cavities in view of the nature of the framing grid and the way services are disposed and provided.

Genesis of the Invention

The genesis of the invention is the desire to provide a ceiling cavity in a building which overcomes or substantially ameliorates one or more of the disadvantages of the prior art, or to provide a useful alternative.

Summary of the Invention

According to a first aspect of the present invention there is provided a ceiling frame system comprising a plurality of frame members configured to depend from the ceiling, the frame members characterised in that one or more frame members include one or more service conduits and are configured to be interconnected to one or more other frame members to interconnect said service conduits between predetermined interconnected frame members, wherein each frame member includes a pair of longitudinally extending and parallel frame member elements each having a leg and a foot, the element legs being spaced apart by two or more cross-members disposed intermediate the legs such that the feet are oriented away from each other, the frame member configured to depend from a ceiling with the legs oriented substantially vertically and to receive over or intermediate said legs distal said feet a conduit service duct having one or more independently operable services such that the service duct is configured to allow access to the one or more services in the service duct intermediate the legs from the feet side of the frame member~~the services are accessible at~~ one or more predetermined locations along the length of each frame member.

According to a second aspect of the invention there is provided a ceiling frame member ~~configured to depend from a ceiling and including one or more service conduits extending therealong, the ceiling frame member configured to be interconnected to one or more other frame members such that services passing through the frame members in the service conduits are accessible at one or more predetermined locations along the length of each interconnected frame member.~~

~~According to another aspect of the invention there is provided a ceiling frame member~~ comprising a pair of longitudinally extending and parallel frame member elements each having a leg and a foot, the element legs being spaced apart by two or more cross-members disposed intermediate the legs such that the feet are oriented away from each other, the frame member configured to depend from a ceiling with the element legs oriented substantially vertically~~upwardly~~ and to receive over or intermediate said legs distal said feet a conduit service duct having one or more services such that the service duct is configured to allow~~provide~~ access to the one or more services in the service duct intermediate the legs from the feet side of the frame member at one or more predetermined locations therealong.

According to another aspect of the invention there is provided a ceiling frame member comprising a pair of longitudinally extending and parallel frame member elements each having a leg and a foot, the element legs being spaced apart by two or more cross-members disposed intermediate the legs such that the feet are oriented away from each other, the frame member configured to depend from a ceiling with the element legs oriented substantially vertically and to receive over or intermediate said legs distal said feet a conduit service duct having one or more independently operable services such that the service duct is configured to allow access to the one or more services in the service duct intermediate the legs from the feet side of the frame member at one or more predetermined locations therealong wherein service delivery devices are disposed within said frame intermediate said legs.

It can therefore be seen that there is advantageously provided a ceiling frame system and frame member that allows services including lighting, building management and control systems to be delivered through the frame members rather than have the services mounted on top of or intermediate the frame members or mounted through or to the tiles. The system and frame members also advantageously allow cabling and the like to be transported therein saving the need to lay cable for each service as that service can simply be interfaced via the frame member. Furthermore, additional services can be added relatively easily.

Brief Description of the drawings

CLAIMS:

1. A ceiling frame system comprising a plurality of frame members configured to depend from the ceiling, the frame members characterised in that one or more frame members include one or more service conduits and are configured to be interconnected to one or more other frame members to interconnect said service conduits between predetermined interconnected frame members, wherein each frame member includes a pair of longitudinally extending and parallel frame member elements each having a leg and a foot, the element legs being spaced apart by two or more cross-members disposed intermediate the legs such that the feet are oriented away from each other, the frame member configured to depend from a ceiling with the legs oriented substantially vertically and to receive over or intermediate said legs distal said feet a conduit service duct having one or more independently operable services such that the service duct is configured to allow access to the one or more services in the service duct intermediate the legs from the feet side of the frame member~~the services are accessible at~~ one or more predetermined locations along the length of each frame member.
2. A ceiling frame system according to claim 1 wherein a plurality of interconnected frame members provide a grid defining a predetermined area such that each predetermined area includes a controller~~control box~~ configured to control the flow of services through the grid of frame members.
3. A ceiling frame system according to claim 2 having a plurality of grids each having a respective services controller~~control box~~ such that each controller~~control box~~ is connected to a master services controller configured to control the flow of services to each grid area via each controller~~control box~~.
4. A ceiling frame system according to claim 3 wherein the plurality of grids provide a plurality of service conduits for the same or different services.
5. A ceiling frame system according to claim 1 wherein the service conduits are disposed within or mounted to the frame members distal said feet and the services include any one or more of lighting, telecommunications, data communications, data access points, air conditioning, emergency warning systems, fire alarms, and building management and control systems.
6. A ceiling frame system according to claim 5 wherein the lighting services

includes one or more~~are configured to drive~~ LED lighting devices disposed intermediate said frame member legs at predetermined locations on predetermined frame members.

7. A ceiling frame system according to claim 6 wherein the LED lighting devices are~~is~~ disposed in ~~on the~~ frame members to provide areas of differential brightness.
8. A ceiling frame system according to claim 1 wherein the frame members are formed from a metal or plastic.
9. A ceiling frame system according to claim 1 wherein the frame members are formed from a pair of spaced apart elongate right angle sections retained together by clips.
10. A ceiling frame system according to claim 1 wherein the frame members include a plurality of discrete service conduits such that service conduits are interconnected to respective service conduits of an interconnected frame member, or one or more service conduits are terminated at an interconnected frame member.
11. A ceiling frame system according to claim 1 wherein the frame members and any service conduits interconnect to an end or a mid-section of an adjacent frame member, the interconnection being direct between members or via a connector adaptor disposed intermediate such that one or more service conduits of adjacent frame members are interconnected.
12. A ceiling frame system according to claim 1 further including ceiling tile elements disposed intermediate two or more interconnected frame members.
13. A ceiling frame system according to claim 1 including a frame member cover strip disposed along one side or face thereof~~.~~

~~14. A ceiling frame system according to claim 1 including an auxiliary conduit services duct configured to releasibly mount to the frame members, the auxiliary duct configured to include the one or more services such that the services are accessible from the frame members.~~

~~15. A ceiling frame member configured to depend from a ceiling and including one or more service conduits extending therealong, the ceiling frame member configured to be interconnected to one or more other frame members such that services passing through the frame members in the service conduits are~~

~~accessible at one or more predetermined locations along the length of each interconnected frame member.~~

14. A ceiling frame member comprising a pair of longitudinally extending and parallel frame member elements each having a leg and a foot, the element legs being spaced apart by two or more cross-members disposed intermediate the legs such that the feet are oriented away from each other, the frame member configured to depend from a ceiling with the element legs oriented substantially vertically~~upwardly~~ and to receive over or intermediate said legs distal said feet a conduit service duct having one or more independently operable services such that the service duct is configured to allow access to the one or more services in the service duct intermediate the legs from the feet side of the frame member at one or more predetermined locations therealong.

15. A ceiling frame member comprising a pair of longitudinally extending and parallel frame member elements each having a leg and a foot, the element legs being spaced apart by two or more cross-members disposed intermediate the legs such that the feet are oriented away from each other, the frame member configured to depend from a ceiling with the element legs oriented substantially vertically and to receive over or intermediate said legs distal said feet a conduit service duct having one or more independently operable services such that the service duct is configured to allow~~provide~~ access to the one or more services in the service duct intermediate the legs from the feet side of the frame member at one or more predetermined locations therealong wherein service delivery devices are disposed within said frame intermediate said legs.

16. A ceiling frame system being substantially as herein described with reference to Figs. 1 to 3.

17. A ceiling frame member being substantially as herein described with reference to Figs. 1 to 3.

18. A ceiling frame formed from two or more interconnected ceiling frame members according to claims 15 and 16.