



# From Zero to Hero

## Roadmapping in an Agile World

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# Table of Contents

- Problem Statement
- Requirements for Successful Analysis
- Requirements Breakdown
- Jira Analysis
  - Jira Tagging
  - Mapping Hours Burned to Epics Worked
  - Data Point Selection Process
  - Stratified Data Point Results
  - K-Means Clustering
- Content-Driven Roadmap
  - Creation of the Roadmap
  - Jira Analogy Results
  - Content-Driven Roadmap Scaling Factors
  - FTE Results
- Other Relevant Uses
- Way Ahead

# Problem Statement

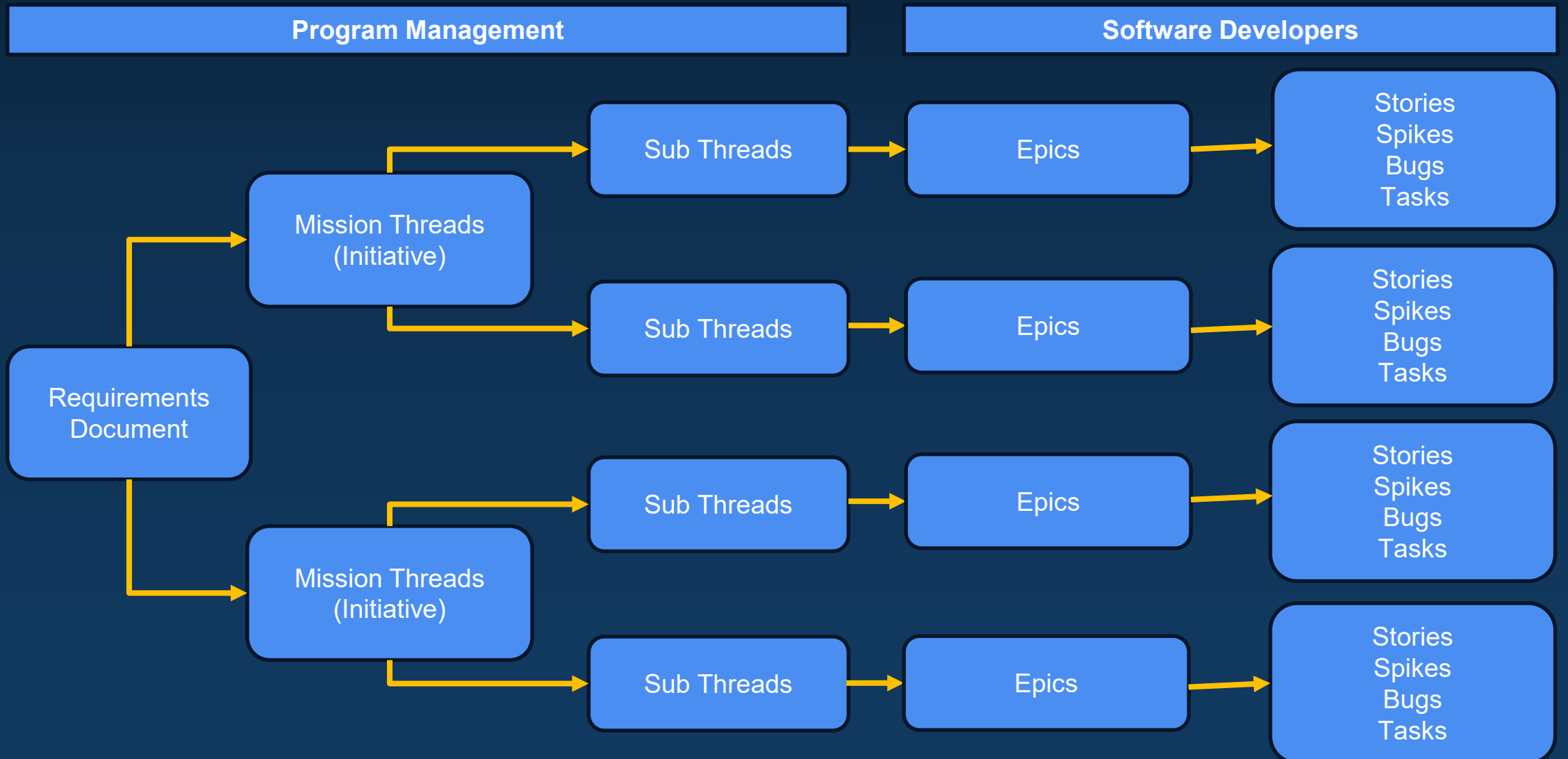
- Large Agile DevSecOps SW Development Programs have been traditionally estimated in a level of effort (LOE) manner
  - With a large number of SW Teams, Developers, and involved contracts, an LOE approach often does not present as defensible a position as compared to many non-SW based programs
    - Lack of effort linkage to requirements
- We were challenged to develop Content-Driven Roadmaps (CDRs) linking to Historical Productivity Data to Requirements in order to support the CARD and Cost Estimating Activities
  - CDRs identify capabilities and their sizing/complexity which directly supports the program office in identifying the timeline to complete relevant operational capabilities
  - Harnesses large volumes of SW sizing and progress data from Jira each Quarter

# Requirements for Successful Analysis

- Program Office Buy-in
  - Integration into Program Events
  - Significant Engineering Team Resources
  - Regular tag-ups with functional teams
- Standardization of Jira Data
  - Rigorous Jira tagging procedure
  - Regular data grooming for accuracy by Contractor
  - Jira-Structured hierarchy tied to Mission Threads
- Regular Data Reporting
  - Regular Team Staffing and Program Management Reports
- Time & Consistency
  - Regular, Consistent Jira Data Exports

**All Elements were necessary for Successful Analysis**

# Requirements Traceability



# Jira Tagging

## Mandatory Fields:

- Proper **Issue Type** Hierarchy (**Epic/Parent Link**) translating SW Development directly to requirements
- Regularly updated **Status**, as well as **Resolution** and **Timestamp** when complete
- **Story Points** associated where applicable
- Teams that are responsible for each Issue tagged (**Dev Team**)
- Any other pertinent **Component/Label** tag to bucket Issue for organizational purposes

Issue key	Summary	Issue Type	Status	Resolution	Created	Resolved	Epic Link	Parent Link	Story Points	Dev Team
ISSUE-001	Core Mission Thread tying to Requirements	Initiative	In Progress		3/19/2024					
ISSUE-002	Epic work that ties to Mission Thread	Epic	Done		3/19/2024			ISSUE-001		Team 1
ISSUE-003	Epic work that ties to Mission Thread	Epic	In Progress		4/15/2024			ISSUE-001		Team 2
ISSUE-004	Epic work that ties to Mission Thread	Epic	In Progress		5/8/2024			ISSUE-001		Team 3
ISSUE-005	Epic work that ties to Mission Thread	Epic	In Progress		9/9/2024			ISSUE-001		Team 4
ISSUE-006	Epic work that ties to Mission Thread	Epic	To Do		10/29/2024			ISSUE-001		Team 5
ISSUE-007	Story that ties to Epic	Story	Done	Done	3/19/2024	3/19/2024	ISSUE-002		3	
ISSUE-008	Story that ties to Epic	Story	Done	Done	3/19/2024	3/19/2024	ISSUE-002		5	
ISSUE-009	Story that ties to Epic	Story	Done	Done	4/15/2024	4/15/2024	ISSUE-003		1	
ISSUE-010	Story that ties to Epic	Story	Done	Done	4/15/2024	4/15/2024	ISSUE-003		8	
ISSUE-011	Story that ties to Epic	Story	To Do		4/15/2024		ISSUE-003			
ISSUE-012	Story that ties to Epic	Story	Done	Done	5/8/2024	5/8/2024	ISSUE-004		13	
ISSUE-013	Story that ties to Epic	Story	To Do		5/8/2024		ISSUE-004			
ISSUE-014	Story that ties to Epic	Story	Done	Done	9/9/2024	9/9/2024	ISSUE-005		5	
ISSUE-015	Story that ties to Epic	Story	To Do		9/9/2024		ISSUE-005			
ISSUE-016	Story that ties to Epic	Story	To Do		10/29/2024		ISSUE-006			

Regular tagging was important to make sure the data analyzed was accurate and useful

# Mapping Hours Burned to Epics Worked

Hours Burned	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
<b>Software Team</b>	<b>PI - 5</b>			<b>PI - 6</b>			<b>PI - 7</b>			<b>PI - 8</b>			<b>PI - 9</b>		
Team 1	1280	1280	1440	1280	1280	1120	960	1120	1280	1440	1440	1280	1280	1280	1280
Team 2	1440	1440	1440	1600	1760	1920	1760	1600	1600	1600	1760	1440	1440	1280	1280
Team 3	1440	1600	1440	1280	1280	1600	1440	1600	1440	1600	1600	1440	1600	1280	1280
Team 4	1760	1600	1760	1600	1440	1600	1440	1600	1440	1440	1600	1280	1440	1600	1760
Team 5	1760	1600	1440	1280	1280	1280	1440	1280	1120	1120	1280	1440	1440	1440	1600

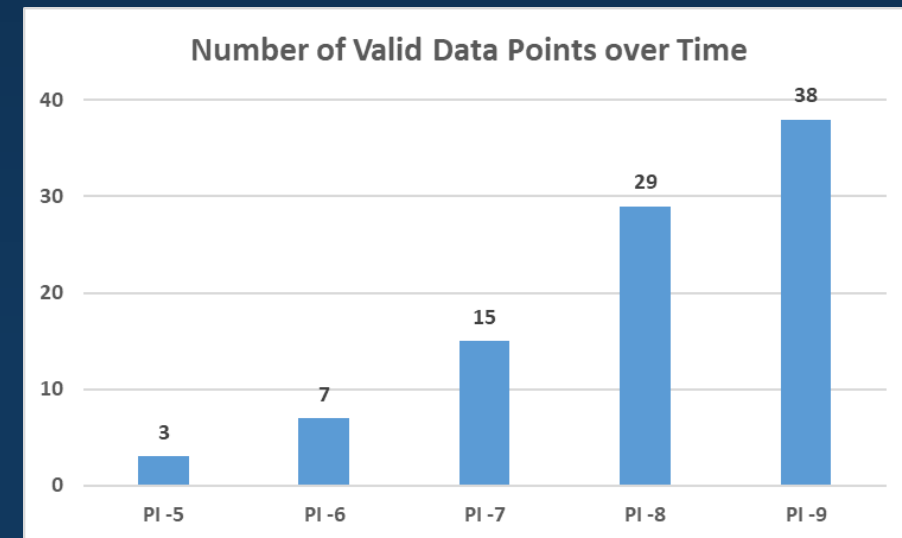
Epic Key	Sub-Thread / Jira Epic	Story Points Resolved						Appx Hours				
		PI - 6	PI - 5	PI - 6	PI - 7	PI - 8	PI - 9	PI - 5	PI - 6	PI - 7	PI - 8	PI - 9
ISSUE-100	Software Team 2 - Epic 1	Team 2	7	8	0	0	0	643	1564	0	0	0
ISSUE-101	Software Team 2 - Epic 2	Team 2	3	0	2	2	4	276	0	472	356	222
ISSUE-102	Software Team 2 - Epic 3	Team 2	9	0	0	12	6	827	0	0	2133	333
ISSUE-103	Software Team 2 - Epic 4	Team 2	0	0	0	12	5	0	0	0	2133	278
ISSUE-104	Software Team 2 - Epic 5	Team 2	0	0	1	1	11	0	0	236	178	611
ISSUE-105	Software Team 2 - Epic 6	Team 2	13	0	0	0	6	1195	0	0	0	333
ISSUE-106	Software Team 2 - Epic 7	Team 2	0	10	0	0	13	0	1956	0	0	722
ISSUE-107	Software Team 2 - Epic 8	Team 2	0	0	13	0	5	0	0	3070	0	278
ISSUE-108	Software Team 2 - Epic 9	Team 2	7	4	0	0	11	643	782	0	0	611
ISSUE-109	Software Team 2 - Epic 10	Team 2	8	5	0	0	9	735	978	0	0	500
ISSUE-110	Software Team 2 - Epic 11	Team 2	0	0	5	0	2	0	0	1181	0	111

Hours from reporting are distributed to Epics in each Program Increment

# Data Point Selection Process

- Based on 100 total Epics
- Data collection between PI-5 and PI-9
- **Data Point Validity Criteria:**
  - No work prior to PI – 5
  - Status = To Do
  - Work “Completes” by PI – 9
  - Status = Done (or Similar)
  - Epic has Story Points Assigned
- Note: “Done” simply means SW Development phase is complete

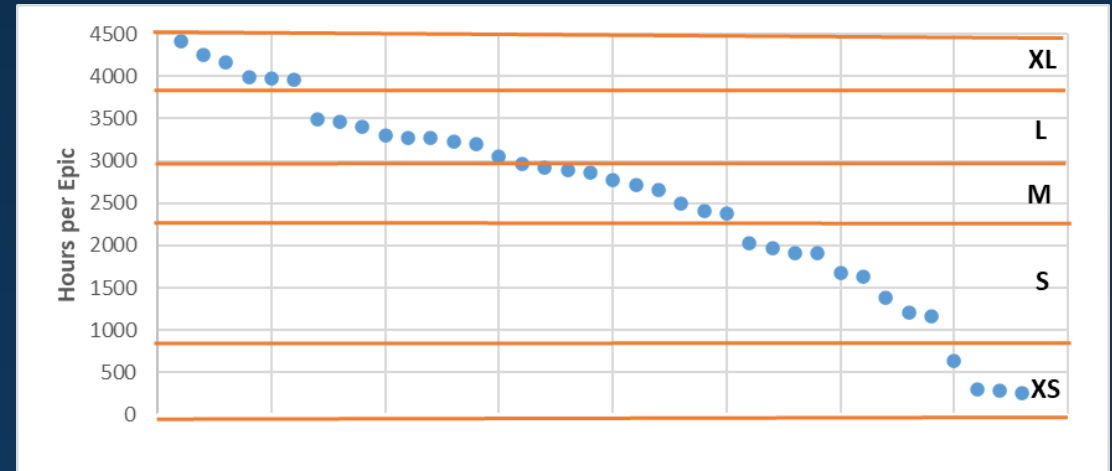
Epic Key	PI -5	PI -6	PI -7	PI -8	PI -9
ISSUE-100	In Progress	Done	Done	Done	Done
ISSUE-101	In Progress	In Progress	Done	Done	Done
ISSUE-102	To Do	In Progress	Done	Done	Done
ISSUE-103	To Do	To Do	In Progress	Done	Done
ISSUE-104		To Do	In Progress	In Progress	Done
ISSUE-105		To Do	In Progress	In Progress	Done
ISSUE-106			To Do	In Progress	Done
ISSUE-107			To Do	In Progress	In Progress
ISSUE-108			To Do	In Progress	In Progress
ISSUE-109				To Do	In Progress
ISSUE-110				To Do	In Progress



The quality of the data point set increases over time

# Stratified Data Point Results

Jira Data as of PI 9			Total (PI 5-9)		Bin Size
Epic Key	Sub-Thread / Jira Epic	Component	SP Cmp.	Dev Hrs.	
ISSUE-331	Epic Work Name 31	Team 1	441	4410	XL
ISSUE-322	Epic Work Name 22	Team 2	426	4260	XL
ISSUE-327	Epic Work Name 27	Team 2	417	4170	XL
ISSUE-323	Epic Work Name 23	Team 3	443	3987	XL
ISSUE-316	Epic Work Name 16	Team 1	441	3969	XL
ISSUE-336	Epic Work Name 36	Team 1	396	3960	XL
ISSUE-330	Epic Work Name 30	Team 5	437	3496	L
ISSUE-338	Epic Work Name 38	Team 3	347	3470	L
ISSUE-306	Epic Work Name 6	Team 1	425	3400	L
ISSUE-325	Epic Work Name 25	Team 5	412	3296	L
ISSUE-310	Epic Work Name 10	Team 5	364	3276	L
ISSUE-334	Epic Work Name 34	Team 4	327	3270	L
ISSUE-314	Epic Work Name 14	Team 4	359	3231	L
ISSUE-311	Epic Work Name 11	Team 1	356	3204	L
ISSUE-319	Epic Work Name 19	Team 4	339	3051	L
ISSUE-305	Epic Work Name 5	Team 5	370	2960	M
ISSUE-317	Epic Work Name 17	Team 2	366	2928	M
ISSUE-304	Epic Work Name 4	Team 4	289	2890	M
ISSUE-332	Epic Work Name 32	Team 2	357	2856	M
ISSUE-335	Epic Work Name 35	Team 5	347	2776	M
ISSUE-301	Epic Work Name 1	Team 1	301	2709	M
ISSUE-313	Epic Work Name 13	Team 3	266	2660	M
ISSUE-329	Epic Work Name 29	Team 4	249	2490	M
ISSUE-337	Epic Work Name 37	Team 2	301	2408	M
ISSUE-324	Epic Work Name 24	Team 4	264	2376	M
ISSUE-312	Epic Work Name 12	Team 2	203	2030	S
ISSUE-326	Epic Work Name 26	Team 1	218	1962	S
ISSUE-318	Epic Work Name 18	Team 3	239	1912	S
ISSUE-328	Epic Work Name 28	Team 3	238	1904	S
ISSUE-302	Epic Work Name 2	Team 2	168	1680	S
ISSUE-308	Epic Work Name 8	Team 3	181	1629	S
ISSUE-320	Epic Work Name 20	Team 5	172	1376	S
ISSUE-315	Epic Work Name 15	Team 5	134	1206	S
ISSUE-307	Epic Work Name 7	Team 2	146	1168	S
ISSUE-303	Epic Work Name 3	Team 3	80	640	S
ISSUE-309	Epic Work Name 9	Team 4	30	300	XS
ISSUE-321	Epic Work Name 21	Team 1	35	280	XS
ISSUE-333	Epic Work Name 33	Team 3	26	260	XS



38 Data Points grouped into analogous Bin Sizes according to Hours

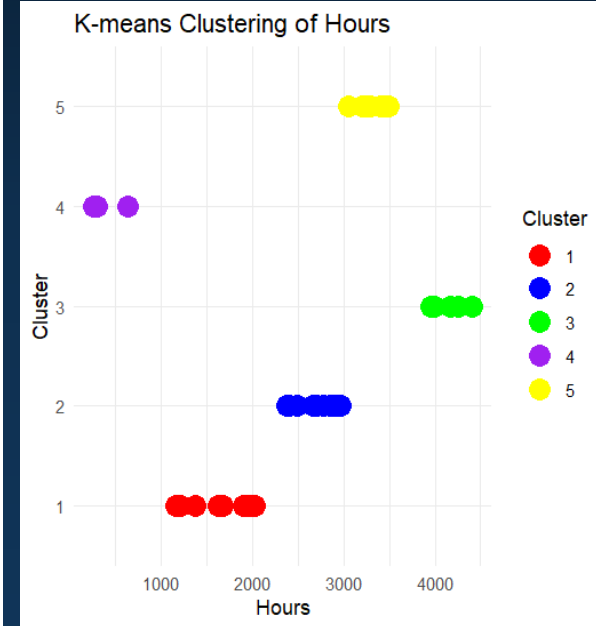
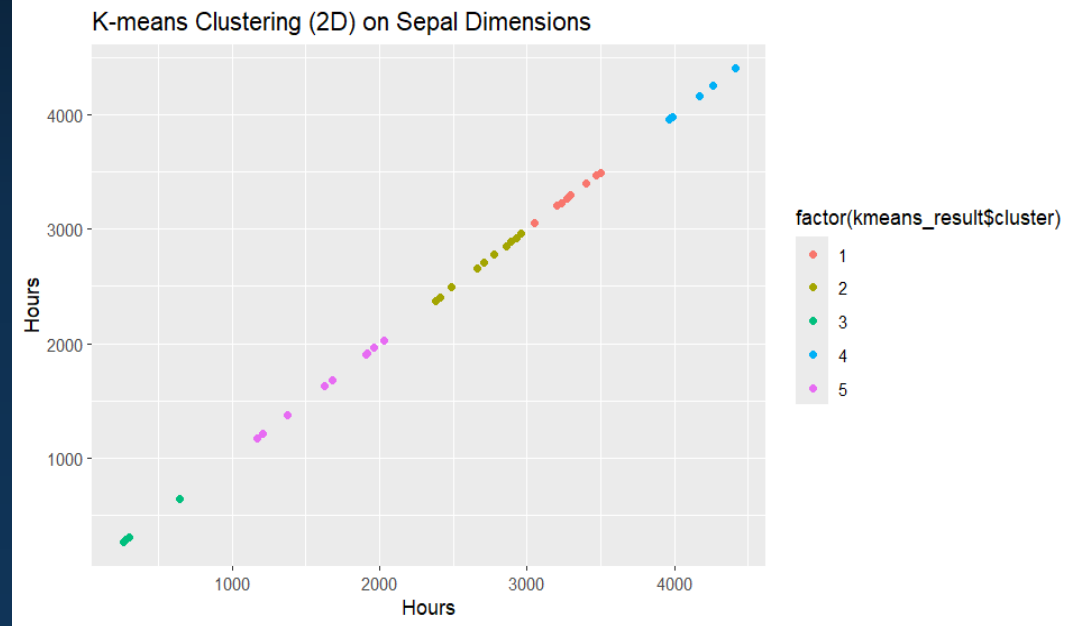
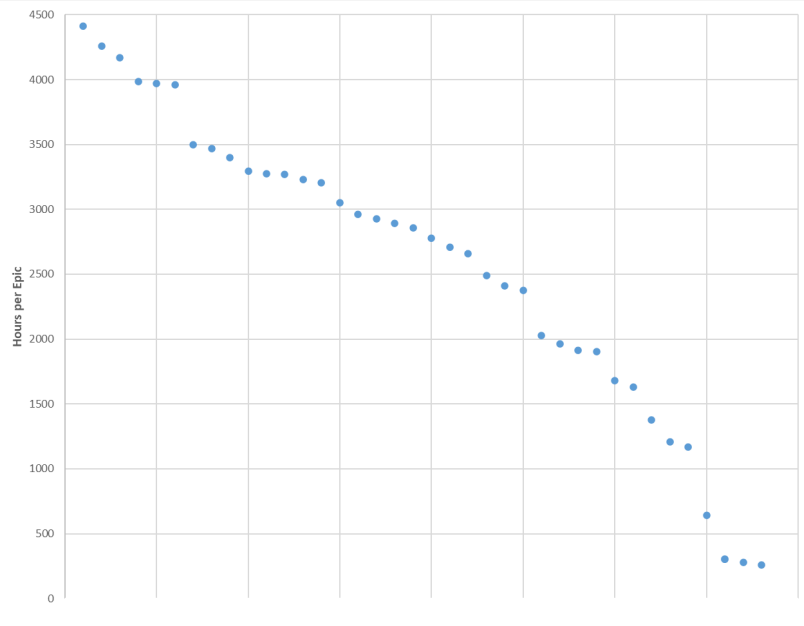
# Data Point Set Comparison

Analogous Data Bins						
Bin Size	PI - 8		PI - 9			Change
	Avg Hrs	# Data Pts	Avg Hrs	# Data Pts	Std Dev	
XS	265	2	280	3	20	6%
S	1424	6	1551	10	447	9%
M	2560	9	2705	11	216	6%
L	3450	8	3300	9	139	-4%
XL	4579	4	4126	5	186	-10%
	<b>Total</b>	<b>29</b>	<b>Total</b>	<b>38</b>		

- PI – 8 and Before
  - T-Shirt Bin Sizes were created with a smaller data set, so less rigorous binning methodologies such as Box-and-Whisker Plots were utilized.
- PI – 9 and After
  - Data set was large enough to improve Bin Sizes utilizing a rigorous statistical method (K-Means Clustering)
  - As Data Set continues to increase, each Bin will continue to solidify as a truly representative collection

Increase in collection of data points allows for more rigorous analysis and a better representation of sizing

# K-means Clustering



- Used K Means which is statistical clustering technique for vector quantization
  - Divides observations into clusters based on the mean/cluster centroids closest to the data point
  - Required K means to use 5 bins to account for T-shirt sizing (XS, S, M, L, XL)

K means clustering provided better vector quantization to ensure the estimate is more accurate

# Content-Driven Roadmap

- Roadmap Criteria
  - Informed by Requirements
  - Useful for Stakeholders
  - Links to Program Schedule
- Epic Categories
  - Critical Enhancements
  - Product Support
- Technical Team Input
  - Sized work in each FY based on utilizing T-Shirt sizes from Historical Jira Data Analysis

Content-Driven Roadmap		Backlog as of PI - 9				FY25	FY26	FY27	FY28
Mission Thread/Sub-Thread/Epic	Jira Key/ID	Status	Team	Phase Filter	Bin	Bin	Bin	Bin	
<b>Mission Thread 1</b>					<b>Mission Thread</b>				
<b>Sub-thread 1</b>					<b>Sub-Thread</b>				
Epic 1	ISSUE-401	Done	Team 1	Jira Epic					
Epic 1				Critical Enhancements					
Epic 1				Product Support	XS	XS	XS	XS	
Epic 2	ISSUE-402	To Do	Team 1	Jira Epic					
Epic 2				Critical Enhancements		M			
Epic 2				Product Support			XS	XS	
Epic 3	ISSUE-403	In Progress	Team 1	Jira Epic					
Epic 3				Critical Enhancements	M	M			
Epic 3				Product Support			XS	XS	
<b>Sub-thread 2</b>					<b>Sub-Thread</b>				
Epic 1	ISSUE-404	In Progress	Team 2	Jira Epic					
Epic 1				Critical Enhancements	XL	L			
Epic 1				Product Support			M	M	
Epic 2	ISSUE-405	In Progress	Team 2	Jira Epic					
Epic 2				Critical Enhancements	M	M			
Epic 2				Product Support			S	S	
<b>Sub-thread 3</b>					<b>Sub-Thread</b>				
Epic 1	ISSUE-406	In Progress	Team 3	Jira Epic					
Epic 1				Critical Enhancements	L	L	L		
Epic 1				Product Support				M	
Epic 2	ISSUE-407	To Do	Team 3	Jira Epic					
Epic 2				Critical Enhancements			L	XL	
Epic 2				Product Support					

Remaining Epics to go were sized and prioritized by Technical Team

# Content-Driven Roadmap – Jira Analogy Results

Bin Size	Avg Hrs	Low Hrs	High Hrs
XL	4126	3960	4410
L	3299	3051	3496
M	2705	2376	2960
S	1551	640	2030
XS	280	260	300

Roadmap Totals	Epic Counts				Hours				FTE			
	FY25	FY26	FY27	FY28	FY25	FY26	FY27	FY28	FY25	FY26	FY27	FY28
Critical Enhancements	57	54	38	43	76,945	75,266	53,262	68,208	40.1	39.2	27.7	35.5
Product Support	63	73	97	104	47,440	56,594	66,449	68,409	24.7	29.5	34.6	35.6
<b>Total</b>	<b>120</b>	<b>127</b>	<b>135</b>	<b>147</b>	<b>124,386</b>	<b>131,859</b>	<b>119,711</b>	<b>136,617</b>	<b>64.8</b>	<b>68.7</b>	<b>62.3</b>	<b>71.2</b>

- Hours per Epic are applied to the Content-Driven Roadmap based on Analogous Bin Sizes to project future FTE
- Analogous Data Bins & Roadmap Sizing only represent the known requirements for Pre-I&T SW Development effort
- Therefore, New Data-driven approaches were incorporated to capture SW Dev scope associated with the I&T Phase, New Work/Req Growth, and Sizing Growth

The Content-Driven Roadmap serves as the basis for the base level of FTE for SW Development Work

# Content-Driven Roadmap – Scaling Factors

- Content-Driven Roadmap only represents estimation of known SW Development activities
- To account for unknowns, additional factors are necessary:
  - Software Development (I&T Phase)
  - New Scope / Requirements Growth
  - Accuracy / Sizing

Roadmap Totals	FTE			
Phase	FY25	FY26	FY27	FY28
Critical Enhancements	40.1	39.2	27.7	35.5
Product Support	24.7	29.5	34.6	35.6
<b>Total</b>	<b>64.8</b>	<b>68.7</b>	<b>62.3</b>	<b>71.2</b>

SW Development Total					Factor
Core SW Development					
Roadmap SW Dev (Pre-I&T)	64.8	68.7	62.3	71.2	Roadmap
SW Dev (I&T Phase)					
SW Dev (New Scope/Req Growth)					
SW Dev (Sizing Factor)					

After the Roadmap generates a level of FTE, additional factors are needed

# Content-Driven Roadmap Scaling Factors – SW Dev ( I&T)

FY24 Actuals				
Epics	Status	Hours Completed		% Add'l Work
		Pre-I&T Phase	I&T Phase	
Epic 1	Done	2705	280	10%
Epic 2	Done	3299	80	2%
Epic 3	Done	4126	2705	66%
Epic 4	Done	1551	500	32%
Epic 5	Done	2705	1000	37%
Epic 6	Done	1551	300	19%
Epic 7	Done	4126	2500	61%
Epic 8	Done	2705	1000	37%
Epic 9	Done	4126	2200	53%
Epic 10	Done	1551	950	61%
Epic 11	Done	280	90	32%
...	...	...	...	...
<b>Total</b>		<b>125000</b>	<b>49875</b>	<b>39.3%</b>

➤ I&T Phase Factor derived from actuals by comparing hours completed Pre-I&T Phase to during I&T Phase

➤ FY24 actuals

125,000 hours were burned in the Pre-I&T Phase

49,875 hours were burned in the I&T Phase

This represents 39.3% of I&T-associated SW Development

SW Development Total					Factor
Core SW Development	90.2	95.7	86.9	99.1	
Roadmap SW Dev (Pre-I&T)	64.8	68.7	62.3	71.2	Roadmap
SW Dev (I&T Phase)	25.5	27.0	24.5	28.0	39.3%
SW Dev (New Scope/Req Growth)					
SW Dev (Sizing Factor)					

➤ Software Development associated with both Pre-I&T and I&T Phases makes up the Core SW Development FTE

As further I&T data is accrued, scaling factor will become unnecessary

# Content-Driven Roadmap Scaling Factors – New Scope/Req Growth

2023 Content Driven Roadmap		
Epics	Status	Hours Burned
Epic 1	To Do	288
Epic 2	To Do	400
Epic 3	To Do	650
Epic 4	To Do	120
Epic 5	To Do	160
Epic 6	To Do	8
Epic 7	To Do	20
Epic 8	To Do	0
Epic 9	To Do	6
Epic 10	To Do	120
Epic 11	To Do	55

New Scope Epics (Not included in 2023 Roadmap)		
Epics	Status	Hours Burned (FY24)
Epic 12	To Do	460
Epic 13	To Do	180
Epic 14	To Do	840
Epic 15	To Do	12
Epic 16	To Do	60
Epic 17	To Do	420
Epic 18	To Do	620
...	....	...
<b>Total</b>		<b>16452</b>

Hours Burned Towards New Scope Epics (Epics not in 2023 Roadmap) PI 5-9			
Hours	FTE	Core SW Dev FTE	% Add'l
16452	8.6	90.2	9.5%

➤ Total Hours/FTE represents a factor of add'l work

SW Development Total					Factor
Core SW Development	90.2	95.7	86.9	99.1	
Roadmap SW Dev (Pre-I&T)	64.8	68.7	62.3	71.2	Roadmap
SW Dev (I&T Phase)	25.5	27.0	24.5	28.0	39.3%
SW Dev (New Scope/Req Growth)	8.6	9.1	8.3	9.4	9.5%
SW Dev (Sizing Factor)					

- Growth Factor derived from actuals
  - New Scope Epics worked in FY24
    - These were not previously in the 2023 Roadmap

As more data is accrued, scaling factors will become more accurate

# Content-Driven Roadmap Scaling Factors – Sizing Factor

2023 Content Driven Roadmap			
Epics	Status	Roadmap Sizing	Forecast Hrs (FY24)
Epic 1	To Do	XS	280
Epic 2	To Do	S	1551
Epic 3	To Do	M	2705
Epic 4	To Do	L	3299
Epic 5	To Do	M	2705
Epic 6	To Do	XS	280
Epic 7	To Do	XL	4126
Epic 8	To Do	S	1551
Epic 9	To Do	L	3299
Epic 10	To Do	XL	4126
Epic 11	To Do	XS	280
...	....	...	...
<b>Total</b>			<b>20426</b>

FY24 Actuals			
Epics	Status	Roadmap Sizing	Actual Hrs
Epic 1	Done	M	2705
Epic 2	Done	L	3299
Epic 3	Done	XL	4126
Epic 4	In Progress	S	1551
Epic 5	In Progress	M	2705
Epic 6	Done	S	1551
Epic 7	Done	XL	4126
Epic 8	Done	M	2705
Epic 9	In Progress	XL	4126
Epic 10	In Progress	S	1551
Epic 11	In Progress	XS	280
...	....	...	...
<b>Total</b>			<b>24327</b>

Projected (2023 Roadmap) vs. Actual Completed Epic SW Dev Hrs burned in FY24		
Forecast Hrs	Actual Hrs	% Add'l
20426.0	24327.0	19.1%

➤ Actual vs. Projected Hours represents a factor of add'l work

SW Development* Total	116.1	123.0	111.7	127.5	Factor
Core SW Development	90.2	95.7	86.9	99.1	
Roadmap SW Dev (Pre-I&T)	64.8	68.7	62.3	71.2	Roadmap
SW Dev (I&T Phase)	25.5	27.0	24.5	28.0	39.3%
SW Dev (New Scope/Req Growth)	8.6	9.1	8.3	9.4	9.5%
SW Dev (Sizing Factor)	17.2	18.3	16.6	18.9	19.1%

- Accuracy / Sizing Factor derived from actuals
  - In-Scope Epics worked in FY24
    - These were captured by the 2023 Roadmap

As more data is accrued, scaling factors will become more accurate

# Content-Driven Roadmap – FTE Results

Mission Threads	FTE by Mission Thread						
	FY24	FY25	FY26	FY27	FY28	FY29	FY30
<b>Mission Thread 1</b>	<b>34.0</b>	<b>34.0</b>	<b>25.0</b>	<b>34.0</b>	<b>34.0</b>	<b>34.0</b>	<b>34.0</b>
Subthread 1	9.0	9.0	6.0	9.0	9.0	9.0	9.0
Subthread 2	10.0	10.0	8.0	10.0	10.0	10.0	10.0
Subthread 3	8.0	8.0	5.0	8.0	8.0	8.0	8.0
Subthread 4	7.0	7.0	6.0	7.0	7.0	7.0	7.0
<b>Mission Thread 2</b>	<b>15.0</b>	<b>15.0</b>	<b>14.0</b>	<b>15.0</b>	<b>15.0</b>	<b>15.0</b>	<b>15.0</b>
Subthread 1	6.0	6.0	5.0	6.0	6.0	6.0	6.0
Subthread 2	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Subthread 3	4.0	4.0	4.0	4.0	4.0	4.0	4.0
<b>Mission Thread 3</b>	<b>9.0</b>	<b>9.0</b>	<b>8.0</b>	<b>9.0</b>	<b>9.0</b>	<b>9.0</b>	<b>9.0</b>
Subthread 1	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Subthread 2	6.0	6.0	5.0	6.0	6.0	6.0	6.0
<b>Mission Thread 4</b>	<b>43.1</b>	<b>40.2</b>	<b>39.3</b>	<b>41.0</b>	<b>41.0</b>	<b>41.0</b>	<b>41.0</b>
Subthread 1	9.0	8.0	8.0	8.0	8.0	8.0	8.0
Subthread 2	10.0	9.0	8.6	9.0	9.0	9.0	9.0
Subthread 3	13.7	12.5	12.0	12.5	12.5	12.5	12.5
Subthread 4	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Subthread 5	6.4	6.7	6.7	7.5	7.5	7.5	7.5
<b>Mission Thread 5</b>	<b>5.0</b>	<b>5.0</b>	<b>6.0</b>	<b>6.0</b>	<b>6.0</b>	<b>6.0</b>	<b>6.0</b>
Subthread 1	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Subthread 2	2.0	2.0	3.0	3.0	3.0	3.0	3.0
<b>Mission Thread 6</b>	<b>10.0</b>	<b>12.0</b>	<b>12.0</b>	<b>11.9</b>	<b>11.9</b>	<b>11.9</b>	<b>11.9</b>
Subthread 1	5.0	6.0	6.0	6.0	6.0	6.0	6.0
Subthread 2	5.0	6.0	6.0	5.9	5.9	5.9	5.9
<b>Mission Thread 7</b>	<b>-</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>
Subthread 1	-	1.0	1.0	1.0	1.0	1.0	1.0
Subthread 2	-	4.0	4.0	4.0	4.0	4.0	4.0
<b>Mission Thread 8</b>	<b>-</b>	<b>2.8</b>	<b>2.4</b>	<b>5.6</b>	<b>5.6</b>	<b>5.6</b>	<b>5.6</b>
Subthread 1	-	1.4	1.5	1.5	1.5	1.5	1.5
Subthread 2	-	1.4	0.9	-	-	-	-
Subthread 3	-	-	-	3.0	3.0	3.0	3.0
Subthread 4	-	-	-	1.1	1.1	1.1	1.1
<b>Total Roadmap FTE</b>	<b>116.1</b>	<b>123.0</b>	<b>111.7</b>	<b>127.5</b>	<b>127.5</b>	<b>127.5</b>	<b>127.5</b>

- Factors can be utilized at the individual Sub Thread levels to generate a Resource-Loaded Content Roadmap
- Additional Value:
  - FTE broken out by individual Requirement
  - Quick Drills on Prioritization:
    - Individual Requirement needs
    - Critical Enhancements vs. Product Support
    - Unconstrained vs. Constrained Funding Drills
    - Unconstrained vs. Constrained Schedules

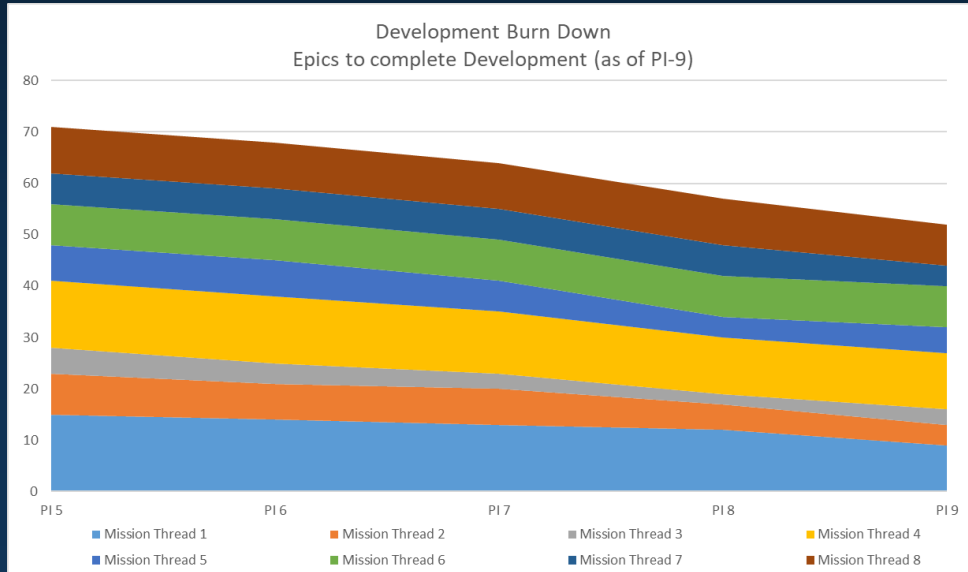
Roadmap FTE forecasts become inputs into the Overall Estimate

# Software Progress Assessments

- Progress Assessments
- Tracking Integration & Test Events
- Tracking of Legacy System Decommissioning
- Support IPRs
- Quarterly Program Office Progress Assessment
- Comprehensive Support for Cost Requirements
  
- Annual SBEs/NACAs/CARD

Roadmap FTE forecasts become inputs into the Estimate

# Project Progress Assessments

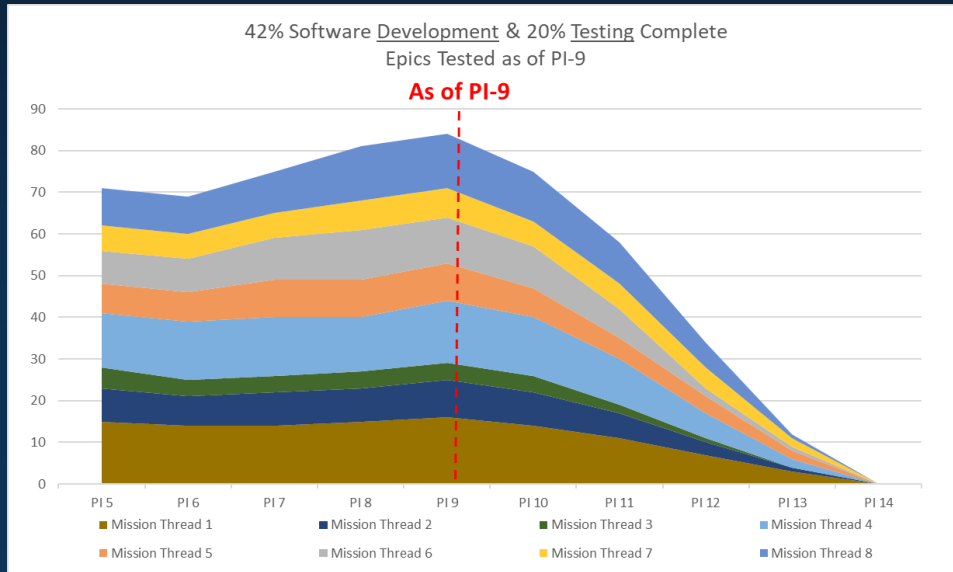


Mission Threads	# Epics	Percent Complete (SW Dev - Epics)				
		PI-5	PI-6	PI-7	PI-8	PI-9
Mission Thread 1	21	7%	13%	20%	44%	56%
Mission Thread 2	13	13%	13%	38%	56%	60%
Mission Thread 3	8	20%	40%	60%	50%	43%
Mission Thread 4	18	0%	8%	21%	27%	27%
Mission Thread 5	10	0%	14%	43%	44%	56%
Mission Thread 6	13	0%	0%	0%	20%	33%
Mission Thread 7	8	0%	0%	0%	33%	43%
Mission Thread 8	14	0%	0%	0%	20%	23%
<b>TOTAL</b>	<b>105</b>	<b>4%</b>	<b>10%</b>	<b>21%</b>	<b>36%</b>	<b>42%</b>

- With consistent, regular Jira usage and tagging, additional assessments can be made on the data

Roadmap FTE forecasts become inputs into the Estimate

# Project Progress Assessments

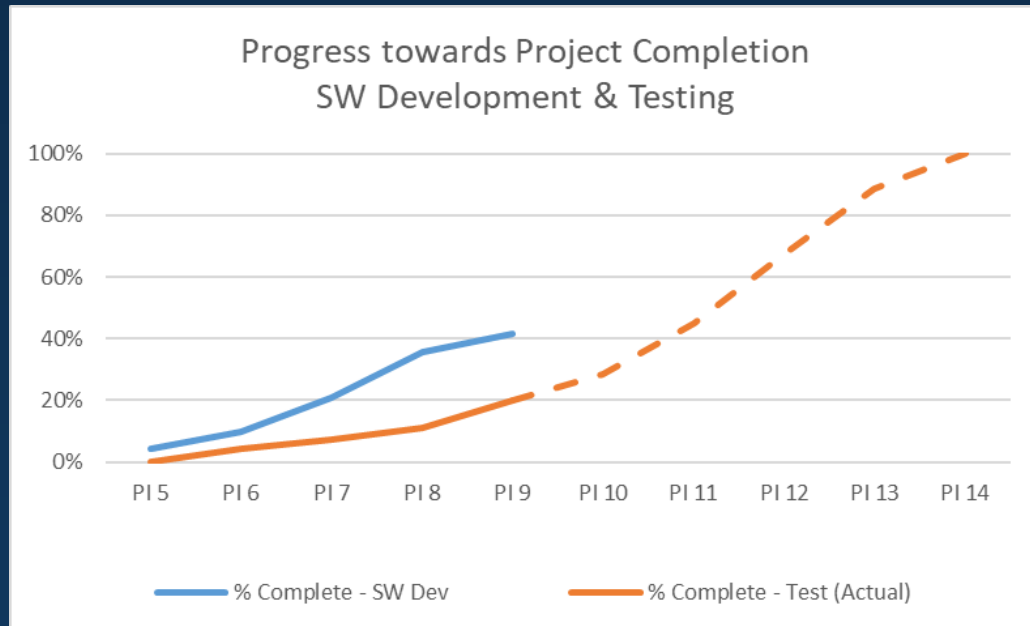


- With consistent, regular Jira usage and tagging, additional assessments can be made on the data

Mission Threads	# Epics	Percent Complete (Testing)									
		Actuals					Forecast				
		PI - 5	PI - 6	PI - 7	PI - 8	PI - 9	PI - 10	PI - 11	PI - 12	PI - 13	PI - 14
Mission Thread 1	21	0%	7%	13%	17%	24%	33%	48%	67%	86%	100%
Mission Thread 2	13	0%	13%	11%	20%	31%	38%	54%	77%	92%	100%
Mission Thread 3	8	0%	20%	33%	43%	50%	50%	75%	88%	100%	100%
Mission Thread 4	18	0%	0%	7%	13%	17%	22%	39%	67%	89%	100%
Mission Thread 5	10	0%	0%	0%	0%	10%	30%	50%	60%	80%	100%
Mission Thread 6	13	0%	0%	0%	0%	15%	23%	46%	85%	92%	100%
Mission Thread 7	8	0%	0%	0%	0%	13%	25%	25%	38%	75%	100%
Mission Thread 8	14	0%	0%	0%	0%	7%	14%	29%	57%	93%	100%
<b>TOTAL</b>	<b>105</b>	<b>0%</b>	<b>4%</b>	<b>7%</b>	<b>11%</b>	<b>20%</b>	<b>29%</b>	<b>45%</b>	<b>68%</b>	<b>89%</b>	<b>100%</b>

Roadmap FTE forecasts become inputs into the Estimate

# Project Progress Assessments



- With consistent, regular Jira usage and tagging, additional assessments can be made on the data

Roadmap FTE forecasts become inputs into the Estimate

# Way Ahead

- Summary
  - Analyzing Jira Historical data can be useful to track progress directly to Requirements as well as support Estimate Analogies
  - Agile Software Content-Driven Roadmaps can be created and quantified based utilizing this data
  - The refinement of this Process and the associated Analysis has been 4+ years in the making (Herculean Effort)
  - Large Engineering Team Support was required
  - Data Collection and Quality has evolved over the past year with heavy Program Office collaboration
  - Benefits of Jira Analysis extend beyond Cost Requirements
  - Content-Driven Roadmap is consistently utilized by the SML to support various programmatic Taskers
  
- Future Analysis
  - More Data Points over Time = Higher Quality Projections
  - Further Progress Projections

**Roadmap FTE forecasts become inputs into the Estimate**

# Questions?