Because of there is too much work to show this portfolio shows select works, in two parts.

- Part 1 includes information on the processes and methods used.
- Part 2 shows the final deliverables with only brief descriptions.
Part 1: Projects with process and method details

**Persona Validation:** Deep dive into application developer tasks to validate design persona’s.

**User Psychographic Modeling:** Program development of UX research to inform corporate strategies

**Business Analytics:** UX architecture for personalized sales and marketing intelligence

**Pocket Avatars:** UX research for text and video messaging in the US and China

**Cisco Licensing and SaaS:** UX management, UX research and design for self-service license registration and management
Research Goals

- Explore how tasks during API development are sequenced and categorized.
- Identify if API Connect currently supports how users commonly sequence these tasks.

Participants

68 application developers participated in the card sort tasks.

Method

Prior to completing the card sort we had participants answer several questions about their job title, the type of APIs they create, and the tools they use.

We used a usability testing tool (Optimal Workshop) to generate the card sort with 57 cards.

The participants were given 7 categories of types of tasks (E.g. Deploy Apps, Test APIs, Monitor API usage, etc), but they could also create their own.

Participants were not required to sort all the cards.
Pre-Card Sort Survey

1. What is your job title or description?

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>API developer</td>
<td>52.6%</td>
<td>10</td>
</tr>
<tr>
<td>Application developer</td>
<td>21.1%</td>
<td>4</td>
</tr>
<tr>
<td>API architect</td>
<td>5.3%</td>
<td>1</td>
</tr>
<tr>
<td>Application architect</td>
<td>10.5%</td>
<td>2</td>
</tr>
<tr>
<td>API product manager (api packaging, pricing, manage...)</td>
<td>10.5%</td>
<td>2</td>
</tr>
<tr>
<td>Security architect</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Application infrastructure architect</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Application infrastructure admin</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>0</td>
</tr>
</tbody>
</table>

2. Which types of API's have you created?

<table>
<thead>
<tr>
<th>Type of API</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote API's for use within my company</td>
<td>42.1%</td>
<td>8</td>
</tr>
<tr>
<td>Remote API's for use outside my company</td>
<td>31.6%</td>
<td>6</td>
</tr>
<tr>
<td>REST API's</td>
<td>57.9%</td>
<td>11</td>
</tr>
<tr>
<td>Loopback API's</td>
<td>15.8%</td>
<td>3</td>
</tr>
<tr>
<td>JavaScript API's</td>
<td>57.9%</td>
<td>11</td>
</tr>
<tr>
<td>OATH API's</td>
<td>31.6%</td>
<td>6</td>
</tr>
<tr>
<td>XML-RPC</td>
<td>36.8%</td>
<td>7</td>
</tr>
<tr>
<td>JSON-RPC</td>
<td>15.8%</td>
<td>3</td>
</tr>
<tr>
<td>Legacy API's</td>
<td>10.5%</td>
<td>2</td>
</tr>
</tbody>
</table>
Card Sort Results

As you can see, we received a large variety of groupings from our participants. This could be because different organizations categorize and sequence tasks differently or that the API management space is fairly new. It could also be that some of the participants weren’t that familiar with the tasks and weren’t confident where to put them.
Participant Demographics

While participants identified mostly with tasks represented by the title ‘API developer’, none of the participants self-described as an API developer. This suggests that the titles currently used for APIC personas and the titles for target APIC users do not align with titles being used at least at this time.

<table>
<thead>
<tr>
<th>When forced to choose - titles provided</th>
<th>When they self-describe</th>
</tr>
</thead>
<tbody>
<tr>
<td>API Developer</td>
<td>Software Engineer</td>
</tr>
<tr>
<td>Application Developer</td>
<td>Software Developer</td>
</tr>
<tr>
<td>API Product Manager</td>
<td>Web Developer</td>
</tr>
<tr>
<td>Application Architect</td>
<td></td>
</tr>
<tr>
<td>API Architect</td>
<td>Manager Of Information Technology Developer</td>
</tr>
<tr>
<td></td>
<td>Senior Software Engineer</td>
</tr>
<tr>
<td></td>
<td>Senior Web Developer</td>
</tr>
<tr>
<td></td>
<td>Senior Software Developer</td>
</tr>
</tbody>
</table>
Psychographic Modeling Program Objective

- A large global travel club does not have the desired level of member retention. The objective is to set up a data science program to create a detailed understanding of travel behavior that will elicit strategies to retain members.

Process

- Collect user attribute data, feature sets, and tasks; compile data into spreadsheet from interviews, surveys, and focus groups.
- Categorize attributes by relevant dimensions such as time on task, priority, user type, and other relevant criteria.
- Correlate and feed attribute data into network models.
- Create descriptive and predictive flows, charts and graphs, and other visual representations.
- Add new research and meta-analysis of previous research combined with multivariate statistical methods to create predictive models.

Deliverables

- Modeling factors with values.
- Modeling correlations with strength of influence.
- Influence diagrams showing what to adjust.
- Model that can be built out and scaled up.
Psychographic Modeling Program Objective

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Deliverables

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- Modeling correlations with strength of influence.
- Influence diagrams showing what to adjust.
- Model that can be built out and scaled up.
User Psychographic Modeling

Step 1: As modeling requires a lot of data, the first step was to compile available data into a spreadsheet, organize it, and analyze it. This is ongoing as more data is collected.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Region</th>
<th>Dropped</th>
<th>JoinAge</th>
<th>Trip_Leng</th>
<th>Nm_Trav</th>
<th>cost</th>
<th>DTCacrcy</th>
<th>DTCexp</th>
<th>BTknldg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>North Am</td>
<td>Active</td>
<td>24</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Female</td>
<td>North Am</td>
<td>Active</td>
<td>24</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Male</td>
<td>North Am</td>
<td>Active</td>
<td>24</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Female</td>
<td>North Am</td>
<td>Active</td>
<td>24</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>NA</td>
</tr>
<tr>
<td>Male</td>
<td>North Am</td>
<td>Active</td>
<td>24</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
</table>

Step 2: R (language and environment for statistical computing) was used for this project to model the data with network science and graph theory. This step involved importing matrices and running scripts that created correlation matrices to turn into graph objects that could be visualized.

```r
#create correlation matrices
j47ncor <- cor_auto(j47n, ordinalLevelMax = 11, missing = "pairwise", detectOrdinal = FALSE)

#create list of all variable names from column headers in corr matrix
j47ncornames <- c(col = colnames(j47ncor))

#create different qgraphs
j47nqgraph <- qgraph(j47ncor, groups= j47ncorgrp, minimum=0.4, cut=0.3,  filetype = "R"

#create qgraph objects
j47ncentabl <- centralityTable(j47nspring)

#create igraph from qgraph objects and plot
j47n_igraph <- as.igraph(j47nglasspr)
tkplot(j47n_igraph)
```
User Psychographic Modeling

This visual—a Sankey Graph—provides a good view of paths leading from influences (left) to several psychographic states (right). These states are measures of a desired outcome; this graph shows the amount each specific influence contributes to them.
This is a network graph of psychographic attributes, showing patterns of influence.

- The graph is derived from correlation matrices.
- The wider the link, the stronger the connection, suggesting a more powerful influence.
- More links mean more powerful influence overall.
- Color coding reflects groups of attributes, based on patterns of correlations.
Example Projects with Process Descriptions

**User Psychographic Modeling:** UX researcher to inform corporate strategies

➤ **Business Analytics:** UX architect for personalized sales and marketing intelligence

**Pocket Avatars:** UX researcher for text and video messaging in the US and China

**Cisco Licensing and SaaS:** UX manager, UX researcher and designer for self-service license registration and management
To fully understand what drives the user, I collected and categorized user attributes, psychological profiles, information needs, and activities.

Bill Traverse, Sales - Likes a Taste of Everything

Senior Account Manager, Global Wire

“I want to know how customers view the world - how it changes, you know, walk in their shoes for a while.”

**Sales Specific**
Bill finds opportunities. He has the talent and the taste, a taste for everything because that’s how he samples the broad range of information he streams his way. He does not need to know everything, just where dig for leads.

**Professional Background**
Everyone gets along with Bill and he prides himself on it. He developed a knack for engaging customers from the beginning days in a liberal arts college in which he studied many things instead of focusing on a few. Always collecting tidbits to easily start conversations and relationships. Bill quickly rose through the ranks until he owned the company and brought along loyal customers – customers for life.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tend to be older</td>
<td>Where to focus.</td>
</tr>
<tr>
<td>Adopting social media</td>
<td>Develop opportunities.</td>
</tr>
<tr>
<td>Friendly &amp; outgoing</td>
<td>Draft insights.</td>
</tr>
<tr>
<td>Very Confident</td>
<td>Collect interesting bits to chat</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motivations</th>
<th>Pain Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Experiences</td>
<td>Deep Dives</td>
</tr>
<tr>
<td>New ways to reach out</td>
<td>Spending time</td>
</tr>
<tr>
<td>Success opening new markets</td>
<td>learning new tools</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exceptional Characteristics</th>
<th>Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charming</td>
<td>Am I looking in the right place</td>
</tr>
<tr>
<td>Easy Going</td>
<td>Is it a lead, useful, &amp; current.</td>
</tr>
<tr>
<td>Well-timed, witty remarks</td>
<td>Hope this doesn’t waste their time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emotions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very curious</td>
</tr>
<tr>
<td>Strongly feels broad experiences is more satisfying and successful</td>
</tr>
<tr>
<td>Easily bored with irrelevant information</td>
</tr>
<tr>
<td>Confident and secure in personal views</td>
</tr>
</tbody>
</table>
Personalized Business Intelligence for Sales and Marketing

To fully understand how users lived their days, I created timelines and maps of thoughts, activities, and information.

Visual depictions of minute-to-minute interactions
Personalized Business Intelligence for Sales and Marketing

To fully understand users’ tools, I mapped out tool use, anchored it to a timeline, and highlighted personal time allocation schemes.
To fully understand how to connect with users, I defined unique psychographic attributes and characteristics to forecast behavior.

- Wake up with coffee, read higher level information already packaged how I like it without having to hunt for it (time-consuming).
- Need to know current events to talk intelligently with customers and start discussions (foster relationships).
- Scans for information that could be relevant to leads.
- Share and review on iPhone from anywhere (ballgame) with colleagues, manager.
- Uses social media networks to stay in touch.
- Likes customer feeds into PC, iPhone, iPad to stay in touch.

Goals
- Where to focus efforts to find opportunities, leads.
- Develop contacts and opportunities.
- Draft insights.
- Find useful stuff to talk knowledgeably to accounts.
- Stay up to date on industry.
- Think like the buyer.
- Search broad but not too deep.
- Make everyone feel important.

Decisions
- Is it a lead.
- Does it have value.
- Can source be trusted.
- Is it relevant to me.
- Which filtering level best shows leads.
- Is this the latest.
- What is this related to.
- Is this executive level.
- How best to share.
As the UI architect, I extensively relied on the UX research to be realistically creative when generating wire-frames of possible design solutions for the main products – the web app, the SalesForce plug-in components, the mobile app, and a range of individual components for customizable deployments.

Here’s one of many revisions of Sales Force plug in component to view documents by a target company or documents by others about it.
The redesign of the main product, the web app, resulted in months of revisions. Here’s just one -
**Example Projects with Process Descriptions**

**User Psychographic Modeling:** UX researcher to inform corporate strategies

**Business Analytics:** UX architect for personalized sales and marketing intelligence

- **Pocket Avatars:** UX researcher for text and video messaging in the US and China

**Cisco Licensing and SaaS:** UX Manager, UX researcher and designer for self-service license registration and management
This project required a broad understanding of smartphone messaging in order to determine the viability of the design. This meant researching the behavior of hundreds of users in the US and China.

The Pocket Avatars app allowed users to send avatars with facial expressions, instead of showing their faces.

I led user research during development trials to determine viability and design direction for Pocket Avatars.

- Utilized qualitative and quantitative methods.
- Facilitated recruiting of hundreds of users in the US and China.
- Collected and analyzed very large usage information datasets.
- Reported usage behavior and preference data.
- Prototyped essential design changes dictated by research results.
Pocket Avatars Video Messaging App

To learn if real patterns existed in highly individual styles, my team and I scrutinized over 1,500 users and relied on statistical analyses to find significance.

Buying and Using Avatars

Survey Average
Will use Branded for coins
Easy App Setup
Change Avatars for feelings
Change Avatars for no reasons
Change Avatars for what I say
Change Avatars for people
Change Avatars - type msg sent
Avatar Purpose Clear
Like Avatar Quality
Satisfied with Store Choices
Satisfied with Buy Options

<table>
<thead>
<tr>
<th>Question</th>
<th>Av 1</th>
<th>Avg 2</th>
<th>SD 1</th>
<th>SD 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied with Buy Options</td>
<td>3.3</td>
<td>3.6</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Satisfied with Store Choices</td>
<td>3.5</td>
<td>3.6</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Like Avatar Quality</td>
<td>3.8</td>
<td>3.8</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Avatar Purpose Clear</td>
<td>4.0</td>
<td>0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Avatars - type msg sent</td>
<td>4.0</td>
<td>3.6</td>
<td>0.4</td>
<td>1.0</td>
</tr>
<tr>
<td>Change Avatars for people</td>
<td>4.3</td>
<td>3.7</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Change Avatars for what I say</td>
<td>3.4</td>
<td>3.5</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Change Avatars for no reasons</td>
<td>3.8</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Avatars for feelings</td>
<td></td>
<td>0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy App Setup</td>
<td>4.3</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will use Branded for coins</td>
<td>4.5</td>
<td>3.9</td>
<td>0.3</td>
<td>0.9</td>
</tr>
<tr>
<td>Survey Average</td>
<td>3.9</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

t-Test: Paired Two Sample for Means

<table>
<thead>
<tr>
<th></th>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.938</td>
<td>3.662</td>
</tr>
<tr>
<td>Variance</td>
<td>0.152</td>
<td>0.024</td>
</tr>
<tr>
<td>Observations</td>
<td>9.000</td>
<td>9.000</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.741</td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>8.000</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>0.254</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>0.403</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.860</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.806</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.306</td>
<td></td>
</tr>
</tbody>
</table>

F-Test Two-Sample for Variances

<table>
<thead>
<tr>
<th></th>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.9375</td>
<td>3.661764706</td>
</tr>
<tr>
<td>Variance</td>
<td>0.152344</td>
<td>0.02400519</td>
</tr>
<tr>
<td>Observations</td>
<td>9.000</td>
<td>9.000</td>
</tr>
</tbody>
</table>
Pocket Avatars Video Messaging App

We found patterns that were sufficient to predict successful avatars and future growth paths.

Free avatars were primarily used and were 89% of total downloads.
Avatars use was dominated by men, except for the avatar China-Nian which was dominated by Chinese women.

Panda and Sketch used almost entirely by Chinese – 80% men, 20% women. In the US, it was 5%, 1%.
User Psychographic Modeling: UX researcher to inform corporate strategies

Business Analytics: UX architect for personalized sales and marketing intelligence

Pocket Avatars: UX researcher for text and video messaging in the US and China

- **Cisco Licensing and SaaS**: UX manager, UX researcher and designer for self-service license registration and management
Cisco’s customers were not managing their thousands of licenses effectively. Too few customers self-registered using the License Registration Portal. Instead they used Cisco support, a burdensome experience.

The UI lacked a clear beginning, had multi-page operations with hidden fields, and forced users to provide much information that Cisco had already received.

Determining essential design changes was predicated on thoroughly understanding target users and their prior experience, tasks, and objectives.

### Resulting User Profile

| **Experience** | • 5 years managing, configuring Networks.  
• Responsible for 10-20 switches.  
• May be a HP-UX reseller.  
• Responsible for network security.  
• Good at using the switch command line.  
• Uses Network Mgmt tools other than ProCurve  
• Uses Network Security Tools other than NIM |
| **Primary Success Criteria** | • Continuous operation of the network.  
• Secure network with zero to minimal security breaches.  
• Rapid detection and reporting of network threats. |
| **Usability Goals** | • Use site map to drill from “50K” view to device details.  
• Use site to view high level summary to understand overall status: activity, anomalies.  
• Correlate wired to wireless. |
| **Primary Use Cases** | • Create site using wizard.  
• Create site without wizard.  
• Locate devices on site map.  
• Monitor device activity on site map; possible to generate charts from a group of selected devices on the site map.  
• Find unauthorized (neighbor, rogue) devices on site map.  
• Find problem devices on site map.  
• Generate reports and maps.  
• Configure and manage MM policies. |
By creating a detailed understanding of the target users, tasks, and ecosystem, I was able to zero in on their “pain points” and create a redesign strategy.
Customer License Registration Ease of Doing Business Initiative

The UX research uncovered the essentials needed to create this final design.

✔ New license information structure.
✔ Anchor tasks to global menus.
✔ Enter data once and re-use.
✔ Collect and display searchable, tabular, selectable information.
✔ Standardize tasks with 3-step operations.

www.cisco.com/go/licensing
The task and user research from the license portal also showed that customers needed to map licenses to devices in the field or in the datacenters, away from PCs. Users so far had to manually record device and license data, find a PC, start the license tool, and enter the information.

- Created prototypes for iOS and Android phones that enabled users to rapidly scan devices and their corresponding licenses to link and upload to Cisco servers.
- Simplified and restructured information to fit mobile form factor.
- Used Google and Apple standards in conjunction with Cisco’s to create functional prototypes.

www.cisco.com/go/licensing

On the support side, diving into the agents’ world revealed that the UI for Global Support did not meet agents’ needs for efficiency, low errors, and short call duration. Serial, multiple-page operations increased search and response time as well as information demands to integrate information across time and space.

Solutions:
✓ Restructured information to support natural work flow.
✓ Integrated pages to reduce time and space for search.
✓ Used drill down task model.
✓ Allowed multiple, simultaneous actions.

Results:
✓ Increased efficiency, reduced errors, and less time per call.
RESEARCH AND DESIGN PROJECTS IN BRIEF

This section shows just a few of the many projects I worked on as a researcher or designer, with prototypes or mockups used to demonstrate the insights and ideas

Part 2: Additional projects in brief

**HP:** HPUX Enterprise Server and Datacenter Management Tools

**ParaSoft:** Concerto Project Management Web GUI redesign

**HP:** Design standards for ProCurve Network Mobility Manager

**HP:** Business Process Outsourcing Web Tool design and style guide

**WorkScape:** Web Design for Employee Management Application style guide

**iEngineer:** Mechanical Engineering Portal and Web Collaboration Tool

**Kaiser Permanente:** Physicians Referral Management Tool (ROMS)
This UI for managing agile development tasks formerly required interaction among disparate tabs and pop-ups, creating navigation confusion and increasing time on task.

From focus groups and interviews with users I found that a tabbed-usage model would best unify multiple windows to efficiently and accurately complete management tasks.
As HP’s Enterprise servers incorporated virtual technologies to meet customer demands, management tools changed to meet users’ virtual information management demands.

The design challenge was to create a flexible, remote, global program to conduct qualitative and quantitative research, in order to determine new information design requirements and create the best experiences.

Server system management GUI design recommendations from testing

Enterprise Centralized Management Server (CIM) design recommendations for Virtual Machine Management
Dashboards present snapshots of essential information. The large amount of information available from large wireless deployments requires research to define effective snapshots. As with the coverage and constraint maps, user and task research provided the design guidance to mock up dashboards from which users determine at a glance the required actions.
HP's business customers experienced difficulty completing tasks using HP's business process expertise website. Direct access to the business customers was not possible, so I found available “surrogates” in the in-house domain experts, support personnel, and account managers.

My design delivered:

- More visible options.
- Information more effectively grouped.
- A clear view of current and possible actions.
- A design that conformed to HP standards and color themes.
Workscape’s desktop employee management application, implemented to aid employees, acted as a barrier to usage. The company decided that making the application web-based would remove the barriers.

I worked with employees and managers to understand the experiences to preserve and those to redesign. With a graphic designer’s help, I delivered the UI style guide for developers.

Mechanical engineers for car companies at the time designed globally but collaborated remotely by physically sharing designs. Collaboration sites to globally share designs and interactively design cars in near-real time did not exist in 1999.

I worked extensively with the mechanical, plastic, and molding engineers to understand the specialized design needs. The overall design goal was simplicity.

- Provided means to check in CAD designs.
- Selected collaborators.
- Specified required design services.
Physicians Referral Management Tool (ROMS), 1998 – 1999

Kaiser provides referrals to certain medical specialists. The existing referral tool design caused unacceptable referral errors that increased time on task, training, and costs.

Exhaustive user research with extensive design evaluations on site revealed design flaw points.

These were design artifacts from constraints of a complex, structured business rules engine.

Once this was understood, redesigning around the constraints was possible.

Information fields needed regrouping and restructuring to follow the real-world flow.