NCSHA 2015 Annual Awards Entry Form

(Complete one form for each entry)

Deadline: Wednesday, June 10, 2015

Visit ncsha.org/awards to view the Annual Awards Call for Entries.

Instructions: Type entry information into the form and save it as a PDF. Do not write on or scan the form. If you have any questions contact Matt Cunningham at mcunningham@ncsha.org or 202-624-5424.

Fill out the entry name *exactly* as you want it listed in the program.

Entry Name: Portfolio Management & Cost-of-Delay Process for Software Development

HFA: North Carolina Housing Finance Agency

Submission Contact: (Must be HFA Staff Member) Tim Carroll **Email:** twcarroll@nchfa.com

Please provide a 15-word (maximum) description of your nomination to appear on the NCSHA website.

A systematic consensus building approach to prioritizing IT software development projects using agile techniques.

Use this header on the upper right corner of each page:

HFA: North Carolina Housing Finance Agency

Entry Name: Portfolio Management & Cost-of-Delay Process for Software Development

Select the appropriate subcategory of your entry and indicate if you are providing visual aids.

Communications	Homeownership	Legislative Advocacy	Management Innovation
○ Annual Report ○ Creative Media ○ Promotional Materials and Newsletters	○ Empowering New Buyers ○ Encouraging New Production ○ Home Improvement and Rehabilitation	○ Federal Advocacy ○ State Advocacy	○ Financial ○ Human Resources ◉ Operations ○ Technology
Rental Housing	**Special Needs Housing**	**Special Achievement**	Are you providing visual aids?
○ Encouraging New Production ○ Multifamily Management ○ Preservation and Rehabilitation	○ Combating Homelessness ○ Housing for Persons with Special Needs	○ Special Achievement	◉ Yes ○ No

The Challenge

Software development has been an important business initiative for the North Carolina Housing Finance Agency (NCHFA) for more than 15 years. By the mid-2000s, the software development team had established a proven track record for building and delivering high-value line-of-business systems. During that time, the need to retire and rebuild legacy systems trumped the needs for new development, which made prioritization easy.

Today, with major business systems replaced, the desire for new business systems to meet the demands of the Agency has increased dramatically. This pronounced increase has made it exceedingly difficult for the Agency's leadership team to prioritize the projects. Not all projects can be tackled at once, but each project owner believes their project to be the most important. Attempts to prioritize lacked an objective measure, which led to misunderstandings and often left staff in the dark about why their project was not selected and instead languished in the queue.

In early 2012, the Agency re-formed an IT governance committee called TechVision. TechVision consists of the Agency's Executive Director and a mix of Directors, Managers, and IT staff. The TechVision team met regularly and often to discuss and debate project costs, durations, and returns on investment. While the mix of team members helped ensure that the interests of each Business Group were represented, too many Agency competing priorities made project prioritization a continual struggle. . In addition, business decisions were made that caused IT to be reactive instead of proactive. The team needed a fair and objective system or process to prioritize projects based on what was best for the Agency. Finally, an IT training session brought us the beginning of a solution.

The Solution

The software development team had adopted Scrum, an agile software development methodology, in 2009. Agile development has several core principles:

- Satisfy the customer early with continuous delivery of working valuable software;
- Welcome changing requirements;
- Deliver frequently;
- Business and IT staff work together daily;
- Build projects around motivated individuals;
- Practice effective face-to-face communication.

Scrum, as a methodology, builds upon these agile principles and creates a framework for iterative development and delivery.

While Scrum had worked well for new projects, the IT team was searching for a way to improve its helpdesk process. In addition, IT leadership sought to apply agile principals to project portfolio management. We had heard about Kanban, another form of agile development, and wanted to learn more to see if it could be the answer.

Kanban manages knowledge work with an emphasis on just-in-time delivery while not overloading the team members. In this approach, the process, from definition of a task to its delivery to the customer, is

displayed for participants to see. Kanban in the context of software development provides a visual process-management system that tells what to produce, when to produce it, and how much to produce. Kanban was inspired by the Toyota Production System and by Lean manufacturing. Kanban, compared to Scrum, is less iterative in nature and more continuous – the work is continually prioritized and work in progress limits (WIP limits) are imposed to intentionally constrain the team's workload at a given time. Kanban's mantra is to "stop starting and start finishing."

In late 2013, the IT team trained on Kanban and then introduced Kanban agile software development concepts to the Agency – specifically the software development helpdesk process. To better understand this method and to support the IT work, the TechVision team also participated in a high-level Kanban training. It was this training, while learning about portfolio management and the concept of "cost-of-delay" for project prioritization, that led the TechVision team to the "a-ha" moment.

The cost-of-delay exercise focuses on giving a numeric value to each project based on its opportunity cost, or in other words, the business value loss if the project is not implemented. Pairing Kanban principles with the cost-of-delay, the Agency's new portfolio management process was developed (See Visual Aid 1 – Diagram of Portfolio Management Process).

- Step 1: Ideas are funneled in to the Agency's list of projects (project backlog). Ideas are welcomed from all Agency staff.
- Step 2: The project backlog is reviewed by the Director team annually (or more often as needed) to prioritize the Agency's top 5 projects.
- Step 3: The IT team analyzes the top projects and creates a Statement of Work (SOW) for each project. No more than 3 projects are being analyzed at any given time.
- Step 4: The TechVision team then prioritizes the analyzed projects using the cost-of-delay exercise, which assigns a numeric value to the top rated projects.
- Step 5: The top rated projects are selected for implementation and the IT manager works on project scheduling, planning, and team formations.

In addition to the cost-of-delay exercise, the TechVision team is responsible for understanding the scope and complexity of the projects using the Statements of Work as an input. This helps the team to understand the project objectives and size as compared to others. To understand scope and complexity of each project, the TechVision team gets input from IT leaders and then uses t-shirt sizing (XXS to XXL) for this estimate to reach the consensus.

The cost-of-delay exercise focuses on giving numeric values using the Fibonacci number sequence: 1, 2, 3, 5, 8, 13, 21, 44, etc., to 3 categories (See Visual Aid 2 – Cost-of-Delay Definition):

- Business Value
- Time Criticality
- Risk Reduction

Each category has a variety of factors and questions that the team considers. After a discussion about the project, the TechVision team plays "planning poker." Instead of speaking -- so as not to influence anyone -- team members play their card on the count of three. Using playing cards numbered with the Fibonacci series of numbers, each TechVision team member throws down the card representing the numeric representation of their perceived impact of these factors. A wide range of numbers thrown

means we have different understanding of the cost-of-delay impacts and more discussion is needed. After discussion, the team throws the cards again and works to reach consensus.

The numbers for each category are added together to provide an overall score. The higher the score, the higher priority. If two or more projects achieve the same overall cost-of-delay score, then scope and complexity are taken into consideration. For instance, a small project with a high cost-of-delay will be prioritized at the top of the list over a large project with an equal cost-of-delay. This is high value with a quick turnaround. It is a fair and objective process to prioritize projects and is free from outside influence.

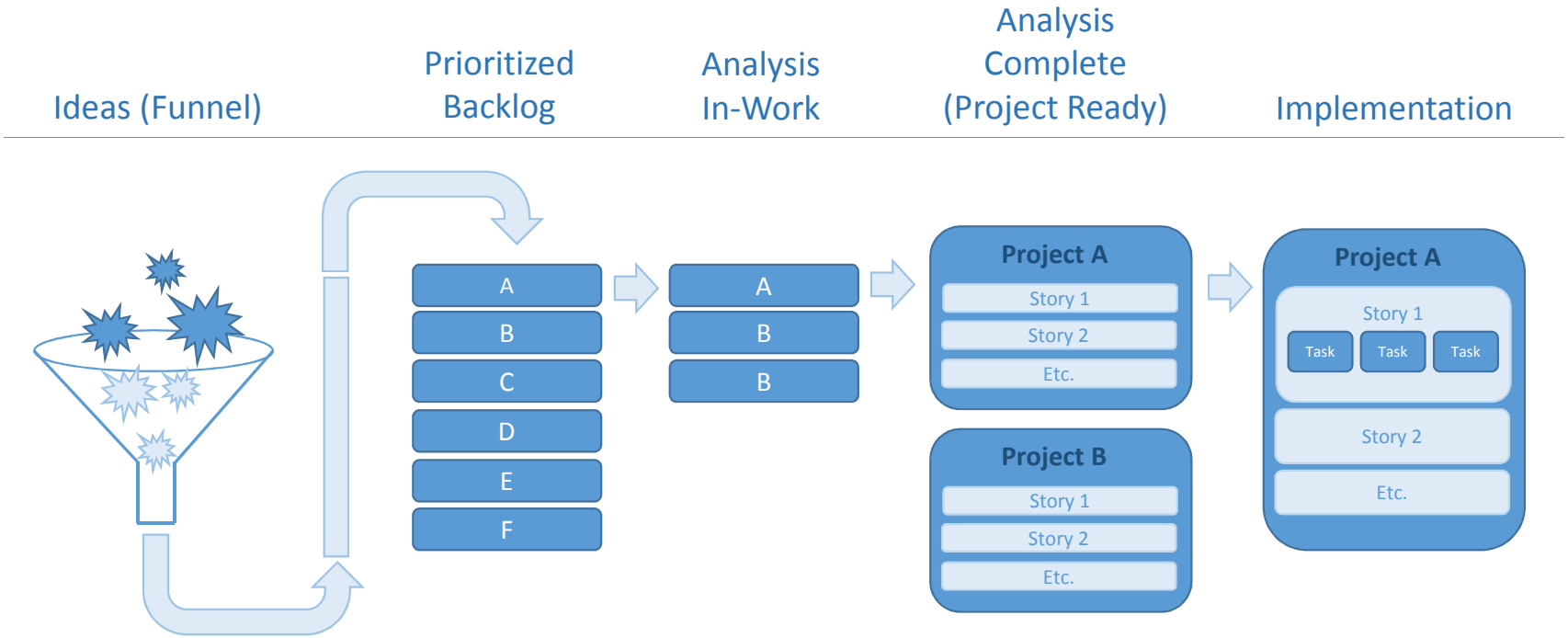
In the following example, project A has the highest priority. Project C and E are tied with a total of 26 points, but since Project E is smaller in scope/complexity, it is ranked second, and Project C ranked third.

Cost-of-delay example: 5 projects reviewed and prioritized					
	Project A	Project B	Project C	Project D	Project E
Business Value	13	3	13	8	13
Time Criticality	5	1	5	8	8
Risk Reduction	13	1	8	8	5
Total	**31**	**5**	**26**	**24**	**26**
Scope/Complexity	Large	Medium	Large	Small	Medium
Ranking	1	5	3	4	2

Summary

In a resource constrained environment, using the cost-of-delay as a principle factor in Software Development Portfolio Management is an objective and fair process to prioritize projects. It spurs discussion and understanding – important for every organization making IT decisions. Business groups now understand the rankings and projects that have the greatest cost-of-delay and opportunity cost, and know that these projects will be completed first. This process is easy to understand, implement and replicate. It puts the decision-making burden on the business and allows IT to focus on accomplishing the work. The introduction of portfolio management and the cost-of-delay exercise by our TechVision team has made the decision-making process transparent and easy to support. In addition, project proposed and actual figures (costs, duration) are tracked, which has led to better predictability for future project budgeting. No longer are there questions regarding how projects are prioritized and selected, which has had a positive impact on IT staff morale and business staff IT buy-in. The process is transparent from project inception to completion.

Visual Aid 1 – Diagram of Portfolio Management Process



Ideas are pitched from across the Agency, captured, and then reviewed and prioritized annually by the Director Team

Analysis is performed on the top rated projects by IT and business stakeholders.

A Statement of Work (SOW) is delivered.

Statement of Work is reviewed and projects are prioritized by the Agency's TechVision Team (IT Steering Committee) using the cost-of-delay exercise.

Implementation begins using Agile methodologies.

Stories (requirements) are written, prioritized and tasked out.

Project Roadmap is base-lined; Development and Release Management begin.

Visual Aid 2 – Cost-of-Delay Definition

Cost of Delay

For Cost of Delay, use the following questions for understanding business value, time criticality, and risk reduction.

Business Value

- Does it improve efficiencies?
    - Decreased product delivery times?
    - Reduction/elimination re-work (re-keying of data)?
    - Opportunity to re-deploy staff to other business initiatives?
    - Ability to work smarter, not harder?
- Does it increase or provide a new opportunity for new revenue?
- Does it create a new efficient process that replaces an existing inefficient process?
- Does it automate a process that will otherwise be manual?
- Will it increase job satisfaction (reduced stress, empowerment, autonomy)?
- Will it have a positive impact on our customers/partners?
- Does it improve overall quality (work output, data)?
- Does it reduce expenses (staff reduction, eliminate need for staff increase, hard costs)?
- Does it enhance our brand/image/reputation?
- Does it allow the Agency to serve a new need?
- Does it give us a competitive advantage?
- Does the information received open up opportunities (data analysis for future decisions)?
- Does it give us an opportunity to rethink how we do things (business, processes, etc.)?

Time Criticality

- Is there a fixed deadline?
    - If yes, what happens if the deadline is missed?
    - If no, is it still time critical for our Agency or our customers/partners?
- If we don't do it now (or soon), will it impact staff either positively or negatively (morale, productivity, etc.)
- If we don't do it now (or soon), where will we be in 1, 3, or 5 years?
- Will we be capitalizing on momentum from prior projects/initiatives?

Risk Reduction

- Will it reduce risk now or in the future?
- Will it increase security?
- Will it increase/help compliance?
- Will the Agency, business group, or staff avoid a potential penalty or negative impact?
    - What are the penalties/impacts?
    - How large are the penalties/impacts?

Scope/Complexity

Our goal is to understand the objectives and size of the project compared to others. A small project with a high cost of delay should be prioritized at the top of the backlog because it provides high value with a quick turnaround.

To help our team better size scope/complexity, we use the following guidelines:

- Do not use costs
- Do not use duration
- Use T-shirt sizes instead of Fibonacci numbers (XXS, XS, S, M, L, XL, XXL)
- Get SME input
- Use other projects as examples/comparisons