18F

Administrative Office of the U.S. Courts

CM/ECF

How to get started building a new CM/ECF. Today.

A tactical approach to designing, building, and shipping products that solve real problems for real users in the federal Judiciary, immediately.

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This guide builds directly on recommendations delivered by 18F in two previous reports: the Path Analysis Report and the Experiment and Iterate Report. We suggest reading those documents first.

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Executive Summary

The reports from the Path Analysis and Experiment and Iterate phases of this project repeatedly showed how the siloing of the teams responsible for building CM/ECF has resulted in failure of previous modernization efforts.

> "We talk about modernizing and the future of case management. Look at what we have given the courts over the last 20-30 years. We haven't given them anything new, just regurgitated old stuff into new platforms. Before CM/ECF, AMES, ICMS - we've only given them a new interface."
>
> — *AO stakeholder*

In addition to the recommendations outlined in the 18F Path Analysis report, **we believe the Administrative Office of the U.S. Courts (the AO) should focus on 4 core objectives right now which are most critical to the success of this initiative:**

1. Establish an empowered Product Team with a Product Owner
2. Conduct research with real users to direct all product decisions
3. Put existing standards for ownership of data and risk into practice
4. Start incrementally building the solution

Each office of the AO has made progress adopting agile methodologies individually, but until the organization adopts agile practices across offices, silos will persist. So in addition to these 4 recommendations, **it's imperative that the AO implement these recommendations outside of the existing structures, processes, and roles across the Judiciary (the AO and courts)**.

> "When a company's capabilities reside in its processes, and when new challenges require new processes—that is, when they require different people or groups in a company to interact differently and at a different pace than they habitually have done—managers need to pull the relevant people out of the existing organization and draw a new boundary around a new group."
>
> Clayton M. Christensen and Michael Overdorf, March 2000

The overarching goal is to create a product that meets user needs and a secondary goal is to create an organization capable of building and maintaining that product.

Research methodology

Discovery

The current 18F team drew on the valuable research conducted during the Path Analysis and Experiment and Iterate phases in order to build on the recommendations made in those reports.

Our team's primary research consisted of **semi-structured interviews** facilitated by a visual presentation or note taking. The benefit of this interview format was that it directed our conversation towards topical areas that built upon our initial research, while creating an open environment for follow-up questions and dialogue for richer understanding and insight. In addition to those interviews, we **attended** Enterprise DevSecOps Ad Hoc Working Group meetings and the regular Scrum[1] ceremonies (meetings) of an CM/ECF agile development team to observe their discussions and identify organizational dependencies that came up.

The goals of our research were to:

- Understand the current state of the organization including product decisions, development, and delivery at an executional level
- Present the strategic recommendations from our Path Analysis to relevant stakeholders, get feedback, and discuss tactical considerations for implementation

Design and Feedback

As we began identifying tactical solutions, we sought inspiration from sources within and outside of the AO, including:

- Interviews with 18F subject matter experts
- Voluntary interviews with senior agency stakeholders from other 18F engagements to learn from the successes of other agencies
- Reviewing Executive Branch policies and guidance
- Reviewing public and private sector case studies

As we were developing our recommendations, we shared early rough drafts of our report with AO stakeholders in order to host semi-structured feedback sessions. These

[1] Scrum is a framework for agile product development centered around a self-organizing team, customer focus, and responding to change.

feedback sessions allowed us to share early concepts so that we could gauge their implications, assess areas of confusion, and refine them to meet the Judiciary's needs.

Participants

- For discovery, we conducted 21 interviews and activities
    - With leaders and subject matter experts (SMEs) across the AO
- For design and feedback, we conducted 10 interviews
    - With leaders from the AO, from the clerks advisory groups, and from key Committees of the Judicial Conference (i.e., Court Administration and Case Management, Information Technology)
    - In addition to the interviews, we provided the AO an open comment period, during which additional stakeholders could contribute feedback asynchronously

Establish an empowered Product Team, with a Product Owner

How to do this

1. Establish an empowered Product Team
2. Redefine the Product Owner[2] role and responsibilities
3. Establish a Product Champions group
4. Maintain Council / Committee involvement in policy decisions. Minimize their involvement in CM/ECF decision making
5. Clarify ownership areas between Product Team, Champions, and Councils / Committees
6. Establish and uphold communication channels between Product Team, Champions, Councils / Committee, and the Judiciary

We strongly recommend that the AO start small, when implementing these recommendations; this means 1 empowered Product Team, with 1 Product Owner, supported by 1 Product Champions group as well as other members of the courts and AO. This will allow the team and organization to define success, form new processes, and ultimately mitigate the risk of doing too many things at once. The organization will be ready to scale up its efforts and devote more teams of people and attention once they have validation that the product is meeting user needs and the support structures formed are effective.

1. Establish an empowered Product Team

This team (also known as a DevSecOps team) shares the responsibility of upholding and executing the product vision for CM/ECF. It is critical that certain roles are internally sourced, but the rest can be filled by AO employees, employees from various courts, or contractors.

[2] A Product Owner is a role defined within agile teams. While the AO currently has a role called Product Owner, the context of the proposed role is significantly different – requiring specific strengths and responsibilities to be successful while pursuing this new and ambiguous path for CM/ECF. The AO may consider calling this new role something different than Product Owner, such as Product Manager, to differentiate between the two. An example, from the U.S. Tax Court.

This should be a cross-functional team capable of investigating, designing, and delivering code. An initial, complete Product Team might include:

- 1 FTE Product Owner (sourced from the Judiciary)
- 1 FTE Technical Lead[3] (sourced from the Judiciary)
- 1 FTE User Researcher (or UX Designer)
- 1 FTE Front-End Designer (product/visual designer)
- 2-3 FTE Developers (front and back end)
- 1/2 FTE Testing Lead (sourced from the AO)
- 1/2 FTE Security Lead (sourced from the AO)

As the product matures and the team takes on more work, the team will likely need support from roles such as a Business Analyst, a second User Researcher, and / or a Content Designer.

Considerations	
What good looks like	• Full-time commitment for the majority of the team • 1 team, 5-7 people, no more at this phase[4] • Clear team charter that explains the roles, contributions, and commitment from all team members • The Product Owner acts as a point of contact (POC) for the team to facilitate collaboration with Champions, unblock the Product Team, and take on feedback from additional stakeholders
What to watch out for	• Delayed approvals and access to technology or data that prevents the team from making progress • User stories[5] that are too rigid to allow flexibility in how the team solves them • The product roadmap is not validated by data from end users • The team is prevented from choosing what it works on

[3] A Technical Lead coordinates with the organization as technical problems or questions arise, and continuously assesses technical risk, complexity, and scope for ideas that the team identifies. This role has unique responsibilities, but could be fulfilled by one of the Developers on the team. An example, from the U.S. Tax Court.

[4] A smaller team is better for collaboration. The size of the team matters, especially when the product is early in its design and development. A Two Pizza team, coined by Amazon, is a rule of thumb where teams are “no larger than can be fed by two pizzas.”

[5] A user story is a short, user-centric description of a feature. Here is some guidance for writing and mapping user stories to user needs.

	• The team is prevented from designing its own agile practices and ceremonies
Tips for success	• Discuss individual objectives, goals, roles, and interests within the team upfront, in order to align them with organizational success • Establish collaborative practices and spaces within the team (How we collaborate at 18F) • Schedule regular meetings for the team to reflect on what is working and what should change to create space for good collaboration practices • Have patience for slow progress at first. This time will serve as an investment for toward setting up effective team structures and tooling • Encourage everyone on the team to regularly attend user research sessions on a rotating basis (avoid having more than 2-3 people attend individual sessions) • Be prepared for the team focus and makeup to change (for example, there's often a ton of security work needed at the beginning, to get things set up and people trained that then tapers off) • Create space for designers and developers to pair together on solving problems

2. Redefine the Product Owner role and responsibilities

The Product Owner should be given the authority and responsibility to set and uphold the vision of CM/ECF at both strategic and tactical levels, while consistently ensuring that every product decision meets user and organizational needs. The Product Owner acts as the lead and representative for the Product Team.

The Product Owner…

- Owns product vision and outcomes
- Ensures high value is created with every release
    - Defines the product backlog
    - Works with business analysts (BA) to creates actionable user stories and acceptance criteria
    - Prioritizes backlog
    - Accepts completed user stories

- Needs to be available to their team, facilitates core ceremonies, user story "sign-off," and clearing blockers[6] to the Product Team's progress
- Understands the environment, the end user, and the business so as to make sound decisions
- Provides effective updates about the project, tailored to different audiences

> "Picking the right Product Owner is the difference between success and failure of a project. You need someone high enough up in the organization that they will be trusted to set the priorities of the project and deliver on it. But you also need someone with enough time to commit to the project."
>
> *— Senior executive at a peer agency*

Considerations	
What good looks like	• Seeks user validation for value / impact and measures success based off it • Understands the context of the organization, the stakeholders involved and maintains relationships / communication with them - regardless of hierarchy (we firmly believe this role should be sourced within the Judiciary and not outsourced) • Gains and keeps the trust and confidence of stakeholders (especially senior stakeholders) • Good at making difficult decisions under pressure • Strong communication (oral & written) skills • Can execute on the daily work while remaining aware of the overall scope of the project (e.g. can see the forest for the trees) • Has the necessary time to devote; this will be a full-time job • Aligned with Judiciary stakeholders and the Product Team on discrete decision making authority areas • Takes feedback into account, seeks deeper understanding of recommendations without saying "no" upfront • Incorporates user research findings into project direction
What to watch out for	• Product Owner continues to default to execution and coordination responsibilities; they are not entrusted with setting the priorities, making final decisions, owning the vision

[6] A blocker, or impediment, is anything that stops or slows down the delivery of a product, like a bug, dependency, or decision.

	• Only measures success based on productivity / velocity[7] • Makes decisions on their own without collaboration with the team • Doesn't maintain open communication outside of the team • Focuses primarily on meeting deadlines over meeting users' needs • In order to influence the Product Owner or the path forward, people go to the Product Owner's supervisor or other superiors.
Tips for success	• Choose a Product Owner who can build consensus and alignment around the project • Choose a Product Owner who understands the organization, stakeholders, and users • Establish direct access between the Product Owner, Product Team, and a variety of users • Establish regular and direct access between the Product Owner, Product Team, and Product Champions • Ask leadership to explicitly and vocally entrust and empower this person (consider having the AO Director and leaders across the Judiciary make a joint announcement) • Use demos and updates to maintain good communication up the leadership chain and out across the Judiciary – not to seek permission, but share red flags or warning signs

3. Establish a Product Champions group

Product Champions are a mixed group of 4-5 executives spanning the AO and the courts, who are responsible for clearing blockers for the Product Team, socializing, and promoting the Product Team's work with stakeholders. It's valuable that the people and involvement in a Champions role remain consistent throughout product development.

Product Champions…

- Clear external blockers for the team to allow them to focus on their work
- Relay product roadmap and progress to relevant stakeholders
- Advocate for funding and project prioritization
- Do not commit the Product Team to features
- Contribute to and support the Product Team's definition of success
- Represent the goals and interests of Product Team or external stakeholders when they aren't in the room

[7] Velocity is a productivity measurement commonly used in software development. Velocity = units of work, like open tasks or tickets, completed in a given timeframe.

> "Leadership's role is coaching to outcomes, not making design decisions. Deciding if a button is blue is not a good use of their time. Their role is defining what problems we want to solve, how do we measure and what success is getting closer to solving it and if we're getting closer. Leave the team alone."
>
> *— Senior executive at a peer agency*

Considerations	
What good looks like	• A small, cross-functional group of leaders across the organization (equal parts AO and courts) • 2-4 people, no more than 5[8] • A regular, recurring meeting, at least 1-2 hours every sprint (usually a two-week cycle), to advise on the path forward and collaborate with the Product Team on a sprint cadence • The group demonstrates a united front to stakeholders • Gives credibility to the vision, the Product Owner, and Product Team • Delegates decision making to the Product Team by default • Product Champion involvement tapers off as Product Team gets up and running, and the Product Champions shift focus to other product initiatives
What to watch out for	• They undermine the authority of the Product Owner and Team by acting as decision-makers on product-related decisions like feature prioritization, the roadmap, and the backlog • Product Champions communicate the vision and progress updates inconsistently to stakeholder groups, especially when the Product Owner or Team isn't present • They conflate their role with being product or technical experts on the system, mistakenly focusing on granular details of the product or the technology rather than the big picture • Failure to uphold decisions consistently
Tips for success	• Avoid existing power structures or titles (committees, council, working groups, expert panels) to allow the role and success for this group to be redefined • The Product Owner should keep the Product Champions well informed – Product Champions should never hear something for the first time in a meeting with other stakeholders

[8] "The smaller the better. With more than five people you lose the singular vision on these things. You can't make decisions efficiently." – Senior executive at a peer agency

- Choose people who:
  - Are well-networked or can clear blockers to limit the layers of approval needed outside the Product Team
  - Can be a team player
  - Are accepted influencers and thought leaders
  - Have the authority to grant approval
  - Have humility about what they don't know or are not an expert in

What we heard

> "Defining success is the number one thing. They don't have to be the ones to define it but they have to own it and have some governance to hold the team accountable."
>
> *— Senior executive at a peer agency*

> "Create a venue where every few weeks a touchpoint with all key decision makers who can give top cover to 99% of the decisions that need to be made are there. They can make decisions on the eight things that the team couldn't and a blocker was cleared."
> *— Senior executive at a peer agency*

4. Maintain Council / Committee involvement in policy decisions. Minimize involvement in CM/ECF decision making.

Advisory Councils and Judicial Conference committees have the authority to decide on Judiciary-wide policies. They will advise the Product Team and decide on these matters as they relate to the product being designed and executed. There are many different types of councils and committees, so it'll be critical to engage with just 3 or 4 so that the Product Owner and Product Team can meet with them regularly to showcase demos[9] and get feedback, without getting bogged down with meetings and updates.

[9]In the agile spirit of "demos, not memos." Instead of measuring progress by looking at purpose-made artifacts, look at the actual work that is being done.

Considerations	
What good looks like	• Advising / deciding on policy or legal issues – it's most critical that they help navigate the tension between standardization of processes or methods vs. critical, unique needs and find a common ground • Provide feedback on vision, strategy and communications • Support speeding up the pace of change (i.e., transition from shipping code to production 2-3x a year to once every sprint, at a minimum) • Hold the Product Team accountable for regularly delivering code / value to users (via demos of features under development)
What to watch out for	• Bias that represent interests other than end users of the system • Group meetings turning into ideation sessions that perpetuate a culture of design by committee • Courts and unit executives will want to direct product decisions • Courts, judges, or other influential stakeholders leverage their stature or relationships to force the Product Team in a direction that favors their needs or perspective

Tips for success	• Join an existing meeting or set up recurring time to meet with each group, possibly 30 min - 1 hour every month, with:
	  ○ Clear agendas
	  ○ User research highlights and demos
	  ○ Topics for discussion, asking for input and / or points of contact for follow-up research
	• Avoid voting sessions and decisions involving the product
	• Take feedback live in the meeting or asynchronously through email / MS Teams

What we heard

> Working groups[10] take a lot of upfront work to get stakeholders together. They're not representative [of end users]. We want to connect directly to users in user communities, panels of attorneys, court staff. Instead of having 1-3 folks, have a rotating list of 3-4 dozen dozen. We ask them to take a look at what we have.
>
> — *AO stakeholder*

[10] "Working groups" is used in the colloquial sense here and does not refer to a specific type of entity in the AO.

5. Clarify and protect ownership areas between Product Team, Champions, and Councils / Committees

Early on, the path forward will be vague and frequent collaboration on decisions will be valuable. But as the Product Team begins to normalize its processes and make progress in its work, it'll be valuable to establish clear lines of involvement and authority.

Considerations	
What good looks like	• Product Team owns product decisions • Product Champions own org / resource decisions • Councils / committees, and AO SMEs own policy decisions
What to watch out for	• Politics driving feature prioritization • Decisions being made behind closed doors, without transparency • Confusion remaining around who is the decision maker in important scenarios, blocking the Product Team • Collaboration desired on all sides, but clarity is lacking on who the final decision maker is
Tips for success	• Outline real, critical decision making activities • Define the people or groups that may be involved (e.g., which councils / committees will advise the Champions on particular topics) • Identify their default level of involvement and authority • Share this broadly within the organization and among the courts • Revisit every 3-6 months to revalidate or update

Ownership and involvement can be codified in a RACI chart

A responsibility assignment matrix, known as a RACI chart, is a diagram used to clarify roles and responsibilities in project management. The role of this framework and chart is to clearly document levels of involvement, it's the Judiciary's responsibility to agree to these definitions and uphold them. The chart defines whether the people involved in a project activity will be Responsible, Accountable, Consulted, or Informed.

Key:

- **Responsible** does the work to complete a task or implement the guidance.
    - Every activity needs at least one Responsible group.
- **Accountable** has decision-making or veto authority.
    - Ideally only one Accountable group is assigned to each activity.
- **Consulted** provides advice or guidance based on their subject matter expertise.
- **Informed** needs to be actively kept in the loop on project progress.

The RACI chart below is meant to provoke conversation about how decision-making responsibilities could be clarified in order to evolve CM/ECF around the needs of its end users. The groups align with our recommendations above with additions of councils / committees representing the groups that advise on legal policy and AO Lead or SME representing the groups or leaders of various AO-specific divisions (Security, Infrastructure, Operations, etc.). Some activities offer starter recommendations. Others are left blank for you to continue the discussion.

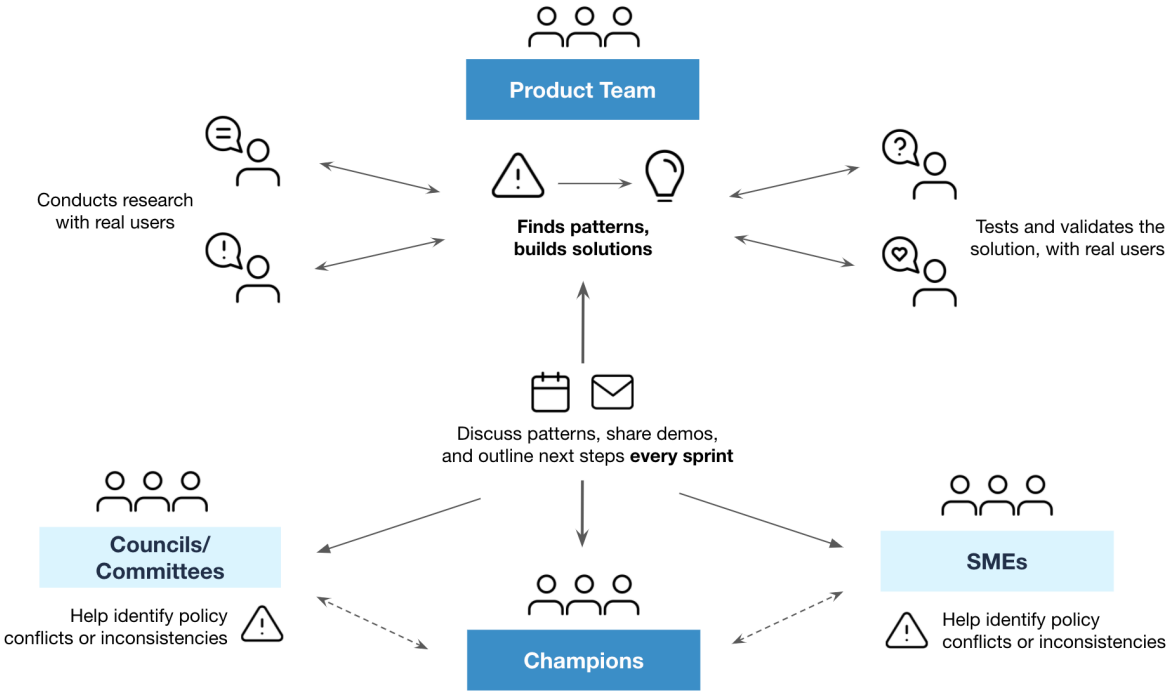
Activity	Product Team	Product Owner	Champions	Councils / Committees	AO Lead or SME
Set CM/ECF's vision, objectives, and goals	Responsible	Responsible	Accountable	Consulted	Informed
Set roadmap and priorities	Accountable, Responsible	Responsible	Consulted	Consulted	Informed
Manage backlog, plan sprints	Accountable, Responsible	Responsible	Informed	Informed	Informed
Understand and establish organization risk	Informed	Consulted	Consulted	Informed	Accountable, Responsible
Prioritize security fixes	Accountable, Responsible	Responsible	Informed	Informed	Consulted

Activity	Product Team	Product Owner	Champions	Councils / Committees	AO Lead or SME
Pursue tech-neutral ATO (Authority to Operate) process to mitigate risks	Responsible	Responsible	Accountable	Informed	Consulted
Decide to move to a third party cloud	Consulted	Responsible	Accountable	Informed	Consulted
What and when to ship to production	Accountable, Responsible	Responsible	Informed	Informed	Informed
Define user groups and decide which to include	Responsible	Accountable, Responsible	Consulted	Consulted	Informed
Determine which tools to build with	Accountable, Responsible	Consulted	Informed	Informed	Consulted
Policy decisions	Consulted	Responsible	Responsible	Accountable	Consulted
Make "enterprise-wide" tech decisions	…	…	…	…	…
Assign staff and funding	…	…	…	…	…
…[11]					

[11] These sections are left blank for the Judiciary to discuss and develop. The areas of the chart that are filled out are preliminary recommendations. It's the Judiciary's responsibility to agree to these definitions and uphold them.

6. Establish and uphold communication channels between Product Team, Champions, Councils / Committees, and the Judiciary

As the team is beginning to build a cadence for delivery, communication channels and meetings should be consistently maintained to socialize progress updates, ask questions, and get feedback.



Considerations	
What good looks like	• Demos, not memos • Working in the open[12] • Create a feedback loop of frequent communication and collaboration among all stakeholders • Provide regular updates

[12] "Working in the open" is a common phrase within agile teams but it can have multiple meanings. Within this context we mean maintaining a roadmap that is visible to stakeholders, providing regular progress updates, maintaining documentation, and providing feedback channels (e.g., demos) for consistent communication and collaboration. In broader terms, "working in the open" can refer to open source policies, which we refer to and define later in the report.

What to watch out for	• Progress updates get derailed with ideas and discussion. If this occurs, set up a separate time to discuss with the people involved. • Feedback is given but not acknowledged or followed up on (if needed) • Stakeholders make demands on the Product Team that change their priorities
Tips for success	• Send progress updates to all informed stakeholders every sprint, consider using a weekly ship email format (source) • Attend monthly meetings with demos, research clips or verbatims, open questions to discuss, and anything they can help unblock • Keep it brief and make space for reactions

What we heard

> “Champions need to protect the Product Team from outside influence by proactively communicating to stakeholders about the decisions and direction of the Product Team.”
>
> — *Senior executive at a peer agency*

> "If we don’t include these stakeholders, they can derail everything, beyond our control. As a process we want to be sure to keep everyone informed. Transparency and communication are key.”
>
> — *AO stakeholder*

Conduct research with real users to direct all product decisions

How to do this

1. Invest in user research roles and activities
2. Set objectives and goals around user value
3. Establish more user research data sources

Who are "real users?"

People who participate in user research activities should be regular end users from identified user groups, and not SMEs. The Experiment and Iterate report referred to these people as the "hands on keyboard" users such as court staff and public filers. End users don't need special training to participate in user research activities because the goal is to learn from their direct experiences using the product. However, user research participants might become too familiar with the activities if they participate too often. Users should only participate more than once if the research activities or topic areas are different from previous research sessions. The User Researcher can follow up to ask participants clarifying questions about a topic or prototype. Real users, members of the court and public, will have the final say on what succeeds vs. fails or what to prioritize vs. deprioritize, via research and testing. Their voice is fundamental to the success of this entire initiative and should be sought and appreciated as such.

⚠ Warning Sign

In the AO's early plans for this initiative, these stakeholder groups are being positioned as "User Communities" in a "User Centered Product Development Process," but most are not "hands on keyboard" users:

- JCUS Committees (CACM, IT, Budget Committees)
- Public Stakeholders (Congress, Attorneys, DOJ, Public Users)
- Internal Stakeholders (Courts, Advisory Councils, CSO, CMSO, JDAO, ITSO, COO, TSO)
- Administrative Office Leadership (Director, Deputy Director, Associate Directors of DPS, DTS, DAS)

When stakeholder groups stand in for real users, the people with the most power get their goals addressed, rather than the users that have direct experience using the product.

1. Invest in user research roles and activities

User Researchers (also known as UX Designers) advocate for end user needs to the Product Owner, Team, and Champions. They regularly guide the team through industry-standard research activities like contextual observation, interviewing and usability testing. These activities allow the Product Team to understand how CM/ECF is or isn't meeting end user needs and use those insights to refine the user experience of the product iteratively over time. The Product Team identifies and recruits a pool of users for research to make sure that research is not blocked by waiting for access to users.

User Researchers…

- Make sure the product works for all users
- Prioritize the input from end users, like court staff and public filers, over secondary users who do not actively use the product
- Make sure features meet user goals. These goals are defined through research activities like observing users doing tasks in their natural setting, interviews with users that uncover their attitudes, and behaviors related to accomplishing goals with the product
- Validate the need to invest in developing a feature by testing a prototype first

Considerations	
What good looks like	• Product Team participates in user research activities led by a User Researcher or UX Designer on a regular basis (such as attending a usability session) • Real end users participate in user research • Product Champions and councils / committees hear highlights from user research
What to watch out for	• Business goals from stakeholders knowledgeable about CM/ECF and AO or Expert Panels replace research with end users as the way to understand user needs biases the research process • The Product Team uses their experience as a proxy for user research, like trying to reproduce bugs or issues in their own environment instead of having users show them what they are experiencing • Research participants are chosen that are already involved in the development process, on a council / committee, or as an AO SME

Tips for success	• Base all user stories and work on user research • Consider conducting user research on a monthly basis with one sprint devoted to planning / scheduling and one sprint for conducting and synthesizing, both led by a UX researcher • Create a pipeline of users that includes different types of users from each court in each district and public users across different roles and geographies • Develop a repository of user research insights that can be reviewed in case they relate to new areas of research

2. Set objectives and goals around user value

Prioritize features and stories based on what creates the most value for real, “hands on keyboard” users. Success is measured in the same way.

Considerations	
What good looks like	• Key Performance Indicators (KPIs) used are focused on user satisfaction with the product • Additional KPIs to build healthy habits could be meeting code standards that the team sets for itself, shipping code every sprint, etc. • Reducing administrative burden (time / effort / confusion) • Organizational leaders are asking for user value indicators in prioritization meetings and demos
What to watch out for	• Product Team and leadership continue to evaluate success based on velocity and other productivity measures • Organizational leaders see a big release as success in itself • KPIs focused on efficiently delivering code and not user satisfaction
Tips for success	• Prioritization factors based on value to the user may include: Number of users impacted, frequency of use, urgency of use case, effort and / or number of steps • User satisfaction indicators may include: overall ease and effort, reduction of actions or content, retention of information • User value factors and indicators are often subjective and biased, use them as directional indicators (and not statistically significant).

What we heard

> "All management should be product champions. Sometimes they're more concerned with driving the focus rather than supporting teams. They ask teams to pull metrics, metrics, metrics. I'd rather the team get work done."
>
> *— Subject Matter Expert*

> "Demand drives action. The desire and demand for change is there. Writing good software is like making good food. 'Sizzle sells the steak.' At the end of the day, does the application meet their needs?"
>
> *— AO Stakeholder*

3. Establish more user research data sources

Qualitative data from user research and usability testing findings will be valuable for gauging success. These sources help validate and tell stories across the organization to build trust. They also provide baseline metrics for future research. As the product begins to form, consider adding simple analytics to measure success at scale and staffing the Product Team with people devoted to analysis as well as design and implementation.

Considerations	

What good looks like	• Using a variety of data points, not just specific ones
	  ○ Qualitative: User interview quotes
	  ○ Qualitative: Usability test videos / sound bites
	  ○ Qualitative: Confirmation of task completion
	  ○ Quantitative: Path to success (clicks, pages, time, etc)
	• Datapoints help identify or prioritize additional research

What to watch out for	• Not collecting baseline data • Data is evaluated in isolation and not put into context
Tips for success	• Seek a mix of qualitative and quantitative data points • Correlate data points to product objectives and goals

What we heard

> “We want to think about moving from points measured to value delivered to the outside world. Penalties for things not delivered to the outside world comes down to them having a metric they’re starting to pay attention to that’s not strictly internal. It can be a number of support requests, repetitive support requests. Are users successful? Are they going away happy or unhappy?”
>
> *– Subject Matter Expert*

Put existing data ownership and risk standards into practice

How to do this

1. Manage risk by fully complying with the existing risk management framework
2. Develop a path forward for third party cloud
3. Support continued investment of DevSecOps tools and pipelines
4. Clarify data stewardship roles

Moving to a centralized system as recommended by the Path Analysis removes many of the intractable development, security, and operations (DevSecOps) problems associated with CM/ECF.

A centralized system will allow the AO to:

- Properly implement the existing Judiciary Information Security Framework (JISF). The AO already has much of the infrastructure it needs in place to do this, but it will require cooperation across the organization
- Develop processes to allow much faster responses to security issues such as the recent log4j vulnerability
- Have a quicker release cycle and be more responsive to user needs
- More easily take advantage of third party cloud offerings

1. Manage risk by fully complying with the AO's risk management framework

The AO already has a risk management framework based on national standards: the Judiciary Information Security Framework (JISF). Compliance with the JISF has historically been inconsistent and incomplete because of the distributed nature of CM/ECF. Notably, the 'authorize' step of JISF has not been adopted, which creates a gap in organizational accountability and provides avenues for security and privacy lapses. Centralizing CM/ECF will allow these challenges, and many of the likely challenges associated with adopting DevSecOps for CM/ECF, to become more manageable.

The Product Team should work closely with the IT Security Office (ITSO) to build in compliance with the JISF (including the authorize step). We expect the ITSO will have a

role in establishing security controls, in informing the AO on the appropriate selection of security-related roles, in training the Product Team, and in helping the Product Team implement automated security scans. The Product Team will be responsible for implementing and continually assessing conformance to security standards.

The process defined in the JISF is cyclical, which works in tandem with the agile development cycle to ensure that, as new features and data are incorporated into CM/ECF, the system continues to meet risk management standards set by the AO. This process will lead to a formal Authority to Operate (ATO) gate check for CM/ECF and associated modules / tools before production goes live.

Considerations	
What good looks like	• Clear, technology-neutral risk management policy • Product Team engages existing security and product expertise within the AO • Policy-based security guardrails, not technology mandates • Product Team understands and can implement security at the information system level • Common security controls are a motivation for developing DevSecOps pipelines • Product Team leverages existing work of data governance groups when categorizing data risk levels • Alignment on roles such as Authorizing Official and System Owner
What to watch out for	• A culture of non-compliance or partial compliance with security controls based on non-security pressures such as feature requests or product timelines • Mandating specific technology as a shortcut to security compliance. The Product Team should be able to choose the tools to best meet user needs as long as they can comply with security controls • Product Team delegates responsibility to others for the security of their work
Tips for success	• Provide security training for Product Team to encourage a culture of safety • Begin ATO process early so Product Team can establish a security mindset from the beginning • Engage ITSO early to establish common controls • Use existing AO security expertise to develop and communicate a holistic risk management policy that covers data governance, DevSecOps, and working in the cloud

- Frame the ATO process as a service to developers: it frees them from having to make security decisions without the proper context and provides a clear framework within which to work
- Frame the ATO process as a service to courts: it provides transparency into organizational security and specific documentation about how

What we heard

> "Security lapses go back years—admin credentials are being hardcoded into code, credentials are stored in projects and in Jira, Gitlab, and Access.… We need to build security in to avoid this."
>
> — *AO Stakeholder*

> "Not all courts have Information Security Officers that understand the information security space well enough. When we come back to them and say, 'Do you realize you have this risk?' They don't know."
>
> — *AO Stakeholder*

2. Develop a path forward for third party cloud

We discovered almost universal acceptance for moving to the cloud across the organization during our research. Third-party cloud services like Microsoft Azure or Amazon Web Services (AWS)[13] offer compelling advantages over running data-centers and managing servers, including:

- Cost transparency
- Massive scalability and redundancy
- Freeing AO resources to focus on the Judiciary's primary mission
- Quicker development cycles and easier deployment of services (servers can be deployed in minutes)
- Access to modern development tools like NoSQL databases, serverless architecture, and monitoring
- Leveraging the service provider's scale and expertise to discover and respond to security vulnerabilities quickly

[13] Azure and AWS are provided here as examples of cloud service providers, and are not being specifically endorsed. There are a number of options other than those listed here that the AO may consider.

Additionally, Federal Risk and Authorization Management Program (FedRAMP) certified cloud providers implement common security controls which eases the burden of developers when implementing a risk management framework.

Considerations	
What good looks like	• Product Team is comfortable with and knowledgeable about working in the cloud • Broad alignment around cloud solutions among stakeholders • Product Team is cross-functional and works across silos • Common inherited controls between JISF and FedRAMP providers are aligned and documented • A small slice of work initially deployed to the cloud
What to watch out for	• Moving data to the cloud that has not been properly categorized for the correct level of risk • Cloud providers that cannot offer data security and privacy guarantees required to work with court data • Spending resources and time to implement on-premise solutions when mature cloud options are available • Waiting until there is a comprehensive 'Cloud Strategy' before beginning
Tips for success	• Existing data governance work is incorporated into the system to ensure court data is managed for risk as the Judiciary moves to the cloud • Understand costs in terms of capital costs vs. operational costs. Cloud pricing is relatively simple; the cost of running data centers is not However, they are difficult to compare because servers are often treated as capital costs, while cloud provider costs are treated as operational • Begin with a small slice of work in the cloud. This should not be expensive and can begin with an iterative approach to reduce risk and get started quickly. • Give Product Team freedom to stand up development environments in the cloud for testing and learning • Closely evaluate offerings from services providers to ensure they can meet the specialized data privacy and security guarantees needed by the courts

What we heard

> "I want us to be able to take advantage of tools available in the cloud, but I need to make sure it doesn't bypass security."
>
> *—AO Stakeholder*

> "Amazon does it [patches system vulnerabilities] in ten hours; we're lucky if we can get a patch out in 30 days."
>
> *— Subject Matter Expert*

> "Yes, the pipeline the DevSecOps Ad Hoc Working Group is building is compatible with the cloud. We made sure everything we picked was cloud ready, so we're not re-inventing the wheel."
>
> *— Subject Matter Expert*

3. Support continued investment in DevSecOps pipelines

18F's Path Analysis and Experiment & Iterate reports highlighted the importance of adopting DevSecOps practices. Through the Enterprise DevSecOps Ad Hoc Working Group (DevSecOps WG), the AO has started the work of developing pipelines and tools to help developers adopt these practices. This work is valuable and should continue.

To make the work of the DevSecOps WG most effective, the AO should allow the Product Team to choose their own tools and develop their own solutions, as needed. A Product Team will often have needs that can't be anticipated by pipeline developers. When the team is empowered, they will choose common tools and pipelines that make their work easier by providing things like inherited security controls, automated security scans, automated deployments, and integration with source control, while still offering the flexibility in the choice of development tools.

Like any other product, the development of these tools should use user-centered design methods and closely involve developers. To do otherwise risks building complex pipelines that will be difficult or frustrating for developers to use.

Considerations	
What good looks like	• Measurable KPIs such as lead time, deployment frequency, and mean time to recovery • Understanding that tools and pipelines are not a substitute for a DevSecOps culture • Pipelines that work seamlessly with third party cloud providers • Developers choose to use the AO-provided pipeline but have the freedom to use other solutions • Automated tests and security scans are built in • Product Team working on actual product are included in the process of developing pipelines • Ability to quickly deploy security patches and roll back changes
What to watch out for	• Building pipelines that don't meet specific developer needs • Creating pipelines as technology / security mandates • Overvaluing consistency of tools rather than responding to developer needs
Tips for success	• Communicate value of pipeline, especially inherited security controls, to developers and encourage adoption • Adopt user-centered design when building pipelines • Encourage Product Team to provide input to teams working on DevSecOps pipelines • Provide clear documentation of pipelines and DevSecOps tools to make them easy for developers to use

4. Clarify data stewardship roles

The National Institute of Standards and Technology (NIST) Special Publication (SP) 800-39 defines the role of "data steward" and "information owner" synonymously as:

> "An agency official with statutory or operational authority for specified information and responsibility for establishing the controls for its generation, collection, processing, dissemination, and disposal."

This role is distinct and independent from the system owner, who is responsible for the development, operation, and maintenance of the system. The roles, however, are compatible. NIST SP 800-39:

> "A single information system may contain information from multiple information owners / stewards. Information owners / stewards provide input to information system owners regarding the security requirements and security controls for the systems where the information is processed, stored, or transmitted."

We anticipate that developing products flexible enough to meet the diverse practical and statutory data governance needs of the courts will be a major challenge for the CM/ECF Product Team. There is already alignment across the Judiciary that the Clerks of the Courts are the legal custodians of court data. In a centralized, AO-managed CM/ECF, the AO and courts will need to decide what data is owned by individual courts versus the AO, even if it requires the AO to request statutory changes. Historically, agreeing on data governance and stewardship standards has been challenging. It will be important moving forward both for the AO to support the data governance needs of specific courts and for the courts to accept the AO as the system owner. The AO and courts have already started to categorize risk for different data types through the efforts of groups like the Judiciary Data Working Group (JDWG). This aligns with the "categorize" step of the JISF and will be valuable as the Product Team assesses the correct risk level of their work.

Considerations	
What good looks like	• Continued alignment with prior guidance that "clerks maintain control of the docket when a centralized server is used for data storage as long as they maintain the legal right to access the data." • Existing data governance work from JDWG is incorporated into the

	system to ensure court data is managed for risk • Courts are willing to participate in developing a new system • Current law and Judiciary policy is clear and documented • Sufficient safeguards are in place and documented that satisfy the legal duty of courts • Controls have been identified that are appropriate for the level of data risk and are understood by the Product Team
What to watch out for	• Misunderstandings regarding laws and regulations used as a blocker • Misalignment around the distinction between system data (like logs), managed by the system owner, and court data owned by the courts • Product Team underestimates the challenge of implementing security that accounts for the diversity of data governance needs
Tips for success	• Clarify and document the distinction between the system owner and the data stewards • Set expectations from the beginning that addressing the diversity of court data will be a major challenge that the AO is committed to meeting • Begin development work with small set of low-risk / publicly-available data

What we heard

> "There's a very vocal minority group that is very much against the AO doing any central administration or enterprise systems because they feel they have a legal mandate to own the data and be responsible for it."
>
> — *Subject Matter Expert*
>
> "Just getting to an on-prem data center was a process; folks wanting the data center in their courthouse."
>
> — *AO Stakeholder*

Start building the solution, incrementally

If the AO believes CM/ECF is not sustainable, they need to start building something as soon as possible. As the AO gets started, it should consider the following:

1. Start small to build trust
2. Create a team to begin the work
3. Set yourselves up for success in procurement

1. Start small to build trust

Starting small validates that actual user needs are being met by what is being developed. The Product Team pursues a small "slice" or increment of functionality, by working with one set of users on their most critical needs and pain points related to a core business process and then expanding out to meet the needs of other users.

> "When we build, we aim to release early and often to end-users using agile development methods. Ultimately, the government's investment should be measured in working software, not phases, documents or milestones. Only working systems are of value to real users."
>
> *—18F's Path Analysis report*

⚠ Warning Sign

The AO's early plans for a product development journey perpetuates the current top-down planning process, rather than empowering a team to start building something small. A problematic journey might include the following steps:

- User Communities identify priorities
- The AO Director consults with councils
- AO leadership approves resources, assigns responsibilities, establishes timelines and success criteria
- Product manager works with product owners, users, Product Team(s), and delivers product

Considerations	
What good looks like	• Build a piece of functionality that crosses user interface, business logic, database, and architecture • Choosing a slice that has high user value and low technical complexity • Product Team regularly demos, every sprint cycle, progress to Champions and councils / committees to build trust, at least once every three weeks (or more often depending on the length of a sprint)
What to watch out for	• The small slice is prioritized by leadership and not based on user value • The small slice use case is too complex – technically complex, not focused on a specific tactical need or "job to be done" • Skepticism that there is sufficient similarity between courts to allow standardization. There are several different common ways of doing a core business practice when there should only be one • Groups jockeying to be the first court to participate can add politics and bias against them as participants
Tips for success	• Understand the "why" of their need so the Product Team can creatively develop a solution to address the outcome desired • Start small with a group that is willing to try something new to lower barriers to getting started • Champions should communicate expectations with stakeholders that starting small will mean that the needs of all users will not necessarily be met, initially, and that the process might require patience as the needs of more and more users are addressed through an agile iterative development process • Take advantage of cloud development environments, which offer low cost and quick iteration

What we heard

> "This team will need to prove to the community that has very low trust that this process will work. That we actually can make this happen and make adjustments in the process along the way. Making course corrections is important."
>
> *— AO Stakeholder*

2. Create a team to begin the work

18F recommends standing up a small, cross-functional team to incrementally build a new, custom solution that leverages open source software.

18F believes building a new system from the ground up that leverages open source[14] software is the best path forward for creating a new case-management system that will meet users' needs.

Considerations	
Why do this	• This approach invests in a team to design and build a solution that meets the AO and courts' unique user and organizational needs • Unexpected changes are easier to adjust to when working in an incremental way and with full control of the release schedule • It is easier to verify supply chain security of open source software and software the AO wrote because the source code is available to inspect
What good looks like	• Follow the recommendations in this report needed to support building new initiatives • Hold information sessions about this approach with various stakeholders and court staff for feedback and suggestions • Form or hire a new Product Team, as described above • Identify 2-3 high value use cases to begin user research • Solicit 2-3 pilot courts • Decide on an application and database deployment strategy • Start to to prototype a use case applying a user-centric, agile methodology
What to look out for	• Estimating total cost before getting started, without a defined scope, it's difficult to estimate time and cost for this work • There is risk that third-party open sources libraries will not be maintained for the life of the system • Courts don't trust the AO to successfully build and maintain a new solution in-house

[14] 18F defaults to working in the open; here is the 18F open source policy. Other agencies have defaulted to this as well, "what agencies have to say about working in the open."

3. Set yourselves up for success in procurement

If the AO seeks to procure vendor support to help them execute the vision of CM/ECF, we believe there are important activities to conduct in order to meet the needs of the users and organization.

> **Only 13% of large government software projects are successful.** Be prepared to help your organization reduce risk by implementing modern development practices.
>
> — *18F De-Risking Guide*

If procuring a vendor to build a system tailored to your needs

Considerations	
What good looks like	• Bring in end users early and prioritize people who interact with it daily to determine user needs • Create a draft RFQ and release it for comment from vendors utilizing the RFI process • Consider vendors with established contractual vehicles on SEWP or MAS / GSA Schedule 70 • Use modular contracting and the agile contracting format • Embody agile principles in the creation of a software development solicitation • Prepare your organization for product ownership and healthy vendor management • Form a successful partnership with the vendor team with open communication • Engage in prototyping to test concepts • Conduct sprints to create code, adjust as necessary, and ensure vendor performance • Have continuous user engagement
What to watch out for	• No collaboration between vendors and the AO • Micromanaging or asking for status reports in lieu of healthy, consistent communication • Penalizing rather than assisting and rectifying the situation • Conducting a traditional waterfall approach FFP (Firm Fixed Price) contract for a base plus 4 years. • No user testing during development and the final end product by the vendor • Vendor lock in

Tips for success	• Utilize agile processes • Use a labor-hour or time and material (T&M) contract • Engage agency staff to participate in DevSecOps from the beginning • Use open source software • Keep the period of performance at or under 3 years • Make sure your contract has the ability to terminate the vendor for non performance ○ If your vendor is not meeting sprint deliverables consider termination if the issue cannot be rectified. It is better to reassess the project vendor than spend millions on a project which does not meet your needs. This is the benefit of the T&M contract.[15]

[15] With a modular, T&M contract format the agency can issue a notice of concern, cure notice, and terminate for non performance if they are not meeting the requirements of the contract regardless of the contract type. More importantly, it also allows for much easier ways of ending the contract if the direction of the work changes or the contractor team is not producing quality software—if their work is inadequate, or their skills prove inappropriate, then no further work need be assigned to that contractor (effectively terminating the contract), and the contractor can be replaced. Sample of determinations and findings (D&F) for a T&M contract.

Conclusion

During the Path Analysis and Experiment & Iterate phases, 18F learned a great deal about the challenges the AO faces as well as the tremendous strides the organization has made in meeting those challenges. One of the biggest challenges is yet to come: implementing a new case management system for the Judiciary that will serve the needs of every user, while making the substantial organizational changes that will be required in order to make that work possible. This report turns the findings and recommendations from 18F's prior reports into concrete next steps the AO can take to help build that new system and adopt supporting practices. The tactical recommendations in this report will not be successful without the strategic intention behind them and the ultimate goal of delivering a product that meets user needs. **While this report lists many steps the AO can take towards a new CM/ECF, the most important step to take is the first one, and the AO should take it immediately.**

Appendix A: Summary of recommendations

Activity	Tactical Recommendations
Establish an empowered Product Team, with a Product Owner	• Establish an empowered Product Team • Redefine the Product Owner role and responsibilities • Establish a Product Champions group • Maintain Council / Committee involvement in policy decisions. Minimize their involvement in CM/ECF decision making • Clarify ownership areas between Product Team, Champions, and Councils / Committees • Establish and uphold communication channels between Product Team, Champions, Councils / Committee, and the Judiciary
Conduct research with real users to direct all product decisions	• Invest in user research roles and activities • Set objectives and goals around user value • Establish more user research data sources
Put existing data ownership and risk standards into practice	• Manage risk by fully complying with the existing risk management framework • Develop a path forward for third party cloud • Support continued investment of DevSecOps tools and pipelines • Clarify data stewardship roles
Start building the solution, incrementally	• Start small to build trust • Create a team to begin the work • Set yourselves up for success in procurement

Appendix B: Unresolved Questions

These are feedback questions from the AO and the courts about our recommendations. We have not investigated these questions in depth, so we could not answer all of them. The answers we are able to provide are provisional and tentative. **Most of these do not need to be answered upfront and do not block starting work**. Instead the Product Team and the AO should continue to raise these questions and collaborate on answers to them, incrementally.

- **How will this initiative be funded? Who will have decision making authority over funding?** For example, how does the AO manage budget projections and funding sources for cloud services? Is the Product Owner and Team responsible for cloud costs or will the costs be borne by the infrastructure group?
    - This should be answered by the AO, we cannot advise on funding sources. That said, we do recommend that you fund this effort incrementally. For example, procure cloud services in a $1-10K range so that the Product Team can estimate or validate usage estimates for a much larger procurement later on.
- **The Judiciary as a whole needs to agree on a set of standard processes or workflows for the system and where customization is warranted.** “We can’t design for everyone. We’ll never get it done.” – AO Stakeholder
    - The Product Team, Champions, and the Councils / Committees will need to address these use cases as they come up.
- **If a business priority conflicts with a user need, or is made without user input, what happens?** Will the Product Owner and Team be supported to make that call, even if it means delaying the decision to get user input?
    - The Product Team and Champions will need to address these use cases as they come up.
- **When should the AO develop a strong prioritization and feedback process to ensure users get the most valuable functionality that meets their needs?**
    - We advise strongly against pursuing this too much upfront and instead to start building something. The prioritization and feedback process should develop organically as the Product Team starts conducting user research, providing demos, performing user testing, etc. to deliver the product.

- **How does the AO develop a user research process? Who is responsible for that?**
    - The 18F UX Guide is an excellent resource for building out an approach for research. In small teams, the User Researcher typically is responsible for developing and leading the process. There are best practices and common phases of this work, but research plans and approaches should be unique to the goals you hope to achieve (whether that be developing a journey map, identifying pain points, designing a solution, testing concepts, etc.).
- **How does project documentation (not product documentation) fit into all this? i.e., to be transparent to the AO and courts?**
    - Consistent, open communication and documentation is imperative. We've made recommendations on potential channels for that, but where it's hosted should be based on where it's accessible to all stakeholders and how easy it is to maintain. Our default is to work in the open. 18F teams have used public GitHub wiki's, to host project documentation so that the team, organization, and the public stay updated on progress. A great example is this github wiki that 18F developed with the DOI's Office of Natural Resources Revenue for their Natural Resources Revenue Data website.
- **How are tech, security, and business priorities weighed against each other?**
    - User value should be the lead determinant of priorities, especially early on. Then considerations around tech, security, business value, and policy constraints add to the feasibility assessment of each priority. This should be driven by the Product Team with contributions from the Champions, Committees / Councils, and various Subject Matter Experts. As noted in previous questions, we do not recommend codifying a rubric for prioritization early on. See Using agile and DevOps to get better results than a change control board as an additional example.
- **What provides guardrails for the work of the Product Team? Such as, what do they base their assessment of security risks on and when do questions need to be raised to the Champions?**
    - As the Product Team develops and maintains regular communication with the Champions and Council / Committees, that should create the

opportunity to identify policy-related considerations and put them in contact with a subject matter expert. Then it's the Product Team's responsibility to seek out more information and collaborate with relevant folks to find a solution that meets the needs of users.

- **If we are regularly presenting new functionality to stakeholders and the courts, we will be getting a lot of feedback. How can we manage this feedback to ensure we are learning what we need?**
    - The Product Team should be seeking feedback from end users regularly through testing and other means. If a Product Team is demoing their work, we fully expect feedback to be taken from various stakeholders. However, feedback is typically 1 instance from 1 person's perspective. It's the Product Team's responsibility to investigate further (consider the 5 why's as a root cause analysis method) and identify common patterns. At that point the Product Team should discuss and consider it in their backlog.
- **Could we have a legal / policy person included as one of the "users"? Stripping away the tools, what steps need to be done at a basic, legally required minimum?**
    - If there are any legal requirements for the system, the Product Team **must** be informed of that information. The capacity in which a legal / policy person would contribute to the development of the product would depend on whether they were participating as a SME or a user as described in the Conduct research with real users to direct all product decisions section. Strictly speaking, unless such a person was actually using the system, they would be a SME regarding law / policy.

Appendix C: How to Proceed with COTS

This report has highlighted several points of contact between 18F's recommendations and work that is underway at the AO. However, one area where 18F and the AO disagree substantially is on the question of whether to build new using custom development that leverages open source software or to pursue a COTS-centric approach.

AO's current approach is focused on procuring core COTS systems to lay the foundation for hosting and data, and then standing up a team to configure or build on top of it.

Considerations	
Why do this	• A COTS software solution is highly mature in the marketplace, and similar organizations have successfully implemented the solution (with "success" determined by end users, not by the vendor). • The agency will modify its existing practices to work within the limitations of the COTS software • Enterprise rollout of the new solution may be quicker once initial functionality is in place • Time required for review and approval of technology architecture may be significantly shorter than for a custom solution • Software operation and maintenance is owned by a third party vendor and they are held accountable by service level agreements (SLAs) and responsible for fixing security vulnerabilities
What good looks like	• Reduce investment in current platforms • New product development process and technology architecture • Start building new modules / features • Deprecate and subsume old functionality • Track progress and iterate as needed
What to watch out for	• Solution vendor may have development priorities that are different than the AO's • The long-term viability of third parties can not be guaranteed; what happens if they stop supporting the software, go bankrupt, are purchased, etc.?

	• As the AO begins to adopt and use it, user needs will mature and the flexibility to address them will be constrained by the capabilities of the system • There is a significant risk of lock-in (a/k/a vendor lock) when choosing COTS solutions. If the solution does not solve all user problems in the future, it is difficult to back out without starting over • Responding to unexpected changes is harder when major functionality depends on a vendor's roadmap and release schedule • Verifying security and privacy of closed source software is difficult • Procuring a COTS solution or component (like cloud services) upfront for the entire organization is an expensive and risky decision to make without validation from users over time • Total cost of ownership may exceed initial estimates

If pursuing COTS, engage users to vet and test systems during procurement

Involve a diverse set of users to formulate the evaluation factors for solicitation to ensure it meets organizations needs.

Sandboxing – The only way to know if something works is if you can actually try it out. A sandbox environment provides an unrestricted trial of a software product. In your solicitation, request sandbox environments and design usability tests to run with a set of users. If you can't get a sandbox environment, you can do further evaluations with demos, but that will require more specific requests and coordination ahead of time. You'll get less accurate information and user feedback from a demo than from a sandbox test. Either approach should be as structured as possible to make 1:1 comparison between offerings easier.

Considerations	
What good looks like	• Bring in end users early and prioritize people who interact with it daily • Tool meets required functionality, works with current systems • Keep everything uniform in the sandbox experience so that results are meaningful • Use the same structure when evaluating the sandbox (see Appendix D: User Scorecard) • Know that no COTS software is going to meet 100% of user needs; align on a reasonable expectation for making a decision • Continue to involve users in the decision making process

What to watch out for	• Users aren't involved in evaluating all COTS options being considered, meaning they're evaluating sandbox A and not sandbox B • Users evaluating products aren't real end users • Evaluating products against a list of requirements versus having users use the product • Group evaluating all options isn't consistent, with providing an accurate picture of the functionality of the product • Features that aren't core to your process or mission • Make sure all sandbox presenters understand that this isn't a formal solicitation • Ensure organizational leads prioritize user perspective in the decision making process

Tips for success	• Recruit a cross section of users reflecting various roles, levels of involvement, and organizational knowledge to ensure a holistic evaluation
	  ○ Patterns can usually be seen across 5-6 users. For CM/ECF users consider focusing on where there are common court processes
	• Keep the sandboxing team small and diverse
	• Build out user stories and use them as sandboxing tasks along with priority evaluation criteria
	• Timebox the evaluation period to about 2 weeks
	• Keep potential vendors on task for sandboxing / demo and avoid sales presentations
	• Uniformity is important: if you do move forward with demos, define a strict, uniform structure for vendors to follow, showing how their product supports the exact same tasks completed from the same users' points of view. For Example:
	  ○ Demonstrate how end users can make granular changes to document permissions and visibility
	  ○ Give a detailed explanation of your API capabilities and experience integrating with other COTS products as well as custom, in-house tools.

Appendix D: Example of a COTS Sandbox User Scorecard

Tasks should be edited to reflect user type, priority user needs and solicitation evaluation factors. Examples below.

Tasks + Features (examples below)	**Score** Score this task or workflow on how well it *seems* to fit your needs: flexible, easy to use, tailored to your needs	**Comments questions** Open field to clarify your score	**Weight** After the demonstration, numerically score the tasks and features you saw based on importance to you
Start a new case, appeal, and / or interaction with the system	1 2 3 4 5 6 7 8 9 10 N/A		
Generate a report			
Receive reminders and notifications			
Validate users for access			
Track and report access and / or issues			
Process court fees			
Support fine-grained access controls for sealed documents			
Allow data-sharing across court types			
Support large attachments			
Software vendor has zero visibility into court data			

Weighting and aggregating user scorecards

- When you've finished all demos or sandbox tests, aggregate the scores from users to see patterns and identify open questions or major concerns.
- When you aggregate user needs, you can add weight to each task based on how users have individually scored the priority of tasks, or by creating an overall weight that is applicable to the service you chose to procure. (For example, if you choose to procure a system that doesn't include EDC capabilities, you can remove tasks associated with that). You can remove all scores that are marked "N/A".
- After additional demonstrations, you can evaluate which solutions to pursue by scoring them on a few additional categories relevant to your evaluation criteria, like integration capabilities, ongoing support, training and education, and risks.

Appendix E: Example of an Overall Sandbox Evaluation Scorecard

This scorecard should be edited based on the AO and courts evaluation criteria.

	COTS 1	COTS 2	CUSTOM BUILD
Integration capabilities and support			
Ongoing support + education User research, feedback, assessment?			
Rollout timeline			
Security requirements			
Education and training support			
Overall aggregate user perception score			
User score for priority task 1			
User score for priority task 2			
User score for priority task 3			
Major benefits			
Major risks			
AO notes			
Key user notes			