ESTABLISHING BEST PRACTICE TO SUPPORT INNOVATION – BSI AND INNOVATE UK PILOT AREAS OF OFFSHORE RENEWABLES AND ASSISTED LIVING

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GREAT
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ESTABLISHING BEST PRACTICE TO SUPPORT INNOVATION – BSI AND INNOVATE UK PILOT AREAS OF OFFSHORE RENEWABLES AND ASSISTED LIVING

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Standardization for Offshore Renewable Energy

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1. Introduction
2. Aims and objectives
3. Methods
4. Results and findings
5. Recommendations

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Introduction

- UK government has set ambitious targets for offshore wind
- UK government has provided targeted support for tidal and wave energies
- Development of standards important for driving industrialisation of offshore renewable energy
- Standards provide:
  - Benchmarks for quality
  - Promotion of UK competitiveness
  - Reduction of barriers to international trade
  - Help "de-risk" investment
- BSI at forefront, e.g. through membership of IEC/TC 88 and IEC/TC 114
- However… *BSI believes more could be done*.

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Aims and objectives

- Perform a strategic review of standards needs within the offshore renewable energy industry
- Research the needs by a programme of engagement with supply chain
- Identify opportunities to transfer or adapt pre-existing standards
- Build consensus within the supply chain and steering group as to strategic direction of BSI, ie *where is the greatest need for further standardization?*

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Methods

- A Survey/questionnaire was prepared with four topics of enquiry:
  - Characterizing the contributor to the survey
  - Standards used by the contributor and their perceptions
  - Market trends in ORE
  - Preferences of dissemination of results and information
- Telephone interviews conducted – Oct-Nov 2013
- Target organizations in the ORE supply chain from 9 areas:
  - Wind OEM, Wave & Tidal OEM, Supply Chain Specialist, Utility, Project Developer, Consultant, Financial Services, Test Centre, Academic
- BSI Knowledge Centre performed a due diligence literature survey
- Draft report produced with findings and recommendations

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Results and findings

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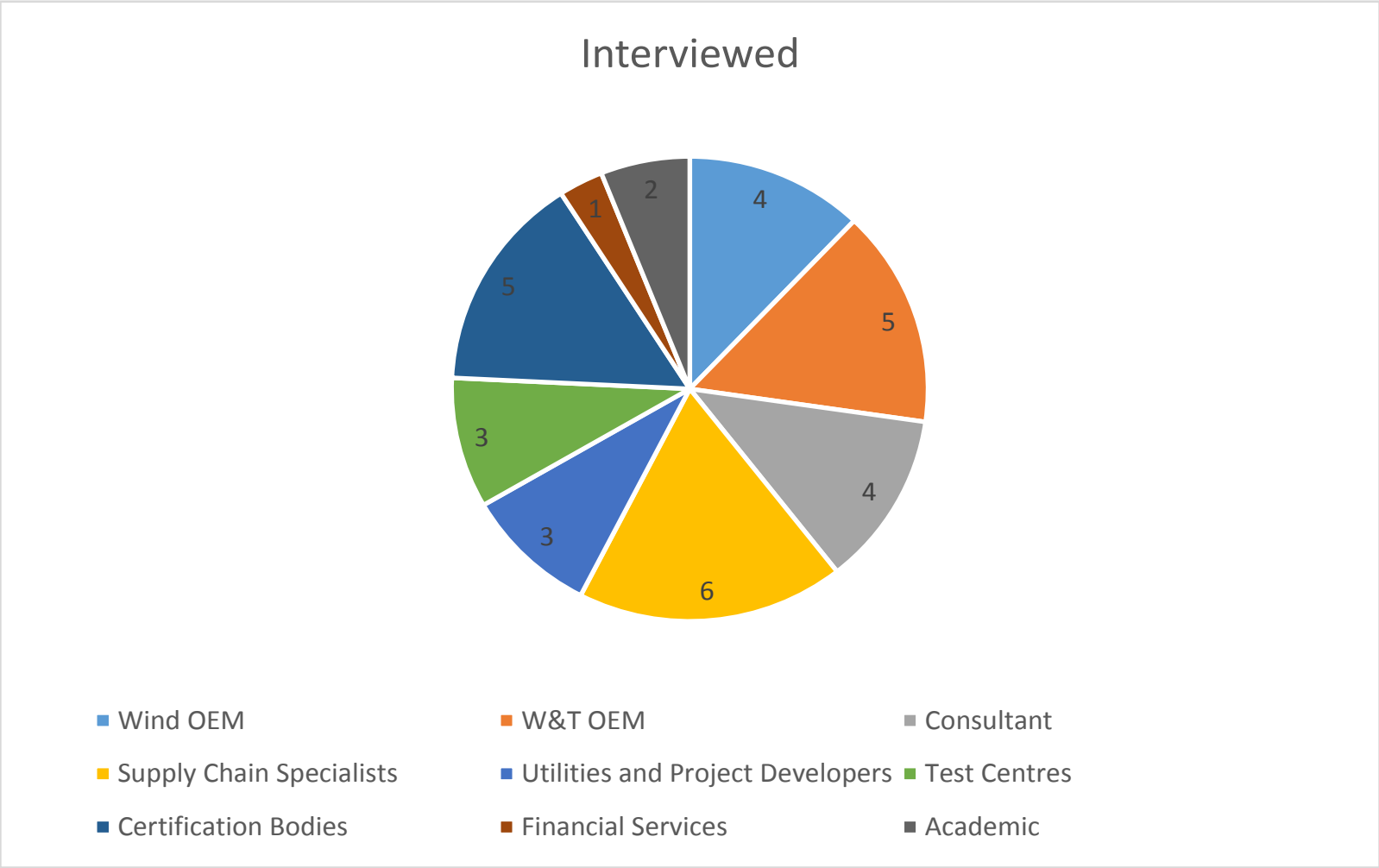
Organisations Contacted and Contributors

- 50 organizations contacted; 33 able to contribute



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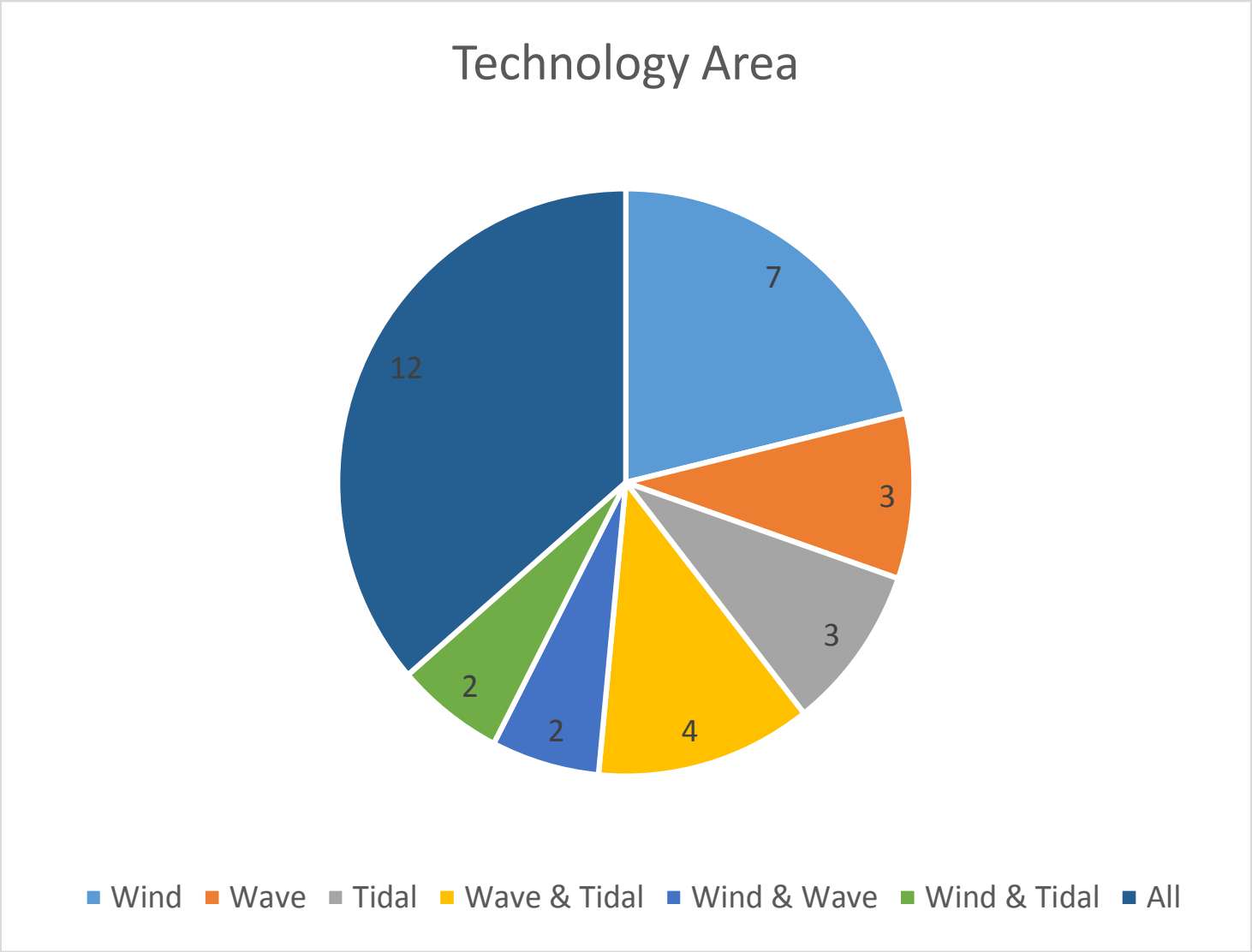
Analysis of contributors by technology area

- 23 involved in wind
- 21 involved in tidal
- 21 involved in wave
- 12 involved in all



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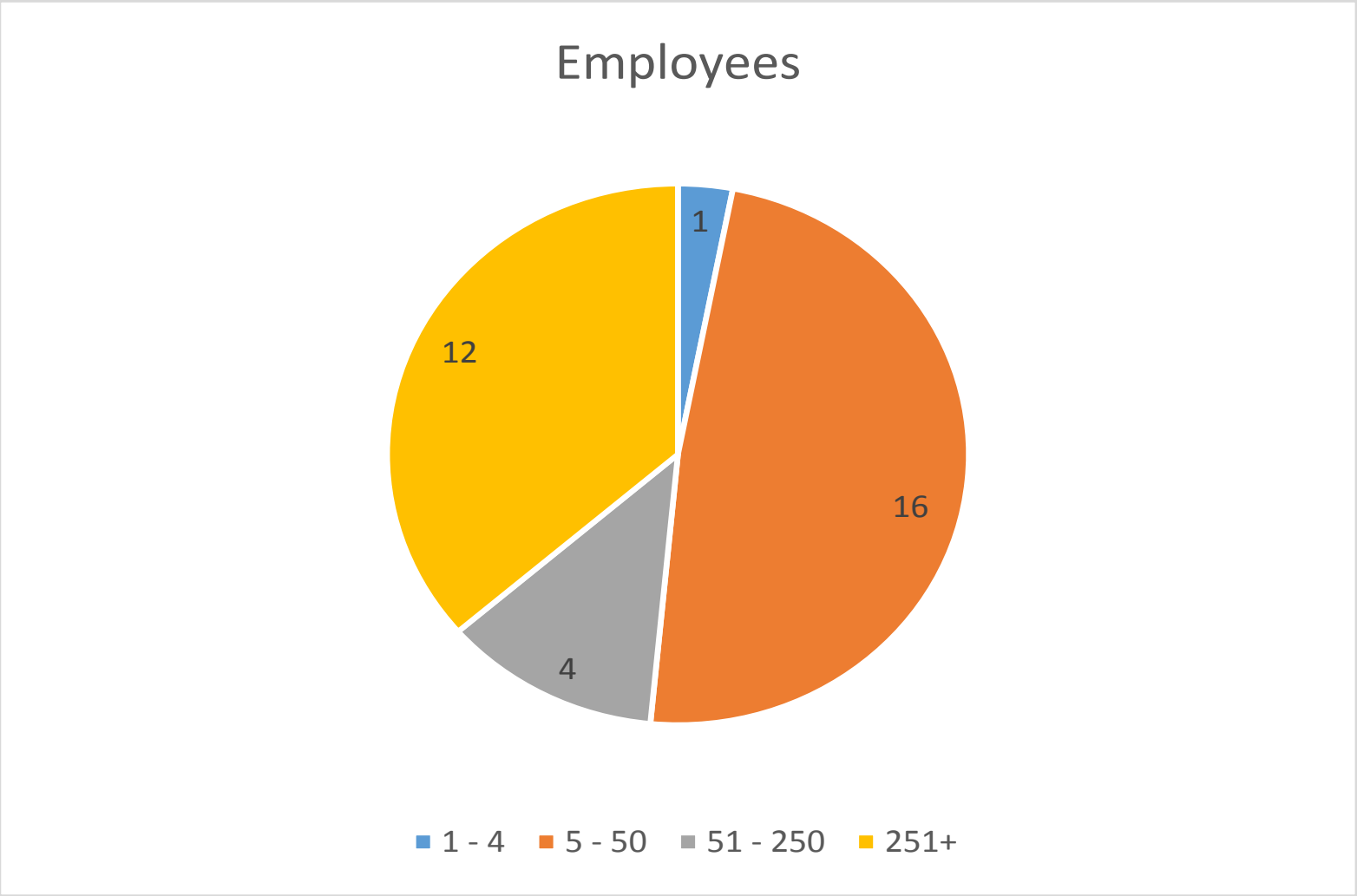
Analysis of contributors by number of employees



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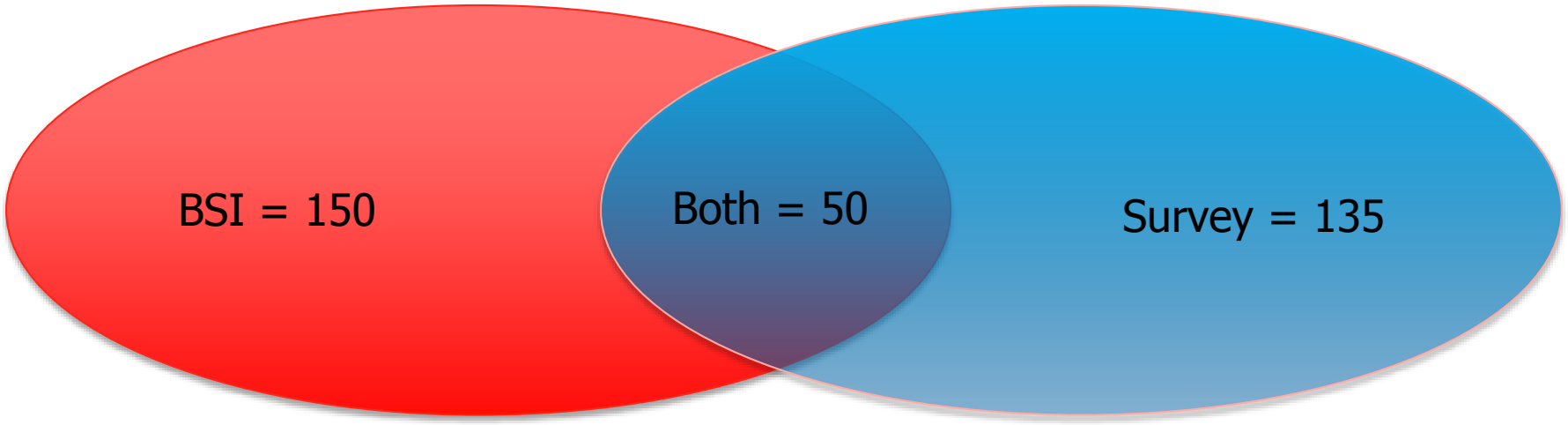
Standards use

- The telephone survey and questionnaire found 185 standards in use by ORE organizations.
- The BSI Knowledge Centre literature review found 200 standards and documents related to ORE.
- The overlap was 50 standards = *335 standards* in total



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Key Sources of Standards

The 50 standards found in both the Survey and BSI's search were from:

- ASME (American Society of Mechanical Engineers)
- DNV (Det Norske Veritas)
- EMEC (European Marine Energy Centre)
- *EN (Euro Norm standard)*
- GL (Germanischer Lloyd)
- *IEC (International Electrotechnical Commission)*
- IEEE (Institute of Electrical and Electronic Engineers)
- *ISO (International Standards Organisation)*
- Renewable UK

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Recommendations

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General observations

- Wave:
  - Relatively *limited technical maturity*
  - Problem with having to locate standards in other areas and then translating them for use in wave energy
- Tidal:
  - Uncertainty of tidal environment – seabed and turbulence
  - Onerous nature of oil and gas standards co-opted for use
- Wind
  - Relatively mature technology area
  - *Harmonization* across topics and national boundaries *would be desirable*

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Wave and tidal: Suggested standardization topics

- Load cases for both wave and tidal devices that are based upon correctly represented environmental conditions (new, specification or guide)
- Installation techniques for the range of marine infrastructure being used in the deployment of TECs (new, specification or guide)
- Sea bed rock stability and capacity to bear loads resulting from placing large items of equipment on the seabed (new, specification)
- Parameters for modelling turbulence and equipment requirements for its measurement in the marine environment (new, guide)
- Corrosion, abrasion and erosion of material and its degradation resulting from prolonged application in highly energetic tidal stream conditions (revised where available or new, specification)

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Wind: Suggested topics

- Control systems for wind turbines and farms (new, guide)
- Blade repair (new, specification)
- In-service maintenance and repair (all systems) (new, guide)
- Shipping, stowage and clamping of wind turbine components (new, guide or specification)
- Data exchange (improved, specification)
- Lightning protection (improved, specification)
- Environmental impact assessment, ORE Statutory Stakeholder criteria (new, route map or guide)

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Impact and difficulty of suggested standardization topics

Potential Implementation Difficulty	LOW	MED	HIGH
HIGH	Load cases for WEC's	Load cases for TEC's	
MED	Tidal stream material selection	TEC Installation TEC Seabed stability TEC Turbulence and measurement	OWT control systems for turbines and farms
LOW	OWT sea fastenings OWT Data Exchange	H&S qualifications and practises harmonisation	OWT Lightning Strike EIA Guidance Route Map and indexing existing standards

Potential ORE 2020 Impact

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Draft guide to environmental impact assessment

- Overview of the environmental impact assessment (EIA) process and linkages to consenting requirements
  - Screening
  - Scoping
  - Preliminary environmental information (PEI)
  - Determining environmental impacts
  - Environmental statement
  - Mitigation and monitoring plans
  - Communication
- Each with issues identified and recommendations made
- Supported with case studies

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