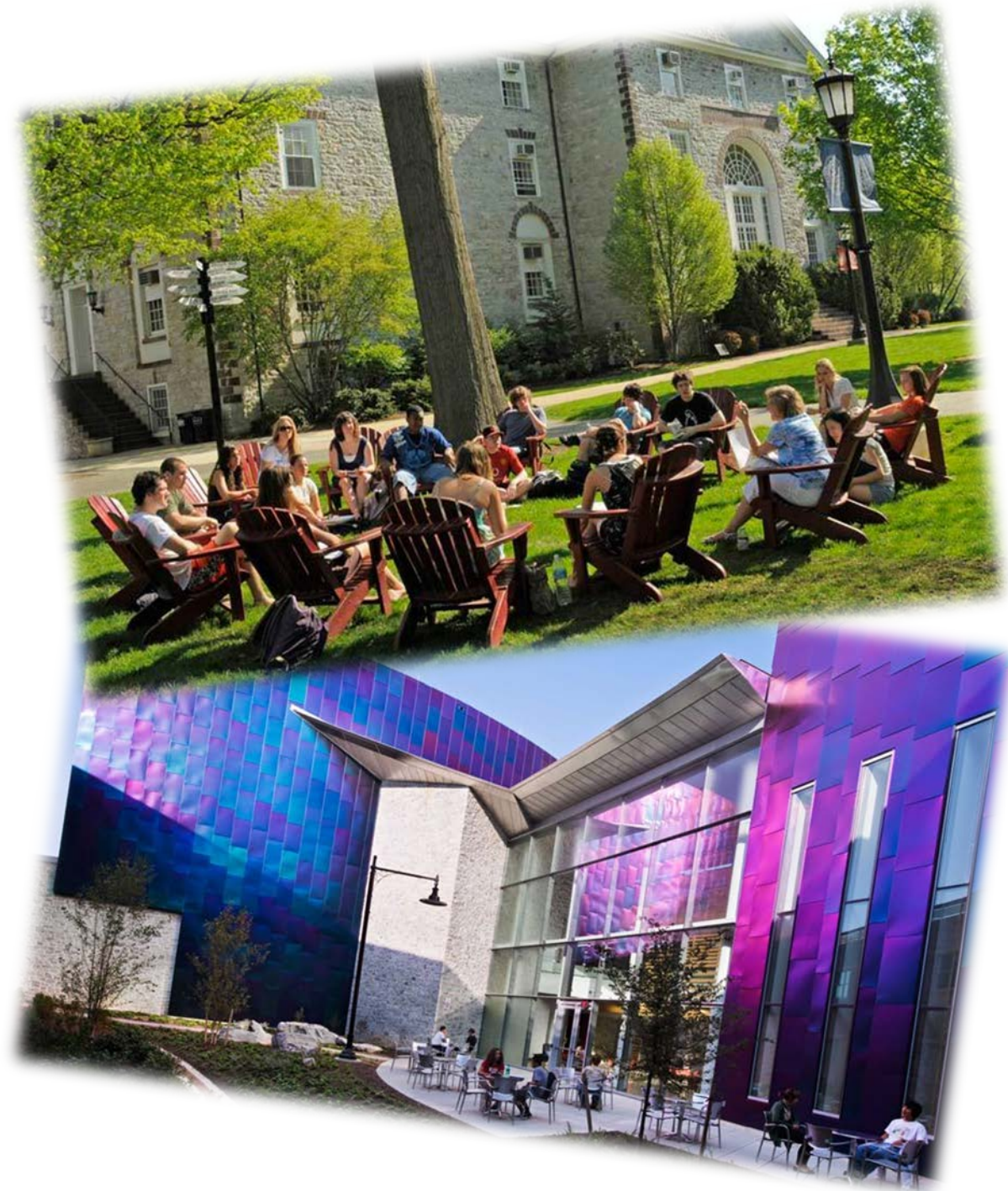


HFOSS Learning Projects: FarmData & AnimalData

Grant Braught
Professor of Computer Science
SIGCSE POSSE Roundup
Febrary 27, 2019

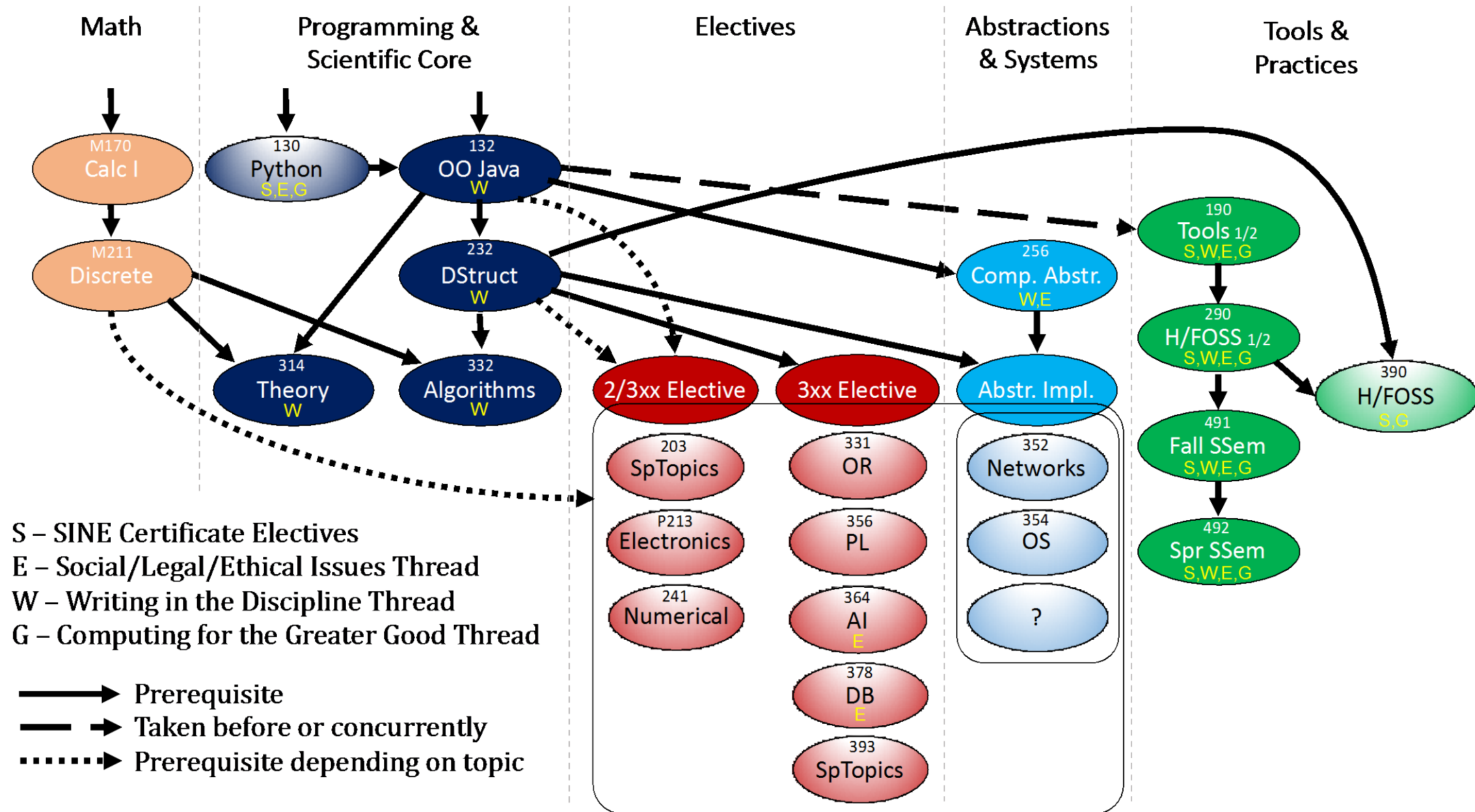
Dickinson Context

- Dickinson College was chartered in 1783, just days after the conclusion of the American Revolution, explicitly to prepare young people, by means of a useful education in the liberal arts and sciences, for engaged lives of citizenship and leadership in the service of society.
 - Nationally recognized, highly selective, private liberal arts college
 - Located in Carlisle, Pennsylvania.
 - 2345 full-time students
 - 9:1 student-faculty ratio



Computer Science & HFOSS at Dickinson

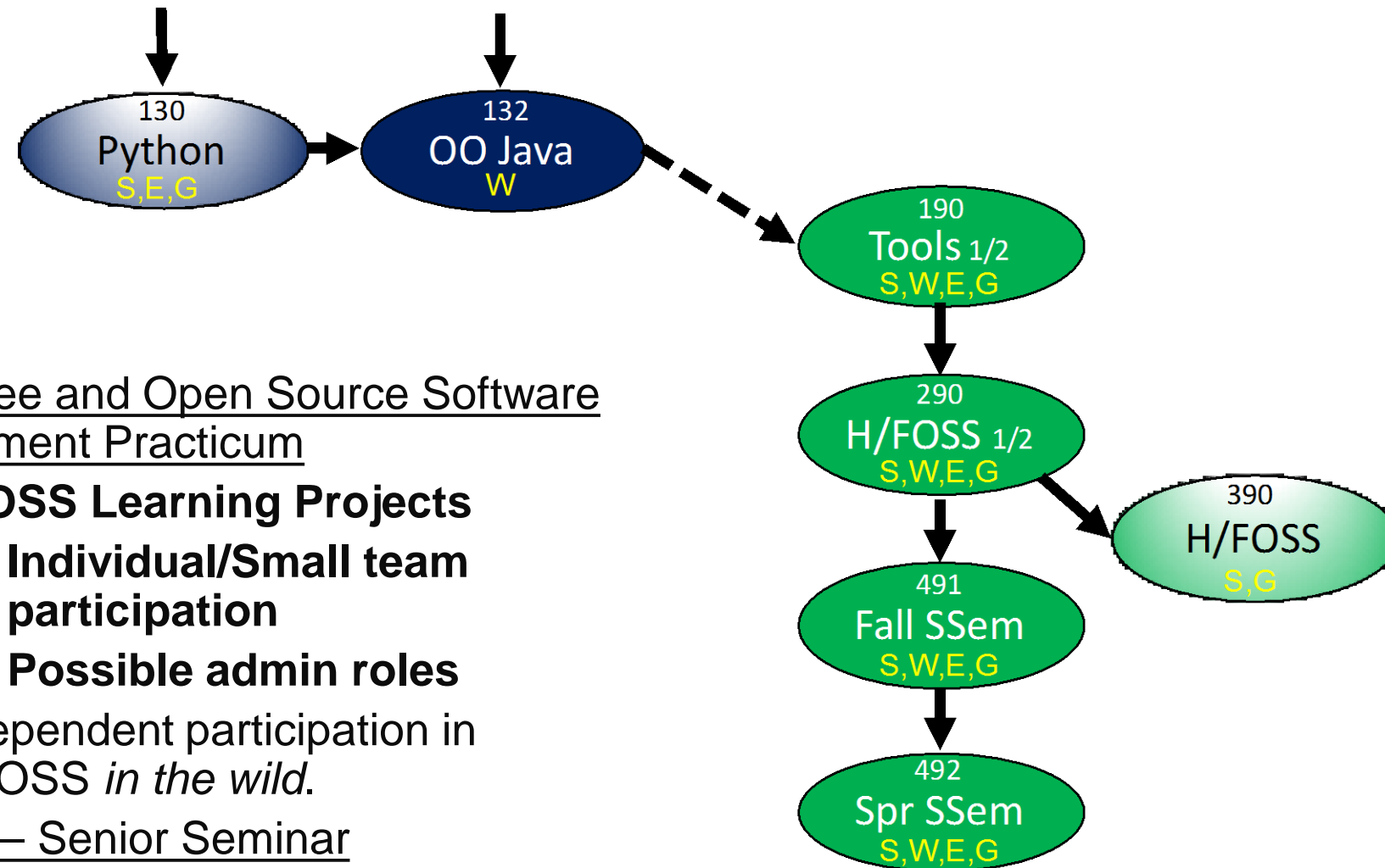
- 4 permanent CS faculty
 - All POSSE Alumni
- ~10-20 graduates/year
- ~60 majors total
 - ~30% Female
 - ~50% International
- Firm course caps of 24
- SINE: Social Innovation and Entrepreneurship Connection



Scaffolding HFOSS Participation

- 130 – Introduction to Computing
 - FOSS vs Proprietary (Licensing)
 - Humanitarian FOSS
 - Computing for the greater good
- 190 – Tools and Techniques for Software Development
 - **HFOSS Kits**
 - Unix / git
 - Issue trackers
 - debuggers
- 290 – Large Scale and Open Source Software Development
 - **HFOSS Learning Projects**
 - Git workflow w/ Upstream
 - Bug fixes / feature addition

- 390 – Free and Open Source Software Development Practicum
 - **HFOSS Learning Projects**
 - Individual/Small team participation
 - Possible admin roles
 - Independent participation in H/FOSS *in the wild*.
- 491/492 – Senior Seminar
 - Team participation in student selecte H/FOSS projects *in the wild*.



The HFOSS Learning Projects

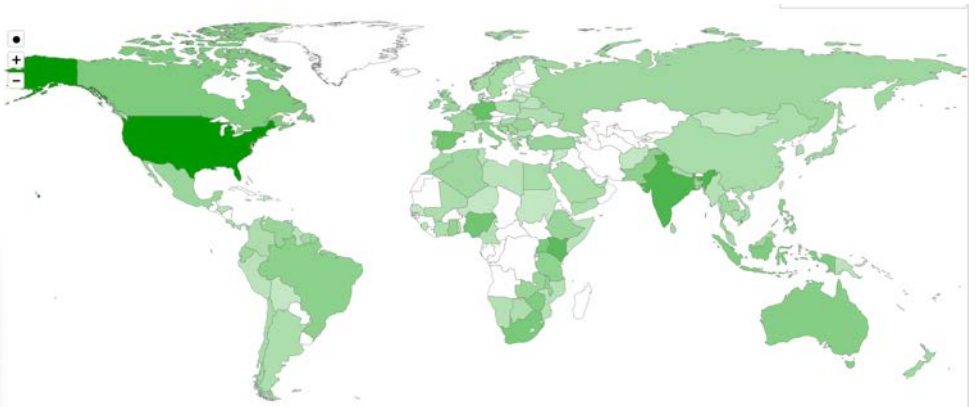
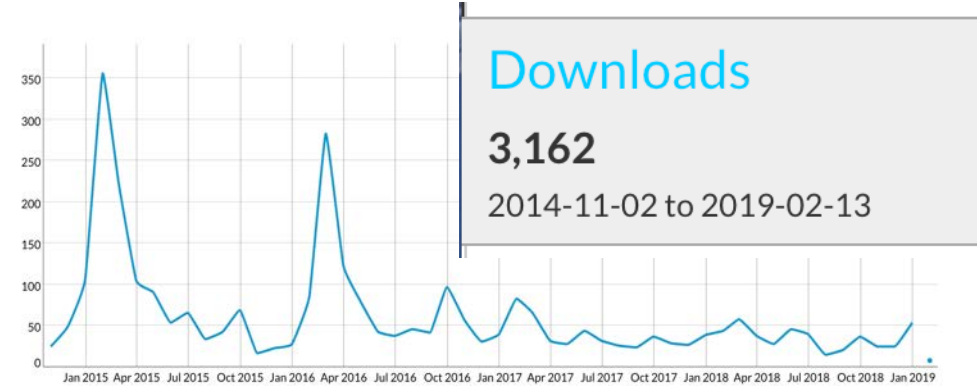
- Dickinson's College Farm is a 80-acre, USDA-certified organic farm and a living laboratory where students can gain distinctive, hands-on learning experiences.
- Web-Based Mobile Database Applications to Support Organic Farming
 - **FarmData:** for entering and reporting crop production records, including seeding, transplanting, harvest, cover crop, compost, fertilization, irrigation, pest scouting, spray activities, packing and distribution records and customer invoicing.
 - **AnimalData:** for keeping livestock production records, from birth to slaughter or sale. Other data captured by the system includes pasture moves, periodic and veterinary care and logging of egg production.



Local Clients, Global Communities

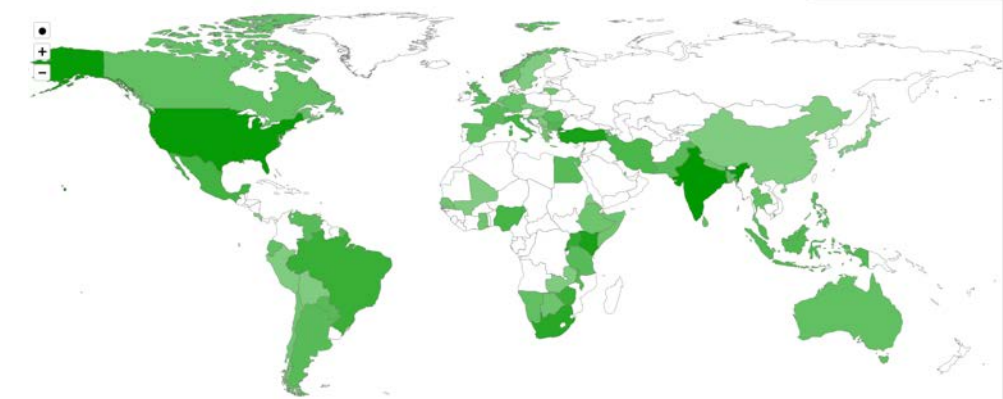
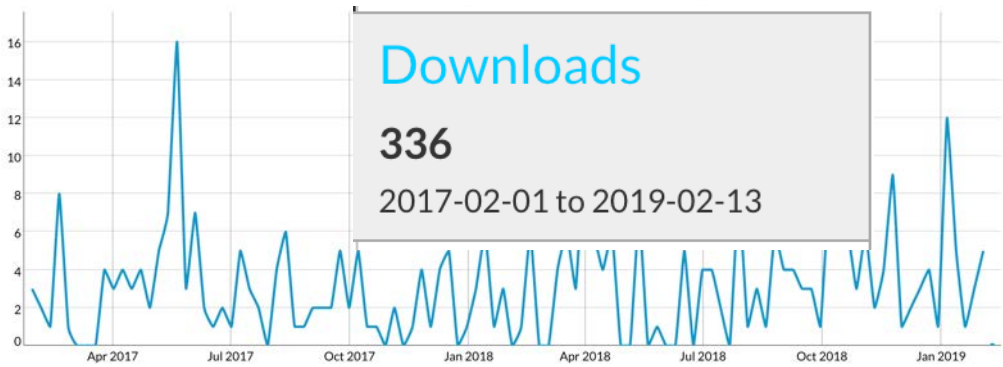


FarmData



Country	Total
1. United States	1,484
2. India	243
3. Kenya	158
4. Germany	109
5. Spain	82

AnimalData



Country	Total
1. India	35
2. United States	31
3. Kenya	21
4. Turkey	21
5. Rwanda	16

Implementations

○ Web-Based Mobile Database Applications to Support Organic Farming

- Small and Fast
- Technologies
 - GPL3.0
 - Apache
 - PHP
 - Shell Scripts
 - ???

GitHub
MySQL
HTML

Harvest

Seed

Soil

Comments

Labor

Admin

Logout

Direct Seeding

Tray Seeding

Transplanting

Order

Input Form

Report

Select Language

Tray Seeding Records for: All Crops

Date of Seeding	Crop	Number of Seeds	Trays	Cells/Tray	Varieties	Comments	User	Edit	Delete
2018-04-26	EGGPLANT	105	1	0	Seed Code: ET-18-3-OG (TRAVIATA) - 35 seeds Seed Code: ET-18-4-UT (GALINE) - 35 seeds Seed Code: ET-18-6-UT (NADIA) - 35 seeds		halpinj	Edit	Delete
2018-04-26	LETTUCE, GREEN	264	1	128	Seed Code: LN-16-3-OG (WALDMANN) - 264 seeds		halpinj	Edit	Delete
2018-04-26	LETTUCE, RED	120	1	128	Seed Code: LD-17-3-OG (DCF RED OAK LEAF) - 120 seeds		halpinj	Edit	Delete
2018-04-26	TOMATO, CHERRY	165	1	0	Seed Code: TY-18-1-UT (SUN GOLD) - 50 seeds Seed Code: TY-18-2-OG (VALENTINE) - 50 seeds Seed Code: TY-16-5-OG (ESTERINA) - 25 seeds Seed Code: N/A (No Variety) - 20 seeds Seed Code: TY-17-4-OG (DCF PINK BUMBLE BEE) - 20 seeds	20 - black vernissage	halpinj	Edit	Delete
					Seed Code: ME-16-3-OG (BMP)				

Home

Admin

View


Animal

Animal Record

Animal ID:

C-11-Africa (Africa)

Basic Animal Data

Animal ID	Animal Group	Breed	Subgroup	Gender	Birthdate	Origin	Mother	Father	Name	Color & Markings	Comments	Alive/On Farm	Picture
C-11-Africa	CATTLE	HERFORD ANGUS CROSS	COWS WITH CALVES	F	04/15/2011	SANTUCCI	N/A	N/A	Africa	Black cow, white face with reversed Africa map on face.	Docile, good mom. Survived hoof care & improved fall 2015.	Yes	

Offspring

Birth Date	Animal ID	Name	Sale/Slaughter Weight	Comments
2016-05-11	C-16-88			

Questions?

- For you:
 - Are there more modern frameworks/technologies we should consider?
 - Are there testing frameworks you would recommend (or not recommend)?
 - How could the code be better organized/structured?
 - Would these projects be an appropriate fit for any of your courses?
 - What on-boarding materials would be helpful for your students?
- For me:
 - Ask away!