THE PLANETARY DATA SYSTEM AND "PDS CHALLENGE"

Ed Grayzeck/Todd King

February 4, 2016

NASA's Tournament Lab (NTL)

Facilitates the use of crowdsourcing to tackle NASA challenges.

Seeks novel ideas or solutions to accelerate research and development efforts, improve algorithm performance, and seek new ideas and approaches in support of the NASA.

- Very agile
- Best for
  - Conceptualizing
  - Design
  - Prototyping (Proof of concept)

Past NTL interactions

- “PDS Challenge” status as of 2016
  - NASA Tournament Lab(NASA/Harvard/TopCoder) teamed with PSD to implement as NTL action
  - Contests initially supported by NTL via NASA HEOMD (then CoECI) and through SMD
  - Used a restricted sample of SBN (comet Halley) -start 2012 and presented at Oct 2012 DPS
  - Poster at Oct 2013 DPS including step to form Cassini-Rings (C-R)Challenge – workshop/posters
  - Planetary Data Storyboard abstract at Dec 2015 AGU in NASA SMD special education session
  - New Task system from CoECI with SMD support for C-R Next Steps

Challenge Cassini - Rings

- 1. NTL Teams to search Cassini ISS data for disruptions – step 1 contests completed.
- 2. Step 2 Marathon Match (761 “controls”)
- 3. Evaluation by Rings (30K images) identifies needed improvements in efficiency of algorithym
- 4. Work through CoECI multi-phase task order contract with SMD funds
- 5. Control search leads to promising results but needs robust verification
- 6. Outline steps to complete phase 1 with improvements and documentation

PPI CHALLENGE AND STORYBOOK UPDATE

Todd King, Ed Grayzeck

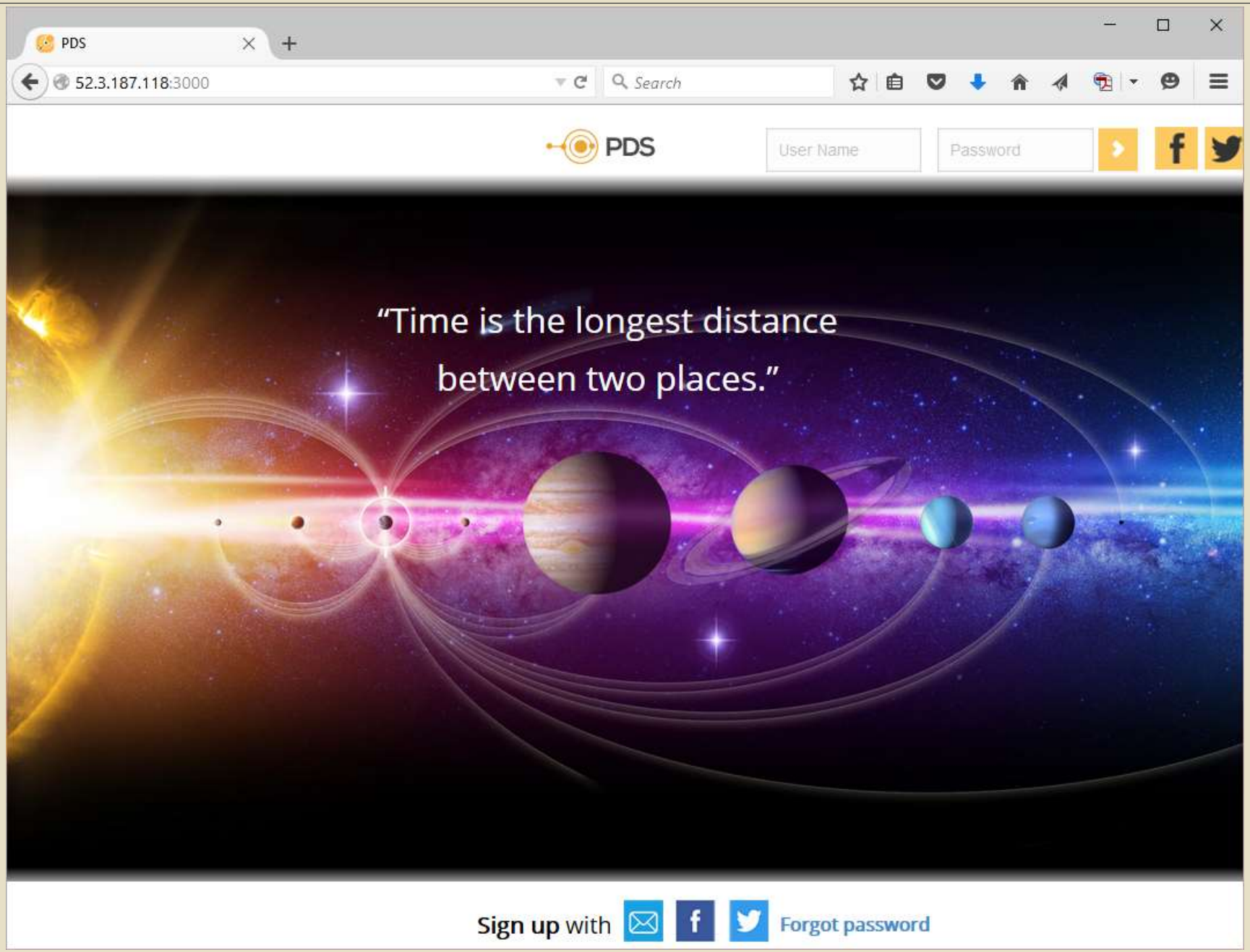
Storyboard
PPI's First NTL Challenge

History

- Concept proposed (11/14)
- SMD funding for proof-of-concept (5/15)
- Completed (11/15) - http://52.3.187.118:3000/

Key features

- Based on Myyna (a Pintrest clone)
- Pin web item (pages, pictures, etc.)
- Node.js application.
- Key drawbacks
- Time line view based on time item pinned.
- Pinned items can be easily disorganized


PDS
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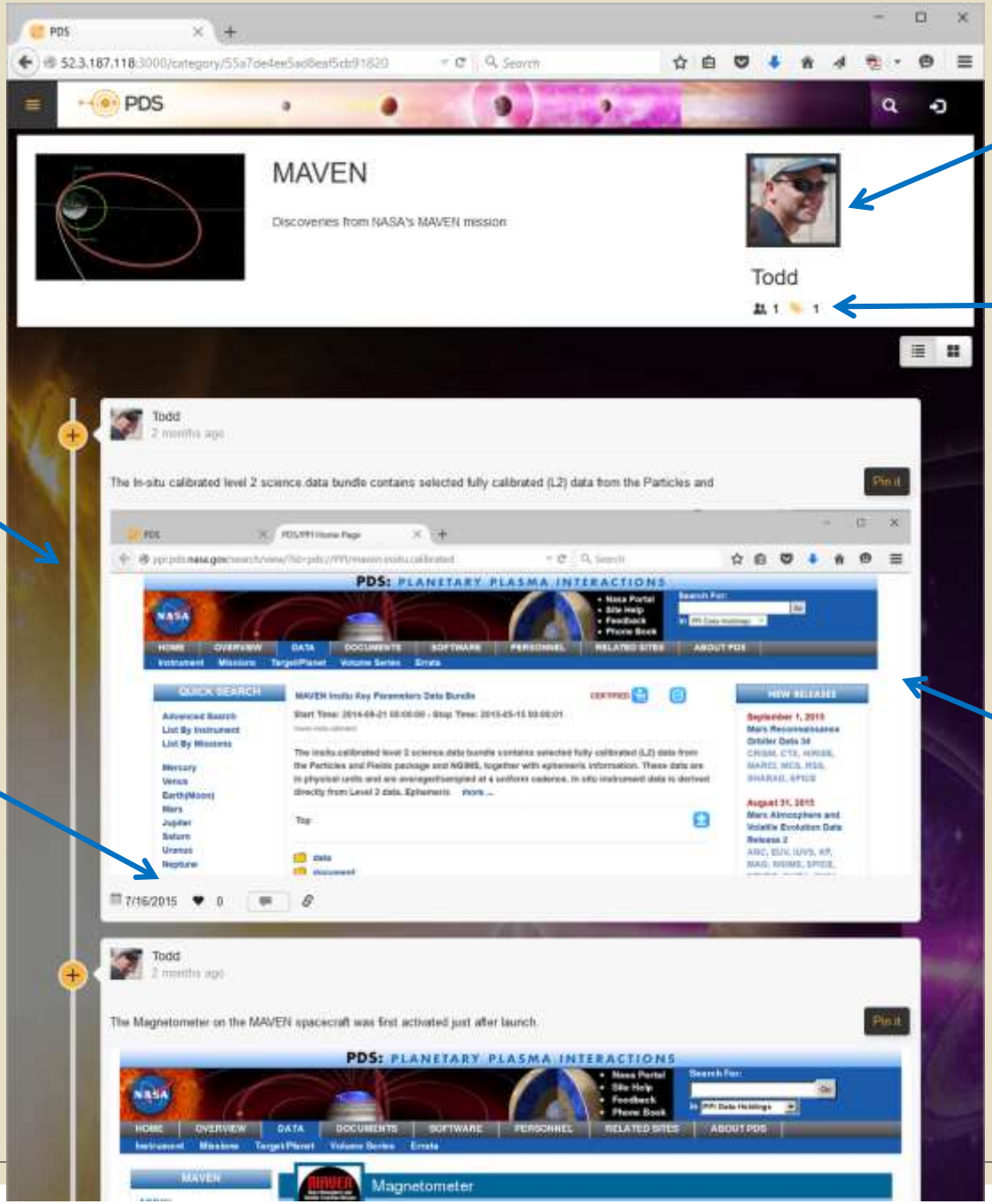
Password
"Time is the longest distance
between two places."
Sign up with
Forgot password



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We Found That…

Using the NTL and the challenge approach is great for

- Tapping into a network of professionals and experts.

And to do:

- Conceptual Design
- User Interface Design
- Proof-of-concept or prototype development.

- It’s very agile

  small sections with multiple implementations, reviewed and best implementation is selected.

Storyboard – Next Steps

- The first version of software is a valuable learning experience.
- Re-implementing can result in a more refined application.

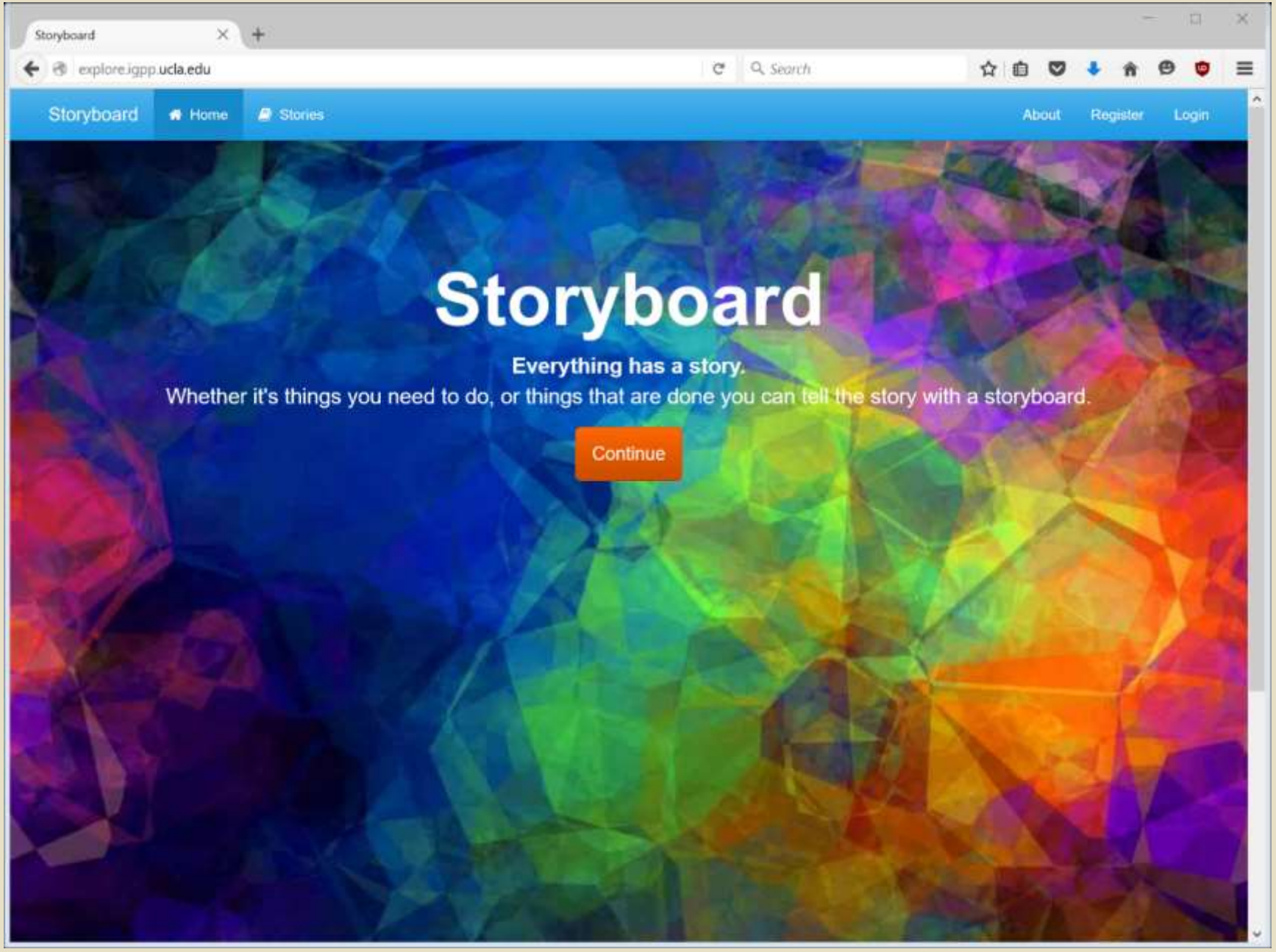
This is what we chose to do for the Storyboard.

Storyboard - Revision

- Pared down and simplified design.
- Development started two weeks ago
  - completed first phase

Key Features

- Meteor application (node.js)
- Uses application specification approach (meteor-kitchen)
- Two sided timeline
- Public and private viewing.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Everything has a story.
Whether it's things you need to do, or things that are done you can tell the story with a storyboard.
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Storyboard

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Journey to Jupiter

A quick journey to Jupiter.

Step One

Find Jupiter in the Solar System.

Step Two

Lauch a spaceship in the right direction.

Step Three

Planned Features

- Login using Oauth (Google, Facebook, Github, Linkedin)
- Step-by-step feature (education mode)
- Image upload (and web page snapshot)
- Visual editing of cards and timelines
- Search feature
- Featured and most popular on home page
- User dashboard (views, likes, shares)
- Like and share
- Team editing
- Server deployment

PPI Challenge – Our Goals

Innovate

> “The trick to innovating is not coming up with something brand new, but connecting things we've never connected before, pairing different technology together.“
>
> (Sean James, Microsoft)

PDS has an infrastructure – let’s use it!

PPI Challenge – Selecting a topic

Selecting a challenge has been challenging.

- Visualization of data

  Our in-house development has matured quickly. No need for a challenge.

- PDS4 support in Python

  An hour after selecting this we got the e-mail from Mike A'Hearn announcing the SBN effort. No need to duplicate.

- Selecting an item from Anne's list.

  But we will be funding the challenge with PPI sources and need to meet a direct PPI need.

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