Lean Startup Method and Agile for Initial Project Requirements Development & Management

"Getting It Right, Right From the Start!"

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LSM/Agile Presentation Information

Presentation slides are posted:

- In **INCOSE CONNECT:**
  - on the **Object-Oriented Systems Engineering Method (OOSEM) Working Group** site.
- In **Dropbox**:
  - **https://tinyurl.com/y9thpypp**

LSM/Agile Presentation Topics

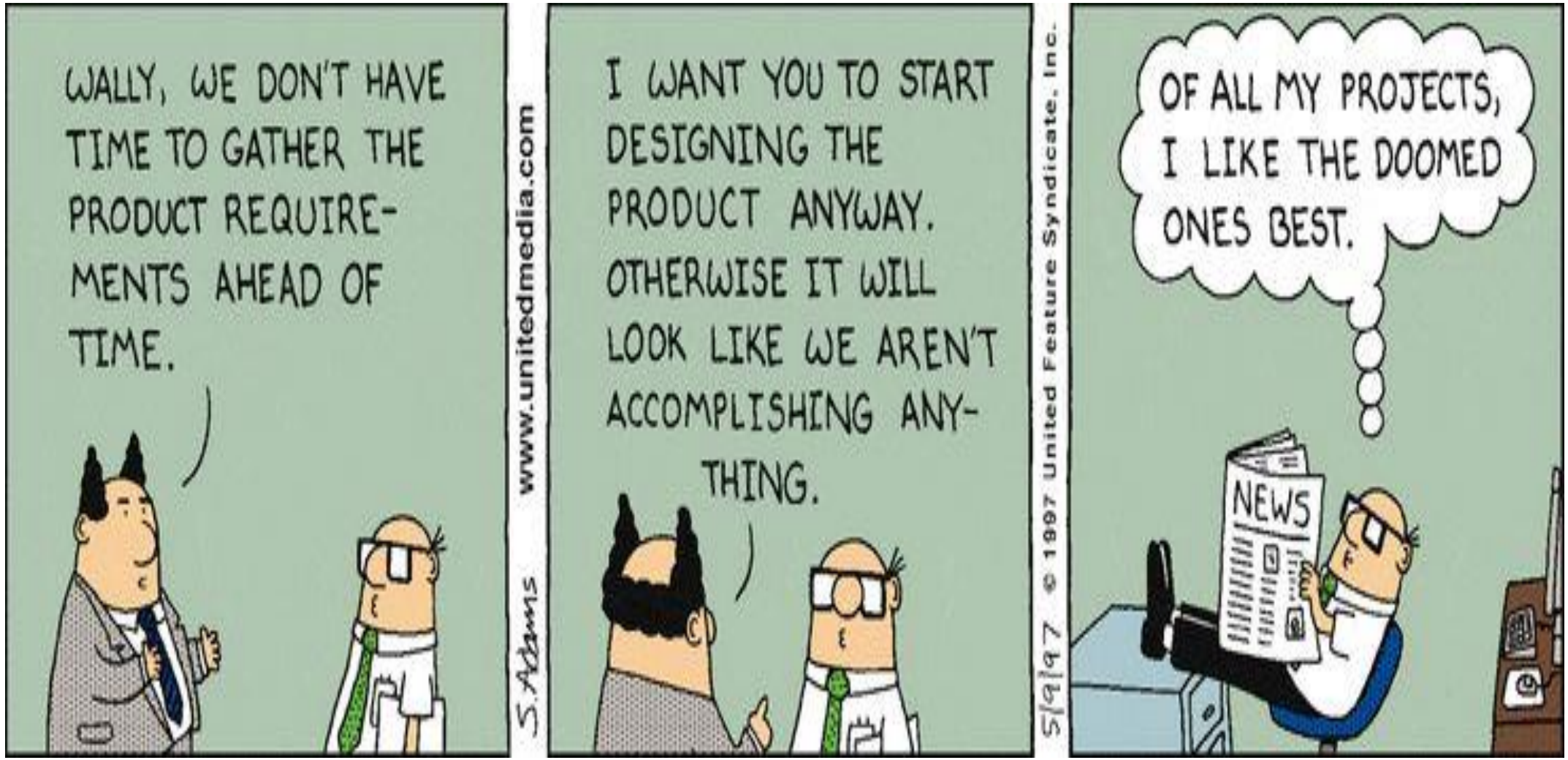
- **Presentation Topics:**
  - **Lean Startup Method (LSM)**
  - **Agile (Scrum)**
  - **LSM/Agile for Initial Project Planning**
    - **“Problem Validation”: ‘Product/Project Vision Board Extended (PVBE)’**
    - **“User Validation”: ‘Persona Templates’**
    - **“Solution Validation”: ‘Product/Project Canvas’**
    - **“Solution Building Blocks”: ‘Solution-Ready Initial Product/Project Work Items’ (e.g., High Level ‘Epic’ User Stories, Capabilities, etc.)**

LSM/Agile Presentation Information

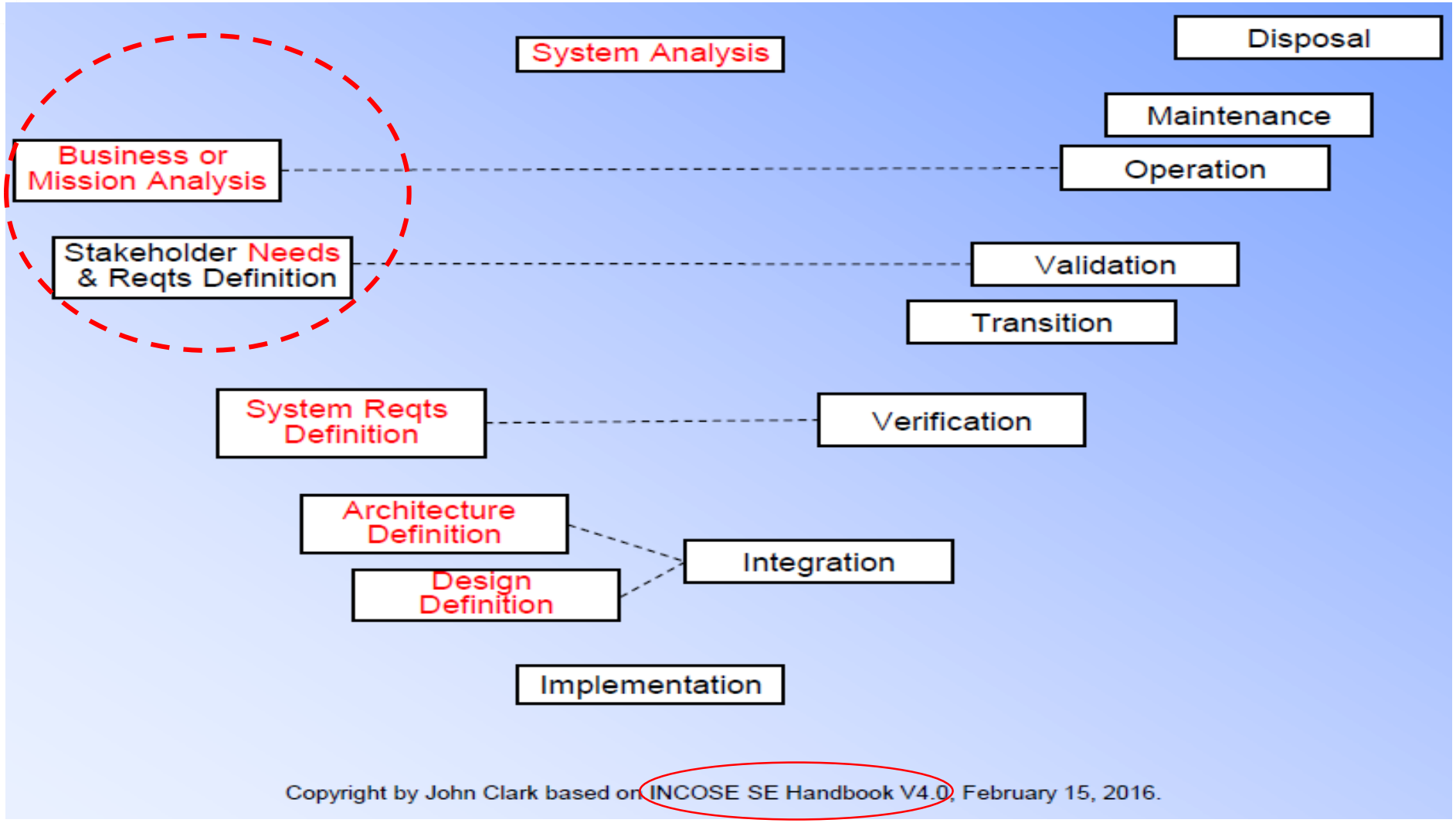
- The roles and responsibilities of Program and Project Engineers and Managers are rapidly evolving.
- The purpose of this Presentation is to acquaint engineers and managers with some current and modern tools and techniques being used, specifically in the initial Project Planning phases of System Development Lifecycle (SDLC) projects.
- Presentation information will be based on example Problem Statements and User Scenario narratives for a Notional Microgrid Reference Model (uGrid RM) MBSE project integrating hardware, software, data, processes, and people.
- A Primary Objective of the Presentation is to highlight the value of using best practices from the Lean Startup Method (LSM) and Agile (Scrum) Product Backlog Item (PBI) Development during initial project planning and requirements analysis.
- Using information from this Presentation, attendees will be introduced to LSM/Agile process steps and techniques involved in developing project initial planning information and artifacts for Problem Validation, User Validation, Solution Validation, and Solution Building Blocks (e.g., Capabilities, High Level Requirements, etc.).

- The **Objective** of using LSM/Agile for Initial Project Planning, is to develop an **Actionable Set of Project Focus Mechanisms.** that can be used to enhance the start of any project—no matter the methodology.

LSM/Agile: Right, Right From The Start – Or Else



IPP in the System Development Life Cycle



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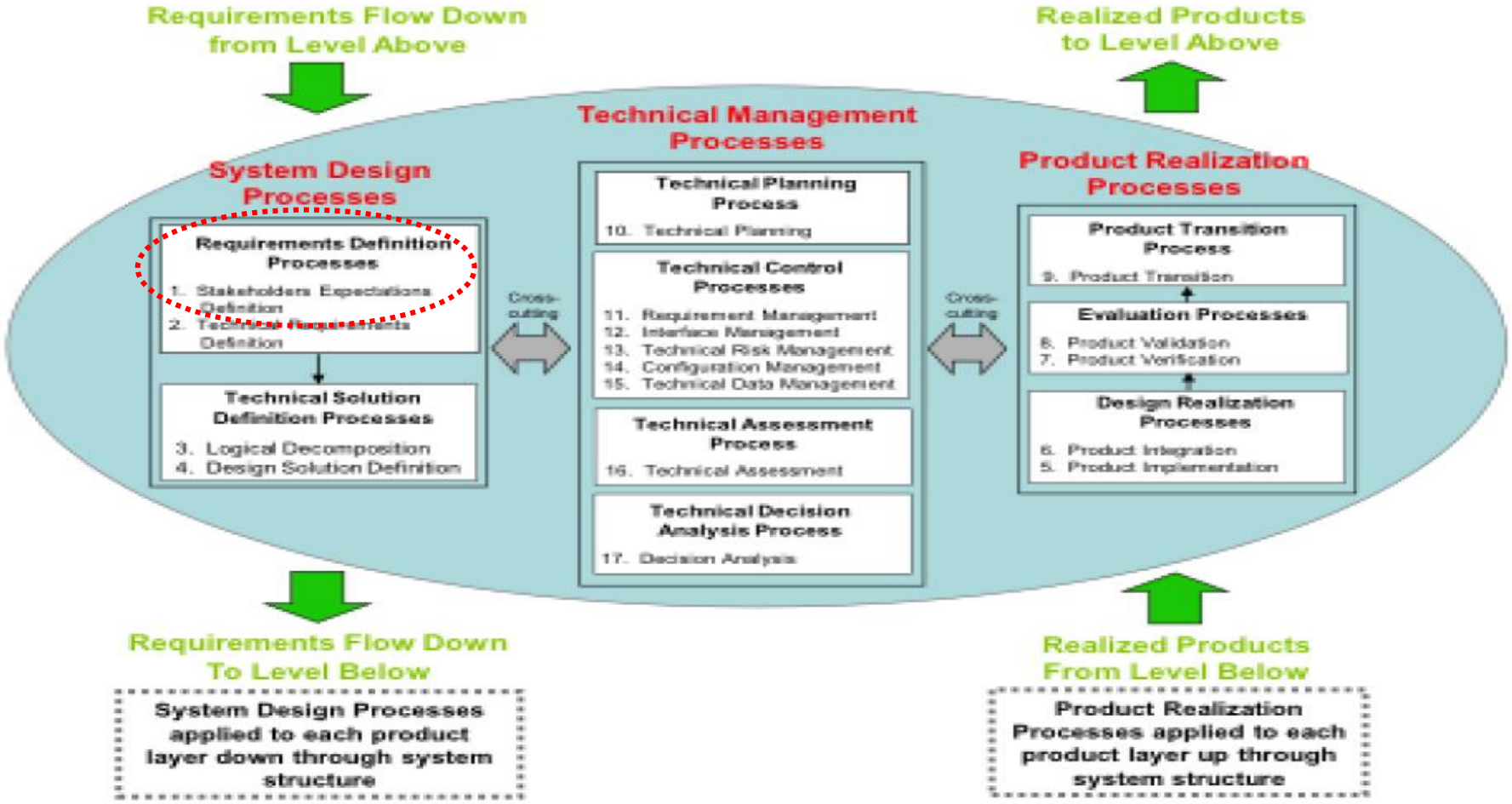
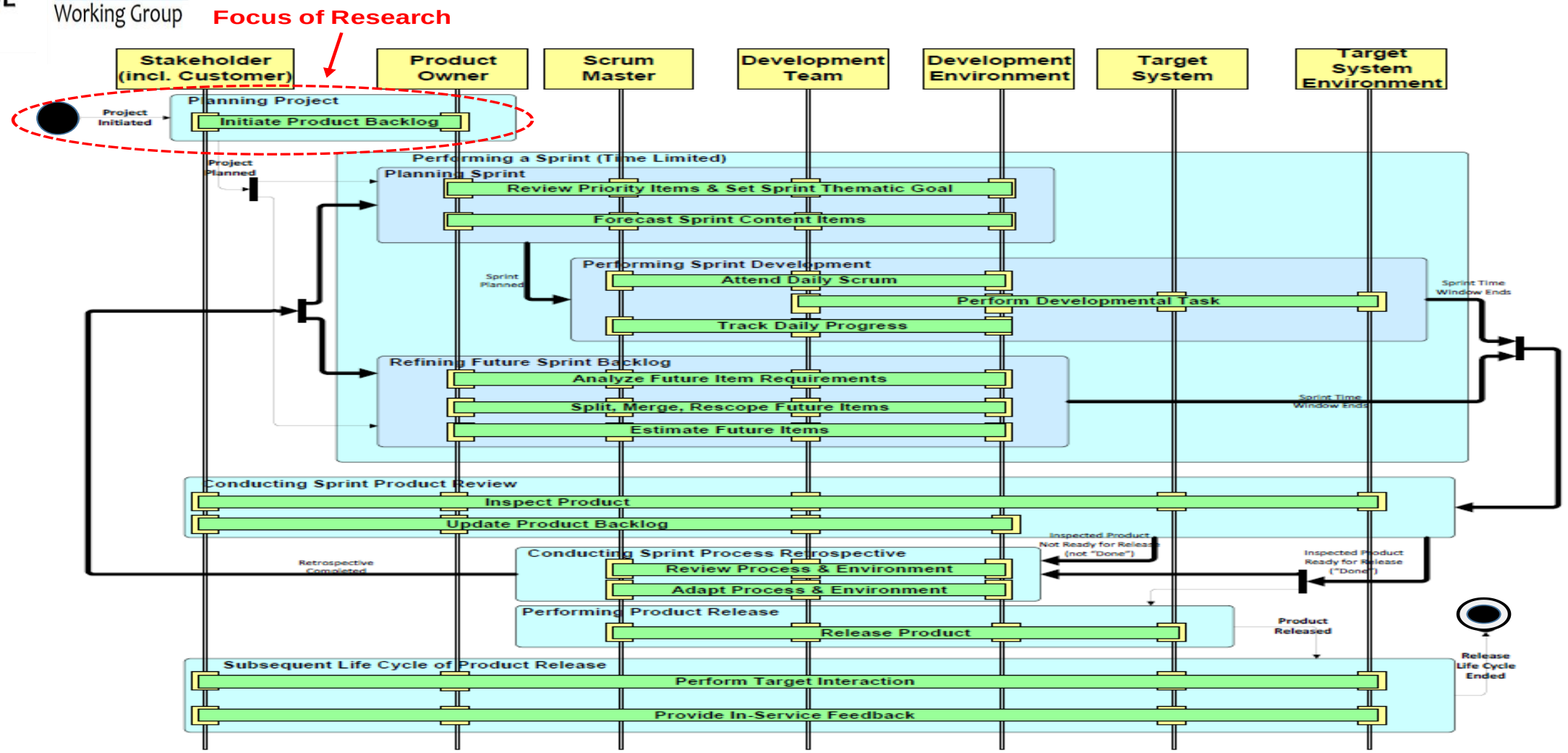


Figure 3 1 - Systems Engineering (SE) Engine

https://snebulos.mit.edu/projects/reference/NASA-Generic/NPR_7123_1B.pdf

LSM/Agile: Example in an Agile Project Lifecycle



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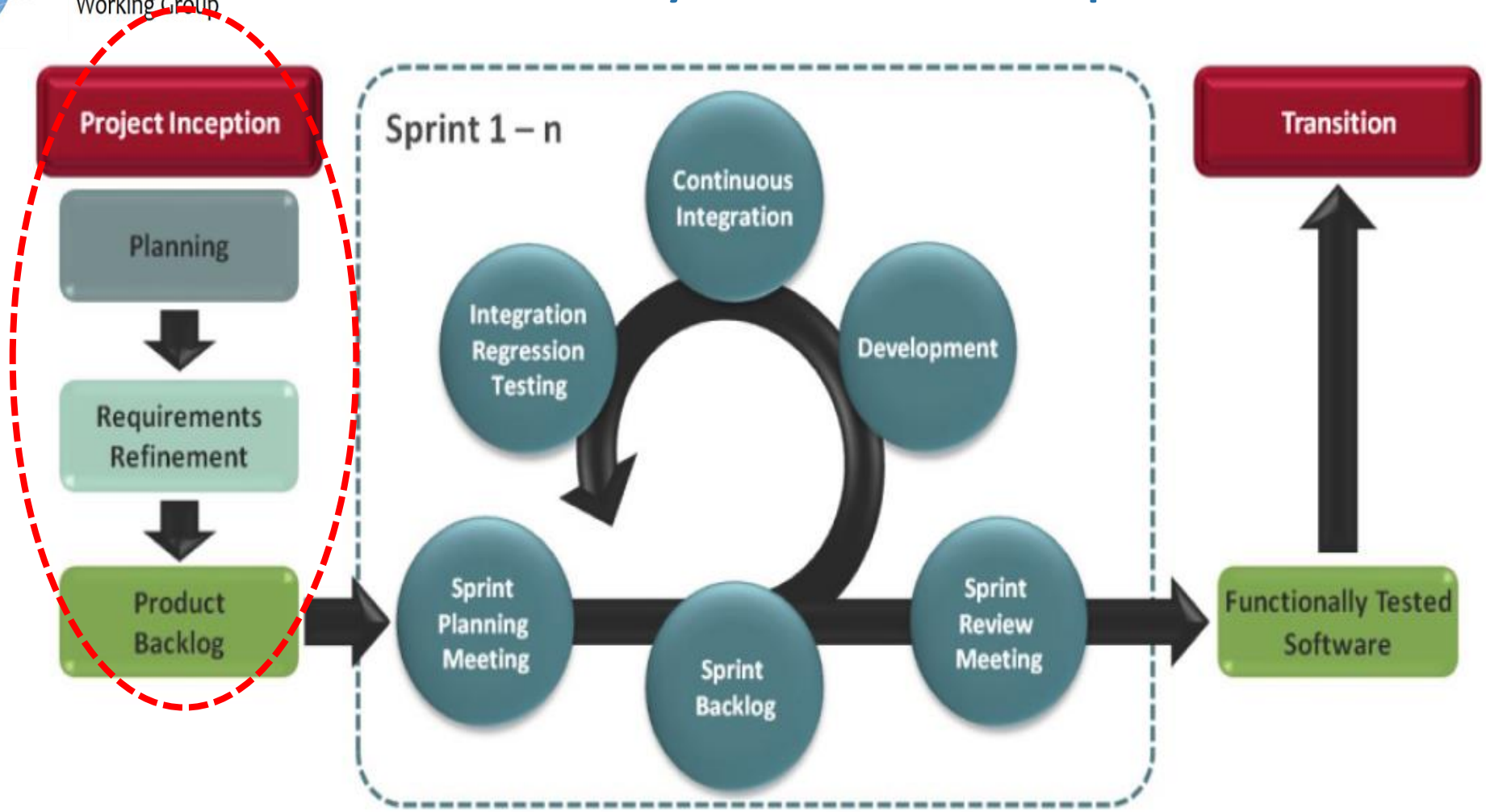
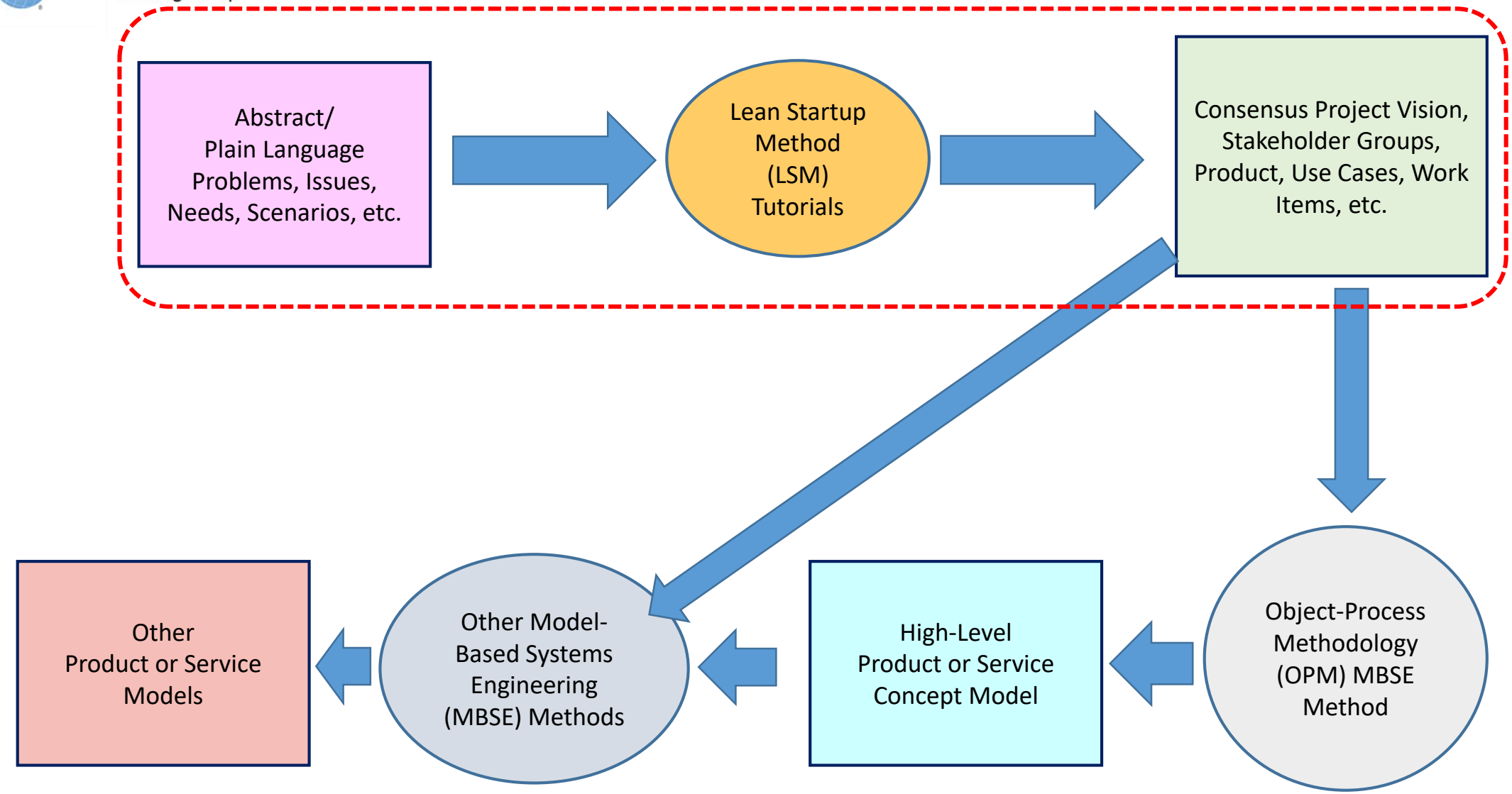
IPP in the System Development Life Cycle

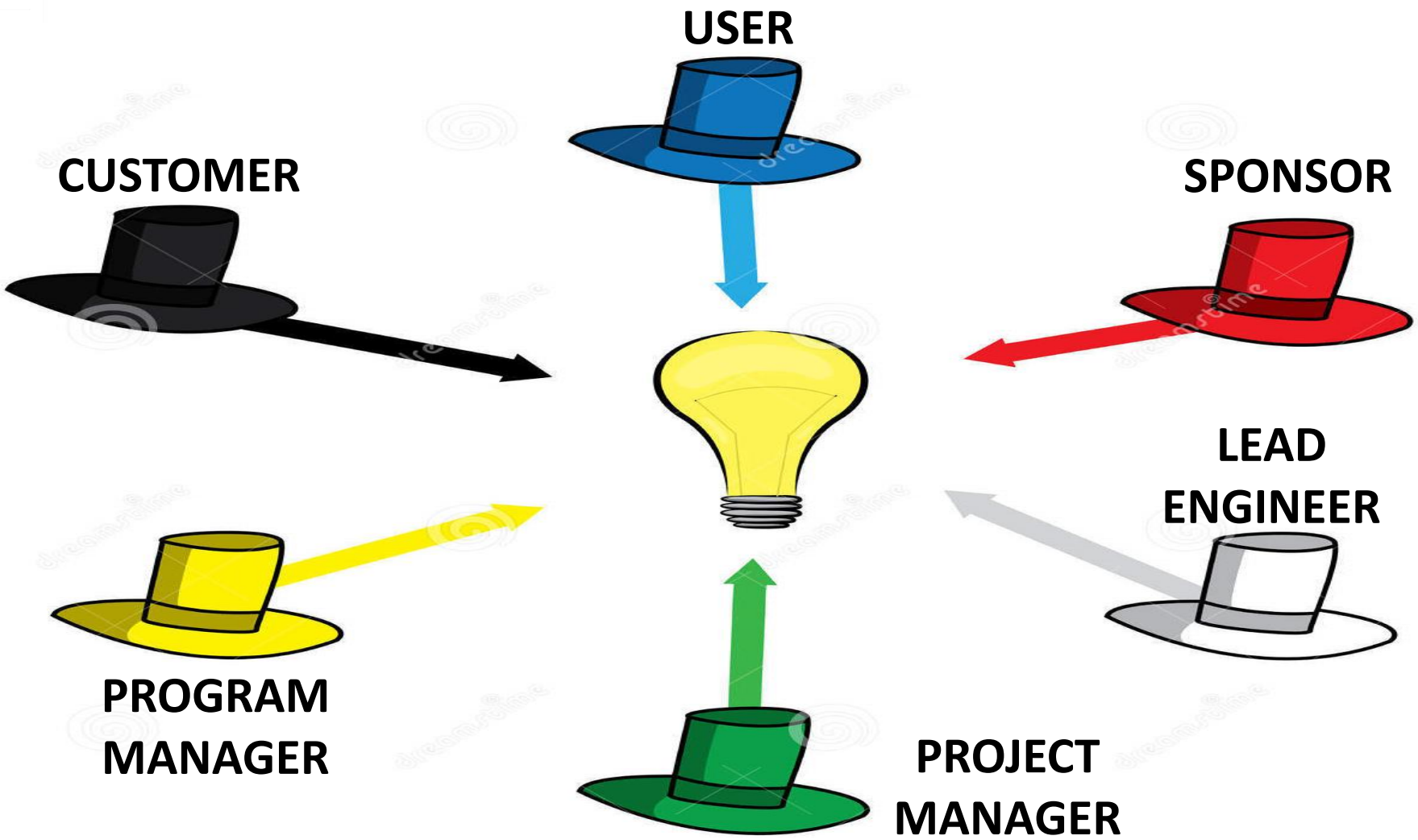


https://tinyurl.com/y83g9vvl

LSM/Agile: Example Objectives



LSM/Agile: 'HATS' (Examples)



LSM/Agile: 'HATS' (Examples)

Eight uGrid RM Project "HATS"

Project Lead

System Integrator

Consumer
(Hospital, etc.)

Producer

Customer
(County, etc.)

Infrastructure

Engineers
(Systems, Software, etc.)

Ops Manager
(County, etc.)

uGrid RM Project - Title and Purpose

Info: sgabriele@gemslearning.net

SYSTEMS THINKING ROUNDTABLE

FACILITATOR GUIDE (300 words: 2.5 minutes read aloud)

At __:00 a.m. begin. Don't read words in parentheses.)

1. Welcome, to our Systems Thinking RoundTable (RT). My name is ____, and I am today's facilitator. The RoundTable Guide is in front of you. (Be sure new people have RT Guides). We propose to suspend judgment and experience this together without stopping for 45 minutes today. Let's take one minute and go around the room for initial introductions--about three words: e.g., your first name, role/title, school. (Cue the person on your left).
2. Thank you and welcome again to everyone. For our reflection today, I'll suggest the topics ____ (see bottom of page) for everyone to comment on. While we each consider the topics for a few minutes, I'll ask for volunteers to read aloud the RoundTable Guidelines on the right. Will ____ read OUR FORMAT?... OUR PURPOSES?... GUIDELINES FOR LISTENING? .... GUIDELINES FOR SPEAKING?.. GUIDELINES FOR RESPONDING?..

(At __:05 a.m. please read...)

3. Did anyone come in after the introductions?... Welcome! (Option: Ask for 3-word intro and offer RT Guide).
4. Again, today's suggested topics are: ____*. I would like to hear everyone's thoughts about these topics or anything else that is on your mind. Let's each take about (__) minutes to speak. I will use a timer to help us stay on time. Please speak so that everyone can hear. What you say is important to us. (Options: I will start, or we'll start with __) and continue around the circle. (If time permits: a 2nd, 3rd full round.)
5. **(If there is time)** Anyone who hasn't spoken who is ready to speak now?

(At __:45 a.m. please read...)

6. It's time to close.
7. Thank you all for coming today. We hope to see you at a future session. If you have something more to say, ask a colleague to listen to you on your way out.

READINGS: RoundTable Guidelines (300 words: 2.5 min.)

OUR FORMAT. Our unique format is a new best practice in systems thinking. We spend 5 minutes listening to short readings and the suggested topics. We then spend 40 minutes on individual comments, time divided equally among all present (e.g. 22 people = 2 minutes each). Each session is facilitated by a different volunteering facilitator chosen from those in attendance.

OUR PURPOSES. We use a facilitator guide/script and basic readings--RoundTable Guidelines--for many reasons: 1- We pack in a great deal of information in a very short time, thus leaving maximum time for each of us to present our ideas. 2- The result is we hear everyone's point of view on a topic. 3- We experience some new real-time effortless practices in equal participation: including rotating, distributed leadership; equal time; as well as a simple scaffold to facilitate conscious self-guided evolution. 4- We have found that just as we break the sound barrier when we travel faster than the speed of sound, we break the communication barrier when we hear 20 authentic viewpoints in 45 minutes—and a different facilitator at each session.

GUIDELINES FOR LISTENING. Listening to the 5 minutes of readings allows us the opportunity to quiet our minds and silently reflect on the topics, the readings, our inner thoughts, and our work and lives. Listening to each other's comments, we hear a great variety of viewpoints. We consciously shift our attitudes from "evaluation" to "valuation," from critiquing to appreciating, from problem-solving to ideal-seeking -- towards one another and towards ourselves.

GUIDELINES FOR SPEAKING. At your turn, please say your name again. Then say something about today's topic, or anything else that is on your mind. Let's each take only one turn to speak and limit our time, so we can offer everyone a turn. Or, if you prefer, pass your turn and just listen today.

GUIDELINES FOR RESPONDING. The facilitator may say "thank you" after you speak. In the interest of time and purpose, we will save all other responses to each other until after the session. We don't want to divert others, or be diverted, from our own individual learning. If someone says something that you want to build on, you may want to make a note of it so you can do so during your turn.

LSM/Agile: Project Title & Purpose (Examples)

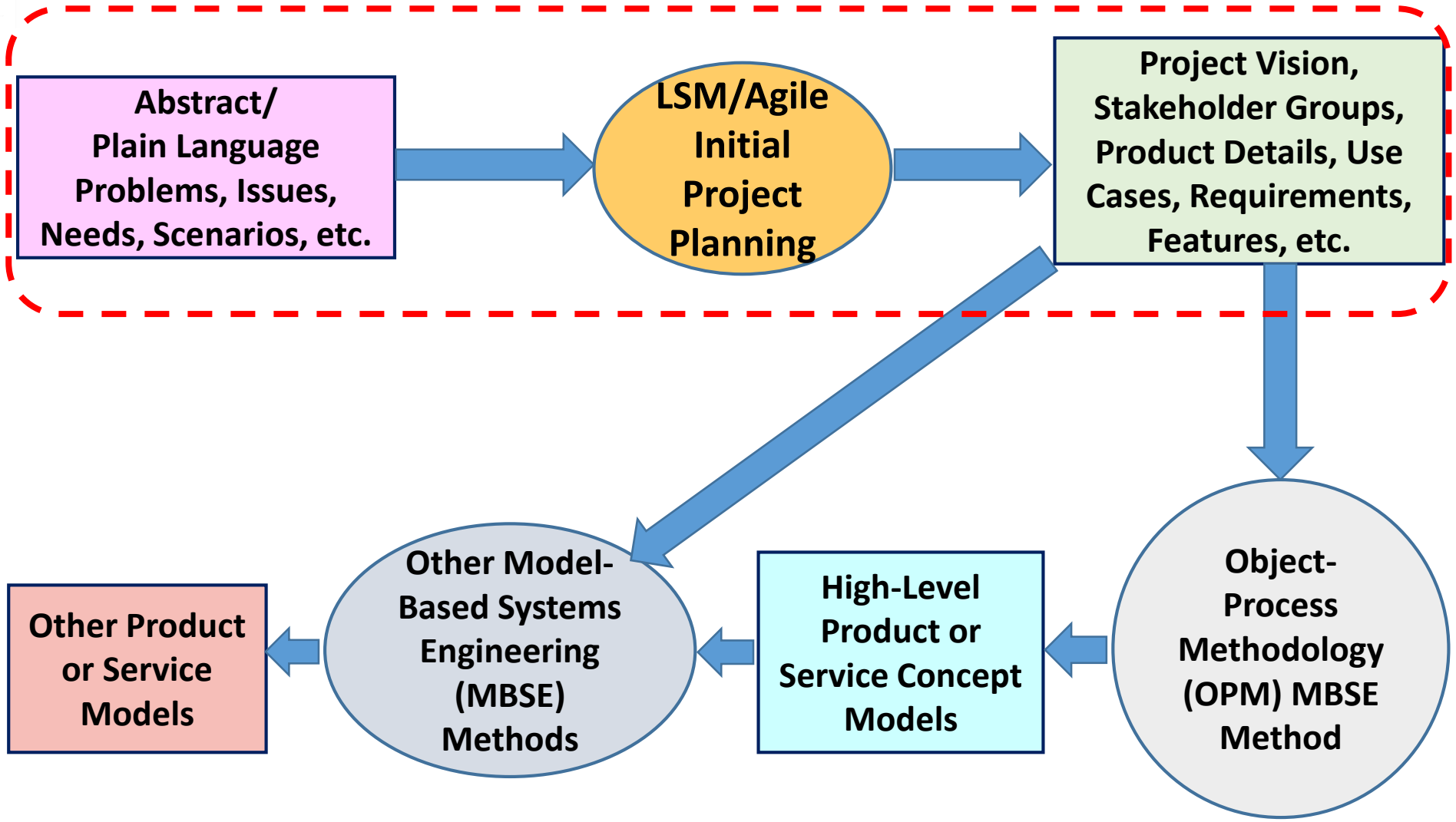
Project Title:

"Microgrid (uGrid)
Reference Model (RM)
and Application Process"

Project Purpose:

"Use LSM to Produce
Initial Work Items
for uGrid RM Project"

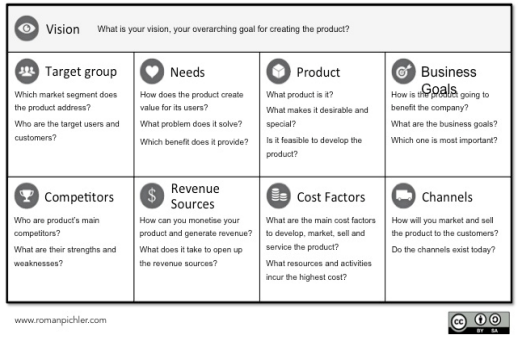
LSM/Agile IPP Roadmap



LSM/Agile IPP: Process Flow

"PROBLEM VALIDATION"

Product Vision Board Extended (PVBE)



-- Compliant with Lean Business Model Canvas (BMC)
-- Can be shared in tools like Atlassian 'Confluence'

"USER VALIDATION"

Persona Templates

PICTURE & NAME	DETAILS	GOAL
What does the persona look like? What is its name? Choose a picture and a name that are representative, and that allow you to develop sympathy for the persona.	What are the persona's relevant characteristics and behaviours? Consider demographics, job, lifestyle, spare time activities, attitudes, and common tasks, for instance.	Why would the persona want to buy or use the product? What problems should the product solve? What benefits does the persona want to achieve? If there are multiple problems or benefits, identify the main one and put it at the top.

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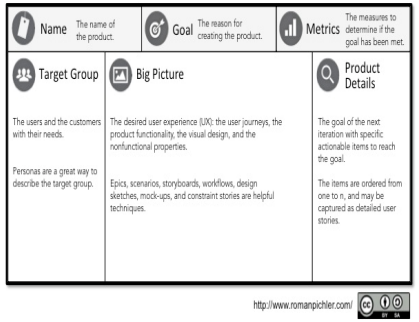
"SOLUTION VALIDATION"

Product Canvas



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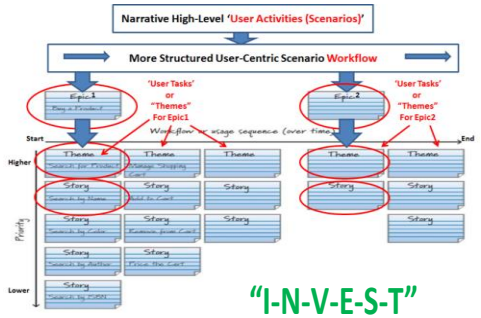
"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping

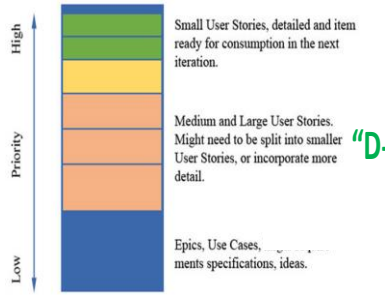


"I-N-V-E-S-T"

-- Can be linked/shared in tools like Atlassian 'Confluence' & 'Jira'

"SOLUTION-READY PBIs"

Initial Product Backlog Items (PBIs)



"D-E-E-P"

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Lean Startup Method (LSM): Introduction

- Also called, **“Lean Launchpad”**
- A philosophy and methodology based on 1980s **Lean Manufacturing.**
- A learnable and shareable **stakeholder-centric** method to quickly and iteratively start to develop a new product or service, or update existing products or services.
- Developed in its current form by American entrepreneur **Eric Ries**, founder and CEO of the Long Term Stock Exchange (LTSE).
  - A former student of **Steve Blank**, who pioneered the **Lean Startup Movement** with his **Customer Development** concept.

Understanding Stakeholders and Stakeholder Feedback are at the center of successful use of LSM for Initial Project Planning and Initial Requirements Analysis.

Starting with an ‘Outcome’, not a ‘Solution’!

Who's Using LSM?

National Science Foundation (NSF) Innovation Corps (I-Corps)
https://www.nsf.gov/news/special_reports/i-corps/index.jsp

National Geospatial Intelligence Agency (NGA)
https://federalnewsradio.com/fed-access/2017/10/innovation-at-the-nga/

National Security Agency (NSA)
https://www.acast.com/leanstartup/7-season-3-how-lean-startup-co-coaches-support-department-of-defense-innovation

Office of Naval Research (ONR)
https://steveblank.com/2017/10/10/office-of-naval-research-onr-goes-lean/

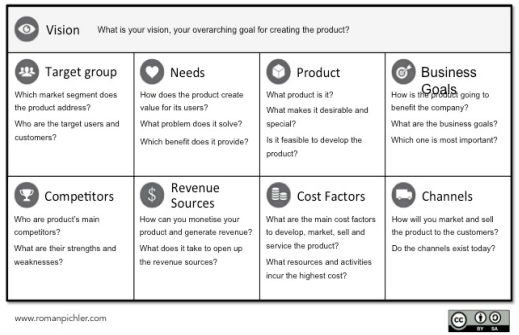
U.S. State Department
https://steveblank.com/2016/10/31/the-state-department-gets-schooled-hacking-for-diplomacy/

Dropbox, Wealthfront, Grockit, imvu, Votizen, Aardvark
http://theleanstartup.com/casestudies#dropbox

LSM/Agile IPP: Process Flow

"PROBLEM VALIDATION"

Product Vision Board Extended (PVBE)



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The Next Part of This Presentation!

"USER VALIDATION"

Persona Templates

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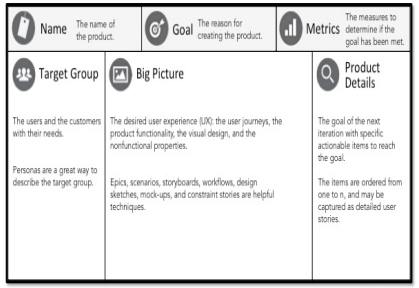
"SOLUTION VALIDATION"

Product Canvas



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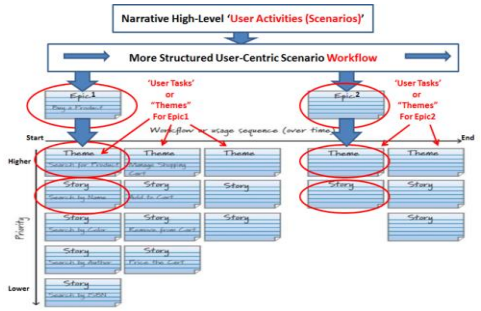
"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping



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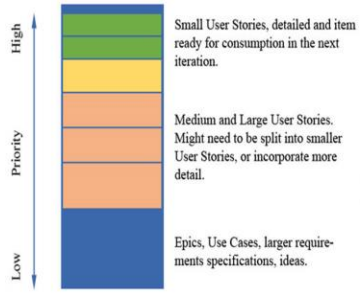

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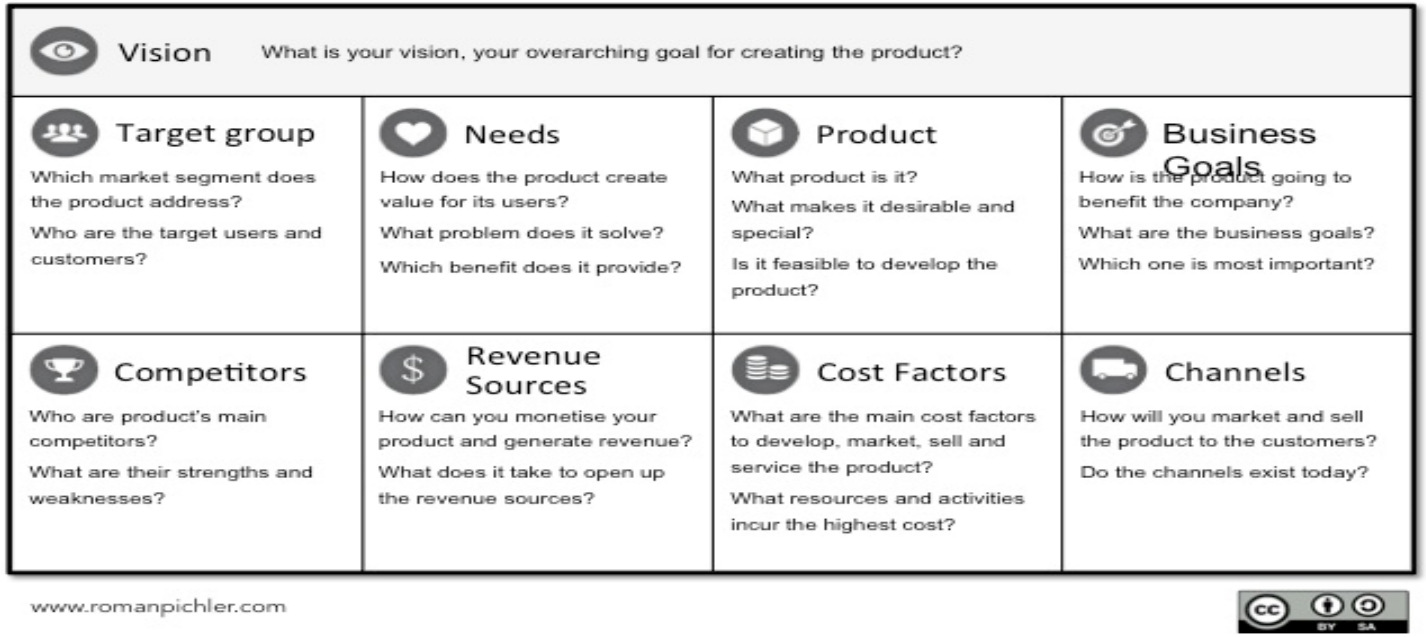
LSM/Agile IPP Step: “Problem Validation”

“PROBLEM VALIDATION”

Product Vision Board Extended (PVBE)



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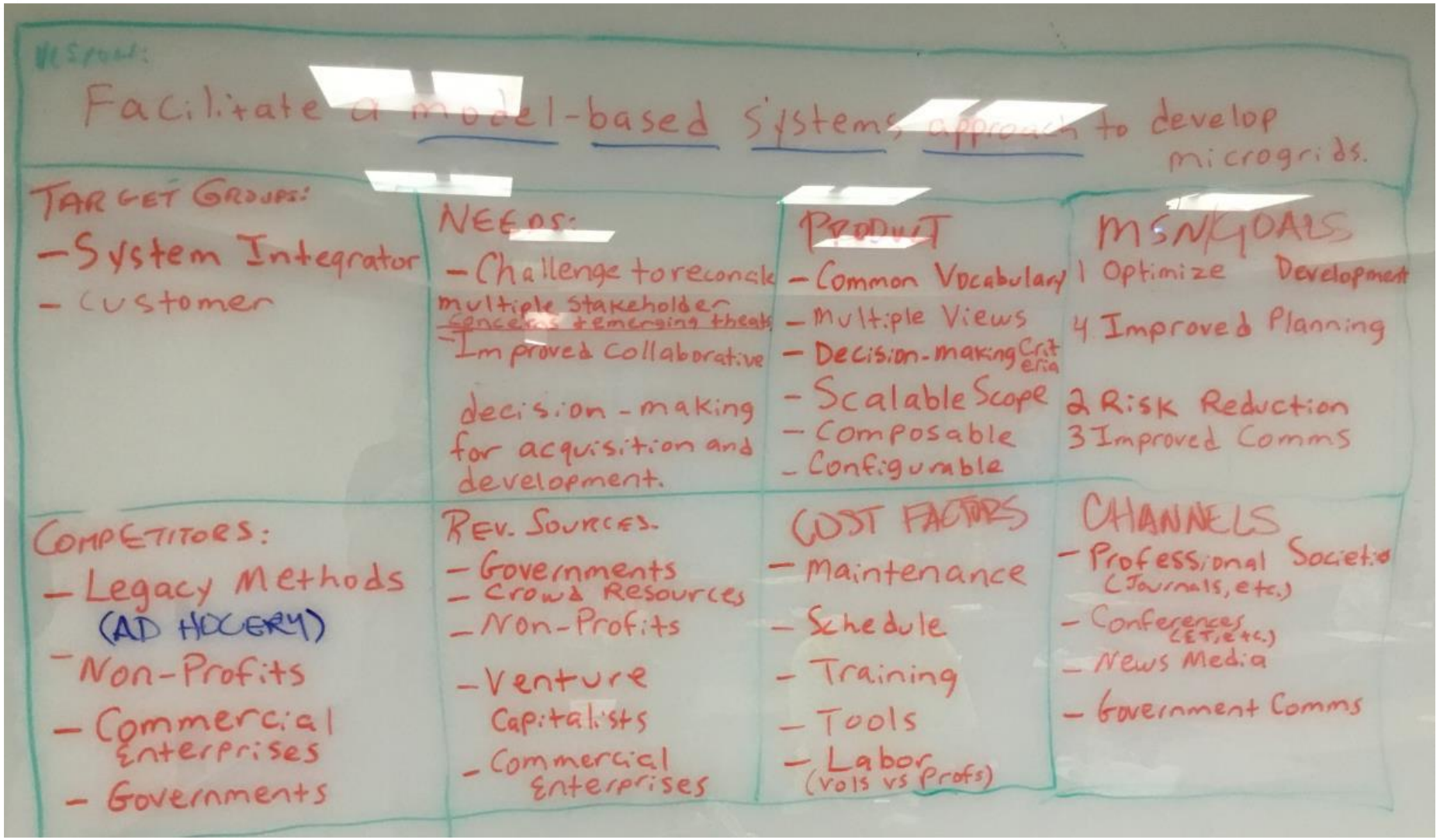
LSM/Agile IPP: "Problem Validation" (Ex.)



LSM/Agile IPP: "Problem Validation" (Ex.)

VISION: Facilitate a Model-Based Systems Approach to Develop Micro-Grids

TARGET GROUP
- System Integrator
- Customer

NEEDS
- Challenge to reconstruct multiple stakeholder concerns and emerging threats.
- Improved collaborative decision-making for acquisition and development.

PRODUCT
- Common vocabulary
- Multiple views
- Decision-making criteria
- Scalable scope
- Composable
- Configurable

MISSION/GOALS
1 Optimize Development
2 Risk Reduction
3 Improved Comms
4 Improved Planning

COMPETITORS
- Legacy Methods
- Non-Profits
- Commercial Enterprises
- Governments

REVENUE SOURCES
- Governments
- Crowd Resources
- Non-Profits
- Venture Capitalists
- Commercial Enterprises

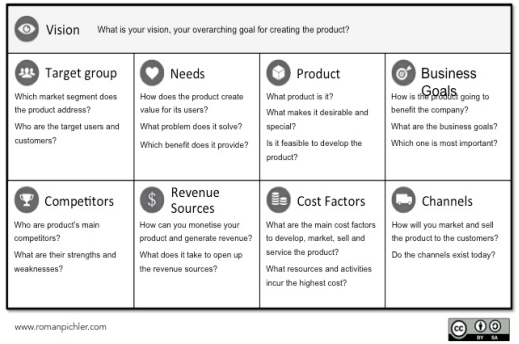
COST FACTORS
- Maintenance
- Schedule
- Training
- Tools
- Labor (Vols vs Professionals)

CHANNELS
- Professional Societies
- Conferences
- News Media
- Government Communications

LSM/Agile IPP: Process Flow

"PROBLEM VALIDATION"

Product Vision Board Extended (PVBE)



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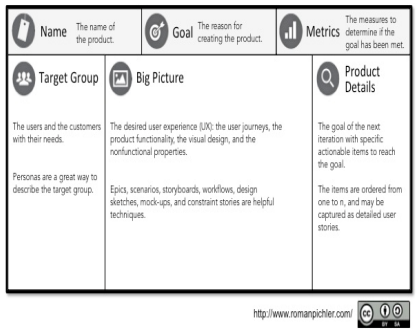
"SOLUTION VALIDATION"

Product Canvas



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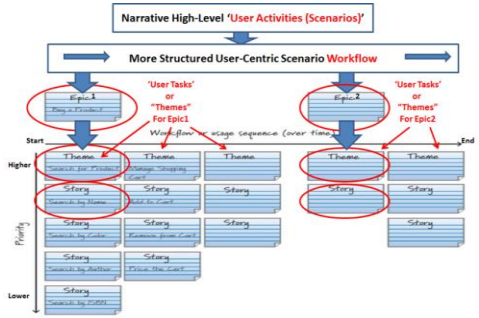
"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping



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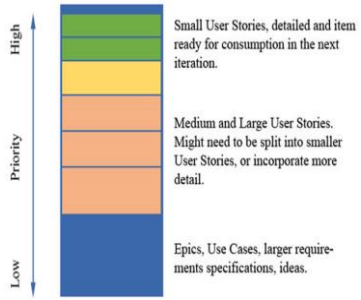

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LSM/Agile IPP Step: “User Validation”

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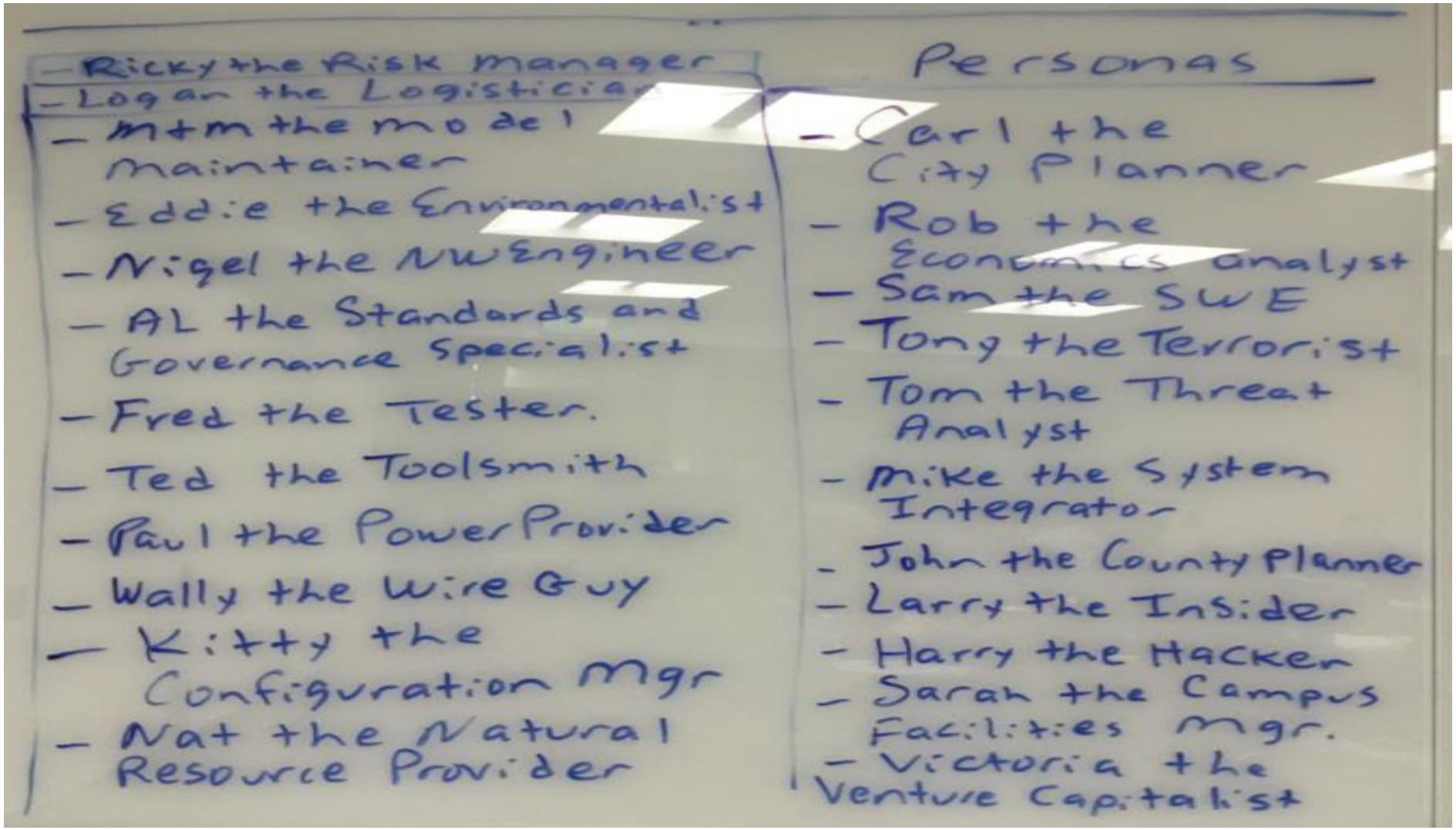
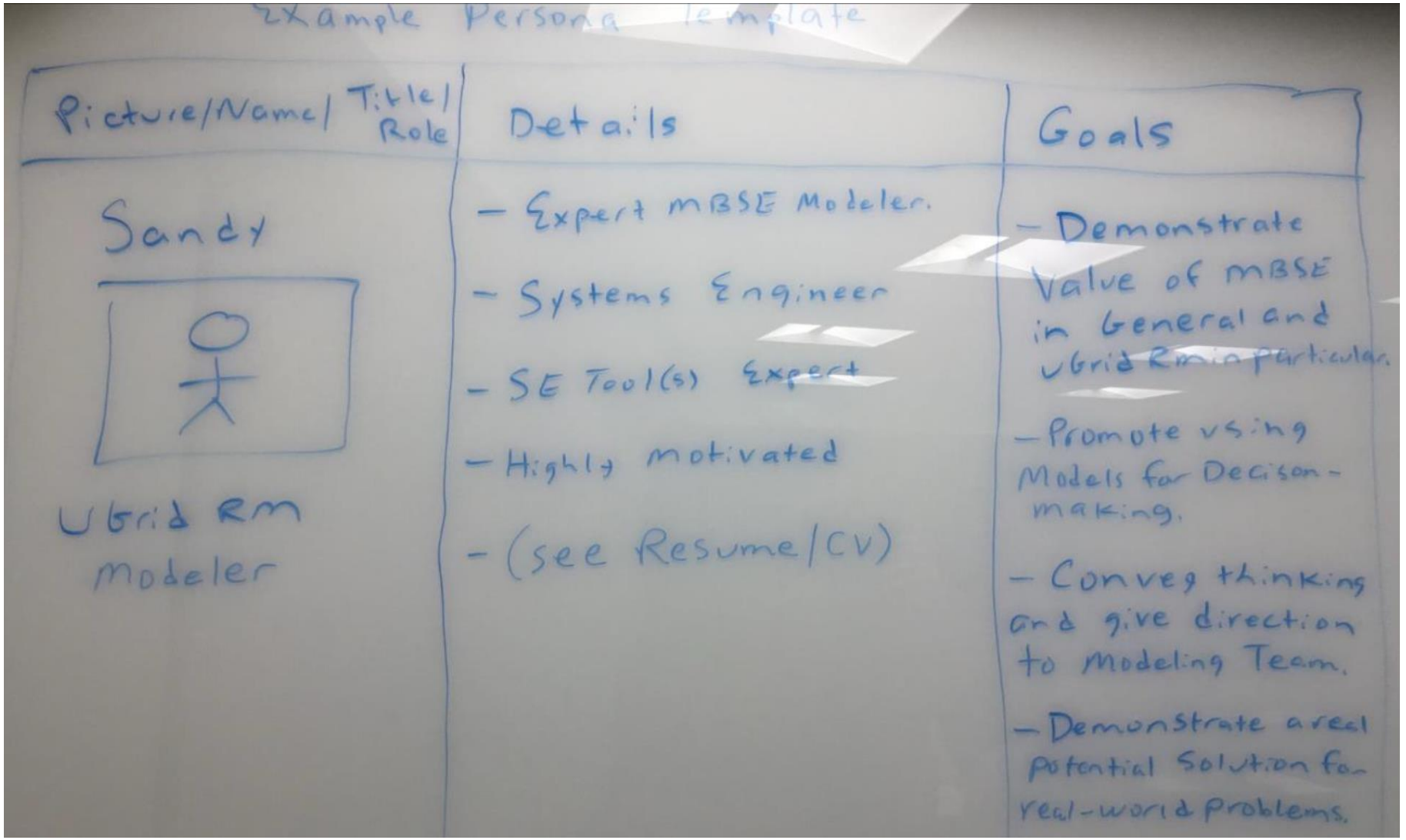
LSM/Agile: uGrid RM "Persona List" (Ex.)



LSM/Agile: uGrid RM "Persona List" (Ex.)

uGrid RM Personas (Stakeholder Groups)	
Ricky the Risk Manager	Carl the City Planner
Logan the Logistician	Rob the Economics Analyst
Mike the Model Manager	Sam the Software Engineer
Eddie the Environmentalist	Nigel the Network Engineer
Alan the Standards & Governance Specialist	Tony the Terrorist
Fred the Model Tester	Marty the Systems Integrator
Ted the Toolsmith	Tom the Threat Analyst
Paul the Power Provider	John the County Planner
Wally the Wire Guy	Larry the Insider (Threat)
Kitty the Configuration Manager	Harry the Hacker
Nat the Natural Resource Provider	Sarah the Campus Facilities Manager
Victoria the Venture Capitalist	Rita the Systems Engineer

LSM/Agile: uGrid RM "Persona Template" (Ex.)



LSM/Agile: uGrid RM "Persona Template" (Ex.)

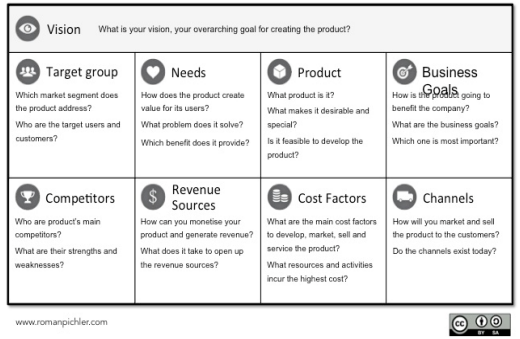
PICTURE/NAME/TITLE	DETAILS	GOALS
Samantha **uGrid RM Modeler**	-- Expert MBSE Modeler -- Systems Engineer -- Systems Engineering Tools Expert -- Highly Motivated -- (See Resume and CV)	-- Demonstrate value of MBSE in general and uGrid RM in particular. -- Promote using models for decision-making. -- Convey thinking and give direction to modeling team. -- Demonstrate a real potential solution for real-world problems.

Example “Persona Cards”

LSM/Agile IPP: Process Flow

"PROBLEM VALIDATION"

Product Vision Board Extended (PVBE)



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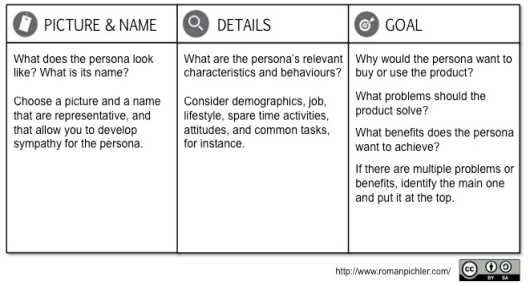
"USER VALIDATION"

Persona Templates

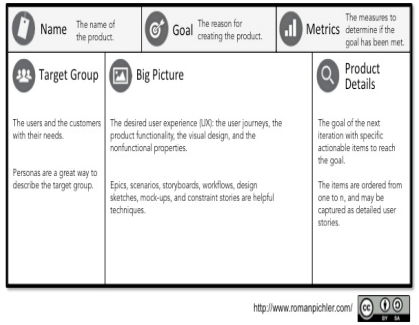


-- Can be shared in tools like Atlassian 'Confluence'

The Next Part of This Presentation!

"SOLUTION VALIDATION"

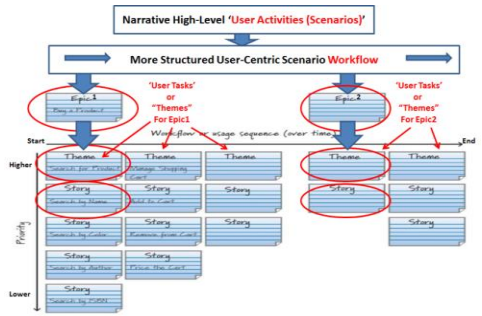
Product Canvas



-- Can be shared in tools like Atlassian 'Confluence'

"SOLUTION BUILDING BLOCKS"

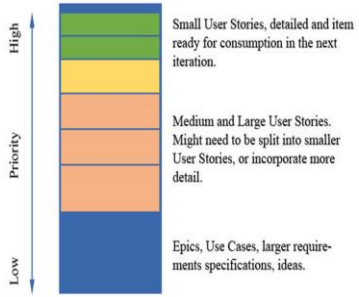
User Story Workshop/Story Mapping



-- Can be linked/shared in tools like Atlassian 'Confluence' & 'Jira'

"SOLUTION-READY PBIs"

Initial Product Backlog Items (PBIs)

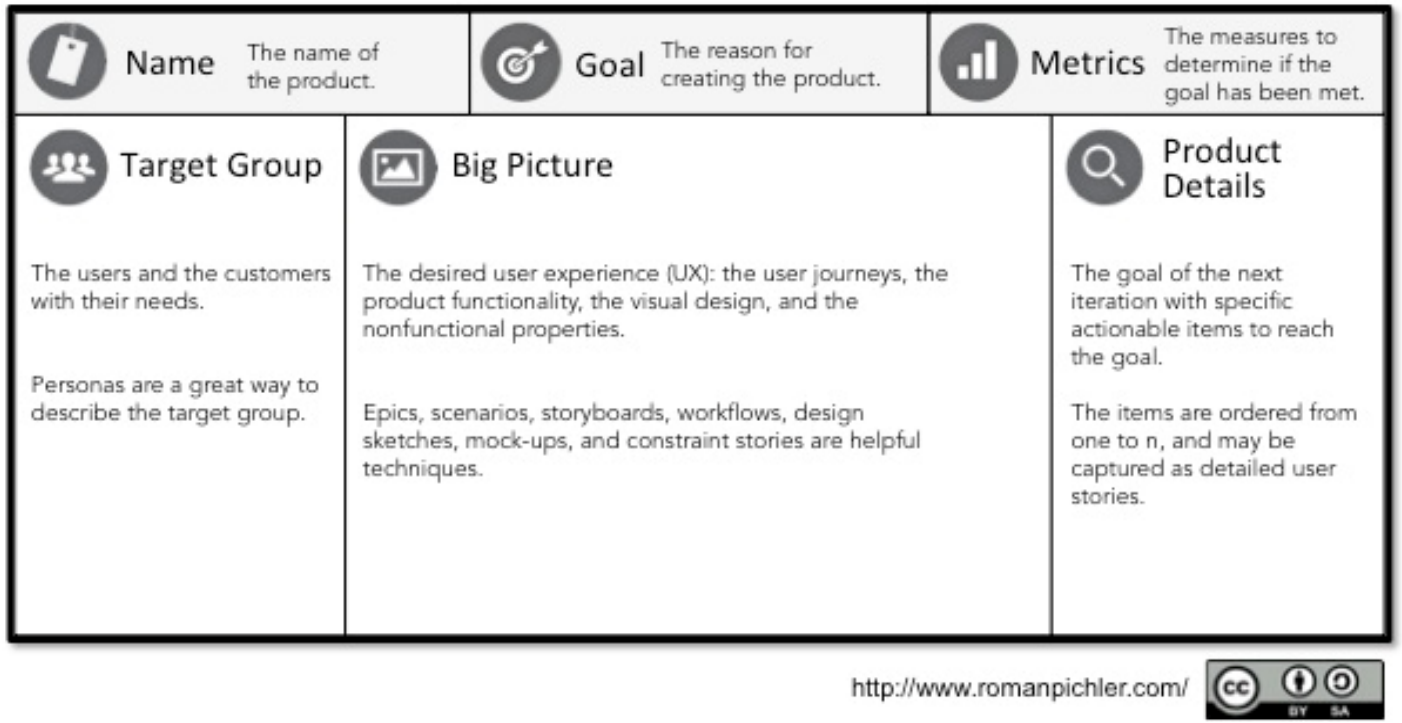


-- Can be linked/shared in tools like Atlassian 'Confluence' & 'Jira'

LSM/Agile IPP: "Solution Validation"

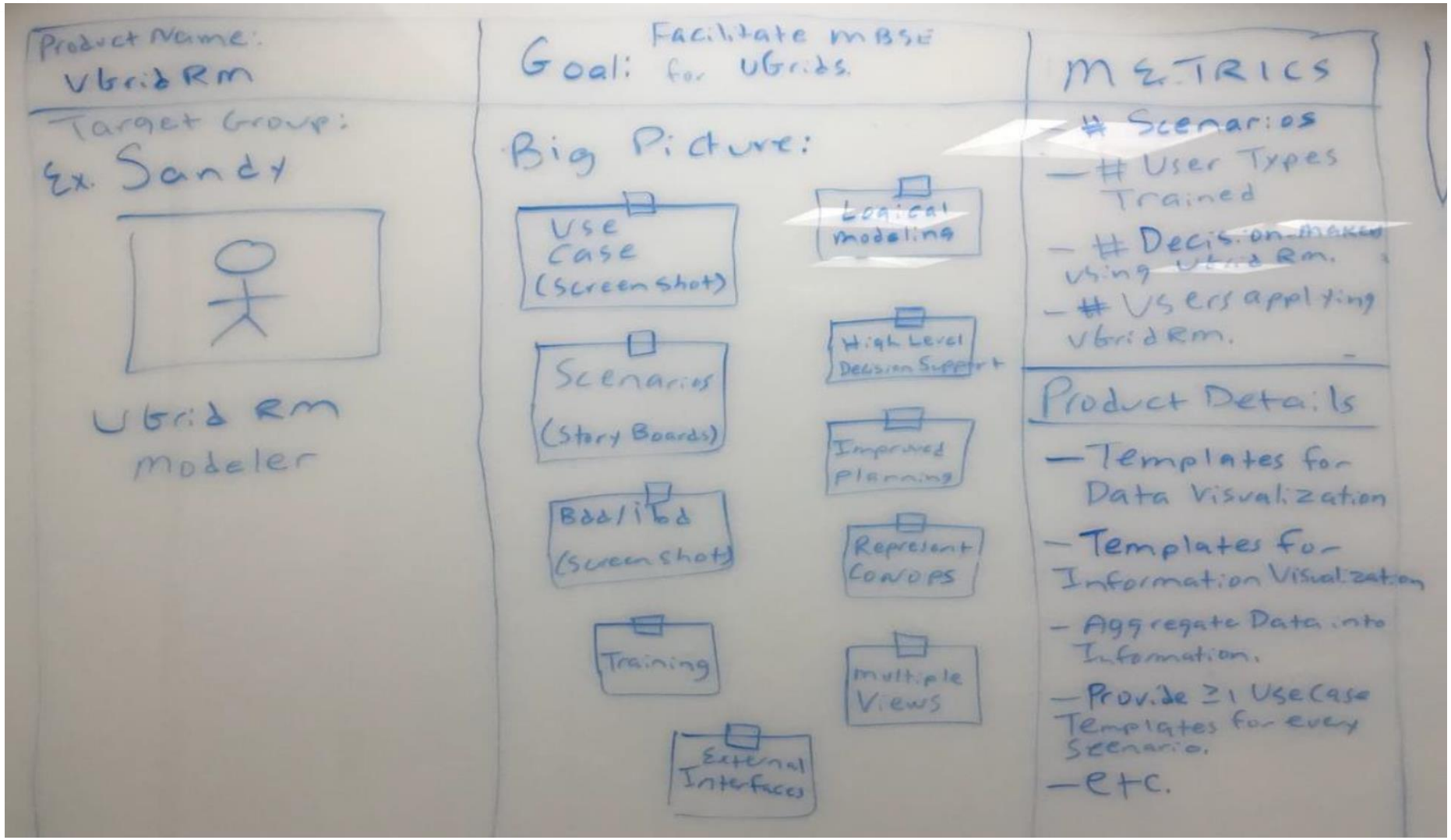
"SOLUTION VALIDATION"

Product Canvas



-- Can be captured and managed as a 'Confluence Space'

LSM/Agile: uGrid RM "Product Canvas" (Ex.)



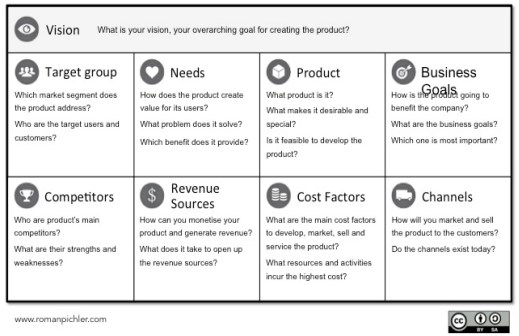
LSM/Agile: uGrid RM "Product Canvas" (Ex.)

Product Name: *uGrid RM*	GOAL: *Facilitate MBSE for uGrids*	**Metrics:**
Target Group: **Ex. Samantha** **uGrid RM Modeler** **(Other Personas as decided in this Target Group)**	**Big Picture:** Use Cases Logical Modeling Scenarios (Story Boards) High Level Decision Support External Interfaces Improved Planning Training Multiple Views	-- # of Scenarios -- # of User Types Trained -- # of Decisions Makers using uGrid RM -- # Users Applying uGrid RM **Product Details:** -- Templates for Data Visualization -- Templates for Information Visualization -- Aggregate Data into Information -- Provide at least One Use Case Template for every Scenario -- etc.

LSM/Agile IPP: Process Flow

"PROBLEM VALIDATION"

Product Vision Board Extended (PVBE)



-- Compliant with Lean Business Model Canvas (BMC)
-- Can be shared in tools like Atlassian 'Confluence'

"USER VALIDATION"

Persona Templates

PICTURE & NAME	DETAILS	GOAL
What does the persona look like? What is its name? Choose a picture and a name that are representative, and that allow you to develop sympathy for the persona.	What are the persona's relevant characteristics and behaviours? Consider demographics, job, lifestyle, spare time activities, attitudes, and common tasks, for instance.	Why would the persona want to buy or use the product? What problems should the product solve? What benefits does the persona want to achieve? If there are multiple problems or benefits, identify the main one and put it at the top.

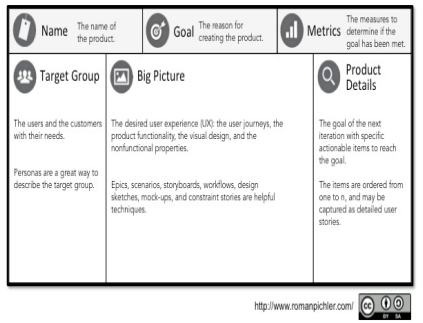
http://www.romanpichler.com/

-- Can be shared in tools like Atlassian 'Confluence'

The Next Part of This Presentation!

"SOLUTION VALIDATION"

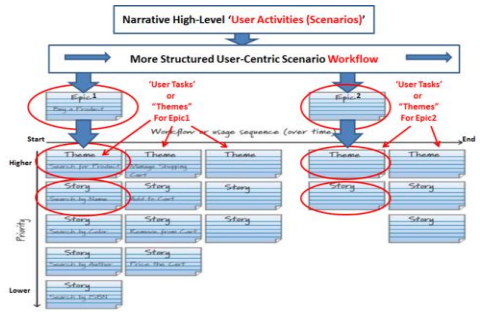
Product Canvas



-- Can be shared in tools like Atlassian 'Confluence'

"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping



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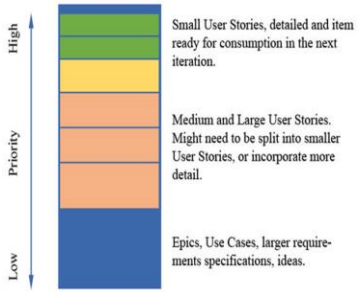
"SOLUTION-READY PBIs"

Initial Product Backlog Items (PBIs)



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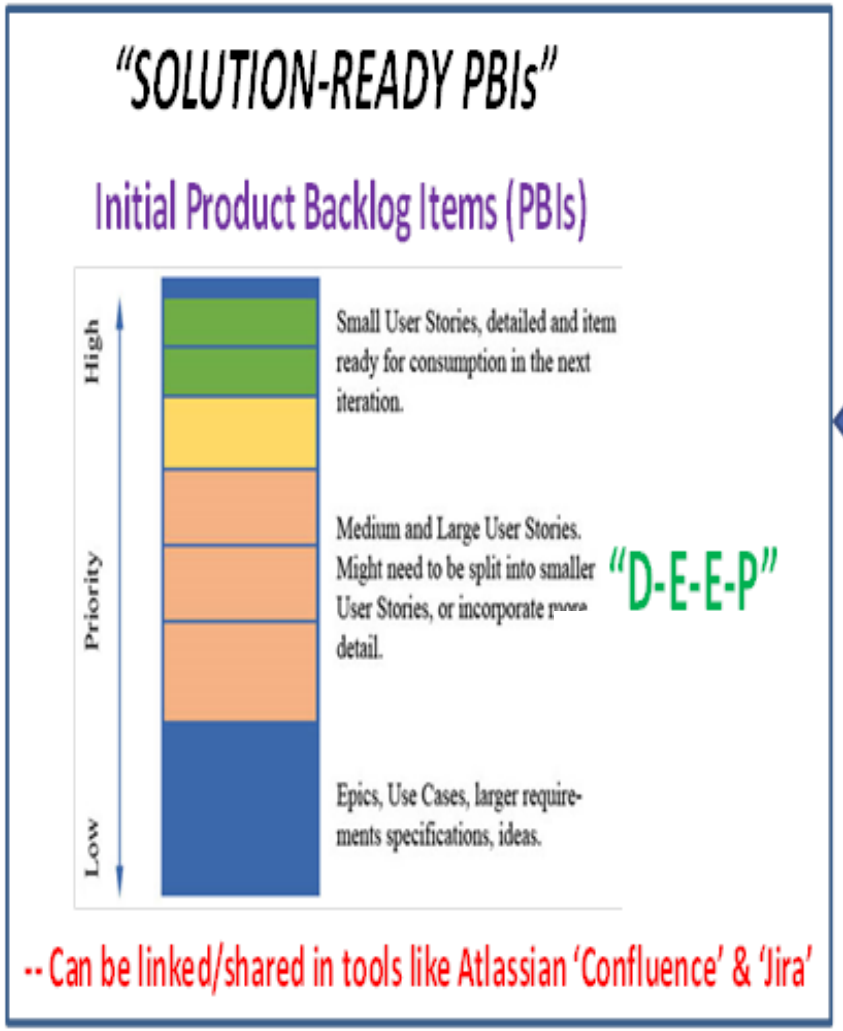
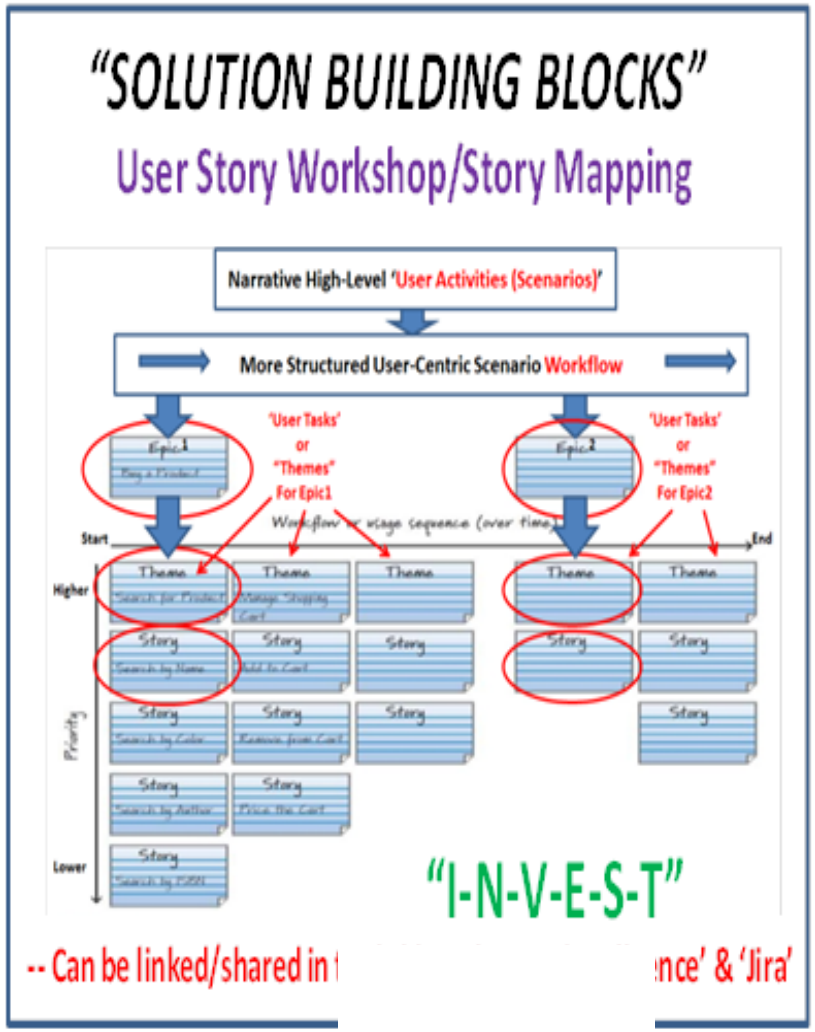
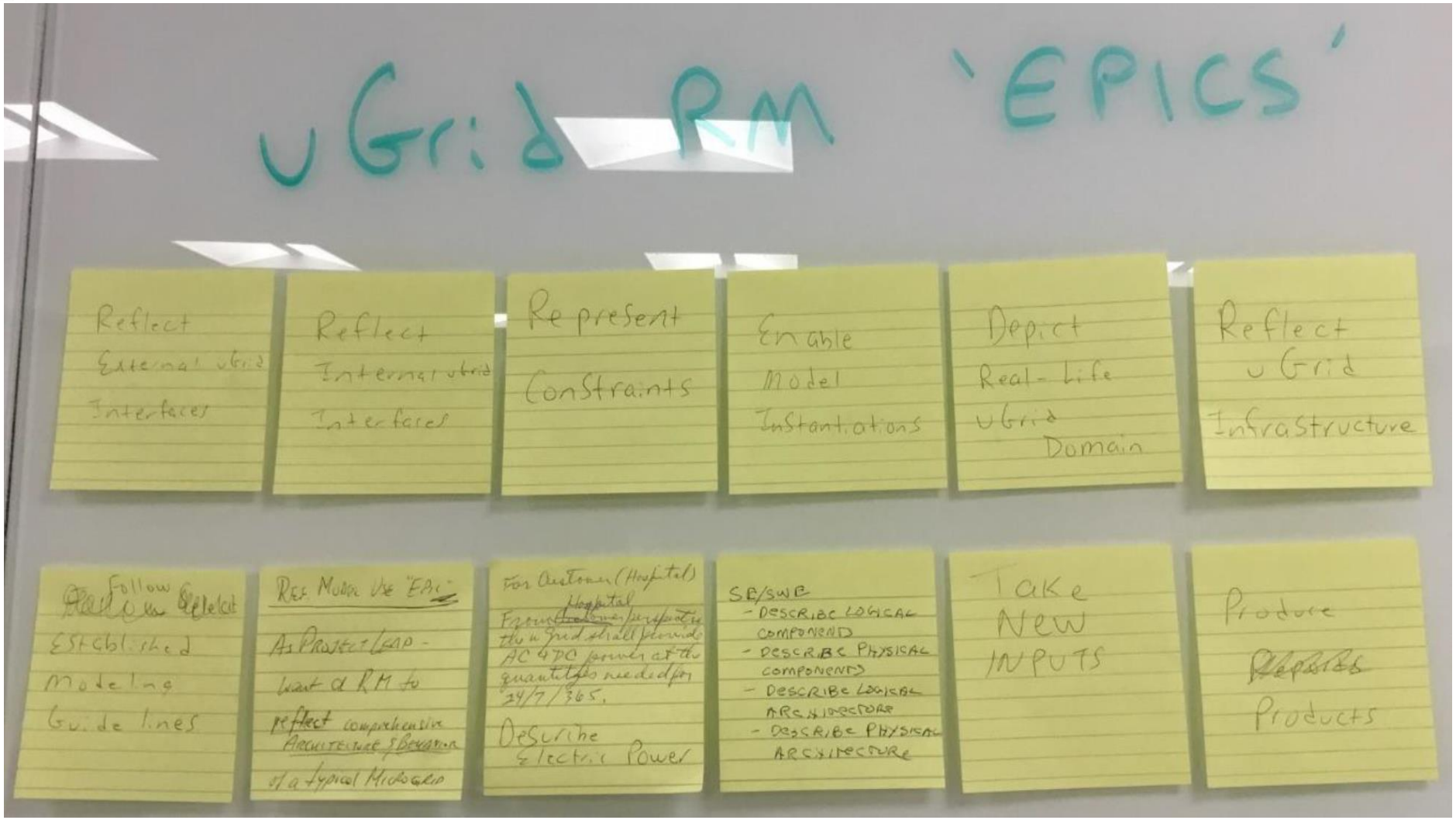
LSM/Agile IPP: "Solution Building Blocks"





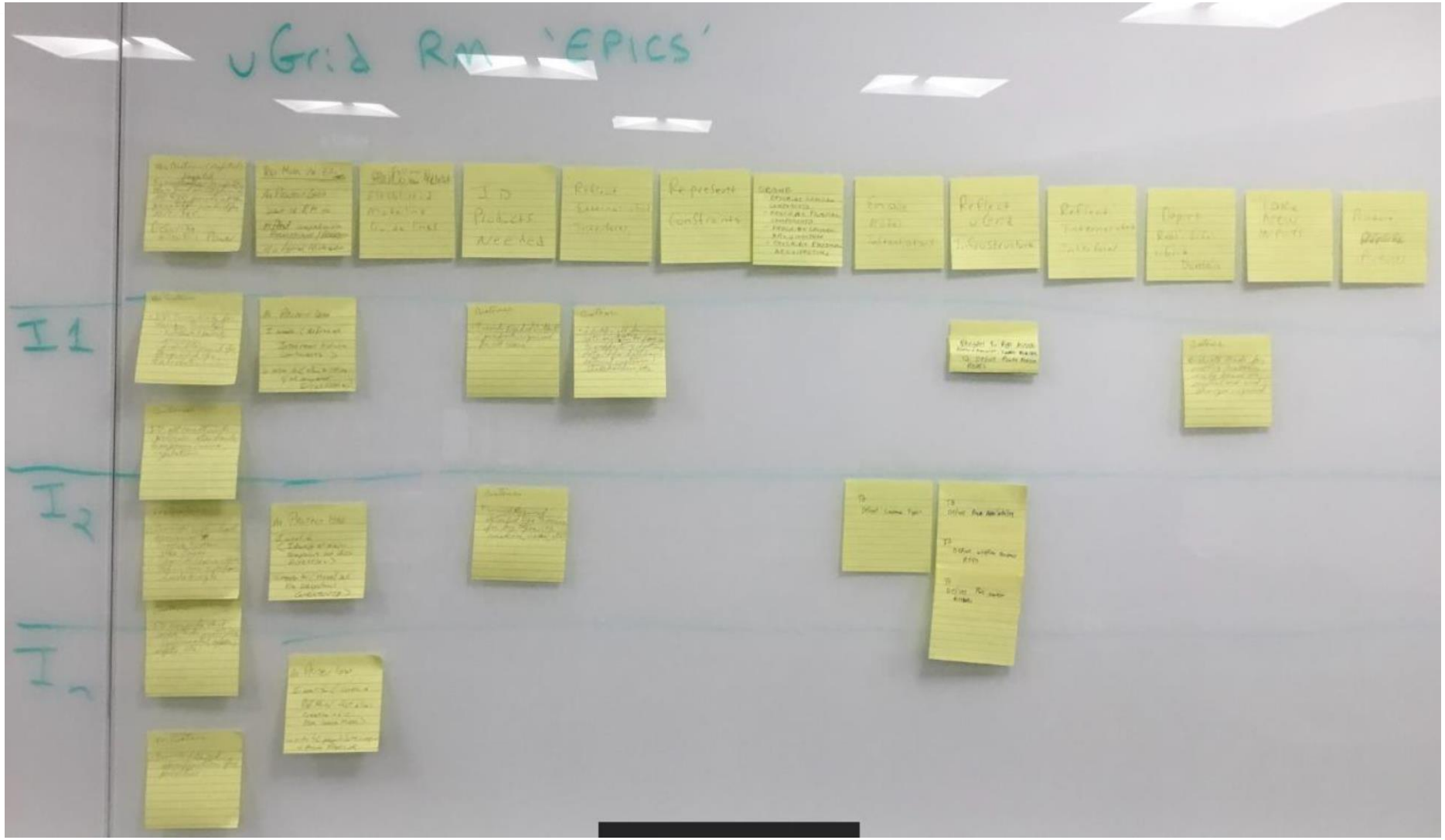
LSM/Agile: uGrid RM "EPICs" (Ex.)



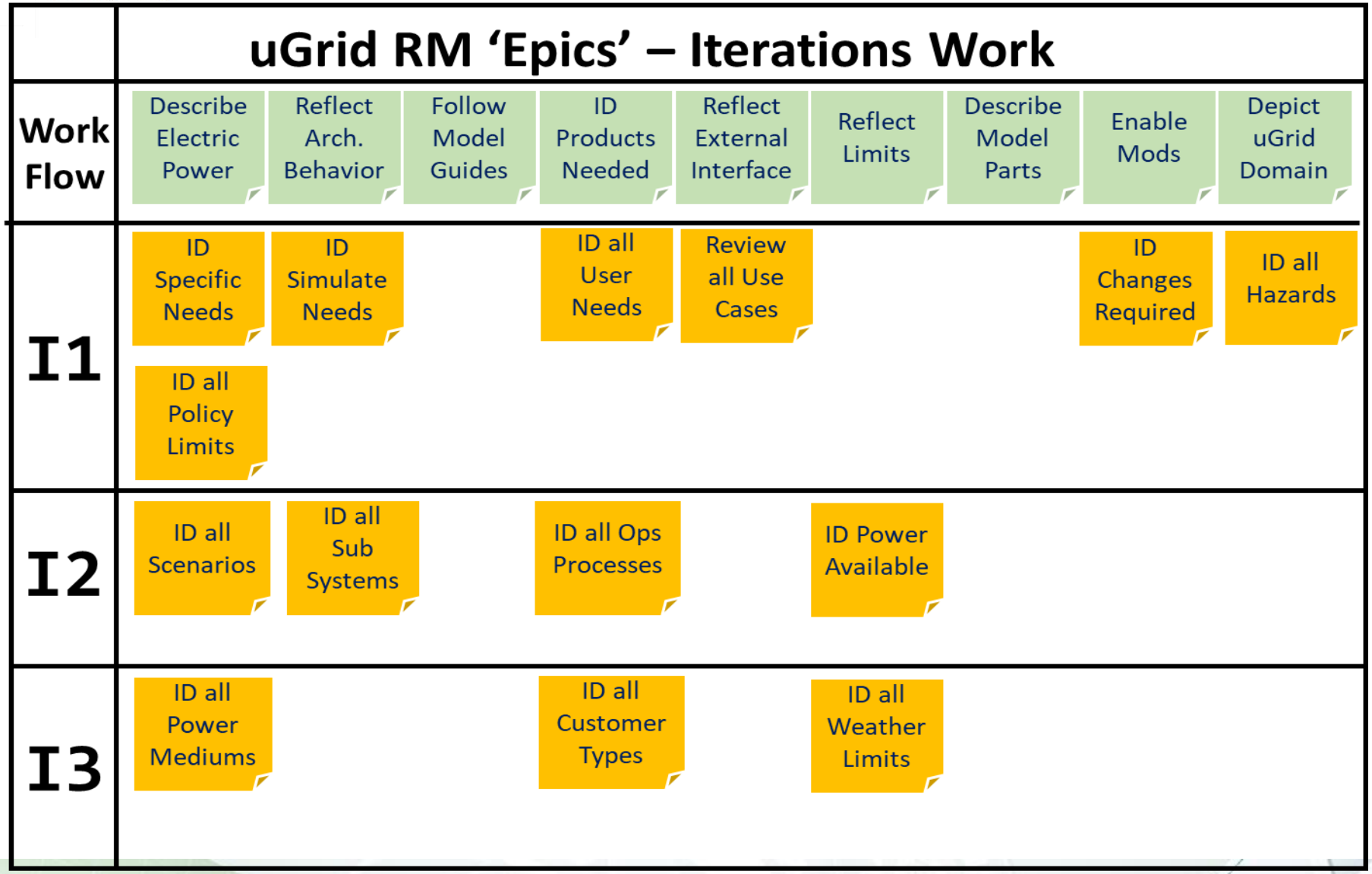
LSM/Agile: uGrid RM "EPICs" (Ex.)

Reflect External uGrid Interfaces	Reflect Internal uGrid Interfaces	Represent Constraints	Enable Model Instantiations
Follow Established Modeling Guidelines	Depict Real-Life uGrid Domain	Reflect uGrid Infrastructure	Describe uGrid Logical and Physical Components

LSM/Agile: uGrid RM "Work Flow & EPICs" (Ex.)



LSM/Agile: uGrid RM "Work Flow & EPICs" (Ex.)



Key Points (1 of 2)

- This **Hybrid Lean Startup Method (LSM)/Agile (Scrum) Product Backlog Item (PBI) Development Approach to Initial Project Planning (IPP)** has proven itself to be an effective approach to help projects, "Get It Right, Right From the Start".
- A small group of Decision Makers and Subject Matter Experts (SMEs) can use this approach in a series of off-site style workshops or Meetups to quickly and efficiently develop together an actionable set of **Seven IPP Focus Mechanisms** that any Development Team can then use throughout the life cycle of any system solution project:
  1. **'Hats'** project perspectives/insights – via "Six Hats"-like exercise
  2. **Project Title & Purpose** – via "Systems Thinking Round Table Session"
  3. **Product Vision Board Extended (PVBE)** – via "Lean Startup Method (LSM)" best practices
  4. **Persona List** – via LSM best practices
  5. **Persona Templates or Cards** – via LSM best practices
  6. **Product Canvas** – via LSM best practices
  7. **Initial Set of Solution-Ready Work Items** – via Agile (Scrum) Product Backlog Item (PBI) best practices

Key Points (2 of 2)

- This **Hybrid Lean Startup Method (LSM)/Agile (Scrum) Product Backlog Item (PBI) Development Approach to Initial Project Planning (IPP)** is done in Three Primary Phases:
  - '**Meetup** or Offsite' Phase: Key Decision Makers meet to collaboratively develop **Project Outcomes.**
  - '**Clean Up**' Phase: IPP Meetup Phase artifacts immediately cleaned up in applications for briefings, etc.
  - '**Post Up**' Phase: Cleaned up IPP Meetup artifacts loaded into repository-based collaboration tools for sharing with Project Development Teams.
- This IPP Approach has been proven to be most successful for the Engineering and Management phases or stages of **Systems Analysis (SA), Requirements Analysis (RA),** and **Project Planning.**
  - IPP SA and RA artifacts become actionable inputs for subsequent **Project Management**, **Requirements Engineering (RE)**, **Architecture**, **Architectural Design**, **Design**, etc.

MBSE, LSM, and Agile References

- **MBSE Book:** *Don't Panic! The Absolute Beginner's Guide to Model-Based Systems Engineering;* **Jon Holt** *and* **Simon Perry***;* 2017; ISBN 978-0-9934857-1-8
  http://tinyurl.com/y8bazggw
- **LSM Book:** *The Lean Startup*; **Eric Ries**; 2011; ISBN 978-0-670-92160-7
  http://tinyurl.com/y7nvq66c
- **LSM Book***: The Lean Product Playbook*; **Dan Olsen**; 2015; ISBN 978-1-118-96087-5
  http://tinyurl.com/yc9ucoox
- **Agile Project Management Book:** *Agile Product Management with Scrum;* **Roman Pichler**; 2011; ISBN-13: 978-0321605788
  https://tinyurl.com/y856stnk
- **Agile User Story Book:** *User Story Mapping: Discover the Whole Story, Build the Right Product 1st Edition;* **Jeff Patton**; 2014; ISBN-13: 978-1491904909
  https://tinyurl.com/yby2esm9

THANK YOU!!

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