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Tutorial: Lean Startup Method (LSM) and Agile for Initial Project Planning (IPP)

"Getting It Right, Right From the Start!"

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Co-Chairman, INCOSE System and Software Interface (SaSI) WG
JHU Instructor (Software Systems Engineering)

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LSM/Agile Tutorial Information

Tutorial slides are posted:

- In **INCOSE CONNECT:**
  - on the **Object-Oriented Systems Engineering Method (OOSEM) Working Group** site.
- In **Dropbox**:
  - **https://tinyurl.com/y747jkuw**

LSM/Agile Tutorial Topics

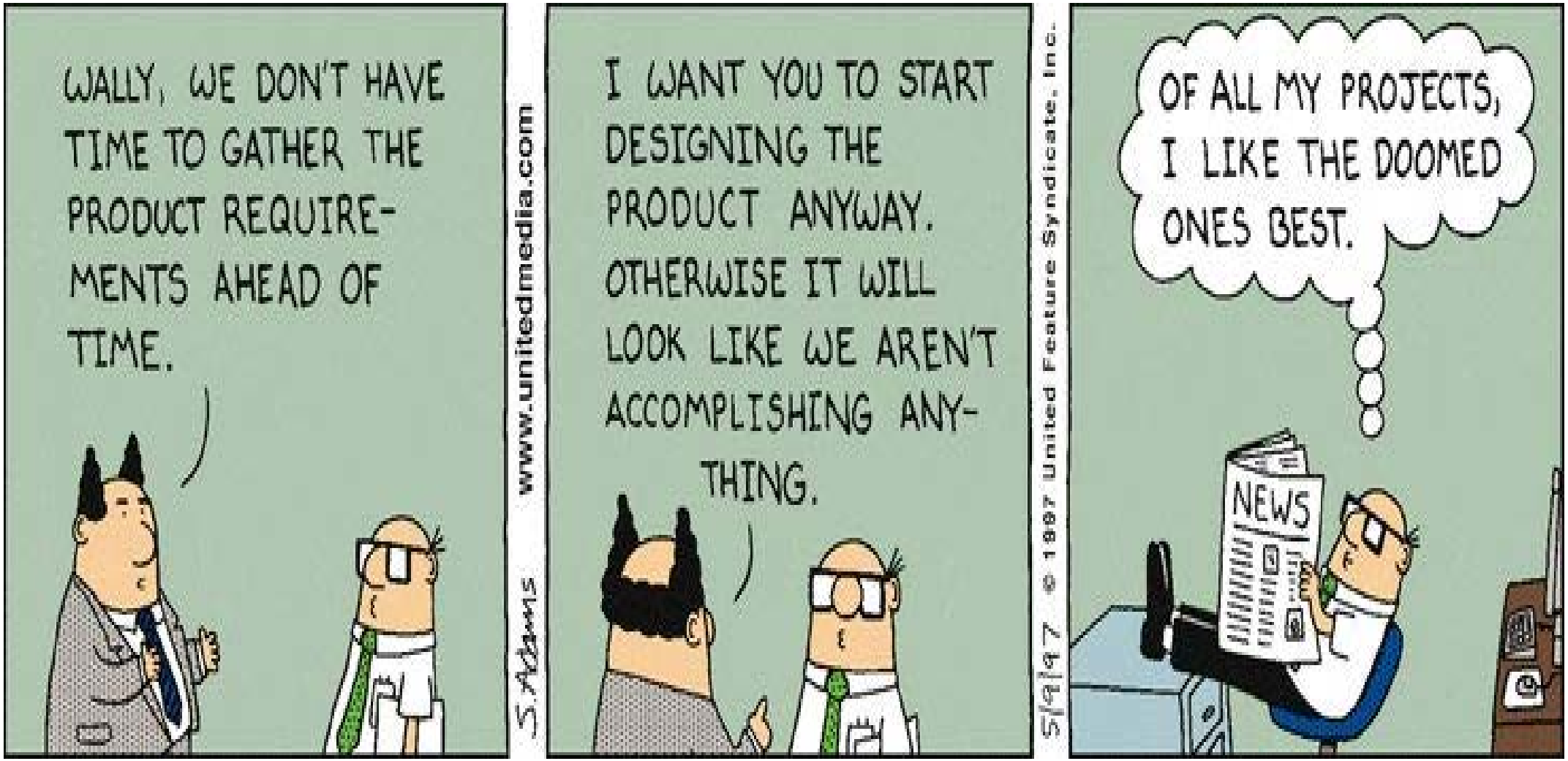
- **Tutorial Topics:**
  - **Review Lean Startup Method (LSM)**
  - **Review Agile Scrum PBI Development**
  - **Introduce LSM/Agile for Initial Project Planning**
    - **"Problem Validation": 'Product/Project Vision Board Extended (PVBE)'**
    - **"User Validation": 'Persona Templates'**
    - **"Solution 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 Tutorial Objectives

The following are very informal Learning Objectives for this LSM/Agile Tutorial:

- **Better Understand how LSM/Agile can help in Initial Project Planning.**
- **Become familiar with the following LSM/Agile initial project planning artifacts, or Project Focus Mechanisms:**
  - **Project and Product Background Information:**
    - **Product Vision Board Extended (PVBE)**
    - **Product 'Personas' (i.e. Stakeholder Groups)**
    - **Product Canvas**
  - **Project 'Epic' (High Level) User Stories**

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



LSM/Agile for IPP Approach: Background

- The roles and responsibilities of Systems Engineers (SEs), Software Engineers (SWEs), and Project/Program Managers (PMs) are rapidly evolving.

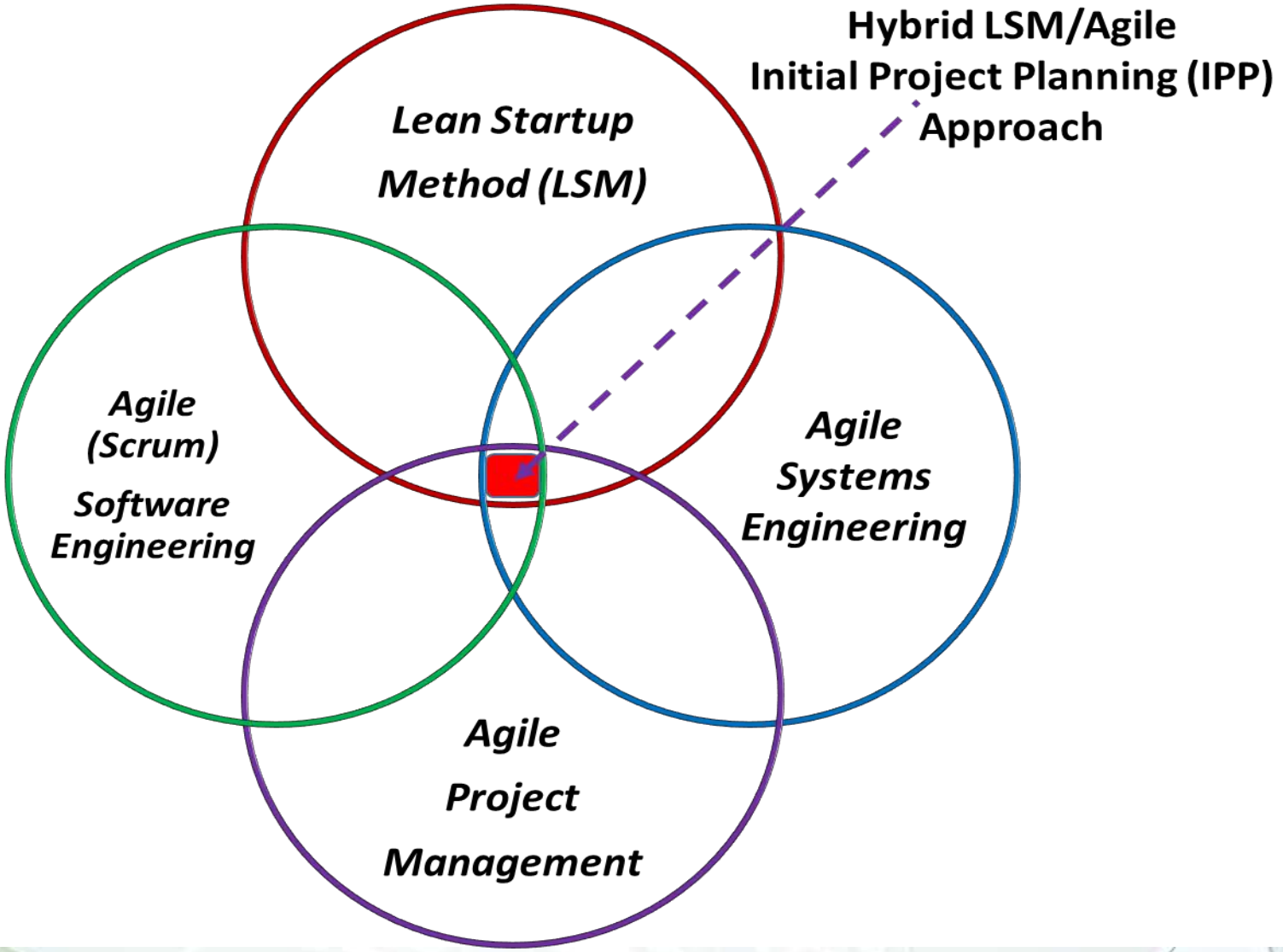
- The purpose of this LSM/Agile for IPP Tutorial is to acquaint SEs, SWEs, and PMs with some current and modern tools and techniques that can be used, specifically in the Initial Project Planning (IPP) phases, of any System Development Lifecycle (SDLC) project.

- Some of the Tutorial information is based on information from SDLC project teams looking to start Model-Based Systems Engineering (MBSE) projects to develop Reference Models for Microgrids and Resilient Hospitals.

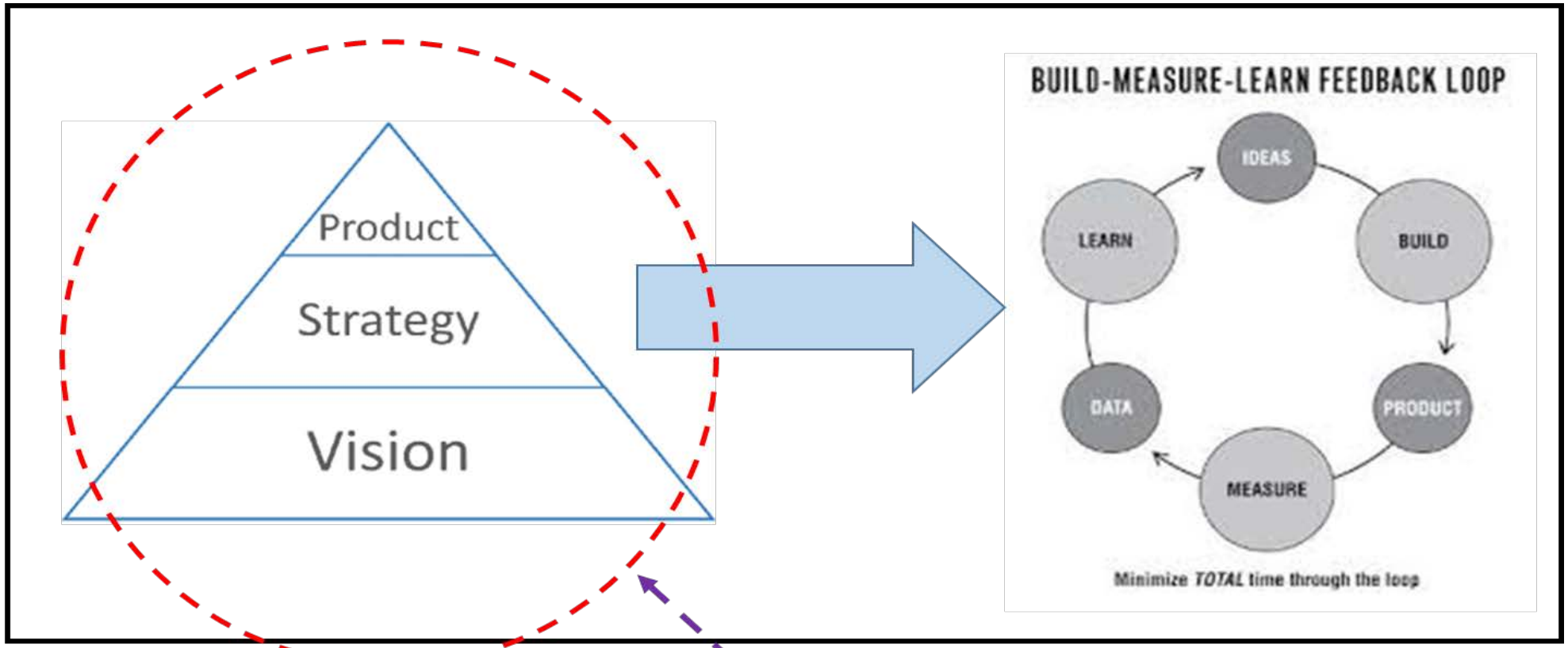
- The Purpose of the Tutorial is to highlight the value of using best practices from the Lean Startup Method (LSM) and Agile Systems Engineering, Software Engineering, and Project/Program Management together to enhance and improve Initial Project Planning (IPP).

- The Objective of using this LSM/Agile for IPP approach, is to help any project team develop a usable set of **Project Focus Mechanisms** that can be easily referenced throughout any solution development project—using any project methodology.

LSM/Agile for IPP Approach: Background



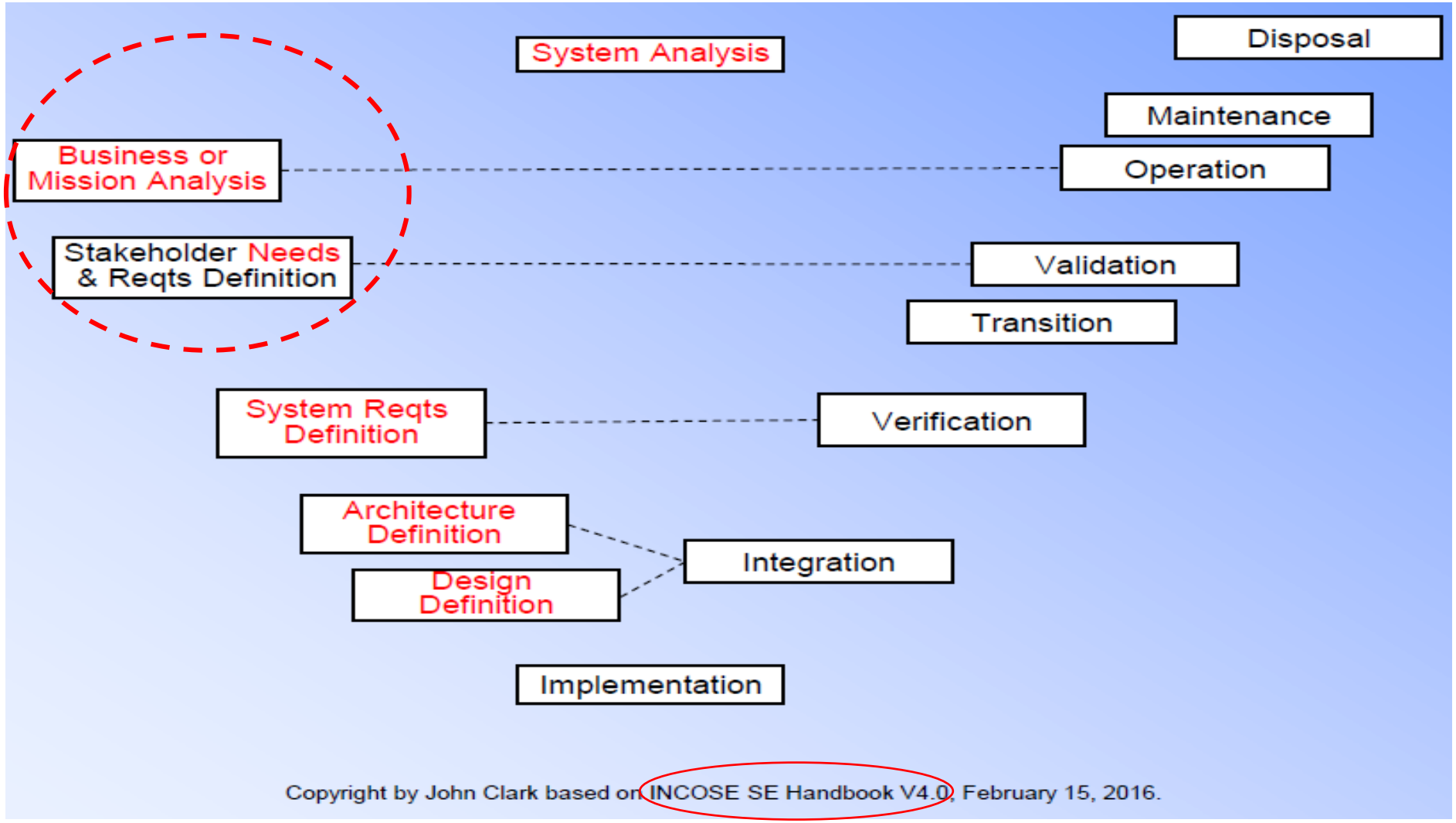
Approach in the Lean Startup Method (LSM)



Hybrid LSM/Agile Initial Project Planning (IPP) Approach

The Lean Startup; **Eric Ries**; 2011; ISBN 978-0-670-92160-7; http://tinyurl.com/y7nvq66c

IPP in the System Development Life Cycle



IPP in the System Development Life Cycle

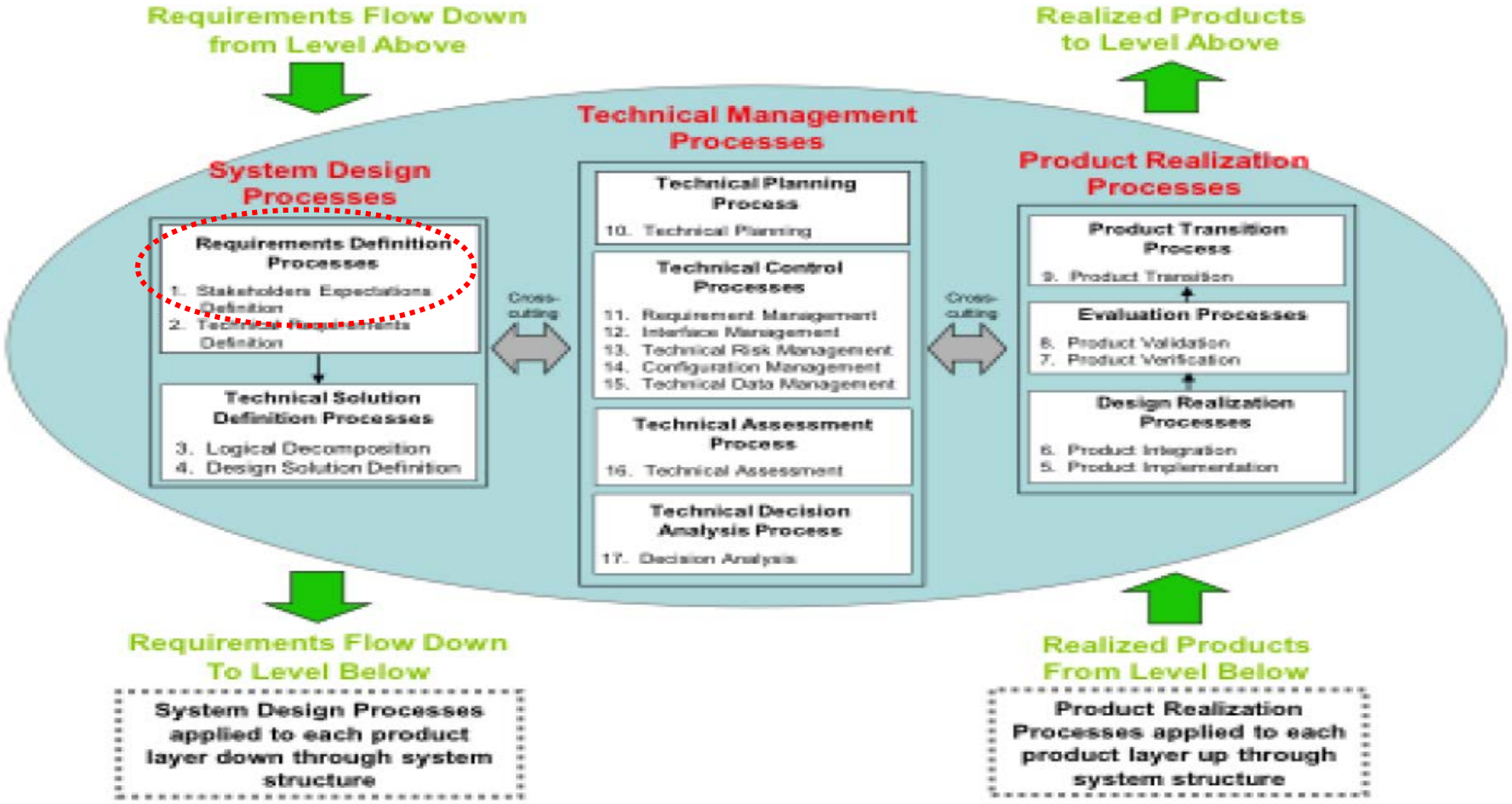
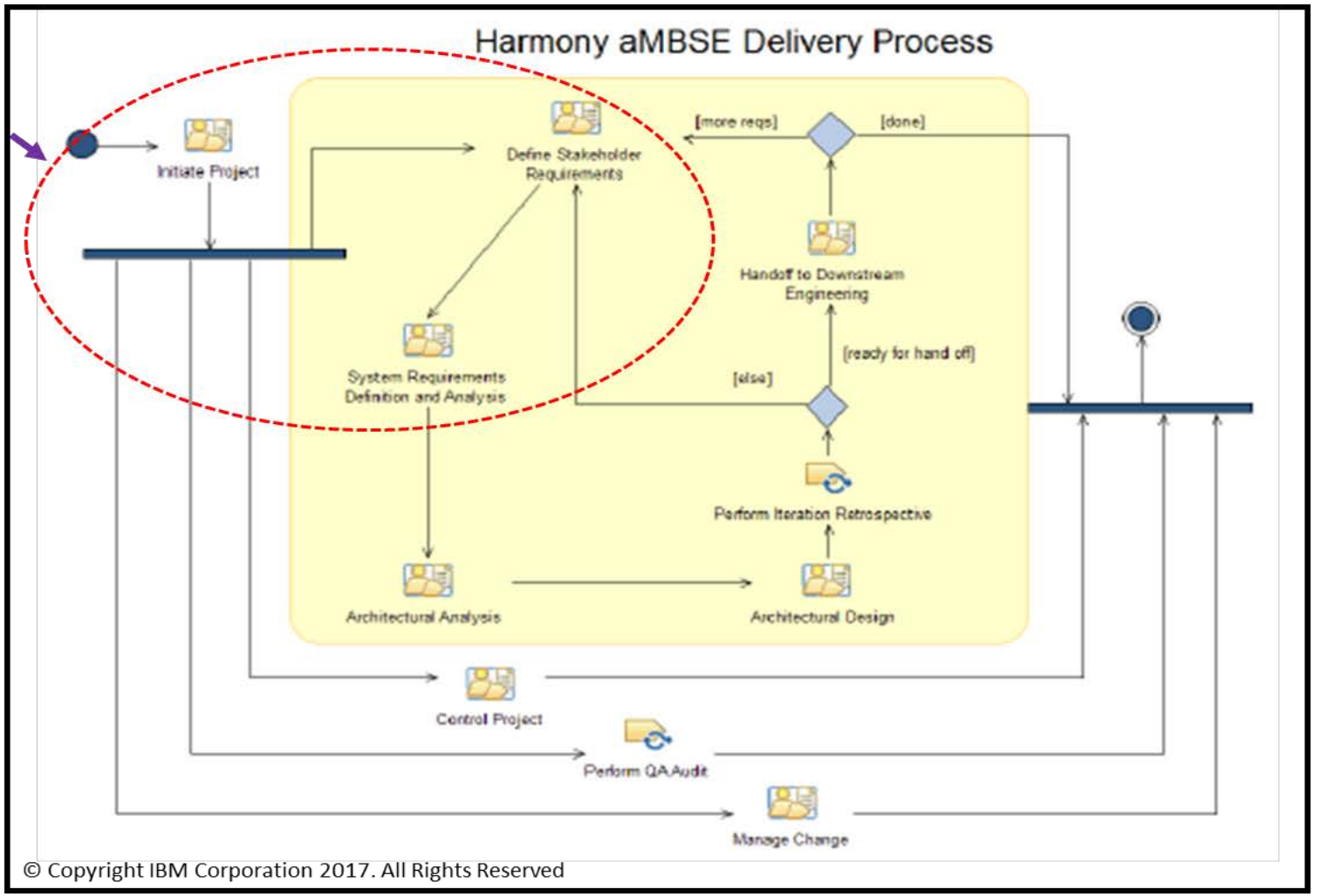


Figure 3 1 - Systems Engineering (SE) Engine

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

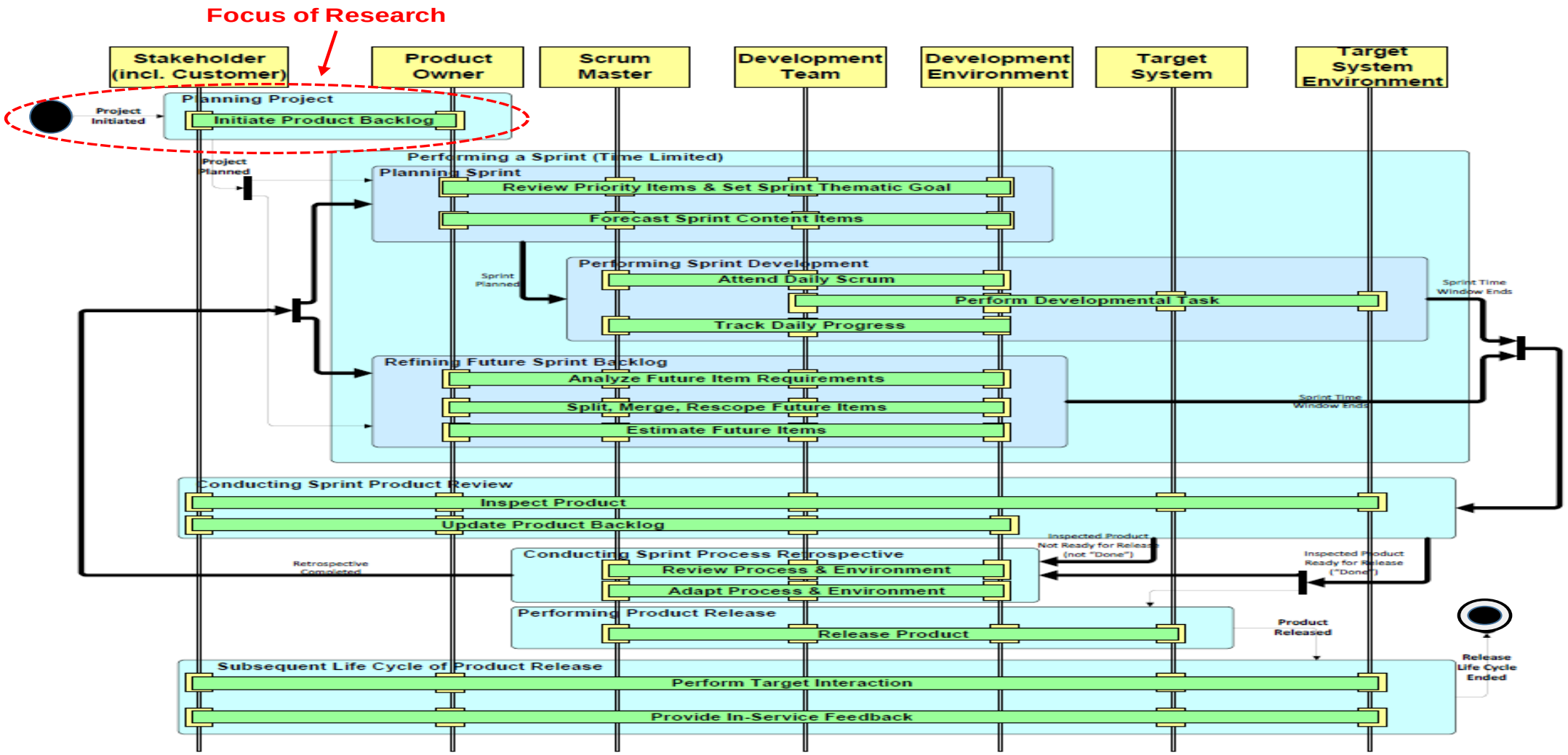
Approach in Agile Systems Engineering

Hybrid LSM/Agile Initial Project Planning (IPP) Approach



Harmony aMBSE Deskbook Version 1.00; https://tinyurl.com/y7gqoj5z

LSM/Agile: Example in an Agile (Scrum) Lifecycle



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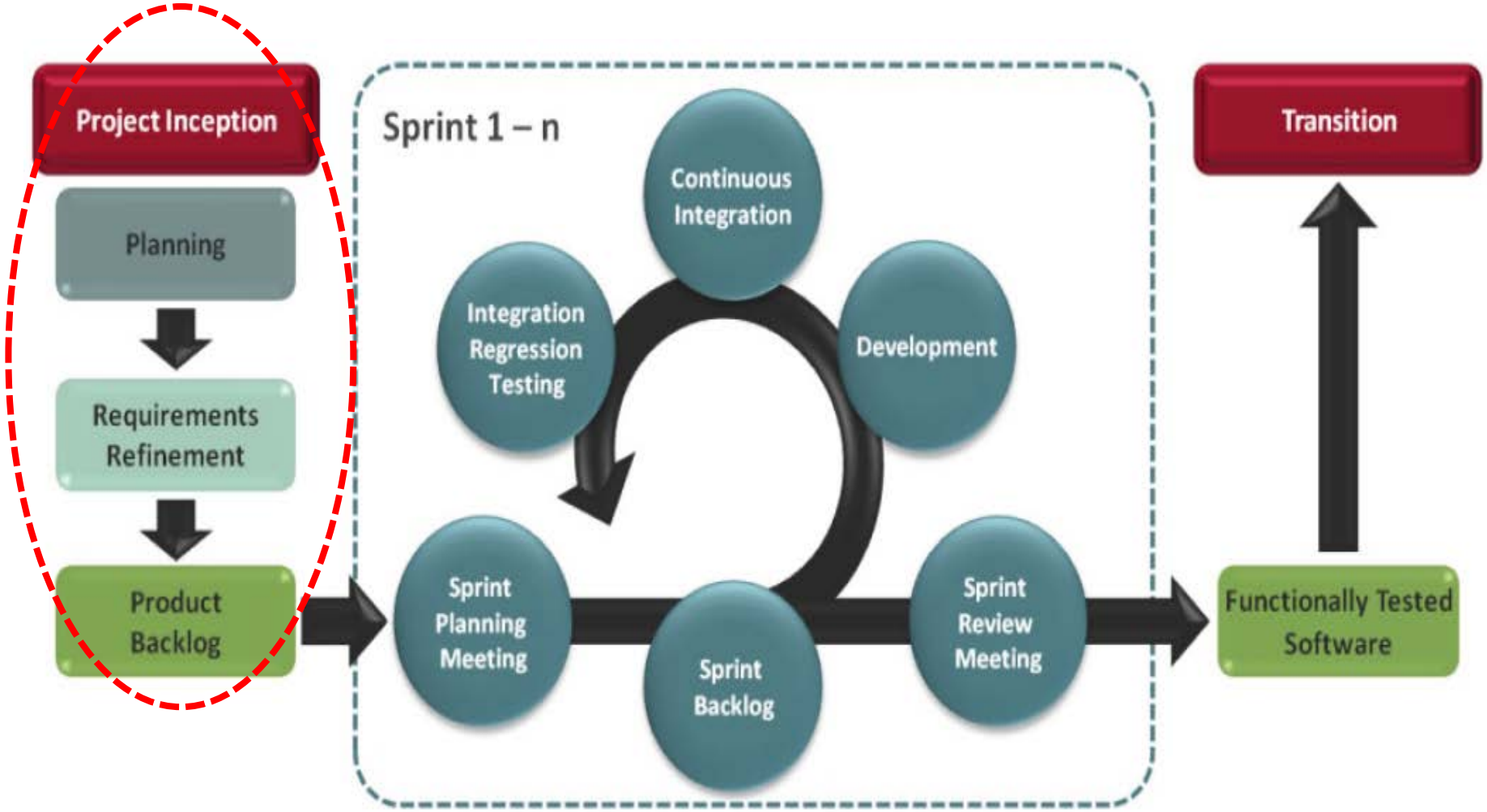
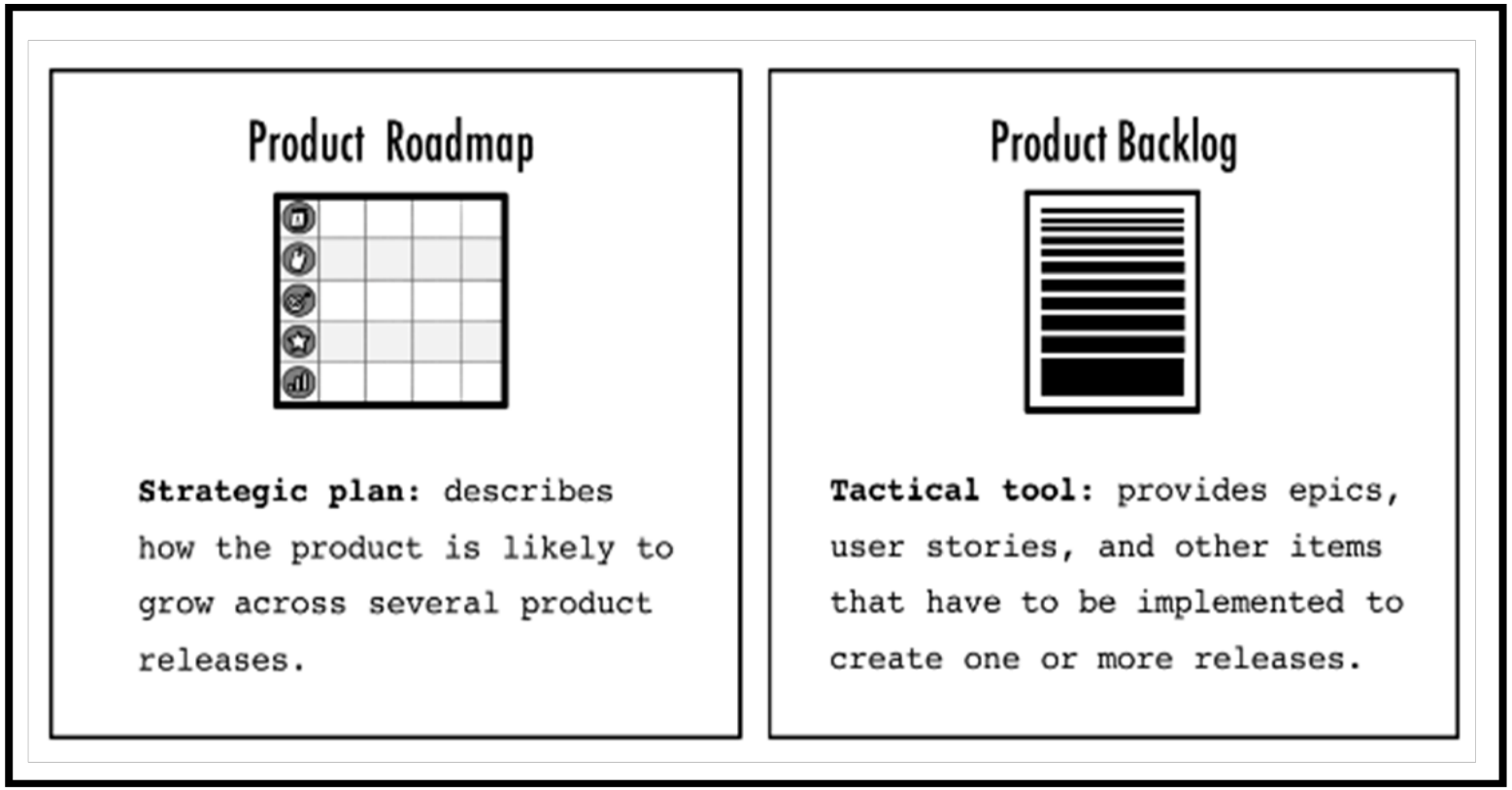
IPP in the System Development Life Cycle



https://tinyurl.com/y83g9vvl

Approach in Agile Project/Program Management



Hybrid LSM/Agile Initial Project Planning (IPP) Approach

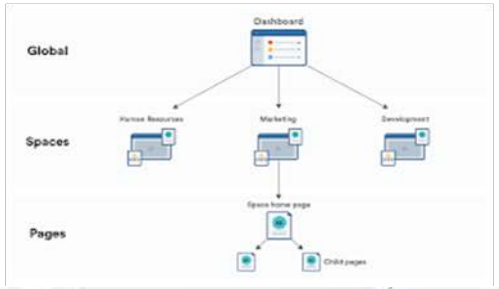
https://www.romanpichler.com/blog/product-roadmap-product-backlog/

LSM/Agile for IPP Approach

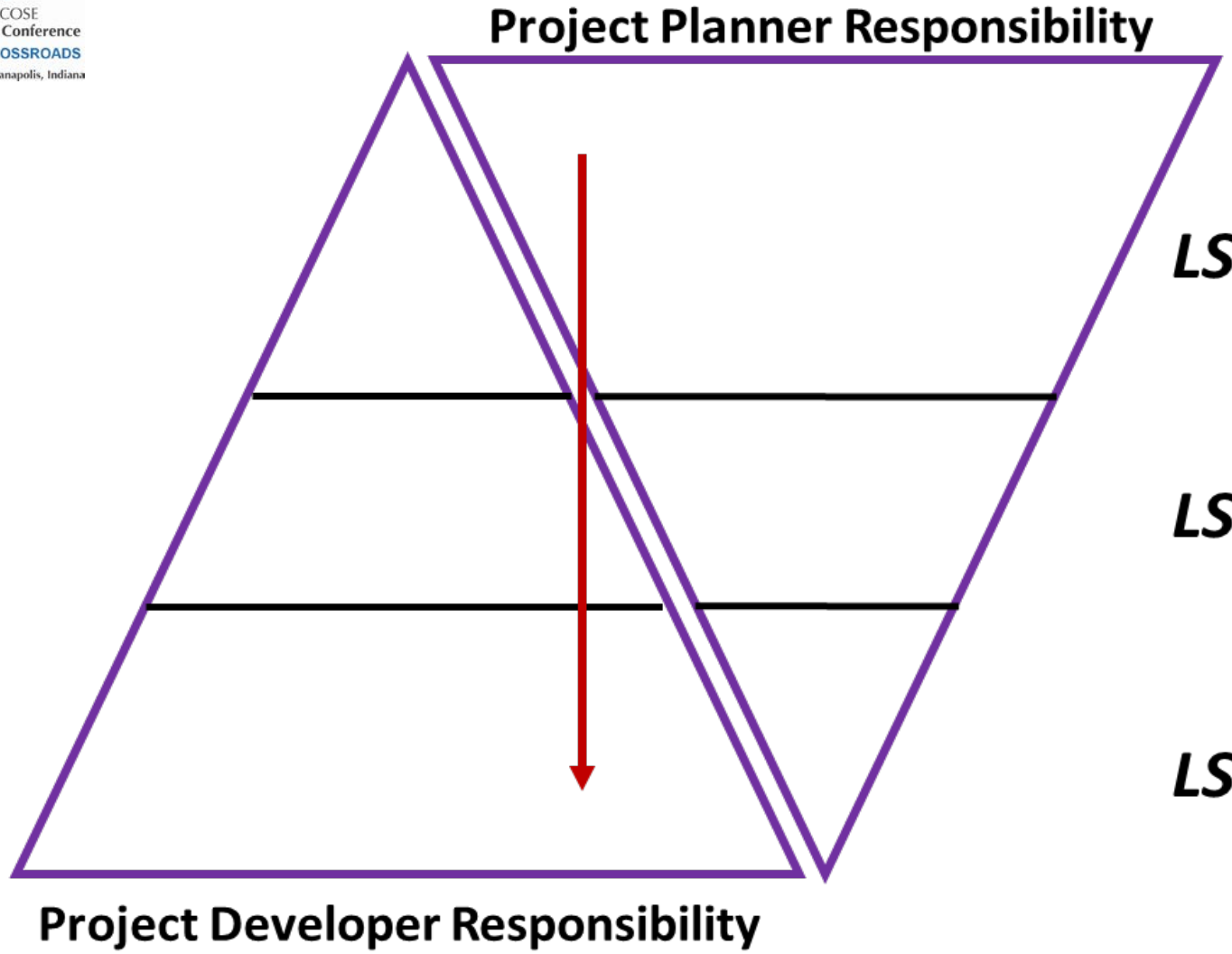
"Meetup"

"Clean Up"

"Post Up"



LSM/Agile for IPP Approach: Responsibilities



LSM/Agile IPP 'Meetup'

LSM/Agile IPP 'Clean Up'

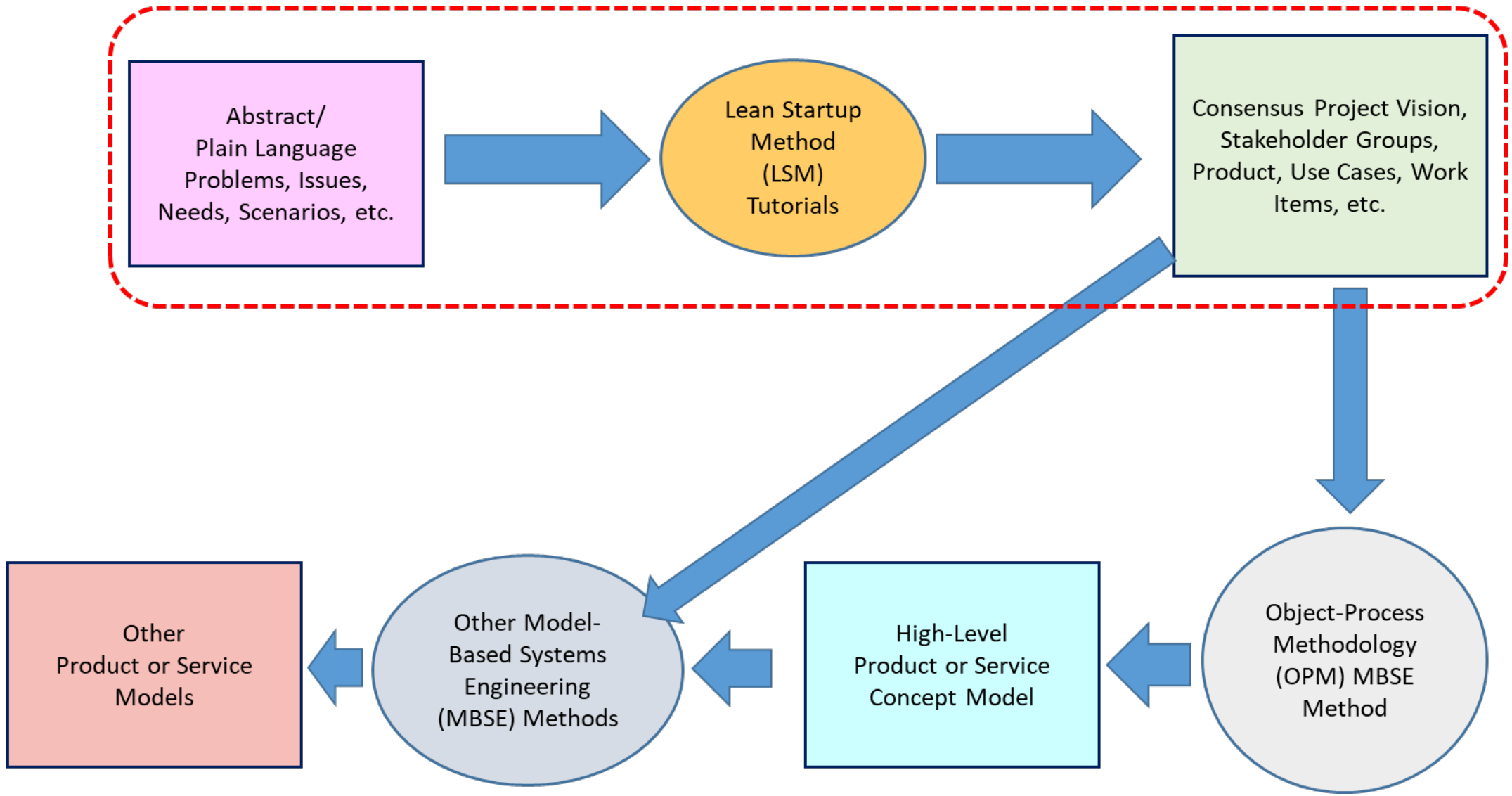
LSM/Agile IPP 'Post Up'

LSM/Agile for IPP Approach: Artifacts

During the three phases of this **Hybrid LSM/Agile for IPP Approach**, the following types of artifacts are created:

- **'Meetup' Artifacts include:**
  - Whiteboard Pictures
  - Flip Charts and Flip Chart Pictures
  - Stickie Notes and Stickie Note Pictures
  - Hand-Written Pages and Page Pictures (e.g., Sign-In Sheets, Forms, etc.)
- **'Clean Up' Artifacts include:**
  - Whiteboard Pictures to Files (PDF, Microsoft Office™ Tools, etc.)
  - Chart Pictures to Files
  - Stickie Note Pictures to Files
  - Hand-Written Page Pictures to Files
- **'Post Up' Artifacts include:**
  - Files to Repository-Based Collaboration Tools (e.g., SharePoint™, Confluence™, etc.)

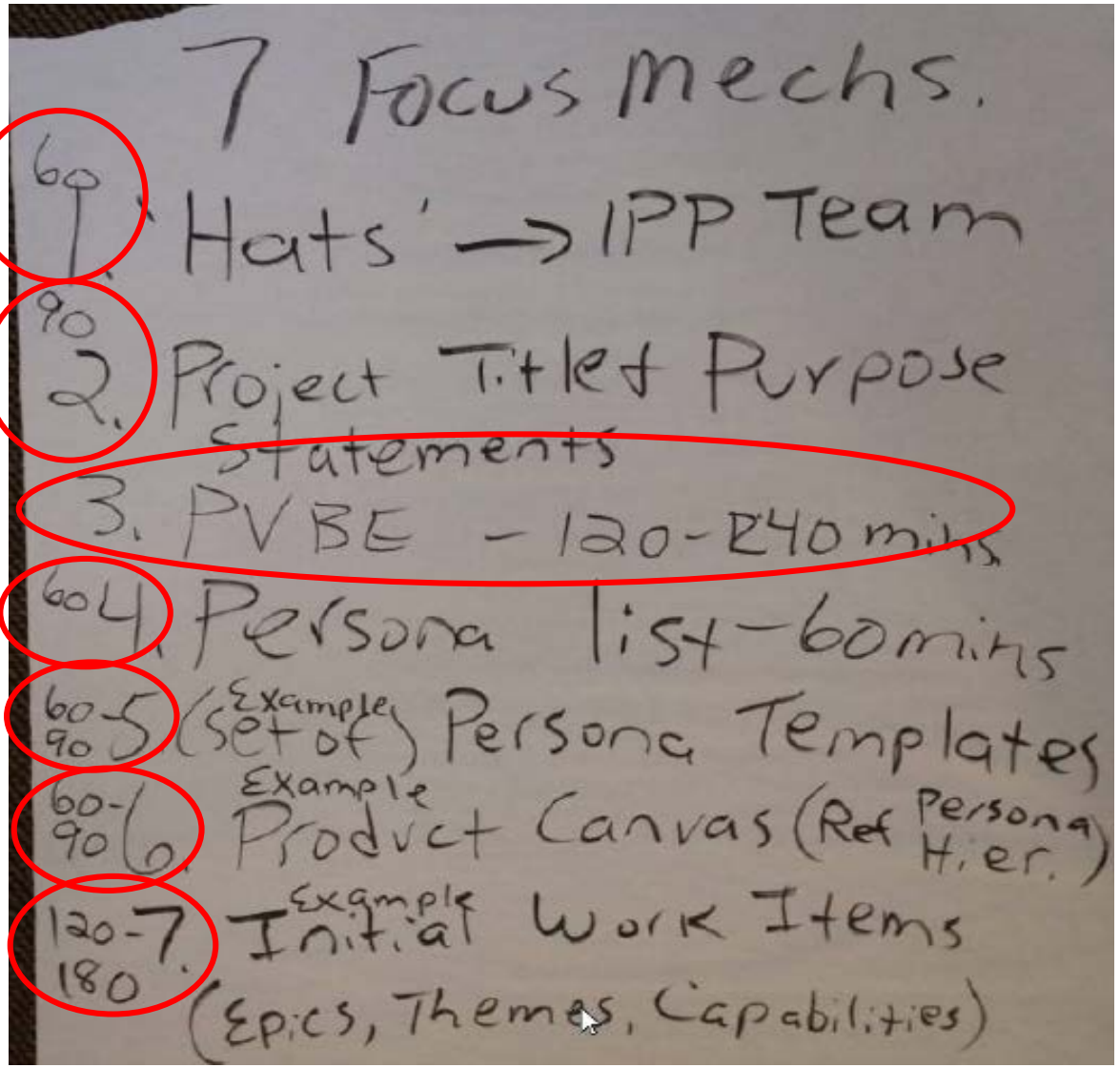
LSM/Agile for IPP: Roadmap



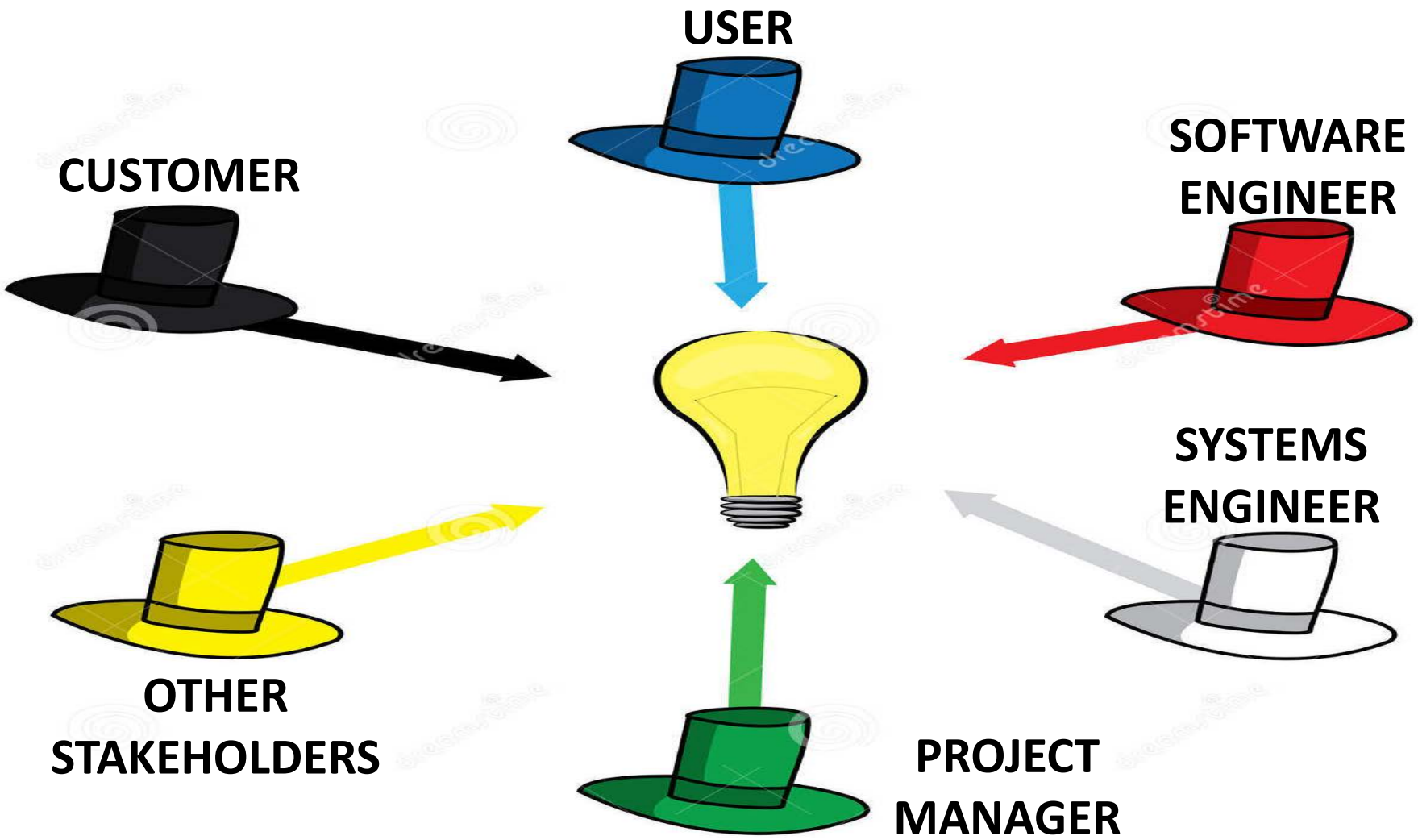
Approach: "Project Focus Mechanisms"

LSM/Agile IPP 'Meetup' Phase	Project Focus Mechanism	Best Practice From Discipline:
IPP Meetup Attendee Selection/Confirmation	1. IPP Meetup 'Hats' (i.e., Roles)	"Six Hats" Derivation, and Agile (Scrum) "Product Owners"
Initial Project Outcome Discussions	2. Project 'Title' and 'Purpose' Statements	Systems Thinking
Project 'Problem Validation'	3. 'Product Vision Board Extended (PVBE)'	Lean Startup Method (LSM) and Agile Project/Product Management
Project 'User Validation'	4. Project 'Persona List'	LSM and Agile Project/Product Management
Project 'User Validation'	5. Project 'Persona Cards' or 'Persona Templates'	LSM and Agile Project/Product Management
Project 'Solution Validation'	6. Project 'Product Canvas' Set	LSM and Agile Project/Product Management
Project 'Solution Building Blocks'	7. Set of 'Title Level' Project Capabilities and Features	Agile (Scrum) SWE 'Product Backlog Item' Development

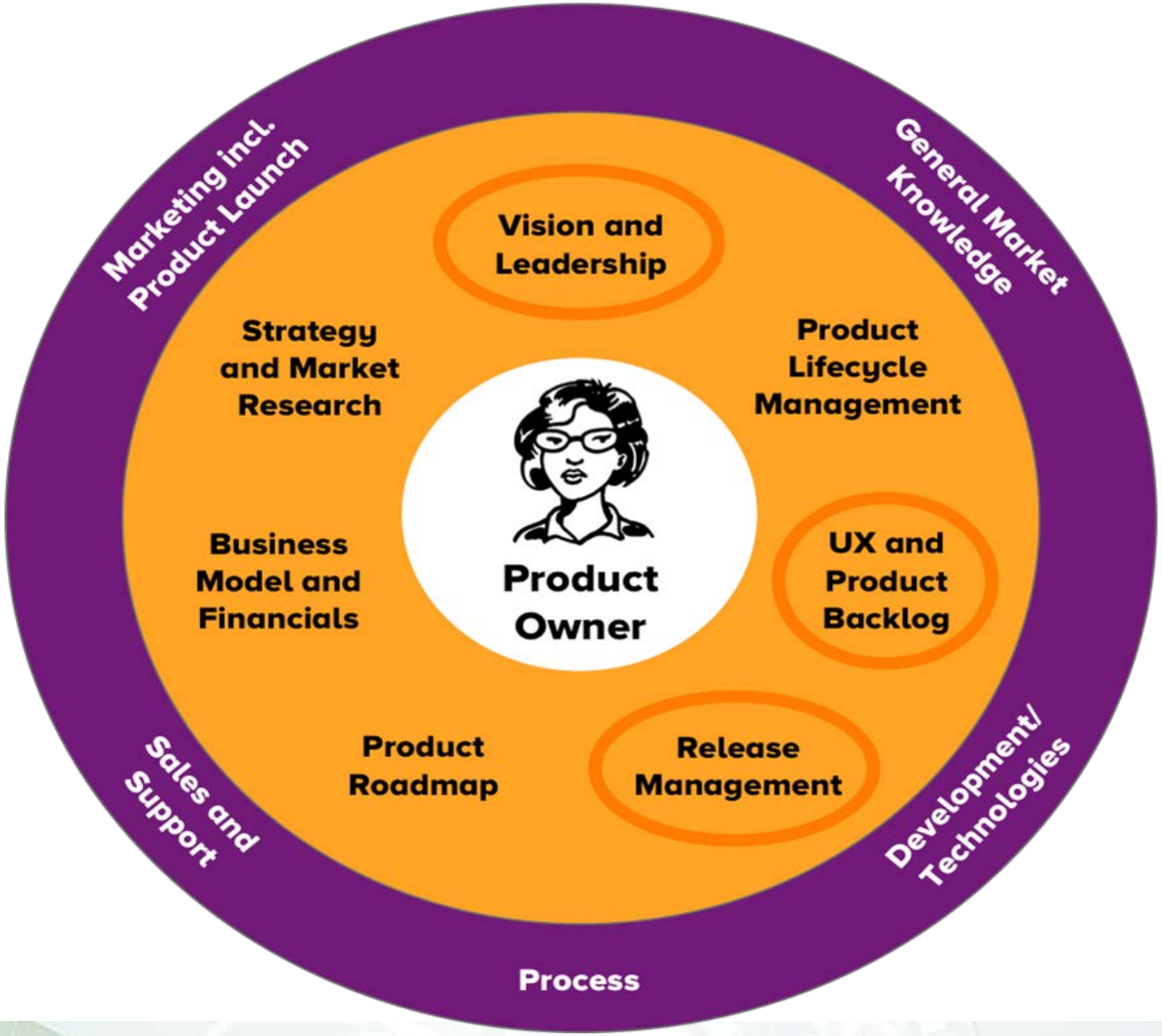
RHET Meetup: 7 Project Focus Mechanisms - Minutes



Project Focus Mechanism #1: "Hats" (i.e., IPP Perspectives)

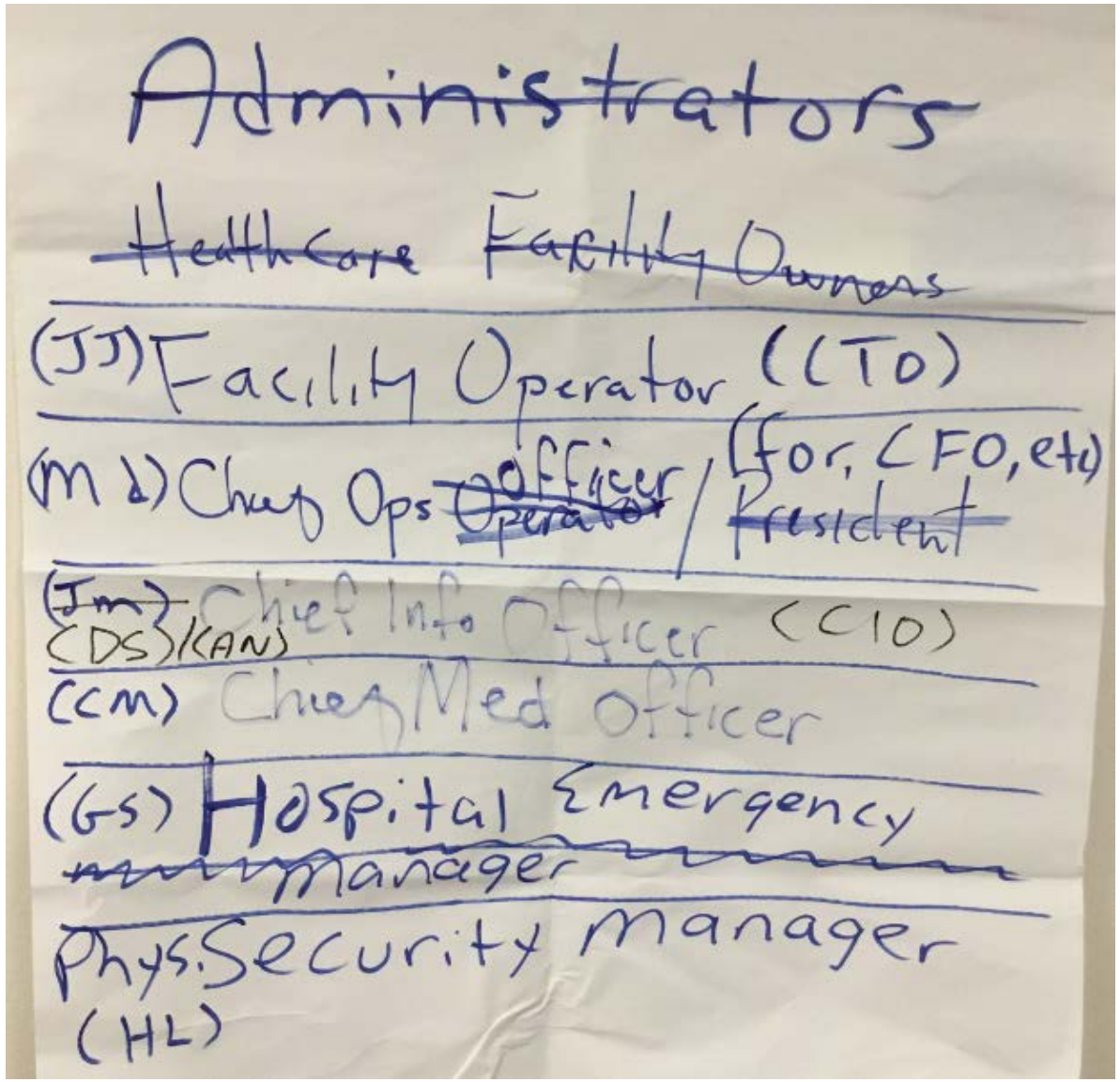


Project Focus Mechanism #1: "Hats" (i.e., IPP Perspectives)



Project Focus Mechanism #1: "Hats" (i.e., IPP Perspectives)

Resilient Hospital Reference Model Development Project "Hats"



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.)

Project Focus Mechanism #2: 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.

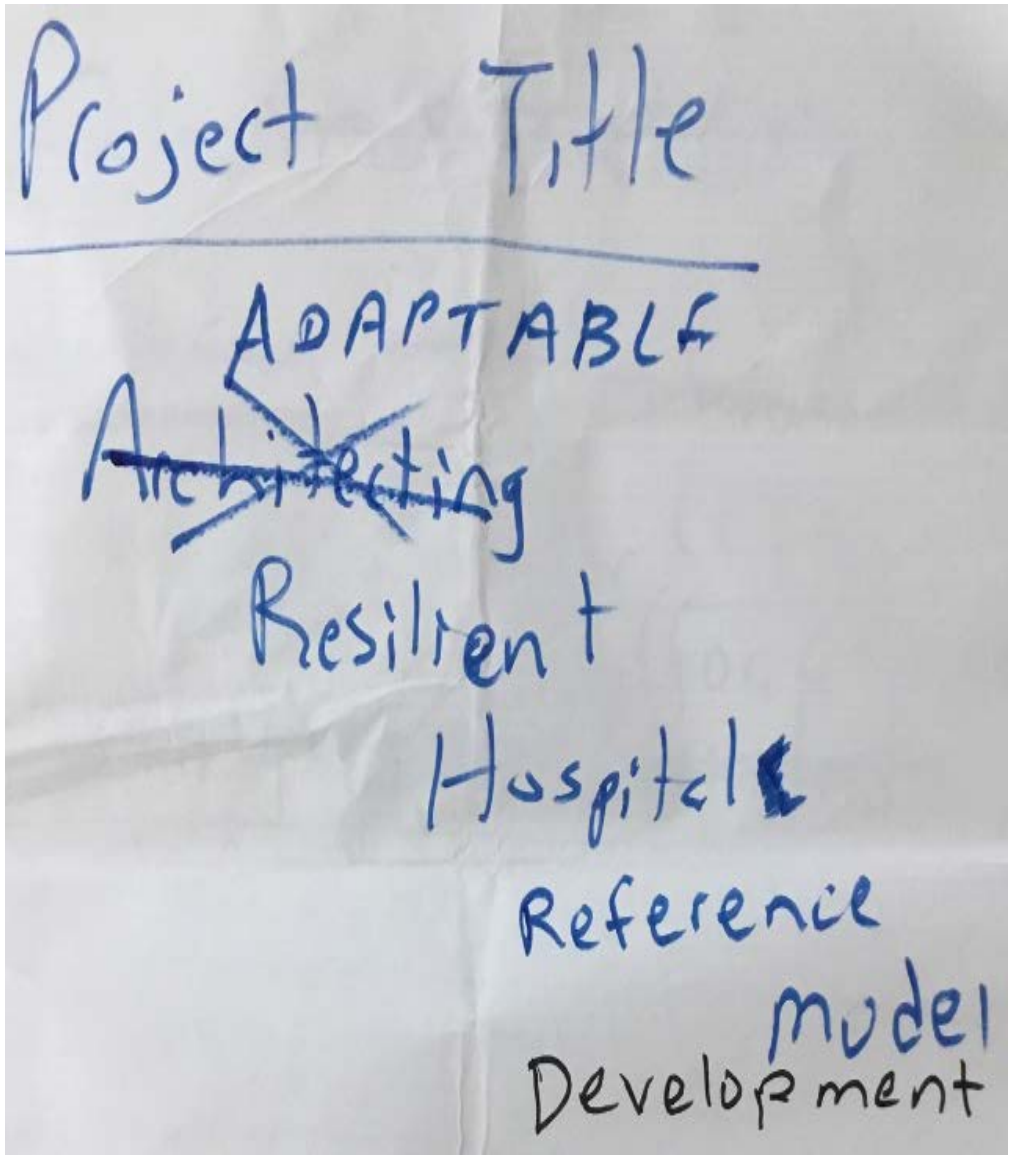
OUR PURPOSES. We use a facilitator guide/script and basic readings--RoundTable Guidelines--for many reasons: 1- We pack in a great deal of information in a very short time, thus leaving maximum time for each of us to present our ideas. 2- The result is we hear everyone's point of view on a topic. 3- 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.

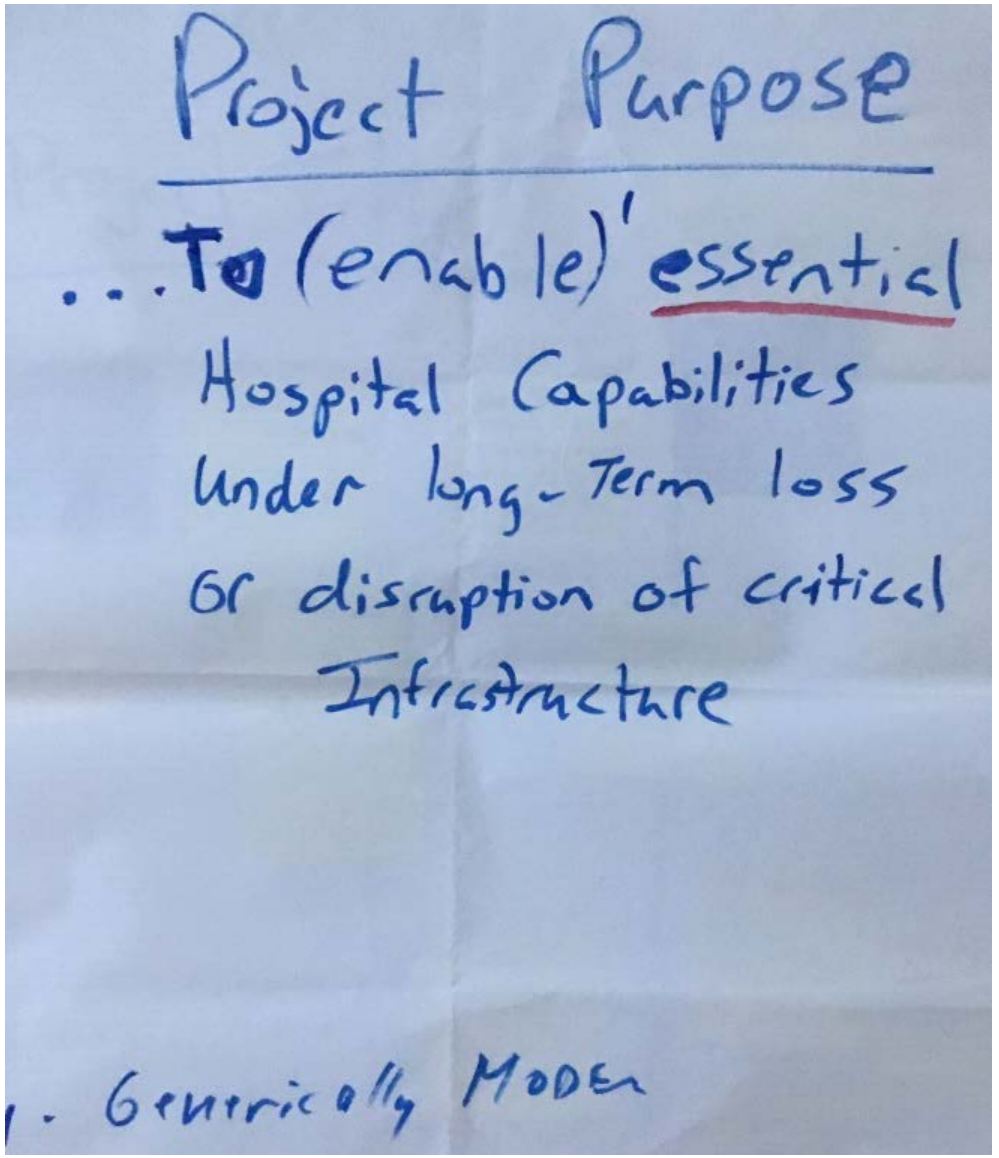
GUIDELINES FOR LISTENING. Listening to the 5 minutes of readings allows us the opportunity to quiet our minds and silently reflect on the topics, the readings, our inner thoughts, and our work and lives. Listening to each other's comments, we hear a great variety of viewpoints. We consciously shift our 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.

Project Focus Mechanism #2: Project Title and Purpose





LSM/Agile: Project Title & Purpose (Examples)

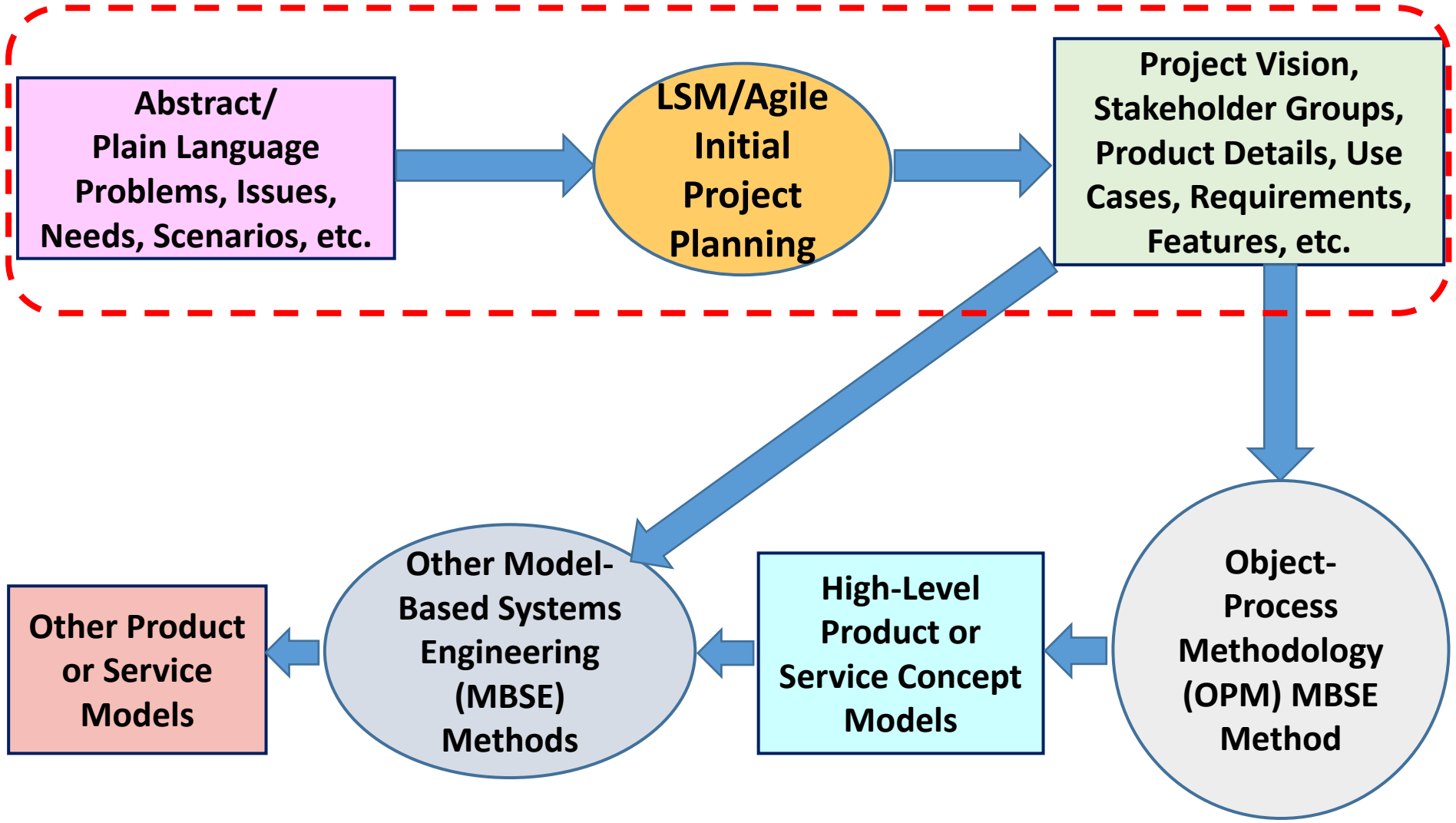
Project Title:

"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



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.

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

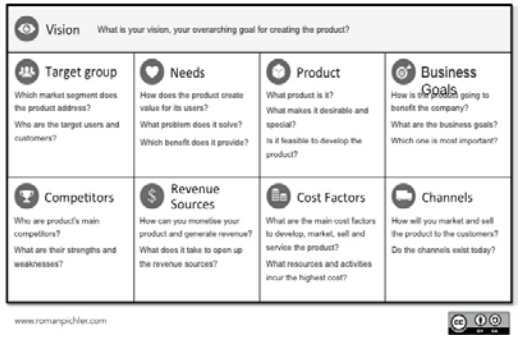
Who's Using LSM?

- **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/
- **U.S. Government "FedTech"**
  - https://www.fed-tech.org/
- **Dropbox, Wealthfront, Grockit, imvu, Votizen, Aardvark**
  - http://theleanstartup.com/casestudies#dropbox

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

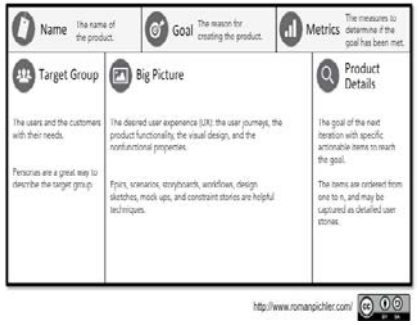
PICTURE & NAME	DETAILS	GOAL
What does the persona look like? What is its name? Choose a picture and a name that are representative, and that allow you to develop sympathy for the persona.	What are the persona's relevant characteristics and behaviours? Consider demographics, job, lifestyle, spare time 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'

"SOLUTION VALIDATION"

Product Canvas



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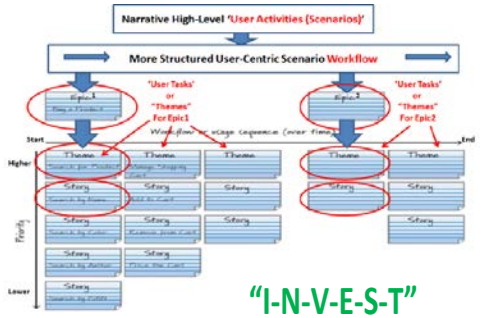
"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping



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

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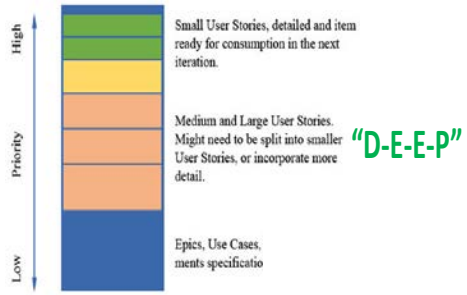
"SOLUTION-READY PBIs"

Initial Product Backlog Items (PBIs)



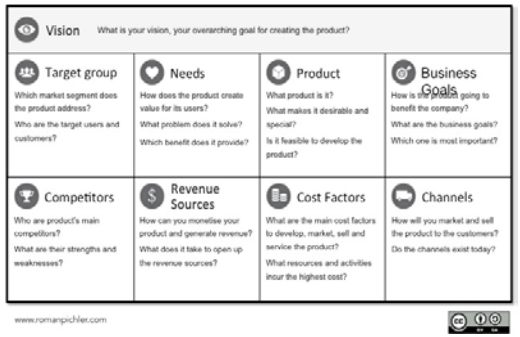
"D-E-E-P"

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

LSM/Agile IPP: Process Flow

"PROBLEM VALIDATION"

Product Vision Board Extended (PVBE)



-- Compliant with Lean Business Model Canvas (BMC)
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The Next Part of This Tutorial!

"USER VALIDATION"

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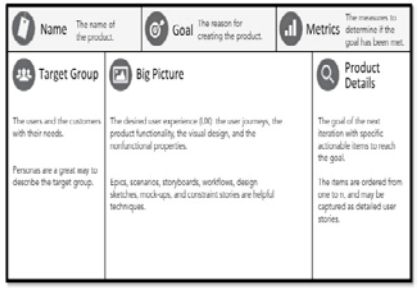
"SOLUTION VALIDATION"

Product Canvas



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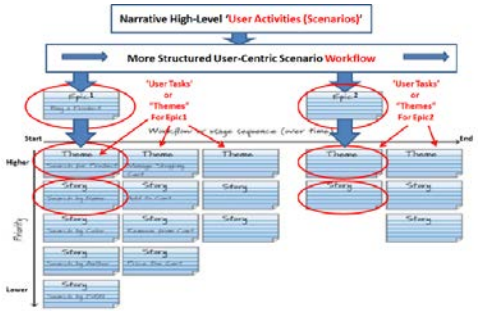
"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping



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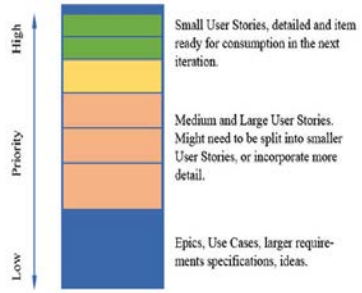
"SOLUTION-READY PBIs"

Initial Product Backlog Items (PBIs)



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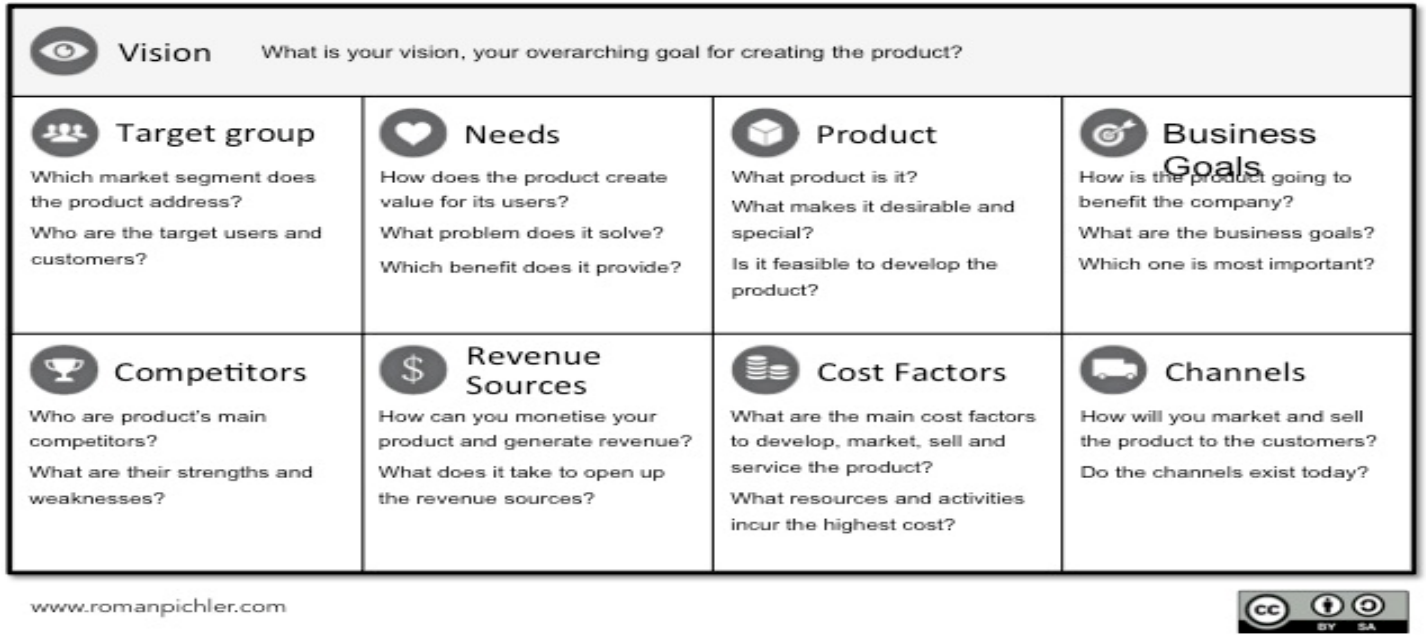
LSM/Agile IPP Step: "Problem Validation"

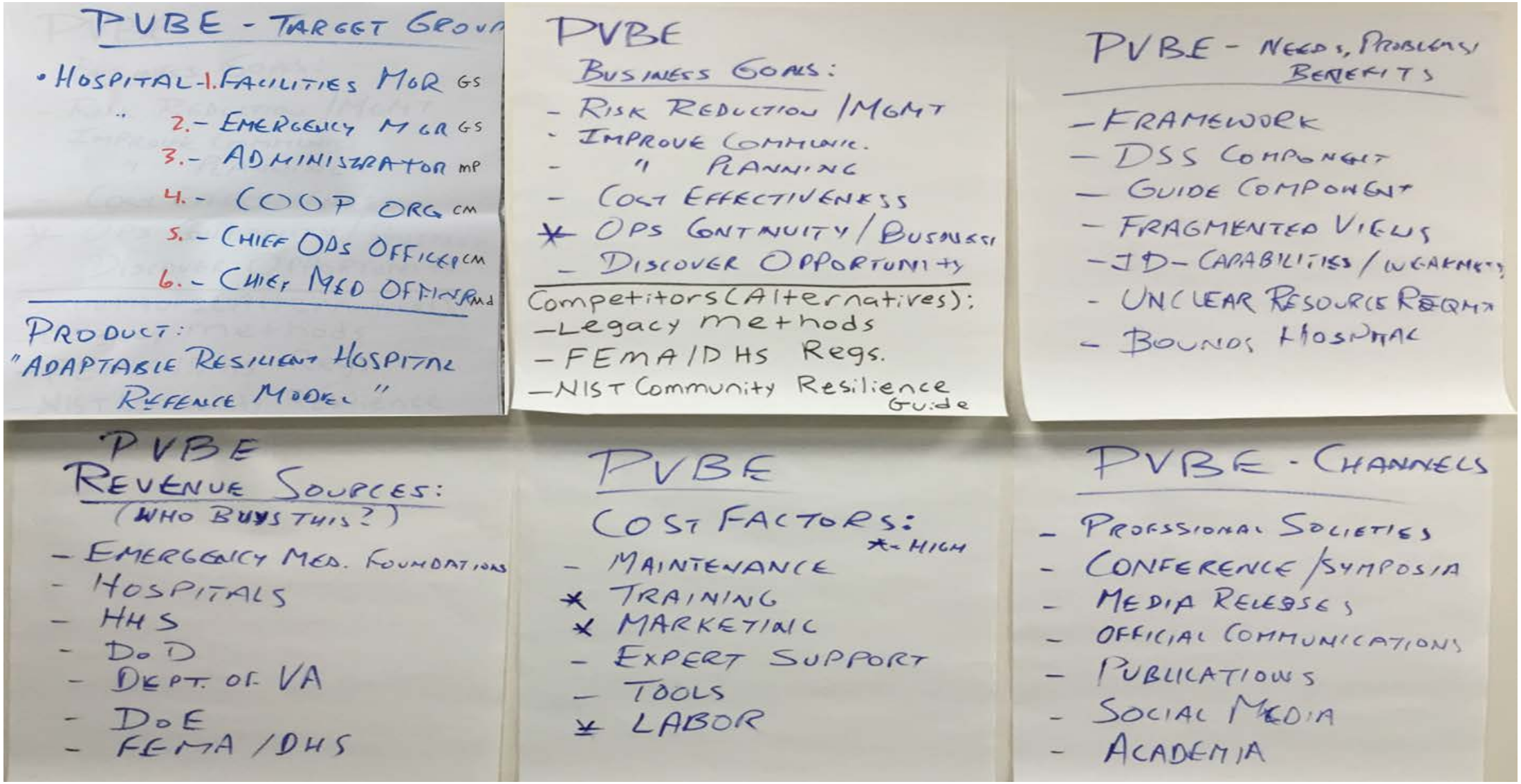
"PROBLEM VALIDATION"

Product Vision Board Extended (PVBE)

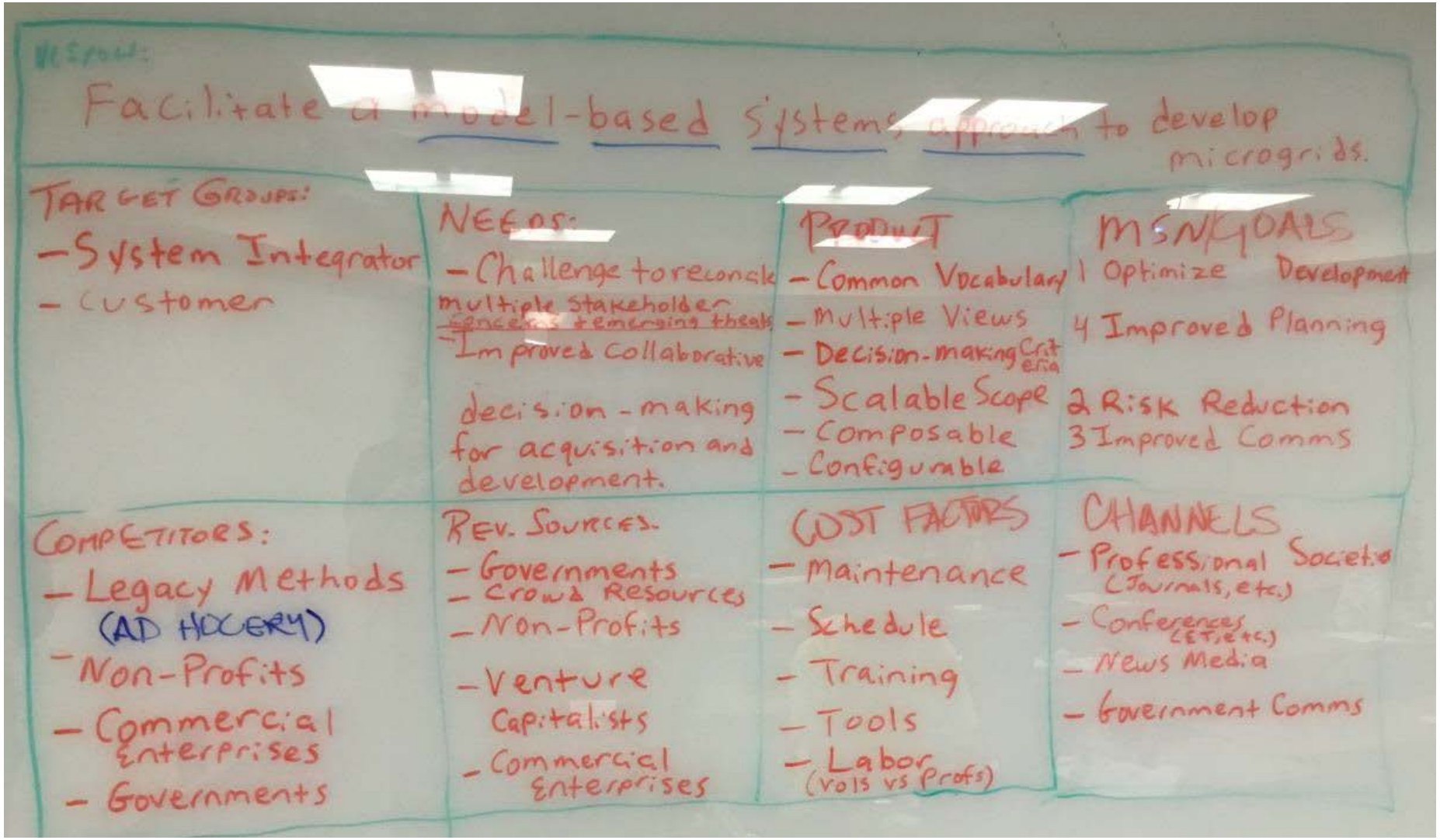


-- Compliant with Lean Business Model Canvas (BMC)
-- Can be captured and managed as a 'Confluence Space'

Project Focus Mechanism #3: "Product Vision Board Extended"



LSM/Agile IPP: "PVBE" (uGrid RM Example)



LSM/Agile IPP: "PVBE" (uGrid RM Example)

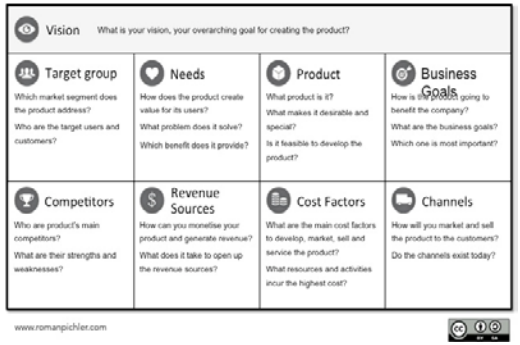
VISION: Facilitate a Model-Based Systems Approach to Develop Micro-Grids

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)



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

The Next Part of This Tutorial!

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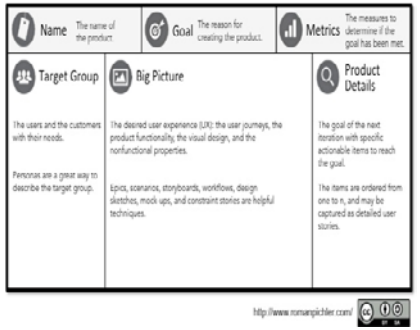
-- Can be shared in tools like Atlassian 'Confluence'

"SOLUTION VALIDATION"

Product Canvas



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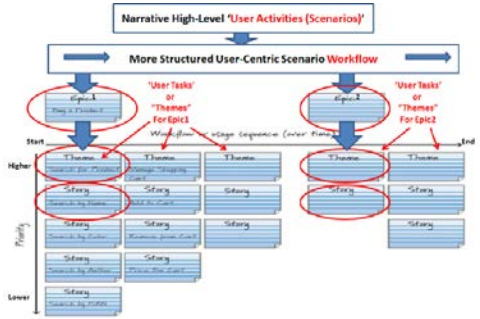
"SOLUTION BUILDING BLOCKS"

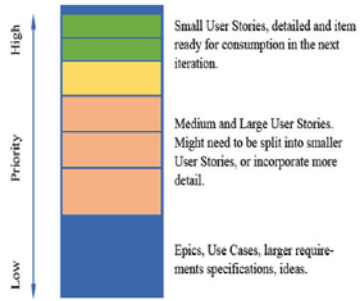
User Story Workshop/Story Mapping



-- 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 Step: "User Validation"

"USER VALIDATION"

Persona Templates

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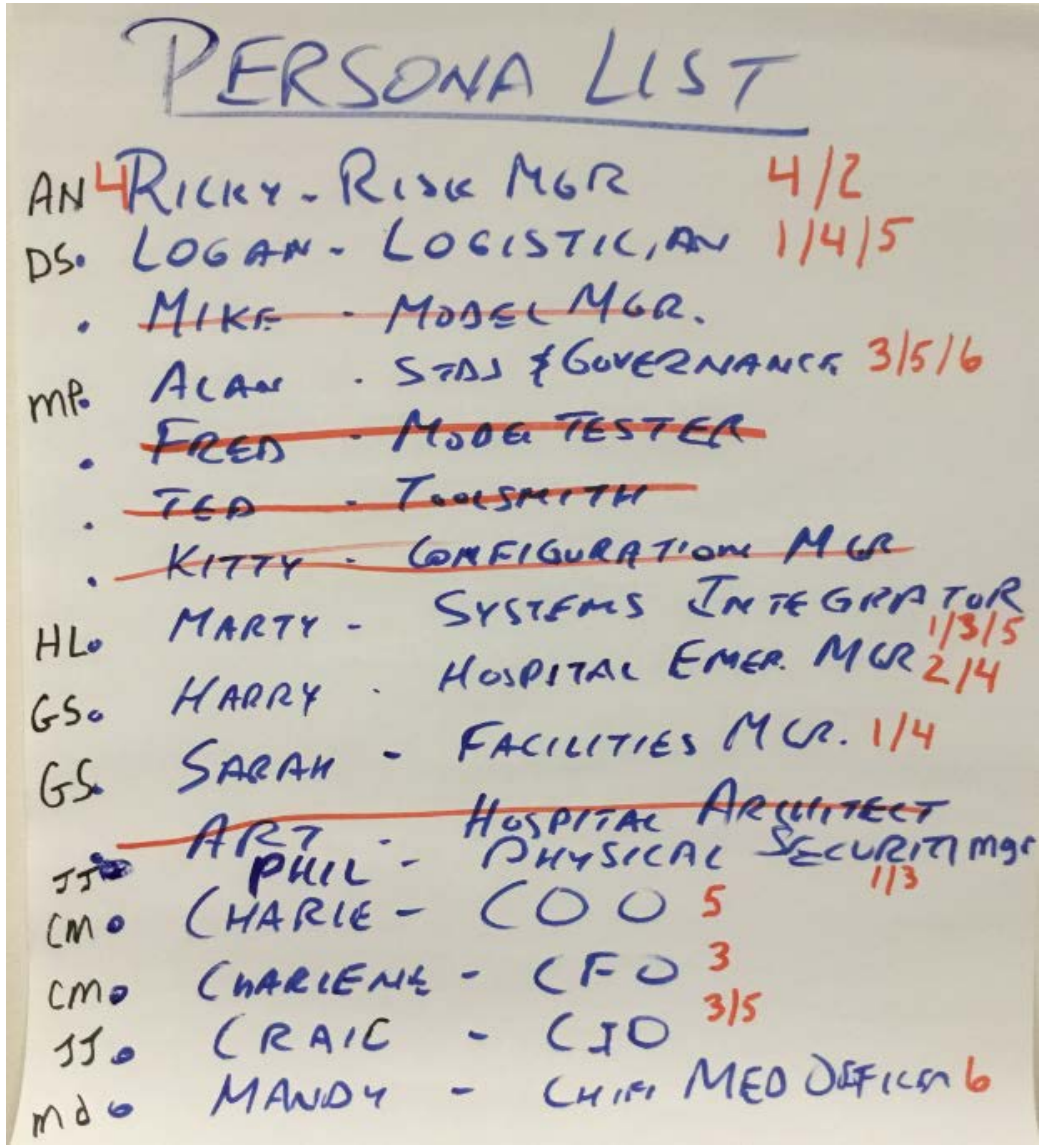
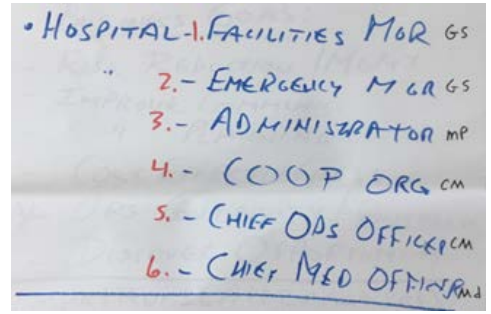
-- Can be captured and managed as a 'Confluence Space'

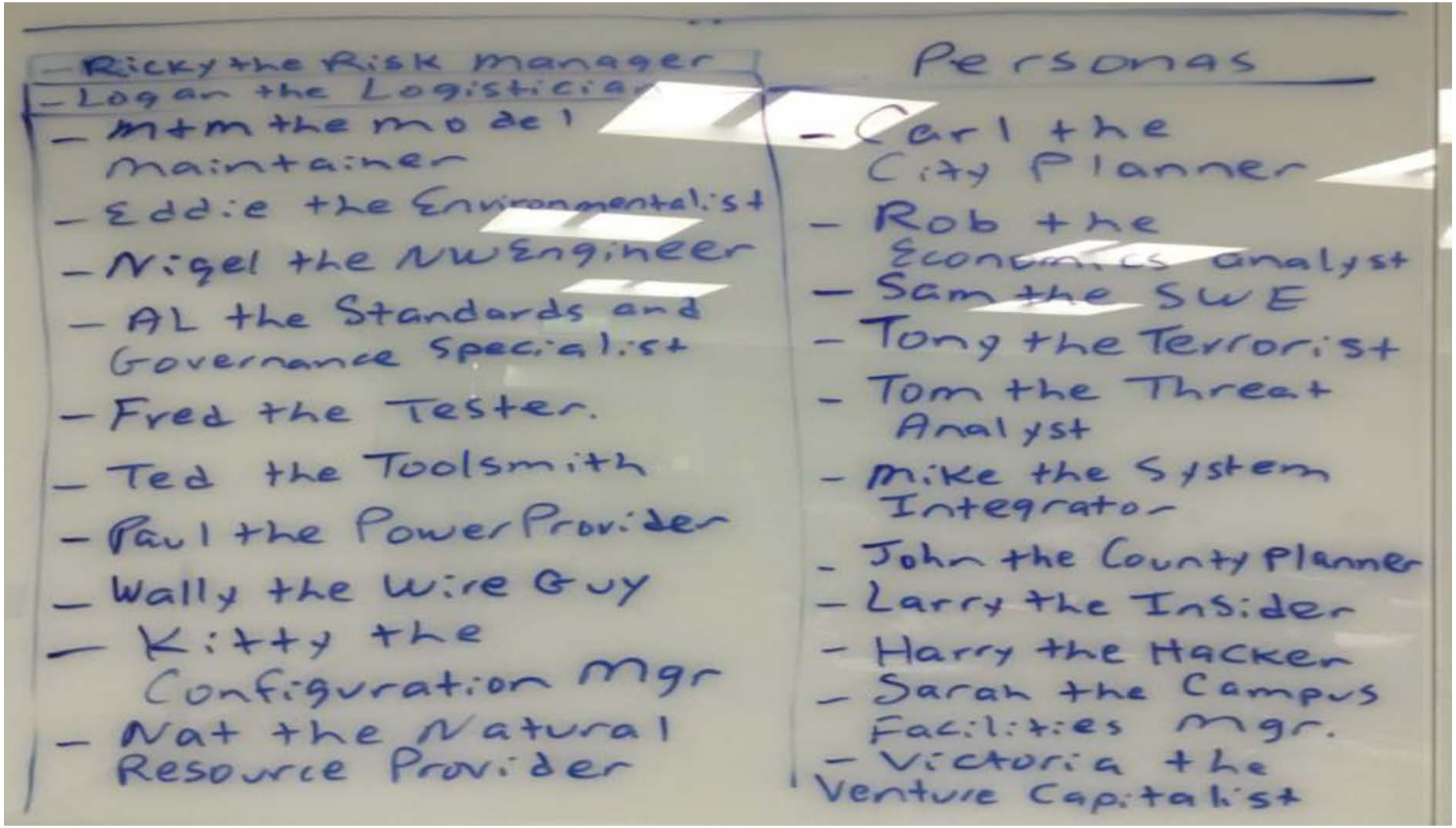
Project Focus Mechanism #4: "Persona List"



Each '**Persona**' (Stakeholder Group) is also a Group Member of six larger '**Target Groups**':



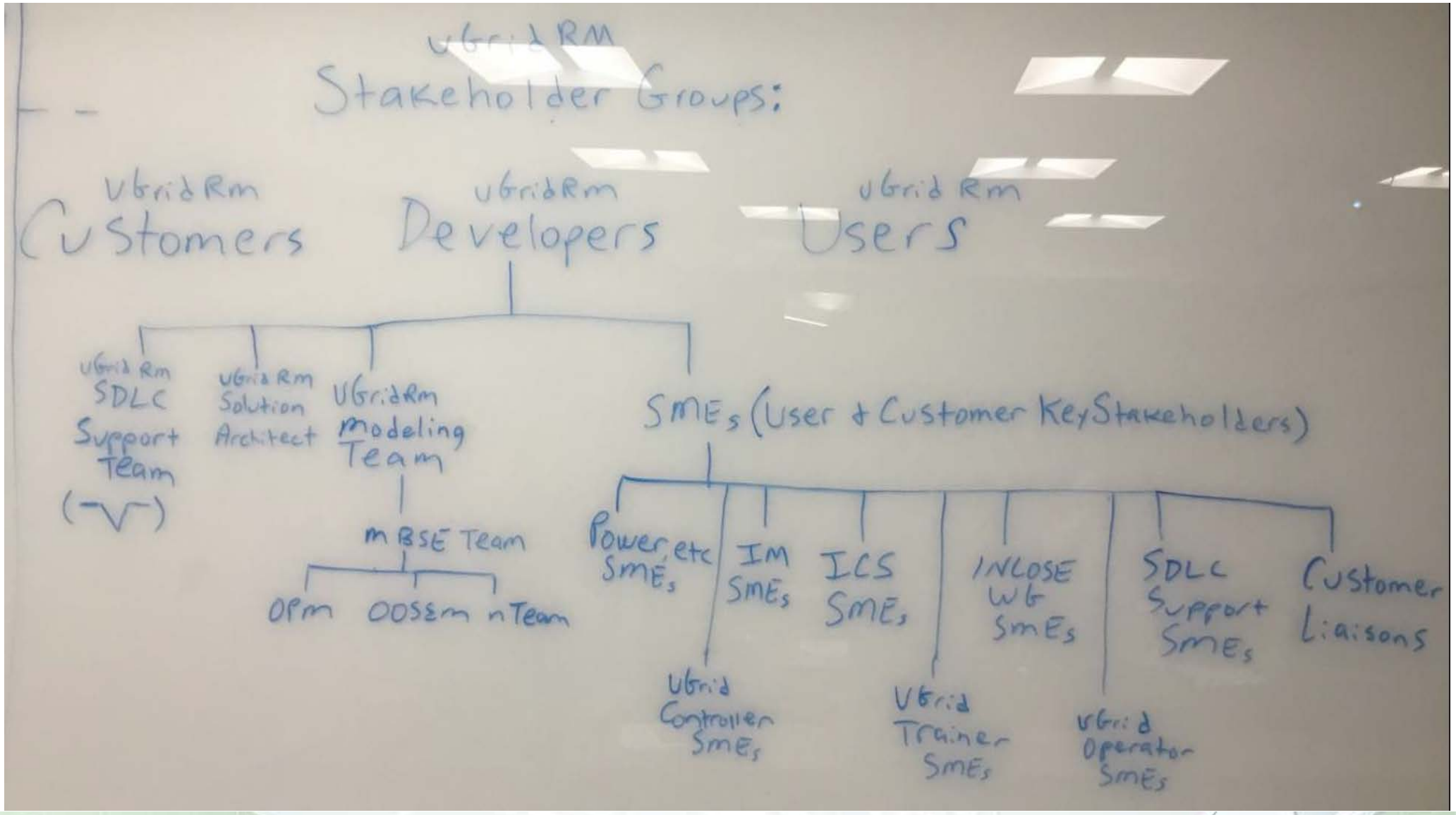
LSM/Agile: "Persona List" (uGrid RM Example)



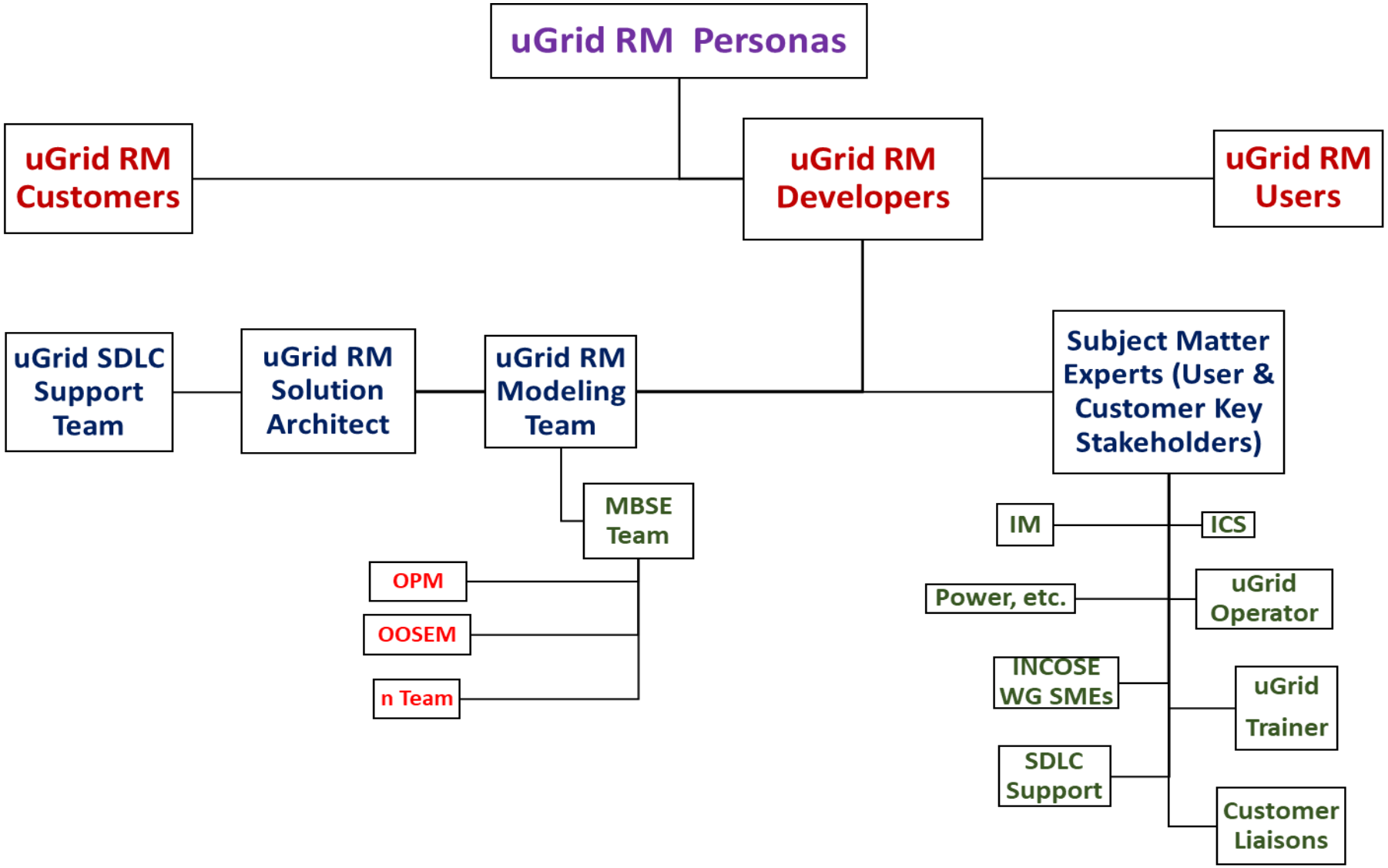
uGrid RM Stakeholder Groups, or "Personas"

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

Project Focus Mechanism #4: "Persona Hierarchy"



uGrid RM MBSE Project: "Persona Hierarchy"



Project Focus Mechanism #5: "Persona Templates"

"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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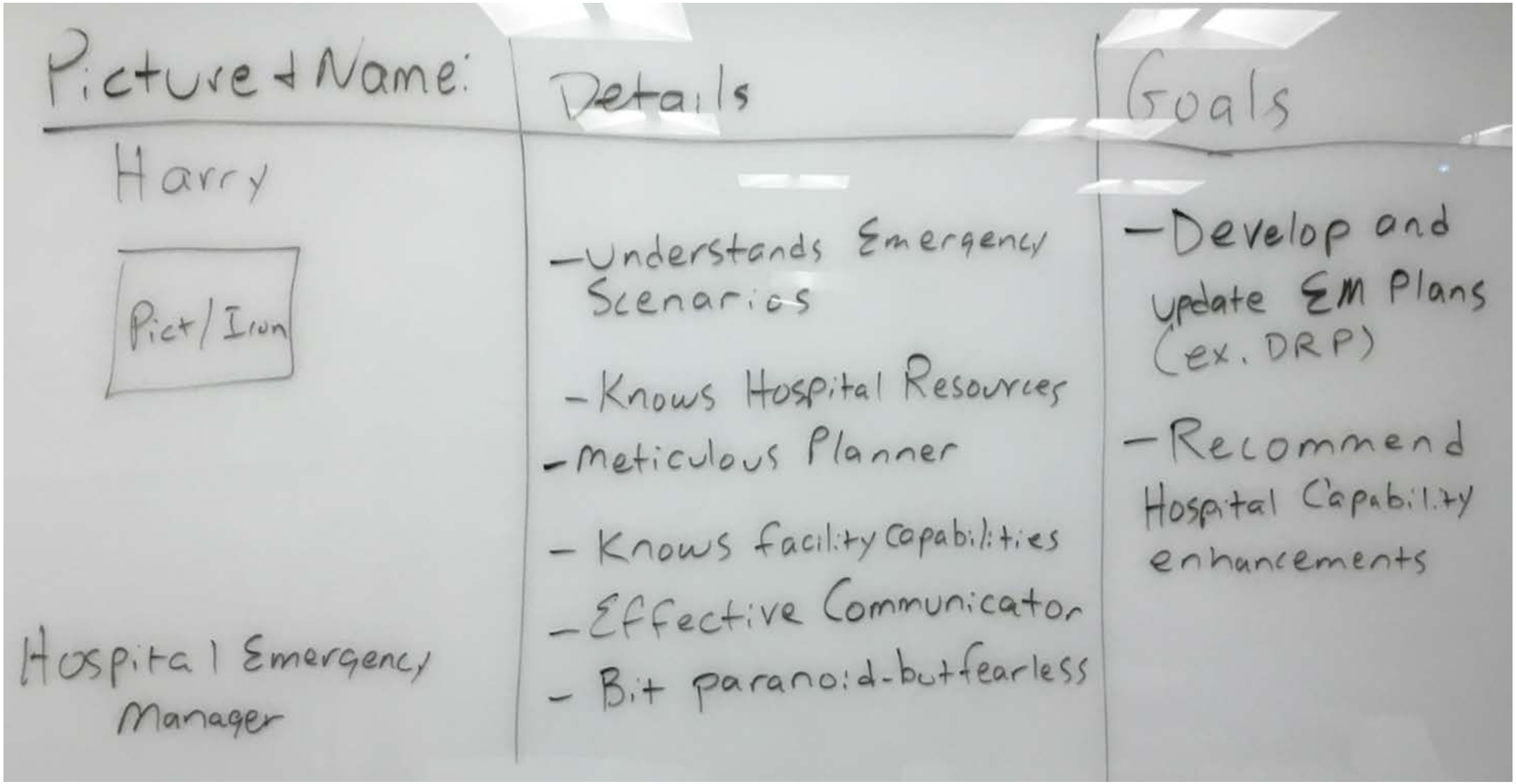
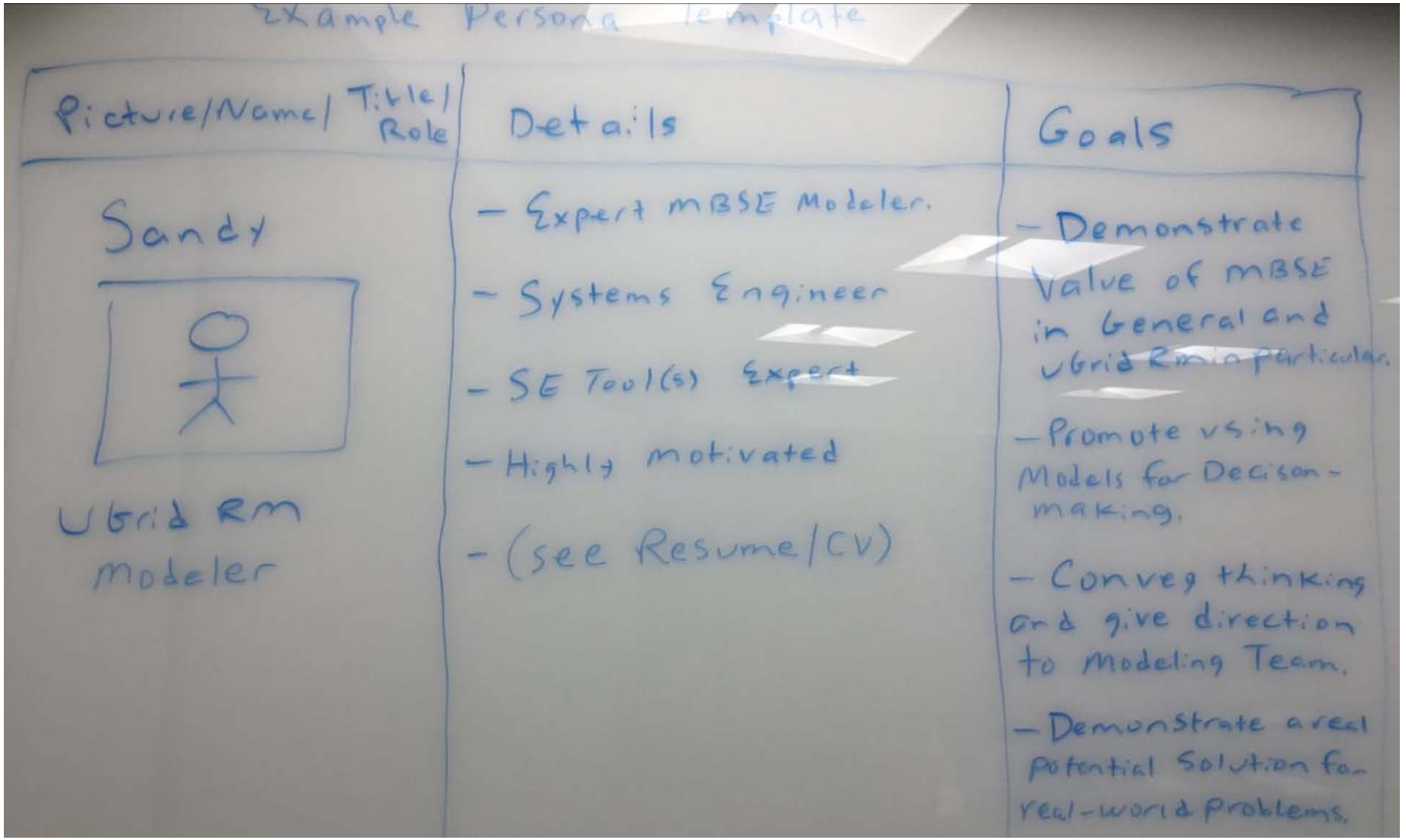
Project Focus Mechanism #5: "Persona Templates"



LSM/Agile: "Persona Template" (uGrid RM Example)



LSM/Agile: "Persona Template" (uGrid RM Example)

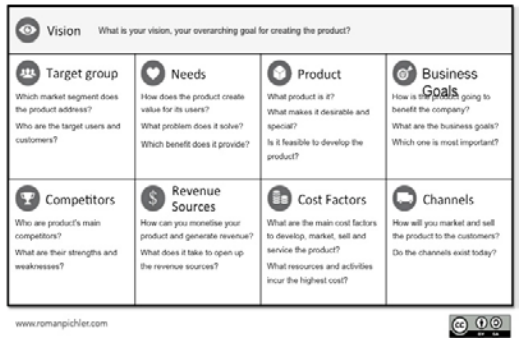
PICTURE/NAME/TITLE	DETAILS	GOALS
Samantha **uGrid RM Modeler**	-- Expert MBSE Modeler -- Systems Engineer -- Systems Engineering Tools Expert -- Highly Motivated -- (See Resume and CV)	-- Demonstrate value of MBSE in general and uGrid RM in particular. -- Promote using models for decision-making. -- 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

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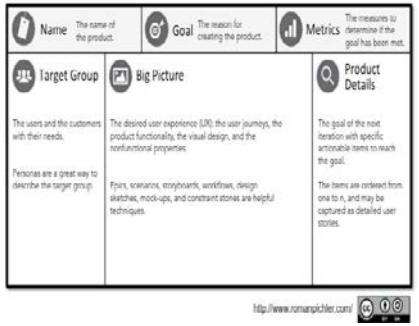
The Next Part of This Tutorial!

"SOLUTION VALIDATION"

Product Canvas



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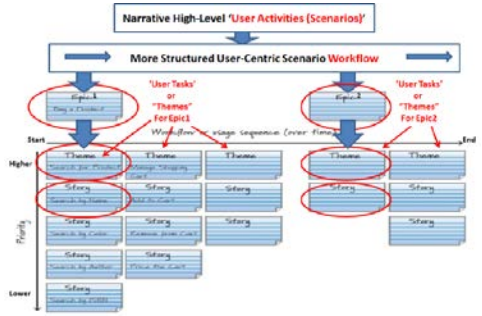
"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping



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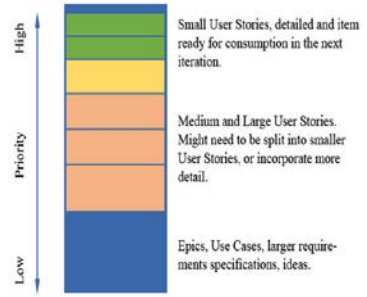
"SOLUTION-READY PBIs"

Initial Product Backlog Items (PBIs)

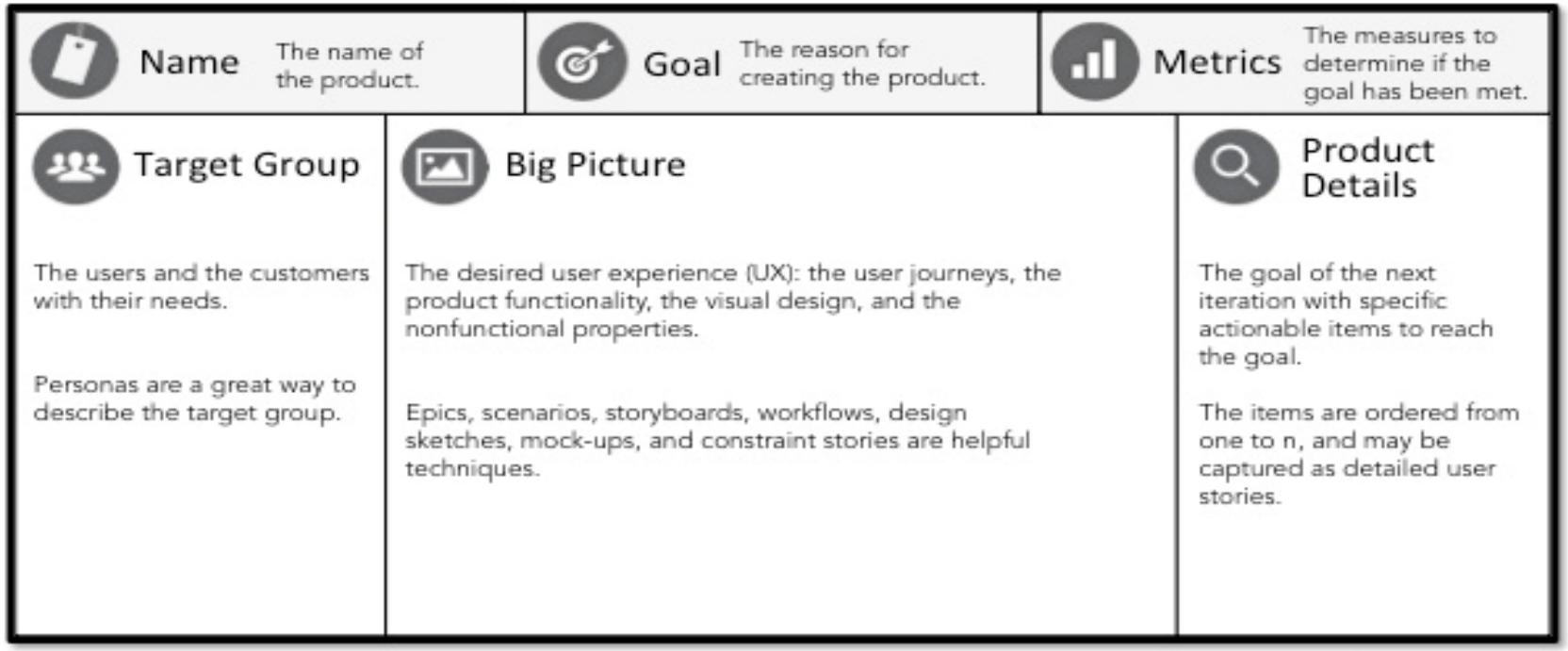


-- Can be linked/shared in tools like Atlassian 'Confluence' & 'Jira'

Project Focus Mechanism #6: "Product Canvas"

"SOLUTION VALIDATION"

Product Canvas



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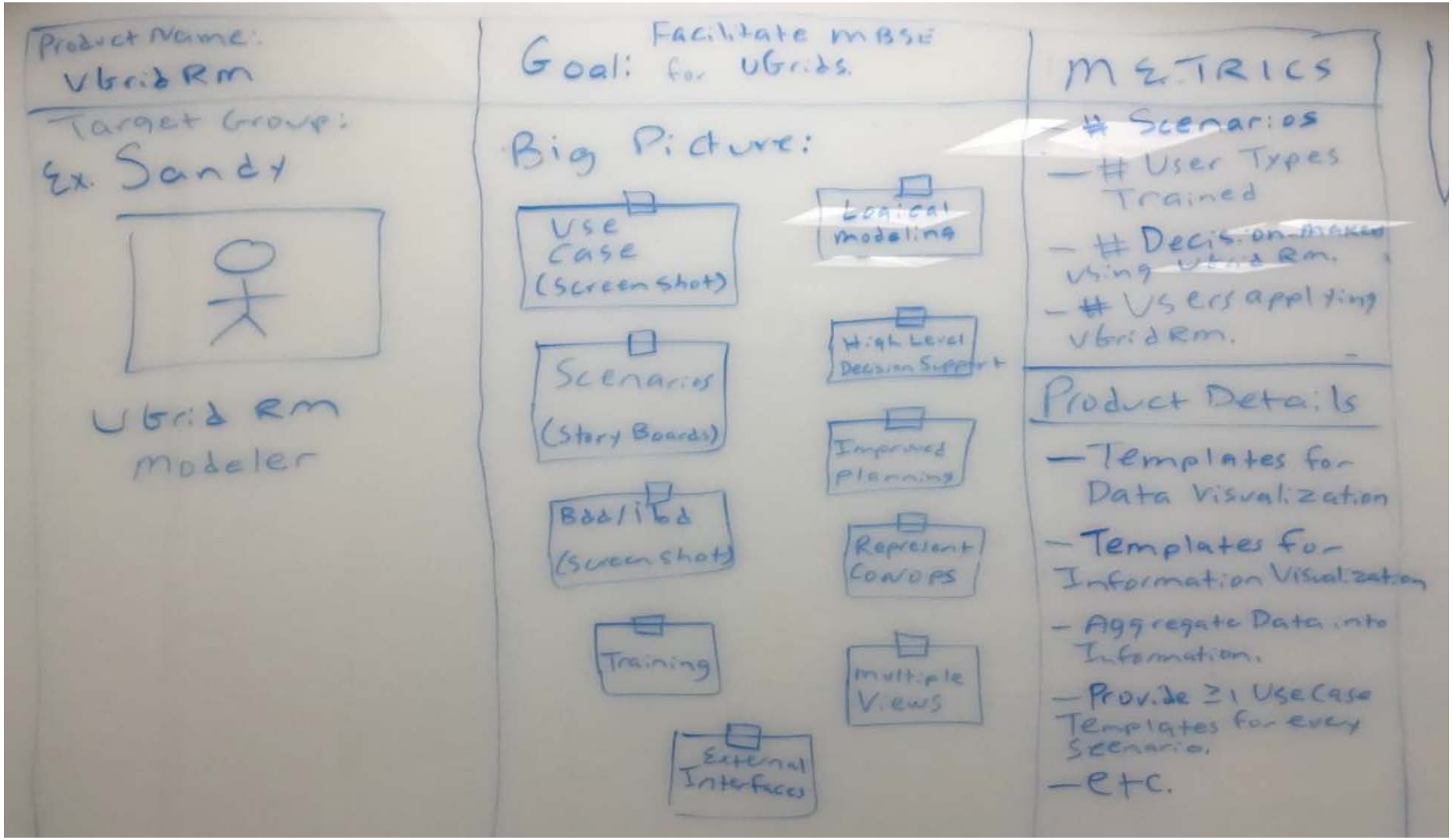
-- Can be captured and managed as a 'Confluence Space'

LSM/Agile IPP: "Product Canvas" (uGrid RM Example)



uGrid RM Project: Example "Product Canvas"

Product Name: *uGrid RM*

GOAL: *Facilitate MBSE for uGrids*

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

Metrics:

-- # 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

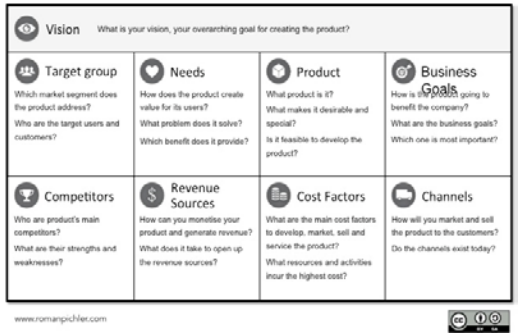
-- Provide at least One Use Case Template for every Scenario

-- etc.

LSM/Agile IPP: Process Flow

"PROBLEM VALIDATION"

Product Vision Board Extended (PVBE)



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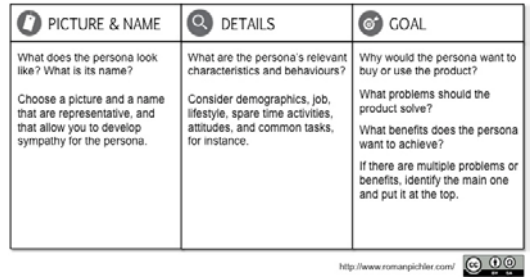
"USER VALIDATION"

Persona Templates



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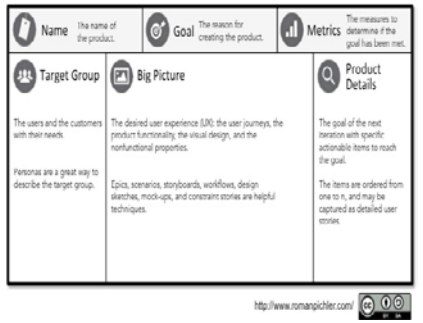
The Next Part of This Tutorial!

"SOLUTION VALIDATION"

Product Canvas



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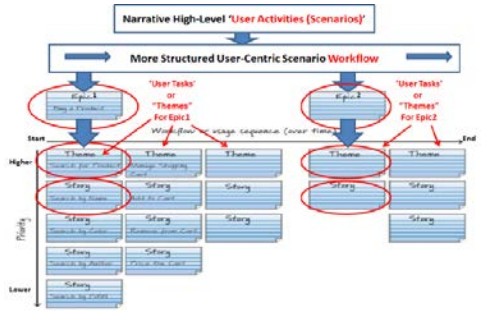
"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping



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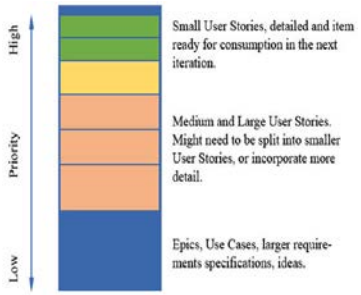
"SOLUTION-READY PBIs"

Initial Product Backlog Items (PBIs)



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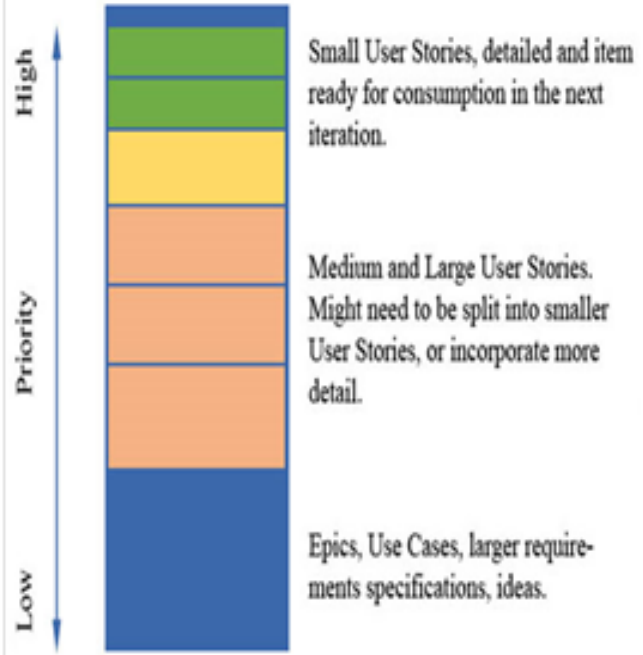
Project Focus Mechanism #7: "Initial Work Items"

"SOLUTION-READY PBIs"

Initial Product Backlog Items (PBIs)



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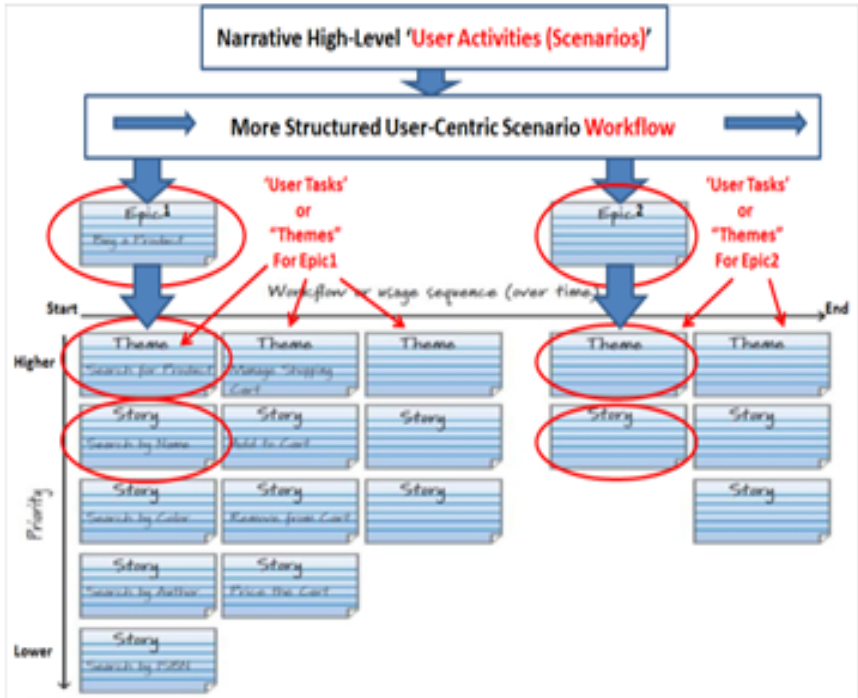
"SOLUTION BUILDING BLOCKS"

User Story Workshop/Story Mapping



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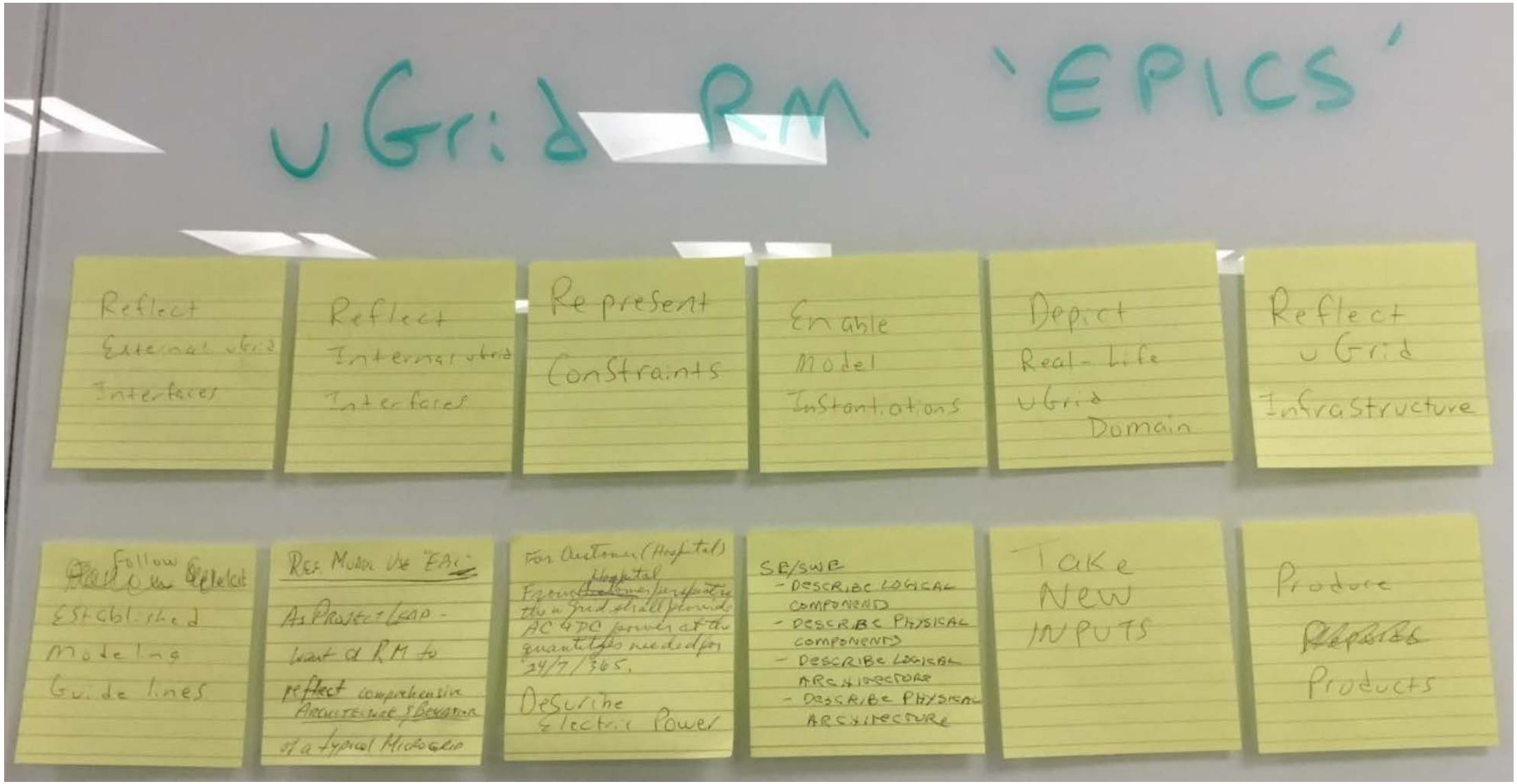
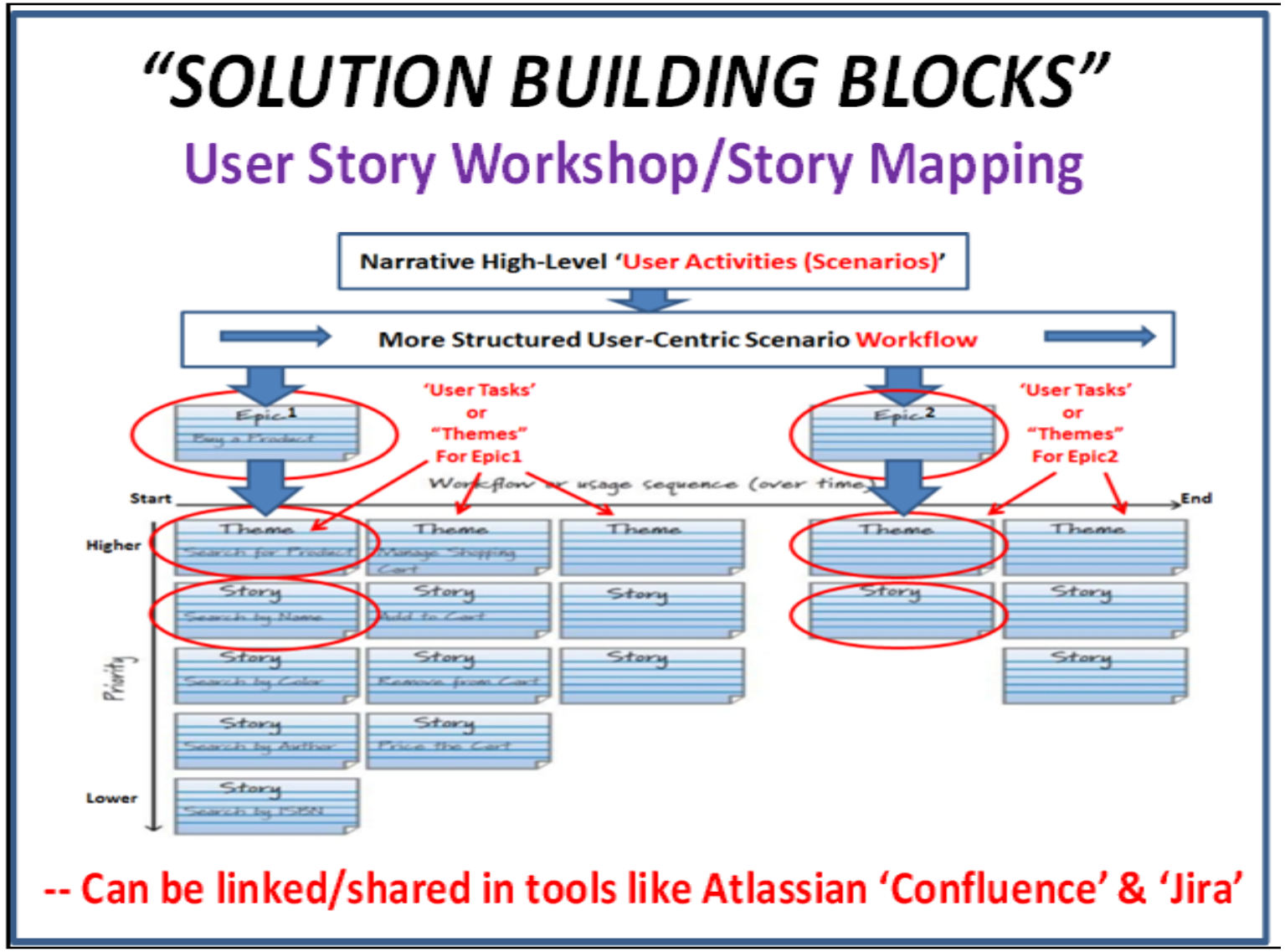
LSM/Agile: "Solution Building Blocks" (uGrid RM Example)



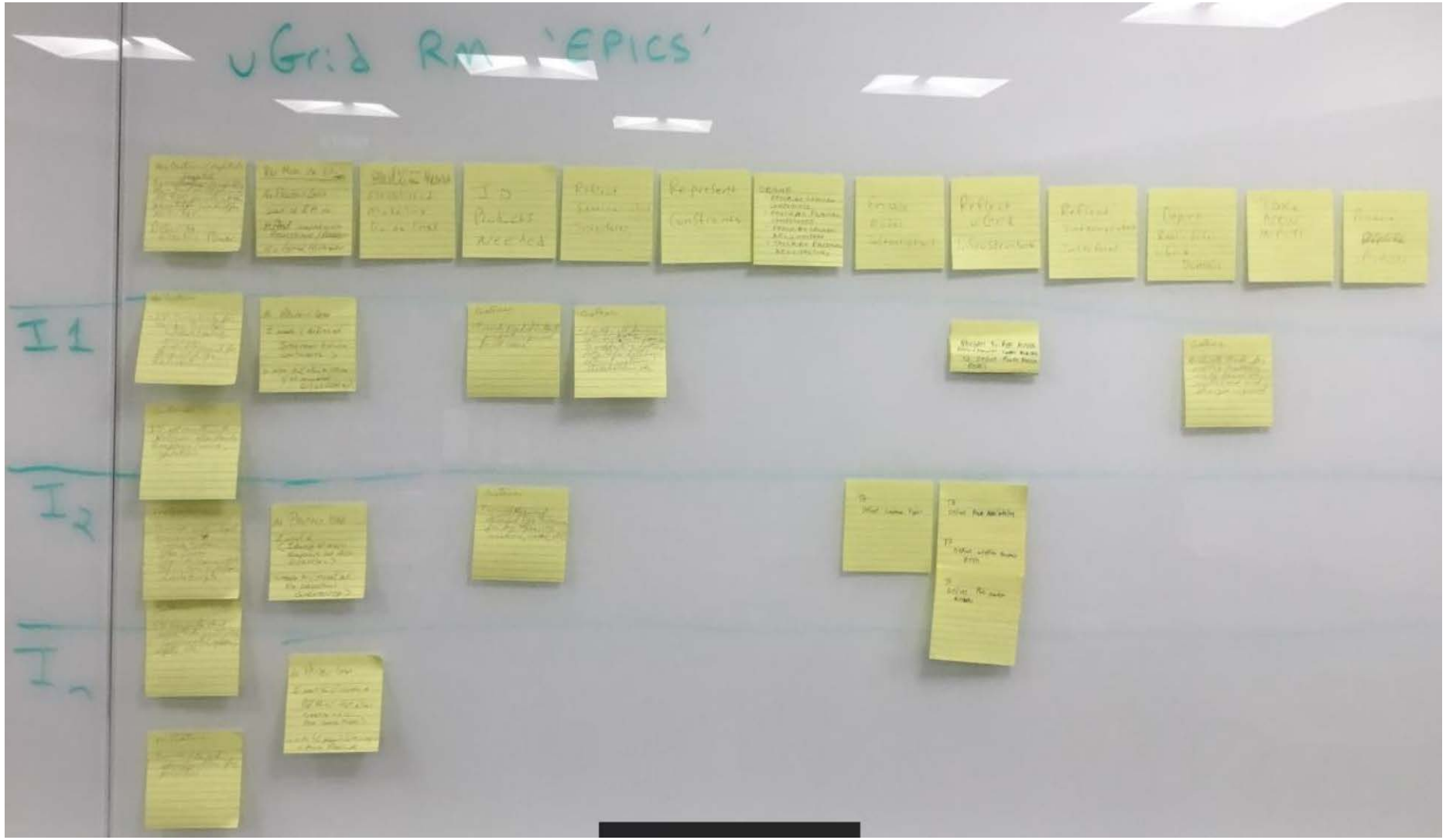
LSM/Agile: "Solution Building Blocks" (uGrid RM Example)

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

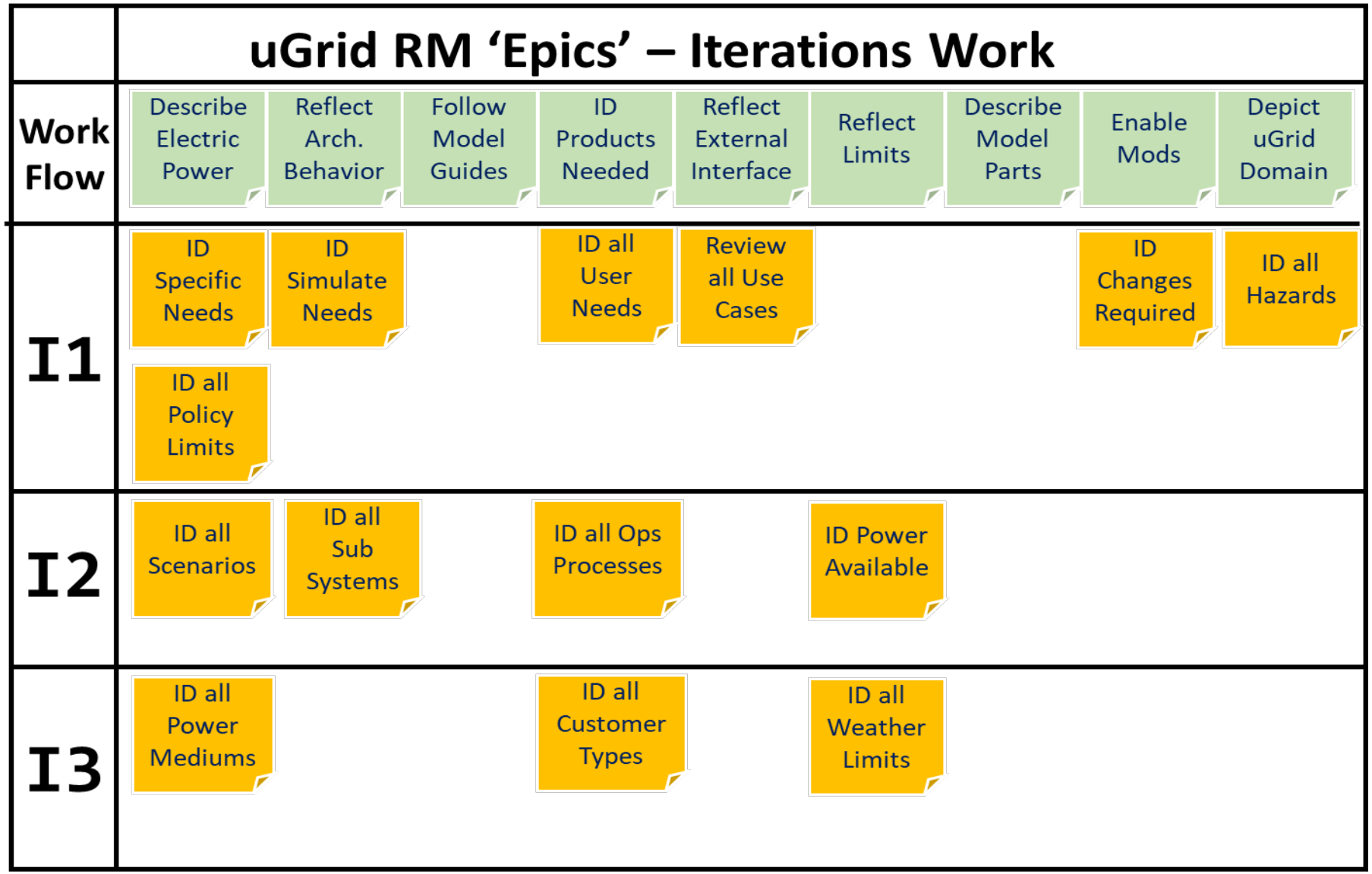
Project Focus Mechanism #7: "Initial Work Items"



LSM/Agile: "Solution Building Blocks" (Example)



Example: "Initial Solution-Ready Work Items"



Key Points (1 of 2)

This **Hybrid Lean Startup Method (LSM)/Agile 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 Project Team can use throughout the life cycle of any system solution project:

1. **IPP Meetup 'Hats' (i.e., Project Decision Making Roles):** "Six Hats" and Agile (Scrum) 'Product Owners' Selection
2. **Project Title & Purpose:** Agile SE "Systems Thinking Round Table Session"
3. **Product Vision Board Extended (PVBE):** Lean Startup Method (LSM) and Agile Project/Product Management 'Business Model Canvas' Development
4. **Persona List and/or Persona Hierarchy:** LSM and Agile (Scrum) Persona Development
5. **Persona Templates or Persona Cards:** LSM and Agile (Scrum) Persona Development
6. **Product Canvas:** LSM and Agile Project/Product Management Product Canvas Development
7. **Initial Set of Solution-Ready Work Items** – via Agile (Scrum) Product Backlog Item (PBI) Development

Key Points (2 of 2)

This **Hybrid Lean Startup Method (LSM)/Agile Approach to Initial Project Planning (IPP)** is done in Three Primary Phases:

- 'Meetup' or 'Offsite' Phase: Key Project Decision Makers meet to collaboratively develop **Project Focus Mechanisms.**
- 'Clean Up' Phase: IPP Meetup Phase artifacts immediately cleaned up in software applications for briefings, etc.
- 'Post Up' Phase: Cleaned up IPP Meetup artifacts uploaded 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 **Initial Project Planning (IPP).**

- SA, RA, and IPP artifacts become actionable inputs for subsequent **Project Management**, **Requirements Engineering (RE)**, **Architecture**, **Architectural Design**, **Design**, etc.

LSM and Agile References

- **Lean Startup Method (LSM):**
  - **WWW:** http://theleanstartup.com/
  - **Book:** *The Lean Startup*; **Eric Ries**; 2011; ISBN: 978-0-670-92160-7; http://tinyurl.com/y7nvq66c
  - **Blog: Steve Blank**; https://steveblank.com/
- **Agile Project Management:**
  - **WWW:** https://www.romanpichler.com/blog/product-roadmap-product-backlog/
  - **Book:** *Agile Product Management with Scrum;* **Roman Pichler**; 2011; ISBN-13: 978-0321605788; https://tinyurl.com/y856stnk
- **Agile Systems Engineering:**
  - **WWW:** SEI CMU - https://tinyurl.com/yb56mb4g
  - **Book:** *Agile Systems Engineering;* **Bruce Powel Douglass, Ph.D.;** 2016; ISBN: 978-0-12-802120-0; https://tinyurl.com/yc7nk2f4
  - **Group, S.** (2009); "Standish Newsroom – CHAOS 2009"; https://tinyurl.com/y8zzleyr
- **Agile (Scrum) Software Engineering:**
  - **WWW:** https://www.scrumalliance.org/learn-about-scrum
  - **Book:** *SCRUM: The Art of Doing Twice the Work in Half the Time*; **Jeff Sutherland & J.J. Sutherland**; https://tinyurl.com/ycp6zs3f

Tutorial QR Codes

2018 GLRC LSM/Agile IPP Tutorial: QR Codes

Tutorial Info In Dropbox	Eric Ries URL	Steve Blank URL
LSM Use URLs	"Six Hats" URL	Business Model Canvas URL
Roman Pichler URL	Atlassian Confluence URL	Gartner Agile URL
Persona Cards URL	Agile Scrum Guide URL	LSM/Agile Refs

Mike Pafford Contact Info

THANK YOU!!

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Co-Chairman, INCOSE Object-Oriented Systems Engineering Method Working Group
Co-Chairman, INCOSE System and Software Interface Working Group
Instructor, Johns Hopkins University, Software Systems Engineering
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