EW and CEMA – where we are and where we need to go

EW … the future beyond CEMA?

How to get to ‘where we need to go’

Alan Blackwell

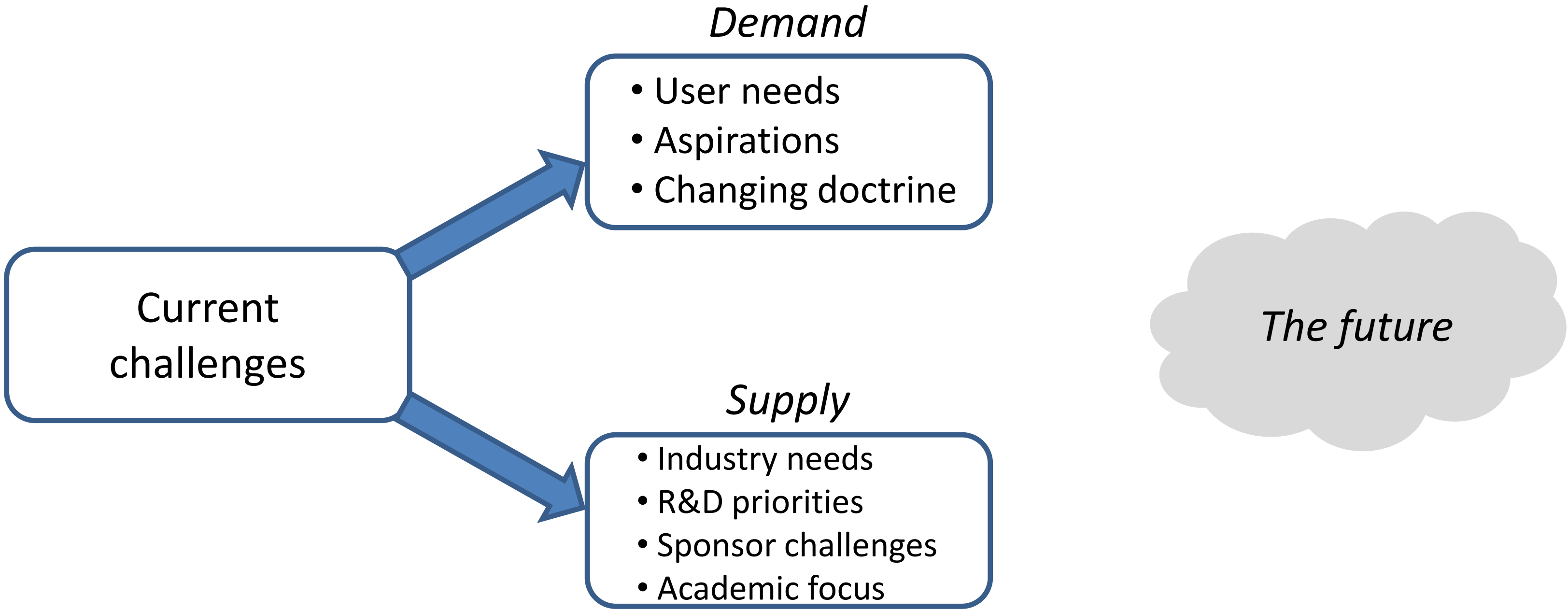
ABAL Insight Ltd

Where we are and where we need to go

- EW capability from 2 perspectives:
  - Demand side: users' needs and aspirations
  - Supply side: industry, suppliers, sponsors and academia

- This presentation will:
  - Review current challenges ('where we are')
  - Examine demand side needs and aspirations
  - Consider supply side needs and behaviours
  - Ask if these are compatible ... are we all going to the same place?

Where we are ……………… and where we need to go



Current challenges

Demand

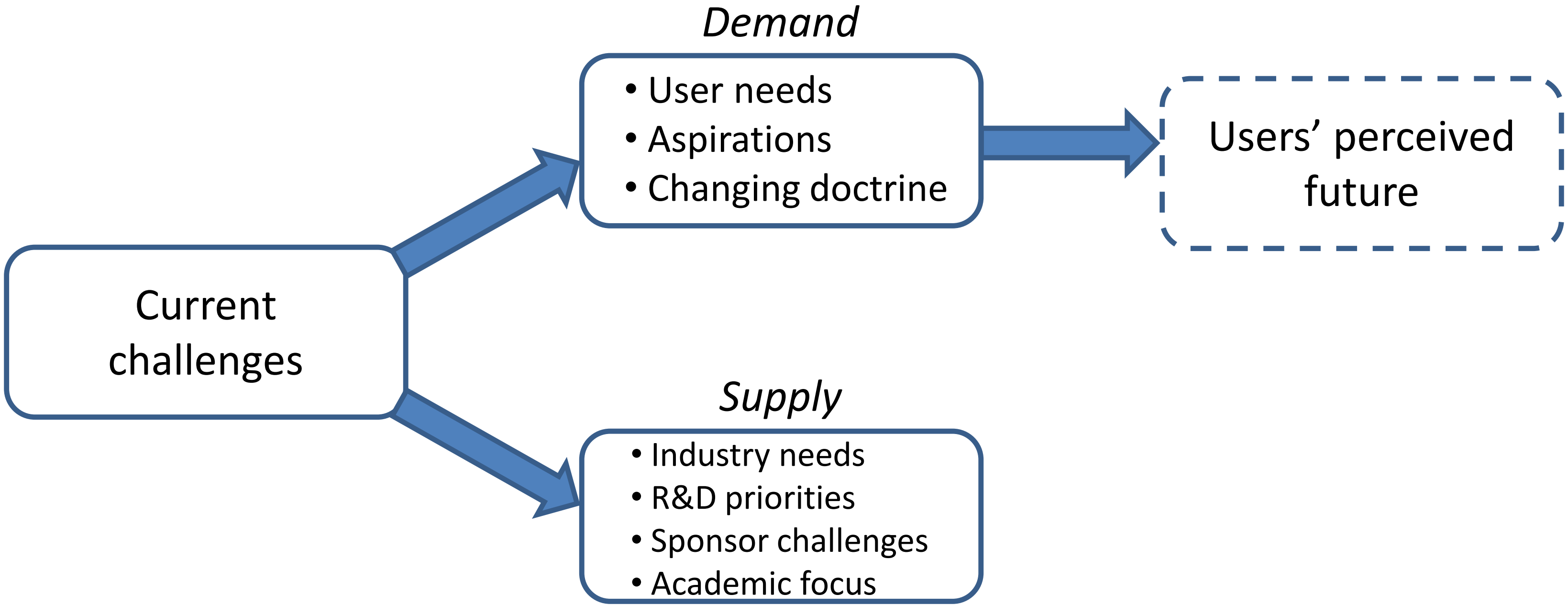
- User needs
- Aspirations
- Changing doctrine

Supply

- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

The future

Where we are ……………… and where we need to go



Current challenges

Demand

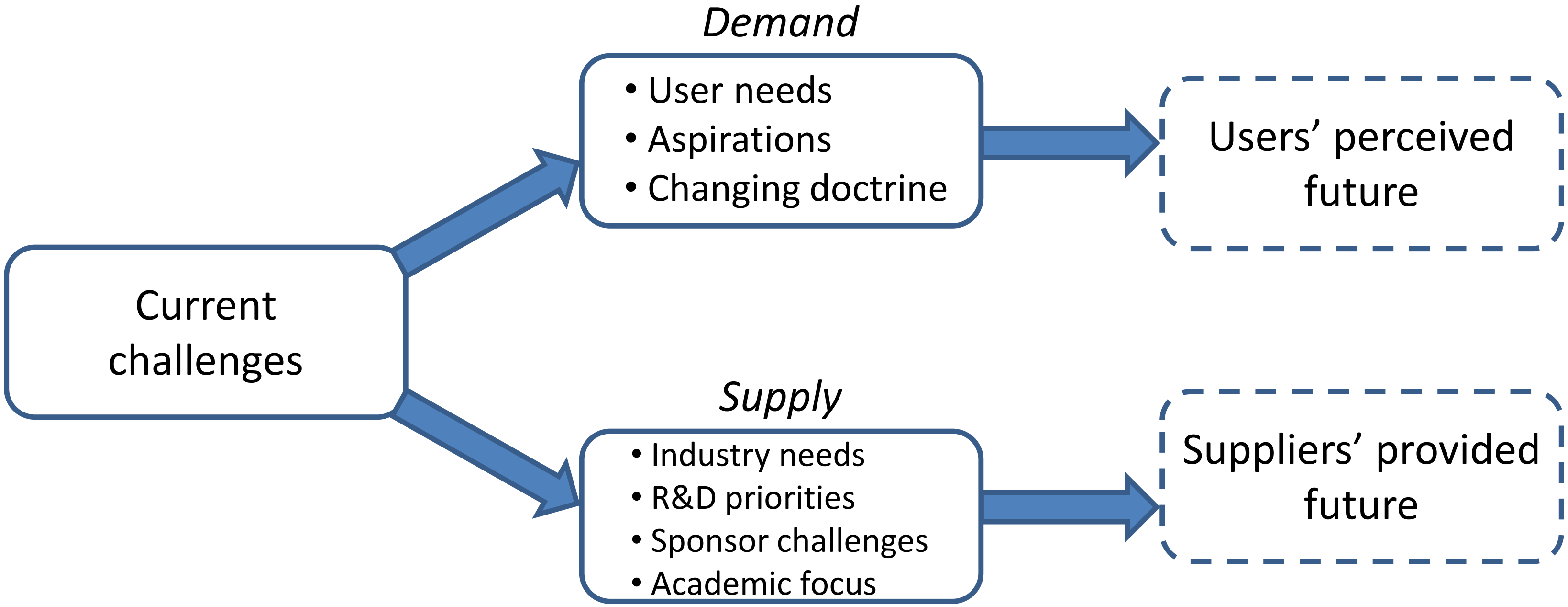
- User needs
- Aspirations
- Changing doctrine

Users' perceived future

Supply

- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

Where we are ……………….. and where we need to go



Current challenges

Demand

- User needs
- Aspirations
- Changing doctrine

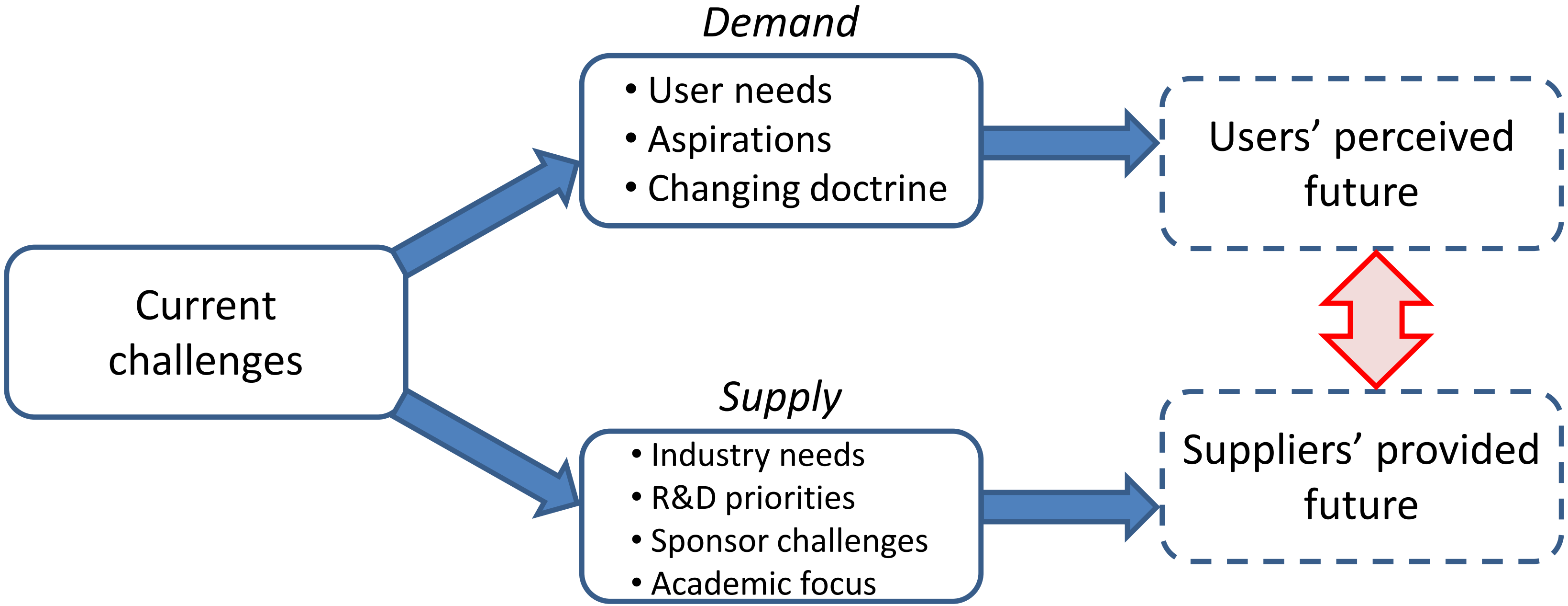
Users’ perceived future

Supply

- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

Suppliers’ provided future

Where we are .... and where we need to go



Demand

- User needs
- Aspirations
- Changing doctrine

Users' perceived future

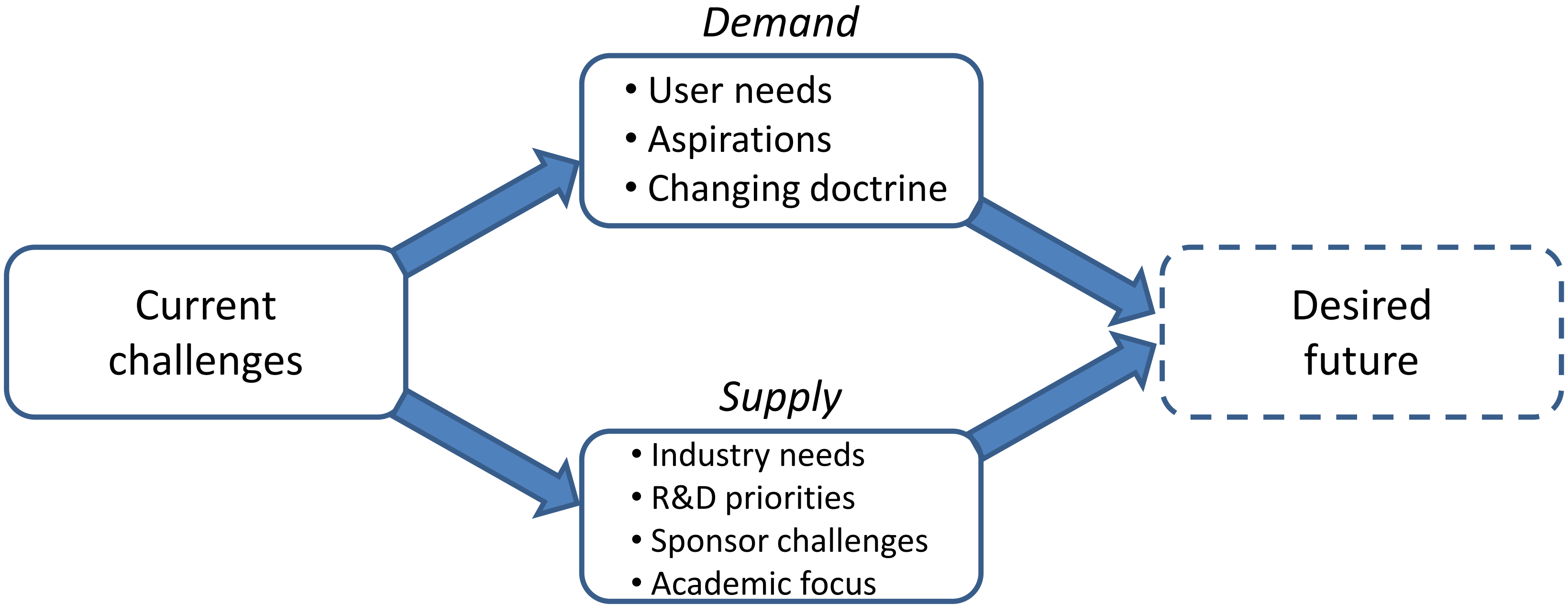
Current challenges

Supply

- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

Suppliers' provided future

Where we are ……………… and where we need to go



Current challenges

Demand

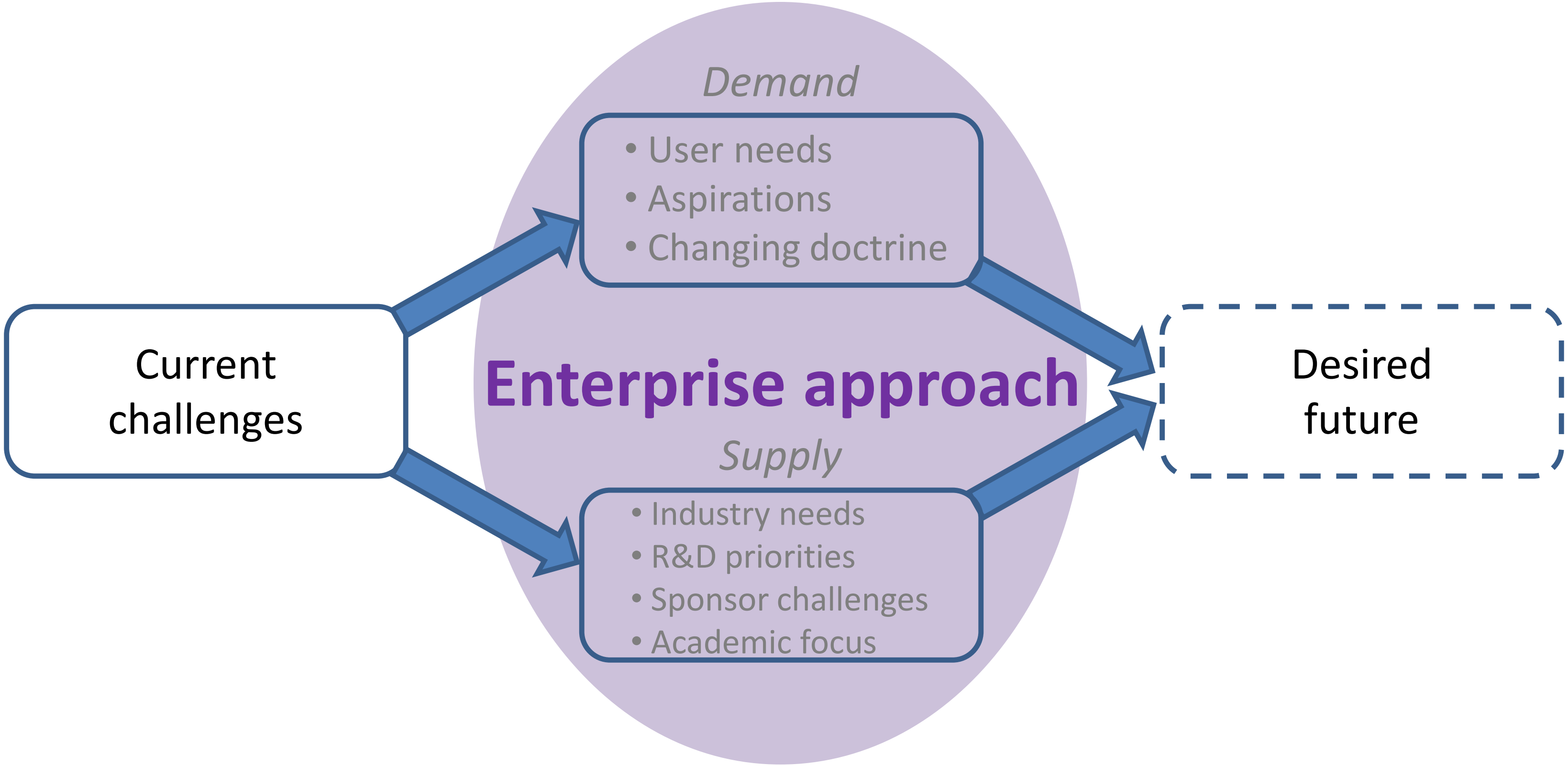
- User needs
- Aspirations
- Changing doctrine

Supply

- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

Desired future

Where we are .... and where we need to go



Current challenges

Demand

- User needs
- Aspirations
- Changing doctrine

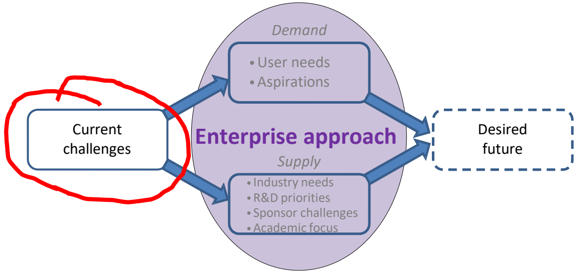
Enterprise approach

Supply

- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

Desired future

Current challenges



➢ For Users:

- Multiple training regimes; skill fade;
- Deploying multiple systems, all requiring management;
- Incompatibilities between systems introduce inefficiencies.

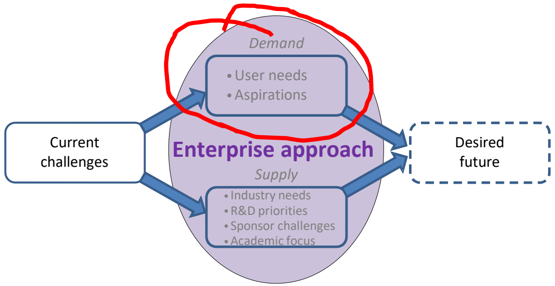
➢ For Customers:

- Multiple systems need specifying and buying;
- Duplication of effort across similar technologies;
- Dilution of scarce expertise;
- Overall capability is less agile (such as when threat changes)

➢ For Suppliers:

- Numerous product lines;
- Multiple interfaces with customers and users;
- Must make early decisions (R&D) about which path to follow.

Demand side drivers


Demand
- User needs
- Aspirations

Current challenges

Enterprise approach

Supply
- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

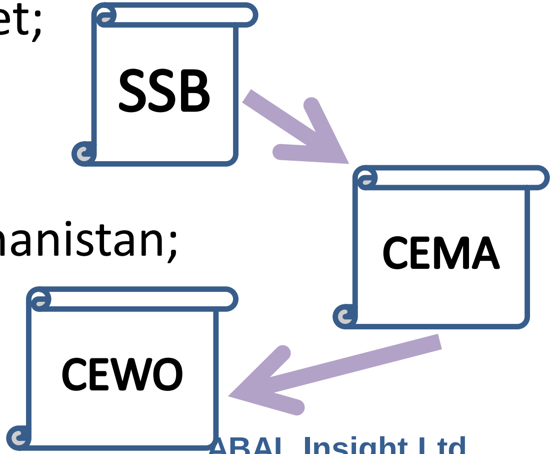
Desired future

Threats:

- Relatively bounded during Iraq and Afghanistan
- Now more wide ranging and more difficult to predict
- and more technically complex ... but *(perhaps?)* commercially simpler

Doctrine:

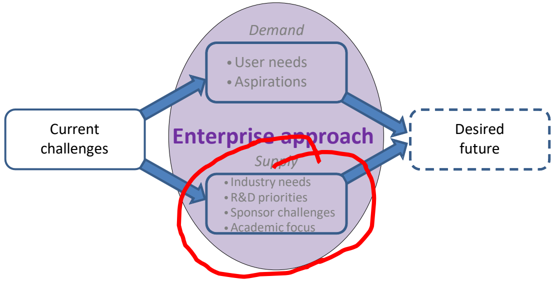
- First decade of C21: Iraq experience changed mindset; distinction between 'tactical' and 'strategic' blurred; convergence of 'EW' and 'SIGINT
- Second decade of C21: embedded lessons from Afghanistan; democratisation of technology and the rise of cyber; resurgent peer adversaries


SSB

CEMA

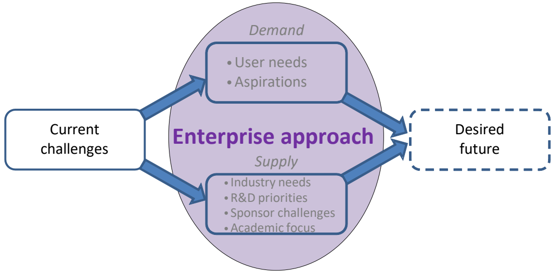
CEWO

Supply side drivers



- ➢ fragmented approach to sponsoring, specifying, buying, fielding and supporting equipment: *EW, ECM, cyber, C-UAS ......*
- ➢ civilian sector is largely setting Standards
- ➢ pace of technological change and civilian demand faster than traditional military/Government decision making
- ➢ volumes/sovereignty constraints/export
- ➢ niche expertise required to stay ahead (in an area of intense civilian competition)

Enterprise approach?



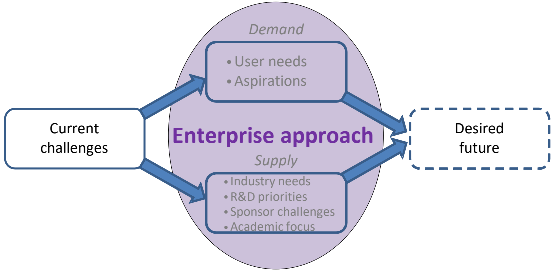
➢Why? (Demand)

- ➢ urgent need to sort out fragmented approach:
  - ➢ Users/Operators: common equipment fleets; easier training; less skill fade; focus doctrinal and procedural effort; fewer interfaces; easier to refresh and manage configuration
  - ➢ Sponsors/Approvers: more coherent equipment portfolios; fewer bespoke types; focus expert manpower for maximum impact; reduce training and support costs; exploit technology faster, especially software based

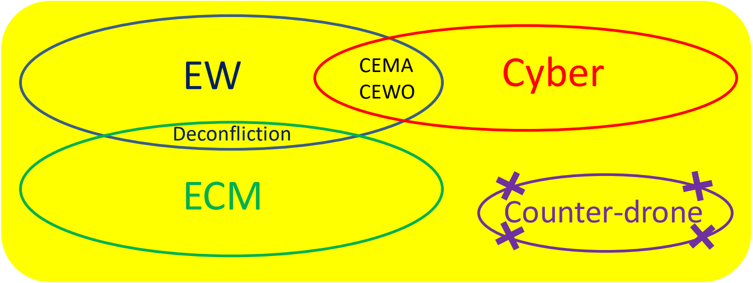
➢Why? (Supply)

- ➢ increase predictability of sales: ‘less but more regular’
- ➢ use software updates, open standards, etc, to reduce fielding cost/risk
- ➢ exploit parallel work in AI, machine learning, data analytics, etc

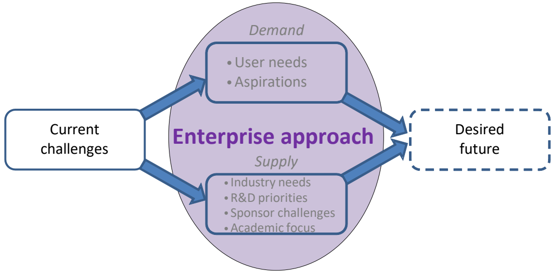
Enterprise approach?



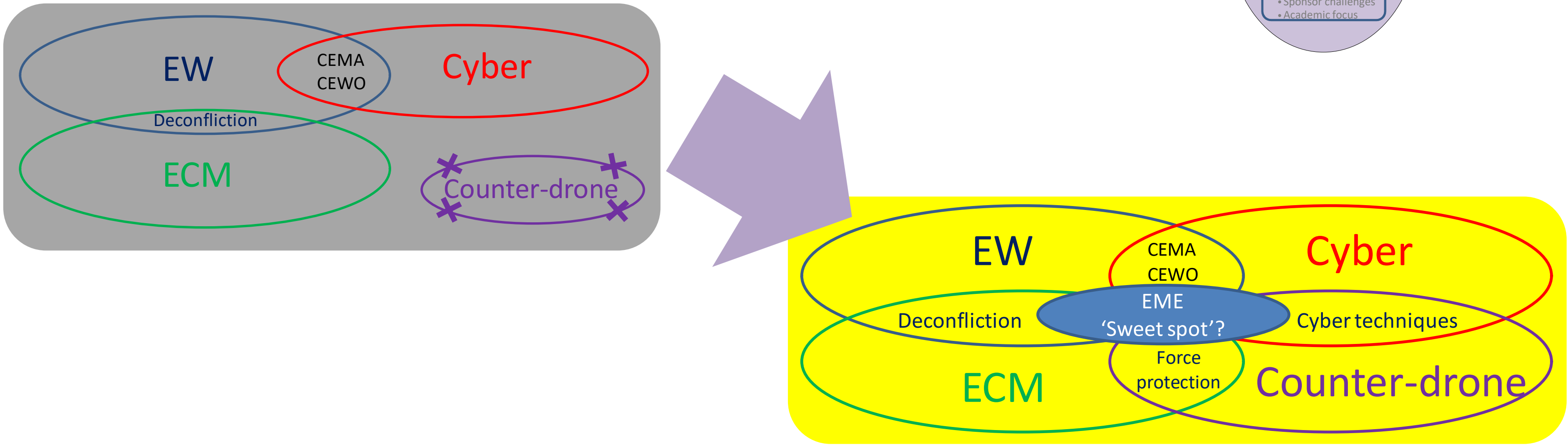
- What could it look like?



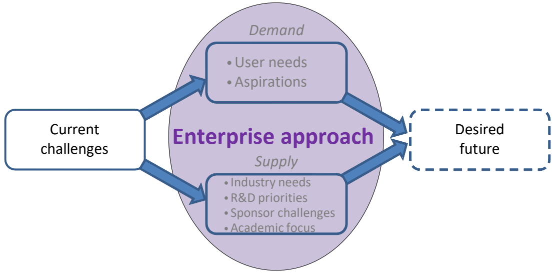
Enterprise approach?



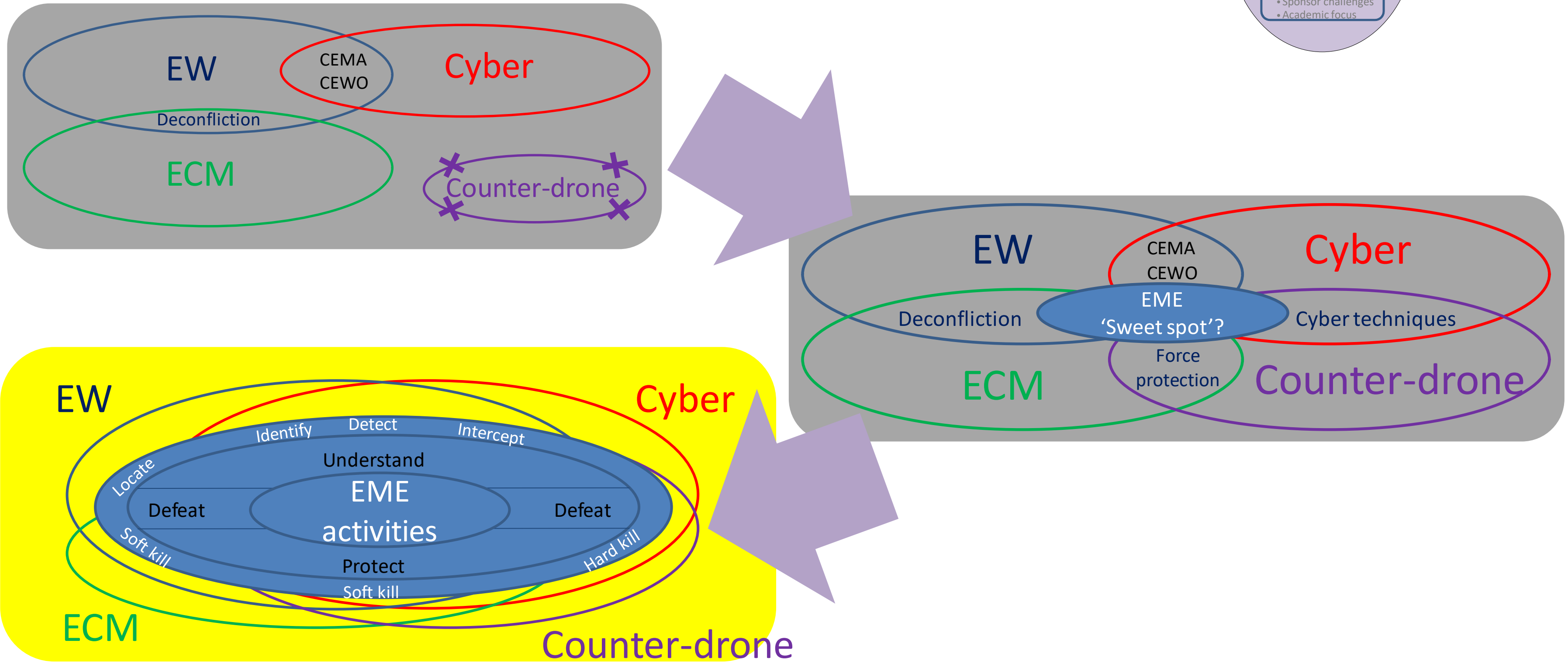
- What could it look like?



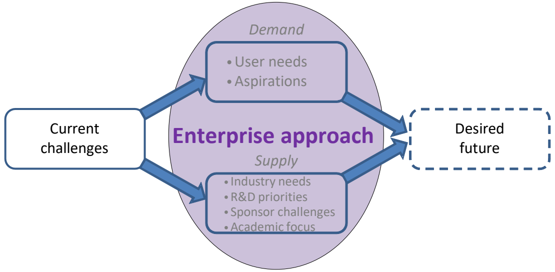
Enterprise approach?



- What could it look like?



Enterprise approach?



Demand

- User needs
- Aspirations

Current challenges

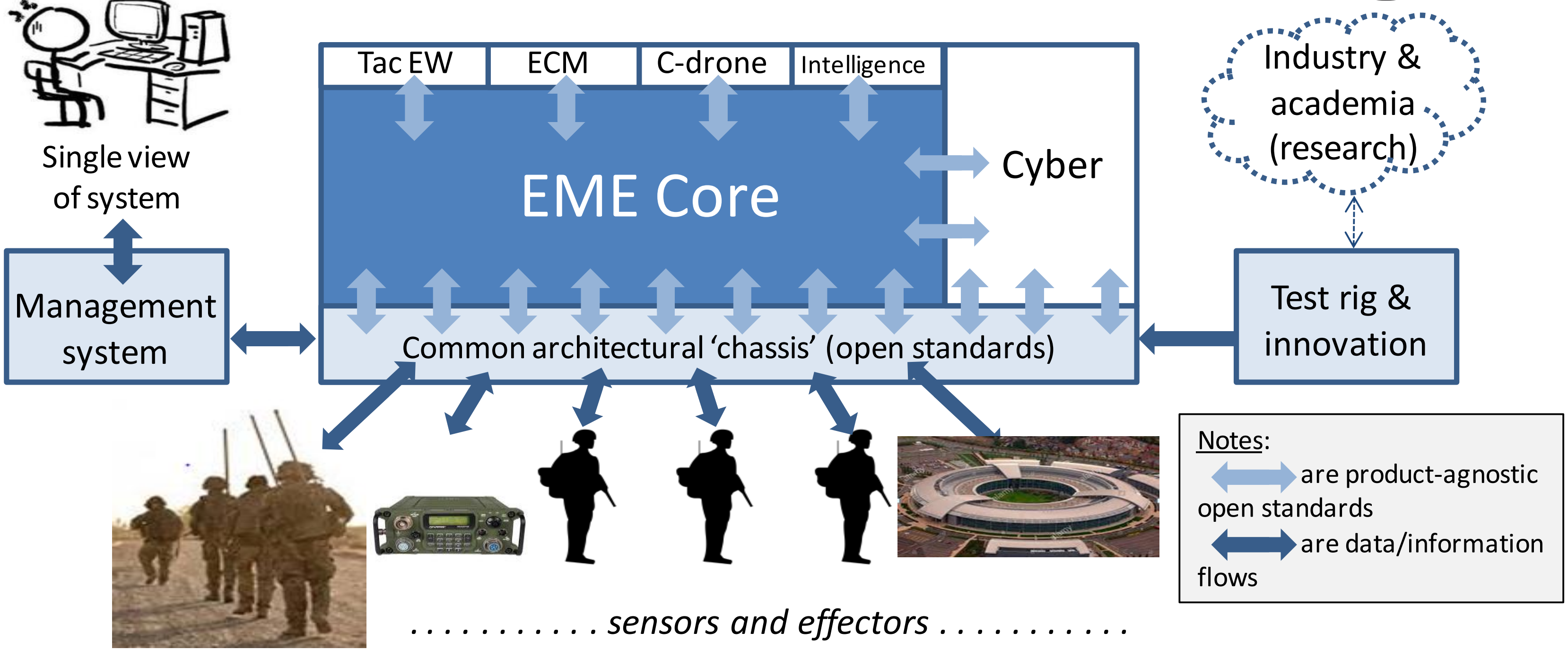
Enterprise approach

Desired future

Supply

- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

➢What could it look like operationally?



Single view of system

Management system

Tac EW

ECM

C-drone

Intelligence

EME Core

Cyber

Common architectural ‘chassis’ (open standards)

Industry & academia (research)

Test rig & innovation

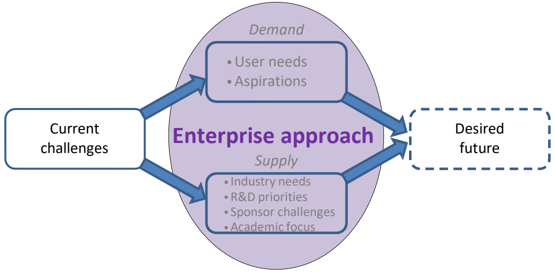
Notes:

⟷ are product-agnostic open standards

⟷ are data/information flows

. . . . *sensors and effectors* . . . .

Issues?



Demand

- User needs
- Aspirations

Current challenges

Enterprise approach

Desired future

Supply

- Industry needs
- R&D priorities
- Sponsor challenges
- Academic focus

- **Skills:**
  - Wider range of skills needed: is it realistic?
  - Skill fade?
  - Do sufficient, and sufficiently capable, people exist?
- **Management/governance:**
  - Will it be too complex to manage?
  - Where do you draw the system/capability boundary?
- **Data overload:**
  - Can AI/machine learning advance faster than our ability to collect data?
  - How to protect/classify information between different groups?
- **Collective risk:** does aggregation increase our own vulnerability too much?
- **Equipment/systems:** can we overcome our protective instincts?

Closing thoughts

What could EW look like beyond CEMA: ***where could we go?***

- Wider remit: include FP ECM and counter-drone, and use such sources for EMS survey/defining ‘normal’
- Greater re-use of assets in support of EME activity: *‘gather once, use many times’*
- Shift emphasis from ‘collect’ to ‘data exploitation’
- **Demand side: capabilities focussed on EME as a warfighting environment**
- Open architectures: smaller but more regular industry input
- Exploit R&D in AI, machine learning and data analytics
- Closer partnerships in designing/sustaining capabilities – LSI approach?
- **Supply side: greater use of open Standards in return for more regular business**

Conclusion

Where do we need to go, in order to keep ahead?

Alan Blackwell

ABAL Insight Ltd
ab@abalinsight.co.uk