CLAIMS:

~~1. A modular housing system comprises a structural framework comprising an internal chassis as a core structural element, the internal chassis including:~~

~~a first ladder frame that defines a base;~~

~~four columns at least two being extendable columns; and~~

~~a second ladder frame engaged to the first ladder frame via the four extendable columns, such that at least one of a distance and an angle between the first ladder frame and the second ladder frame is adjustable to define a usable volume of the structural framework.~~

~~2. The modular housing system of claim 1, wherein the structural framework further comprises an external chassis having:~~

~~a lower member and an upper member defining a plane;~~

~~a pair of columns each engaged with each of the lower member and upper member to form a peripheral frame; and~~

~~a plurality of cross-beams perpendicularly bisecting the plane of the peripheral frame,~~

~~wherein the peripheral frame is disposed apart from the internal chassis by the plurality of cross-beams, thereby increasing the usable volume of the structural framework.~~

~~3. The modular housing system of claim 1 or claim 2, further comprising at least one exterior wall and a roof supported on at least one of the internal chassis and the external chassis.~~

~~4. The modular housing system of any one of claims 1 to 3, wherein at least one of the first ladder frame and the second ladder frame include support members that extend across the frame.~~

~~5. The modular housing system of claim 4, wherein the support members include any one of plates, beams, box-sections and a reinforcement mesh.~~

~~6. The modular housing system of claim 1, wherein the first ladder frame is pivotally engaged to each of a first pair and a second pair of extendable~~

columns, such that the columns are rotatable between a transport configuration where the columns are substantially parallel to the first ladder frame and an operative configuration where the columns are substantially perpendicular to the first ladder frame.

7. The modular housing system of claim 1, wherein the second ladder frame is pivotally engaged to each of a first pair and a second pair of extendable columns to enable rotation of the second ladder frame in response to an unequal extension of the first pair of extendable columns relative to the second pair of extendable columns, maintaining engagement between the first and second ladder frame.

8. The modular housing system of claim 1, wherein a first pair of extendable columns is pivotally engaged to the second ladder frame at a first pivot level and a second pair of extendable columns are pivotally mounted to the second ladder frame at a second pivot level, having a distance h between the first pivot level and the second pivot level and a distance x between the first and second pair of extendable columns that defines a maximum inclination angle θ of the second ladder frame, as: Sin θ = distance h / distance x

9. A modular housing system, comprises a structural framework comprising an internal chassis as a core structural element, the internal chassis including;

a first ladder frame defining a base;

four extendable columns engaged to the first ladder frame;

a second ladder frame engaged to the first ladder frame via the four extendable columns; and

an intermediary ladder frame, engaged with each of the four extendable columns and disposed between the first ladder frame and the second ladder frame, such that a first distance between the first ladder frame and the intermediary ladder frame is adjustable, and a second distance between the intermediary ladder frame and the second ladder frame is adjustable to define a usable volume of the structural framework.

10. The modular housing system of claim 9, wherein the structural framework further comprises an external chassis having:

a lower member and an upper member and an intermediary member defining a common plane;

a pair of columns each engaged with the lower member, upper member and intermediary member to form a peripheral frame; and

a plurality of cross-beams perpendicularly intersecting the common plane of the peripheral frame,

wherein the peripheral frame is disposed apart from the internal chassis by the plurality of cross-beams, thereby increasing the usable volume of the structural framework.

11. The modular housing system of claim 2 or claim 10, comprising a plurality of external chassis arranged around at least one internal chassis such that the at least one internal chassis forms a core and each of the plurality of external chassis is in contact with at least one internal chassis.

12. The modular housing system of claim 2 or claim 10, wherein the internal chassis; the external chassis; and the plurality of extendable columns are packaged as a kit for transportation within a pair of end frames, the kit having the substantial dimensions of a shipping container.

13. The modular housing system of claim 12, wherein the pair of end frames comprise ISO corner castings.

14. The modular housing system of claim 12, wherein the kit further comprises, cross-beams, and roof members for engagement with the internal and external chassis.

15. A self-jacking column, comprising:

a first hollow member and a second hollow member, wherein the second hollow member is dimensioned to sit within the first hollow member providing the column with a retracted mode in which the second hollow member is substantially disposed within the first hollow member, and an extended mode in which the second member substantially extends outwardly from the first hollow member; and

a driver for driving movement of the second member relative to the first hollow member,

wherein in the retracted mode the driver is packaged substantially within the second hollow member, within the first hollow member.

16. The column of claim 15, wherein each of the first hollow member and the second hollow member comprises an upper and a lower portion, such that the upper and lower portions of the first hollow member are in contact, and the upper and lower portions of the second hollow member are in contact, when the column is in the retracted mode.

17. The column of claim 15 or claim 16, wherein the driver comprises an elongate member housed within the second hollow member when the extendable column is in the retracted mode.

18. The column of any one of claims 15 to 17, wherein the driver provides a series of teeth or a continuous thread therealong to cooperatively engage with a driving mechanism.

19. The column of claim 18, wherein the driving mechanism comprises one of a ratchet, a worm gear, a jack and an epicyclic gear set, which in cooperation with the teeth or thread of the driver moves the extendable column between the retracted mode and the extended mode.

20. A self-jacking column for engaging a column with a foundation, comprising:

a hollow support column;

a shaft rotatably mounted within the support column; and

a cutting member engageable at a first end of the shaft,

wherein rotating motion of the shaft relative to the support column drives the cutting member into the foundation thereby drawing the shaft and attached support column towards the foundation.

21. The column of claim 20, wherein the cutting member comprises a circular flange; or the cutting member comprises a helical thread.

22. The column of claim 20 or claim 21, wherein the shaft includes a first end oriented towards the foundation, the first end terminating in a conical tip; and a second end, opposing the first end, the second end configured to receive a driving mechanism to rotate the shaft.

23. The column of any one of claims 20 to 22, wherein the driving mechanism comprises one of: a motor for rotating the shaft within the support column; a hydraulic actuator to rotate the shaft within the support column; and a handle for manually rotating the shaft within the support column.

24. An adjustable pile mount, comprising:

a load distribution member having an aperture therethrough and a substantially planar first surface;

a locking plate having a substantially planar second surface, co-axially aligned with the load distribution member and configured such that the planar first surface of the load distribution member is in contact with the planar second surface of the locking plate; and

a connector that engages the locking plate to a pile through the aperture within the load distribution member,

wherein tensioning the connector draws the locking plate towards the pile and produces a clamping force between the locking plate and the load distribution member along the longitudinal axis of the connector, such that the load distribution member is free to move relative to the pile, locking plate and connector, in a plane that perpendicularly bisects the connector.

25. A method of erecting a modular house having a structural framework, the framework comprising an internal chassis as a core structural element, the method comprising the steps:

(a) determining a configuration of modular house to be constructed;

(b) selecting a number of internal chassis and external chassis to provide structure for the configuration of house to be erected, the or each internal chassis having a first ladder frame that defines a base and a second ladder frame; and

(c) arranging and subsequently interconnecting each external chassis to at least one internal chassis using a plurality of cross-beams, the or each

external chassis having a lower member and an upper member defining a plane and a pair of columns each engaged with each of the lower member and upper member to form a peripheral frame.

26. The method of erecting a modular house of claims 25, further comprising at least one of the following steps:

(d) filing the or each first ladder frame of the or each internal chassis with a pourable substrate to form a structural floor to the modular house

(e) affixing a roof panel to each of the at least one internal chassis;

(f) extending a plurality of extendable columns, disposed between the first ladder frame and the second ladder frame of each internal chassis, to raise the second ladder frame above and in alignment with the first ladder frame;

(g) affixing at least one exterior wall to the modular house;

(h) securing a plurality of extendable columns into a foundation of the modular house;

(i) filling each extendable column with a pourable substrate; and

(j) inserting a reinforcement mesh into the first ladder frame, prior to introducing the pourable substrate of step (d).

27. The method of claim 26, wherein step (e) precedes step (f), such that the roof panel is affixed prior to raising the extendable columns above the first ladder frame.

28. A modular housing system having a structural framework comprising an internal chassis as a core structural element and an external chassis,

the internal chassis including:

a first ladder frame that defines a base;

four columns at least two being extendable columns; and

a second ladder frame engaged to the first ladder frame via the four extendable columns, such that at least one of a distance and an angle between the first ladder frame and the second ladder frame is adjustable to define a usable volume of the structural framework; and

the external chassis including:

a lower member and an upper member defining a plane;

a pair of columns each engaged with each of the lower member and upper member to form a peripheral frame; and

a plurality of cross-beams perpendicularly bisecting the plane of the peripheral frame,

wherein the peripheral frame is disposed apart from the internal chassis by the plurality of cross-beams, thereby increasing the usable volume of the structural framework.

29. A modular housing system comprises a structural framework comprising an internal chassis as a core structural element, the internal chassis including:

a first ladder frame that defines a base;

four columns at least two being extendable columns; and

a second ladder frame engaged to the first ladder frame via the four extendable columns, such that at least one of a distance and an angle between the first ladder frame and the second ladder frame is adjustable to define a usable volume of the structural framework,

at least two of the columns providing an offset hinge arrangement for pivotal attachment to the second ladder frame.

30. The modular housing system of claim 29, wherein the offset hinge arrangement provides a choice of pivot points to facilitate multiple set angles between the second ladder frame and the first ladder frame.

31. The modular housing system of claim 30, wherein the choice of pivot points on a first and a second column are offset in height to facilitate a maximum angle of inclination of the second ladder frame.

32. The modular housing system of any one of claims 29-31, wherein the offset hinge arrangement provides a series of locking bolt holes alignable with a portion of the second ladder frame to receive a locking member.

33. The modular housing system of any one of claims 29-32, wherein the offset hinge arrangement comprises a box section bracket providing the or a plurality of mounting holes to pivot the connection between the bracket and the column.

~~34. The modular housing system of claim 33, wherein the bracket is lockable in a desired orientation relative to the column.~~

~~35. The modular housing system of claim 33, wherein the box section bracket is affixed to the upper ladder frame using a plate bracket.~~

1. A modular housing system comprising a structural framework comprising an internal chassis as a core structural element, the internal chassis including:

a first ladder frame that defines a base; and

a second ladder frame configured to support a roof, the second ladder frame being spaced from the first ladder frame via a plurality of columns to define a usable volume of the structural framework, at least two of the columns including an offset hinge arrangement for pivotal attachment of the second ladder frame thereto,

wherein the offset hinge arrangement comprises a choice of pivot points offset from each other to facilitate multiple set angles of the second ladder frame relative to the first ladder frame.

2. The modular housing system of claim 1, comprising four columns engaged to the respective corners of the first ladder frame.

3. The modular housing system of claim 1, wherein a first pair of columns has a first length and a second pair of columns has a second length, the first length being greater than the second length to enable the modular structure to have a tilted roof profile.

4. The modular housing system of claim 1, wherein the structural framework further comprises an external chassis having:

a lower member and an upper member defining a plane;

a further pair of columns engaged with each of the lower member and upper member to form a peripheral frame; and

a plurality of cross-beams perpendicularly bisecting the plane of the peripheral frame,

wherein the peripheral frame is disposed apart from the internal chassis by the plurality of cross-beams, thereby increasing the usable volume of the structural framework.

5. The modular housing system according to claim 1, wherein the structural framework further comprises:

an intermediary ladder frame, engaged with the plurality of columns and disposed between the first ladder frame and the second ladder frame.

6. The modular housing system according to claim 1, wherein at least two of the plurality of columns are extendable columns having an adjustable length.

7. A method of erecting a modular structure, the method comprising the steps:

(a) receiving a kit comprising a first ladder frame to which a plurality of columns is pivotably coupled and a second ladder frame at a site location, wherein at least two of the columns include an offset hinge arrangement for pivotal attachment of the second ladder frame thereto;

(b) engaging the first ladder frame with a ground surface to provide a base of the structure;

(c) rotating the plurality of columns from a transport position in which each column extends parallel to the first ladder frame to an operative position in which each column is substantially perpendicular to the first ladder frame; and

(d) raising the second ladder frame into position above the first ladder frame to provide a support for a roof of the structure and

(e) choosing a tilt angle of the roof by selecting one of two pivot points of the offset hinge arrangement to which the second ladder frame is pivotably connectable, the pivot points being offset from each other to facilitate multiple set angles of the second ladder frame relative to the first ladder frame.

8. The method of erecting a modular structure of claim 7, wherein at least two of the plurality of columns are extendable columns having an adjustable length, the method comprising the further step of:

(f) adjusting the length of the extendable columns to increase a usable volume of the modular structure.

9. A kit for forming a modular structure, comprising:

(i) a first ladder frame that defines a base of the modular structure;

(ii) a plurality of columns pivotably coupled to the first ladder frame; and

(iii) a second ladder frame configured to support a roof of the modular structure, the second ladder frame being pivotably attachable to the first ladder frame via the plurality of columns;

wherein each of the columns is rotatable between a transport position in which each column is substantially parallel to the first ladder frame and an operative position in which each column is substantially perpendicular to the first ladder frame, and

wherein at least two of the columns include an offset hinge arrangement for pivotal attachment of the second ladder frame thereto, the offset hinge arrangement comprising a choice of pivot points offset from each other to facilitate multiple set angles of the second ladder frame relative to the first ladder frame.

10. The kit of claim 9, wherein the plurality of columns comprises:

a first pair of columns pivotably coupled to corners of a first end of the first ladder frame; and

a second pair of columns pivotably coupled to corners of an opposing second end of the first ladder frame;

wherein the first pair of columns have a length greater than that of the second pair of columns, thereby providing the modular structure with a tilted roof profile.

11. The kit of claim 9, wherein at least two of the plurality of columns are extendable columns having an adjustable length.

12. The kit of claim 9, wherein when in the transport position, each of the columns is nested within a footprint of the first ladder frame.

13. The kit of claim 9, wherein the second ladder frame has the same external area as the first ladder frame.

14. The kit of claim 9, further comprising a pair of end frames configured to constrain the first and second ladder frames therebetween to facilitate transport thereof.

15. The kit of claim 14, wherein the pair of end frames comprise ISO corner castings, the pair of end frames having outer dimensions to match a standard ISO shipping container.

16. The kit of claim 14, wherein the pair of end frames are configured to be incorporated into the modular structure, providing structural support thereto.