



Frequently Asked Questions (FAQs)

General Information

Q: What is the RealWorld-InWorld NASA Engineering Design Challenge?

A: The RealWorld-InWorld (RWIW) Design Challenge guides middle- and high-school-aged students (grades 7-12) through the design process to explore and design solutions for NASA-inspired engineering challenges.

Q: What are the two phases of competition?

A: RWIW consists of two components or phases of project-based learning: a **RealWorld** (face-to-face) and an **InWorld** (unique online virtual reality) phase.

- ▶ NASA scientists and engineers visit and "chat" virtually throughout both phases of the Challenge.

RealWorld (Phase 1): Teams of middle- and high-school-aged students with support of their teachers/coaches/parents explore and design solutions related to the James Webb Space Telescope and Robonaut 2.

- **RealWorld Phase begins:** September 1, 2011.
- **RealWorld Phase ends: January 27, 2012.** To be considered to move to the InWorld phase, all RealWorld work must be submitted by this deadline.
- **Recognition:** Submitted final project solutions will be featured on the RealWorld-InWorld website and teams will receive recognition for their work once they complete the RealWorld challenge and InWorld registration. Names of teachers/coaches/parents who register their teams will be entered into a monthly drawing for \$100 gift certificates.

InWorld (Phase 2): Participating college students select teams of 2-4 middle- and high-school-aged students who have completed the RealWorld phase to build their InWorld teams. Teams work in a virtual online environment using 21st Century tools to refine designs and to create 3D models of their design solutions.

- **InWorld Phase begins:** January 28, 2012. The InWorld phase of the competition requires InWorld team collaboration that will run from January to April 2012. An online timeline helps pace this work (see timeline at end of this document as well).
- **InWorld Phase ends: April 20, 2012.**
- **Recognition:** InWorld teams will compete for cash awards (\$1,000 per member, including team leader, for each winning team). Contest rules apply.



Contact RWIW@ninet.org if you cannot find an answer to your question.

Q: Who can participate in the challenge?

A: The challenge is appropriate for middle- and high-school-aged students (grades 7-12).

- ▶ Students from informal (home school, scouting troops, etc.) settings are eligible to participate.

Q: What are the challenges that students will attempt to solve?

A: For **both** the RealWorld and InWorld work, students will use the design engineering process to solve one of two real-world NASA challenges. One challenge is related to the James Webb Space Telescope and the second is related to Robonaut 2:

- ▶ How can you design a shield to keep the James Webb Space Telescope cold enough so that it can detect faint infrared light from distant sources such as remote galaxies and extrasolar planets?
- ▶ How can you design a "zero-g foot" for Robonaut 2 that will provide support and stability during space walks?

Q: What is the goal of the RealWorld-InWorld initiative and challenge?

A: The main goal of the initiative and the challenge (competition) is to encourage students in grades 7-12 to explore and build skills essential for successful careers in science, technology, engineering, and math (STEM). By working collaboratively with university students, students will also deepen their understanding of project management and NASA innovation.

Q: How long will it take to complete the challenge?

A: The RealWorld phase of the competition requires minimal preparation and can be completed in about two weeks by a team of middle- and high-school-aged students with support of their teacher/coach/parent.

The free online resources, tutorials, and rubrics will guide teams to successful completion of the curriculum.

To be considered to move to the InWorld phase, RealWorld teams must submit their work by **January 27, 2012**. Moving to the InWorld phase requires selection by college team leaders and is limited to U.S. citizens. This match will be supervised by NIA.

The InWorld phase of the competition requires InWorld team collaboration that will run from January to April 2012. A timeline helps pace this work (visit www.nasarealworldinworld.org).

Q: Are the RealWorld-InWorld resources free?

A: Both the RealWorld and InWorld resources and tutorials are **free**. Teachers/coaches/parents can register for **free** at www.nasarealworldinworld.org to receive these online resources.

Q: How can I use the RealWorld-InWorld standards-based resources?

A: Both RealWorld and InWorld resources are flexible to implement. The RealWorld resources can be used as a stand-alone unit or as a supplement to existing standards-based curriculum.

The InWorld resources move students into an online virtual world setting to use 21st Century skills and tools. This phase extends work completed within the RealWorld phase. **Note:** Moving to the InWorld phase requires selection by college team leaders. This match will be supervised by NIA.



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Q: What are the benefits of participation for teachers/coaches?

A: Teachers/coaches/parents participating in this challenge:

- Receive free, flexible standards-based resources
- Learn about innovative NASA resources and missions
- Obtain easy-to-implement, real-world science, technology, engineering, and math (STEM) resources

Q: What are the benefits to students?

A: Students participating in this challenge:

- Learn real-world applications for standards-based content through the design process
- Experience interdisciplinary, project-based learning
- Build and master 21st Century tools and skills
- Interact within a unique online virtual reality setting
- Learn life skills (cooperation, accountability, etc.)
- Become aware of possible career opportunities through personal mentoring from university students and discussions with NASA scientists and engineers
- Build confidence in themselves and their ideas
- Receive a certificate upon completion and submission of the RealWorld project solution.

Q: What are the benefits to university students?

A: University students participating in this challenge:

- Develop leadership skills through mentoring middle- and high-school-aged students
- Reinforce and strengthen an understanding of the use of 21st Century tools and skills through mentoring others
- Develop technical skills by working InWorld (an online virtual reality setting)
- Learn about opportunities at NASA while working collaboratively with NASA engineers
- Help young people explore engineering skills and careers, and build their confidence
- Perform community service through this mentoring experience

Q: What are past participants saying about RWIW?

A: "This challenge solidified my choice to pursue a career in mechanical engineering."

--Jill Friese, Lutheran Southern Academy, Houston, TX

"By participating in this challenge, you learn about and use new technologies throughout the competition, some from the challenge itself, some from the experts, and mostly from your team members. You'll be surprised how much of what you have studied (in class) is finally used for something useful. ... it is an opportunity to develop and to improve communication skills, people skills, and project management skills."

--Nam Truong, University of South Florida

Visit www.nasarealworldinworld.org/PastWinners.aspx for a review of the 2010-2011 InWorld winners.



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Registration

Q: How can I register?

A: Registration is **free** of charge. Teams can register by visiting www.nasarealworldinworld.org.



Q: Why register?

A: By registering, teachers/coaches/parents gain access to both RealWorld and InWorld resources.

Submitted final project solutions will be featured on the RWIW website and teams will receive recognition for their work once they complete the RealWorld challenge and InWorld registration.

Q: What are the deadlines?

A: **January 27, 2012**, is the deadline for middle- and high-school-aged students and their teachers/coaches/parents:

- ▶ To complete and submit final RealWorld (Phase 1) project solutions to be considered to move to the InWorld phase.

January 15, 2012, is the deadline for university students:

- ▶ To register as an InWorld **team leader**. University students must have a professor sponsor their work to verify their qualifications to lead a team.

A complete timeline appears at the end of the document.

Q: What are the awards?

A: Incentives for participation are offered in each phase:

- ▶ Names of teachers/coaches/parents who register their teams will be entered into a monthly drawing for \$100 gift certificates.
- ▶ Submitted final project solutions will be featured on the RWIW website and teams will receive recognition for their work once they complete the RealWorld challenge and InWorld registration.
- ▶ InWorld teams will compete for cash awards (\$1,000 per member, including team leader, for each winning team).

Q: I have already registered online. Now what?

A: You can begin the RealWorld phase of the competition. Remember to submit your final project solution by **January 27, 2012**, and complete the InWorld registration in order for you and your students to receive recognition.

- ▶ You will receive e-mail updates when new resources are added to the RWIW website.
- ▶ E-invitations will also be sent when free informational webinars are scheduled and guest speakers are scheduled for InWorld presentations.



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Information about RealWorld-InWorld Initiative

Q: Who sponsors the challenge?

A: The Challenge is a joint education initiative of NASA's Langley Research Center in Hampton, Va., and Goddard Space Flight Center in Greenbelt, Md., in collaboration with the National Institute of Aerospace (NIA), USA TODAY Education in McLean, Va., and LearnIT-TeachIT in Washington, D.C.

Q: What is the James Webb Space Telescope?

A: The James Webb Space Telescope is one focus of the RealWorld-InWorld Challenge. It is the premier space observatory of the next decade and is scheduled to launch in 2014. Several advanced technologies have been developed for the Webb telescope. These technologies serve as the basis for student exploration during the challenge.

For more information on the Webb telescope, visit www.jwst.nasa.gov.

Q: What is the Robonaut 2?

A: Robonaut 2 (or R2) launched to the International Space Station (ISS) on the Space Shuttle Discovery as part of the STS-133 mission. It is the first dexterous humanoid robot in space and the first U.S.-built robot at the Space Station. Initially R2 will be deployed on a fixed pedestal inside the ISS. Future plans include a leg for climbing through the corridors of the Space Station, upgrades for R2 to move outside into the vacuum of space, and then future lower bodies like legs and wheels to propel the R2 across lunar and Martian terrain.

For more information on Robonaut 2, visit <http://robonaut.jsc.nasa.gov/default.asp>.

Q: What is the historical background to the RealWorld-InWorld Challenge?

A: The RealWorld-InWorld Design Challenge builds on two successful programs developed in collaboration with NASA:

- USA TODAY's and NASA's Sight/Insight and No Boundaries design challenges
- NASA/National Institute of Aerospace (NIA) Virtual Exploration Sustainability Challenge (VESC)

USA TODAY's and NASA's Sight/Insight and No Boundaries program, developed in collaboration with educators and NASA professionals at Goddard Space Flight Center in Greenbelt, Md., deepens students' understanding of STEM careers, project management, and NASA innovation.

VESC, a modeling and simulation challenge, sponsored by NASA's Langley Research Center in Hampton, Va., and NIA, teamed university-level engineering students with high school students to solve a NASA-inspired design problem within a virtual environment.

Educators from NIA and USA TODAY Education worked with NASA education and outreach specialists to develop a competition that reflects the real-life challenges the James Webb Space Telescope and Robonaut 2 projects face.

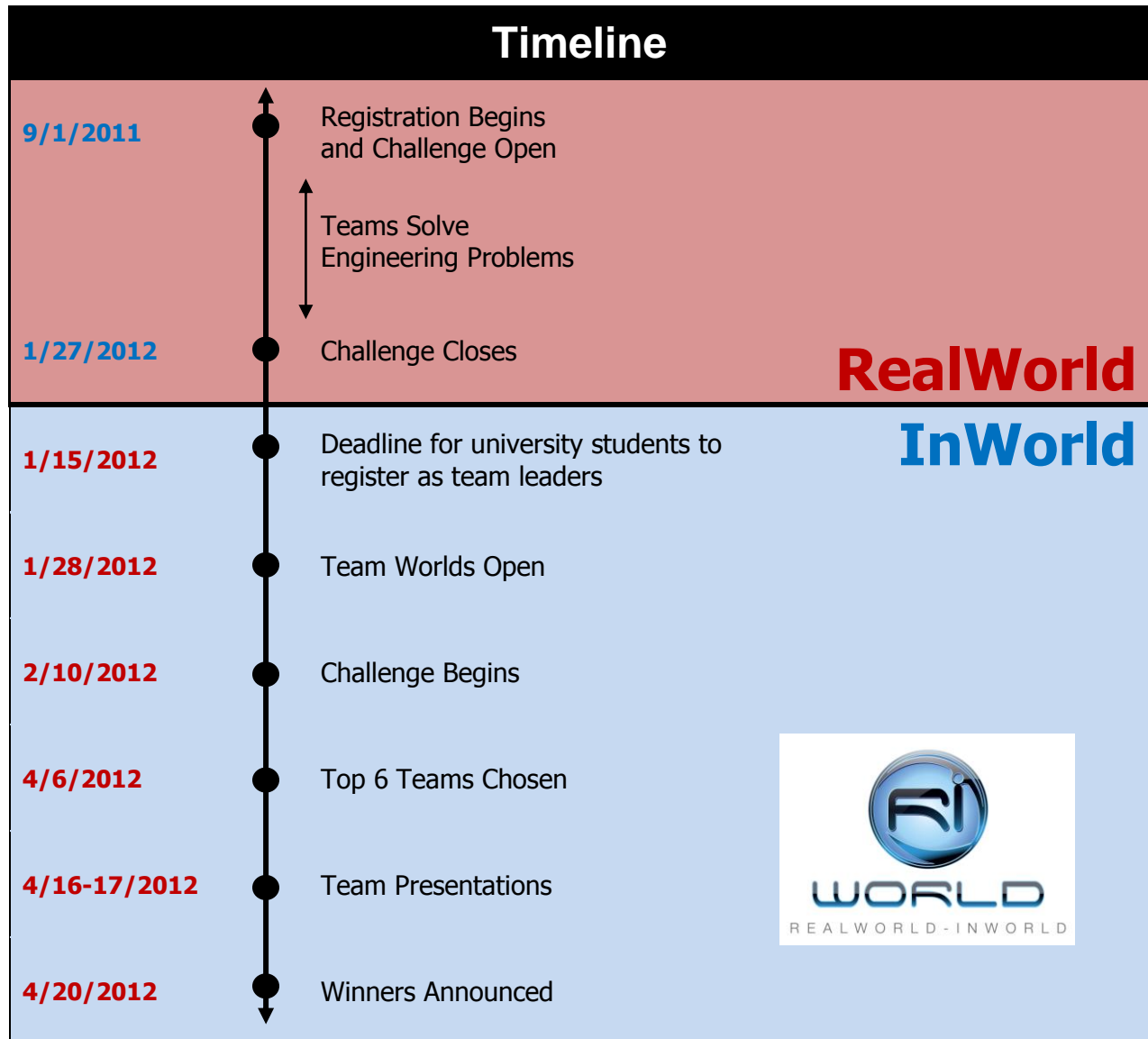
- To visit the RWIW site, go to www.nasarealworldinworld.org.



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- For more information about USA TODAY Education’s SIGHT/INSIGHT and No Boundaries programs, visit <http://usatodayeducate.com>.
- For more information about NASA, visit www.nasa.gov.
- For more information about VESC, visit www.nianet.org/resources/Education/Internships---Competitions/VEESC.aspx.

RWIW NASA Engineering Design Challenge Timeline



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