Project MergEHR
Sharing Code Between Primate Centers

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National Primate Research Centers

• Seven institutions across the US
  • *California*, *Oregon*, *Southwest*, *Tulane*, *Yerkes*, *Washington*, *Wisconsin*
• Founded by the National Institutes of Health
• Established more 50 years ago
• Established as a resource for research for each corresponding regions
Wisconsin National Primate Research Center

- Host institution University of Wisconsin - Madison
- Located in three different locations
  - Main buildings - near University campus
  - Secondary building - at the Medical School
  - Quarantine building - located 20 miles away
- Housed close to 2000 non-human primates
  - Two breeding colonies (Rhesus and Marmosets)
- 2009 ARRA funding to develop Primate Health Record system
- Together with LabKey developed couple of modules
Evolution of Primate Health Record System

- Modern health record system to store information of NHP
- System went live at Wisconsin around 2011
- Around 2012 Oregon started development of their own version
  - Both centers share a common based module (i.e. EHR)
- Three other centers have or are in the process of developing their own versions of EHR modules
  - Southwest (2014), California, and Tulane
- Since 2015 we have meet regularly with all Primate Centers
  - Meeting every other month remotely
  - Yearly in-person meeting during LabKey Users conference
Code Sharing between Centers

• Two main methods:
  1. LabKey development
     • Center specific EHR modules
     • Billing module
     • Marmoset R24 grant
  2. Center development
     • PrimateID - Wisconsin
     • Breeding Cohort builder - Southwest
     • Necropsy request and scheduling - Wisconsin
Center Specific EHR Modules - LabKey

- Each center shares a common EHR module
- Each center has extended this common module to match their specific needs
- Code mainly resides in LabKey’s SVN repository
- Common module is stable between LabKey core versions
  - Changes are recommended by each center and vetted by LabKey staff
- Center specific modules are improving constantly
  - Some features can be exported and adopted by each center
Billing Module - LabKey

• Helps primate center manage accounts and generate invoices
• Initially developed by ONPRC
• Wisconsin is generalizing module and modifying for our use
• Maintained in LabKey’s SVN repository
• Wisconsin is planning to go live early next year
• Expanding Oregon’s Billing module saved development time
• Other centers are planning to adopt this module in the near future
PrimateID - Wisconsin

- Uniquely identifies each non-human primate across all centers
- Standalone module developed to work with LabKey or other systems
- Code maintained in GitHub by Wisconsin (https://github.com/WNPRC-EHR-Services/primate-id.git)
- Wisconsin is planning to deploy before the end of year
- Does not replace center specific identification
- 10 characters long:
  - 2 digit, center-defined prefix (e.g., “WI”)
  - 7 random Base32-encoded characters (drops 'I', 'J', 'O', and 'S')
  - 1 check character to validate the others
    - For example: WI FFQGDT6 H
Breeding Cohort Builder - Oregon/Southwest

• Using primate demographic information establishes animal groups for breeding purpose
• Develop as a R studio application
• Developed between Oregon and Southwest Primate Centers
• Started to be used by Wisconsin under a request from Veterinarian staff
• Code maintained in GitHub (https://github.com/rmsharp/nprcmanager.git)
Running a Production Server

• Wisconsin and other Primate centers depend on LabKey to perform their daily work
• All animal treatments, observations, and health information are enter directly into the LabKey daily
• LabKey updates platform every four months
  • Wisconsin and Oregon running version 17.2
  • Other centers in active development are running trunk
• Determine how far behind your production system can be
• Update schedule changing based on technology stack (i.e. Java)
Questions

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