Team

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Arthur Choe	gassck@bu.edu	Mechanical Engineering	Matlab, CAD, 3D printing
Takeshi Osoekawa	osoken@gmail.com	Data Science	C/C++, Java, HTML, JavaScript, PHP, R, SQL
Yuki Takeichi	tacke.jp@gmail.com	Data Science/Mobile Dev	Ruby (Rails), iOS, R, Python, MySQL, MongoDB
Korina Ysabel	kbaraceros01@g.harvard.edu	Data Science	R, SPSS, Oracle, SQL, Python
Naoya Kurita	kuritanaoya@gmail.com	Designer	Illustrator, photoshop, fireworks, graphic design
Hitoshi Nishihata	nishihata0301@gmail.com	Artist	Processing, C++(openFrameworks), HTML

Timeline

	START	END
Boston	21:00 Friday April 11, 2014	01:30 Sunday April 13, 2014
Tokyo	10:00 Saturday April 12, 2014	14:30 Sunday April 13, 2014

Challenge/Objective

Create an app that provides real-time notification when the **rocky planets and moons of the solar system** have surface temperatures that are possible for human habitation. Some planets and moons have temperatures that are within a habitable range for a limited time at points of their orbit. Similarly, there are times in an orbit when a section of a planet or moon rotates from facing away from the sun to facing towards the sun or Mercury, the Moon, and Mars. This capability could indicate the possibilities out in the solar system where humans can survive on solid ground.

Development Outline

1. Requirements - Define clearly so we can easily track whether we're meeting them.
    - Information to be displayed
        - Rocky Planets & moons: Mercury, Venus, Earth, Mars, Europa, Enceladus
        - Weather parameters: Temperature, H2, O2
    - Data sources
        - Mercury: Messenger Mission
            - http://pds-imaging.jpl.nasa.gov/search/search.html#QuickSearch
        - Mars: Multiple, need to narrow
            - http://sci.esa.int/mars-express/
            - http://mars.jpl.nasa.gov/mro/mission/

        - http://pds-imaging.jpl.nasa.gov/search/search.html#QuickSearch
    - Parameters
        - Time range: Depends on Available data

2. Design
    - Backend
        - Terrain Data
        - Repository: MySQL
    - Frontend
        - Website
            - Landing Page
                - Show members of solar system
                - Temperature search box on the side
                - Search results bring up planet or moon that fit search criteria
                    - Remove planets with without any regions in temperature range
                    - Allow matched planets to be clickable
                    - Animate the planets with regions in temperature range
            - Detailed page
                - User clicks one item from search results
                    - Remove all bodies except user choice
                    - Zoom to the planet and highlight region with matched temperature
                    - Hover over region and pop-up appears with summary info? (temp, coordinates, date of data, data source etc.)
                    - Have landmark names for sense of orientation
3. Implementation (Day of activities)
    - Tokyo
        - Website development
        - Data visualization
            - Convert images from equirectangular orthographic projection
            - Animate orthographic projections
    - Cambridge
        - Data
            - Load data into Picasa & categorize (planet/moon, temperature, date, region on body)
        - Integration
            - Connect website to Picasa repository via Picasa API
            - Website & hardware/projection communication
        - Hardware
            - Globe assembly
            - Projection assembly
        - Presentation material
            - Workflow diagram
            - PowerPoint presentation