

Industrial Collaboration Model

Intended to be a simple, but 'iconic', model of how an individual business needs to see themselves, and other industries around them, as a pre-cursor to suggesting there is benefit in collaborating! I know... I'm no Donald Rumsfeld.

Introducing the Quadrants

The world we live in... in colours

Familiar Problems with Familiar Solutions

Things we know (the green quadrant). We recognise the problem and we have solved it before, or know how to solve it.

e.g. Using a linked list structure to maintain an ordered list of objects.

Familiar Problems with Unfamiliar Solutions

Problems we recognise but don't immediately have a solution (the yellow quadrant). We are forced to solve these in ways that are new to us.

e.g. Mitigating component obsolescence in a long-service-life electronic system.

Unfamiliar Problems with Familiar Solutions

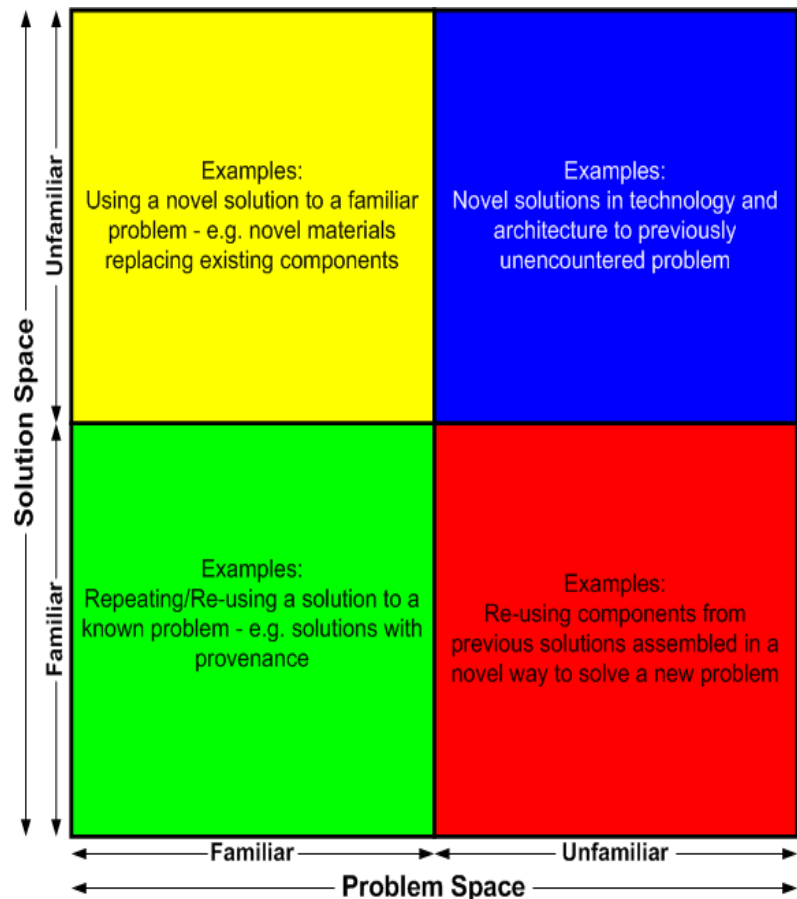
New problems, that we have not encountered before, but for which we can apply an existing solution (the red quadrant).

e.g. Using an alternator as a temporary starter motor.

Unfamiliar Problems with Unfamiliar Solutions

Previously unknown problems with previously unused solutions (the blue quadrant)

e.g. Researchers discover something new during an experiment and have to find a novel solution.



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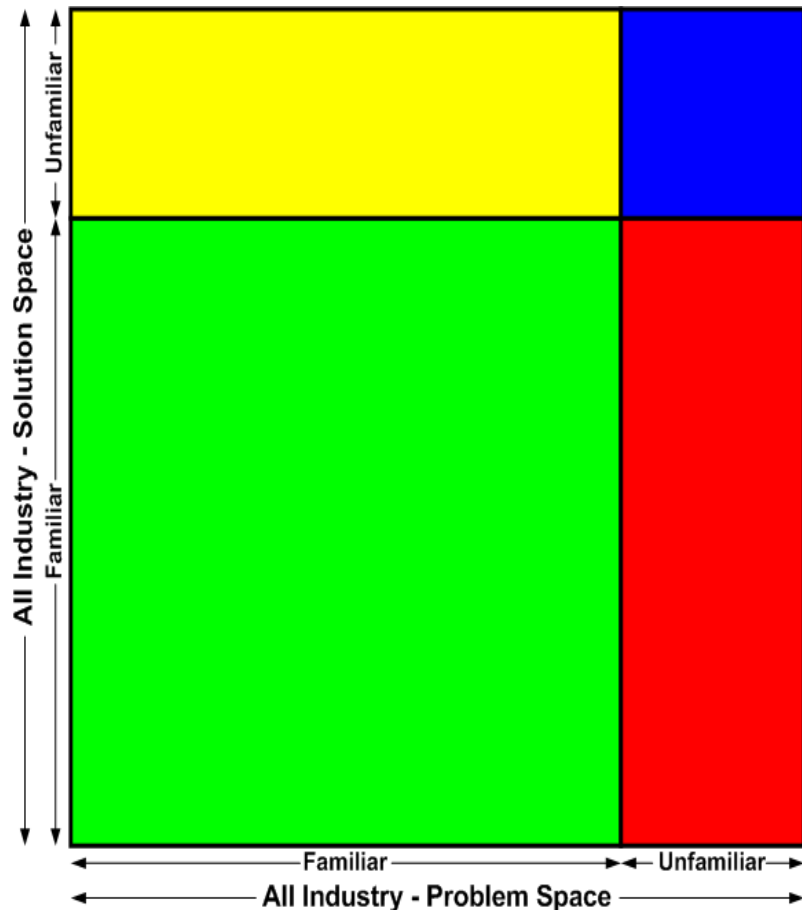
A More Proportional Representation

In the world of the embedded systems engineering industry of electronic systems and software, the green portion dominates. So we can redraw our basic quadrants with a bit more realism with respect to area.

If you could pool all of your industry's resources (knowledge of all possible problems already encountered in your industry) then you would find that most problems would be familiar to someone, and (probably that same) someone will already have a solution.

The problem and its attendant solution may be commonly available (e.g. posted on the internet, available in a Patent or Copyright document, available as open-source) unless someone sees it as a competitive advantage, in which case it may not be published (e.g. trade secret) or using it may cost you money (e.g. a Patent, or a Copyright).

Sometimes your problem may represent a different application and not be addressed explicitly by the solution... so you might be free to extend the patent, by being recognised as a different application.



N.B. Fundamental research (the blue quadrant) is only necessary if no-one has ever encountered your problem before, and doesn't know how to solve it. It represents a small proportion of the problem/solution space compared to the total industry effort.... which sounds about right.

So What are the Collaboration Opportunities?

Green Space – Just bringing companies together to share war stories, help them recognise they are not alone, help them recognise that many problems already have solutions.

Yellow Space – Opportunities for competitive partnership arrangements to define/own IP or commercial advantage – strategic re-application of known solutions to new problems (e.g. GPUs as computationally intensive simulation 'solvers')

Red Space – Opportunities for non-competitive collaboration to solve common problems (financial burden sharing?) (e.g. Co-simulation of multi-physics in electro-mechanical systems (Electric Motor - solve for geometry, electrical, thermal, magnetic, stress))

Blue Space – Academic Research – spark new problems/solutions in abstract.

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So what about YOUR business?

How your Individual Business fits in the world (or UK) industry (for Electronic Systems and Software).

Collaboration 1

Most individual businesses occupy a small area, represented by the corner (white)

- a) Most (if not all) of what you know, is known by others (green)
- b) Most of your unfamiliar problems are familiar to someone else (green), and
- c) Most of their solutions could be applied to your problems (green)

Answer: Collaborate with other Industry

Collaboration 2

There are a few (yellow) areas where your individual business could partner on unfamiliar solutions (but protect competitive advantage, by choosing a non-competitive sector)

- a) Most likely as common, industrially directed, Research

Answer: Find a partner industry to collaborate with, which has the same problem, and share the cost of finding a novel solution (possibly using external academic resources)

Collaboration 3

There are a few (red) areas where your individual business could benefit by collaborating on unfamiliar problems (by taking the lead!)

- a) Likely to be academia-led (e.g. novel applications of familiar solutions)

Answer: Find a partner industry that has the same problem, and share the cost of finding how to apply an existing solution (possibly using academic resources)

Collaboration 4

The fundamental (blue) areas, where the problem and solution are unfamiliar:

- a) Likely to be low Technology Readiness Level (TRL),
- b) More amenable to being academia led
- c) Likely to be protected by sponsoring industry.

Answer: Find an academic partner and secure the rights to their research. If it is an expensive problem, collaborate and agree on the freedom to use the solution, locking out other competitors.

