



High Performance Wireless Research and Education Network

**An interdisciplinary collaboration
leveraging between research and infrastructure**

University of California, San Diego
<http://hpwren.ucsd.edu/>

**funded by the National Science Foundation
Advanced Networking Infrastructure and Research (ANI-0087344)**



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HPWREN available network infrastructure

- 45Mbps shared backbone wireless infrastructure
 - some links FCC licensed
- up to 45Mbps wireless access links into the shared backbone

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HPWREN values and broader impacts

- Research enabling infrastructure for various science disciplines
- Education enabling infrastructure (e.g., Indian Reservations)
- People communications and derivative values
- Network research to understand large scale interdisciplinary and multi-institutional wide area wireless networking for rural and remote locations

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HPWREN funding status

- Funded by the ANIR networking division within NSF/CISE
- Original 36 month award starting August 2000
 - about \$750k/yr totaling \$2.3M
 - about evenly split on staff and equipment
- \$420k supplement award by NSF that may last into late 2004
 - if we are careful about spending money
- Funded staff:
 - 50% Hans-Werner Braun, Principal Investigator
 - 50% systems support (quarter times each of Bud and Jim Hale)
 - 100% documentation and outreach, Kim Bruch
 - 20% Frank Vernon, Geophysicist, Co-PI
 - small miscellaneous allocations
 - engineering, operations and student support

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Supplement HPWREN work scope



Achieving a stable platform

- completing the creation of redundant network links, resulting in additional routing capabilities to eliminate single point of communication failures
- achieving differentiated services to applications, with a special emphasis on prioritizing real-time sensor traffic

Unfinished aspects referenced in the original proposal are still in early stages

- support for mobile/ad-hoc services
- development of prototype emergency communications systems

Additional critical components

- support for the HPWREN field research and remote education applications
- support for environmental sensors for comparison reasons with network performance parameters (e.g., meteorological sensors and cameras)
- integration of new and interoperable technologies
- system performance assessments and metric evaluations

Documentation



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Issues regarding HPWREN's future

- As mentioned last year, it would really help if the HPWREN collaborating researchers/etc. would stress the importance of HPWREN to their research in their public materials, so stronger points can be made to potential funding sources
- Two NSF follow on proposals (ITR and STI) did not get awarded
 - ITR and STI were largely research solicitations
- No immediate danger! HPWREN has received a supplement to the NSF CISE/ANIR grant!
- No readily available NSF solicitation on research-enabling infrastructure
- We should not submit proposals that are unresponsive to solicitations
- Failing direct support, we need to look for alternatives, e.g.:
 - turn the infrastructure into operational budget line items for affiliated institutions
 - support by network users
 - alternate means of support
 - stronger alignment with other communities, e.g., crisis management, where researchers may be allowed to use remaining bandwidth in “peace” times
 - turn HPWREN into largely a network research environment with possibly downgraded operational support
 - other innovative choices?
 - dismantle HPWREN (we cannot leave the infrastructure in place if unsupported)

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