







Rock Island Arsenal MBE Capability Assessment

Prepared for the MBE Summit April, 2017



Stable Stis

20/05

Agenda

Background Team Assessment Roadmap Conclusions





SIDE WIDDERS

Background

Program History and General Overview

Roadmap

Team

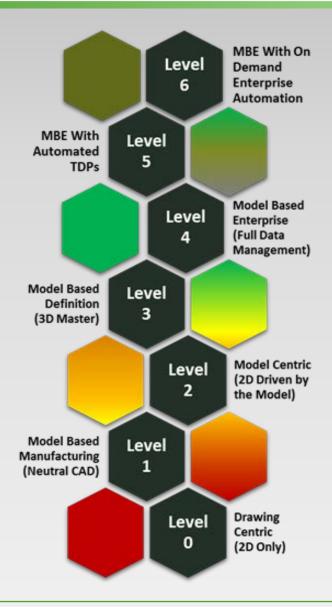
Conclusions

Background

Assessment

What Is An MBE Assessment?

- An unbiased review of an organizations capabilities in regard to utilization of 3D model or other digital product and process definition throughout a products lifecycle
- It is intended to reflect an organizations business model and thus there is no right or wrong score
- It is also intended to measure where an organization wishes to be in the future



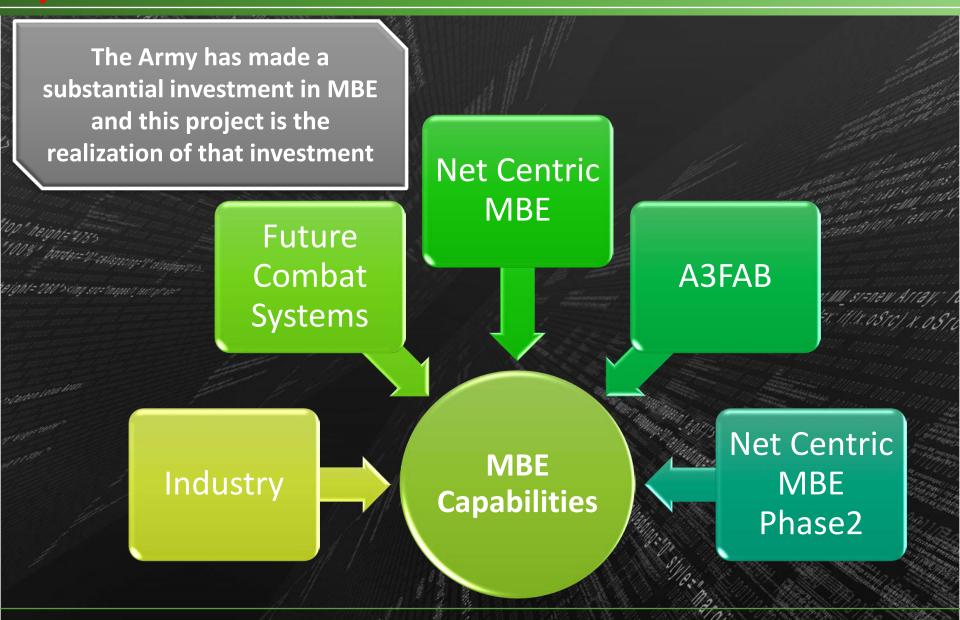
<<u>MBD360</u>



- A tool developed by Army ManTech with industry input
- It consists of 5 process focus areas and a total of 25 sub areas each with a score ranging from 0 to 6
- Aggregate scores are derived for each focus area and overall

NameNameSubscriptionSubscriptionName <th< th=""><th>Here the et and but the et and et al. A the the et al. A the et a</th></th<>	Here the et and but the et and et al. A the the et al. A the et a
Statt Lab. 15 cmMean Statution (Statution	Here the et and but the et and et al. A the the et al. A the et a
NameNa	INF An Information Information An Information Information An Information Information An In
Activities Activit	An in the analysis of the Analysis of of the
Note of the second se	Antiparticular is a los mais for the standards in the standards and the standards in the standards in the standard is the standards in the standards is the standards is the standards in the standards is the standards is the standards in the standards is the standard is the standards is the standards is t
Number of the second	Antiparticular is a los mais for the standards in the standards and the standards in the standards in the standard is the standards in the standards is the standards is the standards in the standards is the standards is the standards in the standards is the standard is the standards is the standards is t
NameNa	Restanders Herebysteres ange: Angewick and angesteres Restanders and angesteres Restanders angesteres Restand
Mathematical Mathematinal Mathmatematical Mathematical Mathematical Mathematical Mathe	Areas Ar
Stability Party Parkage	Angester and the functions and the second constrained on the second co
debugstamm And magnetization of the magneteemagnetization of the magnetemagnetization of the ma	An filipe of the best of the sector of the
description description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	An filipe of the best of the sector of the
Name Name <th< td=""><td>Land Systems Land Systems 12 (S) - 12 (S) Shares Systems 22 (S) - 12 (S) Shares Systems 22</td></th<>	Land Systems Land Systems 12 (S) - 12 (S) Shares Systems 22
And Ansato And Ansato And Ansato Angle and Ansatoo Angle and Ansatoo Angle and Ansatoo Angle and Angle and Ansatoo Angle and Angle angle and Angle and Angle and Angle and Angle and Angle and Ang	Statistics of Lange hilling is interpreted at Statistics of the statistics of the Statistics of the Statistics of the statistics of the Statistics of
Name Description Description Description Description Notice of the second seco	Standard BC (B) Standard BC (B) Standard R (Standard Standard R) Standard R) Standard R (Standard Standard R) Standard R (Standard R) Standard R
basic weisengenie weisengenie <th< td=""><td>a tota off web it have because their laboration of gasted a tota a tota tota</td></th<>	a tota off web it have because their laboration of gasted a tota a tota tota
비해도 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이	a tota off web it have because their laboration of gasted a tota a tota tota
And Control Market (Market) Market (Market	Les des las) Identitations (1) product Administrations (1) product Administrations and a second lass administration and a second lass administration and a second lass administration and a second lass administration administration (1) administration Second administration (1) administration (1) administration Second administration (1) administration (1
code Control (Control (Contro) (Control (Contro) (Control (Control (Control	a hol a Iskeelandroopeaan a'ni eeland opeaal (on a'ni eelang opeaal an alloopige opeaal allo an of angestaf allo fan beng natarabat i bind
And Statubation Manual and	A full actual ayabe too an A, and a second being a second at the Area Paraga being at the Area P
Name Name <th< td=""><td>AnaParasid Moles</td></th<>	AnaParasid Moles
Instrumential Instrume	here a lands in the first
Schwagen Manuschersteil Schwagen	aste pakelatete
Ling Specified and an analysis of the specified an a	DEAT o paper adveloped & trailing operate begins i rig tails
Description of Leaders Description of Leaders <thdescription leaders<="" of="" th=""> Description of Leaders<!--</td--><td></td></thdescription>	
Answersterner Answers	
and Service Address of Ford Advances and Service Ad	laben köllipines ensäng 2011 engensenigensens
Band Midden #Fit (# # 72)(## #Add # (%)(\$0) - (%) #Add # (%)(\$0) - (%) Band Midden #Fit (# # # # # # # # # # # # # # # # # # #	lands/0/langen.of
Resident State and State	N(100000010)
readine development of the second sec	nani firini darim bala mani firini darim bala mani bi bibi
tarbiteline because doctorio () - because extension () - because ext	labora koldinina, makata (bila majara milananan
ria Activitia	and the second second
Verlands Ver	adaranyite.
Are many sense of the Area and the Area and Area an	Labradaritras MET (MET B belarititrastel Bandal Sanfadaritasi
area a far a	ll ^e nservel alerdidasi e Lilendice instante Idalen
kerne presidente af 2 v Else Man d'Derengine mais presidente and 2 v and many service Else and and 2 v and Else and and a service Else and a service Else and a service be presidente and a service Benergo and a service be presidente and a service Benergo and a service be presidente and a service benerging and a servi	labora bilgenamen falda oge menging en figura da anarelia fita farsta farstaga d

Contributing Army Projects



MBD360>



Stable Willie Born

Team

The Assessment Team Members

Team

Background

Assessment

Roadmap

Conclusions

X. 0510

Rock Island Arsenal

The Rock Island Arsenal on the Mississippi River between the cities of Davenport, Iowa, and Rock Island, Illinois. It lies within the state of Illinois. It is home of First Army headquarters. Additionally, it is the home for both design and manufacture of many Army components.



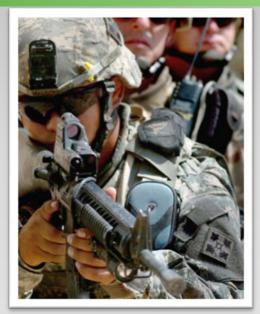




CMBD360

The JMTC

The Rock Island Arsenal Joint Manufacturing and Technology Center occupies 1.5 million square feet of its Kingsbury Complex home. As the only multi-purpose and vertically integrated metal manufacturer in the Department of Defense, the center possesses the unique technical expertise and equipment to manufacture products high in quality and sustainability.



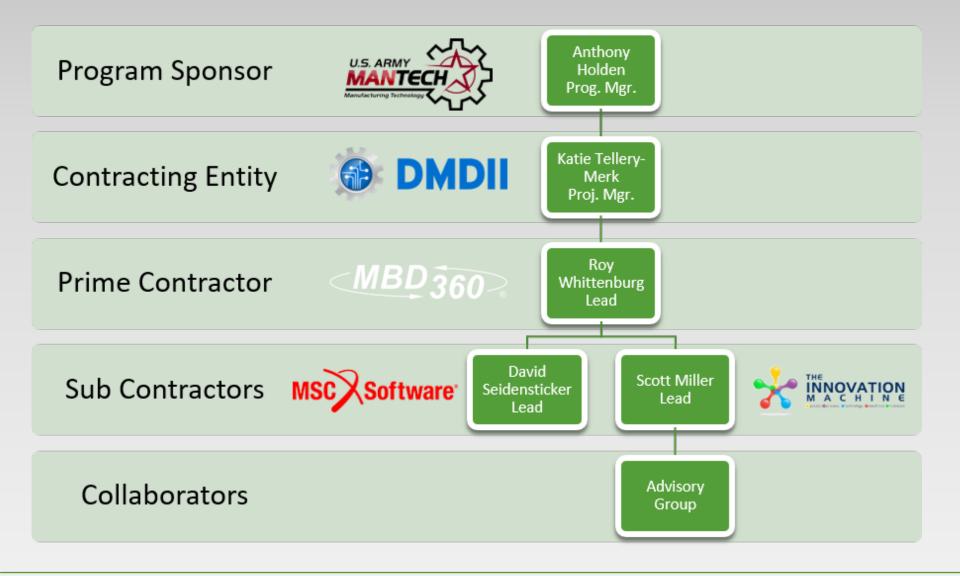




<MBD360



Assessment Team





Advisory Group

- America Makes
- Apriori
- Heartland Science & Technology Group
- Integris Group
- ITI
- Lucrum Group
- Manufacturing Laboratories Inc. (MLI)
- Microsoft
- Penn State
- PTC
- Siemens
- Spire Manufacturing Solutions
- Systems Insight
- Texas State University

A group of unpaid participants that provide a neutral input on the assessment results and recommendations



Slables Strs

Assessment

Measuring MBE Capabilities

Team Assessment

Background

Roadmap

Conclusions

X. OSTU



Approach



Communicate

• Level set with all parties on goals, process and expectations



Learn

• Interview SMEs and other documentations to learn high level processes, data, and tools



Analyze

 Review the facts in the context of the MBE Capability Index



Clarify

 Return to the SMEs to clarify any questions or issues from the analysis

Document

• Create detailed documentation of the assessment and review with the SMEs



- Held a kick off meeting with all major departments
- Conducted over 14 group SME interviews
- Several follow up one on one interviews
- Interview team consisted of 5 members from
 - MBD360
 - MSC Software
 - The Innovation Machine





Other items that were reviewed were:

- ISO Quality Manual
- Applications Lists
- Value Stream Maps
- Org Charts
- Process Flows
- Hands On Tours
- Websites



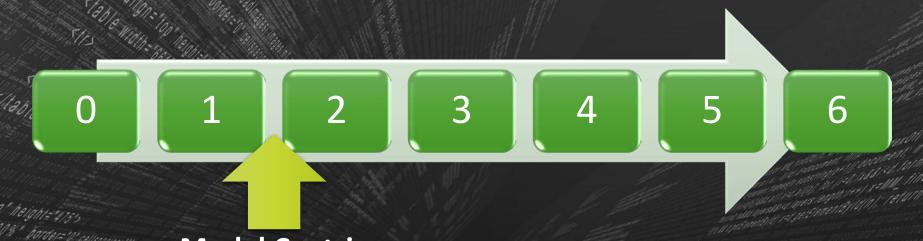


The "As Is" Capability Baseline

dolo dian top	Sec. 10	MBE Level					-	
Focus	Sub Set	0	1	2	3	4	5	6
Design Activities	Product Definition							
0	EBOM							
	Analysis							
	Checking and Model Quality							
CM/DM Activities	Release & Change Process							
	CM Vault Management							
	Collection of Elements In To TDP							
	Management of TDP							
Manufacturing Planning Activities	MBOM (Creation)							
	MFG Product Definition							
	MFG Process Definition							
	MFG Facilities							
	Tooling							
	Tapes (CNC/Other Programs)							
	Manufacturing Operations							
Quality Requirements, Planning	Quality Planning							
Activities	Quality/Inspection Code Generation							
Activities	Quality Requirements DM							
	Receiving Inspection							
	Supplier Quality Certification							
Interprise Activities	Logistics (Tech Manuals) (Out of Scope)							
	Logistics (Spares) (Out of Scope)							
	Procurement							
	Shipping							
	Reverse Engineering							



The "As Is" Capability Aggregates



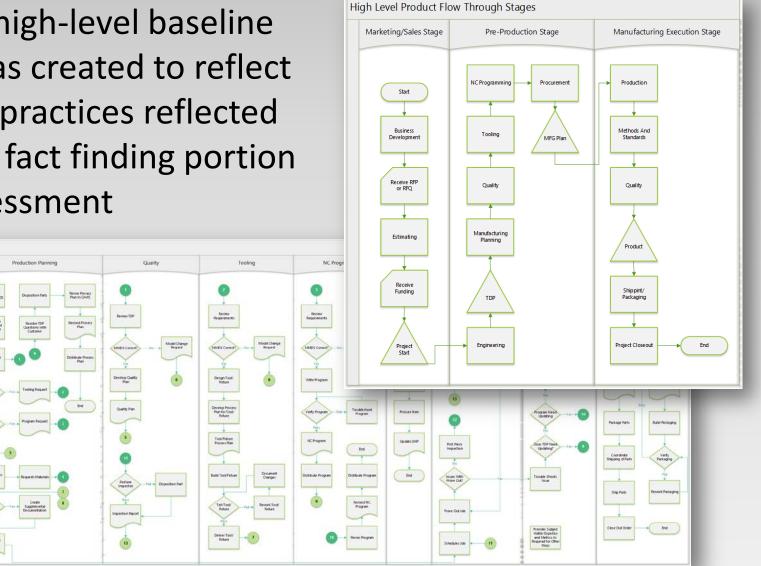
Model Centric

	MBE Level						276)
Focus Category	0	1	2	3	4	5	6
Design Activities		1					
CM/DM Activities			1.5				
Manufacturing Planning Activities		1					
Quality Requirements, Planning Activities			1.8				
Enterprise Activities			2				
Overall MBE Capability			1.5				

1.0510

The "As Is" Process Baseline

An "as is" high-level baseline process was created to reflect the actual practices reflected during the fact finding portion of the assessment



clease Mad

High - Level Basic Process Flow for JMTC-RIA

Engineering

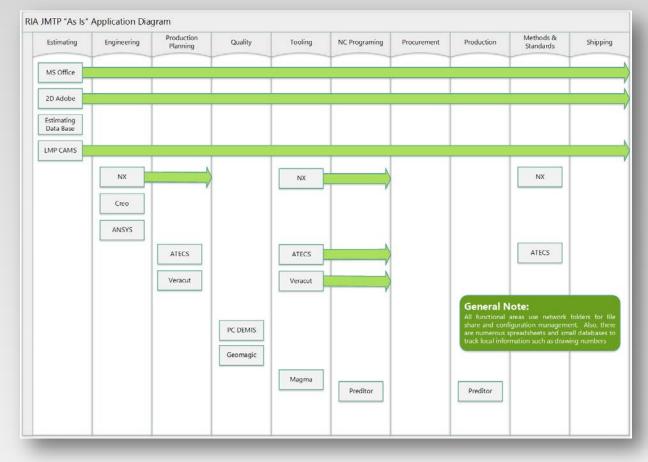
Estimating

Start

Protect Education

The "As Is" Application Baseline

All major applications were mapped to the departments that utilized them



The "As Is" Data Baseline

Both data flow and access was mapped by department and order of work flow

Production

Planning

LMP/CAMS

вом

Tooling Data Base

2

MBD 360 MSC Software

RIA JMTP "As Is" Data Flow Diagram

Engineering

0

Source Folder

Project Folder

Eng. Vault

Legend

2D PDF

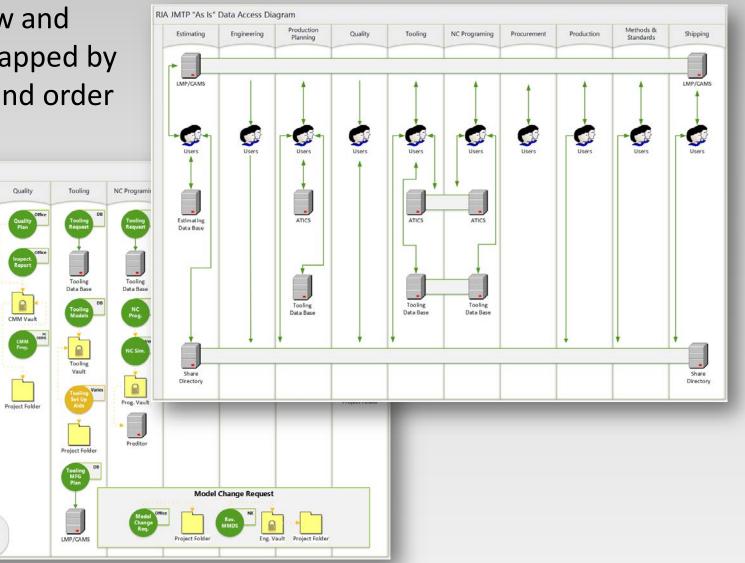
Estimating

Project Folde

LMP/CAMS

Estimating

Data Base





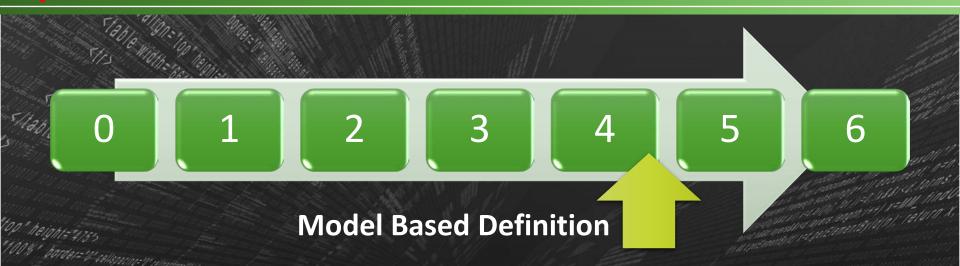
top 100

eign

The "To Be" Capability Baseline

able Shing Marshan		MBE Level								
Focus	Sub Set	0	1	2	3	4	5	6		
Design Activities	Product Definition									
Design Activities	EBOM									
	Analysis									
	Checking and Model Quality									
CM/DM Activities	Release & Change Process									
Civil Divil Activities	CM Vault Management									
	Collection of Elements In To TDP									
	Management of TDP									
Manufacturing Planning Activities	MBOM (Creation)									
vianulaciuming Flamming Activities	MFG Product Definition									
	MFG Process Definition									
	MFG Facilities									
	Tooling									
	Tapes (CNC/Other Programs)									
	Manufacturing Operations									
Quality Requirements, Planning	Quality Planning									
Activities	Quality/Inspection Code Generation									
	Quality Requirements DM									
	Receiving Inspection									
	Supplier Quality Certification									
Enterprise Activities	Logistics (Tech Manuals) (Out of Scope)									
	Logistics (Spares) (Out of Scope)									
	Procurement									
	Shipping									
	Reverse Engineering									

The "To Be" Capability Aggregates



	MBE Level				41. 1 _		
Focus Category	0	1	2	3	4	5	6
Design Activities		1			4		
CM/DM Activities			1.5			5	
Manufacturing Planning Activities		1				5	
Quality Requirements, Planning Activities			1.8		4		
Enterprise Activities			2		4		
Overall MBE Capability			1.5		4.3		

Pending Distribution A



OST

"To Be" Details



The "to be" state is characterized by the following:

- Introduction of PLM
- Automation of CAD model translation and verification
- Introduction of 3D visualization for all departments
- Automation of the quality process
- Increase in the use of analysis
- Smart production floor technology for monitoring and production planning

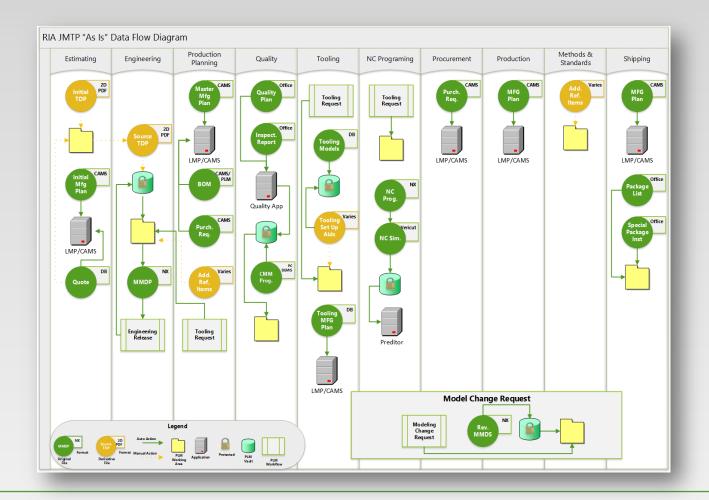






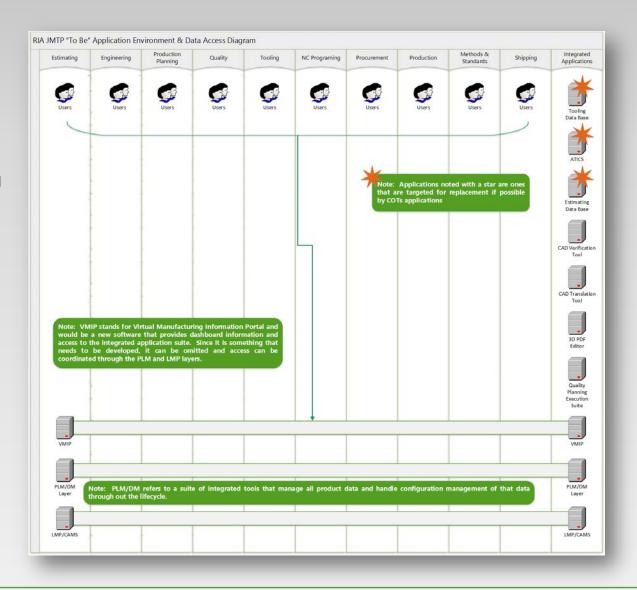
The "As Is" Data Flow Baseline

The "to be" features a 63% reduction in manual data transactions and utilizes automated workflows supported by PLM and ERP



The "To Be" Data Access

The "to be" data access is typified by the introduction of PLM for configuration management and workflow automation as well as integrated applications to aid in the reduction of manual work





Stable Strs

Roadmap

Charting a Path to Implementation

Roadmap

Team

Conclusions

Background

Assessment

1.0510



Purpose

- MSC Software is leading the documentation of the JMTC MBE Roadmap
- It will provide a detailed set of recommendations for achieving the "to be" state
- It will be broken down in near term and long term actions
- It will provide a list of research or gap areas that need to be addressed
- It will be tool neutral with input from the entire team including the advisory group





- The final review of the assessment report and the beginning of the roadmap document are currently under way
- The advisory group is reviewing the assessment report in order to provide input
- The final road map shall be completed in April of this year





Stable Stis

Conclusions

Wrapping It Up...

Roadmap

Team

Conclusions

Background

Assessment

1. 0ST



- The MBE Capability Assessment of RIA-JMTC started in January
- The assessment report is under final review and the roadmap documentation is under development
- The "as is" state of RIA-JMTC is a 1.5 which is still drawing based but supplemented by manufacturing model data
- The "to be" state is a 4.3 where the product model shall drive most if not all downstream applications





Questions?





The Beginning...

