



# Enterprise AR Requirements Session

Michael Rygol  
Chrysalisforge and The AREA

# Workshop Chair

- B.Eng Microelectronics, PhD in 3D Computer Vision (Sheffield)
- 30 years in technology: business and academia
  - Silicon & hardware design, parallel computing, computer vision, robotics, VR, enterprise visualization, CAD, PLM, IoT, AR
- Roles in R&D, Field, Product Marketing and Product Management
- PTC 1999-2017. VP with global responsibilities for:
  - VR** (DIVISION MockUp)
  - Enterprise Visualisation** (ProductView/Creo View)
  - PLM** (Windchill)
  - AR** (Vuforia Studio)
- Co-founded Chrysalisforge in 2017
  - Boutique consultancy for 3D in the enterprise
- AREA Researcher and Requirements Committee Chair



Dr Michael Rygol



# Agenda

<b>Time</b>	<b>Session Format</b>	<b>Participants / Speakers</b>
2:40-3:05	Motivation & background Introduction to ASoN Group task definition	Michael
3:05-3:20	Break and discussion regarding activity	All
3:20-4:10	Group activity	All
4:10-4:30	Group readouts	Group 'speakers'
4:30	End	

# Workshop Objectives

1. Collaboratively define and refine an enterprise use case (and requirements) that guide and support the AR ecosystem *in a structured manner*
2. Capture content for re-use
3. Discuss experiences and methodologies for requirements definition
4. Learn from your peers!

**This is to be a highly interactive workshop  
Please contribute!**

# How the AREA supports the AR ecosystem



## Thought Leadership

The AREA creates, collects and curates up to date AR technology content, created by neutral thought leaders and experts.



## Networking & Marketplace

The AREA facilitates an environment for the AR community to connect, sharing experiences, partnerships and insights related to AR technology



## Educate

The AREA is looking to close the AR skills gap by supporting education courses and jobs promotion



## Reducing Barriers to adoption

The AREA organizes committees to focus on adoption issues including Research, Security, Requirement and Safety

# Enterprises...

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Some of the current challenges...

- Unable to find vendor-neutral information
- No place to register AR-related needs (to a number of suppliers)
- Difficult to see what's gone before (e.g. RFPs, etc.)
- Difficult to plan implementation roadmaps

# Providers...

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Some of the current challenges...

- Difficult to access AR-ready customers
- Lack of awareness of other opportunities within the AR sector
- **Limited understanding of customer requirements**

# Typical use case definition...

## Inspection (Medical)

### Description

AR-assisted inspection systems display relevant medical & dental records on demand by health care workers and overlays digital information on the patient for evaluation and decision support.

### AR Technologies

AR-assisted medical inspection uses any technology for authoring, detection, recognition and rendering. Display options for AR-assisted medical inspection that permit the professional to use both hands are highly preferred. The user interface for AR-assisted medical inspection can be speech recognition, gesture recognition, eye-gaze recognition or touchscreen.

Integration of AR-assisted medical inspection with patient record management technologies and systems is highly desirable.

Advanced medical inspection systems using Augmented Reality can support the professional in unfamiliar procedures or cases with remote expert interaction and feedback with integrated video conferencing and collaboration tools.

### Benefits

- Rapid and consistent access by all medical and healthcare professionals to most current records, instructions, policies or modules
- Reduced risk of delays in evaluating conditions due to lack of familiarity
- Increased safety for healthcare professionals when performing their tasks
- Reduced risk of errors in evaluation, inspection and diagnosis
- Capture conditions of patient at the time of inspection and stores the data in the patient record

### Organizations

Health care organizations operating in hospitals, private clinics, and other health care facilities.

### Users

Health care professionals.

### Examples

- Display of medical records for patient screening by emergency medical technicians
- Real time diagnostic or clinical inspection with nurses and physicians concurrently focusing on the same patient while pointing to regions or structures of interest
- Generation of ultrasound images of tumors by medical technicians with a scanner and conversion into 3D for viewing on an AR-enabled device as part of pre-surgery evaluation

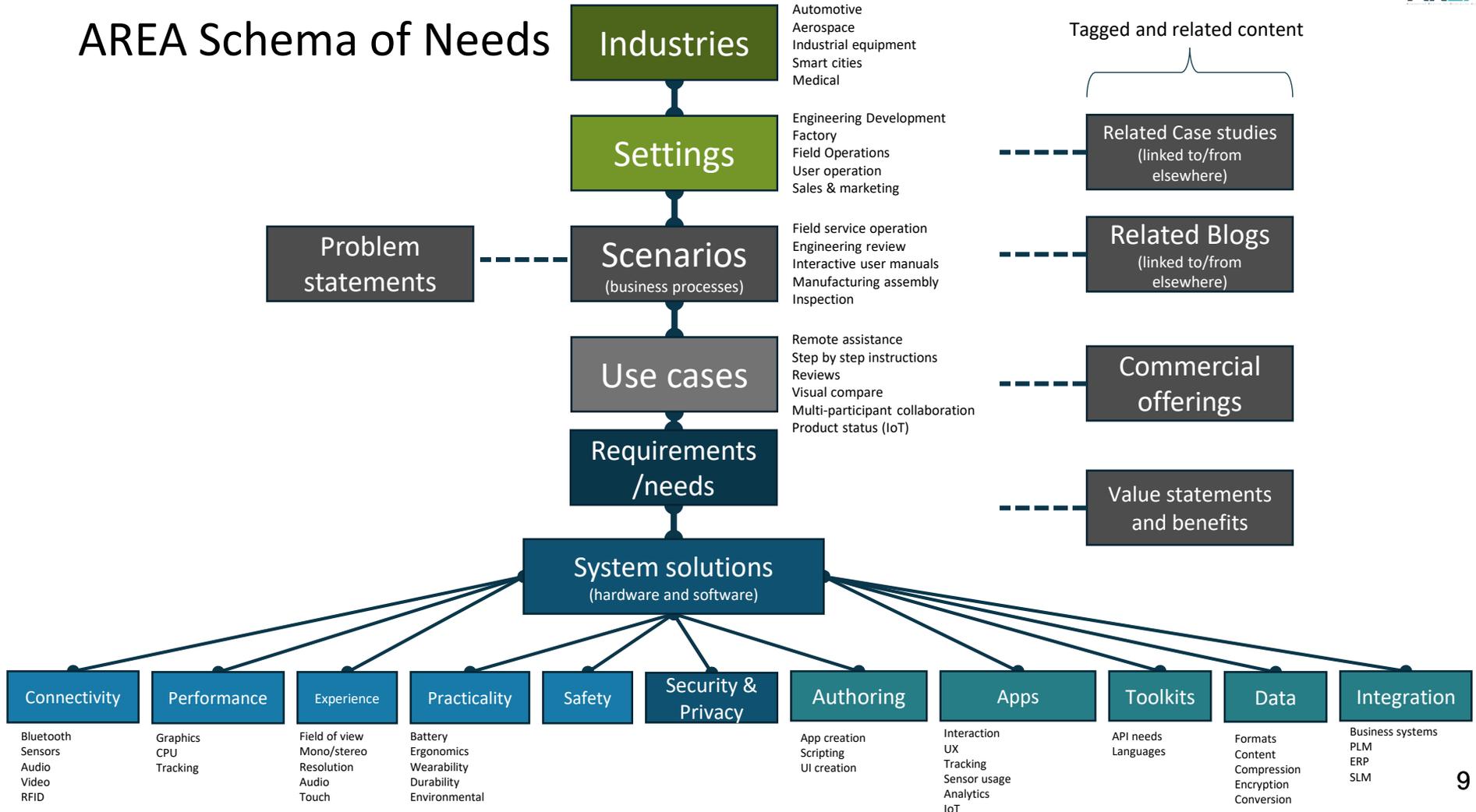
## Commentary

- Numerous use cases have been defined

## But...

- They are high level
- Not linked to any other artefacts (case studies, etc.)
- No linkage to commercial offerings
- No connection to detailed requirements
- “How do I make this use case refer to my **precise need?**”
- “How do I **develop a solution** for this use case?”
- “How can I confirm that my solution **supports this use case** end to end?”
- ***Not actionable***

# AREA Schema of Needs



# Industries

- Aerospace
- Architecture
- Automotive
- Aviation
- Commercial Vehicle
- Construction
- Education
- Engineering
- Food and Beverage
- Healthcare
- Industrial Equipment
- Logistics
- Metals & Mining
- Naval Engineering
- Oil & Gas
- Power & Energy
- Public Sector & Governments
- Utilities

# Settings

## Engineering development

- Prototype development
- Design
- Test

## Factory

- Manufacturing processes
- Factory operations

## Field operations

- Field service and repair
- Maintenance
- Diagnostics

## User operations

- Interactive user instructions
- Consumer diagnostics
- Virtual operation and interaction

## Warehousing and Logistics

## Sales and marketing

- Prospect presentations
- Marketing promotions

# Use Case Maturity Model

## *Field Service Technician Procedure*

### **Level 0 – Standalone**

Offline operation  
In-screen '2D' instructions

### **Level 1 – Connected app**

Live product data and history from business systems  
Online submission of results  
Simple screen sharing of view with SME  
Simple use of 3D to enhance understanding

### **Level 2 – Richer information and interaction**

IoT display enabled  
Interactive 2-way screen annotations  
Animated 3D instructions

### **Level 3 – Fully closed loop and smart**

Use of predictive and field analytics  
Smart diagnostics tools  
Richer fusion of inputs to create  
“smart” dynamic instructions

*A scenario-based mini-roadmap for adoption*

*Required maturity may be influenced by industry, funding, etc.*



# The AREA Schema of Needs Management Tool

Database is online and accessible to the AREA community

Adheres to the AREA Schema of Needs

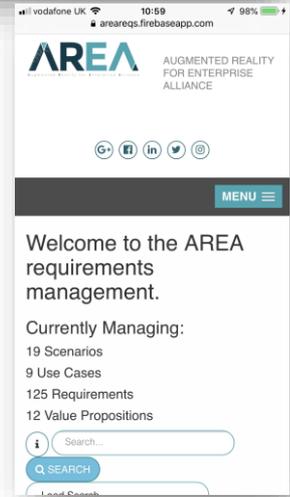
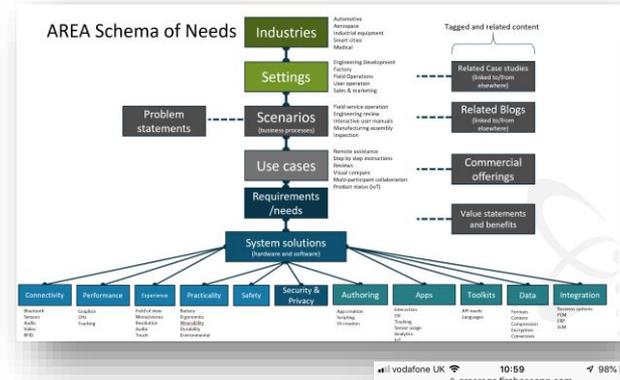
Two views of the system:

- The **registered user**

- Submit content for approval
- Search
- Comment
- Report

- The **Admin user** (aka Requirements Committee members)

- User privileges plus...
- Configuration
  - Users, Settings, Industries, Tags, Personas, Templates, Admin users
- Content approval



# Key Capabilities

## User's View of the System

Consistently structured content is encouraged:

- Business scenarios
- Use cases
- Requirements / needs
- Value propositions
- Personas
- *Submitted content is subject to a review process*

Rich text editing (include links, images, etc.)

- Commenting to encourage collaboration
- Streamlined referencing to existing
- Subscribe and notify model
- Use pre-defined templates

Bulk loading of content

- *From CSV file*

Comprehensive search capabilities

Reporting

**User self registration**

## Admin's View of the System

Maintain list of admins and users

Define list of tags and tag groups

Define set of Industries

- *e.g. Automotive, Aerospace*

Define usage Settings

- *e.g. Factory, Field, etc.*

Define Personas

- *e.g. Field Service Technician*

Define Templates for all content types

Define notification email lists

**Review and Approve content submissions**

# User's home screen

Login for  
admin users

ADMIN LOGIN

Content types

HOME | SCENARIOS | USE CASES | REQUIREMENTS | VALUE PROPOSITIONS | MANAGEMENT |

Welcome, Michael Rygol LOGOUT

Welcome to the AREA requirements management.

Overview of  
approved  
content in  
database

Currently Managing:

2 Scenarios

3 Use Cases

51 Requirements

1 Value Propositions

Search tools



Search...



SEARCH

Load Search

Enter search name

SAVE SEARCH

+ Advanced Search

# Search UI overview



Simple text search according to context

Run the search

Persistent, re-usable personalised search

Help on compound search queries

Search by Industry, Setting and Tags

Facetted search results (links to sublists)

Facetted results shown when in "HOME" context

an | Q SEARCH | Load Search | Enter search name | SAVE SEARCH

+ Advanced Search

1 Scenarios  
1 Use Cases  
23 Requirements

# Advanced Search UI overview (1)

**- Advanced Search**

**- Users**

Me

User name or email

**Logical operator within this group**

AND  OR

**- Related Industries**

Aerospace & defense  Automotive  Industrial equipment  Shipbuilding

Life sciences  Consumer goods & high tech  Smart cities  Toys and games

Footwear and apparel  Process industries  Other  Updated Test Industry

**- Settings**  AND  OR

**Engineering development**

Prototype development

Design

Test

**Sales and marketing**

Prospect presentations

Marketing promotions

**+ Tags**  AND  OR

**Factory**

Manufacturing processes

Factory operations

**Field operations**

Field service and repair

Maintenance

Diagnostics

**User operations**

Interactive user instructions

Consumer diagnostics

Virtual operation and interaction

**Search by user (name/email address)**

**Collapsible group display**

**Tags**

**Admin-defined tag groups**

**Previously saved searches**

**Define name of saved search**

AP\* [and] [-]APP\*

SEARCH

Load Search

Load Search

AeroAutoEngineering

ProcessOrSmartCities

Enter search name

SAVE SEARCH

- Advanced Search

- Saved searches:**
- Capture all tags
  - Include search string
  - Individual to user

# Example search – within REQUIREMENTS

HOME | SCENARIOS | USE CASES | **REQUIREMENTS** | VALUE PROPOSITIONS

MANAGE REQUIREMENTS

SUBMIT REQUIREMENT

Select to search in this context

Simple text field search

Display  Q SEARCH Load Search  Enter search name  SAVE SEARCH

+ Advanced Search

MANAGE SELECTED REQUIREMENTS

Search Results (51 items)

Select	Title	Description	Action
<input type="checkbox"/>	API links to other databases	Needs access to live data. ...	<input type="button" value="COPY LINK"/> <input type="button" value="EDIT"/> <input type="button" value="DELETE"/>
<input type="checkbox"/>	User interface for non-software literate users	Ned to separate creation from usage ...	<input type="button" value="COPY LINK"/> <input type="button" value="EDIT"/> <input type="button" value="DELETE"/>
<input type="checkbox"/>	Output to branded applications	Shall output to an application that the user will define the ...	<input type="button" value="COPY LINK"/> <input type="button" value="EDIT"/> <input type="button" value="DELETE"/>
<input type="checkbox"/>	Displaying standard content	"Display PDF ...	<input type="button" value="COPY LINK"/> <input type="button" value="EDIT"/> <input type="button" value="DELETE"/>

Manage Selected Requirements

- Related Industries

Aerospace & defense  Automotive  Industrial equipment  Shipbuilding  Life sciences  Consumer goods & high tech

Smart cities  Toys and games  Footwear and apparel  Process industries  Other  Updated Text Industry

+ Settings

+ Tags

Simultaneous editing of tags for multiple items

Multi-selection to edit Settings, Tags, etc.

Title of requirement = link to content item

Get the link to this requirement

Edit this requirement

# Example usage : Viewing a use case or scenario

## AR for Training – Overview Use Case

[EDIT](#)
[APPROVE](#)
[REJECT](#)
[SUBSCRIBE](#)
[SHARE](#)

Michael Rygol  
 18/09/2018 5:31 PM

### Overview of use case

The AR solution provides trainees with an augmented view of the physical product to accelerate learning and improve retention. The solution provides contextualised information in appropriate locations relative to the physical product. Such information includes:

- Product information (correct settings, etc.)
- Digital assets (3D models, textual explanatory information)
- Processes (step by step instructions on how to perform a task)
- Audio (talk track assistance)
- Questions to test the trainee's knowledge

### AR-enabled Process

The AR solution provides a richer set of information, in context, to the user.

## Set of steps

When the tasks are complete, the system stores the performance metrics (for subsequent aggregate analysis) and delivers a report to the user.

### Benefits from use of AR

Reduced cost  
Improved training  
Reduced cost  
Streamline training  
Ability to train  
Ability to train  
Stakeholder

### Tags

Other [SMAR2018](#)

### Settings

[Engineering development](#) [Test](#)  
[Factory](#) [Manufacturing processes](#) [Factory operations](#) [Machine configuration](#)  
[Field operations](#) [Field service and repair](#) [Maintenance](#) [Diagnostics](#) [Installation and commissioning](#)  
[User operations](#) [Interactive user instructions](#) [Virtual operation and interaction](#)

### Industries

[Aerospace](#) [Automotive](#) [Aviation](#) [Commercial Vehicle](#) [Construction](#) [Engineering](#) [Healthcare](#) [Industrial Equipment](#) [Naval Engineering](#) [Power & Energy](#) [Utilities](#)

### Linked Requirements

Ability to navigate step by step instructions with gesture...gaze...touch...voice...

### Comments

Add your comment

POST

"For smart devices with touch screen

the worker shall be allowed to use "pinch" gesture for zooming"

CLOSE

Link to requirement

Popup to view requirement in content

Auto-generated list of referenced requirements

# Submitting an item

The screenshot shows a web form titled "Submit Scenario" with a navigation bar at the top containing "HOME | SCENARIOS | USE CASES | REQUIREMENTS | VALUE PROPOSITIONS | MANAGEMENT |" and a user greeting "Welcome, Michael Rygol" with a "LOGOUT" button.

The form fields and their corresponding callouts are:

- (1) Enter title:** Points to the "Scenario Title" input field.
- (2) Choose template (if required):** Points to the "Choose Template" dropdown menu.
- (3) Enter description:** Points to the rich text editor area, which includes a toolbar with various formatting options (bold, italic, underline, strikethrough, text color, background color, font size, bulleted list, numbered list, link, unlink, table, indent, outdent, undo, redo) and three text areas: "Scenario summary", "Problem statement", and "Scenario description".
- (4) Select relevant Industries (optional):** Points to the "+ Related Industries" button.
- (5) Select relevant Settings (optional):** Points to the "+ Settings" button.
- (6) Select relevant Tags (optional):** Points to the "+ Tags" button.
- (7) Click SAVE:** Points to the "SAVE" button.

Additional callouts on the right side of the form:

- Rich formatting tools:** Points to the rich text editor toolbar.
- Embed pictures, tables, hyperlinks, etc.:** Points to the rich text editor area.
- Formatted item template (optional):** Points to the "Scenario description" text area.

At the bottom of the form, there are "SAVE" and "CANCEL" buttons.

*All item submissions and edits are sent for approval (except comments)*

# Linking to other content (e.g. requirements within a use case)

The screenshot shows a web application interface for submitting a scenario. The main form has fields for 'Scenario Title' and 'Choose Template'. Below these is a rich text editor with a toolbar. The text in the editor reads: "First the user will perform the action. This relies on system APIs". A right-click context menu is open over the underlined text, with options: 'Link Scenario', 'Link Use Case', 'Link Requirement' (highlighted), and 'Link Value Proposition'. An arrow points from the 'Link Requirement' option to a 'Requirement' popup window. The popup window has a search bar containing 'AP' and a list of requirements. The first item, 'API links to other databases', is highlighted. Callouts provide the following instructions:

- (1) Enter link text to be shown (optional)
- (2) Right Mouse Button menu and select item type
- (3) Start typing
- (4) Select from auto-populated list that match the text typed and hit return. Hyperlink is embedded within the text.

At the bottom of the form, there are sections for '+ Related Industries', '+ Settings', and '+ Tags', along with 'SAVE' and 'CANCEL' buttons.

# Save search results to PDF & CSV reports

PDF report (can also save as HTML)  
Use browser's "Print to PDF driver"

Link to item in database

URL	Title	Content
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619Kpms5P0w75W	API links to other databases	The toolkit shall provide links to other databases to enable the retrieval of information from enterprise business systems.
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619Q0G63VAgyesmR	User interface for non-software literate users	Output to branded applications
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619Tf8m48S20fE	Output to branded applications	Displaying standard content
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619VlnFlnkud	Displaying standard content	Display animated slide show to the worker.
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619XbAnqHr13PLGU	Displaying standard content	Auto-generation of ultra-light models from engineering
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619Zpv1jR6GfH	Auto-generation of ultra-light models from engineering	Device agnostic deployments
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619a-896z_3jMyW	Device agnostic deployments	"Shall output an application that can be used by Android and Windows devices"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619b46Weg7DSJ	"Shall output an application that can be used by Android and Windows devices"	Shall not require a custom OS on the device.
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619c7Yns5dmUULG2	Shall not require a custom OS on the device.	"Shall output an application that can be used by a use tablets
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619g4N26CteQagm	Visual Tracking method	Visual Tracking method
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619h4y-5b5C8d1p	Visual Tracking method	Shall not require use of a specific type or style of visual tracking method if the AR hardware supports other tracking methods (e.g. SLAM)
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619h4y-5b5C8d1p	Zoom	Shall not require use of a specific type or style of visual tracking method if the AR hardware supports other tracking methods (e.g. SLAM)
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619h4y-5b5C8d1p	Zoom	Shall not require use of a specific type or style of visual tracking method if the AR hardware supports other tracking methods (e.g. SLAM)
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu1	Geometry rotation	Shall allow the worker to zoom into and out of 3D content
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu2	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu3	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu4	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu5	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu6	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu7	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu8	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu9	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu10	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu11	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu12	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu13	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu14	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu15	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu16	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu17	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu18	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu19	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu20	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu21	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu22	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu23	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu24	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu25	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu26	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu27	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu28	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu29	Geometry rotation	"For smart devices with touch screen"
https://area-req.firebaseio.com/view-item.html?type=requirements&id=L6d619i2en6rVxBu30	Geometry rotation	"For smart devices with touch screen"

CSV report

## Notes:

- Uses browser ability to write to a PDF driver.
- You'll need to enable the popup from the tool

# Admin home screen

The screenshot shows the AREA Admin home screen. At the top left is the AREA logo with the tagline 'Augmented Reality for Enterprise Alliance'. To the right is the text 'AUGMENTED REALITY FOR ENTERPRISE ALLIANCE' and social media icons for Google+, Facebook, LinkedIn, Twitter, and Instagram. A 'USER LOGIN' button is in the top right. A navigation bar contains links for HOME, SCENARIOS, USE CASES, REQUIREMENTS, VALUE PROPOSITIONS, and MANAGEMENT. The user is logged in as 'Michael Rygol' with a 'LOGOUT' button.

The main content area starts with a welcome message: 'Welcome to the AREA requirements management.' Below this is a 'Currently Managing:' section listing: 19 Scenarios, 10 Use Cases, 125 Requirements, and 12 Value Propositions. A search bar is present with a 'SEARCH' button, a 'Load Search' button, and a 'SAVE SEARCH' button. An 'Advanced Search' link is also available.

The 'Activity Report' section shows a date range from '06/08/2018' to '04/02/2019' with a 'FILTER' button. It is divided into two columns: 'Items Added' and 'Items Approved'. The 'Items Added' column lists: 19 Scenarios, 7 Use Cases, 72 Requirements, and 12 Value Propositions. The 'Items Approved' column lists: 10 Scenarios, 0 Use Cases, 0 Requirements, and 0 Value Propositions.

Callouts point to various elements: 'Overview of approved content in database' points to the 'Currently Managing:' section; 'Submitted content counts' points to the 'Items Added' list; 'Links to lists of updated content items' points to the bottom of the 'Items Added' list; 'Time period (defaults to one month ago to 'today')' points to the date range; and 'Approval counts' points to the 'Items Approved' list.

Overview of approved content in database

Currently Managing:  
 19 Scenarios  
 10 Use Cases  
 125 Requirements  
 12 Value Propositions

Search... SEARCH Load Search Enter search name SAVE SEARCH

+ Advanced Search

## Activity Report

From 06/08/2018 To 04/02/2019 FILTER

### Items Added

19 Scenarios  
 7 Use Cases  
 72 Requirements  
 12 Value Propositions

### Items Approved

10 Scenarios  
 0 Use Cases  
 0 Requirements  
 0 Value Propositions

Submitted content counts

Links to lists of updated content items

Time period (defaults to one month ago to 'today')

Approval counts

# Pending Items on the Admin's Home Screen

Committee actions

Grouped according to Item Type

Pending for Approval

Pending Scenarios

Title	Description	Action
Product Design	Produc	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>
Flight Path Visualization	Flight	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>
Cabin Crew Workflow	Cabin	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>

Pending Use Cases

Title	Description	Action
Emergency Response	Emergency ResponseAR-assisted emergency response supports p	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>
Placement of equipment in bar cellar as part of system of record	Often, during the layout of cellar equipment for a bar, hote	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>
AR for Training – Overview Use Case	Overview of use caseThe AR solution provides trainees with a	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>

Backlog of items to approve

Pending Requirement

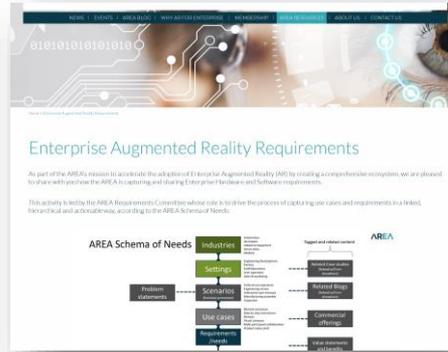
Title	Description	Action
Ability to place 3D models in physical context	The system shall provide the ability to place a selected 3D	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>
Ability to capture a view of a 3D model within a physical scene	The system shall provide the ability to capture an image of	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>

Pending Value Propositions

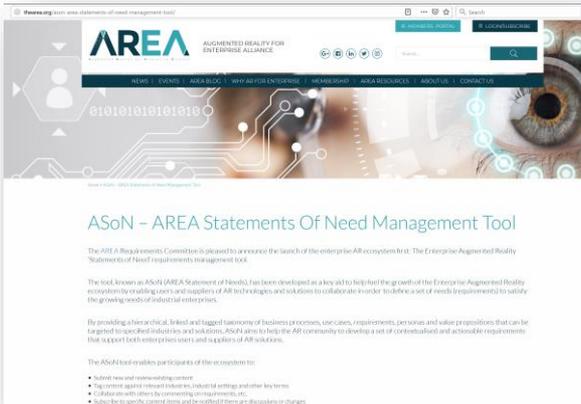
Title	Description	Action
Reduce knowledge transfer costs from an ageing and retiring workforce	The use of AR will help to reduce the costs of transferring	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>
Improvements to traceability and auditability	The use of AR shall improve the organisation's ability to en	<input type="button" value="APPROVE"/> <input type="button" value="EDIT"/> <input type="button" value="REJECT"/>

# Value to the AR ecosystem

- Enable providers to map their solutions against “AREA Enterprise Needs”
- Streamline RFP/RFQ proposals
- Reduce enterprise time to “scout” for potential solutions
- Assist with roadmap planning for enterprise deployment
  
- Assist with roadmap planning for provider solutions
  - ‘we need to support the following 5 high traffic use cases’
  
- Develop concrete use cases and definitions of value to:
  - Make it easier to sell to your boss
  - Encourage investment in supporting AR technologies
- Reduce cost of planning/investigation and cost of sale
  
- Build stronger bridges between enterprise needs and solution providers
- Provide content from a neutral source



Visit [thearea.org/enterprise-augmented-reality-requirements/](https://thearea.org/enterprise-augmented-reality-requirements/)



Intro movie, user guides and more...

Visit the ASoN page [thearea.org/ason-area-statements-of-need-management-tool/](https://thearea.org/ason-area-statements-of-need-management-tool/)



## Group Session

*Get involved...*  
*Learn from others...*

Within each group choose your use case (from the provided list or one specific to your group):

1. Choose your **industry** and **setting** – *ideally those with some familiarity to you.*
2. Consider how your use case will be refined in your industry and setting
3. Work through the provided template
4. Discuss and document identified requirements (time permitting)
5. BONUS: think about a maturity model for your use case

***The facilitators are here to help!***

Please assign the following roles in your team:

1. Scribe (to write/type in the template)
2. Speaker to provide a summary at the end of the session

Paper is provided. Digital is preferred (email to [michael@thearea.org](mailto:michael@thearea.org) ).

# Using the Template

Your team number

AREA Advanced Research and Engineering Agency

AMRC Advanced Manufacturing Research Centre

## AREA Workshop Use Case Template

**Team Number:**

**Overview of use case**  
*Provide a provide a brief description of the use case*

**What is the industry to which the use case applies?**  
*Select all that apply.*

<ul style="list-style-type: none"><li>Aerospace</li></ul>	<ul style="list-style-type: none"><li>Architecture</li><li>Commercial Vehicle</li></ul>	<ul style="list-style-type: none"><li>Automotive</li><li>Construction</li></ul>
<ul style="list-style-type: none"><li>Aviation</li></ul>	<ul style="list-style-type: none"><li>Food &amp; Beverage</li><li>Logistics</li></ul>	<ul style="list-style-type: none"><li>Healthcare</li><li>Metals &amp; Mining</li></ul>
<ul style="list-style-type: none"><li>Engineering</li></ul>	<ul style="list-style-type: none"><li>Oil &amp; Gas</li><li>Utilities</li></ul>	<ul style="list-style-type: none"><li>Power &amp; Energy</li><li>Other</li></ul>
<ul style="list-style-type: none"><li>Industrial Equipment</li></ul>		
<ul style="list-style-type: none"><li>Naval Engineering</li></ul>		
<ul style="list-style-type: none"><li>Public Sector &amp; Government</li></ul>		

**What is the 'setting'?**  
*Where does this use case take place?*

<ul style="list-style-type: none"><li>Engineering Development</li></ul>	<ul style="list-style-type: none"><li>Factory</li><li>Sales &amp; Marketing</li></ul>	<ul style="list-style-type: none"><li>Field operations</li></ul>
<ul style="list-style-type: none"><li>User operations</li></ul>		

**Problem statement**  
*What are the problems/risks/challenges that this use case seeks to address?*

**Current Process (optional)**  
*Provide a clear and concise description how this task is performed today (describe what skills and/or tools are needed and the complexity/duration of the task).*

**AR-enabled Process**  
*Provide a clear and concise description how would this task be performed with the use of AR.*

AREA Workshop Use case template

AREA Advanced Research and Engineering Agency

AMRC Advanced Manufacturing Research Centre

**Benefits from use of AR**  
*How is the task improved or the problems mitigated with the use of AR?*

**Digital assets**  
*What digital data is required for or assists this use case (e.g. 3D models, drawings, documents)*

/

**Environment**  
*Describe the physical objects (machines, buildings, etc.)*

**Personas**  
*What are the human roles in this use case? (e.g. "Field Service Technician")*

**Stakeholders**  
*Who has a vested interest in the successful adoption of this use case? (e.g. VP of Engineering)*

**External Links or Examples**  
*Please provide public links or examples of this use case.*

**Requirements**  
*Please list the requirements needed to support this use case. Consider needs such as:*

<ul style="list-style-type: none"><li>Security</li><li>Safety</li><li>Authoring</li><li>Privacy</li><li>System integration</li><li>Content re-use and delivery</li><li>IoT</li><li>Navigation</li></ul>	<ul style="list-style-type: none"><li>Navigation</li><li>User interaction</li><li>Data presentation</li><li>Digital UI</li><li>Device needs</li><li>Performance</li><li>Automation</li><li>Data needs</li><li>Digital twin</li></ul>
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AREA Workshop Use case template

# Workshop Example Use Cases

1. AR for Training
2. AR for Inspection and Quality Assurance
3. AR for Complex Assembly
4. AR for Remote Assistance
5. Virtual User Interfaces with AR

## AREA/AMRC Workshop Use Case Examples

### 1. AR for Training

#### Overview of use case

The AR solution provides trainees with an augmented view of the physical product to accelerate learning and improve retention. The solution provides contextualised information in appropriate locations relative to the physical product. Such information includes:

- Product information (correct settings, etc.)
  - Digital assets (3D models, textual explanatory information)
  - Processes (step by step instructions on how to perform a task)
  - Audio (task track assistance)
  - Questions to test the trainee's knowledge
  - Tasks for the trainee to perform (potentially with smart tools and visual monitoring)
  - Alerts to test responses to different events
  - Live or simulated product IoT data
  - Instructions to the user (where to stand, etc.)
  - Feedback on trainee's performance (at the right time and location)
  - Capture of trainee performance
  - Closed loop analytics (time, accuracy and other metrics)
  - Ability to seek remote assistance to help during training when required.
- The maturity model of this use case will vary according to need and availability of the requisite data types.

#### Problem statement

Training of staff to manufacture, service or operate complex machinery often incurs significant costs owing to the difficulties of providing the right information at the right place and time on the product and the need to provide human trainers at that location.

Traditional methods (involving books and digital media) are, by definition, entirely separate to the product on which the person is to be trained. Moreover, often training material has large amounts of text which needs localisation to support international training networks.

Such non-connected methods present challenges in information retention.

#### Current Process

User reads/consumes training asset content (which may be paper manuals or digital instructions) and attempts to perform task. User must locate correct place on physical product whilst remembering the task from the (now out of context) training material.

User will manually select/check an option to state task completion. User receives little feedback on how well the task was performed (other than from human trainers).

#### AR-enabled Process

The AR solution provides a richer set of information, in context, to the user.

Using an appropriately enabled device (which may be handheld or wearable eyewear) the user is taken through the training scenario. Explanatory information is provided (textually or audibly) in addition to

# Other use case ideas

1. **AR for Design reviews**
2. **AR for Factory layout**
3. **AR for Sales Demonstrations**
4. **AR for Service Procedures**
5. **AR for Factory Operations**
6. **AR for User Manual**
7. **AR for XYZ? – choose your own use case...**

Consider this from the point of view of the Enterprise customer deploying AR. What are the requirements from end to end in order to implement the use case?

What are the personas involved in the scenario?

- Service technician, engineer, machine operator, inspection technician, etc?

Consider needs such as :

- Security
- Safety
- Authoring
- Privacy
- System integration
- Content re-use and delivery
- IoT
- Navigation
- Digital twin
- Navigation
- User interaction
- Data presentation
- Digital UI
- Device needs
- Performance
- Automation
- Data needs

Please describe your use case industry, setting and use case

What were key requirements?

Thoughts on levels of maturity?

Any “interesting” findings from your session?

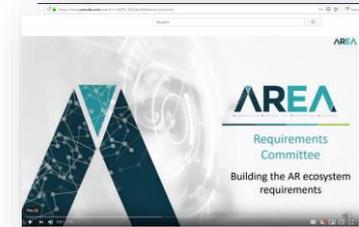
## Next Steps

Interested in the AREA?

- Learn more about the AREA at [thearea.org](http://thearea.org)
- Contact Mark Sage [mark@thearea.org](mailto:mark@thearea.org)

Interested in getting involved in AR use cases and requirements?

- Watch the Requirement Committee intro movie



# Thank you for your time!