

INNOVATION - WE ALWAYS FIND A BETTER WAY

# INNOVATION MONTHLY RECOGNITION

MARCH 2022



# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

**Debug Of Anomalous  
Network Performance  
On Catalina**

## TEAM:

- Ashley Chang
- Bell Liang
- Pony Yang
- Sam Tsay
- Kevin Tsai
- Greg Ting

# Debug of Anomalous Network Performance on Catalina

We had validated network performance and had a manufacturing test on Catalina before we shipped a cluster of 16 servers to Intel. The cluster reported severe network performance degradation and the Catalina team worked over 6-7 weeks to identify a root cause. We found a BIOS bug originating to some Intel code and this was solved to satisfaction.

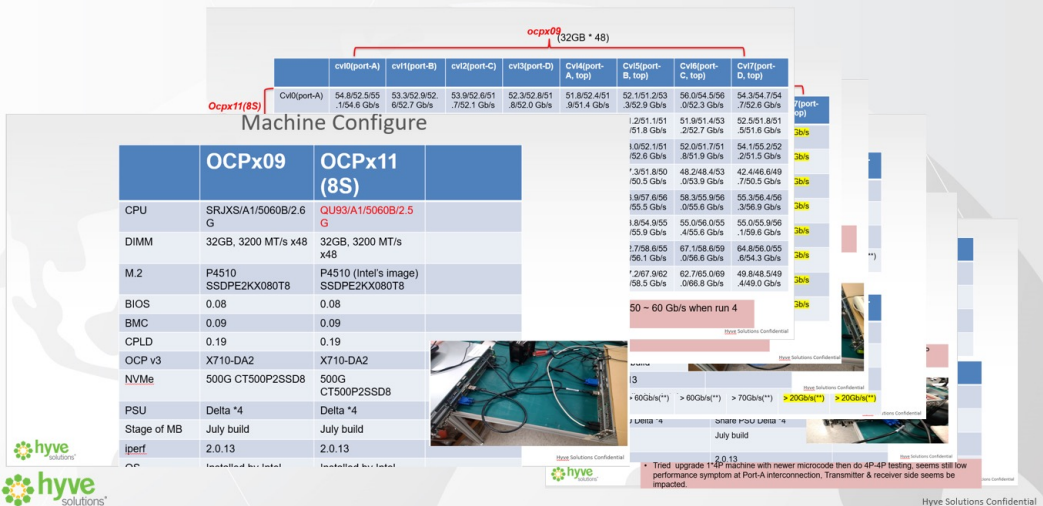
Criteria & Team  
(H)igh, (M)edium, (L)ow

| Teamwork                                                             | Company Impact | Customer Delight |                                                                        |
|----------------------------------------------------------------------|----------------|------------------|------------------------------------------------------------------------|
| H                                                                    | L              | H                | Catalina was a demonstration project, with 1 cluster shipped to Intel. |
| Sam Tsay, Bell Liang, Ashley Chang, Pony Yang, Kevin Tsai, Greg Ting |                |                  |                                                                        |

- Catalina with 8 100GbE ports, is the most network intense server ever designed at Hyve. At 8 sockets, it is our most complex compute server as well
- We had learnt how to test 100GbE ports as a part of Catalina development, even that was not in place before. But we had validated network performance during EVT
- First suspicion was hardware, then OS and drivers. No significant difference was found to our manufacturing test
- Catalina team then embarked on a matrix of experiments with CPU type (EQ vs QS, core count firmware, BIOS, cables etc.) to localize it to only QS high core count CPUs in 8S mode only
- Manufacturing test was 4 socket, EVT was ES CPU
- That pointed to new BIOS code in 8S mode, and thence to the bug

3:

## Debug 100GbE Performance on Catalina



Matrix of network testing to localize source of issue



Hyve Solutions Confidential

# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

**Adopting Scrum to  
Implement Automated  
HW Testing**

## TEAM:

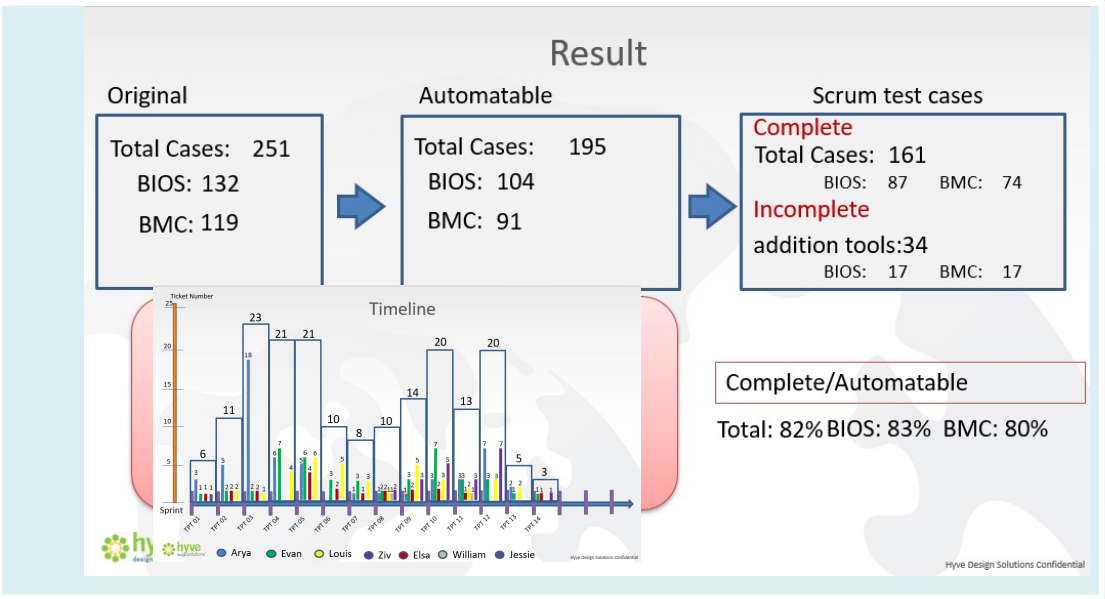
- Dennis Ku
- Jesse Xiong
- Ziv Ho
- Arya Lv
- Evan Chang
- Elsa Chen

# Adopting Scrum to Implement Automated HW Testing

Even though the Hyve software team had provided Kiwi/ELTA automation platform since mid-2019, the hardware team in Taiwan hadn't adopted automated testing. In June 2021, we needed urgently to fix this. Except members of hardware team were not familiar with the framework and scripting needed to implement automated testing. To address this, the team adopted a scrum method where they could get regular help from other team members and rapidly make progress on multiple tasks.

| Teamwork                                                       | Company Impact | Customer Delight |                                                                               |
|----------------------------------------------------------------|----------------|------------------|-------------------------------------------------------------------------------|
| M                                                              | H              | M                | Only a few people were involved in this, but it raises our chance of winning. |
| Dennis Ku, Jesse Xiong, Ziv Ho, Arya Lv, Evan Chang, Elsa Chen |                |                  |                                                                               |

- Besides test automation, this was the first time most team members were using a scrum method of development
- Team had members from Technology, SW, FW and SIT
- Tech Lead for scrum team had organized a groomed backlog of a first list of tests numbering about 200
- Tech lead and software team were available to assist FW 7 SIT team members in their implementation difficulties
- The pace of progress was measurable via the number of completed tasks and new tasks started per week.
- Pace grew quickly in 4 weeks to reach a peak of 20 tests finishing each week
- Over 80% of the list was addressed in about 5 months. Something that seemed impossible at the start was accomplished



## Test Automation Progress Report



# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

**Power Draw Added  
to Rack Dashboard**

## TEAM:

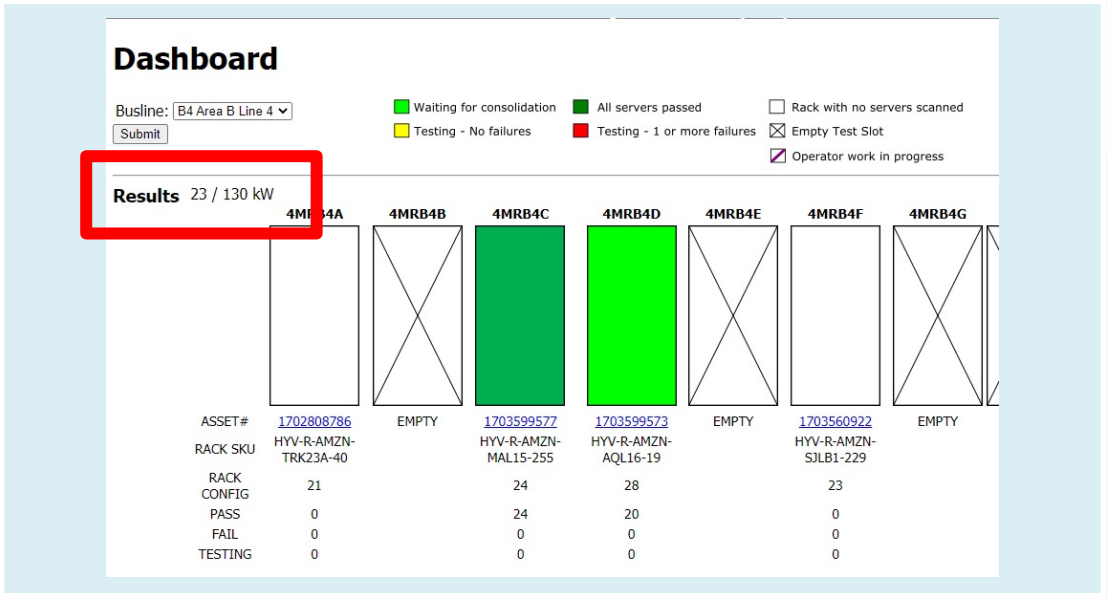
- Alex Matias
- John Ferguson
- Billy Santos

# Power Draw Added to Rack Dashboard

Rack power draw information is now included in the rack test dashboards at the end of each test busline. This gives operators on the production floor visibility on how much power is available on each busline so they can make informed decisions on where to place new racks going into test.

| Teamwork                                 | Company Impact | Customer Delight |                                                                  |
|------------------------------------------|----------------|------------------|------------------------------------------------------------------|
| M                                        | H              | M                | Adds protection against busline downtime due to electrical trips |
| Alex Matias, John Ferguson, Billy Santos |                |                  |                                                                  |

- The dashboard displays the total power that could be drawn by all servers over the total busline power capacity
- Server max level power draw is measured during test and stored in a database by model
- Initial Scan data is used to determine each rack's current server composition



Rack Dashboard with power draw numbers

# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

### **Split Component Scanning**

## TEAM:

- Henford Chan
- Praful Fadadu
- Fred Liu
- Cora Deng
- Cisco Miranda
- Ahmad Alhebshi
- Brandon Selver
- Mark Abel

# Split Component Scanning

Shop Floor logic previously required component data to be captured at start of the assembly line. Enhancements on Shop Floor allowed acceptance of component data entry at multiple locations on assembly line. This improves space efficiency to stage material behind each station at point of use and removes bottlenecks due to kitting and scanning time required at first station for balanced line throughput.

| Teamwork                                                                                                   | Company Impact | Customer Delight |                                                                             |
|------------------------------------------------------------------------------------------------------------|----------------|------------------|-----------------------------------------------------------------------------|
| H                                                                                                          | H              | H                | Changed floor process to meet the Ramses Pure <b>takt</b> time requirements |
| Henford Chan, Praful Fadadu, Fred Liu, Cora Deng, Cisco Miranda, Ahmad Alhebshi, Brandon Selvar, Mark Abel |                |                  |                                                                             |

- Created supplemental maintenance screen/feature for Process Engineers to systematically control/limit where components should be installed
- Logic provides flexibility to production teams so that components scanned by previous stations cannot be accidentally modified/deleted, but can unlock for intended changes
- Setup logic allows new screens to be phased-in to project platforms as not to impact existing production

Shop Floor Assembly@FCAB4-AssyScan10-01

System SN/Asset Tag:

Timer: 00:00:02

PC Touch Screen

| Line# | Part#                | MFG P/N              | Description                                | Category     | Serial Number                 |
|-------|----------------------|----------------------|--------------------------------------------|--------------|-------------------------------|
| 32    | ANP-K2C-ABM-T2       | K2C-ABM-T2           | Accelerator card x16 PCIe LP V2 4G         | K2C          |                               |
| 32-1  |                      |                      |                                            | MAC0         |                               |
| 33    | ANP-K2C-ABM-T2       | K2C-ABM-T2           | Accelerator card x16 PCIe LP V2 4G         | K2C          |                               |
| 33-1  |                      |                      |                                            | MAC0         |                               |
| 34    | ANP-K2T-QB-TP1       | K2T-QB-TP1           | K2T-QB-TP1, ASIC, 4K25G + 1XGBE            | K2T          |                               |
| 34-1  |                      |                      |                                            | MAC0         |                               |
| 35    | ANP-K2X-N R02        | K2X-N                | Smart Network card w/ 100Gb network        | K2X          |                               |
| 35-1  |                      |                      |                                            | MAC1         |                               |
| 36    | QNT-1HYQZZ2099L      | 1HYQZZ2099L          | 240W HOLDUP MODULE,ATN VR 8D W/CA...       | HUM          |                               |
| 37    | KAZ-MCDP3A43008T1NU2 | MCDP3A43008T1NU215X4 | 8000GB, SSD, NVMe, Seikie, U.2, Kingston   | NVME         | 31-006670-1BK5002687282929E2  |
| 38    | KAZ-MCDP3A43008T1NU2 | MCDP3A43008T1NU215X4 | 8000GB, SSD, NVMe, Seikie, U.2, Kingston   | NVME         | 31-006670-1BK5002687282929FF  |
| 39    | KAZ-MCDP3A43008T1NU2 | MCDP3A43008T1NU215X4 | 8000GB, SSD, NVMe, Seikie, U.2, Kingston   | NVME         | 31-006670-1AK5002687282849957 |
| 40    | KAZ-MCDP3A43008T1NU2 | MCDP3A43008T1NU215X4 | 8000GB, SSD, NVMe, Seikie, U.2, Kingston   | NVME         | 31-006670-1AK5002687282849991 |
| 41    | KAZ-MCDP3A43008T1NU2 | MCDP3A43008T1NU215X4 | 8000GB, SSD, NVMe, Seikie, U.2, Kingston   | NVME         |                               |
| 42    | KAZ-MCDP3A43008T1NU2 | MCDP3A43008T1NU215X4 | 8000GB, SSD, NVMe, Seikie, U.2, Kingston   | NVME         |                               |
| 43    | KAZ-MCDP3A43008T1NU2 | MCDP3A43008T1NU215X4 | 8000GB, SSD, NVMe, Seikie, U.2, Kingston   | NVME         |                               |
| 44    | KAZ-MCDP3A43008T1NU2 | MCDP3A43008T1NU215X4 | 8000GB, SSD, NVMe, Seikie, U.2, Kingston   | NVME         |                               |
| 45    | FLX-MP-00033746-002  | MP-00033746-002      | Riser for K2T-QB/K2X-N, 1U Combo Butterfly | Riser Double |                               |
| 46    | FLX-MP-00033746-002  | MP-00033746-002      | FG-INTERPOSER, QBERTA16, CNB               | Interposer   | G21190FV5                     |
| 47    | FLX-MP-00033746-002  | MP-00033746-002      | FG-INTERPOSER, QBERTA16, CNB               | Interposer   | G21190FLR                     |
| 48    | FLX-MP-00033746-002  | MP-00033746-002      | FG-INTERPOSER, QBERTA16, CNB               | Interposer   |                               |
| 49    | FLX-MP-00033746-002  | MP-00033746-002      | FG-INTERPOSER, QBERTA16, CNB               | Interposer   |                               |
| 50    | FOK-1A316U100-600-G  | 1A316U100-600-G      | CHASSIS BASE, C16B, AC1.1(AVC)             | CHS          | TW211505819                   |

Production screen highlighting only items requiring scanning and installation



# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

**One-Piece Flow  
Compute Rack Cabling**

## TEAM:

- Joe Austin
- Victor Marchena
- Kevin Marin
- Cisco Miranda
- Mark Abel

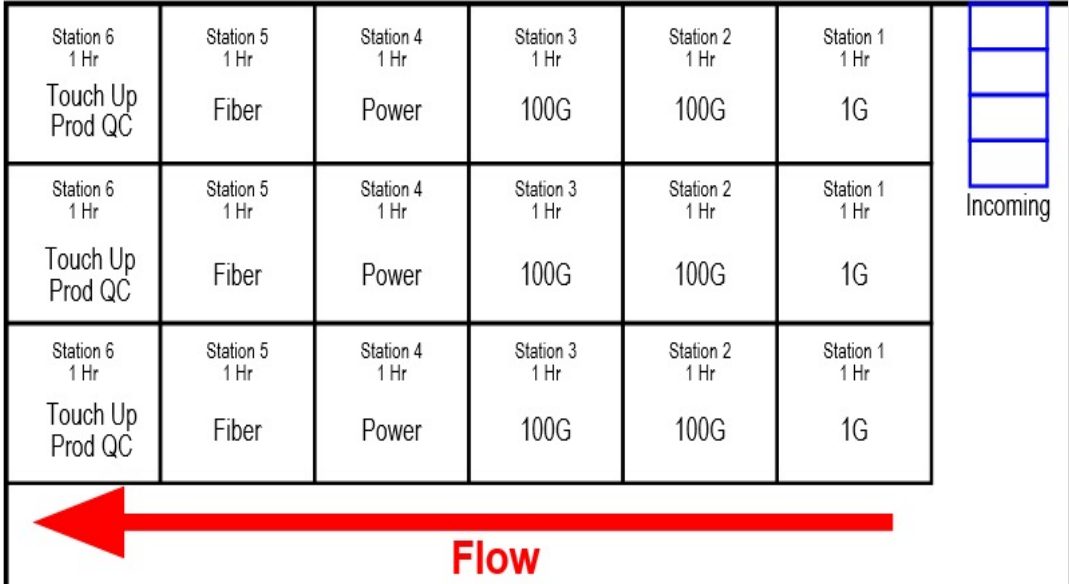
# One-Piece Flow Compute Rack Cabling

Change Rack Cabling process from a batch (stationary) process to one-piece flow. Previously all racks cleared out and completed at end of each shift with no crossover of shifts. One-piece flow breaks down work content and balance which allows for cross-over and continuous flow of material through the area.

| Teamwork | Company Impact | Customer Delight |                                                                                                               |
|----------|----------------|------------------|---------------------------------------------------------------------------------------------------------------|
| M        | H              | M                | Required initial time study and analysis, several trial runs, review of layout and final team implementation. |

Joe Austin, Victor Marchena, Kevin Marin, Cisco Miranda, Frank Tang, Mark Abel

- Work content balanced into 1-hour increments
- Rack moves from station to station
- At shift break, next operator takes over in the station
- Allows for continuous flow of material
- Improved quality by focusing on one cable type only
- Reduced headcount need from 22 to 15 with same output



Rack Cabling Layout

# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

**Chassis / Motherboard  
Intumescent Coating  
for Exothermic  
Retardancy**

## TEAM:

- Jonathan Chou
- Mike Mason
- Steve Pulos
- David Iannomico
- Yuting Huang

# Chassis / Motherboard Coating

Hosts are exposed to various environmental conditions throughout their respective lifecycles. The Scout ME/Thermal teams have identified unique applications for various chassis / motherboard coatings to prevent against exothermic events. This allows for the utilization of hosts in expanded operating environments and further promotes safety.

| Teamwork                                                              | Company Impact | Customer Delight |                                                                                                         |
|-----------------------------------------------------------------------|----------------|------------------|---------------------------------------------------------------------------------------------------------|
| M                                                                     | M              | M                | High value/impact addition to the Hyve portfolio, supporting regulatory compliance approval for safety. |
| Jonathan Chou, Mike Mason, Steve Pulos, David Iannamico, Yuting Huang |                |                  |                                                                                                         |

- Cost effective innovation
- Regulatory approved
- Support legacy hosts
- Safety / QoL Improvement



# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

**ACP Expansion to  
Olive Branch**

## TEAM:

- Ben Roppiyakuda
- Amit Khatri
- Farjahan Hossain
- Alan Kyaw
- Dennis Anderson
- Zaw Nyi Zin
- Stephen Neveu

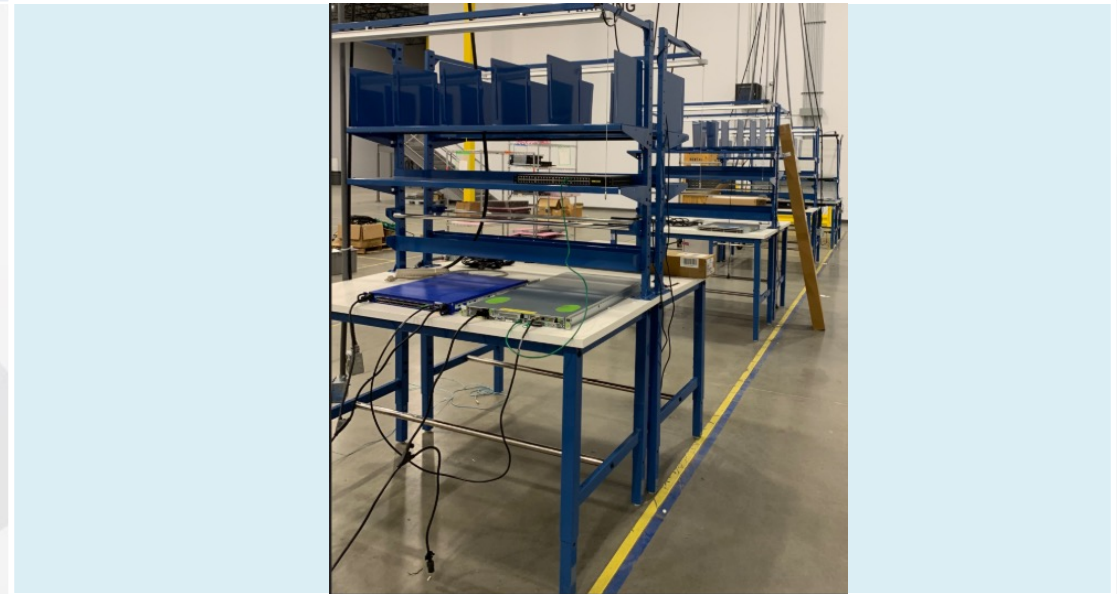
# ACP Expansion to Olive Branch

Due to growth within our customer and product sectors, our commodity testing needed to expand to OB. The team drove test expansion, documentation, material transfer, and all other testing needs.

| Teamwork | Company Impact | Customer Delight |                                                                                                       |
|----------|----------------|------------------|-------------------------------------------------------------------------------------------------------|
| H        | H              | M                | This involved a lot of cross functional engagement and resulted in a big impact to scale and testing. |

Ben Roppiyakuda, Amit Khatri, Farjahan Hossain, Alan Kyaw, Dennis Anderson, Zaw Nyi Zin and Stephen Neveu

- Building and developing expansion infrastructure in OB from switches to CMD/PXE servers
- Built up a clone repository of our KIWI infrastructure to OB
- Currently all handling material transfer to OB
- Designing and developing new lab space
- Handled knowledge transfer to OB



Lab space in OB

# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

**Work Order  
Release Automation**

## TEAM:

- Shrutika Borikar
- Praful Fadadu
- Simon Zhang
- Fred Liu
- Colin Mao
- Jonathan Sloves

# Work Order Release Automation

Releasing work order to manufacturing had been a very manual process and tedious for supply chain and program management teams. It could take from several hours to 1-2 days to release work orders for manufacturing. This automation consists of two phases: (1) MRP WOR release automation and, (2) WO Module automation. As of today, the turnaround-time from PO receive to WO release to manufacturing is 2 hours.

| Teamwork | Company Impact | Customer Delight |                                                                                       |
|----------|----------------|------------------|---------------------------------------------------------------------------------------|
| H        | H              | H                | Allows Hyve to improve the process and better align with customer's SLA requirements. |

Shrutika Borikar, Praful Fadadu, Simon Zhang, Fred Liu, Colin Mao, and Jonathan Sloves

- Phase 1
  - MRP enhancement requirements were identified by SC, BizOps, and IT
  - Implemented MRP to auto release work order request for customer PO demand by referencing PLM BOM
- Phase 2
  - Work Order Module enhancement requirements were identified by PM, BizOps, and IT
  - Implemented Work Order Module to auto convert WOR to WO, and push to Mfg. queue
- Continuous Improvement
  - EDI 850 signal auto loaded to MRP for new PO
  - MRP re-run increased to every two hours to meet customer's SLA

The screenshot displays two web-based interfaces. The top interface, titled 'Global MRP', features a navigation bar with tabs for 'CTB: Model Summary', 'CTB: Demand Unit', 'Component Projections', 'Inventory', 'PO/MT Request', 'WOR Request', and 'Data Issues'. The 'WOR Request' tab is active, showing a form for creating or updating a work order request. This form includes fields for Customer, Demand Type, Demand ID(s), Sys Release No, Submit Date, Region, Model Group, Cost Part No, WOR No, Location, Model, and Batch No. Below the form is a 'Work Order Request' section with a table of requests, including columns for Status, Ref#/MRP Project#, Model, Warehouse, and POR. The bottom interface, titled 'Work Order', shows a 'Work Order Request' form with fields for Input Number, Cust#, Cost Part#, BTR#, and Demand ID. Below this is a 'Result' table with columns for WO Request#, WOR Source, WO Source, WO Automation Error, Work Order#, Customer, Ref#/MRP Project#, WO Part#, Model, Cost Part#, System Type, Prod Type, and SN.

MRP and WOR Screens



# MONTHLY RECOGNITION

*“What can we change to make things / processes / products better?”*



## PROJECT:

**Daily Inventory  
Carrying Cost PowerBI**

## TEAM:

- Michael Fein
- Nway Yeap
- Cindy Zhang
- Jason Reynosa
- Ryan Conners

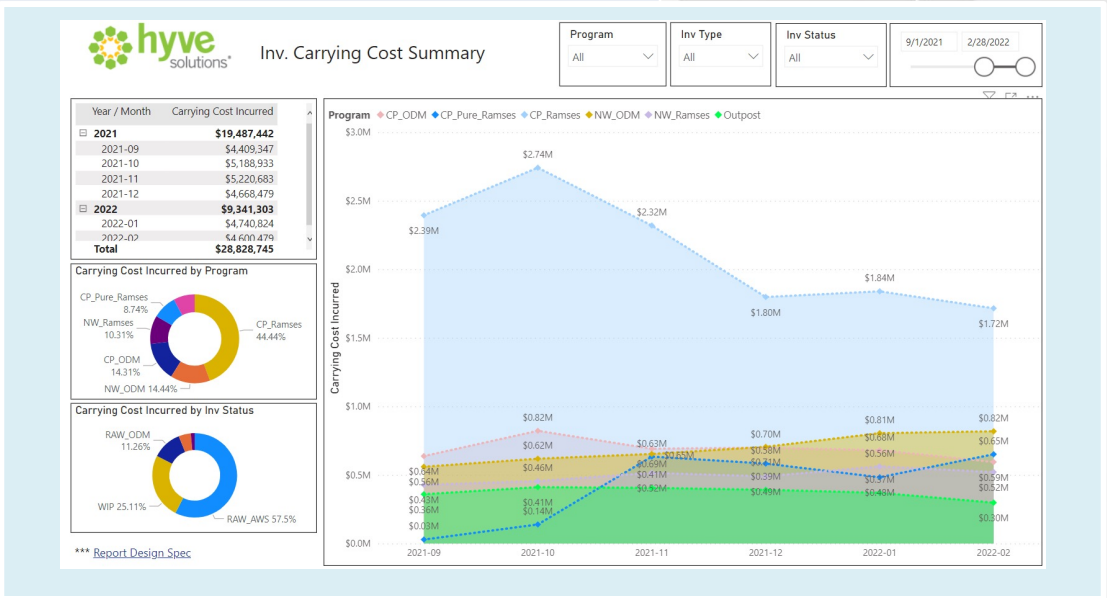
# Daily Inventory Carrying Cost PowerBI

This PowerBI report provides real-time inventory carry cost visibility. Finance and Sales teams use this data for cost collection / reconciliation with customers. Prior to this automation, supply chain spent hours manually calculating the cost at both a monthly and quarterly basis.

| Teamwork | Company Impact | Customer Delight |                                                                                  |
|----------|----------------|------------------|----------------------------------------------------------------------------------|
| M        | H              | M                | Allows Hyve to capture costs more accurately and recover costs in timely manner. |

Michael Fein, Nway Yeap, Cindy Zhang, Jason Reynosa, Ryan Connors

- Supply Chain and Sales worked closely with the customer for carrying cost calculation and logic
- The logic was implemented in PowerBI by using daily inventory snapshot data
- Aligned the logic and calculation with Finance Team
- Report shows both summary view and detail review for any deep-dive requirements
- Woody Networking, NW Loose, Spare, Sparetacus programs were later added to this PBI



Inventory Carrying Cost PBI