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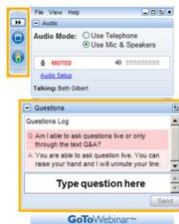
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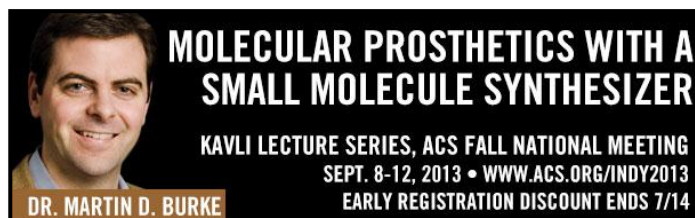
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Thursday, August 15, 2013

### Intellectual Property Today and the America Invents Act

Marc Morley, Patent Attorney at Foley & Lardner LLP  
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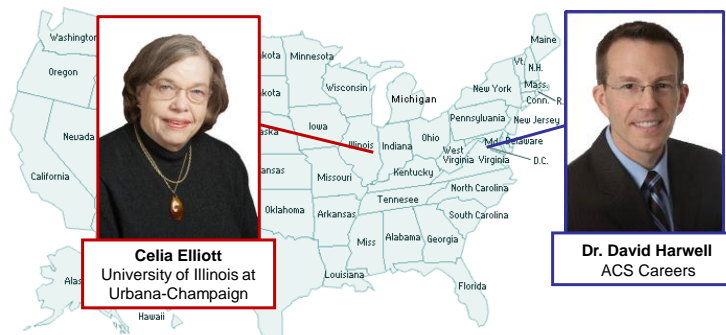
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## Writing Winning Proposals-Heilmeier Catechism



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Writing Successful Technical Proposals

**Tips from the Trenches:  
The Heilmeier Catechism**

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With thanks to the fabulous Physics faculty at Illinois!

## **Meet George Heilmeier: scientist, inventor, industry leader, government official**

**PhD in solid-state materials**

**Inventor of the LCD**

**Member of the National  
Academy of Engineering**

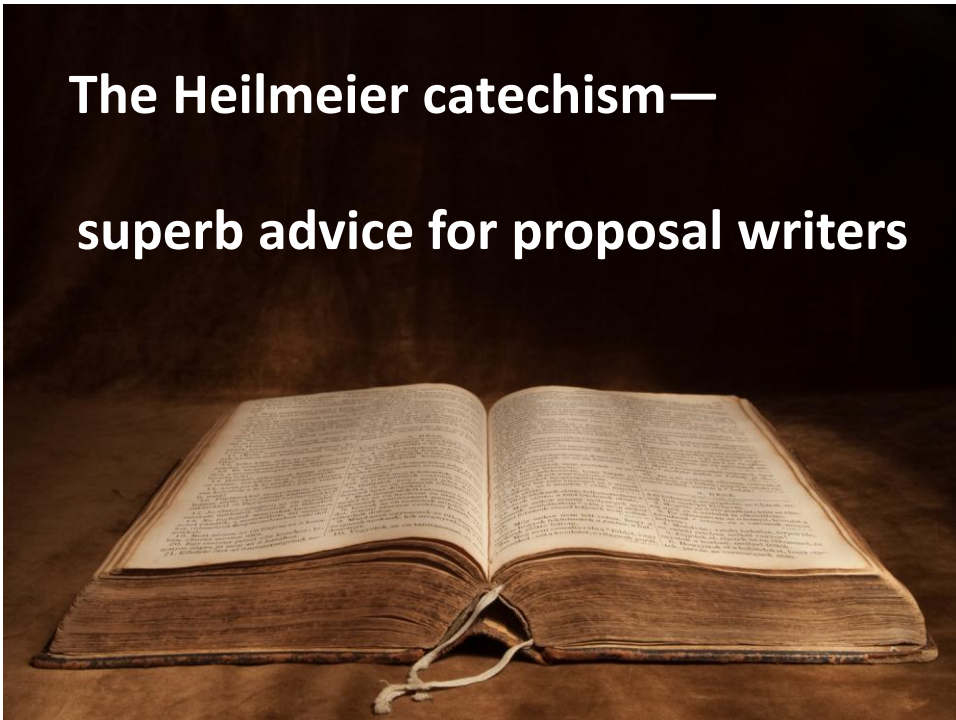
**National Medal of Science, IEEE Medal of  
Honor, Kyoto Prize**

**White House Fellow, assistant to Secretary of  
Defense, director of DARPA**

**VP & CTO, Texas Instruments; Pres & CEO,  
Bellcore; Chairman & CEO, SAIC**



**The Heilmeier catechism—  
superb advice for proposal writers**



## 1. What are you trying to do?



**State the goal of your project using  
absolutely no jargon.**

## 2. How is it done today, and what are the limits of current practice?



**Why are improvements  
needed?**

**What are the consequences  
of doing nothing?**



### **3. What's new in your approach, and why do you think it will be successful?**



**What preliminary work have you done?  
How have you tested your assumptions  
on a small scale?**

#### **Poll Question #1:**

**How hard is it for a novice (not  
previously funded) investigator to  
receive an NSF grant?**

- a) Harder than for someone who  
has had previous support**
- b) Easier than for someone who has  
had previous support**
- c) The same—it's what you're  
proposing *now* that's important**

## **Answer:**

- a) **Harder than for someone who has had previous support**

**The success rate in FY12 for novice PIs was 17%, vs. 28% for PIs who had at least one previously funded project. The numbers are virtually the same for NIH proposals.**

"Report to the National Science Board on the National Science Foundation's Merit Review Process, Fiscal Year 2012," May 2013 (<http://www.nsf.gov/nsb/publications/2013/nsb1333.pdf>).

Success Rates—NIH Research Portfolio Online Reporting Tools, [http://report.nih.gov/success\\_rates/](http://report.nih.gov/success_rates/), "Research Project Grants: Success rates by type, activity, and Institute/Center"; accessed 07/08/13.

## **4. Who cares?**



**Identify your “stakeholders.”**

**Who will benefit from your successful project?**

## 5. If you're successful, what difference will it make?



**What will your successful project mean  
for your research?**

**For the infrastructure of your  
institution and future capabilities?**

**For your discipline? related disciplines?**

**For society? for the funding agency??**

## 6. What are the risks and the payoffs?



**Why are the potential  
rewards worth the risk?**

**What have you done to  
mitigate risk?**

**What's Plan B?**

## **Poll Question #2:**

**What is the most common mistake  
novice NIH proposal writers make?**

- a) Having too many collaborators**
- b) Requesting too big a budget**
- c) Proposing too much work**
- d) Being overly concise**

## **Answer:**

**c) Proposing too much**

**According to Sally Rockey,  
Deputy for Extramural Research, NIH:**

**“So, often times, new investigators have so many great ideas that they come in with ten or twelve objectives and that really would not be accomplishable in a three to four year time frame. And reviewers pick up on that. So, first and foremost, you want to try to put some boundaries around your objectives...Usually we say no more than four objectives or specific aims in an application for a new investigator.”**

NIH, “Grant Writing for New Investigators,” interview with Dr. Sally Rockey, April 30, 2010,  
[http://grants.nih.gov/podcasts/All\\_About\\_Grants/episodes/Grant\\_Writing\\_April\\_2010.htm](http://grants.nih.gov/podcasts/All_About_Grants/episodes/Grant_Writing_April_2010.htm)

## 7. How much will it cost?



In money?

In time?

In people?

In institutional  
resources?

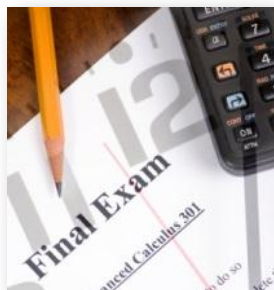
In “opportunity costs”?

## 8. How long will it take?



Match your project  
with the funding  
agency’s “boundary  
conditions.”

## 9. What are the midterm and final “exams” for your project?



How will you assess progress and make midcourse corrections?  
What are the metrics for success?  
How will you know you're “done”?

### To recap...

Answer every question of the catechism in your project description.

Make it easy for a reviewer to pick out your answers and quote them in the review.

Make your answers as specific, quantitative, and jargon-free as possible.

Provide a summary at the end of your project description that recaps the catechism.



## Other sources of good advice:



### ***Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty***

<http://www.hhmi.org/educational-materials/lab-management/for-early-career-scientists>

### **NIH Grant Process YouTube Videos (includes tips)**

<http://public.csr.nih.gov/aboutcsr/contactcsr/pages/contactorvisitscrpages/nih-grant-review-process-youtube-videos.aspx>

### **NIH "All About Grants" Podcasts**

[http://grants.nih.gov/podcasts/All\\_About\\_Grants/index.htm](http://grants.nih.gov/podcasts/All_About_Grants/index.htm)

### **NSF Regional Grants Conference Presentations,**

March 2013, <http://www.nsf.gov/bfa/dias/policy/outreach.jsp>

Questions and feedback: [cmelliot@illinois.edu](mailto:cmelliot@illinois.edu)

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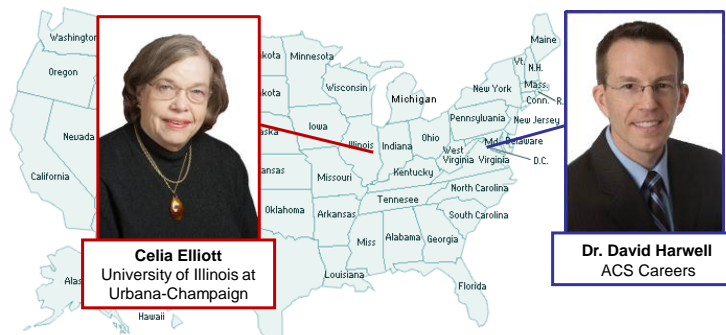
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