Webinar 3—Change Model Intro
Script for Julia Williams

Slide: What is a change model?
My name is Julia Williams, and I am Interim Dean of Cross-Cutting Programs and Emerging Opportunities, as well as Professor of English, at Rose-Hulman Institute of Technology. I am also a member of the RED Participatory Action Research Team that includes my Rose-Hulman colleague Dr. Ella Ingram, and our partners at the Center for Workforce Development at the University of Washington, Dr. Liz Litzler and Dr. Cara Margherio.

Slide: RED Consortium
Beginning with the first cohort of RED teams in 2015, the REDPAR team has been working with the RED teams to support their change efforts through the RED Consortium, REDCON. The RED teams comprise a national leadership cohort for change in engineering and computer science education, and we are learning so much about change from their excellent examples.

The third webinar in the series is meant to address important and challenging dimension of the NSF RED Project Proposals: the Change Model. During this webinar we will be using the phrase "Change Model" interchangeably with "Theory of Change," which is the phrase found in the NSF solicitation. Charles, Vanessa, and I hope to provide a deep consideration of change models, their role in the RED project, and how you can address this important element of your proposal.

Slide—Familiar Scenario
In order to frame our conversation, I'd like to start with a familiar scenario. A small group of faculty meet periodically over coffee to talk about the need for a new curriculum that engages STEM students in their learning. During these conversations, each person refers to the new curriculum as a major "change" initiative for the college.

But what does each person really mean by the word “change”? The answer to this question really depends on the role the person inhabits in the university community.

Slide—Definitions of change
The definitions of change multiply quickly.

For a faculty member, change may refer to the new curriculum that was discussed over coffee. When faculty go to the department head, however, she may hear the word “change” and think of something else, such as the need to hire faculty with new expertise, or the need to shift departmental resources to other priorities, as well as the justification she will need to make to the rest of the department to convince them that this is the right direction for the department to take and to gain their buy in.

The definition of change shifts again when the department head presents the change to the dean of the college. He may hear “change” and think about new policies and procedures required to propose a new curriculum, with perhaps a new major, even a new department, resulting from the change.

Consider too how the word “change” changes when the project is brought to the Director of the Center for Teaching and Learning. Now change refers, in her mind, to new workshops that must be developed and deployed in order to help faculty learn new pedagogies. It changes again when the lab technicians learn that a “change” is coming; for them, change means new equipment that must be purchased and space reconfigured to support a new engaging curriculum.

And let’s not forget the Provost or the President—for them, “change” refers to new fundraising opportunities and challenges. They are at one end of the spectrum when it comes to defining change. And, at the other end, students may think that “change” refers primarily to a new textbook!

Slide—NSF Solicitation

Before I overwhelm you with multiplying definitions of change, let me refer you back to the NSF solicitation for the RED program. If you take a look at the Proposal Preparation Instructions/Full Proposal Contents, the solicitation asks you to address a "specific theory of change" as a way to demonstrate that you have considered how your objectives will be achieved. Charles and Vanessa are going to walk you through several change models a little later on in the webinar, but I'd like to emphasize how useful an integrated change model can be for your project, even before you submit your proposal to NSF.

Slide—Welcome to the 2016 cohort

At yesterday's webinar, Susan Lord explained that the RED program is different from previous NSF programs, and I believe the requirement for a change model is a key indicator of the differences. The 2015 and 2016 RED cohorts have been formed to take a leadership role at the national level in transforming computer science and engineering education.

Slide—Cross-team Collaborations

Rather than receiving their grants and working in isolation, they meet regularly, they collaborate, they share information and tools. This is indeed a new model for stimulating change, as well as a new strategy for dissemination.

Slide—Borrego

The change you are working toward begins with using the change model to help bring your multidisciplinary team together. If you weren't able to join us yesterday, I hope you will take some time to watch Geoffrey Herman, Jeremi London, and Susan Lord, discuss strategies for identifying the RED team members, particularly the social scientist and the evaluator who must be represented. When you assemble a multidisciplinary team for your RED project, the change model can be a key strategy for forming the team. As a communication person in my teaching life, I have seen firsthand how individuals can experience difficulties based simply on the different ways that disciplines construct knowledge. The

change model you select can serve as the touchstone for your multi-disciplinary team as you bring together a diverse group of people. As Borrego and Newswander have argued, the success of multidisciplinary teams depends largely on how individuals construct and share knowledge. Now I'd like to turn the webinar over to Charles.

CHARLES

Webinar 3: Svihla script

My name is Vanessa Svihla and I am from the University of New Mexico. Today I want to share with you my perspective on change models and strategies. I want to note that we are seeing some variability in language- from change model to theory of change. According to the NSF: "*A theory of change is a model that links your desired long-term outcomes to medium- and short-term outcomes and specific activities*."

Today, I will share my perspective as an engineering education researcher on a RED team. As someone who is not an expert on change models, I want to help you understand what to look for and why it matters.

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I'll start by sharing a story of our RED project to provide a concrete example of what you have been hearing about today. I'll relate examples from the flipped classroom case studies we discussed in the webinar on What is Revolutionary and Not-so-Revolutionary? Then I'll share how a few different RED projects have integrated change models into their proposals. And I will share some tips about ways to think about how a change model can support your revolution.

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We first assembled our team for the 2014 RED call. We did not have an expert on organizational change. We proposed specific actions that we said would bring about change. This included doing discipline-based education research and having financial incentives. We named changes we wanted to see, but we failed to describe a change process. We did not make clear how or why change might happen. We did not have a change model. And, we were not successful.

We changed our team for the next call. We found an expert in organizational change. We took took time to collaborate with him so that he understood our project ideas. He observed who was passionate and invested on our team. He then identified and adapted a change model that fit our project well. In fact, we could all easily identify the steps we'd already taken. He also acted in as devil's advocate, giving voice to questions he thought the engineering faculty might have about ideas I was promoting. This helped us figure out where were were in our change process.

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If you attended our webinar on What is Revolutionary and Not-so-Revolutionary? you met Dr. Taylor and Dr. Samara, the Pis of our hypothetical RED proposals. If you missed that webinar, you can still go back and watch it. In brief, these two RED proposals both began with the idea of flipping classrooms, but they were very different proposals. Today, I am just focusing on how they integrated change models. In the case of Dr. Taylor's proposal, he viewed flipping as itself a revolutionary change. His was a top-down model of change, making the change mandatory for all classes. He brought in a social scientist too late for the social scientist to do more than write a paragraph. Thus, his proposal lacked an integrated model of change.

In contrast, Dr. Samara leveraged a grassroots change when a couple of her faculty wanted to get a group together to try flipping. She immediately brought in a change expert to help her design the project. The change expert agreed that the flipped classroom could be a good diving off point for faculty to propose additional changes. This expert then found and adapted a change model.

Let's take a closer look at each of the cases to understand what it means to integrate the change model.

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In Dr. Taylor's proposal, the top-down approach to making flipped classes mandatory does not match the proposed change model, Diffusion of Innovations. The research questions are not about how change occurs or about how specific change tactics might lead to a specific change. Instead, they address a narrow research agenda. The evaluation questions connect to the proposed change in

this case, as they ask whether the proposed change occurred. But neither the research nor the evaluation questions investigate HOW the change occurred. A hallmark of most of the successful proposals is that they explore how change occurs, not just if it occurs.

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In Dr. Samara's revolutionary RED proposal, we can see better alignment between the research questions, change model, proposed activities, and the evaluation plan. The activities are aligned to the change model they selected and adapted. Their research questions explore how the change occurs, specifically looking at how faculty beliefs change. The evaluation questions focus on both short term change, focusing on the initial flipped classroom idea, and then on longer range outcomes.

Now let's take a look a four of the successful proposals. Here, we will return to the four square Charles was using.

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First, let me say that we reviewed a set of successful RED proposals, and tried to view these as reviewers, looking for the main change strategy and tactics. These are our interpretation based on the proposals, and may not reflect the level of detail that program officers actually had when making decisions.

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Oregon State University proposed a change strategy that uses activity systems to change social contexts to support desired beliefs and behaviors.

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This strategy aligns to the tactics the proposed. For instance, they proposed to hold a faculty seminar on difference, power, and discrimination. This prescribed tactic focuses on changing individuals.

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Another individual change tactic focuses on creating professional learning communities to support the redesign of courses.

[CLICK]

A systemic change supports this effort by allowing faculty to be recognized formally as change leaders.

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They proposed to change TAs to help them facilitate interactive classes.

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And they proposed topical sessions on diversity and inclusion at faculty retreats.

[CLICK]

Finally, they proposed an emergent structural change Co-developing student professional development pods with students.

Overall, this Strategy and set of tactics was convincing to reviewers.

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San Diego University proposed a Leader-driven organizational change strategy.

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A prescribed structural change tactic they included was ongoing measurement of faculty buy-in to new ideas. Here, we see a tight alignment between their change model and research plan.

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To change individual faculty, they proposed that faculty would attend collaborative leadership workshops. They also provide support for fauclty to attend external workshops, and to attend workshops on teaching techniques.

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Another structural change, creating a new department and program aligns to their overall strategy.

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Supporting this tactic is the coordination of the new program with existing programs.

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Finally, an emergent structural change tactic is engineering and non-engineering faculty co-developing courses.

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Arizona State University proposed a strategy of seeking to understand and change their department by viewing it as an ecosystem

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To support this, they imposed a new structure: the lean Launchpad methodology.

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To change individual faculty, their proposed faculty development workshops.

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Using these tactics collectively provides an emergent change, with faculty proposing, using, sharing, and building on each others idea.

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At the University of New Mexico, we adapted Kotter's 8-stage model to fit our processes and language as our strategy.

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We proposed Community- Industry-, Research- and Entrepreneurial design challenges that could be integrated into existing core courses. We proposed multiple roles for faculty to commit to, from adding a challenge to their course, to serving as a design challenge originator, to being on panels to evaluate student designs. This allowed us to prescribe participation while allowing faculty to select a level of participation they could commit to.

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To support this, we proposed holding professional development institutes for faculty where faculty could learn about and plan changes they would like to make.

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Another structural change tactic was creating a digital badging system to shape faculty teaching and enhance their ability to understand their students.

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Finally, we are collaborating with faculty to conduct discipline-based education research, aimed at improving their courses.

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Of note is that in all the examples I have shared today, the change strategies were prescribed and structural. We think this may be an artifact of the RFP, which asks proposers to be clear about their vision. Despite this, all of the example proposals also have both prescribed and emergent tactics. This is important because, in these revolutions, it helps to have tactics that propel you forward, but also tactics that promote shared ownership and mid-course correction.

I also want to draw your attention to how diverse the tactics are across the proposals, yet how well they align to the main change strategy. This coherence is a hallmark of successful RED proposals.

Finally, as someone who is not an expert on change models, I found the four square to be difficult and very productive for my thinking. Initially, I wanted to put goal states on it, rather than tactics. Forcing me to think about tactics helped make it clearer HOW change occurs. I would certainly encourage you to try this out with the proposals you are working on.

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I want to draw to a close with a few tips about building or adapting your change strategy, about aligning your change model and activities, and about helping reviewers understand your revolution.

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In some of the successful proposals, the team custom built a change model. In such cases, they still often cite a well-known change model. Most of these proposals incorporate sociocultural theories and empirical research in their custom-built change models. These then serve as drivers of their research plan. They pose research questions that focus on how change occurs and whether the model drives or accounts for the desired changes. In other proposals, teams found a well-known change model that describes how change happens, usually from industry or organizational change models. Successful proposals using

existing change models adapt these to fit their activities. They tend to pose research questions on how their specific strategies affect change, and their evaluation plan is usually driven by their change model.

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No matter what your change model and strategies are, they need to fit your proposed project. They need to connect to your proposed activities and serve as a driver of the research and / or evaluation. Be explicit about how the change model fits your project. Consider how your proposed activities, roles, research plan and evaluation plan fit.

How does the change model fit your context? Consider the mission of your university and any recent changes made in your department or community.

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In the landscape of RED proposals, it is extremely important to help the reviewer envision where you are in your change process.

You have to help the reviewer understand your history and where you are starting from.

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The act of forming a team, understanding the need for change, and beginning to plan the revolution is already part of the change process.

However, your revolution may take you into unchartered dragons-be-here territory.

[CLICK - Dragon appears]

Help the reviewer envision where your project will take you. What will the revolution look like when you get there?

[CLICK – X appears]

But it is your change model and change strategies that help the reviewer understand how you will get there.

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Successful RED proposals provide this map, connecting their change models and strategies in ways that are specific and clear.

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It can be helpful to think about how your change model fits in your broader system. Does it take into account all of the intended targets of the proposed change? The faculty, students, culture, curriculum, processes and procedures that you think need to change?

Is it sensitive to the diversity of conditions that exist even within categories. For instance, faculty hold different ranks. Members of your team may have different reasons for joining the revolution. Students may have different levels of interest in being part of your revolution.

Thinking about the ecosystem of your department, consider, are your change model and strategies something like a bulldozer?

[CLICK – bulldozer appears]

While a bulldozer can certainly change the landscape, there may be little left to like about it afterwards. Overly top-down revolutions may chase off the targets of the revolution, rather than changing them.

[CLICK – bulldozer disappears and cane toad appears together]

Or, are you change model and strategies more like the cane toad, an invasive species that out-competes existing species? When you change an ecosystem without understanding it well enough, your change can have unintended consequences. Ecosystems- and revolutions- are complex and lots can go wrong. For many of the successful RED proposals, an important first step has been gaining a deeper understanding of that ecosystem, prior to beginning the main changes.

I hope these metaphors can ignite your thinking about the kind of change you want to bring.

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