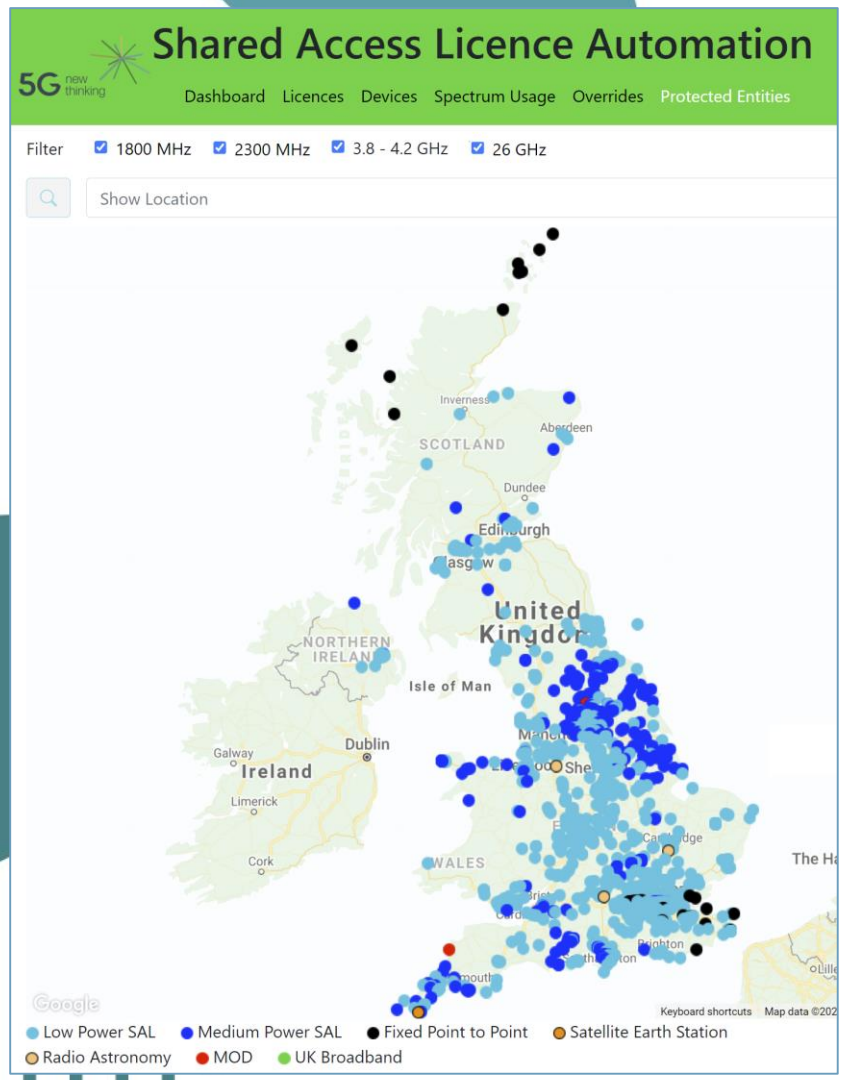
# 5GNT Spectrum Prospector

## Taking SALs from Here to Full DSA Automation

28th October, 2021




# Shared Access Licences and DSA Automation

- Manual application for 1 yr renewable licence for low power (urban) or medium power (rural) private networks with device ecosystem support
  - 1800 MHz (paired) B3 1.4, 3 MHz
  - 2390-2400 MHz B40, n40 5, 10 MHz
  - 3800-4200 MHz n77 10-100 MHz
  - 24.25-26.5 GHz n258 50, 100, 200, 400 MHz
- Good uptake (1292 licences in WTR as of 23 Oct), but
  - Long waits (4+ weeks) for licence to be issued
  - No way of checking whether an application is likely to succeed before applying
  - Ofcom's manual process presumably can't scale indefinitely?
- Interest from industry and Ofcom to:
  - Automate existing process
  - Transition to fully automated DSA

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# DSA Automation Dilemmas

- Ecosystem Bootstrapping and Evolution
  - Why develop a new technology when there's no market?
  - Can't develop a new market without the enabling technologies
- Spectrum Sharing Population Paradox
  - Supply is abundant where there is limited demand
  - Demand is abundant where there is limited supply
- Scale Versus Optimization
  - Scale for silicon pulls towards regulatory harmonization
  - Optimizing for local conditions leads to regulatory fragmentation

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# Key Insights

- Cloud-based software can do scale, customization, and service evolution well
  - Individual recommendations or localized RF optimizations at scale
  - GIS + RF Modeling at scale “solved” problems in this space
  - DSA devices don’t have to be exposed to complexity or changes
- A REST server doesn’t care if the request originates from a webpage or a device
  - **Automate to the Engineer** or **Automate to the Device** - Same protocol can support manually configured and automatically configured devices
- Heartbeat periods were always meant to be variable. Make periods explicitly condition-based like other regulations (e.g., rural vs urban, band)
  - Population or device density, Incumbent dynamics
  - Heartbeat = periodic message for grant renewal
- Existing one-month SAL notification of need to modify service can be handled as a heartbeat

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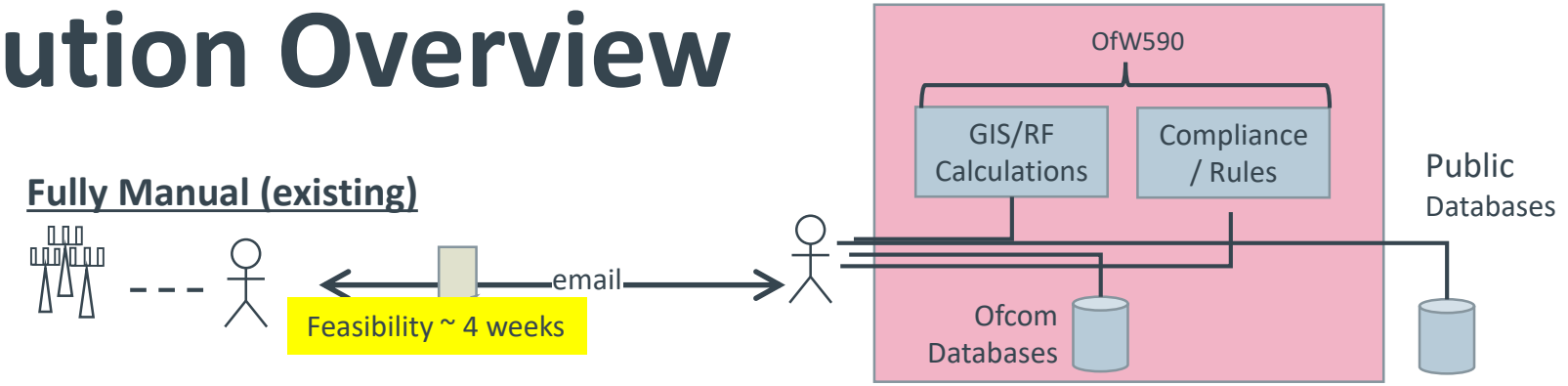
# Solution Overview



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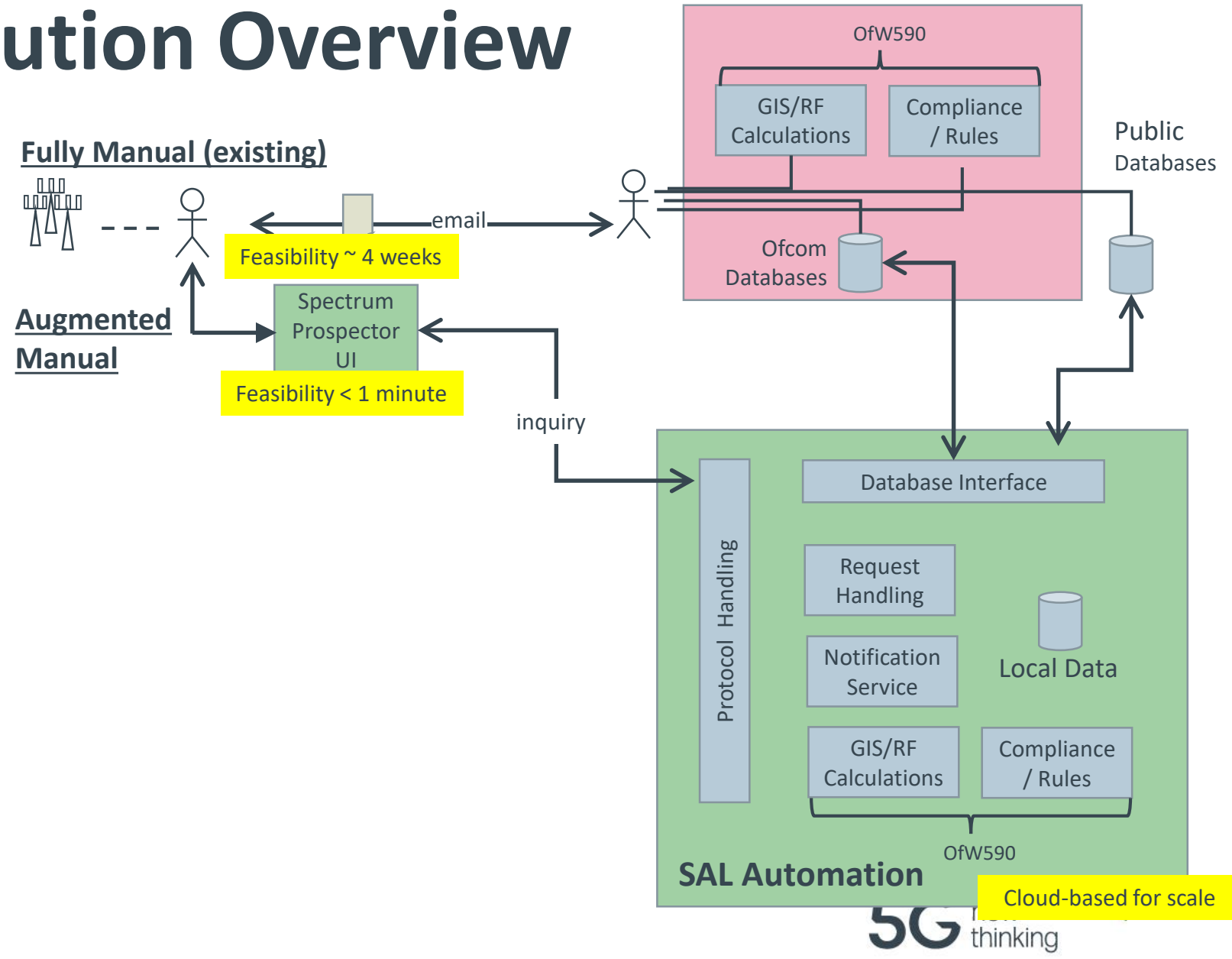
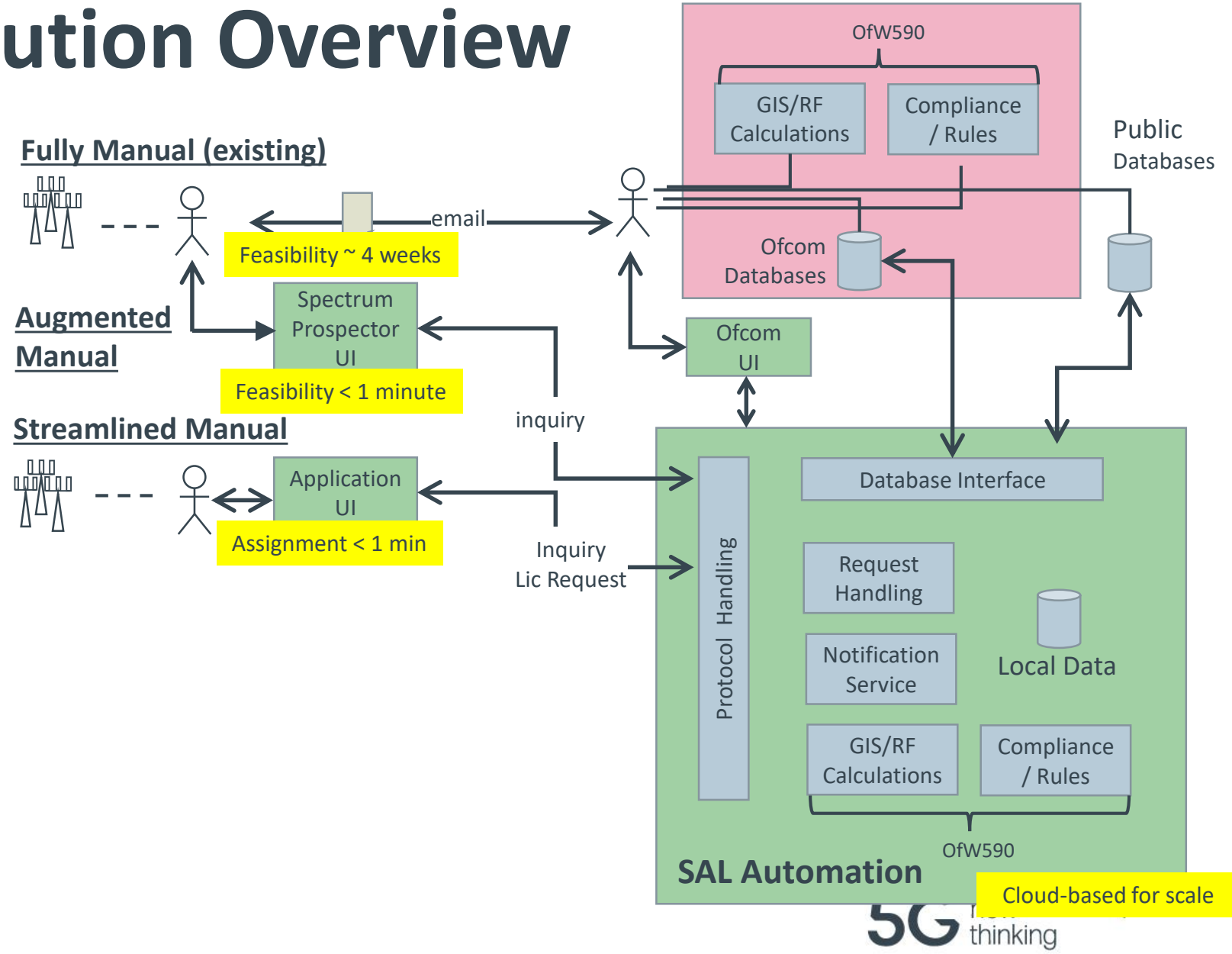


# Solution Overview

- Existing manual process can be streamlined
  - 4 wks => seconds



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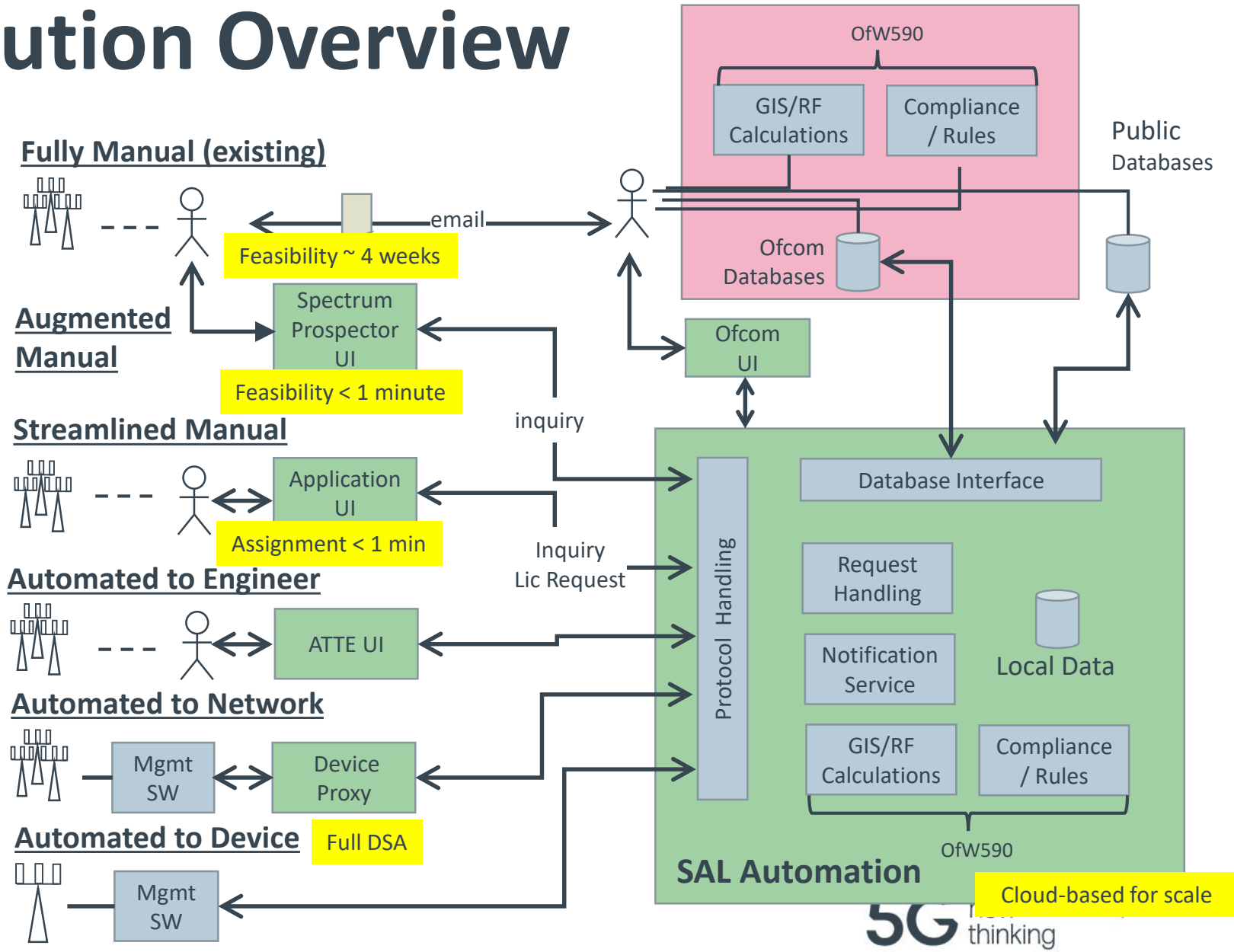

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- ATTE enables legacy DSA devices to work alongside fully automated DSA devices
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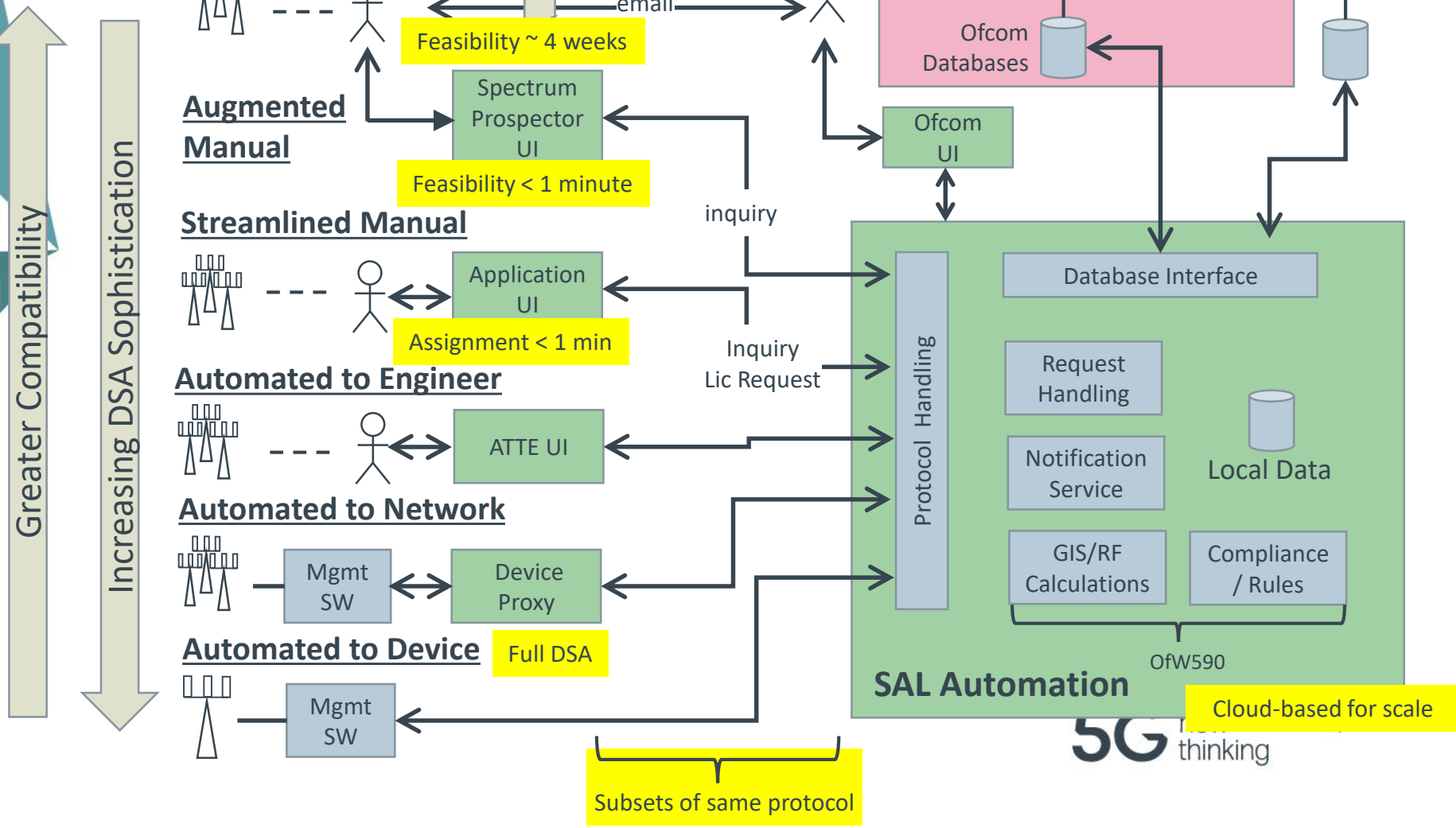
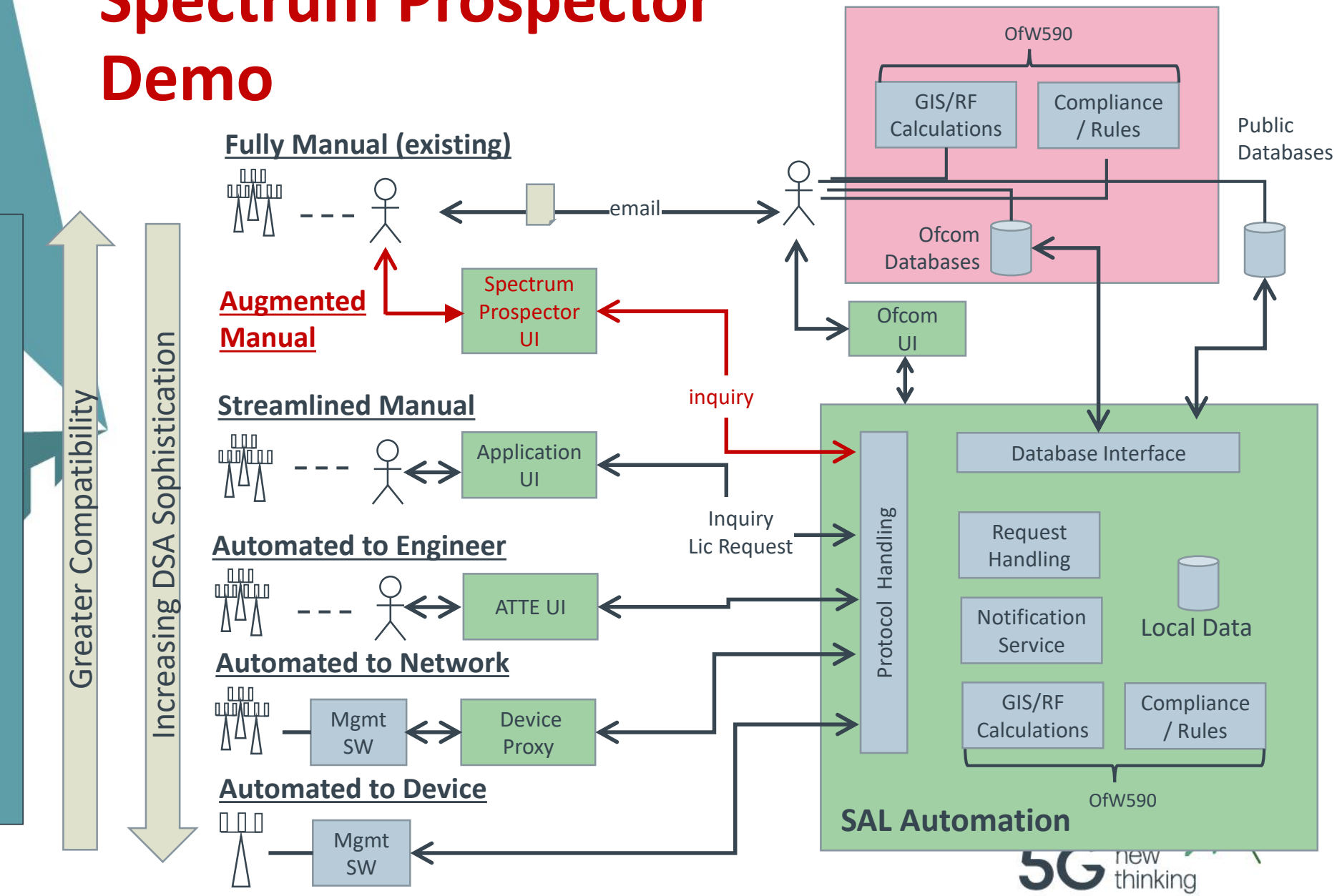
- Same protocol, same backend services can support all options
  - Eliminate ecosystem bootstrapping issue
  - Path to Full DSA and beyond



# Spectrum Prospector Demo

- Works within existing regulations
- Implements Ofw590 calculations using Ofcom and public data
  - Not a replacement for Ofcom
- Instant feedback on expected viability of application
- Some guidance on alternate configurations
- Publicly available soon



# Backups

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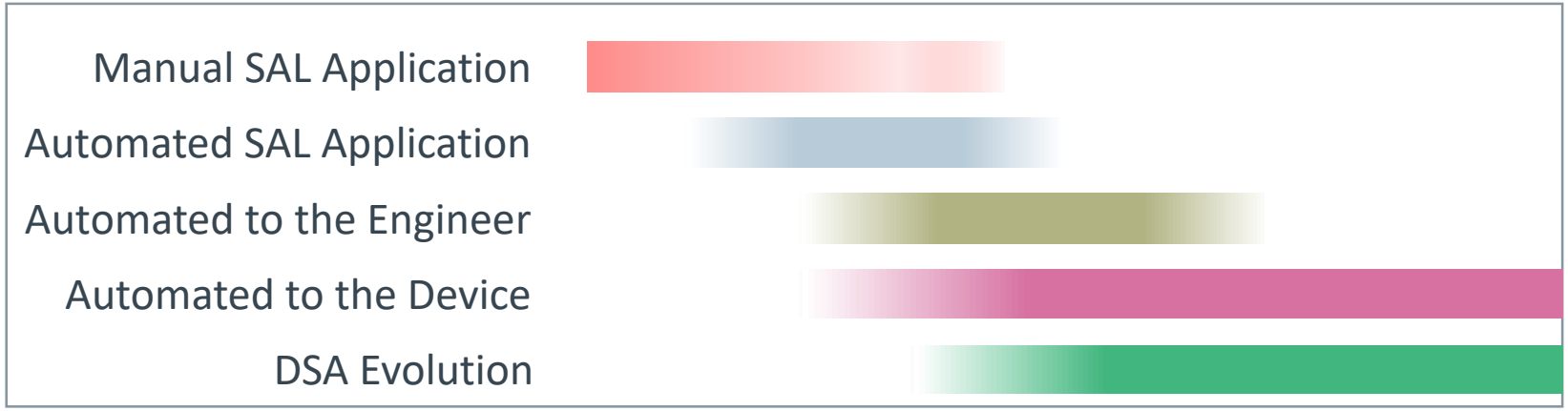
Manual SAL Application
Automated SAL Application
Automated to the Engineer
Automated to the Device
DSA Evolution