Cybersecurity TTP Workshop

January 12th – 13th, 2023

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TRL Assessment and TTP Canvas

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(taken from the Trusted CI TTP Playbook

created by Ryan Kiser and Florence D. Hudson

https://trustedci.org/ttp)

Trusted CI TTP Program

- Purpose – to enable researchers to transition cybersecurity research into practice.
- Established – 2018
  - NSF Grant supported (1547272, 1920430, 2241313)
  - Workshops, webinars, etc.
- Developed a set of materials to assist researchers and practitioners with TTP
  - https://trustedci.org/ttp (available under Creative Commons Attribution 3.0)
  - Designed to aid in planning and decision making for TTP
  - Technology Readiness Level (TRL) Assessment Tool
  - TTP Canvas

Technology Readiness Level (TRL) Assessment

- Based on NASA and U.S. Government Accountability Office TRL Processes
- Enables the researcher to assess/identify the current state of the research
  - Allows them to identify any gaps to operational deployment readiness
  - Assists in developing a plan to progress the user environment toward operational readiness
    - Prioritize efforts necessary to further mature the technology
    - Captures the state of several difference components to identify those which are most in need of improvement

- This process can be completed iteratively - as improvements are made it is valuable to track progress and reevaluate current priorities
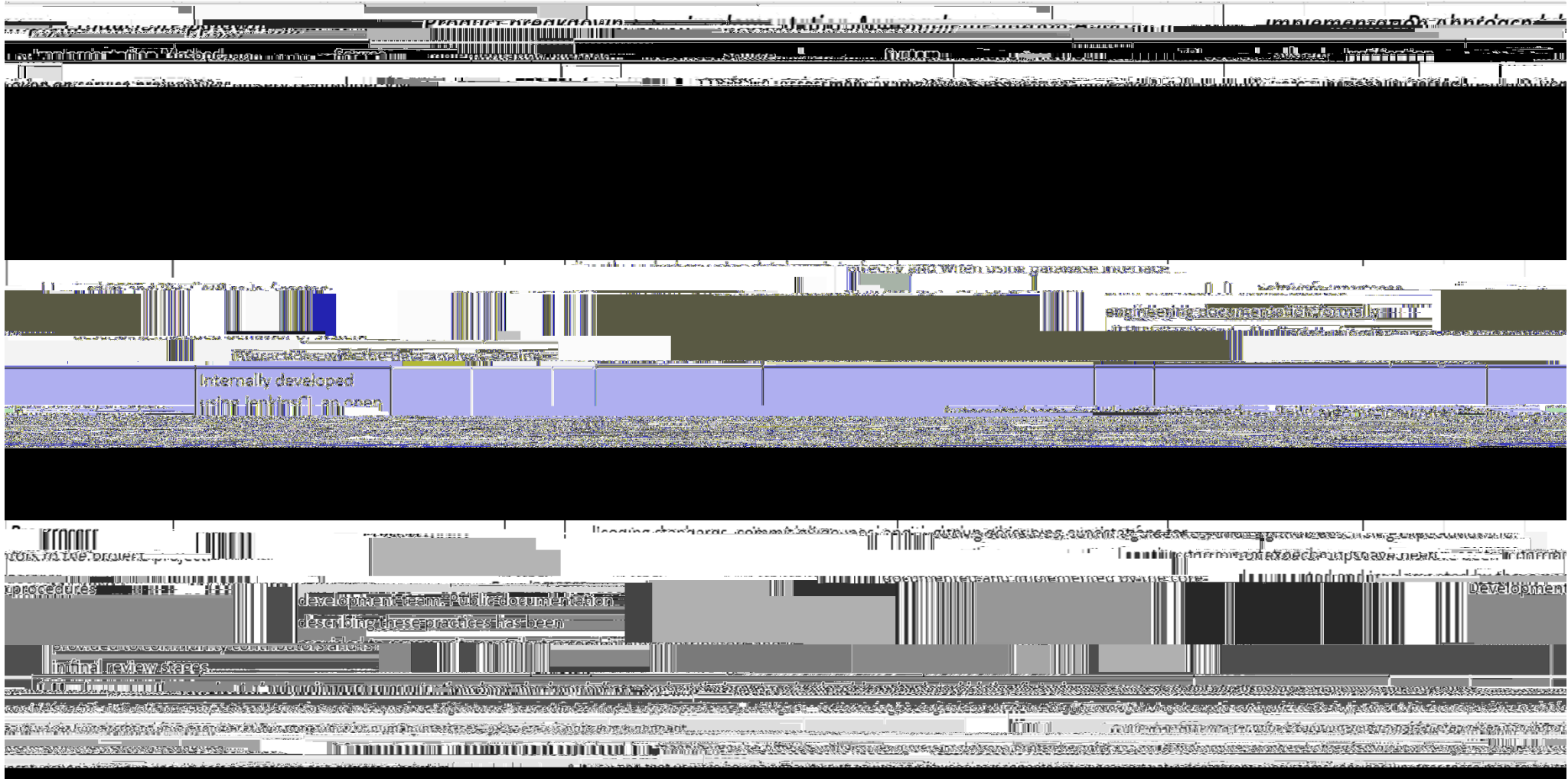
Technology Readiness Level (TRL) Assessment

- The TRL Assessment tool can be used to:
  - Describe the overall maturity of a technology
  - Describe the maturity of each of the different subsystems and components that provide the functionality of the technology
  - Discern what components need the most attention in order to make the technology operationally viable
  - Communicate to stakeholders regarding the current state of development and future work.
- The TRL Assessment Tool allow researchers to capture the current state of different components that provided the necessary functionality
  - Allows researcher to identify where efforts need to be focused in order to mature the technology

TRL Worksheet

TRL Definitions (1 – 7)

TRL	Definition
1	

TRL Worksheet Example (page 2)

TRL Assessment Tool

- Reminder - This is an iterative process
- As improvements are made it is valuable to track progress and reevaluate current priorities
  - Assess Readiness Level of the technology again
  - Identify updated list of components that may need improvement
- The results of the TRL Assessment can be used:
  - Identify the set(s) of components that need to most work in order to move the technology toward transition to practice
  - Communication tool to describe the current state of the technology's development
    - This can be used to convey why a specific development effort is requested/necessary

TTP Canvas

- A business model canvas-based approach that is similar to (and modeled after) what is used in iCorps (NSF Innovation Corps) – Business Model Canvas
  - Modified for when the goal of TTP is not necessarily establishing a business
- A tool researchers can use to clarify:
  - The purpose and/or value of their research
  - Their target clients
  - Activities to move the research toward operational deployment (Transition to Practice)
  - Development of a sustainability model
- The TTP Canvas enables the researcher to brainstorm and develop a model to explore ideas for transitioning research into practice
- This is also an iterative tool that can be continuously updated
  - New insights about key elements including potential clients, value propositions, solutions, costs, and resources
  - Elements of the TTP Canvas can be used in presentations, papers and discussions during the TTP Process and communicate with stakeholders

Planning Activities

- When filling out a Canvas (or planning for future efforts), examples can be helpful to provide a starting point.

- 9 example activities have been provided by the Trusted CI TTP team that include things a researcher should expect to carry out in order to successfully Transition their Research to Practice
  - Each of these should be considered when developing a TTP Canvas to see if they are necessary activities for the specific research

Examples of Planning Activities

1. Customer Discovery – identify potential users who would gain value from your research
   - Who are your Customers

2. Customer Challenge Discover – Identify operational challenges of your potential users
   - What are their operational challenges
   - Test your hypothesis about what value your research can provide them
     - why would they try/use your research

Examples of Planning Activities

4. Develop a Prototype – advance the research to develop a prototype (with documentation) that can be deployed in a user environment

5. Develop a Pilot with the User – TTP TRL 5 – Complete the prototype

Examples of Planning Activities

7. Partnerships for Development or Delivery – As you develop your solution and/or delivery model you may figure out that your need strategic partners to develop or deliver elements of the solution
   - You may not have the resources, time or skill to complete all elements

8. Identify Resources needed to Assist with Coding, Prototype, Pilot, Delivery
   - Can be students, interns, partners, other collaborators, investors, or other researchers

9. Identify and Develop Support Channels for Marketing and Delivery – if you intend to expand beyond a single client

- This is not a comprehensive list of everything that need to be considered

TRL Assessment and TTP Canvas

- Tools to assist researchers who are interested in Transitioning their research into Practice (TTP)
  - TRL Assessment helps the researcher to identify the current state of the research and develop a plan to progress into practice
  - TTP Canvas helps the researcher to clarify the value of their research, the target clients, activities to progress into practice, and a sustainability model.

- Publicly available through the Trusted CI TTP Team
  - https://trustedci.org/ttp