Case Study: Trane Products

Managing the complexity and development of energy management and performance software, using progressive methodology, tools, and a Lean UX process

Engineering diagrams > PowerPoint > Miro user flows and online collaboration

> Lean 360 Matrix validation > User Research > Rapid Prototypes > Agile Sprints

Dave Fleming, UX Architect

The Process

1

New digital products and services review and project kick off.

2

UX Workshop: User Flow Study with SMEs, using Miro online to include remote participation.

3

Assumption requirements are logged and validated with the Lean 360 Matrix, informing UX research and design.

4

With UX research and design completed, Agile Sprints bring UX and Developers together in daily stand-up meetings

5

After Developers produce software, UX validates its usability before Beta versions are deployed.

6

Pre-established success metrics measure data and typically track the KPIs and OKRs.

1

New digital products and services review and project kick off.

Engineering Research, Review & Presentation

Taking the technical information presented by a Trane Engineer and translating that information into a more cohesive user flow, the UX Lead guided a team that included a Product Owner, Systems Architect, UX Manager, Scrum Master and a UX Designer - all participating in an exercise that helped to define, discuss, and document user flows. With that preliminary work in hand, the team decided that they would work in a lean UX fashion, eliminating the need for a B.A. and an extensive requirements documentation and review process.

User Flow for Smart MAINTENANCE (vs. Smart START)

Building Owner/Mgr.

1. Building Owner/Mgr. – receives notification that there is a Trane Smart Maintenance Event pending their attention.
   - Depending on how they set up their Smart Maintenance PROFILE, they should do one of the following:
     - A. Do Nothing (?) – everything is pre-approves and it all happens w/out any BO interaction. (i.e: Customer Type = "Set it & Forget it" - just send me the report at the end of the month/quarter….")
     - B. Acknowledge – YES or YES, but wait until this date…..
     - C. Acknowledge – DEFER
     - D. Approve/Defer
     - E. Approve & Purchase something

     NOTE: May also provide a "Remind me Later" function…. Or maybe this is part of the PROFILE.
2. BO (all, except "set it & forget it") – gets Progress Notice upon Smart Maint Mgmt Milestone reached.
   - Milestones/**Progress** = Received, In-Progress, Scheduled, On-Site, Completed.
   - Also need to have an Alert that Servicer can instigate to get BO's attention on something.
   - Also, BO needs to have the ability to communicate directly with Servicer
3. BO – (if Deferred from #1), gets Reminder and Impact statement and ability to Acknowledge/Approve/Defer until next Smart Maintenance Recommendation occurs.
4. BO – gets Smart Maintenance "Value Update"- Monthly
   1. BO can see how the LCC of unit is tracking against baseline and expected performance.
   2. BO – can look at anytime and see History of all Smart Maintenance Recommendations and Completion/Deferral

2

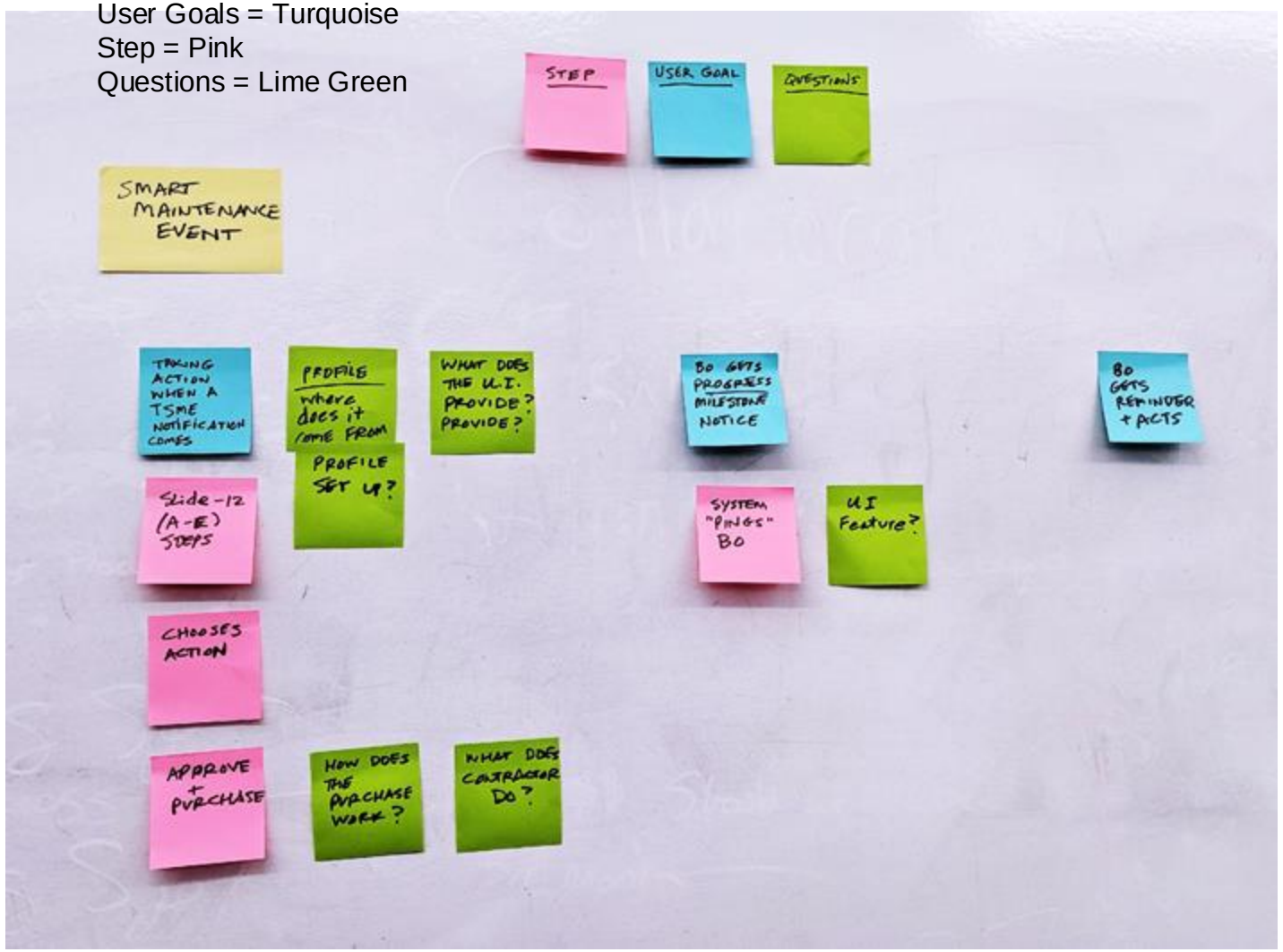
UX Workshop:
User Flow Study
with SMEs, using Miro online to include remote participation.

UX Workshop

Using the examples of a Smart Maintenance Event technical diagram in a PowerPoint presentation, this whiteboarding session began as an exercise to identify the User, their goals, the steps required to achieve those goals, and the integrated systems required to support the successful work necessary to achieve those goals.

In this scenario design, a Building Manager is the primary Persona.

LEGEND
User Goals = Turquoise
Step = Pink
Questions = Lime Green

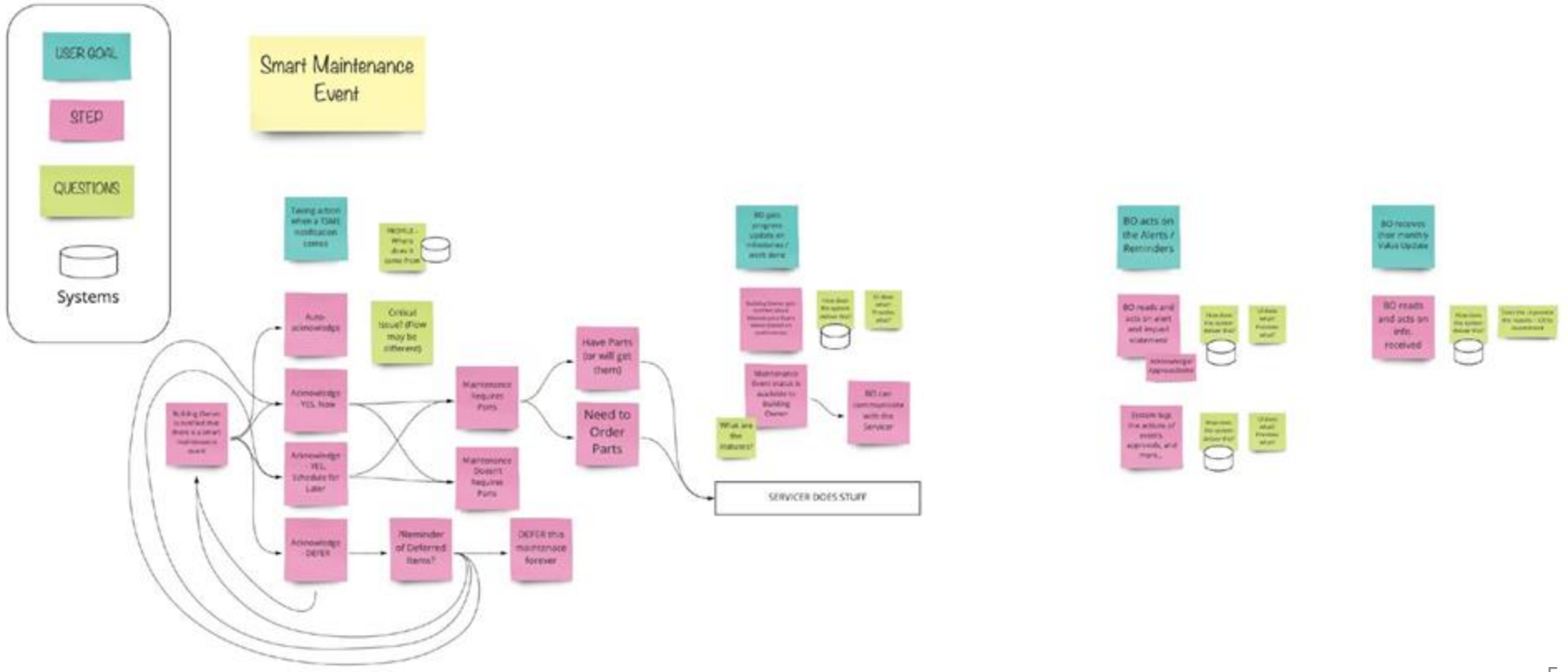


2

UX Workshop: User Flow Study with SMEs, using Miro online to include remote participation.

UX Workshops (Cont'd)
User Flow – Online Collaboration using Miro

Translating traditional whiteboard methods into collaborative online methodology, enables any team to work in ways that accommodate teams meeting in person and remotely – opening up the work to any global participant or group. This also provides a way for leadership and stakeholders to observe or participate in any critical steps of a project.

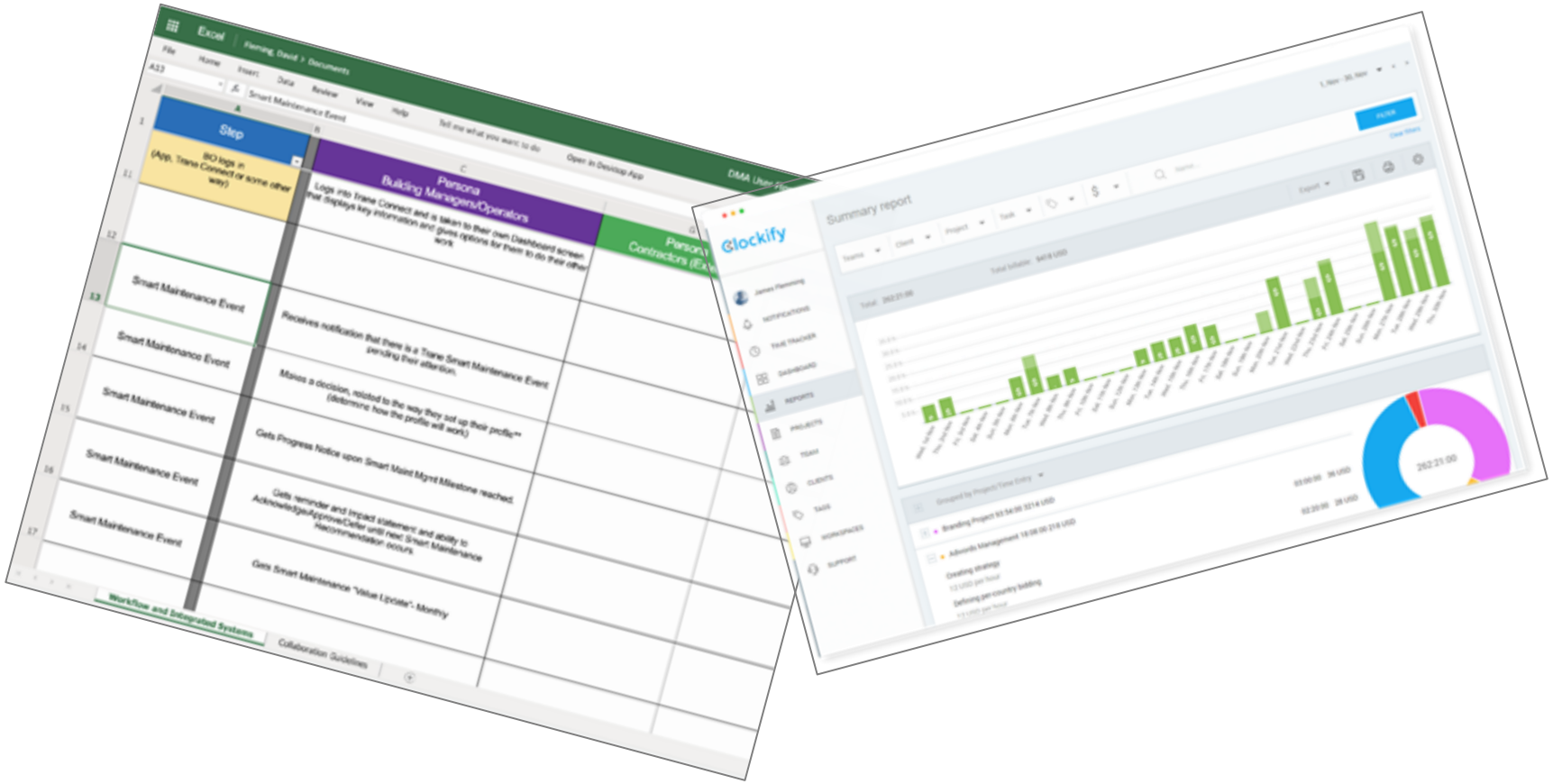


Lean 360 Matrix – Assumption Requirements & UX Research

Linear documentation of the workshop sessions are tracked in the Lean 360 Matrix spreadsheet. This extensible documentation is used to capture and track the User Flow, Integrated Systems, Features projection, KPIs, Questions, Knowledge Gaps and other dimensions typically tracked in traditional requirements. The matrix also covers information that may be gathered using Customer Journey Maps and Service Design Blueprints. This becomes the foundation of UX Research, informed by the gaps and collective knowledge.

3

Assumption requirements are logged and validated with the Lean 360 Matrix, informing UX research and design.

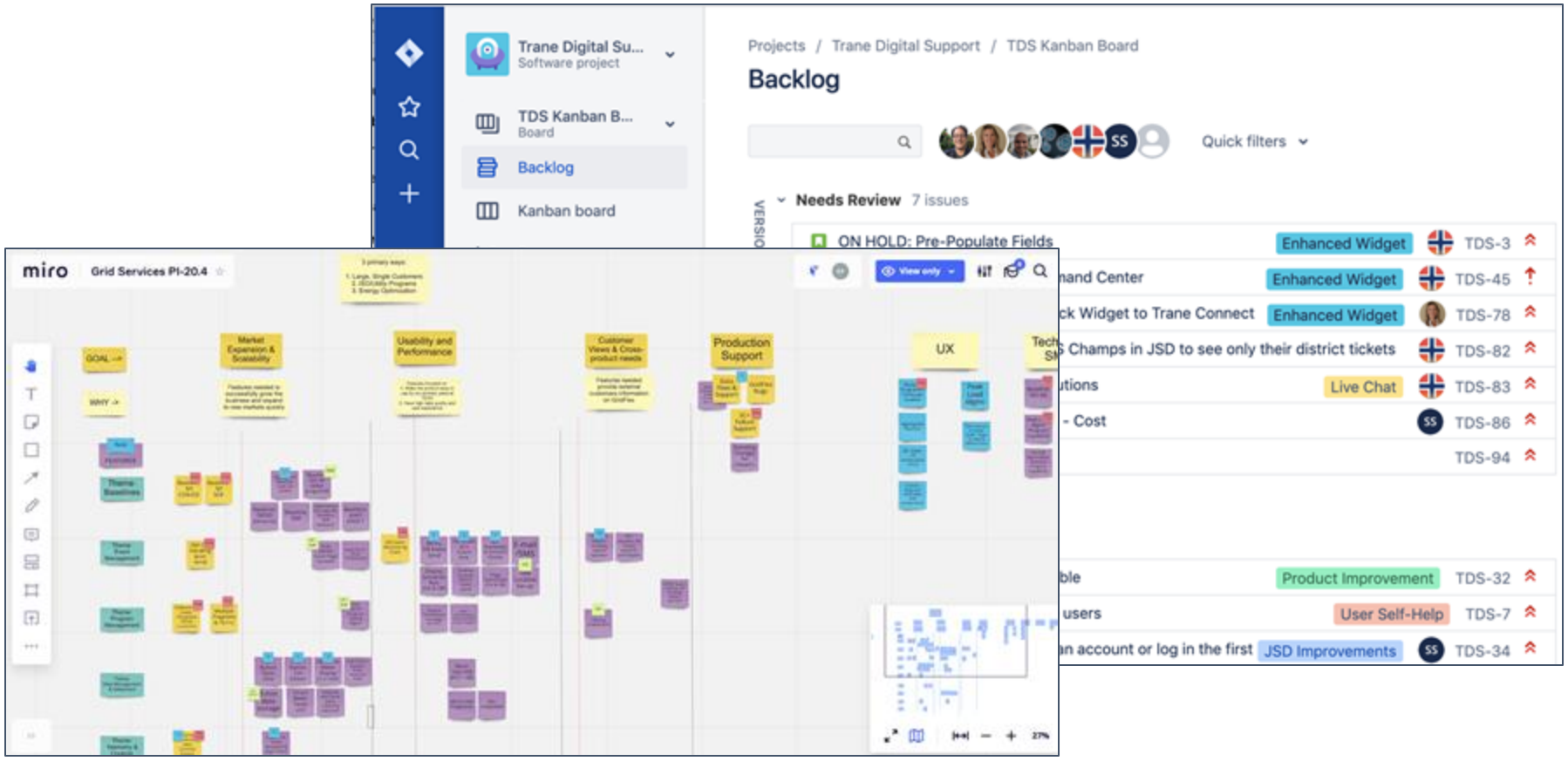


Agile Sprints transitioning

When the team has collaborated and confirmed that the designs align with the software roadmap, it's time to translate and transition into JIRA sprints—the term given to define the timing of work streams in development . Epics and Stories are used by the teams to assess, point, and develop. Led by Product Owners, UX will manage the work, along with Scrum Masters, QA, and other SMEs.

4

With UX research and design completed, Agile Sprints bring UX and Developers together in daily stand-up meetings

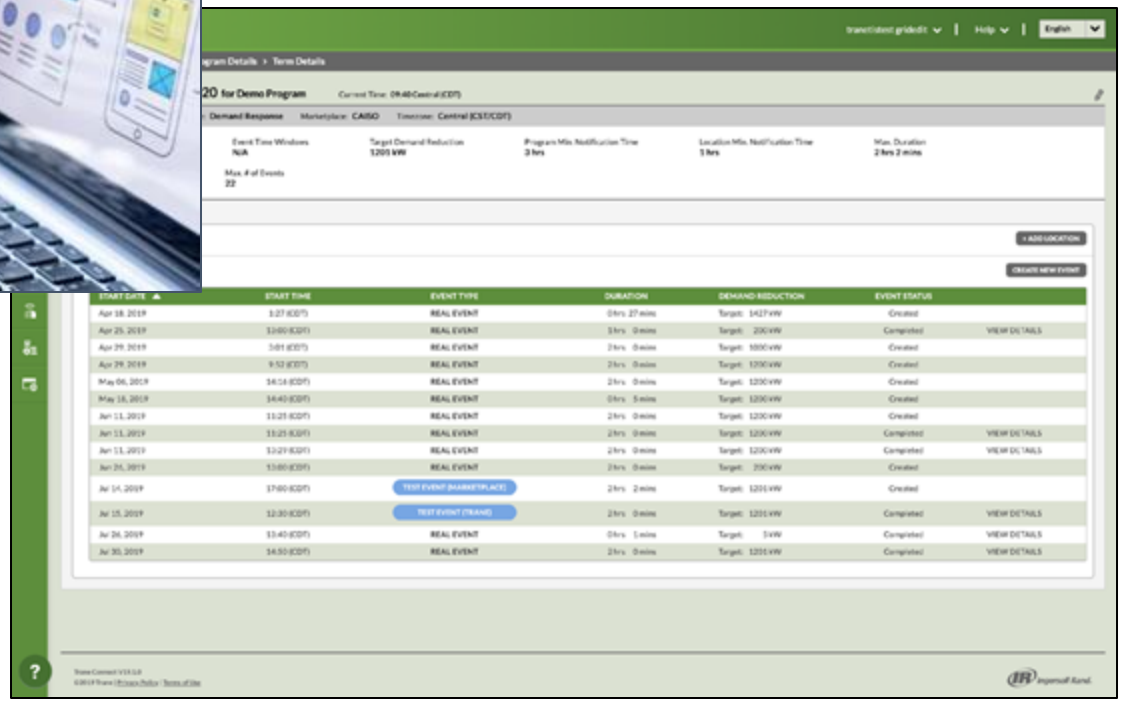


Developers validating with UX and then deploying

Deployment goes through the prestaging and design validation phases until the latest solution is released.

5

After Developers produce software, UX validates its usability before Beta versions are deployed.



6

Pre-established success metrics measure data and typically track the KPIs and OKRs.

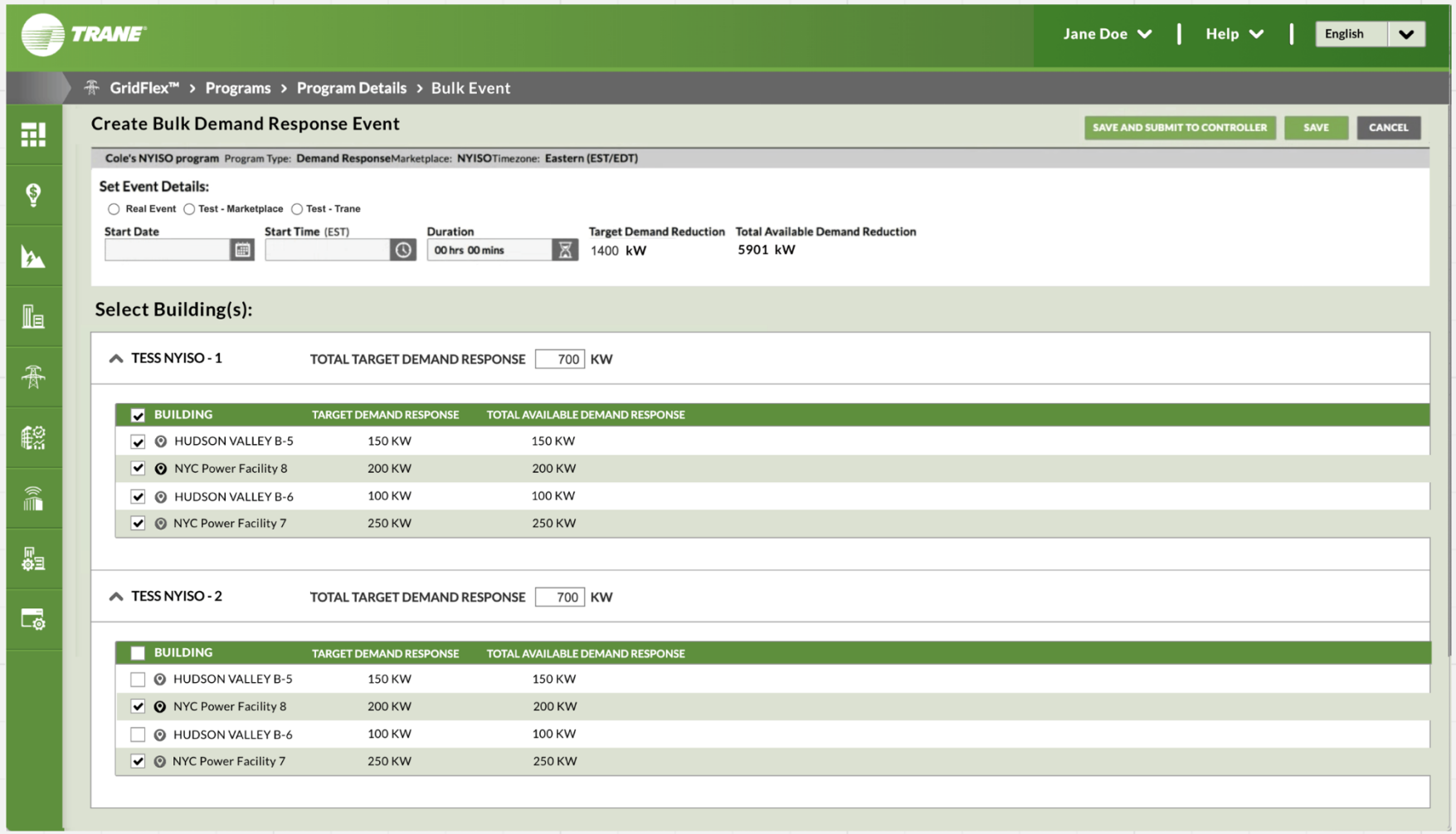
With KPIs and/or OKRs in place, success metrics are defined early and measured upon release.

Depending upon the organization, different approaches are used to define and measure success. UX can augment this work with Usability Testing, Surveys and Analytics programs such as Amplitude or Google Analytics.

Additional UX Research examples and UI Prototypes for Energy Performance Management

Gridflex - Demand Response and Day Ahead Offerings
Digital Maintenance Solutions – Remote Monitoring
Personas - Customer Service Solutions
Surveys – Internal Trane Information Flow
Zendesk Integration – Contemporary support solutions

Bulk Events


TRANE
Jane Doe
Help
English
GridFlex™ > Programs > Program Details > Bulk Event
Create Bulk Demand Response Event
SAVE AND SUBMIT TO CONTROLLER
SAVE
CANCEL
Cole's NYISO program Program Type: Demand ResponseMarketplace: NYISOTimezone: Eastern (EST/EDT)
Set Event Details:
Real Event
Test - Marketplace
Test - Trane
Start Date
Start Time (EST)
Duration
00 hrs 00 mins
Target Demand Reduction
1400 kW
Total Available Demand Reduction
5901 kW
Select Building(s):
TESS NYISO - 1
TOTAL TARGET DEMAND RESPONSE
700
KW
BUILDING
TARGET DEMAND RESPONSE
TOTAL AVAILABLE DEMAND RESPONSE
HUDSON VALLEY B-5
150 KW
150 KW
NYC Power Facility 8
200 KW
200 KW
HUDSON VALLEY B-6
100 KW
100 KW
NYC Power Facility 7
250 KW
250 KW
TESS NYISO - 2
TOTAL TARGET DEMAND RESPONSE
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100 KW
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NYC Power Facility 7
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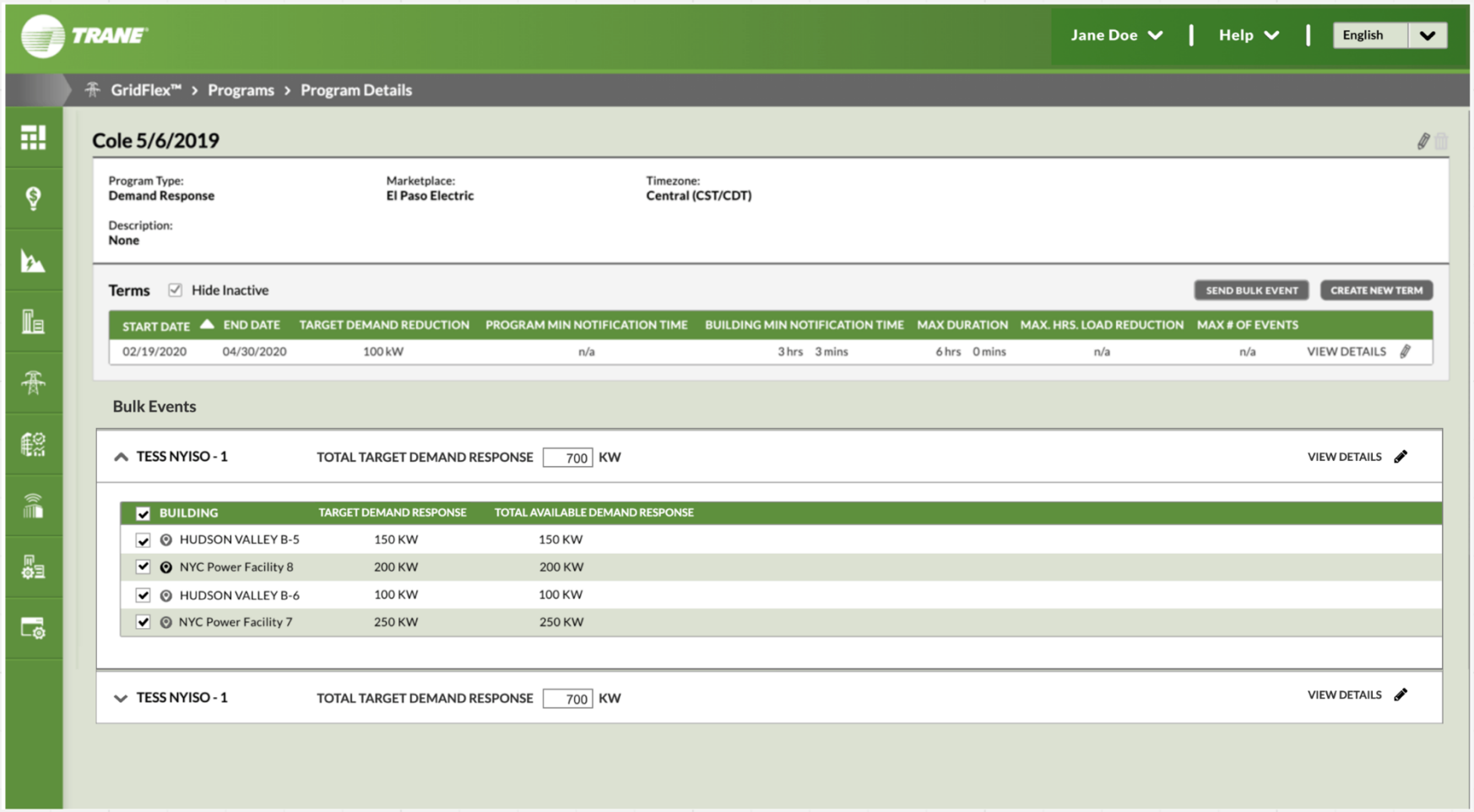
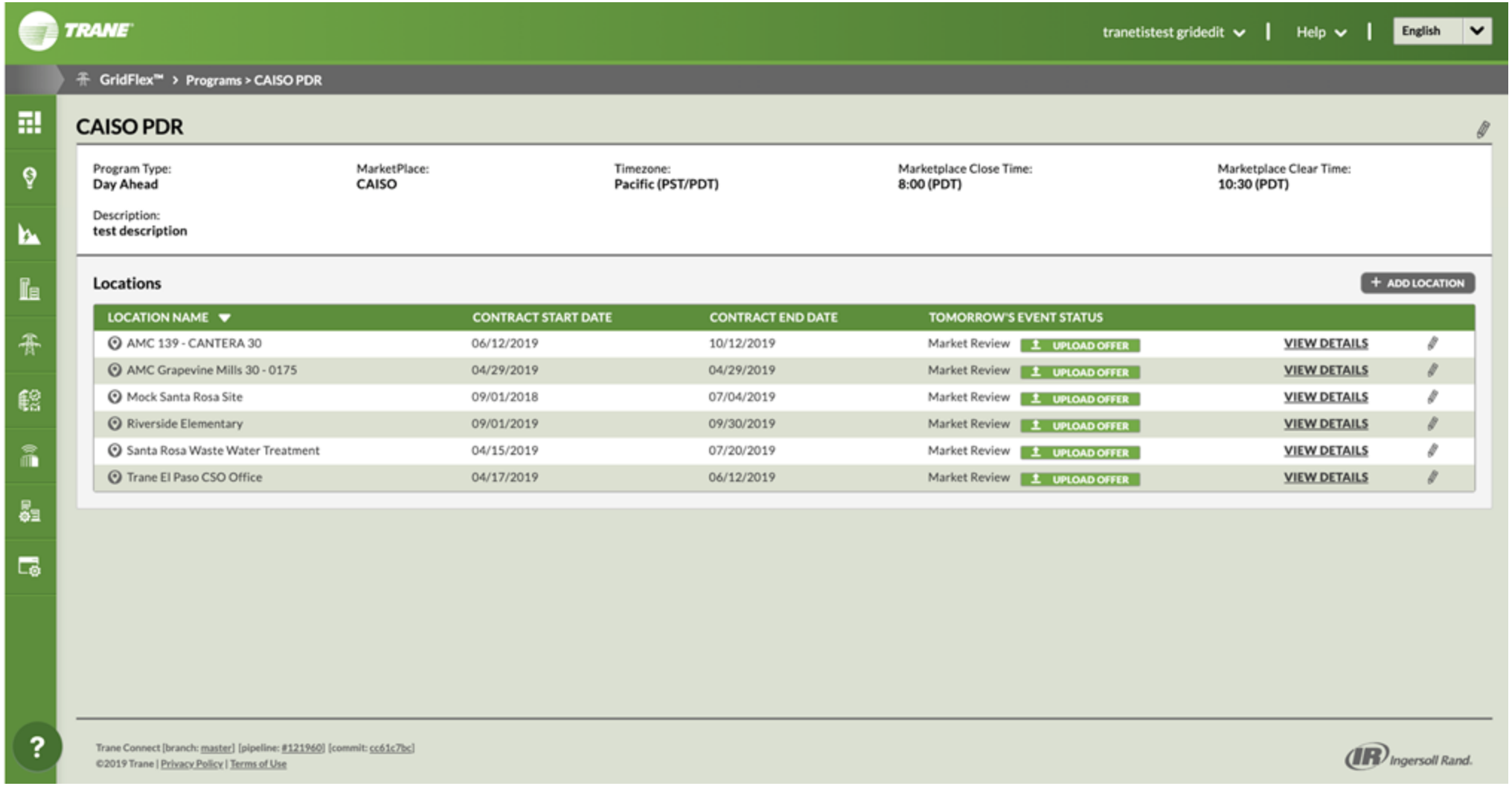
250 KW

Program Details



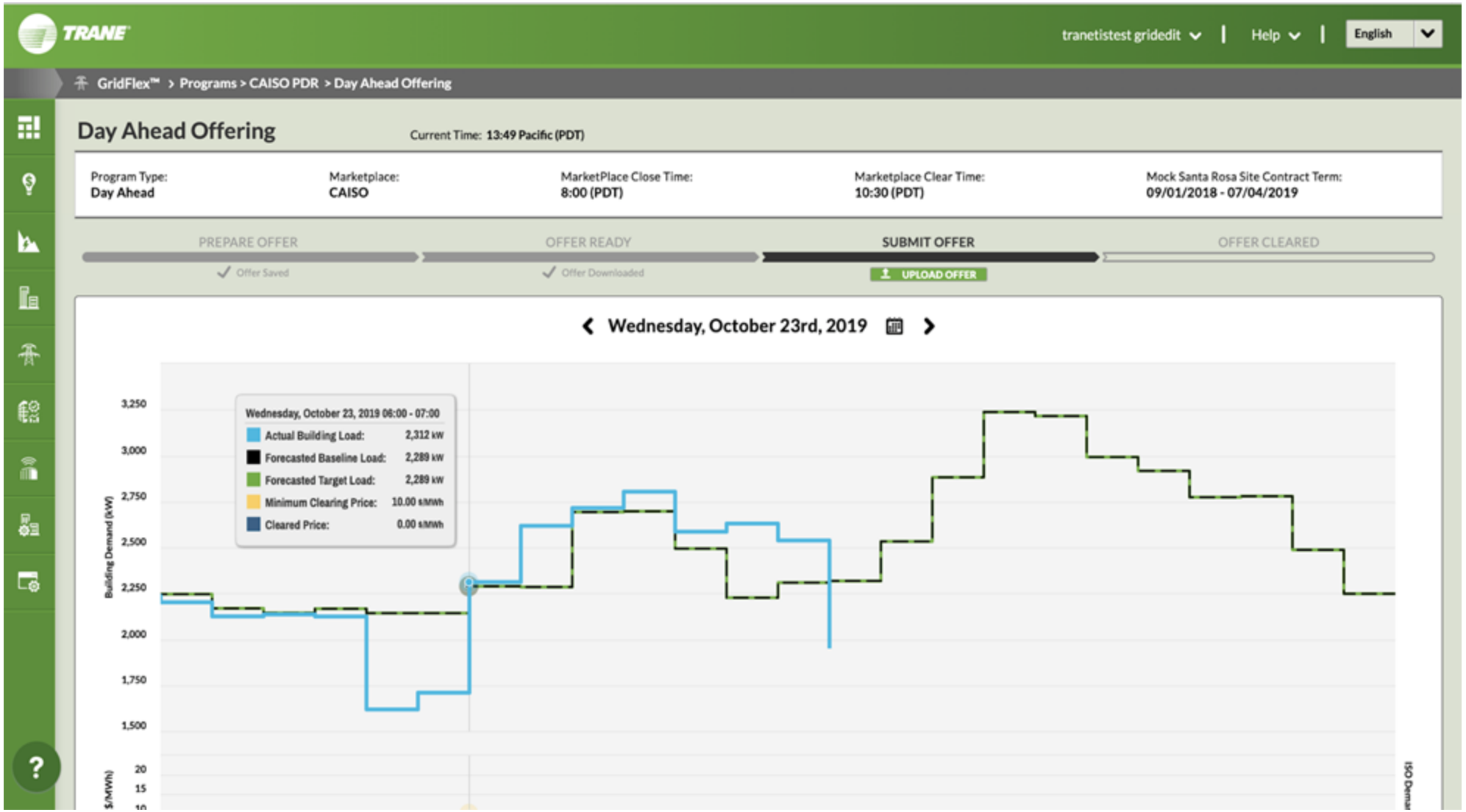
GridFlex UI

Day Ahead Locations



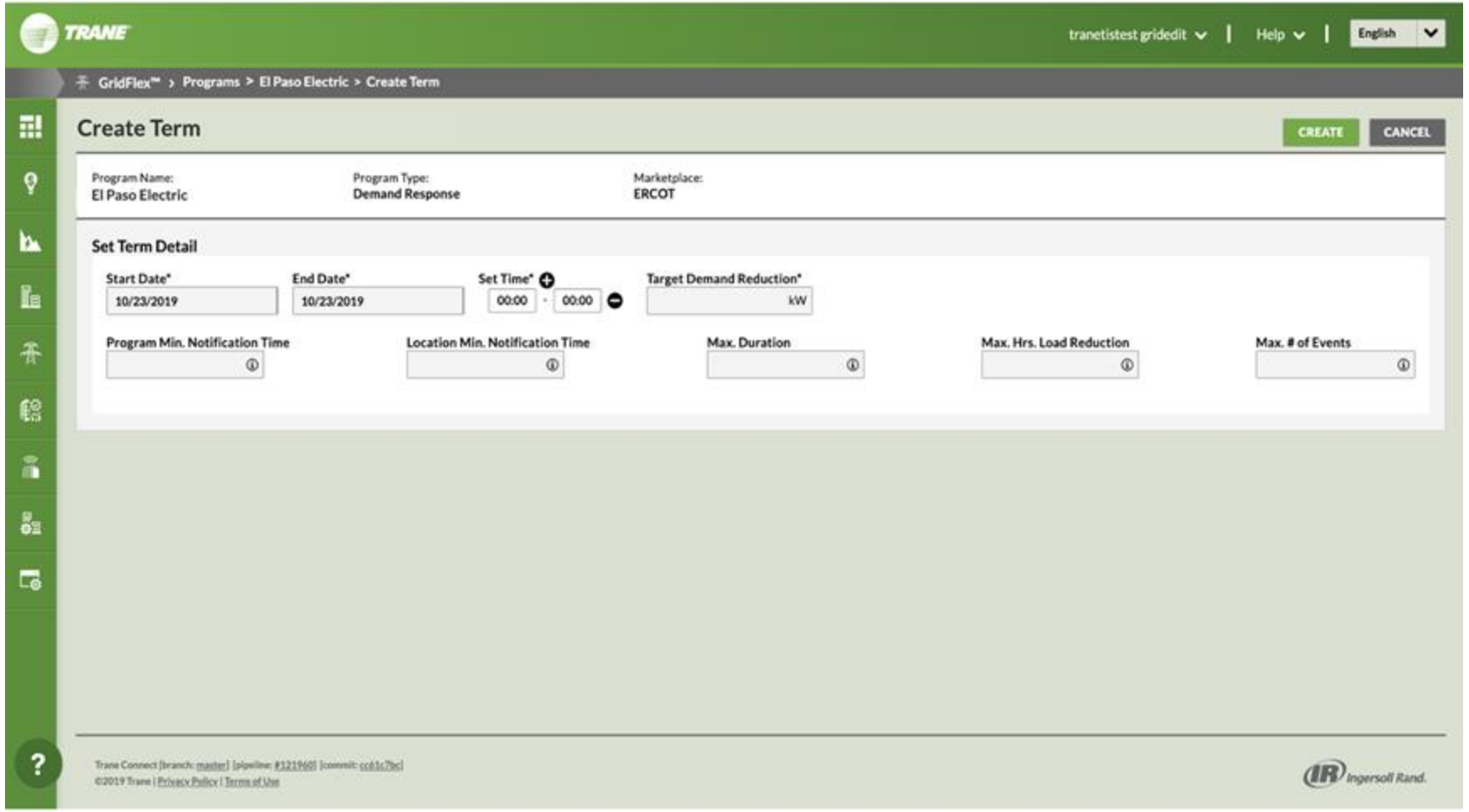
GridFlex UI

Day Ahead Offering & Chart

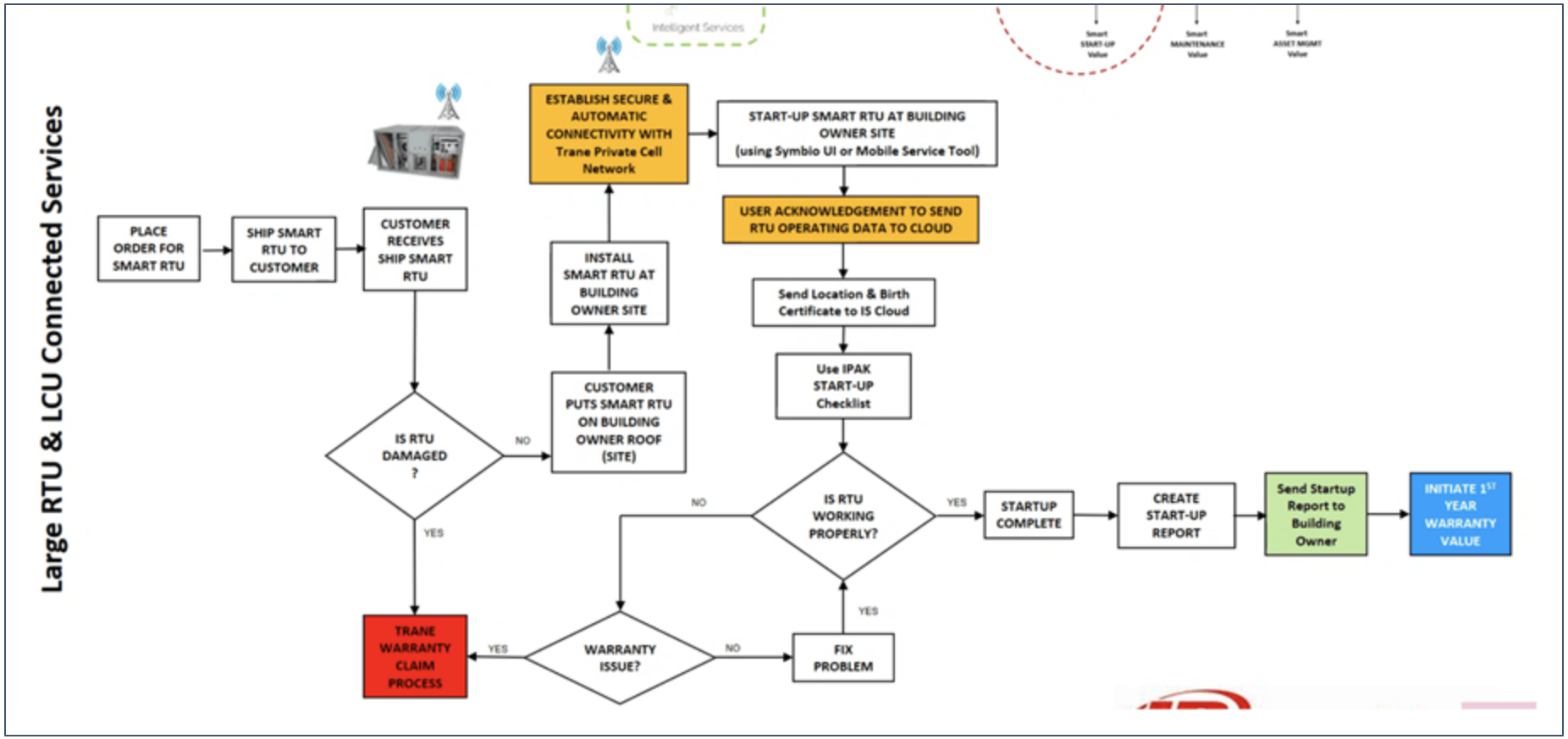


GridFlex UI

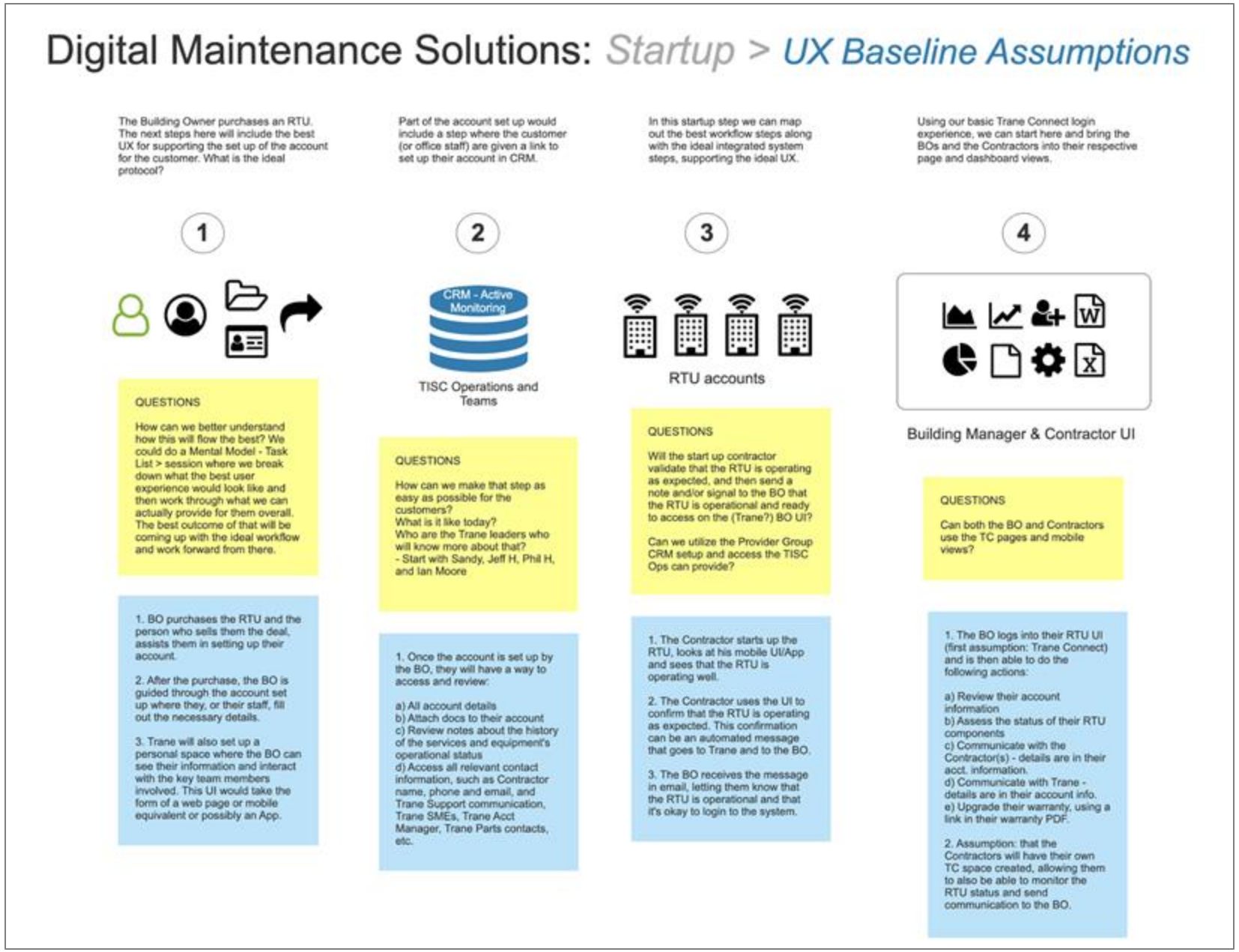
Demand Response - Create Term



Engineering Diagrams to be translated into User Flows



Baseline Startup Assumptions and Discovery Questions



Proto-Personas and Standard Personas

RTU -IPAK Contractors - Installer/Servicer, non-Trane

Ronnie RTU

Demographics
32, Family man with two kids, ages 7 and 9
Blue collar culture, lives in North Carolina
Worked on and off with Trane for 7 years
Has a strong relationship with a Trane Acct Manager

Work Goals
- Installation of RTU/IPAK
- RTU Servicing

Behavioral
- Prefers Mobile device: uses his Smartphone

[Try to focus on demographic information that predicts a specific type of behavior. For example, there may be cases in which the persona's age is totally irrelevant yet their access to a specific device, such as an iPhone, will completely change the way they interact with your product.]

Needs
- User friendly App
- Alerts
- Wireless connectivity
- Fast & Easy access to Support

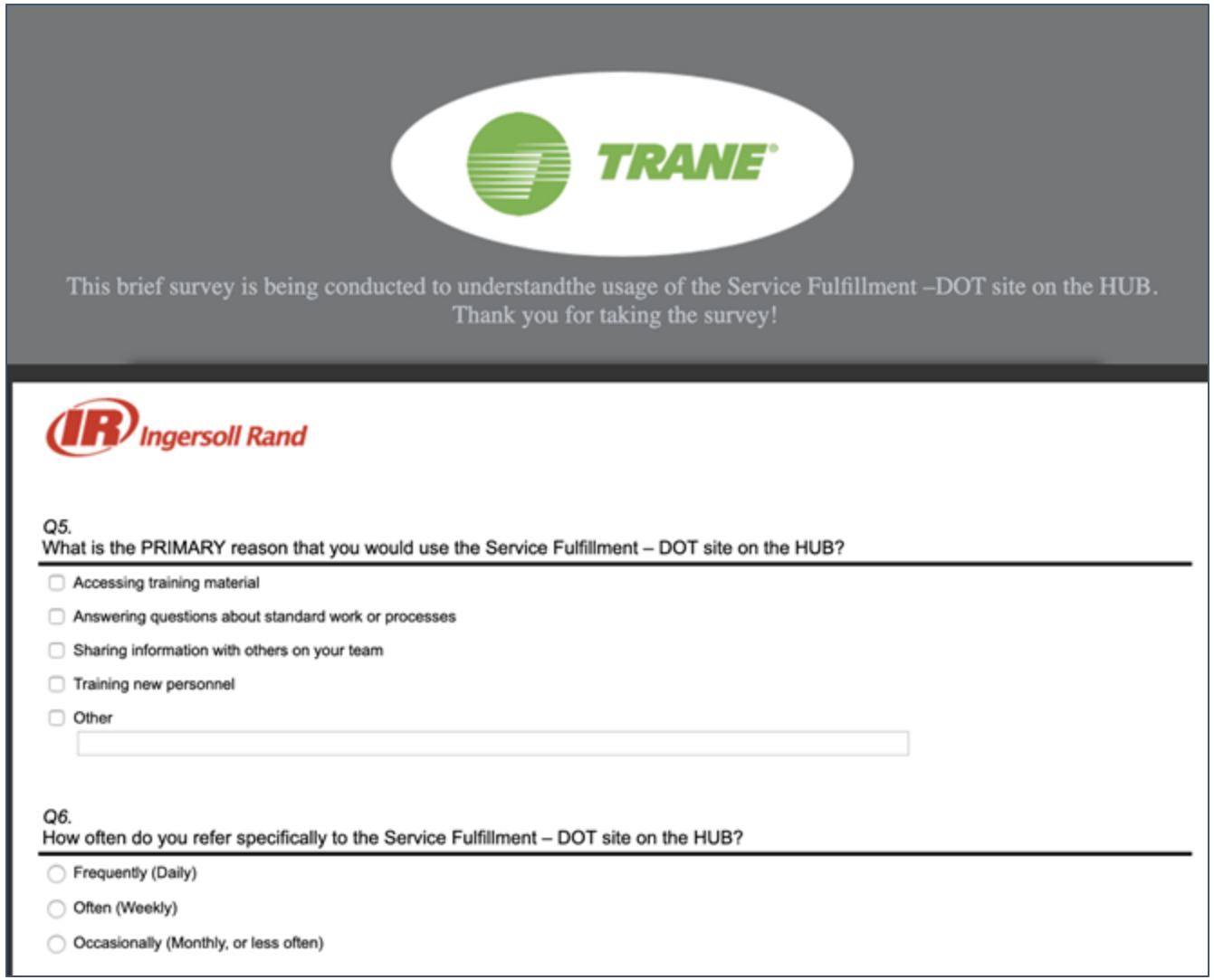
Pain Points / Frustrations
- Smooth Communication with all team members
- Wireless connectivity

[The bottom-left quadrant contains the user's needs and frustration with the current product or situation, the specific pain points your product is trying to solve, and/ or the opportunity you're trying to address.]

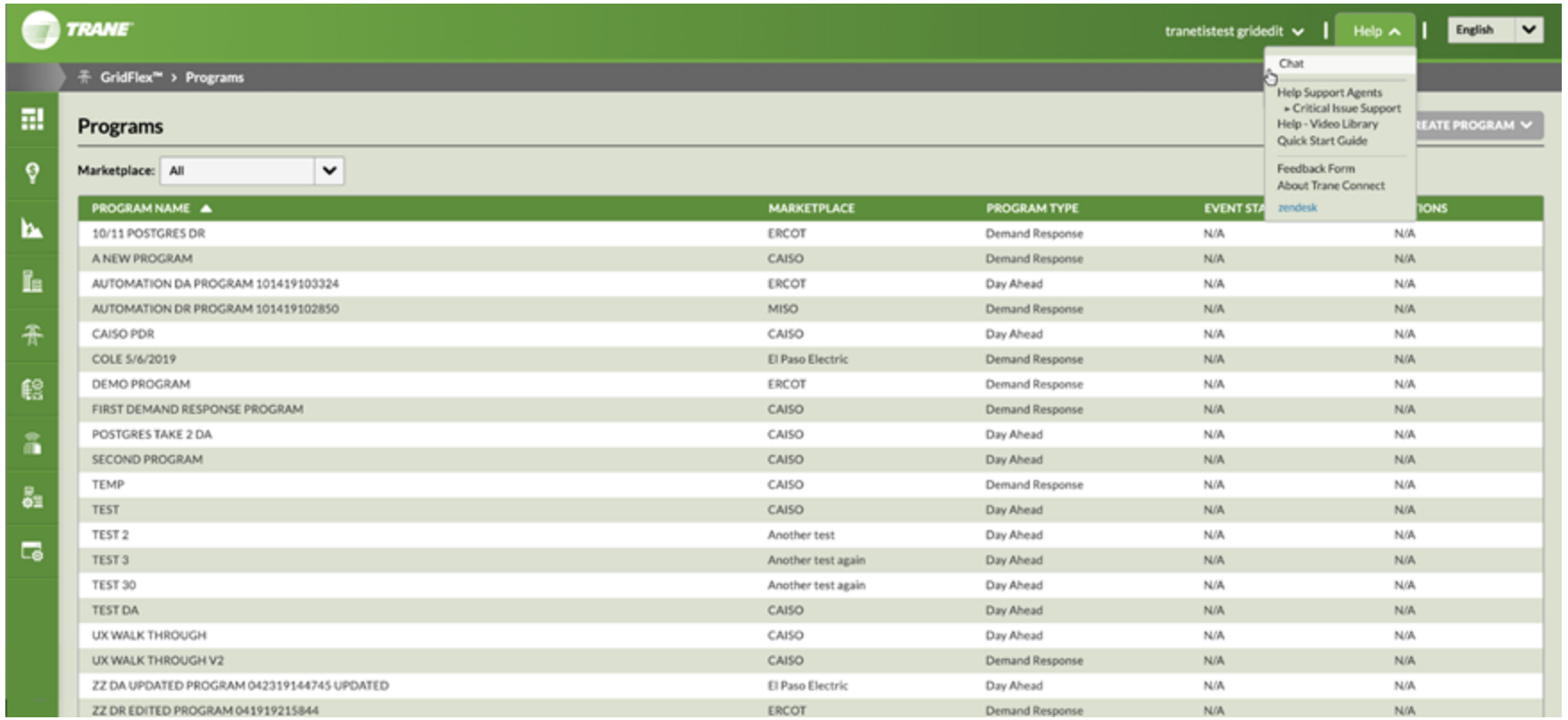
Solutions
- Mobile UI
- Easy to use software
- Option to log in from a link, vs. signing up for an account (?)

[The bottom-right quadrant contains potential solutions for those needs. You'll use the bottom-right quadrant to capture feature and solution ideas.]

Qualtrics User Surveys



Zendesk Integration



Q & A

Dave Fleming |. UX Architect

Thank you!