

A large, stylized blue arrow pointing to the right, composed of various shades of blue and teal geometric shapes. It is positioned on the left side of the slide.

Harmonic's Journey - Scaled-Agile in the new generation of CableOS™

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Date (Month, DD, YYYY) (10.5 pt.) Dark Grey

- Harmonic Inc. was founded in 1988 and is headquartered in San Jose, California.
- Harmonic Inc. designs, manufactures, and sells video and Data infrastructure products and system solutions worldwide.
- The company operates in two segments, Video and Cable Edge.
 - The Video segment sells video processing, and production and playout solutions and services.
 - The Cable Edge segment offers cable edge solutions and related services, including Narrowcast Services Gateway products primarily to cable operators; and software-based CCAP solution.

Company Highlights

 Broadcast The market share leader in video servers for 5 years with more than 40,000 channels on air globally	 Cable The leading innovator in edgeQAMs, with more than two million ports in service	 Telco The majority of Mediacom IPTV deployments are powered by Harmonic headends	 Satellite Eight of the 10 largest satellite operators rely on Harmonic encoders
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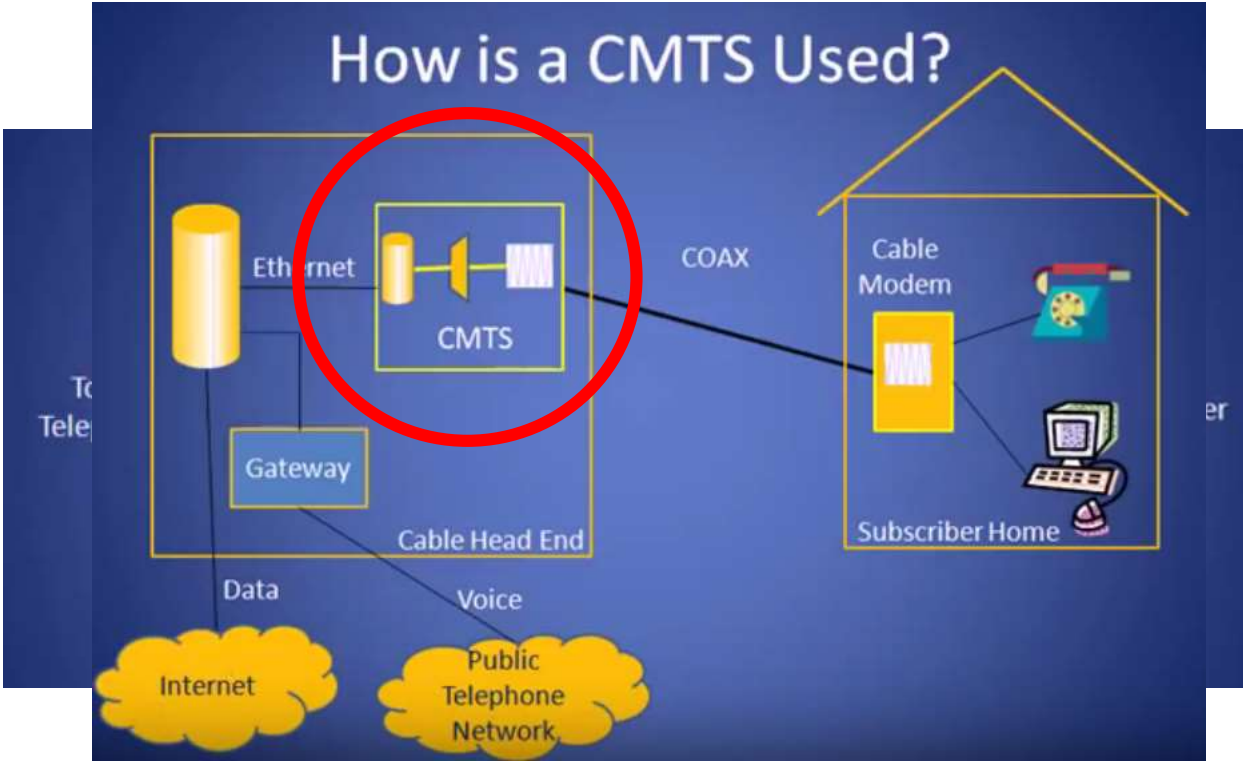
Harmonic Israel

- Activity in Israel had started in 1993, and since 1997 our R&D center is located in Caesarea Industrial Park

harmonic



Harmonic – a unique case study



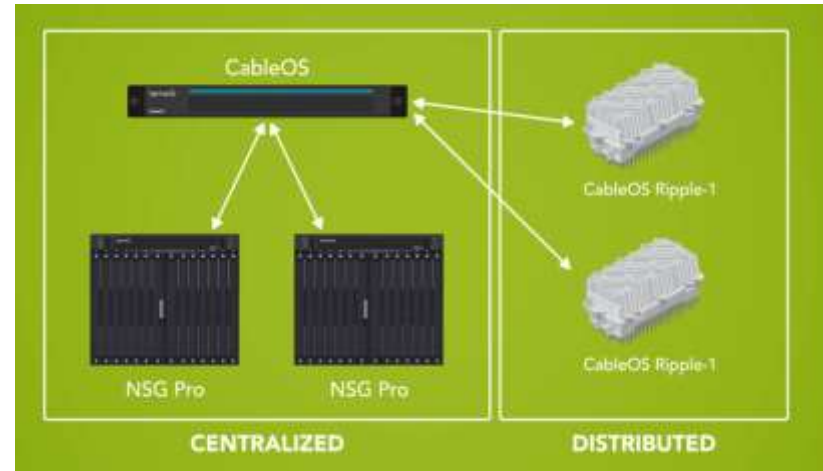
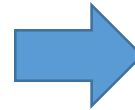
Harmonic – a unique case study

- Complex solution:

Moving from Traditional Integrated HW based platform



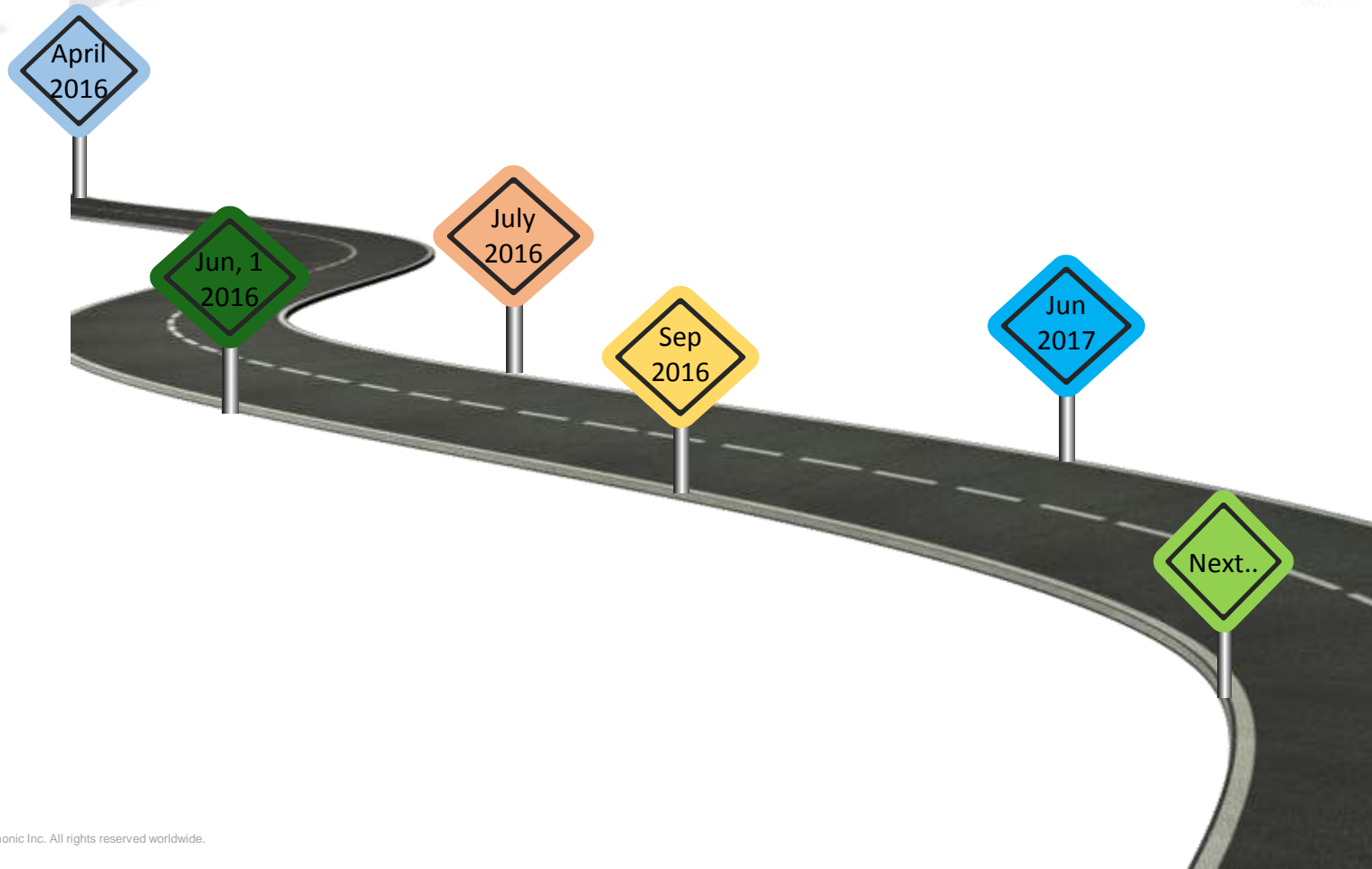
SW over COTS servers + Custom Harmonic HW



Harmonic – a unique case study

- Complex solution
- Large and distributed project
 - 180 Engineers in IL, US and Kiev
 - SW, HW, QA, Automation, Integration...
- Tight collaboration and Mutual agile development process with customer

Harmonic – The Scale Agile Journey



Harmonic – The Scale Agile Journey



Management WS

April
2016

Define the goals
And the way

Jun, 1
2016

July
2016

Sep
2016

Jun
2017

Next..

Our Improvement Goals

1

Planning process is a nightmare – takes too long, complicated, requires too many discussions in large forums...

2

Estimated delivery date of the backlog is unknown.
Major epics don't have breakdown and estimation for the GA delivery. Big picture is not clear

3

It takes too much time to stabilize the Sprint (monthly) release
Stability of the main truck is not consistent

4

Tasks are not "Ready" (well defined) at the beginning of the sprint

5

"Feature team" is not a silo - not fully allocated for the feature
"Feature team" is not permanent and in many cases changes every month.

6

Integrations are painful and in many cases take too long

The Challenges

A lot of new terms and changes to implement before start of 1st iteration

- New roles
- Backlog creation
- Team formation
- Establish short Sprint
- Weekly sprint events
- ...

Harmonic – The Scale Agile Journey



Management WS



Define the goals
And the way



Iteration 1 PI-1

The "Train" with 10 teams are
on the way



Immediate Achievements

- **We choosed to use Safe metodology**
- **Team Formation**
 - 9 cross functional stable Scrum development teams (Israel, Kiev and USA)
 - QA become part of the Scrum teams
 - SM and PO per each team
- **Establish the ART – Agile Release Train structure**
 - Nominate the RTE – Release Train Engineer (Program Manager)
 - System team
 - Mutual Cadence – 2 weeks Sprints
- **Establish the Product Team led by Chief Product Owner/PM**
 - MVP definition
- **Project Visualization**
 - Unified Product Backlog
 - Clear Sprint Backlog per team
 - Mutual DOD

Create Confidence in the Process

Planning process is a nightmare – takes too long, complicated, requires too many discussions in large forums...

“Feature team” is not a silo - not fully allocated for the feature
 “Feature team” is not permanent and in many cases changes every month.

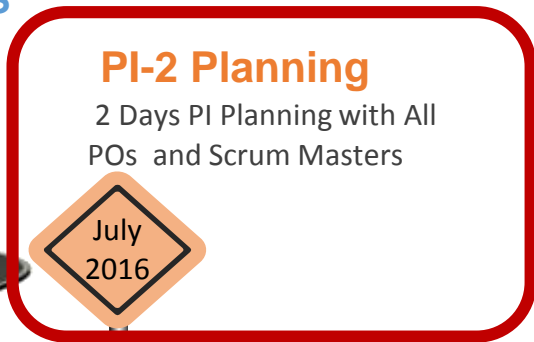
- Up to 2H team’s Sprint planning meetings replace the Endless planning meetings
- Stable cross functional teams *
- Delivery every 2 weeks improve communication with the customer

Harmonic – The Scale Agile Journey

Management WS



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PI-2 Planning – Jump to the next level

- The “Train Synchronization” and the “Big Picture” were the new pains during the first PI
- The 2 days PI planning was important improvement step:
 - Create common understand on the train goals – one of the most critical MS (SCTE goals)
 - The PI Board visualize the amount of work can and **can't be done**
 - Help to make the right priority calls
 - The dependencies between teams was clear
 - Force the Train to preform long term planning
- We are now at PI-6 and it is clear that this is important meeting



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PI-2 Planning

2 Days PI Planning with All
POs and Scrum Masters

Jun, 1
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Jun
2017

Iteration 1 PI-1

The “Train” with 10 teams are
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CableOS Announcement

The official announcement of
the CableOS

Next..

Entering the deployment phase...



- CableOS is now public:
 - Investors are excited
 - Customers are eager
 - Competitors are aware



September 28, 2016 | Morning Meeting Note
Company Update

Sidoti & Company, LLC
Equity Research



Harmonic Inc. (HLIT)

We Think Warrant Deal With Comcast (NASDAQ: CMCSA, NC) Suggests That HLIT Is Competitive In Its Bid For The CCAP Market After Years Of Investment; Maintain BUY, \$7 Price Target

Harmonic Inc. (HLIT)

Cable Edge Investment Pays Off- Raising Ests and PT to \$7



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1 Year - Agile Journey

Major releases every 2 months
Deployment every 2 weeks
Meeting the major MS

Jun
2017

Next..

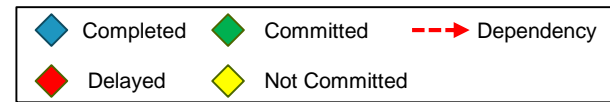
What's Next

Meet the next MSs
Focus on quality

Collaboration with our customer

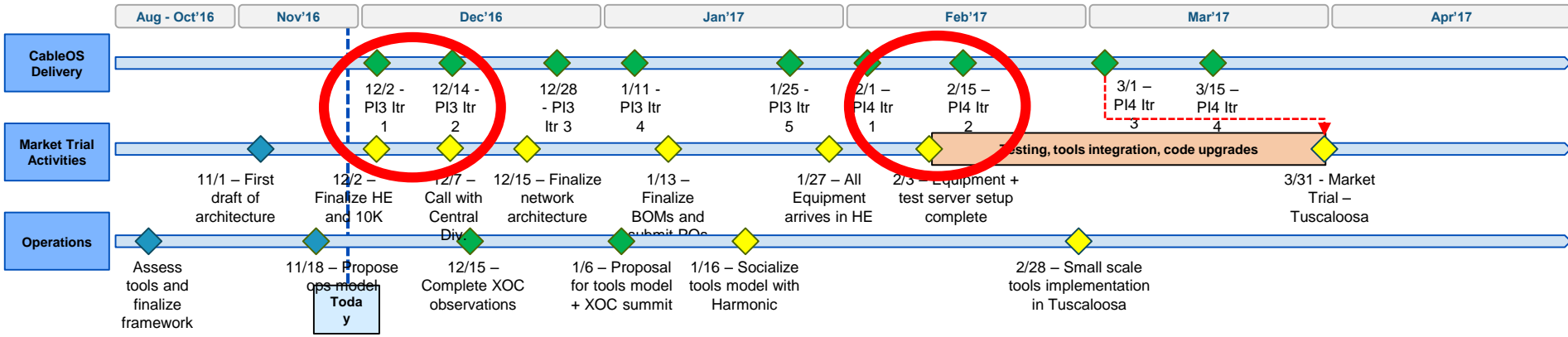
- Daily standup meeting
- Participate in SOS
- PI planning preparation and prioritize features (WSJF – Weighted Shorted Job First/
Cost of Delay)
- PO from customer side
- Access to Jira to review user stories and open bugs
- Accept version, from trunk, every 2 weeks
- Sprint demos (System demo at system team and customer labs)

Path to Tuscaloosa



Key Callouts:

- Now that we are on track to have BDN's up and running in Seattle and Freedom, we need to focus our efforts on our approach to market trials
- Plan is to deploy one (or more) test CMs in the HE (off the vCMTS + RPS setup) with a banana pi and test server behind it to generate traffic and tests



Key Upcoming Milestones and Activities:

- Finalized physical architecture and BOM for deployment Tuscaloosa on 3/31
- Determine how CableOS code will be upgraded in the BDN and during market trials; can code be pushed directly to the HE? Who does the code upgrade?
- **Next Code Drop:** PI-3 iteration 1 on 12/2
- **PI-4 Testing Strategy Meeting:** Scheduled for tomorrow
- **HA Summit:** Scheduled for 12/6

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Next..

The Next Steps

- Still long way in front of us
- Quality and technical debt is our main challenge how to balance
Develop New Features with Stable system
- Invest in automation and CI
- Improve environment of short cycles

Thank You