Raytheon
BBN Technologies

ONR STEM Grand Challenge
Extensible Adaptive System for STEM Learning

Contract # N00014-12-C-0535
Raytheon BBN Technologies Corp. (BBN) Reference # 14217
In partial fulfillment of contract deliverable item # A001

Quarterly Progress Report #2

April 7, 2013 –July 6, 2013

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1 Introduction

This is the second Quarterly Progress Report (QPR) (CDRL Data Item #A001) for EAITS, an extensible and adaptive STEM Learning System that BBN is developing under the ONR STEM Grand Challenge Program, Contract # N00014-12-C-0535. It covers the period April 7, 2013 through July 6, 2013.

During the period of this quarterly report our efforts focused on developing a prototype of the system workbench for content authoring and system administration. We also developed a briefing about our project that was presented at the ONR STEM Grand Challenge kickoff meeting on April 19, 2013. A revised version of this briefing was created and present to ONR on June 14, 2013.

2 Technical Progress

2.1 Workbench Development

As described in the system architecture (Ref: Deliverable #A005), the workbench is an extensible environment that is part of our EAITS. It is used by both subject matter experts (e.g. content developers) and system administrators.

The workbench is comprised of four tools:

- Administration/Configuration Tool
- Curriculum Editor
- Dialog Script Authoring Tool
- Problem Editor

During the first month of this quarter, we focused on building prototypes of the Curriculum Editor and the Problem Editor.

2.1.1 Curriculum Editor

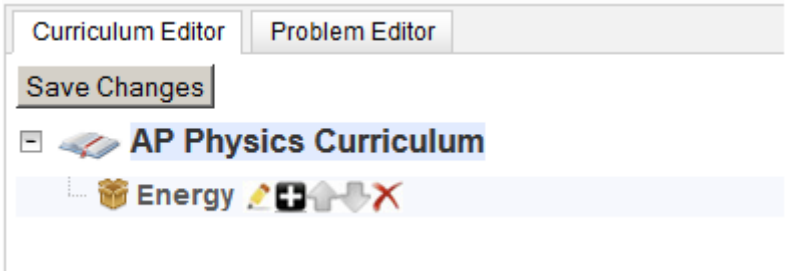

Figure 1. Curriculum Editor

The Curriculum Editor enables subject matter experts (SMEs) to create and maintain the curriculum of the learning domain. The editor is implemented as an extension of the

curriculum browser application that is used by learners to explore the learning domain and access the learning domain. The SMEs can edit the curriculum through a WYSIWYG interface. Figure 1 shows a snapshot of this editor. The editing toolbar that is made available alongside each node (e.g. *Energy* in Figure 1) in the model allows the SME to edit a node, add child nodes, re-order a sequence of nodes, and delete a node.

2.1.2 Problem Editor

The Problem Editor, shown in Figure 2, offers a WYSIWYG interface for authoring problems that can then be integrated into the curriculum and made accessible to the learners. The editor allows content developers to author complex problems using multimedia objects and rich content (such as equations). Authors can associate textual, audio, or video feedback with the multiple choices associated with the problem. Furthermore, authors can specify the steps and sub-steps involved in solving a problem to offer problem solving support to learner.

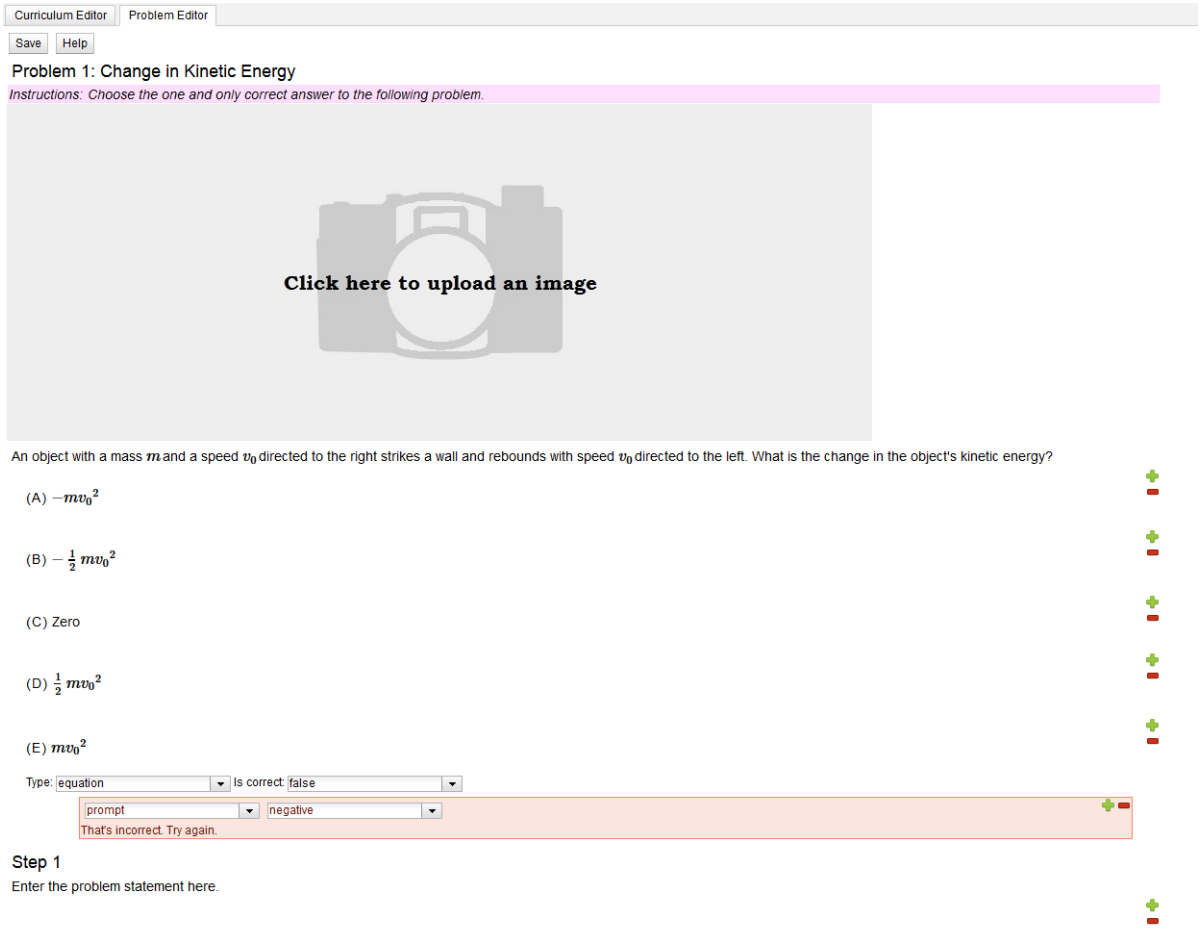

Figure 2. Problem Editor

3 Deliveries and Milestones

Table 1: Phase 1 Deliverables Status as ofJuly 16, 2013

Item	Description	Due Date	Delivery Date	Status / Comment
A003	System Requirements/Concept Report (SRCR)	3/8/2013	3/15/2013	Delivered
A004	SRCR Review	3/23/2013		Meeting requested
A005	System Design/Architecture Report (SDAR)	4/7/2013	4/12/2013	Delivered
A005	SDAR review	4/22/2013		Meeting requested
A001	Quarterly Progress Report (QPR) 1	4/17/2013	4/17/2013	Delivered
A007	Approved Protocol	5/7/2013	4/18/2013	Approved
A006	Cognitive Task Analysis (CTA) Report	5/7/2013	5/7/2013	Delivered
A001	Quarterly Progress Report (QPR) 2	7/17/2013	7/17/2013	Delivered (This report)

Notes:

1. CDRL Data Item A002, a Final Technical Report, is due at the end of the contract.
2. Phase I of the contract received two no-cost-extensions, introducing this QPR as an additional deliverable.

4 Financial Status

Table 2: Financial Status as of June 21, 2013

CLIN 0001	
Contract Award Value	$259,997
Contract Funded Value	$250,000
Inception to Date Expenditures	$254,752
External Commitments	$3,713
Remaining Funds	**$(8,465)**

External commitments reflect the uninvoiced portion of UCLA's (BBN's subcontractor) award.

Contract Status

Table 3: Contract Status as of July 16, 2013

Date	Contract Action
Nov. 29, 2012	Received Contract Mod 2 establishing January 7, 2013 start date
Jan. 7, 2013	Start Phase I
Apr. 19, 2013	Kick-off Meeting at ONR
Apr. 30, 2013	No-Cost Extension through June 28, 2013 issued
May 9, 2013	Meeting at ONR
Jun. 14, 2013	Revised briefing presented at ONR
Jun. 28, 2013	No-Cost Extension through July 20, 2013 issued
July 20, 2013	End of Phase I

BBN is operating under Phase I of a three-phase contract. Phase I was awarded at $259,997 and funded at $250,000. BBN submitted a limitation of funds letter in early April.

Phase I was originally awarded through May 7, 2013. BBN has received two no cost extensions. The current end date is July 20, 2013.

5 Issues or Problems

BBN has expended all Phase I funding and has been apprised that it will not receive the balance of the Phase I award.

