Creating simulations for tablets using Easy Java(script) Simulations

Francisco Esquembre and Félix J. García Universidad de Murcia, Spain



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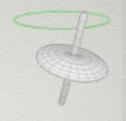
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ED Ideas worth spreading

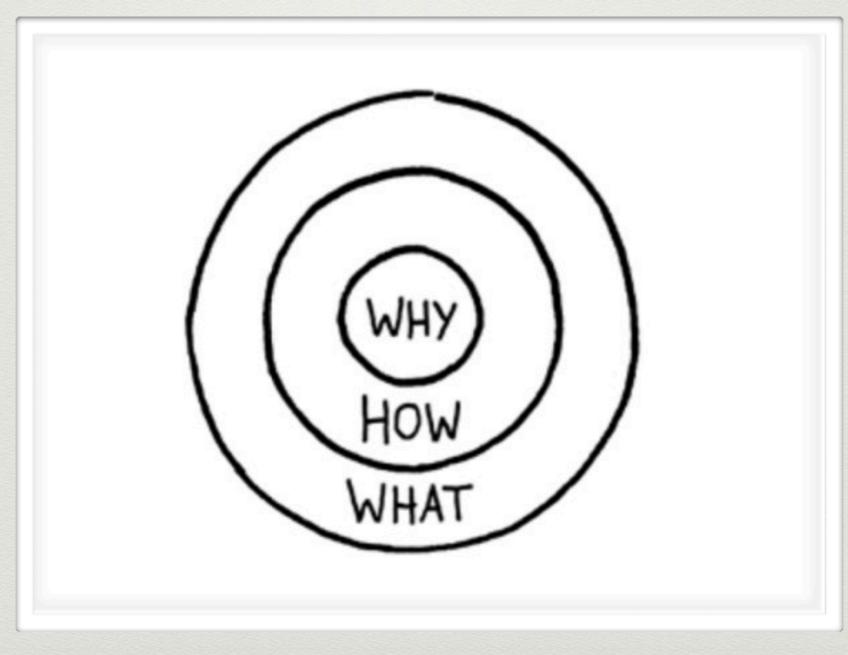
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11 talks (Curated b	by TED)	
	1. Ken Robinson: How schools kill creativity Show details	19:24
.	2. David Gallo: Underwater astonishments Show details	05:27
1.	3. Sarah Kay: If I should have a daughter Show details	18:28
	4. Hans Rosling: The best stats you've ever seen Show details	19:50
1	5. Chimamanda Ngozi Adichie: The danger of a single story	18:49

Start with "why?"

The Golden Circle

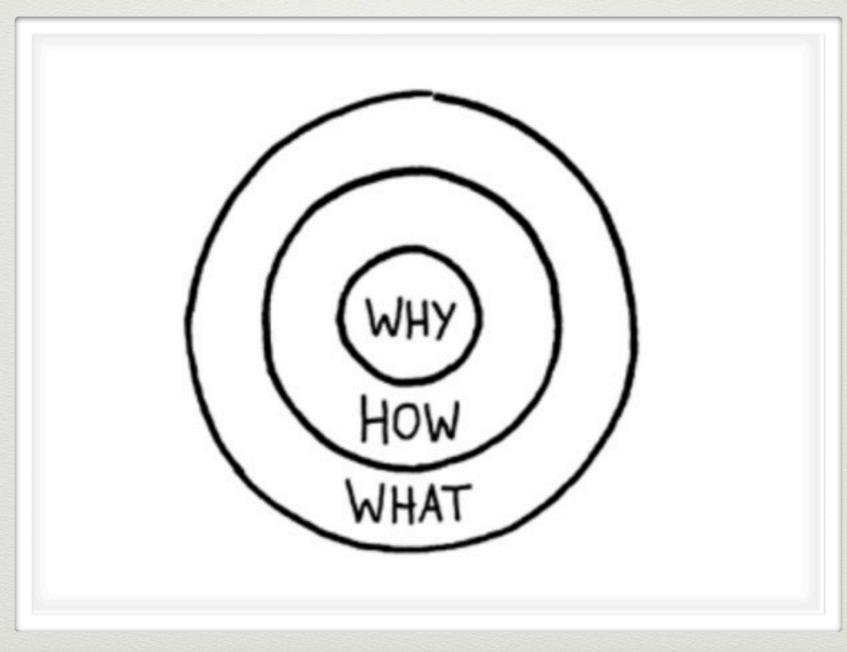






Start with "why?"

The Golden Circle

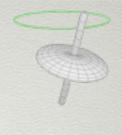




Contents of the talk

- The reason behind Easy Java Simulations
- Evolution of the idea (past, present, and future)
- Creating Java simulations with EJS 5
- Creating Javascript simulations with EJS 5
- Creating hybrid (Java+HTML) simulations with EJS 5
- Running simulations on tablets and smart phones (iBooks, ePubs and the Reader App)
- Copyright and licensing

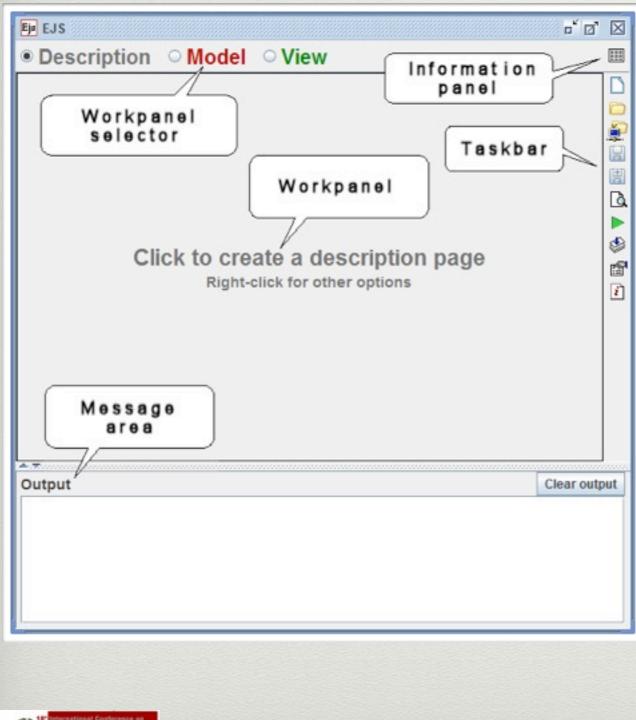




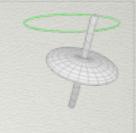


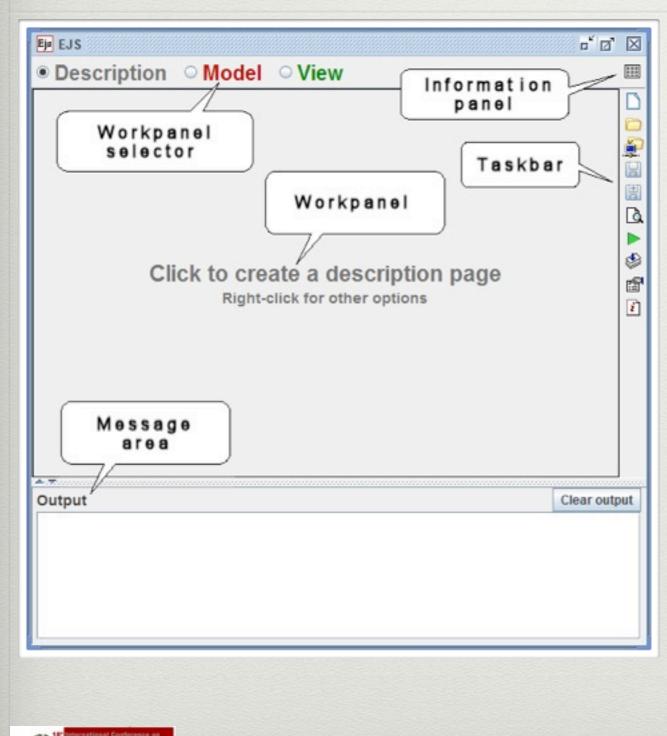


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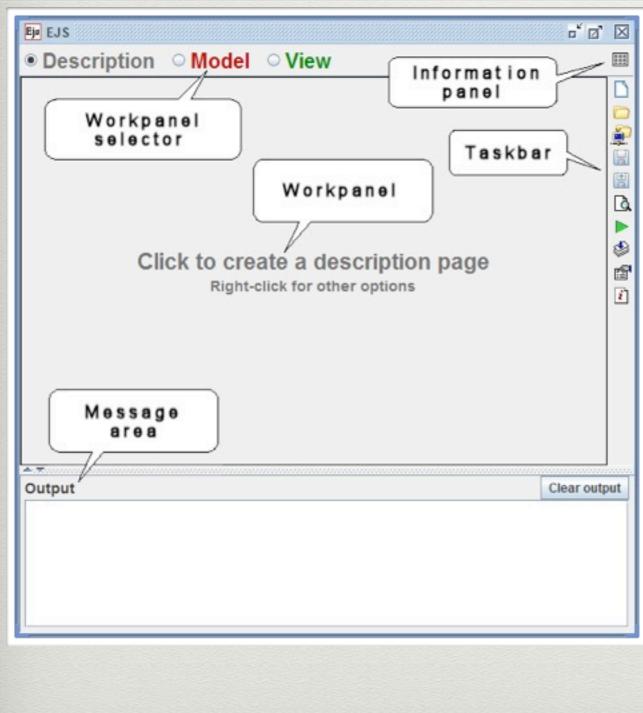






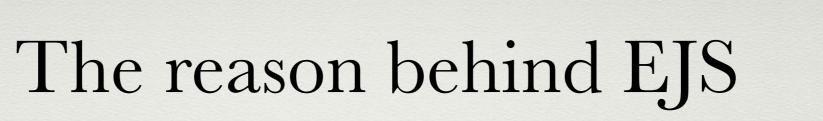


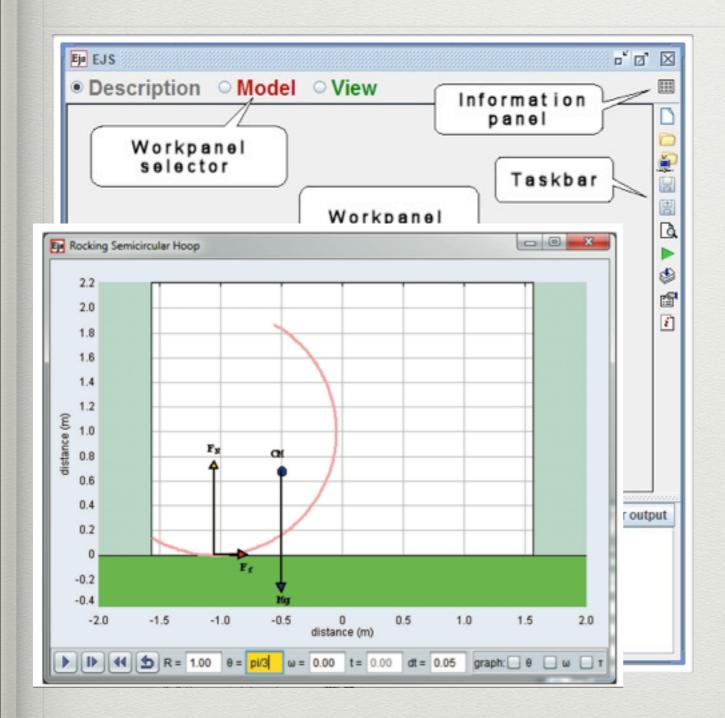






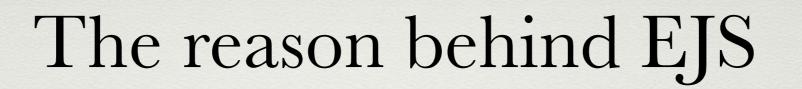


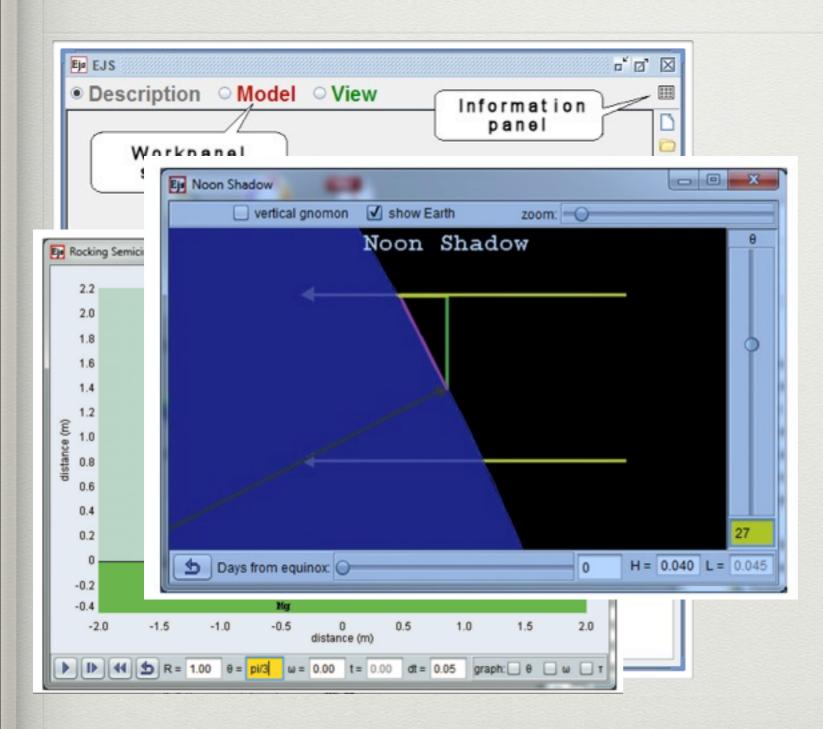






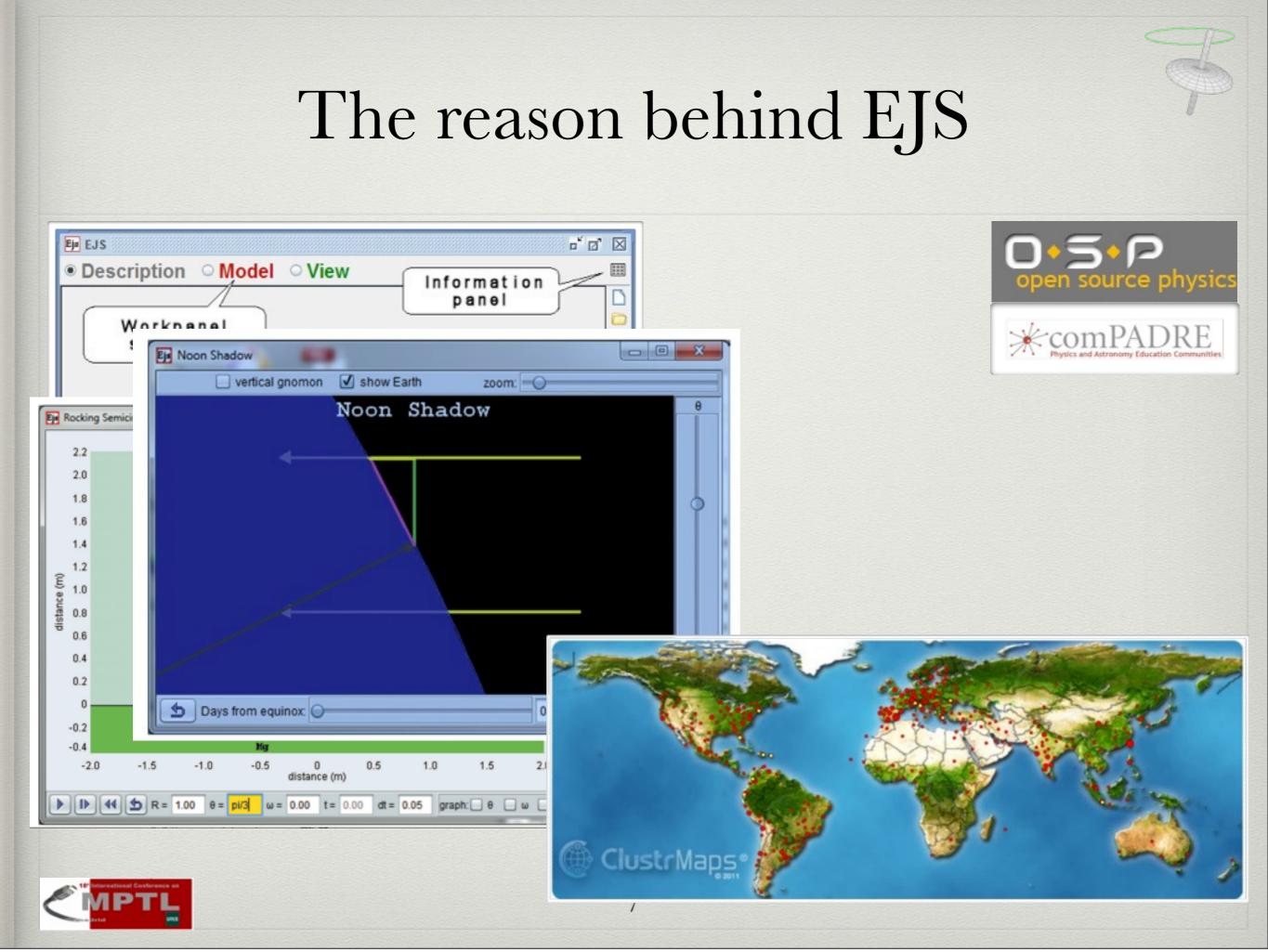


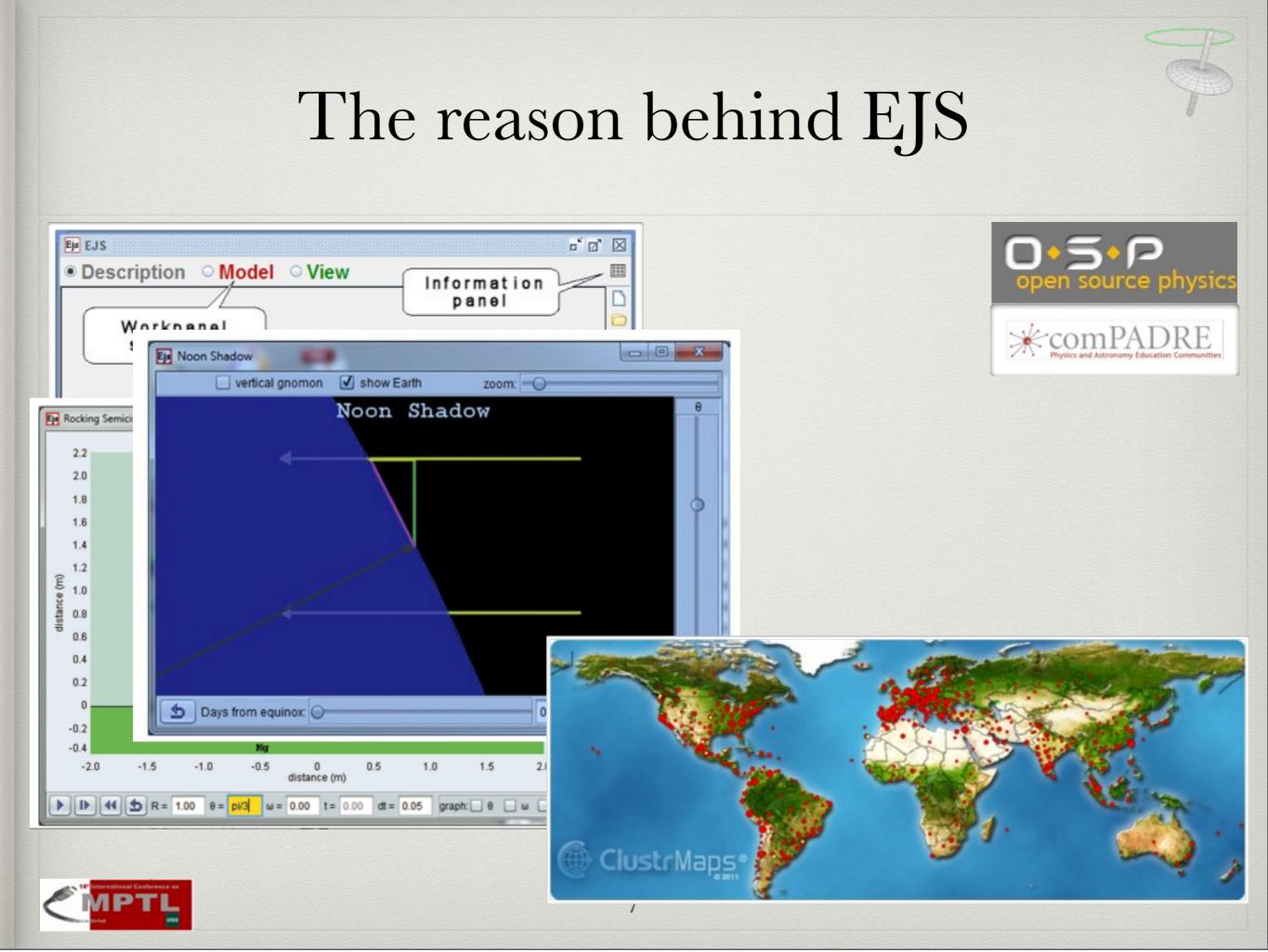


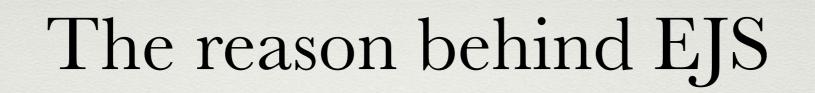


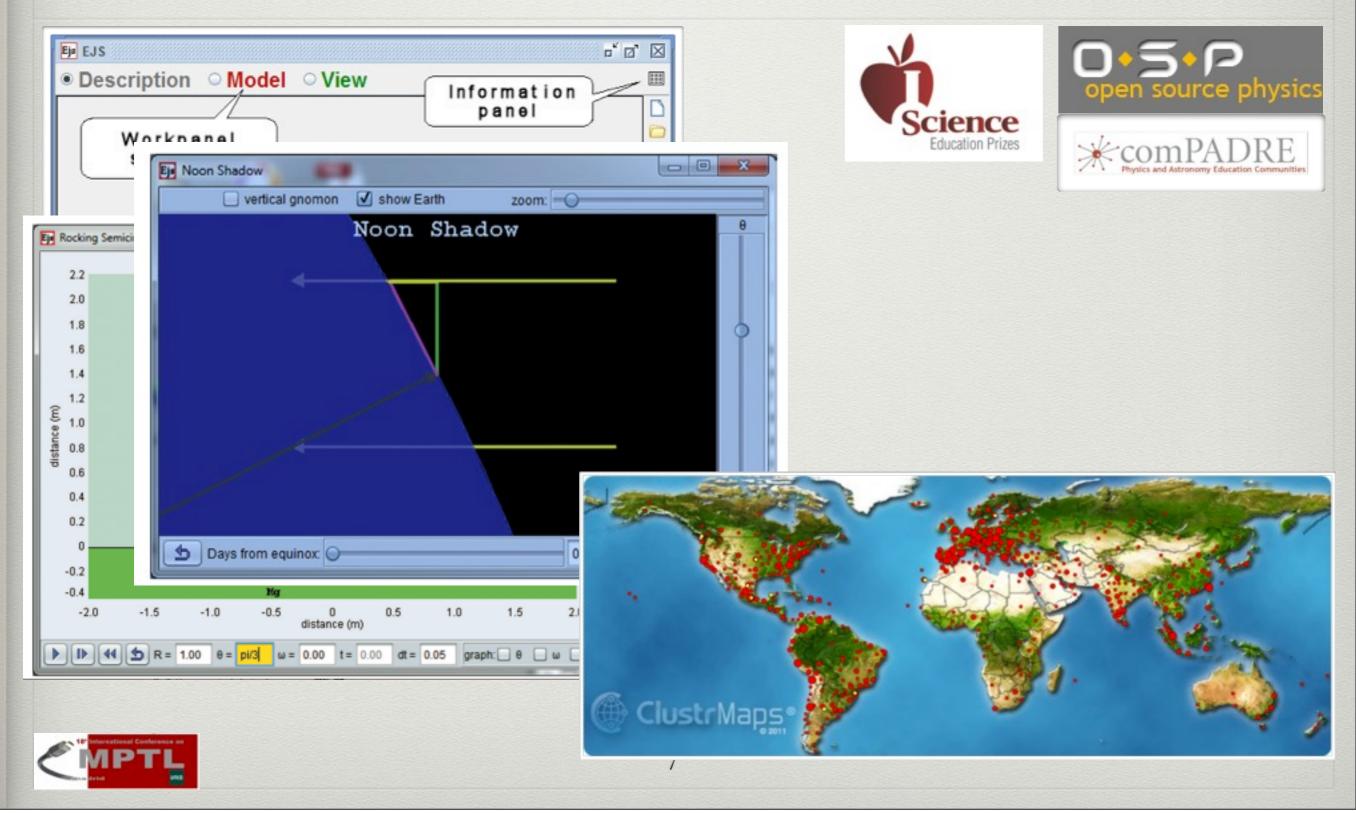


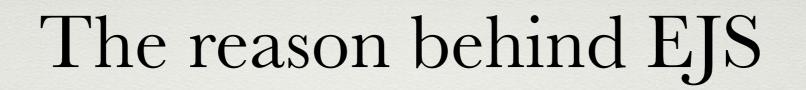


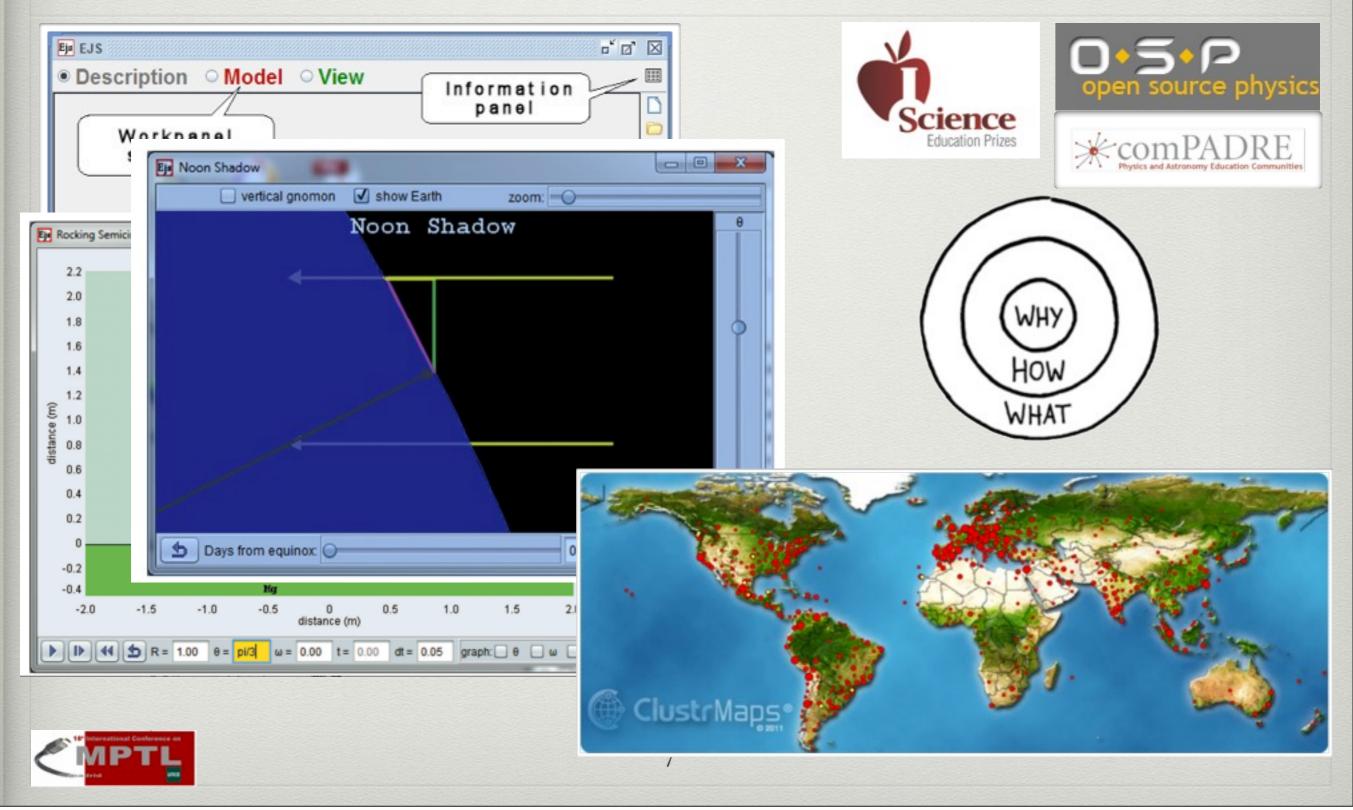












Computers can really improve education...



Computers can really improve education...

...but only if used appropriately.



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Computers can really improve education...

...but only if used appropriately.

EJS is agnostic...



Computers can really improve education...

...but only if used appropriately.

EJS is agnostic...

...but I am NOT!



I believe in Interactive Engagement



I believe in Interactive Engagement

Interactive Engagement (IE) is achieved by questioning students or challenging them to think or to do something that requires thought. Students interact with each other, with the instructor as a coach or guide, or with guided materials created by the instructor (on paper or computer). A key ingredient is frequent and thoughtful interaction.

(First entry in a Google search: http://serc.carleton.edu/introgeo/models/IntEng.html)



I believe in Interactive Engagement

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(First entry in a Google search: http://serc.carleton.edu/introgeo/models/IntEng.html)

I believe because I have experienced the validity of IE myself, with myself. You may call it "a vision"!



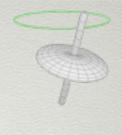
Two scenarios:

- Teachers can create IE activities by creating simulations.
- Modeling can involve students in IE activities.

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Teachers need a good tool for both scenarios.

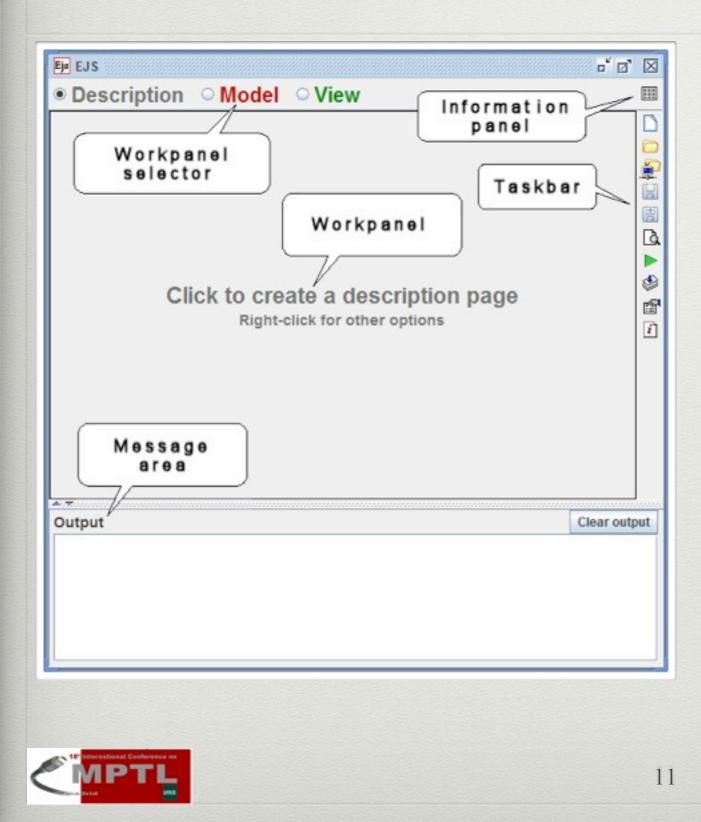


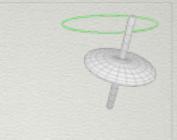


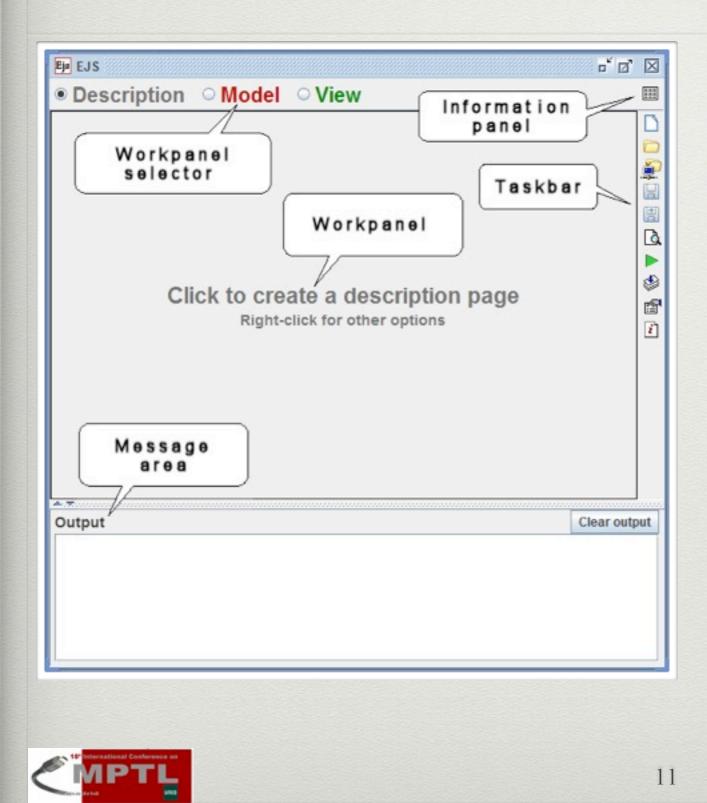
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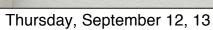




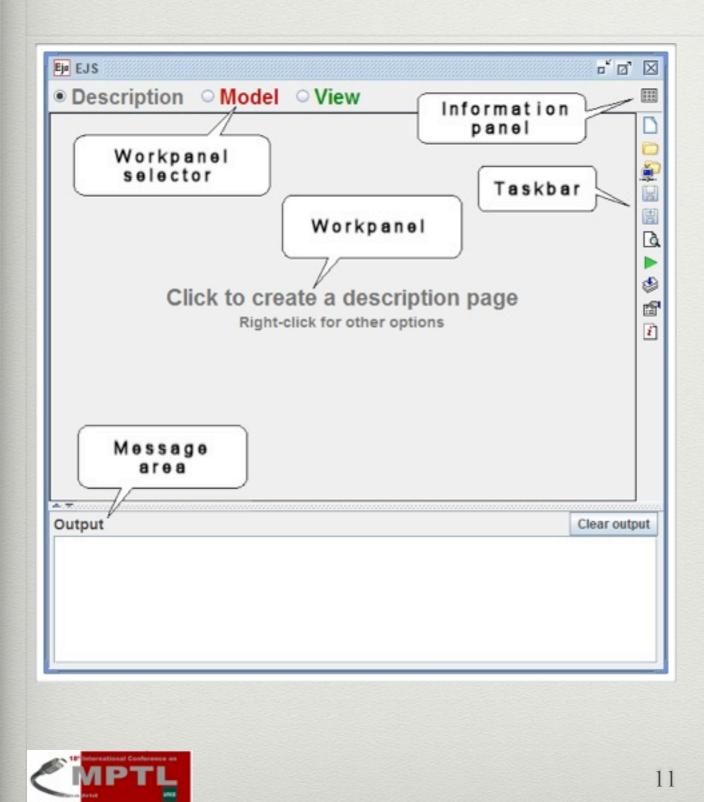




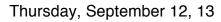




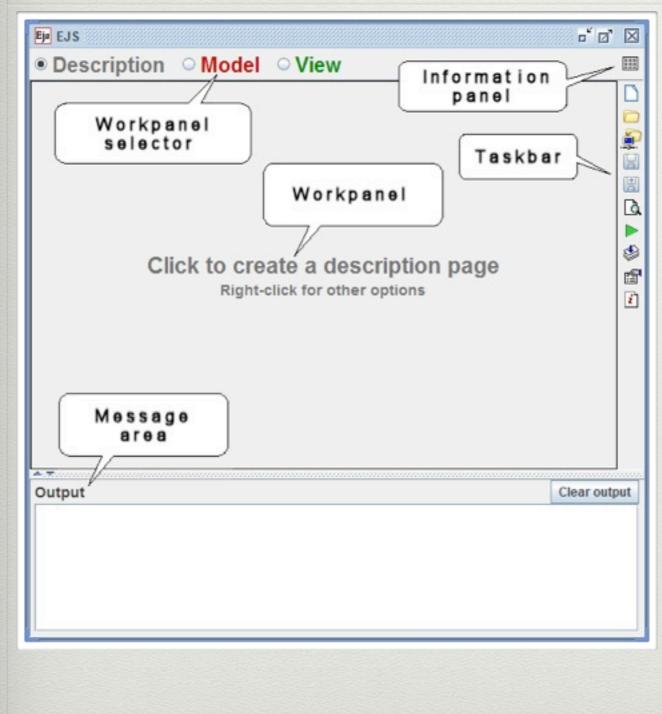








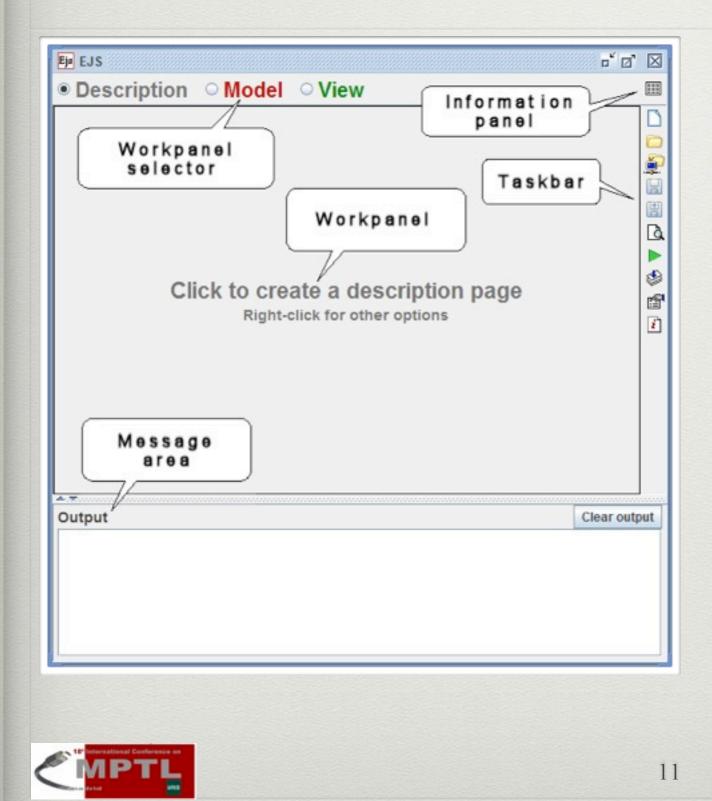
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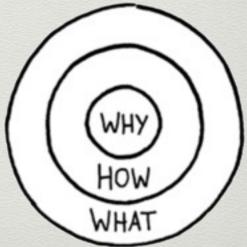
EJS is my small contribution to these ideas, to Science Education, to this world



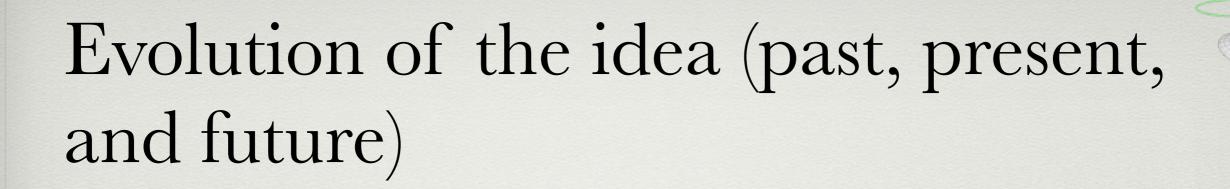




EJS is my small contribution to these ideas, to Science Education, to this world







A brief history of time...

(run separated PowerPoint file)



What should the future be? and why?

In cooperation with Félix J. García, Univ. Murcia, Spain



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What should the future be? and why?



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What should the future be? and why?



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What should the future be? and why?



Do I need to tell you the answer?

In cooperation with Félix J. García, Univ. Murcia, Spain



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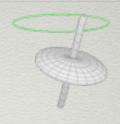
What should the future be? and why?



Do I need to tell you the answer? Move to the future, benefitting from the past experience

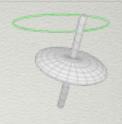
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EJS 5 beta

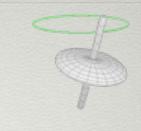




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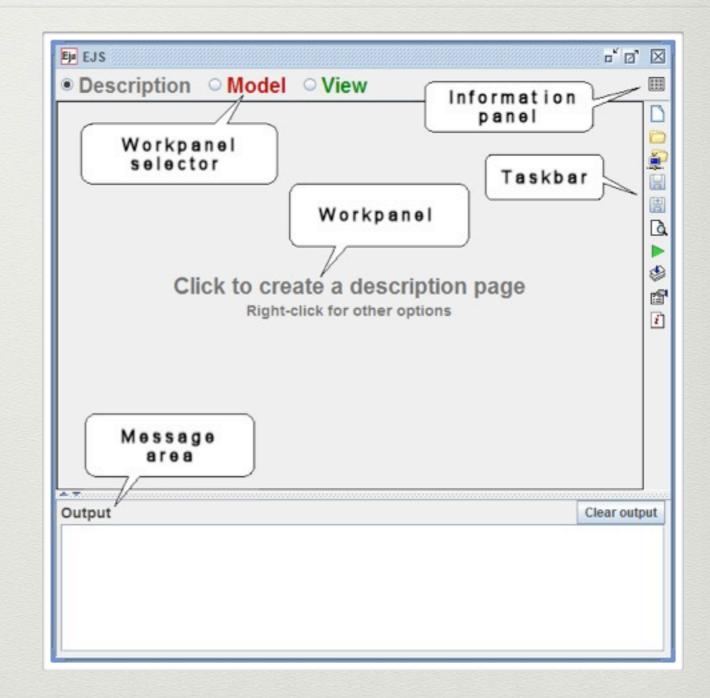
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EJS 5 beta



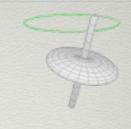




EJS 5 beta



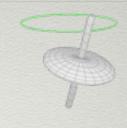
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Roller Co	oaster Physics: Apple	et Introduction	
		R	
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energy of the coaster. The user can also in		aerodynamic friction force via the consta	int k. The
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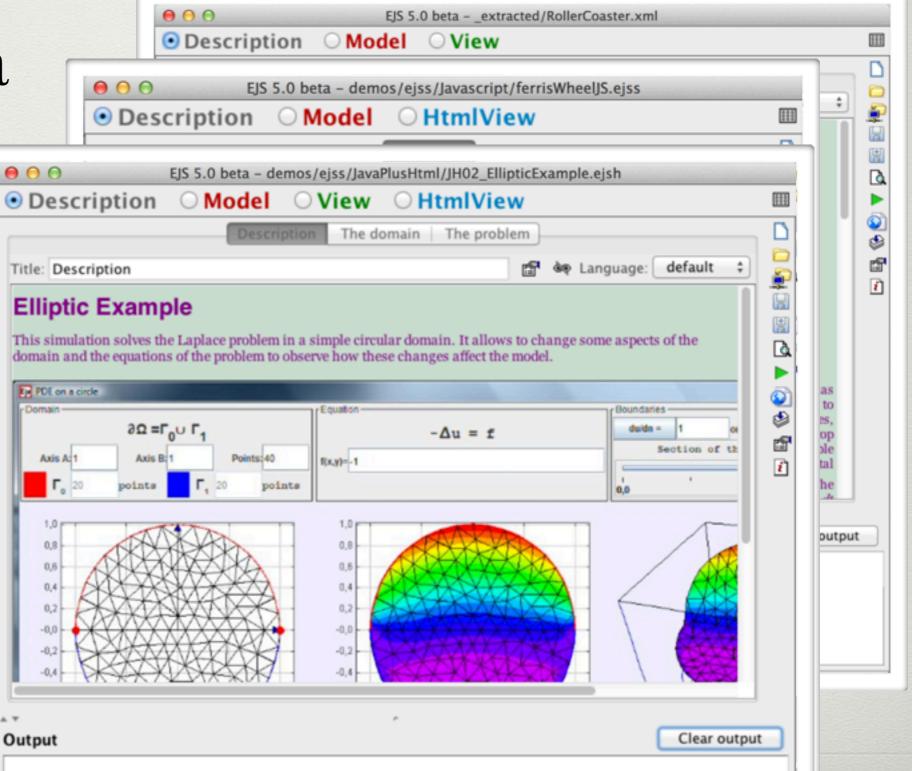
EJS 5 beta



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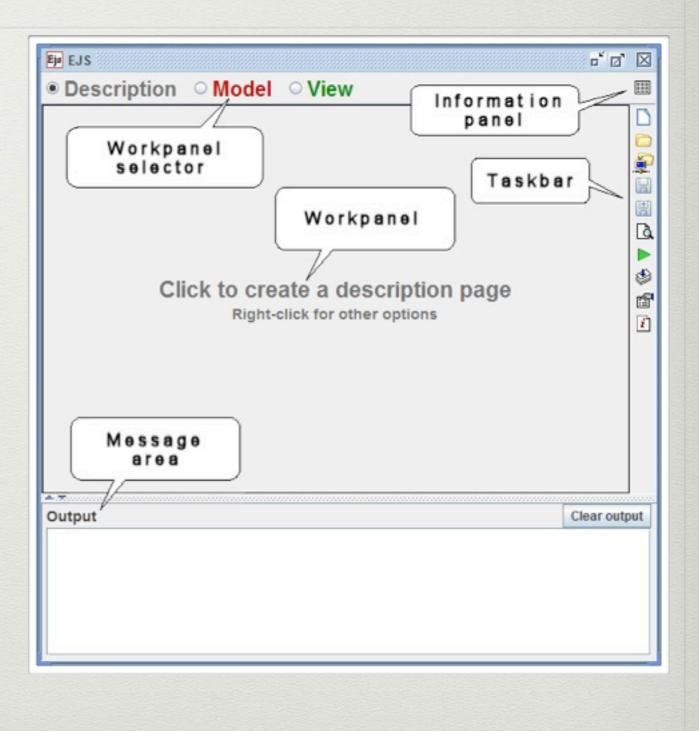


EJS 5 beta





Best main features of EJS



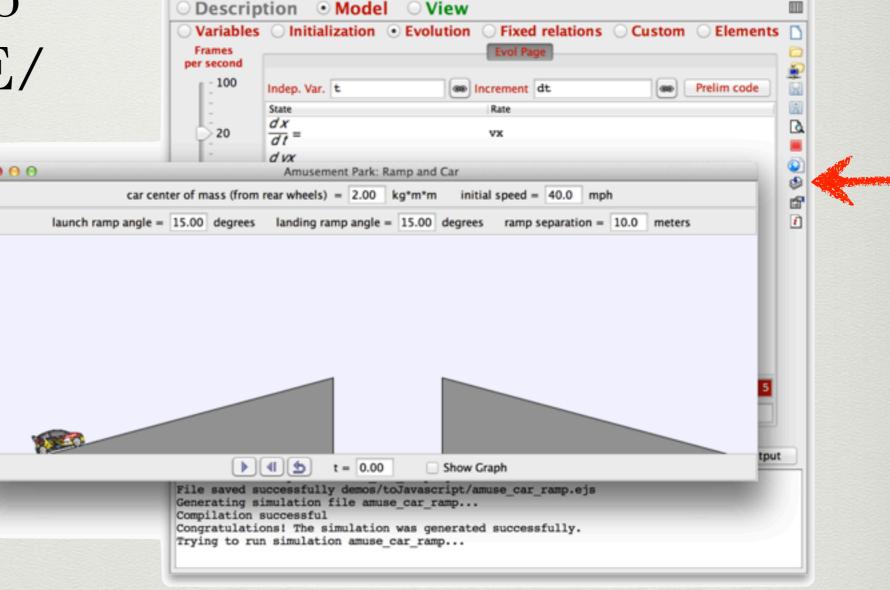


1. Access to comPADRE/ OSP

		EJS 4.3.7	
	• Descripti	on 🔿 Model 🔿 View	
00	7	EJS models in library	
Connect to th	e EJS digital library:	OSP collection in the comPADRE digital library Get catale	
Search: Amus	se car ramp	🛕 🗹 List models only under their main cate	gory
About O	Library Models DSP and comPADRE r Jump Model	Ally Car Jump Model Muthor: Mario Belloni The Rally Car Jump Model simulates the effect of a rally car jumping off of a ramp as in an X Games event. The simulation make the approximation that the car's rear wheels move along the ramp at a constant speed until the end of the ramp is reached. The rally car experiences a torque, and hence a rotation, when the front wheels lose contact with the ramp. Once the rear wheels also leave the ramp, the rotation rate stays fixed until the car hits the second ramp. The Rally Car Jump Model was created using the Easy Java Simulations (EJS) Download Disconnect	
	Output	Clear o	output
	16		



1. Access to comPADRE/ OSP



EJS 4.3.7 - demos/toJavascript/amuse_car_ramp.ejs



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2. Description included (and translation facilities)

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or an exa	mple of X-Games Rally ca	ar jumps see: <u>http://www.yo</u>	putube.com/watch?v=zOTulc5ZXCI.
	ation is part of a collectio s can be found on the OS		amusement park physics. Additional
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3. Organized model structure

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3. Organized model structure

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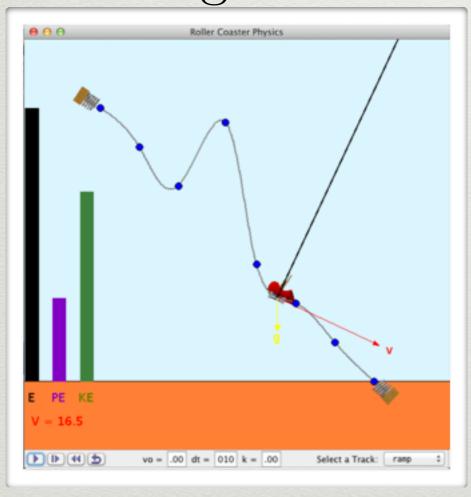
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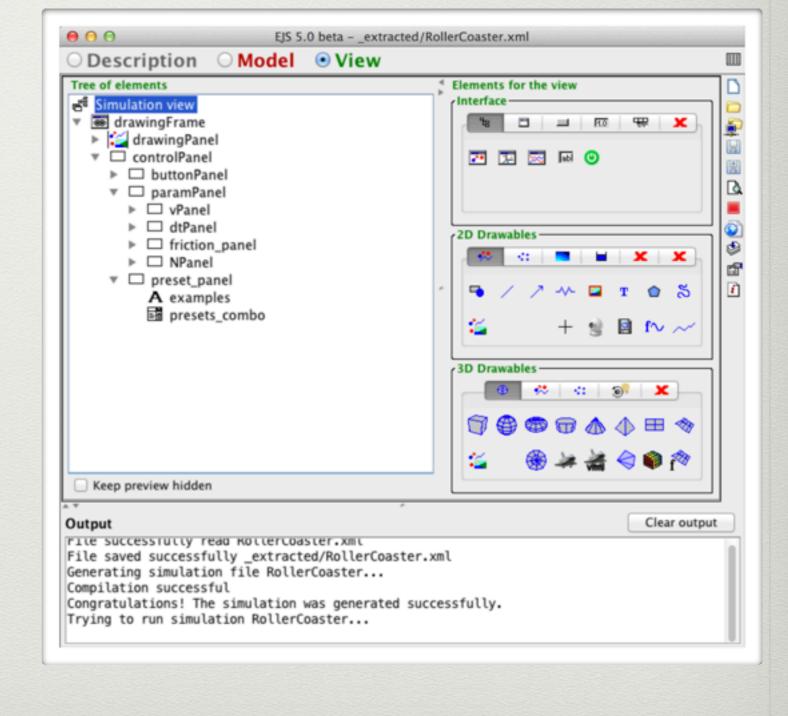
EJS 5

Creating Java simulations with EJS 5

20

4. Professional-looking views



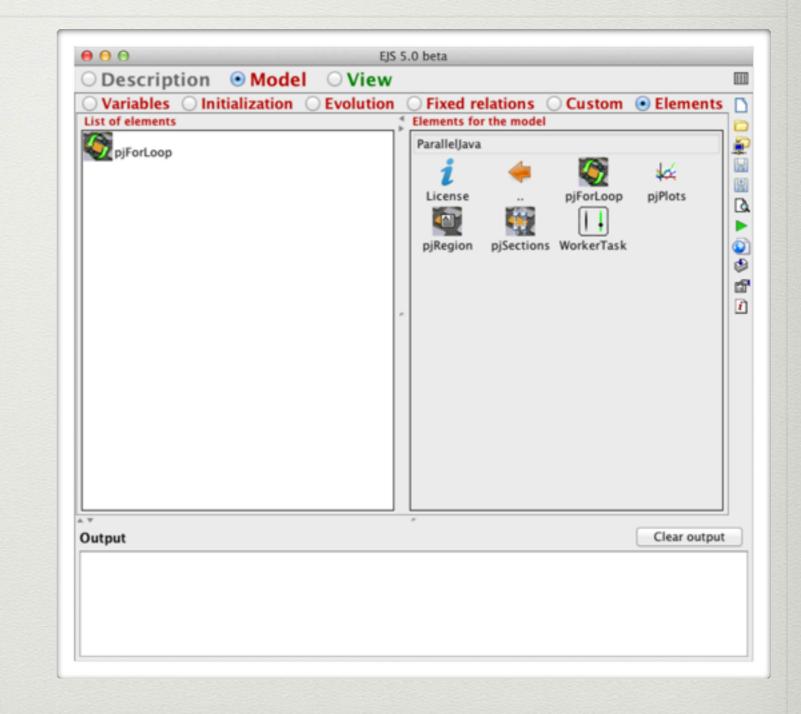






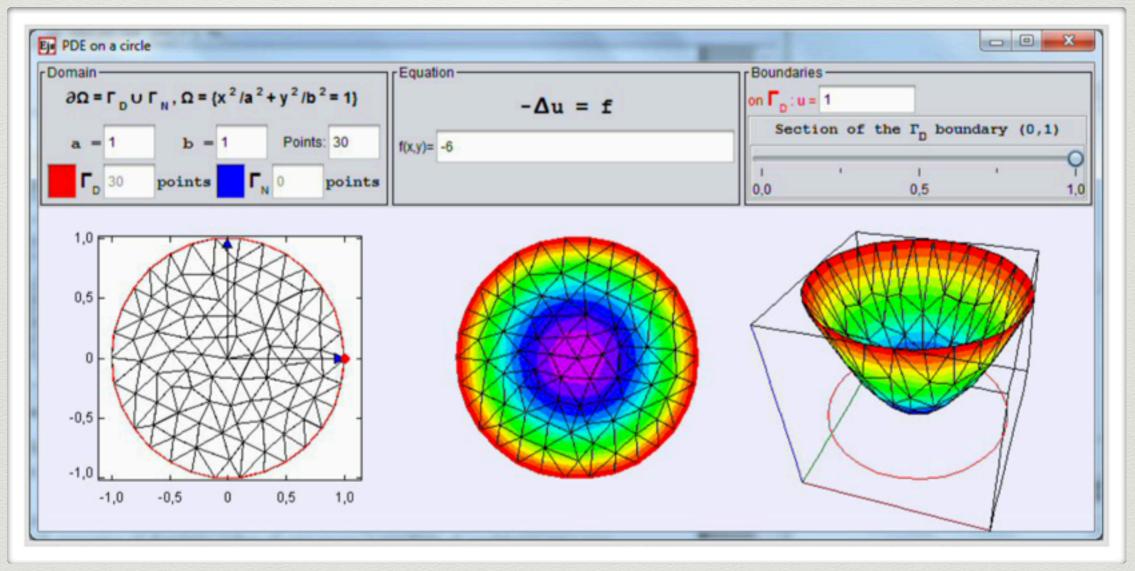
21

5. And lots of opportunitiesfor expansion





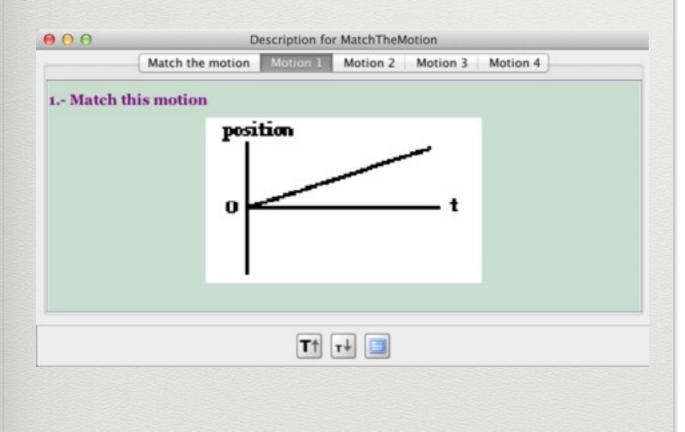
Solving PDEs

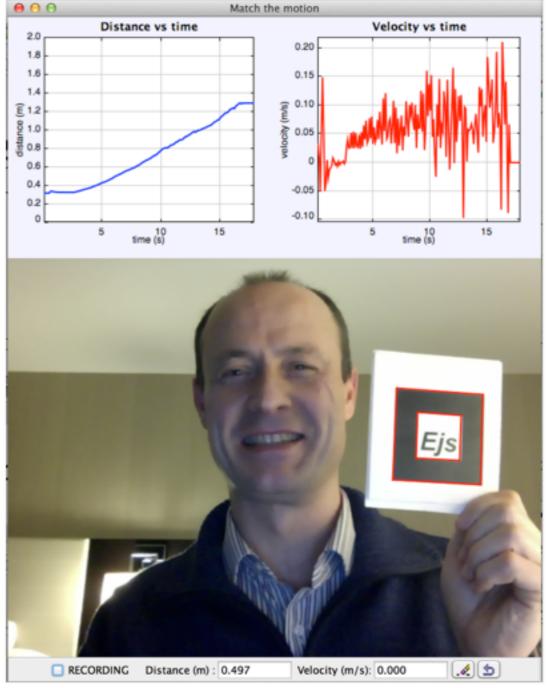


In cooperation with M José Cano and Eliseo Chacón, Univ Murcia, Spain



Interfacing with your camera

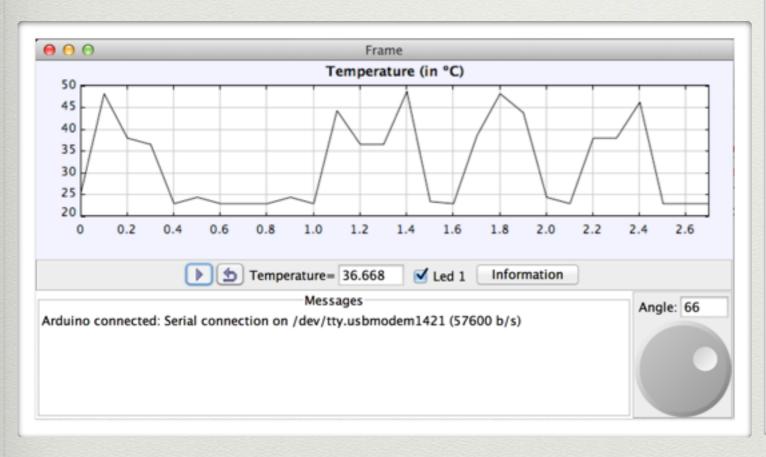


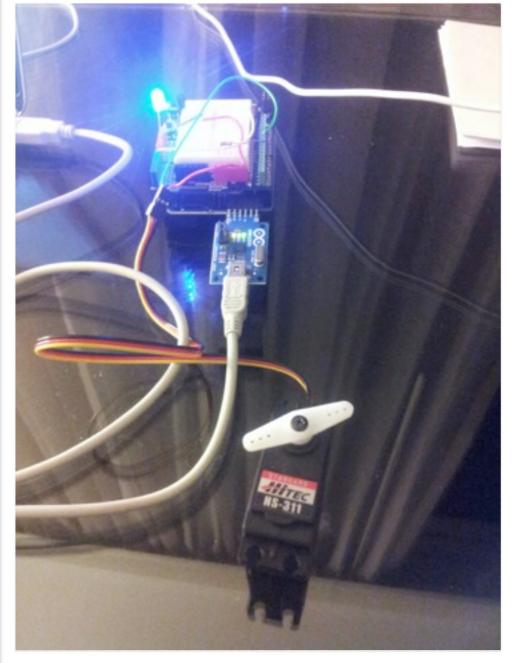


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Interfacing with Arduino

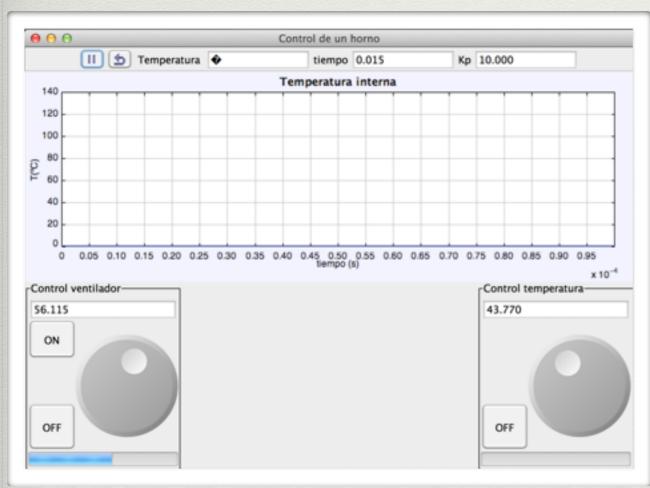




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Interfacing with Phidgets





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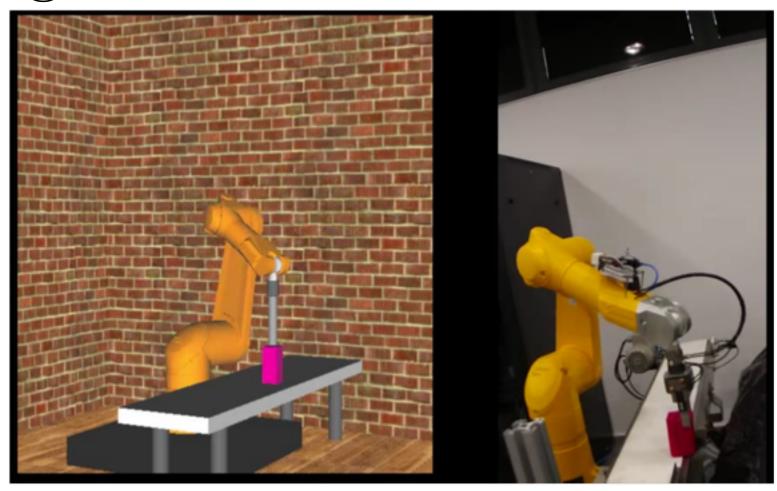


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EJS grows through cooperation: Interfacing with hardware

Interfacing with industrial robots





In cooperation with Almudena Ruiz and Humberto Martínez, Univ Murcia, Spain



EJS grows through cooperation: Interfacing with hardware

Interfacing with industrial robots



How do EJS users define virtual and real laboratories in EJS?

In cooperation with Almudena Ruiz and Humberto Martínez, Univ Murcia, Spain



What to expect from EJsS?

EJS 5 beta

Run-time demo begins here!

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HTML File ./ferris.htm	nl			2
Output		^	Clear	output

Running simulations on tablets and smart phones (iBooks, ePubs and the Reader App)





Switch to the tablet



Copyright and licensing

We are trying to find a self-sustainable model

We are trying to thank comPADRE and OpenSourcePhysics

We want to make it possible for people without resources to run all EJS simulations

We want to offer those who **can** and **want** to contribute to sustain this project the possibility to do so, and give them something in return





Copyright and licensing

- Java version absolutely free (as usual)
- Javascript versions are limited:
 - + Demo license (simulations run for 3 months) FREE
 - + Academic license (simulations run forever) 199 €

+ Models have a copyright and are distributed on a *Attribution-NonCommercial-NoDerivs 3.0* Unported Creative Commons license



+ Commercial projects should contact us.



Copyright and licensing

With these **exceptions**:

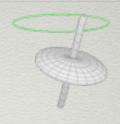
- No time limit if run from comPADRE.org or opensourcephysics.org

- No time limit if run inside the Reader App

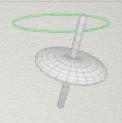
- The Reader App is free up to 5 simulations
- Costs 1.99 € for unlimited number of simulations











EJS 5 beta





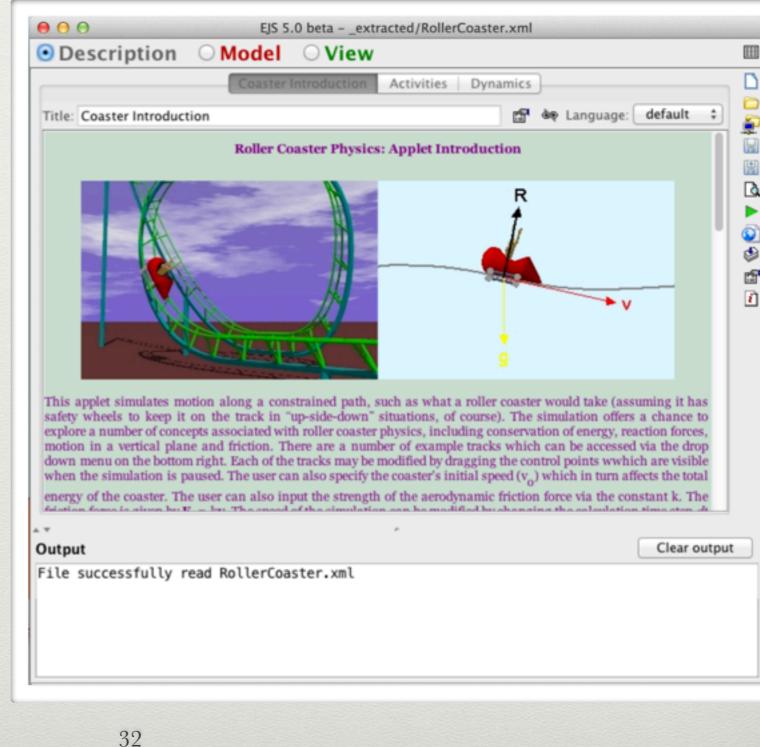
EJS 5 beta

Shipping today!

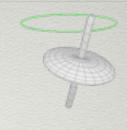




EJS 5 beta



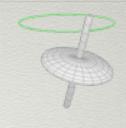




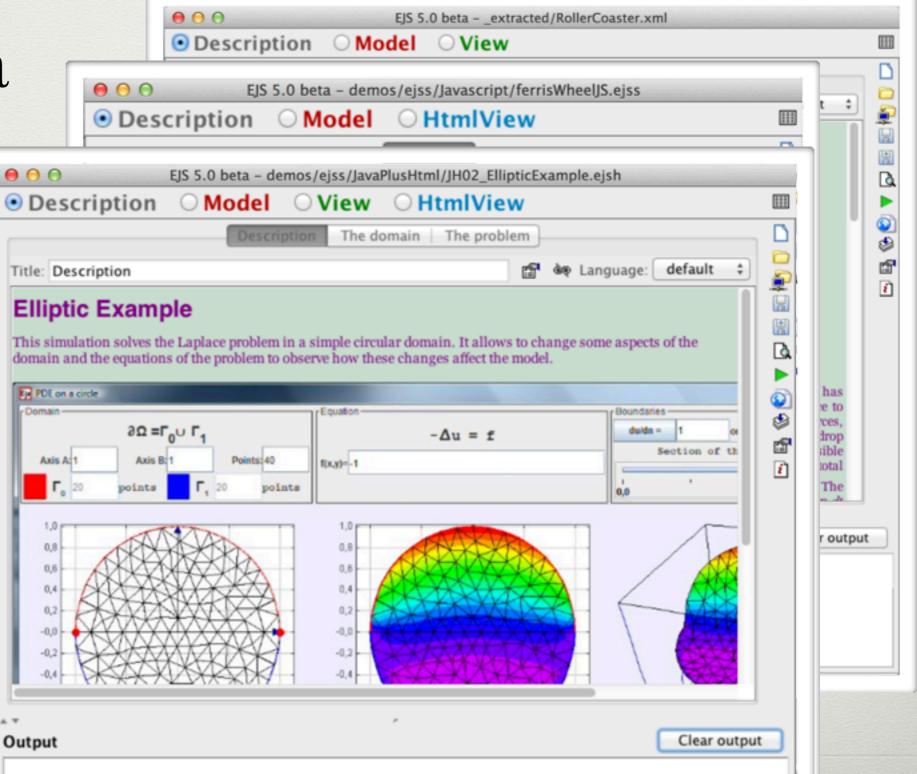
EJS 5 beta



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EJS 5 beta



Creating simulations for tablets suing Easy Java(script) Simulations

Francisco Esquembre and Félix J. García Universidad de Murcia, Spain

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Thank you very much for your attention!

Creating simulations for tablets suing Easy Java(script) Simulations

> Francisco Esquembre and Félix J. García Universidad de Murcia, Spain

> > 33

