE	Low	Low	Moderate	None	Minimal
WRSETUP	Low	Low	Low	None	None
TDRF	Moderate	Low	Low	None	None
TDUMP32	Moderate	Moderate	Low	None	Minimal
TDUMP	Moderate	Low	Low	None	None
TDINST	Moderate	Moderate	Low	Minimal	Minimal
TDINST32	Moderate	High	Low	None	Minimal
TDSTRIP	???	Moderate	Low	None	Minimal
TDMEM	???	Low	Low	Minimal	None
TDDEV	???	Low	Low	Minimal	None

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Product Coverage Outline Examples

Another simple example, with minimal formatting, focusing on UI factors...

DiskMapper Test Notes

(After 30 Minutes)

FUNCTIONS

- Map Drive
 - ???when is drive mapped?
- Drive Selection
- Print Map
- File Operations
 - delete
 - unzip/zip
 - print
 - run
 - information
- Invoke Explorer
- Exit/Startup
- Mapping Method
 - Color Scheme
 - level colors
 - Color by
 - levels
 - age
 - extension
 - archive
 - protected
 - never used
- Goto Root
- Zoom in/out
- Show one/many levels

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Another one, for a video game, that focuses on GUI factors...

Putt Putt Saves the Zoo

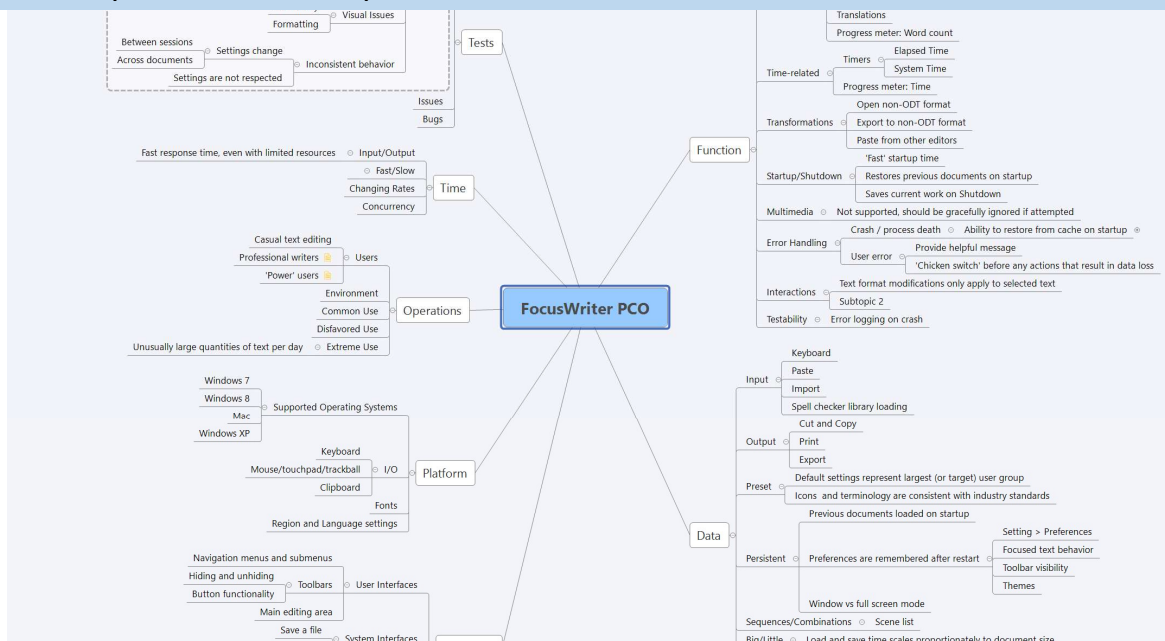
(Product coverage outline after 1 hour)

- Plot Line
 - pre-rescue parental conversations
 - post-rescue parental conversations
 - changing baby conversations & sound bites
 - Pre-Rescue Sequences
 - Post-Rescue Sequences
- Conversations
- Characters
 - ShopKeeper
 - Food Cart
 - Gift Cart
 - Outback Al
 - Animal Parents
 - Animal Babies
 - Putt-Putt
- Props
 - List of Animals
 - Map of Zoo
 - Zoo Chow
 - Dog
 - Rope
 - Shovel
 - Hot Cocoa
 - Toolbox
 - Log
 - Raft
 - Cheese puffs
 - Camera
- Screens
 - Screen states
 - General
 - Special

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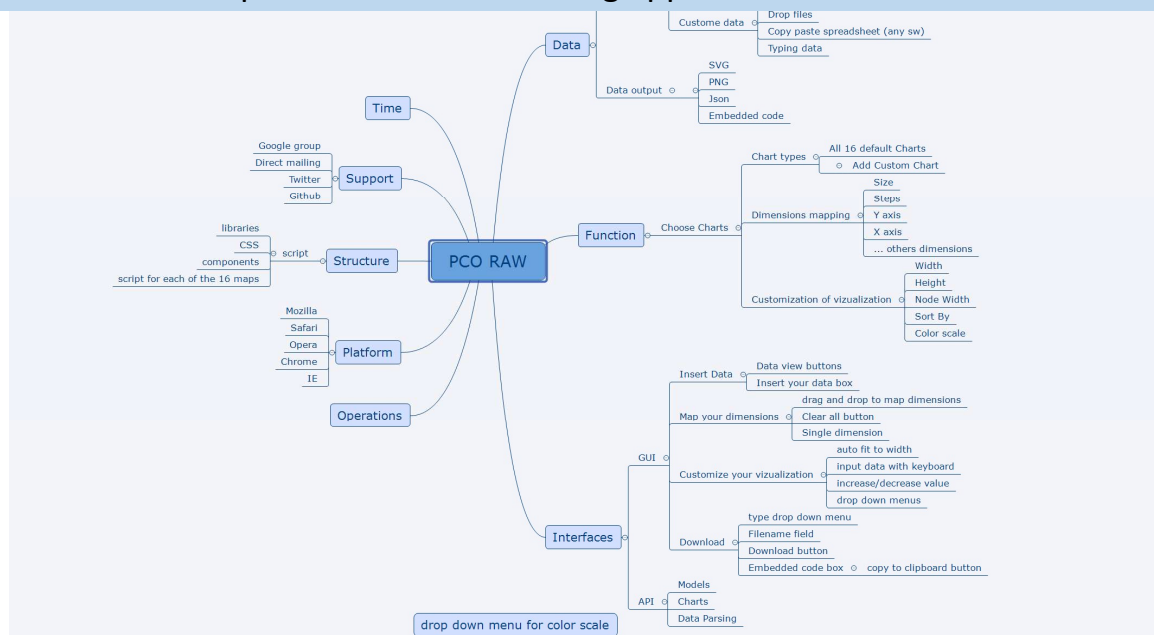
Product Coverage Outline Examples

This example is for a word processor, it follows the HTSM structure...



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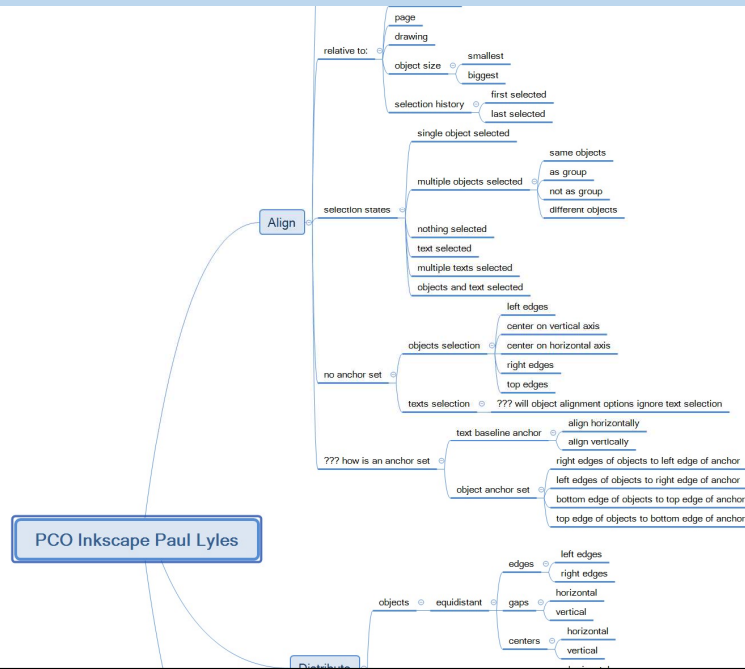
And another example for an online charting app that also follows HTSM...



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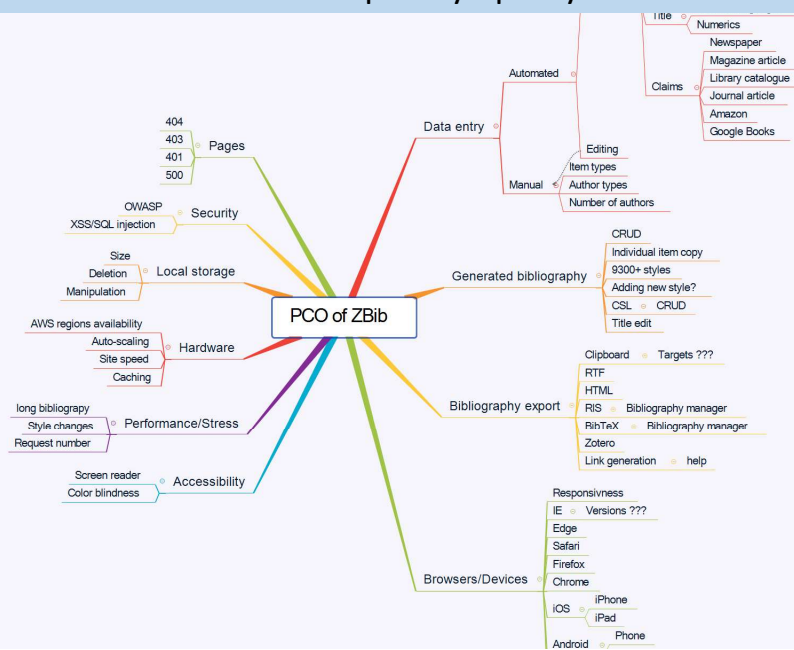
Product Coverage Outline Examples

This one, for a drawing app, is structured more naturally...



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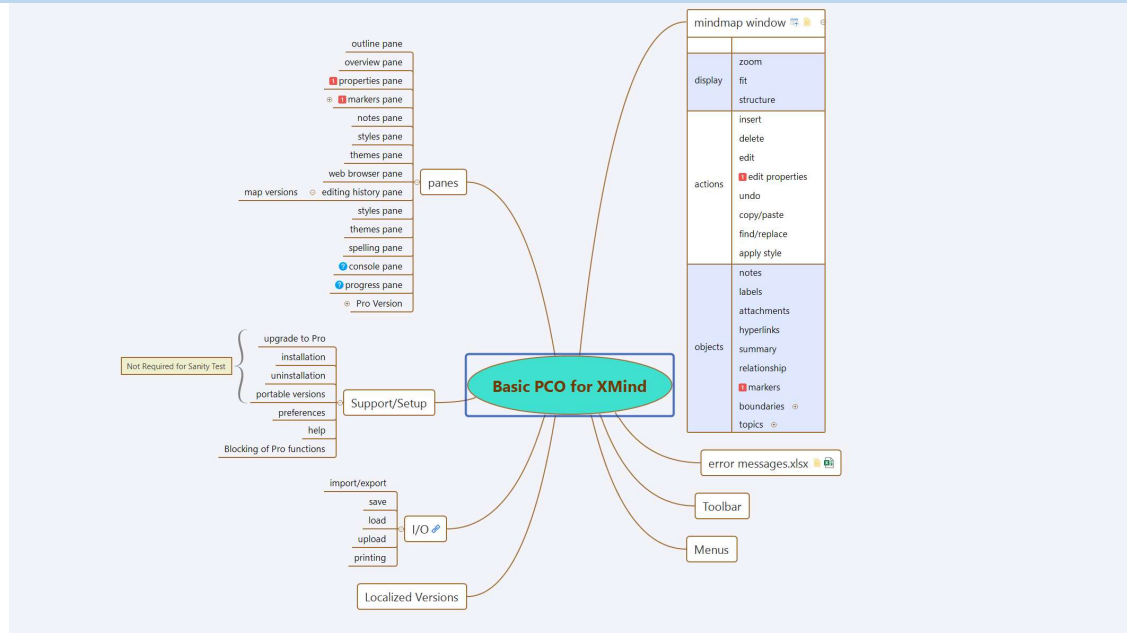
The organization of the PCO is completely up to you. This one is nicely balanced...



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Product Coverage Outline Examples

The table in this PCO represents product factors that must be tested together...



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And for that product, I gathered some of the factors directly from documentation.

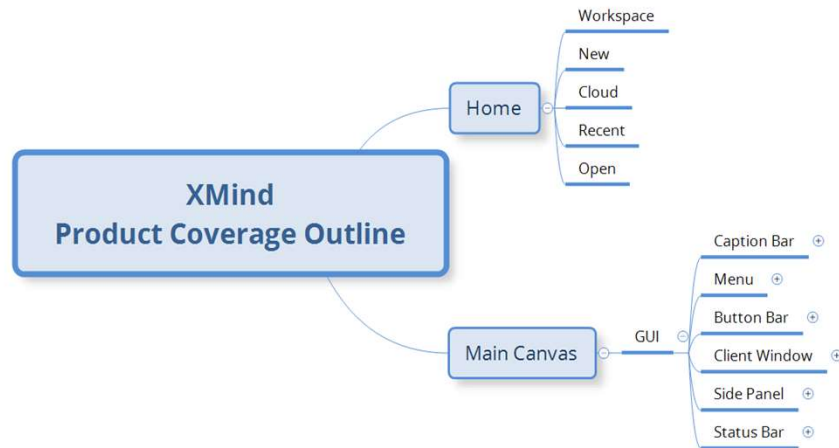
The following table is a list of the appropriate style names and values as defined in `styles`. This is not meant to be an exhaustive list, but as a quick reference. Always check the API for the version you are using.

Styles Name	Styles values
ShapeClass	DEFAULT
	TOPIC_SHAPE_ROUNDEDRECT
	TOPIC_SHAPE_RECT
	TOPIC_SHAPE_ELLIPSE
	TOPIC_SHAPE_UNDERLINE
	TOPIC_SHAPE_DIAMOND
	TOPIC_SHAPE_CALLOUT_ELLIPSE
	TOPIC_SHAPE_CALLOUT_ROUNDEDRECT
	TOPIC_SHAPE_NO_BORDER
LineClass	DEF_BRANCH_DECORATION
	BRANCH_CONN_STRAIGHT
	BRANCH_CONN_CURVE
	BRANCH_CONN_ARROWED_CURVE
	BRANCH_CONN_ROUNDEDBOW
	BRANCH_CONN_ELBOW

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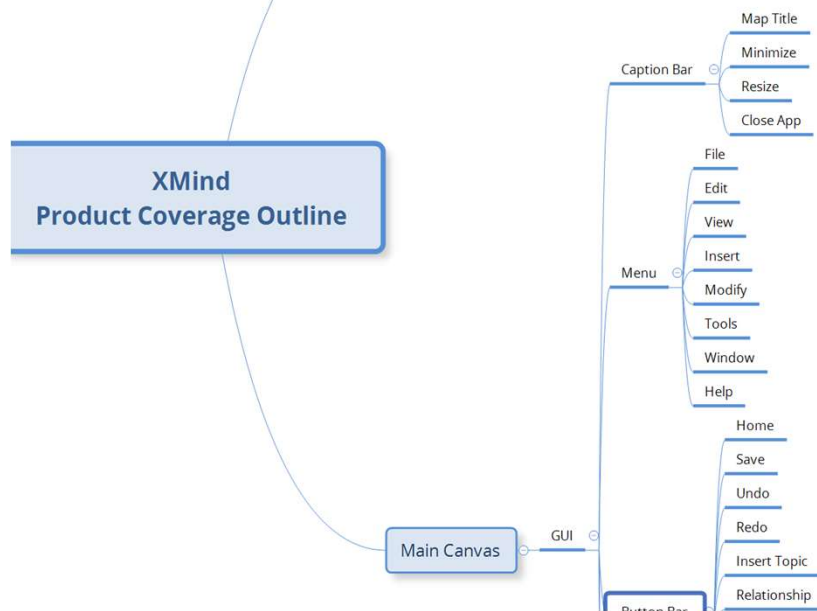
Product Coverage Outline Examples

Learn the product by touring, mapping as you go...



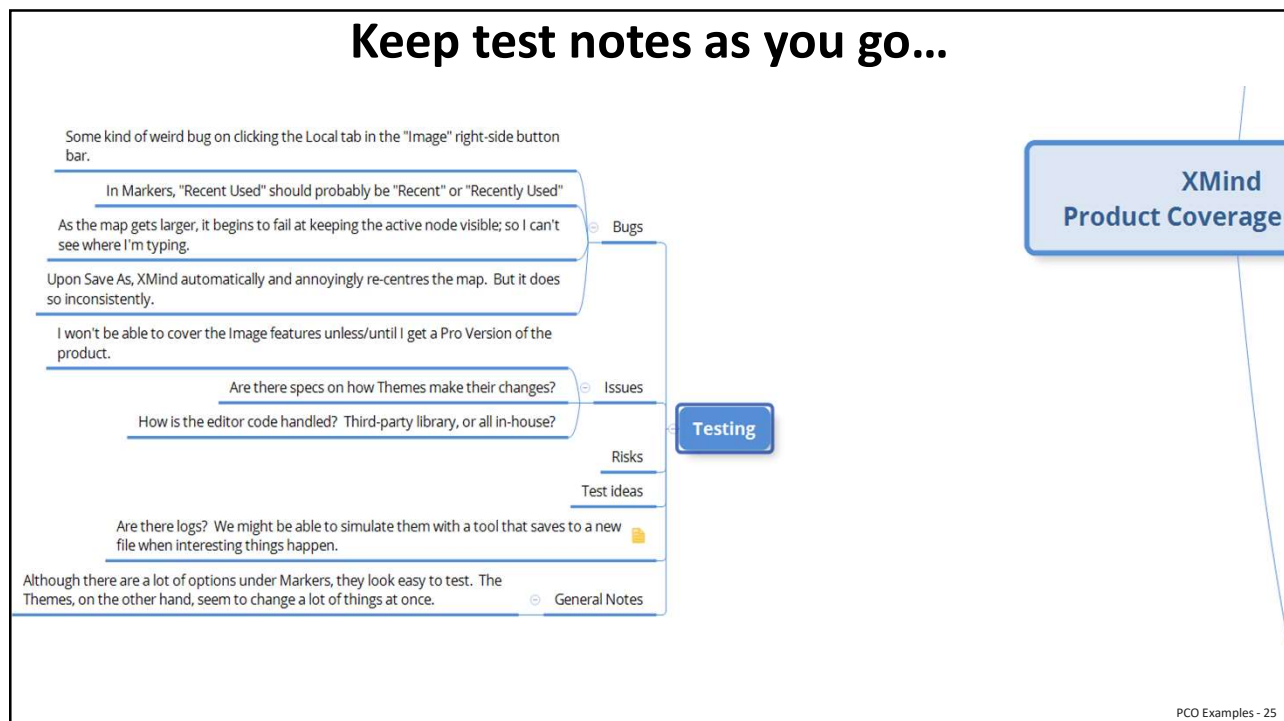
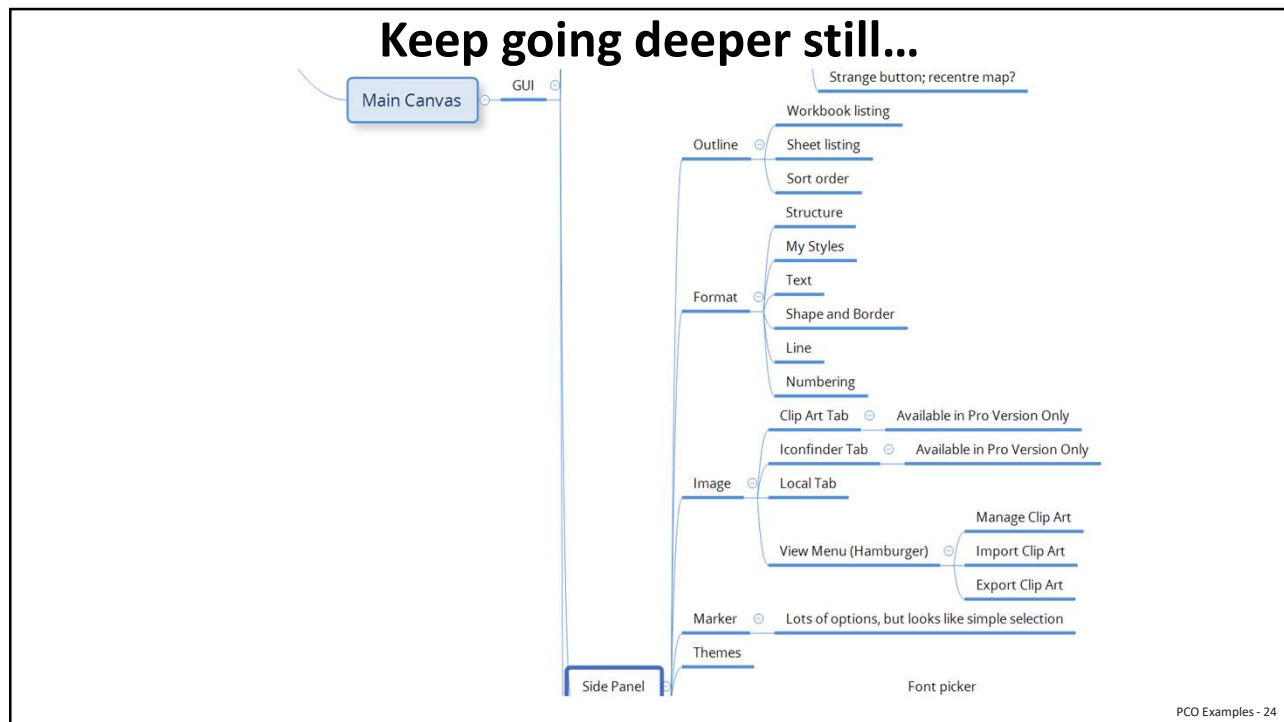
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Iterate and go deeper...



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Product Coverage Outline Examples



Product Coverage Outline Examples

Discover bugs while learning!

Some kind of weird bug on clicking the Local tab in the "Image" right-side button bar. The product seems to hang or get confused; investigate later.

In Markers, "Recent Used" should probably be "Recent" or "Recently Used"

As the map gets larger, it begins to fail at keeping the active node visible. When I create a new node, the map reorients, sometimes with the cursor outside the client window so I can't see where I'm typing. This seems to be related to the zoom level. Investigate later.

Upon Save As, XMind automatically and annoyingly re-centres the map. But it seems to do so inconsistently.

Product will slow down if maps get even moderately big

Registration of Pro Version will encounter problems

Use a tool to create giant mind maps to stress the product out

The file format is a .ZIP (disguised as a .xmind) file, with XML embedded inside. There may be lots of checking opportunities there.

Bugs

Issues

Risks

Test ideas

Testing

PCO Examples - 26

Note issues while learning!

Gantt Chart

Export to Office

Slide-based Story

Brainstorming Mode

Set Password

60,000+ Icons

Audio Notes

There are features in the Pro version that I can't test now.

What are the limits on Undo/Redo

Product will slow down if maps get even moderately big

Registration of Pro Version will encounter problems

Use a tool to create giant mind maps to stress the product out

The file format is a .ZIP (disguised as a .xmind) file, with XML embedded inside. There may be lots of checking opportunities there.

Are there logs? We might be able to simulate them with a tool that saves to a new

Issues

Risks

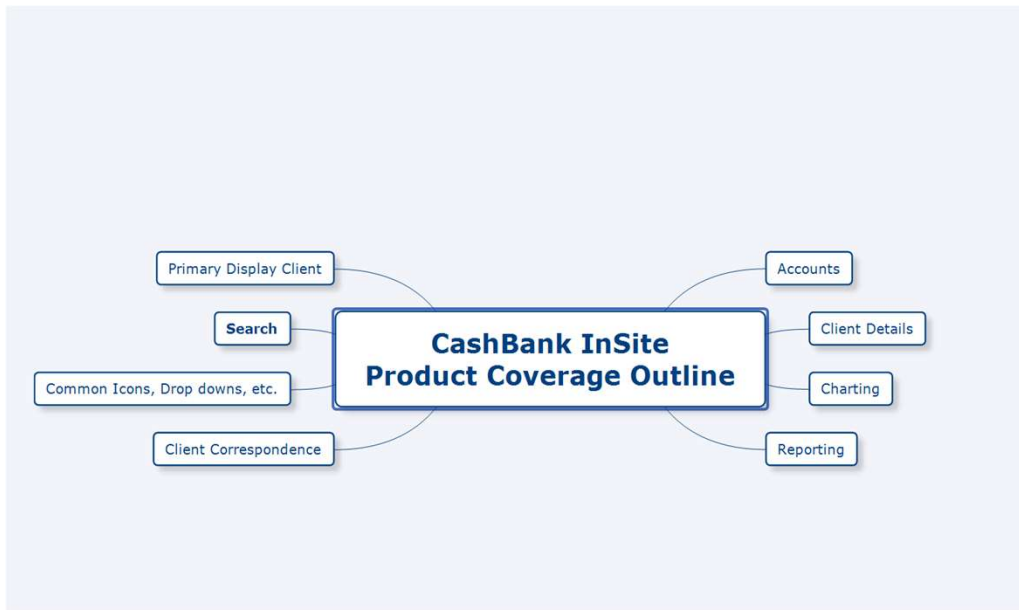
Test ideas

Testing

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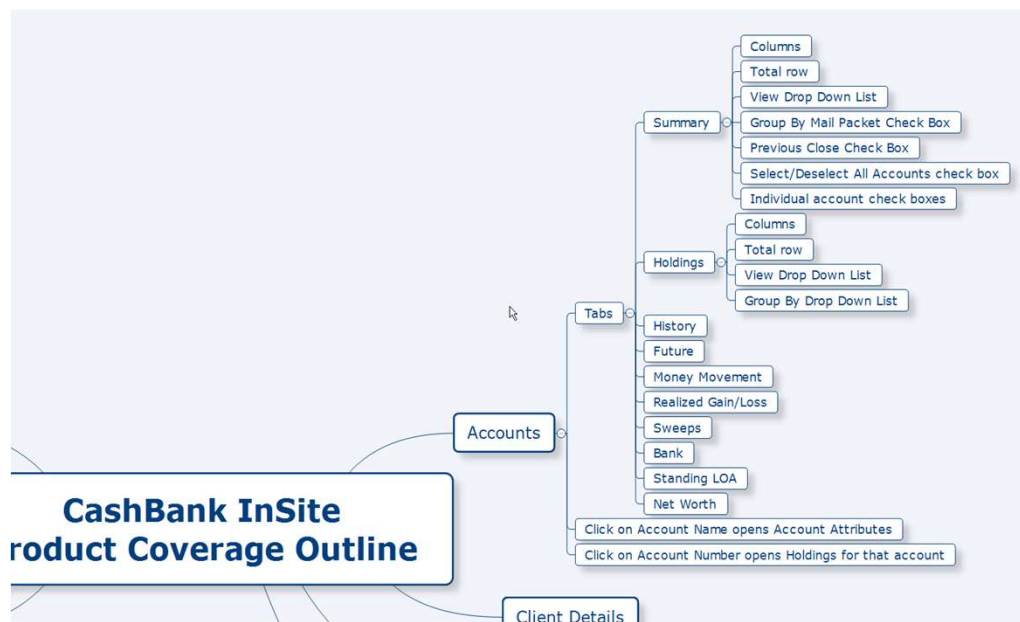
Product Coverage Outline Examples

Attend that feature meeting...



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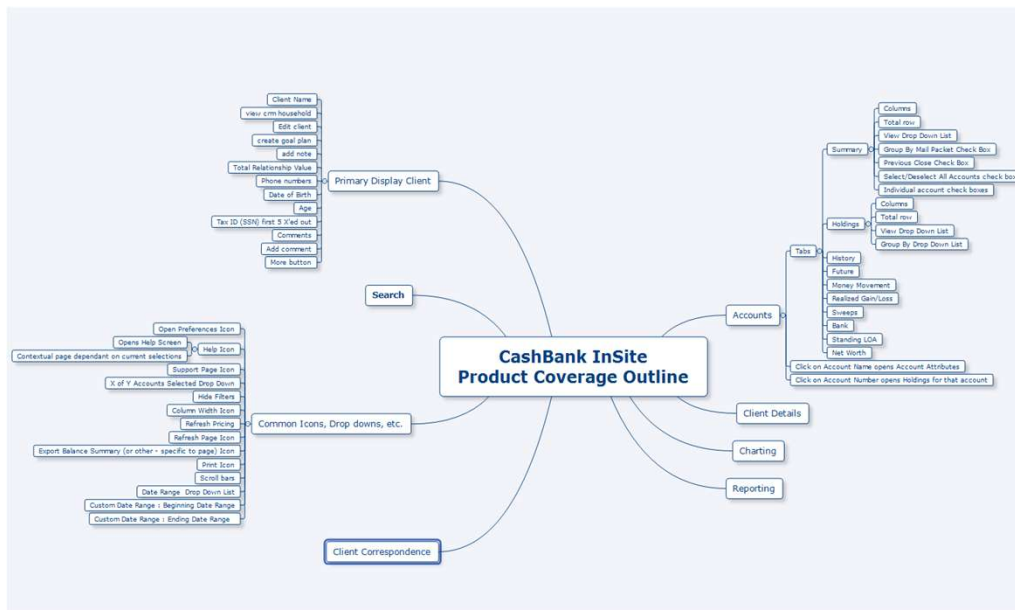
Study the specs...



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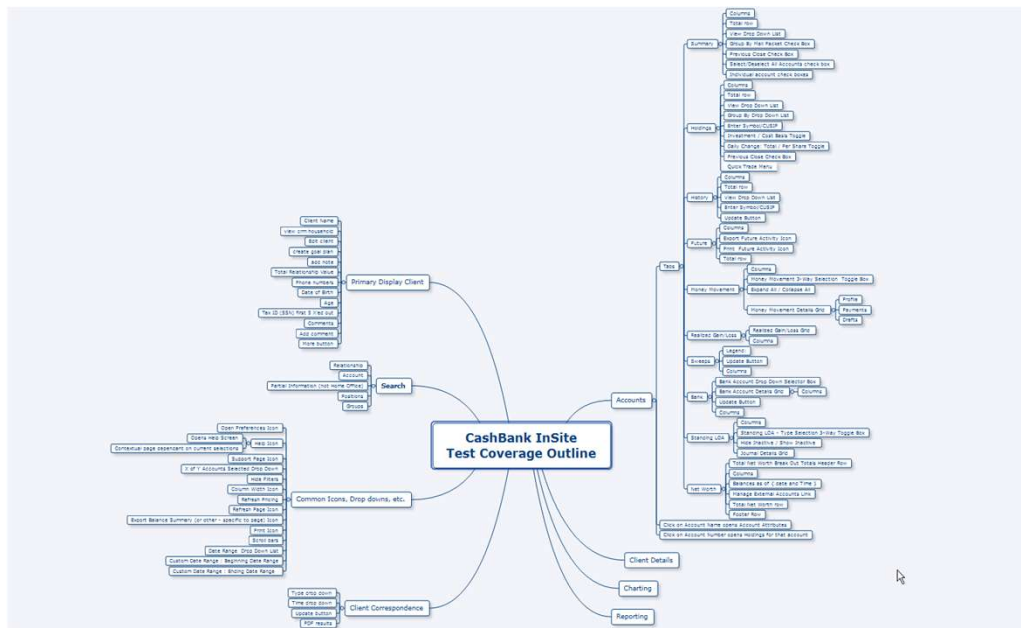
Product Coverage Outline Examples

Model the test space...



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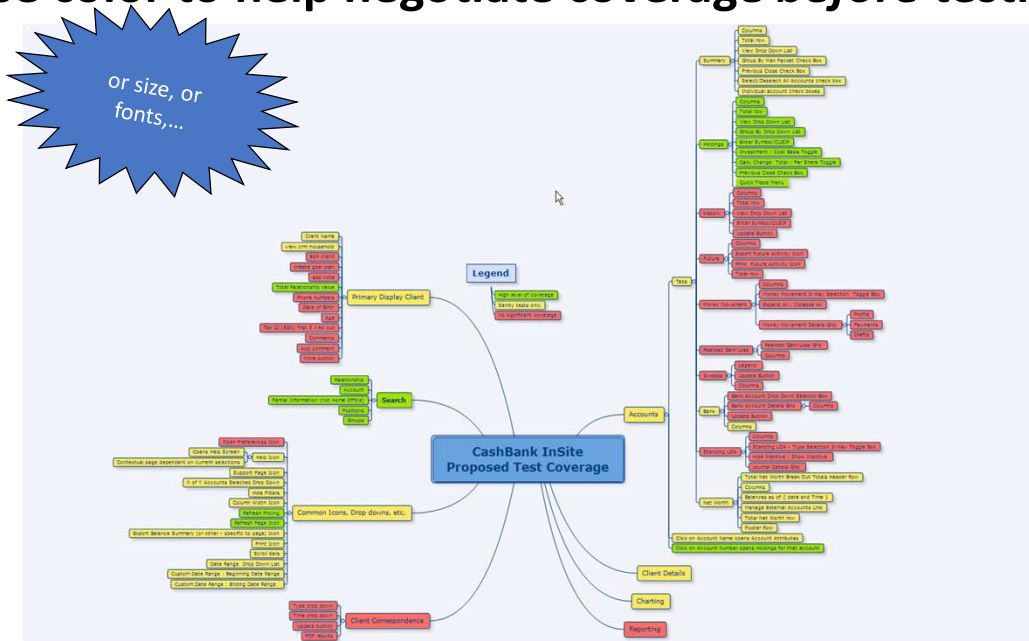
Now bring in the client!



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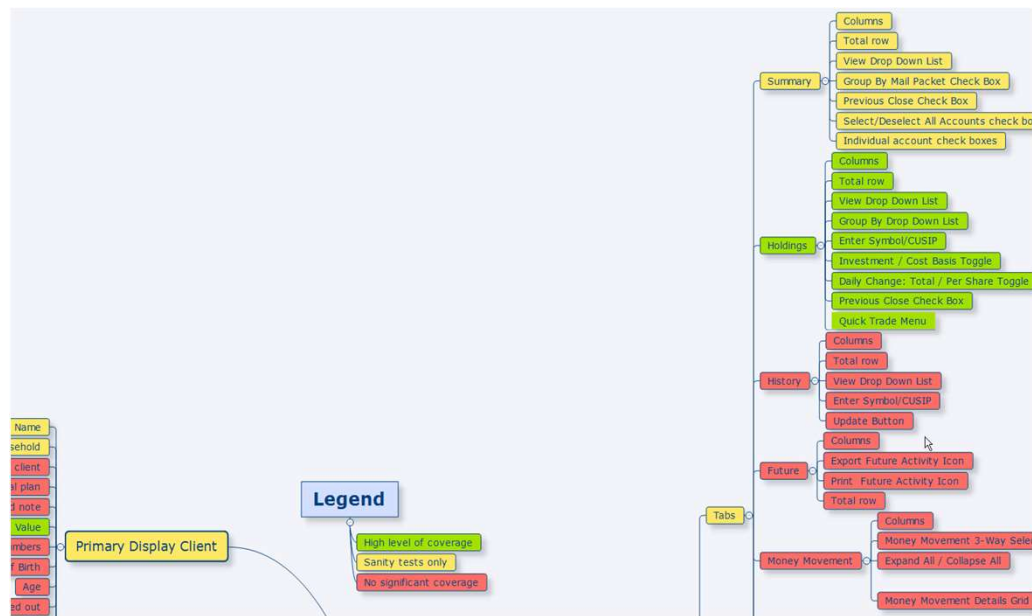
Product Coverage Outline Examples

Use color to help negotiate coverage *before* testing...



PCO Examples - 32

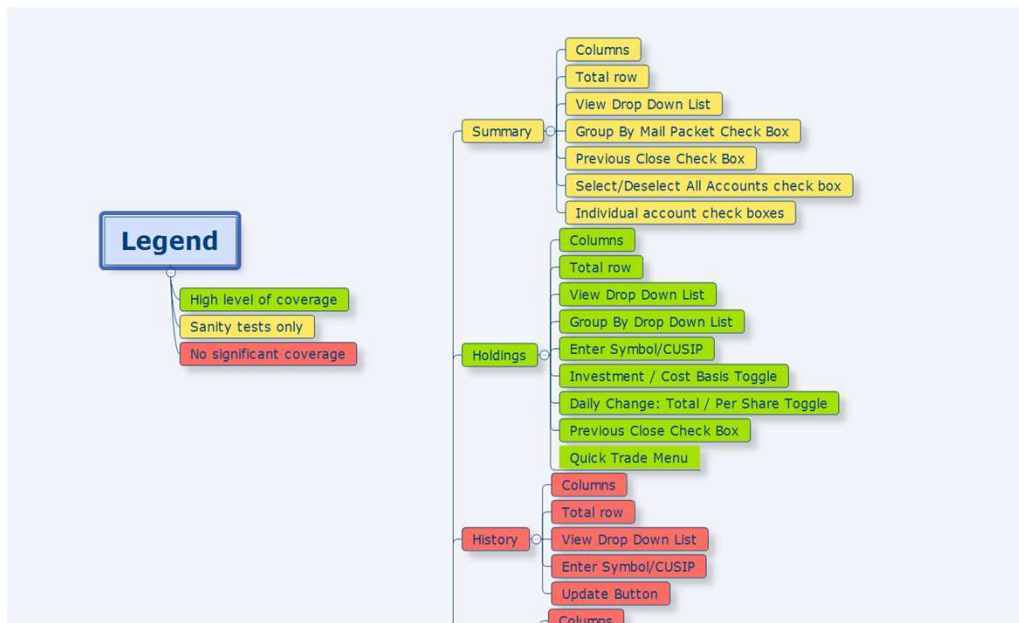
...or use color to identify coverage *after* you've tested.



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Product Coverage Outline Examples

Feature Area Coverage



PCO Examples - 34

Interface Coverage



PCO Examples - 35

Product Coverage Outline Examples

Degrees of Coverage (without quantification)

Level 0	We don't know much about this area. We're aware that this area exists, but it's mostly a black box to us, so far. Whatever testing that's been done, we don't really trust.
Level 1	We're just getting to know this area. We've done basic reconnaissance; surveyed it; we've done smoke and sanity testing. We may have some artifacts that represent our models, which will help us to talk about them and go deeper. If the product were completely broken, we'd know.
Level 2	We've learned a good deal about this area. We've looked at the core and the critical aspects of it. We're collecting and diversifying our ideas on how to cover it deeply. We've done some substantial testing focused on common usage patterns, the highest suspected risks, and the most important quality criteria.
Level 3	We have a comprehensive understanding of this area. We've looked deeply into it from a number of perspectives, and applied a lot of different test techniques. We've done harsh, complex, and challenging tests on a wide variety of quality criteria. If there were a problem or unrecognized feature in this area that we didn't know about, it would be a big surprise. Any problem that escapes can teach us something important (as opposed to being evidence of not trying very hard).

Notice that test coverage is not the same as product quality. Product quality is about how good or bad the product is relative to people's needs or desires. Coverage is about how well we know the product.

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