Networking Tonga from the Ground Up and the Sky Down

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Role of FCC in US

- Communications Act of '34
- Spectrum Management & Policy
- 'Tragedy of the Commons' Problem
- Not able to keep pace with changes
  - Technological Advisory Council

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New Problems

- Internet Appliances
- UWB = More Bandwidth!!!
  - Spectrum Overlay
- Smart Radios
  - Software Defined Radios
- Convergence
  - Mobility vs Fixed

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Regulatory Summary

- Regulatory issues are the biggest problem in the way of a paradigm shift for wireless!

- More technology available than we know what to do with!

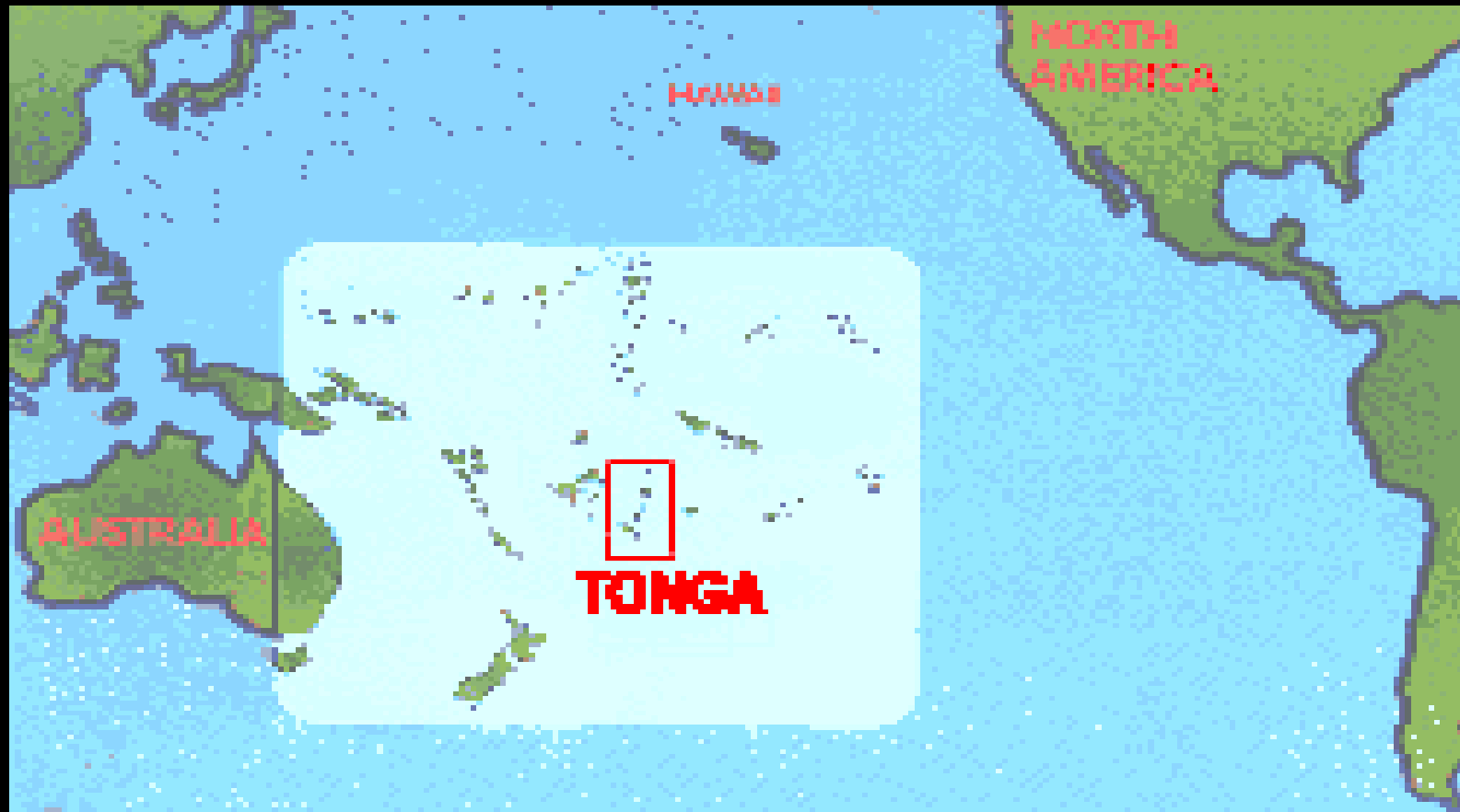- Need to find a place where wireless regulatory issues are absent!!

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Kingdom of Tonga Project

- Island group in the South Pacific
- About 171 islands, 70 inhabited
- 100K people in Tonga, about the same number outside Tonga
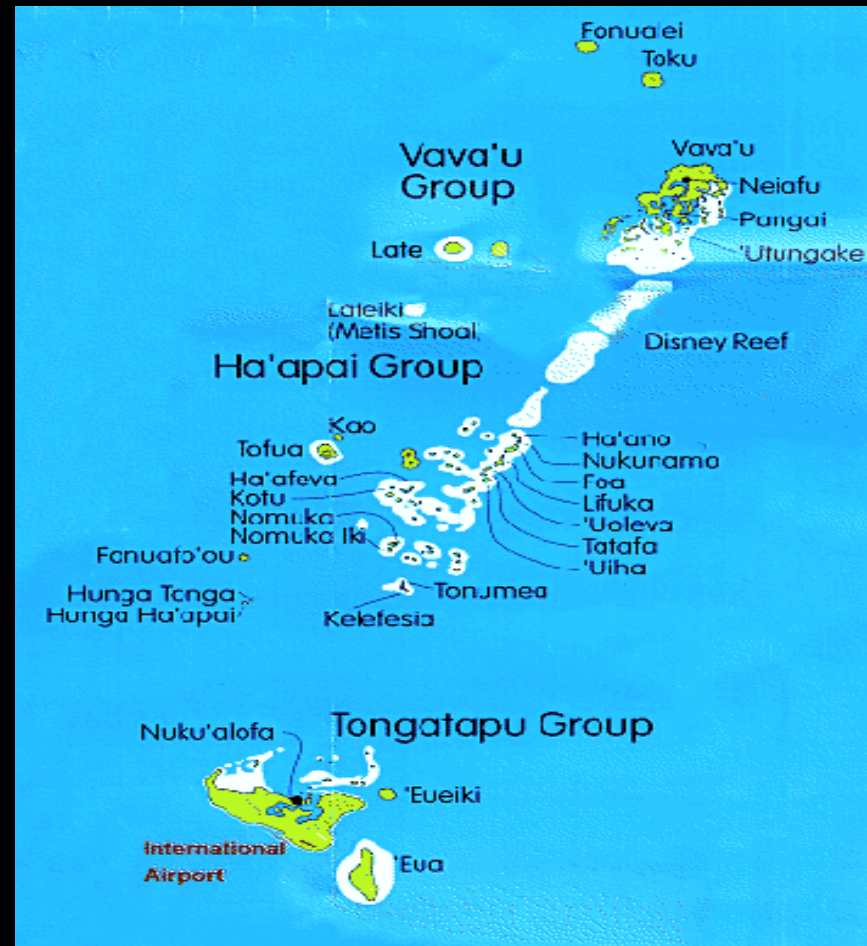- Agricultural exports main source of $
- One of the last true monarchies

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Kingdom of Tonga

Islands of Tonga

T he Task

- Business project of the Crown Prince
- Move country from wired to totally wireless infrastructure
- Two Phases
  - International
  - Domestic
- No regulatory issues!!!

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Basic Statistics

- 11K Households
- 6500 phone customers
- 8 yr. waiting list to get a phone
- Cable & Wireless handles international
- Tonga Telecom handles domestic

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Technology

- Wireless Multiservices IP Network
  - Scalable, fully meshed network
- Use of wideband wireless devices
  - Spread Spectrum
  - Ultrawideband
- New two-way VSAT technologies
- Support for new Internet appliances
  - New PDA's
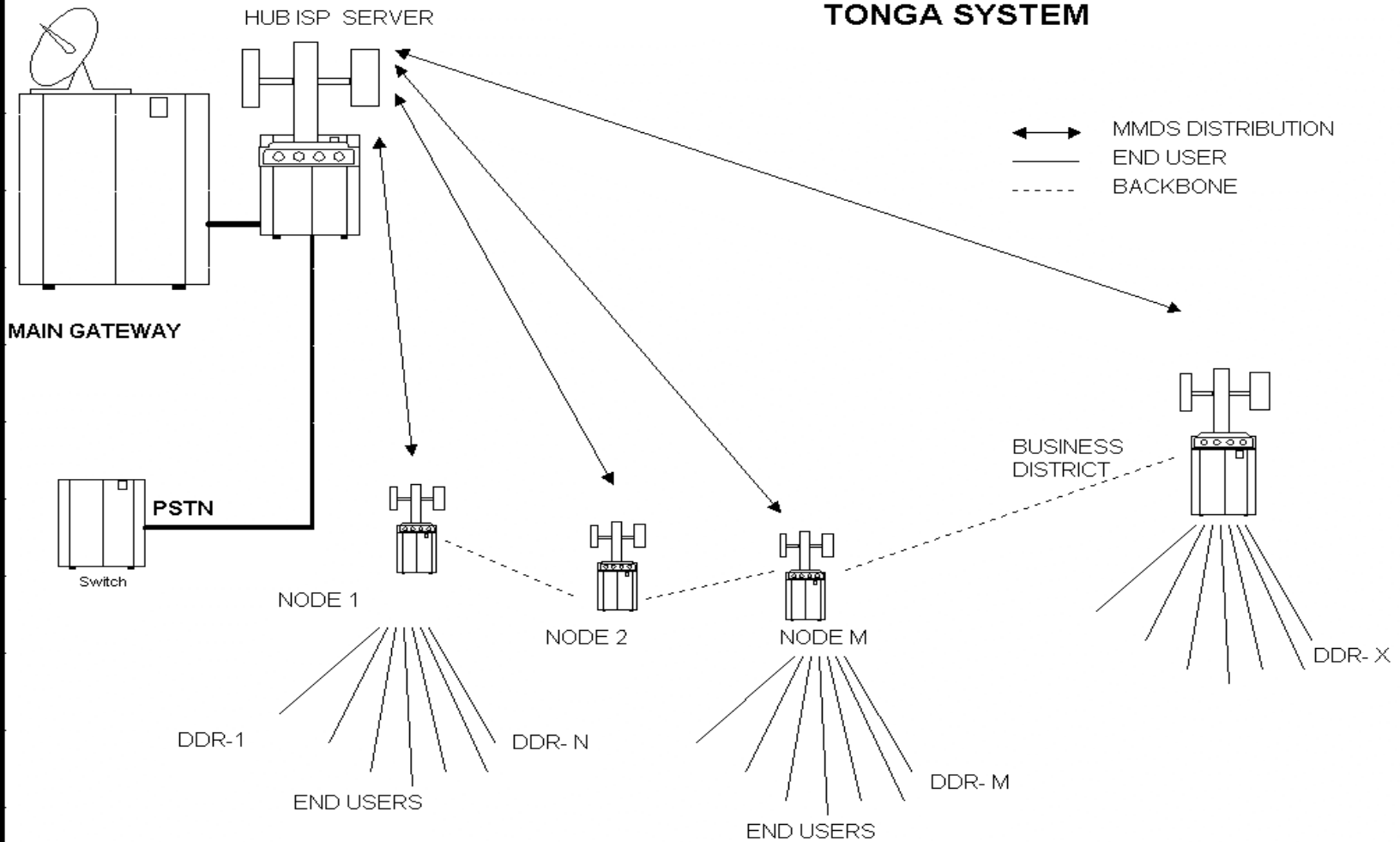 - Playstation II
- Goal of CPE cost of about $450

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Services

- VoIP for telephony
- Internet data
- Video
- Introduce 'Smartcard' for access to services, billing

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Kingdom of Tonga

SATELLITE HUB / VSAT

DANDIN INTEGRATED WIRELESS NETWORK
TONGA SYSTEM

HUB ISP SERVER

MMDS DISTRIBUTION
END USER
BACKBONE

MAIN GATEWAY

PSTN

Switch

NODE 1

NODE 2

NODE M

BUSINESS DISTRICT

DDR-1

DDR- N

DDR- M

DDR- X

END USERS

END USERS

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AN-MSI Project

- NSF and EDUCAUSE effort
- Deploy pilot projects in Tribal Lands
- Use similar architecture and technologies as in Tonga
- Adapt to US regulatory environment
- Innovative use of two-way satellite and terrestrial wireless

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Questions?

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