CONNECTICUT STATE DEPARTMENT OF EDUCATION

Next-Gen Science CT

From PD to Online Course

Developed through a Mathematics and Science Partnership (MSP) grant by:

Connecticut Center for Advanced Technology, Inc.

This presentation supported by:

Joyce D. and Andrew J. Mandell Academy for Teachers at the Connecticut Science Center®

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Hello!

Nick Balisciano

- Director of Programs and the Mandell Academy, CT Science Center
- Part-Time Faculty, Central CT State University
- Project Coordinator, Next-Gen Science CT (grant duration: 2014-2016) – through the Connecticut Center for Advanced Technology

Session Outline

- About the MSP Project
- About the Course
- Strategies for Success

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About the Project

Who, What, When, How

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Project Goals

- #12060-21592-2013-84158-170003
- #12060-21592-2014-84158-170003
- #12060-21592-2015-84158-170003

- Provide a strong foundation in three-dimensional learning to a diverse cohort of teacher-leaders.
- Leverage that cohort to inform the development of a free online course for all educators in CT.

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The ‘P’ in MSP

- **CCAT: Connecticut Center for Advanced Technology, Inc.** – me, Kristal Atkinson (Moodle support), Gail Emilsson (course development support)
- **Central Connecticut State University** – Marsha Bednarski, Kristine Larsen, Jeff Thomas (PD co-facilitation, course development assistance)
- **University of Hartford** – Joan Pedro (PD support)
- **CRE: Curriculum Research and Evaluation, Inc.** – Theresa Bruckerhoff (eval.)
- 11 demographically diverse **school districts**: Colchester, CT Technical High Schools, East Granby, East Hartford, Farmington, Hartford, Manchester, Middletown, New Britain, Simsbury, and Waterbury
- **CSDE: CT State Department of Education** – Liz Buttner, then Ron Michaels

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Project Overview

	Phase One	Phase Two	Phase Three
Timeframe	1/14 – 9/14	10/14 – 9/15	10/15 – 9/16
Participants	49	37	22
	K-12, from very demographically different districts		
Length	48 hours	69 hours	74 hours
Format	Blended (in-person, webinars, on-site support)		

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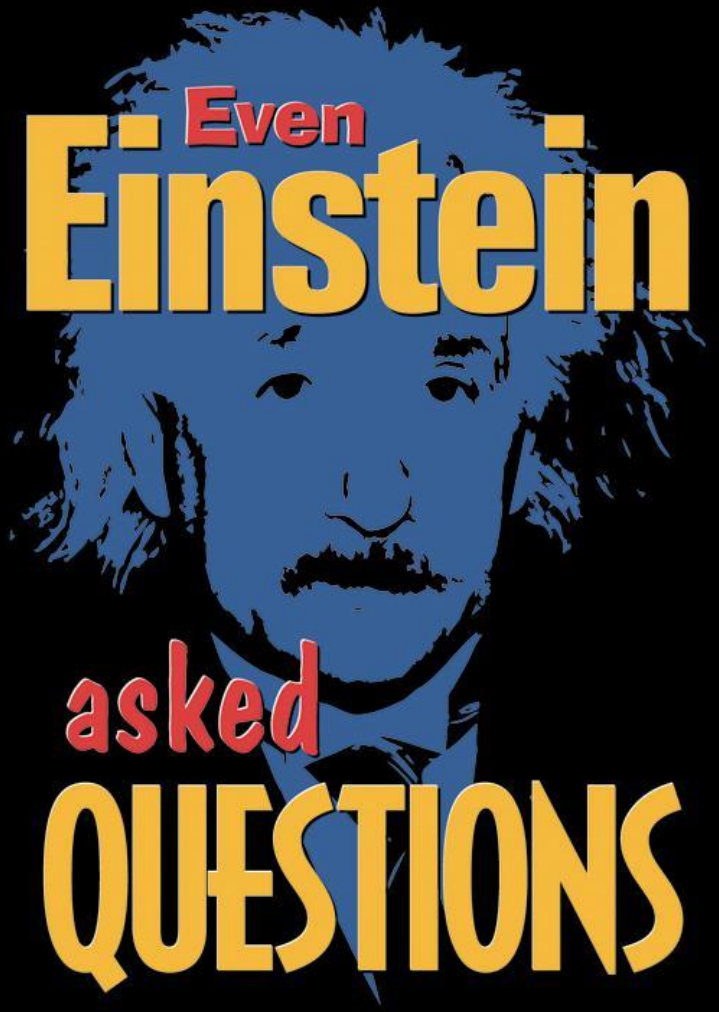
A Hybrid Model

	Phase One	Phase Two	Phase Three
Emphases	NGSS vision, goals, 3-D architecture Key pedagogical shifts – focus on priority Practices	Engineering design; equity and diversity Classroom implementation Online course development	Evaluation of units and lessons PLC support Online course completion
Primary Outcomes (PD Cohort)	Significant pre/post PCK gains	Significant pre/post PCK and self-efficacy gains, improvements in NGSS teaching behaviors	Significant pre/post PCK and self-efficacy gains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About the Course

Structure and Function

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Course Benefits

- **Basic** foundation for Next Generation Science Standards (NGSS)*
- **Free** for CT educators through July 2022
- **Flexible** scheduling
- **Useful** for local PLCs
- **Certificate** of completion (emailed)

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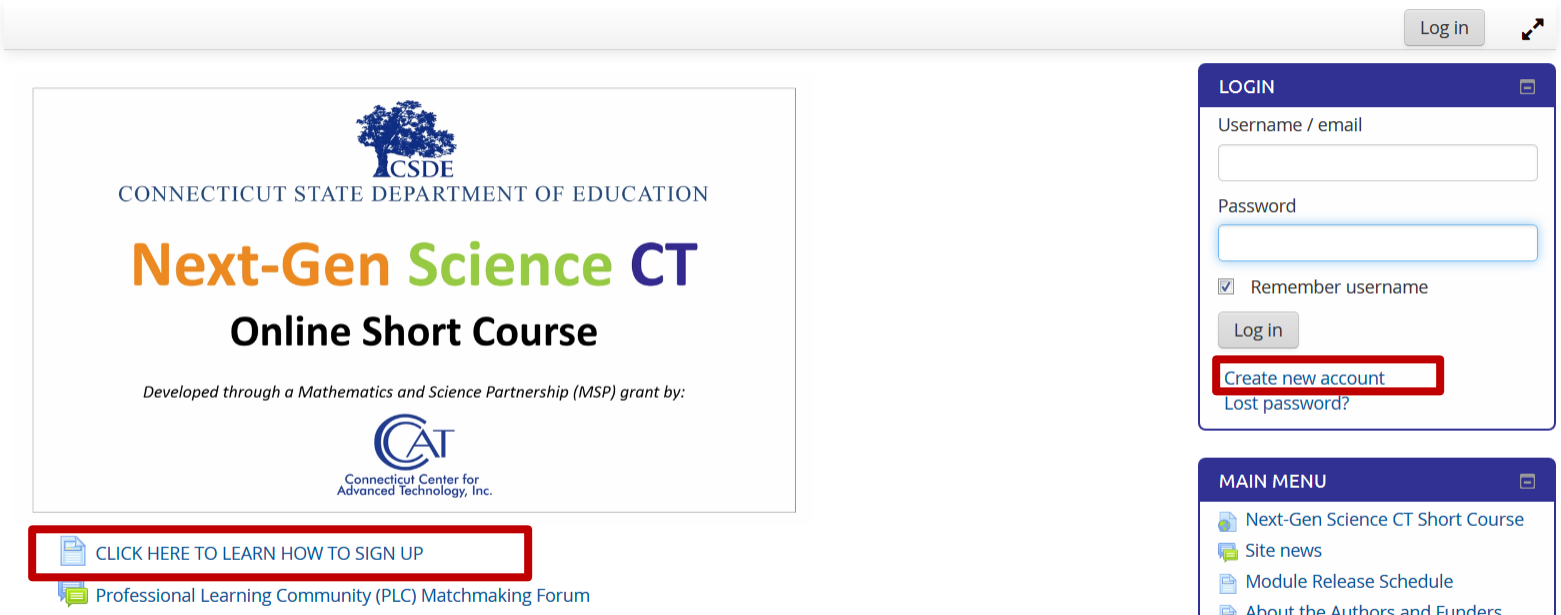
The Course

Next-Gen Science CT



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Module List and Length

Done in Sequence

Module	Title	Min (hrs)	Max (hrs)
1	Course Introduction	0.33	1.5
2	Overview of Next-Gen Science	1.5	6
3	Next-Gen Practices Overview	1.75	8.25
4	New/High Priority Practices	3.5	16
		7	**32**

Done in Any Order

Module	Title	Min (hrs)	Max (hrs)
5	Disciplinary Core Ideas	1	3
6	Crosscutting Concepts	0.67	1.5
7	Nature of Science	1.5	3
8	Engineering	2	4.5
9	Equity and Diversity	2.5	8
10	NGSS Architecture	2	6
		11	**29**

Final Module

Module	Title	Min (hrs)	Max (hrs)
15	Wrap-Up	**1**	**2.5**

Solo Speed Run: 18 hours
With Rich PLC Discussions: 60 hours

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Module 4: New/High Priority Practices

Approximate Time needed for Module Completion: 3.5 - 16 hours

If PLC time is limited, you may wish to watch the videos and think about the "Think & Discuss" prompts on your own and then engage in discussion about the videos and those prompts with your PLC. If you plan to complete any of the optional submissions, we suggest you complete those after you have had your PLC discussions.

Module 4 Notes Outline

Download and print this Word file for an outline for note-taking.

New/High Priority Practices: Introduction

Asking Questions About Phenomena: Part 1

Not available unless: The activity **New/High Priority Practices: Introduction** is marked complete

Asking Questions About Phenomena: Part 2

Not available unless: The activity **Asking Questions About Phenomena: Part 1** is marked complete

Asking Questions About Phenomena: Part 3

Not available unless: The activity **Asking Questions About Phenomena: Part 2** is marked complete

Asking Questions About Phenomena: Think & Discuss 1

Not available unless: The activity **Asking Questions About Phenomena: Part 3** is marked complete

Asking Questions About Phenomena 1 Written Submission (Optional)

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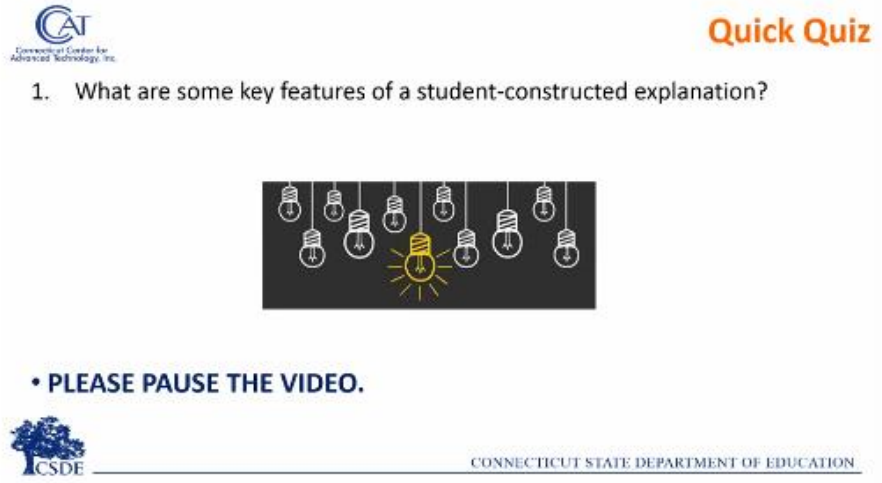
Other Features

Constructing Explanations of Phenomena: Part 1



- "Quick Quizzes" within videos (ex. shown here)
- Badges and "XP" for progress and for doing extra
- End-of-Module Checkpoint (70% req.'d)
- Module Feedback Form
- Module Discussion Forum

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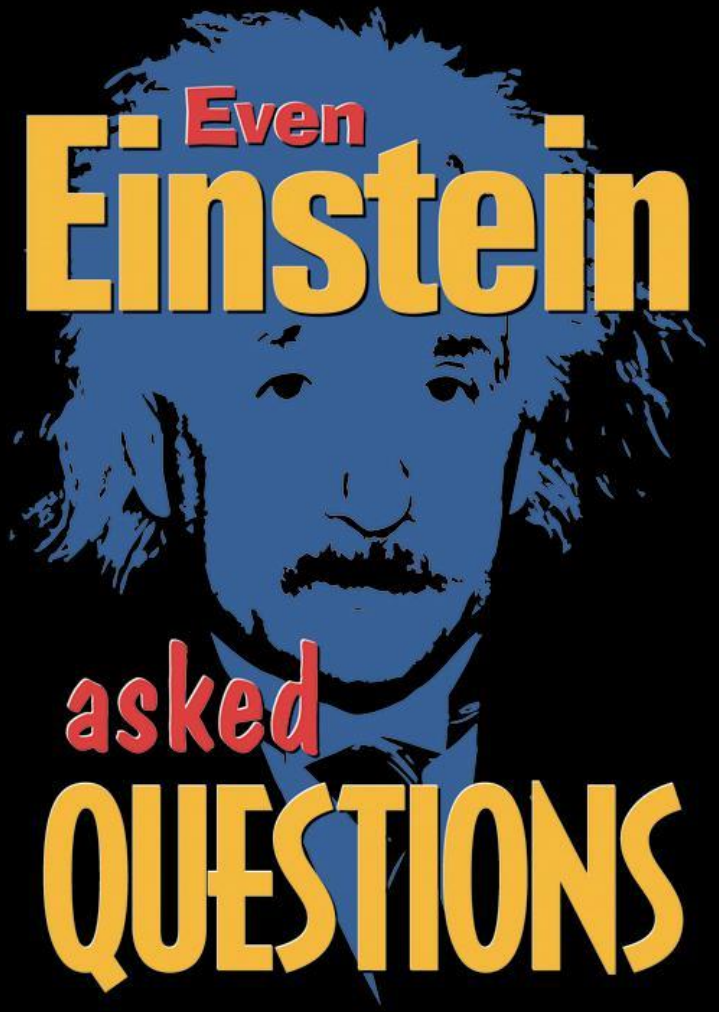
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Strategies for Success

In an Online Course

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Course Tradeoffs

It's free, but…

- "Live" PD with access to experts is vastly ideal versus self-serve.
- Some people don't do well or persevere much with online courses.

Typical completion rate for Massively Open Online Courses (MOOCs) → 4%

Success w/o Expert Facilitation

- What conditions are needed for success?
- What are the personality characteristics of an effective course taker?
- What are the behavioral habits of an effective course taker?

Conditions, Characteristics, Habits

Success in a course without consistent expert facilitation is greatly enhanced by:

Professional Learning Community

- Conditions:
  - Access to and participation in a PLC
  - Sufficient time – lots to know & understand!
- Characteristics:
  - Patience and persistence/diligence
  - A belief in there always being room for improvement, an open mind, and a willingness to make changes
- Habits:
  - Very reflective
  - Very discursive; engages with PLC – speaks, listens, and writes
  - Carves out time in advance to complete the course
  - Uses each module to make deliberate, relevant, and realistic changes to classes and dept.

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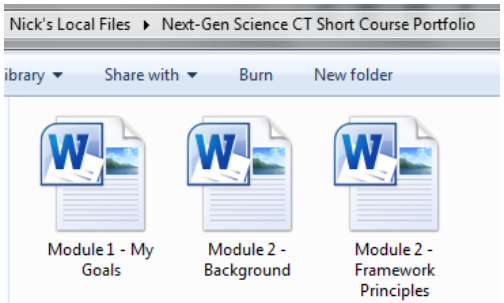
Portfolios and Lists

You can revisit “Think and Discuss” work products after you submit them, but we recommend you keep a folder in a convenient place where you can save your work as you submit it.

We recommend that you keep your own prioritized to-do list since we will suggest – and you will likely think of –many things you can/should do.



"Next-Gen" To-Do List			
thing to do	priority/when to do it	with whom I should work	resources/support I will need
try A	Thursday	myself	instructional supplies
develop B	this marking period	myself	time
improve C	in the spring	my department	peer feedback
acquire D	next summer	school leadership	equipment
implement E	next school year	district leadership	policy changes

Scheduling

This is not simple stuff, and teachers are busy!

Carve out a regular day/time (or specific dates) up front w/PLC colleagues.

We strongly encourage school and district leadership to free up time.

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More Project Resources

PLCs, Videos, EQuIP

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PLC Resources

Handout:

- Getting a PLC Started
- Solving Common Problems
- Using PLC Protocols

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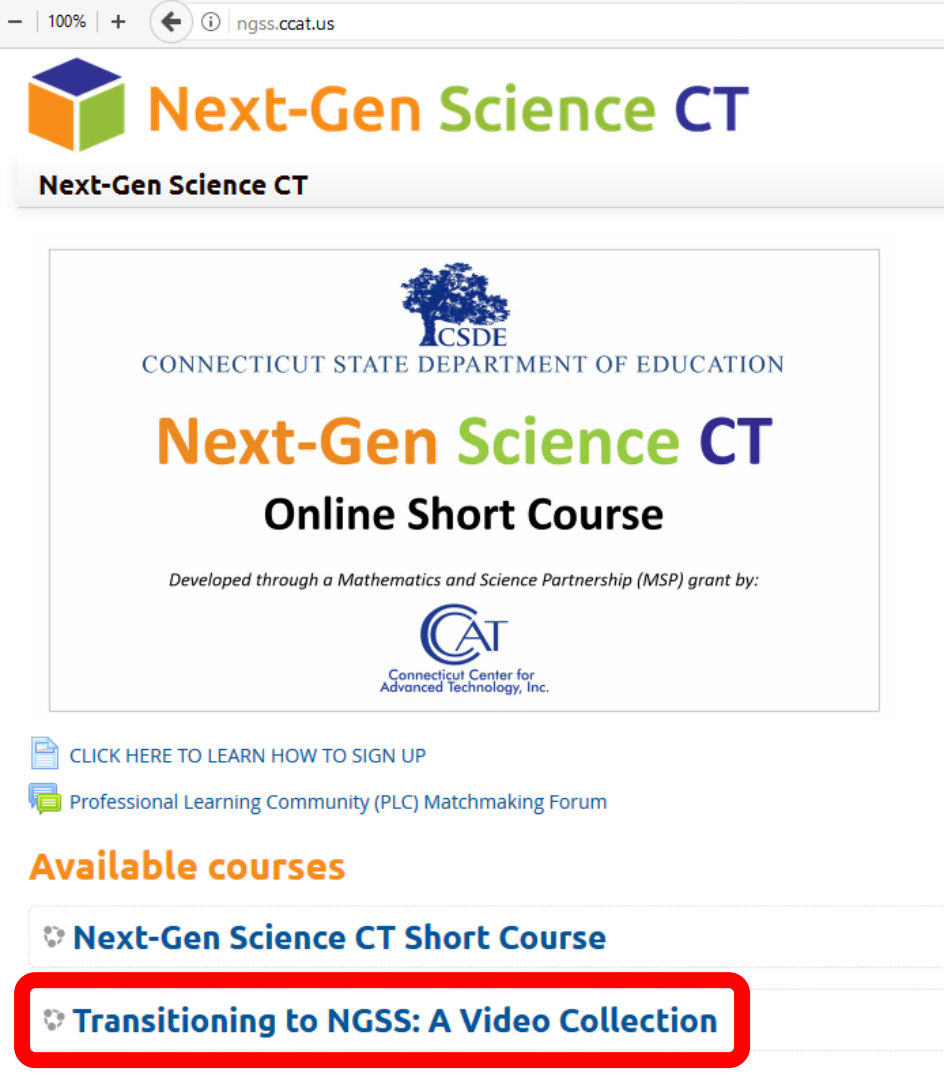

Video Collection

- Footage of teachers was captured and catalogued with MSP funding.
- Additional funding from CSDE allowed the clips to be chosen and annotated by CREC and then processed and uploaded by CCAT.

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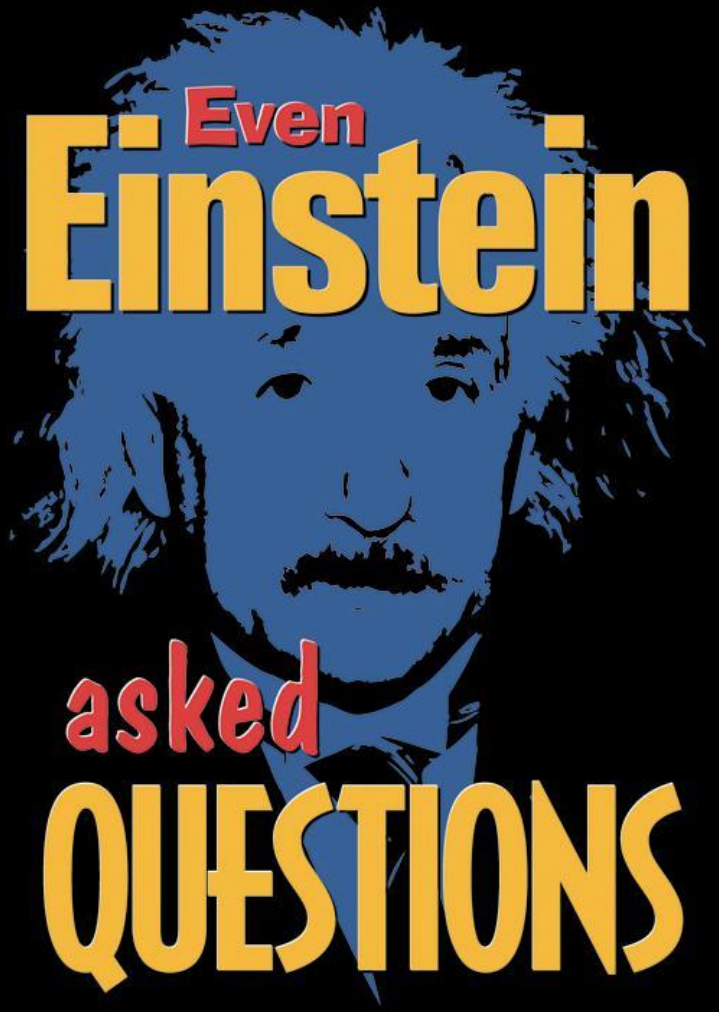
- Summer 2016: MSP review of numerous commercially available materials using EQuIP: Science (modified v2)
  - None achieved the minimum score of 2/3 on Category I (NGSS Alignment) needed to proceed to Categories II and III.
    - Regardless of the source, teachers will need to **shift** their lesson activities towards the NGSS as they learn more about pedagogies that support "three-dimensional" learning.
  - Advice on how to go about this process will inform the design of an EQuIP workshop in the coming months. This workshop will need a prerequisite.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Thank you, and happy learning!

Next-Gen Science CT Online:
http://ngss.ccat.us

Next-Gen Science CT Support:
nextgensciencect@gmail.com

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