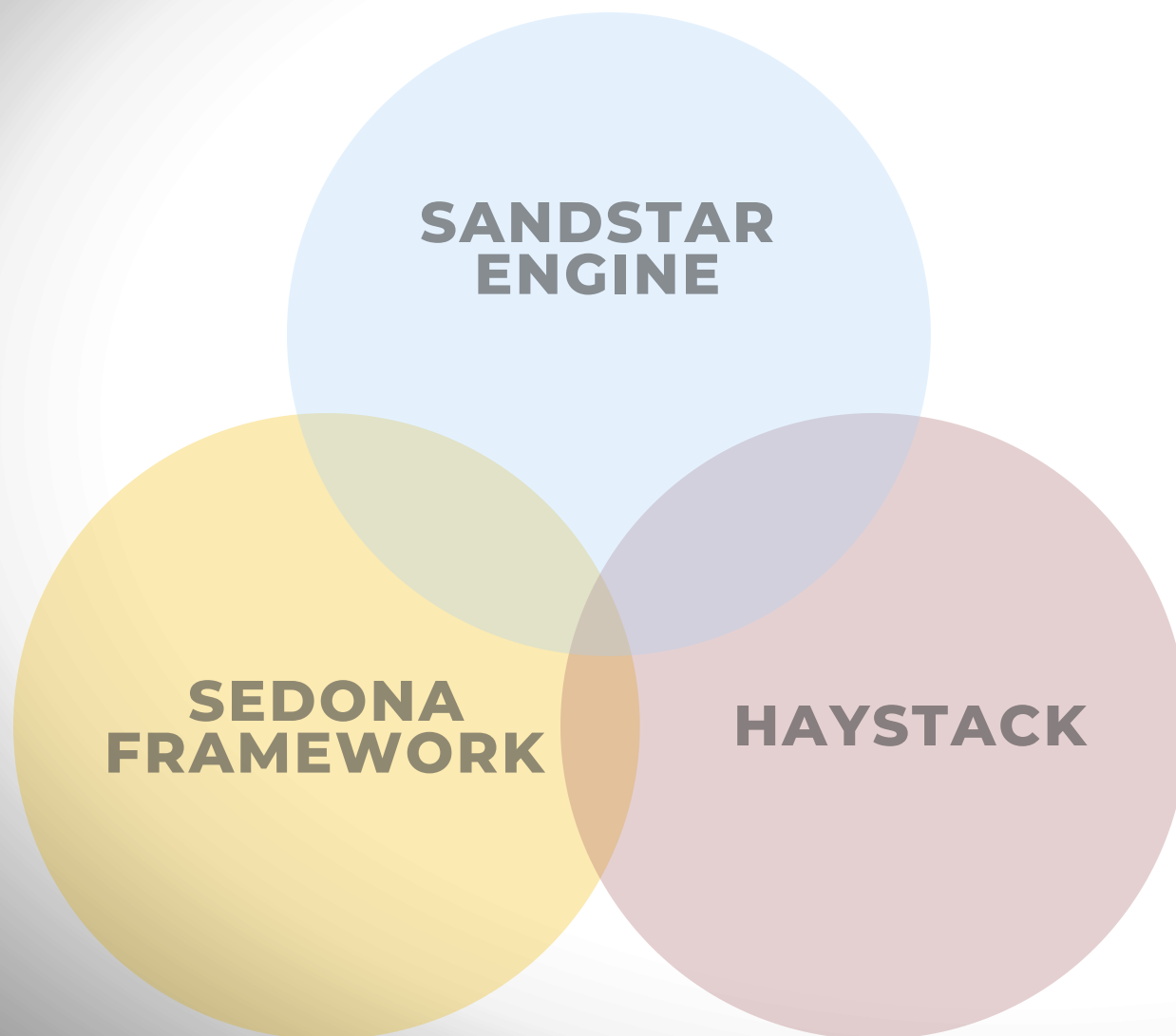


THE JOURNEY OF A HAYSTACK BYTE

ALPER UZMEZLER | ANKA LABS INC | BASSG LLC | AKBIN AS

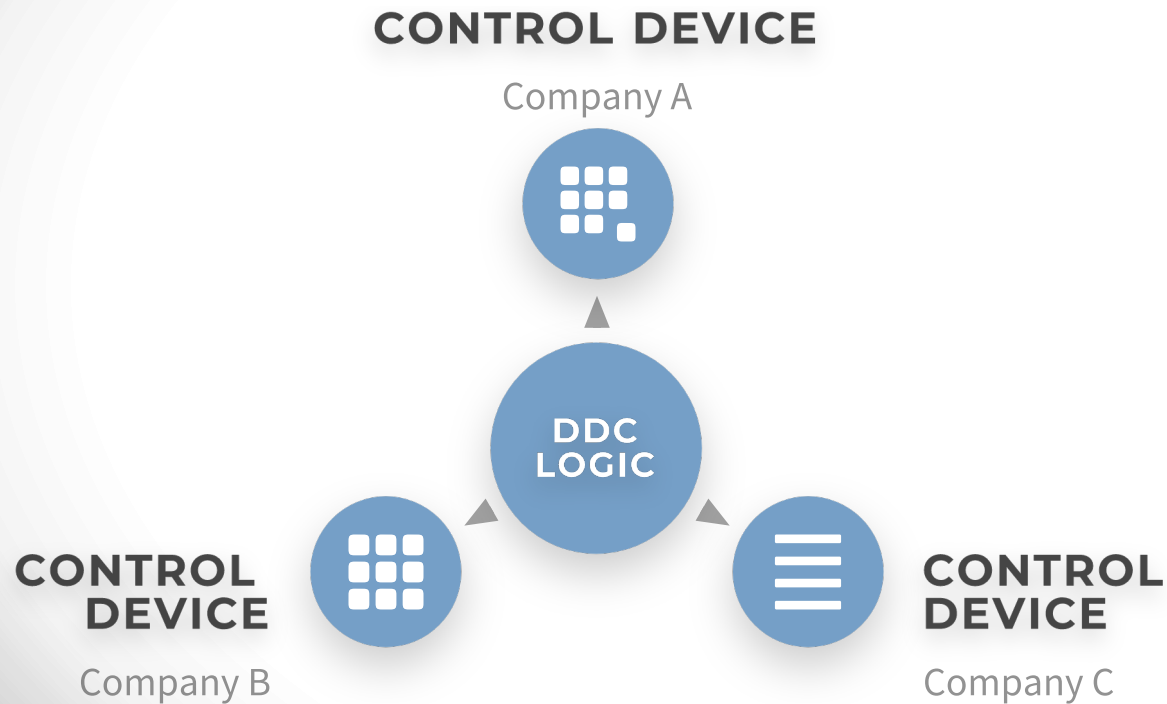
PROJECT SANDSTAR



MERGES SEDONA WITH HAYSTACK INTO A SEAMLESS WHOLE

- **SANDSTAR ENGINE**
 - Converts raw data to cur data
 - Connects to I2C and other protocols based on tags
- **SEDONA FRAMEWORK**
 - Controls IO
 - Interrogates the haystack server with client
- **HAYSTACK**
 - Defines each port with zinc
 - Defines each port with haystack ops
 - Share point information and live data with ops

OPEN SOURCE PROJECT SANDSTAR



WITH THE POWER OF PROJECT HAYSTACK

HARDWARE AGNOSTIC DDC

- **REGARDLESS OF
HARDWARE**

ARM & INTEL

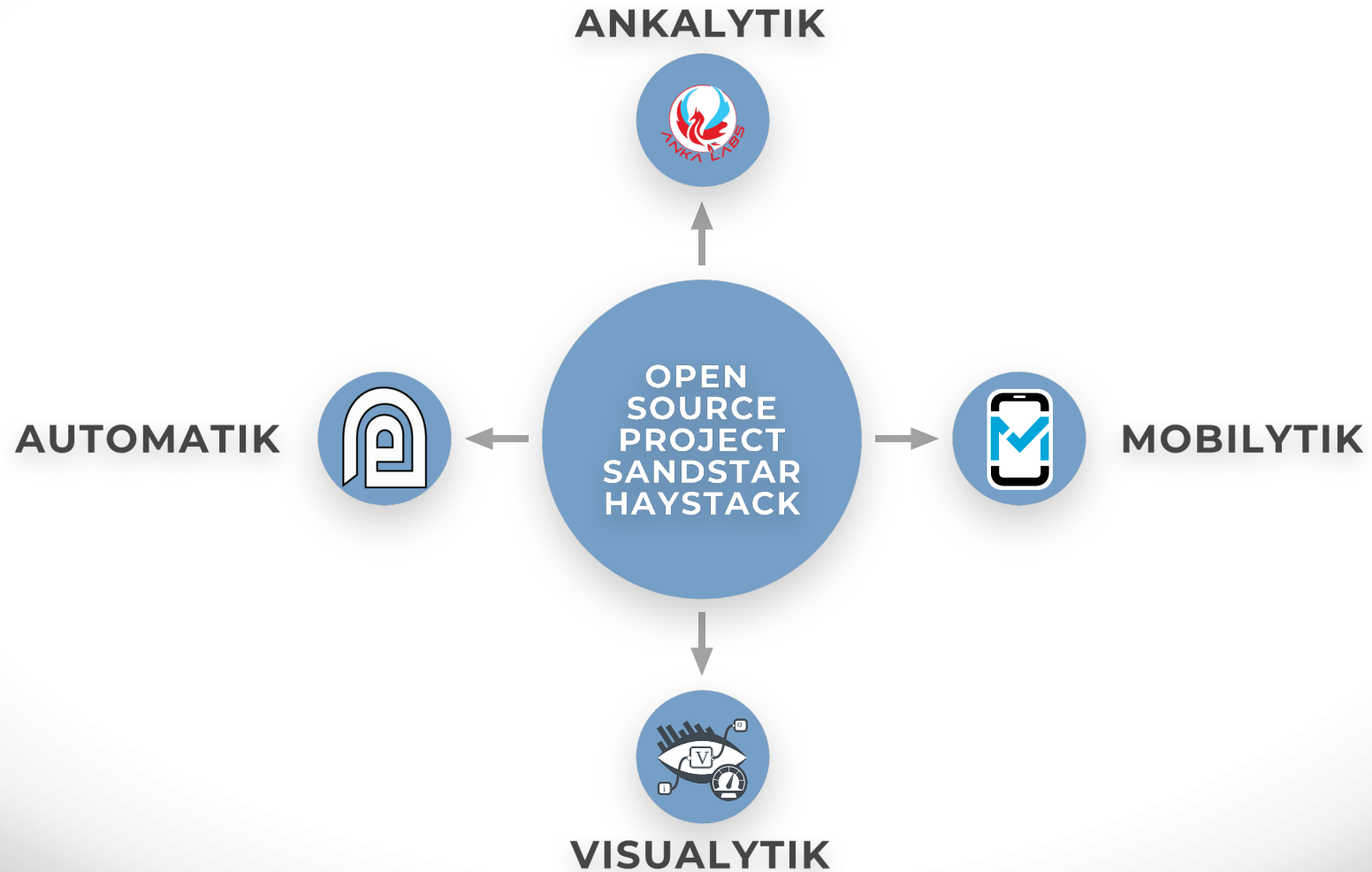
- **SELF AWARE
DDC**

Logic is aware of port
definitions - Tag based control

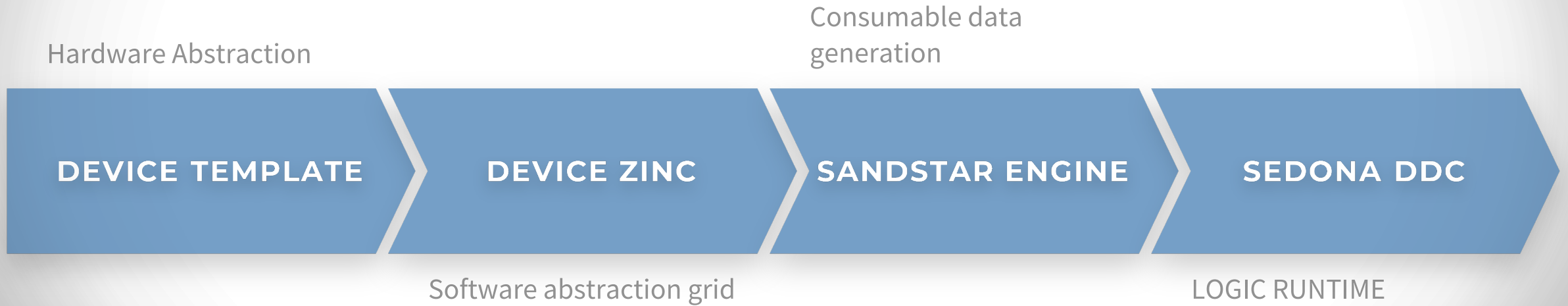
- **TALK TO
HAYSTACK
SERVER**

via Haystack Sedona client

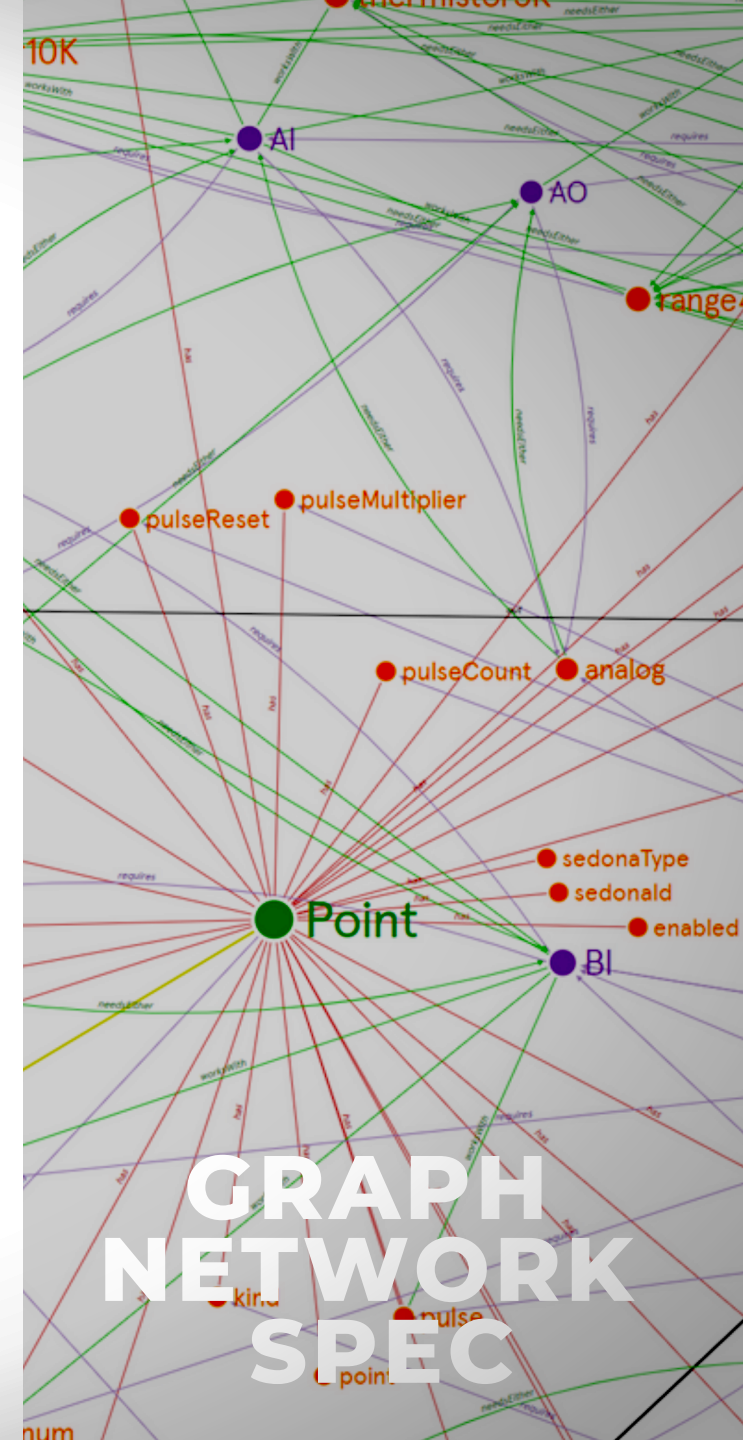
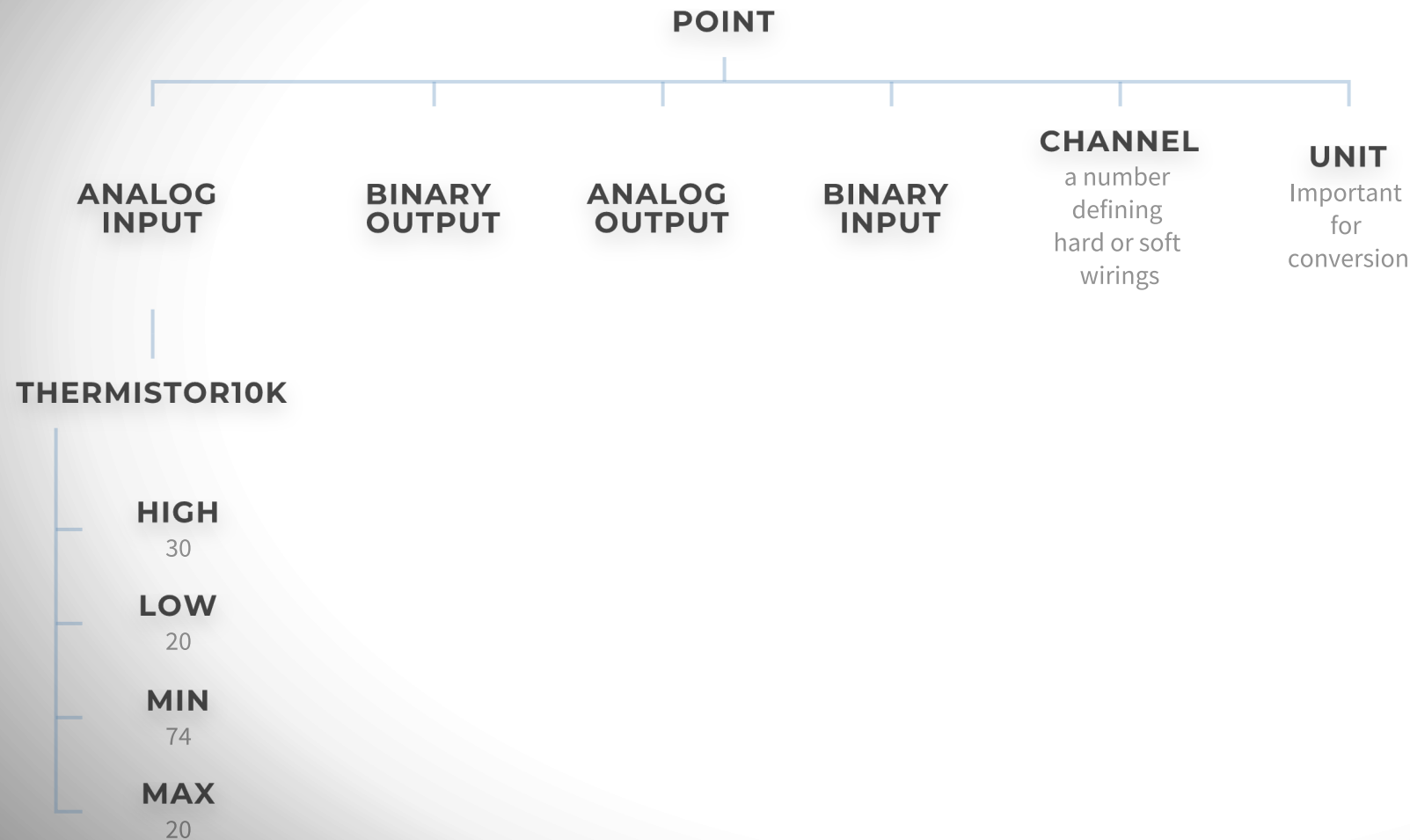
VALUE GENERATION AUTOMATED



PROJECT SANDSTAR



SANDSTAR TAGGING

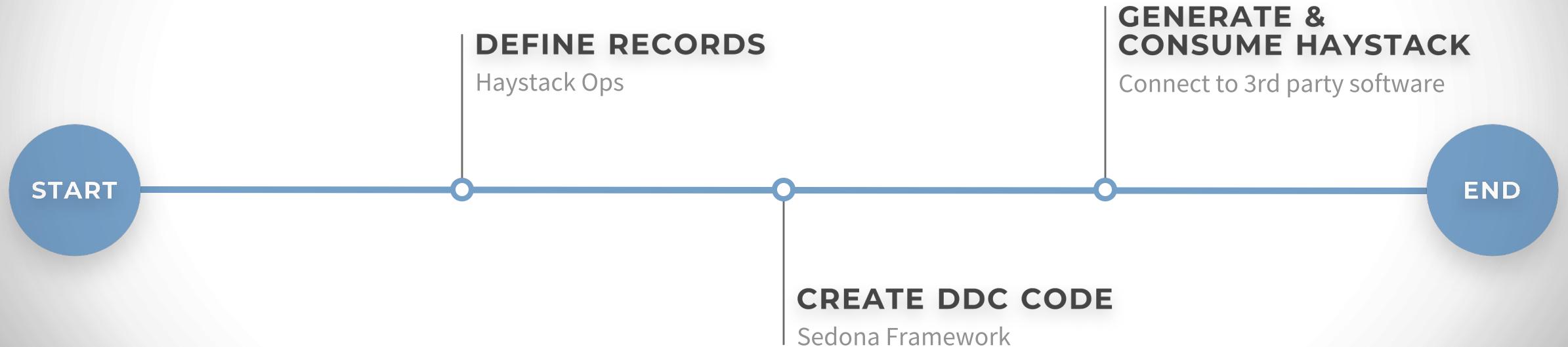


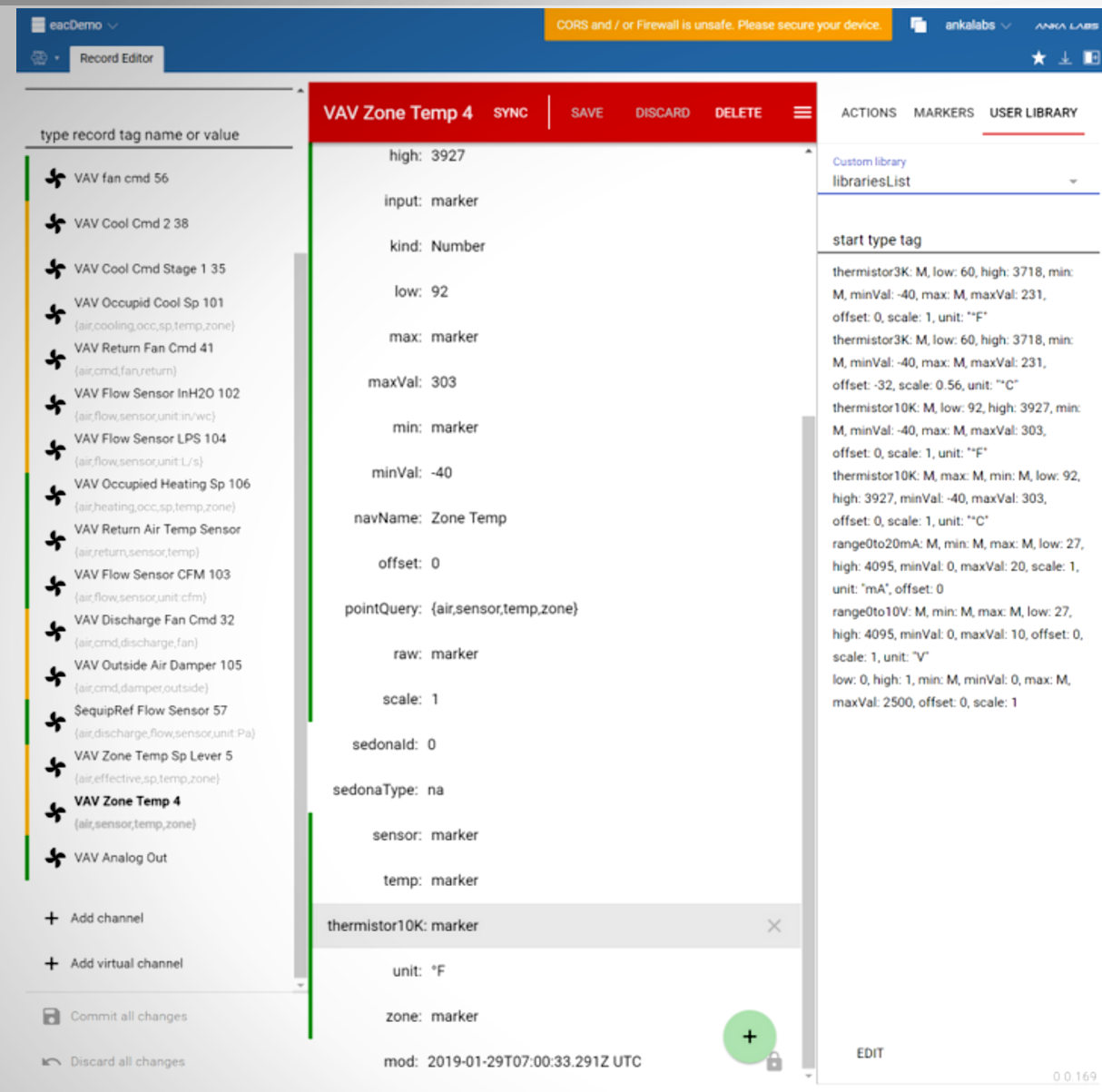
DEVICE GRID

id				pointQuery			convertFunc			sedonaType	il		irStat	curVal
Discharge Fan Cmd 32				{air,cmd,discharge,fan}						Eaclo::BoolOut			ok	FALSE
Cool Cmd Stage 1 35										Eaclo::BoolOut			ok	FALSE
Occupid Cool Sp 101				{air,cooling,occ,sp,temp,zone}						Eaclo::AnalogV	M		ok	70
Flow Sensor 57				{air,discharge,flow,sensor,unit:Pa}			SDP610ToPa						ok	0Pa
Flow Sensor InH2O 102				{air,flow,sensor,unit:in/wc}			SDP610ToInH2O						ok	0
Flow Sensor CFM 103				{air,flow,sensor,unit:cfm}			SDP610ToCFM			na			ok	0cfm
Flow Sensor LPS 104				{air,flow,sensor,unit:L/s}			SDP610ToLPS						ok	0L/s
Outside Air Damper 105				{air,cmd,damper,outside}						Eaclo::AnalogO			ok	2%
Cool Cmd 2 38										Eaclo::BoolOu1			ok	TRUE
Zone Temp Sp Lever 5				{air,effective,sp,temp,zone}						na			ok	2483%
Fan cmd 56														
Zone Temp 4				{air,sensor,temp,zone}						Eaclo::AnalogI			ok	'7.9167
VAV Return Fan Cmd				{air,cmd,fan,return}						Eaclo::BoolOut			ok	FALSE
VAV Occupied Heating Sp 106				{air,heating,occ,sp,temp,zone}						Eaclo::AnalogV			ok	60
VAV Return Air Temp Sensor				{air,return,sensor,temp}						Eaclo::AnalogI			ok	-40 °F
VAV Analog Out										Eaclo::AnalogI			ok	0

Each row defines a port of the controller

SANDSTAR WORKFLOW





RECORD EDITOR

- LINT TOOL VIA IN POINT DEFINITION CHECK
- CUSTOMIZABLE LIBRARY
- PUSH OR EXPORT DEVICE GRID TO SANDSTAR

SIMPLIFIED DEVICE PORT DEFINITIONS

EAC IO KIT

The screenshot displays the EAC IO KIT software interface. On the left is a component palette under the 'Eaclo' category, listing various input and output modules. The main workspace in the center shows a grid with a selected 'AnalogI' component (Eaclo::AnalogInput) highlighted with a red border. To the right of the workspace are two property windows. The first property window is for the 'AnalogI' component, showing properties like Name, Meta, ChannelName, Channel, PointQuery, PointQuerySize, PointQueryStatus, Out, CurStatus, and Enabled. The second property window is for the 'BoolOut' component (Eaclo::BoolOutput), showing properties like Name, Meta, ChannelName, Channel, Out, and a list of input/output channels (In1 through In16, Out).

Component Palette (Eaclo):

- AnalogInput [368B]
- AnalogOutput [436B]
- AnalogValue [436B]
- BinaryValue [380B]
- BoolInput [364B]
- BoolOutput [380B]
- CycleFolder [64B]
- ExposeTags [388B]
- RecordCount [280B]
- TriacOutput [380B]

Selected Component: AnalogI (Eaclo::AnalogInput)

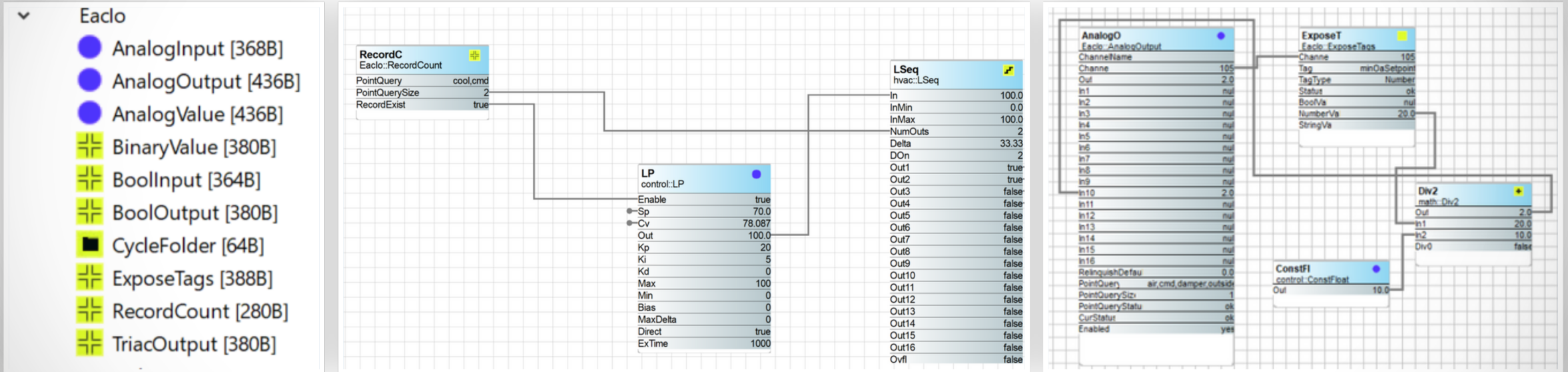
Property	Value
Name	AnalogI
Meta	788660225
ChannelName	
Channel	4
PointQuery	zone,air,temp,senso
PointQuerySize	1
PointQueryStatus	ok
Out	78.08
CurStatus	ok
Enabled	yes

Property Window: BoolOut (Eaclo::BoolOutput)

Property	Value
Name	BoolOut
Meta	1644298341
ChannelName	
Channel	35
Out	false
In1	null
In2	null
In3	null
In4	null
In5	null
In6	null
In7	null
In8	false
In9	null
In10	true
In11	null
In12	null
In13	null
In14	null
In15	null
In16	null
RelinquishDefault	false
PointQuery	cool.cmd.stage1
PointQuerySize	1
PointQueryStatus	ok
CurStatus	ok
Enabled	yes

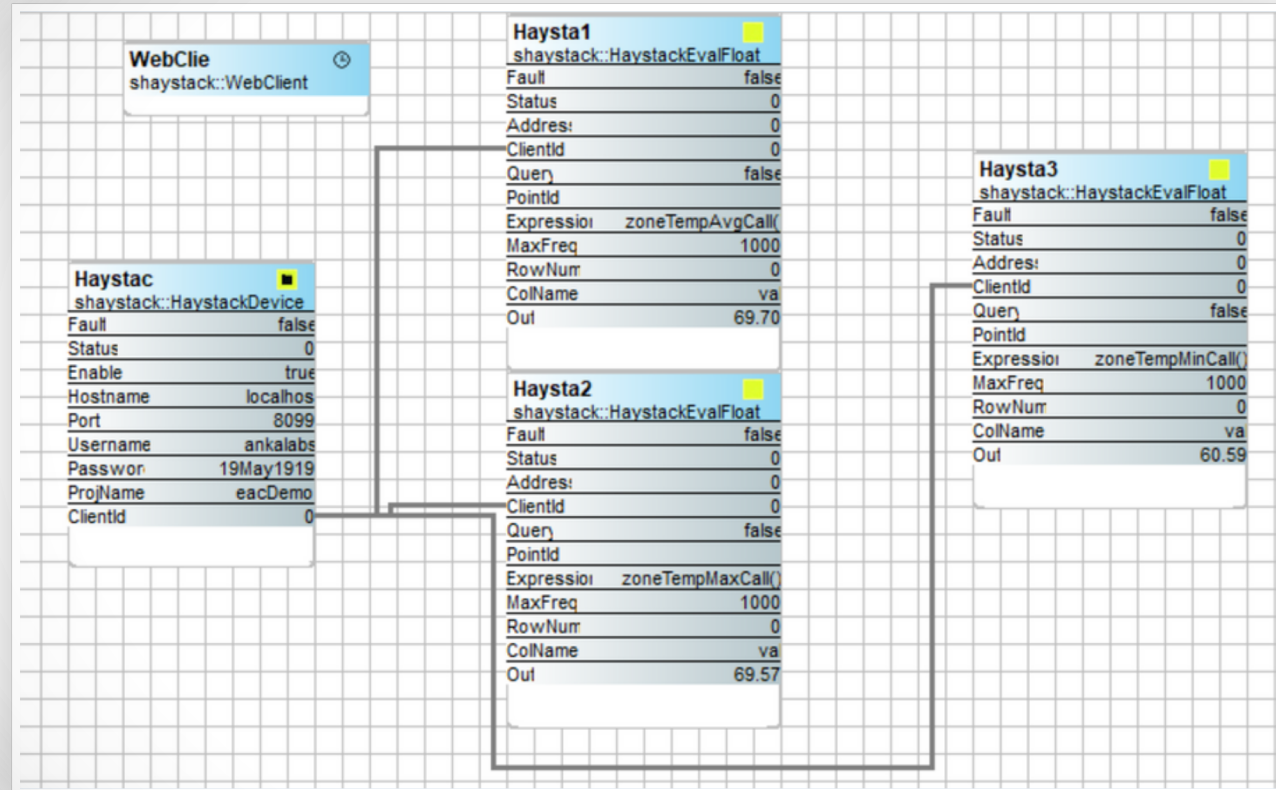
OPEN SOURCED TO CREATE HARDWARE AGNOSTIC TAG BASED CONTROL

EAC IO KIT



OPEN SOURCED TO CREATE HARDWARE AGNOSTIC TAG BASED CONTROL

SHAYSTACK



- shaystack
 - HaystackAOPoint [2424B]
 - HaystackAiPoint [5760B]
 - HaystackDOPoint [2424B]
 - HaystackDevice [14960B]
 - HaystackDiPoint [5760B]
 - HaystackEval [6020B]
 - HaystackEvalBool [6024B]
 - HaystackEvalFloat [6024B]
 - HaystackFilter [5240B]
 - HaystackIPoint [5756B]
 - HaystackOPoint [2420B]
 - HaystackPoint [92B]
 - WebClient [64B]

LICENSED TO OEM

HAYSTACK BYTE READY FOR ADVENTURE

Haystack Conn

dis	haystackConnRef	cur	write	his	connTuningRef	haystackCur
Austin HQ RTU-Sandstar Analog Out	Haystack Conn	0	null @ def			preacDemo::242b4abf-
Austin HQ RTU-Sandstar Cool Cmd Stage 1 35	Haystack Conn	Stage 1 Off	Stage 1 Off @ 1			preacDemo::22ef72f4-3
Austin HQ RTU-Sandstar Discharge Fan Cmd 32	Haystack Conn	Stop	null @ def	collect 15min, cov		preacDemo::22ef7138-
Austin HQ RTU-Sandstar Flow Sensor 57	Haystack Conn	0 Pa				preacDemo::22f56ff4-ft
Austin HQ RTU-Sandstar Flow Sensor CFM 103	Haystack Conn	0 cfm				preacDemo::22fea4c1-
Austin HQ RTU-Sandstar Occupied Cool Sp 101	Haystack Conn	70 °F	null @ def	collect 15min, cov		preacDemo::22ef76a3-
Austin HQ RTU-Sandstar Occupied Heating Sp	Haystack Conn	60	null @ def	collect 15min, cov		preacDemo::23e2b872-
Austin HQ RTU-Sandstar Return Fan Cmd	Haystack Conn	Stop	null @ def	collect 15min, cov		preacDemo::23e2b505-
Austin HQ RTU-Sandstar Zone Temp 4	Haystack Conn	78.26 °F		collect 5min, cov		preacDemo::23db7cb6-

Func

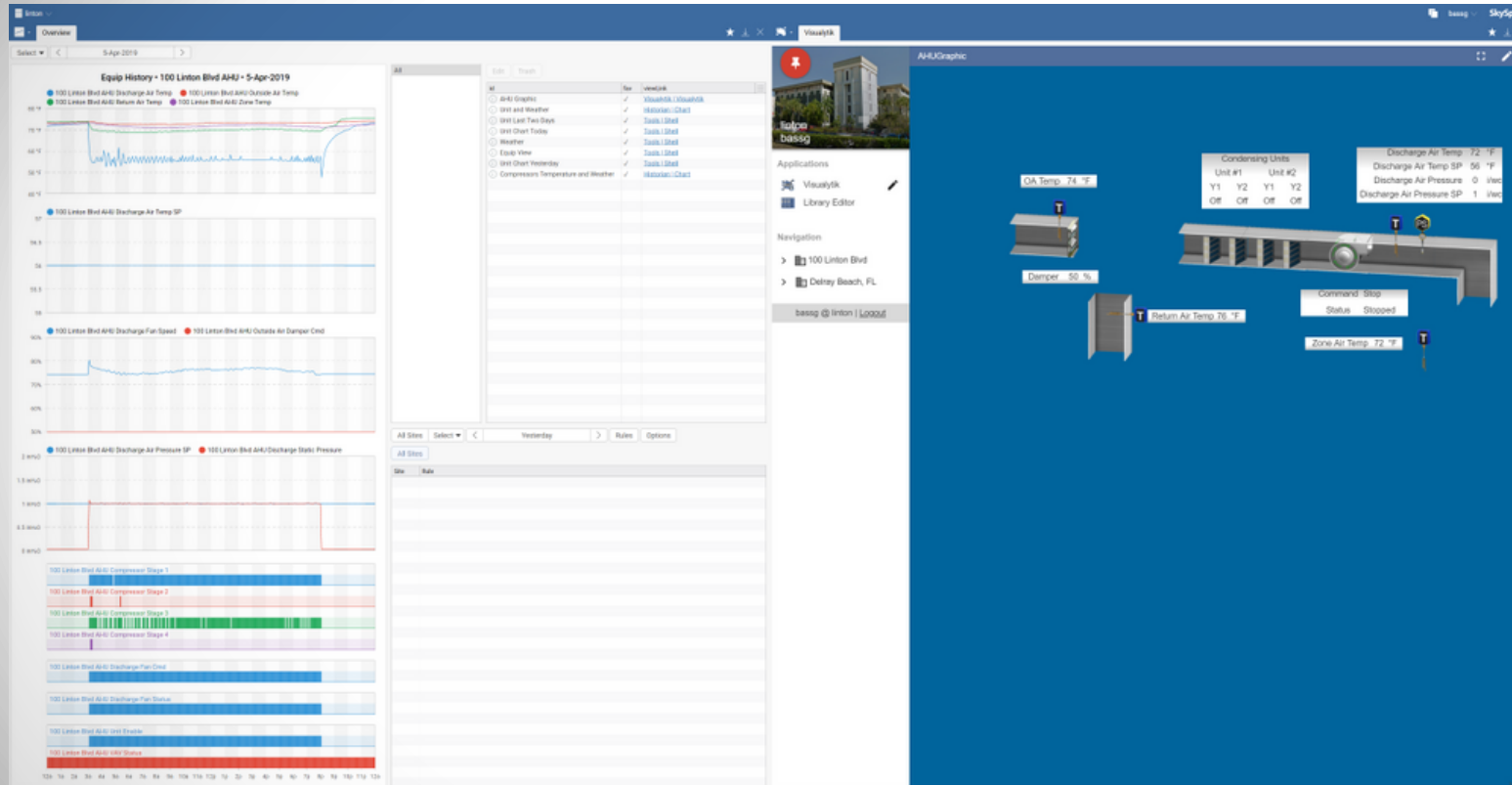
```
1 () => {
2
3 //readAll(zone and air and temp and sensor).hisRead(now()-1hr..now()).hisRollup(avg,15min).hisFoldCols(avg).foldCol("\v0\","v
4 call:"readAll(zone and air and temp and sensor)"
5 +".hisRead(now()-1hr..now())"
6 +".hisRollup(avg,15min)"
7 +".hisFoldCols(avg)"
8 +".foldCol("\v0\","v)"
9
10 xq()
11 .xqProj(["demoJan18"])
12 .xq[call]
13 .xq[execute].first
14 }
```

val

67.43 °F

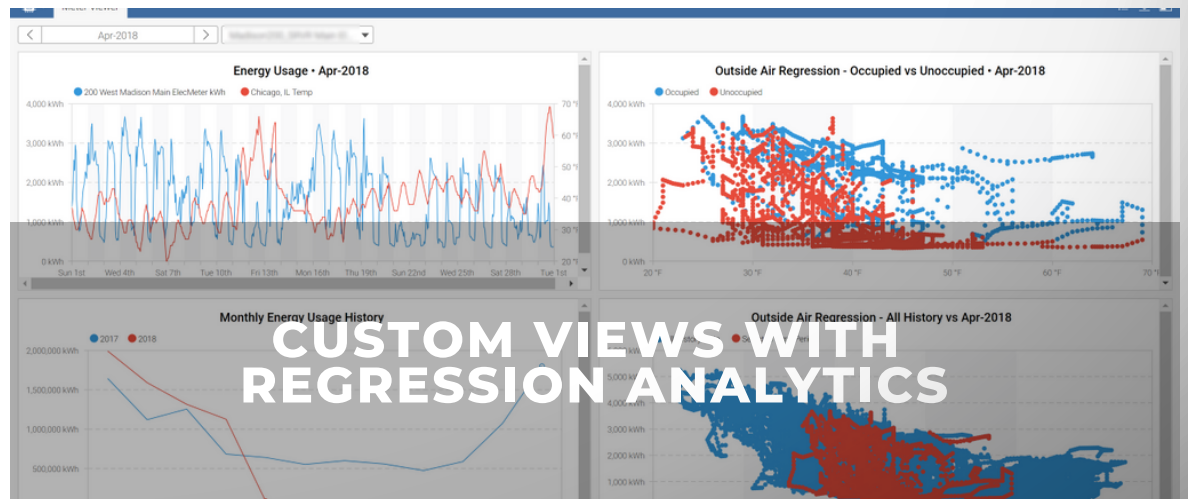
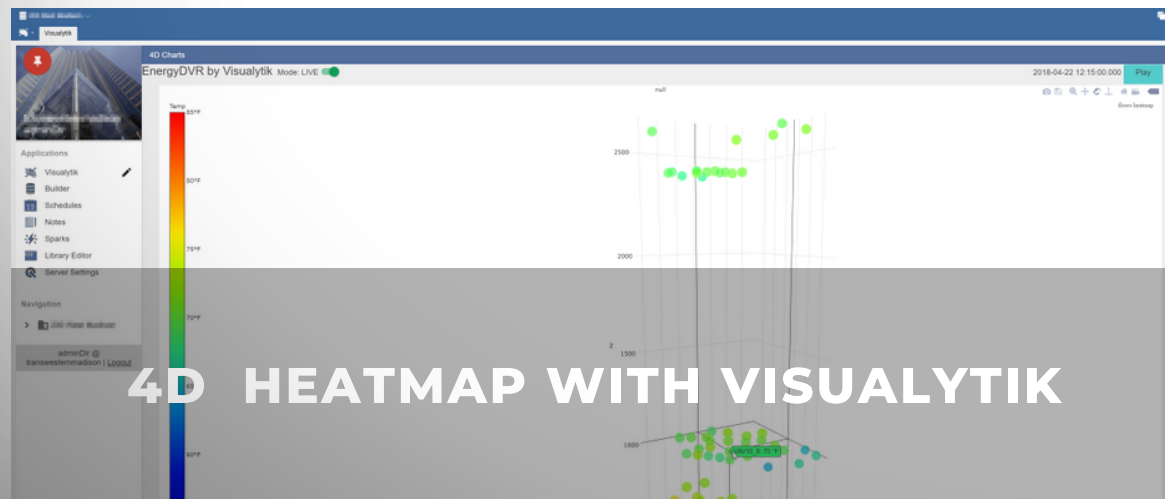
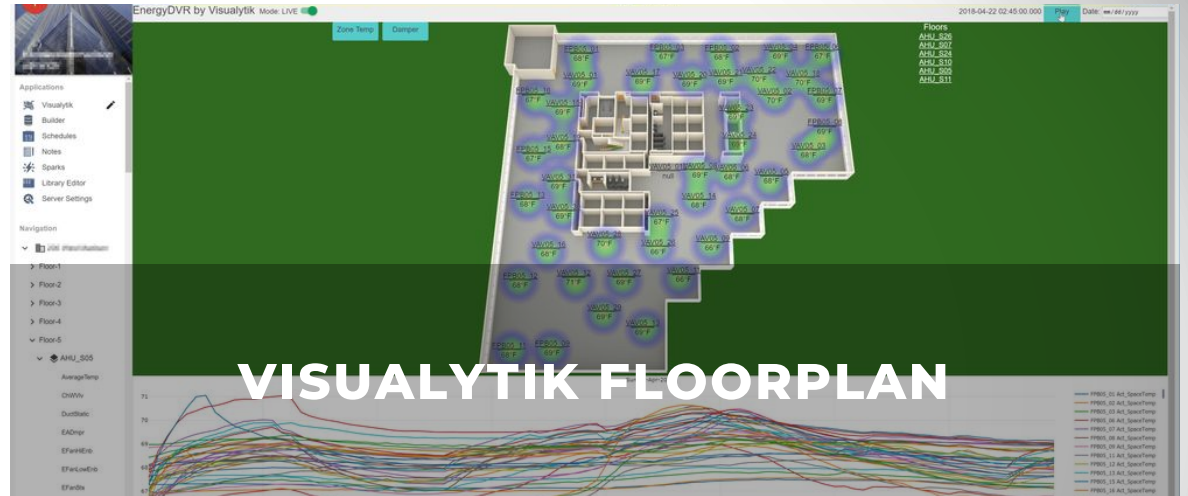
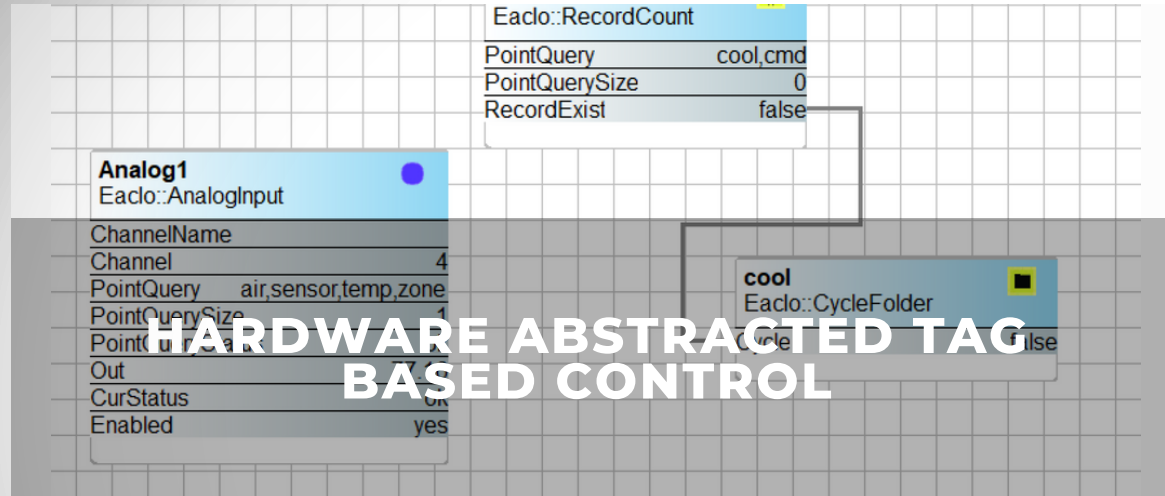
LICENSED TO OEM

ROOFTOP UNIT PILOT

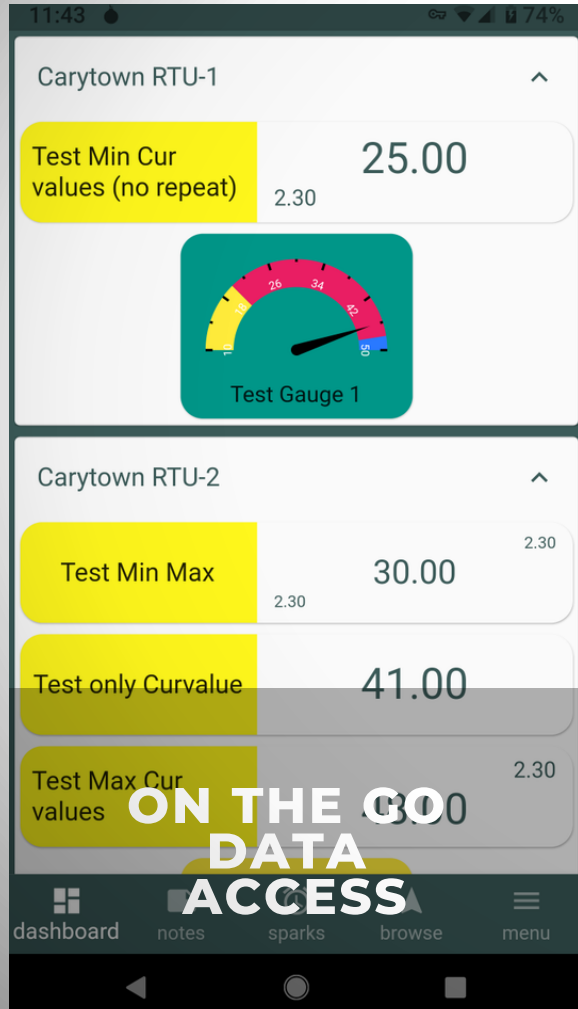


ANKALYTIK - VISUALYTIK - EAC HARDWARE

VISUALYTIK



TECHNOLOGY BUILD 2



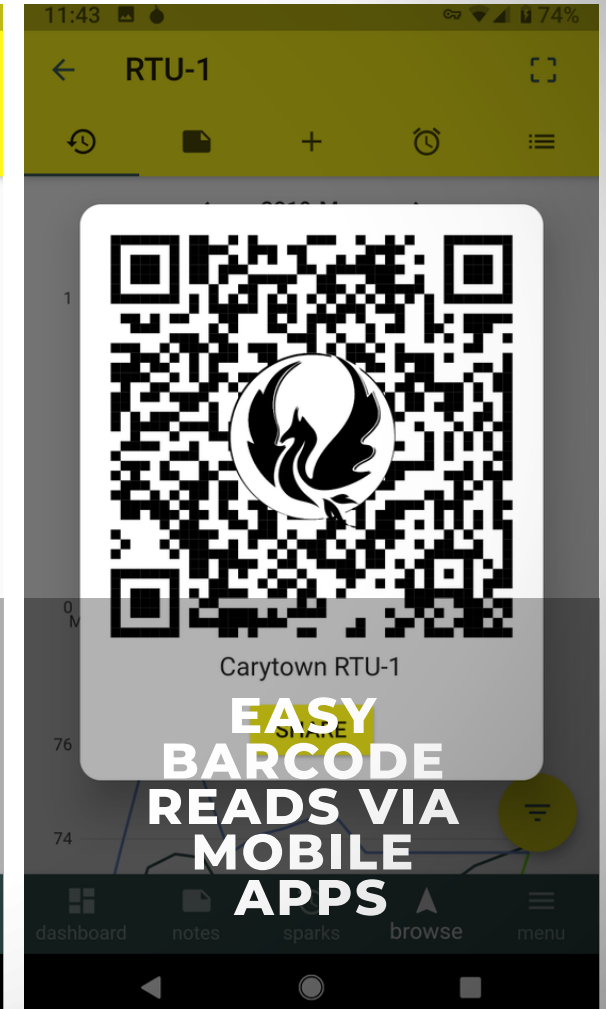
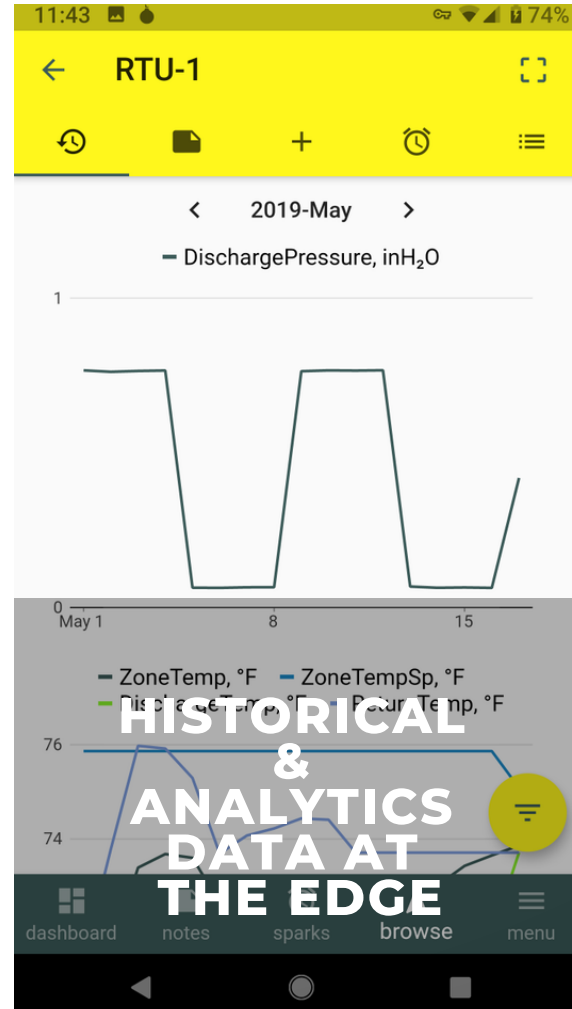
11:43 74%

sites

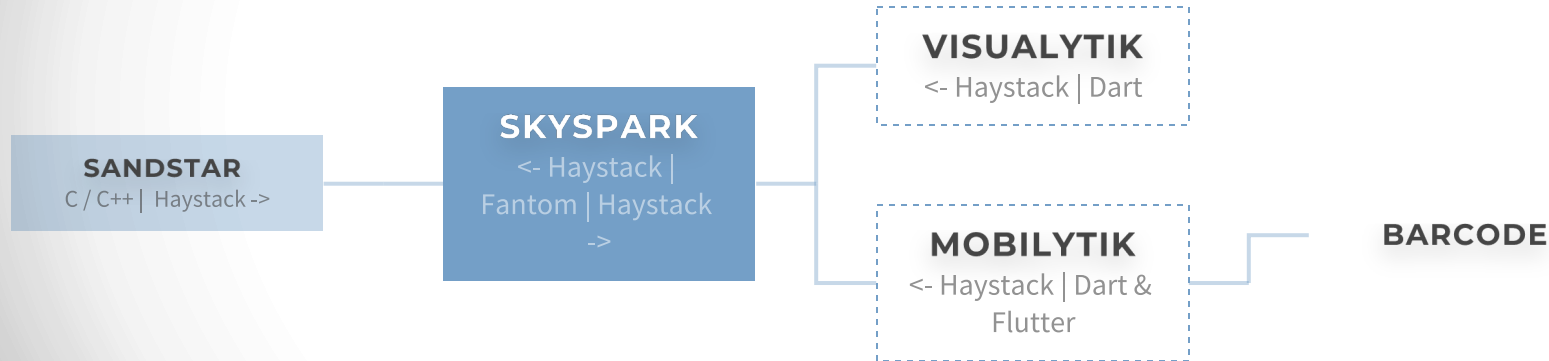
Carytown	toEquips
Gaithersburg	toEquips
Headquarters	toEquips
Short Pump	toEquips

ALL SITES & EQUIPS AVAILABLE WITH NATIVE APPS

dashboard notes sparks browse menu



JOURNEY OF HAYSTACK BYTE



HEADLESS CONTROL

EDGE

Generate haystack

CLUSTER

Interrogate cluster from control logic

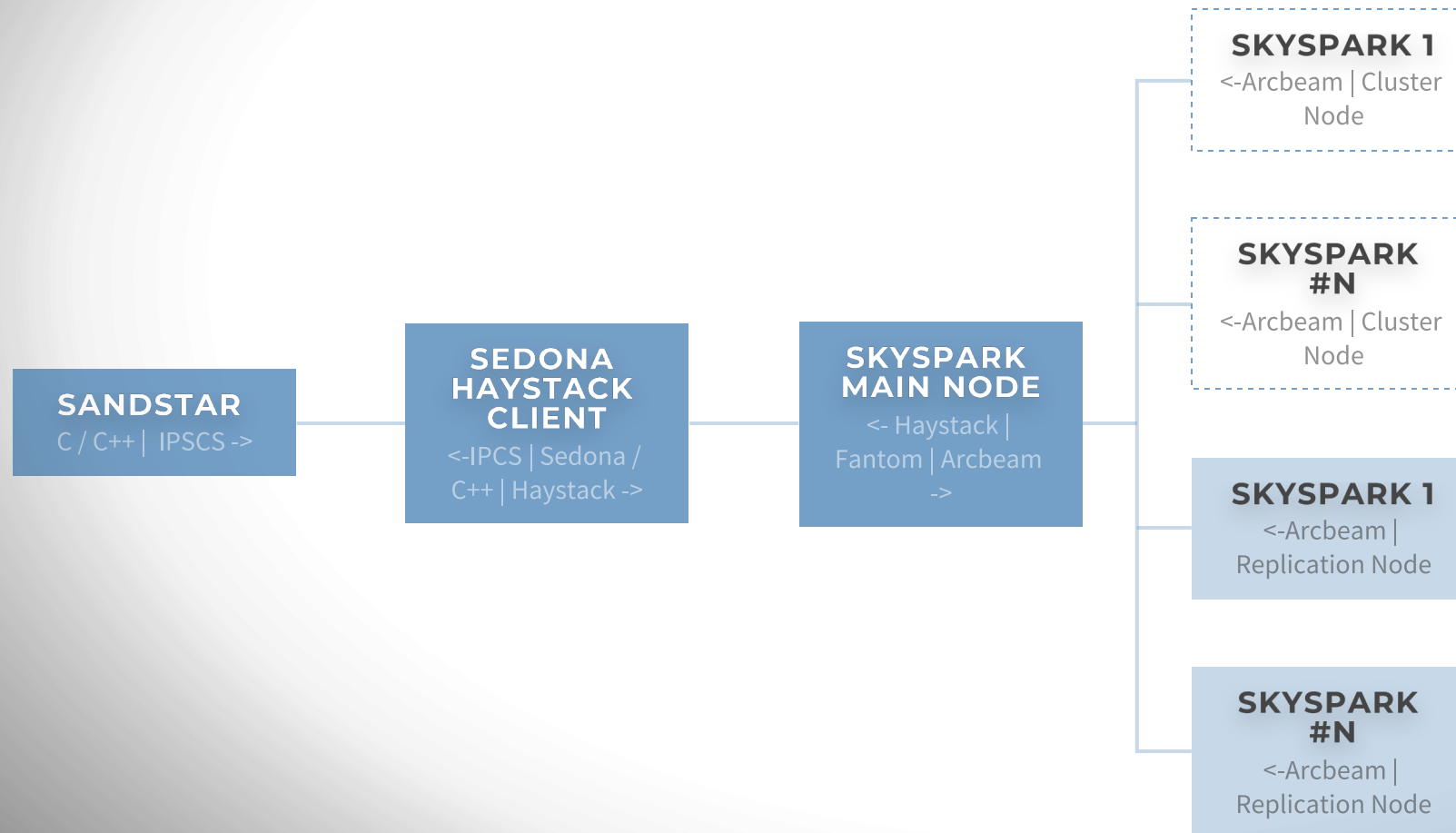
DESKTOP

Visualize on the desktop

MOBILE

Consume, manage & control on the go!

JOURNEY OF HAYSTACK BYTE WITHIN CLUSTER



HEADLESS CONTROL

EDGE

Generate haystack

CLUSTER

Interrogate cluster from
control logic

DESKTOP

Visualize on the desktop

MOBILE

Consume, manage & control on
the go!

LANGUAGES WRITTEN & SPOKEN

- **C/C++**

Sandstar Engine

- **SEDONA LANG**

Eaclo & Haystack client kits

- **DART**

Visualytik Dashboarding

- **FLUTTER**

Mobilytik

- **LUA SCRIPT**

Haystat - Wifi sensor

- **ENGLISH UK & US**

Fantom / Java / C / Lua

- **RUSSIAN**

Dart / Flutter / C / Sedona / C++

- **HINDU**

Sedona / C / C++

- **TURKISH**

Fantom/ Gluing technology & civilization

HAYSTACK UNITES GLOBALLY

B-IOT > 5
THANK YOU

