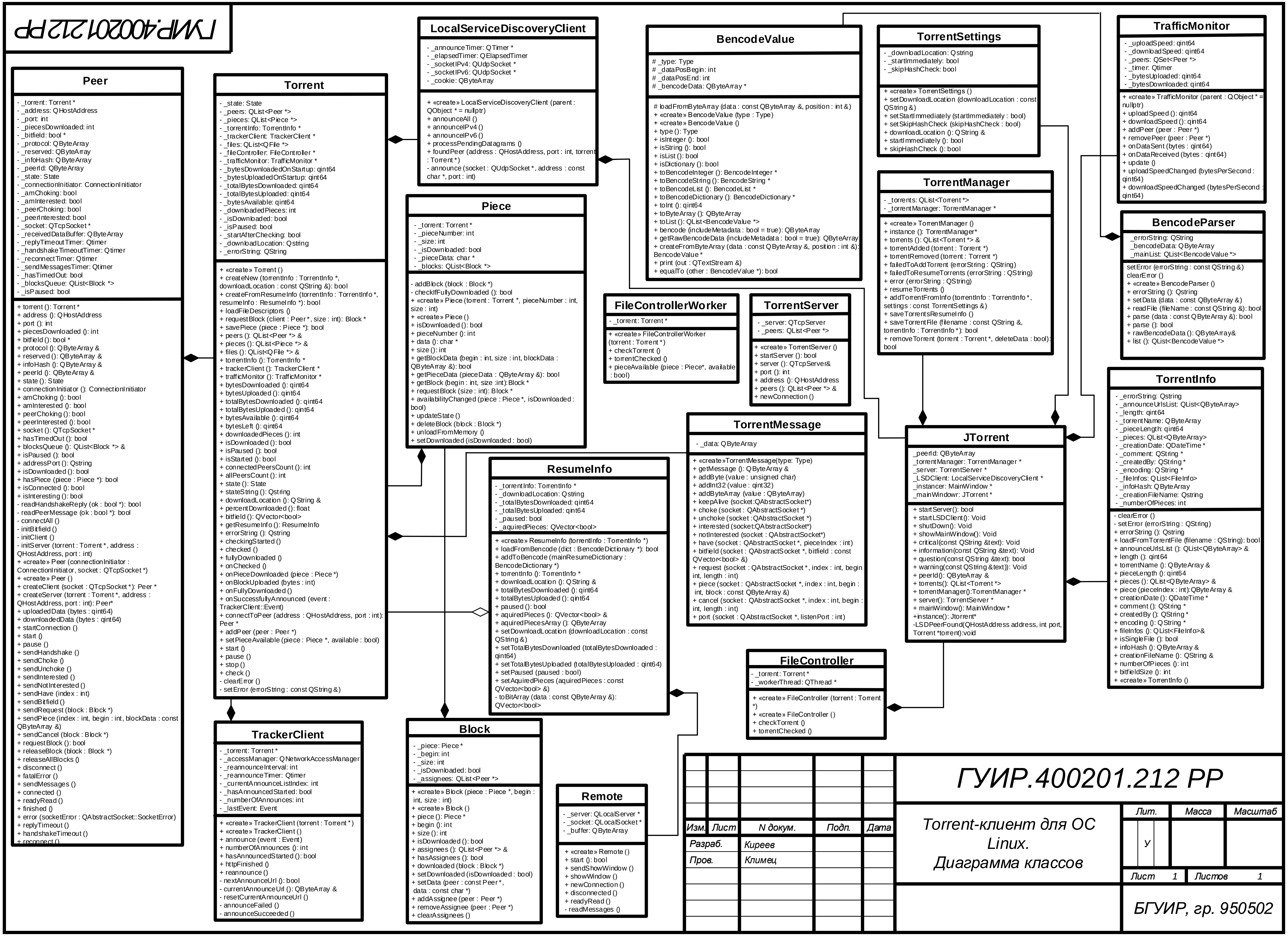
ГУИР.400201.212 РР



Peer

- _torrent: Torrent *
- _address: QHostAddress
- _port: int
- _piecesDownloaded: int
- _bitfield: bool *
- _protocol: QByteArray
- _reserved: QByteArray
- _infoHash: QByteArray
- _peerId: QByteArray
- _state: State
- _connectionInitiator: ConnectionInitiator
- _amChoking: bool
- _amInterested: bool
- _peerChoking: bool
- _peerInterested: bool
- _socket: QTcpSocket *
- _receivedDataBuffer: QByteArray
- _replyTimeoutTimer: Qtimer
- _handshakeTimeoutTimer: Qtimer
- _reconnectTimer: Qtimer
- _sendMessagesTimer: Qtimer
- _hasTimedOut: bool
- _blocksQueue: QList<Block *>
- _isPaused: bool

```
+ torrent (): Torrent *
+ address (): QHostAddress
+ port (): int
+ piecesDownloaded (): int
+ bitfield (): bool *
+ protocol (): QByteArray &
+ reserved (): QByteArray &
+ infoHash (): QByteArray &
+ peerId (): QByteArray &
+ state (): State
+ connectionInitiator (): ConnectionInitiator
+ amChoking (): bool
+ amInterested (): bool
+ peerChoking (): bool
+ peerInterested (): bool
+ socket (): QTcpSocket *
+ hasTimedOut (): bool
+ blocksQueue (): QList<Block *> &
+ isPaused (): bool
+ addressPort (): Qstring
+ isDownloaded (): bool
+ hasPiece (piece : Piece *): bool
+ isConnected (): bool
+ isInteresting (): bool
- readHandshakeReply (ok : bool *): bool
- readPeerMessage (ok : bool *): bool
- connectAll ()
- initBitfield ()
- initClient ()
- initServer (torrent : Torrent *, address : QHostAddress, port : int)
+ «create» Peer (connectionInitiator : ConnectionInitiator, socket : QTcpSocket *)
+ «create» Peer ()
+ createClient (socket : QTcpSocket *): Peer *
+ createServer (torrent : Torrent *, address : QHostAddress, port : int): Peer*
+ uploadedData (bytes : qint64)
+ downloadedData (bytes : qint64)
+ startConnection ()
+ start ()
+ pause ()
+ sendHandshake ()
+ sendChoke ()
+ sendUnchoke ()
+ sendInterested ()
+ sendNotInterested ()
+ sendHave (index : int)
+ sendBitfield ()
+ sendRequest (block : Block *)
+ sendPiece (index : int, begin : int, blockData : const QByteArray &)
+ sendCancel (block : Block *)
+ requestBlock (): bool
+ releaseBlock (block : Block *)
+ releaseAllBlocks ()
+ disconnect ()
+ fatalError ()
+ sendMessages ()
+ connected ()
+ readyRead ()
+ finished ()
+ error (socketError : QAbstractSocket::SocketError)
+ replyTimeout ()
+ handshakeTimeout ()
+ reconnect ()
```

Torrent

```
- _state: State
- _peers: QList<Peer *>
- _pieces: QList<Piece *>
- _torrentInfo: TorrentInfo *
- _trackerClient: TrackerClient *
- _files: QList<QFile *>
- _fileController: FileController *
- _trafficMonitor: TrafficMonitor *
- _bytesDownloadedOnStartup: qint64
- _bytesUploadedOnStartup: qint64
- _totalBytesDownloaded: qint64
- _totalBytesUploaded: qint64
- _bytesAvailable: qint64
- _downloadedPieces: int
- _isDownloaded: bool
- _isPaused: bool
- _startAfterChecking: bool
- _downloadLocation: Qstring
- _errorString: QString
```

```
+ «create» Torrent ()
+ createNew (torrentInfo : TorrentInfo *, downloadLocation : const QString &): bool
+ createFromResumeInfo (torrentInfo : TorrentInfo *, resumeInfo : ResumeInfo *): bool
+ loadFileDescriptors ()
+ requestBlock (client : Peer *, size : int): Block *
+ savePiece (piece : Piece *): bool
+ peers (): QList<Peer *> &
+ pieces (): QList<Piece *> &
+ files (): QList<QFile *> &
+ torrentInfo (): TorrentInfo *
+ trackerClient (): TrackerClient *
+ trafficMonitor (): TrafficMonitor *
+ bytesDownloaded (): qint64
+ bytesUploaded (): qint64
+ totalBytesDownloaded (): qint64
+ totalBytesUploaded (): qint64
+ bytesAvailable (): qint64
+ bytesLeft (): qint64
+ downloadedPieces (): int
+ isDownloaded (): bool
+ isPaused (): bool
+ isStarted (): bool
+ connectedPeersCount (): int
+ allPeersCount (): int
+ state (): State
+ stateString (): Qstring
+ downloadLocation (): QString &
+ percentDownloaded (): float
+ bitfield (): QVector<bool>
+ getResumeInfo (): ResumeInfo
+ errorString (): Qstring
+ checkingStarted ()
+ checked ()
+ fullyDownloaded ()
+ onChecked ()
+ onPieceDownloaded (piece : Piece *)
+ onBlockUploaded (bytes : int)
+ onFullyDownloaded ()
+ onSuccessfullyAnnounced (event : TrackerClient::Event)
+ connectToPeer (address : QHostAddress, port : int): Peer *
+ addPeer (peer : Peer *)
+ setPieceAvailable (piece : Piece *, available : bool)
+ start ()
+ pause ()
+ stop ()
+ check ()
- clearError ()
- setError (errorString : const QString &)
```

TrackerClient

```
- _torrent: Torrent *
- _accessManager: QNetworkAccessManager
- _reannounceInterval: int
- _reannounceTimer: Qtimer
- _currentAnnounceListIndex: int
- _hasAnnouncedStarted: bool
- _numberOfAnnounces: int
- _lastEvent: Event
```

```
+ «create» TrackerClient (torrent : Torrent *)
+ «create» TrackerClient ()
+ announce (event : Event)
+ numberOfAnnounces (): int
+ hasAnnouncedStarted (): bool
+ httpFinished ()
+ reannounce ()
- nextAnnounceUrl (): bool
- currentAnnounceUrl (): QByteArray &
- resetCurrentAnnounceUrl ()
- announceFailed ()
- announceSucceeded ()
```

LocalServiceDiscoveryClient

```
- _announceTimer: QTimer *
- _elapsedTimer: QElapsedTimer
- _socketIPv4: QUdpSocket *
- _socketIPv6: QUdpSocket *
- _cookie: QByteArray
```

```
+ «create» LocalServiceDiscoveryClient (parent : QObject * = nullptr)
+ announceAll ()
+ announceIPv4 ()
+ announceIPv6 ()
+ processPendingDatagrams ()
+ foundPeer (address : QHostAddress, port : int, torrent : Torrent *)
- announce (socket : QUdpSocket *, address : const char *, port : int)
```

Piece

```
- _torrent: Torrent *
- _pieceNumber: int
- _size: int
- _isDownloaded: bool
- _pieceData: char *
- _blocks: QList<Block *>
```

```
- addBlock (block : Block *)
- checkIfFullyDownloaded (): bool
+ «create» Piece (torrent : Torrent *, pieceNumber : int, size : int)
+ «create» Piece ()
+ isDownloaded (): bool
+ pieceNumber (): int
+ data (): char *
+ size (): int
+ getBlockData (begin : int, size : int, blockData : QByteArray &): bool
+ getPieceData (pieceData : QByteArray &): bool
+ getBlock (begin : int, size :int): Block *
+ requestBlock (size : int): Block *
+ availabilityChanged (piece : Piece *, isDownloaded : bool)
+ updateState ()
+ deleteBlock (block : Block *)
+ unloadFromMemory ()
+ setDownloaded (isDownloaded : bool)
```

Block

```
- _piece: Piece *
- _begin: int
- _size: int
- _isDownloaded: bool
- _assignees: QList<Peer *>
```

```
+ «create» Block (piece : Piece *, begin : int, size : int)
+ «create» Block ()
+ piece (): Piece *
+ begin (): int
+ size (): int
+ isDownloaded (): bool
+ assignees (): QList<Peer *> &
+ hasAssignees (): bool
+ downloaded (block : Block *)
+ setDownloaded (isDownloaded : bool)
+ setData (peer : const Peer *, data : const char *)
+ addAssignee (peer : Peer *)
+ removeAssignee (peer : Peer *)
+ clearAssignees ()
```

ResumeInfo

```
- _torrentInfo: TorrentInfo *
- _downloadLocation: Qstring
- _totalBytesDownloaded: qint64
- _totalBytesUploaded: qint64
- _paused: bool
- _aquiredPieces: QVector<bool>
```

```
+ «create» ResumeInfo (torrentInfo : TorrentInfo *)
+ loadFromBencode (dict : BencodeDictionary *): bool
+ addToBencode (mainResumeDictionary : BencodeDictionary *)
+ torrentInfo (): TorrentInfo *
+ downloadLocation (): QString &
+ totalBytesDownloaded (): qint64
+ totalBytesUploaded (): qint64
+ paused (): bool
+ aquiredPieces (): QVector<bool> &
+ aquiredPiecesArray (): QByteArray
+ setDownloadLocation (downloadLocation : const QString &)
+ setTotalBytesDownloaded (totalBytesDownloaded : qint64)
+ setTotalBytesUploaded (totalBytesUploaded : qint64)
+ setPaused (paused : bool)
+ setAquiredPieces (aquiredPieces : const QVector<bool> &)
- toBitArray (data : const QByteArray &): QVector<bool>
```

Remote

```
- _server: QLocalServer *
- _socket: QLocalSocket *
- _buffer: QByteArray
```

```
+ «create» Remote ()
+ start (): bool
+ sendShowWindow ()
+ showWindow ()
+ newConnection ()
+ disconnected ()
+ readyRead ()
- readMessages ()
```

BencodeValue

```
# _type: Type
# _dataPosBegin: int
# _dataPosEnd: int
# _bencodeData: QByteArray *
```

```
# loadFromByteArray (data : const QByteArray &, position : int &)
+ «create» BencodeValue (type : Type)
+ «create» BencodeValue ()
+ type (): Type
+ isInteger (): bool
+ isString (): bool
+ isList (): bool
+ isDictionary (): bool
+ toBencodeInteger (): BencodeInteger *
+ toBencodeString (): BencodeString *
+ toBencodeList (): BencodeList *
+ toBencodeDictionary (): BencodeDictionary *
+ toInt (): qint64
+ toByteArray (): QByteArray
+ toList (): QList<BencodeValue *>
+ bencode (includeMetadata : bool = true): QByteArray
+ getRawBencodeData (includeMetadata : bool = true): QByteArray
+ createFromByteArray (data : const QByteArray &, position : int &): BencodeValue *
+ print (out : QTextStream &)
+ equalTo (other : BencodeValue *): bool
```

FileControllerWorker

```
- _torrent: Torrent *
```

```
+ «create» FileControllerWorker (torrent : Torrent *)
+ checkTorrent ()
+ torrentChecked ()
+ pieceAvailable (piece : Piece*, available : bool)
```

TorrentServer

```
- _server: QTcpServer
- _peers: QList<Peer *>
```

```
+ «create» TorrentServer ()
+ startServer (): bool
+ server (): QTcpServer&
+ port (): int
+ address (): QHostAddress
+ peers (): QList<Peer *> &
+ newConnection ()
```

TorrentMessage

```
- _data: QByteArray
```

```
+ «create»TorrentMessage(type: Type)
+ getMessage (): QByteArray &
+ addByte (value : unsigned char)
+ addInt32 (value : qint32)
+ addByteArray (value : QByteArray)
+ keepAlive (socket:QAbstractSocket*)
+ choke (socket : QAbstractSocket *)
+ unchoke (socket : QAbstractSocket *)
+ interested (socket:QAbstractSocket*)
+ notInterested (socket : QAbstractSocket*)
+ have (socket : QAbstractSocket *, pieceIndex : int)
+ bitfield (socket : QAbstractSocket *, bitfield : const QVector<bool> &)
+ request (socket : QAbstractSocket *, index : int, begin int, length : int)
+ piece (socket : QAbstractSocket *, index : int, begin : int, block : const QByteArray &)
+ cancel (socket : QAbstractSocket *, index : int, begin : int, length : int)
+ port (socket : QAbstractSocket *, listenPort : int)
```

FileController

```
- _torrent: Torrent *
- _workerThread: QThread *
```

```
+ «create» FileController (torrent : Torrent *)
+ «create» FileController ()
+ checkTorrent ()
+ torrentChecked ()
```

TorrentSettings

```
- _downloadLocation: Qstring
- _startImmediately: bool
- _skipHashCheck: bool
```

```
+ «create» TorrentSettings ()
+ setDownloadLocation (downloadLocation : const QString &)
+ setStartImmediately (startImmediately : bool)
+ setSkipHashCheck (skipHashCheck : bool)
+ downloadLocation (): QString &
+ startImmediately (): bool
+ skipHashCheck (): bool
```

TorrentManager

```
- _torrents: QList<Torrent *>
- _torrentManager: TorrentManager *
```

```
+ «create» TorrentManager ()
+ instance (): TorrentManager*
+ torrents (): QList<Torrent *> &
+ torrentAdded (torrent : Torrent *)
+ torrentRemoved (torrent : Torrent *)
+ failedToAddTorrent (errorString : QString)
+ failedToResumeTorrents (errorString : QString)
+ error (errorString : QString)
+ resumeTorrents ()
+ addTorrentFromInfo (torrentInfo : TorrentInfo *, settings : const TorrentSettings &)
+ saveTorrentsResumeInfo ()
+ saveTorrentFile (filename : const QString &, torrentInfo : TorrentInfo *): bool
+ removeTorrent (torrent : Torrent *, deleteData : bool): bool
```

JTorrent

```
_peerId: QByteArray
_torrentManager: TorrentManager *
_server: TorrentServer *
_LSDClient: LocalServiceDiscoveryClient *
_instancer: MainWindow *
_mainWindowr: JTorrent *
```

```
+ startServer(): bool
+ startLSDClient(): Void
+ shutDown(): Void
+ showMainWindow(): Void
+ critical(const QString &text): Void
+ information(const QString &text): Void
+ question(const QString &text): bool
+ warning(const QString &text)): Void
+ peerId(): QByteArray &
+ torrents(): QList<Torrent *>
+ torrentManager():TorrentManager *
+ server(): TorrentServer *
+ mainWindow(): MainWindow *
+instance(): Jtorrent*
-LSDPeerFound(QHostAddress address, int port, Torrent *torrent):void
```

TrafficMonitor

```
- _uploadSpeed: qint64
- _downloadSpeed: qint64
- _peers: QSet<Peer *>
- _timer: Qtimer
- _bytesUploaded: qint64
- _bytesDownloaded: qint64
```

```
+ «create» TrafficMonitor (parent : QObject * = nullptr)
+ uploadSpeed (): qint64
+ downloadSpeed (): qint64
+ addPeer (peer : Peer *)
+ removePeer (peer : Peer *)
+ onDataSent (bytes : qint64)
+ onDataReceived (bytes : qint64)
+ update ()
+ uploadSpeedChanged (bytesPerSecond : qint64)
+ downloadSpeedChanged (bytesPerSecond : qint64)
```

BencodeParser

```
_errorString: QString
_bencodeData: QByteArray
_mainList: QList<BencodeValue *>
```

```
setError (errorString : const QString &)
clearError ()
+ «create» BencodeParser ()
+ errorString (): Qstring
+ setData (data : const QByteArray &)
+ readFile (fileName : const QString &): bool
+ parse (data : const QByteArray &): bool
+ parse (): bool
+ rawBencodeData (): QByteArray&
+ list (): QList<BencodeValue *>
```

TorrentInfo

```
- _errorString: Qstring
- _announceUrlsList: QList<QByteArray>
- _length: qint64
- _torrentName: QByteArray
- _pieceLength: qint64
- _pieces: QList<QByteArray>
- _creationDate: QDateTime *
- _comment: QString *
- _createdBy: QString *
- _encoding: QString *
- _fileInfos: QList<FileInfo>
- _infoHash: QByteArray
- _creationFileName: Qstring
- _numberOfPieces: int
```

```
- clearError ()
- setError (errorString : QString)
+ errorString (): Qstring
+ loadFromTorrentFile (filename : QString): bool
+ announceUrlsList (): QList<QByteArray> &
+ length (): qint64
+ torrentName (): QByteArray &
+ pieceLength (): qint64
+ pieces (): QList<QByteArray> &
+ piece (pieceIndex : int):QByteArray &
+ creationDate (): QDateTime *
+ comment (): QString *
+ createdBy (): QString *
+ encoding (): QString *
+ fileInfos (): QList<FileInfo>&
+ isSingleFile (): bool
+ infoHash (): QByteArray &
+ creationFileName (): QString &
+ numberOfPieces (): int
+ bitfieldSize (): int
+ «create» TorrentInfo ()
```

Изм.	Лист	N докум.	Подп.	Дата
Разраб.		Киреев		
Пров.		Климец		

ГУИР.400201.212 РР

Torrent-клиент для ОС Linux.
Диаграмма классов

Лит.	Масса	Масштаб
У		

Лист 1 Листов 1

БГУИР, гр. 950502