Augmented Reality for Enterprise Alliance

Fulfilling the potential of Enterprise AR

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Visit www.thearea.org
Improving Performance

Relevant data

Resource management

Real-time compliance
Increasing Efficiency

- Reduce Time
- Minimise Errors
- Lower Costs
How does the world of AR look today?
Enterprises...

What are the current problems?

- Unable to find vendor-neutral information
- Difficult to evaluate the tools available
- Lack of confidence in implementing new technologies
- Lack of insight and information to support ROI decisions
Providers...

What are the current problems?

- Difficult to access customers with an awareness of AR terminology
- Limited understanding of customer requirements
- Lack of awareness of other opportunities within the AR sector
Logistics
Warehouse picking
DHL - 25% productivity gains with fewer errors and more-engaged worker

Field Services
Remote Assistance
Xerox – 76% technical problems resolved without any on-site help

Field Engineers
On site repairs
KPN – 11% reduction in overall costs for service teams use AR smart glasses

Training
Instruct and guide
Boeing - 35% less time to train new staff than using traditional 2-D drawings

Inspection
Final sign off
Newport News - 96% reduction in inspection time (36 hours to 90mins)

Medical
Vascular procedures
AccuVein - 45% less doctor escalations (calling for assistance)

Source - WHY EVERY ORGANIZATION NEEDS AN AUGMENTED REALITY STRATEGY
The AREA’s Aspiration

Current Ecosystem
AREA Building

Developing Ecosystem
Defining Best Practice

Ideal Ecosystem
Defining Standards

Irregular
Developing
Maturing
The AREA is...

...the only global, membership-funded non-profit alliance dedicated to helping accelerate the adoption of Enterprise Augmented Reality (AR) by supporting the growth of a comprehensive ecosystem
innovative companies investing in Augmented Reality technology

Who need...

a better understanding of the tools available, use case possibilities, methods of implementation and return on investment
...an opportunity to learn, co-innovate and build partnerships to reap the full benefits of deploying AR technology

The AREA provides...

...a deep and open exchange of best practice, lessons learned and technological insights
Which can...

...help enterprises effectively implement Augmented Reality technology to create bottom line benefit
45 members – 29 May 2018
How we are supporting AR the 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.
Reducing Barriers to adoption - AREA Committees

Research
Funds and organizes research programs that are defined and agreed upon by its members

Requirements
Owns and manages the global set of Enterprise AR requirements

Safety
Identifying, classify and prioritize AR safety risks and developing risk reduction recommendations

Security
Identifying, classify and prioritize AR security risks and developing risk reduction recommendations

Marketing
The AREA creates and delivers marketing programs to promote the Enterprise AR ecosystem and its members
Reducing Barriers to adoption - AREA Committees

Members only research

Research

Funds and organizes research programs that are defined and agreed upon by its members

1. Security in wearables
2. Enterprise AR Calculator
3. Framework for AR Technology Safety and Human Factors
AREA member quotes

“Security is forefront in today's world, and it's one of the areas that I get asked about most frequently.”

“Thorough analysis of what can go wrong in an AR system, along with direct recommendations to mitigate risks. Must-read for anyone working in this space!”

“Good framework to specific challenges of bringing AR technology into the enterprise. Useful to guide for internal discussions with our customers & partners.”

“The AREA have begun the conversation about the mitigation steps that all players in the AR space can take.”

‘Extremely in-depth look at both known and new areas when dealing with security in wearables.”

“Key information from experts that I can apply to my business in real-time. They afford me a working team to forward think issues that may not even be on the business' radar.”
Enterprise AR ROI Research

Member exclusive benefits
• Enterprise AR ROI Calculator
• Best Practice Report

Public-released benefits
• AR ROI Case Study
• Best Practice Report Abstract

• Defines and answers common questions about **how to measure ROI for enterprise AR projects** in order to demystify ROI across industry and ecosystem

• By following the **best practices** and **guidelines** when **developing ROI estimates**, this supports internal decision makers, and assists customers and partners in the **development of ROI estimates for their AR projects**
Technology ROI Increasingly Difficult

Accelerating Technology Cycles...

Source: World Economic Forum, Accenture

and How They Impact ROI Analysis on AR Investments

Significant investment

Digital Transformation

accelerate returns on technology investments

Technology ROI

software-as-a-service (SaaS)

Iterative revenue-generating services

Agile development processes
Overview of ROI Calculator

Inputs

Business Case
- Productivity improvements
- Hardware costs
- Inventory costs
- Audit/ accounting costs
- Profits
- Other benefits

AR Solution Costs
- Hardware
- Software & cloud
- Labor
- Consulting services

Currency & Financial Metrics
- Currency
- Tax rates
- Cost of capital
- Life of assets

Annual Allocations
- Costs
- Benefits
- Initial & ongoing

Results

Return on Investment
- Results
- Analysis
- Summary
In development

- Framework to aid in the assessing AR solutions for safety and human factors in industrial use-cases
- Generate **assessment tools** as part of the framework
- Promote a **consistent approach** to assessing safety and **human factors** of AR solutions across the AREA members and the wider AR community
The AR Project Cycle - Project Manager/Adopter

Recommended Actions

- **Define Safety Considerations**
  - User Demographics
  - User Environment
  - AR Location(s) of Use
  - Current Risks/Hazards to User
  - PPE Requirements
  - Safety/Compliance standards

- **Define Process Flow and Analyse Risk**
  - Undertake Risk Analysis activities with Development team and H&S team
  - Adopt controls

- **Define Safety and Usability Testing**
  - Conduct Safety and Usability Trials
  - Analyse results and incorporate feedback into design

- **Train end-users on AR technology functionality and safety risks**

Supporting Tools

- **AR Device Assessment**
- **AR Design Assessment**
- **AR Generic Risks**
- **Usability and Safety Tools**

Select Role:

- [Developer](#)
- [Safety Manager](#)
- [Solutions Provider](#)
- [Project Manager](#)
### Design Assessment - To Aid in the Safe and User-Centric design

#### 1. Design for Environment

<table>
<thead>
<tr>
<th>Notes</th>
<th>H&amp;S Considerations</th>
<th>Design Safety Considerations</th>
<th>Main AI Risk/Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous areas contain mobile vehicles, engines, or energized equipment. Flammable environments, working at height, or near moving/operating machinery.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consider visual/audiowarnings, hazardous material control measures, intentional device thermal or gas detection systems.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motion sickness is a risk with AR. Some users may feel nausea and disorientation fast-traveling VR/AR devices. This can make it difficult for users to adapt to wearing the device.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicate this and discontinue use for users. Encourage other design or technology options that address this.</td>
<td></td>
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</tr>
</tbody>
</table>

#### 2. Design for User

<table>
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<th>Design Safety Considerations</th>
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</thead>
<tbody>
<tr>
<td>Has the user ever had a history of photosensitivity seizures?</td>
<td></td>
<td></td>
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<tr>
<td>Motion Sickness</td>
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</tbody>
</table>

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### Device Hardware Assessment - To Aid Device Selection

#### 1. Assess Device for Environment

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<th>Notes</th>
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<th>Main AI Risk/Hazard</th>
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</thead>
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<tr>
<td>Hazardous areas defined as places where concentrations of flammable gases, vapors, or dusts may occur.</td>
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<td></td>
</tr>
<tr>
<td>Prevention, detection, and self-ignition (e.g., Zone 0, Zone 1, Zone 2).</td>
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<td></td>
</tr>
<tr>
<td>Explosion/arc risk in hazardous areas. Classification is Class I, Division 1, Zone 1, Zone 2.</td>
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<td></td>
</tr>
<tr>
<td>Explosion dust area classifications are Class I, Division 1, Zone 1, Zone 2.</td>
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</tr>
<tr>
<td>The surface temperature or any parts of the electrical equipment must be lower than the ignition temperature of the ambient atmosphere.</td>
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<td></td>
</tr>
<tr>
<td>The normal minimum ambient temperature according to IEC 60079 and standards adopted by US and Canada is -20 degrees Celsius.</td>
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<td></td>
</tr>
<tr>
<td>Working on or near live electrical equipment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device will require relevant hazardous environment protection rating.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection rating for explosive gas area and relevant environment of intended use (ATEX for EU, NRTL for US) Equipment may need to be flameproof (e.g., EX d/c).</td>
<td></td>
<td></td>
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<tr>
<td>Protection rating for explosive dust area and relevant environment of intended use (ATEX for EU, NRTL for US) Equipment may need to be flameproof (e.g., EX d/c).</td>
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<tr>
<td>Protection rating for temperature 1, 2, T3, T4, T5, T6.</td>
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</tr>
<tr>
<td>Check manufacturer's advice on using device in extreme cold temperatures.</td>
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<td></td>
</tr>
<tr>
<td>Device malfunctioning/overheating</td>
<td></td>
<td></td>
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<td>Device ignition/ignition</td>
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<td>Typical hazards such as slips, trips, and falls while working at height. Does the device obstruct peripheral vision?</td>
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<tr>
<td>Typical hazards such as moving vehicles, machinery, and automation.</td>
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Reducing Barriers to adoption - AREA Committees

Requirements

1. Ecosystem Use Cases
2. Schema of Needs

Owns and manages the global set of Enterprise AR requirements
Ecosystem use cases

Enterprises around the globe are deploying Augmented Reality solutions to bring new productivity to a wide range of tasks and organizations.

We invite you to explore our growing catalog of use cases to learn how AR is helping companies today – and how it might be applied to your organization.

SEARCH BY:

SELECT INDUSTRY...

SELECT TECHNOLOGY...

SELECT BENEFIT...

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**DAMAGE ASSESSMENT (UTILITIES)**

Use case and image contributed by Micah Tinklepaugh. Description: When assessing damage from a storm, earthquake or other disaster, utility workers must estimate the time required to fully restore services. This estimate is based on: Pinpointing locations of service degradation Estimating damage to assets and...

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**WORK ORDER CREATION (UTILITIES)**

Use case and image contributed by Micah Tinklepaugh. Description: In work order creation in utilities (electrical, water, natural gas and sewage), workers request, assign and track field service work by: Planning work scope Obtaining and scheduling resources Assembling needed documentation such as work instructions, forms...

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[VIEW MORE +]
AREA Schema of Needs

Industries
- Automotive
- Aerospace
- Industrial equipment
- Smart cities
- Medical

Settings
- Engineering Development
- Factory
- Field Operations
- User operation
- Sales & marketing

Scenarios (business processes)
- Field service operation
- Engineering review
- Interactive user manuals
- Manufacturing assembly
- Inspection

Use cases
- Remote assistance
- Step by step instructions
- Reviews
- Visual compare
- Multi-participant collaboration
- Product status (IoT)

Requirements /needs

System solutions (hardware and software)

Problem statements

Connectivity
- Bluetooth
- Sensors
- Audio
- Video
- RFID

Performance
- Graphics
- CPU
- Tracking

Experience
- Field of view
- Mono/stereo
- Resolution
- Audio
- Touch

Practicality
- Battery
- Ergonomics
- Wearability
- Durability
- Environmental

Safety

Security & Privacy
- App creation
- Scripting
- UI creation

Authoring
- Interaction
- UX
- Tracking
- Sensor usage
- Analytics
- IoT

Apps
- API needs
- Languages

Toolkits
- Formats
- Content
- Compression
- Encryption
- Conversion

Data

Inteoration
- Business systems
- PLM
- ERP
- SLM

Related Case studies
(Linked to/from elsewhere)

Related Blogs
(Linked to/from elsewhere)

Commercial offerings

Value statements and benefits

Tagged and related content

Problem statements
Reducing Barriers to adoption - AREA Committees

Safety
Identifying, classify and prioritize AR safety risks and developing risk reduction recommendations

Security
Identifying, classify and prioritize AR security risks and developing risk reduction recommendations
AREA start-up membership offer

New membership offer (based on Contributor class) that fulfils the needs, time commitment and budget for start-up AR providers

* start-ups (see conditions) to receive same benefits as AREA contributor
* annual membership (2 years max) $1500
* can be paid via credit card or invoice (payment within 14 days)

JOIN HERE

Benefits...
- Member only “thought leadership” content
- AREA member events (3 to 4 per year)
- Participate in AREA committees
- Discounts to events negotiated by the AREA
- Synopsis of AREA Research (full access may require additional payment)
- Entry into the AREA marketplace
- Add thought leadership content to blog
- Contributor voting rights

Conditions...
- All of the following
  - less than:
    - $1m gross revenue
    - 10 staff
    - 3 years trading
- Start-up package is only available for 2 years
- company will revert to a Contributor or Sponsor member
What Next?

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