

How to Train an Enterprise of Systems Engineers

WHIRLPOOL CORPORATION



2018 Annual INCOSE
Great Lakes Regional Conference
SYSTEMS AT THE CROSSROADS
17 - 20 October 2018 | Indianapolis, Indiana



Mandy
McIvor

Director
CSEP



Greg
Garstecki

Sr. Principal
Engineer
CSEP

WE'RE REACHING ACROSS THE WORLD

Our brands serve consumers in every region



Whirlpool
KitchenAid®

Whirlpool
KitchenAid®
MAYTAG®
JENN-AIR®
GLADIATOR®
by Whirlpool Corporation
AMANA®

Whirlpool
KitchenAid®
Consul
BRASTEMP
acros®

Whirlpool
KitchenAid®
Hotpoint
Bauknecht
Indesit

Whirlpool
KitchenAid®

Whirlpool
KitchenAid®
DIQUA帝度
Bauknecht

Whirlpool
KitchenAid®

OUR SCALE AND REACH CREATE GROWTH OPPORTUNITIES



\$21B

Annual sales

70

Manufacturing and R&D centers

92K

Employees worldwide



**MORE THAN
70 million
PRODUCTS SOLD
*each year***

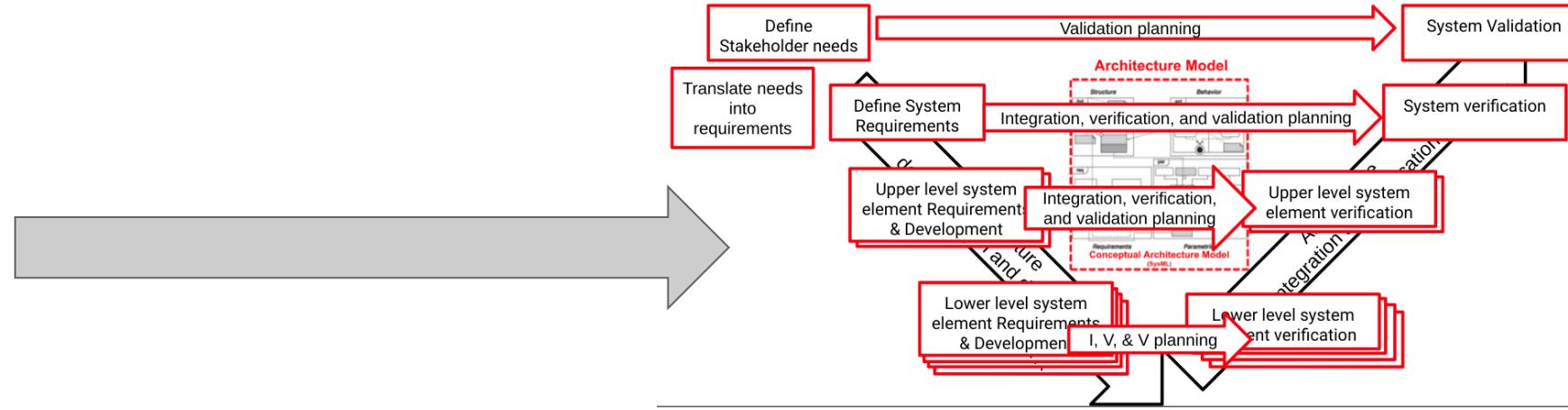
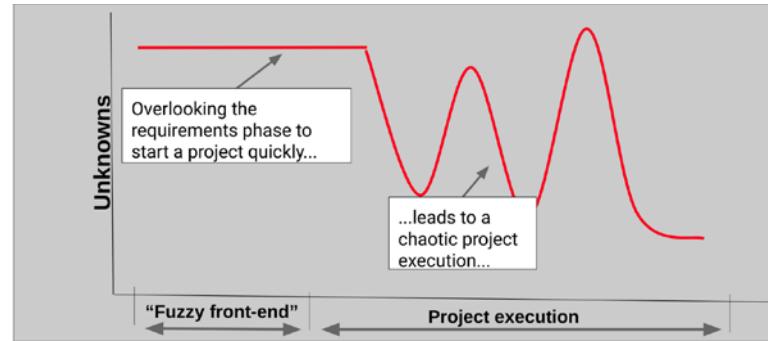
“Systems Engineering training within your organization can be effective given the right tailoring, education, practice, and follow-up support”

- How to start
- Training context
- Training overview

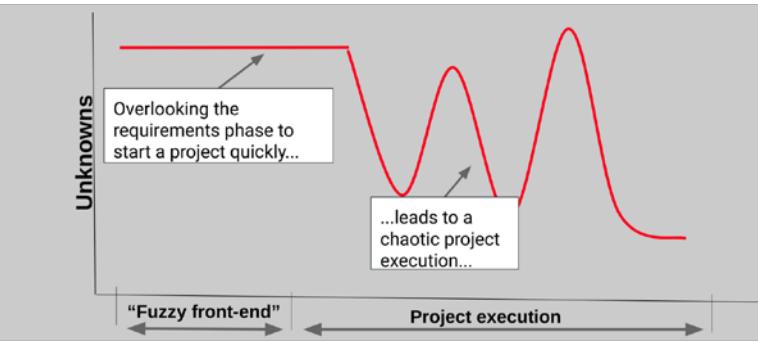
CONTENT



WHERE WE ARE --> WHERE WE WANT TO BE



WHERE WE ARE --> WHERE WE WANT TO BE



WHIRLPOOL CORPORATION SOP
DVP&R PROCESS 02/21/2018

D Stakeholder
Translate new

WHIRLPOOL CORPORATION PDX SOP
CREATE AND UPDATE CONCEPTUAL SYSTEM ARCHITECTURE MODEL 04/12/2017

Audience: Architecture Leader, System Architect, System Integrator, Subsystem and Cross-Functional Design Team

structure and

WHIRLPOOL CORPORATION SOP
Requirement Writing Guide 01/08/2018

CREATE NEW CONC

No new Conceptual Architecture is made from an existing Whirlpool specific SysML profiles and add-ons

- From PTC Model Manager
 - Select the "Whirlpool" Project
 - Right-click and choose "Import..."
 - Set the Repository to another Repository
 - Select Retain
 - Rename the Model

1 Introduction

1.1 Scope

This document applies to all written Requirements produced by product development teams (marketing, merchandising, GCD, GSS, manufacturing, engineering, etc.).

1.1 Overview

The purpose of this document is to assist in the process of writing good requirements. It outlines a number of aspects to consider that are important when requirements are being created.

System of Interest

System

System Element

System Element

System Element

Level N

Level N +1

Level N +2

Figure 1

Consider a general system that consist of two system elements as illustrated in figure 1. This document can be applied when writing requirements, independent of level. The system and system elements will have an associated requirement specification with the corresponding

HOW TO START?

WE ASKED: WHAT SHOULD BE OUR OVERALL STRATEGY?



WHIRLPOOL PRODUCT DEVELOPMENT

WPD System Planning Advanced Project Production Project Help Center DPL Learning Tools and Resources

Existing Constraints

Whirlpool Product Development (WPD) is a cross-functional, global, and consumer-focused way of approaching product development. WPD is both a system and a project delivery process. The WPD system encompasses the WPD process as well as the foundational behaviors, elements, capabilities, and tools required to consistently deliver Product Leadership and Brand Leadership. [Click here](#) for a brief video.

WHO WILL USE THE WPD SYSTEM?

Everyone who touches the product development process will work within WPD. From Marketing to Manufacturing, To Global Consumer Design and Consumer Care, cross-functional teams throughout Whirlpool Corporation will be involved in WPD.



Company Benchmarking



HOW DID WE GET STARTED AND TRACTION?

	2016				2017				2018	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Deploy Intro to SE Host OpCat Modeling Classes										Generated awareness but mixed responses from practitioners.
1st INCOSE IW Evaluate Multiple MBSE Tools										Strategists see the light! We need something more...MBSE!
\$\$\$ Approved for MBSE Tools Initial Tool Configuration					Justify, procure and configure the new tools.					
Launch 1st SE Boot Camp to “Accelerate SE”					Generic MBSE training with better (not great) responses from trainees.					
Launch WPD-Based SE Boot Camps (Tailored for MBSE in Whirlpool)					Whirlpool-specific MBSE training with hands-on simulation and class projects generates enthusiasm and results!					

TRAINING CONTEXT

TRAINING INPUTS & INTERFACES



Modality	Project Management		WFO		Legacy Systems		Systems Engineering							
	ILT	ILT	ILT	ILT	ILT	Online	Online	ILT	Online	ILT	Online	Online	ILT	
Content Completion Status	Y	A	Y	N	V	A	V	A	N	N	A	V	Y	Y
2019	Y	Y	Y	Y	Y	N	Y	N	M	N	N	Y	Y	Y
Course Notes														
Architects & Teams														
ADIE														
ADM														
Algo/ML														
Architects														
Architect	0	1	2	3	4	5	6	7	8	9	10	11	12	13
C4E Leader	0	1	2	3	4	5	6	7	8	9	10	11	12	13
C4E Team	0	1	2	3	4	5	6	7	8	9	10	11	12	13
C4E Team	0	1	2	3	4	5	6	7	8	9	10	11	12	13
C4E Team	0	1	2	3	4	5	6	7	8	9	10	11	12	13
C4E Team	0	1	2	3	4	5	6	7	8	9	10	11	12	13
EES Architect Team	0	1	2	3	4	5	6	7	8	9	10	11	12	13
EES Architect Leader	0	1	2	3	4	5	6	7	8	9	10	11	12	13
EES Architect	0	1	2	3	4	5	6	7	8	9	10	11	12	13

Support Key Org Roles

Integrate with Existing Systems

SE Training content

Deploy New Systems



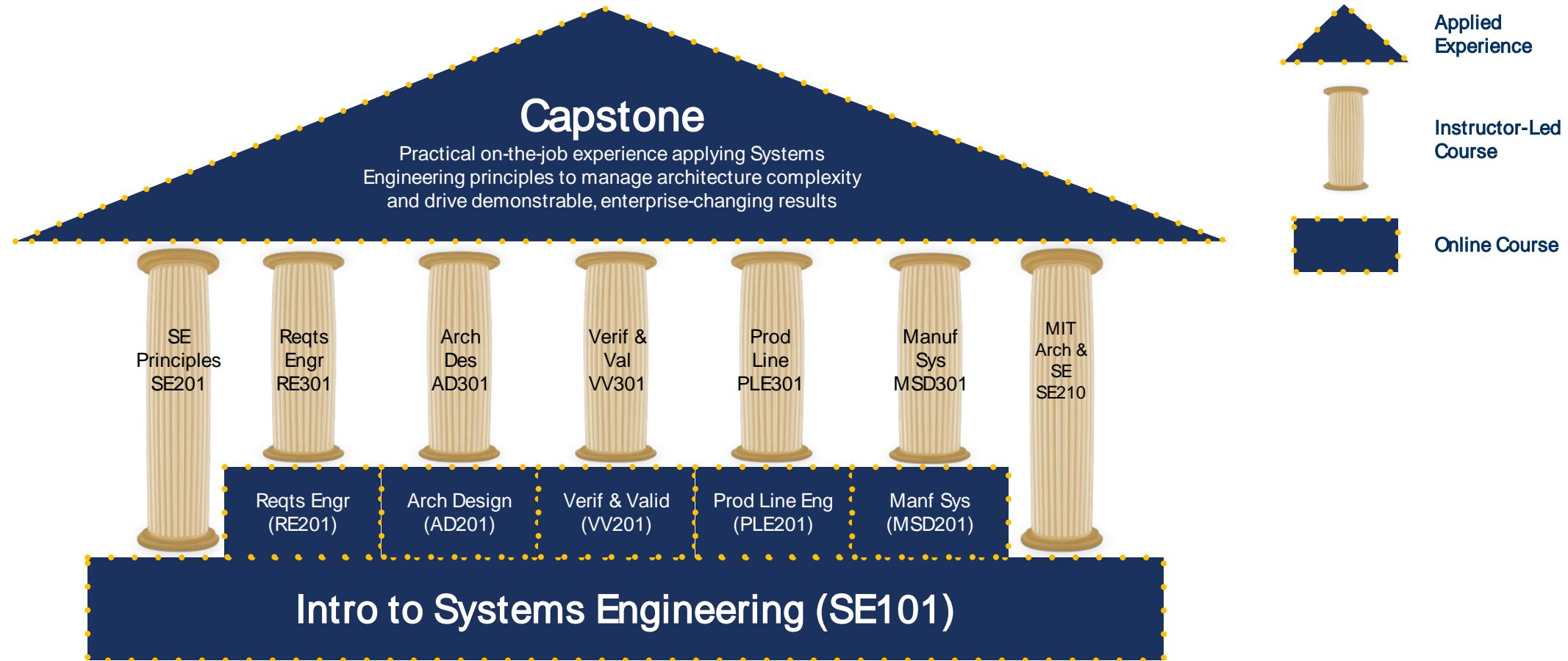
Provide Hands-On Training



Improve Metrics

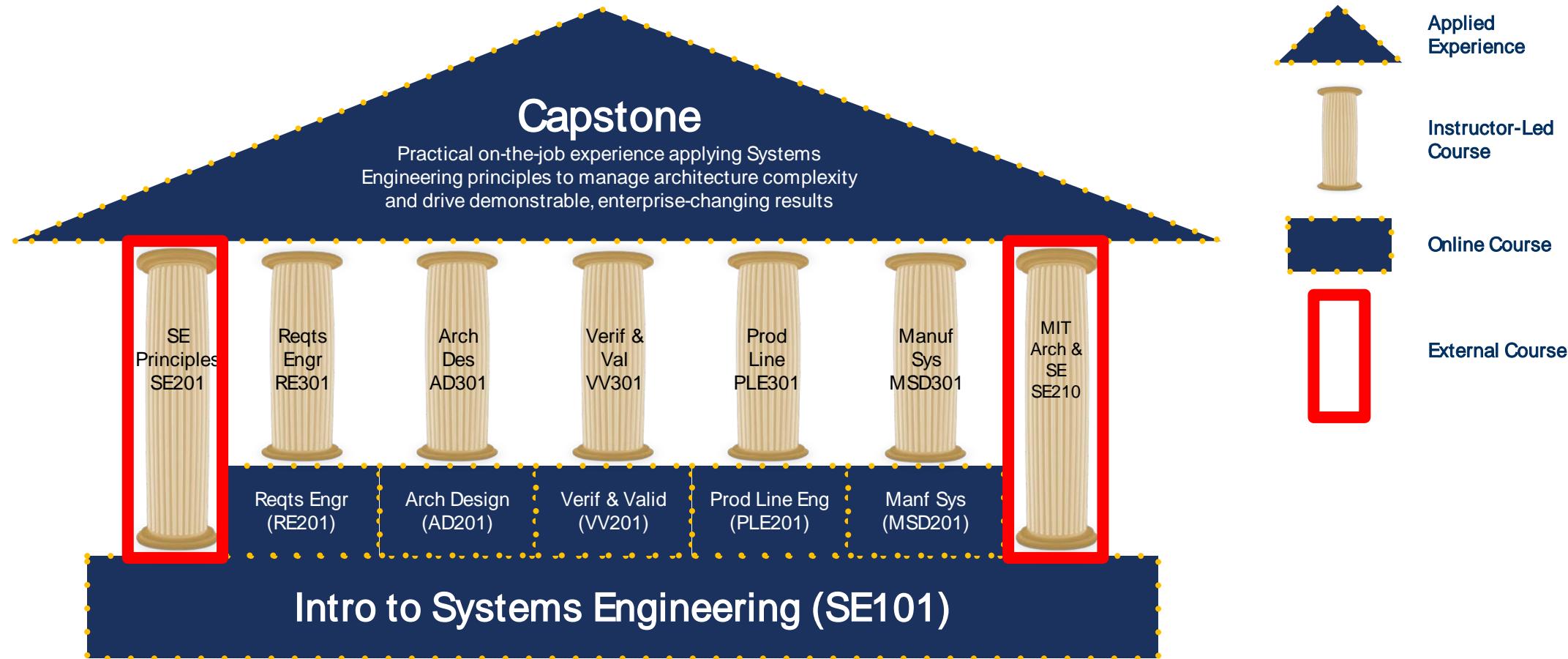
TRAINING OVERVIEW

TRAINING IS TAILORED TO OUR ORGANIZATION...



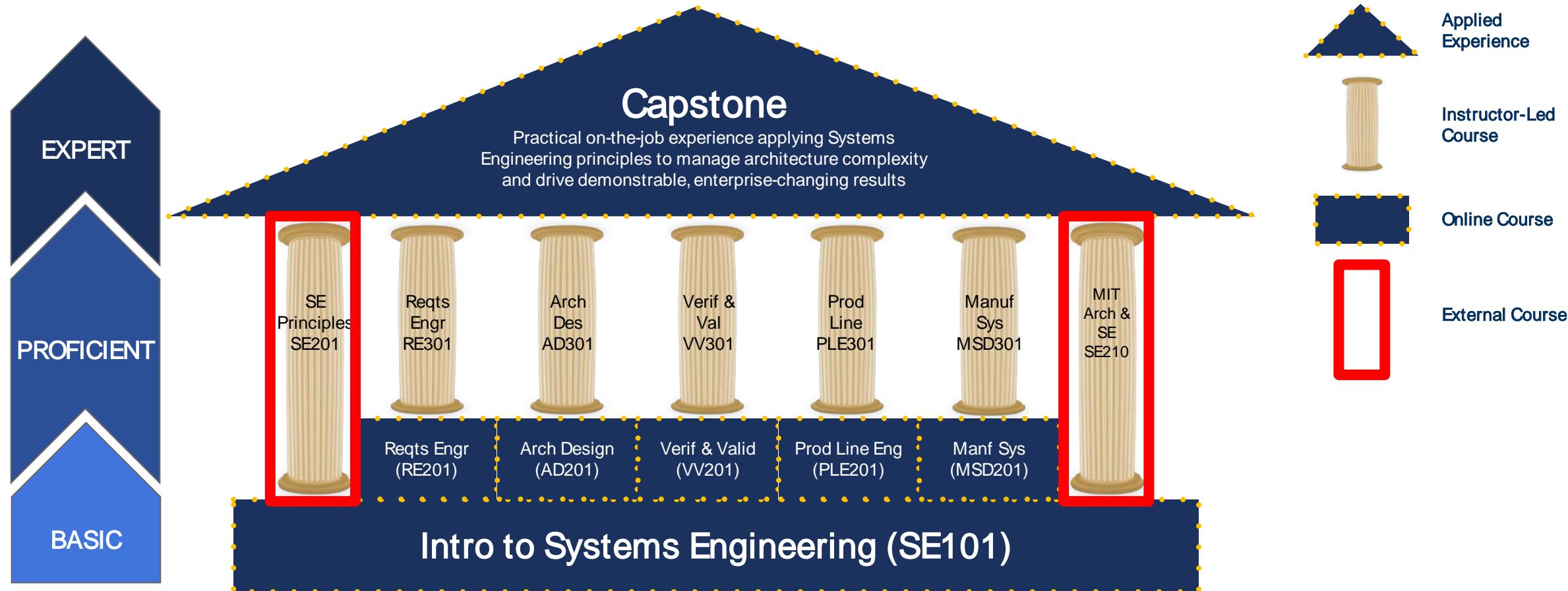
CURRICULUM IS A MIX OF ONLINE AND INSTRUCTOR-LED COURSES

...TO SUPPORT OUR UNIQUE NEEDS ...



EXTERNAL TRAINING BRINGS AN OUTSIDE PERSPECTIVE AND ADDS CREDIBILITY

...AND BUILD CAPABILITIES

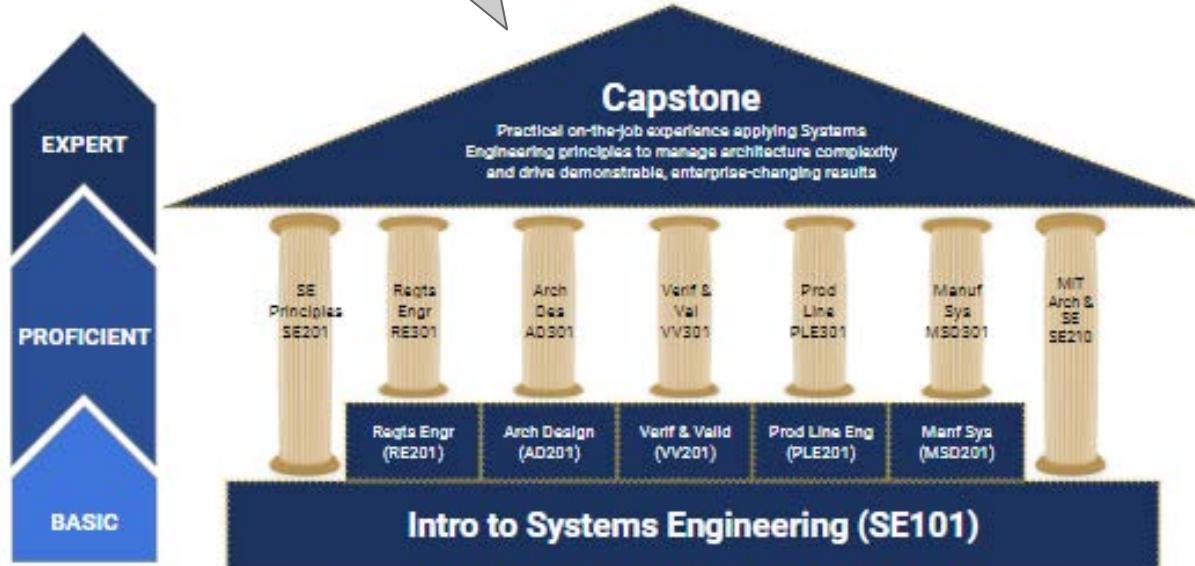


TIERED STRUCTURE ENABLES MODULAR APPROACH THAT SUPPORTS MANY ROLES

EXPERT ROLES ARE MORE THAN TRAINING

Demonstrated success
applying the methods and
using the tools

Supported by certification
status (CSEP or ESEP level)
and recognition in industry

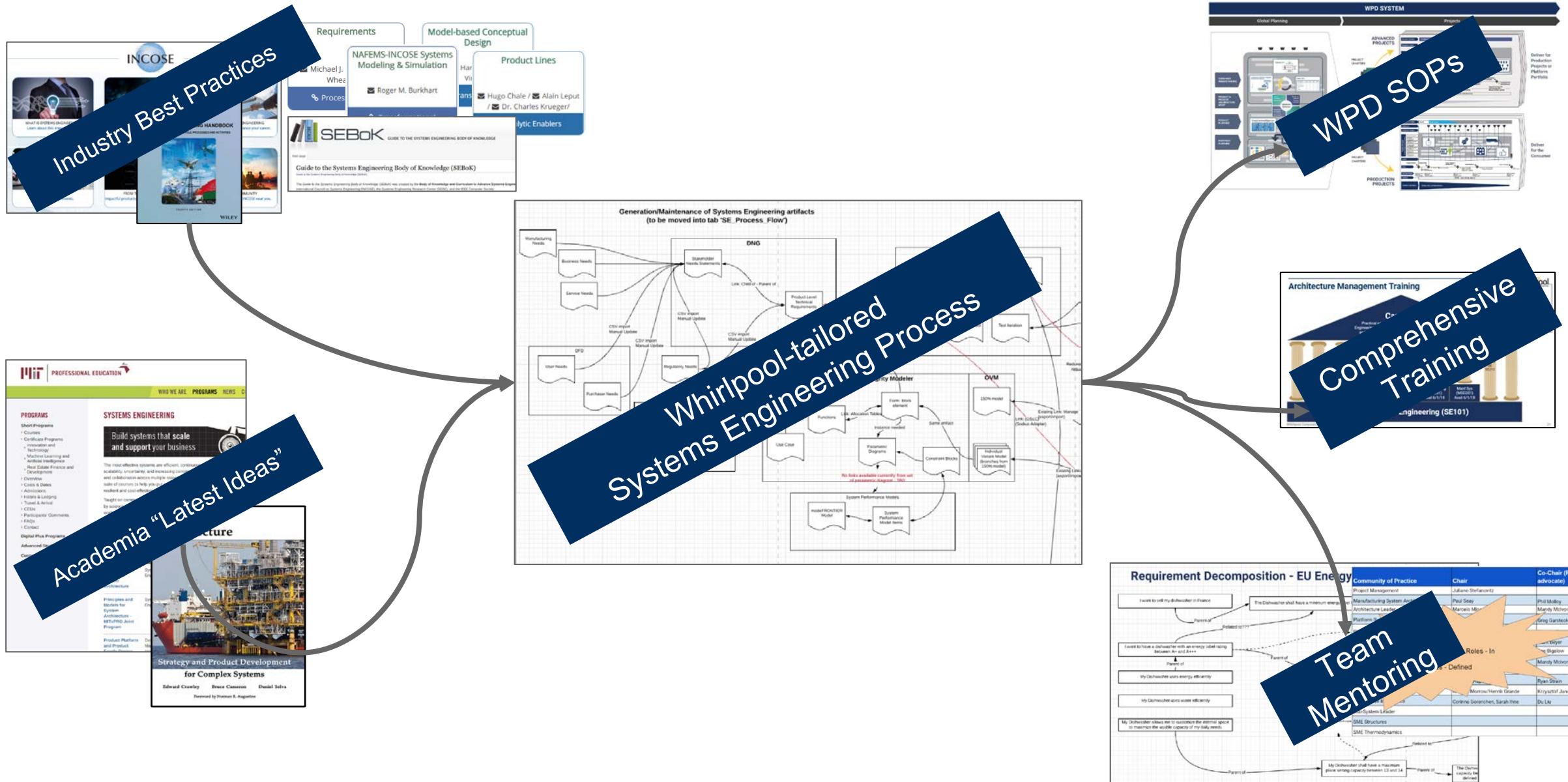


Multi-Level Base Credentials
The Base ASEP, CSEP, and ESEP credentials cover the breadth of systems engineering at increasing levels of leadership, accomplishments and experience.

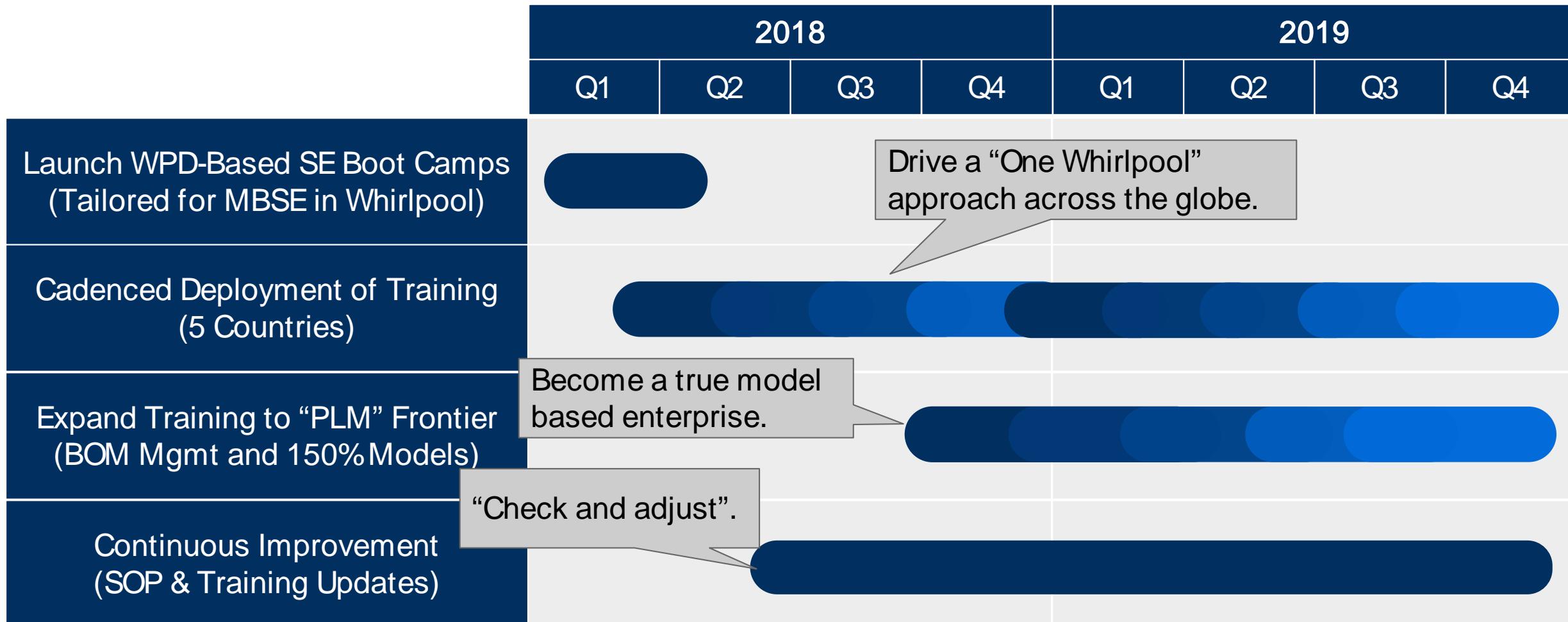


9 CSEPs
+ 5 in process

SO WHAT DID WE DO?



HOW ARE WE GETTING TO WHERE WE WANT TO BE?



“Systems Engineering training within your organization can be effective given the right tailoring, education, practice, and follow-up support”

LET'S GET STARTED

WE ASKED: WHAT SHOULD BE OUR OVERALL STRATEGY?

WHIRLPOOL PRODUCT DEVELOPMENT

WPD System Planning Advanced Project Production Project Help Center DPI Learning Tools and Resources

WHIRLPOOL PRODUCT DEVELOPMENT (WPD)

Existing Constraints

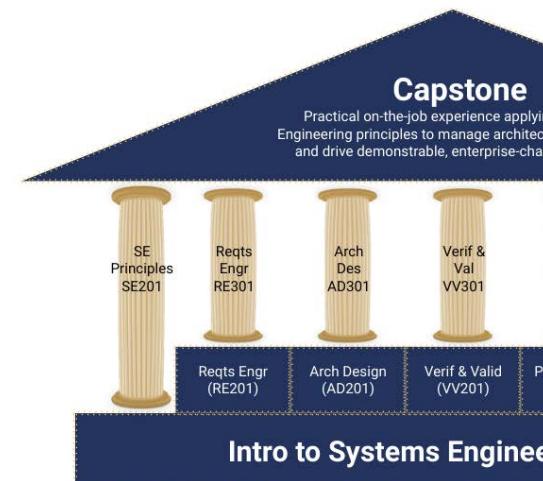
Whirlpool is a system and a project delivery process. The WPD system encompasses the SEIC process as well as the foundational behaviors, elements, capabilities, and tools required to consistently deliver Product Leadership and Brand Leadership. Click here for a brief video.

WHO WILL USE THE WPD SYSTEM?

Everyone who touches the product development process will work within WPD. From Marketing to Manufacturing. To Global Consumer Design and Consumer Care, cross-functional teams throughout Whirlpool Corporation will be involved in WPD.



INSTITUTE OF TRAINING IS TAILED TO OUR ORGANIZATION...



THANK YOU

JOIN THE CONVERSATION

 @WhirlpoolCorp #WhatMatters

 [LinkedIn.com/company/Whirlpool-Corporation](https://www.linkedin.com/company/Whirlpool-Corporation)
WhirlpoolCorp.com



*Whirlpool Corporation ownership of the *Hotpoint* brand in EMEA and Asia Pacific regions is not affiliated with the *Hotpoint* brand sold in the Americas.

