DESIGN RESEARCH IN THE CONTEXT OF FEDERAL LAW ENFORCEMENT

BARBORA BATOKOVA, ANNE CONNELL & TODD WAITS
Carnegie Mellon Software Engineering Institute

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INTRODUCTION

Design research facilitates the conceptual development, planning and making of **products that meet the needs of human beings.**

DESIGN RESEARCH

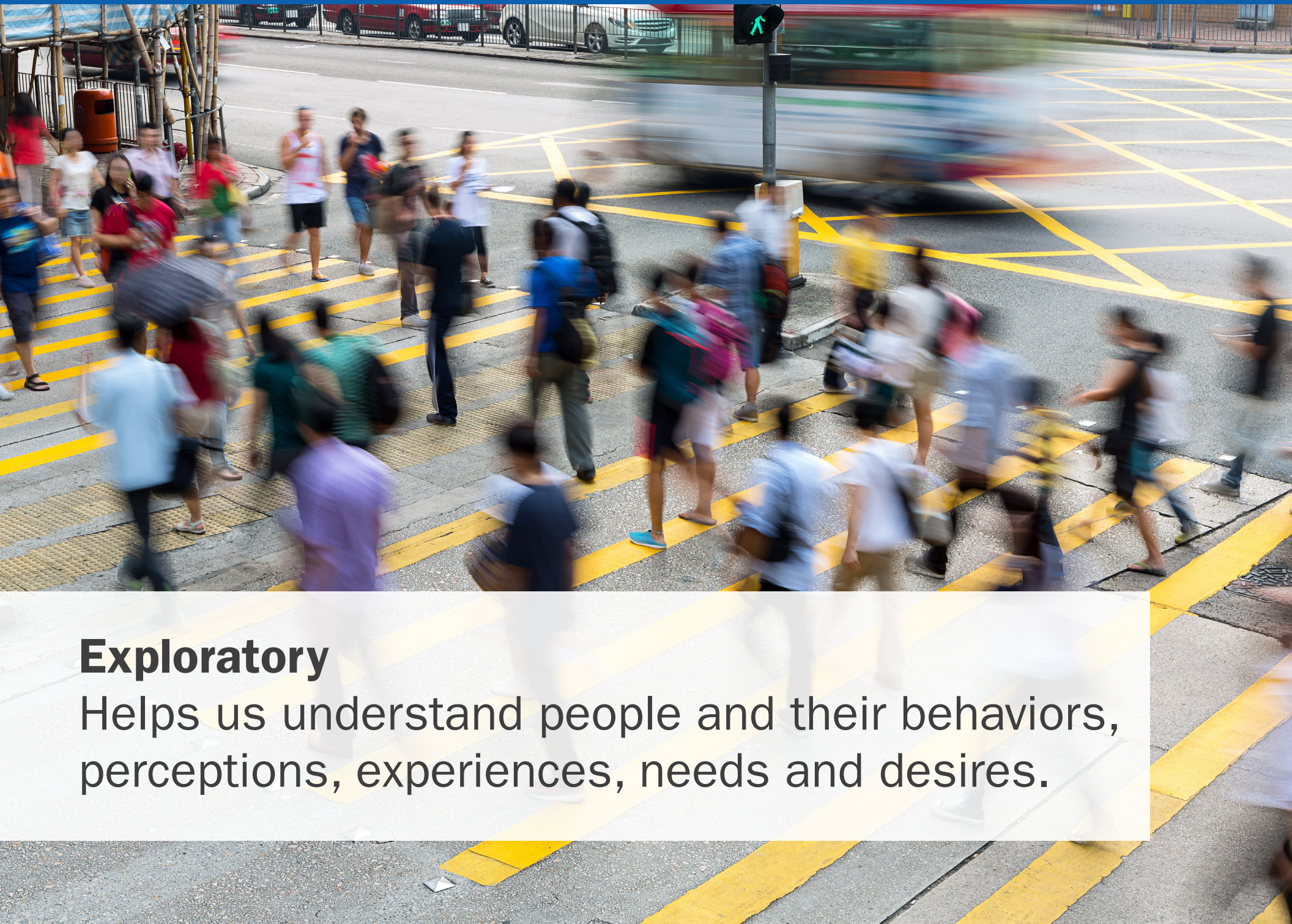
Helps us identify the **needs of future users**.

Integrates **specialized knowledge** into meaningful solutions.

Creates **structured and productive conversations** among team members and the client.

Builds **credibility** of the team and their process.

Creates **value** for the client.

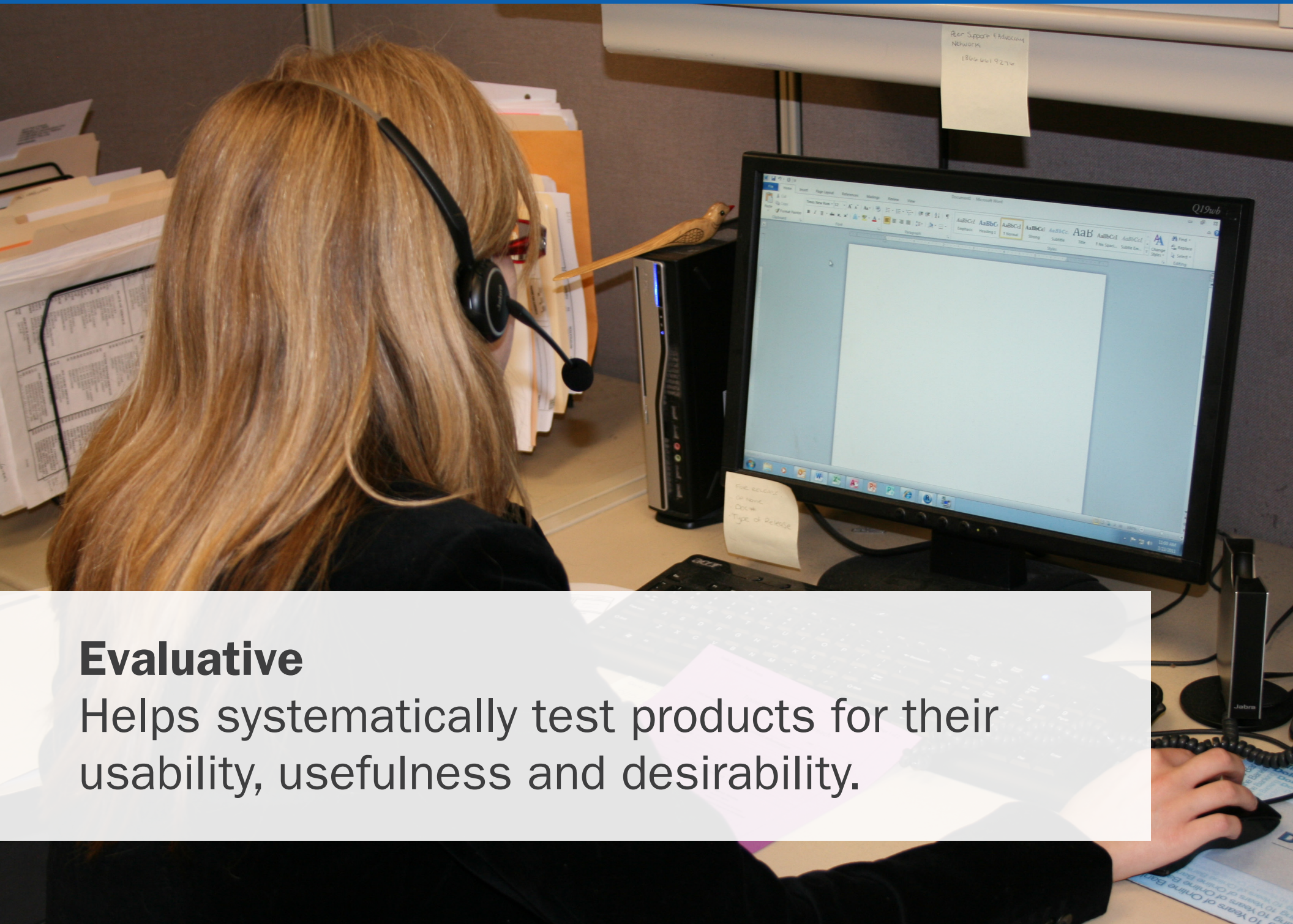


Exploratory

Helps us understand people and their behaviors, perceptions, experiences, needs and desires.

Generative

Provides for effective development of new ideas and concepts, leading to innovation.



Evaluative

Helps systematically test products for their usability, usefulness and desirability.

DESIGN RESEARCH IN CONTEXT

Evidence Processing Application

PROJECT OVERVIEW

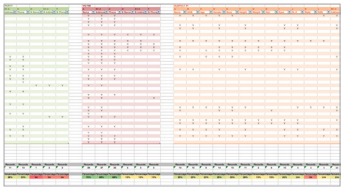
Client
Federal Law Enforcement Agency

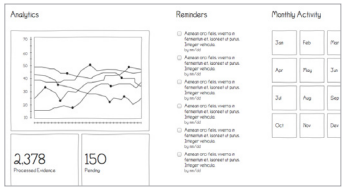
Challenge
Create a software and hardware solution to automate and standardize the processing and collection of paper-based evidence using OCR.

Resources
18 Months | Team of 3–7 | 50–100% effort

PROCESS OVERVIEW

APPLICATION





Research

Secondary Research
Contextual Inquiry
Literature Review
Hardware Assessment

Synthesis

Stakeholder Matrix
Current System Model
Task Flow Analysis
Content Analysis
Key Findings
Design Implications

Concept Development

System Components Model
Hardware Architecture
System Workflow
User Workflow
Software Architecture
Wireframes
Interactive Prototype
Concept Validation
Identity Standards
Screen Designs

Implementation

Agile Software Development
Task Completion Testing
Iterative Deployments
Usability Testing
Unit Tests

Transition

Collaborative Integration
Stakeholder Touchpoints
Expansion Proposals

DOCUMENTATION

- Needs Assessment
- System Requirements Specification
- System Design Document
- Concept Validation Report
- Usability Testing Plan
- Technical Documentation
- User Guide
- Training Materials

DESIGN RESEARCH CHALLENGES

Laws and regulations affecting our access to data and target audience.

Working in the data-sensitive realm of **cybersecurity**, **digital intelligence**, and **evidence processing**.

Restricted physical access to people and places to conduct design research.

Dissemination of information stemming from the gathered data.

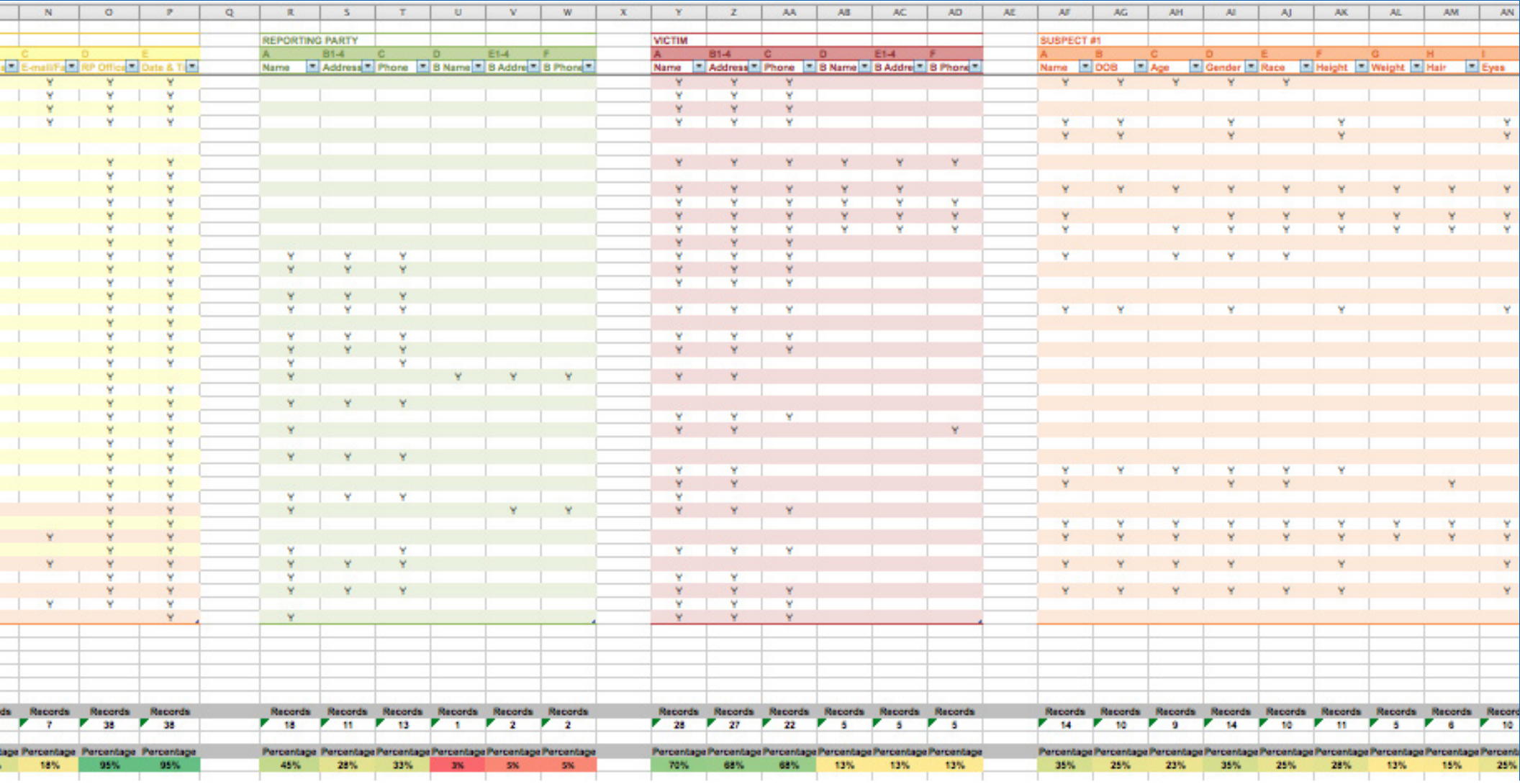
RESEARCH

CONTEXTUAL INQUIRY

Immersive observation and interviewing of people that reveals underlying (and invisible) work structure.

Data
Visits to 5 field offices
Six 2-hour sessions

Purpose
Understand our future users, their environment and current processes.
Uncover tacit knowledge.


REPORTING PARTY
VICTIM
SUSPECT #1
Name
Address
Phone
DOB
Age
Gender
Race
Height
Weight
Hair
Eyes
Records
Percentage

SYNTHESIS

STAKEHOLDER RESPONSIBILITY MATRIX

Maps the key participants and their responsibilities within a defined workflow.

Purpose
Understand the varying roles and needs for the new solution.

Identify the primary user to keep in mind when making design decisions.

TASK FLOW ANALYSIS

Breaks down the elements of a user's workflow, including actions and interactions, system response, and environmental context.

Data
Observed steps
Discrepancies
Pain points

Purpose
Understand the primary user's current sequence of tasks so that the future solution could enable their completion.

CURRENT SYSTEM MODEL

Visualizes the interactions, connections and breakdowns among actors, artifacts and technology.

Data
Observed steps
Discrepancies
Pain points

Purpose
Analyze the communication and data flows among the various elements of the observed system

KEY FINDINGS

Lack of automation causing significant delays and breakdowns within the entire process.

Manual processing and entry of information was very tedious and allowed for human error.

Overwhelming amounts of evidence and related information.

Purposeful **omission of information** ocurred to speed up the process.

Untimely intelligence gathering.

DESIGN IMPLICATIONS

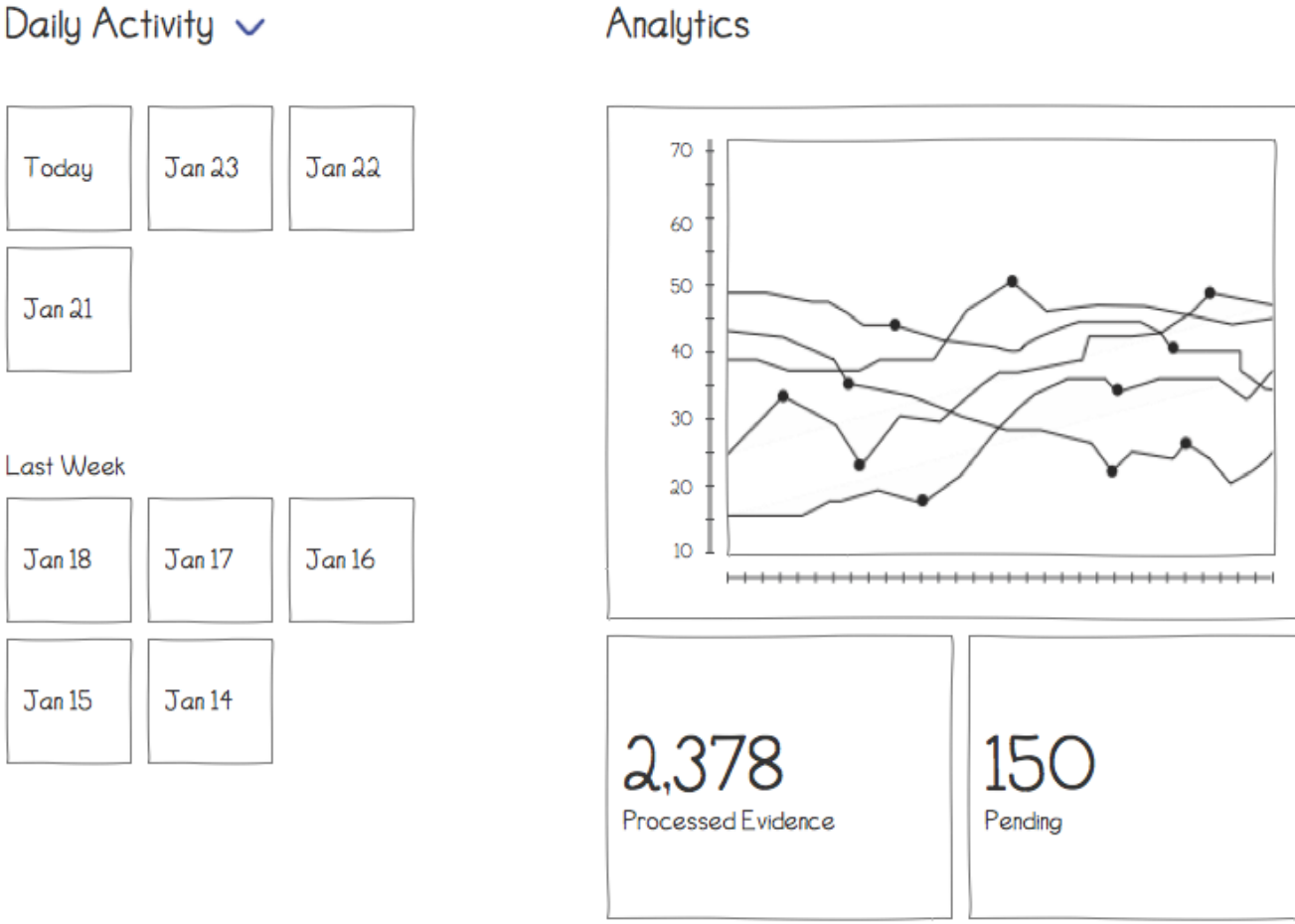
Integrate with existing systems and databases to **close the information gap**.

Use high-speed scanners to **automate the intake** of evidence and related information.

Use OCR technology to provide efficient, complete and **accurate records**.

Provide **contextual information** to aid in intelligence gathering and pattern identification.

Create a **unified methodology** to help standardize processing.



CONCEPT DEVELOPMENT

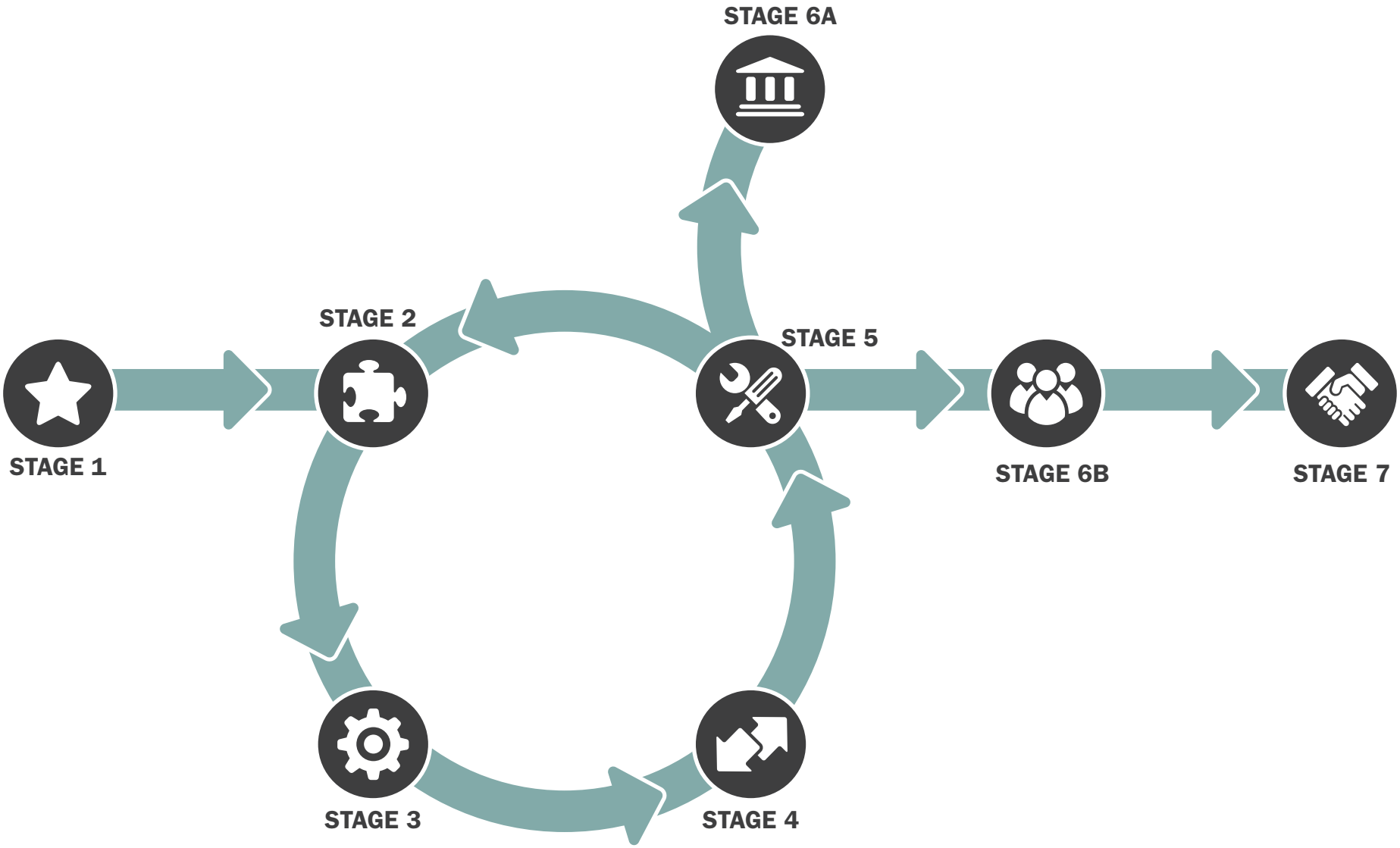
SYSTEM & USER WORKFLOWS

Define the overall system stages and individual steps of a process.

Purpose
Define a unified methodology and approach for evidence processing.

Define specific software and hardware requirements.

SYSTEM WORKFLOW 1 (ABSTRACTED)



USER WORKFLOW 1 (ABSTRACTED)

Stage 1	
1	Step Description
2	Step Description
	Further instructions or notes about Step 2.
3	Step Description
	Further instructions or notes about Step 3.
4	Step Description
	Further instructions or notes about Step 4.
	Another note about Step 4.
	Instructions on how to handle a special use case during Step 4.

Stage 2	
5	Step Description
	Further instructions or notes about Step 5.
	Another note about Step 5.
	Instructions on how to handle a special use case during Step 5.
6	Step Description
	Further instructions or notes about Step 6.
7	Step Description
8	Step Description

Stage 3	
9	Step Descript
	Further instru about Step 6.
10	Step Descript
	Further instru about Step 6.
11	Step Descript
	Further instru about Step 5.
	Another note
	Instructions o handle a spec during Step 5

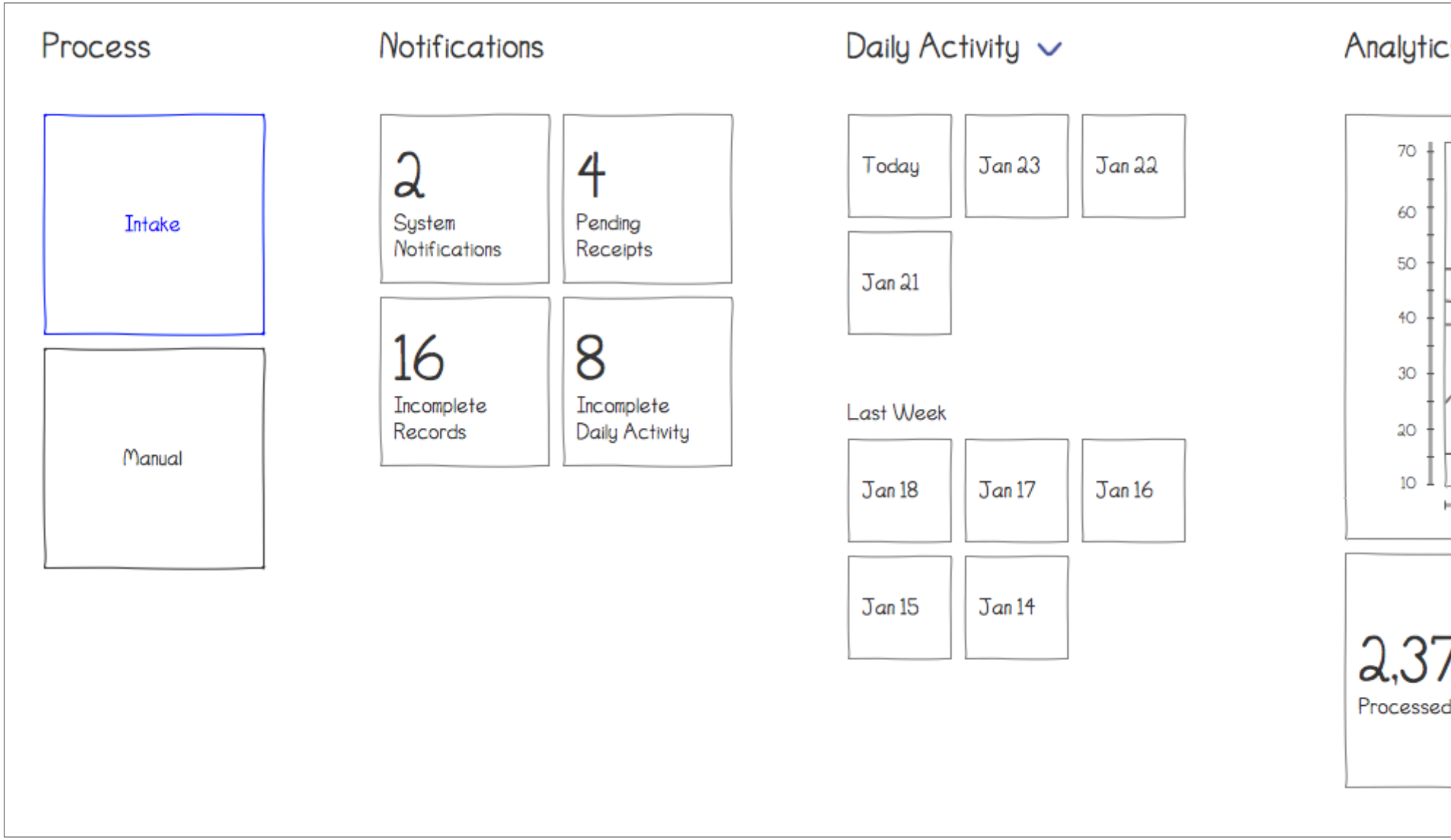
WIREFRAMES

Visualize the identified requirements and establish content and functionality in the form of a simplified graphical user interface.

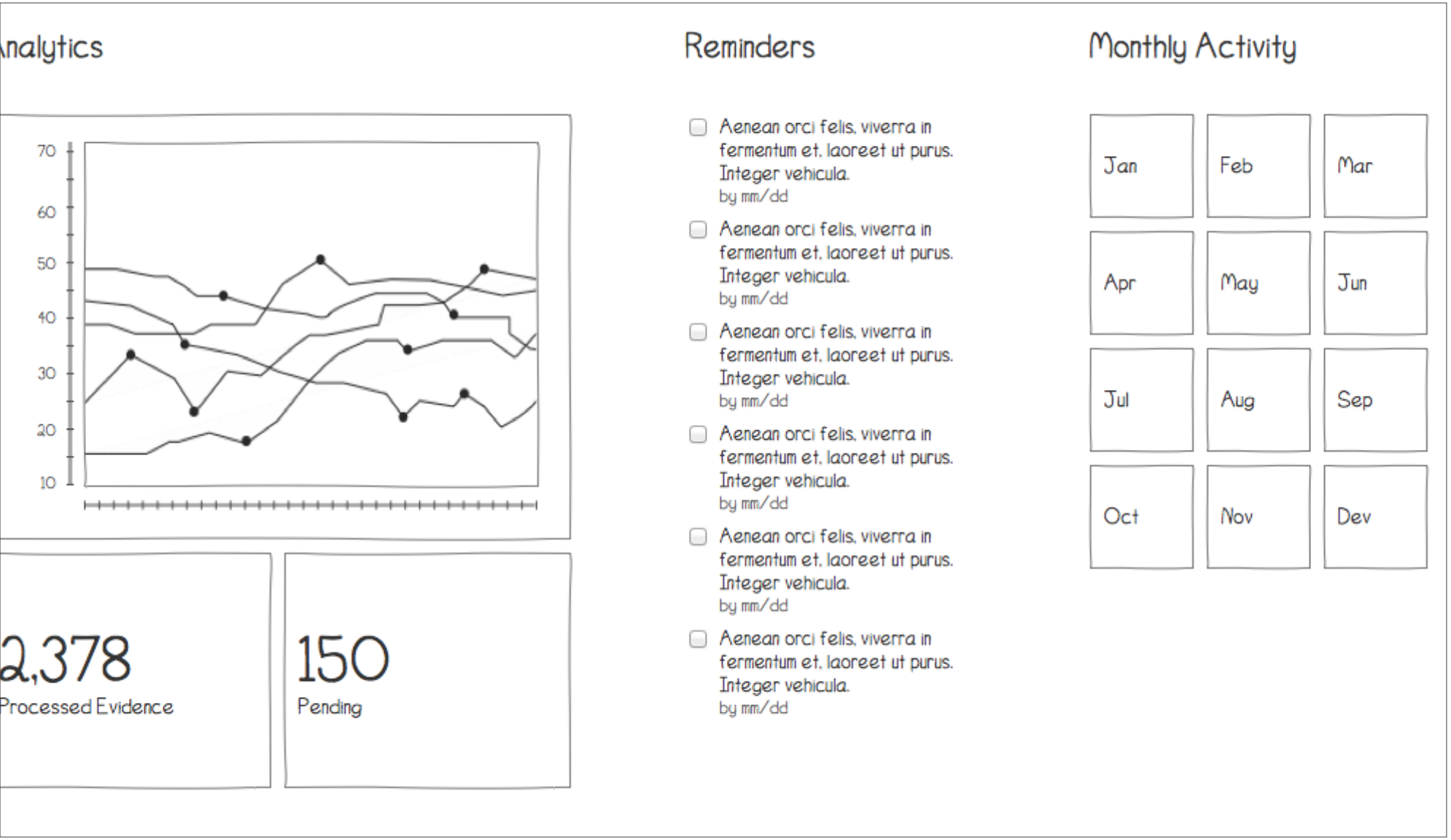
Purpose

Establish core functionality.
Validate high level requirements with the client.
Validate concept and overall workflow.

WIREFRAME 1 (ABSTRACTED)



WIREFRAME 1 (ABSTRACTED)



CONCEPT VALIDATION / TESTING

Combined wireframes, task completion analysis, usability testing and a survey to create an interactive PDF to test the concept.

Data
4-hour teleconference call with 27 participants from 24 field offices.

Purpose
Validate concept with future users.
Get feedback for future iterations.

IMPLEMENTATION

PAPER-BASED DATA CAPTURE FORMS

Record session feedback in the absence of remote testing technology and direct observation.

Purpose
Gather feedback from participants to further improve the solution and user experience.

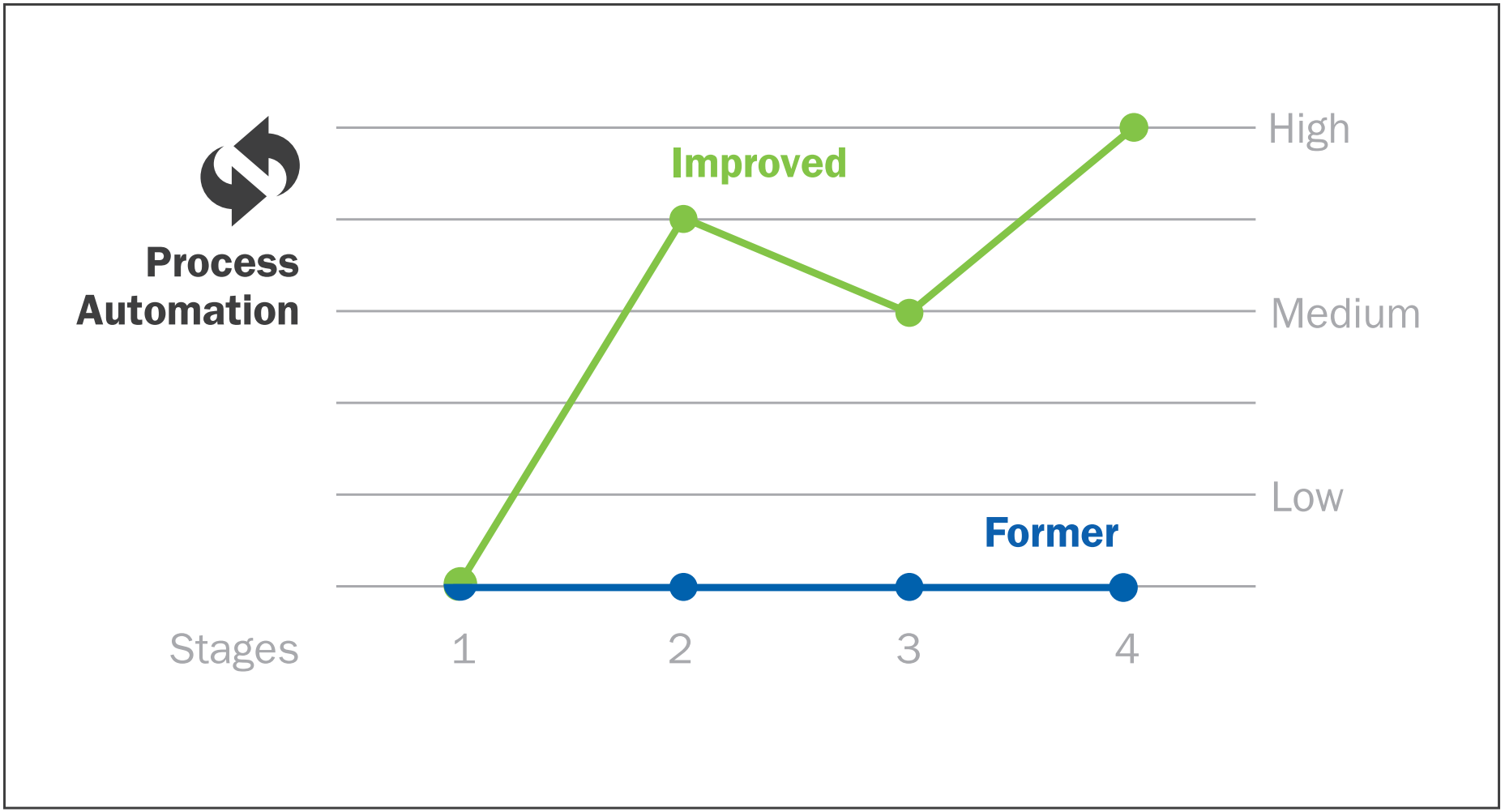
Gather metrics on process improvement.

PAPER-BASED DATA CAPTURE FORMS

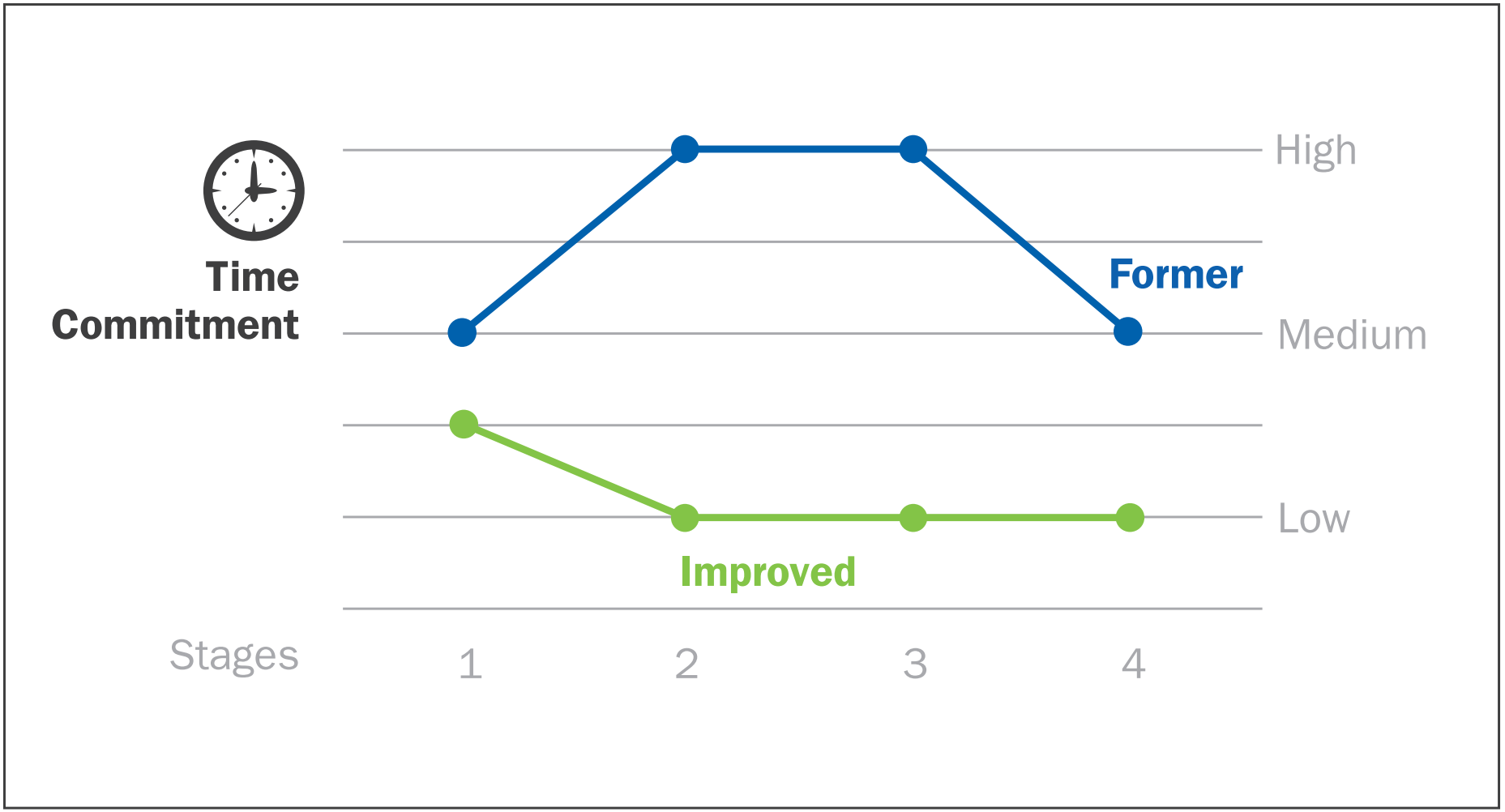
	Day 1	Day 2	Day 3	Day 4	Day 5
How much evidence did you scan?					
How long did it take?	START hh:mm / END hh:mm	START hh:mm / END hh:mm	START hh:mm / END hh:mm	START hh:mm / END hh:mm	START hh:mm / END hh:mm
Was any evidence unscannable?	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No
If yes, • How many? • Why? (e.g., Torn? Taped? Fragile?)					

CONCLUSION

PROCESS IMPROVEMENT



PROCESS IMPROVEMENT



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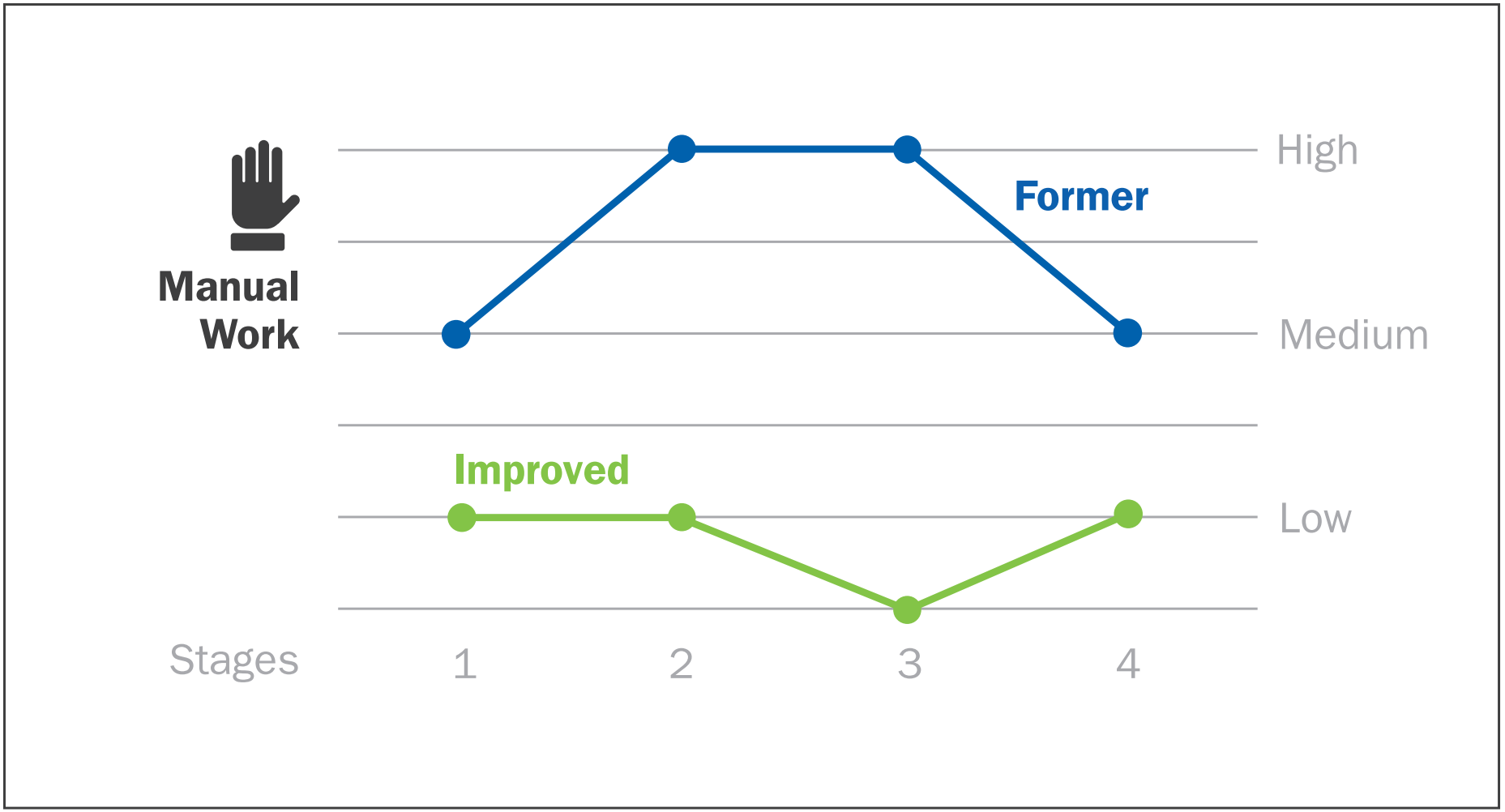
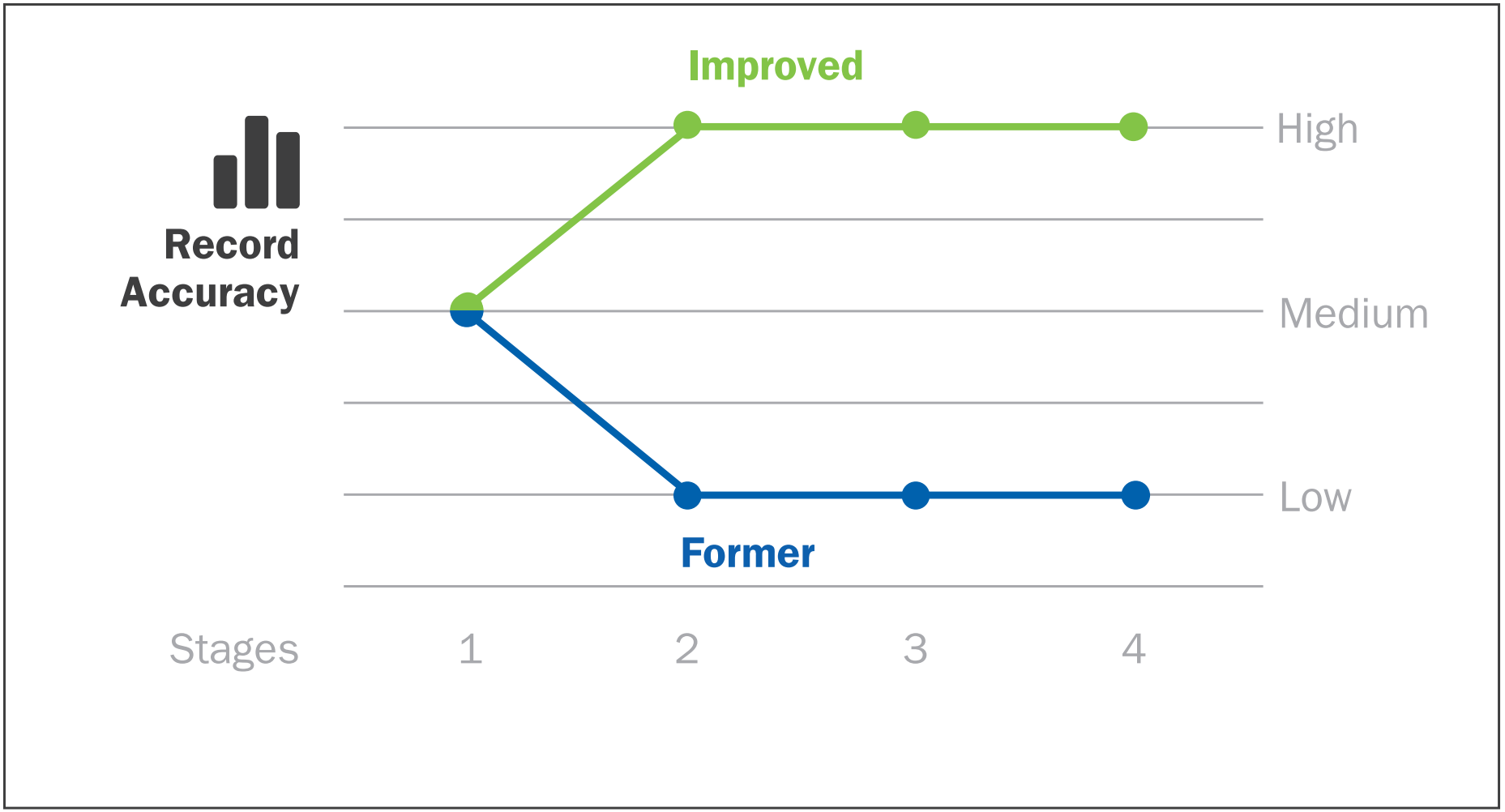


PROCESS IMPROVEMENT



THANK YOU!

bbatokova@sei.cmu.edu

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