

UW-IT Wi-Fi Services Requirements Guide: CELLULAR DISTRIBUTED ANTENNA SYSTEMS (“Cellular DAS”)

UW Facilities - Section 27 17 53 Wireless Communications

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OVERVIEW - UW-IT Wireless Services and Mobile Communications Requirements Guides

All UW projects for new construction and space renovations of 50,000 sq ft or more must incorporate the design and installation of the following Wireless and Mobile Communications Services:

WI-FI SERVICE - Service managed and operated by UW-IT Wireless Services Team.

PUBLIC SAFETY DISTRIBUTED ANTENNA SYSTEM (“PS DAS”) - Service managed and operated by EH&S with UW-IT Mobile Communications Team consulting.

CELLULAR DISTRIBUTED ANTENNA SYSTEM (“Cellular DAS”) - Service managed and operated by cellular carrier with UW-IT Mobile Communications Team consulting.

The following collection of requirements guides should help project participants better understand these services and how UW-IT Wireless Services and Mobile Communications teams are engaged and integrated into the overall project. While all

guides should be helpful for the Project Manager, some are geared toward specific teams.

UW-IT Wi-Fi Services Requirements Guide: Project Management

- Provides the UW Project Manager with information to help integrate the design and deployment of UW-IT Wi-Fi Services into the project plan.

UW-IT Wi-Fi Services Requirements Guide: Architecture and Engineering Designs

- Provides the Wi-Fi Design Engineer with information needed to create and deliver a Wi-Fi service design.

UW-IT Wi-Fi Services Requirements Guide: Service Installations

- Provides the Wi-Fi service installation team with information needed to install a UW-IT Wi-Fi service based on the final pre-installation design.

UW-IT Wi-Fi Services Requirements Guide: Post-Installation Surveys

- Provides the Wi-Fi post-installation survey team with information needed to test the installed UW-IT Wi-Fi service to ensure it meets service standards and all vetted service requirements.

UW-IT Requirements Guide: Public Safety Distributed Antenna Systems (Public Safety DAS)

- Provides EH&S and the Project Manager with information needed for the inclusion of a Public Safety DAS.

UW-IT Requirements Guide: Cellular Distributed Antenna Systems (Cellular DAS)

- Provides the Project Manager with information needed for the inclusion of a Cellular DAS.

OVERVIEW – Cellular Distributed Antenna Systems (“Cellular DAS”)

While UW supports cell phone calls using its wireless network (“Wi-Fi calling”), it is important to know that emergency 911 (“E911”) calls over Wi-Fi do not provide the caller’s location information. Location information will be provided for an E911 cell phone call only if it is made using a commercial cellular service.

Because cellular service signal strengths can vary substantially within buildings, cellular distributed antenna systems (“cellular DAS”) can be used to boost signal

strength where needed so all cell phone calls - including E911- can be reliably made throughout the building. Installation of cellular DAS should always be included in conjunction with the installation of Public Safety DAS as part of all new buildings and major renovations.

Cellular DAS systems are purchased, owned, and maintained by the carriers; this is not a service that UW-IT offers directly. However, UW-IT's Mobile Communications team does provide the following required services in conjunction with cellular DAS installations:

- Solicitation of participation from appropriate carriers;
- Division of service expenses such that the deployment and on-going maintenance of the cellular DAS service is effectively zero cost to the project;
- Facilitation of UW Real Estate's contract negotiations with the carrier(s) including terms for the following:
 - Term of the contract;
 - Cost responsibilities;
 - Space, power, hvac;
 - Security and access;
 - Maintenance, upgrades, and support.
- Review and approval of the carriers' cellular DAS designs and installations to ensure there is no impact on UW-IT's wireless and mobile services.
- Coordination with EH&S to ensure that a) the cellular DAS has no impact on the PS DAS; b) the cellular DAS power levels are acceptable; and c) proper safety signage for the cellular DAS is installed.

Cellular DAS equipment may include a rooftop or elevated antenna that receives and sends signals to the nearest carrier transmitter; 'head end' equipment - usually located in a designated telecommunications closet in the building – that amplifies the signal and distributes it through an antenna system via cables installed throughout building or space; and a third party network circuit from the installed cellular DAS back to the carrier's nearest aggregation device.

REQUIREMENTS

R1 - Required UW-IT Wireless Services and Mobile Communications Change Reviews and Approvals

Once service requirements have been collected and the service design process starts, any subsequent changes with the potential to impact the service requires review and advanced approval by the appropriate UW-IT service team before incorporation in the design and service implementation.

Service quality can be affected by many environmental and use-specific factors, all of which are considered in the service design process. Proposed changes to these factors - inclusive of customer requirements - after the onset of the design work will be reviewed by the UW-IT Wireless Services team or Mobile Communications team, as appropriate, and considered in the context of the overall design. Some of the many factors considered in the design include the following:

- architecture (e.g., new room, change in wall location, stairwells, elevators, etc.);
- environment (e.g., building materials, furniture, cabling);
- space type (e.g., office space, lab, auditorium);
- people using the service (e.g., students, medical staff, researchers, guests);
- devices (other than laptops, tables, and phones) using the service (e.g., cameras, freezers);
- apps using the service (e.g., Wayfinder);
- density of devices by location (e.g., 50 devices in small room vs 2 devices in large room);
- use profiles in each location (e.g., sporadic video streaming; students in large lecture hall simultaneously accessing Internet sites; big data uploads/downloads);
- appropriate RF frequencies;
- target delivery dates and project delays of six or more months which may require updates to equipment and equipment costs.

The UW-IT service teams appreciate your cooperative communication throughout the project regarding changes that have the potential to impact the resulting quality and delivery of the services.

R2 - UW-IT Wireless Services and Mobile Communications and Project-Related Communications and Coordination

Collaboration Space and Document Sharing. At the outset of each project, a UW-IT Business Analyst will create a dedicated online shared-access space where project-related information and documents can be accessed and managed by project team members. Documents in this space will include materials from the project's architecture team; UW-IT forms related to service requirements and installation details; the service design package; and more as needed.

Meetings. Project team members are required to attend various meetings relevant to their roles and project coordination efforts. These meetings may include one or more on-site walkthroughs; pre-design requirements identification; post-installation review; and regular (usually weekly) project team meetings. Meetings may be called by the Project Manager, the UW-IT Business Analyst, or other project team members. Each participating project team – UW teams and third-party contractors – must ensure that an appropriate team member and/or leader attend all required meetings. The designated meeting attendees will be informed and up to date on the status of their team's responsibilities and work.

Professional and Timely Communications. Each project participant is responsible for appropriate and timely communications via email, document sharing, ticket systems, etc. If in doubt as to who to contact, send email to help@uw.edu and specify the project name in the subject line.

R3 – General Requirements

As the third-party cellular provider places their DAS equipment in UW space, a contract between UW and the cellular DAS owner is required. The contract is facilitated on the UW side by both UW Real Estate and the UW-IT Mobile Communications team. The contract addresses the responsibilities of both parties including but not limited to...

- Term
- Financial obligations
- Space, power, and HVAC
- Security and access
- Allowable frequencies
- Equipment maintenance, upgrades, and operation
- Safety requirements as mandated by EH&S

In advance of any cellular DAS installations, the UW-IT Mobile Communications team must be consulted regarding the proposed design, installation, and on-going operations of the cellular DAS. The Mobile Communications team will ensure that the cellular DAS installation is consistent with other implementations across campus and that standards related to mobile services are adhered to. The consulting review will look at the following:

- Use of currently approved equipment;
- Fire ratings and back-up power;
- Red flags that indicate the system may have issues or cause issues with other services e.g., DAS equipment placements near high-voltage cabling.

PROCESS

P1 - Process Input Materials, Information, Resources

- Architectural Floor Plans
- Cellular DAS design created by third party

P2 - Process Output Materials, Information, Resources

- Copy of cellular provider's final design with as-builts sent to UW-IT's Mobile Communications team.

P3 - High-Level Process Overview

- A. UW interest for implementation of a cellular DAS in a specific UW space is confirmed.
- B. UW-IT's Mobile Communications team reaches out to appropriate cellular service providers to solicit interest in acquiring and installing a cellular DAS in the specified UW space.
- C. Once carrier interest is confirmed, UW Real Estate, in collaboration with UW-IT Mobile Services, negotiates a contract with the cellular provider.
- D. The cellular provider proposes a design; UW-IT Mobile Services and Cable Infrastructure ("CI") teams review the design; review and input are solicited from EH&S as well to ensure no impacts on PS DAS.
- E. Once the design is approved, the necessary UW-IT, carrier and third-party contractors are engaged to do the installation.
- F. Once installation is completed and the DAS is online, the service is tested and if required tuned.

- G. The carrier is responsible for soliciting and managing participation by other cellular carriers so that multiple carriers are represented on a single cellular DAS.
- H. An e-copy of the final design, as-builts, and the testing results are provided to the Mobile Communications team who in turn file this material for future reference with other UW-IT documentation for this building.