

Heather Glen

Village



Seniors Retirement Village

Ken Taylor: (unpaid / volunteer) Techie Board Member

The Concept



- A 400+ acre gated seniors community
- Rotary inspired project
- Phase One – 1000 (small) Condos
- Community Center / Admin Building
- Green . . . Very Green

Village Management



- Accounting (AR, AP, Payroll, GL, Taxes etc.)
- HVAC, Security, Fire, Air, Water
- All seasons landscaping (Lawns and Snow)
- Maintenance (paint, roofs, doors, appliances)
- Power (Solar, Wind, Battery Farm)
- Water (Lake, Pond, Stream, Dam, Giant water feature)
- Data (measure and track all of above . . .)

Open Source



- Village Support
 - Problem Management - osTicket
 - Administration – OFBIZ
 - Statistics – SNMP - Grafana et al

Ticketing via osTicket



Residents / Staff Report a Problem /
osTicket

- Problem Management Structure
 - Tracking / Escalating / Closing / Knowledge Base
- Field Tech Dispatch
- Management Reports

Administration - OFBIZ



Open For Business – Open Source

- Accounting
- Project Management
- Hospitality / Medical
- On-line Web Store
- Bricks and Mortar Store
- Inventory Management
- Asset Management

SNMP-REMS-RAMMS

Grafana - Guacamole



Simple Network Management Protocol

- Data collection connection
- Standard Network Management Application
- Used for decades
 - Server Polls Infrastructure (including REMS)*
 - Server collects data - displays statistics
- Grafana / Prometheus etc displays “Variances”

*** *more later . . .***

HGV Tech



- Open Source
- “Free” but pay for Support
- Literally Thousands of Developers
- Need Software support staff
 - Needed anyway
 - Staffing Model Residence
 - Linux Center of Excellence (paid)
 - Resident Contribution (volunteer)

Residence Management (1)

- Normal Heat & Humidity Management
 - Standard stuff
- Fire & Smoke alarm . . .
 - Standard smoke alarm etc
 - Need site security involved
 - And lots more . . .

Residence Management 2



- Motion detectors
 - Inside
 - Outside
- Water detectors
 - Running toilets etc
 - Shut off valves
- Village wide (and individual) HVAC controls
- Door locks / Security access / Lost keys / Concierge access?
- Data collection / SNMP / Reporting to Central DB

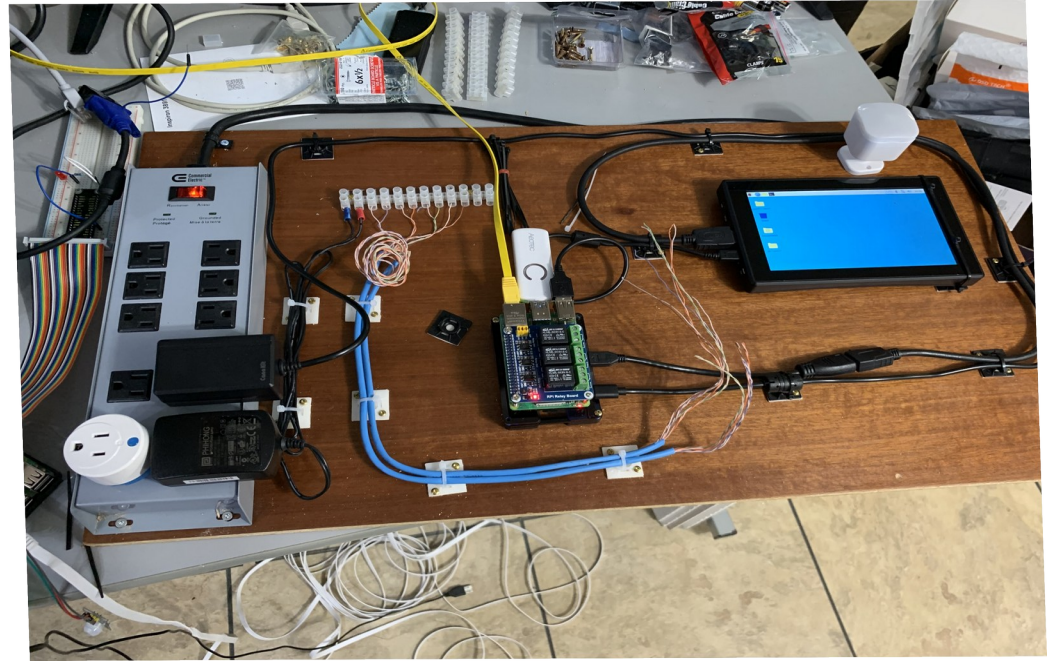
It all “works” but . .



- Platforms (VERY / too?) Flexible but documented
 - If you speak Python
- Lots of Developers
- Lots of programming approaches
- Mainly Python but also C, C+, Java
- Needed
 - Standard, supportable approach
 - Restricted end user access

Remote Environment Management System REMS

- Hardware Platform
 - Raspberry Pi 3 – 4
 - Touch Screen
- Software Platform
 - OpenHAB.org (Zigbee et al)
 - Domoticz.com (Z-Wave et al)
 - Home Assistant (thanks Paul)
 - Z-Wave (North American Pref)
 - HomeGenie (X10)
 - Roll Your Own – Off The Shelf



What is in REMS ?



- Two things – Thing 1
 - Stuff Under Resident's control
 - Temperature and temperature control
 - Humidity and humidity control

REMS Thing 2: Management View

- All of above + (A little more than in-home lights and media)
- Fire / smoke detection and alarms (locally and centrally)
- Water / flood management (shut off water / leaky toilet etc)
- Electricity consumption / cut off for fire / emergency
- Access / Egress reporting (keyless entry ? / fobs etc)
- Remote control locks / access for Security & Maintenance Staff
- Vacant occupancy management
 - Florida, vacation, visit kids for weekend etc
- Statistics, trouble reporting via SNMP
- Video link to security and vice versa (see no occupancy above)
- FreePBX (video) phone extension (ET / Zoiper calling??)
- And probably more. (Think Flexibility)



REMS Variant(s)



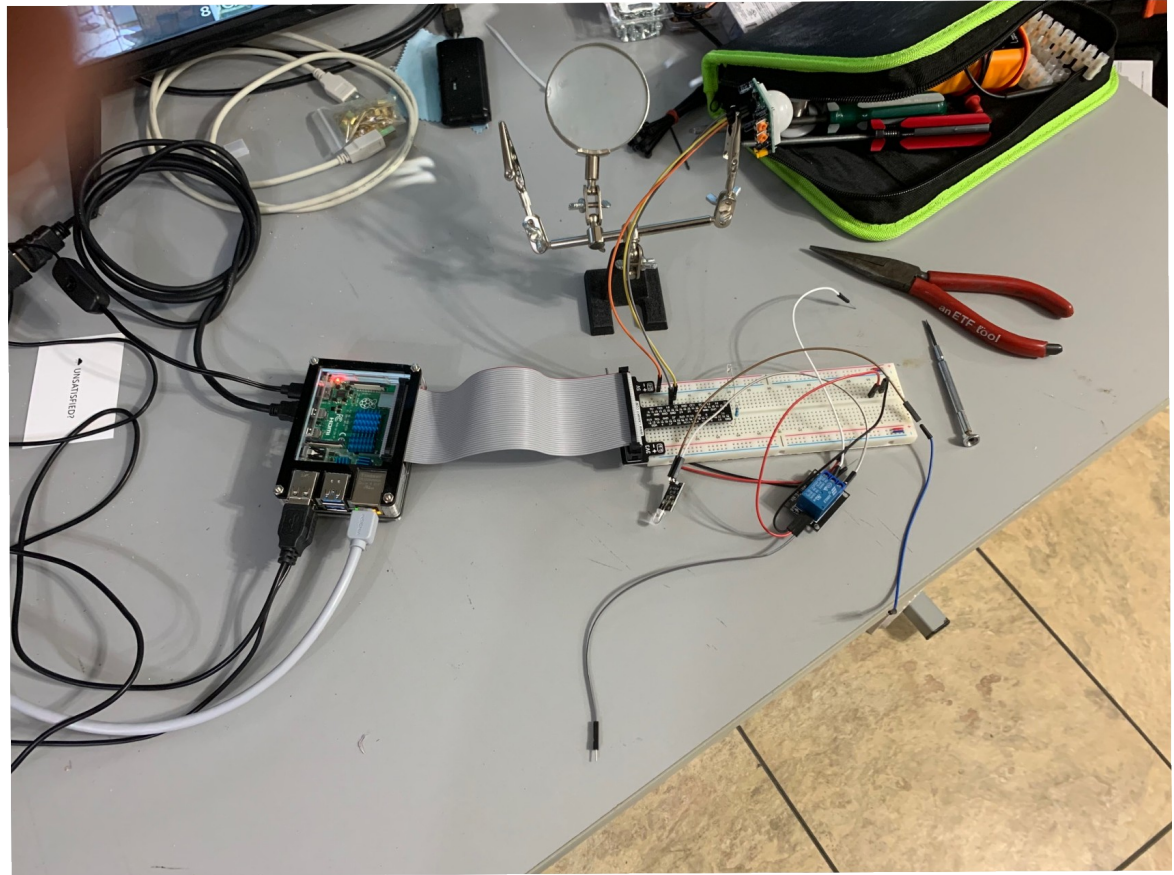
- Same platform - different focus . . .
 - Report data (power plant – water usage – pond – weather / air)
 - Elephant stampedes
 - **Data collection** / SNMP / Reporting to Central DB
 - Monitoring “continuous drip”
 - Emulating VT100
 - Remote web page
 - ET call home (call us 1st)
 - Various security / legal related items . . .

REMS Premise

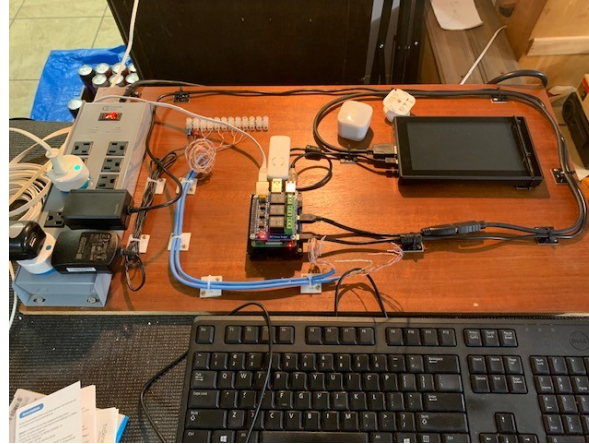


- Input from Sensors
 - Motion, Temperature, Variance from normal, Water etc.
- Output to Relay(s)
 - If needed, a relay turned on / off as required
 - Power sockets, lights etc
- Output via SNMP to Data / Stats DB
 - All data is recorded for statistical purposes.
 - Individual privacy is paramount.

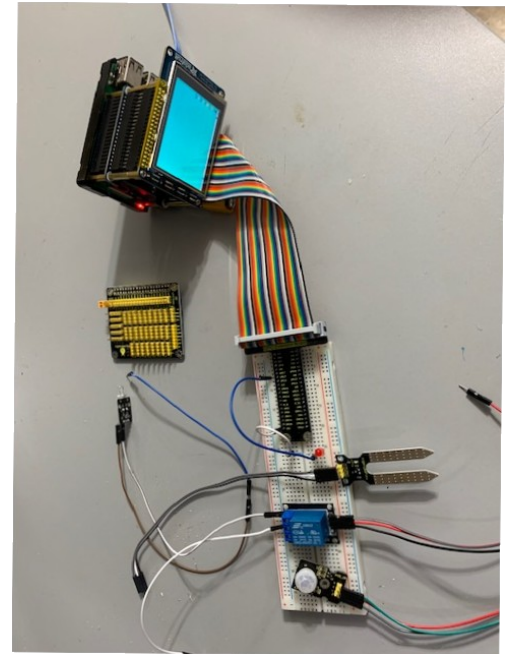
My 1st LAB and RPi Farm



Latest LAB and RPi Farm

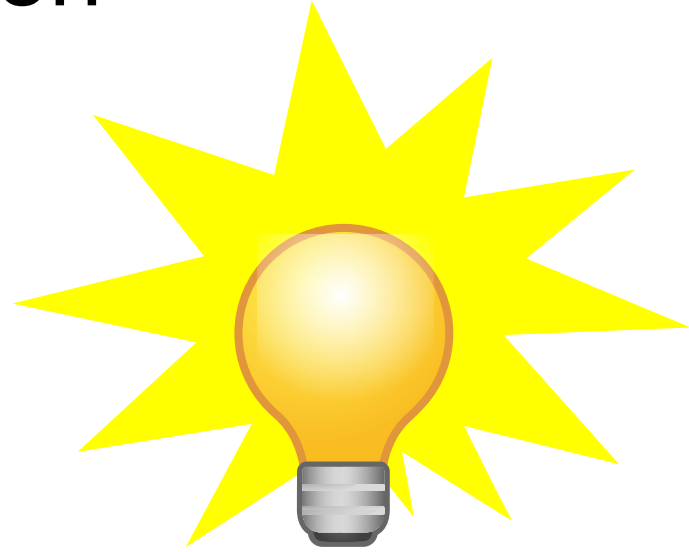


**REMS
(Prototypes)**



Heather Glen Village Tech

- Questions & Discussion
- Deferred List



The Deferred “Because” List . . .

- OsTicket – Can’t get email to work
- NUT (Network UPS Tools)
 - Monitor / manage battery farm
- Web Page design / implementation
 - Guacamole
- Prometheus / Grafana / SNMP
 - NASA / Trekkie / Space Commander Display
- REMS – That’s why I’m here





Last 15 minutes



5s



Grouped Random Metric



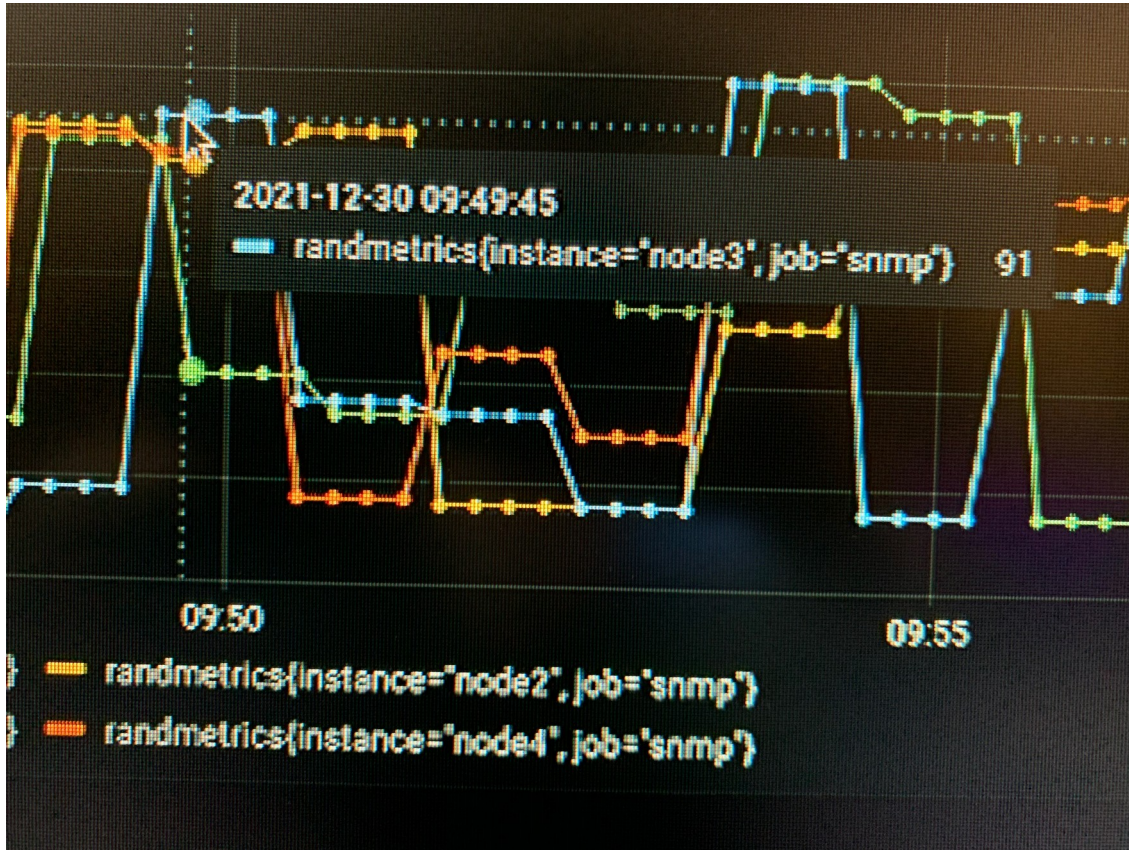
`randmetrics{instance="node1",job="snmp"}`
`randmetrics{instance="node2",job="snmp"}`
`randmetrics{instance="node3",job="snmp"}`
`randmetrics{instance="node4",job="snmp"}`

Bar Random Metric



`randmetrics{instance="node1",job="snmp"}`
`randmetrics{instance="node2",job="snmp"}`
`randmetrics{instance="node3",job="snmp"}`
`randmetrics{instance="node4",job="snmp"}`

Village HQ Display



Now . . .

Click on graph point - See Data

Need . . .

To have system bring up actual status messages via SNMP.

Report sensor results . . .

Floods, fires

“Not Normal” conditions

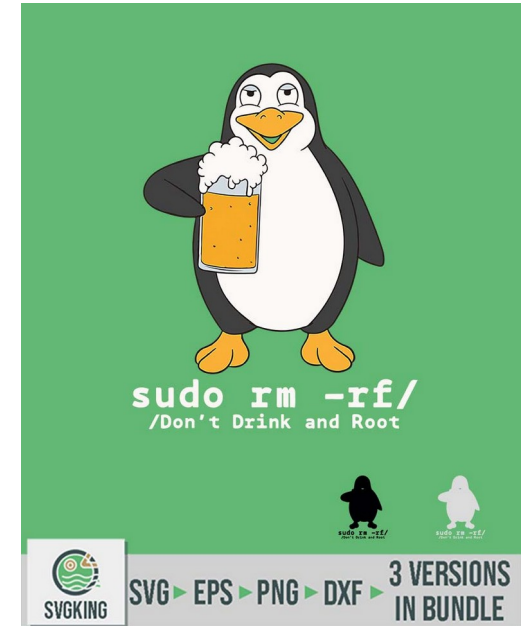
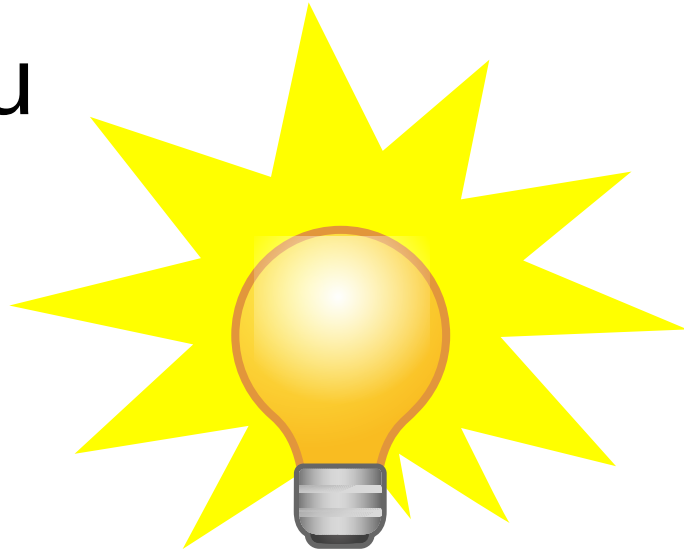
“Unknown Message” from device

Alarms of all sorts

Elephant Stampedes

Heather Glen Village Tech

- (More) Questions & Discussion
- Ground Floor Opportunity
- Thank you



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Thank you KWLUG