

Location Name Service (LNS) DRAFT 2012-04-14 17:25:00

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A. LNS VOCABULARY

A. 1. LNS Mobile

A physical, portable computer such as a smart mobile phone that can send a virtual or current physical Location (Latitude, Longitude, Altitude) and Cardinal Direction via a defined protocol over HTTP/1.1 in a TCP/IP-based network connection to an LNS Server.

A. 2. LNS Server

A logical server computer such as a "1U rack" with CPU, RAM and disk, virtual memory, a process that acts on input variables and processes this information in virtual memory, and a process that returns information to a Device when the input parameters triggers an Action based on the logical rules programmed by an Agency.

A. 3. LNS Device

A physical sensor output device such as a television screen, audio speaker, or an input device such as a video or audio recorder that receives information from a Server and that executes an Action that is recognisable by the Mobile.

A. 4. LNS Action

An event that is triggered by pre-programmed rules that is based on input sensor parameters from a Mobile sent to a Server over TCP/IP network, processed by the Server and sent to a Device over TCP/IP network to execute something that is recognisable to the Mobile.

A. 5. LNS Agency

Auto-algorithm writer or programmers that is using the System to write programs that uses the elements in the System to trigger Action on a Device recognized by the Mobile.

A. 6. LNS Ask

A provider of material, virtual or gratis products available for sale in the moment when a Action was triggered on a Device to a Mobile.

A. 7. LNS Bid

A bidder of an Action that triggers an Action on a Device.

A. 8. LNS Match

Occurs when an Agency has programmed a rule that triggers an Action for a Seller by Bidder on a Device recognizable to Mobile that agrees to buy from the Seller.

B. LNS PROCESSES

B. 1. LNS Mobile

The primary input sensor moving in space, direction and time and that provides sensor output parameters to the Server such as

Output Variables to Server.

: ipaddress

Example output values: ("129.1.178.188")

: sessionid

Example output values: ("elec37ec-b326-464d-8993-cbc9bf657ce4")

: GPS Latitude

Example output values: ("10.362")

: GPS Longitude

Example output values: ("32.102")

: GPS Altitude

Example output values: ("0", "5m", "10m", "15m", "500m", "3000m", "10000m")

: Cardinal direction Example output values:

("North", "NorthEast", "NorthWest", "South", "SouthEast", "SouthWest", "E", "W")

B. 2. LNS Server

The Server is the input request and response engine that processes input sensor parameters from Mobile and outputs a response to the Device based on logical Action event triggers programmed by the Agency, and sends the Action event trigger to the Device.

B. 2. a. LNS Time Server <-> Mobile/Device

The System Time is UTC and Server request and Response is logged.

B. 2. b. LNS Connection Server <-> Mobile

Example:

Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State
tcp	0	0	lns-server:80	129.01-178-188.mobile:62	ESTABLISHED

B. 2. c. LNS Connection Server <-> Device

Example:

Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State
tcp	0	0	lns-server:80	211.90-149-168.device:62	ESTABLISHED

B. 2. d. LNS Input Handler Server Process

Example:

```
lnsd 2670 0.0 0.1 24616 5132 pts/1 Ss 23:31 0:00 lns-mobile-handler
```

B. 2. e. LNS Output Handler Server Process

Example:

```
lnsd 2671 0.0 0.1 24616 5132 pts/1 Ss 23:31 0:00 lns-device-handler
```

B. 2. f. LNS Output Handler Server Process

The Server Input Process logs incoming input sensor from a Mobile parameters and the Actions.

The Server will use pre-computed approximation tables such as the following.

Example:

```
Apr 13 22:40:55 lns-mobile-handle:In("129.1.178.188,10.362,32.102,5,NW")
: physical distance between Mobile and Device
: cardinal direction ("North","South","East","West")
  between Mobile and Device
```

B. 2. g. LNS Output Handler Server Process

```
Apr 13 22:40:55 lns-device-handler
Apr 13 22:40:55 Action "CB_LCD_42_NW" "15s" "htc-NO.avi"
```

B. 3. LNS Device

The Device is the output sensor that provides an Action recognizable to the Mobile based on input parameters processed by the Server by pre-programmed logic based on

latitude, longitude, compass direction, distance between mobile and device

The Device is the output sensor in the system.

The Device can be an audio/video output device or input device

B. 4. LNS Action

The Action is measured in seconds and is the information provided on the Device if the Mobile is near and the Mobile has approved that about the Mobile

latitude, longitude, compass direction

B. 5. LNS Agency

The agency is the programmed system operators that returns output sensors to the device based on input sensor parameters from the mobile

B. 6. LNS Ask

B. 7. LNS Bid

B. 8. LNS Match

C. PROTOCOL

- 1. Virtual Location MAP COORDINATES
- 2. Current Location GPS COORDINATES

C. 1: LOCATION NAME SERVICE SESSION Mobile -> Server

Mobile starts a LNS/1.0 protocol session to the Server over HTTP/1.1

C. 1. 1. LNS/1.0 INITIAL SESSION

```
GET http://lms.geopher.com/initial?
  sessionid=7432c77d-ba07-4e1c-85a4-9c8ae0e6bcf7&
  lat=62.12345&
  lng=15.12345 HTTP/1.1
```

```
GET Variables
  sessionid 7432c77d-ba07-4e1c-85a4-9c8ae0e6bcf7
  latitude 62.12345
  longitude 15.12345
```

C. 1. 2. LNS/1.0 INITIAL SESSION

```
GET http://lms.geopher.com/initial?
  sessionid=e52784e4-2b5b-4f2e-8b20-de21262eb21b&
  lat=62&
  lng=15 HTTP/1.1
```

```
GET Variables
  sessionid e52784e4-2b5b-4f2e-8b20-de21262eb21b
  latitude 62
  longitude 15
```

C. 2: LOCATION NAME SERVICE DISCOVERY Server -> Mobile

GET http://lms.geopher.com/discovery?

GET Variables

LOCATION	NAME	DEVICE	SERVICE	RESOLUTION	PRICE	PERIOD	DURATION
62.01,15.01	dno_hall_screen	screen	commercial	1080p			
62.02,15.02	dno_hall_cinema	cinema	public	720p			
62.03,15.03	kalles_phone	phone	private	720p	1 USD	201204	00:00:15
62.04,15.04	vg.no	website	commerce	1080p			
62.05,15.05	army.mil	screen	military	1080p			
62.06,15.06	whitehouse.gov	screen	government	1080p			
62.07,15.07	platekompaniet	audio	streaming	320kbps	50NOK	always	03:56:00
62.08,15.08	oslospektrum	ticket	event	frontrow	99NOK	201204	03:00:00

C. 3: LOCATION NAME SERVICE NEGOTIATION Mobile -> Server

```
GET http://lms.geopher.com/negotiate?
  sessionid=e52784e4-2b5b-4f2e-8b20-de21262eb21b&
  lat=62.12345&
  lng=15.12345
```

```
GET Variables
  budget_from 10USD
  budget_to 99USD
  target private
```

GET [http://lms.geopher.com/negotiate?](http://lms.geopher.com/negotiate?sessionid=e52784e4-2b5b-4f2e-8b20-de21262eb21b&lat=62&lng=15)
sessionid=e52784e4-2b5b-4f2e-8b20-de21262eb21b&
lat=62&
lng=15 HTTP/1.1

GET Variables
budget_from 10USD
budget_to 99USD
target private

C. 4: LOCATION NAME SERVICE AVAILABILITY Server -> Mobile

C. 4. 1. LMS/1.0 AVAILABLE

GET http://lms.geopher.com/available/?name=dno_hall_screen

GET Variables

C. 4. 2. LMS/1.0 AVAILABLE

#	62.0000,15.0000	dno_taket	AVAILABLE	TICKET	SPACE
#	62.0011,15.0019	dno_rad_1_plass_9	AVAILABLE	TICKET	SEAT
#	62.0000,15.0000	dno_hall	AVAILABLE	TICKET	EVENT
#	62.0010,15.0020	dno_reception	AVAILABLE	TICKET	JOB

C. 5: LOCATION NAME SERVICE RESERVATION Mobile -> Server

GET <http://lms.geopher.com/reserve>

C. 6: LOCATION NAME SERVICE ACCEPTANCE Server -> Mobile

GET <http://lms.geopher.com/accept>

C. 7: LOCATION NAME SERVICE DELIVERY Server -> Device

GET <http://lms.geopher.com/deliver>

C. 8: LOCATION NAME SERVICE RECEIPT Device -> Server

GET <http://lms.geopher.com/receipt>

D. 1. LNS Data Format

LOCATION	NAME	DESC	DEVICE	SERVICE	QUALITY	DURATION	BID	ASK	AVAIL
float,float	string	string	string	string	string	interval	float	float	boolean

D. 2. LNS Data Example

Example Values (Not Exhaustive)

LOCATION	NAME	DESC	DEVICE	SERVICE	QUALITY	DURATION	BID	ASK	AVAILABILITY
lat,lng	dno_hall	Stage	screen	?	?	00:00:15	\$	\$	True
lat,lng	dno_film	Cinema	cinema	?	?	03:00:00	\$	\$	False
lat,lng	kalles_p	Phone	phone	?	?	01:00:00	\$	\$	True
lat,lng	www.vg.no	VG nett	advert	?	?	01:00:00	\$	\$	True
lat,lng	army.mil	Website	video	?	?	01:00:00	\$	\$	False
lat,lng	filmweb	Cinema	video	?	?	00:01:23	\$	\$	True
lat,lng	platekom	Retail	audio	?	?	03:56:00	\$	\$	True
lat,lng	oslospekt	Stage	ticket	?	?	03:00:00	\$	\$	False
lat,lng	dnbnor	Estate	dorm	?	?	03:00:00	\$	\$	False

D. 3. LNS Data Import

D. 4. LNS Data Export

D. 5. LNS Data Expire

E. APPLICATIONS

E. 1. LNS Mobile Session Initiation

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